

Education, Poverty and Terrorism: Is There a Causal Connection?

Alan B. Krueger and Jitka Malečková

In the aftermath of the tragic events of September 11, 2001, several prominent observers—ranging from former Vice President Al Gore (2002) to President George W. Bush (2002a), as well as academics, including Joseph Nye, Dean of the Kennedy School of Government, Laura Tyson (2001), Dean of the London Business School, and Richard Sokolsky and Joseph McMillan (2002) of the National Defense University—have called for increased aid and educational assistance to end terrorism.¹ Perhaps surprisingly, our review of the evidence provides little reason for optimism that a reduction in poverty or an increase in educational attainment would meaningfully reduce international terrorism. Any connection between poverty, education and terrorism is indirect, complicated and probably quite weak. Instead of viewing terrorism as a direct response to low market opportunities or ignorance, we suggest it is more accurately viewed as a response to political conditions and long-standing feelings of indignity and frustration that have little to do with economics.

Terrorism is difficult to define; in fact, more than 100 diplomatic or scholarly definitions exist. Since 1983, the U.S. Department of State has employed the

¹ President George W. Bush refrained from drawing a connection between poverty and terrorism for a time, but on March 22, 2002, he announced in Monterrey, Mexico, “We fight against poverty because hope is an answer to terror.” See (<http://www.whitehouse.gov/news/releases/2002/03/20020322-1.html>).

■ *Alan B. Krueger is Bendheim Professor of Economics and Public Affairs, Princeton University, Princeton, New Jersey, and Research Associate, National Bureau of Economic Research, Cambridge, Massachusetts. Jitka Malečková is Associate Professor, Institute for Middle Eastern and African Studies, Charles University, Prague, Czech Republic.*

following definition, which seems to capture what is considered terrorism by many governments and international organizations:

The term “terrorism” means premeditated, politically motivated violence perpetrated against noncombatant targets by subnational groups or clandestine agents, usually intended to influence an audience.

The term “international terrorism” means terrorism involving citizens or the territory of more than one country.

The State Department also specifies that “the term noncombatant is interpreted to include, in addition to civilians, military personnel who at the time of the incident are unarmed and/or not on duty. . . . We also consider as acts of terrorism attacks on military installations or on armed military personnel when a state of military hostilities does not exist at the site, such as bombings against U.S. bases in the Persian Gulf, Europe, or elsewhere.” The rub in this definition, of course, is that terms such as “subnational” and “military hostilities” leave much latitude for disagreement.

Definitions used by scholars tend to place more emphasis on the intention of terrorists to cause fear and terror among a target audience rather than the harm caused to the immediate victims. Also, scholarly definitions often include nation states as potential perpetrators of terrorism, as well.² We readily acknowledge that the line between terrorism and resistance can become blurred. It is therefore reassuring that our main conclusions appear to hold across a varying set of circumstances, cultures and countries (see also Russell and Miller, 1983).

We begin with an overview of theoretical considerations involved in the occupational choice to participate in terrorist-type activities. Although the rational-choice model of participation in terrorism can yield valuable insights, it does not yield an unambiguous answer to the question of whether higher income and more education would reduce participation in terrorism. Evidence on the determinants of terrorism is just beginning to be assembled, and the following sections of the paper consider a variety of types of evidence: the determinants of “hate crimes,” which can be viewed as a close cousin to terrorism; public opinion data from the West Bank and Gaza Strip on Palestinians’ attitudes toward violence and terrorism; a new statistical analysis of the determinants of participation in Hezbollah in Lebanon; biographical evidence on Palestinian suicide bombers and the backgrounds of 27 Israeli Jews who were involved in terrorist activities in the early 1980s; and finally, a new cross-country data set on whether a country’s economic conditions are related to the likelihood that citizens from that country will become involved in international terrorism.

² We do not examine state terrorism because we suspect that the process underlying state terrorism is quite different than the process underlying substate terrorism and would require different data and analysis.

The data we present in this paper are often sketchy, incomplete and possibly nonrepresentative. Participation in terrorist activities may well be highly context-specific, and much of our discussion focuses primarily on the Middle East. Moreover, the absence of a correlation does not prove the absence of a causal relationship: simultaneity and omitted variables could render a correlation to be zero even in the presence of a causal relationship. Nevertheless, the evidence we have assembled does not indicate a connection between poverty and terrorism, and we are not aware of compelling evidence that points in the opposite direction.

Theoretical Considerations of Participation in Terrorism

The extensive literature on the economics of crime offers some reason to believe that poverty and lack of education are connected to illegal activity, especially property crimes. However, although terrorism seems akin to crime, this literature does not necessarily predict a similar connection between poverty or lack of education and terrorism.

Economists have a well worked out and empirically successful theory of participation in criminal activities. As emphasized by Becker (1968), individuals should allocate their time between working in the legal job market or working in criminal activities in such a way that maximizes their utility. After accounting for the risk of being caught and penalized, the size of the penalty, and any stigma or moral distress associated with involvement in crime, those who receive higher income from criminal activities would choose involvement in crime. In this model, crime increases as one's market wage falls relative to the rewards associated with crime, and decreases if the risk of being apprehended after committing a crime or the penalty for being convicted of a crime rises.

Available evidence suggests that individuals are more likely to commit property crimes if they have lower wages or less education (for example, Ehrlich, 1973; Freeman, 1996; Piehl, 1998). The occurrence of violent crimes, including murders, however, is typically found to be unrelated to economic opportunities (for example, Piehl, 1998; Ruhm, 2000). If violent crime is unrelated to economic opportunity, terrorism may be unrelated as well.

Glaeser (2002) specifically models the supply and demand for hatred, arguing that political leaders purvey hatred if it furthers their policy objectives. His model predicts that hatred will be more common if hatred makes a particular politician's policies more appealing, if hateful speech conveys coded information and if groups interact infrequently. Group size has an ambiguous effect on the amount of hatred; on the one hand, rallying opposition against a big group is more costly in terms of foregone political support and economic activity, and on the other hand, there is more to expropriate from a larger minority, and it may be impossible to foment hatred if a group is too small to be a plausible villain. An important point of

Glaeser's work is that the stated rationale political leaders use to justify hatred need not have much basis in reality.

Landes (1978) and Sandler, Tschirhart and Cauley (1983) apply the economic model of crime to transnational terrorism. They focus on how an increase in penalties and law enforcement influences the incentive to partake in terrorist activities. The model, however, yields few concrete predictions insofar as the relationship between market opportunities and participation in terrorism is concerned because participation in terrorist acts by individuals with different characteristics depends on the probability that participation will bring about the desired political change and the differential payoff for the various groups associated with achieving the terrorists' desired aims versus the penalties associated with failure.

Other important considerations include the relative pay of skilled and unskilled individuals for participation in terrorist organizations and how it compares to relative pay in the legal sector, and the *selection* of terrorists by terrorist organizations from the pool of potential applicants. Terrorism may in some cases offer greater benefits for those with more education. For example, well-educated individuals may participate disproportionately in terrorist groups if they think that they will assume leadership positions if they succeed; or if they identify more strongly with the goals of the terrorist organization than less educated individuals; or if they live in a society where the relative pay advantage of well-educated individuals is greater for participation in terrorist organizations than in the legal sector. (Labor economists will naturally think of the Roy (1951) model of occupational choice.)

Furthermore, terrorist organizations may prefer to select those who have better education. Between 1996 and 1999, Nasra Hassan (2001), a relief worker for the United Nations, interviewed nearly 250 militants and associates of militants involved in the Palestinian cause, including failed suicide bombers, the families of deceased bombers and those who trained and prepared suicide bombers for their missions. One Hamas leader Ms. Hassan interviewed claimed, "Our biggest problem is the hordes of young men who beat on our doors, clamoring to be sent [on suicide missions]. It is difficult to select only a few." A planner for Islamic Jihad explained to Ms. Hassan that his group scrutinizes the motives of a potential bomber to be sure that the individual is committed to carrying out the task. Apparently, the groups generally reject for suicide bombing missions "those who are under eighteen, who are the sole wage earners in their families, or who are married and have family responsibilities." A high level of educational attainment is probably a signal of one's commitment to a cause and determination, as well as of one's ability to prepare for an assignment and carry it off. The demand side of the terrorism phenomenon is often neglected.

Suicide bombers are clearly not motivated by the prospect of their own individual economic gain, although the promise of larger payments to their families may increase the willingness of some to participate in suicide bombing mis-

sions.³ We suspect their primary motivation results from their passionate support for their movement. Eradication of poverty and universal secondary education are unlikely to change these feelings. Indeed, those who are well-off and well-educated may even perceive such feelings more acutely.

Economic theory is unlikely to give a very convincing answer one way or the other as to whether poverty or low education are important root causes of terrorism. One could construct plausible explanations for why a reduction in poverty and a rise in education might increase or decrease the incidence of terrorism. Thus, we turn to a broad consideration of evidence related to terrorism.

Evidence from Hate Crimes

We begin by briefly reviewing evidence on the economic determinants of hate crimes, a phenomenon that many have considered closely related to terrorism (for example, Hamm, 1998; Kressell, 1996). Hate crimes are commonly defined as crimes against members of religious, racial or ethnic groups because of their group membership, rather than their characteristics or actions as individuals. Hate crimes include acts of violence, as well as destruction of property, harassment and trespassing. A consensus is emerging that views hate crimes as independent of economic deprivation.⁴

The evidence of a connection between economic conditions and hate crimes is highly elusive.⁵ Green, Glaser and Rich (1998) report time series evidence on the

³ Based on interviews with Palestinian militants, Hassan (2001) reported that the sponsoring terrorist organization usually gave between \$3,000 and \$5,000 to the families of suicide bombers. Apart from that payment, she reported that the typical cost of the operation was around \$150. It was widely alleged that Saddam Hussein increased the payment to families of Palestinian suicide bombers to \$25,000 in March 2002, yet Krueger (2003) found no evidence of a decrease in suicide attacks shortly after the fall of Mr. Hussein's regime.

⁴ One possible exception involves witch-hunts. Oster (2004), for example, finds that witchcraft trials were more common during periods of inclement weather, which she associates with poor economic conditions. Witch-hunts may be different from other hate crimes, however, because the church often played a major role in organizing the hunts. In addition, the weather may have played a direct role independent of economic conditions because alleged witches were often accused of altering the weather as evidence of their pact with the devil.

⁵ The original empirical support for the "economic deprivation hypothesis" stemmed from historical evidence on antiblack lynchings in the southern part of the United States. In his 1933 classic study, *The Tragedy of Lynching*, Arthur Raper documented a correlation of -0.532 between the number of lynchings in a year and the value of an acre of cotton (a measure of economic conditions) using annual time series data from 1882 to 1930. A landmark study by Green, Glaser and Rich (1998) overturns that conclusion. First, they find the correlation between lynchings and economic conditions vanished once secular trends in both variables were taken into account. That is, apart from the long-term tendency for the number of lynchings to decline and the economy to grow, lynchings were unrelated to year-to-year economic fluctuations. Second, when they use Simon Kuznets's measure of real per capita GNP growth (which was unavailable to Raper) as a measure of economic conditions instead of the price of cotton, they find that lynchings and economic conditions are virtually uncorrelated. Third, lynchings did not rise during the Great Depression, despite the dramatic deterioration in economic conditions. When Raper's sample

incidence of hate crimes against blacks, Jews, Asians and gay men and lesbians using data from New York City each month from 1987 to 1995. They found that the incidence of these crimes was unrelated to the city's unemployment rate.

Across regions in a given year, the occurrence of hate crimes and prevalence of hate groups are also found to be unrelated to economic circumstances of the area. Jefferson and Pryor (1999), for example, examined determinants of the existence of hate groups across counties in the United States in 1997, using a list of hate groups assembled by the Southern Poverty Law Center. Specifically, they used logistic regressions to relate the characteristics of counties to the likelihood that the county was home to a chapter of a hate group. About 10 percent of the 3,100 counties in the continental United States contained one or more hate group, like the Ku Klux Klan. The existence of hate groups was unrelated to the unemployment rate, divorce rate, percentage black or gap in per capita income between whites and blacks in the county. The share of the adult population with a high school diploma or higher had a statistically significant, *positive* association with the probability that a hate group was located in the area. They concluded, "[E]conomic or sociological explanations for the existence of hate groups in an area are far less important than adventitious circumstances due to history and particular conditions."

The findings for the United States do not appear to be unique. Germany experienced a rash of violence against foreigners in the early 1990s. Unemployment was high, particularly in the former East Germany. Krueger and Pischke (1997), however, found no relationship between the unemployment rate and the incidence of ethnic violence across 543 counties in Germany, once they controlled for a dummy variable indicating whether the county was located in the former East or West Germany. Likewise, average education and the average manufacturing wage in the county was unrelated to the amount of violence against foreigners. Within the former East Germany, those counties located furthest from the west had the highest incidence of ethnic violence. Krueger and Pischke attribute the geographic pattern to a failure of law enforcement further east and pent-up animosity that was suppressed during Communism.

To summarize, neither cyclical downturns nor longer-term regional disparities in living standards appear to be correlated with the incidence of a wide range of hate crimes. Rather than economic conditions as a cause of hate crimes, this literature points to a breakdown in law enforcement and official sanctioning or encouragement of civil disobedience as potential causes of the occurrence of hate crimes.

is extended through 1938, the correlation vanishes. It is almost certainly the case that the inverse correlation between economic conditions and antiblack lynchings that launched the aggression-frustration hypothesis was spurious, a coincidence of two unrelated trends that happened to move in opposite directions at the turn of the twentieth century.

Evidence from Public Opinion Polls in the West Bank and Gaza Strip

Public opinion polls can provide indirect information about which segments of the population support terrorist or militant activities. Here we analyze public opinion data collected by the Palestinian Center for Policy and Survey Research (PCPSR), an independent, nonprofit think tank located in Ramallah that performs policy analysis and academic research in the West Bank and Gaza Strip. We should emphasize that these results are undoubtedly highly specific to the context of the long-running Israeli-Palestinian conflict.

The PCPSR conducted a public opinion poll of 1,357 Palestinians age 18 or older in the West Bank and Gaza Strip on December 19–24, 2001. The survey, which was conducted by in-person interviews, covered topics including views toward the September 11th attacks in the United States, support for an Israeli-Palestinian peace agreement and views toward armed attacks against Israel.⁶ Under trying circumstances in the midst of one of the worst periods of the recent Israeli-Palestinian conflict, the Center kindly provided us with tabulations of key questions broken down by the educational level and occupational status of the respondents.

Tables 1 and 2 summarize some of the questions and results from the survey, with Table 1 providing a breakdown by occupational status and Table 2 by education level. The questions are presented in the order in which they were asked in the survey (although results are not available for all questions, and there are some gaps in the questions shown here). Several themes emerge from these results.

Clearly, a majority of the Palestinian population favor armed attacks against Israeli targets (Q18), with “support or strong support” from at least 72 percent in every educational and occupational group. In another question, majorities in the range of 90 percent favor armed attacks against Israeli soldiers in the West Bank and Gaza Strip. Smaller majorities, in the range of 60 percent for each educational and occupational group, believe that “armed attacks against civilians inside Israel” have helped achieve Palestinian rights in a way that negotiations could not have.

These results offer no evidence that more highly educated individuals are less supportive of violent attacks against Israeli targets than are those who are illiterate or poorly educated. Consider, for example, the percentage of individuals who say they support or strongly support armed attacks against Israeli targets less those who say they oppose or strongly oppose such attacks. By a 68 percentage point margin those with *more than* a secondary school education support armed attacks against Israeli targets, while the margin is 46 points for those who are illiterate and 63 points for those with an elementary school education. A chi-square goodness-of-fit test decisively rejects the null hypothesis that responses to the question

⁶ The questionnaire and aggregate results are available from (<http://www.pcpsr.org/survey/polls/2001/p3a.html>).

Table 1

Results of December 19–24, 2001, PCPSR Poll of West Bank and Gaza Strip, by Occupation and Employment Status

	<i>Student</i>	<i>Laborer, Craftsman & Employee</i>	<i>Housewife</i>	<i>Merchant, Farmer & Professional</i>	<i>Unemployed</i>
Q16. In your opinion, are there any circumstances under which you would justify the use of terrorism to achieve political goals?					
Yes or Definitely Yes	41.0%	34.6%	36.0%	43.3%	38.4%
No or Definitely No	49.6	58.0	50.6	48.3	54.3
No Opinion	9.4	7.3	13.4	8.3	7.2
Q17. Do you believe that armed attacks against Israeli civilians inside Israel so far have achieved Palestinian rights in a way that negotiations could not?					
Yes or Definitely Yes	66.7%	66.4%	58.2%	64.2%	63.8%
No or Definitely No	31.6	31.5	37.2	29.2	36.2
No Opinion	1.7	2.1	4.6	6.7	0.0
Q18. Concerning armed attacks against Israeli targets, I . . .					
Support or Strongly Support	89.7%	80.8%	82.0%	86.7%	73.9%
Oppose or Strongly Oppose	9.4	16.0	15.7	10.0	23.9
No Opinion	0.9	3.1	2.3	3.3	2.2
Q22-5. To what extent do you agree or disagree to define the following event as a terrorist event: "The killing of 21 Israeli youths by a Palestinian who exploded himself at the Dolphinarium night club in Tel Aviv"					
Agree or Strongly Agree	12.0%	14.4%	15.9%	12.5%	18.1%
Disagree or Strongly Disagree	87.2	81.9	82.7	80.8	79.7
No Opinion	0.9	3.7	1.4	6.7	2.2
Q28. Concerning armed attacks against Israeli soldiers in the West Bank and the Gaza Strip, I . . .					
Support or Strongly Support	95.7%	93.4%	91.3%	94.2%	89.9%
Oppose or Strongly Oppose	3.4	5.0	7.9	4.2	9.4
No Opinion	0.9	1.6	0.9	1.7	0.7

Notes: Sample size is 117 for students, 381 for laborers, craftsmen and employees, 562 for housewives, 120 for merchants, farmers and professionals and 138 for unemployed. Percentages may not add up to 100 because of rounding.

concerning support for armed attacks against Israel (Q18) are independent of educational attainment (p -value = 0.004). This finding has been supported by previous surveys. For example, a survey conducted by PCPSR in November 1994, before the latest intifada, asked respondents whether they supported a dialogue between Hamas and Israel (see <http://www.pcpsr.org/survey/cprspolls/94/poll13a.html>). More highly educated respondents were *less* supportive of a dialogue with Israel: 53 percent of those with a B.A. degree and 40 percent of those with an M.A. or Ph.D. degree supported a dialogue, compared with 60 percent of those with nine years or less of schooling. (Based on other questions, it is clear that supporters of dialogue generally favored a more peaceful coexistence with Israel.)

Support for armed attacks against Israeli targets is widespread across all

Table 2

Results of December 19–24, 2001, PCPSR Poll of West Bank and Gaza Strip, by Educational Attainment

	<i>Illiterate</i>	<i>Elementary</i>	<i>Middle</i>	<i>Secondary</i>
Q16. In your opinion, are there any circumstances under which you would justify the use of terrorism to achieve political goals?				
Yes or Definitely Yes	32.3%	37.5%	36.9%	39.4%
No or Definitely No	45.3	53.4	55.3	51.4
No Opinion	22.4	9.2	7.8	9.2
Q17. Do you believe that armed attacks against Israeli civilians inside Israel so far have achieved Palestinian rights in a way that negotiations could not?				
Yes or Definitely Yes	56.8%	63.3%	64.8%	63.3%
No or Definitely No	36.4	33.1	32.9	34.2
No Opinion	6.8	3.6	2.3	2.4
Q18. Concerning armed attacks against Israeli targets, I . . .				
Support or Strongly Support	72.2%	80.5%	82.1%	86.1%
Oppose or Strongly Oppose	25.9	17.5	15.3	12.0
No Opinion	1.9	2.0	2.6	1.9
Q22-5. To what extent do you agree or disagree to define the following event as a terrorist event: “The killing of 21 Israeli youths by a Palestinian who exploded himself at the Dolphinarium night club in Tel Aviv”				
Disagree or Strongly Disagree	78.3%	80.4%	84.1%	84.0%
No Opinion	5.6	0.8	2.0	2.4
Education Distribution	12.0	18.7	25.8	27.4

Notes: Sample size is 1,345. Percentages may not add up to 100 because of rounding.

occupations and groups, as shown in Table 2, but particularly strong among students (recall that respondents are age 18 or older) and merchants, farmers and professionals. (Only 22 respondents were farmers, and some may own farms, so we included them with merchants and professionals.) The unemployed are somewhat less likely to support armed attacks against Israeli military, and especially civilian, targets. If poverty was the wellspring of support for terrorism, one would have expected the unemployed to be more supportive of armed attacks than merchants and professionals, not less. Notice also that responses from housewives are quite similar to those of the general public.

Answers to several of the questions document sharp differences of opinion in interpreting what is meant by terrorism. A majority of the Palestinian population did not consider suicide bombings, like the one that killed 21 Israeli youths at the Dolphinarium night club in Tel Aviv, terrorist events (Q22-5). Toward the end of the questionnaire, respondents were also asked whether they thought the *international community* considered the Dolphinarium bombing a terrorist event (Q23-5, not shown). Ninety-two percent responded yes. Respondents were divided on whether they defined as a “terrorist event” the “destruction of the Twin Towers in New York City by people suspected to be members of Bin Laden’s organization”:

41 percent agreed and 53 percent disagreed, although they also responded that the international community viewed the event as terrorism.

As a whole, the public opinion findings are consistent with Lerner's (1958, p. 368) classic study of political extremism in six Middle Eastern countries. After examining opinion polls and conducting field work, Lerner concluded, "The data obviate the conventional assumption that the Extremists are simply the 'have-nots,' suggesting rather that they are the 'want-mores.'" He also noted, "Poverty prevails only among the Apolitical mass."

It is possible to use public opinion data to infer trends in economic expectations, and then to check whether changes in expectations are linked to changes in terrorism. In July/August 1998, September 1999 and February 2000, PCPSR asked respondents in the West Bank and Gaza Strip the following two questions: "How would you describe your economic situation over the last three years compared to the situation today? Better, Worse, Stayed the Same, or Don't Know?" and "Are you optimistic or pessimistic regarding your economic situation over the next three years? Optimistic, Pessimistic, It will remain the same, No Opinion/Don't Know?" Tabulations of responses to these two questions, as well as the unemployment rate, are shown in Table 3. Between 1998 and 2000, the public perceived economic conditions to be improving. The downward trend in the unemployment rate is also consistent with this perception. Thus, there is little evidence to suggest that a deteriorating economy or falling expectations for the economy precipitated the intifada that began in September 2000, although it is possible that expectations could have changed between the PCPSR's last survey and the start of the intifada.

Angrist (1995) closely examines trends in school enrollment, earnings and unemployment by level of education in the West Bank and Gaza Strip in a period encompassing the intifada in 1988. He finds that college enrollment increased rapidly in the early 1980s, doubling between 1981 and 1985. Between 1982 and 1988, the number of Palestinian men in the labor force with 12 or more years of schooling doubled, while the number of those with 11 or fewer years of schooling increased only around 30 percent. This remarkable rise in the education of the workforce coincided with a sharp increase in the unemployment rate for college graduates relative to high school graduates in the 1980s. In addition, from 1985 to 1988, the real daily wage of college graduates fell by around 30 percent, while the real wage of those with 12 years of schooling held steady and the real wage of those with 11 or fewer years of schooling increased slightly. Angrist notes that the decline in Palestinian school enrollment in the early 1990s probably represents "a belated supply response to low returns to schooling."

Thus, the noteworthy increase in educational attainment of Palestinians in the 1980s coincided with a marked deterioration in the economic position of more highly educated Palestinians. Angrist and others speculate that the deterioration in economic opportunities for the highly educated contributed to the civil unrest that broke out in December 1987. Angrist notes, however, that the confluence of these developments could be unique to the Palestinian situation and not a universal

Table 3

PCPSR Surveys on Economic Conditions in the West Bank and Gaza Strip

<i>Date</i>	<i>Unemployment Rate</i>	<i>Economic Situation Better Over Last 3 Years</i>	<i>Economic Situation Worse Over Last 3 Years</i>	<i>Optimistic About Economy Next 3 Years</i>	<i>Pessimistic About Economy Next 3 Years</i>
Mar 1995	38%				
Mar 1996	49				
Nov 1997	27				
Jul/Aug 1998	26	37.5%	31.2%	50.8%	29.2%
Oct 1998	29				
Nov 1998	24				
Jan 1999	25				
April 1999	20				
June 1999	20				
July 1999	18				
Sept 1999	23	39.2	27.6	50.4	27.5
Oct 1999	17				
Dec 1999	19				
Jan 2000	23				
Feb 2000	19	43.3	24.6	55.8	27.2
Mar/Apr 2000	17				
Dec 2001	21				

Source: PCPSR polls conducted at various times. Poll results are available from (www.pcpsr.org/survey/cprspolls/index.html).

response to expanding educational opportunities. The Israeli occupation of the territories and lack of an effective capital market or banking system probably prevented the labor markets in the West Bank and Gaza Strip from equilibrating, particularly in light of the fact that many Palestinians are dependent on Israel for jobs. Indeed, the contrasting economic environments surrounding the intifadas in 1988 and 2000 suggest that protest, violence and even terrorism can follow either a rising or retreating economic tide.

Correlates of Participation in Hezbollah Militant Activities

The Hezbollah (or *Hizb'allah*, Party of God) was founded in Lebanon in 1982, following the Israeli occupation of southern Lebanon. The original goal of Hezbollah was to fight the Israeli occupation and create a Shiite state in Lebanon, modeled on Iran. The organization refrained from publicly claiming responsibility for its actions for three years after it was formed and did not reveal its name until 1985. Hezbollah has since evolved into a complex social, political and resistance organization, and it currently maintains a website in English and Arabic at (<http://www.hizbollah.org>) that describes its multifaceted activities.

Hezbollah is based in three main areas in Lebanon: Beirut, the Bekaa Valley and southern Lebanon. Hezbollah has used various means to achieve its goals. In the 1980s, taking western hostages proved successful, especially when President Ronald Reagan was willing to trade arms for hostages. In the early 1990s, Hezbollah participated in Lebanese elections with some success. Beginning in the 1980s, Hezbollah introduced suicide attacks, first against Israeli military bases in southern Lebanon and later against western soldiers in Beirut. Hezbollah is believed to be responsible for the suicide truck bombings of the U.S. Embassy, U.S. marines' barracks and French paratroopers' barracks in Beirut in 1983, a 1985 hijacking of TWA Flight 847, and bombings of the Israeli embassy and a Jewish Community Center in Argentina in 1992 and 1994. The U.S. State Department and British Home Office have labeled Hezbollah as a terrorist organization. Hezbollah supported the radical Palestinian movements, Hamas and Islamic Jihad, in their campaign against Israel. It is from Hezbollah that these organizations reportedly have adopted the technique of suicide bombings. It has also been reported that Hezbollah and al Qaeda have joined forces after al Qaeda was dispersed from Afghanistan (Priest and Farah, 2002).

Eli Hurvitz of Tel Aviv University graciously provided us with biographical information on 129 members of Hezbollah's military wing (*Al-Muqawama Al-Islamiya*) who died in action from 1982 to 1994. Two-thirds of the *Shahids*, or martyrs, were killed between 1986 and 1988. The biographical details were extracted by Hurvitz from articles about the deceased fighters in Hezbollah's weekly newspaper, *Al-Ahd*. The observations in the sample may make up as many as one-third of the members of Hezbollah's military wing in this period, according to Hurvitz. Hurvitz (1998) used the data to develop a profile of Hezbollah, but did not compare the *Shahids* to the Lebanese population from which they were drawn. We culled a data set from the biographies that included the individuals' age at death, highest level of school attended, poverty status, region of residence and marital status.

Three problems with the data are worth emphasizing here. First, the deceased Hezbollah fighters were involved in a mix of activities, not all of which might be classified as terrorist attacks. An attack on a military post was the most common type of activity that the individuals were engaged in when they were killed. Others died planting booby traps or were assassinated by the Israeli Defense Forces or Lebanese forces. Three died in suicide bombing attacks. Second, it is unclear whether the deceased Hezbollah militants who are described in the organization's newspaper are representative of all Hezbollah members who engaged in terrorist and paramilitary activities. Hezbollah has a heterogeneous membership, ranging from untrained foot soldiers to well-trained individuals. Perhaps foot soldiers are overrepresented among the deceased, in which case our sample may underrepresent highly educated members from middle- or upper-income families. Third, relevant information was missing

for several individuals, and sometimes we were forced to infer variables indirectly from available information. For example, we inferred poverty status from available information on individuals' family background (like parents' occupation) or from their own economic condition when it was reported, but this information was available for fewer than half of all cases. Thus, our data on poverty is not perfectly comparable to poverty as defined in the general population survey described below.

Obtaining data on the general population in Lebanon proved difficult. We obtained an extract of individual-level data on a small subset of variables from the Lebanese Population and Housing Survey (PHS), conducted in 1996 by the country's *Administration Centrale de la Statistique*. Specifically, we have information on the age, poverty status and highest level of education attended of 287,204 individuals. Poverty status is defined on the basis of 11 indicators of living conditions, including rooms per person, principal means of heating, access to water and sewerage, car ownership and occupation.

This sample is large and pertains to a period close to the time frame of the Hezbollah sample. But again, some problems with the data are worth noting. First, the PHS contained no information on whether respondents were Hezbollah members. But because Hezbollah militants made up only about three in 10,000 people in the Lebanese population (in the relevant age group), we ignore the fact that, in principle, some members of the PHS sample may have been Hezbollah members. Second, we lack data on the sex of individuals in the PHS, while all of the deceased Hezbollah fighters were male. Although we readily acknowledge this shortcoming of the data, we suspect it does not seriously confound our results because, as best we can ascertain based on Figuié (1998), educational attainment is similar for male and female youth in the relevant cohorts in Lebanon. Family poverty status, region of residence and age are also likely to be orthogonal to sex, so including data on young women in the sample without controlling for gender is unlikely to bias our estimates severely.

Despite the limitations of both data sets, the samples provide some information on the characteristics of Hezbollah militants vis-à-vis the general population. Because the sample of 129 deceased Hezbollah fighters ranged in age from 15 to 38, we restricted the PHS sample to the 120,796 individuals age 15 to 38, as well. Table 4 presents summary statistics for the sample of deceased Hezbollah militants and the general population of Lebanon age 15 to 38. For each variable, only observations with nonmissing data on that variable are used to construct the table, so the sample varies across rows. (The PHS sample we were provided does not have any missing values.)

Several findings are of interest. First, notice that the poverty rate is 28 percent among the Hezbollah militants and 33 percent for the population—that is, 5 points lower for members of the Hezbollah military wing, although the gap is not statistically significant.

Second, in terms of education, the Hezbollah fighters are more likely to have

Table 4
Characteristics of Hezbollah Militants and Lebanese Population of Similar Age

<i>Characteristic</i>	<i>Deceased Hezbollah Militants</i>	<i>Lebanese Population Age 15–38</i>
< <i>Poverty</i>	28%	33%
<i>Education</i>		
Illiterate	0%	6%
Read and write	22%	7%
Primary	17%	23%
Preparatory	14%	26%
Secondary	33%	23%
University	13%	14%
High Studies	1%	1%
<i>Age</i>		
Mean	22.17	25.57
[std.dev.]	(3.99)	(6.78)
15–17	2%	15%
18–20	41%	14%
21–25	42%	23%
26–30	10%	20%
31–38	5%	28%
Hezbollah	21%	NA
<i>Education System</i>		
<i>Region of Residence</i>		
Beirut	42%	13%
Mount Lebanon	0%	36%
Bekaa	26%	13%
Nabatieh	2%	6%
South	30%	10%
North	0%	22%
<i>Marital Status</i>		
Divorced	1%	NA
Engaged	5%	NA
Married	39%	NA
Single	55%	NA

Notes: Sample size for Lebanese population sample is 120,796. Sample size for Hezbollah is 50 for poverty status, 78 for education, 81 for age (measured at death), 129 for education in Hezbollah system, 116 for region of residence and 75 for marital status.

attended secondary school than are those in the general population, and a chi-square test indicates that the differences in the educational distributions between the Hezbollah and population samples are statistically significant. Because, even in this restricted age range, the Hezbollah members are younger, the education differences would be even greater if individuals with the same age distribution were compared.

Third, the Hezbollah fighters tended to be in their late teens and early 20s when they died: 41 percent were 18–20 years old or less, and another 42 percent were ages 21–25 (for the general population, 15 percent were 18–20 years old and

23 percent were 21–25 years old). Russell and Miller (1983) report that “the usual urban terrorist was between [age] 22 and 25” in their sample of more than 350 terrorists from 18 different organizations.

Fourth, the deceased Hezbollah fighters were more likely to reside in South Lebanon and Beirut than were members of the population. This finding is not surprising given that the south of Lebanon is a stronghold of Hezbollah and was the area occupied by Israeli forces. Because educational attainment and living conditions are notably higher in Beirut than in the rest of Lebanon, it is important to control for regional differences in comparing the Hezbollah fighters to the general population.

Table 5 provides logistic estimates using the pooled sample of Hezbollah and PHS observations.⁷ The dependent variable equals one if the individual is a deceased Hezbollah fighter, and it is zero otherwise. The first two columns present unweighted estimates for the pooled sample of Hezbollah fighters and the PHS data set. However, this setup presents a classic problem of choice-based sampling: the Hezbollah militants were selected for inclusion in the sample on the basis of the dependent variable of the logit equation equaling one. Consequently, the sample does not constitute a random sample, and the unweighted estimates will generally be inconsistent. (See Manski and Lerner, 1977, for an exposition of choice-based sampling.) Columns 3 and 4 present logit models in which the observations have been weighted by the estimated frequencies of the groups in the population relative to their frequencies in the sample, which should yield consistent estimates.

Concentrating on the weighted estimates in columns 3 and 4, the results suggest that poverty is inversely related with the likelihood that someone becomes a Hezbollah fighter, and education is positively related with the likelihood that someone becomes a Hezbollah fighter. The former effect is statistically significant at the 0.05 level, and the latter at the 0.10 level, when the equation excludes region dummies, but both coefficients become insignificant when region is held constant in column 4. (The p-value for a joint test that poverty and education are unrelated to participation in Hezbollah in column 4 is 0.12.) According to the coefficient in column 3, a 30 percentage point increase in the poverty rate is associated with a 10 percent *reduction* in participation in Hezbollah. The same model implies that a 30 percentage point increase in the secondary school or higher attendance rate is associated with an 8 percent increase in participation in Hezbollah.

⁷ To maximize the sample size, the mean value of nonmissing values was assigned to observations with missing data for each variable in the Hezbollah sample. This procedure is not ideal and has some undesirable properties (for example, data may not be missing at random, and the reported standard errors do not reflect the additional variability due to the imputations), but it provides a simple way to impute missing data. A more sophisticated technique would impute missing observations along the lines proposed by Rubin (1987).

Table 5

Logistic Estimates of Participation in Hezbollah

(dependent variable is 1 if individual is a deceased Hezbollah militant, and 0 otherwise; standard errors shown in parentheses)

	<i>All of Lebanon:</i>				<i>Heavily Shiite Regions:</i>	
	<i>Unweighted Estimates</i>		<i>Weighted Estimates</i>		<i>Weighted Estimates</i>	
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	-4.886 (0.365)	-5.910 (0.391)	-5.965 (0.230)	-6.991 (0.255)	-4.658 (0.232)	-5.009 (0.261)
Attended Secondary School or Higher (1 = yes)	0.281 (0.191)	0.171 (0.193)	0.281 (0.159)	0.170 (0.164)	0.220 (0.159)	0.279 (0.167)
Poverty (1 = yes)	-0.335 (0.221)	-0.167 (0.223)	-0.335 (0.158)	-0.167 (0.162)	-0.467 (0.159)	-0.500 (0.166)
Age	-0.083 (0.015)	-0.083 (0.015)	-0.083 (0.008)	-0.083 (0.008)	-0.083 (0.008)	-0.082 (0.008)
Beirut (1 = yes)	—	2.199 (0.219)	—	2.200 (0.209)	—	0.168 (0.222)
South Lebanon (1 = yes)	—	2.187 (0.232)	—	2.187 (0.221)	—	1.091 (0.221)
Pseudo R-Square	0.020	0.091	0.018	0.080	0.021	0.033
Sample Size	120,925	120,925	120,925	120,925	34,826	34,826

Notes: Sample pools together observations on 129 deceased Hezbollah fighters and the general Lebanese population from 1996 PHS. Weights used in columns 3 and 4 are the relative share of Hezbollah militants in the population to their share in the sample and relative share of PHS respondents in the sample to their share in the population. Weight is 0.273 for Hezbollah sample and .093 for PHS sample.

These effects are 40 to 50 percent smaller in column 4, which adjusts for whether the individual resides in Beirut, South Lebanon or elsewhere in Lebanon and for age. As suggested by the means in Table 4, residents of Beirut and southern Lebanon are more likely to join Hezbollah. Also, even in the sample of 15 to 38 year-olds, younger individuals are more likely to be represented in the deceased Hezbollah sample than in the population.

Columns 5 and 6 of Table 5 attempt to sharpen the comparison by using a population sample that is matched more closely in terms of geography and religion. Hurvitz (1998) reports that virtually all of the Hezbollah militants were Shiite Muslims. Although we lack information on religious affiliation in our data sets, to control partially for differences across religious groups, we can restrict the sample to districts with a high proportion of Shiite Muslims. El Khoury and Panizza (2002, Table 1) provide estimates of the percentage of the Lebanese population belonging to various religious groups for 26 districts in the PHS, based on voter registration from the 1996 national parliamentary elections. We limit the PHS sample to the six districts in which at least 69 percent of the population is Shiite Muslim and to

Beirut, because 42 percent of the Hezbollah militants were from Beirut.⁸ For this sample, which is arguably a more relevant one, the results indicate an even larger *negative* effect of poverty on the propensity to join Hezbollah: a 30 percentage point reduction in poverty is associated with a 15 percent increase in participation in Hezbollah, based on the model in column 6. A 30 percentage point increase in secondary school enrollment is again associated with an 8 percent increase in Hezbollah participation.

We regard these findings as suggestive, but not definitive. Data limitations prevent us from drawing strong conclusions. Also, the process of participation in Hezbollah, primarily a resistance organization, may not be representative of participation in other organizations that are more exclusively focused on terrorist activities. Nevertheless, these findings provide little support for the view that those who live in poverty or have a low level of education are disproportionately drawn to participate in terrorist activities.

Palestinian Terrorists

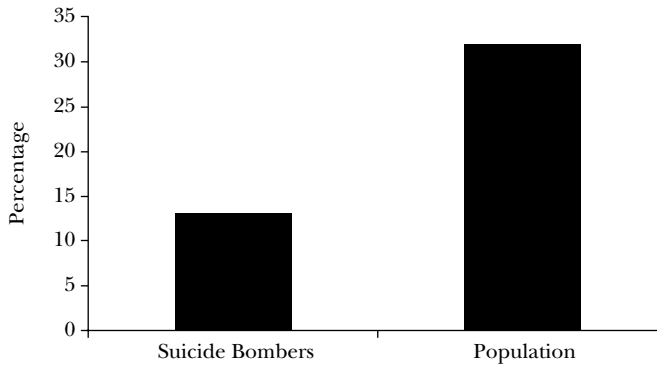
Berrebi (2003) has conducted an extensive analysis of Palestinian terrorist attacks in Israel and the occupied territories. Specifically, he created a micro data set from the biographies of 285 *Shahids* published in the magazines of Hamas, Palestinian Islamic Jihad and the Palestinian National Authority from 1987 to 2002. More than half of the terrorist acts were committed from 2000 to 2002.

Figures 1 and 2 summarize his main findings for suicide bombers. It is apparent that the individuals who carried out suicide bomb attacks for these organizations are less likely to come from impoverished families and are much more likely to have completed high school and attended college than the general Palestinian population. These findings continue to hold when Berrebi (2003) estimates choice-based logit models to control for age and region of residence (West Bank versus Gaza Strip). The same pattern *vis-à-vis* education and poverty arises for the broader sample of terrorists, as well as suicide bombers, but we have focused on suicide bombers because a common stereotype is that they are the most economically deprived of all the terrorists. It is also worth noting that Berrebi's econometric results accord well with Nassra Hassan's (2001) informal observations about Palestinian suicide bombers: "None of them were uneducated, desperately poor, simple minded or depressed. Many were middle class and, unless they were

⁸ The six districts and percentage of voters identified as Shiite Muslims are Baalbek (69.1 percent); Bent-Jbayl (86.7 percent); El-Hermel (100 percent); El-Nabatiyye (99.3 percent); Marj'ayun (91.6 percent); and Sour/Tyre (91.8 percent). In Beirut, 13.6 percent of voters were Shiite Muslims and 44.9 percent were Sunni Muslims. We are grateful to Marianne El Khoury and Ugo Panizza for sharing these data with us.

Figure 1

Comparison of Poverty Rate for Palestinian Suicide Bombers and Palestinian Population of Comparable Age

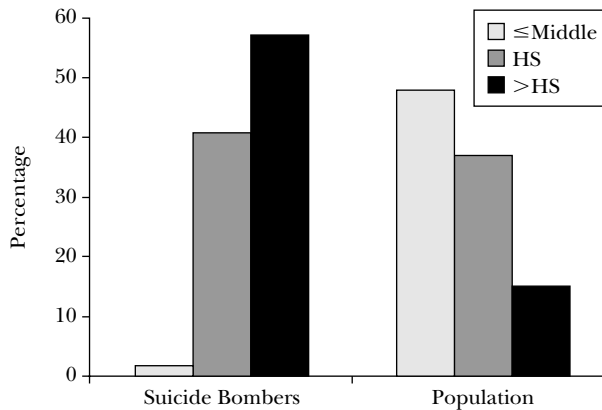


Source: Claude Berrebi (2003).

Notes: Sample size is 48 for suicide bombers and 18,803 for the population. Age range is 16 to 50 for both samples.

Figure 2

Comparison of Educational Distribution for Palestinian Suicide Bombers and Palestinian Population of Comparable Age



Source: Claude Berrebi (2003).

Notes: Sample size is 44 for suicide bombers and 37,824 for the population. Age range is 16 to 50 for both samples.

fugitives, held paying jobs. More than half of them were refugees from what is now Israel. Two were the sons of millionaires.”

Berrebi (2003) also finds that suicide bombers are younger than the general population. The typical profile of suicide bombers is completely different than the

profile of those who commit suicide in general, who tend to be older and poorer than the general population (Hamermesh and Soss, 1974).

Israeli Jewish Underground

In the late 1970s and early 1980s, numerous violent attacks against Palestinians were conducted by Israeli Jews in the West Bank and Gaza Strip, led most prominently by the *Gush Emunim* (Bloc of the Faithful) group. These attacks included attempts to kill three Palestinian mayors of West Bank cities and failed attempts to blow up the Dome of the Rock mosque, the third-holiest shrine of Islam. From 1980 to 1984, a total of 23 Palestinians were killed in attacks by the Jewish Underground, and 191 individuals were injured. The *International Encyclopedia of Terrorism* (Combs and Slann, 1997) refers to these attacks as terrorism. In 1985, an Israeli court convicted three Israeli settlers of murder and found others guilty of violent crimes in cases involving attacks in the West Bank.

We compiled a list of 27 individuals closely involved in the Jewish Underground in the early 1980s. We think this list is fairly complete and accurate, as the main source is a book by one of the members of the Underground, Haggai Segal.⁹ These Israeli extremists were disproportionately well-educated and in high-paying occupations. The list includes teachers, writers, university students, geographers, engineers, entrepreneurs, a combat pilot, a chemist and a computer programmer. As Neff (1999) observed of the three men convicted of murder, “All were highly regarded, well-educated, very religious.” Although we have not systematically compared the backgrounds of the extremists to the wider Israeli population, the 27 individuals on our list certainly do not appear to be particularly underprivileged or undereducated.

Cross-Country Analysis

Economic circumstances could still matter for terrorism if relatively well off people from poor countries are attracted to terrorism. That is, would-be terrorists could be inspired by the poverty of their countrymen: a Robin Hood model of terrorism. To explore this possibility, one needs data on the number of terrorists originating from each country. Although data are particularly problematic in this area, we have assembled a country-level data set on the origins of perpetrators of terrorist events drawn from the U.S. State Department’s annual list of significant

⁹ See Segal (1988). We also drew on Black and Morris (1991), Friedman (1992) and Neff (1999). For a table listing the names of these 27 individuals, along with their birth year, occupation and particular underground activity, see Table 6 of the earlier draft version of this paper, which appeared as NBER Working Paper No. 9704 at <http://papers.nber.org/papers/W9074>.

international terrorist incidents.¹⁰ An “international terrorist event” is defined here as a terrorist attack involving citizens or the territory of more than one country. From the State Department’s description of events, we have tried to trace the country of origin of the perpetrators of the attack. For example, we treated September 11th as four separate events and apportioned the country of origin of the perpetrators in proportion to the countries of the 19 terrorists who commandeered the airplanes.

The resulting data set is clearly imperfect: the country of origin, or even the identity of the terrorist organization that carried out the event, was unknown in some cases. In addition, some events are more significant or involve more participants than others, and only a small number of individuals are involved in international terrorist events compared to world population. Nevertheless, the resulting data should provide a rough indication of whether international terrorists are more likely to come from rich or poor countries. It is also reassuring to note that the correlation is 0.57 between our country-level measure of terrorist attacks and the number of events for each country recorded in the International Terrorism: Attributes of Terrorist Events (ITERATE) data set assembled by Walter Enders and Todd Sandler.¹¹ (The correlation rises to 0.89 if India, an outlier, is dropped from the sample.) Because the ITERATE data set attributes events to the country where they occurred, which may not be the country of origin of the perpetrators, we present results using our data.

Table 6 summarizes our main findings. We have estimated negative binomial regression models, where the dependent variable is the number of international terrorist events perpetrated by individuals from each country.¹² The model in the first column controls only for log population and three dummy variables indicating whether a country falls in the bottom, second to bottom or second to top quartile of the world distribution of GDP per capita. Because the negative binomial specification should be interpreted as logarithmic in the dependent variable, the coefficient on the log of population can be interpreted as an elasticity. The results indicate that terrorists are more likely to originate from larger countries, although the elasticity is well below one. More relevant for our purposes, in the simple model there is a negative relationship between GDP per capita and the number of terrorists emanating from a country: the poorest countries spawn more terrorists ($p = 0.11$). To see if income has a causal effect or is just standing in for some other

¹⁰ The list is published in Appendix A of *Patterns of Global Terrorism, 1997–2001*. According to the report, “An International Incident is judged significant if it results in loss of life or serious injury to persons, abduction, or kidnapping of persons, major property damage, and/or is an act or attempted act that could reasonably be expected to create the conditions noted.”

¹¹ The average country has 4.66 terrorist events in the ITERATE data and 4.00 events in the data derived from the State Department’s list in the same time period.

¹² More than half of the countries in the sample are credited with zero terrorist events, so an ordinary least squares regression is inappropriate. Because the data exhibit overdispersion, a Poisson count model gives misleading standard errors. For this reason, we estimated negative binomial models.

Table 6

Negative Binomial Regressions with Country-Level Data*(dependent variable: number of international terrorist events originating from each country, 1997–2002)*

<i>Explanatory Variable</i>	(1)	(2)	(3)	(4)
Intercept	-5.78 ^b (1.60)	-4.16 ^b (1.57)	-9.92 ^b (1.94)	-10.77 ^b (2.10)
Log Population	0.42 ^b (0.09)	0.40 ^b (0.09)	0.59 ^b (0.08)	0.64 ^b (0.09)
Bottom Quartile of GDP Per Capita	0.75 ^a (0.36)	-0.34 (0.46)	-0.17 (0.47)	-0.14 (0.54)
Second Quartile of GDP Per Capita	0.19 (0.39)	-0.90 (0.49)	-0.86 (0.49)	-1.00 (0.53)
Third Quartile of GDP Per Capita	0.17 (0.41)	-0.52 (0.47)	-0.42 (0.48)	-0.42 (0.49)
High Civil Liberties (1 = yes; 0 = no)	—	-1.57 ^b (0.49)	-1.51 ^b (0.55)	-1.48 ^b (0.58)
Middle Civil Liberties (1 = yes; 0 = no)	—	-0.45 (0.29)	-0.63 ^a (0.34)	-0.70 (0.39)
Proportion Muslim	—	—	2.71 ^b (0.89)	2.90 ^b (0.95)
Proportion Christian	—	—	2.50 ^b (1.02)	2.52 ^a (1.12)
Proportion Buddhist	—	—	1.54 (1.11)	1.63 (1.19)
Proportion Hindu	—	—	3.71 ^b (1.05)	3.83 ^b (1.12)
Illiteracy Rate	—	—	—	-0.31 (0.82)
P-Value for GDP	0.11	0.22	0.12	0.09
P-Value for Civil Liberties	—	0.005	0.02	0.03
Pseudo-R ²	0.04	0.06	0.09	0.10
Sample Size	148	148	143	129

Notes: Mean (s.d.) of dependent variable is 5.3 (21.2). Average illiteracy rate is 0.21. GDP per capita is the average from 1996–2000, and is derived from the World Bank; for 8 countries with unavailable GDP data from the World Bank, income quartile was imputed. The base group for the religion dummy variables is other and no religion. Sample is restricted to countries with more than 1 million people.

^a Statistically significant at .05 level for two-tailed test.

^b Statistically significant at .01 level for two-tailed test.

factor, we simultaneously controlled for the effects of other variables, as well. Most importantly, when we control for a measure of civil liberties in column 2, the effect of income becomes statistically insignificant and very weak. Once one accounts for the fact that poorer countries are less likely to have basic civil liberties, there is no difference in the number of terrorists springing from the poorest or the richest countries.

At a given level of income, countries with greater civil liberties—defined by the Freedom House organization as the “freedom to develop views, institutions, and

personal autonomy without interference from the state”—are less likely to be a wellspring of international terrorists. This variable seems to matter more than political freedoms, another Freedom House variable that we tried, for predicting participation in terrorism.¹³

In column 3 we add controls for the proportion of each country’s population belonging to four major religious faiths: Islam, Christianity, Buddhism and Hinduism. The base group is the proportion belonging to other religions or to no religion at all. Interestingly, having a higher proportion of the population affiliated with any of these religious faiths is positively associated with the incidence of terrorism, but if we conduct an F-test, we cannot reject the null hypothesis that the population shares belonging to each of the four religious groups have the *same* effect on terrorism at the 0.05 level. On reflection, this result is not terribly surprising, as terrorism has occurred throughout the world.

In column 4 we add the illiteracy rate to the equation, which reduces the sample size because data are not available for all countries. In other results not reported here, we also experimented with controlling for male and female illiteracy and the tertiary school enrollment rate. At the country level, illiteracy and school enrollment are insignificantly related to participation in terrorism. (The GDP quartiles are on the margin of statistical significance in column 4, but this is mainly because countries in the second to lowest income group are less likely than the richest countries to be a breeding ground for terrorists.)

We also tried a number of robustness checks. For example, Colombia and India are large outliers in terms of terrorist events, but if we exclude these two countries, the results are qualitatively unchanged. Instead of the number of terrorist incidents owing to citizens of a country, we created a dummy variable indicating whether citizens of the country were responsible for *any* significant terrorist events in the period under study, and we used this variable as our dependent variable. Again, income was an insignificant predictor.

After drawing a connection between poverty and terrorism in his Monterrey speech in March 2002, President Bush seems to have adopted a more nuanced view, writing in a *New York Times* op-ed on September 11, 2002: “Poverty does not transform poor people into terrorists and murderers. Yet poverty, corruption and repression are a toxic combination in many societies, leading to weak governments that are unable to enforce order or patrol their borders and are vulnerable to terrorist networks and drug cartels.” We interpret his statement as suggesting that poverty and government repression interact to foment terrorism. We tested for interactions between GDP per capita and measures of political freedom and civil

¹³ If we use the ITERATE data as our dependent variable, we find that GDP per capita is unrelated to the number of terrorist events occurring in a country, but civil liberties are related to the number of events. Piazza (2003) analyzes data assembled from the State Department’s list of significant terrorist events from 1986–2002, based on the country where the incident occurred, and similarly finds that economic factors are unrelated to the occurrence of terrorist events.

liberties, yet we did not find a significant interaction term. The data seem to suggest that a lack of civil liberties is associated with higher participation in terrorism and that low income has no direct connection.

Conclusion

The evidence we have presented, tentative though it is, suggests little direct connection between poverty or education and participation in terrorism. Indeed, the available evidence indicates that, compared with the relevant population, members of Hezbollah's militant wing or Palestinian suicide bombers are at least as likely to come from economically advantaged families and have a relatively high level of education as to come from the ranks of the economically disadvantaged and uneducated. Similarly, members of the Israeli Jewish Underground who terrorized Palestinian civilians in the late 1970s and early 1980s were overwhelmingly well-educated and in highly regarded occupations.

Qualitative studies of participants in terrorism in several different settings have reached conclusions similar to ours. For example, Russell and Miller (1983) assembled demographic information on more than 350 individuals engaged in terrorist activities in Latin America, Europe, Asia and the Middle East from 1966 to 1976, based on newspaper reports. Their sample consisted of individuals from 18 revolutionary groups known to engage in urban terrorism, including the Red Army in Japan, Baader-Meinhof gang in Germany, Irish Republican Army in Northern Ireland, Red Brigades in Italy and People's Liberation Army in Turkey. Russell and Miller found: "[T]he vast majority of those individuals involved in terrorist activities as cadres or leaders is quite well educated. In fact, approximately two-thirds of those identified terrorists are persons with some university training, university graduates or postgraduate students." They also report that more than two-thirds of arrested terrorists "came from the middle or upper classes in their respective nations or areas." Taylor (1988) likewise concludes from his survey of the literature: "Neither social background, educational opportunity or attainment seem to be particularly associated with terrorism."

Poverty at the national level may indirectly affect terrorism through the apparent connection between economic conditions and the proclivity for countries to undergo civil wars. Fearon and Laitin (2001) find that GDP per capita is inversely related to the onset of civil war, and Collier and Hoeffler (2000) find that the growth rate of GDP per capita and male secondary school enrollment rate are inversely related to the incidence of civil war. Miguel (2003) also presents evidence that shocks to economic growth caused by exogenous variation in rainfall are negatively related to the incidence of civil wars in sub-Saharan African countries. Lebanon, Afghanistan and the Sudan are high-profile examples of countries where civil war provided a hospitable environment for international terrorists. However, terrorism has arisen in many countries that were not undergoing a civil war, and

countries undergoing a civil war have not always provided a breeding ground for international terrorism, so the connection from civil war to terrorism is unclear. The cross-country evidence that we have assembled suggests that, once civil liberties are taken into account, a country's income level is unrelated to the number of terrorists who originate from that country, although we consider the connection between poverty at the national level and terrorism a fertile area for future research.

Enough evidence has accumulated that it is fruitful to conjecture why participation in terrorism and political violence is apparently unrelated, or even positively related, to individuals' income and education. In terms of the supply of terrorists, we hypothesize that terrorism resembles a violent form of political engagement. More educated people from privileged backgrounds are more likely to participate in politics, probably in part because political involvement requires some minimum level of interest, expertise, commitment to issues and effort, all of which are more likely if people have enough education and income to concern themselves with more than minimum economic subsistence. Our finding that terrorists are more likely to spring from countries that lack civil rights, if it holds up, is further support for the view that terrorism is a political, not economic, phenomenon. On the demand side, terrorist organizations may prefer educated, committed individuals. In addition, well-educated, middle- or upper-class individuals are better suited to carry out acts of international terrorism than are impoverished illiterates because the terrorists must fit into a foreign environment to be successful.

On the whole, there is little reason for optimism that a reduction in poverty or increase in educational attainment will lead to a meaningful reduction in the amount of international terrorism, without other changes. Stern (2000) observes that many madrasahs, or religious schools, in Pakistan are funded by wealthy industrialists, and that many of these schools deliberately educate students to become foot soldiers and elite operatives in extremist movements around the world. She further reports: "Most madrasahs offer only religious instruction, ignoring math, science, and other secular subjects important for functioning in modern society." These observations suggest that if the international community attempts to use education as part of a strategy to reduce terrorism, it should not limit itself to increasing years of schooling, but must also consider the content of education.

■ *We thank Claude Berrebi for excellent research assistance, Eli Hurvitz, Adib Nehmeh and Zeina el Khalil for providing data, and Joshua Angrist, Claude Berrebi, Fran Blau, Mia Bloom, Yinon Cohen, Jed Devaro, Guido Imbens, Bill Johnson, Christina Paxson, Howard Rosenthal, Jessica Stern, Elie Tamer and numerous seminar audiences for helpful discussions and comments. We also appreciate the very helpful editorial suggestions of Andrei Shleifer, Timothy Taylor and Michael Waldman.*

References

- Angrist, Joshua.** 1995. "The Economic Returns to Schooling in the West Bank and Gaza Strip." *American Economic Review*. December, 85:5, pp. 1065–087.
- Becker, Gary S.** 1968. "Crime and Punishment: An Economic Approach." *Journal of Political Economy*. March/April, 76:2, pp. 169–217.
- Berrebi, Claude.** 2003. "Evidence About the Link Between Education, Poverty and Terrorism Among Palestinians." Mimeo, Princeton University.
- Black, Ian and Benny Morris.** 1991. *Israel's Secret Wars: The Untold History of Israeli Intelligence*. London: Hamish Hamilton.
- Bush, George W.** 2002a. "Securing Freedom's Triumph." *New York Times*. September 11, Op-ed page.
- Bush, George, W.** 2002b. "Remarks by the President at United Nations Financing for Development Conference." Cintermex Convention Center, Monterrey, Mexico, March 22; available at (<http://www.whitehouse.gov/news/releases/2002/03/20020322-1.html>).
- Collier, Paul and Anne Hoeffler.** 2000. "Greed and Grievance in Civil War." World Bank, Policy Research Working Paper No. 2355.
- Combs, Cindy C. and Martin W. Slann.** 1997. *International Encyclopedia of Terrorism*. Chicago and London: Fitzroy Dearborn Publishers.
- Ehrlich, Isaac.** 1973. "Participation in Illegitimate Activities: A Theoretical and Empirical Investigation." *Journal of Political Economy*. May, 81:3, pp. 521–65.
- El Khoury, Marianne and Ugo Panizza.** 2002. "Social Mobility and Religion: Evidence from Lebanon." Mimeo, Inter-American Development Bank, Washington, D.C.
- Fearon, James and David Laitin.** 2001. "Ethnicity, Insurgency, and Civil War." Mimeo, Stanford University.
- Figuié, Gérard.** 1998. *Le Point Sur le Liban*. Paris: Maisonneuve & Larose.
- Freeman, Richard.** 1996. "Why Do So Many Young American Men Commit Crimes and What Might We Do About It?" *Journal of Economic Perspectives*. Winter, 10:1, pp. 25–42.
- Friedman, Robert.** 1992. *Zealots for Zion: Inside Israel's West Bank Settlement Movement*. New York: Random House.
- Glaeser, Edward L.** 2002. "The Political Economy of Hatred." Mimeo, Harvard University, August.
- Gore, Albert.** 2002. "A Commentary on the War Against Terror: Our Larger Tasks." Speech at the Council on Foreign Relations, February 12; available at (<http://www.gwu.edu/~action/2004/gore/gore021202L.html>).
- Green, Donald P., Jack Glaser and A. Rich.** 1998. "From Lynching to Gay-Bashing: The Elusive Connection Between Economic Conditions and Hate Crime." *Journal of Personality and Social Psychology*. 75:1, pp. 82–92.
- Green, Donald P., Laurence H. McFalls and Jennifer K. Smith.** 2001. "Hate Crime: An Emergent Research Agenda." *Annual Review of Sociology*. 27, pp. 479–504.
- Hamermesh, Daniel and N. Soss.** 1974. "An Economic Theory of Suicide." *Journal of Political Economy*. 82:1, pp. 83–98.
- Hamm, Mark S.** 1998. "Terrorism, Hate Crime, and Antigovernment Violence: A Review of the Research," in *The Future of Terrorism: Violence in the New Millennium*. Harvey W. Kushner, ed. London: SAGE, pp. 59–96.
- Hassan, Nasra.** 2001. "An Arsenal of Believers." *New Yorker*, November 19, pp. 36–41.
- Hovland, C. and R. Sears.** 1940. "Minor Studies of Aggression: Correlation of Lynchings with Economic Indices." *Journal of Psychology*. 9, pp. 301–10.
- Hurvitz, Eli.** 1998. "The Military Wing of Hizballah: A Social Profile." Masters Thesis submitted to the School of History, Tel Aviv University, published by the Moshe Dayan Centre for Middle Eastern Studies, Tel Aviv University; available at (www.dayan.org/frameres.htm).
- Jefferson, Philip and Frederic L. Pryor.** 1999. "On the Geography of Hate." *Economics Letters*. December, 65:3, pp. 389–95.
- Keller, Bill.** 2002. "Springtime for Saddam." *New York Times*. April 6, p. A15.
- Kressel, Neil J.** 1996. *Mass Hate: The Global Rise of Genocide and Terror*. New York: Plenum Press.
- Krueger, Alan.** 2003. "Poverty Doesn't Create Terrorists." *New York Times*. May 29, Business section.
- Krueger, Alan and Jörn-Steffen Pischke.** 1997. "A Statistical Analysis of Crime Against Foreigners in Unified Germany." *Journal of Human Resources*. Winter, 32:1, pp. 182–209.
- Landes, William.** 1978. "An Economic Study of U.S. Aircraft Hijackings, 1961–1976." *Journal of Law and Economics*. 21:1, pp. 1–31.
- Lerner, Daniel.** 1958. *The Passing of Traditional Society*. Glencoe, Ill.: Free Press.

- Manski, Charles and Steven Lerner.** 1977. "The Estimation of Choice Probabilities from Choice Base Samples." *Econometrica*. November, 45:8, pp. 1977–988.
- Miguel, Edward.** 2003. "Economic Shocks and Civil Conflict: An Instrumental Variables Approach." Mimeo, U.C. Berkeley, June.
- Neff, Donald.** 1999. "Jewish Terrorists Try to Assassinate Three Palestinian Mayors." *Washington Report on Middle East Affairs*. June, pp. 87–88.
- Oster, Emily.** 2004. "Witchcraft, Weather and Economic Growth in Medieval Europe." *Journal of Economic Perspectives*. Forthcoming.
- Piehl, Anne Morrison.** 1998. "Economic Conditions, Work, and Crime," in *Handbook on Crime and Punishment*. Michael Tonry, ed. Oxford: Oxford University Press, pp. 302–19.
- Piazza, James A.** 2003. "Rooted in Poverty?: Terrorism, Poor Economic Development and Social Change." Mimeo, Meredith College, Raleigh, North Carolina.
- Priest, Dana and Douglas Farah.** 2002. "Hezbollah, Al Qaeda Team Up." *Washington Post*. June 30, p. 23.
- Raper, Arthur.** 1969 [1933]. *The Tragedy of Lynching*. Montclair, N.J.: Patterson Smith; Reprint series in Criminology, Law Enforcement, and Social Problems, Publication No. 25.
- Roy, A. D.** 1951. "Some Thoughts on the Distribution of Earnings." *Oxford Economic Papers*. 3, pp. 135–46.
- Rubin, Donald.** 1987. *Multiple Imputation for Nonresponse in Surveys*. New York: John Wiley.
- Ruhm, Christopher.** 2000. "Are Recessions Good for Your Health?" *Quarterly Journal of Economics*. May, 115:2, pp. 617–50.
- Russell, Charles and Bowman Miller.** 1983. "Profile of a Terrorist," in *Perspectives on Terrorism*. Wilmington, Del.: Scholarly Resources Inc., pp. 45–60.
- Sandler, Todd and Walter Enders.** 2001. "An Economic Perspective on Transnational Terrorism." Mimeo, University of Southern California, December.
- Sandler, Todd, John T. Tschirhart and Jon Cauley.** 1983. "A Theoretical Analysis of Transnational Terrorism." *American Political Science Review*. March, 77:1, pp. 36–54.
- Segal, Haggai.** 1988. *Dear Brothers—The West Bank Jewish Underground*. New York : Beit-Shamai Publications, Inc.
- Sokolsky, Richard and Joseph McMillan.** 2002. "Foreign Aid in our Own Defense." *New York Times*. February 12, Op-ed page.
- Stern, Jessica.** 2000. "Pakistan's Jihad Culture." *Foreign Affairs*. November/December, 79:6, pp. 115–26.
- Taylor, Maxwell.** 1988. *The Terrorist*. London: Brassey's Defence Publishers.
- Tyson, Laura.** 2001. "It's Time to Step Up the Global War on Poverty." *Business Week*, December 3, p. 26.