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Where to Spend Foreign Aid to Counter Terrorism

by

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Abstract:

A simple game-theoretic model is first presented to bring out the conditions for terrorist organizations to choose to perpetrate their attacks in a host country other than at home. This emphasizes the diluted impact of counter-terrorism measures implemented in the host-country on the number of attacks taking place there. These measures might attract more imported attacks and mainly impact the number of attacks exported by the domestic terrorists without affecting much the overall level of terrorist activity in the host country. The empirical results presented provide some support to this prediction, by contrasting the econometric equations that explain the number of attacks per country of origin vs. per host country. A dyadic analysis is also presented. These analyses confirm the role of foreign aid as a counterterrorism measure in the source country, but it raises the issue of its role in the host country. Although foreign aid is confirmed as an effective tool for reducing the total number of attacks produced, it affects the venue of these terrorist attacks. Military interventions are mostly counter-productive, as they seem to be a strong attraction factor for terrorists.

Keywords : Foreign Aid, Terrorism, Military Intervention, Education

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1. Introduction

The first decade of the 21st century has witnessed a major change in international relations, with the fight against terrorism becoming the dominant issue. At the same time, developed nations have massively stepped up their disbursement of foreign aid to poor countries, as shown in figure 1. Some authors have pointed out that the post 9/11 aid boom is likely to be directly related to the perceived increase in the terrorist threat.

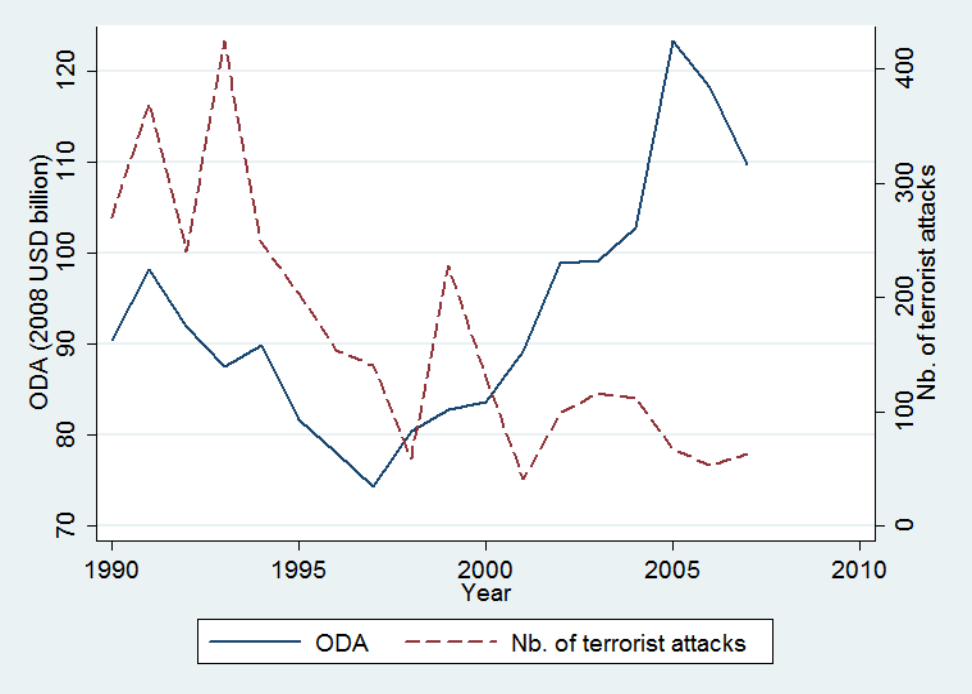


Figure 1: Foreign Aid and Number of Terrorist Attacks, 1990-2007

Lancaster (2008) documents the changes in the US government's attitude towards foreign aid that took place under the Bush administration. The latter created the Millennium Challenge Corporation to handle the increased flow of resources transferred to developing countries selected for their reliable positions in the global war on terror. Fleck and Kilby (2010) provide a thorough quantitative analysis of these changes, showing that the US aid budget has significantly gone up under the Bush administration. In fact, the West seems to be reviving the tradition prevailing during the cold war when foreign aid was granted more or less explicitly with a view to induce political alignment in recipient countries. Frey (1984)

provides a classic analysis of this issue, showing that the allocation of foreign aid flows across recipient countries was largely determined by the alignment with the two super powers of the time. Alesina and Dollar (2000) have shown econometrically that this kind of political alignment was still highly significant for explaining the allocation of foreign aid across recipient countries.

However, while this literature has shown convincingly that foreign aid is significantly determined by the pursuit of international political objectives, it has only partially addressed the issue of what goals are the rich countries trying to achieve by this means. While the list of potential objectives is still open, this line of research has already produced a few clues. The attention of the profession was first attracted by the so-called "aid-ineffectiveness" literature, originating in Boone (1996) and in Burnside and Dollar (2000), which has brought out the fairly negative diagnosis that aid is not really targeted at reducing poverty and boosting growth in recipient countries. Another fairly negative result was brought out by Alesina and Weder (2002), showing that foreign aid has a tendency to increase corruption in recipient countries, through the "voracity effect", while this does not seem to bother donors at all. Beside these negative results, some more positive results about the donors' true motivations have been brought out in the literature. Using a two-stage method with a view to tease out causality, Azam and Berlinschi (2010) have shown that (i) foreign aid reduces the inflow of immigrants from low-income and lower-middle income countries into donor countries, and (ii) the donors are actually using aid as a tool to abate this inflow.

Using a similar two-stage approach, Azam and Delacroix (2006) and Azam and Thelen (2008, 2010) have shown empirically that rich countries are allocating foreign aid across recipient countries with a view to abate terrorism, and that they are achieving a significant impact on the number of terrorist attacks produced by recipient countries. Their econometric approach is based on a structural model where the fight against terrorism is

delegated to the aid-recipient governments. Foreign aid is then viewed as a payment delivered by the donors in return for the efforts invested by the recipient governments in fighting terrorism within their sphere of influence. They use two different datasets spanning 1990-2004 to estimate a structural equation explaining the number of transnational terrorist attacks produced by the different countries, while controlling for the endogeneity of some of the explanatory variables. Two robust results come out of their different cross-country estimates, namely that countries receiving more foreign aid and countries better endowed in educational capital tend to produce significantly less terrorist attacks than the others. Using different approaches, Dreher and Fuchs (2011) have analyzed the increase in foreign aid observed during the war on terror period (2002-2008), and illustrated at figure 1. A first analysis of 22 donor countries suggests that the aid effort increased during this period but not as a response to terrorism. Disaggregating their analysis, they have shown that countries from which terrorism originates are not more likely to receive aid but they receive a larger amount of aid if they are selected. They also found differences in how donor countries react to terrorism by examining particular donor countries. France, Italy and Sweden decreased aid to countries from which terrorism is likely to originate as a consequence of terrorist attacks while the United States increased the amounts of aid. The present paper is also related to the work of Bandyopadhyay, Sandler and Younas (2011a). They present a two-stage game of strategic interaction between the counter-terrorism measures of the donor country and the recipient country. Foreign counter-terrorism measures using foreign aid for fighting terrorism at the source and thus originating from the recipient country may be complementary to the donor defensive counter-terrorism measures. For weak state with unstable regime, they show that untied aid may be more effective than conditional aid. However, the analyses of the number of terrorist attacks that a country is hosting suggest that the amount of foreign aid received has no significant impact. Campos and Gassebner (2009) find no strong links between foreign aid

and the number of attacks and fatalities caused by these attacks in the host country. There is also some evidence that aid given to specific sectors have different impacts. According to the empirical results of Young and Findley (2011), foreign aid decreases terrorism especially when it is given to improve education, health, civil society and conflict prevention. Bandyopadhyay, Sandler and Younas (2011b) have also shown that foreign aid might mitigate the negative effects of terrorism on foreign direct investment, especially the impact of total and domestic terrorism while this is not the case for transnational terrorism.

Azam and Thelen (2010) get a more ambiguous result regarding the impact of military interventions on the number of terrorist attacks by country of origin. Whether the country hosting the US soldiers is an oil exporter or not seems to be an important determinant of the impact of the presence of these soldiers on the production of terrorist attacks by the host country. However, the estimated impact depends on the dataset used, so that no firm conclusion about this point can be extracted from this econometric analysis. This work is also related to the analysis of Braithwaite (2010) showing that countries deploying more troops are more likely to experience transnational terrorist attacks against their interests and the deployment of foreign military troops generates negative externalities. Bapat (2011) finds that military aid creates a moral hazard problem and might not be effective in the fight against terrorist organizations. However military aid can prevent host governments from negotiating with them. Like Azam and Thelen (2010), we consider in this paper foreign aid and military intervention as the main counter-terrorism measures that a foreign country might use to protect its economic or political interests abroad.

The aim of the present paper is to go deeper into the analysis of the impacts of foreign aid, educational capital, and US military presence on the production and export of terrorist attacks, in order to clarify their policy implications. It first confirms empirically the effectiveness of foreign aid as a means to reduce the number of terrorist attacks produced by

source countries using the ITERATE data set over the 1990-2007 period. However, terrorist organizations can perpetrate their attacks in third countries, so that the actual number of terrorist attacks taking place in any given country might differ significantly from the number that is produced by the latter's own terrorist organizations. Host countries might in fact import a lot of attacks from abroad, while some source countries might export a large share of the attacks they produce to some other venues. The present paper provides a simple game-theoretic analysis of this phenomenon, in order to bring out how these exports and imports of terrorist attacks may disconnect the number of terrorist attacks hosted by a country from its own efforts to counter terrorism. This theoretical analysis helps us to understand the kind of cross-border externalities entailed by each country's fight against terrorism.

The paper then presents an empirical analysis confirming the contrast between the determinants of the number of terrorist attacks produced by a country and the number that the latter is hosting. This empirical analysis is first performed at the cross-country level, in order to bring out this disconnection effect by contrasting the findings using the number of attacks by host country and by source country. However, this raises a potential omitted variable problem, because the export and import flows of terrorist attacks across countries create links between the counter-terrorism measures adopted in one country and the number of attacks taking place in some other countries. In order to take this issue into account, we then use dyadic data to analyze imported terrorist attacks. This dyadic analysis confirms the role of foreign aid as a counter-terrorism measure in the source country, but it raises the issue of its role as an attraction factor in the host country. This finding suggests that there are severe incentive problems regarding the role of foreign aid in the war on terror. Although foreign aid is confirmed as an effective tool for reducing the total number of attacks produced, it affects the venue of these terrorist attacks in a counter-productive way. Hence, these findings raise some doubt about the so-called "hearts and minds" approach used recently in Iraq by the US-

led intervention force, which aims at using foreign aid locally with a view to undermine the possible popular support that the terrorists might get and thus reduce the number of attacks occurring there. Picard and Buss (2009) claim that this approach was already used by the Kennedy administration in Vietnam. Lastly, the present analysis is adding a bit of uncertainty to the debate regarding the impact of military interventions in the war on terror, by suggesting that they are mostly counter-productive, as they seem to be a strong attraction factor for terrorists, while they do not affect the number of attacks produced by source countries in a very significant fashion. However, their impact on imported attacks does not seem robust, suggesting that they mostly work by reducing the number of attacks exported by the countries that host these interventions.

The next section presents the theoretical discussion, while section 3 below presents the empirical results, the cross-country analysis and the dyadic analysis.

2. A Two-Country Model of Exporting and Importing Terrorist Attacks

We analyze a world where a major power has some political or economic interests represented in two other countries. Each of the latter is harboring a terrorist organization that seeks to attack the foreign power's economic or political interests in any of these two countries. Hence, the terrorist organizations have the choice of perpetrating these attacks either at home, or abroad, or fanning out in both. We assume away the possibility of attacking the foreign power on the latter's own territory, where the strategy to counter terrorism raises some additional issues beyond the ones analyzed here.

The Terrorist Organizations

Define $a_{sh} \geq 0$ as the number of attacks against the foreign power perpetrated by the terrorist organization from the source country $s \in \{1, 2\}$ in the host country $h \in \{1, 2\}$ and $A_h = \sum_{s=1}^{2} a_{sh}$ as the total number of attacks hitting the foreign power's interests in country h,

whatever the origin of their authors. Define also $\delta > 0$ as the relative cost of perpetrating an attack abroad rather than at home. In what follows we will typically assume that $\delta < 1$ in order to capture the fact that the counter-terrorist units of the police or the army in the host country will probably inflict less damage to the terrorist organization and its supporters in the source country than the latter's own country's equivalent units would in case of home attacks. In the latter case, the counter-terrorist units' response might include a crackdown on suspected terrorists and their supporters, as well as some increased police pressure that might disrupt their future operations. Moreover, the host-country's counter-terrorist units are generally less well prepared to track foreign terrorists acting outside their own country, who just spend little time in the host country for preparing their attack. They might be taken by surprise by the attack, after having failed to detect these terrorists at the border when they entered the country. Similarly, the local counter-terrorist units might fail to get enough intelligence from the terrorists' country of origin, if only because the latter might have a hard time tracking them along the indirect route that terrorists generally use to get to their theatre of operation. Hence the source-country anti-terrorist units might not know where the terrorists have moved to. By contrast, their home country's police would have an advantage for tracking all their moves within their home country, after years of surveillance within a well known territory. In particular, they would be in a position to monitor more closely the various kinds of support that terrorists get in their own country, and might have some informants infiltrated among them. For the sake of saving notation, define also $C_s = \sum_{h=1}^{2} \delta^{|s-h|} a_{sh}$ as the total number of attacks perpetrated by country s's terrorists weighted by their relative cost.

Assume that each country's terrorist organization values equally the attacks perpetrated by the other country's terrorists against the same target in the same host country as its own attacks. We thus assume that there is a public-good ("public-bad") dimension to terrorism, as each country's terrorists would derive satisfaction from all the attacks

perpetrated by all the terrorist organizations within each country, independently of their national origin. Hence, there is an interaction between the two terrorist organizations via this mechanism that calls for a game-theoretic analysis. We use the simplest simultaneous-move Nash equilibrium concept for solving the model. Then, assuming for the sake of simplicity a quadratic specification for the cost function, each terrorist organization seeks to maximize the following expression, taking as given the equilibrium choice made by the other one:

$$V_s = \max_{a_{sh}} \sum_{h=1}^{2} \theta_h \, v\left(A_h\right) - \gamma_s \, C_s^2 / 2 \,. \qquad (1)$$

In this expression, $\theta_h \geq 0, h \in \{1, 2\}$ captures the "attractiveness" of the host country for the terrorists, which plausibly depends both on the strategic value of the foreign power's interests present in that country and on the links between the local government and this foreign power. Then, the function $v\left(A_h\right)$ is assumed increasing and concave, in order to capture the additional benefits that the terrorists get when the foreign power is hit in different countries, putting the latter under a multi-country pressure forcing it to spread its self-protection efforts more thinly. The source-country-specific parameter $\gamma_s > 0$ is a portmanteau parameter that captures both the effectiveness of all the counter-terrorist measures taken by the government in the source country, which increase γ_s, and the extent of the popular support that the terrorist organization enjoys in its own country, reducing γ_s. We take all these source-country-specific influences on the terrorist organization's cost of operation as exogenous in this partial-equilibrium analysis. The amounts of foreign aid received by the source-country's government and the level of secondary school enrollment have been found highly significant inhibitors of terrorist violence by Azam and Thelen (2008, 2010). These two determinants may be viewed as some background determinants of a high γ_s, which we take into account in the empirical analysis below.

Patterns of Specialization

This simple model allows us to discuss various patterns of specialization by the two terrorist organizations, which are fanning out if they are active in both countries or focusing, if they only launch their attacks in one country. This simple framework can generate all types of patterns of specialization for different configurations of parameters. However, rather than providing a catalog of all possible cases, we only focus here on some more relevant cases. The following proposition first clears the ground by spelling out a simple condition that excludes three impossible cases.

Proposition 1: If $0 < \delta < 1$ it is impossible for the two countries' terrorist organizations to be both engaged in home attacks in equilibrium.

Proof: Define $\lambda_{sh} \geq 0$ as the Lagrange multiplier attached to the non-negativity constraint $a_{sh} \geq 0$, with complementary slackness. Then, the first-order condition for problem (1) may be written as:

$$\theta_h v'(A_h) = \delta^{|s-h|} \gamma_s C_s - \lambda_{sh}, s \in \{1, 2\}, h \in \{1, 2\}. \quad (2)$$

Then it is easily checked that it is impossible to have:

$$\lambda_{sh} = 0, \forall s \in \{1, 2\}, \forall h \in \{1, 2\}. \quad (3)$$

This would imply:

$$\theta_h v'(A_h) = \delta^{|s-h|} \gamma_s C_s = \delta^{|\$-h|} \gamma_\$ C_\$, \forall s \in \{1, 2\}, \forall \$ \neq s \in \{1, 2\}, \forall h \in \{1, 2\}, (4)$$

which is clearly impossible if $\delta \neq 1$.

Moreover, it is also easily checked that we necessarily have at least one of the home attacks equal to zero so that $\lambda_{ss} > 0$ for that one.

Proposition 1 thus shows how important is the assumption presented above that the relative cost of perpetrating terrorist attacks abroad rather than at home is lower than 1. It rules out the following three types of cases: (i) both countries' terrorist organizations are

fanning out, (ii) one of the countries is fanning out and the other one focuses on home attacks, and (iii) the two countries specialize in home attacks. It thus entails that at least one of the two countries will export some terrorist attacks to the other one and that at most one will perpetrate home attacks. This assumption is thus yielding a kind of premium on the export of terrorist attacks, and we now focus on the cases where at least one of the terrorist organizations is perpetrating its attacks abroad and at most one will launch any home attacks. This captures the intuition that, because of the assumed export premium, a terrorist organization will only engage in home attacks if its country does not import enough attacks from the other one, leaving the marginal value of the home attacks high enough to compensate for the higher cost of perpetrating them. This assumption is required in particular to allow for the phenomenon of attacks swapping, whereby terrorists from two different countries are perpetrating their attacks in each other's country, a phenomenon that can be observed in the real world. If $\delta > 1$, then it is easily checked that at least one country specializes in home attacks in equilibrium and we rule this out. Without loss of generality, we assume $a_{22} = 0$, so that country 1 is really our host-country of interest while country 2 is put in the role of the rest of the world that may or may not produce some attacks in country 1. Proposition 1 still leaves us with several distinct types of equilibrium configurations of attacks, which involve potentially three basic patterns of attack combinations.

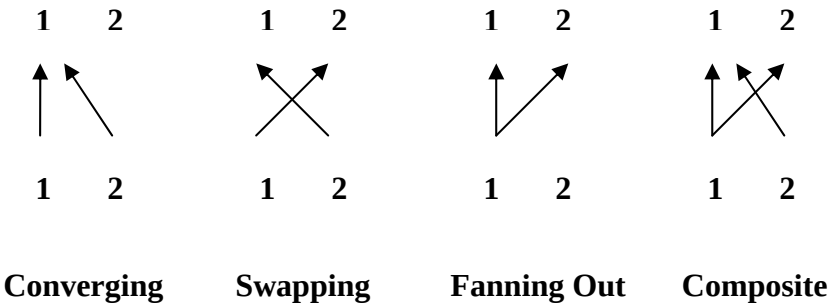


Figure 2: Basic Patterns of Attacks

Figure 2 represents the direction of attack by an arrow flowing from the source country to the host country. (i) In the "converging" configuration, the terrorist organizations from both source countries perform their attacks in the same host country. (ii) In the "swapping" configuration, both terrorist organizations export their attacks to the other country, and do not perform any at home. (iii) In the "fanning out" pattern, one country's terrorist organization is attacking in both countries, while the other one refrains from performing any attack. Then, (iv) the "composite" configuration is defined as the combination of all three basic patterns.

We now take the composite equilibrium as our reference and spell out the conditions for its existence. Then, we show below that the converging equilibrium and the swapping equilibrium can be derived from the composite equilibrium under some parameter restrictions, while a pure fanning out equilibrium is not possible. In the converging equilibrium, one country specializes in home attacks, while the other one specializes in exporting attacks to the other country. It follows that one country gets all the attacks while the other one remains free from terrorist violence. In the swapping equilibrium, each country exports some attacks to the other one, while none of them remains diversified. The conditions for these types of equilibriums to prevail are spelt out in proposition 2.

Proposition 2:

(i) A composite equilibrium with $a_{11} > 0, a_{12} > 0, a_{21} > 0$ and $a_{22} = 0$ exists if:

$$\theta_1 v'(A_1) = \gamma_1 C_1 = \delta \gamma_2 C_2, \tag{4}$$

and

$$\theta_2 v'(A_2) = \delta \gamma_1 C_1 < \gamma_2 C_2. \tag{5}$$

(ii) Assume in addition that $\theta_h v'(0) \ll \infty, h \in \{1, 2\}$. Then, a converging equilibrium with $a_{11} > 0, a_{21} > 0,$ and $a_{12} = a_{22} = 0$ prevails if (4) holds and:

$$\theta_2 v'(0) < \delta \gamma_1 C_1 < \gamma_2 C_2 . \qquad (6)$$

(iii) A swapping equilibrium with $a_{12} > 0,\ a_{21} > 0$ and $a_{11} = a_{22} = 0$ prevails if (5) holds and (4) is replaced by:

$$\theta_1 v'(A_1) = \delta \gamma_2 C_2 < \gamma_1 C_1 . \qquad (7)$$

(iv) A fanning out equilibrium with $a_{11} > 0, a_{12} > 0,$ and $a_{21} = a_{22} = 0$ is not possible.

Proof: Using again (2), one can easily check the various results in proposition 2 by looking at the corresponding combinations of Lagrange multiplier values entailed by complementary slackness.

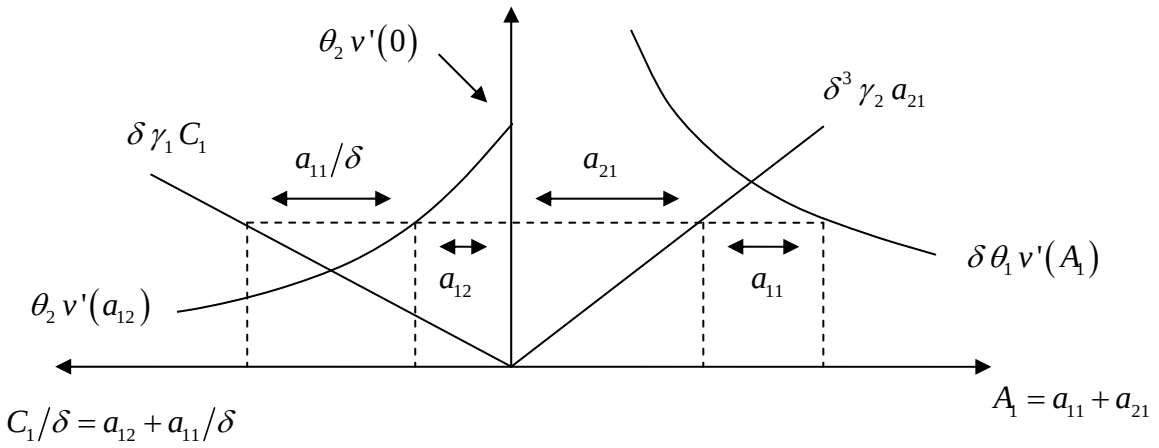


Figure 3: The Composite Equilibrium

Figure 3 represents the composite equilibrium in a "back-to-back" diagram that allows us to give a kind of "demand-and-supply" interpretation of the terrorist organizations behavior. In this case, the configuration of parameter values is such that there is an "excess demand" for terrorist attacks in host country 1, so that the local terrorists have to perpetrate some home attacks in order to put up with an insufficient level of imported attacks, despite the additional cost implied by these home attacks relative to exported ones. Figure 3 shows intuitively that such a pattern of attacks will prevail when country 1 is a more "attractive" host country than country 2 for the terrorists, while the marginal cost of running a terrorist

organization in the latter country is relatively high compared to the corresponding cost in country 1.

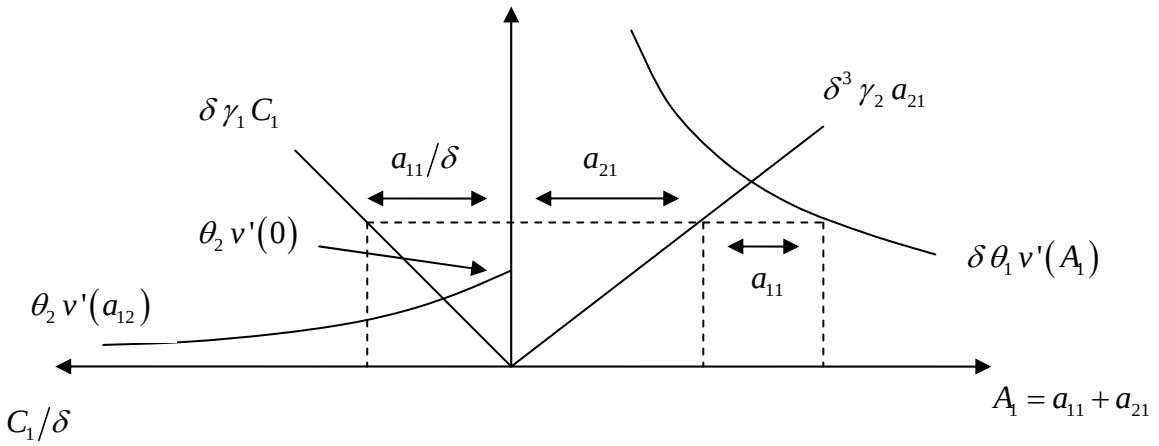


Figure 4: The Converging Equilibrium

Figure 4 represents a converging equilibrium, which is derived from the composite equilibrium of figure 2 by either lowering the attractiveness parameter θ_2 of country 2 as a host country or by increasing the cost parameters γ_1 and γ_2. In this case, country 1 is so much more attractive as a host country than country 2 that both terrorist organizations give up the latter and only focus their activity on attacking the foreign power in country 1. Now, let us go beyond the partial-equilibrium setting of this model for a moment and assume that the host country's government gets some negative fallout from the terrorist attacks, e.g., reduced foreign investment. Then, it is easy to guess that this kind of equilibrium is providing some welcome incentives for each government to reduce its country's attractiveness as a host for terrorist attacks, with a view to divert the attacks produced by its own terrorist organizations to the other country.

At the other extreme, the two countries may be much closer in terms of attractiveness as host countries for the terrorist attacks so that the export premium entailed by $\delta < 1$ plays the key role. Figure 5 represents the resulting swapping equilibrium, where both terrorist organizations specialize in exporting attacks. As a result, the number of attacks hitting the foreign power in each host country is independent of the efforts engaged in each of them to

counter terrorism. Going again beyond the partial equilibrium setting, as we did above, it is easy to guess that this configuration is the worst in terms of incentives for national governments to engage resources in counter-terrorism activities, whose potential benefits only accrue to the other country. A race to the bottom is likely in this case unless the two countries engage in a close cooperation for protecting each other's interests. However, monitoring problems related to each country's sovereignty are bound to crop up in this case.

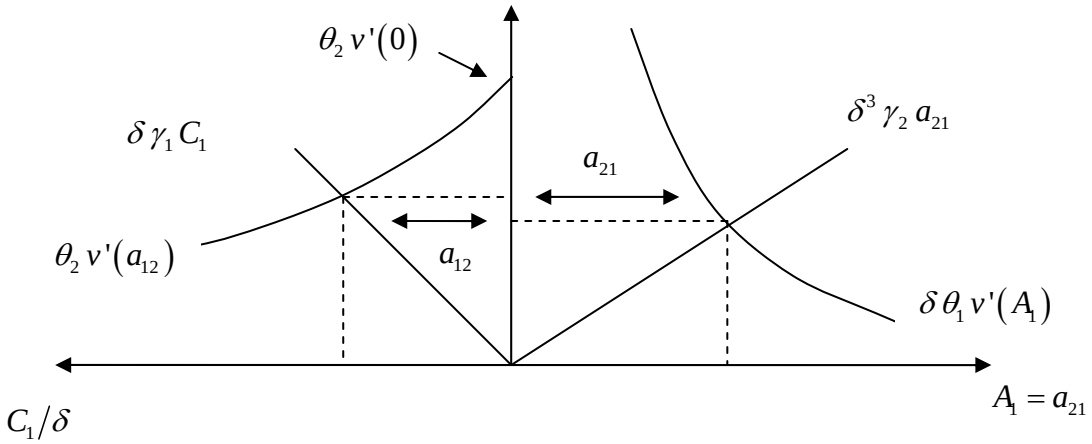


Figure 5: The Swapping Equilibrium

Comparing these three diagrams shows that the swapping and the converging equilibriums can be understood as special cases of the composite one. Figure 6 depicts the relative locations of these special cases in the $\{\theta_1, \gamma_1\}$ space, given $\{\delta, \theta_2, \gamma_2\}$. This diagram emphasizes how the swapping and the converging equilibriums can be understood as borderline cases compared with the central case of the composite equilibrium, prevailing for rather extreme values of some of the parameters. It brings out that the converging equilibrium prevails when both country 1's attractiveness as a venue for terrorist attacks and the cost or running a terrorist organization there are too high and that a swapping equilibrium is impossible if the latter cost is too low. Equivalently, it shows that, within the range of values for θ_1 that permits the swapping equilibrium to exist, then increasing γ_1 will reach a limit

beyond which it effectiveness as a counter-terrorism device vanishes. Similar diagrams can easily be derived in the other parameter subspaces.

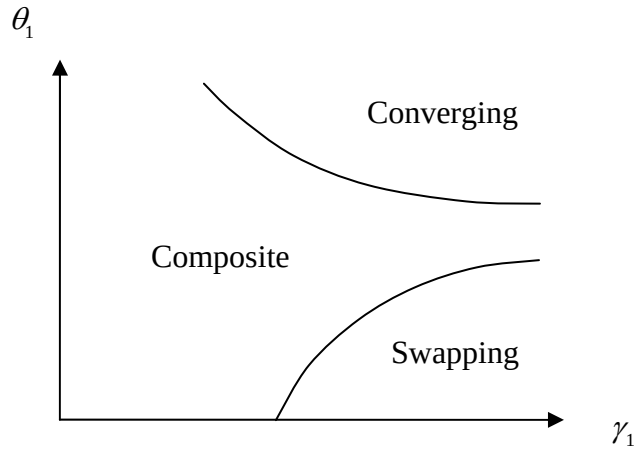


Figure 6: Equilibrium Types in the $\{\theta_1, \gamma_1\}$ Space

In each case involved in proposition 2, we can now characterize the determinants of the numbers of attacks occurring in each country as in proposition 3. These predictions form the basis of the empirical analysis presented below.

Proposition 3: The impacts of the exogenous parameters $\{\theta_h, \gamma_s\}$, $h \in \{1, 2\}$, $s \in \{1, 2\}$ depend on the prevailing equilibrium type as described in Table 1.

Table 1: Comparative Statics by Equilibrium Type

Eq. Type	A_h	θ_1	θ_2	γ_1	γ_2
Swapping	A_1	+	0	0	-
	A_2	0	+	-	0
Composite	A_1	+	-	-	-
	A_2	-	+	-	-
Converging	A_1	+	0	-	-
	A_2	0	0	0	0

Source: Authors' calculations.

Proof: The signs of these impacts can either be found by shifting the different curves at figure 3 through 5 or by tedious calculations from the equilibrium conditions given at proposition 2, which are sketched in the appendix.

Proposition 3 gives us the main empirical predictions to be tested below. It tells us that the number of attacks hosted by a country depends mainly on its own "attractiveness" for terrorists, which affects this number positively whenever it is hit at all by terrorist attacks. In the composite equilibrium, where some form of competition exists between the host countries, it also depends negatively on the other country's attractiveness. In all three equilibrium configurations, it also depends negatively on the cost of running a terrorist organization in the country of origin. Lastly, in the cases of the converging and the composite equilibriums, there is also a negative effect of the cost of launching the home attack in the host country, an impact that disappears in the swapping equilibrium.

The Diluted Impact of Counter-Terrorism Measures on Hosted Attacks

Figures 3 through 5 give us an important insight about the impact of the operating cost of running a terrorist organization inside the host country on the number of attacks affecting the latter. They show that an increase in γ_1, rotating upwards the marginal cost line in the left-hand panel, provides an incentive for reducing both types of attacks originating in country 1. This captures the impact of counter-terrorism measures on the number of attacks per country of origin, which have been brought out empirically by Azam and Thelen (2008, 2010), like foreign aid or an expanded educational capital.

However, the impact of this contraction will only translate into a reduction in the number of attacks hosted by country 1 in a much diluted way. Two offsetting effects are involved, resulting respectively from an imported-attacks expansion and an exported-attacks contraction. In both figures 3 and 4, the resulting contraction in the number of home attacks in country 1 is partly offset by an increase in the number of imported attacks, responding to the

entailed increase in the marginal value of attacks perpetrated there. In both figures 3 and 5, the response to the counter-terrorism measures translates into a fall in the number of exported attacks, with a dampened effect on the number of home attacks in figure 3. In figure 5, this dampening effect is absent as there are no active home attacks. These two offsetting effects, which are only present jointly in the composite equilibrium, constitute the main insight brought out by this model. The empirical results presented below suggest that this offsetting effect, brought about either by import expansion or export contraction, or both, is highly significant.

A little imagination is required to extrapolate these predictions from this simple two-country model to the real world where many countries are unaffected by terrorist activity, on the one hand, while many other countries are exporting and/or importing terrorist attacks, on the other hand. Our empirical analysis below focuses on the different determinants of the number of attacks per host country compared with those of the number of attacks per source country. In line with the theoretical framework presented above, they focus on the determinants of the level of the host country's attractiveness to terrorists and on the diluted impact of counter-terrorism variables. Our findings provide some qualified support to the view that the number of US soldiers present in the host country is the most noticeable attraction factor, contrary to some stronger views presented among others by Pape (2006). We also analyze the number of attacks per country of origin, in order to identify the counter-terrorism variables that are subsumed in this theoretical model in the cost parameter. In fact, this part of the analysis mainly confirms the findings presented in Azam and Thelen (2010), which emphasize foreign aid and educational capital in the source country as the main inhibitors of terrorist attacks, although the sample used here is slightly different. This helps us to interpret some of the estimates found in the host-country equation.

The main prediction flowing from the foregoing theoretical exercise is that the impact of the counter-terrorist measures implemented in the host country should not be very robust, being probably either swamped at the margin by the imported attacks that are only affected by them indirectly, or being mainly vented by reduced exports. In particular, they should not come out significantly if the swapping pattern played an important part in the observed outcome. Because the host country might import terrorist attacks from several source countries, the impact of the counter-terrorism measures implemented in the source countries are difficult to capture. Nevertheless, the foregoing theoretical model predicts that they should be significant determinants of the number of attacks imported by the host country. We present two different attempts at controlling for them.

3. Econometric Analysis

In this section, we want to identify the determinants of the level of the host country's attractiveness and the impact of the counter-terrorism variables analyzed by Azam and Thelen (2010), i.e. the impacts of foreign aid, educational capital and military intervention. We want to analyze the different determinants of the number of terrorist attacks per host country and compare them to those of the number of attacks per country of origin of the perpetrators. The theoretical model suggests that more attractive countries host more attacks, while foreign aid and the level of educational capital might have a strong impact as counter-terrorism measures only in the terrorists' country of origin. In the cross-country analysis, we use the same econometric method as in Azam and Thelen (2008, 2010). A dyadic analysis of imported attacks is also performed below to control for the potential problem of omitted variables that could be due to the link between the counter-terrorism measures adopted in one country and the number of attacks taking place in other countries.

3.1 The Data

Dependent Variables

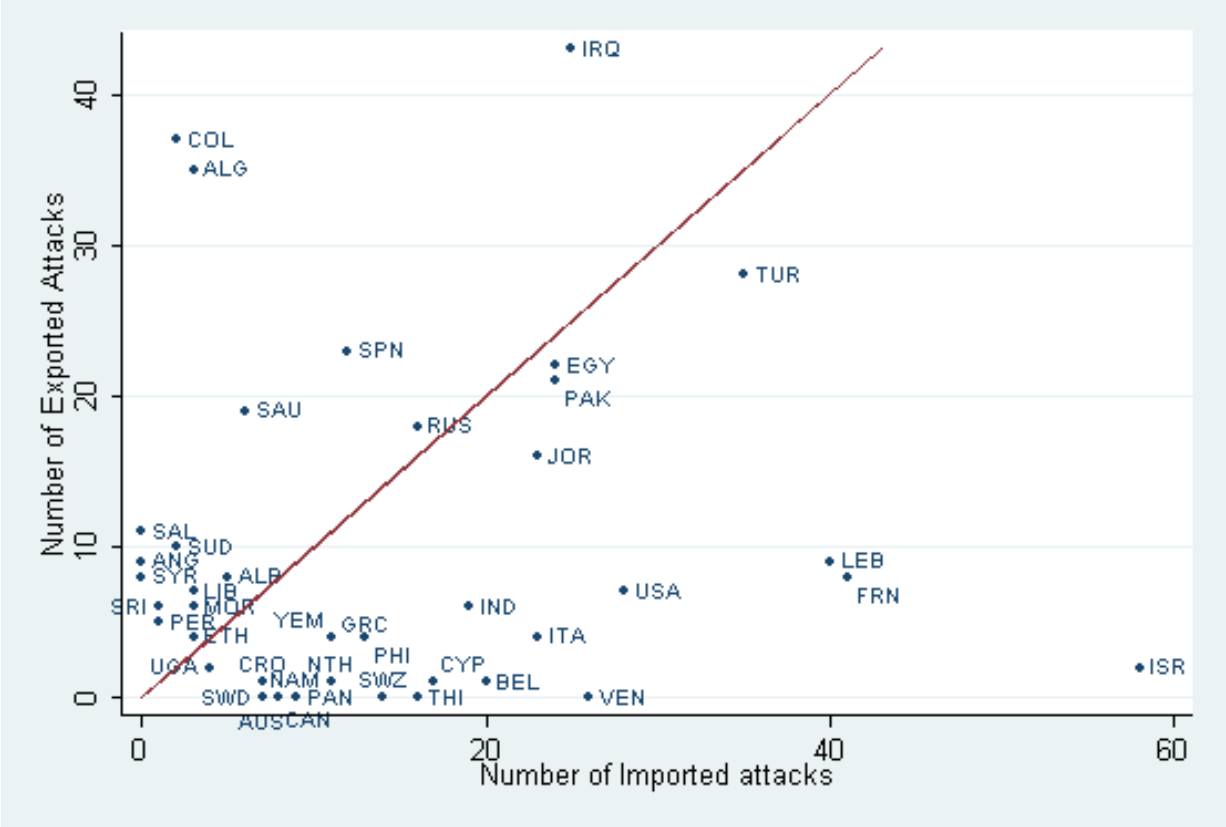
The two dependent variables in the cross-country analysis are the number of terrorist events per source country and the number of terrorist events per host country taking place over the period 1990 to 2007.

The only dataset available to have the information about the country of origin of the perpetrators is ITERATE (*International Terrorism: Attributes of Terrorist Events*, Mickolus et al., 2008). ITERATE focuses on transnational terrorist attacks where terrorism is defined as "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", as explained in Enders and Sandler (2000, 2012). These data record key information about the date of the attacks, the location of the attacks, the type of incidents and, for many events, the country of origin of the perpetrators. Over the period 1990 to 2007, the percentage of incidents for which the dataset ITERATE does not give the nationality of the terrorists is about 30%. We have thus a set of 3016 events where 2859 involved only one nationality among the perpetrators. There are 157 events for which there is more than one nationality among the perpetrators. If we count as separate events the attacks for which the nationality of the second and the third perpetrators are different from the first one, this adds 174 events in the whole sample and it does not change the main results.

We compute the number of terrorist events according to the first nationality of the perpetrator's and according to the country of location of the attacks. In the main analysis, we use a reduced sample where the incidents with unknown nationality of the perpetrators are dropped in order to compare the results with the source country analysis. The correlation between the number of terrorist events per country of origin and per host country in this

reduced set of events is 0.59. In this reduced sample, 20 countries are never concerned by terrorist attacks, 12 countries are concerned by imported terrorist attacks but are the source of zero attacks and 2 countries have exported one attack but they are not concerned by terrorist attacks in their own territory.

Table A1 in the appendix provides some summary statistics over the whole sample. For the countries concerned by terrorism, the average number of attacks per source country over the period 1990 to 2007 is 20.78 while it is 23.38 per host country.



Source: computed from ITERATE

Figure 7: Number of Exported Attacks *vs.* Number of Imported Attacks

Figure 7 plots countries by the total number of exported terrorist attacks versus the total number of imported attacks during the period 1990 to 2007. Only the countries where at least five attacks where exported or imported are presented, the whole sample being plotted in figure A1 in the appendix. In these figures, four countries are missing, Ireland and Iran with a

number of exported attacks higher than 50 and United Kingdom and Germany with a number of imported attacks higher than 60. The countries which do not export or import any attacks or very few compared to the attacks perpetrated by domestic terrorists are not represented. They include Peru, Nigeria, Sierra Leone, Chile, Indonesia, China, Liberia, Argentina, Guatemala and Panama**.** The countries close to the 45-degree line are just as likely to import attacks as they are to export attacks. Like in Blomberg and Rosendorff (2006), some countries are notable net importers of attacks. This is the case for the United Kingdom, Israel, France, Lebanon, the United States and Venezuela. Germany and Italy are also notable importers of attacks but they have many attacks perpetrated by domestic terrorists. The net exporters include Ireland and Iran. Colombia and Algeria are notable exporters but they host many attacks perpetrated by domestic terrorists.

To check the robustness of the cross-country findings and to take into account the characteristics of the host and the source countries, we then perform a dyadic analysis of imported attacks. This analysis is performed to control for the potentially omitted variable problem because the export flows of terrorist attacks across countries create links between the counter-terrorism measures adopted in one country and the number of attacks taking place in other countries. In this analysis, the dependent variable is the number of imported attacks coming from each country of our sample over the period covered. In our original sample, about 40% of the events are perpetrated by a terrorist originating from a different country than the country where the attack occurs. We thus only have 1200 imported events over the period covered, which are used in the dyadic analysis, while the cross-country analysis also uses the events perpetrated by domestic terrorists[1].

[1] The country of location of the attack is the same as the country of origin of the perpetrator. These incidents are still transnational events because some of the victims are originating from another country.

Explanatory Variables

To estimate the impact of the military approach to deter terrorism and to proxy for the attractiveness of the country, we focus on US overseas military interventions, using the average number of US soldiers[2] deployed in the host country over the sample period. As emphasized by Pape (2006) in his analysis of the presence of American forces in Iraq and in the Arabian Peninsula, all the campaigns led by the terrorist organizations have the common goal of getting foreign military forces out of the country of origin. This point is reinforced in Pape and Feldman (2010). Moreover, the USA usually provide by far the largest contingent of soldiers so it can also be viewed as a proxy for military intervention of other countries. Finally, a military intervention is liable to be endogenous because it could be a response to the presence of highly militant groups. We control for this potential endogeneity.

We use the standard measure of foreign aid, namely Official Development Assistance (ODA). This variable aggregates the disbursements of loans and grants by official agencies of the members of the Development Assistance Committee (DAC) to promote economic development and welfare in the recipient countries. This data is measured in constant 2008 US dollars and the source is the online OECD Development Database on CRS Aid Activities. In the robustness checks, we also use the level of aid as a ratio to GNI from the same database. In our sample, 24 countries are aid donors, mainly OECD member countries.

We use the gross enrolment rate in secondary education to measure the educational capital[3]. It is the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the level of secondary education. This is admittedly a fairly gross proxy, which we instrument below for the sake of controlling for measurement error.

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[2] The source of the active duty military personnel strengths by country is the Directorate for Information Operations and Reports (US Department of Defence). We set the number of US soldiers in the US equal to zero as other institutions are in charge of fighting terrorism in the country.

[3] As in Azam and Delacroix (2006) and Azam and Thelen (2008, 2010) we are not interested in the flow of human capital investment, which is optimized out in these models, but in the stock of educational capital that determines it to some extent. Here, secondary school enrollment is just a rough proxy to capture the latter.

To control for other characteristics of the sample countries we use the same explanatory variables as in Azam and Thelen (2010). We add the average value of GDP per capita over the sample period to control for the level of economic development. The source of the data for the gross enrollment rate in secondary education and GDP per capita is the World Bank's online World Development Indicators (WDI). We use the same variables for capturing the aspect of "militancy" in the country, the geographic and civilization characteristics and the level of legal capital. Basuchoudhary and Shughart (2010) and Azam and Thelen (2010) show that the level of "ethnic tension" in the country significantly affects the level of terrorist attacks originating from this country. To control for the level of militancy in the country, we add an index of ethnic tension[4] from the IRIS 3 data set (International Country Risk Guide, proprietary of the PRS group). To capture the level of legal capital in each country, we use the "Law and Order" index[5] from the same data set. As suggested by Roberts (2003) the sense of "justice" is an important determinant of popular support for political Islamism or other radical positions. To capture the militancy aspect and to control for other country characteristics such as geography and civilization as well as for some historical determinants that may still influence the foreign country's behavior, we also use several geographical dummy variables. These are "Camp David" (Egypt and Israel), China and India, Latin American countries, Sub-Saharan countries, former USSR countries, ASEAN countries before 1990 and OECD countries before 1990. We also add two important dummy variables for capturing the historical importance of some past wars that are liable to influence the presence of US troops in these countries. This is notably the case for South Korea and the former "Axis" allies groups, including Germany, Italy and Japan.

[4] The ethnic tension index is an assessment of the degree of tension within a country attributable to racial, nationality or language divisions, ranging from -6 to 0 with higher values indicating higher ethnic tension.

[5] The law and order index represents the strength and the impartiality of the legal system and an assessment of popular observance of the law, ranging from 0 to 6 with higher values indicating sound and strong legal institutions.

3.2 Cross-Country Analysis

From our theoretical model, we expect negative and significant impacts of the amount of aid received and the stock of educational capital on the number of terrorist attacks per country of origin of the perpetrators, in line with Azam and Thelen (2010). The impact of these counter-terrorism variables is different on the number of terrorist attacks hosted by each country as they might both affect the costs of running a terrorist organization there as well as to enhance the attractiveness of that venue for terrorists. We also expect that more attractive countries, determined in part by the presence of a high number of US soldiers in the country, might be more concerned by terrorist attacks.

The two dependent variables, number of terrorist attacks per source country and per host country only have non-negative integer values. Hence, the standard least square estimation cannot be used and we present the results using a negative binomial specification. To control for omitted variables, we use a version of the Hausman test (Wooldridge 1997). The procedure has two stages: first, a reduced-form equation is estimated for each endogenous variable using exogenous regressors. The latter are meant to account for all the information that is common to the players and to the researcher. Then, the residuals resulting from this estimation capture the effect of the unobserved information used by the donor community for making their decision about aid and military intervention. These residuals are then included in a second step as regressors in the structural equation that we want to estimate. If they turn out to be jointly significant according to a Wald test then we cannot reject the endogeneity assumption confirming somehow that the donor is using this kind of unobservable relevant information for allocating its support across countries.

Reduced-Form Equations

For each endogenous variable we use all the exogenous variables of the structural equation and various additional instruments as regressors. As instrument for the educational

capital and for representing the development objectives of the donors, we use the under-5 mortality rate at the beginning of the period in 1990 (WDI Online data). We also include a series of dummy variables to control for other country characteristics. For capturing some geo-strategic considerations that might also influence the presence of US soldiers in the country we follow Azam and Thelen (2010) and use the shortest distance to an oil-exporting country. We only consider countries where oil exports amount on average to more than 30% of merchandise export during the period 1990 to 2007. Then for each country we compute the distance in hundreds of kilometers between its capital-city and the capital-city of the nearest oil-producing country. The latter countries have thus a distance to oil wells equal to zero.

Table 2 shows that all our reduced form equations are significant and provide an acceptable starting point for the subsequent analysis. Equation [1] is the reduced-form equation for per capita ODA. Equation [2] and [3] are OLS regressions for the level of secondary education and the number of US troops deployed in the country. Both are significant. Some economic variables such as per capita GDP and population size explain to some extent the need for aid but are not significant in the other two equations. The under-5 mortality rate is clearly inversely related to past investment in human capital, especially for women, confirming that health and education tend to move together. It is also negatively correlated to the number of US troops in the country, reflecting the fact that US military interventions do not generally take place in the poorest countries.

Finally, as expected, the distance to oil has a significant negative impact on the number of US troops deployed in the country. This variable is not significant in the other two equations suggesting that oil-exporting countries, holding every thing else constant, do not receive less aid and are not enrolling more kids at school than the other countries. The two dummy variables (Korea and Axis) have a strong and positive impact on the number of US troops deployed in the country.

Table 2: Reduced-Form Equations

Variables	ODA per capita	Secondary School Enrol.	Number of US troops (log)
	[1]	[2]	[3]
Intercept	459.188***	93.665***	2.538
	(55.254)	(23.722)	(3.279)
GDP p.c.	-0.004***	0.000	-0.000
	(0.001)	(0.000)	(0.000)
Population (log)	-22.815***	-1.032	0.165
	(2.835)	(1.097)	(0.164)
Under 5 mortality Rate in 1990 (per 1000)	0.037	-0.244***	-0.008**
	(0.050)	(0.040)	(0.003)
Distance to Oil Wells (hundred of km)	0.081	0.050	-0.025**
	(0.003)	(0.001)	(0.000)
Ethnic Tension	9.217*	-0.189	-0.006
	(5.093)	(1.432)	(0.154)
Law and Order	1.888	1.476	-0.293
	(4.929)	(2.305)	(0.282)
"Axis" (Japan, Germany, Italy)	-37.431*	-8.432*	5.096***
	(20.147)	(4.448)	(1.024)
Korea	-136.771***	21.142***	7.717***
	(21.789)	(5.543)	(0.794)
ASEAN	0.377	-6.321	1.061
	(10.348)	(6.679)	(0.940)
"Camp David"	145.595**	15.461**	1.967*
	(74.251)	(6.360)	(1.142)
China and India	38.337**	-6.561	0.099
	(16.267)	(6.455)	(0.936)
Latin America	-1.077	-1.338	0.271
	(14.907)	(5.859)	(0.631)
OECD	-49.733**	21.653***	2.171*
	(21.895)	(5.386)	(1.119)
Sub-Saharan	-13.982*	-11.977	-0.681
	(8.348)	(7.265)	(0.630)
USSR	-24.547***	16.356***	-1.819***
	(9.280)	(3.519)	(0.527)
Observations	129	129	129
LR statistic	144.50***	223.07***	87.05***
pseudo- or adjusted R^2	0.674	0.799	0.423

Note: Equations [1] is a Tobit regression while [2] and [3] are least squares regressions estimated by maximum likelihood. Robust standard errors are in parentheses.
* significant at 10%, ** significant at 5%, *** significant at 1%.

Structural Equations

The first three columns of table 3 present the findings regarding the number of attacks per host country, while the results for the number of attacks per country of origin are presented in the second set of columns. In equations [5], [6], [8] and [9] we add the corresponding residuals from the reduced-form equations presented above to control for endogeneity and the relevant F-test for their joint significance. All the equations are globally significant. For the number of terrorist attacks per country of origin in the second set of columns, we get the same results as in Azam and Thelen (2010). Equation [7] does not control for the endogeneity. The joint-F tests are significant in equations [8] and [9], confirming the presence of some potential endogeneity bias.

The amount of ODA per capita and the level of secondary education have the expected significant negative impacts on the number of terrorist events originating from each country. In equation [9], we find as in Azam and Thelen (2010) that military interventions have an ambiguous impact depending on the distance to oil, but it is only significant at the 10% level. This suggests that military interventions are only effective to counter terrorism when they take place far away from any oil exporting country, but that this impact is not estimated very precisely These results support the conclusion of the theoretical model suggesting that the counter-terrorism variables, foreign aid and educational capital, in the country of origin impact positively the cost parameter of the terrorist organization and thus decrease the number of terrorist attacks originating from this country.

Table 3: Number of Terrorist Events per Host Country and per Source Country

Variables	Dep. Var.: Number of Attacks per Host Country			Dep. Var.: Number of Attacks per Source Country		
	[4]	[5]	[6]	[7]	[8]	[9]
Intercept	-3.421	-1.449	-3.864	-1.671	12.448***	8.453**
	(2.16)	(3.56)	(3.34)	(2.559)	(4.58)	(4.29)
GDP p.c.	0.000	0.000	0.000	-0.000	-0.000	-0.000*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Population (log)	0.466***	0.414**	0.492***	0.385**	-0.178	-0.036
	(0.10)	(0.16)	(0.15)	(0.13)	(0.19)	(0.18)
ODA p.c.	**0.007***	**0.005**	**0.008**	**-0.000**	**-0.036*****	**-0.028*****
	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)
Secondary Enrollment (% gross)	**-0.005**	**-0.027****	**-0.020***	**-0.003**	**-0.046*****	**-0.039*****
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Nb. Of US Troops in the Country (log)	**0.140*****	**0.172***	**0.232****	**0.006**	**0.167**	**0.262***
	(0.04)	(0.09)	(0.09)	(0.06)	(0.11)	(0.14)
Interaction Nb. US Troopsx Dist to Oil	-	-	**-0.006****	-	-	**-0.005***
			(0.002)		-	(0.003)
Ethnic Tension	0.165	0.147	0.072	-0.010	0.287*	0.150
	(0.12)	(0.12)	(0.11)	(0.11)	(0.15)	(0.13)
Law and Order	-0.372***	-0.282**	-0.218*	-0.509***	-0.366**	-0.330**
	(0.14)	(0.14)	(0.13)	(0.17)	(0.14)	(0.14)
OECD	1.088**	1.452**	1.287**	2.135***	2.330***	2.122***
	(0.51)	(0.59)	(0.54)	(0.74)	(0.83)	(0.74)
"Camp David"	0.442	0.803	0.162	0.845*	5.757***	4.127***
	(0.49)	(1.25)	(1.21)	(0.49)	(1.85)	(1.59)
Sub-Saharan	-1.132**	-2.137***	-1.702***	-1.121**	-2.850***	-2.354***
	(0.46)	(0.52)	(0.51)	(0.49)	(0.66)	(0.63)
USSR	-1.295***	-0.799	-1.063**	-1.228**	-0.644	-0.702
	(0.48)	(0.56)	(0.54)	(0.56)	(0.61)	(0.62)
Endog. Bias ODA p.c.	-	0.002	-0.002	-	0.042***	0.032***
		(0.01)	(0.01)		(0.01)	(0.01)
Endog. Bias Secondary	-	0.037***	0.033**	-	0.059***	0.057***
		(0.01)	(0.01)		(0.02)	(0.02)
Endog. Bias US troops	-	-0.027	-0.037	-	-0.192	-0.246*
		(0.11)	(0.11)		(0.13)	(0.15)
Observations	129	129	129	129	129	129
Log pseudolikelihood	-444.89	-441.43	-437.90	-424.29	-416.69	-414.55
Wald statistic	182.25***	407.57***	163.63***	94.86***	120.65***	134.03***
Endogeneity joint test	-	7.58*	5.99	-	21.69***	19.71***

Note: These equations are negative binomial regressions estimated by maximum likelihood using the ITERATE data set. Robust standard errors are in parentheses.
* significant at 10%, ** significant at 5%, *** significant at 1%.

The results per host country in the first set of columns are different. The amount of aid received per capita has no significant impact on the number of terrorist attacks per host country (equations [4], [5] and [6]). This suggests that two opposing effects are at work: on the one hand, foreign aid provides the local government with an incentive to protect the donor's interests, but it also increases the attractiveness of the recipient country to the terrorists, on the other hand. The level of secondary education has the expected negative impact on the number of terrorist events per host country after controlling for measurement error (equations [5] and [6]). It thus seems to increase the cost of a terrorist attack in the host country, without increasing its attractiveness to the terrorists. The presence of foreign military troops has a more significant impact on the number of attacks per host country compared to the one on the attacks per source country. The number of US troops deployed in the host country thus seems to increase the level of the latter's attractiveness in the terrorists' eyes without affecting much their operating costs. To take into account the heterogeneous motivations of military intervention, we add an interaction term between the number of US troops deployed in the country and its distance to oil wells as described above. This interaction term excludes the oil-exporting countries and gives more weight to countries the further away they are from oil-producing regions. It has a significant and negative coefficient in equation [6], suggesting that the US troops do not attract terrorist attacks as much when they are positioned far enough from oil. These different impacts of military intervention support the idea that the presence of US soldiers in a country is an important factor of the country's attractiveness for terrorists, especially in oil-exporting countries where military intervention might be motivated by other considerations than the war on terror.

Taken individually, the residuals of secondary education in all the regressions are significant supporting the relevance of controlling for measurement errors. The residuals of the reduced-form military intervention are not significant (only at the 10% level in equation

[9]). These results strengthen the hypothesis that the military deployment of troops is not always motivated by the threat of terrorism in the country. As expected, in the source countries' equations, the residuals of the ODA per capita reduced-form equation are significant suggesting that donor countries are actively using foreign aid as a tool for fighting terrorism in the country of origin of the perpetrators. However, we reach a different conclusion per host countries suggesting that donor countries actually know that their control over hosted attacks is pretty low and focus on other objectives. Nevertheless, we find that the more relevant joint test for endogeneity is significant at the 1 % level in equations [8] and [9] and only at the 10 % level in equation [5] suggesting the presence of some potential endogeneity bias worth controlling for.

Regarding the other control variables, per capita GDP is not significant as in Krueger and Maleckova (2003). However it is nevertheless a useful tool for disentangling the effect of foreign aid from that of under-development. Four geographical dummies are significant most of the time; the dummies for "Camp David" (only in the source country equations) and for OECD member countries have a positive and significant impact while the dummies for former USSR countries (sometimes) and for Sub-Saharan countries have significant and negative coefficients. Population is most of the time significant with a positive sign in the host country equations which is in line with the literature. The index of ethnic tension is most of the time not significant except in equation [9] with the expected positive sign but only at 10% level. The index of "law and order" has a negative and significant coefficient, suggesting that it increases the operating costs of terrorists in both the source and the host countries while reducing their attractiveness too.

Robustness Checks

We have reproduced the same analysis using ODA as a ratio to GNI instead of per capita and we obtain roughly the same main conclusions. The results are presented in

appendix Table A2. The impacts of the amount of ODA received by the country as a ratio to GNI is significant and negative on the number of terrorist events per source country but not on the number of attacks per host country. Educational capital has again its negative impact, most of the time significant when we control for measurement errors. The presence of military troops in the regressions per country of origin of the perpetrators is not significant while for the host country the coefficient of the number of US troops deployed and the interaction term are significant with the same signs as in the previous analysis. These results support the idea that the presence of US soldiers in the host country is an important attraction factor and that the amount of foreign aid received by the country has a stronger impact in the country of origin than in the host country.

We have also reproduced these results for the number of terrorist events per host country but using the whole original set of events available with ITERATE, using the events for which the nationality of the perpetrator is unknown. The main conclusions are unchanged and the results are presented in appendix Table A3.

We have also tested a bootstrap method for estimating standard errors. The joint test for endogeneity is significant in some equations suggesting the importance to control for potential bias. The variance-covariance matrix of the structural equation estimator needs to be adjusted for the replacement of the unobserved information (the residuals) by their estimation. We have reproduced the same regressions as in table 3 using the bootstrap method and the results are presented in the appendix, at Table A4. Again, we have almost the same conclusion as for the analysis presented in Table 3. The amount of aid received and the level of educational capital have a significant and negative impact on the number of attacks per country of origin of the perpetrators while military intervention has no significant impact. The number of US troops deployed in the country has a positive and significant impact. The presence of foreign troops is an important attraction factor in the host country. Educational

capital also has a negative impact on the number of attacks per host country and the impact of foreign aid is positive but most of the time not significant.

This cross-country analysis supports the conclusion of the theoretical model and suggests that the characteristics of the country of origin of the perpetrators are important determinants. The counter-measure variables, captured here by the level of foreign aid and the level of educational capital, negatively affect the number of attacks coming from that country. In the host country, these variables have a more diluted impact while the foreign military presence is an important determinant of the country's attractiveness.

3.3. Dyadic Analysis of Imported Attacks

In order to control for the different characteristics of the host and the source countries and to control for the potential omitted variable problem caused by the link between the measures adopted in one country and the number of attacks taking place in some other countries, we perform a dyadic analysis focusing on the imported attacks (a_{21} in figures 3 through 5). For each country, we compute the total number of imported attacks coming from each other country over the period 1990 to 2007. From the theoretical model we first expect a negative impact of the operating costs of the terrorists in the country of origin, here captured by the source country's level of educational capital and the amount of foreign aid that it gets. The impacts of the same variables in the host countries are more uncertain, depending on the equilibrium type. The terrorists' operating costs in the host country exert a positive effect on the number of attacks imported, except in the swapping equilibrium, by reducing the number of home-produced attacks thus creating a vacuum that foreign terrorists will be eager to fill in. The attractiveness of the host country is obviously predicted to increase the number of imported attacks, but so is the attractiveness of the source country in the composite equilibrium, by providing an incentive to swap attacks. The latter effect disappears in the other equilibrium types. We thus also expect a positive impact of the number of US soldiers

deployed in the host country since this variable is an important determinant of the country's attractiveness in the cross-country analysis. The results are presented pair wise in Table 4, which includes the same explanatory variables for the host country, in the top panel, and the source country, in the bottom one. All the even equations do not control for endogeneity, while all the odd ones do. Equations [12] and [13] are derived from [10]-[11] by adding the interaction term between the number of US troops in the country and the distance to oil, while [14]-[15] add the distance between the two countries. Regarded as a proxy for transportation costs, the latter may be regarded as capturing the impact of δ in the theoretical model. Not surprisingly the latter variable is strongly significant with a negative sign, meaning that countries mainly import terrorist attacks from neighboring countries. This suggests that the export premium assumed above is waning when the most attractive country for terrorists is too far away form the source country. Inclusion of distance also entails some noticeable changes in the values of some other parameters and their significance.

Among the source-countries variables, we first find some results that roughly reproduce those found at table 3 at equations [7] through [9], namely that foreign aid, educational capital, and law and order have the expected negative impacts, although ODA p.c. in the source country sees its significance level fall to 10% when distance is included. The latter also changes the significance of the population size in the source country, which becomes significant with a positive impact in [14]-[15]. It is probably cheaper to run a terrorist organization in a populous country. In this same set of variables, we also find that the number of US troops in the country of origin is only effective against the export of terrorist attacks when that country is located far enough from oil-exporting countries.

Some fairly drastic changes occur when comparing the impacts of the host-countries variables in Table 4 to those of Table 3. Remember that the dependent variables are not the same in these two tables, as Table 3 looks at the total number of terrorist attacks hosted by

each country, including both home attacks and imported ones, while Table 4 only takes the latter into account. We only find three significant host-countries variables, all acting with a positive sign. We are thus unable to determine whether they mainly capture “attractiveness” or operating costs, which are predicted to affect the imports of attacks with the same sign, as mentioned above. We first find that population and GDP p.c. in the host country have a positive and significant impact on the number of imported attacks. Then, the most counter-intuitive result is the strongly positive impact of foreign aid. This works in fact in the direction predicted by the theory, as aid is liable to enhance the attractiveness of the recipient country for the terrorists, may be simply by providing more targets to aim at, as well as providing incentives to the recipient government to invest some resources in protecting the donors’ interests within its sphere of influence by increasing the terrorists’ operating costs. Then, increased imports of terrorist attacks sanction the successful fight against home attacks. Moreover, foreign aid involves the presence of a number of foreign actors in the recipient country, which might be perceived as a threat and might increase the country’s attractiveness. Foreign aid is often the vector of some foreign influence on the recipient government’s policy-making that might affect the number of terrorist attacks perpetrated in the country, especially if some militant factions perceive it as a threat.

The findings regarding the impact of the number of US troops in the host country are mixed. When endogeneity is not controlled for, we find a positive and significant impact. After controlling for endogeneity, only equation [13] shows a significant positive impact, which vanishes in equation [15] when controlling for distance. Similarly, the interaction term between the number of US troops present in the country and the distance to oil has a significant negative impact in [13], which disappears when distance is controlled for. Probably, in line with the theory, the presence of US troops in the host country is not affecting much its imports of terrorist attacks because it boosts the local supply of attacks, as seen

above, some of which being vented by increased exports, as suggested by the lower panel of table 4. Then imports are crowded out, despite the enhanced attractiveness due to the foreign military presence, by the increased number of home attacks. Similarly, the level of secondary education looses its significance in the dyadic imported attacks equation when distance is included, although it still has a negative coefficient. One potential explanation in line with the theory is that a higher level of educational capital in the country is affecting its level of attractiveness to the terrorists and their operating costs in offsetting directions, increasing the latter and reducing the former.

Table A5 in the appendix presents the same analysis but using the amount of aid received as the ratio of GNI instead of per capita. The main difference with the results presented above is the impact of the number of US troops in the source country which is now effective irrespective of the latter's distance to oil. In this analysis, the level of ethnic tension is now an important determinant. The level of ethnic tension in the host country has a positive and significant impact while the level of ethnic tension in the country of origin is negative and significant. Host country with a high level of ethnic tension may be more attractive while countries with a low level of ethnic tension might generate less conflict.

Table 4: Dyadic Analysis of Imported Attacks

	Dep. Var.: Dyadic Imported Attacks					
Variables	[10]	[11]	[12]	[13]	[14]	[15]
Host Country Variables:						
ODA p.c.	**0.012****	**0.029****	**0.012*****	**0.031****	**0.010*****	**0.030*****
	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)
Secondary Enrollment	**-0.019****	**-0.009**	**-0.006**	**-0.005**	**-0.018*****	**-0.012**
(% gross)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Nb. Of US Troops in the	**0.199*****	**0.062**	**0.235*****	**0.117****	**0.108****	**-0.017**
Country (log)	(0.05)	(0.07)	(0.06)	(0.06)	(0.05)	(0.06)
Interaction Nb US Troops x	-	-	-0.006***	-0.006***	-0.001	-0.001
Dist. to Oil			(0.00)	(0.00)	(0.00)	(0.00)
Population (log)	0.396***	0.635***	0.428***	0.688***	0.507***	0.729***
	(0.10)	(0.14)	(0.09)	(0.12)	(0.11)	(0.12)
GDP p.c.	0.000	0.000	0.000	0.000*	0.000	0.000**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Law and Order	0.249	0.205	0.251	0.210	0.036	0.002
	(0.17)	(0.15)	(0.17)	(0.15)	(0.18)	(0.17)
Source Country Variables:						
ODA p.c.	**-0.003**	**-0.027*****	**-0.003**	**-0.021*****	**-0.001**	**-0.010***
	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)
Secondary Enrollment	**-0.013****	**-0.028****	**-0.015****	**-0.024****	**-0.014*****	**-0.026*****
(% gross)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)
Nb. Of US Troops in the	**-0.120***	**0.061**	**-0.037**	**0.235***	**-0.048**	**0.167***
Country (log)	(0.07)	(0.06)	(0.04)	(0.20)	(0.04)	(0.13)
Interaction Nb. US Troops x	-	-	-0.015***	-0.015***	-0.011**	-0.012**
Dist. to Oil			(0.01)	(0.01)	(0.00)	(0.01)
Law and Order	-0.590***	-0.537***	-0.508***	-0.405***	-0.512***	-0.422***
	(0.16)	(0.15)	(0.14)	(0.13)	(0.10)	(0.11)
Population (log)	0.307**	0.015	0.367**	0.088	0.452***	0.310***
	(0.15)	(0.11)	(0.13)	(0.12)	(0.06)	(0.11)
GDP p.c.	-0.000	-0.000	-0.000	-0.000*	0.000	-0.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
Distance	-	-	-	-	**-0.040*****	**-0.040*****
(in hundred of km)					(0.01)	(0.01)
Intercept	-12.69***	-11.26***	-15.03***	-14.91***	-14.35***	-16.24***
	(2.32)	(3.61)	(2.31)	(3.61)	(2.35)	(2.91)
Regional Dummies [a]	Yes	Yes	Yes	Yes	Yes	Yes
Reduced-Form Residuals	No	Yes	No	Yes	No	Yes
Observations	16512	16512	16512	16512	16512	16512
Log pseudolikelihood	-1483.67	-1467.85	-1450.63	-1433.75	-1325.38	-1311.25
Wald statistic	265.95***	364.65***	268.53***	459.65***	397.91***	596.15***
Endog. Test	-	21.28***	-	26.98***	-	28.91***

Note: Negative binomial regressions estimated by maximum likelihood using ITERATE. Clustered standard errors are in parentheses. Significant *at 10%, **at 5%, *** at 1%. a- for each host and source countries we have included the most significant regional dummies which are OECD Camp David and Sub Saharan dummies.

4. Conclusion

This paper brings out some new facets of the delegated fight against terrorism by analyzing the impacts of foreign aid, educational capital, and US military presence not only on the production of transnational terrorist attacks as in Azam and Thelen (2010) but on their imports and exports as well. Terrorist organizations can perpetrate their attacks in foreign countries, so that the actual number of terrorist attacks taking place in any given country might differ from the number that is produced by the latter's own terrorist organizations. The present paper first provides a game-theoretic analysis of this phenomenon, in order to bring out how these exports and imports of terrorist attacks may disconnect the number of terrorist attacks hosted by a country from its efforts to counter terrorism. This theoretical analysis helps us to understand the kind of cross-border externalities entailed by each country's fight against terrorism.

Two lines of empirical analysis are presented to test the relevance of this framework using the ITERATE data set over the 1990-2007 period. A cross-country analysis shows first that the determinants of the number of terrorist attacks produced by a country are different from those governing the number that the latter is hosting. The results confirm the effectiveness of foreign aid to reduce the number of terrorist attacks originating from the recipient country. In the host country, in contrast, the impact of foreign aid is insignificant as counter-terrorism measures also influence the number of imported and exported attacks. Foreign military interventions are counter-productive and they seem to be a strong attraction factor for terrorists. A strong presence of foreign actors in the recipient country or foreign influence on its government might in fact be counter-productive. Then, a dyadic analysis of the number of imported attacks in the host countries shows that foreign aid reduces significantly the number of attacks exported by the source country, while it attracts imported attacks in the host country. This finding thus brings out a potential incentive problem as the

benefit of the effort invested in the war on terror by the recipient government in return for the aid received might seem counter-productive as it is in fact punished by imported attacks from neighboring countries, as a response to the vacuum thus created, which are liable to produce some collateral damage in the host country.

These findings thus show the importance of international policy coordination for fighting terrorism taking these externalities into account. Foreign aid is effective for fighting terrorism at the source while military intervention have a counter-productive effect. Further investigations are still needed to understand better how this impact of foreign aid in the host country affects the strategy of the donor community in the fight against terrorism. Moreover, further research seems worthwhile for disaggregating aid by donors, to see whether the aid flow given through multilateral institutions has a different impact on the attractiveness of a country to foreign terrorists from that of bilateral aid. Similarly, it seems promising as well to analyze whether imperfect fungibility between different types of grants, e.g. military aid *vs.* social expenditures, can be exploited to mitigate some of the problems brought out here. This shows the way to further research.

Appendix

Proof of proposition 3.

(i) In the converging equilibrium (2) allows us to write:

$$A_h = a_{hh} + a_{sh} = \left(1 + \frac{\gamma_h}{\delta^2 \gamma_s}\right) a_{hh} . \qquad \text{(A.1)}$$

This can be ploughed back into (2) to yield the following equilibrium condition:

$$\theta_h v'(A_h) = \frac{\gamma_h \delta^2 \gamma_s}{\gamma_h + \delta^2 \gamma_s} A_h . \qquad \text{(A.2)}$$

Hence, A_h is found as the fixed point of (A.2). Taking the total differential of the latter and rearranging yields:

$$d A_h = \left(\frac{v'(A_h)\left(\delta^2 \gamma_s + \gamma_h\right)^2 d\theta_h - A_h\left(\delta^4 \gamma_s^2 d\gamma_h + \gamma_h d\left(\delta^2 \gamma_s\right)\right)}{\left(\delta^2 \gamma_s + \gamma_h\right)\left(\delta^2 \gamma_s \gamma_h - \theta_h v''(A_h)\left(\delta^2 \gamma_s + \gamma_h\right)\right)} \right). \qquad \text{(A.3)}$$

Reading off the partial derivatives from this expression yields the signs described in proposition 3, while taking note of the fact that the other country is free of attacks.

(ii) In the swapping equilibrium, the equilibrium conditions may be written as:

$$\theta_h v'(A_h) = \delta^2 \gamma_s A_h . \qquad \text{(A.4)}$$

Hence, A_h is now found as the fixed point of (A.4). Taking the total differential of the latter and rearranging yields:

$$d A_h = \left(\frac{v'(A_h) d\theta_h - A_h d\left(\delta^2 \gamma_s\right)}{\delta^2 \gamma_s - \theta_s v''(A_h)} \right) . \qquad \text{(A.5)}$$

Reading off the partial derivatives from this expression yields the signs described in proposition 3.

(iii) The calculations involved for the composite equilibrium are somewhat more complicated. First, use (4) to eliminate a_{21} between the two marginal cost terms. Then, define:

$$Z = \frac{\gamma_1 \delta^2 \gamma_2}{\gamma_1 + \delta^2 \gamma_2} > 0 . \qquad \text{(A.6)}$$

Notice that Z is an increasing function of all the cost parameters. Then, the first-order conditions (4) and (5) may be written as:

$$\theta_1 v'(A_1) = Z(A_1 + \delta A_2), \qquad \text{(A.7)}$$

and:

$$\theta_2 v'(A_2) = \delta Z(A_1 + \delta A_2). \qquad \text{(A.8)}$$

Now, define:

$W = \theta_1 \theta_2 v''(A_1) v''(A_2) - Z\left(\delta^2 \theta_1 v''(A_1) + \theta_2 v''(A_2)\right) > 0$. Then, taking the total differentials of (A.7) and (A.8) and rearranging the terms yields:

$$\begin{aligned} dA_1 = {} & W^{-1} v'(A_1)\left(\delta^2 Z - \theta_2 v''(A_2)\right) d\theta_1 - W^{-1} \delta Z v'(A_2) d\theta_2 \\ & - W^{-1}(A_1 + \delta A_2)\left(\left(1-\delta^2\right) Z - \theta_2 v''(A_1)\right) dZ \end{aligned} \qquad \text{(A.9)}$$

and:

$$\begin{aligned} dA_2 = {} & W^{-1} v'(A_2)\left(Z - \theta_1 v''(A_1)\right) d\theta_2 - W^{-1} \delta Z v'(A_1) d\theta_1 \\ & + W^{-1} \delta \theta_1 v''(A_1)(A_1 + \delta A_2)\, dZ \end{aligned} . \qquad \text{(A.10)}$$

The partial derivatives can be read off these expressions, yielding the signs presented at table 1.

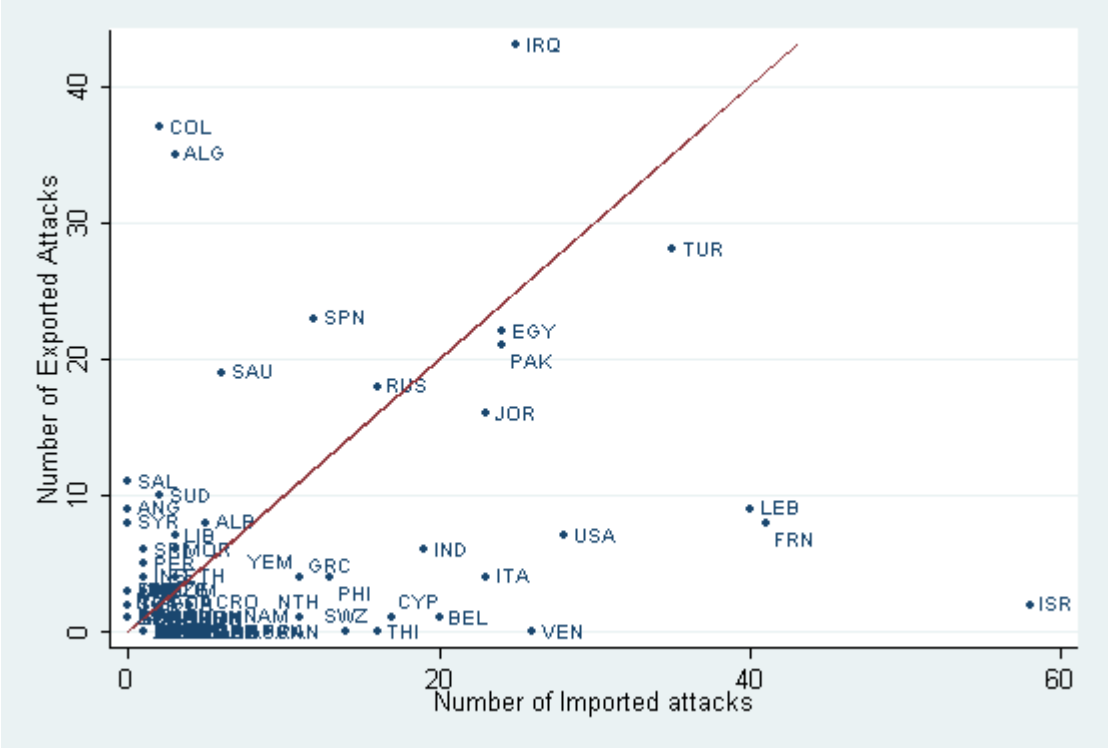

Figure A1: Nb. of Exported Attacks *vs.* Nb. of Imported Attacks for all the Countries

Table A1: Summary Statistics

	Obs.	Mean	Median	Std. Dev.	Min.	Max.
Nb. of Attacks per Source Country	129	17.56	3	35.24	0	242
Nb. of Attacks per Host Country (reduced sample)	129	19.75	6	37.94	0	252
Nb. of Attacks per Host Country (whole sample)	129	28.59	10	50.07	0	306
ODA per capita	129	39.42	23.51	47.73	0	265.97
Secondary School Enrol. (% gross)	129	69.79	76.33	31.41	5.51	141.70
Number of US Troops (log)	129	3.56	2.93	2.50	0	11.41
Population (log)	129	16.22	16.14	1.58	12.53	20.94
GDP per capita	129	6952.0	2035.7	9651.1	111.1	43111.3
Ethnic Tension	129	-4.06	-4.19	1.20	-6	-0.51
Law and Order	129	3.83	3.89	1.25	0.99	6
Distance to Oil Reserve	129	1348.5	1081	1339.4	0	7725
Under-5 Mortality Rate in 1990 (per 1000)	129	70.23	45.4	69.18	6.4	303.5

Source: Computed from ITERATE, World Development Indicators and PRS group.

Table A2: Number of Terrorist Events per Host Country and per Source Country using ODA as a ratio to GNI

Variables	Dep. Var.: Number of Attacks per Host Country			Dep. Var.: Number of Attacks per Source Country		
	[1]	[2]	[3]	[4]	[5]	[6]
Intercept	-0.559	2.738	-4.541	-2.371	11.914**	7.904*
	(1.97)	(3.53)	(3.97)	(2.31)	(4.64)	(4.75)
GDP p.c.	-0.000	0.000	0.000	-0.000	-0.000	-0.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Population (log)	0.341***	0.249*	0.461***	0.413***	-0.030	0.084
	(0.08)	(0.13)	(0.14)	(0.12)	(0.16)	(0.16)
ODA (% of GNI)	**0.007**	**-0.046**	**0.101**	**0.007**	**-0.311*** **	**-0.230****
	(0.02)	(0.08)	(0.09)	(0.02)	(0.10)	(0.10)
Secondary Enrollment (% gross)	**-0.007**	**-0.041****	**0.002**	**-0.002**	**-0.107*** **	**-0.084*** **
	(0.01)	(0.02)	(0.02)	(0.01)	(0.03)	(0.03)
Nb. Of US Troops in the Country (log)	**0.145*** **	**0.171****	**0.293*** **	**-0.009**	**0.087**	**0.159**
	(0.04)	(0.09)	(0.09)	(0.07)	(0.10)	(0.16)
Interaction Nb. US Troops x Dist to Oil	-	-	**-0.007*** **	-	-	**-0.003**
			(0.003)			(0.003)
Ethnic Tension	0.247**	0.190*	0.167	-0.045	-0.131	-0.149
	(0.12)	(0.11)	(0.11)	(0.12)	(0.12)	(0.11)
Law and Order	-0.362**	-0.252*	-0.240*	-0.504***	-0.248*	-0.238*
	(0.14)	(0.14)	(0.13)	(0.17)	(0.14)	(0.14)
OECD	1.076**	1.728**	0.688	2.018***	4.076***	3.459***
	(0.54)	(0.75)	(0.71)	(0.69)	(0.96)	(1.04)
"Camp David"	1.246***	1.855***	0.797	0.820***	2.804***	2.065***
	(0.40)	(0.70)	(0.89)	(0.30)	(0.63)	(0.79)
Sub-Saharan	-1.443***	-2.354***	-1.737***	-1.102**	-2.567***	-2.227***
	(0.44)	(0.50)	(0.49)	(0.48)	(0.57)	(0.58)
USSR	-1.416***	-0.664	-1.568**	-1.210**	0.997	0.543
	(0.49)	(0.64)	(0.64)	(0.57)	(0.93)	(0.82)
Endog. Bias ODA	-	0.043	-0.114	-	0.343***	0.256**
% of GNI		(0.09)	(0.09)		(0.11)	(0.11)
Endog. Bias Secondary	-	0.048**	0.009	-	0.124***	0.103***
		(0.02)	(0.11)		(0.03)	(0.16)
Endog. Bias US troops	-	-0.030	-0.074	-	-0.123	-0.175
		(0.12)	(0.02)		(0.12)	(0.03)
Observations	127	127	127	127	127	127
Log pseudolikelihood	-437.03	-433.76	-429.60	-414.03	-405.87	-405.42
Wald statistic	137.62***	128.99***	135.70***	92.64***	140.65***	134.27***
Endogeneity joint test		8.41**	7.05*		22.31***	17.32***

Note: These equations are negative binomial regressions estimated by maximum likelihood using the ITERATE data . Robust standard errors are in parentheses. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table A3: Number of Terrorist Events per Host Country using the Whole Set of Events

Variables	Dep. Var.: Number of Terrorist Attacks per Host Country (whole sample)		
	[7]	[8]	[9]
Intercept	-2.8320	-1.6544	-3.5822
	(1.8850)	(3.2772)	(3.0418)
GDP p.c.	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)
Population (log)	0.4524***	0.4291***	0.4944***
	(0.0890)	(0.1489)	(0.1361)
ODA p.c.	**0.0063***	**0.0061**	**0.0082**
	(0.0036)	(0.0087)	(0.0081)
Secondary Enrollment (% gross)	**-0.0033**	**-0.0190***	**-0.0127**
	(0.0064)	(0.0108)	(0.0111)
Nb. Of US Troops in the Country (log)	**0.1386*****	**0.1458***	**0.1797****
	(0.0389)	(0.0888)	(0.0859)
Interaction Nb. US Troops x Dist to Oil	-	-	**-0.0042***
			(0.0021)
Ethnic Tension	0.1740	0.1587	0.0942
	(0.1063)	(0.1098)	(0.0959)
Law and Order	-0.3484***	-0.2899**	-0.2505**
	(0.1312)	(0.1250)	(0.1204)
OECD	0.6546	0.9557*	0.8423*
	(0.4844)	(0.5558)	(0.4994)
"Camp David"	0.3043	0.4543	-0.0983
	(0.4847)	(1.1723)	(1.1102)
Sub-Saharan	-1.2667***	-1.9813***	-1.6529***
	(0.3901)	(0.4646)	(0.4763)
USSR	-1.1399***	-0.8196	-1.0368**
	(0.4417)	(0.5243)	(0.4962)
Endog. Bias ODA p.c.	-	0.0005	-0.0026
		(0.0091)	(0.0083)
Endog. Bias Secondary	-	0.0255**	0.0224*
		(0.0127)	(0.0129)
Endog. Bias US troops	-	0.0000	0.0036
		(0.1109)	(0.1002)
Observations	129	129	129
Log pseudolikelihood	-495.60	-493.71	-491.43
Wald statistic	156.522	234.869	288.630
Endogeneity joint test		4.06	3.20

Note: These equations are negative binomial regressions estimated by maximum likelihood using the ITERATE data set. Robust standard errors are in parentheses.
* significant at 10%, ** significant at 5%, *** significant at 1%.

Table A4: Number of Terrorist Events per Host Country and per Source Country using ODA per capita and bootstrap Method

Variables	Dep. Var.: Number of Attacks per host country			Dep. Var.: Number of Attacks per country of origin		
	[10]	[11]	[12]	[13]	[14]	[15]
Intercept	-3.442	-1.446	-3.814	-1.707	12.606	8.656
	(2.44)	(5.05)	(4.50)	(3.41)	(8.09)	(7.70)
GDP p.c.	0.000	0.000	0.000	-0.000	-0.000	-0.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Population (log)	0.466***	0.412*	0.488**	0.384**	-0.187	-0.047
	(0.12)	(0.23)	(0.21)	(0.18)	(0.37)	(0.36)
ODA p.c.	**0.007***	**0.005**	**0.008**	**-0.000**	**-0.036****	**-0.029***
	(0.00)	(0.01)	(0.01)	(0.00)	(0.02)	(0.02)
Sec. Enrollment (% gross)	**-0.004**	**-0.027***	**-0.020***	**-0.002**	**-0.046****	**-0.039***
	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)
Nb. Of US Troops in the Country (log)	**0.139*****	**0.172**	**0.232***	**0.008**	**0.171**	**0.266**
	(0.05)	(0.17)	(0.14)	(0.09)	(0.22)	(0.24)
Interaction Nb. US Troopsx Dist to Oil	-	-	**-0.006***	-	-	**-0.004**
			(0.00)			(0.00)
Ethnic Tension	0.162	0.145	0.072	-0.011	0.290	0.154
	(0.14)	(0.17)	(0.16)	(0.14)	(0.22)	(0.22)
Law and Order	-0.378**	-0.289*	-0.224	-0.508**	-0.374*	-0.338
	(0.17)	(0.18)	(0.19)	(0.21)	(0.20)	(0.26)
OECD	1.110*	1.469*	1.304	2.180*	2.352*	2.147*
	(0.66)	(0.85)	(0.80)	(1.19)	(1.38)	(1.30)
"Camp David"	0.443	0.812	0.176	0.851	5.814	4.187
	(0.76)	(1.79)	(1.58)	(1.05)	(3.72)	(3.58)
Sub-Saharan	-1.130**	-2.125***	-1.696**	-1.110*	-2.837***	-2.344**
	(0.47)	(0.81)	(0.75)	(0.57)	(1.08)	(1.02)
USSR	-1.326	-0.836	-1.096	-1.229	-0.630	-0.686
	(1.12)	(1.15)	(1.10)	(1.18)	(1.33)	(1.37)
Endog. Bias ODA p.c.	-	0.002	-0.002	-	0.042*	0.033*
		(0.01)	(0.01)		(0.02)	(0.02)
Endog. Bias Sec.	-	0.037*	0.033*	-	0.059**	0.057**
		(0.02)	(0.02)		(0.03)	(0.03)
Endog. Bias US troops	-	-0.028	-0.038	-	-0.196	-0.250
		(0.18)	(0.16)		(0.23)	(0.25)
Observations	129	129	129	129	129	129
Nb. Replications	380	380	380	380	380	380
Log pseudolikelihood	-443.264	-431.838	-427.390	-421.795	-406.652	-404.560
Wald statistic	87.830***	82.084***	90.981***	43.258***	44.279***	48.463***
Endogeneity joint test	-	3.471	2.818	-	9.376**	7.411*

Note: These equations are negative binomial regressions estimated by maximum likelihood using the ITERATE data set. Bootstrap errors are in parentheses. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table A5: Dyadic Analysis with ODA as a Ratio to GNI

	Dep. Var.: Dyadic data					
Variables	[16]	[17]	[18]	[19]	[20]	[21]
Host Country Variables:						
ODA (% of GNI)	**-0.026**	**0.084**	**-0.012**	**0.165***	**-0.011**	**0.180****
	(0.03)	(0.09)	(0.02)	(0.09)	(0.03)	(0.08)
Secondary Enrollment	**-0.026*****	**-0.010**	**-0.022*****	**0.007**	**-0.026*****	**0.005**
(% gross)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)
Nb. of US Troops in the	**0.153*****	**0.115**	**0.206*****	**0.221*****	**0.086***	**0.089**
Country (log)	(0.06)	(0.09)	(0.06)	(0.07)	(0.05)	(0.07)
Interaction Nb US	-	-	-0.006***	-0.007***	-0.001	-0.000
Troops x Dist. to Oil			(0.00)	(0.00)	(0.00)	(0.00)
Ethnic Tension	0.163	0.205*	0.148	0.199	0.075	0.133
	(0.11)	(0.12)	(0.11)	(0.12)	(0.11)	(0.13)
Population (log)	0.171*	0.290**	0.217**	0.400***	0.331***	0.498***
	(0.10)	(0.12)	(0.09)	(0.11)	(0.11)	(0.12)
GDP p.c.	-0.000	0.000	0.000	0.000	0.000	0.000*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Law and Order	0.206	0.186	0.202	0.159	-0.053	-0.104
	(0.18)	(0.18)	(0.19)	(0.18)	(0.19)	(0.19)
Source Country Variables:						
ODA (% of GNI)	**-0.059**	**-0.447*****	**-0.045**	**-0.376*****	**-0.049**	**-0.344*****
	(0.05)	(0.09)	(0.05)	(0.09)	(0.04)	(0.08)
Secondary Enrollment	**-0.010****	**-0.102*****	**-0.007**	**-0.088*****	**-0.013*****	**-0.085*****
(% gross)	(0.01)	(0.02)	(0.01)	(0.02)	(0.00)	(0.01)
Nb. of US Troops in the	**-0.267****	**-0.241****	**-0.171****	**-0.151***	**-0.217*****	**-0.213****
Country (log)	(0.07)	(0.12)	(0.07)	(0.8)	(0.07)	(0.07)
Interaction Nb US	-	-	-0.010**	-0.007*	-0.003	-0.001
Troops x Dist. to Oil			(0.00)	(0.00)	(0.00)	(0.00)
Ethnic Tension	-0.239**	-0.335***	-0.246***	-0.314***	-0.219***	-0.300***
	(0.10)	(0.11)	(0.09)	(0.11)	(0.08)	(0.10)
Law and Order	-0.512***	-0.332*	-0.480***	-0.309*	-0.458***	-0.307**
	(0.17)	(0.18)	(0.15)	(0.17)	(0.11)	(0.184)
Population (log)	0.379***	-0.090	0.417***	-0.005	0.493***	0.150
	(0.06)	(0.09)	(0.06)	(0.10)	(0.06)	(0.10)
GDP p.c.	-0.000*	-0.000**	-0.000	-0.000**	-0.000	-0.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.000)	(0.00)
Distance	-	-	-	-	**-0.043*****	**-0.042*****
(in hundreds of km)					(0.01)	(0.01)
Intercept	-9.125***	2.378	-11.30***	-3.726	-11.17***	-5.467
	(2.45)	(4.49)	(2.55)	(4.12)	(2.66)	(3.71)
Regional Dummies [a]	Yes	Yes	Yes	Yes	Yes	Yes
Reduced-Form Resid.	No	Yes	No	Yes	No	Yes
Observations	16002	16002	16002	16002	16002	16002
Log pseudolikelihood	-1346.27	-1316.01	-1329.23	-1302.09	-1200.29	-1173.11
Wald statistic	336.09***	398.85***	334.92***	426.84***	523.87***	603.95***
Endog. Test	-	43.32***	-	40.61***	-	43.92***

Note: Negative binomial regressions estimated by maximum likelihood using ITERATE. Clustered standard errors in parentheses. Significant *at 10%, **at 5%, *** at 1%. a- for each host and source countries we have included the most significant regional dummies which are OECD Camp David and Sub Saharan dummies.

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