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Counterterrorism and Terrorism in the Post-9/11 Era

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1. Executive Summary

There are four subcomponent projects. Project 1 is “An Evaluation of INTERPOL’s Cooperative-based Counterterrorism Linkages.” This research project shows that INTERPOL’s technology-based counterterrorism linkages have much to offer in the fight against transnational terrorism. Nations tend to under invest in cooperative counterterrorism strategies, preferring to confront a common terrorist threat independently. We show that a collective, technology-driven approach can be an extremely cost-effective counterterrorism tool. This paper evaluates the payback from INTERPOL’s efforts to coordinate proactive counterterrorism measures by its member countries to arrest terrorists and weaken their ability to conduct operations. We use INTERPOL arrest data and the utilization of INTERPOL resources by member countries to compute counterfactual benefit measures, which, when matched with costs gleaned from INTERPOL, yield benefit-cost ratios. These ratios averaged around 200 over 12 alternative counterfactual scenarios, so that each dollar of INTERPOL counterterrorism spending returns around $200. The paper also puts forward a perspective on benefits derived from INTERPOL’s Stolen and Lost Travel Document database. Our work shows that INTERPOL provides an inexpensive proactive measure against transnational terrorism that, unlike military operations, does not result in backlash attacks.

Project 2 is “New Empirics of Transnational Terrorism and Its Impact on Economic Growth.” This research project quantifies the threat that transnational terrorism poses on the targeted countries’ economies. Past studies have shown that, while significant, this influence has been rather small, especially for populous wealthy countries. This paper applies principal components analysis to decompose transnational terrorism during 1970-2007 into common and idiosyncratic factors. A single common

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*Funded from other sources
factor is related to individual countries’ transnational terrorist events. Three countries’ (Lebanon, the United States, and Germany) transnational terrorist incidents explain 90% of the variation in the common driver of transnational terrorism, with Lebanon accounting for 67%. A correlation coefficient approach shows that neither the growth rate of real GDP, nor the growth rates of its expenditure components are significantly correlated with terrorism. Separate panel regressions of these growth rates on the overall and common factors of transnational terrorism also indicate no significant relationships. Our common component analysis is a novel methodology applied to terrorism that shows that just a couple countries can influence the direction of transnational terrorism worldwide.

Project 3 investigates “Foreign Aid as Counterterrorism Policy.” This game-theoretic research project indicates the essential factors that determine the appropriate mix between tied and untied aid to a country whose terrorists pose a global threat. Aid is used by a donor country to assist a developing country to adequately address resident transnational terrorists who poses a threat worldwide. An apt example is US aid to Pakistan or Yemen. This project presents a model where foreign aid bolsters a developing country’s proactive counterterrorism efforts against a resident transnational terrorist group. In stage 1 of the game, the donor country allocates resources to terrorism-fighting tied aid, general assistance, and defensive actions at home. The recipient country then decides its proactive campaign against the common terrorist threat in stage 2, while the terrorists direct their attacks against the donor and recipient countries in stage 3. Terrorists’ choices in the final stage provide a solid microfoundation for the terrorists’ likelihood of success function. In stage 2, greater tied aid raises the recipient country’s proactive measures and regime instability, while increased general aid reduces these proactive efforts and regime instability. In stage 1, a donor’s homeland security decisions are interdependent with its aid package to a recipient country, hosting resident transnational terrorists. This interdependency has gone unrecognized to date. This work shows that the need for homeland security is related to foreign aid given to countries where the terrorists reside. The tradeoffs are subtle because aid tied to fighting the resident terrorists abroad can increase regime instability. Thus, the proper mix of tied (terrorism-fighting) aid and general assistance must be chosen while accounting for homeland security expenditures at home.

Project 4 is “Transnational Terrorist Targeting Decisions.” We investigate transnational terrorist targeting choices for 1968-2008 to ascertain the pattern of complementarity and substitution across four targets – officials, military, business, and private parties. To accomplish this task, we employ multivariate event count time series models that account for series interdependencies. Our results are displayed using dynamic tools. There is a clear pattern of dynamic interdependence among target time series that changes over five regimes that relate to changes in defensive barriers (e.g., metal detectors and other devices), state sponsorship of the 1980s, dominant terrorist orientation (e.g., leftist versus fundamentalists), and the post-9/11 era. Complementarity prevails for interdependent time series within each regime. With the progression of regimes over time, target innovations become more unidirectional with spillovers directed to private parties as their relative vulnerability and target desirability increase. Changes in private parties and business attacks explain most of the variation in attacks over time since September 2001.

Keyword 1: INTERPOL
Keyword 2: counterterrorism
Keyword 3: economic growth
Keyword 4: common components of transnational terrorism

2. Research Accomplishments
2.1. An Evaluation of INTERPOL Counterterrorism Linkages

INTERPOL uses its resources and linkages to assist and coordinate the crime-fighting efforts of its member countries. After 9/11, INTERPOL assumed a larger role in curbing transnational terrorist attacks that, through their victims, perpetrators, or implications, impact two or more countries. In particular, INTERPOL took on a proactive role in fighting transnational terrorism by fostering international cooperative linkages among INTERPOL, law enforcement agencies, and its member countries’ National Central Bureaus (NCBs). Although economic studies of counterterrorism established that proactive cooperation among targeted countries will be undersupplied as countries free ride on the actions of others, the potential value of this cooperation has not been previously quantified for specific instances.

This study estimates the return from INTERPOL’s efforts to coordinate proactive counterterrorism measures by its member countries. To accomplish this task, we perform a benefit-cost analysis of INTERPOL-assisted actions. Costs are apportioned to INTERPOL’s counterterrorism activities, while benefits are related to the associated reduction in transnational terrorism. The benefit estimates involve a difficult counterfactual calculation, dependent on the number of transnational terrorist events in the absence of INTERPOL’s actions. This counterfactual cannot be observed and must be ascertained through an informed calculation. In particular, this calculation is based on member countries’ utilization of INTERPOL’s resources – its secure global police communication link, its terrorism-related databases, its police support services, and its training workshops – to arrest suspected terrorists that followed from INTERPOL-issued arrest notices or diffusions (i.e., an NCB-issued arrest request) in 2006 and 2007. Using historical data on transnational terrorist incidents, we devise a means for translating these terrorist-related arrests into fewer terrorist incidents and reduced casualties under twelve alternative scenarios.

Once we estimate the potential reduction in terrorist incidents, attributed to INTERPOL’s actions to coordinate member countries’ police arrests of suspected terrorists, these reductions can be valued in terms of fewer casualties (i.e., reduced deaths and injuries) and saved gross domestic product (GDP). Reduced casualties are readily translated into value-of-life savings, while an econometric model of the impact of transnational terrorism on economic growth is employed to ascertain likely global economic savings from fewer terrorist events. These estimated savings constitute the benefits from INTERPOL coordination.

Given cost and benefit information, we then compute benefit-cost ratios under varied scenarios (e.g., one arrest results in one fewer incident, or an average-sized terrorist cell arrest results in one less incident). These benefit-cost ratios indicate that the return per dollar of costs from INTERPOL’s fight against terrorism ranges from a high of 370 to a low of 65. For the myriad scenarios, the ratio has an average value of about 200, thereby indicating a return of $200 for each dollar of cost. This figure likely understates the true return of INTERPOL counterterrorism coordination, because we err on downplaying benefits and emphasizing costs to be conservative. In the case of costs, we assign the entire cost of INTERPOL’s Command and Coordination Center and its I-24/7 communication linkage to counterterrorism even though they serve other purposes. Our benefit-cost ratios do not include the benefits from the use of INTERPOL’s Stolen and Lost Travel Documents (SLTD) database through the MIND/FIND technological linkage. For the United States, we show that additional SLTD hits (i.e., positive matches at border crossings and elsewhere) may justify the entire INTERPOL counterterrorism costs if just 0.29% of these hits in 2008 captured terrorists.

Given the modest $16-17 million spent on counterterrorism by INTERPOL in 2007 and its large estimated benefit-cost ratios, we conclude that INTERPOL has much to offer to the international community in its fight against transnational terrorism. INTERPOL’s expenditure is tiny compared with
the tens of billions spent on homeland security in just the United States and the much greater expenditure on military proactive measure. Greater use of INTERPOL’s resources is warranted.

2.2. New Empirics of Transnational Terrorism and Its Impact on Economic Growth

Unlike previous empirical studies of transnational terrorism, we apply principal components analysis to identify common and idiosyncratic drivers of transnational terrorism for 1970-2007. Regardless of the sample size, we find a single common factor or driver for transnational terrorism. Some regions – e.g., Europe and Central Asia, and Middle East and North Africa – are more influenced by this common factor than other regions. Moreover, select countries – Lebanon, France, Greece, Spain, and Austria – are more affected by this common factor than other countries. We then investigate whether a few countries’ transnational terrorist incidents are the common drivers of worldwide transnational terrorism. In fact, transnational terrorism in Lebanon, the United States, and Germany explains about 92% of this common factor, with Lebanon alone accounting for 67%. These results cannot be used for forecasting purposes because common drivers may change owing to political and strategic events. For example, it appears that transnational terrorism in Iraq began exerting a common influence ever since the US-led invasion of Iraq.

To discern the dynamic relationship between transnational terrorism and economic growth, we take a simple, direct approach and investigate the correlation coefficients. In so doing, we find no significant correlation between transnational terrorism and economic growth, even when we account for the common and idiosyncratic factors of transnational terrorism. Moreover, we do not uncover any evidence that the growth rates of GDP’s expenditure components are correlated with transnational terrorism. These findings are supported when the growth of each macroeconomic variable is regressed on the common and idiosyncratic components of transnational terrorism. Finally, we investigate the static long-term relationship between transnational terrorism and economic growth. We identify no systematic relationship in either direction between transnational terrorism and average economic growth for the sample period. This remains the case when we relate income levels and transnational terrorism. These findings indicate that transnational terrorism is not, on average, a significant negative influence on economic growth in most countries. We do not deny that small terrorism-plagued countries experience negative macroeconomic impacts. However, our findings caution against generalizing from such countries to countries in general.
There are numerous examples where terrorist groups in foreign bases pose threats to targeted countries. For example, al-Qaida’s command and control center has included bases in the tribal areas of Pakistan and Afghanistan. Jemaah Islamiyah operates out of Indonesia, but poses a threat throughout the region in its quest for a pan-Islamic state. Recently, al-Qaida affiliates conducted attacks in Iraq and Saudi Arabia. Currently, al-Qaida elements are showing up in Yemen and Somalia. In the 1980s, the Abu Nidal Organization, led by Sabri al-Banna, operated from Syria, Iraq, and Libya and targeted European nations. The spillover of Middle Eastern terrorism in the 1970s and 1980s to Europe fits the pattern of foreign-based terrorist groups launching operations abroad.

This paper presents a three-stage game with three active agents: a donor (home) nation, an aid-recipient nation, and a terrorist group. Stage 3 provides a microfoundation to the terrorists’ targeting decision, based on the countermeasures of the donor and recipient nations. In particular, defensive measures in the donor transfers attacks to the recipient country. Proactive measures in the latter curtail attacks everywhere, thereby justifying counterterrorism-based aid. Greater terrorist preference for hurting the donor country’s interests does not necessarily raise attacks at home. Attacks may still increase in the aid recipient if the terrorists view their marginal effectiveness against the donor’s assets to be greater abroad. In stage 2, the regime stability of the aid recipient becomes a key consideration. Greater tied aid increases
the recipient’s proactive efforts, but at the expense of increased regime instability and subsequent terrorism. Untied aid and/or defensive measures in the donor reduce the recipient’s proactive response. Terrorists’ taste and damage parameters affect the recipient’s proactive efforts in complex ways, given the interplay between stages 2 and 3. For example, as terrorists’ proclivity for attacking the donor’s assets increases, the terrorists tend to reduce operations in the recipient country. This, in turn, enhances the donor’s net marginal benefit of proactive measures in the recipient country, thereby leading to a greater subsidy and increased proactive measures.

Finally, in stage 1, the donor chooses its defensive measures and its aid package. Each of these instruments has its opposing aspects – e.g., general aid reduces regime instability in the recipient, but discourages its proactive efforts. In addition, donor’s defensive measures increase homeland security but jeopardize donor’s assets abroad, which necessitate higher tied aid to offset reduced counterterrorism in the recipient. However, this tied aid negatively impacts the recipient’s regime stability.

2.4. Transnational Terrorist Targeting Decisions

This project’s primary purpose is to use a Bayesian Poisson vector autoregressive model (BaP-VAR) to investigate transnational terrorist targeting choices for 1968-2008 to ascertain the patterns of complementarity and substitution among four target classes – officials, military, business, and private parties. Moreover, we are interested in these patterns for five subsamples, identified by Brandt and Sandler in earlier work, as distinct target regimes. These regimes correspond to the rise of transnational terrorism, the application of technological barriers (e.g., metal detectors at airports and embassies), the era of state sponsorship, the dominance of fundamentalist terrorists, and the period of post-9/11. In particular, we develop a new multivariate event count time series model, the BaP-VAR, to characterize the dynamics of terrorist targeting decisions that account for the interdependencies of the four target time series. Our dynamic interpretations are tied to impulse responses with a Cholesky decomposition ordering, based on the speed of reaction of the various target types. In addition, we compute the decompositions of the forecast error variances (DFEV) to glean additional insights.

Our investigation possesses some noteworthy characteristics that distinguish it from previous time series investigation of terrorism. First, we focus on the target choice of terrorists rather than their choice of mode of attack (e.g., kidnappings or bombings) or geographic location. Second, we disaggregate the data to the monthly level, because greater aggregation, say, to the quarterly level affects the dynamic inference by augmenting serial correlation. Third, we use a count model. Fourth, unlike our earlier work, we do not examine each target time series independently, so that the interdependencies among target types are allowed. It is these interdependencies that permit substitutions and complementarities among various target choices. Fifth, these dynamic interdependencies are investigated for five distinct regimes. A rich set of interdependencies among target classes are identified that correspond to target choices diverging in some instances and moving in sync in other instances.

3. Applied Relevance

3.1. INTERPOL Counterterrorism Linkages

Transnational terrorism requires cooperative efforts by targeted countries; yet, these countries have been slow in integrating their defensive and proactive counterterrorism measures. There has been some sharing of information and intelligence – e.g., intelligence was shared with the United States in November 2010 concerning printer-cartridge bombs on planes. Nevertheless, countries still make defensive
decisions independent of one another, often resulting in overinvestment in such actions. Moreover, proactive measures against terrorist bases of operations (e.g., safe havens and training camps) have been made by a few prime-target countries, with other countries free riding on their efforts.

Our innovative work on INTERPOL’s efforts to unite countries in the war on terrorism shows that small amounts of expenditures may have large paybacks in terms of fewer terrorist incidents. To direct its counterterrorism activities, INTERPOL created a Public Safety and Terrorism subdirector in October 2001 following the 9/11 hijackings. In so doing, INTERPOL focused more of its crime-fighting resources on counterterrorism. In particular, INTERPOL assumed a proactive role in fighting transnational terrorism by bolstering international cooperative linkages among law enforcement agencies, INTERPOL, and its member countries’ National Central Bureaus. The resulting proactive measures are aimed at capturing terrorists, thwarting planned incidents, and reducing terrorist resources. Member countries can access INTERPOL databases on suspected terrorists, Stolen and Lost Travel Documents, DNA, and fingerprints. Through the issuing of notices and diffusions (i.e., a member-initiated arrest request), INTERPOL coordinates international efforts to apprehend suspected terrorists. INTERPOL provides a low-cost legal alternative to offensive military actions in the war on terrorism. We derive a methodology to evaluate these efforts. As mentioned earlier, the payback can be as high as $200 for every dollar spent when we account for the reduced terrorism that these INTERPOL-assisted arrests cause. Our methods can be applied to evaluate other counterterrorism efforts for other international cooperative arrangements.

3.2. New Empirics of Transnational Terrorism and Economic Growth

The principal components findings show how a failed or weak state – Lebanon – that gave sanctuary to transnational terrorist groups can impact transnational terrorism globally. Thus, failed states can generate negative spillovers of terrorism far beyond their own borders. This suggests that the world community must assume a more proactive role in stabilizing these failed states in the future and assisting them to eliminate any resident terrorist group. Our analysis also shows that some rich states – the United States and Germany – can also have a disproportionate common impact on transnational terrorism. In the case of Germany, its leftist groups in the 1970s influenced the rise of similar groups in other countries. Moreover, the tactics of these groups were borrowed by other groups throughout the world. The principal components analysis also identifies countries whose transnational terrorism was idiosyncratic to that country. If a country’s terrorism is largely idiosyncratic, then other countries do not have to worry that this country’s terrorism will have an influence beyond its own border. This knowledge helps countries to determine where their scarce counterterrorism resources are best allocated – they are more productive curbing terrorism where there is a common factor.

There are a couple key reasons why countries need to calibrate the influence of transnational terrorism on economic growth. First, knowledge of the losses in economic growth allows nations to judge the opportunity costs from an ongoing terrorist campaign. The size of these economic losses informs nations about the potential payback in terms of fewer terrorist events and reduced economic losses that would presumably follow from offensive countermeasures against the terrorists. Second, knowing the impact of terrorism on economic growth allows countries to ascertain whether terrorists have been effective in hurting targeted economies. Our study identifies no systemic relationship in either direction between transnational terrorism and average economic growth for the sample period. This finding indicates that support for offensive measures must come from considerations – i.e., lost lives and casualties – other than curbing economic growth losses. The findings also suggest that some terrorist groups’ – e.g., al-Qaida – intent to harm the world’s economy has not been very successful.
A companion paper investigates the impact of domestic and transnational terrorism on income per capita growth for 51 African countries for 1970-2007. We find that transnational terrorism had a significant, but modest, marginal impact on growth; however, domestic terrorism had no impact on growth. This finding indicates that donor countries can promote growth by directing some counterterrorism resources to protect against transnational terrorism in particular. The modest impact of transnational terrorism on African growth means that developing countries’ economies have been more resilient, than generally thought, to terrorism.

3.3. Foreign Aid As Counterterrorism Policy

This project adds a novel perspective to the emerging literature that views foreign aid as a means of delegating the fight against terrorism to a source nation. Our analysis shows how homeland security is integrally related to the composition of the aid package – tied versus general assistance – to the country that hosts the common terrorist threat. Because previous analyses did not allow the donor to decide defensive measures, this important relationship has gone unrecognized. The presence of donor’s assets abroad makes this analysis more interesting because deflecting attacks abroad is not always a good thing. Regime instability in the recipient also adds an important new dimension to the study of aid as a counterterrorism tool. Our study demonstrates that terrorists greatly limit the effectiveness of counterterrorism aid by taking refuge in weak states with unstable regimes. In such states, general aid assumes an increased importance in fighting a common terrorist threat, since it can raise the opportunity costs of potential terrorist recruits and it does not weaken the regime. Aid tied to fighting the resident terrorists may be viewed by citizens in the recipient country with distain and animosity to the ruling regime that accepted the aid.

The analysis here shows that targeted countries with global interests must bolster proactive measures through tied and general aid to countries where transnational terrorist groups reside. With many targeted donor countries, this raises a free-riding problem because counterterrorism aid generates global benefits in terms of reduced terrorism for all targeted countries. A prime-target country, like the United States, may take up the fight and subsidize proactive measures abroad. If, however, the wrong mix of general and tied aid is given, then sufficient regime instability can produce a global public bad to all targeted countries as more terrorism results. The fight against transnational terrorism must develop a judicious mix of homeland defenses and counterterrorism foreign assistance.

Recent events in Yemen, Somalia, and Pakistan highlight the importance of understanding the use of foreign assistance as a counterterrorism tool.

3.4. Transnational Terrorist Targeting Decisions

Knowledge of terrorists’ targeting decisions is absolutely essential to informed allocation of homeland security resources. Our analysis shows that target choice by terrorists is influenced by defensive measures and the changing preferences of the dominant terrorist type – e.g., leftist or religious fundamentalists. Terrorists may still attack more heavily fortified targets if their taste for that target type remains high or increases. Thus, both costs and benefits have a role to play. We uncover a clear pattern of dynamic interdependence for the targets; this pattern changes over five distinct regimes. Innovations to each target time series have clear influence on itself that takes some months to die out. In the post-9/11 era, these series’ own effects take longer to fade than in earlier regimes. Moreover, there is a marked interdependence among the target time series, in which complementarity prevails over the five regions. Over time, innovation spillovers favor attacks on private parties, especially during the two regimes since 1990 when fundamentalist terrorists are dominant. The regime with the least interdependence among
targets is that of state sponsorship in the 1980s, when terrorists appear more fixated on specific targets and therefore less willing to substitute to a different target.

The augmented attack spillovers to private parties from 1990 on are attributed to two drivers: fundamentalists’ orientation to create carnage and enhanced defensive measures after 9/11. A Fatwas made private parties legitimate targets, while increased defenses made private parties the most vulnerable target. Target interdependence means that overall target-protection strategies are required to respond to terrorist threats; perceived efforts to focus on defending specific targets will not work. This raises a conundrum since businesses act independently to defend their interests. Governments focus on defending officials, the military and high-profile targets. Private parties face a collective action problem that requires governments to step in and look out for their interests. The changing dynamics over the regimes mean that target interdependence must be constantly monitored as technology, terrorist dominant preferences, and sponsorship changes.

An understanding of target dynamics is at the root of effective homeland security. Our analysis provides this understanding, thereby indentifying changing vulnerabilities over time.

4. **Collaborative Projects**

Only through participation in the Terrorism and Policy Conference that I ran in May 2010

5. **Research Products**

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5.1. **Publications and Reports**


**Papers Completed and in Review**


**5.2. Presentations**

1. Sandler, T., “An Evaluation of INTERPOL’s Cooperative-Based Counterterrorism Linkages,” Department of Political Science, Texas A & M University, College Station, TX, October 1, 2009.


8. Sandler, T., “The Past and Future of Terrorism Research,” LBJ School of Public Policy, University of Texas, Austin, TX, April 5, 2010, Outreach.


10. Enders, W., Sandler, T., “Domestic Versus Transnational Terrorism: Data, Decomposition, and Dynamics,” Third Annual Conference on Terrorism and Policy, Center for Global Collective Action, University of Texas at Dallas, Richardson, TX, May 20, 2010.


15. Sandler, T., “Linking Substantive Expertise and Theory,” Bridging Areas of Expertise: Funding Research on Terrorism, University of Texas at Dallas, Richardson, TX, October 8, 2010, Keynote Address.

6. **Education and Outreach Products**

I used funding from my Center for Global Collective Action to finance the Third Annual Conference on Terrorism and Policy, May 2010. The conference attracted scholars from the United States and Europe. The intent of the conference was to establish linkages among the significant contributors to the study of terrorism and policy. The
interdisciplinary orientation was an essential feature of the conference. Participants presented research papers that explore terrorism and policy using theoretical (e.g., game theory and rational choice models), experimental, and empirical methods (e.g., time series and panel estimations). Participants came from the University of Alabama, Claremont McKenna College, State University of New York (SUNY) at Albany, Texas A & M, RAND/UCLA, St. Louis Federal Reserve Bank, Yale University, University of Toulouse (France), University of the Basque Country (Spain), University of Goettingen (Germany), Washington University (St. Louis), University of North Carolina at Chapel Hill), University of North Carolina at Charlotte, Binghamton University, and ETH Zurich, KOF Swiss Economic Institute. There were also a number of paper presenters and participants from the University of Texas at Dallas. The conference included scholars from economics, operations research, public health, and political science. There were eighteen papers presented. Participants included scholars from CREATE and START. The best papers are being considered for a refereed special issue of the *Journal of Peace Research* that I am currently editing.

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I funded Khusrav Gaibulloev as a Post-Doctoral Researcher during the 2009-2010 academic year. He and I co-authored a number of papers on terrorism.

During the Fall 2009 semester I taught The Political Economy of Terrorism to Honors Students at the University of Texas at Dallas. There were about twenty students in the class. All materials were updated.

My INTERPOL project has meant an ongoing relationship with this organization and the General Secretariat in Lyon, France. The Secretary General, Ronald Noble, has been very supportive of our research and has allowed us to acquire the necessary data to complete the first paper that tries to evaluate INTERPOL efforts to coordinate the arrest of terrorists by member countries.