

Unintended Consequences? The Impact of Targeted Economic Sanctions on International Terrorism

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Abstract

The effectiveness of economic sanctions cannot be thoroughly examined on the basis of their ability to achieve a stated goal alone. This paper takes a broad look into one of the possible unintended consequences associated with the use of economic sanctions—the potential for increased political violence and terrorism. Past theoretical and empirical studies assume the economic impact of sanctions lead to an increase in terrorism, while other findings suggest that most terrorists come from relatively well-educated and high-income backgrounds. In this paper, I employ an event study model to analyse the incidence of terrorism between sender and target countries and exploit the various characteristics of sanctions to better understand the causal relationship between sanctions and terrorism. My results suggest that, controlling for other determinants of terrorism at the country level, sanctions lead to an increase in the number of terrorist attacks leveled at individuals from sender countries by individuals from target countries for a significant period of time following their imposition and, in some cases, even long after the sanctions have been lifted.

Keywords: Economic Sanctions, Terrorism, Poverty

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1 Introduction

On September 20, 2001, President George W. Bush announced to a joint session of Congress that the United States' war on terror would not end "until every terrorist group of global reach [had] been found, stopped and defeated." Yet, as Kreuger and Maleckova (2003) note, it was not until March 2002, during a speech in Monterrey, Mexico, that President Bush would suggest an alternative way to fight terrorism, declaring "[The United States] fights against poverty because hope is an answer to terror." This marked the first time President Bush drew a direct connection between poverty and terrorism. While poverty as a driver of terrorism was a historically popular view among world leaders in the early 21st century, a number of empirical studies conducted in subsequent years find poverty and terrorism are largely unrelated, suggesting the alleviation of poverty as means to fight terrorism may be misguided when employed as an anti-terrorism policy (Kreuger and Maleckova, 2003; Krueger and Laitin, 2007; Abadie, 2006). A similar assumption is also made about lack of education as a cause of terrorism, yet numerous studies find no supporting evidence (Krueger and Laitin, 2007; Abadie, 2006). These small, but consequential, assumptions among world leaders from the past decade make further research into the subject all the more important.

This paper draws upon the past literature on terrorism, both quantitative and qualitative, exploring those findings within the context of economic sanctions and the international system. I use international sanctions, employed as a quasi-instrumental variable, to explore the links between economic well-being and terrorism. By distinguishing between domestically-derived economic woes and those perceived to have

been caused by foreign actors (e.g. through the imposition of economic sanctions), my analysis uses the cases of international sanctions to break the endogeneity between weak development and other determinants of terrorism—an important distinction given that a large number of unobserved factors are correlated with both weak development and terrorism. This paper proposes economic sanctions as a source of exogenous variation, allowing for a quasi-experimental estimation of the impact of sanctions on levels of international terrorism, resulting in a more thorough examination of the weak economic development as driver of terrorism theory. Doing so distinguishes this study from others broaching the subject by providing more context than studies which examine only country-level economic indicators.

Building on the large body of research already devoted to the origins of terrorism, this paper also explores the causal relationship between economic sanctions and international terrorism using a dyadic approach. While such a structure presents various problems and limitations, especially with regard to data constraints, it provides a unique way to evaluate the origins of terrorism and explore a potential negative consequence associated with them. Exploiting the varying characteristics and intensity levels of international sanctions, I use an event study model, including relevant time-dependent explanatory variables, to examine the nature and intensity of terrorism perpetrated against individuals from sender countries by individuals from target countries across time, assuming the impact of both sanctions and terrorism will be born out over a period of time extending beyond one year.

The rest of this paper is organised as follows. Section 2 gives a broad overview of existing theoretical and empirical research related to economics sanctions and the

determinants of terrorism. Section 3 describes the methodology and data used in my analysis. Section 4 presents the results and compares them to similar and contrasting findings. I also explain in what cases my model is advantageous compared to other models and in what cases it falls short. Finally, Section 5 concludes and discusses potential opportunities for future research.

2 Literature Review

2.1 Determinants of Terrorism

While my analysis centers around how economic sanctions impact the incidents of terrorism leveled at the sending country, it is important first to understand the country-level determinants of terrorism more broadly. Perhaps the most popular hypothesis, and indeed the most well-researched, is that poor economic conditions, weak development, and poverty are among the greatest indicators for whether or not an individual resorts to perpetrating an attack of terror. However, many researchers now dispute this once prominent theory. Krueger and Laitin (2007) and Piazza (2006) use U.S. State Department data on transnational terrorist attacks to examine this theory, finding that poverty is a poor indicator for a country's propensity to be the origin of a terrorist. This is especially true once controlling for civil liberties and political rights. Since Frey (2004) and Krueger (2017) question the quality of the U.S. State Department data¹, Abadie (2006) explores the poverty theory using the World

¹The U.S. State Department data on transnational terrorism is rightly scrutinized, as the first release of the statistics for 2000-2003 unintentionally excluded 3 months of data in 2003, leading the Bush administration to claim that terrorism was at its lowest levels since the start of the war

Market Research Center’s Global Terrorism Index (WMRC-GTI), which “combines expert ratings on the motivation, presence, scale, efficacy, and prevention of terrorism at the country level” (Center, 2003). Using different data for robustness, Abadie (2006) also fails to find a significant relationship between poverty and terrorism.

In addition to a multitude of empirical studies finding little or no relationship between poverty and terrorism at the country-level, there also exists evidence at the individual-level contradicting the poverty theory. Comparing data on 129 deceased members of Hezbollah, an Islamist militant group based in Lebanon, to data from the Lebanese Populations and Housing Survey (PHS), Kreuger and Maleckova (2003) find that education and income are actually positively correlated with the likelihood that someone becomes a Hezbollah fighter. In simpler terms, terrorists are, on the whole, wealthier and more educated than the population from which they derived (Krueger, 2017). In fact, wealthier countries are more likely to be origin country of an individual that commits a terrorist attack (Krueger, 2017). By and large, the majority of empirical research examining poverty and terrorism suggest they are unrelated at both the individual-level and country-level.

These findings, however, present more questions than answers about the origins of terrorism. A prominent alternative hypothesis is that a lack of civil liberties creates a political and social environment conducive to terrorism. This theory is supported by multiple studies addressing the issue (Krueger and Laitin, 2007; Savun and Phillips, 2009; Gaibullov and Sandler, 2019). However, in the context of international and transnational terrorism, there is no solid theoretical understanding to support such

on terror.

a theory. However, one useful explanation for why this would be the case is posed by Krueger (2017), who re-frames attacks of terror as form of political expression, or political violence, where the likelihood of a given individual to carry out a terrorist attack is more analogous to one's propensity to vote than to committing a crime.

While directly contradicting previous research suggesting that terrorists are best understood as rational actors seeking to maximize expected utility (Landes, 1978), Krueger's re-framing of the issue is theoretically sound in a variety of ways and further supported by empirical research. The 'terrorism as vote' theory is consistent with empirical findings about both the likelihood to vote and likelihood to participate in terrorist activity. As noted by Krueger (2017), people with higher incomes and higher levels of education are more likely to vote, even despite the higher opportunity cost of doing so, compared to people with lower income and less education. Likewise, using evidence from public opinion polls, Krueger and Laitin (2007) finds that individuals with higher levels of educational attainment are more likely to support suicide bombings carried out against westerners. In the same study, Krueger also finds that foreign fighters are disproportionately well-educated. This is consistent with evidence from the United States suggesting that well-educated individuals are more likely to hold extreme political views (Krueger, 2017). The voter theory could also help explain evidence suggesting that countries with lower levels of civil and political liberties are more likely to be a terrorist's origin country. In contrast to the voter model, though still contradicting the rational actor model, Bernholz (2004a) proposes that the origins of terrorism may be best understood under a 'supreme values' model, meaning participation in terrorism is related to extreme values that

dominant all other aims in a individual's mind. This model could also explain the lack of relationship between poverty, education, and terrorism.

In addition to the factors listed above, a variety of other determinants are commonplace in the study of terrorism at the country-level. One such country-level characteristic widely accepted as having a positive relationship with terrorism is state failure. Piazza (2008) finds that "countries beset by significant state failures are more likely to be the source and target of transnational terrorism," regardless of whether or not other significant explanatory variables exist. A number of studies also find that population is positively correlated with terrorism at the country-level for both the perpetrator and victim countries (Choi and Luo, 2013; Abadie, 2006; Krueger and Laitin, 2007; Kreuger and Maleckova, 2003).

Aside from the determinants of terrorism, it is also useful to understand the use of economic sanctions more broadly. As noted by McLean et al. (2018), economic sanctions are rarely used for the sole purpose of combating international and transnational terrorism. However, terrorism is related to the decision making process for if and when sanctions are imposed and, likewise, sanctions are related to the emergence of many of the common determinants of terrorism.

First, sanctions play a significant role with regard to the sanctioned country's domestic economic and political atmosphere. One notable study by Grauvogel et al. (2017) finds that economic sanctions can trigger domestic protest against the sanctioned government, providing a sort of "international stamp of approval for protesters." While much of the resulting dissent is nonviolent, violent protests are not altogether uncommon. (Dudouet, 2013) and Enders et al. (2011) find that

violent protest, or domestic terrorism, often spills over into transnational terrorism. Thus, aside from the potential for direct retribution, the previously stated findings suggest sanctions may also increase levels of international and transnational terrorism indirectly.

Secondly, it is important to note that many studies find that sanctions as a foreign policy tool rarely achieve their stated goal, making it all the more important to understand whether there are unintended consequences, such as terrorism, associated with their use (Morgan and Schwebach, 1997; Pape, 1998; Whitty et al., 2006). A study with similar findings by Whang (2011), suggesting that sanctions rarely extract political concessions for target states, also makes clear that sanctions are often used as a means to garner domestic political support.

This poses a question: do economic sanctions lead to unintended consequences, namely increased terrorism, that outweigh their associated reward?

3 Data

This section describes the data used in the statistical analysis, including the sources of data, relevant variables and what they are supposed to measure, and descriptive statistics.

3.1 Dependent Variable: Terrorism

The data on terrorism used in my analysis is derived from the International Terrorism: Attributes of Terrorist Events (ITERATE) data (Mickolus et al., 2011). The

dependent variable, international terrorism, is coded as a count measure of the number of terrorism events per year, where the perpetrator is from the target country and the victim is from the sender country². In my coding of the data, a single event may be counted in more than one observation, as ITERATE data lists up to three victim nationalities and up to three perpetrator nationalities. Thus, an event is counted as an incident in my data if any of the three listed victim nationalities matches the sender country and any of the three listed perpetrator nationalities matches the target country. This count measure is tabulated by the sender-target dyad for the years 1968 to 2002. The ITERATE project defines international/transnational terrorism in the following way:

International/transnational terrorism... is the use, or threat of use, of anxiety-inducing, extra-normal violence for political purposes by any individual or group, whether acting for or in opposition to established governmental authority, when such action is intended to influence the attitudes and behavior of a target group wider than the immediate victims and when, through the nationality or foreign ties of its perpetrators, its location, the nature of its institutional or human victims, or the mechanics of its resolution, its ramifications transcend national boundaries.

Fortunately, this definition is operationally and functionally similar to other projects that record incidences of international terrorism. For example, the U.S. Department of State's Patterns of Global Terrorism defines terrorism as "premeditated politically motivated violence, perpetrated against non-combatant targets by

²A complete list of countries included in the analysis can be found in the Appendix

sub-national 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” (COUNTERTERRORISM, 2003).”

Other studies addressing sanctions and terrorism (Choi and Luo, 2013), to ensure consistent and accurate results, have compared the ITERATE data to other data on international and transnational terrorism. For this analysis, I cannot do as much as ITERATE is the only data with a sufficiently large temporal domain that also lists both the victim and perpetrator nationalities needed to create data with a dyadic structure. This being said, Enders et al. (2011) provide evidence that ITERATE and the National Consortium for the Study of Terrorism and Responses to Terrorism’s (START) Global Terrorism Database track well enough to assuage concerns about significant inaccuracies in the data.

3.2 Independent Variable: Sanctions

The data on sanctions used in this analysis is obtained using the Threat and Imposition of Sanctions (TIES) dataset, which covers all international sanctions at the case-level from 1968 to 2005 (Morgan et al., 2013).

For each sender-target pair, I create a dummy variable, or indicator variable, denoting whether or not there is one or more sanctions in place between each pair in a given year. For the primary model, the variable keeps a value of “1” after the first instance of sanctions, regardless of whether or not they have been removed in subsequent years, and “0” until the first instance of sanctions or if there are no instance of sanctions between a given dyad from 1968-2002. Given the data

constraints, this coding best captures the long-term and delayed effect of economic sanctions. It also allows for the terrorism mobilization process to be a multi-year process and still capture by the model.

4 Results

4.1 Random Forest Regression

For robustness, given the lack of consensus among scholars, I use a random forest estimator to evaluate the relative importance of different explanatory variables as well as their ability to accurately predict out-of-sample observations. This method is especially important given the dyadic structure of the data, potentially influencing which variables should be included in the regression models. Random forest, or random decision forest, is a machine learning algorithm developed by Breiman (2001), which builds a number of decision trees commonly used for prediction. Best articulated by Yiu (2012), the random forest method is based off the “fundamental, democratic premise” that a large number of models will outperform any individual model.

The advantages of this approach are plentiful. First, and most importantly, the random forest algorithm can evaluate the importance and predictive power of all explanatory variables in a data-set at once, removing the potential bias associated with an analyst’s decision to include or exclude certain control variables in a given statistical model. Additionally, the random forest approach can handle nonlinear function forms “without the analyst having to pre-specify a particular functional form

or interaction term” (Daniel W. Hill and Jones, 2014). However, it does not provide any insight as to the nature of the relationship (e.g. linear, nonlinear, positive, negative, etc).

The advantages cited above are not an exhaustive list but rather the most important and relevant advantages for this analysis. More detailed information about the random forest approach can be found in Strobl et al. (2009) and a technical explanation can be found in Breiman (2001).

Table 1 shows the relative importance of each variable for making an accurate prediction of terrorism for out-of-sample observations. The first row shows the most important variable for making an accurate prediction is the Dyad_ID (sender-target pair), which supports the explanation proposed by Krueger and Laitin (2007) that terrorism “is more accurately viewed as a response to political conditions and long-standing feelings of indignity and frustration,” rather than a direct response to other factors. Another notable finding from the random forest estimation is that the size of a target country’s military personnel appears to be a strong predictor of whether or not a country is the target of international terrorism.

4.2 Event Study

For this analysis, I use an event study specification for affected sender-target pairs where the pre/post treatment is defined as a dummy variable measuring time relative to the first imposition of sanctions (t). In addition to a variety of time-variant control variables, I also include terrorism-by-year and Dyad fixed effects in order to isolate

Table 1: Variable Importance for Out-of-Sample Predication

	<i>Variable</i>	<i>Importance</i>
	Dyad ID	0.13
Target	Military Personal (thousands)	0.11
Target	Military Expenditures	0.05
Target	Iron & Steel Production	0.05
Target	GDP per Capita	0.05
Target	Composite Index of Military Capability (CINC)	0.04
Target	GDP Growth (t-1)	0.04
	Relative CINC (Sender - Target)	0.04
Target	Primary Energy Consumption	0.03
Target	Total Urban Population	0.03
Sender	Gross Domestic Product	0.03
	Sanction year: (t+7)	0.03
	Year	0.02
Sender	Primary Energy Consumption	0.02
Target	Infant Mortality Rate	0.02
Sender	Regime Durability	0.02
Target	Executive Constraints	0.02
Target	Gross Domestic Product	0.02
Sender	GDP Growth (t-1)	0.02

Notes: Variable importance is produced by the random forest algorithm and displays which variables are most important, in rank order, for making an accurate out-of-sample prediction, i.e. these features are most important in explaining the terrorism for each sender-target dyad. **The numerical value for importance can not be interpreted outside of the importance framework.**

the effect of sanctions on terrorism. The dummy variable for the year prior to the imposition of sanctions is omitted, normalizing estimates to zero for that year, and I then estimate coefficients on terrorism for the event window, which spans from 5 years prior to imposition ($t-5$) to 10 years after ($t+10$).

The event study framework assuages a number of relevant concerns. For example, the economic impact of sanctions are often delayed or not fully-realized until years after their imposition. This delayed affect would not be captured using other methods.

A common concern among studies employing an event study, anticipation by a target country’s government and people may bias estimates (Karolyi and Martell, 2010). To assuage concerns about anticipation, my analysis examines the 5-year period (“pre-period”) leading up to the first imposition of sanctions between a given dyad. Additionally, economic sanctions may not be wholly exogenous, or related to the outcome of interest, since a country could impose sanctions against another country as a result of its support for non-state actors. However, as previously noted, McLean et al. (2018) finds that countries rarely use economic sanctions to specifically combat terrorism. This analysis is evidenced by the TIES data, which indicates “Terminate Support of Non-State Actors” as an issue in less than 2 percent of all sanction cases (Morgan et al., 2013)³ and further evidence is provided by Hufbauer et al. (1990).

An econometric issue raised by a previous studies that use count terrorism data

³For robustness, I also run the same estimation and drop all cases where the sender country is specifically sanctioning a target country for its support of non-state actors. I find that this does not meaningful change any of the subsequent results.

Table 2: Sender Explanatory Variables Regression Results

Variables	Linear Fixed Effects	Linear Random Effects
(s) GDPpc Q2	-0.0001 (0.0005)	0.0008*** (0.0003)
(s) GDPpc Q3	0.0000 (0.0009)	0.0031*** (0.0006)
(s) GDPpc Q4	-0.0026 (0.0028)	0.0112*** (0.0013)
(s) Political Competition	-0.0000 (0.0001)	0.0003*** (0.0001)
(s) State Failure	0.0004 (0.0008)	0.0016** (0.0007)
Post 1991 dummy	0.0017 (0.0023)	0.0019* (0.0011)
Constant	-0.0746*** (0.0178)	-0.0293*** (0.0053)
Observations	516,266	516,266
R-squared	0.0045	0.0043
Number of Dyads	23,483	23,483
Dyad FE	YES	YES
Year FE	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Sanction year pre-/post-period dummies are included in all regressions but are not shown in the table. All regressions use the year of first sanction occurrence between a given sender-target dyad as the treatment year.

(Krueger and Laitin, 2007; Choi and Luo, 2013; Krieger and Meierrieks, 2011; Freytag et al., 2011) is which estimator should be used to deal with data suffering from significant over-dispersion, where the variance is larger than the mean and there are a disproportionate amount of zero-value outcomes. Presently, there is no authoritative consensus as to which model is best. Krieger and Meierrieks (2011) note that negative binomial regression models are the standard for examining the determinants of terrorism and this model is used by a number of other studies (Kreuger and Maleckova, 2003; Krueger and Laitin, 2007; Frey, 2004; Choi and Luo, 2013; Enders et al., 2016). However, Savun and Phillips (2009) argues for the use of a zero-inflated negative binomial regression model, which assumes that observations where the variable of interest is zero are generated by a separate process from the non-zero outcomes. To assuage these concerns, I use multiple estimators but I do not find that model specification impacts the general trends of my findings. Table 2 and Table 3 report the Sender and Target explanatory variable regression results for two linear models.

Figure 1 displays the event study results. There is a significant spike in terrorism during sanction year $t+7$, which also appears in the random forest results. This finding suggests that terrorism peaks 7 years after sanctions are imposed.

Figure 2 (Panel A) shows the event study results broken down by the timing and length of sanctions during the study period. Noticeably, in cases where a sender country imposes sanctions and they remain place at least for the ten year post-period, there is a noticeable decline in terrorism in the years immediately the sanctions imposition and a rise starting in post-year 4. This may be the case for a variety of reasons. Sanctions spanning the entire event window may indicate unique relation-

Table 3: Target Explanatory Variables Regression Results

Variables	Linear Fixed Effects	Linear Random Effects
(t) log Population	0.0086*** (0.0021)	0.0026*** (0.0005)
(t) GDPpc Q2	0.0017* (0.0009)	0.0044*** (0.0009)
(t) GDPpc Q3	-0.0049* (0.0029)	0.0032* (0.0020)
(t) GDPpc Q4	-0.0058* (0.0030)	-0.0002 (0.0009)
(t) Political Competition	-0.0002 (0.0002)	-0.0001 (0.0002)
(t) State Failure	0.0070*** (0.0025)	0.0081*** (0.0024)
(t) Military Personnel	0.0000** (0.0000)	-0.0000 (0.0000)
(t) Military Personnel2	-0.0000** (0.0000)	-0.0000 (0.0000)
Post 1991 dummy	0.0017 (0.0023)	0.0019* (0.0011)
Constant	-0.0746*** (0.0178)	-0.0293*** (0.0053)
Observations	516,266	516,266
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Sanction year pre-/post-period dummies are included in all regressions but are not shown in the table. All regressions use the year of first sanction occurrence between a given sender-target dyad as the treatment year.

ships between the sender and target country (e.g. the United States and Cuba), where the ease of travel is difficult initially and smooths over time.

Figure 2 (Panel B) displays the event study results broken down by the cost imposed to the target country by the sanctions. These results suggest, while severe economic costs to the target country may result in an initial and more immediate backlash, more economic cost does not necessarily lead to more terrorism, compared with less severe sanctions. These results pose an interesting counterpoint to Choi and Luo (2013), who theorize that sanctions, which disproportionately affect the poor, lead "frustrated poor people [to] turn to terrorism." Additionally, the relatively similarity of the coefficients grouped by cost suggest that the level of terrorism may not be related to the actual economic issues but rather in the realm of political dispute. For example, if poverty or weak economic development is to blame for the emergence of terrorism, one would suspect the coefficients of terrorism where the sanction cost is more severe to be higher. My results suggest this is not the case.

4.3 Limitations

The model structure used in this analysis constraints the results for a variety of reasons.

One potential limiting factor to consider, apart from the findings of this study, is the rising prevalence of terrorism carried out by religious fundamentalist groups, or what Bernholz (2004b) describes as individuals or groups motivated by "supreme values." This unique form of violence may alter the nature of terrorism, rendering traditional determinants of terrorism irrelevant. In other words, political- and

Figure 1: Event Study Results

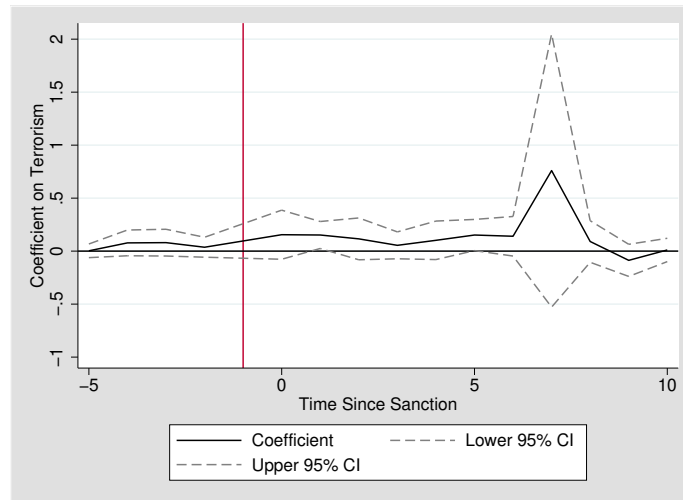
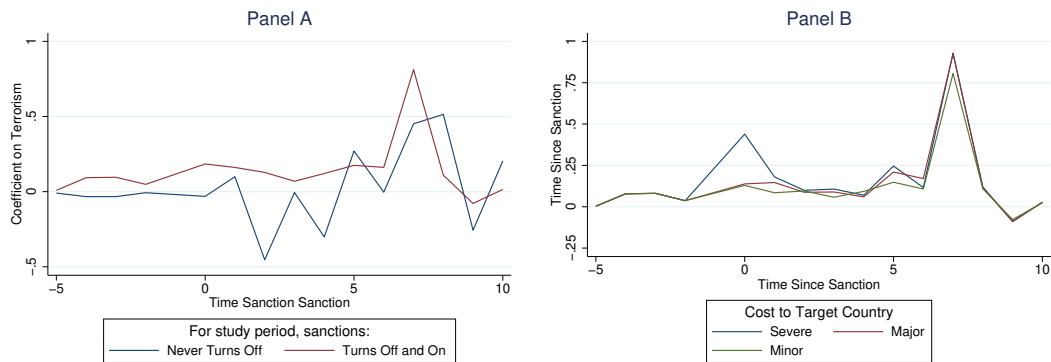


Figure 2: Event Study by Group



Note: Panel A shows event study results grouped by whether the sanctions stay on throughout the study period or turn off before the end of the study period. Panel B shows event study results grouped by sanctions intensity.

religious-based terrorism could be derived from completely different processes, meaning future research would need to distinguish between the two. Indeed, if “supreme value” terrorism becomes the predominate form, it will be hard, if not impossible, for researchers to make sound conclusions about the true origins of terrorism through quantitative analysis.

In addition, the definition of terrorism employed by this study is limited in that it only considers traditional forms of terrorism. For example, credible arguments can be made in favor of including crimes committed via the internet as a form of cyber terrorism. However, alternate data encompassing the full range of possible new forms of terrorism does not yet exist. Even so, the results presented in this paper are still revealing and informative to policymakers.

5 Conclusion

The evidence presented in this paper, though constrained in many ways, suggests that international and transnational terrorism should be understood more through the lens of politics and international relations than through poverty or weak economic development. Additionally, policymakers should place an increased focus on the unintended consequences of economic sanctions, such as increased levels of terrorism, when making foreign policy decisions. Without a thorough historical analysis of the relationship between the sender and target country, whatever benefits that arise from the use of sanctions may be outweighed by the indirect consequences of their use.

Though a wealth of research has already been devoted to the subject of terrorism

more broadly, there is still room for more innovative studies in the field, especially with regard to the relationship between terrorism and economic sanctions. Future studies should consider employing more advanced statistical models and machine learning algorithms, like random forest, to examine the origins and targets of international and transnational terrorism using both a non-dyadic and dyadic approach.

On the whole, even while poverty reduction may be important for variety of reasons, there is little reason to believe it is a successful mechanism for combating terrorism. However, there are also few reasons to believe that exploiting economic vulnerabilities through the use of sanctions is a successful avenue for reducing terrorism either. Thus, as the use of economic sanctions continue to rise, the findings presented in this paper should inspire researchers and policymakers to look beyond common explanations of terrorism and consider the indirect consequences of their use.

References

- Abadie, A. (2006). Poverty, political freedom, and the roots of terrorism. *American Economic Review*, 96:50–56.
- Bernholz, P. (2004a). Supreme values as the basis for terror. *European Journal of Political Economy*, 20(2):317–333.
- Bernholz, P. (2004b). Supreme values as the basis for terror. *European Journal of Political Economy*, 20:317–333.
- Breiman, L. (2001). Random forests. *Machine Learning*, 45(1):5–32.
- Center, W. M. R. (2003). Global terrorism index 2003/4.
- Choi, S. and Luo, S. (2013). Economic sanctions, poverty, and international terrorism: An empirical analysis. *International Interactions*, 37:217–245.
- COUNTERTERRORISM, B. O. (2003). *Patterns of global terrorism*. US Dept. of State.
- Daniel W. Hill, J. and Jones, Z. M. (2014). An empirical evaluation of explanations for state repression. *American Political Science Review*, 108:661–687.
- Dudouet, V. (2013). Dynamics and factors of transition from armed struggle to nonviolent resistance. *Journal of Peace Research*, 50(3):401–413.
- Enders, W., Hoover, G. A., and Sandler, T. (2016). The changing nonlinear relationship between income and terrorism. *Journal of Conflict Resolution*, 60(2):195–225.
- Enders, W., Sandler, T., and Gaibullov, K. (2011). Domestic versus transnational terrorism: Data, decomposition, and dynamics. *Journal of Peace Research*, 48(3):319–337.
- Frey, B. S. (2004). *Dealing with terrorism: stick or carrot?* Edward Elgar Publishing.
- Freytag, A., Krüger, J. J., Meierrieks, D., and Schneider, F. (2011). The origins of terrorism: Cross-country estimates of socio-economic determinants of terrorism. *European Journal of Political Economy*, 27:S5–S16.
- Gaibullov, K. and Sandler, T. (2019). What we have learned about terrorism since 9/11. *Journal of Economic Literature*, 57:275–328.

- Grauvogel, J., Licht, A. A., and von Soest, C. (2017). Sanctions and signals: How international sanction threats trigger domestic protest in targeted regimes. *International Studies Quarterly*, 61(1):86–97.
- Hufbauer, G. C., Schott, J. J., and Elliott, K. A. (1990). *Economic sanctions reconsidered: History and current policy*, volume 1. Peterson Institute.
- Karolyi, G. A. and Martell, R. (2010). Terrorism and the stock market. *International Review of Applied Financial Issues & Economics*, 2(2).
- Kreuger, A. B. and Maleckova, J. (2003). Education, poverty, and terrorism: Is there a causal connection? *Journal of Economic Perspectives*, 14:119–144.
- Krieger, T. and Meierrieks, D. (2011). What causes terrorism? *Public Choice*, 147(1-2):3–27.
- Krueger, A. B. (2017). *What Makes a Terrorist*. PRINCETON UNIVERSITY PRESS.
- Krueger, A. B. and Laitin, D. D. (2007). Kto kogo?: A cross-country analysis of the origins and targets of terrorism. *Terrorism, economic development, and political openness*, pages 148–173.
- Landes, W. M. (1978). An economic study of us aircraft hijacking, 1961-1976. *the Journal of Law and Economics*, 21(1):1–31.
- McLean, E. V., Hinkkainen, K. H., De la Calle, L., and Bapat, N. A. (2018). Economic sanctions and the dynamics of terrorist campaigns. *Conflict management and peace science*, 35(4):378–401.
- Mickolus, E. F., Sandler, T., Murdock, J. M., and Flemming, P. A. (2011). The international terrorism: Attributes of terrorist events (iterate). *Inter-University Consortium for Political and Social Research*.
- Morgan, T. C., Bapat, N., and Kobayashi, Y. (2013). Threat and imposition of sanctions (ties) data 4.0 users’ manual case level data. *Chapel Hill: University of North Carolina*.
- Morgan, T. C. and Schwebach, V. L. (1997). Fools suffer gladly: The use of economic sanctions in international crises. *International Studies Quarterly*, 41(1):27–50.
- Pape, R. A. (1998). Why economic sanctions still do not work. *International Security*, 23(1):66–77.

- Piazza, J. A. (2006). Rooted in poverty?: Terrorism, poor economic development, and social cleavages. *Terrorism and political Violence*, 18(1):159–177.
- Piazza, J. A. (2008). Incubators of terror: Do failed and failing states promote transnational terrorism? *International Studies Quarterly*, 52(3):469–488.
- Savun, B. and Phillips, B. J. (2009). Democracy, foreign policy, and terrorism. *Journal of Conflict Resolution*, 53(6):878–904.
- Strobl, C., Malley, J., and Tutz, G. (2009). An introduction to recursive partitioning: Rationale, application, and characteristics of classification and regression trees, bagging, and random forests. *Psychological Methods*, 8(4):323.
- Whang, T. (2011). Playing to the home crowd? symbolic use of economic sanctions in the united states. *International Studies Quarterly*, 55(3):787–801.
- Whitty, M., Kim, S., and Crick, T. (2006). The effectiveness of economic sanctions: the case of north korea. *North Korean Review*, page 50.
- Yiu, T. (2012). Understanding random forest: How the algorithm works and why it is so effective. <https://towardsdatascience.com/understanding-random-forest-58381e0602d2>.

Appendix

Table 4: Terrorism by Country

Country	Victims	Perpetrators	Country	Victims	Perpetrators
United States of America	788	87	Cameroon	2	0
Canada	58	10	Nigeria	11	42
Bahamas	5	0	Gabon	0	5
Cuba	16	92	Central African Republic	2	1
Haiti	5	9	Chad	0	11
Dominican Republic	7	12	Congo	3	3
Jamaica	5	1	Democratic Republic of the Congo	4	3
Trinidad and Tobago	1	0	Uganda	4	18
Barbados	0	0	Kenya	12	2
Dominica	0	0	Tanzania	4	3
Grenada	0	0	Burundi	0	6
St. Lucia	0	0	Rwanda	0	18
St. Vincent and the Grenadines	0	0	Somalia	4	129
Antigua & Barbuda	1	0	Djibouti	0	0
St. Kitts and Nevis	0	0	Ethiopia	22	51
Mexico	45	30	Eritrea	1	45
Belize	0	0	Angola	2	66
Guatemala	19	71	Mozambique	7	51
Honduras	11	17	Zambia	3	0
El Salvador	21	110	Zimbabwe	0	0
Nicaragua	21	37	Malawi	2	0
Costa Rica	27	7	South Africa	0	0
Panama	18	16	Namibia	0	0
Colombia	24	375	Lesotho	0	1
Venezuela	63	26	Botswana	0	0
Guyana	0	0	Swaziland	0	0
Suriname	0	0	Madagascar	0	0
Ecuador	17	25	Comoros	0	0
Peru	11	88	Mauritius	0	0
Brazil	23	18	Seychelles	1	0
Bolivia	17	17	Morocco	15	12
Paraguay	5	1	Algeria	19	62
Chile	42	56	Tunisia	9	16
Argentina	27	160	Libya	28	50
Uruguay	20	18	Sudan	8	44
United Kingdom	320	18	Iran	44	206
Ireland	16	12	Turkey	53	156
Netherlands	79	9	Iraq	33	80
Belgium	45	10	Egypt	63	74
Luxembourg	0	0	Syria	23	47
France	398	76	Lebanon	39	270
Switzerland	81	7	Jordan	35	49
Spain	94	137	Israel	214	21
Andorra	0	0	Saudi Arabia	46	23
Portugal	48	41	Yemen Arab Republic	0	0
Germany	210	80	Yemen	6	67
German Federal Republic	0	0	Yemen People's Republic	0	0

Country	Victims	Perpetrators	Country	Victims	Perpetrators
German Democratic Republic	0	0	Kuwait	50	23
Poland	15	3	Bahrain	1	8
Austria	26	7	Qatar	1	0
Hungary	7	1	United Arab Emirates	3	0
Czechoslovakia	10	1	Oman	0	0
Czech Republic	1	0	Afghanistan	2	46
Slovakia	0	1	Turkmenistan	0	0
Italy	241	51	Tajikistan	1	10
San Marino	0	0	Kyrgyzstan	1	0
Malta	2	2	Uzbekistan	1	6
Albania	3	13	Kazakhstan	0	0
Macedonia	1	1	China	0	0
Croatia	6	1	Mongolia	0	0
Yugoslavia	24	25	Taiwan	0	0
Bosnia and Herzegovina	0	0	North Korea	6	5
Slovenia	0	0	South Korea	19	1
Greece	33	61	Japan	52	46
Cyprus	9	8	India	32	27
Bulgaria	9	0	Bhutan	0	0
Moldova	0	0	Pakistan	47	37
Romania	8	1	Bangladesh	8	5
Russia	0	0	Myanmar	0	0
Estonia	0	0	Sri Lanka	0	0
Latvia	0	0	Maldives	0	0
Lithuania	0	0	Nepal	7	5
Ukraine	3	1	Thailand	7	4
Belarus	0	0	Cambodia	0	0
Armenia	0	0	Laos	0	1
Georgia	0	0	Vietnam	0	0
Azerbaijan	0	0	Malaysia	11	88
Finland	6	0	Singapore	5	4
Sweden	29	6	Brunei	0	0
Norway	13	2	Philippines	35	188
Denmark	14	3	Indonesia	0	38
Iceland	3	1	Australia	37	5
Cape Verde	1	0	Papua New Guinea	0	0
Sao Tome and Principe	0	0	New Zealand	16	0
Guinea-Bissau	0	0	Vanuatu	0	0
Equatorial Guinea	1	0	Solomon Islands	0	0
Gambia	2	0	Kiribati	0	0
Mali	0	2	Tuvalu	0	0
Senegal	1	1	Fiji	0	2
Benin	0	0	Tonga	0	0
Mauritania	0	0	Nauru	0	0
Niger	1	5	Marshall Islands	0	0
Ivory Coast	2	1	Palau	0	0
Guinea	2	0	Federated States of Micronesia	0	0
Burkina Faso	0	0	Samoa	0	0
Liberia	1	26			
Sierra Leone	0	43			
Ghana	2	2			
Togo	1	3			

Table 5: Explanatory Variable Sources

	VARIABLE	SOURCE
Target	Military Personal (thousands)	Correlates of War
Target	Military Expenditures	Correlates of War
Target	Iron & Steel Production	Correlates of War
Target	GDP per Capita	World Bank
Target	Composite Index of Military Capability (CINC)	Correlates of War
Target	GDP Growth (t-1)	World Bank
	Relative CINC (Sender - Target)	Correlates of War
Target	Primary Energy Consumption	Correlates of War
Target	Total Urban Population	Correlates of War
Sender	Gross Domestic Product	World Bank
Sender	Primary Energy Consumption	Correlates of War
Target	Infant Mortality Rate	World Bank
Sender	Regime Durability	POLITY IV
Target	Executive Constraints	POLITY IV
Target	Gross Domestic Product	World Bank
Sender	GDP Growth (t-1)	World Bank