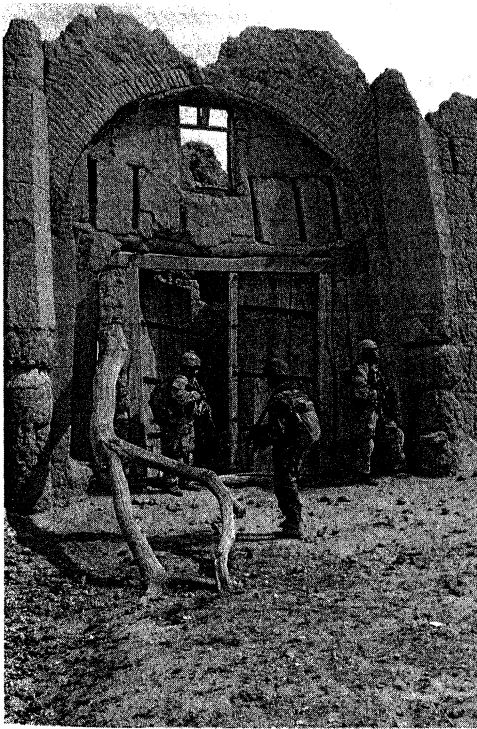


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## ECONOMICS AND TERRORISM

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Whenever major terrorist incidents happen, questions arise regarding the economic causes and consequences of these acts. The terrorist attacks of September 11, 2001, were no exception. No sooner had the dust had settled over Manhattan than studies about the human and economic costs of terrorism started to mushroom. A further immediate reaction was to trace the tragedy back to some easily understandable causes. One initial interpretation maintained that poverty constituted



Members of a combined special operations force secure a village gate during a counternarcotics operation in northern Zabul province, Afghanistan, April 10, 2010. Afghan National Army soldiers, assisted by U.S. Special Operations members, investigated the presence of drug facilities in the province. (U.S. Navy photo by Chief Mass Communication Specialist Jeremy L. Wood/Released)

one of the key triggers for the attacks. In 2002, George W. Bush, president of the United States, said, “we fight against poverty because hope is an answer to terror.” That same year, Gloria Arroyo, Bush’s counterpart in the Philippines, told BBC News that “terrorism and poverty are twins.” But are poverty and inequality really root causes of terrorism, and how costly are terrorist attacks and counterterrorist measures?

The deterrence approach to terrorism, pioneered by the scholars Todd Sandler and Harvey E. Lapan, provides a unifying model for the analysis of these queries. It shows how terrorist organizations try to maximize the costs of their actions to the adversary in comparison to the price they have to pay for their actions. The unifying theoretical framework also allows the research community to understand how the counterterrorism policies of the target nation affect these cost-benefit calculations. This article briefly summarizes this underlying model of the analysis and discusses its main contributions to the understanding of the economic causes and consequences of terrorism.

### The Costs and Benefits of Terrorism and Counterterrorism

Terrorism, especially in its transnational variant, is a complex global challenge. Both averted and realized terrorist acts are costly, sometimes exceedingly so. According to a 2004 estimate by Joshua Goldstein, the average U.S. household pays \$500 per year to fight the “war on terror.” The “terrorism bill” includes the costs of lives lost, of the military operations, and of the damage done to infrastructure, as well as the opportunity costs for the economic interactions that do not take place in the aftermath of a terrorist attack or because of the fear of a potential incident.

One helpful assumption for an understanding of terrorism is that both the attacker and the defender are goal oriented, and therefore are, in the economic sense, rational actors. While the terrorist organization tries to maximize the benefits attached to a particular incident in comparison to the costs of this act, the potential target attempts to increase the costs to the terrorists of an attack, hoping to induce terrorists to refrain from using force in the first place. This deterrence model has

proven useful for the analysis of the actions of the perpetrators and their real or potential victims.

A key problem for deterrence is the wide range of modes of attacks from which the terrorists can choose. The pioneering article of W.M. Landes, who analyzed the impact of U.S. aircraft hijackings from 1961 to 1976 using intervention analysis, illustrates the problems that this *embarras de richesse* creates for the defender of terrorist attacks. Landes originally found that the installation of metal detectors in 1973 decreased the number of skyjackings. Subsequent empirical work, however, qualified this positive initial assessment of counterterrorist measures. A series of articles, masterfully summarized in *The Political Economy of Terrorism* (2006) by Walter Enders and Todd Sandler, showed that terrorist organizations can quite often substitute one "instrument" of terror for a cheaper, and possibly more deadly, alternative. In this light, it is not surprising that al Qaeda switched from attacks using skyjacked airplanes as missiles to blowing up commuter trains in metropolitan areas, for the counterterrorism strategies that became effective after September 11, 2001, rendered it nearly impossible for terrorists to conduct a similar type of attack as that used on the World Trade Center and the Pentagon.

A further issue for anti-terrorist campaigns is that they are, in an economic sense, classic examples of the "free rider" problem: they constitute a public good from which each state or citizen can profit, and from whose consumption no nation or individual can be excluded. This creates a disincentive for particular individuals or nations to contribute their fair share. As is typical for joint efforts against a global or national challenge, attempts to fight terrorism are beset by so-called collective action dilemmas, which range from the underprovision of counterterrorism activities to the "free riding" of some states. This failure on the part of some states to do their share puts a larger burden on those actors that invest heavily in counterterrorism measures. The consequence of these collective action problems is that anti-terrorist activities are not as strong as they should be. Unsurprisingly, statesmen and diplomats of the nations that are highly active often condemn what they perceive to be the unfair behavior of other potential target states that do not, in the view of the activists, contribute sufficiently to the joint effort.

Terrorist organizations understand the collective action logic of counterterrorism, and they often select as a location for a terrorist act the country that is the "weakest link" in the counterterrorism alliance, and that accordingly invests relatively little in security measures. An illustrative example is that al Qaeda has chosen U.S. embassies in countries that offer relatively light protection of foreign installations and individuals in comparison to states with tougher anti-terrorism practices. Moreover, game-theoretic models suggest that in the case of global terrorism, proactive measures facilitate free rides on the efforts undertaken by the mainly targeted nation. One empirical implication of this tendency is that countries spend too little on proactive measures against transnational terrorism while spending too much on defensive measures.

Market reaction is one vivid way to assess whether counterterrorism measures are as effective as politicians make their electorates believe. An evaluation of the assassinations Israel conducted against suspected terrorists shows that the Israeli stock market declined subsequent to assassinations of senior *political* leaders, but it rose following assassinations of senior *military* leaders.

Another way of countering terrorism efficiently is by denying resources to terrorists, particularly by cutting their access to the money needed for carrying out deadly acts. Relatively little systematic research has been devoted to the issue of how terrorist organizations finance their activities, though this is not surprising in light of the difficulties in finding reliable data. The massive terrorist incidents of 2001 nevertheless sent a dire warning that fighting terrorists is not really possible without draining their human and financial resources. The majority of the studies investigating this issue have explored the resource base of Islamic terrorist groups, primarily al Qaeda. These studies estimate al Qaeda's financial flows, on average, to have been between 20 million and 50 million U.S. dollars per year from 1999 to 2006. Thus, financially, this most deadly of terrorist organizations is about the size of a midrange private-sector company. According to the scholar Friedrich Schneider, the illegal income of this transnationally active network stems from donations and, as is the case with many other terror organizations, from criminal activities such as drug trafficking. Denying terrorists the resources that they need for their operations

would often be a far more effective strategy than investments in defensive measures such as harbor or airport protection. However, such alternative counterterrorism strategies would also involve policy measures, such as the legalization of drugs, that are hard to sell to the electorates of the targeted nations.

The deterrence model also explains the cycles in terrorist activities that several studies have unearthed. When the public is not alert for this danger and governments invest little in counterterrorism, the costs for attacks are small. As terrorists become more active, targeted nations protect themselves better, thereby increasing the costs to terrorists of conducting a campaign. This growing efficiency of the deterrence measures lowers the number of assaults and makes the public feel more secure. The cycle restarts when the incentives for the terrorists are sufficiently attractive to restart their "business" again.

### Economic Causes of Terrorism

The study of the economic causes of terrorism has not led to any conclusive results, despite—or perhaps because of—the link that some politicians created between underdevelopment and terrorism following the attacks of September 11, 2001. Academically, the idea that poverty and inequality generate terrorism can be traced back at least to the social-scientific literature of the 1970s on deprivation and rebellion. According to this line of reasoning, the economic and political discrimination of powerful social or ethnic groups fuels unrest, political violence, and, by extension, terrorism. Another causal mechanism in support of this grievance argument hints at the opportunity costs of terrorism. Microeconomic research suggests that the more attractive the economic prospects of an individual are, the lower the risk that he or she will engage in terrorist activities or other forms of political violence. According to this adage, terrorist organizations should find more volunteers in poor countries and among the uneducated, as the underprivileged do not possess many attractive career opportunities. This opportunity-cost argument accordingly maintains that individuals for whom the opportunity costs for using violence are relatively low are more likely to join a rebel or terrorist organization.

However, several studies have shown that there is little direct connection between poverty, education, and participation in terrorism if the individual—whether as a real or potential recruit—is the unit of analysis. In 2003, Alan Krueger and Jitka Malečková highlighted the fact that members of Hezbollah's militant wing, as well as suicide bombers from the West Bank and Gaza Strip, come predominantly from economically advantaged families and possess a relatively high level of education. These authors argue that it is the lack of political liberty, and not poverty or the lack of education, that causes terrorism.

Yet this counterargument against the received wisdom ignores the "market" that exists for activists in many deprived regions of the world. In such areas, many frustrated, disaffected, or just bored individuals volunteer to become terrorists. According to the formal argument developed by Ethan Bueno de Mesquita, this oversupply of potential attackers allows the terror organizations to carefully select the most able terrorists, who are often to be found among the better-educated militants. Other studies suggest that the content of the education the terrorists have received is relevant: according to this formulation, only indoctrination, and not education, is able to turn individuals into terrorists. Bueno de Mesquita also shows that educated volunteers are more likely to be politically motivated, and thus even more successful in committing terror acts. Against this backdrop, it does not come as a surprise that the young men selected by al Qaeda to carry out the 9/11 attacks had predominantly middle-class backgrounds. Similarly, the Marxist terrorist organizations that were active in Western Europe in the 1970s and 1980s, such as the Red Army Faction (West Germany) or the Red Brigades (Italy), hardly ever recruited volunteers from the working class they proclaimed to represent.

The question of whether economic underdevelopment is a root cause of terrorism also remains controversial in cross-country comparisons. According to the scholar James Piazza, state repression, and thus the reaction of the government to a potential rebellion, fosters terrorism. As poverty is a frequent cause of rebellion, underdevelopment could at least be indirectly linked to terrorism. Some studies, just show that the opposite might be true, to some extent. A 2004 study by S. Brock Blomberg, Gregory Hess, and Akila

Weerapana found that economic development attracts terrorist attacks, but that high income reduces the risk that a state will breed terrorism. But another wide-ranging study, "On the Origin of Domestic and International Terrorism," by Krisztina Kis-Katos, Helge Liebert, and Günther G. Schulze, argues that terrorism is more likely to originate from wealthier countries. Using a newly available data set on both domestic and transnational terrorism, the authors found evidence that terrorism increases with GDP (gross domestic product) per capita. This suggests that it is not political repression that creates terrorism. In fact, in comparison to highly autocratic regimes, states with a higher level of civil and political liberties are more prone to breed terrorism, in both its domestic and transnational variants. Future research has to show whether such discrepancies depend on the operationalization of terrorism, on the data set that is used, or on other research-design effects.

A related question is whether economic integration, often also reduced to the catchphrase "globalization," has an influence on the incidence of transnational terrorism. This question is closely connected to the poverty argument. Most social scientists agree that economic globalization in the form of increased trade and foreign investment promotes economic development. This should, in the light of the opportunity cost argument, decrease the number and intensity of terrorist incidents. In other words, the proponents of the globalization thesis believe that positive economic development removes at least one main incentive for engaging in terrorist activities, namely poverty. Studies assessing empirically the effects of economic globalization on transnational terrorist incidents find a statistical association between economic globalization and transnational terrorism. These studies show that because economic globalization promotes economic development, it can also lower the risk of the occurrence of transnational terrorism.

Although transnational terrorist incidents represent only a small percentage of overall terrorist activities, there are still very few comparative studies that explore the economic causes of domestic terrorism. The extant studies suggest that the latter form of violence is largely a development phenomenon. While armed groups rely on terrorism in rich and powerful states, they employ guerrilla tactics in economically less privileged and weaker states.

It is the extreme asymmetry of power between terrorist groups and the state that distinguishes guerrillas from terrorists. While terrorist groups are unable to control territory and lack the support of the population, guerrillas are able to control a part of the state's territory and can rely on the assistance of a considerable part of the population. Some studies, such as that by Ignacio Sánchez-Cuenca and Luis de la Calle, suggest this dichotomy could be employed to restrain civil war in developed countries. Other studies, by contrast, are more in line with the opportunity cost argument that economic growth reduces the likelihood of domestic terrorism. This raises the question of whether or not the redistribution of wealth lowers the risk of domestic terrorism. In 2010, Tim Krieger and Daniel Meierrieks showed that, at least for the case of western Europe, social welfare policies make terrorist activities less attractive. It remains to be seen whether such findings are robust across different regions and across different specifications of terrorism and social welfare spending.

### Economic Consequences of Terrorist Attacks and Campaigns

Terrorism creates direct and indirect economic costs to a targeted nation. These economic repercussions can easily spill over to other countries. Most extant studies confirm that both domestic and transnational terrorist attacks are costly, but often not as grave as the panic reactions of investors following a major attack suggest. In 2007, Mikel Buesa and colleagues measured the direct economic costs of the terrorist attack on March 11, 2004, in Madrid. Direct costs arise immediately after a terrorist incident and include physical and infrastructural damages and economic losses that accrue as a result of the killing and harming of civilians, military personnel, and politicians. For example, Buesa's study estimated that the short-term economic costs of the Madrid bombings exceeded 211.58 million Euros; the direct costs were 0.16 percent of the GDP of the region around Madrid, and hardly 0.03 percent of the national GDP of Spain in that year. Other studies confirm that the direct economic costs of terrorist attacks are relatively small, short term, and transitory. In addition, markets can adapt over time to the fear

that terrorist attacks create. In their 2004 article "Financial Markets and Terrorism," Rafi Eldor and Rafi Melnick analyzed the impact of Palestinian terror attacks on stock market prices and exchange rates in Israel between 1990 and 2003. They found that these markets became desensitized to terror attacks over time and continued to function efficiently after terror incidents. There is also evidence that modern and diversified capital markets are more resilient and recover sooner than less competitive markets.

Even the overall macroeconomic effects of the attacks of September 11, 2001, were relatively small if one takes the United States of America as the frame of reference. The estimated costs of 48.7 billion U.S. dollars only represented about 0.5 percent of the U.S. GDP. Studies that focus on the short-term losses of terror attacks also underestimate the ability of a region to respond. There is quite often a "phoenix factor" in terrorism-affected areas, and the economy rebounds rather quickly after the initial shock. However, many of the negative effects of terrorism are indirect. They come, for instance, in the form of the costs of tightening security measures and insurance premiums that increase in the aftermath of a terrorist incident. It remains to be seen which terrorist attacks have a long-term crippling impact on an economy, and for which ones the negative aggregated effect was only transitory.

The effects of a terrorist campaign are much more severe and long-lasting than the impact of isolated incidents. In "The Economic Cost of Conflict: A Case Study of the Basque Country" (2003), Alberto Abadie and Javier Gardeazabal examine the GDP per capita reduction that the murderous activities of the Basque separatist organization Euskada Ta Askatasuna (Basque Fatherland and Liberty, or ETA) had on this Spanish region. They estimate that the terrorist organization provoked a GDP gap of 10 percent in comparison to an artificial region economically comparable to the Basque region. In Israel, a similar study estimated the consumption per capita gap that terrorist activities created in 2004 to be around 5 percent. Furthermore, the study estimated that the output per capita would have been around 10 percent higher for the year 2004 if Israel had not have suffered from a terrorist campaign in the previous years.

The singular experiences of Israel raise the question of whether these effects are able to be generalized across a broad set of nations affected by terrorism. In "The Macroeconomic Consequences of Terrorism," authors S. Brock Blomberg, Gregory Hess, and Athanasios Orphanides address this question in an evaluation of the macroeconomic consequences of transnational terrorism in comparison to internal conflict and external wars. They show that, on average, terrorism has a significant negative effect on economic growth. If a country suffered from transnational terrorist attacks in each year of the period examined, per capita income growth fell by 1.58 percent over the entire sample period. However, their results suggest that this effect was smaller and less incisive than that linked to internal conflicts and external wars. Concurrently, the negative effect of terrorism on economic growth is more pronounced in less developed countries. In a 2008 comparison of 18 states, Khusrav Gaibulloev and Todd Sandler found that transnational terrorism had a greater negative marginal influence on income per capita growth than domestic terrorism. Their results also showed that both transnational and domestic terrorist attacks reduce private investment but increase government spending.

Terrorism affects the different economic sectors unequally: some are directly targeted and others suffer from the aftermaths of terrorist incidents. For example, the tourism sector is often among the main economic victims of terrorism. In 1991, Walter Enders and Todd Sandler were the first to show the interrelation between transnational terrorism and tourism in Spain between 1970 and 1988; they demonstrated that transnational terrorism caused a considerable decline in the number of tourists who normally would have headed to Spain. Tourism can also be used to illustrate that terrorism, while in general being a costly collective challenge, can have redistributive effects. In a subsequent study, Sandler and his coauthors demonstrated that terrorist incidents in one country deterred tourism in neighboring countries. Other studies have found that tourists avoid high-risk countries and go instead to more secure countries.

Because terrorism affects the economy in neighboring countries, cross-border economic activities also suffer from attacks. Studies exploring the effects of transnational terrorism on international

and bilateral trade indicate that the first transnational terrorist attack reduces bilateral trade about 10 percent and that a doubling of the number of terrorist attacks in a year is associated with a decrease in bilateral trade of about 4 percent. Similarly, in 1996, Enders and Sandler found for the cases of Greece and Spain that transnational terrorism reduced annual net foreign direct investment (FDI) flows in Spain by 13.5 percent and in Greece by 11.9 percent. Ten years later, however, Enders, Sachsida, and Sandler found different results when they examined the extent to which transnational terrorism altered U.S. foreign direct investment after September 11, 2001. The authors included many diversified economies in the study, which allowed resource substitution from threatened to nonthreatened sectors. Their results show that the attacks on September 11, 2001, had no long-lasting negative impact on U.S. investment flows. They found further that the attacks had a negative impact on investment in other member states of the Organisation for Economic Co-operation and Development (OECD), but that they had no effect in countries outside of the OECD. They ascribe this finding to the fact that U.S. FDI stocks in non-OECD countries are less important than those in OECD member states.

If these isolated pieces of evidence are put together, a clear image emerges. Terrorist organizations are quite often successful in their attempts to weaken the society and economy of the targeted state. This is especially the case if a network is able to unleash a terror campaign that lasts many years. However, some economic sectors are more vulnerable to terrorist attacks than others, and large diversified economies overcome terrorist attacks more easily and with only marginal losses.

Although attacks on the World Trade Center or similar symbols of global capitalism seem irrational at first, studies exploring the economics of terrorism help to reveal the logic of such assaults. Understanding the cost-benefit calculus of terror networks is mandatory not only for policymakers who try to design effective counterterrorism measures. The economic aspects of terrorism are ultimately of concern for every individual, as consumers and taxpayers have to pay the bill for deterrence efforts and the costs that terrorist attacks cause. Unfortunately, the current literature does not always offer ready-made solutions for dealing with the

economic facets of terrorism. Nevertheless, it shows convincingly that building efficient deterrent mechanisms is the only way forward in the global fight against domestic and transnational terrorism.

*Tahmina Sadat Hadjer and Gerald Schneider*

*See also* Basque Fatherland and Liberty; Counterterrorism; Financing Terrorism; Madrid Bombings; September 11 Attacks

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## ECOTERRORISM

Since the late 1980s, ecoterrorism, a blanket term referring to various forms of violence and sabotage committed in the name of the environment, has become one of the top three "single issue" domestic terrorist threats in the United States (anti-abortion and animal rights are the other main areas). The growing radical environmental movement has become a top concern of the FBI, which estimates that more than 1,200 ecoterrorist acts were committed between 1990 and the end of 2004.

Radical environmentalism went public in the United States in 1969, when a small group of environmental activists—the Don't Make A Wave Committee—boarded a rented boat they called *Greenpeace* and attempted to halt nuclear testing on the Aleutian Islands. Although this mission failed, the movement grew. Five years later, Greenpeace was known worldwide for its Save the Whales campaign, in which members in small crafts placed themselves directly between whales and whaling boats. Over the next decade, as the movement grew, Greenpeace members took on new issues, dividing the campaigns into four major categories: nuclear energy, toxic pollution, ocean ecology, and atmosphere and energy.

"Loner" environmentalists throughout the country were active in the 1970s. In Chicago, an ecological saboteur known only as the Fox targeted large-scale industrial polluters, once redirecting toxic waste into an executive's office. Minnesota's Bolt Weevils toppled more than a dozen power poles to protest a massive power line across that state, while Michigan had the "Billboard Bandits" and Arizona had the Ecoraiders. The early tactics of ecoterrorists were inspired, in part, by Edward Abbey's 1975 radical environmentalist novel *The Monkeywrench Gang*.

### Growing More Radical

Earth First!, one of the most prominent radical environmental groups, also used Abbey's novel as a guidebook for action. Founded in 1980, the Arizona-based group became known for its anti-logging campaigns to save old-growth forests in the Pacific Northwest. The group's cofounder, Dave Foreman, wrote *Ecodefense: A Field Guide to Monkeywrenching*, from which individual environmentalists have learned the tools of the trade: spiking trees, disabling bulldozers and other heavy equipment, and toppling billboards and power-line towers. Activists are instructed to pull up survey stakes to halt further development into wilderness areas and to put themselves in trees to stop loggers.

Like the Animal Liberation Front (ALF), a radical animal rights group that began in England in 1976, Earth First! was decentralized and nonhierarchical. With no membership list and no formal leaders, Earth First!ers were left to conceive of and carry out their own operations, held together only