

# Poverty, Political Freedom, and the Roots of Terrorism

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After the 9/11 attacks, much of the political and media debate on terrorism has focused on prevention policies. The widespread view that poverty creates terrorism has dominated much of this debate (see Joseph Kahn and Tim Weiner, 2002). This is hardly surprising. After all, the notion that poverty generates terrorism is consistent with the results of most of the literature on the economics of conflicts. In particular, the results in Alberto Alesina et al. (1996) suggest that poor economic conditions increase the probability of political coups. Paul Collier and Anke Hoeffler (2004) show that economic variables are powerful predictors of civil wars, while political variables have low explanatory power. Edward Miguel et al. (2004) show that, for a sample of African countries, negative exogenous shocks in economic growth increase the likelihood of civil conflict. Because terrorism is a manifestation of political conflict, these results seem to indicate that poverty and adverse economic conditions may play an important role explaining terrorism.

Recent empirical studies, however, have challenged the view that poverty creates terrorism. Using U.S. State Department data on transnational terrorist attacks, Alan B. Krueger and David D. Laitin (2003) and James A. Piazza (2004) find no evidence suggesting poverty may generate terrorism. The results in Krueger and Laitin (2003) suggest that among countries with similar levels of civil liberties, poor countries do not generate more terrorism than rich countries. Conversely, among countries with similar levels of civil liberties, richer countries seem to be preferred targets for transnational terrorist attacks.<sup>1</sup>

While the results in Krueger and Laitin (2003) and Piazza (2004) are extremely suggestive, these studies may suffer, in principle, from some potential shortcomings. First, the U.S. State Department data cover only events of international terrorism—those that involve citizens or property of more than one country. International terrorism, however, represents only a small fraction of terrorist activity. For example, for the year 2003, the MIPT Terrorism Knowledge Base (2004) reports 1,536 events of domestic terrorism, but only 240 events of international terrorism. The difference between reported domestic and international terrorist events is large, in spite of the probable fact that international terrorist incidents tend to have more visibility. While it is clearly interesting to elucidate the impact of potential policy interventions on the level of international terrorism, the effects of such policies on the overall amount of terrorism, both domestic and of foreign origin, is of obvious importance. The determinants of international terrorism, however, are not necessarily informative about the determinants of domestic terrorism. Much of modern-day transnational terrorism seems to generate from grievances against rich countries. In some cases terrorist groups may decide to attack property or nationals of rich countries in order to gain international publicity. As a result, transnational terrorism may predominantly affect rich countries. The same is not necessarily true for domestic terrorism.<sup>2</sup> Also, the adequacy of U.S. State Department data to measure terrorism has come under attack. Krueger and Laitin (2004) have questioned the quality of this dataset due to the ambiguity of the definitions used for the variables in the dataset, and the lack of transparency in the process through which this dataset is assembled. Finally, because ter-

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<sup>1</sup> In addition, for the Israeli-Palestinian conflict Krueger and Jitka Malečková (2003) show that participants in polit-

ically motivated violence tend to originate, if anywhere, from relatively affluent sectors of the population.

<sup>2</sup> Todd Sandler (2003) describes the differences in motivation and targets between international and domestic terrorism.

rorism may affect economic prosperity (see, e.g., Abadie and Javier Gardeazabal, 2003, for a case study of terrorism effects on economic outcomes; Bruno S. Frey, 2004, provides a survey of this literature), the observed correlation between terrorism and national income cannot be interpreted as a measure of the magnitude of the effect of economic variables on terrorism. Because terrorism adversely affects economic prosperity, ordinary regression estimates of the effect of economic development on terrorism include a negative bias.

Most studies on the causes and effects of terrorism (for example, Krueger and Laitin, 2003; Piazza, 2003) have relied on measures of terrorist casualties or terrorist incidents as proxies for the level of terrorist risk. Frey (2004) and others have questioned the quality and adequacy of the available data on terrorist casualties and incidents. In this article, I use a new dataset on the intensity of country-level terrorist risk to study linkages between terrorism and economic and political variables. The measure of terrorism intensity I use in this article comes from an international risk agency. Risk ratings are used by international investors to evaluate specific types of country risks. Terrorist risk ratings have obvious limitations. They provide only a summary measure of an intrinsically complex phenomenon. However, they have the advantage of reflecting the total amount of terrorist risk for every country in the world. To my knowledge, this article represents the first attempt to measure the determinants of terrorism using risk rating data.

The analysis of risk rating data presented here validates the findings in Krueger and Laitin (2003) and Piazza (2004), and produces a number of new results. The empirical results reported here show that terrorist risk is not significantly higher for poorer countries, once the effects of other country-specific characteristics, such as the level of political freedom, are taken into account. In contrast with the results for civil wars in Collier and Hoeffler (2004), lack of political freedom is shown to explain terrorism, and it does so in a nonmonotonic way. Countries with intermediate levels of political freedom are shown to be more prone to terrorism than countries with high levels of political freedom or countries with highly authoritarian regimes. This result suggests, as ex-

perienced recently in Iraq and previously in Spain and Russia, transitions from an authoritarian regime to a democracy may be accompanied by temporary increases in terrorism.<sup>3</sup> Finally, the results of this article suggest geographic factors may be important to sustain terrorism. In particular, variables that measure average elevation, tropical weather, and country area are powerful predictors of terrorism. The results obtained using ordinary regression become even sharper when instrumental variable methods are used to correct for reverse causation.

### I. Data

Table 1 contains definitions of the variables in the dataset and descriptive statistics. The measure of terrorist risk I use is the World Market Research Center's Global Terrorism Index (WMRC-GTI). The WMRC-GTI seems to be the first attempt to measure, globally, the risk from terrorist attacks at a country level. It assesses the risk of terrorism in 186 countries and against these countries' interests abroad for 2003–2004. The WMRC-GTI encompasses five factors forecasting motivation, presence, scale, efficacy, and prevention of terrorism. The potential range of the WMRC-GTI is 10–100, with higher values representing higher exposure to terrorism.

To measure poverty, I use data on country GDP per capita. In some regressions, instead of GDP per capita, I use the United Nations Human Development Index (HDI) or the country Gini Index. The HDI measures the well-being of the inhabitants of a country along three different dimensions: health, education, and income. It is constructed using country data on life expectancy at birth, adult literacy, school enrollment ratio, and GDP per capita. The HDI has a 0–1 potential range. The Gini Index, a widely used measure of income or consumption inequality, has a potential range of 0–100, a value of zero meaning perfect equality.

The measure of (absence of) political freedom is the Freedom House's Political Rights

<sup>3</sup> In Spain, for example, the number of deaths caused by terrorism increased sharply in the late 1970s, with the beginning of the democratic transition, and decreased gradually afterward. See Abadie and Gardeazabal (2003).

TABLE 1—DESCRIPTIVE STATISTICS

Variable	Definition	Obs.	Mean	S.D.
Terrorism				
Terrorist risk	WMRC Global Terrorism Index 2003/04	186	40.13	19.82
Economic variables				
GDP per capita	GDP per capita for 2003 in current USD	156	6,971	11,541
Human Development Index	U.N. Human Development Index, 2002	171	0.70	0.18
Gini Index	Gini Index on income or consumption, various years	122	40.61	10.17
Political freedom				
Lack of political rights	Freedom House's Index of Political Rights, 2003	176	3.5	2.15
Fractionalization				
Linguistic	Linguistic fractionalization	174	0.39	0.28
Ethnic	Ethnic fractionalization	175	0.45	0.26
Religious	Religious fractionalization	182	0.43	0.23
Geography and climate				
Country area	Country area in million square kilometers	161	0.81	2.03
Elevation	Average elevation above sea in hundred meters	161	6.19	5.57
Tropical area	Fraction of country area in tropical weather	161	0.31	0.41
Landlock	Fraction of country area beyond 100 km of ice-free coast	161	0.64	0.35

Index (PRI). In contrast with Krueger and Laitin (2003), I use a measure of political rights rather than a measure of civil liberties to describe the political climate of a country because endogeneity may be a more serious concern for the latter, if countries restrict civil liberties in response to terrorism. Given that these two variables are highly collinear, the results of the empirical section do not depend on which one is used in the regressions. The PRI has a 1–7 range, with high values representing absence of political rights.

Some regression specifications include indices for linguistic, ethnic, and religious fractionalization. These indices range between zero and one; they reflect the probability that two individuals chosen from the same country at random belong to different linguistic, ethnic, or religious groups. Geographic variables include measures of country land area, average elevation, fraction of the country area in tropical climate, and landlock. (See Abadie, 2004, for information on data sources.)

## II. Empirical Results

### A. OLS Regressions

In this section, I use country-level data for 2003–2004 to estimate the following basic specification.

$$(1) \ln(\text{terrorist risk}) = \alpha + \beta \ln(\text{GDP per capita}) + \mathbf{X}'\boldsymbol{\gamma} + \varepsilon.$$

I use the WMRC-GTI to measure terrorist risk at the country level. The vector  $\mathbf{X}$  includes other potential predictors of terrorism such as measures of political freedom, fractionalization, country geography, and climate.

Table 2, columns 1–4, reports Ordinary Least Squares (OLS) estimates of the coefficients in equation (1). The coefficient on log GDP per capita in column 1 shows that a 1-percent increase in per capita GDP is associated with a 0.17-percent reduction in terrorism, as meas-

TABLE 2—TERRORISM AND COUNTRY CHARACTERISTICS  
(OLS with heteroskedasticity-robust standard errors)

Dependent variable: log of WMRC Global Terrorism Index						
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Economic variables</b>						
Log GDP per capita	-0.168** (0.034)	-0.095** (0.043)	-0.051 (0.046)	-0.040 (0.049)		
Human Development Index					-0.061 (0.452)	
Gini Index						-0.008 (0.005)
<b>Political variables</b>						
Lack of political rights		0.297** (0.107)	0.229** (0.114)	0.198* (0.114)	0.253** (0.112)	0.233** (0.109)
Lack of political rights squared		-0.030** (0.013)	-0.021 (0.013)	-0.020 (0.013)	-0.027** (0.013)	-0.026* (0.013)
<b>Fractionalization</b>						
Linguistic			0.421* (0.245)	0.356* (0.185)	0.316* (0.181)	0.402** (0.188)
Ethnic			0.213 (0.253)			
Religious			-0.103 (0.166)			
<b>Geography and climate</b>						
Country area				0.045** (0.013)	0.046** (0.012)	0.043** (0.014)
Elevation				0.015** (0.006)	0.020** (0.006)	0.021** (0.006)
Tropical area (fraction)				0.312** (0.114)	0.306** (0.114)	0.378** (0.126)
R-squared	0.21	0.27	0.32	0.37	0.33	0.43
Number of observations	156	154	144	136	146	118

Notes: All specifications include an exhaustive set of regional dummies for North America and Western Europe, Latin America and the Caribbean, Middle East and North Africa, Sub-Saharan Africa, Eastern Europe and Central Asia, and rest of Asia and Pacific. Heteroskedasticity-robust standard errors are shown in parentheses.

\* Statistical significance at the 10-percent level.

\*\* Statistical significance at the 5-percent level.

ured by the WMRC-GTI. Column 2 shows that this negative association decreases but remains significant when the PRI is introduced in the regression. The effect of political freedom on terrorism is significantly nonlinear.

In column 3, I include in the regression measures of linguistic, ethnic, and religious fractionalization. Only the measure of linguistic fractionalization shows a significant association with terrorism. Conditional on income, political freedom, and linguistic fractionalization, ethnic and religious fractionalization are not significantly associated with terrorist risk. In column 3, where the fractionalization indices are included in the regression, the coefficient of log GDP per capita remains negative, but it becomes statistically indistinguishable from zero at conventional test levels.

It is well-known that certain geographic characteristics may favor terrorist activities. Areas of difficult access offer safe haven to terrorist groups, facilitate training, and provide funding through other illegal activities, such as the production and trafficking of cocaine and opiates. Failure to eradicate terrorism in some areas of the world has often been attributed to geographic barriers, such as mountainous terrain (e.g., Afghanistan) or tropical jungle (e.g., Colombia). In addition, large countries tend to generate centrifugal pressures, include disaffected minorities, and accumulate grievances.<sup>4</sup>

<sup>4</sup> See also Fearon and Laitin (2003), and Collier and Hoeffler (2004), for a discussion of how certain geographic characteristics may favor civil wars.

To control for the effect of geographic factors on terrorism, column 4 includes three additional variables in the regression: total country area, average elevation, and proportion of the country area in tropical weather. Because geographic factors are also believed to affect economic development (see John L. Gallup et al., 1998), it is potentially important to correct for the confounding effect of these variables. Once geographic factors are included in the regression, the coefficient on per capita GDP decreases below its standard error in absolute value.

The regression results in columns 1–4 show that after controlling for other country characteristics, including the level of political rights, fractionalization, and geography, national income is not significantly associated with terrorism.<sup>5</sup>

Columns 5 and 6 report the coefficients for the same regression as column 4, but this time using the HDI and the Gini Index, respectively, as explanatory variables instead of log per capita GDP. The results show that once other country characteristics are included in the regression, human development and inequality do not show a significant correlation with terrorism, at conventional test levels.

#### B. IV Regressions

The regression results in the previous section describe correlations between terrorism and other country characteristics, such as economic factors. It would be erroneous, however, to interpret those correlations as measures of the effect of economic variables on terrorism. Of course, the reason is that not only economic factors may cause terrorism, but also terrorism may affect economic prosperity.

In this section, I use variation in country income induced by geographic landlock to estimate the effect of country income on terrorism. Landlock (the fraction of a country area distant to sea access) has been shown to predict economic growth (see Gallup et al., 1998). The identification assumption adopted in this section is that landlock does not cause terrorism di-

rectly; that is, landlock is related to terrorism only through its effect on national income. If this assumption holds, variation in national income induced by country landlock can be treated as exogenous and used to assess the effect of an exogenous change in income on the level of terrorism.

Columns 1–4 of Table 3 report instrumental variables estimates of the effect of national income on terrorism. Qualitative results remain virtually unchanged relative to Table 2. The magnitude of some of the coefficients change considerably, however. In contrast with Table 2, the instrumental variables coefficient on log per capita GDP becomes positive in columns 3 and 4 where the fractionalization and geographic variables are included in the regression, respectively. Nevertheless, this coefficient remains nonsignificant at conventional test levels. Also, the magnitude of the coefficients on the political freedom variables increases considerably. The results in column 4 show the effect of political variables is significantly nonlinear once the effect of geographic factors is taken into account.

Figure 1 plots the estimated effect of lack of political rights on terrorism with the other variables evaluated at their means. Over most of the range of the political rights index, lower levels of political rights are associated with higher levels of terrorism. However, highly authoritarian countries (political rights index equal to 7) experience lower terrorist risk than countries in some intermediate range of political rights (political rights index equal to 4–6). The non-monotonic nature of the relationship between political rights and terrorism can be interpreted in different ways. On the one hand, the repressive practices commonly adopted by autocratic regimes to eliminate political dissent may help keep terrorism at bay.<sup>6</sup> On the other hand, intermediate levels of political freedom are often experienced during times of political transitions, when governments are weak, and political instability is elevated, so conditions are favorable for the appearance of terrorism.<sup>7</sup>

As with the OLS regression results in Table 2, column 5 reports the estimated coeffi-

<sup>5</sup> Beside the results reported here, I estimated additional specifications which included measures of other potential determinants of terrorism (see Abadie, 2004). None of these additional variables produced significant coefficients at conventional test levels.

<sup>6</sup> The country with the lowest value of the WMRC-GTI 2003–2004 is North Korea, a highly autocratic regime.

<sup>7</sup> See Fearon and Laitin (2003) for a discussion of the same issues in relation to civil wars.

TABLE 3—TERRORISM AND COUNTRY CHARACTERISTICS  
(IV with heteroskedasticity-robust standard errors)

Dependent variable: log of WMRC Global Terrorism Index					
	(1)	(2)	(3)	(4)	(5)
Economic variables					
Log GDP per capita	-0.217 (0.152)	-0.117 (0.217)	0.063 (0.221)	0.199 (0.191)	
Human Development Index					1.271 (1.589)
Political variables					
Lack of political rights		0.241 (0.288)	0.388 (0.258)	0.468** (0.223)	0.394** (0.181)
Lack of political rights squared		-0.024 (0.029)	-0.037 (0.026)	-0.046** (0.023)	-0.042** (0.020)
Fractionalization					
Linguistic			0.502* (0.260)	0.515* (0.220)	0.396** (0.201)
Ethnic			0.065 (0.238)		
Religious			-0.065 (0.197)		
Geography and climate					
Country area				0.033** (0.015)	0.034** (0.014)
Elevation				0.022** (0.008)	0.022** (0.006)
Tropical area (fraction)				0.346** (0.133)	0.287** (0.119)
Number of observations	141	140	135	136	146

*Notes:* Economic variables are treated as endogenous variables and instrumented with landlock. All specifications include an exhaustive set of regional dummies for North America and Western Europe, Latin America and the Caribbean, Middle East and North Africa, Sub-Saharan Africa, Eastern Europe and Central Asia, and rest of Asia and Pacific. Heteroskedasticity-robust standard errors are shown in parentheses.

\* Statistical significance at the 10-percent level.

\*\* Statistical significance at the 5-percent level.

cients for a specification that uses the HDI instead of per capita income as an explanatory variable. The HDI is also instrumented with landlock.<sup>8</sup> Similar to the results in the previous column, the instrumental variables coefficient on the HDI is positive but not statistically different from zero at conventional test levels.

As a robustness exercise, I repeated the regressions in Tables 2 and 3 using as the dependent variable the number of deaths caused by

terrorism per year (as reported by the MIPT database) per million population for the period 1998–2004. The use of this alternative dependent variable produced very similar results (not reported here).

### III. Summary and Conclusions

Using a new dataset on terrorist risk worldwide, I fail to find a significant association between terrorism and economic variables such as income once the effect of other country characteristics is taken into account. Instrumental variables estimates, which are used to correct for reverse causation, produce the same qualitative results. The estimates suggest that political freedom has a nonmonotonic effect on terrorism. This result is consistent with the observed increase in terrorism for countries in transition from authoritarian

<sup>8</sup> Table 3 does not include a specification with the Gini Index treated as an endogenous explanatory variable. Arguably, country inequality is affected to a lesser extent by reverse causation than per capita GDP or human development. In addition while landlock is believed to affect per capita income and human development, to my knowledge a similar effect has not been documented for inequality. In fact, while the landlock variable produces decent first stages for per capita income and human development, the first-stage *F*-statistic on landlock, with the Gini Index as the endogenous explanatory variable, is 1.22.

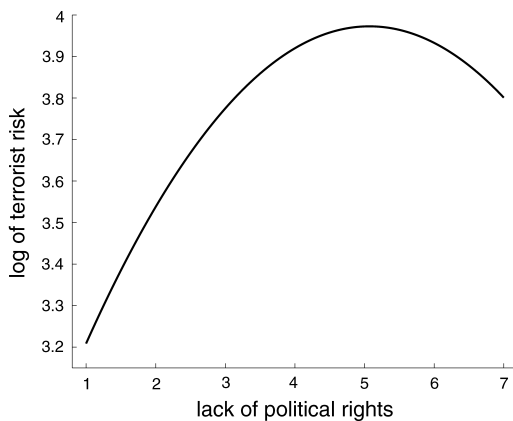


FIGURE 1. TERRORISM AND POLITICAL FREEDOM

regimes to democracies. The results also show that certain geographic characteristics may favor the presence of terrorism.

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