

Economics and Terrorism: What We Know, What We Should Know and the Data We Need*

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1. Introduction

In the last five years, terrorism, its consequences and how to counteract it, have become a household discussion subject and the object of intense scrutiny by social scientists. This is the direct consequence of the attack of September 2001 in the United States, the shape of the U.S. government's response in a variety of forms labeled the "war on terror" and the continuing occurrence of extremely violent attacks in various parts of the world. In economics the literature on terrorism has made remarkable advances since 2001, building on important work that was already available but gaining a new visibility. The literature has been strengthened in the range of topics analyzed, as well as the data and methodologies employed. In spite of substantial progress, different strands of research remain insufficiently integrated. At this stage, charting the progress made so far and suggesting fruitful avenues for additional effort are key. This paper puts forward a broad survey of the economic literature on terrorism, organized in seven different topics: we identify what we think we know, we highlight the key issues that remain to be answered and the data that might illuminate this research effort.

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Any attempt at organizing existing knowledge on a topic should circumscribe the topic and adopt a definition. Terrorism, given its variety of objectives, methods, targets and organizational forms, is elusive as far as definitions go. The word “terror”, at least with its ominous sense of continually indiscriminate violence, has been traced to the Robespierre years of revolutionary France.¹ The word “terror” has remained associated with the actions of states against their own citizens, not least due to the ominous historical record of Nazism and Stalinism. In discussing the issue of “terrorism”, we ought to recognize that totalitarian experiments (in the worst sense of the word), have been responsible for millions of victims in the premeditated use of state-sponsored terror. Only recently “terrorism” (no longer “terror”) suggests an association with the actions of sub-national groups. In this paper, we adopt Enders and Sandler’s (2002) view of terrorism as “the premeditated use or threat of use of extra-normal violence or brutality by sub-national groups to obtain a political, religious, or ideological objective through intimidation of a huge audience, usually not directly involved with the policymaking that the terrorists seek to influence”, the most frequently used in studies of terrorism.² In this, as well as most definitions of terrorism, there are four important elements that come together to characterize terrorism: the “underground” or even informal nature of the perpetrators of terrorist acts, individuals or organizations; the premeditated or “rational” element in the pursuit of objectives; the crucial role of violence, often of an extreme nature; finally and certainly not least, its intended impact on a broad audience beyond the direct targets.³

Our examination of the economics literature on terrorism shows that most of the studies concentrate on the consequences of terrorist attacks at the aggregate level and in specific sectors of activity. An important share of the literature is empirical, using a limited number of data sets that are available. There are notable examples of papers examining the causes or consequences of terrorism in the context of theoretical models of individual, group or aggregate economic behavior. The analysis of individual actors is certainly constrained by data limitations. Another strand in the literature is clearly policy-oriented and, although presenting neither a theoretical model nor an empirical exercise, can provide useful insights.⁴

¹ See Harris (2005) and Bergesen and Lizardo (2004) for a discussion of the definitions of terrorism.

² The official definition by the United States Department of State is compiled under title 22 of the United States Code as the “premeditated, politically motivated violence perpetrated against noncombatant targets by sub-national groups or clandestine agents, usually intended to influence an audience (Office of the Coordinator for Counterterrorism (1997). Interestingly, the Federal Bureau of Investigation (FBI) and the Department of Defense slightly change the definition to highlight the “*unlawful* use of force or violence” and explicitly include both people and property. Another possible definition, by Mickolus (1980, p. xiii), sees terrorism as “the use, or threat of use, of anxiety-inducing extra-normal violence for political purposes [. . .] when such action is intended to influence the attitudes and behavior of a target group wider than the immediate victims and when [. . .] its ramifications transcend national boundaries.” See also Hoffman (1988, Chap. 1), Mickolus (1982), Schmid and Jongman (1988) and Shugart (2007).

³ Irrespective of the breadth and legitimacy of the possible definitions of terrorism, we must acknowledge that data on terrorist attacks have one important limitation: they tend to refer to attacks by non-state groups (even if sponsored by foreign states) on the citizens and the assets of a specific nation or economy.

⁴ See Llussa and Tavares (2007) for a “graphical” presentation of the breakdown of papers on the economics of terrorism regarding their micro versus macro and empirical versus theoretical approach.

In this paper we decided to organize the study of the economics of terrorism around seven different topics. Although some papers are relevant for more than one topic, we offer a comprehensive view of the literature that is useful to identify the questions that remain unanswered. These areas are: *The Measurement of Terrorist Activity*, *The Nature of Terrorists*, *The Utility Cost of Terrorism*, *The Impact of Terrorism on Aggregate Output*, *Terrorism and Specific Sectors of Activity*, *Terrorism and Economic Policy*, and *Counter-Terrorism*. Thus, from measurement we proceed to studies on the characteristics of terrorists and terrorist organizations that rely on economic theory, the consequences of terrorism on individual utility and, at the aggregate level, the cost of terrorism in terms of output and output growth, the direct impact on specific sectors of activity and the reflection of terrorism on fiscal and monetary policies. We conclude with an examination of the economics literature on counter-terrorism measures.

In the paper we discuss, for each of the topics above, what the literature has achieved, the important questions that remain open and the type of data that would help researchers make progress. In our discussion we identify the main papers in the literature and the issue(s) where each made a contribution and, at the end, we present a brief individual summary for those papers in tables organized along the same topic areas.

2. What We Know, What We Should Know and the Data We Need

Below we present our assessment of the state of the literature on terrorism for which research in economics has made or should have made a contribution. For each of the themes we start with a brief summary of what we “know”, and proceed to a discussion of the issues worth an extra research effort, pointing to data limitations where they are relevant.

2.1. The Measurement of Terrorist Activity

The measurement of terrorist activity has resulted in a limited number of datasets. Some provide a count of terrorist events and have been widely used, most notably those organized by Mickolus and associates - Mickolus (1980, 1982), Mickolus and Fleming (2003), Mickolus et al. (1989, 1993) - and the dataset from the International Policy Institute for Counter-Terrorism in (2003). Another group of datasets is based on sectoral or individual information, and tends to be collected by the researchers conducting a specific study, and to have poor dissemination. As mentioned in the introduction, the variety of objectives, means, targets and organizations, in addition to the underground nature of the latter, adds to the difficulty of measuring terrorist activity. Terrorism ranges from ethnically motivated to state-sponsored, from

religious or ideologically motivated, and can directly target the government, the military or the civilian population, assassinate individuals or threaten the use of weapons of mass destruction.⁵ The simple count of events may seriously underestimate the phenomenon of terrorism and it is important to acknowledge the indirect and psychological costs of terrorism, whether or not translated into actual attacks. This is addressed in the subsection on the utility cost of terrorism, below.

The existing literature has established important facts on the occurrence of terrorism. First, **terrorist attacks are relatively rare and extreme events**. The number of actual attacks is highly volatile over time and across countries, as Enders and Sandler (2002) documents.⁶ There is some evidence of a **cyclical pattern in terrorism**, a higher prevalence during **economic downturns** – documented in Im et al. (1987) and Enders and Sandler (1995, 2000) and explained in Blomberg, Hess and Weerapana (2004a) – or with the occurrence of **elections** – electoral outcomes in Berrebi and Klor (2004) and electoral dates in Brauer et al. (2004). There is evidence that **terrorist attacks have become more lethal** over time – Enders and Sandler (2000) and Sandler and Enders (2004) present data - which might be related to a change in the motivation of terrorists - from ideological to religious motivated; and method – the increased use of suicide attackers, as documented in Berman and Laitin (2005). In addition, since the 1967 Arab-Israeli War, several acts of terrorism have acquired a transnational nature.⁷

Rich countries are frequent targets of terrorism. Israel and the United States are the most frequent targets, the latter also indirectly through political and business interests – as documented in Blomberg et al. (2004, 2004b, 2007), Enders and Sandler (2002) and Krueger and Laitin (2007) - and this is true whether a count of events or its per capita equivalent are used – as in Tavares (2004).⁸ It is unclear whether **democracies** are likelier targets – see Blomberg et al. (2004, 2007) for a “yes”, Tavares (2004) for a “no”, and Abadie (2004) for a non-monotonic relationship where intermediate levels of political rights are associated with more attacks. Blomberg and Hess (2007) use bilateral data to find that, while **richer, more open and more democratic countries seem more prone to be targeted**, poorer, less democratic and less open countries are more often the origin of terrorists – corroborated also by Krueger and Laitin (2007).

The measurement of terrorist activity presents opportunities for research in at least two areas. To support research on the individual and aggregate costs of terrorism and the effectiveness of different counter-terrorism measures, there is a need to **document the type and nature of attacks** as far as number of events, type of targets, type of

⁵ See Enders and Sandler (1995; 2002) and Frey (2004) for a discussion. Shugart (2007) organizes an analytical history of terrorism around three “waves”: the national liberation and ethnic separatism phase, the ideological and the religious.

⁶ Tavares (2004) shows that the time series on terrorist attacks displays a substantially higher standard deviation than a similar series on natural disasters.

⁷ See Enders and Sandler (2002).

⁸ Laitin and Shapiro (2007) argue for the use of relative indicators of the intensity of terrorism.

organization, number of dead and wounded, direct dollar cost of attacks and type of media coverage. A thorough documentation of how these different characteristics of attacks correlate and evolve over time is a precondition for identifying what it is that causes what and why. A reading of the literature suggests that data constraints limit the type of terrorism indicator used. As a consequence, studies that compare the impact of different indicators are rare. A second issue deserving substantial attention is more technical in nature and appeals to a much broader use of statistical and econometric techniques that **take account of outliers, censored, and truncated data** when assessing the incidence of terrorism. The incentives of governments and certainly of terrorist organizations go against transparency and towards manipulation of information, but this may be partly overcome by a more intense use of the above-mentioned techniques. A third important issue for research on the measurement of terrorism, for which econometric methods are useful, is a fuller account of the fact that terrorism does not always lead to terrorist acts. The task of **measuring the underlying level of terrorist activity**, as opposed to terror events, is an important step to assess the individual utility cost and the economic cost of terrorism.

2.2. The Nature of Terrorists

There several explanations for the emergence of terrorist groups and the occurrence of terrorist attacks, ranging from those based on individual or group incentives to a second set that examines how aggregate variables correlate with the frequency of events. Both provide important insights. In general, what is known as to the individual motivations of terrorists goes against current prejudices that view terrorists as irrational misanthropes with low income and poor education.⁹ Generalizations are extremely risky at the current stage of research, but, if anything, available evidence suggests that the support for and **participation in terrorist acts is not associated with lower educational or economic status** – as in Krueger and Maleckova (2003), Berrebi (2003) and in Schelling (1991).¹⁰

As the presence of suicide actors dramatically illustrates, non-traditional explanations for terrorism may be required – as in Wintrobe (2006;2007) on **extreme tradeoffs**, when one of the choice variables is whether to use your own life, Hardin (1995) on **group identity** theories, and Ferrero (2005) on the use of **social sanctions**. The use of **club good theory** - as in Berman (2003) and Berman and Laitin (2005) – is another important hypothesis towards identifying group rationality, associating the

⁹ Which does not mean they are not driven by political and religious ideologies.

¹⁰ As an example of an explanation for these counter-intuitive results, education can signal an individual's ability to commit, a necessary input for extreme actions. Azam (2005) uses a dynastic model where the "benefits" of terrorism accrue to several generations to rationalize this result: higher income and higher educated individuals may be more sensitive to those future benefits. Bueno de Mesquita (2005b) models terrorist volunteers and terrorist organizations that screen for "quality", delivering results consistent with more terrorism in recessionary economies while actual terrorists are better educated than the average. For an interesting exercise based on a different view, see Berman and Stepanyan (2004), which assesses the number of potentially "radical" Muslim women, based on fertility, low returns to education and religious education.

process of recruiting terrorists to membership in a restricted group, with its associated costs and benefits..¹¹ More specifically, the existence of multiple terrorist groups, behaving “rationally”, but pursuing different objectives, may confound conclusions. Kydd and Walter (2002) show how a minority of terrorist radicals may “rationally” delay a truce between the government and a majority of their own camp that desire peace as violent actions undermine the trust between the majorities of peace seekers on both sides of the conflict. Siqueira (2005) shows how the existence of different factions may actually decrease rather than increase terror activity.

As argued in Laitin and Shapiro (2007), the strength of state institutions, the democratic processes within the target state, the degree of popular support for the terrorist organization, the degree to which terrorist organizations divide into factions, the sources and magnitude of funding and the counter-terrorist tactics all affect the nature and intensity of terrorist activities. These authors put forward a series of hypotheses on the political, economic and organizational determinants of terrorism, derived from the “rationalist” view that sees terrorists as calculating individuals reacting to incentives. Laitin and Shapiro (2007) propose that organizations with dwindling support or strong support but no political voice are more prone to adopt terrorism as a tactic, especially in democratic states. Moreover, the adoption of terrorism tends to be reinforced by the appearance of perverse incentives once that path has been chosen. Several studies view terrorism as the result of tensions and new resources that arise with **modernization** - Crenshaw (1981) and Aziz (1995) - the rise of **religious-based fundamentalism** - also Crenshaw (1981). Terrorism may be a **substitute for other forms of political conflict** in the internal fight over resources – as in Garfinkel (2004), Blomberg et al. (2004b) and Sambanis (2007)¹² – and terrorist acts as part of a **signaling game where governments are uninformed** of the terrorists strengths - Lapan and Sandler (1993) or, in the case of international terrorism, a **foreign policy tool** used in foreign policy crises - O’Brien (1996). Individual hatred towards specific groups or nations can emerge from misinformation and **manipulation by political leaders** – as in Glaeser (2005) and Charney and Yakatan (2005) – who can enhance follower loyalty by promoting violence and terrorism - Epstein and Gang (2004).

What avenues for research are presented insofar as the characteristics and motivations of terrorists? First, and despite important progress, the analysis of individual motivations should proceed by **encouraging interdisciplinary research**, bringing economics into closer interaction with other disciplines, especially psychology, sociology, political science and media studies. This can enrich the “rational” explanations for terrorist participation, helping build more plausible models of extreme behavior. In parallel, interdisciplinary research can result in better testing of the existing incentive theories of terrorist participation. Secondly, we need to know

¹¹ The “demand” for suicide terrorists is easier to understand. See Wintrobe (2006) and Pape (2003).

¹² Though Sambanis (2007) argues that development may decrease the risk of civil war without significantly altering the risk of terrorist activity.

much more on the **“industrial organization” of terrorist groups**. Terrorists seldom act alone, and are instead recruited, trained, supported and protected by specific organizations and networks. These organizations have developed different organizational patterns over time, the study of which can help identify the source of terrorism and the best instruments to counter it. The fact that some terrorist organizations are twins to more easily scrutinized political parties or associations, with a line of discourse and reaction to events, opens possibilities for important documentation of the terrorists’ motivations. Data collection on the internal organization of terrorism, on the role of different actors, technologies and costs – financial, time or otherwise, will help identify effective points for defusing. A third promising line of research is the collection of survey data on the **relationship between individual characteristics such as income, education and support** for terrorism. Detailed studies of this type could unveil the individual characteristics that groups delve into when recruiting terrorists but also the public reaction to different terrorist goals, means and activities, which probably is taken into account by terrorist groups in their decisions.

2.3. The Utility Cost of Terrorism

Certainly, terrorist acts have a negative impact on individual utility and on the economy. However, their association with extreme random harm and a level of uncertainty that is difficult to ascertain suggests that terrorism’s utility cost goes well beyond the direct and immediate damage. Terrorism entails costs linked to what some term a **“non-rational” evaluation of risk** on the part of individuals, namely, a decrease in utility that goes beyond the computable expectation of losses. The perception of this cost may be associated with an outcome-independent negative impact of “fear and loathing” that greatly exceeds the “objective” discounted harm – as in Becker and Rubinstein (2004) and Sunstein (2003).¹³ Despite its “non-rational” nature, this perceived cost can be quite substantial. Viscusi and Zeckhauser (2003) suggest there are several anomalies in people’s evaluation of the cost of terrorism, and Frey et al.. (2004) suggest that people’s utility losses from terrorism far exceed the expected consequences.

There is one important line of research on the utility cost of terrorism. First, it is important to assess directly through individual surveys and contingent valuation techniques the **impact of terrorism on individual happiness**. In the wake of successful applications of contingent valuation to public and environmental economics, researchers should evaluate the impact of terrorism on self-reported

¹³ Becker and Rubinstein (2004) argue that an exogenous shock to the probability of being harmed affects peoples’ choice in two ways: a change in exposure to risk - the weights of “good” and “bad” states change - and in fear - in each state of nature, the utility level itself decreases in response to an increased probability of being harmed. Sunstein (2003) had shown that individuals focus on the “badness” of the result rather than on the probability of occurrence. This so-called “probability neglect” results in fear that greatly exceeds the discounted harm.

subjective well-being. Additionally, research should try to identify the characteristics of terrorist acts that entail the greatest subjective loss.

2.4. The Impact of Terrorism on Aggregate Output

A considerable number of articles on the economics of terrorism concentrate on the consequences of terrorist events on the macroeconomy, namely on output.¹⁴ The **direct cost to output seems to be relatively low and short-term** – Hobijn (2002), International Monetary Fund (2001), Navarro and Spencer (2001) and **Treverton et al. (2007)** – mostly associated with public expenditures for specific military operations abroad and protective measures at home – Treverton et al. (2007). Terrorist attacks do **reduce economic growth**, though its impact is estimated to be less than that of violent internal conflict and external war – Blomberg et al. (2004) – or even natural disasters – Tavares (2004). However, **high and persistent levels of terror** – Eckstein and Tsiddon (2004) – or concentrated in **specific regions** – Abadie and Gardeazabal (2003) and World Bank (2002, 2003) – have a considerable impact. Moreover, although with lower incidence, **poorer countries suffer more** from attacks – see Blomberg et al. (2004) and **Sandler and Enders (2007)** on poorer countries, World Bank (2002, 2003) on Israel versus the Palestine territories.¹⁵ **Democratic countries seem to be more resilient** to attacks – Tavares (2004). Larger and more diversified economies are likely to suffer less – Sandler and Enders (2007).

An alternative way to look at the effect of terror on aggregate output is to examine its **impact on the value of stocks** of different companies. Here researchers have found evidence that the impact is relatively short-term and may decrease over time – as in Choudhry (2003), Chen and Siems (2004), Eldor and Melnick (2004). A possible explanation is that efficient markets diversify efficiently, diminishing the influence of risk on particular stocks.

The study of the effects of terrorist attacks on output and economic growth seem relatively consensual in that the cost is limited and short-term, except in cases of extreme vulnerability. We believe a useful line of research stems from analyzing the cost of terrorism in light of what is known on the cost of **other unlikely but extreme events such as natural disasters**, which also are rather circumscribed in time. A second line of research should connect the cost of terrorism to the literature on **volatility and growth**,¹⁶ relating the output change to the responsiveness of consumption, investment and trade. A third line of research that would draw on relatively inexpensive collection of new data would be to run **event-studies on the**

¹⁴ See Brück and Wickström (2004) for a survey on the consequences of terrorism.

¹⁵ The World Bank (2002, 2003) estimates the cost of the Palestinian–Israeli conflict for both contenders: while the cost to Israel is estimated at 4 percent of GDP, the Palestinian territories suffered a 50 percent decline in income per capita between 1994 and 2002. In addition, specific sectors such as tourism and trade have been especially hurt.

¹⁶ See Auffret (2003) and Hnatkovska and Loayza (2003).

performance of stock markets differentially affected by terrorism in periods of increased terrorist activity.

2.5. Terrorism and Specific Sectors of Activity

In addition to the effects on aggregate output mentioned above, the economics literature provides ample evidence that terrorism is associated with **significant differential impacts on different economic sectors**. It is natural that a severe shock, temporally circumscribed, will affect consumption differently, through a consumption smoothing mechanism, and investment, which may decrease in response to a temporary willingness to free resources for other uses, such as consumption and public spending. In fact, there are noticeable **decreases in consumption** following terror attacks – modeled and documented in Eckstein and Tsiddon (2004) and documented in Fielding (2003a) - and **decreases in investment** – modeled and documented in Eckstein and Tsiddon (2004), also documented in Blomberg, et al.. (2004) and in Fielding (2003b) – the latter a consequence of a crowding out effect in response to increases in public spending, which we will cover in the next subsection. **Capital flows and trade across borders are also likely to decrease** – as argued and documented in Abadie and Gardeazabal (2005) and documented also in Enders and Sandler (1996) for capital flows; argued in Walkenhorst and Dihel (2002) and documented in Nitsch and Schumacher (2004) for trade.¹⁷

Tourism and airline demand, due to their specific vulnerability to terrorist attacks and to fluctuations in consumer sentiment, have received special attention by researchers. The consensus points to a clear negative impact on **tourism and airline demand** – Drakos and Kutan (2003), Enders et al.. (1992), Enders and Sandler (1991, 1996), Sloboda (2003) and Fleischer and Buccola (2002) on tourism; Drakos (2004) and Ito and Lee (2004) on airline demand.

The concentration of economic and governmental activities and the large population density of urban areas suggest greater vulnerability to terrorism. This can be compounded by the fact that media attention is naturally focused on events taking place in large, populated, identifiable geographical areas, i.e. cities. If this view holds, **terrorism can be viewed as a tax on cities**. Several authors have discussed whether cities are particularly vulnerable, but the estimates put forward point to a very limited cost, especially in the long run – Bram et al.. (2002), Glaeser and Shapiro (2002), Harrigan and Martin (2002), Mills (2002) and Rossi-Hansberg (2003).

Given the association of terrorism with risk in general, and dramatic revisions in the risk profile that economic activities face, the insurance industry is likely to be

¹⁷ The contraction in trade may be in response to an increase to trade and transport costs, as argued in Organization for Economic Development and Cooperation (2002) and Lenain et al.. (2002).

affected, either positively or negatively, by terrorist attack.¹⁸ In addition, changes in exposure may highlight market imperfections in the industry.¹⁹ There is evidence that the **stock of insurance companies** reacts to increased terrorist risk – Cummins et al.. (2003). There is an open discussion on the appropriateness of government schemes that interfere with the insurance market, such as the Terrorism Risk Insurance Act (TRIA) in the United States. Chalk et al.. (2005) examine the trends in terrorism and in the threat level to the U.S. and how the Terrorism Risk Insurance Act responds or not to those changes. Kunreuther et al.. (2003) shows that the insurance system established by TRIA is neither a complete nor a definitive response to increased risk.²⁰ Brown et al.. (2004) follow thirteen key legislative events leading to the Terrorism Risk Insurance Act (TRIA) in November 26, 2002 and document their impact on the stock price of firms in banking, construction, insurance, real estate investment trusts, transportation, and public utilities. Stock prices in the affected industries responded negatively to the legislative events. As to the differential effect of terror on other activities, Berrebi and Klor (2005) show strong evidence of a differential and positive impact on defense and security-related Israeli industries in response to terror attacks.²¹

The research agenda on the sectoral effects of terrorism is likely to yield interesting results in at least two directions. First, given the **differential impact of terrorism on the components of output and different economic sectors**, namely on consumption and investment, it is worthwhile to investigate what characteristics of terror events drive consumption and investment changes. This is in line with the suggestion above in subsection 1 on organizing existing data and collecting new data on terrorist actions. Given the different reasons for changes in consumption and investment, and the different motivations of the decision-makers involved - consumers and firm managers –the use of a richer panel of characteristics of attacks may help identify which characteristics affect consumption, investment and other aggregates– victims, material losses, type of perpetrators or simple count of events. In addition, there are several sectors for which stock market data are available and which should suffer differential impact of terror, in line with Berrebi and Klor (2005). A second line of research is the collection of new aggregate data on **tourist movements**, including origin and destination, information on cost and length of stay, to evaluate more finely the impact and substitution effect between destinations. Crossing this data with information on media coverage, which should vary substantially across countries, can also lead to important insights.

¹⁸ Woo (2002) presents an analytical method to compute the risk of terrorism in actuarial terms. Lenain et al.. (2002) argues for an impact on the insurance industry.

¹⁹ Froot (1999) studies catastrophic events. According to risk management theory, reinsurance should cover the most severe events such as natural disasters. However, reinsurance is more prevalent for mid- and small-size risk events. Supply restrictions associated with capital market imperfections and market power exerted by reinsurers are the most reasonable explanations for the divergence of observed data from what is expected from theory.

²⁰ One of the reactions to the 2001 attacks on the World Trade Center was the enactment of the Terrorism Risk Insurance Act (TRIA) ,which requires insurance companies to provide terrorism insurance to customers in return for federal provision of reinsurance in case of losses due to terrorist attacks.

²¹ This is true also of defense-related Israeli exports, which seem to have benefited from a boom following the attacks.

2.6. Terrorism and Economic Policy

Terrorism can affect fiscal and monetary policy, either as any other unexpected shock would, or as the result of the endogenous response of economic policy-making to terrorist events. The **increase in public spending** in response to additional security needs is likely to be small- as argued in Lenain et al.. (2002), Gupta et al.. (2004) and Hobijn (2002) -,and probably with little impact on **budget deficits** – Eichenbaum, and Fisher (2004) and Wildasin (2002).

Another important issue is the reaction of the payments system in the face of an attack. Here there is at least one careful study of the consequences of the September 11 terrorist attacks on the monetary and payment systems, in the context of what is common sense knowledge on banking crises. Lacker (2004) shows how the Federal Reserve credit extension after September 11 increased the supply of banks' balances and attenuated the effects of the terrorist shock.

2.7. Countering Terrorism

A final key question on terrorism and the economy, and probably the most important policy issue, is what can be done to reduce the incidence of terrorism. The two basic policy options are, in simplified terms, to counter-terrorism by force – the “stick” – or to divert terrorists, by increasing the opportunity cost, making the targets less attractive or adjusting the media coverage to diminish the benefits – the “carrot” option.²² In thinking about counter-terrorism, it is realistic to acknowledge beforehand that complete eradication of terrorist activity is unlikely, not only because of imperfect information and cost asymmetry, which gives terrorist groups a strategic advantage, but also due to continuous innovation on both parts of the conflict.²³

There is evidence that **terrorists substitute between means, targets and across time** – Im et al.. (1987) for substitution away from military and governmental targets to tourists and over time.²⁴ This ability on the part of terrorists suggests the use of a portfolio rather than just a specific anti-terrorist measure – argued in Enders and Sandler (2004) and Frey (2004). **Deterrence has been the main response** of states to terrorist organizations but may not be the right strategy, as it induces escalation and a negative sum game interaction - as argued in Frey (2004) and modeled in **Arce and Sandler (2005) and Bueno de Mesquita (2005b)**.²⁵ Bueno de Mesquita (2007)

²² See Frey (2004) for a discussion of the relative attractiveness of different counter-terrorist policies.

²³ Mickolus et al.. (1989) quote Hoffman (1998) on an IRA member after a near miss of the United Kingdom prime minister bragged: Today, we were unlucky. But remember we have only to be lucky once. You will have to be lucky always”.

²⁴ In addition, there may be substitutability with other forms of violence, as argued in Garfinkel (2004) and Blomberg, Hess and Weerapana (2004). See above.

²⁵ Frey (2004) lists a series of costs from over-reliance on deterrence, including budgetary costs and political costs (in terms of possibly reduced support for counter-terrorism policy), exploitation by self-interested politicians to extend their stay in power and reduced human rights and civil liberties. Deterrence also entails costs due to the response of terrorists, who gain in visibility

argues the observability of specific counter-terrorism measures and the voters' perceptions may explain such a bias. However, as highlighted in Rosendorff and Sandler (2004), proactive policies may also be excessive and encourage more "dramatic" terrorist attacks, either at home or abroad. **Economic sanctions** may also be ineffective.²⁶ An important mechanism is active limitation of terrorist funding through better regulation - proposed in Fitzgerald (2004). Other counter-terrorist strategies that should be considered involve **decreasing the benefits or raising the opportunity cost, rather than the material cost, of terrorist attacks** – Frey and Luechinger (2003; 2004) and Frey (2004).²⁷ There is evidence that people realize the complexity of terrorism and are **ready for more considered and more flexible policy** responses – Downes and Hoffman (1993) – including episodes involving hostage taking – Shambaugh and Josiger (2004).

Credible non-negotiating policies are also important – Sandler and Enders (2004) – but time inconsistency is a major issue and there is a high risk of default – as explained in Lapan and Sandler (1993). At the other extreme, **some states tolerate the activities of terrorist organizations** in their territory in exchange for no direct harm and at the expense of other nations – a dominant strategy, according to Lee (1988) – which points to the desirability of multilateral coordination and institutions. Coordination is also described as desirable in Rosendorff and Sandler (2004), where there may be incentives for too much or too little proactive counter-terrorism at the cost of more "dramatic" attacks, and in Sandler and Siqueira (2003), who argue that an efficient counter-terrorist policy cannot be achieved through the leadership of one country.

One plausible response to terrorism is adjusting **how political institutions** - as discussed in Wilkinson (2001) – **or legal institutions function** – discussed in Garoupa et al.. (2006) and Enders et al.. (1990) for a skeptical view - from the insights on the economics of crime. Mueller (2004) argues that it is necessary instead to **strengthen democratic institutions** and increase citizens understanding and support for those institutions.²⁸ Other options include **decentralizing political institutions** to decrease the attractiveness of targets – argued in Frey and Luechinger (2003) – and increase the cost to terrorists through **screening** – as in Viscusi and Zeckhauser (2003) and Garoupa et al.. (2006).

We identified three important niches for research on counter-terrorism. First, we should learn more on the linkage between a **country's legal and political institution** and both the incidence and the vulnerability to terrorism. In the wake of September 11 and the qualified restrictions on civil liberties, a debate has lit up on the

and cohesion and substitute towards potentially deadlier means of attack. Concessions may be important, even as they apparently result in more attacks in the immediate aftermath, as explained in Bueno de Mesquita (2005b).

²⁶ See Frey (2004).

²⁷ However, in a comparative analysis of the two forms of political violence, Sambanis (2007) argues that economic development may decrease the likelihood of civil war but not of terrorism.

²⁸Tavares (2004) finds evidence that the more democratic a country, the lower the output decrease following a terror attack.

appropriate means democracies can use in their fight against the terrorist. Here we believe the history of terrorism in Israel warrants a profound examination of the comparative effectiveness of counter-terrorist measures through a case study analysis. A related issue is how to make democratic institutions less vulnerable to terrorism.²⁹ A second research path should **model the asymmetries between the terrorists and the governments'** actions, in terms of information and cost requirements, as an intermediate step towards increasing the effectiveness of counter-terrorism. A particular issue worth investigating given the current level of the debate is how to coordinate among nations as far as information and means to combat terrorism, exploiting the existence of multiple equilibria, both in the coordination level among countries and in the incidence of terrorism. Finally, a third research area which we consider particularly promising is the analysis of **media coverage of terrorist events**. Foremost among the motives for terrorist activity is the publicity gained freely as a consequence of terror. Existing geographical variation in coverage – for example, in Europe versus the US, and variation in its content and intensity – terrorist groups, motivation and victims mentioned, etc. – can go a long way toward establishing what in attacks drives media attention, or the other way round. By combining datasets on terrorist events and the associated news coverage, researchers could better understand how the media can be used to discourage terrorist activity.

3. Concluding Remarks

Probably, and unfortunately also for the worst reasons, terrorism will be high on the political agenda for years to come. Understanding the motivations of terrorists and terrorist groups and the policies to diminish the occurrence and the effects of violence must be a key element in the response to terrorism. This is only possible if we extend our knowledge on the intrinsic nature of the terrorist phenomena by collecting new data to answer the remaining questions, thus decreasing the extent of our ignorance of its causes and consequences. In this effort, the role of research in economics, as surveyed in this paper, cannot be diminished, and is likely to remain central.

²⁹ Here, a useful linkage can be made with the literature arguing more developed institutions lower the incidence or the cost of risk, as suggested in Tavares (2004).

Table 1
The Measurement of Terrorist Activity
Paper Overview

Author (s) and Title	Brief Summary	Model	Data
<p>Abadie, Alberto (2004) “Poverty, Political Freedom and the Roots of Terrorism” Working Paper.</p>	<p>An empirical investigation of the determinants of terrorism at the country level using a new measure of terrorism that encompasses both domestic and transnational terrorism. Terrorist risk is not significantly higher for poorer countries, once the effects of other country-specific characteristics such as the level of political freedom are taken into account. Political freedom is shown to explain terrorism, but it does so in a non-monotonic way: countries in some intermediate range of political freedom are shown to be more prone to terrorism than countries with high levels of political freedom or countries with highly authoritarian regimes. Finally, the results suggest that geographic factors are important in sustaining terrorist activities.</p>	<p>No</p>	<p>Yes</p>
<p>Berman, E. and Laitin, D. (2005) “Hard Targets: Theory and Evidence on Suicide Attacks” National Bureau of Economic Research</p>	<p>Insurgency typically occurs in poor countries but suicide attacks are just as likely in rich democracies and favored by the radical religious. The authors model the choice of tactics by rebel groups, considering that a successful suicide attack imposes a large and definitive cost on the attacker and the organization. The attacker and other operatives are embedded in a club-good model emphasizing the provision of benign local public goods. The ultimate sacrifice demanded serves as a regulator of entry and solves a free-rider problem. The model predicts that suicides will be used when targets are well protected and when damage is great.</p>	<p>Yes</p>	<p>International Policy Institute for Counter-Terrorism (2003) and from Pape (2003).</p>

<p>Berrebi, Claude and Esteban F. Klor (2004). <i>“On Terrorism and Electoral Outcomes: Theory and Evidence from the Israeli-Palestinian Conflict.”</i> Working Paper.</p>	<p>The interaction between terrorist attacks and electoral outcomes in Israel is studied based on a dynamic model of reputation with two equilibriums: in the first one, support for the rightist party increases after periods with high levels of terrorism and decreases after relatively calm periods, and in the second one, the expected level of terrorism is higher during the leftist party’s tenure in office compared to the one expected during the rightist party’s term in office. The empirical results support the theoretical model for three of the four Israeli governments in the period between 1990 and 2003: terrorist attacks increase during leftist governments and decrease during rightist governments.</p>	<p>Yes</p>	<p>Public opinion polls and a new data set on terrorist attacks in Israel and the occupied territories between 1990 and 2003.</p>
<p>Blomberg, S. Brock, Gregory Hess and Athanasios Orphanides (2004) <i>“The Macroeconomic Consequences of Terrorism.”</i> Journal of Monetary Economics</p>	<p>The authors examine a panel data set of 177 countries from 1968 to 2000 to evaluate the macroeconomic consequences of terrorism, using three different econometric procedures: cross-section, panel growth regression analysis and a structural VAR model. Terrorism reduces growth and the country fixed effects are an important explanatory variable. The negative effect of terrorism on growth is stronger and statistically significant in developing countries, not statistically significant in OECD economies. The incidence of terrorism correlates with increases in government spending and a crowding out of investment. Violent internal conflict and external wars have a stronger and more persistent negative effect on economic growth than terrorism.</p>	<p>No</p>	<p>Data on terrorism from “International Terrorism: Attributes of Terrorist Events” – ITERATE from Mickolus et al. (2002).</p>
<p>Blomberg, S. Brock, Gregory Hess and Akila Weerapana (2004a) <i>“Economic Conditions and Terrorism.”</i> European Journal of Political Economy</p>	<p>The theoretical model used in this paper sees terrorism as initiated by groups that are discontent with their current economic situation but are unable to drastically change it or affect the present political and institutional order that are responsible for their situation. The model predictions are: a) conflict is more likely in bad times when the economic resources</p>	<p>No</p>	<p>Data and sources: the terrorist activities data are the ITERATE data set from Mickolus et al. (1993) with 159 countries over 24 years providing 3816 observations, and the economic data are obtained from the update to the Summers and Heston (1991) data set which is given for 152 countries over 25 years providing 3800 observations. Combining</p>

	shrink and the dissident groups are less likely to be satisfied and b) the choice between a rebellion and a terrorist attack depend on the responses of the government to these actions. Richer countries that have better institutions, stronger economies and well-equipped armies increase the cost of rebellion to the point that dissident groups prefer to resort to terrorism. These predictions are tested in a panel of 127 countries from 1968 to 1991. It is observed that in richer democratic countries terrorism is more likely during economic downturns. This is consistent with the model predictions.		both data sets results in a panel of 3014 observations (127 countries from 1968 to 1991).
Brauer, J., A. Gómez-Sorzano, S. Sethuraman (2004). “ <i>Decomposing Violence: Political Murder in Colombia</i> ”. European Journal of Political Economy	Demonstrate the role of cyclical political variables and permanent non-political variables applying the Hodrick-Prescott and Beveridge-Nelson business-cycle decomposition methods to a time-series of homicides in Colombia (1946-1999).	No.	Crime statistics from Colombian National Police, between 1946 and 1999.
Enders, Walter and Todd Sandler (2002). “ <i>Patterns of Transnational Terrorism, 1970-1999: Alternative Time-Series Estimates.</i> ” International Studies Quarterly	This paper uses time-series methods to evaluate some of the consequences of transnational terrorism and find that: a) transnational terrorism tends to result in relatively few deaths, especially as compared with more frequent events such as accidents on roads and highways; b) terrorist attacks have become more threatening and lethal in recent years; c) there seems to be a cyclical pattern in the incidence of terrorism, with a large fraction of casualties associated with a small number of events and d) attacks aimed at the United States or US interests constitute a substantial portion of total attacks.	Yes	Data on transnational terrorism incidents. They are drawn from International Terrorism Attributes of Terrorist Events (ITERATE): ITERATE 2 covers 1968-77 (Mickolus, 1982), ITERATE 3 covers 1978-87 (Mickolus et al., 1989), and ITERATE 4 covers 1988-91 (Mickolus et al., 1993).
Enders, Walter and Todd Sandler (2000) “ <i>Is Transnational Terrorism Becoming</i>	This study applies time-series techniques to investigate the current threat posed by transnational terrorist incidents. Although the number of incidents has dropped dramatically during the post-cold war period,	No	Data on transnational terrorist incidents and casualties.

<p>More Threatening? A Time Series Investigation” Journal of Conflict Resolution</p>	<p>transnational terrorism still presents a significant threat. In recent years, each incident is almost 17 percentage points more likely to result in death or injuries. Three alternative casualties’ series (incidents with injuries and/or deaths, the proportion of incidents with casualties, and incidents with deaths) are investigated. These series increased in November 1979 with the takeover of the U.S. embassy in Tehran and again after the fourth quarter of 1991. The growth of religious terrorism appears to account for the increased severity of terrorist attacks since the last quarter of 1991. All three casualties’ series displayed more deterministic factors than the non-casualties series, which is largely random after detrending. Cycles in the aggregate incident series are solely attributable to the underlying casualties’ series.</p>		
<p>Enders, Walter and Todd Sandler (1995) “Terrorism: Theory and Applications” In: Keith Hartley and Todd Sandler (eds.), Handbook of Defense Economics.</p>	<p>Reviews game-theoretic and choice-theoretic depictions of terrorist behavior. A simple game-theoretic framework is presented to ascertain under what circumstances a government would want to precommit itself to a no-negotiation strategy. In another game model, the authors analyze whether two governments (nations) that are targeted by the same terrorist group would over deter or under deter terrorist attacks. Moreover, they demonstrate that piecemeal policy, which allows the governments to share intelligence but not deterrence decisions, can be worse than no coordination. Choice-theoretic models identify possibilities for substitution and complementarity among diverse modes of terrorist attacks as terrorists respond optimally to government actions. A host of time-series techniques are used to study the effectiveness of alternative anti-terrorism policies. Vector-autoregression intervention procedures are particularly suited. Time-series analyses are also used to identify cycles, trends, and irregular components for</p>	<p>No</p>	<p>Data on transnational terrorist incidents.</p>

	forecasting purposes.		
Figueiredo, Rui J.P. de Jr. and Barry R. Weingast (2001) “ <i>Vicious Cycles: Endogenous Political Extremism and Political Violence.</i> ” Working Paper.	The authors develop a model of radical political violence with three players: a dominant in-group, moderate and radical sub-groups of the out-group, showing that persistent violence is most likely when moderates are truly moderate (not too close to either the dominant group or to the radicals) and a provocation motive interacts with other explanations as an incentive for terrorist violence as the radicals must have an incentive to terrorize <i>beyond</i> the provocation motive so that the threat of future violence is credible.	Yes	No
Im, Eric Iksoon, Jon Cauley and Todd Sandler (1987) “ <i>Cycles and Substitutions in Terrorist Activities: A Spectral Approach.</i> ” Kyklos	By using spectral analysis this paper shows that all terrorist events series had a cycle of 28 months. Skyjackings had two periodicities: 41 and 28 months. The periodicity of a barricade and hostage events were 72 and 48 months, respectively. It is also shown that tighter security measures for military and government facilities made tourists relatively more attractive for terrorist attacks. Besides there is some evidence that terrorists substitute in the short run between similar events (e.g. kidnapping and skyjacking).	No	Yes.
Sandler, Todd and Walter Enders (2004) “ <i>An Economic Perspective on Transnational Terrorism.</i> ” European Journal of Political Economy	In the period from 1960 to 1980 terrorism was basically motivated by nationalism, separatism, Marxist ideology and nihilism. In the 1990s motivation changed and an increased proportion of terrorist attacks were from religious-based fundamentalist groups. In terms of cycles and trends, the series of incidents tended to rise in the late 1960s and decline in the late 1990s (inverted U-shaped pattern). Also, in recent years the probability of death or injury in a terrorist incident increased by about 17 percent. In addition, this study shows that transnational externalities and market failures are present in the case of transnational terrorism. Given the data, this paper summarizes some studies on	No.	Transnational terrorism annual data from US Department of State (1988–2002) and the ITERATE dataset (International Terrorism: Attributes of Terrorist Events - 1968-2002) from Mickolus (1982), Mickolus et al.. (1989, 1993) and Mickolus and Flemming (2003).

	<p>terrorism in order to understand what anti-terrorist policies can do. Studies support that if terrorists know ahead of time that they have nothing to gain – there will be no concessions and deals with terrorists – they will never abduct hostages. Game theory accounts for uncertainty and strategic interactions of opposing interests, which could help the understanding of terrorism. Every policy to thwart terrorism would entail its own stream of benefits and costs that must be taken into account.</p>		
<p>Tavares, José (2004) <i>“The Open Society Assesses Its Enemies: Shocks, Disasters and Terrorist Attacks”</i> Journal of Monetary Economics</p>	<p>This paper uses datasets on terrorist attacks, natural disasters and currency crises to answer three different questions: what the determinants of terrorism are; if there is an output cost following a terrorist attack; and if that cost is larger or smaller in the case of democracies. We find that rich countries are the most prone to suffer attacks while democracies are, if anything, less vulnerable than other countries. The cost to output of a terrorist attack is quantitatively small and closely associated with the occurrence of an event rather than the number of casualties. Finds robust evidence that a terrorist attack imposes a lower output cost the more democratic a country is.</p>	<p>No</p>	<p>Data on terrorism incidence International Policy Institute for Counter-Terrorism.</p>

Table 2
The Nature of Terrorists
Paper Overview

Author (s) and Title	Brief Summary	Model	Data
Azam, Jean Paul (2005) <i>“Suicide Bombing as Intergenerational Investment.”</i> Public Choice	Models terrorism as a phenomenon where the current generation is linked to the next one as in standard dynastic family models: bombing today increases the probability of some public good accruing to the next generation. The model is used to explain the fact that suicide bombers have been found by Krueger and Maleckova (2003) to come disproportionately from wealthy families, and have an above average education level. Income and education increase the opportunity cost of “investing” in a suicide bombing but may also increase the sensitivity to the future generation’s welfare.	Yes	No
Aziz, Heba (1995) <i>“Understanding Attacks on Tourists in Egypt.”</i> Tourism Management	The author argues that the terrorist attacks carried out by Muslim groups in Egypt (1991-1993) could be a reaction to irresponsible tourism development in the region.	No	No
Berman, E. (2003) <i>“Hamas, Taliban and the Jewish Underground: An Economist’s View of Radical Religious Militias”</i> NBER	The paper proposes a club-good framework that emphasizes the function of voluntary religious organizations as efficient providers of local public goods. The sacrifices these groups demand are economically efficient and suitable for solving the extreme principal-agent problems present in militia production. Seemingly gratuitous acts of violence by group members destroy their outside options, increasing the incentive compatibility of loyalty.	Yes	No
Berman, Eli, and Stepanyan, Ara, (2004) <i>“How Many Radical Islamists? Indirect Evidence from Five Countries”</i>	High fertility and low market returns to schooling have been pointed to as characteristics of religious sects. The authors investigate fertility and returns to education in families of graduates of Muslim religious schools in five countries with a Muslim population. It is found that	No	Datasets on religious education, fertility and earnings in Indonesia, Bangladesh, India, Cote D’Ivoire, and Pakistan.

Working Paper.	fertility is indeed higher among these families, and there is evidence of lower market returns to education. The results provide a rough estimate of the individual prevalence of a well-defined strand of “radical Islamism”, which ranges from 2 to 18 percent of the female population.		
Berrebi, Claude (2003) <i>"Evidence About the Link Between Education, Poverty and Terrorism Among Palestinians."</i> Working Paper.	The paper investigates whether participation in terrorist activity can be linked to low schooling, to poverty at the individual level or various economic difficulties at the societal level. Analyzes the determinants of participation in terrorist activities in Israel from the late 1980s to the present day, as well as a time-series relationship between terrorist attacks in Israel and economic conditions. Both higher standards of living and higher levels of education are <i>positively</i> associated with participation in terrorist activities. The analysis of the determinants of self-selection as a suicide bomber provides evidence that suicide bombers tend to be of higher economic status and higher educational attainment than the typical individual in the population, but come from lower socioeconomic groups than other, non-suicidal, terrorists.	No	Data on Hamas and Palestinian Islamic Jihad terrorist cells.
Blomberg, S. Brock, Gregory Hess and Akila Weerapana (2004b) <i>"An Economic Model of Terrorism."</i> Conflict Management and Peace Science.	In this model, terrorism is initiated by groups unhappy with their current economic status and unable to change it drastically through political and institutional means. The prediction is that conflicts are more frequent in bad times, when economic resources shrink and dissident groups are dissatisfied. The choice between a rebellion and a terrorist attack depends on the governments' ability to respond and richer countries, with better institutions, stronger economies and better-equipped armies, increase the relative cost of rebellion to the point that dissident groups resort to terrorism	Yes	Yes
Blomberg, S. Brock, and Gregory D. Hess (2007) <i>"The Lexus and the Olive Branch: Globalization, Democratization and</i>	This paper employs a gravity model to investigate the relative importance of globalization and democratization on transnational terrorism, using a database of over 200,000 bilateral observations on economic, political and historical factors that may influence the likelihood of	No	Yes. Cross section of bilateral data for 179 “source” and “target” countries, from 1968 to 2003.

<p><i>Terrorism</i> This volume.</p>	<p>citizens from one country to engage in terrorist activities against citizens of another. The advent of democratic institutions, high income and more openness in a “source” country significantly reduces terrorism, but the exact same factors in “target” countries actually increase terrorism. For a “source” country, being a democracy or a participating member of the World Trade Organization decreases the number of transnational terrorist attacks by about 2 to 3 per year, more than two standard deviations above the average number of attacks between any two countries in a given year.</p>		
<p>Bueno de Mesquita, Ethan (2005b) <i>“The Quality of Terror”</i> American Journal of Political Science</p>	<p>As the result of the interaction of a government, a terrorist organization, and terrorist volunteers, while individuals with low ability or little education are most likely to volunteer to join the terrorist organization, specially in recessionary economies with lack of economic opportunities, screening for quality by terrorist organizations may lead to better educated terrorist operatives. Government crackdowns have opposing effects on mobilization as they fuel the ideological war (which attracts volunteers) but also makes attacks less effective (which discourages volunteers).</p>	<p>Yes</p>	<p>No</p>
<p>Charney, C. and Nicole Yakatan (2005) <i>“A New Beginning: Strategies for a More Fruitful Dialogue with the Muslim World”</i> Working Paper.</p>	<p>Draws on focus groups of adult, university-educated Muslims responding to open-ended questions and statements put forward by a trained moderator. The discussions are transcribed and analyzed and results are seen as qualitative, not quantitative. The major factors behind the hostility that dominates Muslim thinking on America are identified, including: American military action in recent years – including the invasion of Iraq and the war on terror – which has cast the United States as domineering and unpredictable; the rise of local satellite networks that openly criticize U.S. policy; the lack of visibility of U.S. development aid. An overturn of the situation will probably involve an emphasis on bilateral communication, including an ability to listen, focus on</p>	<p>No</p>	<p>Focus groups of adult, university-educated Muslim citizens from Morocco, Egypt, and Indonesia. Focus groups are small, homogeneous in social terms – age, gender, education -,led by a moderator and responding to open-ended questions. Results are qualitative.</p>

	bilateral aid and partnership and tolerating disagreement on controversial issues.		
Crenshaw, Martha (1981) “ <i>The Causes of Terrorism</i> ” Comparative Politics	Identifies aggregate causes of terrorism as modernization – which can increase inequality and group segregation while providing cost effective ways of equipping them for violence - social sanctioning of violence and the spread of disruptive forms of nationalism and religiosity.	No	No
Epstein, Gil and Ira N. Gang (2004) “ <i>Understanding the Development of Fundamentalism</i> ” Working Paper.	Develops a model to explain the creation and development of fundamentalist groups under which leaders compete to enhance the observance of their followers. The model explains the result of competition among fundamentalist groups leading, over time, to extremism and terrorist activity.	Yes	No
Ferrero, Mario (2005) “ <i>Martyrdom Contracts</i> ” Working Paper.	Highlights the similarities between different instances of the use of suicide to advance group interests and ideology, from the Christian martyrs under the Roman Empire to the Islamic martyrs of yesterday and today, and including the Japanese <i>kamikaze</i> of World War II, the Tamil Tigers of Sri Lanka, and the Christian martyrs under the Roman Empire. Presents a two-period, expected-utility model of a martyrdom contract, under which volunteers sign up in the expectation of probabilistic earthly rewards. Contract enforcement is ensured through a social sanction (or stigma) placed on possible renegades. Counter-terrorism policy would be effective if it could reduce this sanction and turn prospective martyrs into apostates.	Yes	No
Garfinkel, M. (2004) “ <i>Global Threats and the Domestic Struggle for Power</i> ” European Journal of Political Economy	Presents a theoretical model on the interaction of terrorism and internal conflict where groups compete over the redistribution of future income. An increase in terrorist threats reduces the expected value of future income and, accordingly, the intensity of internal conflict. Terrorism may also imply a greater sense of group security against external threats and a greater struggle for power at home.	Yes	No
Glaeser, Edward L. (2005) “ <i>The Political Economy of Hatred</i> ”	An attempt to explain the origins of hatred, a necessary input for terrorist activities. Three “case studies” are examined: anti-Americanism in the Arab world; anti-black	Yes	Data on the lynching of African-Americans between 1868 and 1930.

<p>Quarterly Journal of Economics</p>	<p>sentiment in the south of the United States and episodes of anti-Semitism in Europe. Hatred is fostered by stories that derive their impact from repetition rather than objectivity and politicians are the suppliers of such hate-creating stories as tools to discredit their opponents. Individual citizens are willing to accept such stories as valid generalizations if the cost of acquiring information is higher than its return. Hatred declines the presence of strong private incentives to learn the truth, such as when the interactions with minorities in peaceful settings are frequent. Thus, hatred emerges if minorities are politically relevant but socially segregated.</p>		
<p>Krueger, Alan B., and David D. Laitin (2007). <i>“Kto Kogo?: A Cross-Country Study of the Origins and Targets of Terrorism”</i> This volume.</p>	<p>This paper links the country of origin and the target country of the terrorist event and finds that, after controlling for political regime, there is little economic foundation for terrorist origins. Rather, the economic story for terrorism is in the characteristics of the target. The data suggest that the origins of terrorism are in countries that suffer from political oppression while the targets are countries that bask in economic success.</p>	<p>No</p>	<p>Yes. Suicide attacks.</p>
<p>Krueger, Alan B. and Jitka Maleckova (2003) <i>“Education, Poverty and Terrorism: Is There a Causal Connection?”</i> Journal of Economic Perspectives</p>	<p>Analyzes opinion polls conducted in the Palestinian Territories on support for attacks against Israeli targets and finds that support does not decrease with higher education and living standards. The paper also provides a statistical analysis of the determinants of participation in Hezbollah militant activities in Lebanon: a living standard above the poverty line or a secondary or higher education is positively associated with participation. Israeli Jewish settlers who attacked Palestinians in the West Bank in the early 1980s originated overwhelmingly in high-paying occupations.</p>	<p>No</p>	<p>Individual micro data from public opinion polls and characteristics of terrorists in the Israel and the Palestinian Territories.</p>
<p>Kydd, Andrew and Barbara F. Walter (2002) <i>“Sabotaging the Peace: The Politics of Extremist Violence.”</i></p>	<p>The authors present a game theoretic model analyzing terrorism as a problem of trust between the moderate opposition group and the targeted government as to the ability of the former to carry out a peace treaty. A small</p>	<p>Yes</p>	<p>No</p>

International Organization	minority of radicals may be able to provoke the continuation of conflict even if majorities on both sides would rather conclude an agreement. This is because the actions of the radical minority affect the trust the government deposits on the moderates' ability to enforce a successful agreement.		
Laitin, David D., and Jacob N. Shapiro (2007) <i>"The Political, Economic and Organizational Sources of Terrorism"</i> This volume.	This paper reviews the "rationalist" view on terrorist organizations, their strategic options, actions and consequences. This view sees terrorists as conditioning their decisions to five factors: funding, popular support, competition against other terrorist groups, the regime type against which they fight and the counter-insurgency tactics by states. The literature shows how terrorist tactics self-perpetuate after they are chosen over other, more traditional, tactics of insurgency. Since the literature was not written as a coherent piece, we use it as a starting point to suggest a series of hypotheses that should serve as a foundation for future analyses and statistical tests.		
Lapan, Harvey and Todd Sandler (1993) <i>"Terrorism and Signaling"</i> European Journal of Political Economy	Presents an analysis of terrorism based on a signaling game in which an uninformed government uses the first-period attacks of the (informed) terrorist to assess terrorists' capabilities. Based on posterior beliefs, the government decides in period 2 whether to resist or to capitulate. A perfect Bayesian equilibrium for the two-period signaling game is derived in which the government prefers the associated partial-pooling equilibrium associated with probabilistic regret owing to ex-post wrong inferences.	Yes	No
O'Brien, Sean P. (1996) <i>"Foreign Policy Crisis and the Resort to Terrorism: A Time Series Analysis of Conflict Linkages"</i> Journal of Conflict Resolution	This study tests the validity of opposing arguments regarding superpower state sponsorship of international crises by exploring the linkages between the monthly foreign policy crisis behavior of nation-states and the occurrence of international terrorism over a 228-month period from 1968 to 1986 using data drawn from ITERATE 2 and 3 and the International Crisis Behavior	No	Yes.

	<p>(ICB) data sets. Using time-series ARIMA modelling techniques, superpower involvement in international crises, attitudes toward superpower crisis intervention, and the victory and defeat patterns of democracies and non-democracies are considered for their short-term and long-term influences on the amount and occurrence of international terrorism in the global system. The analysis lends support to the view that the Soviet Union and other authoritarian regimes are more likely than the U.S. and other democracies to resort to international terrorism as a foreign policy tool.</p>		
<p>Pape, Robert A. (2003) <i>"The Strategic Logic of Suicide Terrorism"</i> American Political Science Review</p>	<p>Existing psychological explanations have been contradicted by the widening range of socio-economic backgrounds of suicide terrorists. To advance our understanding of this growing phenomenon, this study collects the universe of suicide terrorist attacks worldwide from 1980 to 2001, 187 in all. In contrast to the existing explanations, this study shows that suicide terrorism follows a strategic logic, one specifically designed to coerce modern liberal democracies to make significant territorial concessions. Moreover, over the past two decades, suicide terrorism has been rising largely because terrorists have learned that it pays. Suicide terrorists sought to compel American and French military forces to abandon Lebanon in 1983, Israeli forces to leave Lebanon in 1985, Israeli forces to quit the Gaza Strip and the West Bank in 1994 and 1995, the Sri Lankan government to create an independent Tamil state from 1990 on, and the Turkish government to grant autonomy to the Kurds in the late 1990s. In all but the case of Turkey, the terrorist political cause made more gains after the resort to suicide operations than it had before. Thus, Western democracies should pursue policies that teach terrorists that the lesson of the 1980s and 1990s no longer holds, policies which in practice may have more to do with improving homeland security than with offensive military action.</p>	<p>Yes</p>	<p>Data on suicide terrorist attacks worldwide from 1980 to 2001</p>

<p>Sambanis, Nicholas (2007) <i>“Terrorism and Civil War“</i> This volume.</p>	<p>The author argues that there is a link between terrorism and widespread political violence, but the former is unlikely to evolve into civil war, as there are key differences between the conditions that favor the organization of violence as terrorism as opposed to civil war. The paper provides a conceptual discussion for the differences between terrorism and civil war and empirically tests if a rationalist model of civil war can explain terrorism in the same countries and years. A key policy implication of this analysis is that strategies of economic development, which are likely to reduce the prevalence of civil war in the world, are unlikely to eliminate the incidence of terrorism.</p>	<p>No</p>	<p>Yes. Data on the incidence of terrorism and civil war from 1997 to 2002.</p>
<p>Siqueira, Kevin (2005) <i>“Political and Militant Wings within Dissident Movements and Organizations.”</i> Journal of Conflict Resolution</p>	<p>A model provides a basis for investigating the interrelationships between factions and their supporters under conditions of competition and cooperation. When factions act competitively and independently of one another, the existence of several factions does not necessarily lead to increased terrorist activity and violence, if compared to the case where factions act jointly and in a coordinated way.</p>	<p>Yes</p>	<p>No</p>
<p>Wintrobe, R. (2006) <i>“Can Suicide Bombers Be Rational?”</i> In: Wintrobe, R. (eds.), Rational Extremism: The Political Economy of Radicalism</p>	<p>Suicide attacks are particularly difficult to understand. The readiness to sacrifice oneself increases its effectiveness and impact dramatically. One reason such acts are committed is to obtain solidarity, typically acquired through group-directed activity in gangs, cults, unions, political parties or movements, and religious sects. The author analyses the production of solidarity through a simple formal model. The central idea is that of a “solidarity multiplier” through which an individual chooses <i>more</i> solidarity by identifying with a leader’s utility. In these circumstances, rational suicide for the group is possible.</p>	<p>Yes</p>	<p>No</p>
<p>See Also Papers Below, From Other Tables</p>			

Author (s) and Title	Table
Abadie, Alberto (2004) <i>“Poverty, Political Freedom and the Roots of Terrorism”</i> Working Paper.	1
Berman, E. and Laitin, D. (2005) <i>“Hard Targets: Theory and Evidence on Suicide Attacks”</i> National Bureau of Economic Research	1

Table 3
The Utility Cost of Terrorism
Paper Overview

Author (s) and Title	Brief Summary	Model	Data
Becker, Gary S. and Yona Rubinstein (2004) <i>"Fear and the Response to Terrorism: An Economic Analysis"</i> Working Paper.	A rational choice model of fear where an exogenous shock on the probability of being harmed affects people's choice due to the changes in the risk - the weights of the "good" and "bad" states change - and fear - persons' utility decreases in all states of nature, regardless of outcomes. People can invest and accumulate skills to overcome their fears if they derive other benefits from undertaking the risky activity. Otherwise, individuals substitute away from the risky activity. Assuming a constant relative risk aversion utility function (CRRA), the authors calibrate the fear and risk aversion parameters and find that the higher is the fear factor, the lower people's risk aversion should be in order to explain their response to terror. Terror is found to have a large effect on the "quality" of life - by increasing fear - rather than the "quantity" of life.	Yes	Micro and macro-level data series from public sources in the United States and Israel and terror events and casualties collected by authors.
Frey, Bruno S., Simon Luechinger, and Alois Stutzer (2004) <i>"Calculating Tragedy: Assessing the Costs of Terrorism"</i> Working Paper.	Aims to show that the damage done by terrorism can be empirically measured. In the authors' opinion, terrorism can be measured through the life satisfaction approach in which individual utility is approximated by self-reported subjective well-being (surveys with large representative questionnaire studies, where individuals are asked about their level of life satisfaction or happiness), suggest that people's utility losses may far exceed the purely economic consequences.	No	No
Sunstein, Cass R. (2003) <i>"Terrorism and Probability Neglect."</i> Journal of Risk and Uncertainty	Shows that individuals focus on the badness of the outcome of terrorism rather than on the probability that it will occur. The "probability neglect" results in fear that greatly exceeds discounted harm.	Yes	No

<p>Viscusi, W. Kip and Richard J. Zeckhauser (2003) <i>"Sacrificing Civil Liberties to Reduce Terrorism Risks."</i> Journal of Risk and Uncertainty</p>	<p>The paper surveys people's willingness to sacrifice civil liberties in order to reduce terrorism risks. The results show that support for targeted screening of airline passengers increases if the cost delays to other passengers is controlled. Perceptions of terrorism risk are highly diffuse: people are subject to a propensity to predict worst-case scenarios in the case of terrorism and anomalies known from other risk perception contexts.</p>	<p>No</p>	<p>Yes, survey data on willingness to sacrifice civil liberties as part of an effort to reduce the risk of terrorism.</p>
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Table 4
The Impact of Terrorism on Aggregate Output
Paper Overview

Author (s) and Title	Brief Summary	Model	Data
Abadie, Alberto and Javier Gardeazabal (2003) <i>"The Economic Costs of Conflict: A Case Study of the Basque Country."</i> American Economic Review	To evaluate the impact of terrorism in the Basque Country in Spain, the authors create a synthetic Spanish region based on the region's characteristics that closely resembles the actual region in the absence of terrorism. Based on this comparison, terrorism is estimated to decrease regional output by 10 per cent. The authors use information on ETA's 1998-1999 truce as a natural experiment to estimate the effect of terrorism. Stocks of firms with a significant share of their business activity in the Basque region showed a positive relative performance when the truce began and as the truce gained credibility, and a relative negative performance when the truce ended.	No	Data on ETA terrorist activities between 1968 and 1997, a list of Basque and non-Basque firm stocks collected from the Spanish Ministry of Interior (2002), Fundación BBV (1999) and Madrid Stock Exchange on-line data.
Brück, T. and Bengt-Arne Wickström (2004) <i>"The Economic Consequences of Terror: A Brief Survey"</i> Working Paper.	This paper is a very short summary on what has been studied by other authors on the consequences of terrorism in terms of data availability, costs of terror on financial markets and on international trade, fiscal and growth effects of terrorism and policy implications for developed and developing countries. The indirect effects of terrorism (that is, the changes in risk, transaction costs, demand, public finances and growth) may outweigh the direct effects.	No	No
Chen, Andrew H. and Thomas F. Siems (2004). <i>"The Effects of Terrorism on Global Capital Markets."</i> European Journal of Political Economy	Using an event study methodology, the authors study the global market's response to terrorist attacks and observe that the U.S. capital markets in the recent two episodes (Iraq's invasion of Kuwait in 1990 and the September 11, 2001 terrorist attack) are more resilient and recover sooner compared to what happened in the past 14 terrorist/military attacks dating back to 1915. This can be partially explained by a more developed and stable	No	Data from Constitutional Rights Foundation and the U.S. Department of State.

	banking and financial sector providing liquidity in order to have market stability.		
Choudhry, Taufiq (2003). “September 11 and Time-Varying Beta of United States Companies” Working Paper.	This paper evaluates the effect of September 11, 2001 on the time-varying beta for 20 United States firms. The results show that the September 11 terrorist attack affected most of the United States firms. The size and direction of the effect varies according to the companies, but none of them had a significant increase in beta in the period after the terrorist attack.	No	Daily stock price data from 20 United States companies (1/1/1991-7/31/2002) from DataStream dataset.
Eckstein, Zvi and Daniel Tsiddon (2004) “Macroeconomic Consequences of Terror: Theory and the Case of Israel” Journal of Monetary Economics	A theoretical model is presented to predict the impact of terrorism on output. An increase in terror results in a decrease in investment, consumption and income in the long run. A government that acts optimally increases the proportion of output spent on defense. These predictions are assessed for the case of the Israeli economy using a VAR methodology for the period 1980-2003. The negative effect of continued terror in the economy results in a decrease of annual consumption per capita in the Israeli economy by about 5% in 2004. According to the authors’ calculations, the Israeli output per capita in March 2003 is 10-15% lower due to the terrorist attacks that occurred from 2000 to that date.	Yes	Public data sources including the International Policy Institute for Counter-Terrorism.
Eldor, Rafi and Rafi Melnick (2004). “Financial Markets and Terrorism.” European Journal of Political Economy	This paper evaluates the reaction of the stock and foreign exchange market to terrorist attacks in Israel between 1990 and 2003. Results show that the intensification of Palestinian attacks after 9/27/2000 had a negative effect on the stock market but not in the foreign currency market. Also, it is observed that markets continue to perform efficiently. Market liberalization helped the economy to cope with terrorism.	No	Data from 1990 to 2003 on terror attacks in Israel.
Hobijn, Bart (2002) “What Will Homeland Security Cost?” Federal Reserve Bank of New York Economic Policy Review	This paper estimates the costs of extra security measures imposed after 9/11. Evidence suggests that the economic costs of homeland security will be relatively small with no major effects on the fiscal discipline of the government. It is expected that government spending on homeland security will be about 0.35 percent of GDP in 2003. If we	No.	Data from 2003 Homeland Security Budget on share of inputs devoted directly to protective services, hours lost due to airport delays, road congestion and security-check waiting times at ten major U.S. airports from the Air Transportation

	add to this amount the private sector spending on security-related inputs, the total direct cost of homeland security would be 0.66 percent of GDP. Also, the private sector productivity levels will decrease by only 1.12.		Association of America (2001).
International Monetary Fund (2001) <i>“How Has September 11 Influenced the Global Economy”</i> In: World Economic Outlook 2001.	The total direct loss of the terrorist attacks on September 11, 2001 is estimated at 21.4 billion dollars.	No	Yes
Navarro, Peter and Aron Spencer (2001) <i>“September 2001: Assessing the Cost of Terrorism”</i> Milken Institute Review	This paper estimates the human capital loss to be 40 billion dollars, and the property loss to be between 10 and 13 billion dollars due to the September 11, 2001 terrorist attacks.	No	Yes
Sandler, Todd, and Walter Enders (2007) <i>“Economic Consequences of Terrorism in Developed and Developing Countries: an Overview”</i> This volume.	This paper reviews the literature on the economic consequences of terrorism and evaluates the methodology used to date, distinguishing macroeconomic from microeconomic or sector-specific influences of terrorism. The authors evaluate the impact of terrorism in developed and developing countries, suggesting its costs are greater in the latter, especially when economies are smaller in size and less diversified.	No	No
Treverton, Gregory F., Adams, Justin, Dertouzos, James, Dutta, Arindam, Everingham, Susan S. and Eric V. Larson (2007) <i>“Costing Rich Country Responses to the Terrorist Threat”</i> This volume.	The new terrorist threat implies renewed costs for both rich and poor states. This report takes a first step by examining the costs to the rich states of addressing the terrorism threat, not the wider costs of terrorism itself or the narrower costs of the immediate response to an attack. In that sense, the costs might be thought of as the “secondary” cost of countering terrorism, rather than the “proximate” costs of terrorism. Costs, estimated as those costs that would not have been incurred had it not been for the threat of terrorism, are found to be incremental in the case of the United States. Direct costs are those associated	No	Yes

	with security activities and mostly borne by the government. Indirect costs, mainly private, are those incurred through changes made to lower the threat level, for instance, the diminished level of travel and increased inspection of goods. There are also opportunity costs associated with the shifting of resources away from activities to those in which there are larger threats. The analysis distinguishes between rich country actions at home, most of them non-military, and rich country actions abroad, most of them military. The increment in homeland security spending for the United States is not very large in total and is mostly associated with public expenditures for specific military operations abroad and protective measures at home.		
World Bank (2002) “ <i>Fifteen Months – Intifada, Closures and Palestinian Economic Crisis: An Assessment</i> ” World Bank.	Studies the large cost to the Palestinian–Israeli conflict: estimates at 4 percent of GDP the cost for the Israeli economy.	No	Yes
World Bank (2003) “ <i>Two Years of Intifada, Closures and Palestinian Economic Crisis: An Assessment</i> ” World Bank.	Estimates that the Palestinian territories suffered a 50 percent decline in income per capita between 1994 and 2002. In addition to the aggregate costs, some specific sectors, such as tourist and trade activities, may be especially hurt.	No	Yes
See Also Papers Below, From Other Tables			
Author (s) and Title			Table
Blomberg, S. Brock, Gregory Hess and Athanasios Orphanides (2004) “ <i>The Macroeconomic Consequences of Terrorism.</i> ” Journal of Monetary Economics			1
Tavares, José (2004)			

<i>"The Open Society Assesses Its Enemies: Shocks, Disasters and Terrorist Attacks"</i> Journal of Monetary Economics	1
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Table 5
Terrorism and Specific Sectors of Activity
Paper Overview

Author (s) and Title	Brief Summary	Model	Data
Abadie, Alberto and Javier Gardeazabal (2005) <i>“Terrorism and the World Economy”</i> Working Paper.	A two-country stochastic version of the AK endogenous growth model is used to show that terrorism may have a long run impact on international capital flows. According to the model, even if terrorist attacks destroy only a small fraction of the productive capital of a country, increases in terrorist risk may greatly affect the level of international investment. In the empirical work it is shown that higher levels of terrorist risk are associated with lower net foreign direct investment after controlling for country risk. Estimates suggest that a one standard deviation increase in the intensity of terrorism leads to a 5 percent fall in the net FDI position of the country.	Yes.	Data on country terrorism risk from the World Markets Research Centre’s Global Terrorism Index for the period 2003/4.
Berrebi, C. and Klor, E. (2005) <i>“The Impact of Terrorism Across Industries: An Empirical Study”</i> Working Paper	Uses data on the Israeli-Palestinian conflict to assess the impact of terrorist activities on Israeli companies related to the defense, security or anti-terrorism industries and on other companies. The findings show that terrorism has a significant negative impact on non defense-related companies and a significant positive impact on defense and security-related companies. The authors also find that terror fatalities in Israel have a positive effect on Israeli exports of defense products.	No	Yes
Bram, Jason, Andrew Haughwout and James Orr (2002) <i>“Has September 11 Affected New York City’s</i>	This article studies the effects of September 11, 2001 terrorist attack on the New York city economy in the long run. According to the author, the worst case scenario is the possibility that financial firms will leave the city having an impact on the number of jobs	No	Yes

<p><i>Growth Potential?</i> Federal Reserve Bank of New York Economic Policy Review</p>	<p>and in the city's economic growth. After evaluating some key growth fundamentals prior to September 11 (the city's industrial structure and its quality-of-life amenities) the conclusion is that the ability to manage relatively large budget deficits and rebuild New York City's destroyed infrastructure – while maintaining the productivity of the capital stock – will be crucial to allow future economic growth.</p>		
<p>Brown, Jeffrey R., J. David Cummins, Christopher M. Lewis and Ran Wei (2004). <i>"An Empirical Analysis of the Economic Impact of Federal Terrorism Reinsurance."</i> Journal of Monetary Economics.</p>	<p>This paper examines the effects of thirteen key legislative events related to federal reinsurance which resulted in the signing of the Terrorism Risk Insurance Act (TRIA) on November 26, 2002 on the stock price of firms in the industries most affected by the Act (banking, construction, insurance, real estate investment trusts (REITs), transportation, and public utilities). The period covered is from October 2001 to November 2002. The TRIA aimed at providing a federal reinsurance backstop for US commercial property-casualty insurers for "free", preventing the reemergence of private sector reinsurance for terrorism losses. In the months following September 11, 2001 insurers eliminated terrorism coverage. After the TRIA, US insurers are now required to cover terrorism but are unable to buy private reinsurance to cover the loss exposure created by TRIA. In addition, TRIA eliminated the possibility of more efficient private market solutions and reduced market expectations of federal assistance following future terrorist attacks. As a result, stock prices in the affected industries responded negatively to the legislative events.</p>	<p>No.</p>	<p>Thirteen legislative events related to the enactment of TRIA, prices and returns of insurance, banks, construction, utilities and transportation stocks from the Center for Research in Security Prices (CRSP), Council of Insurance Agents and Brokers (CIAB) (2003), U.S. Census Bureau.</p>
<p>Chalk, Peter, Bruce Hoffman, Robert Reville and Anna-Britt Kasupski (2005) <i>"Trends in Terrorism:</i></p>	<p>The book analyzes the present and future trends in terrorism and whether developments that could affect the probabilities of a future terrorist attack within the borders of the continental United States are addressed or not by the TRIA (Terrorism Risk Insurance Act).</p>	<p>No</p>	<p>No</p>

<p><i>Threats to the United States and the Future of the Terrorism Risk Insurance Act</i> Rand Center for Terrorism Risk Management Policy</p>	<p>The TRIA legislation requires insurance companies to make terrorism insurance available to customers and, in return, provides federal reinsurance for losses from terrorist attacks.</p>		
<p>Cummins, J. David and Christopher M. Lewis (2003). <i>“Catastrophic Events, Parameter Uncertainty and the Breakdown of Implicit Long-Term Contracting: The Case of Terrorism Insurance.”</i> Journal of Risk and Uncertainty</p>	<p>Investigates similarities between terrorist attacks and other types of catastrophic events by comparing the response of the U.S. equity markets to the WTC attack and earlier large loss shocks (the WTC attack, Hurricane Andrew, and the Northridge earthquake). The authors conduct an event study analysis of the response of equity markets to the three large loss events. They differentiate the impact of event induced uncertainty – e.g. parameter uncertainty – and flight to quality in determining the market’s valuation of different insurance companies in an attempt to better understand the process by which the industry moves toward a new market equilibrium following a crisis.</p>	<p>No</p>	<p>Yes</p>
<p>Drakos, Konstantinos (2004) <i>“Terrorism-Induced Structural Shifts in Financial Risk: Airline Stocks in the Aftermath of the September 11th Terror Attacks.”</i> European Journal of Political Economy</p>	<p>This paper investigates the effects of the terror attacks of September 11 on a set of airline stocks listed at various international stock markets. Based on the market model, the author observes an increase in stock returns’ volatility following the terrorist attack. Also, the ratio of systematic risk to total risk shows an increase of 72% in its share in the total decomposition of risk. The systematic risk accounted for about 10% and 19% of total risk before and after 9/11, respectively. These results have implications in terms of increasing the difficulty and the costs of airlines in raising capital. In terms of portfolio diversification, managers that hold airline stocks now have a sizeable increase in the undiversifiable risk and will seriously consider a portfolio reshuffling.</p>	<p>No</p>	<p>Yes</p>
<p>Drakos, Konstantinos and</p>	<p>Based on the theoretical model of Enders, Sandler and</p>	<p>No</p>	<p>Data on terrorist attacks were obtained from the</p>

<p>Ali M. Kutan (2003) <i>“Regional Effects of Terrorism on Tourism in Three Mediterranean Countries.”</i> Journal of Conflict Resolution</p>	<p>Parise (1992), the authors use the seemingly unrelated regression model to study the effect of terrorism in Greece, Israel and Turkey on each other’s market share, with Italy serving as a control country, being a proxy for tourist activities in the rest of the Mediterranean region and being a tourist destination itself from January 1996 to December 1999. The results show that there are significant substitution effects. But there is also empirical evidence for the contagion effect: only around 11% of aggregate loss in market shares is directed toward other destinations within the group of countries under consideration, whereas around 89% flows out of the region.</p>		<p>International Terrorism Database (ITD) of the International Policy Institute (http://www.ict.org.il/).</p>
<p>Enders, Walter and Todd Sandler (1991). <i>“Causality between Transnational Terrorism and Tourism: The Case of Spain.”</i> Terrorism.</p>	<p>Using a VAR they estimate that a typical terrorist act in Spain scares away over 140,000 tourists, when all the monthly impacts are combined. In 1988, 5.392 million foreigners visited Spain and 18 international terrorist incidents took place. Hence without these incidents, 1.5 times as many tourists would have visited Spain in 1988.</p>	<p>No</p>	<p>Monthly data on terrorist incidents.</p>
<p>Enders, Walter and Todd Sandler (1996) <i>“Terrorism and Foreign Direct Investment in Spain and Greece.”</i> Kyklos</p>	<p>The authors study the impact of terrorism in reducing foreign direct investment in Spain and Greece. Using a VAR methodology it is estimated that terrorism reduced annual FDI flow by 13.5% in Spain in the period 1975-1991(about \$500 million) and by 11.9% in Greece in the period 1976-1991 (about \$400 million). As a consequence of the reduced FDI, investment and economic growth were negatively affected. Also, the reduced transfer of technological know-how contributed to a decrease in the countries’ growth.</p>	<p>No</p>	<p>Quarterly data on terrorism.</p>
<p>Enders, Walter, Todd Sandler and Gerald F. Parise (1992) <i>“An Econometric Analysis of the Impact of Terrorism</i></p>	<p>The authors quantify the present value of loss in tourism revenues for a sample of European countries. According to their calculations, Austria, Italy and Greece lost \$4.538 billion, \$1.159 billion and \$0.77 billion respectively between 1974 and 1988 (in 1988</p>	<p>No</p>	<p>Yes. Tourism revenues.</p>

<p><i>on Tourism.”</i> Kyklos</p>	<p>terms, using a real interest rate of 5%). Continental Europe as a whole lost \$16.145 billion due to terrorism.</p>		
<p>Fielding, David (2003a) “<i>Counting the Cost of the Intifada: Consumption, Saving and Political Instability in Israel.</i>” Public Choice</p>	<p>The author studies the effects of political instability and violence in Israel in aggregate consumption and savings since 1987. An estimated consumption function for Israel in the period 1989-1999 including data that reflects insecurity (basically the number of Israelis killed, the number of Palestinians killed and the rate of growth of the Jewish settlements in the West Bank and Gaza areas) allows the author to conclude that savings would double with an end to the terrorist attacks in the area.</p>	<p>No.</p>	<p>Yes</p>
<p>Fielding, David (2003b) “<i>Modeling Political Instability and Economic Performance: Israeli Investment During the Intifada.</i>” Economica.</p>	<p>The author investigates the effects of political instability and violence in Israel on the level and composition of investments by estimating two investment equations (one for non-traded capital goods and one for machinery and equipment) including data that reflects insecurity – which are the number of Israelis killed, the number of Palestinians killed and the rate of growth of the Jewish settlements in the West Bank and Gaza areas. The results show that the terrorist attacks have a huge effect on the construction and machinery and equipment investments, which would be 27.9% and 14.7% higher, respectively, with an end to the terror attacks.</p>	<p>No</p>	<p>Yes</p>
<p>Fleischer, Aliza and Steven Buccola (2002) “<i>War, Terror, and the Tourism Market in Israel.</i>” Applied Economics</p>	<p>The author uses a supply and demand model of the Israeli hotel industry to study the impact of terrorism on tourist activity and hotel revenues. The model has four equations: supply and demand in the local market and supply and demand in the foreign market. A lagged monthly terror index influences foreign demand and thus, the equilibrium prices. From 1992 to 1998 annual averages of monthly revenue losses from terror events in the foreign and local markets were approximately \$48.6 million or 1.27% and \$0.3</p>	<p>No.</p>	<p>Data on the index were taken from the International Terrorism web site (http://www.ict.org.il).</p>

	million or less than 1% of total revenues, respectively. The losses increase in both markets with the deterioration of the situation. In addition, because local market demand is inelastic, hotels have little incentive to reduce prices in the case of a terrorist outbreak, in order to compensate reduction in the number of foreign tourists and revenue losses.		
Glaeser, Edward L. and Jesse M. Shapiro (2002) <i>“Cities and Warfare: The Impact of Terrorism on Urban Form”</i> Journal of Urban Economics	Focusing on the impact of war and terrorism on cities, the authors conclude that the costs on urban structure are limited. While there is a positive relationship between terrorism and the extent of urbanization in the period 1968 to 1977, Glaeser and Shapiro (2002) assert that “this link is small, statistically weak, and causally dubious” (p. 223). No evidence is found for an effect of terrorism on the number of tall buildings built in a country.	No	Data from 1968 to 1977 on the number of terrorist incidents, the extent of urbanization in 1978 and the number of skyscrapers built.
Harrigan, James and Philippe Martin (2002) <i>“Terrorism and the Resilience of Cities”</i> Federal Reserve Bank of New York Economic Policy Review	The authors study the resilience of cities to terrorist shocks. They conclude that “the same forces that are thought to lead to the formation of cities—namely, the gains derived from the proximity of firms to markets, suppliers, and a large labor pool—will help to preserve cities in the face of an attack.” In the case of a continued threat, the costs are certainly higher, but even in this case, the gains from producing and consuming in large agglomerations such as New York City largely overwhelm the “tax-like” cost of higher vulnerability to terrorist attacks.	No	No
Ito, Harumi and Darin Lee (2004) <i>“Assessing the Impact of the September 11 Terrorist Attacks on U.S. Airline Demand.”</i> Journal of Economics and Business	The authors estimate a reduced form model of demand for air services with monthly time-series data since 1986 and model the post- September 11 period as an attenuating shock process, which has both a transitory and an ongoing component. After controlling for cyclical, seasonal and other unique events impacting the industry, the initial demand shock is estimated to be more than 30%, measured in revenue passenger miles (RPMs), and 7.3%,	No	Data on US airline industry demand, from the Air Transport Association.

	measured in yields. The decline in yield is smaller because a large number of airline tickets are purchased well in advance (transitory component). There is also an ongoing downward shift in the demand of 7.4% measured in RPMs and of 10% measured in yields. On the basis of a counterfactual demand prediction the authors conclude that the terror attacks and security measures account for roughly 94% of the decline in RPMs from the historical peak.		
Kunreuther, H., Erwann Michel-Kerjan and Beverly Porter (2003) "Assessing, Managing, and Financing Extreme Events: Dealing with Terrorism." Working Paper	This paper shows that the temporary insurance system established by TRIA is neither a complete answer nor a definitive one. It raises fundamental questions for U.S. insurers as to how they will estimate the risk in order to set premiums for terrorist coverage that they must now offer to their clients. Since the passage of TRIA, the current level of demand for insurance coverage has remained low, and some factors that may contribute to it are discussed. After presenting alternative foreign public-private partnerships and discussing the potential role for terrorist catastrophe bonds, some features of a more sustainable program for terrorism insurance in the U.S. after December 31, 2005 are provided.	No	No
Lenain, Patrick, M. Bonturi and V. Koen (2002) "The Economic Consequences of Terrorism" Working Paper.	This paper identifies three possible channels through which terrorism may influence macroeconomic activity: through decreased insurance coverage as a result of the perception of increased risk; through higher trade costs possibly leading to lower levels of international transactions; through greater security and defense spending.	No	No
Mills, Edwin S. (2002) "Terrorism and U.S. Real Estate" Journal of Urban Economics	The author considers the effect of a terrorist threat on the returns to investments in structures. The main results are similar to Esteban Rossi-Hansberg (2003).	No	No
Nitsch, Volker and Dieter	This paper studies the impact of terrorism on	No	Yes

<p>Schumacher (2004) <i>"Terrorism and International Trade: An Empirical Investigation."</i> European Journal of Political Economy</p>	<p>international trade between 217 countries in the period 1968-1979 using an extended gravity model. The results are that countries affected by a large number of terrorist attacks trade significantly less with each other than countries that are not affected by terrorism. Also, doubling the number of terrorist attacks reduces bilateral trade flows by 4%.</p>		
<p>Organization for Economic Development and Cooperation (2002) <i>"The Impact of the Terrorist Attacks of 11 September 2001 on International Trading and Transport Activities."</i> Working Paper.</p>	<p>There were major disruptions of trade flows in the immediate aftermath of the terrorist attacks, but over time trade operations returned to normal. Some modest increase in frictional costs due to increased security concerns is likely to persist, even though the exact amount is hard to predict. Some have likened these higher frictional trading costs to taxes on business activity or increases in border tariffs, but a comparison with business spending on mandatory pollution abatement equipment would be more appropriate. Not all commodities and countries will be affected to the same extent by the increases in frictional costs. Differences across products are due to varying ratios of transport and insurance costs to goods-value, divergences in prevailing transport modes, and differing roles in the production process.</p>	<p>No</p>	<p>No</p>
<p>Rossi-Hansberg, Esteban (2003) <i>"Cities under Stress"</i> Journal of Monetary Economics</p>	<p>Studies the effect of terrorist attacks on the internal structure of cities. Develops an urban framework with suitable capital structures. In the long run a terrorist attack will affect urban structure only modestly, relative to the potentially large decrease in the level of economic activity in the city. In the short run agglomeration forces will amplify the effect of the original destruction and will reduce urban economic activity temporarily.</p>	<p>Yes</p>	<p>No</p>
<p>Sloboda, Brian W. (2003) <i>"Assessing the Effects of Terrorism on Tourism by</i></p>	<p>This paper studies the effects of terrorism on tourism using the ARMAX (autoregressive moving average with explanatory variables) model for the period</p>	<p>No</p>	<p>Yes. Tourism.</p>

<p><i>Use of Time Series Methods.</i> Tourism Economics</p>	<p>1988-2001. It also studies the impact of the Gulf War in 1991 and the increase in anti-American attacks on tourism revenues. The number of terrorism attacks on US interests almost doubled in 1991 and this shock had a long effect on the tourism revenues until 2000. The total losses in revenue due to it were about \$ 57 billion (1996 present value discounted at 5%).</p>		
<p>Walkenhorst, Peter and Nora Dihel (2002) <i>“Trade Impacts of the Terrorist Attacks of 11 September 2001: A Quantitative Assessment”</i> Working Paper.</p>	<p>The author studies the effects of September 11, 2001 terrorist attacks on welfare and international trade using a general equilibrium model (the GTAP: Global Trade Analysis Project). The tightened security measures implemented after the terrorist attacks resulted in additional frictional trading costs, which made international trade more expensive. The largest trade and welfare losses due to increased frictional costs are in regions with high trade to GDP ratios (South Asia, North Africa and the Middle East). Agriculture and food products, textiles and leather, non-metallic minerals and machinery are the products that have the greatest reduction in the volume of trade.</p>	<p>No</p>	<p>GTAP-5 database (see Gehlhar and McDougall (2002) and Organization for Economic Development and Cooperation (2002).</p>
<p>Woo, G. (2002) <i>“Quantifying Insurance Terrorism Risk.”</i> Working Paper.</p>	<p>Terrorism risk quantification must take into account the following aspects: “a) the frequency and severity of planned attacks will depend critically on the network architecture of the terrorist organization; b) pressurized increasingly by counter-terrorist forces, terrorist organizations may adapt to form emergent swarm clusters. These rapidly forming virtual cells, communicating via internet, will be very hard to detect and stop; c) emergent networks will facilitate the execution of more frequent, but less ambitious and generally less damaging, planned attacks; d) an event-tree may be constructed to estimate the probability that a planned attack will succeed, depending on the availability and usage of intelligence, the effectiveness of security barriers and technical and</p>	<p>No</p>	<p>No</p>

	<p>logistical mishaps; e) the loss severity distribution may be derived by mapping losses from realistic showpiece terrorism scenarios, and assigning a cost function to each. The cost function reflects practical logistical factors such as planning time, technical difficulty, and consumption of scarce resources; f) the overall computation of a terrorism loss excess curve can be achieved, provided that the assignment of subjective input probabilities is made using the formal elicitation of expert judgment, such as has been invoked already by government security agencies.” Even if there is uncertainty about the loss curves they will help insurers to price terrorism coverage.</p>		
<p>See Also Papers Below, From Other Tables</p>			
<p>Author (s) and Title</p>		<p>Table</p>	
<p>Blomberg, S. Brock, Gregory Hess and Athanasios Orphanides (2004) <i>“The Macroeconomic Consequences of Terrorism.”</i> Journal of Monetary Economics</p>		<p>1</p>	
<p>Brück, T. and Bengt-Arne Wickström (2004) <i>“The Economic Consequences of Terror: A Brief Survey”</i> Working Paper.</p>		<p>4</p>	
<p>Eckstein, Zvi and Daniel Tsiddon (2004) <i>“Macroeconomic Consequences of Terror: Theory and the Case of Israel”</i> Journal of Monetary Economics</p>		<p>4</p>	
<p>Frey, Bruno S., Simon Luechinger, and Alois Stutzer (2004) <i>“Calculating Tragedy: Assessing the Costs of Terrorism”</i> Working Paper.</p>		<p>3</p>	

Table 6
**Terrorism and Economic Policy
 Paper Overview**

Author (s) and Title	Brief Summary	Model	Data
Eichenbaum, Martin and Jonas D.M.Fisher (2004) <i>"Fiscal Policy in the Aftermath of 9/11"</i> NBER Working Paper	The dramatic fall in the government surplus in the aftermath of 9/11 is not due to the large exogenous increase in military spending, but the driving force was the large fall in tax rates.	No	Data on real defense spending – consumption and investment components.
Gupta, Sanjeev, Benedict Clements, Rina Bhattacharya and Shamit Chakravarti (2004) <i>"Fiscal Consequences of Armed Conflict and Terrorism in Low- and Middle-Income Countries."</i> European Journal of Political Economy	The paper examines the fiscal effects of armed conflict and terrorism on low- and middle-income countries and concludes that conflict and terrorism have a negative impact on growth. Higher government spending on defense tends to be financed through macroeconomic instability (higher inflation and lower investment) rather than in a decrease in spending on education and health.	No	Data from Yearbooks of the Stockholm International Peace Research Institute (SIPRI rating for major armed conflicts).
Lacker, Jeffrey M. (2004). <i>"Payment System Disruptions and the Federal Reserve Following September 11, 2001."</i> Journal of Monetary Economics	This paper evaluates the consequences of the 9/11 terrorist attacks on the monetary and payment systems, comparing it to U.S. banking crises. A common characteristic of all these crises is the disruptions in the inter-bank payment. In the case of September 11, 2001 terrorist attacks the Federal Reserve credit extension increased the supply of banks' balances, mitigating the effects of the shock.	No.	Data on the behavior of the federal reserve system, depository institutions and retail stores during September 2001, including data from the Board of Governors of the Federal Reserve System (2001).
Wildasin, David E. (2002) <i>"Local Public Finance in</i>	The author describes the effect on local public finances of terrorist shocks. Since terrorism seems to present acute risks for core urban areas, it may affect the spatial distribution of population and	No	No

<p><i>the Aftermath of September 11</i> Journal of Urban Economics</p>	<p>economic activity. These impacts, however, will depend importantly on the assignment of responsibilities among Federal, state, and local governments for dealing with terrorism, and on the distribution of the costs of these responsibilities. Issues for further research should include fiscal competition in the metropolitan area and funded versus unfunded mandates. In its efforts to improve security throughout the nation, the Federal government might insist on costly security upgrades for subway systems, nuclear power plants, harbor and port facilities, and the like. Will and should these mandates be subsidized by the Federal government?</p>		
<p>See Also Papers Below, From Other Tables</p>			
<p>Author (s) and Title</p>		<p>Table</p>	
<p>Hobijn, Bart (2002) “<i>What Will Homeland Security Cost?</i>” Federal Reserve Bank of New York Economic Policy Review</p>		<p>4</p>	
<p>Lenain, Patrick, M. Bonturi and V. Koen (2002) “<i>The Economic Consequences of Terrorism</i>” Working Paper.</p>		<p>5</p>	

Table 7
Countering Terrorism
Paper Overview

Author (s) and Title	Brief Summary	Model	Data
<p>Arce, Daniel G. and Todd Sandler (2005) <i>“Counterterrorism: A Game-Theoretic Analysis.”</i> Journal of Conflict Resolution.</p>	<p>This model establishes general tendency for governments to provide too much deterrence over pre-emption, resulting in equilibrium with socially inferior payoffs. Proactive policies provide mostly purely public benefits to all those potentially targeted, while defensive policies provide mostly provider-specific benefits. When a disproportionate number of attacks are directed at one government, the over-reliance on defensive measures can disappear. In other words, in this latter case, terrorists assist governments in overcoming coordination problems.</p>	<p>Yes</p>	<p>No</p>
<p>Bueno de Mesquita, Ethan (2005a) <i>“Conciliation, Counterterrorism, and Patterns of Terrorist Violence.”</i> International Organization</p>	<p>The model explains the benefits of concessions to terrorists even if a surge in attacks follows. Terrorist organizations increase militancy after concessions because it is the moderate terrorists that accept them, while extremists gain control. Governments, on the other hand, are willing to make concessions when they increase their counter terror capabilities with the collusion of former terrorists.</p>	<p>Yes</p>	<p>No</p>
<p>Bueno de Mesquita, Ethan (2007) <i>“Politics and the Suboptimal Provision of Counterterror.”</i> International Organization</p>	<p>In this model of the interactions between voters, government, and a terrorist organization, an over-reliance in some observable counter-terrorism measures despite its relative ineffectiveness. Terrorists have a diversity of tactics available, governments also have a menu of counter-terrorism measures but voters decide on the basis observable spending on counter-terrorism and their inferred success, inducing the government to overspend on observable counterterror. When voters are less demanding as to non-security related public goods, government spending on covert operations and counter-terrorism effectiveness may increase.</p>	<p>Yes</p>	<p>No</p>
<p>Downes Le Guin, Theodore and Bruce Hoffman (1993) <i>“The Impact of Terrorism on Public Opinion, 1988 to 1989.”</i> RAND Corporation.</p>	<p>Examines the relationship between terrorism and public opinion on two levels: how the public reacts to terrorism and the preferences for terrorism countermeasures. The study concludes that the majority of people realize the complexity of terrorism and are ready for more considered and more flexible policy responses. There is support for more flexible policy in dealing with hostage episodes.</p>	<p>No</p>	<p>Poll data.</p>

<p>Enders, W. and T. Sandler (2004) <i>“What Do We Know about the Substitution Effect in Transnational Terrorism?”</i> In: A. Silke and G. Ilardi (eds.), <i>Researching Terrorism: Trends, Achievements, Failures.</i></p>	<p>The authors investigate the substitution effect in terrorist activities and find strong evidence in favor of its existence. Piecemeal approaches to counter-terrorism or technological advances can be overcome by terrorists, though still useful if they induce substitution toward less deadly attacks. The authors suggest that the right approach is a continued effort to reduce total resources available to terrorists – financial, leadership and otherwise.</p>	<p>No</p>	<p>Yes</p>
<p>Enders, Walter, Sandler, Todd, and Jon Cauley (1990) <i>“Assessing the Impact of Terrorist-Thwarting Policies: An Intervention Time Series Approach”</i> Defence Economics</p>	<p>Discusses the effectiveness of terrorist-thwarting policies on reducing the incidence of terrorism. Legal actions seem particularly ineffective and disappointing in results.</p>	<p>No</p>	<p>Yes</p>
<p>Fitzgerald (2004) <i>“Global Financial Information, Compliance Incentives and Terrorist Funding”</i> European Journal of Political Economy</p>	<p>The author considers as a priority the interdiction of international transactions supporting global terrorism. However, the current obstacles to transactions made by targeted individuals or groups have had limited success, mainly due to economic disincentives for the disclosure of the identity and purpose of transacting agents, or the transactions are reported too late for the effective intervention. A solution to this problem could be policies of disincentives for undertaking terrorist financial transactions and improving systems for channeling migrant remittances.</p>	<p>No</p>	<p>No</p>
<p>Frey, Bruno S. and Simon Luechinger (2004) <i>“Decentralization as a Disincentive for Terror”</i> European Journal of Political Economy.</p>	<p>Consideration of anti-terrorism policy has focused almost exclusively on deterrence that seeks to fend off terrorism by raising the costs of undertaking terrorist acts. This paper suggests an alternative approach to anti-terrorism policy that is based on reducing the expected benefits of undertaking terrorist acts to prospective terrorists, rather than raising the costs of doing so. Specifically, it is argued that strengthening decentralized decision-making in the polity and economy provides disincentives for terrorist attacks.</p>	<p>No</p>	<p>No</p>
<p>Frey, Bruno S. and Simon Luechinger (2003) <i>“How to Fight Terrorism: Alternatives to Deterrence”</i> Defense and Peace Economics.</p>	<p>Deterrence has been a crucial element in fighting terrorism, both in actual politics and rational choice analyses of terrorism. But there are superior strategies to deterrence. One is to make terrorist attacks less attractive. Another is to raise the opportunity cost – rather than the material cost – to terrorists. These alternative strategies effectively dissuade potential terrorists. The strategies suggested here build on the “benevolence” system and tend to produce a positive sum game among the interacting parties. In contrast, the deterrence system is based on “threats” and tends to produce a negative sum game interaction.</p>	<p>No</p>	<p>No</p>

<p>Garoupa, Nuno, Jonathan Klick and Francesco Parisi (2006) <i>"A Law and Economics Perspective on Terrorism"</i> Public Choice</p>	<p>This paper reviews the existing law and economics literature on crime, noting where various models might apply to the terror context. Specifically, it focuses on two strands of the literature, deterrence and incapacitation. Challenging the conventional application of the basic rational agent model of crime in the context of terrorism, it considers anti-terror measures enacted by different countries, highlighting how the details of the laws correspond to the insights from economic models of crime. In conclusion, the paper proposes an efficient sorting mechanism in which individuals will be provided with adequate incentives to reveal their type to law enforcement authorities.</p>	<p>No</p>	<p>No</p>
<p>Lee, Dwight R. (1988) <i>"Free Riding and Paid Riding in the Fight against Terrorism."</i> American Economic Review</p>	<p>Analyzes the accommodation between terrorists and a government, where the terrorist organization may operate with impunity in the host country, provided it does not create collateral damage there. Nations have three options before terrorists: do nothing, retaliate, or accommodate, this last option being to help the terrorists at the expense of the cooperating nations. This third option dominates the other two, thereby resulting in a prisoner's dilemma where some nations seek accommodation and, in so doing, undermine the efforts of others to curtail terrorist activity.</p>	<p>Yes</p>	<p>No</p>
<p>Mueller, D. C. (2004) <i>"Rights and Citizenship in a World of Global Terrorism"</i> European Journal of Political Economy</p>	<p>Studies policy implications of 9/11, asking whether global terrorism should lead to a re-evaluation of how to design constitutions, how to award citizenship, and how to protect property rights. Mueller's premise is that global terrorism seriously challenges the democratic constitutional state. Thus, it is necessary to strengthen both the democratic institutions and the citizens' understanding and support for these institutions.</p>	<p>No</p>	<p>No</p>
<p>Rosendorff, Peter and Todd Sandler (2004) <i>"Too Much of a Good Thing? The Proactive Response Dilemma."</i> Journal of Conflict Resolution</p>	<p>The authors model the amount of proactive counter-terrorist activity where the choice of the terrorist target is endogenized, as well as the type of terrorist attack – "normal" or "dramatic". Proactive policy has a downside by increasing grievances and terrorist recruitment if the government responds too harshly. Aggressive anti-terrorist actions may result in "dramatic" terrorist attacks. The paper explains why target nations may engage in a modest level of offense but a prime target can choose too large a level of proactive counter-terrorism when "dramatic" attacks can be transferred abroad to softer targets.</p>	<p>Yes</p>	<p>No</p>
<p>Sandler, Todd and Kevin Siqueira (2003) <i>"Global Terrorism: Deterrence versus Preemption."</i> Working Paper.</p>	<p>This paper analyzes two anti-terrorism policies when a government's nationals are attacked at home and abroad. Deterrence involves external benefits and costs. When damages are limited to home interests, countries will over-deter, while, for globalized terror, they will under-deter while preemption is usually undersupplied. Leader-follower behavior may lessen inefficiency for</p>	<p>Yes</p>	<p>No</p>

	deterrence, but worsens inefficiency for preemption as compared with coordinated equilibria, so that targeted nations cannot achieve the proper counter-terrorism policy through leadership.		
Shambaugh, George and William Josiger (2004) “ <i>Public Prudence, the Policy Salience of Terrorism and Presidential Approval Following Terrorist Incidents</i> ” Working Paper.	The public is assumed to rally around the flag in the event of national emergencies, granting greater executive powers to promote national security. This paper indicates that the importance the public assigns to terrorism as a policy issue and the rallying effect terrorist activity has on public support for the president and his policies vary as a function of the costs of the attacks in human and material terms, the types of people targeted and the weapons used by terrorists. Even in the context of a terrorist attack, the public exercises prudence when lending support to the president.	No	Poll data.
See Also Papers Below, From Other Tables			
Author (s) and Title			Table
Blomberg, S. Brock, Gregory Hess and Akila Weerapana (2004a) “ <i>Economic Conditions and Terrorism.</i> ” European Journal of Political Economy			1
Blomberg, S. Brock, Gregory Hess and Akila Weerapana (2004b) “An Economic Model of Terrorism.” Conflict Management and Peace Science			2
Bueno de Mesquita, Ethan (2005b) “ <i>The Quality of Terror</i> ” American Journal of Political Science			2
Garfinkel, M. (2004) “ <i>Global Threats and the Domestic Struggle for Power</i> ” European Journal of Political Economy			2
Im, Eric Iksoon, Jon Cauley and Todd Sandler (1987) “ <i>Cycles and Substitutions in Terrorist Activities: A Spectral Approach.</i> ” Kyklos			1
Kydd, Andrew and Barbara F. Walter (2002) “ <i>Sabotaging the Peace: The Politics of Extremist Violence.</i> ”			2

International Organization	
Laitin, David D., and Jacob N. Shapiro (2007) “ <i>The Political, Economic and Organizational Sources of Terrorism</i> ” This volume.	2
Lapan, Harvey and Todd Sandler (1993) “ <i>Terrorism and Signaling</i> ” European Journal of Political Economy	2
Sambanis, Nicholas (2007) “ <i>Terrorism and Civil War</i> ” This volume.	2
Sandler, Todd and Walter Enders (2004) “ <i>An Economic Perspective on Transnational Terrorism.</i> ” European Journal of Political Economy	1
Siqueira, Kevin (2005) “ <i>Political and Militant Wings within Dissident Movements and Organizations.</i> ” Journal of Conflict Resolution	2
Tavares, José (2004) “ <i>The Open Society Assesses Its Enemies: Shocks, Disasters and Terrorist Attacks</i> ” Journal of Monetary Economics	1
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