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Victim Countries of Transnational Terrorism: An Empirical Characteristics Analysis

Levan Elbakidze[1*] and Yanhong Jin[2]

This study empirically investigates the association between country-level socioeconomic characteristics and risk of being victimized in transnational terrorism events. We find that a country's annual financial contribution to the U.N. general operating budget has a positive association with the frequency of being victimized in transnational terrorism events. In addition, per capita GDP, political freedom, and openness to trade are nonlinearly related to the frequency of being victimized in transnational terrorism events.

KEY WORDS: GDP; transnational terrorism; United Nations; victims

1. INTRODUCTION

Debates over the roots of transnational terrorism and best strategies for prevention and preparedness have been extensive in recent years. There have been numerous studies published on the topic of transnational terrorism and strategies to suppress it.[1–8] However, the literature is focused primarily on the behavior of perpetrators and characteristics of the countries from which terrorism incidents and perpetrators originate. Limited attention has been devoted to the understanding of characteristics of the victim countries.[9,10] Such analysis may provide valuable information for studying targeting patterns of transnational terrorism incidents.

It has been established that terrorists behave as rational decisionmakers as they utilize their limited resources to inflict maximum fear and damages[6,11] as a tactic to achieve their ultimate objective. As a result, counterterrorism actions ought to be designed taking into account rationality of the adversary. For example, preventative measures like metal detectors are ineffective in preventing terrorism acts in the long run as terrorists switch to alternative attack modes and/or substitute their efforts to less protected targets.[2,6] Furthermore, increasing national security measures may reduce terrorist attacks within the country, but the number of attacks against nationals of the country abroad or against other countries may escalate.[3] The transnational terrorist attacks in New York (September 11, 2001), Madrid (March 11, 2004), and London (July 7 and 21, 2005) demonstrate that terrorists seek less protected targets as opposed to highly protected public officials and structures.[12] The ability of the terrorists to adjust their strategies (e.g., target countries and attack modes) suggests that the fight against transnational terrorism needs international coordination and ought to rely on policies and technologies designed to thwart all forms of terrorist activities. For example, eliminating sources of financial support would be immune to the substitution phenomenon. Although the final academic verdict regarding the role of education and economic development is still pending, Azam and Thelen[13] recommend use of foreign aid to support education as a strategy to reduce supply of terrorist attacks.

[1]University of Idaho, Moscow, ID, USA.
[2]Rutgers, The State University of New Jersey, New Brunswick, NJ, USA.
*Seniority of authorship is shared. Address correspondence to Levan Elbakidze, PO Box 442334, 606 Rayburn St., Moscos, ID 83844-2334, USA; lelbakidze@uidoaho.edu.

This study offers its contribution to the literature by investigating the association between country-level characteristics and the risk of being victimized in transnational terrorism incidents. In particular, we explore the roles of individual country's involvement in the United Nations, measured by its annual contributions to the U.N. regular operating budget; the effect of participation in global economy, measured by openness of trade (the ratio of exports and imports to GDP), and per capita GDP and other characteristics. There are only a few studies of which we are aware that utilize the data on financial contributions to the United Nations.[14–16] These studies examine distribution and public good aspects of financial contributions to the U.N. Peacekeeping Operations across contributing countries.

We find that annual financial contributions to the U.N. regular operating budget have a positive linear relationship, while participation in global economy has a nonlinear U-shaped relationship with frequency of victimization. Other variables found to have statistically significant relationship with frequency of victimization include political freedom, per capita GDP, and unemployment rate. These relationships are not necessarily causal. Common covariates like international activities and policies, which may be enabled by economic variables included in this study and that may have a significant role in motivating terrorist campaigns, may be at play. Furthermore, these findings should not be interpreted as suggestions for either disengagement with U.N. activities or global economy. We do not intend to forecast how terrorist groups will act or which countries' citizens will be attacked. Rather, the intent of uncovering these relationships is to raise awareness and spur further investigations. For example, future studies should empirically examine how foreign policy, as a possible covariate with socioeconomic variables used in this study, may affect national security and risk of being targeted in transnational terrorism. Future studies should, among other issues, focus on: (a) identifying specific international activities that might be correlated with attacks by transnational terrorists; and (b) identifying foreign policy mechanisms that could be employed to counterbalance the positive effect of activities identified in (a).

2. RELATED LITERATURE

The economic literature studying roots of terrorist activities is extensive and various explanations have been proposed and empirically tested. The long list of studies includes, but certainly is not limited to, numerous publications by Todd Sandler and Ian Krueger, as well as Abadie,[17] Blomberg *et al*.,[18] Reich,[19] Bueno de Mesquita,[20] Pape,[21] Piazza,[22] Li,[23] and many others. Some have found socioeconomic variables to have significant roles in fostering political violence and terrorism,[8,13,24–28] while others find no evidence to support such relationships.[17,22,29,30] In fact, while some have suggested a negative relationship between economic standard of living and participation in terrorism,[8,23,26,28] Berrebi[31] detects a positive relationship between economic standard of living and participation in terrorism. This disagreement in literature has, to some degree, been addressed by Bueno de Mesquita.[20] Wulf *et al*.[8] propose that possible reasons why some developing countries might be supporting terrorism include ideological differences, past operations and policies of the developed countries, and unfavorable socioeconomic conditions.

Although there has been significant attention devoted to studying patterns of participation in terrorism acts, there has been limited attention devoted to examining the attributes of targeted/victimized countries and how terrorists select their targets/victims. Wulf *et al*.[8] and Barros *et al*.[28] suggest that target selection decisions by the perpetrators may follow patterns reflective of characteristics of both victims' and perpetrators' countries of origin. Gassebner and Luechinger[9] show that being victimized in transnational terrorism events is positively correlated with GDP per capita, population, OECD membership, religious variables, and military conflicts; and negatively correlated with economic freedom and exports. Case-specific studies have been done regarding specific targets and locations of incidents. For example, Barros *et al*. [32] use the ITERATE (International Terrorism: Attributes of Terrorist Events) data set and conclude that terrorist groups disproportionately target U.S. citizens in Europe, revealing their hatred for the United States. Barros *et al*.[28] show that U.S. citizens are more likely to be attacked in countries characterized by poverty and low level of political and economic freedom. Barros and Proenca[33] also use the ITERATE data set and find that Islamic terrorist attacks are more prevalent in Switzerland, France, and Italy, and less prevalent in Germany, the United Kingdom, and the United States. Sobek and Braithwaite[34] find that American global dominance in the realm of political, military, and diplomatic matters has a positive effect

on the number of terrorism attacks against its global interests.

Kurrild-Klitgaard *et al*.[35] find that the extent of civil rights is negatively related to the probability that transnational terrorism will occur in a country, and that the extent of political liberties exhibits a nonlinear relationship with respect to the probability of transnational terrorism occurrence within a country. They also find that the more trade oriented is the society the smaller the probability that this society will experience or produce transnational terrorism. However, they find no statistically significant relationship between transnational terrorism and inequality, economic growth, education, poverty, and religious composition.

As rational decisionmakers terrorists follow a strategic logic in coercing liberal democracies to yield to their demands and objectives.[21] In the context of international conflicts, Gelpi and Grieco[36] find that although democracies are effective crisis bargainers and combatants, they are also disproportionately targeted in international conflicts. The authors attribute this to frequent turnover of leadership and consequent lack of leadership experience in democratic countries relative to autocratic states. This logic may also be applicable for the case of transnational terrorism, although strategic objectives may vary across state and nonstate sponsored conflicts. Eubank and Weinberg[10] find a positive relationship between degree of democracy and frequency of being victimized. Krueger[37] also argues that democratic countries have a higher likelihood of becoming victims of terrorism than autocratic countries because democratic country leaders are more responsive than autocratic leaders to public opinion, making terrorism more effective in democracies. Similarly, Sandler[5] finds a positive correlation between democracy and the levels of terrorist activities, suggesting that terrorists may prefer to act in countries where their attacks will be reported widely. These arguments are consistent with Pape,[21] who argues that suicide terrorism has been increasing in frequency at least in part because terrorists have learned that terrorism pays as democracies appear to be more responsive to terrorist activities and demands.

Whether or not transnational terrorists may target victim countries in response to victim countries' roles in certain international political and/or economic initiatives remains to be studied. Aside from terrorism, Kauffmann[38] studies the determinants of the risks of civil wars and demonstrates that International Financial Institutions' Structural Adjustment Programs may, through their temporary dismantlement of social safety nets, have a positive effect on social and political instability. As a result, member countries of International Financial Institutions may be targeted by resistance groups that are unhappy with instability caused by structural adjustment programs, which can potentially inspire international terrorism activities. On the other hand, groups that are marginalized within the current socioeconomic status quo or development directions, perhaps in part supported by international institutions, and are unable to influence the political and institutional situation, may resort to terrorist activities to increase their voice in the economy.[18] As suggested by Wulf *et al*.,[8] in addition to ideological differences and unfavorable socioeconomic conditions, possible reasons why some developing countries might produce transnational terrorism acts can include past operations and policies of the developed countries.

Previous literature is sparse about the relationship between country-specific socioeconomic characteristics, involvement in international initiatives, and frequencies of being victimized in transnational terrorism incidents.[9] We explicitly examine the relationship between the frequency of victim countries' citizens being victimized in transnational terrorism incidents and socioeconomic characteristics like per capita GDP, integration in global economy, economic and political freedoms, education, unemployment, and extent of financial contribution to the United Nations.

3. DATA

Consistent with the data set used in this study, transnational terrorism in this article is "premeditated, threatened or actual use of force or violence to attain a political goal through fear, coercion, or intimidation" and when its ramifications transcend national boundaries through the nationality of the perpetrators and/or human or institutional victims, location of the incident, or mechanics of its resolution.[39] We use a panel data with terrorism victimization counts as a dependent variable and country-level social, economic and political attributes as independent variables. The terrorism victimization count is a by-country annual count of terrorism events, henceforth referred to as victimization counts, in which one or more citizens or interests of each country were documented as victims. For example, the 1997 observation for the United States is 39 (victimization count), meaning that in that year the data show 39

different events in which at least one U.S. citizen was a victim of a transnational terrorism act. These chronological data come from the ITERATE data set, which documents up to three nationalities of victims for each documented transnational terrorism incident, in addition to other attributes of the incidents like nationalities of perpetrators, locations of the incidents, types of attacks, and numbers of injured and killed. These data include transnational terrorism events only, excluding purely domestic terrorist acts. It has been extensively used in transnational terrorism literature.[1,2,9,10,28,33,36,40] Detailed description of this data set is available in Sandler and Enders,[40] Enders and Sandler,[1] and several other publications.[39,41–43]

Each country's annual financial contributions to the U.N. regular operating budget are directly collected from the United Nations. Using the World Bank database, we calculate the share of each country's total imports and exports relative to total GDP. The World Bank database also allows us to compile GDP per capita (measured in terms of constant 2000 U.S. dollars) and unemployment rate. We also include economic and political freedom indices. The index of economic freedom, which was obtained from the Heritage Foundation,[44] ranges from one, denoting an economic environment and policies that are most conducive to economic freedom, to five, denoting a set of policies that are least conducive to economic freedom. Freedom House[45] classifies countries being politically free, partly free, or not free based on the combination of political rights and civil liberty ratings. We also include education attainment variables obtained from the World Bank, which are ratios of labor force with the highest achieved education being primary, secondary, and tertiary levels.

If the World Bank database has a missing value for the relevant country-level variables, we rely on the countries' national statistics services where possible. In cases where some of the historical estimates were not available, particularly in the case of education and economic freedom variables, we used historically closest available data estimates to fill in the missing observations. For the countries like former Soviet Union republics, where unstable political and socioeconomic conditions preclude us from using the 1990s data as a proxy for the 1980s data, we reduced the time horizon of the data to start at the year when economic data start being available.

Matching the terrorism events data with the socioeconomic and political data, we are able to construct a data set consisting of 1,398 observations from 1980 to 2000 with 77 countries. Each observation reports the total number of transnational terrorist events in which at least one citizen of a particular country was documented as victim in a given year. Table I shows that the countries in the sample account for 75% of total documented terrorist events with only known nationalities of victims, and 70% of total documented incidents including unknown nationalities of victims in ITERATE data set. Furthermore, the sample covers 67% of total documented victimization counts (total number of documented victim nationalities as opposed to number of events) with known victim nationality only, and 47% of total victimization counts including unknown victim nationalities.

Fig. 1 illustrates global distribution of victimization counts in the study period. Out of 77 countries, 11 have more than 100 counts. In particular, U.S. citizens were documented as victims in 2,111 transnational terrorism incidents, followed by France (681) and Germany (245). Approximately 35.3% of observations in the sample have zero annual victimization counts and more than half (55.4%) have at least one but less than 10 counts.

Table II provides summary statistics of country attributes used as independent variables in the analysis. It suggests that the sample countries have a great degree of heterogeneity in terms of income, education levels, and economic and political freedom. A significant number of countries actively participate in the global economy, as suggested by the high levels of openness to trade. The average ratio of exports and imports to the overall GDP is 0.67, and the sum of total export and import exceeds GDP for 17% of the observations. The annual contributions to the U.N. regular operation budget are highly skewed, ranging from zero to 654 million with an average of 14 million and a median of approximately 1 million.

4. ESTIMATION METHODOLOGY

The Poisson regression model has been widely used in count data analysis.[46] However, the assumption in the Poisson distribution is that variance is equal to its mean, which can lead to inefficient estimates from Poisson regression if overdispersion is present in the count data.[46,47] Overdispersion can be caused by unobserved heterogeneity among individuals and/or by excess zeros in the dependent variable. Negative binomial (NB) regression models add an error term to the conditional mean of the Poisson distribution to model the unobserved heterogeneity.

Table I. Number of Terrorism Incidents and Victimization Counts

	No. of Terrorism Incidents		No. of Victimization Counts	
	With Known Nationalities Only	Including Unknown Nationality	With Known Nationalities Only	Including Unknown Nationalities
Documented				
During 1980s	4,281	4,651	5,296	9,670
During 1990s	3,255	3,511	4,847	5,025
Total	7,536	8,162	10,143	14,695
Study sample				
During 1980s	3,150		3,423	
During 1990s	2,500		3,447	
Total	5,650		6,870	

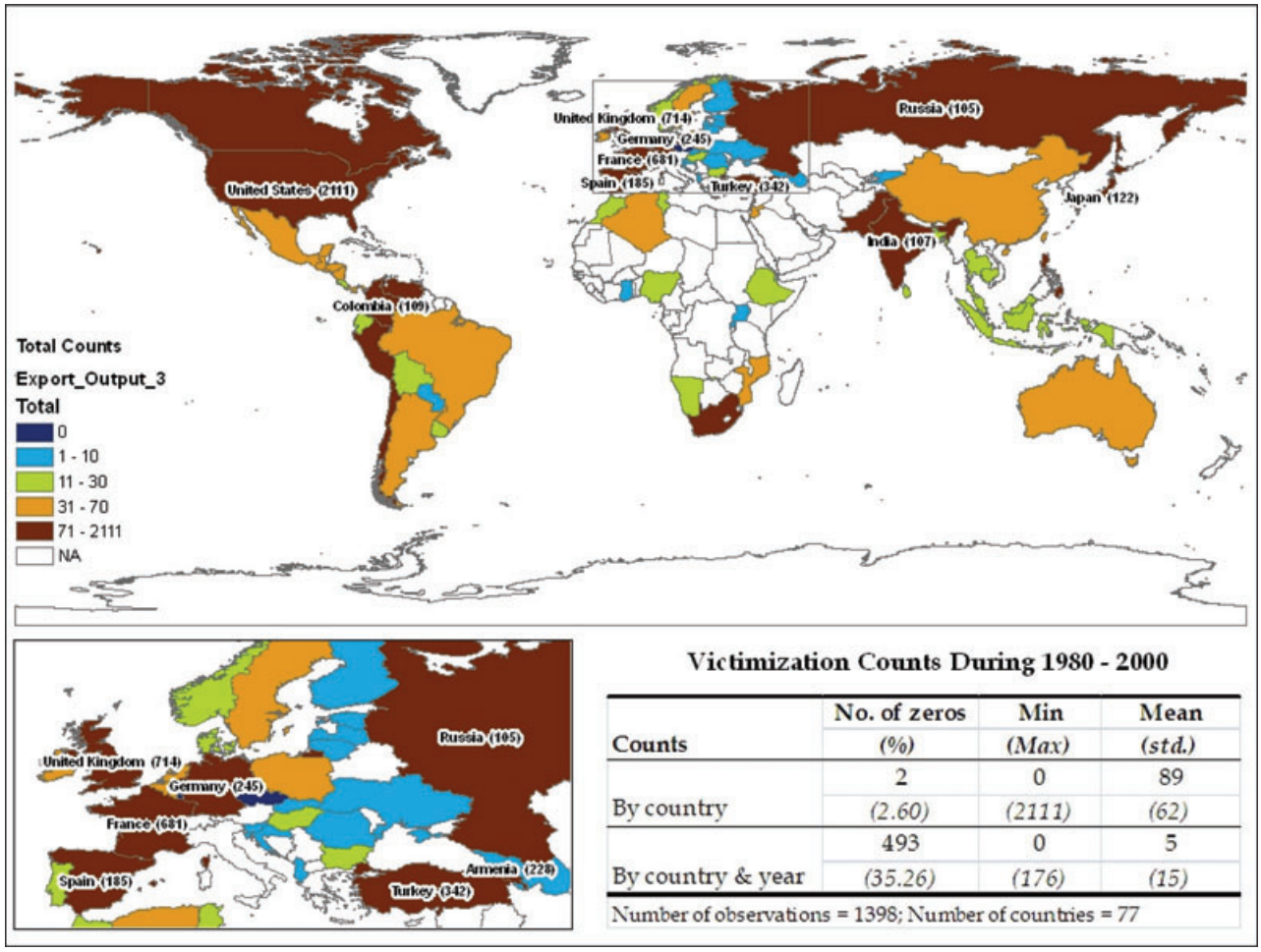

Fig. 1. Global distribution of transnational terrorism acts (1980–2000).

In addition, zero inflated models, like zero inflated Poisson (ZIP) and zero inflated negative binomial (ZINB), account for overdispersion resulting from excess zeros. In our study 35% of observations in the sample have zero counts (see Fig. 1), which raises a concern of excessive zeros in the dependent variable. Both ZIP and ZINB include a logit (or probit) regression for zero inflation, followed by the Poisson estimation for ZIP or the negative binomial estimation for ZINB. Such models have previously been

Table II. Summary Statistics of Independent Variables

Variable	Mean	*SD*	Min.	Max.
Measures of participation in global economy and politics				
Openness to trade (export+import)/GDP)	0.67	0.52	0.09	4.97
Contribution to U.N. operating budget (1 mill.)	14.00	47.06	0.00	654.78
Income and poverty measures				
GDP per capita ($1,000)	6.65	8.90	0.07	44.76
Education measures				
Ratio of labor force with the following education as the highest achieved				
Primary	0.38	0.18	0.03	0.85
Secondary	0.29	0.19	0.00	0.79
Tertiary	0.15	0.11	0.00	0.54
Economic and political freedom				
Economic freedom from one (best) to five (worst)	3.00	0.64	1.80	4.78
Political freedom (%)				
No freedom	48.50			
Partial freedom	12.23			
Freedom	39.27			
Other variables				
Unemployment rate	0.09	0.06	0.00	0.36
Population (1,000,000,000)	0.06	0.17	0.00	1.26

used in numerous count data analysis, including, but not limited to, terrorism-related investigations.[48,49]

To choose the most appropriate model among these four specifications, Poisson, NB, ZIP, and ZINB models, we use likelihood ratio tests to compare the nested models (Poisson vs. NB, and ZINB vs. ZIP) and Voung tests[50] for nonnested models (Poisson vs. ZIP, and NB vs. ZINB).

For each count data model we assume that the error terms are independent between countries, but correlated over time for observations with the same country. That is, the models take into account the possibility that we may have correlated error terms across observations within the same country.

5. ESTIMATION RESULTS AND DISCUSSIONS

We employ pooled cross-section as well as panel estimation techniques using the count data models. The pooled cross-section analyses allow us to further explore the excess zero problems by employing zero inflated count data modeling. On the other hand, panel estimation makes better use of the data structure.

5.1. Diagnostic Analyses

Table III presents estimation results from the pooled data. The likelihood ratio tests favor the ZINB model over the ZIP model ($\chi^2_{(1)} = 81.77$, p-value $= 0.00$) and the NB model over the Poisson model ($\chi^2_{(1)} = 7{,}906$, p-value $= 0.00$). Hence, the assumption implicit in the Poisson and ZIP models that the variance and mean of the distributions are equal seems to not hold up against the alternative specification allowing for difference between the variance and the mean. In addition, the Voung tests suggest that the ZINB model is more appropriate than the NB model ($Z = 5.76$, p-value $= 0.00$) and that the ZIP model is more appropriate than the Poisson model ($Z = 8.26$, p-value $= 0.00$). Hence, we conclude that annual victimization counts have excessive number of zero observations that do not follow Poisson or negative binomial data generation patterns. Overall, statistical results suggest that the ZINB specification seems to be the most appropriate among four models, which implies that both unobserved heterogeneity and excessive zeros contribute to overdispersion.

To fully explore the panel nature of the data set, we also estimate random and fixed effect Poisson models and present the panel estimation results in Table IV. The likelihood-ratio test, which compares the panel estimator with the pooled Poisson estimator, suggests that the panel estimation is more appropriate ($\chi^2_{(1)} = 4{,}324$, p-value $= 0.00$). The Hausman test rejects the null hypothesis that the individual-level effects are adequately modeled by a random-effects model ($\chi^2_{(11)} = 374$, p-value $= 0.00$) and favors the fixed effect model.

Table III. Pooled Estimation Results of Four Count Data Models

	Poisson Count	NB Count	ZIP[a]		ZINB[a]	
			Inflation	Count	Inflation	Count
U.N. contribution ($1,000,000)	0.004***	0.011***	−0.138**	0.004**	−0.459	0.010***
	(0.002)	(0.003)	(0.054)	(0.002)	(0.506)	(0.003)
Trade: (export + import)/GDP	−2.696***	−1.664***	5.133**	−2.313***	3.23	−1.466***
	(0.615)	(0.437)	(2.393)	(0.597)	(5.381)	(0.441)
Square term of trade	0.488***	0.287***	−3.272**	0.399***	−1.975	0.246***
	(0.127)	(0.093)	(1.612)	(0.124)	(2.434)	(0.095)
Economic freedom (1 = best; 5 = worst)	−0.593	−0.253	−0.577	−0.646	−1.289	−0.300
	(0.479)	(0.267)	(0.578)	(0.443)	(1.162)	(0.278)
Political freedom (base = partial freedom)						
Full freedom	−0.651**	−0.563***	−0.037	−0.493*	−1.319	−0.523**
	(0.286)	(0.217)	(0.315)	(0.282)	(1.714)	(0.223)
No freedom	−0.772**	−0.653***	−1.677***	−0.866***	−16.100***	−0.800***
	(0.340)	(0.246)	(0.512)	(0.291)	(2.255)	(0.228)
GDP per capita ($1,000)	0.126***	0.146***	0.078	0.092*	0.597	0.148***
	(0.052)	(0.046)	(0.116)	(0.051)	(0.562)	(0.044)
Square of GDP	−0.003**	−0.004***	−0.003	−0.002*	−0.012	−0.004***
	(0.002)	(0.001)	(0.003)	(0.001)	(0.010)	(0.001)
Unemployment rate	8.401	6.327***	2.861	8.386***	3.373	7.023***
	(2.578)	(1.823)	(3.121)	(2.040)	(4.062)	(1.658)
Labor ratio having the highest education of						
Elementary	0.350	0.021	−0.38	0.259	−2.299	0.116
	(0.927)	(0.700)	(1.376)	(0.923)	(2.845)	(0.693)
Secondary	−0.952	−0.191	1.092	1.106	−0.296	0.121
	(0.927)	(0.669)	(1.293)	(0.918)	(4.283)	(0.693)
Tertiary	−0.910	−0.316	−0.416	0.59	−30.408	−1.451
	(1.443)	(1.020)	(2.653)	(1.586)	(24.055)	(0.992)
Population (1,000,000)	2.299****	1.433***	1.152	2.156***	−93.073	1.444***
	(0.556)	(0.377)	(1.632)	(0.548)	(66.755)	(0.334)
Decade dummy	−0.101	−0.080	0.331	−0.068	2.023	−0.04
	(0.232)	(0.145)	(0.238)	(0.241)	(1.250)	(0.153)
Constant	2.480	1.761	−1.096	2.885	3.745	1.851
	(1.964)	(1.154)	(2.198)	(1.820)	(7.264)	(1.213)
N (cluster)	1,398 (77)	1,398 (77)	1,398 (77)		1,398 (77)	

Vuong tests: ZIP vs. Poisson: z-stat = 8.26; $p = 0.00$; ZINB vs. NB: z-stat = 5.76; $p = 0.00$.
Asterisks (*, **, ***) indicate 10%, 5%, and 1% significance levels. Figures in the parentheses are standard errors.
[a]The inflate equation that determines whether the count is zero in the ZIP and ZINB models. Thus, the estimated coefficients reflect the impact of the corresponding variable on the probability that a country will not be attacked by transnational terrorism.

We also validate the models by examining prediction accuracy. Fig. 2 shows the deviation of the mean predicted probabilities from the observed proportions for each count across four count data models. The figure shows that the Poisson regression overpredicts the number of zeros by more than 10%. The ZIP and NB models do much better at predicting zeros than the Poisson model, but are poor at predicting corresponding probabilities for count of one. The panel estimation provides the most accurate predictions. Overall, the panel estimation has the highest rate of correct predictions (34.19%), followed by the ZINB model (22.10%), ZIP (21.10%), Poisson (20.74%), and NB (19.24%) models.

5.2. Estimation Results

Table III presents estimation results of the Poisson, NB, ZIP, and ZINB regression models. Before we discuss the results, recall that Poisson and NB models only provide estimates of the effects of

Table IV. Estimation Results and Marginal Effects of Random Effects (RE) and Fixed Effects (FE) Poisson Models

	Coefficient		Marginal Effects	
	RE	FE	RE	FE
U.N. contribution ($1,000,000)	0.0006***	0.0004***	0.0006***	0.0005***
	(0.000)	(0.000)	(0.000)	(0.000)
Trade: (export+import)/GDP	−2.122***	−1.355***	−2.122***	−1.355***
	(0.204)	(0.236)	(0.204)	(0.236)
Square term of trade	0.391***	0.246***	0.391***	0.246***
	(0.046)	(0.052)	(0.046)	(0.052)
Economic freedom (1 = best; 5 = worst)	0.956***	1.557***	0.956***	1.557***
	(0.150)	(0.176)	(0.150)	(0.176)
Political freedom (base = partial freedom)				
Full freedom	−0.043	−0.036	−0.043	−0.036
	(0.065)	(0.066)	(0.065)	(0.066)
No freedom	−0.111	−0.107	−0.111	−0.107
	(0.099)	(0.099)	(0.099)	(0.099)
GDP per capita ($1,000)	0.170***	0.058**	0.170***	0.058**
	(0.023)	(0.029)	(0.023)	(0.029)
Square term of GDP	−0.004***	−0.002***	−0.004***	−0.002***
	(0.000)	(0.001)	0.000	(0.001)
Unemployment rate	1.066	0.436	1.066	0.436
	(0.658)	(0.685)	(0.658)	(0.685)
Labor ratio having the highest education of				
Elementary	0.334	0.282	0.334	0.282
	(0.408)	(0.417)	(0.408)	(0.417)
Secondary	−0.984**	−1.777***	−0.984**	−1.777***
	(0.484)	(0.519)	(0.484)	(0.519)
Tertiary	−3.908***	−4.990***	−3.908***	−4.990***
	(0.518)	(0.555)	(0.518)	(0.555)
Population (1,000,000)	1.206*	0.533	1.206*	0.533
	(0.730)	(0.796)	(0.730)	(0.796)
Alpha parameter	0.687***			
	(0.163)			
No. of observations	1,398	1,370		

Likelihood ratio test of alpha parameter where alpha is the variance of a gamma distribution of the exponential random effects: χ^2 (1) = 4,324; $p = 0.00$.
Hausman test: χ^2 (11) = 374; $p = 0.00$.
Asterisks (*, **, ***) indicate 10%, 5%, and 1% significance levels. Figures in the parentheses are standard errors.
[a]Twenty-eight observations of two countries are automatically dropped in the fixed effect model because of all zeros within the country.

independent variables on the frequency of being victimized in transnational terrorism events without taking into consideration potential data problems that can be caused by excessive number of observations with zero counts of being targeted. On the other hand, ZIP and ZINB models provide estimates of the effects on frequency as well as effects on the probability of having extra zero count observations that do not follow Poisson or negative binomial data-generating process, respectively. The Poisson and NB models as well as the count equations in the ZIP and ZINB models pertain to the correlation between independent variables and the frequency of being victimized in transnational terrorism incidents. Results from panel estimation are presented in Table IV. The marginal effects of the explanatory variables are presented in Table V for the pooled data estimation and in Table IV for panel estimation.

In all of the pooled and panel models, contributions to the U.N. general operating budget have a statistically significant but small positive correlation with the frequencies of being attacked.[3] One possible explanation for this result can be that

[3]Data on contributions to the U.N. general budget have some outliers with very large contributions from the United States, Japan, and Germany. As a robustness check, we reran the estimation while excluding a total of 42 observations where contribution to the United Nations is two standard deviations higher than the average U.N. contribution. The estimation results are qualitatively similar except that GDP per capita loses statistical significance.

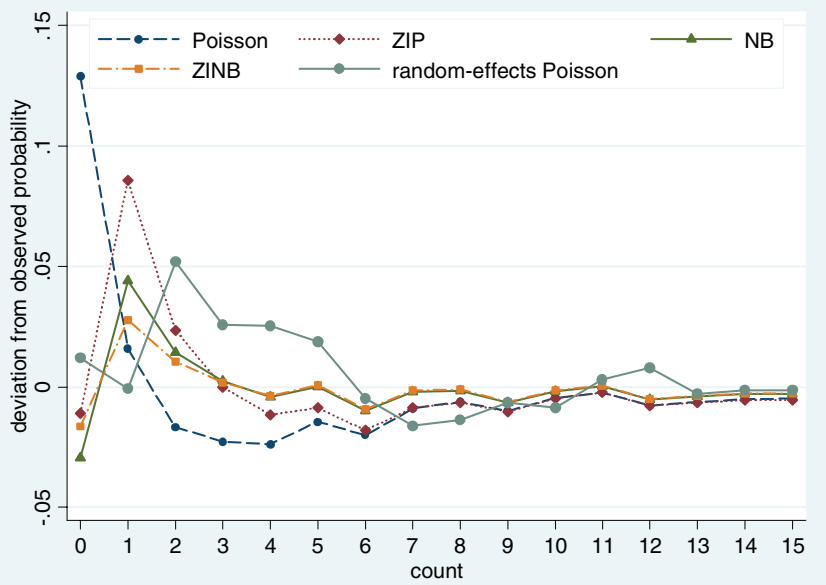

Fig. 2. Deviation of the predicted probabilities of each transnational terrorism count from the observed proportions for model.

Table V. The Marginal Effect of Explanatory Variables on the Terrorism Count

	Poisson	NB	ZIP	ZINB
U.N. contribution ($1,000,000)	0.008**	0.027***	0.028**	0.028***
	(0.004)	(0.009)	(0.011)	(0.007)
Trade: (export+import)/GDP	−5.813***	−4.027***	−7.220***	−4.002***
	(1.339)	(1.166)	(1.698)	(1.318)
Square term of trade	1.052***	0.696***	1.537***	0.671**
	(0.274)	(0.241)	(0.424)	(0.272)
Economic freedom (1 = best; 5 = worst)	−1.279	−0.613	−1.773	−0.819
	(1.045)	(0.664)	(1.278)	(0.783)
Political freedom (base = partial freedom)				
Full freedom	−1.414**	−1.368**	−1.405*	−1.432**
	(0.671)	(0.569)	(0.841)	(0.648)
No freedom	−1.275***	−1.257***	−1.762***	−1.658***
	(0.470)	(0.439)	(0.571)	(0.450)
GDP per capita ($1,000)	0.273**	0.352***	0.253*	0.404***
	(0.120)	(0.119)	(0.143)	(0.129)
Square term of GDP	−0.007*	−0.010***	−0.007	−0.012***
	(0.004)	(0.003)	(0.004)	(0.004)
Unemployment rate	18.119***	15.312***	23.569***	19.177***
	(5.428)	(4.923)	(5.595)	(5.129)
Labor ratio having the highest education of				
Elementary	0.755	0.05	0.786	0.316
	(2.004)	(1.693)	(2.589)	(1.885)
Secondary	2.053	−0.463	3.021	0.332
	(1.978)	(1.621)	(2.558)	(1.894)
Tertiary	1.962	−0.764	1.734	−3.962
	(3.032)	(2.500)	(4.268)	(2.883)
Population (1,000,000)	4.958***	3.467***	6.007***	3.945***
	(1.089)	(0.945)	(1.355)	(0.938)
Decade dummy	−0.22	−0.196	−0.236	−0.111
	(0.504)	(0.356)	(0.673)	(0.419)

Asterisks (*, **, ***) indicate 10%, 5%, and 1% significance levels. Figures in the parentheses are standard errors.

to the extent the countries' contributions to the U.N. general budget may be reflective of the relative extent of engagement in or support of the U.N. activities—the greater the extent of engagement of a country in or support of U.N. activities the greater the frequency of that country's citizens turning out to be victims of transnational terrorism events. Of course, it remains to be studied whether contributions to the U.N. general operating budget is a good indicator of relative influence in the United Nations or the global political arena. It is also possible that the estimated positive relationship is due to possible correlation between contributions to the U.N. budget and contributing country's international policies that may be the significant factors motivating terrorist campaigns. Clearly, this result can also be confounded by the fact that citizens from richer countries, which tend to contribute to the U.N. regular budget more than the poor countries, tend to travel overseas more and have more interests overseas than the citizens of the poorer countries do, and thus are exposed to greater risks of being victims in transnational terrorism events. Some of these factors are likely to be captured in per capita GDP, openness to trade, and population variables included in this study as control variables. Whatever the explanation might be for the positive correlation between contributions to the U.N. general operating budget and frequencies of victimization in transnational terrorism incidents, the correlation detected in this study perhaps points to potential merit for future academic attention to this angle of analysis that has been absent in academic literature prior to this study.

The signs of the coefficients associated with openness to trade as well as its square term in all models (see Tables III and IV) suggest a nonlinear U-shaped relationship with the expected frequencies of being victimized in transnational terrorism acts. At lower levels of integration in international trade a marginal increase in openness to trade decreases the frequency of being attacked. However, at higher levels of openness to trade, further increase in international trade has a positive association with expected frequencies of being targeted by transnational terrorists. The four pooled models predict that the inflection point after which the increase in the proportion of exports and imports relative to total GDP coincides with increase in frequency of being attacked ranges from 2.90% to 3.33%, with the estimate from ZINB at 2.98%.[4] Similarly, the estimated inflection points based on the random effects and fixed-effects models are 2.71% and 2.75%, respectively. Out of 1,398 observations only 10 have openness to trade higher than 2.90, which suggests that for most of countries in the sample, an increase in openness to trade is associated with a decrease in frequencies of being attacked. Increase in openness to trade may also be positively correlated with policies and activities that may be considered as unfair and aggressive from terrorists' point of view and thus may be the cause of increased victimization.

The sign of the coefficients associated with GDP per capita and its square term in Tables III and IV suggest that GDP per capita has an inverse-U-shaped correlation with frequency of being a victim in transnational terrorism events. An improvement in GDP per capita is positively correlated with the count of being attacked but the marginal change is diminishing as per capita GDP increases, eventually reversing the effect. The value of GDP per capita at the inflection point varies between $13,000 and $21,250 depending on the model (see Tables IV and V). For relatively richer countries, where GDP per capita is above $21,250, corresponding to 9.80% of the observations in our data set, increase in per capita GDP is negatively associated with frequency of being a victim in transnational terrorism incidents. For the countries with less than $13,000 of per capita GDP, corresponding to 77.97% of observations in our sample, the increase in GDP per capita is positively related to the frequency of being a victim. A possible explanation for the positive sign at the lower levels of per capita GDP can be that increase in income may enable the countries to be engaged in international activities, which may be the motivating factors behind terrorism campaigns. The positive relationship is consistent with the results in Gassebner and Luechinger[9] where only linear specification of GDP per capita was considered. On the other hand, a possible explanation for the negative sign at the higher levels of GDP per capita can be that the richer countries have more resources available to invest in counterterrorism programs and activities as well as in general security measures as their GDP increases, which helps thwart terrorist attacks and perhaps deflects the attacks on the relatively poorer and less protected countries in accordance with an argument by Sandler *et al.*,[6] who argue that perpetrators

These results are available from the authors upon request. We thank an anonymous reviewer for the suggestion.

[4]The 2009 estimate of the ratio of exports plus imports relative to GDP for the United States is about 18%.

respond to counterterrorism measures by redirecting their efforts toward less protected targets. If a group of countries, of which some are relatively richer than others, is targeted by the perpetrators, then the relatively richer countries will be better positioned to deflect the attacks. In the poor countries marginal increase in per capita GDP does not necessarily imply increased resource availability for national-security-related activities. This reasoning is similar to the logic of richer potential victims in Chiu and Madden[51] installing anti-burglary security systems to deter potential burglars. On average, for most countries in our sample marginal increase in GDP per capita is positively associated with frequency of being attacked by transnational terrorists.

The economic freedom index does not seem to have a statistically significant relationship with frequencies of being victimized in transnational terrorism, unlike the results found by Gessebner and Luechinger.[9] The difference in findings might be due to different empirical estimation techniques or specification of independent variables. Political freedom has a statistically significant relationship with being a victim of transnational terrorism across all four pooled models, but an insignificant relationship in the panel estimation. Unlike Krueger[37] and Eubank and Weinberg,[10] who suggest a monotonic, positive impact of political freedom on frequency of being targeted by transnational terrorists, and unlike Gelpi and Grieco,[36] who make similar arguments in international conflicts in general—i.e., countries with most political freedom are targeted most frequently, followed by the countries with intermediate political freedom, and followed by countries with least political freedom—we find that the countries with intermediate freedom are victimized the most. Such pattern may indicate that as a country moves from no political freedom to relatively more political freedom the frequency with which its citizens are victimized in transnational terrorism acts increases. However, as a country becomes even more politically free the number of transnational terrorism incidents in which this country's citizens are victims decreases. This result is similar to the finding in Abadie[17] where countries with intermediate levels of political freedom are found to be more prone to terrorism (regardless of its origins and targets) than countries with high levels of political freedom or countries with low levels of political freedom. A possible explanation for the relationship detected in our analysis might be that as a country moves from a political system with no freedom to a relatively freer system it can be alienating marginalized groups in foreign countries and exposing itself to potential attacks. However, as a free political system takes hold and develops, more resources might be allocated to enhance national security. Perhaps rich and free countries have greater capability to defend their citizens and interest against potential threats. Alternatively, it might be that transnational terrorists attack politically freer countries less because it might be less likely that they may receive support.[5]

Unemployment has a statistically significant and positive relationship with the frequency of being attacked in transnational terrorism events based on pooled data estimation but not based on panel data estimation. Education attainment coefficients generally do not seem to be statistically significant. Consistent with the findings of Gassebner and Luechinger,[9] the population variable, which was included to control for overall exposure to risk of being victimized in transnational terrorism incidents, is statistically significant in most of the models including all of the pooled frequency equations of the count data models.

6. SUMMARY AND CONCLUSIONS

This study examines the characteristics of victim countries in transnational terrorism incidents using count data and corresponding econometric estimation techniques. We use the ITERATE data set and socioeconomic characteristics of victim countries collected from various sources including the World bank database, the United Nations, the Heritage Foundation, Freedom House, and national statistics services of various countries. We include GDP per capita, economic and political freedom, openness to trade, education attainment, literacy, and contributions to the regular U.N. budget as explanatory variables for frequency of being victimized in transnational terrorism events.

The results suggest that the citizens of the countries that make larger financial contributions to the U.N. general budget are attacked slightly more frequently than the citizens of the countries that do not contribute to the U.N. budget as much. Perhaps contributions to the United Nations might be correlated with and be enabling international policies and activities that may be the motivating factors behind terrorist campaigns. Countries playing significant roles in U.N. international initiatives might be viewed by the terrorists as responsible for what terrorists consider

[5]We thank the anonymous reviewer for suggesting this possibility.

an unjust global political playfield, as well as responsible for disadvantaged economic conditions in their home countries.[8] Politically more influential countries can also be viewed as cultural threats.[52] Terrorists may target some countries more than others perhaps because they view the dominant players in the world political and/or economic arena as imperialistic regimes, which threaten their national and/or cultural identities. Another explanation of the statistical significance of U.N. contributions in our analysis can be potential correlation between contributions to the United Nations and the contributor country's international policies and activities viewed by the perpetrators as aggressive and/or unfair. Clearly, contributions to international organizations can also be viewed by some as positive, and potentially altruistic engagements with international community and not necessarily be linked with political influence. This argument, to some degree, would negate our explanation of positive correlation between frequencies of being victimized in transnational terrorism incidents and financial contributions to the United Nations that was empirically uncovered in this study. However, financial contributions to international organizations and activities, like foreign aid, have been found by some researchers, at least in part, to have ulterior motives like influencing U.N. voting outcomes in favor of donor countries' interests.[53–55] Consequently, countries that are relatively active in the United Nations, perhaps those that make most significant contributions to the U.N. operating budget, might be viewed as culprits who enable the United Nations as a vehicle for legitimizing international activities driven by and serving the interest of the donor countries. Financial contributions to the United Nations may be viewed as instruments for advancing the donor's country's interest, which in turn can be the motivating factor, or at least provide justification for, adverse reactions like transnational terrorism. Regardless of the plausibility of our explanations for the coefficient of the U.N. contribution being statistically significant, or possible explanations that we may have omitted in our discussion, we believe that the statistical significance of the relationship merits further examinations of transnational terrorism patterns from the perspective of victim countries' activities in the international arena. Studies of such activities can include but not necessarily be limited to participation in and support of the United Nations, World Bank, International Monetary Fund, or other government, nongovernment, humanitarian, or commercial international initiatives. While significant attention has been devoted to explaining patterns of participation in transnational terrorism events from the perspective of perpetrators' country of origin, little research has been done on the effects of victim countries' involvement in international initiatives on frequencies of being victimized.

A convex U-shaped relationship is detected with respect to openness to trade. Initial increase in openness to trade is negatively related to frequency of being victimized. However, further integration of a country into the global economy is positively related to the number of transnational terrorism events in which its citizens are victims. Perhaps such pattern is in a way consistent with the results pertaining to U.N. contributions. The results may suggest that as a country becomes financially more active in the global political and economic arena the number of transnational terrorist attacks against its citizens or interests increases. Again, it is clearly possible that there might be an alternative explanation to this relationship, including, but not limited to, the victim country's international policies that might be correlated with openness to trade and with frequencies of victimization.

The results here also show that there is as an inverse U-shaped relationship between per capita GDP and frequency of being attacked by transnational terrorists. As per capita GDP increases from low levels to relatively higher levels frequencies of being victimized in transnational terrorism events increase. However, after reaching a certain level of per capita GDP, further increase in per capita GDP corresponds to a decrease in the frequency of being victimized in transnational terrorism events. This may warrant extra caution for the countries that are climbing out of poverty and are escalating their economic activities. The positive relationship between GDP per capita and frequencies of being victimized may be caused by stronger economies enabling policies and activities that may be the real motivating factors behind terrorist campaigns. The sign reverses from positive to negative perhaps because as a country's per capita GDP continues to increase, more resources may become available for national-security-related activities, thus potentially negatively affecting the number of transnational terrorist attacks against its citizens or interests. Other explanations for the relationship detected here might be possible and we hope that future studies extend our findings. The correlations estimated in this study are not necessarily indicative of direct relationships but rather may represent indirect relationships via

international policies and actions of victim countries that can act as factors motivating or deterring terrorism acts. We do not claim to have offered every possible explanation of the correlations detected in this study. The statistical results of this investigation should encourage further academic work aimed at explaining the roles of victim countries' socioeconomic characteristics in the patterns of transnational terrorism.

One caveat of this study is that, similar to Barros *et al*.[28,32] and Gassebner and Luechinger,[9] our dependent variable reflects victim nationalities rather than nationalities of intended targets. Clearly victims are not always those who are targeted, but significant correlation between targets and victims can reasonably be expected. Another caveat is that our set of independent variables does not include an explicit measure of the rate of exposure to transnational terrorist attacks. Similar to all other studies in this field, due to lack of appropriate data we are not able to control for such factors as international tourism or commerce and business-related travel. However, GDP per capita, openness to trade, and population are likely to account for exposure rates to some degree. Nevertheless, the intent of this study is not to predict potential victims or to suggest a possible counterterrorism strategy. Rather, given the lack of literature on transnational terrorism focusing on the victims' side of the equation, with this analysis we hope to encourage future research in this direction. Thus, the study should be interpreted as no more than a preliminary analysis of victims of transnational terrorism and corresponding socioeconomic characteristics. This study provides a valuable contribution to the literature on transnational terrorism by providing a unique analysis of how the socioeconomic characteristics of victim countries relate to risks of being victimized in transnational terrorism.

Given some statistically significant correlations detected in this study we believe that perhaps further research in this direction is warranted. One of the most obvious possible extensions would be to include variable(s) representing activities of victim countries related to international politics. We made a first attempt by incorporating contributions to the U.N. general operating budget as a potential proxy variable for the extent of victim counties' engagement in international political arena. Better measures reflecting specific international policies and commercial or diplomatic initiatives of victim countries are likely to generate valuable insights.

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