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# **The Geo-Politics of Foreign Aid and Transnational Terrorism**

by

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**Abstract:** This paper reviews some findings by Azam and Thelen (2008, 2010, 2012) that illustrate how foreign aid is used by rich countries to purchase the services of recipient governments with a view to protect or promote their economic and political interests. In particular, these findings show that foreign aid is effective at controlling the number of transnational terrorist attacks coming from the recipient countries, while it is not so regarding the number of attacks in the host countries. In contrast, they show that military intervention, as captured by the presence of US soldiers on the ground is counter-productive, as it increases the number of terrorist attacks both by source country and by host country.

## **1. Introduction**

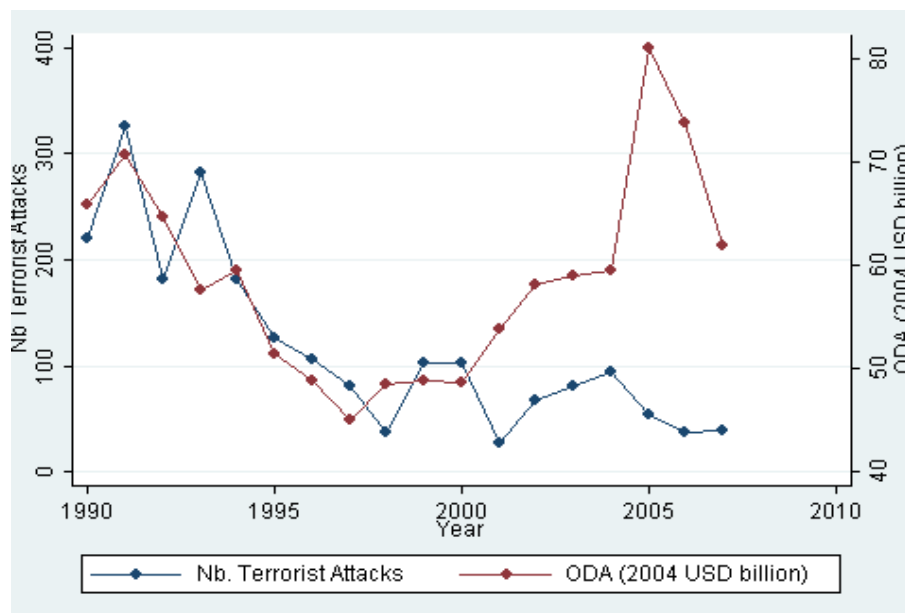
Since the end of the Cold War, international relations between rich and poor countries have been dominated by large flows of foreign aid as well as by the resumption of military interventions, most of them led by the US. Concurrently, transnational terrorism has become a dominant concern for the West, especially after 9/11. Hence, the “War on Terror” dominated international relations in the wake of 9/11. Azam and Thelen (2010, 2012) have shown that these trends in foreign aid, military interventions, and transnational terrorism are not independent of one another, but must be analyzed jointly. Combining foreign aid and military interventions with a view to reduce terrorism at the source is nowadays a well accepted policy mix. For example, in early April 2009, President Obama asked congress for \$ 83 billion of additional funding for Iraq and Afghanistan with a view to eradicate decisively the Al Qaeda threat. This budget included \$ 1.6 billion and \$ 1.4 billion for Afghanistan and Iraq, respectively, for “diplomatic programs and development aid”. An additional \$ 800 million was asked for the Palestinian Authority, including some humanitarian aid for Gaza. A further \$ 1 billion of unconditional aid to Pakistan was announced about a week later, as a provisional measure before Congress voted a \$ 1.5 billion aid flow to this country for the next five years. Some other politicians felt at that time that this switch of emphasis between aid and military solutions has not gone far enough. For example, Rep. Lynn Woosley, a prominent anti-war Democrat, said: “instead of attempting to find military solutions to the problem we face in Iraq and Afghanistan, President Obama must fundamentally change the mission in both countries to focus on promoting reconciliation, economic development, humanitarian aid, and regional diplomatic efforts” (Walsh, 2009).

### ***Foreign Aid to Counter Terrorism***

This debate illustrates the change of emphasis that occurred since 9/11 and the decisions to invade Afghanistan and Iraq. Ricks (2006) provides a sample of excerpts from

official speeches made by the Bush administration for justifying the intervention in Iraq showing that the military option was then clearly presented as the key strategy in the war on terror. Nevertheless, the Millennium Challenge Account was created by the Bush administration as a new tool for channeling aid to poor countries in the wake of George W. Bush much cited speech in Monterrey on March 22, 2002, where he said: “We fight against poverty because hope is an answer to terror” (cited in Krueger and Maleckova, 2003, p.119). This suggests that aid has been part of the policy-mix against terrorism at least since that date. Lancaster (2008) provides a very lucid analysis of the strategic use of foreign aid by the U.S. government, and its inflexions under George W. Bush. Our econometric results presented below confirm that this approach was adopted even before these events, although it was not much publicized at that time. The following evidence suggests that foreign aid and transnational terrorism are connected in an intriguing fashion.

**Chart 1: Foreign Aid and Transnational Terrorist Attacks**



**Note:** The number of terrorist attacks comes from the ITERATE dataset (Mickolus *et al.* (2008). The aid flow is the standard Official Development Assistance (ODA) produced by the Development Assistance Committee (DAC), measured in constant 2004 US \$. The sample is restricted to 132 countries for econometric reasons, as described below, with the exception of Colombia, which has a spike of 100 attacks in 1999.

Chart.1 plots the evolution of foreign aid and the number of transnational terrorist attacks at the global level, using the same data as in the empirics below<sup>1</sup>. The sample is restricted to 132 countries over the 1990s and the early 21<sup>st</sup> century, while Colombia is excluded from this sample, because it has a huge spike of 100 attacks produced in 1999 that blurs somewhat the visual outlook of the series. The number of terrorist attacks comes from the ITERATE dataset (Mickolus *et al.*, 2008). The aid flow is the standard Official Development Assistance (ODA) produced by the Development Assistance Committee (DAC), measured in constant 2004 US \$. This aid flow aggregates the disbursements made by all the donor countries, which are mainly OECD members. This plot suggests clearly that we observe two contrasting periods, with a break in the trends at the turn of the century. From 1990 to 2000, the two series seem to be remarkably correlated, both trending clearly downwards and reaching a floor in the late 1990s. Then an upward shift seems to push the aid series upwards in 2001, while the year-to-year correlation seems to remain strong afterwards, up to 2004. Then, a spike in the aid series seems to occur in 2005, when the terrorism series starts sloping downwards again from this date on. Overall then, this plot suggests that there is a strong correlation between these two series, which seem to move in the same direction most of the time, after taking due account of two easily interpretable shifts. However, this strong correlation does not give us any clue about the direction of causality. In fact, the econometric analyses presented by Azam and Delacroix (2006) and Azam and Thelen (2008, 2010, 2012), and highlighted below, support the view that these two series are jointly determined, as aid is used by donors as a means to fight terrorism. They show that the co-movement of aid flows and the number of terrorist attacks brought out in chart 1 suggests that donors are using foreign aid to buy a reduction in transnational terrorist activity at the global level and that they get a pretty quick response to this outlay.

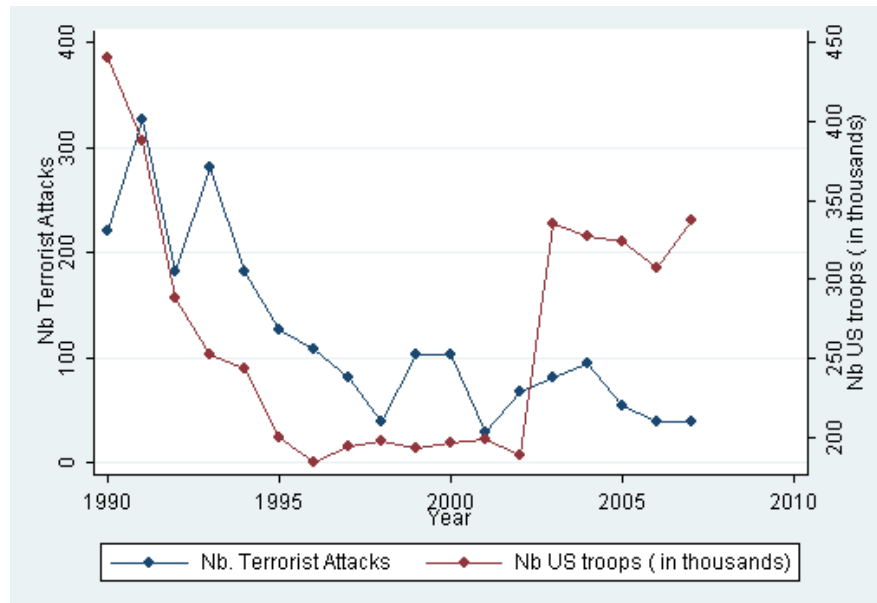
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<sup>1</sup> The reader is referred to section 2 below for more details on the series used and the sample.

This view stands in sharp contrast the more conventional approach that emphasizes military intervention as a tool in the war on terror. The latter was used in particular to justify the military interventions in Afghanistan and Iraq in the wake of 9/11.

### ***The Role of Military Intervention***

Azam and Thelen (2010, 2012) presented an extension of the latter analysis, using the same two-part methodology, and adding foreign military intervention in the list of potential tools used by the North for reducing the number of terrorist attacks from developing countries. The likely impact of this variable on terrorist activity has been brought out in particular by Pape (2006) and Pape and Feldman (2010), using a series of case studies. They suggest that a lot of terrorist attacks against Western interests have been prompted by military interventions by the U.S.A. or the NATO alliance, and conclude that Middle Eastern terrorism, in particular, is mainly motivated by nationalism. These terrorists would thus simply be fighting against what they view as a foreign occupation of their country. On the other hand, especially since 9/11, recent U.S. military interventions have been justified as a key component in the war on terror. Hence, the link between terrorism and military intervention could in fact be due to reverse causation, the presence of U.S. and allied soldiers being merely a response to a terrorist threat. Gelpi *et al.* (2009) have shown how this cue has been quite successfully used by the Bush administration for attracting the support of the U.S. public opinion in favor of the war in Iraq at the beginning. However, some dissenting views have been expressed claiming that the control of oil reserves was the true agenda pursued by the invasion of Iraq, and not the fight against terrorism (see e.g., Cramer and Duggan, 2009). The latter would thus be just a political cover for more materialistic interests that would not have attracted so much support from the general public. Chatterjee (2009) goes one step further in suggesting how some private contractors got a privileged access for influencing the decision to invade Iraq, also for oil-related reasons.

**Chart 2: Number of US Troops and Transnational Terrorist Attacks**

**Note:** See data sources in section 2.

Chart 2 plots the same number of terrorist attacks as in chart 1 together with the number of U.S. troops stationed outside of the USA, for the same sample of countries. The source of the latter series is described in section 3 below. We have been unable to find similar data for Britain or France, two other countries that participated significantly in military interventions overseas during this sample period. Nevertheless, it is well known that the US has provided by far the largest contingents of soldiers for overseas military interventions over this period. This plot shows some similarity with chart 1. In particular, two contrasting periods can be identified, with a clear break in the early 21<sup>st</sup> century. However, there are some significant differences. First, one can check that the number of U.S. troops strongly shifts upwards later in the 2000s than the jump we observed in the foreign aid series. While the latter seems to shift upwards as early as 2001, the former jumps only in 2003. Hence, one can guess that the Anaconda operation in Afghanistan, which started at the end of 2001 and the beginning of 2002 in response to the 9/11 attack (Corbin, 2004) was not involving as many troops as the invasion of Iraq and the response to the ensuing civil war (Ricks, 2006). Second,

even if we forget this delayed jump, casual inspection suggests that the correlation between the two series is not as tight as in chart 1. Hence, the first impression coming out from eyeballing these series is that foreign aid seems to be more closely linked to the number of transnational terrorist attacks than the changes in the number of U.S. troops stationed outside the U.S.A. Moreover, the dates of the apparent shifts in the series do not seem to provide convincing grounds for assuming that they respond to exactly the same rationale. While the foreign aid series seems to shift upwards in response to the 9/11 attack, the U.S. troops' series seems mainly to be affected by the war in Iraq.

Whatever the reason invoked to justify military interventions, this remark suggests that testing whether military interventions are effective in fighting terrorism at the source is a key issue to be addressed in the present analysis. This is done in Azam and Thelen (2010, 2012) from both a theoretical point of view and an empirical one. They show that military interventions involving “boots on the ground” are probably quite counter-productive, while using foreign aid to induce recipient governments to fight terrorism within their sphere of influence is quite a powerful tool. The Obama administration seems to have taken on board this robust finding that the presence of U.S. troops in foreign countries triggers in fact quite a lot of violence and terrorist activity. The new U.S. military strategy presented by President Obama in January 2012 involves massive cuts in the number of troops in the Army, falling by about 50,000 as a first step, while subsequent cuts are expected to take place (Whitlock and Jaffe, 2012). “Yes, our military will be leaner, but the world must know the United States is going to maintain our military superiority with armed forces that are *agile, flexible and ready for the full range of contingencies and threats*” (cited by Whitlock and Jaffe, italics added). A strengthening of Special Forces and the Navy SEALs in particular is planned in the new strategy. Moreover, this strategy plans to reinforce cooperation with foreign governments and an increased effort in training their own militaries.

The present paper reviews some of findings by Azam and Thelen (2012) that bear on this strategic choice between foreign aid and military intervention. While these econometric findings corroborate those of Azam and Thelen (2010), with an extended sample, they also point out that they require some careful geo-strategic analysis before they can be used indiscriminately in the war on terror. The next section discusses the appropriate allocation of foreign aid across countries to counter terrorism and raises the issue of home-produced *vs.* imported attacks. Section 3 describes the econometric approach and findings, while section 4 concludes.

## **2. The Choice of Aid-Recipient Countries to Counter Terrorism**

The key point analyzed by Azam and Thelen (2012) is that the determinants of the number of attacks by country of origin have a significantly different impact on the number of attacks per host country. Transnational terrorist attacks potentially involve three countries or more. There is first the source country, defined by the terrorist's citizenship. As shown in particular by 9/11, there might in fact be more than one source country in any terrorist attacks. Most of the time, the terrorists come from developing countries. There is next the target country whose political or economic interests are attacked. This is usually a rich and democratic country and in particular the U.S.A., which is attacked most frequently. Lastly, the terrorist attack might take place in a host country that is neither of the above. Nevertheless, even if the host country sometimes does not suffer from direct collateral damage from the attack, otherwise it would be counted as a target, it might suffer from indirect damage like a loss of reputation or a fall in revenues from tourism.

### ***Some Facts about Transnational Terrorism***

The two dependent variables in the cross-country analysis performed by Azam and Thelen (2012) 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. These data come



from the ITERATE dataset (Mickolus *et al.*, 2008). They 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.

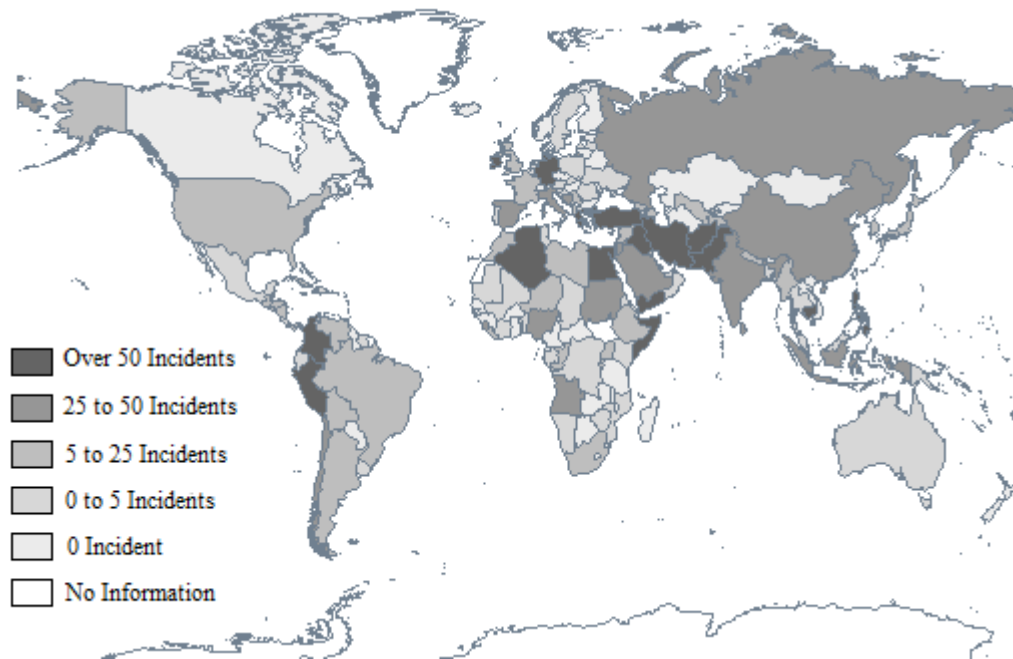
We compute the number of terrorist events according to the first nationality of the perpetrator's and according to the country hosting the attacks. In the main analysis, we use a reduced sample where the incidents with unknown nationality of the perpetrators are dropped in order to compare the results 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.

Some summary statistics over the whole sample can be found in Azam and Thelen (2010b). 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.

Map 1 clearly shows that the largest number of terrorist attacks originates from countries that are clustered in the South, while Northern countries are much less prolific, with a small number of exceptions. The dataset does not allow us to disaggregate the Russian

federation, although it is well known that terrorist attacks originating there mainly do so in the “Russian South”, e.g., Chechnya.

**Map 1: Number of Terrorist Events per Country of Origin over 1990 to 2007**

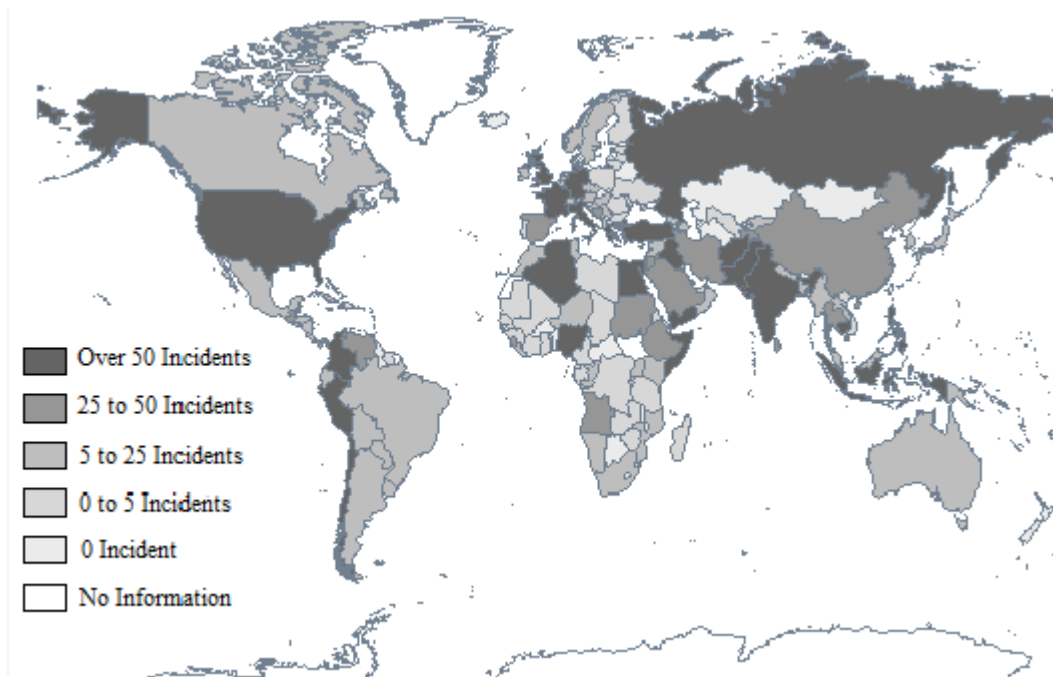


**Note:** The data used come from the ITERATE database, which is presented in some detail below.

A very active empirical literature has developed to refine this diagnosis and identify more precisely the different characteristics that make some countries the favorite targets or sources of terrorist attacks. Enders and Sandler (2012) provide a rich survey of this literature with a broader focus. An additional issue has been discussed about the source of terrorist attacks, by disaggregating the countries of origin and looking at the individual characteristics of the perpetrators. The main finding of this type of studies, which are briefly reviewed in Azam (2012), is the overwhelming role that education seems to play in sorting out the terrorists from the rest of their population of origin. This came as a shock to the profession, as it seemed at first sight to challenge the rational-choice hypothesis which most of the social sciences have adopted nowadays. Azam (2005, 2012) has shown how this seemingly paradox

can in fact be dispelled by using some standard tools of rational choice theory, like inter-generational altruism as assumed in the dynastic family type of models.

**Map 2: Number of Terrorist Events per Host Country over 1990 to 2007**



Map 2 shows instead the number of attacks per host country. Comparing this map with map 1 shows that rich countries, with the exception of Germany, as well as Bangladesh, Chile, India, Indonesia and Nigeria, produce much less attacks than they host. In contrast, Iran is exporting quite a lot of attacks while hosting fewer of them. Other, less spectacular forms of specialization can also be seen by inspecting lighter shades of grey.

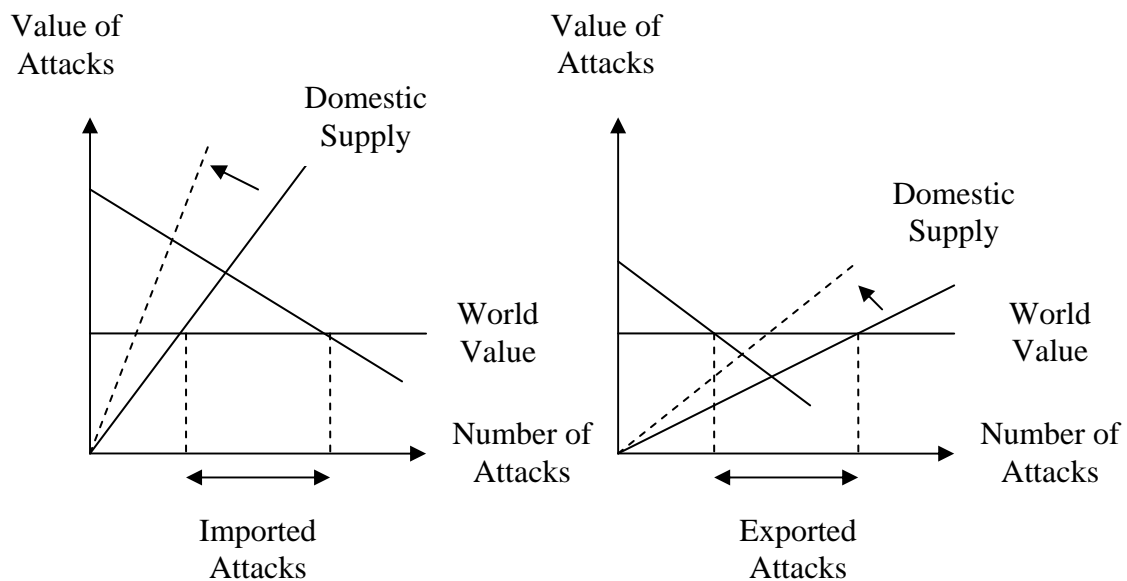
### ***Theoretical Framework***

Azam and Thelen (2012) provide a game-theoretic analysis of the imports and exports of terrorist attacks in a two-country model where terrorist organizations have a common enemy in a third country, the foreign power, whose economic and political interests are present in both host countries. The following two diagrams provide the main flavor of their argument, in a much simplified framework. These diagrams assume that the value that home and foreign terrorist organizations attach to an attack in the country depicted is decreasing

with the number of attacks hosted there. This is captured by the downward sloping line. These attacks can be perpetrated either by domestic terrorists or by foreign terrorists. The upward sloping curve represents the attack-supply curve by home terrorists, assuming that their marginal cost is increasing with the number of attacks perpetrated. This cost includes not only the direct resource costs of the attacks, like the purchase of explosives or the compensation given to the family of suicide terrorists, but also the political and social costs like the increased repression by the defending police or army and the enhanced harassment of the community of origin of the terrorists that may result from a crackdown. These are bound to get tougher as the number of attacks increases. Lastly, the horizontal line labeled “world value” represents the minimum value of an attack in the country under study that is required to induce foreign terrorists to cross the border and perpetrate an attack there. This includes the opportunity cost of diverting their forces from one country to the other, as well as any potential additional resource cost (travel, lodging, etc.) involved in operating in a foreign country. Azam and Thelen (2012) have a more complex model, where terrorist organization from different countries might have an incentive to “swap” attacks across the border, e.g., to make the work of domestic police more difficult.

The left-hand panel of figure 1 shows the case where the domestic supply of terrorist attacks is small relative to the value of attacks in the country, entailing a flow of imported attacks from abroad. The right-hand panel shows the opposite case, where the value of attacks is relatively low while the supply of domestic terrorist attacks is pretty high. Then, this country will produce more attacks than it will host, and export the difference. In Azam and Thelen (2012), more complicated outcomes occur, where the terrorist organizations of the two country swap attacks, each one exporting some attacks to the other one. This can be neglected as a first approximation, as figure 1 provides the key intuition needed to understand the econometric results presented below. The main empirical prediction coming out from figure 1

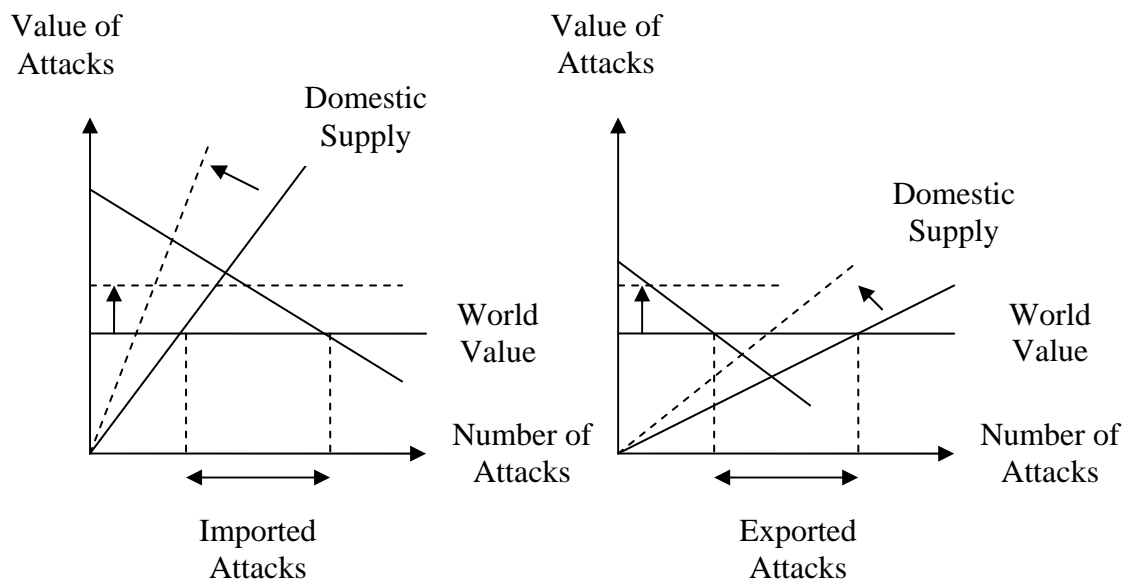
is that a successful policy for reducing the number of attacks perpetrated by domestic terrorists might have a negligible impact on the number of attacks hosted by this country. This can be seen by assuming that the local government launches a successful counter-terrorist policy, may be motivated by foreign aid, so that the domestic supply of attacks is reduced, as shown by the rotated dotted lines in the diagram. It is immediate to see that in the left-hand panel, the number of hosted attacks is unaffected, while the number of imported attacks is increased as a response to the reduction of home-produced attacks. In the right-hand panel, the benefit of the successful counter-terrorist policy accrues entirely to the foreign country, as the home country still hosts the same number of attacks, while it reduces its exports of attacks. In Azam and Thelen (2012), more complex responses can be generated by the model but the main intuition derived here from figure 1 is sufficient for interpreting the empirical results presented below.



**Figure 1: Number of Hosted Attacks with Imports (Left) or Exports (Right)**

The next section presents some findings of Azam and Thelen (2012) that support these predictions. The latter raise a strategic issue about the allocation of counter-terrorist resources across the globe. They suggest that concentrating the counter-terrorist effort in one or a small

number of countries would raise both fairness and credibility issues among participant governments exposed to such imports and exports of terrorist attacks. A simultaneous multi-country approach would raise the “world value” of attacks in the eyes of terrorists, thus helping to share the visible benefits of counter-terrorism among participant governments. Figure 2 illustrates this point by showing how an increase in the “world value” of terrorist attacks is required in this simple framework to reduce the number of attacks hosted by the country under study.



**Figure 2: Impact of a Multi-Country Approach**

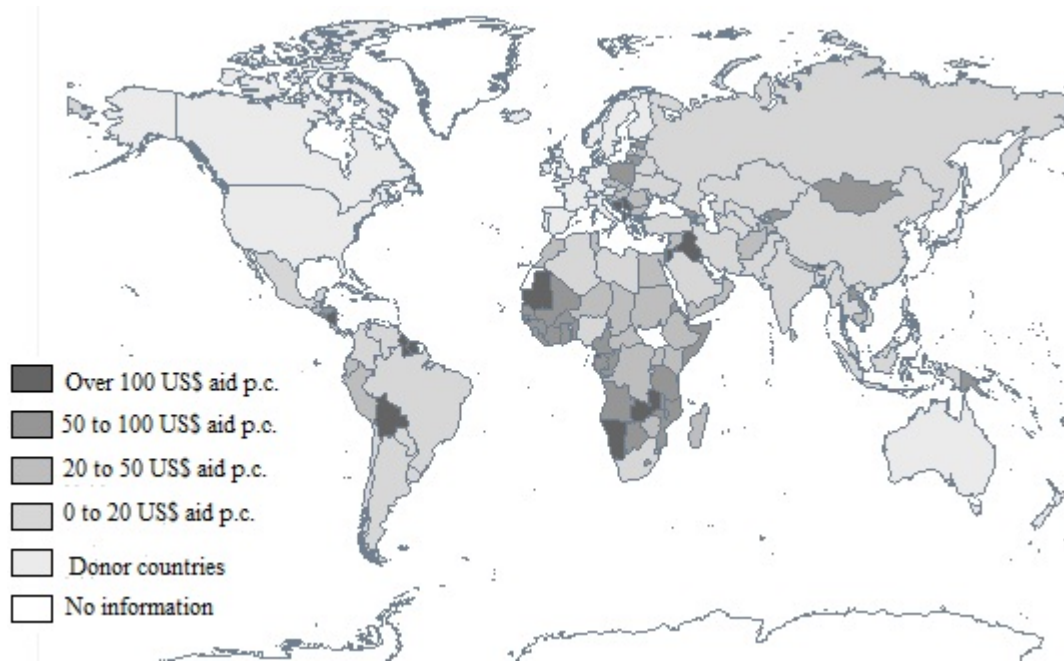
The bottom line of the foregoing theoretical discussion is that we expect the number of attacks per source country and the number of attacks per host country to respond quite differently to counter-terrorism. This entails that we should expect foreign aid to have a different impact on the number of terrorist attacks hosted by a country than the one mentioned in the introduction. The next section highlights the findings presented by Azam and Thelen (2012), which corroborate this prediction in a significant way.

### 3. Econometric Analysis

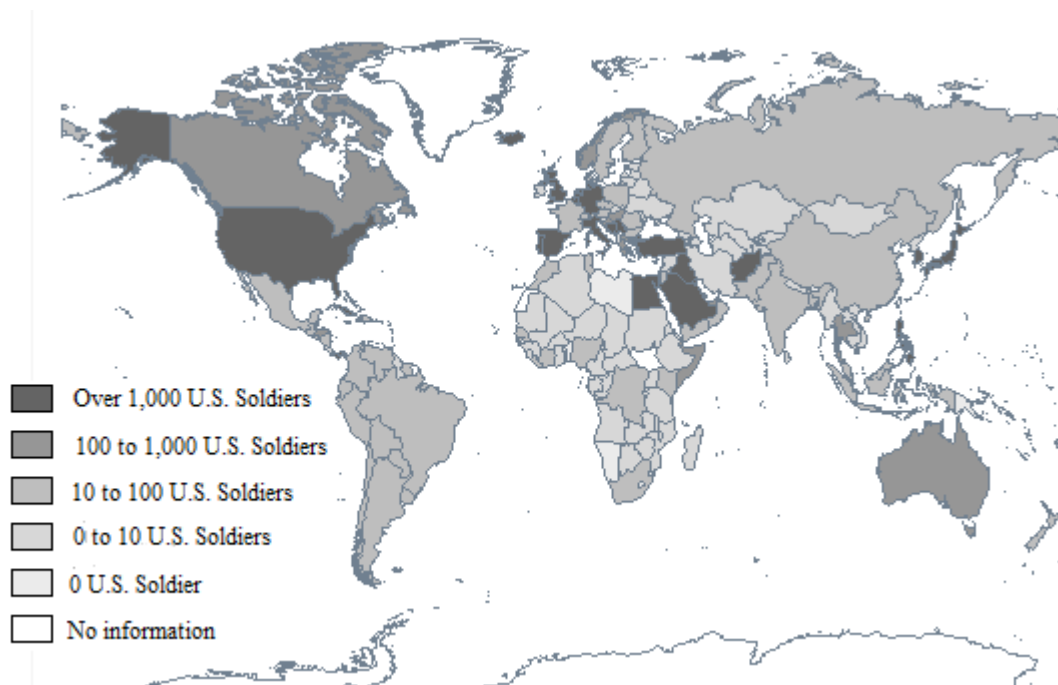
#### *Key Variables of Interest*

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. These data are measured in constant 2006 U.S. dollars and the source is the online OECD Development Database on CRS Aid Activities. In the sample used in this chapter, 24 countries are aid donors, mainly OECD member countries. Map 3 depicts the average allocation of foreign aid across countries over the 1990-2007 period, showing undoubtedly that the recipients are mainly located in the South, and especially in Africa. To measure the educational capital, we use the gross enrollment rate in secondary education, i.e., 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. Here again, the idea is to take advantage of the players' informational advantage for extracting some relevant information to be used in the final estimation, i.e. to extract from observing the players' behavior what additional information about the recipient country's educational capital they use for making their decisions. To control for the level of economic development, and thus to mitigate the risk of finding a spurious correlation with aid and the level of education due in fact to under development, we add the average value over the sample period of GDP per capita in constant 2000 U.S. dollars in the regressors' list. The source of the data for the gross enrollment rate in secondary education and per capita GDP is the World Bank's online World Development Indicators (WDI).

**Map 3. Average Aid per Capita over 1990 to 2007**



**Map 4. Average Number of U.S. Soldiers over 1990 to 2007**



**Source:** See fn.2 for the source of the data.

To estimate and test the impact of the military approach to deter terrorism, we focus



on US overseas military interventions, using the average number of US soldiers deployed in the host country over the sample period. Map 4 describes the allocation of US soldiers across countries over the same period. It clearly shows that their presence is highly concentrated in the Middle East and around the Mediterranean Sea, with a few other spots like Afghanistan, Japan, South Korea and the Philippines. As emphasized by Pape (2006), for example, 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 terrorists' country of origin. Pape and Feldman (2010) extend the geographical coverage of this diagnosis by analyzing other countries. The strategy and the targets attacked by Al-Qaeda suggest that their principal motive is to end foreign military occupation of the Arabian Peninsula and other Muslim regions. Between 1980 and 1990, the US military forces on the Arabian Peninsula were less than 800 soldiers as opposed to on average 10,000 soldiers between 1990 and 2001. A strong presence of foreign troops may thus cause an increase in "militancy" in the country which affects the number of terrorist incidents, especially the presence of US troops in the Middle East as mentioned by Pape (2006). Thus, our proxy for foreign military intervention is the average number of US military personnel<sup>2</sup> over the period covered. Unfortunately, we could not collect similar data for the other main powers that also intervene abroad with a military presence, e.g., Britain, France, etc. However, it is clear that the US usually provide by far the largest contingent of soldiers and military hardware. We do not consider the "direction of the intervention", i.e., whether the intervention is supporting the incumbent government or helping to replace it with a more favorable one, because there are almost no hostile interventions in this sample over the sample period. Like for the amount of aid and educational capital, a military intervention is liable to be endogenous, as a response to the presence of highly militant groups in the country.

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<sup>2</sup>The source of the active duty military personnel strengths by country is the Directorate for Information Operations and Reports (U.S. Department of Defense). We consider the number of US soldier in the US equal to zero as they have other organizations to fight terrorism in the country.

### *Control Variables*

Another useful variable for capturing some aspects of “militancy” is an “ethnic tension” index. Basuchoudhary and Shughart (2010) show that this variable affects significantly the level of terrorist attacks by country of origin. We use the same IRIS-3 data set (International Country Risk Guide, proprietary of the PRS group) where ethnic tension is an assessment of the degree of tension within a country attributable to racial, nationality or language divisions. The methodology is not published, but they argue that this index is a better measure of ethnic polarization than the more commonly used ethno-linguistic fractionalization index since it is more sensitive to the definition of the different groups. It assigns numbers ranging from 0 to 6 to each country, higher values originally indicating lower ethnic tension. In order to have an increasing order and to facilitate the interpretation of the results, we use the same index but ranging from -6 to 0 with higher values (close to 0) indicating higher ethnic tension.

We also use several geographical dummy variables for capturing this “militancy” aspect: “Camp David” (Egypt and Israel), China and India, Latin American countries, Sub-Saharan countries, former USSR countries, ASEAN countries before 1990 (Indonesia, Malaysia, Philippines, Singapore and Thailand) and OECD countries before 1990. Azam and Delacroix (2006) and Azam and Thelen (2008, 2010) have shown that these dummy variables contain some relevant information for identifying the equations. They may also help to control for other country characteristics such as geography and civilization, as well as for some historical determinants that may still influence the donors’ behavior. In addition, we use two important dummy variables not included in Azam-Thelen (2008, 2010), for capturing the historical importance of some past wars that are liable to influence the presence of U.S. troops in some countries up to these days, namely South Korea, on the one hand, and the former “Axis” allies group, including Japan, Germany, and Italy, on the other hand.

Finally, to capture the impact of the level of legal capital in each country, for describing the sense of “justice” suggested by Roberts (2003) as an important determinant of popular support for political Islamism and other radical positions, we use the “Law and Order” component of the IRIS-3 data set. Many empirical studies aiming at clarifying the link between democracy and terrorist incidents use variables capturing civil liberties or political rights, with the possible endogeneity bias that this may entail. In the theoretical framework of Azam and Thelen (2010, 2012), variables of this kind are optimized out in defining the structural equation, as they are closely related to “repression”, positively or negatively. On the other hand, the strength of the legal system may be regarded as exogenous because of the longer time needed to change these institutions compared to the level of repression imposed by the government. This indicator is made of two components, which are assessed separately. The “Law” one represents the strength and the impartiality of the legal system while the “Order” one is an assessment of popular observance of the law. This index also assigns numbers ranging from 0 to 6 with higher values indicating sound legal institutions and a strong court system.

### ***Controlling for Endogeneity***

One of the key predictions of Azam and Thelen (2008, 2010) is that the amounts of foreign aid and educational capital affect negatively the number of attacks originating from the recipient countries. A glance at map 3 provides some support to this view. It shows by comparison with map 1 above that the countries getting a lot of aid per capita produce very little terrorism, with the exception of Iraq. Conversely, it shows that the countries around the Arabian Sea, which produce a lot of terrorist attacks, are getting very little aid per capita. However, the aid money is probably allocated to some extent with a view to control the terrorist attacks originating from the recipient countries by defraying the recipient governments’ costs of such an effort. Hence, one should not jump to strong conclusions from

such a visual examination of the maps. Similarly, the military interventions are also allocated across countries in order to entice their governments to fight terrorism within their spheres of influence by some in-kind contributions reducing the cost of investing in counter-terrorism measures. Therefore, we need to control for endogeneity when performing our estimations, as the Azam-Thelen theoretical model predicts that the number of attacks per source country, the amount of aid received, and the level of the foreign military intervention are simultaneously determined. In the kind of setting used here, which relies on simple game theory, endogeneity comes both as a technical issue and as an opportunity for the econometrician. If the latter was in a position to use at least as much information as the players under study, then we could neglect this problem, from an econometric point of view. What creates an endogeneity problem is that the donor and the recipient government are certainly using some information that is unavailable to the researcher, given the classified intelligence that most governments produce, as well as the very diverse level of sophistication of the local statistical offices. Neglecting this issue would obviously raise an omitted variable problem, which would make any econometric estimation unreliable, to say the least, if not completely misleading. However, insofar as these players are in fact using this kind of information in making their decisions, then observing the latter provides some valuable indication about the former. The allocation of aid-cum-military packages across countries would thus reflect to some extent this unobservable component of the players' information set. The approach adopted here aims precisely at extracting as much of this unobserved information as possible from the observed behavior regarding aid and military intervention, with a view to use it in estimating the structural equation describing terrorist attacks in order to make the omitted variable bias negligible. This is what "controlling for endogeneity" means in what follows.

To perform this analysis, we use a version of the Hausman test (Wooldridge 1997). This 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. Table 2 in the appendix presents these first-stage equations. Then, the residuals resulting from this estimation capture in a synthetic fashion the effect of the unobserved information used by the donor and the recipient governments for making their decisions about aid and military intervention. These residuals are then included in a second step as regressors in the structural attacks supply curve that we want to estimate and test as a control function. If they turn out to be jointly significant according to a Wald test, then the endogeneity assumption is not rejected, confirming somehow that the donor is using this kind of unobservable relevant information for allocating its support across countries. This is a key prediction arising from the theoretical framework presented by Azam and Thelen (2008, 2010). Moreover, in this case, we can be confident that a significant part of this missing information has been observed indirectly, and is liable to mitigate the omitted variable problem described above. Hence, an additional benefit of this approach is that it removes the endogeneity bias that would otherwise affect the estimates and improves the precision of their estimation.

### *Structural Equations*

The first three columns of table 1 present the findings regarding the number of attacks per host country, while the results for the number of attacks per country of origin with the same sample size are presented in the second set of columns, for the sake of comparison. 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 endogeneity. The joint-F tests are significant in equations [8] and [9], confirming the presence of some potential endogeneity bias.

**Table 1: 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 (2.16)	-1.449 (3.56)	-3.864 (3.34)	-1.671 (2.559)	12.448*** (4.58)	8.453** (4.29)
GDP p.c.	0.000 (0.00)	0.000 (0.00)	0.000 (0.00)	-0.000 (0.00)	-0.000 (0.00)	-0.000* (0.00)
Population (log)	0.466*** (0.10)	0.414** (0.16)	0.492*** (0.15)	0.385** (0.13)	-0.178 (0.19)	-0.036 (0.18)
<b>ODA p.c.</b>	<b>0.007*</b> (0.00)	<b>0.005</b> (0.01)	<b>0.008</b> (0.01)	<b>-0.000</b> (0.00)	<b>-0.036***</b> (0.01)	<b>-0.028***</b> (0.01)
<b>Secondary Enrollment (% gross)</b>	<b>-0.005</b> (0.01)	<b>-0.027**</b> (0.01)	<b>-0.020*</b> (0.01)	<b>-0.003</b> (0.01)	<b>-0.046***</b> (0.01)	<b>-0.039***</b> (0.01)
<b>Nb. Of US Troops in the Country (log)</b>	<b>0.140***</b> (0.04)	<b>0.172*</b> (0.09)	<b>0.232**</b> (0.09)	<b>0.006</b> (0.06)	<b>0.167</b> (0.11)	<b>0.262*</b> (0.14)
<b>Interaction Nb. US Troopsx Dist to Oil</b>	-	-	<b>-0.006**</b> (0.002)	-	-	<b>-0.005*</b> (0.003)
Ethnic Tension	0.165 (0.12)	0.147 (0.12)	0.072 (0.11)	-0.010 (0.11)	0.287* (0.15)	0.150 (0.13)
Law and Order	-0.372*** (0.14)	-0.282** (0.14)	-0.218* (0.13)	-0.509*** (0.17)	-0.366** (0.14)	-0.330** (0.14)
OECD	1.088** (0.51)	1.452** (0.59)	1.287** (0.54)	2.135*** (0.74)	2.330*** (0.83)	2.122*** (0.74)
"Camp David"	0.442 (0.49)	0.803 (1.25)	0.162 (1.21)	0.845* (0.49)	5.757*** (1.85)	4.127*** (1.59)
Sub-Saharan	-1.132** (0.46)	-2.137*** (0.52)	-1.702*** (0.51)	-1.121** (0.49)	-2.850*** (0.66)	-2.354*** (0.63)
USSR	-1.295*** (0.48)	-0.799 (0.56)	-1.063** (0.54)	-1.228** (0.56)	-0.644 (0.61)	-0.702 (0.62)
Endog. Bias ODA p.c.	-	0.002 (0.01)	-0.002 (0.01)	-	0.042*** (0.01)	0.032*** (0.01)
Endog. Bias Secondary	-	0.037*** (0.01)	0.033** (0.01)	-	0.059*** (0.02)	0.057*** (0.02)
Endog. Bias US troops	-	-0.027 (0.11)	-0.037 (0.11)	-	-0.192 (0.13)	-0.246* (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 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. Still, the counter-productive effect of stationing US soldiers in oil-producing countries is confirmed, at this level of significance. 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 reached in the previous studies that the counter-terrorism variables considered here, i.e., foreign aid and educational capital, in the country of origin impact positively the cost parameters of the terrorist organization and thus decrease the number of terrorist attacks originating from this country. The next set of findings brings out the public good dimension of this effective fight against terrorism, as its benefits might accrue to other countries.

### ***Host Country Findings***

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. Azam and Thelen (2012) provide some additional information about these effects by performing a dyadic analysis of imported terrorist attacks. In agreement with the theoretical framework sketched above, they find that foreign aid is an attraction factor that boosts the number of imported attacks in the host country. 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 troops has a more significant impact on the number of attacks per host country than 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 wells. 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 endogeneity and 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. This suggests that terrorists can hide better in more populous countries, thus reducing their probability of detection by the local police. 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.

#### **4. Conclusion**

This paper has reviewed some findings from Azam and Thelen (2010, 2012) that provide strong support for the geopolitical importance of foreign aid. They show that the latter is actively used by donors for inducing recipient governments to protect their economic and political interests against terrorist attacks, within their sphere of influence. These findings strongly support the view that foreign aid and educational capital are the main inhibitors of transnational terrorist attacks by source country, while military interventions are robustly counter-productive. A thorny issue comes out of these results because the number of attacks hosted by a country responds differently to foreign aid, as the latter also triggers imported

attacks when it is successful at reducing the level of terrorist activity originating in the recipient country. Hence, the successful recipient government might not see the full benefice of its efforts against terrorism. In the real world, this is certainly liable to require some careful analysis of the incentives faced by the recipient governments, as well a coordinated effort at curbing terrorism simultaneously in several countries. This is at variance to the “Winning Hearts and Minds” approach favored by some American administrations (Picard and Buss, 2009), and used in Pakistan and Afghanistan under General Petraeus. This policy aims at spending foreign aid to provide social services, like health and education, in the pacified areas controlled by the intervention forces. This strategy was used initially in Vietnam by the Kennedy administration. The findings presented at table 1 above suggest instead that foreign aid should be spent as well in the other countries where terrorists might come from, with a view to reduce the incidence of imported attacks. Further research is needed here to better comprehend how to allocate aid across countries linked by such a network of exports and imports of terrorist attacks.

Further research is also needed to account for other geopolitical dimensions of foreign aid. For example, Azam and Berlinschi (2010) show that foreign aid is used effectively by OECD countries for controlling immigration from low income and lower middle income countries. According to some observers, reducing immigration from these countries is also liable to reduce the risk of terrorist attacks hosted by the rich and democratic countries. However, it is probably not the main reason why Western governments are investing resources in this anti-immigration policy. Much more research is needed on this topic to better identify the various policy tools that are used alongside foreign aid in this policy.

### **Appendix: Reduced-Form Estimates**

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, which have been tested for their exclusion from the structural equation. For capturing some geo-strategic considerations that might also influence the presence of US soldiers in the country we use the shortest distance to an oil-exporting country, as mentioned above. We only consider countries where oil exports amount on average to more than 30% of merchandise export during the period 1990 to 2007. 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 [1]	Secondary School Enrol. [2]	Number of US troops (log) [3]
Intercept	459.188*** (55.254)	93.665*** (23.722)	2.538 (3.279)
GDP p.c.	-0.004*** (0.001)	0.000 (0.000)	-0.000 (0.000)
Population (log)	-22.815*** (2.835)	-1.032 (1.097)	0.165 (0.164)
Under 5 mortality Rate in 1990 (per 1000)	0.037 (0.050)	-0.244*** (0.040)	-0.008** (0.003)
Distance to Oil Wells (hundred of km)	0.081 (0.003)	0.050 (0.001)	-0.025** (0.000)
Ethnic Tension	9.217* (5.093)	-0.189 (1.432)	-0.006 (0.154)
Law and Order	1.888 (4.929)	1.476 (2.305)	-0.293 (0.282)
"Axis" (Japan, Germany, Italy)	-37.431* (20.147)	-8.432* (4.448)	5.096*** (1.024)
Korea	-136.771*** (21.789)	21.142*** (5.543)	7.717*** (0.794)
ASEAN	0.377 (10.348)	-6.321 (6.679)	1.061 (0.940)
"Camp David"	145.595** (74.251)	15.461** (6.360)	1.967* (1.142)
China and India	38.337** (16.267)	-6.561 (6.455)	0.099 (0.936)
Latin America	-1.077 (14.907)	-1.338 (5.859)	0.271 (0.631)
OECD	-49.733** (21.895)	21.653*** (5.386)	2.171* (1.119)
Sub-Saharan	-13.982* (8.348)	-11.977 (7.265)	-0.681 (0.630)
USSR	-24.547*** (9.280)	16.356*** (3.519)	-1.819*** (0.527)
Observations	129	129	129
LR statistic	144.50***	223.07***	87.05***
pseudo- or adjusted R <sup>2</sup>	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%.

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