

Forces of Good and Evil: U.S. Economic and Politico-Military Power, Globalization, and Anti-American Terrorism

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Abstract: This contribution studies the causal interaction between U.S. global activity and transnational terrorist activity directed against U.S. interests. It helps to better understand the role of global forces in the emergence of anti-U.S. violence. This study shows that U.S. military and foreign policy (i.e., U.S. military presence in foreign countries, its position in the Arab-Israeli conflict, and its global political reputation) and the global spread of U.S. culture tend to influence the patterns of anti-U.S. violence. At the same time, it shows that American foreign policy is also governed by the level of anti-U.S. terrorism, pointing at a complex causal nexus between U.S. foreign policy and terrorism directed against its interest. Finally, this contribution finds some support for a negative causal effect of anti-U.S. terrorism on the global economic position of the United States. This study helps to improve U.S. preparedness against future terrorism directed against its interest, which seems to result from present trajectories of American politico-military and cultural influence.

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1. Introduction

The terrorist attacks on New York and Washington on September 11, 2001, have triggered a plethora of empirical studies on the roots of terrorism. Most of these studies have focused on the relationship between *local* (i.e., national) conditions and terrorism.¹ This contribution deviates from this strand of the literature as we relate *global U.S. activity* to the patterns of *transnational terrorism directed at U.S. interests*. We follow earlier examples by, e.g., O'Brien (1996) and Lizardo (2006) when we connect world-level data to the emergence of international terrorism. Our focus on anti-U.S. terrorism is motivated by earlier studies (e.g., Sobek and Braithwaite 2005; Neumayer and Plümper 2011) which also analyze this specific form of transnational terrorism.

We believe that our empirical study adds to existing research—which predominantly relates local social conditions to terrorism—by emphasizing the role of global factors in terrorism. These factors seem to have mattered to transnational terrorism for past decades, particularly when it has been aimed at the United States. Our period of observation (1978-2007) saw terrorist activity against the U.S. by left-wing, separatist, and religious (Islamist) terrorist groups (e.g., LaFree et al. 2009). Clearly, all of these groups were motivated by local conditions (e.g., inequality, ethnic discrimination, secularization) and had local goals (e.g., regime or territorial change). However, many of these groups also had larger, international goals (e.g., Communist world revolution, global right of self-determination and anti-imperialism, establishment of a global caliphate) and were to some extent incited by international factors (e.g., global economic imbalances, foreign policies perceived as revisionist). It seems reasonable to assume that those groups which attacked the U.S. between 1978 and 2007 did so because they considered the United States to be an obstacle to their global goals and because U.S. global activity provided additional motives for

¹ For example, these studies find that political instability (e.g., Piazza 2008), political underdevelopment (e.g., Krueger and Maleckova 2003), a lack of socioeconomic progress and economic openness (e.g., Kurrild-Klitgaard et al. 2006; Burgoon 2006; Freytag et al. 2011), and demographic stress (e.g., Basuchoudhary and Shughart 2010) contribute to the emergence of terrorism. However, these studies have not generated an academic consensus regarding the “true” causes of terrorism. Krieger and Meierrieks (2011) and Gassebner and Luechinger (2011) provide extensive reviews of the empirical literature.

terrorism. For example, anti-U.S. terrorist activities by the German left-wing *Red Army Faction (RAF)* in the 1970s and 1980s were also carried out as a response to perceived American imperialism (e.g., involvement in the Vietnam War), the alleged exploitation of the developing world by the West, and the firm opposition of the U.S. to Communist ideas (e.g., Shughart 2006). The recent wave of Islamist terrorism directed against the U.S. (e.g., Al-Qaeda and its affiliates) also seems to be (partially) influenced by U.S. foreign policy. Here, the military strength of the U.S. is a clear obstacle to the establishment of a global caliphate. What is more, Crenshaw (2001) argues that the activities of Islamist groups are to some extent motivated by U.S. Middle Eastern policy (e.g., military presence in Saudi Arabia, support for secular governments).

This contribution examines the role of two global forces related to the U.S in anti-U.S. terrorism, namely *U.S. military and foreign policy*, and *U.S. economic-cultural influence*. As indicated by the literature review below, these forces in theory have been repeatedly linked to the emergence of anti-U.S. terrorism, while empirical studies on their relationship with anti-U.S. violence are sparse. Its transnational nature—foreign terrorism specifically aimed at the United States—makes it plausible that this kind of terrorism is directly linked to U.S. global activity, so that we largely disregard the influence of local social conditions on this type of terrorism. For instance, recall that the 9/11 hijackers came from different countries (Saudi Arabia, Egypt, the UAE, Lebanon), with some of them having lived in the West for years (the *Hamburg cell*). Given their diverse background, it seems reasonable to relate their activities not only to local conditions in their respective country of origin, but also to global conditions (e.g., U.S. foreign policy). What is more, current trends in international migration and politico-economic integration as well as advances in international communication may amplify the role of global factors in anti-U.S. terrorism in the future. It seems to be increasingly the case that events in one part of the world quickly lead to the radicalization of individuals and societal groups in other parts of the world.²

² A recent example of this trend is the terrorist attack by a man from the Kosovo on American servicemen at the Frankfurt Airport (Germany), which left two servicemen dead and two others wounded. The perpetrator stated that his attack was motivated by alleged American atrocities in Afghanistan of which he had become aware of through the internet.

Our study employs event-count and time-series models to analyze the relationship between global factors controlled by the U.S. and anti-American terrorism, using world-level data for the period of 1978 to 2007. In detail, we study the effect of U.S. military presence in foreign countries, U.S. foreign policy standing and its political position in the Arab-Israeli conflict on terrorism. Also, we examine the impact of American exports, foreign direct investments (*FDI*), U.S. economic power (wealth), and cultural exports on anti-U.S. terrorism. We make no a priori assumptions about the expected effect of these variables on terrorism. For instance, we hypothesize that U.S. military presence in foreign countries may either decrease or increase anti-U.S. terrorism, given that both effects have been discussed in the literature. What is more, we also consider the “reverse causation argument”. For example, we do not only study the potential causal effect of U.S. military presence on terrorism, but also analyze a whether there also exists a causal effect of terrorism on this very presence.

Our study shows that that U.S. military and foreign policy (i.e., U.S. military presence in foreign countries and its position in the Arab-Israeli conflict) and the global spread of U.S. culture tend to be associated with more anti-U.S. violence. By contrast, a favorable political reputation of the U.S. tends to make violence against its interests less likely. At the same time, we show that the causal nexus between U.S. foreign policy and anti-U.S. terrorism is complex, given that we find that American foreign policy is also governed by the level of anti-U.S. terrorism (bidirectional causation). We argue that present trajectories of American politico-military and cultural influence determine anti-U.S. terrorist activity. From the terrorists’ perspective, the exercise of this influence leads to the development and aggravation of grievances (e.g., linked to the presence of U.S. troops which are *perceived* as hostile occupation, or to the spread of American culture which is *perceived* as a threat to local cultures and religions). We argue that these grievances lead to the emergence of terrorism which is—for strategic reasons—also directed against the United States. Our analysis is not intended to “blame the victim” (i.e., the U.S.) for terrorism; neither is it intended to justify terrorism. Rather, our study intends to help calculating the (potential) undesired backlash from the exercise of American influence, so that American success—that manifests itself in military, politico-economic, and cultural influence—can be better

protected from terrorism. This is particularly important given that our empirical findings also show that anti-U.S. terrorism is partially successful in damaging the global economic position of the United States.

The rest of this contribution is organized as follows. In the next section we introduce a series of hypotheses that (positively or negatively) relate anti-U.S. terrorism to U.S. military and foreign policy, and U.S. economic-cultural influence that emerges via economic globalization. Section 3 introduces the data and variables used in our statistical analysis. Section 4 describes our empirical approach and findings from a series of generalized linear models for count data. Section 5 discusses the issue of reverse causation. It uses time-series tools to analyze the causal relationship between terrorism and U.S. global activity, so as to assess the robustness of the findings of Section 4 and to further our understanding of the (potentially) complex causal links between terrorism, international politics, and globalization. Section 6 concludes.

2. Literature Review and Hypotheses: Foreign Policy, Globalization, and Anti-American Terrorism

2.1 Foreign Policy and Anti-American Terrorism

2.1.1 Military Presence and Terrorism

One foreign policy tool that has been repeatedly related to anti-U.S. terrorism is the presence of U.S. military on foreign soil. In many cases this presence is associated with the fight against terrorism, be it in the form of military advisers (e.g., in Latin America) or active combat units (e.g., Afghanistan, Iraq). Conventional wisdom—as it is voiced by policymakers—has it that this military presence raises the operating costs of terrorist organizations.³ For instance, then-U.S. President George W. Bush followed this line of

³ Note that throughout this contribution we repeatedly argue with (economic) rational-action models of terrorism. That is, we argue that the observed level of anti-U.S. terrorism is subject to certain economic constraints (e.g., manpower, financial resources) and driven by the costs, benefits, and opportunity costs of

reasoning in 2001, saying with respect to the goals of the U.S. military intervention in Afghanistan: “By destroying camps and disrupting communications, we will make it more difficult for the terror network to train new recruits and coordinate their evil plans.”⁴ As stressed by Lai (2007), any policy that strengthens a government’s capacity to control its territory ought to curtail the production of transnational terrorism by, e.g., constraining terrorist recruitment or denying terrorists safe havens. Given that U.S. military presence can be expected to improve territorial control, a negative effect on the emergence of terrorism can be expected. What is more, U.S. military presence also increases the possibility that the United States swiftly retaliates against terrorist attacks. Indeed, some evidence indicates that military actions may prove helpful in the war on terrorism. For instance, Prunckun and Mohr (1997) find that military retaliation against Libya that followed a wave of Libyan-sponsored terrorist attacks had a deterrent effect on transnational terrorism, presumably by influencing the perceived costs of terrorism (military punishment by the U.S.) in ways that made terrorism less attractive. Choi (2011) and Azam and Thelen (2010) find that U.S. military actions that specifically aim at fighting terrorism have the desired effect as they actually reduce terrorist activity. Therefore, our first hypothesis (*H1a*) regarding the effect of military factors on anti-American terrorism is:

Hypothesis 1a: A stronger presence of U.S. troops in foreign countries is associated with less anti-U.S. terrorism.

However, some studies either find that military means against terrorism are ineffective (e.g., Enders and Sandler 1993) or—more importantly—*positively* related to terrorism (e.g., Eland 1998; Pape 2003; Savun and Phillips 2009; Choi 2011). For instance, Choi (2011) finds that U.S. military presence that is not directly related to the fight against terrorism—e.g., humanitarian missions—tend to cause more terrorist activity. He argues that U.S. military actions may increase political instability, thereby offering terrorist groups breeding grounds, given that domestic authorities are less likely to counter them in instable times. What is more, U.S. military presence may be regarded by—at least parts of—the population as a

terrorism, which are in turn affected by U.S. global activity (e.g., foreign policy). Sandler and Enders (2004) and Freytag et al. (2011) provide further discussions of rational choice models in the study of terrorism.

⁴ See <http://merln.ndu.edu/archivepdf/afghanistan/WH/20011007-8.pdf>.

hostile occupation. This is because, first, it facilitates U.S. politico-economic influence on domestic affairs, which usually creates grievances in parts of the population. Second, U.S. military presence is likely to prevent insurgent groups from seizing power. For instance, Al-Qaeda's activities against the U.S. have apparently been also motivated by U.S. military presence on the Arabian Peninsula. From al-Qaeda's perspective, this presence is perceived to result in an undesired influence of the U.S. on Arab affairs and as an obstacle to Islamic unity. The 1998 fatwa of Bin Laden and other Islamist militants⁵ argues that:

“[the] United States has been occupying the lands of Islam in the holiest of places, the Arabian Peninsula, plundering its riches, dictating to its rulers, humiliating its people, terrorizing its neighbors, and turning its bases in the Peninsula into a spearhead through which to fight the neighboring Muslim peoples. [...] The ruling to kill the Americans and their allies—civilians and military—is an individual duty for every Muslim who can do it in any country in which it is possible to do it, in order to liberate the al-Aqsa Mosque and the holy mosque from their grip, and in order for their armies to move out of all the lands of Islam, defeated and unable to threaten any Muslim [...]”

Given the obvious power differential between a foreign military occupation force and domestic insurgents, terrorism is used as a cost-efficient means to end an occupation by making it increasingly unattractive, so as to limit foreign influence on domestic affairs and to facilitate eventual terrorist success (e.g., regime or territorial change). For instance, Pape (2003) argues that the suicide terrorist campaign of Hezbollah against the U.S. and France in 1983 and 1984 was designed to make American and French military presence in Lebanon too costly by, e.g., claiming American and French lives and raising the political costs of defending this presence at home. Their campaign was successful in that it limited Western influence in Lebanon, while at the same time helping Hezbollah to gain politico-military leverage (Pape 2003). Hence, anti-U.S. terrorism can be regarded as a strategic reaction to American power (i.e., military presence), particularly when American power clashes with terrorists' interests (e.g., Crenshaw 2001; Pape 2003). Following this line of reasoning, we arrive at the following hypothesis (*H1b*) regarding the role of U.S. military presence in anti-U.S. terrorism:

⁵ See <http://www.fas.org/irp/world/para/docs/980223-fatwa.htm>.

Hypothesis 1b: A stronger presence of U.S. troops in foreign countries is associated with more anti-U.S. terrorism.

2.1.2 U.S. Foreign Policy Reputation, Unilateralism and Terrorism

U.S. military policies are one important pillar of U.S. foreign policy, which surely correlates with its global political reputation. However, this standing is also influenced by non-military factors, e.g., trade relations, economic aid, diplomacy, and other politico-economic commonalities and differences between the U.S. and the rest of the world. The global reputation of the U.S. may constitute yet another global factor that affects the rate of anti-U.S. terrorism. Previous studies have found that politico-economic and military conflicts between nation states may translate into more transnational terrorism, presumably because for political gains nation states either directly sponsor terrorism directed at their foreign enemy or at least tolerate terrorist groups on their territory to extract concessions from their foreign enemy (e.g., O'Brien 1996; Sobek and Braithwaite 2005; Bapat 2007). When the global political position of the United States is favorable, it ought to be less likely that there are in conflict with other states, so that it also ought to be less likely that other countries use anti-U.S. terrorism as a foreign policy tool. What is more, a favorable political reputation is expected to signal that the United States and the rest of the world share a common interest in preserving the status quo, making it less likely that terrorism directed at the U.S.—as the epitome of the status quo—emerges (e.g., Sobek and Braithwaite 2005). By contrast, stronger differences that are signaled by a poor political standing of the U.S. are anticipated to correlate with more anti-American terrorism. In this case, countries have increasing interest in challenging the status quo, thus having fewer incentives to actually suppress terrorism that is directed against the United States. Based on this discussion, our hypothesis (H2a) is:

Hypothesis 2a: Fewer political differences between the U.S. and foreign countries (i.e., a better global reputation of the U.S.) are associated with fewer anti-American terrorist attacks.

In contrast to this hypothesis, however, several studies find that those countries that are politically close to the United States are actually more prone to terrorism (e.g., Dreher and Gassebner 2008; Savun and Phillips 2009; Neumayer and Plümper 2011). For instance, Neumayer and Plümper (2011) find that countries which are dependent upon U.S. military aid generate more anti-U.S. terrorism than other countries. One explanation for a positive relationship between a country's attitude towards the U.S. and its generation of terrorism is that a high political proximity coincides with a strong dependence—in the form of military aid, economic aid, and arms trade—from the United States (Neumayer and Plümper 2011). That is, political proximity can be regarded as a signal of external sponsorship of a domestic government by the United States, which is similar to the idea—see hypothesis *H1b*—that U.S. military presence in a foreign country signals military dependence and external U.S. sponsorship. As argued above, terrorist organizations then engage in anti-American terrorism to make it less attractive for the U.S. to continue its support for a domestic government the terrorist group opposes. Ultimately, a withdrawal of U.S. support may make it easier for an insurgent group to claim political influence (e.g., Neumayer and Plümper 2011). That is, anti-American terrorism can be understood as spillover of domestic conflict, where U.S. sponsorship mediates this relationship (e.g., Addison and Murshed 2005). Following this line of reasoning, we can interpret a favorable U.S. foreign policy standing as evidence of dependence of other countries from the U.S., consequently leading to the following hypothesis (*H2b*):

Hypothesis 2b: Fewer political differences between the U.S. and foreign countries (i.e., a better global reputation of the U.S.) are associated with more anti-American terrorist attacks.

Some commentators linked the 9/11 attacks and the subsequent wave of religious (Islamist) terrorism to a specific feature of U.S. foreign policy, namely its position in the Arab-Israeli conflict. More precisely, some scholars regarded these attacks as a response to U.S. support for the state of Israel. From their perspective, this support was deemed unilateral and detrimental to the national interest of the U.S. (cf. Mearsheimer and Walt 2006). For instance, Mearsheimer and Walt (2006: 30) argue that:

“[the] combination of unwavering U.S. support for Israel and the related effort to spread democracy throughout the region has inflamed Arab and Islamic opinion and jeopardized U.S. security.”

Apparently, anti-American terrorist activity by Al-Qaeda and its affiliates is also motivated by U.S. foreign policy towards Israel, given that from their point of view (according to Bin Laden’s 1998 fatwa) “serve[s] the Jews’ petty state and divert[s] attention from its occupation of Jerusalem and murder of Muslims there”. That is, from the (Islamist) terrorists’ perspective American interests are attacked to punish the U.S. for their perceived partiality in the Arab-Israeli conflict and to force them to cease their sponsorship of the Israeli government. Again, terrorism can be regarded as a means to weaken a terrorists’ enemy (Israel) by weakening its strategic partner (the U.S.). There is good reason to believe that a growing difference between the U.S. and the rest of the world over the Arab-Israeli conflict—which is regarded by the terrorists as unilateralism or partiality—may in response fuel anti-U.S. terrorism, leading to the following hypothesis (*H2c*):

Hypothesis 2c: A stronger political differences between the U.S. and the rest of the world over the Arab-Israeli conflict is associated with more terrorism directed against the United States.

2.2 Globalization and Anti-American Terrorism

2.2.1 Globalization, Socioeconomic Inequality, and Terrorism

Some scholars link anti-American resentment not only to U.S. foreign policy but also to the ill effects of economic globalization—that is, the increasing economic interdependence of national economies through, e.g., trade and foreign direct investment—especially for developing economies. Hoffman argues (2002: 112):

“Islamic terrorism, for example, is not only based on support for the Palestinian struggle and opposition to an invasive American presence. It is also fueled by a resistance to "unjust" economic globalization [...]"

Economic globalization may contribute to unfavorable socioeconomic outcomes (e.g., poverty, inequality, natural degradation, poor economic growth). For instance, Sandbrook and Romano (2004) argue that economic globalization (e.g., increased trade and financial openness) has contributed to macroeconomic instability, volatile economic growth, heightened socioeconomic insecurity, and rising inequality in the developing world. Also, Stiglitz (2005) argues that globalization has—at times—led to increases in unemployment, inequality, and poverty. What is more, he argues that Western economies tend to bend the rules of globalization (e.g., trade rules) in their favor, so that for them the benefits of globalization far outweigh its costs, while for the rest of the world the opposite is true. When economic globalization produces unfavorable socioeconomic effects, it may impact the calculus of terrorists in ways that make violence more likely. Here, the opportunity costs of terrorism—as signaled by poor socioeconomic conditions that result from economic integration—are comparatively low, while the benefits from terrorist success (e.g., changes in trade and foreign investment that may eventually produce more favorable outcomes) are comparatively attractive (e.g., Li and Schaub 2004).⁶ Following this line of reasoning, from the terrorists' point of view terrorism can then be understood as a weapon of the poor and disenfranchised—the globalization losers—against the winners of globalization, in particular the United States. Our hypothesis (*H3a*) is thus:

Hypothesis 3a: Economic globalization (an increasing economic influence of the United States) is associated with more attacks against U.S. interests.

There are, however, some studies showing that globalization may produce favorable economic outcomes. For instance, Dreher (2006) finds that economic globalization spurs economic growth, while Dollar (2005) argues that economic globalization has contributed to global growth, poverty reduction, and a modest decline in global inequality. If these studies are correct, we ought to expect a diminishing effect of economic globalization on terrorism. When socioeconomic conditions improve as a consequence of economic globalization,

⁶ Note that these mechanisms not only apply to the development of anti-U.S. terrorism in developing countries, which directly affected by the (potentially) ill effects of economic globalization. For instance, Shughart (2006) argues that many left-wing terrorist groups that originated in Western countries also claimed solidarity with developing nations and their (perceived) fate of politico-economic oppression.

(potential) terrorists have fewer incentives to attack (e.g., Li and Schaub 2004). In particular, they ought to have little incentives to attack the U.S. as a prime “globalizer”, given that terrorist activity may cut them off from the benefits of globalization. Economically speaking, if the benefits of economic integration exceed its costs, the opportunity costs of terrorism are expected to increase (e.g., due to additional economic alternatives to violence), meaning that terrorist recruitment is likely to be aggravated and popular support for terrorism likely to decrease (e.g., Freytag et al. 2011). Following this discussion, our alternative hypothesis (*H3b*) concerning the relationship between economic integration and anti-U.S. terrorism is:

Hypothesis 3b: Economic globalization (an increasing economic influence of the United States) is associated with fewer attacks against U.S. interests.

2.2.2 Globalization, Cultural Influence, and Terrorism

Globalization is not limited to the economic sphere. There is also a cultural dimension to it. Cultural globalization means the export of Western—say, American—values, ideas, technologies, and tastes to non-Western societies, where this export takes place via, e.g., movies, popular music, advertisement, and other consumer products (e.g., Sandbrook and Romano 2004). Many commentators have argued that this cultural globalization is yet another global force that—paralleling economic globalization—incites terrorism directed at the U.S. as one of its main drivers and profiteers. For instance, Cronin (2003: 45) argues that:

“[whether] deliberately intending to or not, the United States is projecting uncoordinated economic, social, and political power even more sweepingly than it is in military terms. Globalization, in forms including Westernization, secularization, democratization, consumerism, and the growth of market capitalism, represents an onslaught to less privileged people in conservative cultures repelled by the fundamental changes that these forces are bringing-or angered by the distortions and uneven distributions of benefits that result.”

Some empirical studies indeed suggest that globalization does not only produce economic effects. Rather, these studies point out that globalization also brings about social and cultural change (e.g., Rudra 2005; Neumayer and De Soysa 2007; Dreher et al. 2011). For instance, Rudra (2005) finds that increases in trade and financial openness also promote democratic institutions in developing countries, while Neumayer and De Soysa (2007) find that women's rights are strengthened through globalization. Finally, Dreher et al. (2011) show that globalization tends to promote human rights and economic freedom. That is, these studies point out that the export of Western values, ideas, and ideologies (e.g., democracy, woman's rights, human rights, economic freedom, and market orientation) is a byproduct of economic globalization.

Cronin (2003) expects this cultural globalization—say, Westernization or Americanization of the world—that accompanies economic globalization to be an additional global force that produces anti-U.S. sentiment. Mousseau (2002: 6) similarly argues that:

“[as] a result of globalization, [Western] values and beliefs are increasingly clashing in the mixed market-clientalist economies of the developing world, triggering intense antimarket resentment directed primarily against the epitome of market civilization: the United States.”

Foreign cultural influence is expected to create resentments among conservative or traditionalist segments of society, which may turn to terrorism to limit foreign influence and protect local cultures, values, and religions. The clash of Western and non-Western ideas may allow terrorist groups that consider themselves to be defenders of traditional values to, e.g., rally popular support, gain financial assistance, and recruit new members in comparatively cost-efficient ways. As a consequence, terrorist activity against the U.S.—as the embodiment of Western culture—ought to increase with the spread of U.S. culture. The study by Robison et al. (2006) suggests that Islamist transnational terrorist activity is swayed by urbanization and secularization. This can be seen as first evidence that terrorism is indeed used as a means to fight modernization and Westernization projected by the American core onto the traditionalist, non-Western periphery. Following these lines of reasoning, we

hypothesize about the relationship between U.S. cultural influence and anti-American terrorism as follows (*H4a*):

Hypothesis 4a: Cultural globalization (an increasing cultural influence of the United States) is associated with more attacks against U.S. interests.

Lizardo (2006) offers an alternative, optimistic view regarding the effect of cultural globalization on terrorism. He hypothesizes that such globalization may lead to a global convergence in values, ideas, and ideologies, where the Western cultural model provides the basis for a “world culture”. This cultural convergence may make it more difficult for traditionalist groups to muster support. While true cultural convergence can only be expected to happen in the very long run, the trend towards it may already inhibit the emergence of anti-U.S. resentments. This leads to the following hypothesis about the linkages between U.S. cultural expansion and terrorism against the United States (*H4b*):

Hypothesis 4b: Cultural globalization (an increasing cultural influence of the United States) is associated with fewer attacks against U.S. interests.

3. Data and Variables

The following sections tests which of the hypotheses discussed above are supported by the data. Below, we introduce the variables employed in our statistical efforts. For our study we compile world-level data for anti-U.S. terrorism and measures of global U.S. activity (U.S. foreign and military policy, U.S. economic power, and U.S. cultural influence) for the period of 1978 to 2007. The summary statistics are given in Table 1.

– Table 1 here –

3.1 Measuring Anti-American Terrorism

Anti-American terrorism is measured by the *global number of transnational terrorist attacks against U.S. interest* for a given year. The raw data for our analysis is drawn from the *Global Terrorism Database* (National Consortium for the Study of Terrorism and Responses to Terrorism 2009; LaFree et al. 2009). This dataset includes information on the nationality of the target of a terrorist attack (e.g., businesses, the military, diplomatic personnel), so that we are able to identify attacks against U.S. interests. As discussed by Enders et al. (2011), the use of this database can be difficult for two reasons. First, the database does not differentiate between domestic and transnational terrorist events.⁷ Second, there appear to be some data inconsistencies that are related to the data collection process (e.g., changes in coding rules).

Fortunately, Enders et al. (2011) decompose the dataset into domestic and transnational terrorist events. Also, they provide methods to account for data inconsistencies.⁸ For our study we therefore use the decomposed and adjusted terrorism data provided by Enders et al. (2011), which builds on the GTD.⁹ By starting our analysis with the year 1978, we avoid those time period for which the GTD data seems to be most inconsistent (Enders et al. 2011). This starting point also coincides with the beginning of the wave of Islamist transnational terrorism incited by the Iranian revolution and the Soviet invasion of Afghanistan (e.g., Robison et al 2006; Enders et al. 2011). Figure 1 displays the patterns of transnational terrorism directed against the U.S. for the period of 1978 to 2007. The figure shows that anti-U.S. terrorism was quite persistent during the late 1970s and 1980s, and

⁷ In contrast to transnational terrorism, domestic terrorism only affects one country. For our analysis we therefore do not consider attacks by U.S. terrorist groups against American interests.

⁸ In detail, Enders et al. (2011) compare the *Global Terrorism Database (GTD)* with the *International Terrorism: Attributes of Terrorist Events (ITERATE)* dataset, an alternative database tracking transnational terrorism. They provide adjustment factors for those time periods in which the GTD data seems to undercount/overcount terrorist activity. Enders et al. (2011: 326) note that after these adjustments the two data series “track each other quite well”, meaning that they show similar patterns of transnational terrorist activity. We invite future research to check the validity of our findings using the ITERATE data, which was not available to us due to its proprietary nature.

⁹ As a robustness check, we also use the unadjusted data on transnational terrorism as provided by Enders et al. (2011). The use of this data does not systematically change our empirical results.

increased sharply during the end of the 1980s and early 1990s. During the 1990s the level of anti-U.S. terrorism was quite low, while this level tended to be higher during the 2000s.¹⁰

– Figure 1 here –

3.2 Measuring U.S. Power, Foreign Policy, and Globalization

U.S. military presence abroad is measured as the *number of U.S. servicemen stationed overseas in non-NATO countries*. We take the natural logarithm of this data series to correct for skewness. We also use the *number of U.S. servicemen stationed overseas in non-NATO countries to the total number of U.S. military servicemen* as an additional indicator. The latter measure ought to better factor in systematic trends in the reduction of military personnel after the end of the Cold War. These variables are used to test *H1a* and *H1b* which relate U.S. military commitment in foreign countries to the patterns of anti-U.S. terrorism. The data are drawn from various reports of the *U.S. Department of Defense*.¹¹

Hypotheses *H2a* and *H2b* link American foreign policy reputation to terrorism directed against its interests. In our study the U.S. political relationship with the rest of the world is measured as *the mean affinity score between the United States and the other UN member countries*. As described by Gartzke (1998), the affinity score is an index that evaluates the voting behavior of member countries in the United Nations General Assembly, which reflects how similar policy preferences between countries are. As in Sobek and Braithwaite (2005), a higher mean affinity score is expected to coincide with a fewer political differences between the U.S. and the rest of the world, which may either be interpreted as a common interest in the global status quo that reduces terrorism (*H2a*) or as a sign of politico-economic and

¹⁰ Note that our study does not focus on the number of U.S. *victims* from transnational terrorism, given that the GTD does not provide the corresponding data. Also, the actual number of casualties from terrorism seems to be random to some extent. However, there is a trend in international terrorism—that potentially also relates to anti-U.S. terrorism—towards attacks with more casualties (e.g., Bellany 2007).

¹¹ See <http://siadapp.dmdc.osd.mil/personnel/MILITARY/miltop.htm>.

military dependence from the United States that fosters terrorism (*H2b*). To conceptualize the effect of American foreign policy activity related to the Arab-Israeli conflict on anti-U.S. terrorism (*H2c*), we use the *difference between the affinity score between the U.S. and Israel and the mean affinity score between the rest of the world and Israel*, where a larger difference ought to mean a more unilateral policy position of the United States towards the Arab-Israeli conflict. The affinity score data is drawn from an update of Gartzke (1998).¹²

Hypotheses H3a and H3b, and H4a and H4b relate U.S. economic and cultural influence to anti-American terrorism. We introduce several measures to test this relationship. First, as two rather rough measures of global economic influence of the United States, we use the *total GDP of the U.S.* and the *U.S. share of global GDP*, with the data being drawn from the *World Development Indicators*.¹³ Furthermore, we employ alternative, more precise measures, so as to better capture the effects of American economic and cultural influence on anti-U.S. violence, which may be masked when we use rather broad measures of American economic power. Here, we use the (logged) *total U.S. export in merchandise goods* and the *share of U.S. share of global merchandise goods*. Furthermore, we use the (logged) *total outward FDI flow of the U.S.* and the *U.S. share of global outward FDI flows*. All four data series are constructed using *UNCTAD* data.¹⁴ As argued above, economic and cultural globalization are usually mutually dependent. That is, for instance, the flow of U.S. investment into foreign countries does not only produce economic but also cultural effects (e.g., the inflow of American ideas, technologies, and values). Therefore, these measures can be interpreted as indicating both American economic and cultural influence. As explicit measures of cultural globalization, we use the *United Nations Commodity Trade Statistics Database* to calculate the (logged) *total U.S. exports of books, newspapers, and popular music* as well as the *share of these exports in relation to total global trade*.¹⁵

¹² See <http://dss.ucsd.edu/~egartzke/htmlpages/data.html>.

¹³ See <http://data.worldbank.org/data-catalog/world-development-indicators>.

¹⁴ See <http://unctadstat.unctad.org>.

¹⁵ See <http://comtrade.un.org/db>.

Note that all of the measures introduced above explicitly measure U.S. military and foreign policy, and its economic-cultural position, which are later tested with respect to their causal relationship with anti-U.S. terrorism. They also measure—whenever appropriate—U.S. influence in absolute and relative terms, so as to better account for, e.g., price effects or long-run trends and global alignments in integration. We believe that this array of explanatory variables provides a sound basis for an empirical analysis that links U.S. global politico-military, economic, and cultural influence to anti-U.S. terrorism.¹⁶

3.3 Controls

Given that we use world-level data for the period of 1978 to 2007, our number of observations is relatively small ($N=30$). This calls for the inclusion of only few controls to retain sufficient degrees of freedom.¹⁷ Here, two dummy variables indicate major structural changes in the international political system. The first dummy variable corresponds to the *Cold War era* (1978-1989), in which anti-U.S. terrorism was often committed by left-wing transnational terrorism and accrued from the dynamics of Cold War rivalry (e.g., O'Brien 1996; Robison et al. 2006). The second dichotomous variable indicates the *post-9/11 era* (2001-2007), in which terrorism against the U.S. was strongly related to the war on terror, i.e., to terrorist actions by Al-Qaeda and its affiliates and the American response to these attacks.

We also control for the *global level of trade openness*, using data from the *World Development Indicators*. On the one hand, this variable captures a general globalization trend which may influence the level of anti-U.S. terrorism. For instance, the global trend towards increased integration may be positively related to anti-U.S. terrorism simply

¹⁶ In contrast to our approach, e.g., Lizardo (2006) relates measures of *total* (and not U.S.-led) economic globalization to the emergence of anti-American terrorism. It is our understanding that our approach more explicitly models anti-American violence is a function of U.S. policies and economic-cultural influence.

¹⁷ Note, however, that besides the controls described below we also experimented with the use of other control variables (for global population size, global economic growth etc.). The inclusion of these controls did not systematically change our empirical findings or introduced excessive collinearity into our models.

because it increases the availability of U.S. targets (e.g., U.S. tourists and transnational enterprises). On the other hand, the global level of trade openness is also a proxy for global socioeconomic conditions. As argued by Li and Schaub (2004), increased economic integration may reduce transnational terrorism by fostering economic growth and development. In this spirit, the inclusion of a measure of global trade openness may also help to disentangle the (potentially beneficial) effects of global economic integration from the (potentially ill) effects of U.S. economic-cultural influence that is exercised via globalization.

Finally, we include a *lagged dependent variable*, which ought to capture the persistence of anti-U.S. terrorism over the observation period (e.g., Li and Schaub 2004). What is more, its inclusion has methodological merits discussed below.

4. Empirical Evidence from Count Data Models

4.1 Econometric Method

The choice of an adequate empirical model is influenced by several factors. First, we use time-series data, which introduces the issues of autocorrelation (i.e., the dependence of present values of the dependent variable on its earlier values) and heteroskedasticity (i.e., non-independence of the error term) that commonly arise in time-series analysis. Second, our dependent variable is a count variable (i.e., the number of anti-U.S. attacks) that can only assume non-negative values. Third, overdispersion of the dependent variable is present, meaning that the mean of the dependent variable is smaller than its variance (see Table 1).

To account for these issues, we use a *generalized linear model (GLM) for count data*, where the count is expected to come from a negative binomial distribution that is able to take the overdispersion of the dependent variable into account (e.g., Long 1997). Newey-West standard errors are used that are consistent to autocorrelation and heteroskedasticity (e.g., Newey and West 1987). The inclusion of a lagged dependent variable is a further protective

measure to account for autocorrelation (e.g., Beck and Katz 1995). What is more, the inclusion of a lagged dependent variable also accounts for omitted variables (e.g., Beck and Katz 1995), which may be a concern in our analysis where the small sample size calls for the inclusion of only few controls. Multicollinearity may also matter to our analysis, which may, e.g., yield statistical models in which no variable is statistically significant (e.g., Hair et al. 1995). For instance, multicollinearity may arise in our model due to the inclusion of variables indicating U.S. economic influence (via exports and FDI) and global trade openness, given that both indicators measure similar concepts. We consider the influence of multicollinearity on our statistical results by reporting the mean variance inflation factor (mean *VIF*), where values below 10 indicate no serious multicollinearity (e.g., Hair et al. 1995). Finally, all explanatory variables are lagged behind one year to make a stronger causal argument about the relationship between these variables and the patterns of anti-American terrorism.

4.2 Empirical Results

The *GLM* estimates for the effect of measures of U.S. military presence and its foreign policy position on anti-U.S. terrorism are reported in Table 2.

– Table 2 here –

Our findings vindicate *H1b*, while not supporting *H1a*. That is, considering the effect of U.S. military abroad, we find that it leads to more anti-U.S. terrorist activity in later time periods. As argued by Pape (2003), U.S. troops in foreign countries seem to result in anti-U.S. resentment, potentially as they are regarded as an occupation force that implements U.S. interests and influences domestic politics, while stabilizing domestic governments terrorist groups oppose (e.g., Neumayer and Plümper 2011). U.S. military presence does not seem to deter terrorist attacks. Rather, they appear to be a strategic target of terrorist groups that seek to cut U.S. support for a domestic government (e.g., Neumayer and Plümper 2011). What is more, U.S. military presence seems to facilitate terrorist recruitment and increase

popular support when terrorist groups can exploit feelings of humiliation and helplessness that usually accompany a (perceived) foreign occupation (e.g. Pape 2003; Choi 2011).

Our findings also support *H2a*. A more favorable foreign policy position of the United States (as indicated by a higher mean affinity score) is negatively associated with anti-U.S. terrorism. Potentially, an increase in political proximity signals a common interest in the global status quo. This is in line with Sobek and Braithwaite (2005) who argue that such proximity makes it less likely that global challengers of U.S. influence resort to the support of terrorism to induce change. We do not find that political proximity between the U.S. and the rest of the world leads to more anti-American terrorism, as speculated by *H2b*. That is, this variable does not seem to reflect dependence from the United States. Rather, U.S. military presence seems to be a better indicator of such dependencies and associated grievances.

Finally, our statistical results also support *H2c*. That is, we find that a larger political difference between the United States and the rest of the world over the Arab-Israeli conflict leads to more anti-American terrorism. This result also supports anecdotal evidence that argues likewise. For instance, the 9/11 Commission Report (2004: 147) argues that Khalid Sheikh Mohammed—the alleged architect of the 9/11 attacks—was provoked by related grievances. It states that “[Khalid Sheikh Mohammed’s] animus toward the United States stemmed [...] from his violent disagreement with U.S. foreign policy favoring Israel”. As argued by the 9/11 Commission (2004: 376), this does not mean that the U.S. position in the Arab-Israeli conflict is wrong or needs to be changed. However, our finding reveals that there may be a strategic logic (“the friend of my enemy is my enemy”) that explains why a U.S. position in the Arab-Israeli conflict that favors Israel—particularly when this position is at odds with the rest of world—causes anti-U.S. violence. By attacking the United States, terrorist groups try to reduce its support for Israel, thereby making it easier to overwhelm Israel and change Middle Eastern politics in their favor. This strategic logic mirrors earlier theoretical and empirical contributions by Addison and Murshed (2005), Basuchoudhary and Shughart (2010), and Neumayer and Plümper (2011). At the same time, the perceived unilateral support of Israel by the U.S. ought to make it easier (less costly) for terrorist groups to find, e.g., new recruits and financial support when they preach anti-Semitism, anti-

Zionism and anti-Americanism, where related mechanisms have been previously described by, e.g., Basuchoudhary and Shughart (2010).

Next, *GLM* estimates that consider the effect of variables reflecting U.S. economic and cultural influence on anti-American terrorism are reported in Table 3.

– Table 3 here –

By and large, these findings tend to support *H3a* and *H4a*. We find that increases in U.S. exports and a larger U.S. share of global trade results in more anti-American terrorism. Also, more U.S. cultural exports seem to incite anti-American violence. There is also some evidence that U.S. FDI outflows are positively associated with terrorism, while U.S. economic power (U.S. share of global GDP) seems to weakly negatively correlate with anti-U.S. terrorism.¹⁸ That is, the expansion of American economic and cultural influence results in more anti-American terrorism. Potentially, this is because this growing influence produces unfavorable socioeconomic outcomes and is by accompanied by sociocultural changes (e.g., the import of Western values concerning capitalism, consumerism, or the role of women in society) in the target countries of U.S. exports and investment. These unfavorable economic and cultural effects seem to make it easier for terrorist organizations to find support. For instance, unfavorable socioeconomic outcomes due to inflow of U.S. goods and capital (e.g., unemployment, increased pressures of competition) may lower the opportunity costs of terrorism by closing non-violent alternatives to terrorism (e.g., Li and Schaub 2004; Freytag et al. 2011). Also, a growing cultural influence of the U.S. seems to produce a backlash,

¹⁸ The U.S. share of global GDP may signal economic power, which in turn is closely related to American state capacity. The negative effect of the GDP share on terrorism may then be interpreted as a deterrence effect of state capacity on terrorism (cf. Sobek and Braithwaite 2005; Lai 2007). However, this effect is only marginally significant. More importantly, as shown below, this result is likely to be driven by reverse causation. In Section 5 we show that U.S. economic power does not cause terrorism but that terrorism damages the U.S. economic position.

where anti-U.S. terrorism emerges as a means to limit U.S. influence and protect a local identity (religion, language, culture).

The findings reported in Table 3 do not support *H3b* and *H4b*. There is no evidence that U.S. economic influence (via economic globalization) deters terrorism. Rather, it seems to be the case that the exercise of U.S. economic power is associated with unfavorable economic outcomes, as stressed by Stiglitz (2005). These outcomes seem to play to the mobilization efforts of terrorist organizations. Also, the spread of American culture (via exports and FDI) does not seem to lead to cultural convergence that aggravates terrorist activity. Rather, the positive correlation between U.S. cultural influence and anti-U.S. violence is in line with Lizardo (2006).

With respect to the control variables, Tables 2 and 3 report very similar findings. First, terrorism against the U.S. was more likely during the Cold War era, potentially reflecting the wave of left-wing terrorism against U.S. interests, which was partly exploited by enemies of the United States in the international system (e.g., O'Brien 1996). Second, anti-U.S. terrorism has also been more likely in the post-9/11 period, possibly mirroring the dynamics of the war on terror. Third, lagged values of the dependent variable positively predict present values of terrorism, potentially capturing the persistence of anti-American transnational terrorism (e.g., Li and Schaub 2004). Finally, the level of global economic openness is almost always negatively related to anti-U.S. terrorism in a statistically significant way. This supports Li and Schaub (2004) who argue that economic globalization generates socioeconomic gains which make terrorism less likely by raising its opportunity costs. Interestingly, while global openness negatively affects anti-American terrorism, global U.S. economic influence (operationalized via U.S. merchandise exports and FDI flows) seems to stir it up. This indicates that the cultural dimension of globalization matters more to anti-U.S. terrorism than economic aspects. American exports and FDI do not only have economic effects but also foster the distribution of American values and ideas. The expansion of American culture—more than its economic expansion—seems to antagonize traditional, conservative or anti-globalisationist movements that may counter this expansion with terrorist means.

5. The Question of Reverse Causation: Further Time-Series Evidence

The previous section has provided several insights into the relationship between American military, politico-economic, and cultural influence and the emergence of anti-U.S. terrorism. One potential weakness of the previously introduced approach is that we make a clear causal argument about the connection between global U.S. influence and terrorism. However, a *reverse causal argument* can easily be made, where the U.S. merely reacts to the threat of terrorism (e.g., in the form of military interventions), and where the global socioeconomic position of the United States is damaged by terrorist activity. This section analyzes the issues of reverse causation which may have influenced the findings reported above. First, we provide a brief discussion as to why reverse causation—or simultaneous causation—may be present. Then, we introduce several tools from time-series analysis to investigate whether reverse causality is indeed present. At the same time, this time-series analysis serves as a robustness check of the findings of Section 4.

5.1 Further Discussion and Hypotheses

5.1.1 Military Actions and Foreign Policy in the Face of Terrorism

It seems reasonable to assume that U.S. military presence in foreign countries—or military activity against terrorists and their supporters—is merely a reaction to terrorism directed against the United States, so that reverse causation may indeed be an issue (e.g., Azam and Thelen 2010). For instance, then-U.S. President George W. Bush considered the military intervention in Afghanistan in 2001 to be a response to anti-U.S. terrorism operated from this very country. He argued that U.S. military forces “now defend [the U.S.] so far from home”, thus considering the war on terror to be defensive. Previous military strikes against terrorist camps and state sponsors of terrorism (e.g., the 1986 raid on Libyan targets) were also regarded as retaliations for earlier terrorist attacks against the United States (e.g., Enders and Sandler 1993; Prunckun and Mohr 1997). Similarly, the U.S. foreign policy standing can be affected by terrorism. For instance, the aftermath of the 9/11 attacks saw global solidarity with the U.S., so that in 2001 George W. Bush could very well argue that the

“the collective will of the world” was behind the United States. That is, anti-American terrorism may affect the political standing of the U.S., even more so when international terrorism is recognized by both the U.S. and the rest of the world as a common threat. Sharing a common enemy may also explain why U.S. foreign policy in the Arab-Israeli conflict tends to favor Israel. Both the U.S. and Israel have been attacked by transnational religious and left-wing terrorist groups, where the latter were often allied with nationalist/Marxist Palestinian liberation movements (Crenshaw 2001). This common threat may have contributed to a closer politico-military cooperation between the U.S. and Israel, while other countries—that have been less threatened by international terrorism—may have taken up more ambiguous stances over Middle Eastern politics.

All of these considerations suggest that causation may very well also run from anti-American terrorism to U.S. military and foreign policy. It is also possible that bidirectional causation is present. In the following, we want to test the following hypothesis (*H5*):

Hypothesis 5: Independent of the causal effect of U.S. military and foreign policy on anti-American terrorism, there is a causal effect of anti-U.S. terrorism on U.S. military and foreign policy.

5.1.2 Terrorism as Economic Warfare

Several studies stress that (transnational) terrorism is an obstacle to economic activity. For instance, Crain and Crain (2006) find that terrorism is—on a global scale—negatively related to economic growth, investment, and consumer spending. Sandler and Enders (2004) emphasize that economic destabilization is a central goal of terrorist groups, as it weakens their enemy and makes concessions more likely. Indeed, the use of terrorism as economic warfare also seems to have entered the calculus of Osama bin Laden who in 2004 argued that Al-Qaeda activities are intended to inflict economic damage on the United States, so as to “[bleed] America to the point of bankruptcy”.¹⁹

¹⁹ See <http://www.guardian.co.uk/world/2004/nov/03/usa.alqaida>.

Thus, we can also speculate about a (negative) causal effect of terrorism on U.S. economic power (e.g., American GDP) and its cultural influence that is associated with its international economic position. This seems even more reasonable considering that several empirical studies find that terrorism is detrimental to international trade and FDI flows (e.g., Enders and Sandler 1996; Nitsch and Schumacher 2004; Abadie and Gardeazabal 2008). As above, it is also possible that bidirectional causation is present, so that terrorism curtails the (international) cultural-economic position of the U.S., while U.S. economic and cultural influence affects the patterns of anti-U.S. violence at the same time. At a minimum, we want to test the following hypothesis regarding the causal relationship between anti-American terrorism and economic-cultural globalization (*H6*):

Hypothesis 6: Independent of the causal effect of global U.S. economic and cultural influence (via economic-cultural globalization) on anti-American terrorism, there is a causal effect of anti-U.S. terrorism on U.S. economic and cultural influence.

5.2 Econometric Method

We investigate the nature of causality between terrorism, U.S. military and foreign policy, and its economic-cultural influence by means of time-series analyses. First, we investigate the stationarity properties of the employed data series by means of *unit root tests*. A proper identification of these properties is necessary to correctly specify a *vector-autoregression model (VAR)* which we use to test for *Granger causality* (Granger 1969) using the method proposed by Hsiao (1982).²⁰

The detection of a unit root calls for the use of the first-difference filter as a means of data transformation to achieve stationarity (e.g., Said and Dickey 1984). Thus, we test for the presence of unit roots using two unit root test. The first one is the *Augmented Dickey-Fuller (ADF)* test (e.g., Said and Dickey 1984). However, a major disadvantage of this test is that it does not control for the presence of structural breaks in data series, potentially leading to

²⁰ Previous studies that have similarly tested the causal relationship between terrorism and other time series are Enders and Sandler (1996), Enders et al. (2011), and Gries et al. (2011).

wrong inferences about stationarity (e.g., Peron and Vogelsang 1992; Clemente et al. 1998). For instance, it seems plausible that the anti-U.S. terrorism series exhibits at least one structural break that coincides with the end of the Cold War and the subsequent decline of transnational left-wing terrorism (see Figure 1). Hence, we also rely on the *Clemente-Montañés-Reyes (CMR)* test which allows for a maximum of two structural breaks in the data to make inferences about the stationarity properties of the data (Clemente et al. 1998). What is more, the CMR test endogenously determines the structural breaks in the time series, revealing additional information about their dynamics.²¹

It is necessary to use stationary time series to make correct inference about Granger causality (Granger 1969). That is, based on the unit root results some data series may need to be transformed by applying the first-difference filter. The time series are then used to fit a VAR that considers both terrorism and a respective variable of interest (indicating U.S. military presence, and its politico-economic and cultural influence) as dependent variables to assess the presence of Granger causality between the variables of interest. Note that this part of the analysis we use the same variables as above.

Commonly, Granger causality is established when the inclusion of (lagged) values of an explanatory variable of interest—the causal variable—improves the predictive power of an empirical model that previously only included past lags of the dependent variable, an intercept and (potentially) a vector of controls (e.g., Granger 1969). A shortcoming of conventional tests for Granger causality in VARs is that all variables are constrained to enter the VAR at the same lag length, which may cause misspecifications (e.g., Braun and Mitnik 1993).

²¹ Note that the CMR test is an extension of the unit root test developed by Perron and Vogelsang (1992) that only allows for one structural break. In case the CMR test only detects one significant structural break, the test statistics and inferences from both tests are identical.

The method proposed by Hsiao (1982), however, allows for more flexibility with respect to an optimal lag length selection.²² In short, to make causality inferences we first calculate the minimal *Final Prediction Error (FPE)* from a model that only includes the constant, the lagged dependent variable—entering up to a specific, FPE-minimizing lag—and a vector of controls²³ to predict present values of the dependent variable. Then, we let our main variable of interest enter the model up to a specific, FPE-minimizing lag order. By comparing the minimal FPE from a model with and without the causal variable, we can make causality inferences. If the FPE is smaller after the inclusion of information on the causal variable, Granger causality running from the causal to the dependent variable is present; otherwise, no Granger causality is detected. An evaluation of the signs of the regression coefficients of the lagged causal variable values allows us to examine whether the effect of the causal on the dependent variable is positive or negative.

5.3 Empirical Results

Table 4 reports the findings from the two unit root tests. Note that when the ADF and CMR test differ with respect to their inferences, we rely on the more powerful CMR test. Most importantly, they reveal that the anti-U.S. terrorism series does not contain a unit root but exhibits two significant break dates (1989 and 1993). The first break date coincides with the end of the Cold War and the subsequent decline in anti-U.S. terrorism perpetrated by leftist groups (e.g., Robison et al 2006). The second break date seems to correspond to the growing importance of the new wave of religious (Islamist) terrorism directed against the U.S. (e.g., 1993 World Trade Center bombing). Structural breaks in U.S. military and foreign policy also seem be related to the end of the Cold War and the war on terror that started in 2001. In summary, there are six time series (e.g., the terrorism series) where no data transformation is needed, while seven time series (e.g., the U.S. GDP series) need to be first-differenced to

²² Note that the appendix gives a more technical presentation of the testing procedure. Also, Hsiao (1982) offers some applications of this empirical approach.

²³ Our vector of controls includes the lag of the Cold War era dummy, the lag of the post-9/11 dummy and the lag of the first difference of global trade openness due to the latter's stationarity properties. This vector ensures that the findings of this section can be compared to those of Section 4.

achieve stationarity. Note that because the terrorism series is stationary, there is no need to consider the issue of cointegration.

– Table 4 here –

After having transformed the data as it follows from the unit root tests, we test for Granger causality using Hsiao's approach. The corresponding results are reported in Table 5.

– Table 5 here –

First, there is some support for *H6*. We find evidence that terrorism is indeed effective as a means of economic warfare. Terrorism negatively affects U.S. foreign investment, U.S. GDP and the U.S. share of the global GDP. Here, previous results (see Table 3) seem to have been driven by reverse causation, given that we find no evidence of a causal effect running from U.S. FDI and GDP to anti-U.S. terrorist activity. Our findings are in line with earlier studies that also detected a negative effect of terrorism on economic activity (e.g., Crain and Crain 2006; Abadie and Gardeazabal 2008). Our results do not suggest that U.S. economic power or global U.S. economic influence (in the form of FDI) cause anti-American resentments.

Second, we find that U.S. merchandise and cultural trade positively sways anti-U.S. terrorism, confirming earlier results (see Table 3). These variables more strongly emphasize the cultural facets of globalization, representing a constant outflow—which is less volatile than FDI outflows—of merchandise and cultural goods that also carry American ideas and values (e.g., consumerism, modernity) and which may induce social change in penetrated societies (e.g., women empowerment, market reforms). The inflow of goods and Western values seems to antagonize traditionalist segments in these societies, which turn to

terrorism to limit Western influence.²⁴ Considering reverse causation, we do not find that anti-U.S. terrorism affects its patterns of merchandise and cultural exports.

Third, we find additional support for earlier findings (see Tables 2 and 3) that suggest a causal effect of U.S. military policies on terrorism. As before, this effect is positive. This indicates that, from the terrorists' perspective, that U.S. military presence in their home country is considered as an occupation and ought to be fought by parts through terrorism (e.g., Pape 2003). By contrast, we do not find that these military measures have a deterrence effect by raising the operating costs of terrorists, as speculated by Lai (2007). Reverse causation is not present, so that terrorism does not damage affect its military policy, disproving *H5* for this set of variables. This seems reasonable, given that, e.g., U.S. military presence does not only serve the purpose of fighting terrorism, but is also dictated by other, e.g., strategic, political, and humanitarian considerations (e.g., Choi 2011).

Finally, our causality analysis provides support for our earlier findings (see Table 2) that a favorable global U.S. policy standing reduces anti-U.S. violence, whereas a more unilateral policy stance with respect to the Arab-Israeli conflict increases it. Here, terrorism against the U.S. seems to serve the purpose of reducing U.S. support and sponsorship for domestic governments (i.e., Israel) the terrorist groups oppose. However, a favorable U.S. policy standing—that is not only governed by military, but also economic, political, historic, and cultural factors—makes anti-U.S. terrorism less likely, presumably because fewer political differences between the U.S. and the rest of the world signal a common interest in the global status quo and fewer incentives to challenge it (e.g., by means of supporting terrorism against the United States). This latter finding is in line with Sobek and Braithwaite (2005).

Interestingly, we find that there is also a causal effect of terrorism on the U.S. foreign policy position and its political attitude towards Israel, vindicating *H5* for these variables and

²⁴ A recent example is the Nigerian Islamist group *Boko Haram* that fights to constrain Western influence on Nigeria, which the group believes to emerge through the impact of Western education and the inflow of Western ideas.

indicating the presence of bidirectional causation. That is, the relationship between anti-U.S. resentment and its foreign policy is rather complex, which calls for future to further investigate the related causal mechanics. For now our findings indicate that, on the one hand, terrorism against the U.S. seems to improve its global political standing. Potentially, other countries show solidarity with the U.S. or tend to cooperate more strongly with the United States when facing a common enemy (international terrorism). On the other hand, anti-U.S. terrorism seems to increase the political differences between the U.S. and the rest of the world over the Arab-Israeli conflict. Possibly, this is because the U.S. and Israel share a common enemy (cf. Crenshaw 2001), while the rest of the world is more critical towards Israel.

6. Conclusion

Why are U.S. citizens, military and diplomatic personnel, and enterprises at risk of being attacked by foreign terrorist groups? To answer this question, we analyzed the causal relationship between U.S. global activity (U.S. military and foreign policy, and U.S. economic and cultural influence) and incidences of anti-American terrorism, using world-level data for the period of 1978 to 2007 and employing event-count and time-series models. Due to the international nature of this kind of violence, we explicitly linked it to international rather than local forces—as it has been common in the empirical mainstream—that are associated with U.S. military, politico-economic, and cultural influence. For our empirical study we made no a priori assumptions about the direction of causation or the nature of the causal effect (which may be positive or negative).

Our analysis delivered a number of insights, which at times mirror anecdotal evidence regarding the role of international factors in terrorism (e.g., with respect to “international” motivations behind the 9/11 attacks). (1) There is a unidirectional causal effect of U.S. cultural (rather than economic) influence and power on anti-American terrorism. This suggests that American cultural expansion antagonizes traditionalist and conservative (but also left-wing) terrorist groups, which turn to terrorism to limit the Americanization of society (e.g., the growth of capitalism, consumerism, and secularization). (2) There is some

evidence that terrorism is effective as a means of economic warfare, e.g., as it is found to reduce American economic power. For instance, terrorism may result in an increase of transaction costs, which in turn impairs the efficient allocation of resources and therefore damages economic activity. (3) U.S. military policy unilaterally causes more anti-U.S. terrorism, which indicates that U.S. military forces are indeed sometimes perceived as a foreign occupation force that influences domestic politics and supports (unpopular) domestic governments terrorist groups oppose. (4) There is bidirectional causation between other foreign policy measures and anti-U.S. terrorism. On the one hand, a greater political difference between the U.S. and the rest of the world over the Arab-Israeli conflict results in more anti-U.S. terrorism, potentially because it is in the interest of terrorists to hurt the strategic partner of their enemy (i.e., Israel). At the same time, anti-U.S. terrorism seems to lead to a closer alignment between the United States and Israel, possibly because they share a common enemy. On the other hand, a positive foreign policy standing of the U.S.—that is not only governed by its military and foreign policy regarding the Arab-Israeli conflict, but also other economic, political, cultural, and historic factors—makes anti-American terrorism less probable. At the same time, terrorism against the U.S. seems to lead to a closer alignment between the U.S. and the rest of the world, potentially because international terrorism does not only threaten the U.S. but also other countries which may therefore benefit from a closer cooperation with the United States.

What are the implications of this study? Considering future research on the causes of terrorism, our study suggests that a systemic perspective on the roots of terrorism may be helpful, particularly when there is a clear global dimension to object of investigation (as in our case, anti-American transnational terrorism). From a policy perspective, there are no straightforward implications. As said in the introduction, we do not want to blame the U.S. and its policies for terrorism directed against it; neither do we want to justify terrorism and its motives. That is, we do not call for the U.S. to stop its support for Israel, withdraw all their troops from foreign countries, or limit the spread of its culture. The benefits from these activities and policies (e.g., political influence, economic gains) may very well exceed their

undesired costs (anti-U.S. terrorism).²⁵ Our study suggests that American success (e.g., military and politico-economic influence) and the exercise of American power—particularly when it is perceived as unilateral by a non-American audience—may have created undesired backlashes in the past. Our investigation may help to better calculate the risk of future terrorism against the U.S., which can be expected to result from specific trajectories of global American influence and exercise of power. Such calculations ought to increase U.S. preparedness and reduce its politico-economic vulnerability to anti-American terrorism.

²⁵ However, the U.S. may try to counter the toxic effects of their policies. For instance, a partial withdrawal of U.S. troops or more considerateness regarding local traditions and religions in times of U.S. cultural expansion may help to reduce grievances towards the United States without jeopardizing its global politico-economic and military position. Such an approach may lead to a more favorable U.S. cost/benefit ratio.

References

9/11 Commission (2004). The 9/11 Commission Report. Washington, D.C.

Abadie, A. & Gardeazabal, J. (2008). Terrorism and the world economy. *European Economic Review* 52, 1-27.

Addison, T. & Murshed, M. (2005). Transnational terrorism as a spillover of domestic disputes in other countries. *Defence and Peace Economics* 16(2), 69-82.

Azam, J.-P. & Thelen, V. (2010). Foreign aid versus military intervention in the war on terror. *Journal of Conflict Resolution* 54(2), 237-261.

Bapat, N. A. (2007). The internationalization of terrorist campaigns. *Conflict Management and Peace Science* 24, 265-280.

Basuchoudhary, A. & Shughart, W. F. (2010). On ethnic conflict and the origins of transnational terrorism. *Defence and Peace Economics* 21(1), 65-87.

Beck, N. & Katz, J. N. (1995). What to do (and not to do) with time-series cross-section data. *American Political Science Review* 89(3), 634-647.

Bellany, I. (2007). Terrorism: Facts from figures. *Defence and Peace Economics* 18(2), 101-112.

Braun, P. A. & Mittnik, S. (1993). Misspecifications in vector autoregressions and their effects on impulse responses and variance decompositions. *Journal of Econometrics* 59, 319-341.

Burgoon, B. (2006). On welfare and terror: Social welfare policies and political-economic roots of terrorism. *Journal of Conflict Resolution* 50(2), 176-203.

Crain, N. V. & Crain, W. M. (2006). Terrorized economies. *Public Choice* 128, 317-349.

Choi, S.-W. (2011). Does U.S. Military Intervention Reduce or Increase Terrorism? Paper presented at the American Political Science Association Annual Meeting, Seattle 2011.

Clemente, J., Montañés, A. & Reyes, M. (1998) Testing for a unit root in variables with a double change in the mean. *Economics Letters* 59, 175-182.

Crenshaw, M. (2001). Why America? The globalization of civil war. *Current History* 100, 425-432.

Cronin, A. K. (2003). Behind the curve: Globalization and international terrorism. *International Security* 27(3), 30-58.

Dreher, A. (2006). Does globalization affect growth? Evidence from a new index of globalization. *Applied Economics* 38, 1091-1110.

Dreher, A. & Gassebner, M. (2008). Does political proximity to the U.S. cause terror? *Economic Letters* 99, 27-29.

Dreher, A., Gassebner, M. & Siemers, L.-H. R. (2011). Globalization, economic freedom and human rights. *Journal of Conflict Resolution* (forthcoming).

Dollar, D. (2005). Globalization, poverty, and inequality since 1980. *World Bank Economic Observer* 20(2), 145-175.

Eland, I. (1998). Does U.S. intervention overseas breed terrorism? The historical record. Cato Institute Foreign Policy Briefing No. 50.

Enders, W. & Sandler T. (1993). The effectiveness of antiterrorism policies: A vector-autoregression-intervention analysis. *American Political Science Review* 87(4), 829-844.

Enders, W. & Sandler T. (1996). Terrorism and foreign direct investment in Spain and Greece. *Kyklos* 49(3), 331-352.

Enders, W. & Sandler, T. (2011). Domestic versus transnational terrorism: Data, decomposition, and dynamics. *Journal of Peace Research* 48(3), 319-337.

Freytag, A., Krueger, J., Meierrieks, D. & Schneider, F. (2011). The origins of terrorism: Cross-country estimates on socio-economic determinants of terrorism. *European Journal of Political Economy* (forthcoming).

Gartzke, E. (1998). Kant we all just get along? Opportunity, willingness, and the origins of the democratic peace. *American Journal of Political Science* 42(1), 1-27.

Gassebner, M. & Luechinger, S. (2011). Lock, stock, and barrel: A comprehensive assessment of the determinants of terror. *Public Choice* (forthcoming).

Granger, C. W. J. (1969). Investigating causal relations by econometric models and cross-spectral methods. *Econometrica* 37(3), 424-438.

Gries, T., Krieger, T. & Meierrieks, D. (2011). Causal linkages between domestic terrorism and economic growth. *Defence and Peace Economics* 22(5), 493-508.

Hair, J. F., Anderson, R. E., Tatham, R. L. & Black, W. C. (1995). *Multivariate Data Analysis*. Macmillan: New York.

Hoffman, S. (2002), Clash of globalizations. *Foreign Affairs* 81(4), 104-115.

Hsiao, C. (1982). Autoregressive modelling and causal ordering of economic variables. *Journal of Economic Dynamics and Control* 4, 243-259.

Krieger, T. & Meierrieks, D. (2011). What causes terrorism? *Public Choice* 147, 3-27.

Krueger, A. B. & Maleckova, J. (2003). Education, poverty, and terrorism: Is there a causal connection? *Journal of Economic Perspectives* 17(4), 119-144.

Kurrild-Klitgaard, P., Justesen, M. K. & Klemmensen, R. (2006). The political economy of freedom, democracy and transnational terrorism. *Public Choice* 128, 289-315.

Lafree, G., Yang, S.-M. & Crenshaw, M. (2009). Trajectories of terrorism: Attack patterns of foreign groups that have targeted the United States, 1970–2004. *Criminology & Public Policy* 8(3), 445-473.

Lai, B. (2007). “Draining the swamp”: An empirical examination of the production of international terrorism, 1968–1998. *Conflict Management and Peace Science* 24, 297-310.

Li, Q. & Schaub, D. (2004). Economic globalization and transnational terrorism: A pooled time-series analysis. *Journal of Conflict Resolution* 48(2), 230-258.

Lizardo, O. (2006). The effect of economic and cultural globalization on anti-U.S. transnational terrorism 1971-2000. *Journal of World-Systems Research* 12(1), 149-186.

Long, J. S. (1997). *Regression Models for Categorical and Limited Dependent Variables*. Sage Publications: Thousand Oaks.

Mearsheimer, J. J. & Walt, S. M. (2006). The Israel lobby and U.S. foreign policy. *Middle East Policy* 13(3), 29-87.

Mousseau, M. (2002). Market civilization and its clash with terror. *International Security* 27(3), 5-29.

National Consortium for the Study of Terrorism and Responses to Terrorism (2009) Global Terrorism Database. CD-ROM. University of Maryland.

Newey, W. K. & West, K. D. (1987). A simple, positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix. *Econometrica* 55(3), 703-708.

Neumayer, E. & De Soysa, I. (2007). Globalisation, women's economic rights and forced labour. *The World Economy* 30(10), 1510-1535.

Neumayer, E. & Plümper, T. (2011). Foreign terror on Americans. *Journal of Peace Research* 48(1), 1-12.

Nitsch, V. & Schumacher, D. (2004). Terrorism and international trade: An empirical investigation. *European Journal of Political Economy* 20, 423-433.

O'Brien, S. P. (1996). Foreign policy crises and the resort to terrorism: A time-series analysis of conflict linkages. *Journal of Conflict Resolution* 40(2), 320-335.

Pape, R. (2003). The strategic logic of suicide terrorism. *American Political Science Review* 97(3), 343-361.

Perron, P. & Vogelsang, T. J. (1992). Nonstationarity and level shifts with an application to purchasing power parity. *Journal of Business & Economic Statistics* 10(3), 301-320.

Piazza, J. A. (2008). Incubators of terror: Do failed and failing states promote transnational terrorism? *International Studies Quarterly* 52, 469-488.

Prunckun, H. W. & Mohr, P. B. (1997). Military deterrence of international terrorism: An evaluation of Operation El Dorado Canyon. *Studies in Conflict & Terrorism* 20(3), 267-280.

Robison, K. K., Crenshaw, E. M. & Jenkins, J. C. (2006). Ideologies of violence: The social origins of Islamist and Leftist transnational terrorism. *Social Forces* 84(4), 2009-2026.

Rudra, N. (2005). Globalization and the strengthening of democracy in the developing world. *American Journal of Political Science* 49(4), 704-730.

Said, S. E. & Dickey, D. A. (1984). Testing for unit roots in autoregressive-moving average models of unknown order. *Biometrika* 71(3), 599-607.

Sandbrook, R. & Romano, R. (2004). Globalisation, extremism and violence in poor countries. *Third World Quarterly* 25(6), 1007-1030.

Sandler, T. & Enders, W. (2004). An economic perspective on transnational terrorism. . *European Journal of Political Economy* 20, 301-316.

Savun, B. & Phillips, B. J. (2009). Democracy, foreign policy, and terrorism. . *Journal of Conflict Resolution* 53(6), 874-904.

Shughart, W. F. (2006). An analytical history of terrorism, 1945-2000. *Public Choice* 128, 7-39.

Sobek, D. & Braithwaite, A. (2005). Victims of success: American dominance and terrorism. *Conflict Management and Peace Science* 22, 135-148.

Stiglitz, J. E. (2005). The overselling of globalization. In: Weinstein, M. M. (Ed.), *Globalization: What's New*, Columbia University Press: New York, pp. 228-261

Figures and Tables

Figure 1: Transnational Terrorist Attacks against the United States, 1978-2007

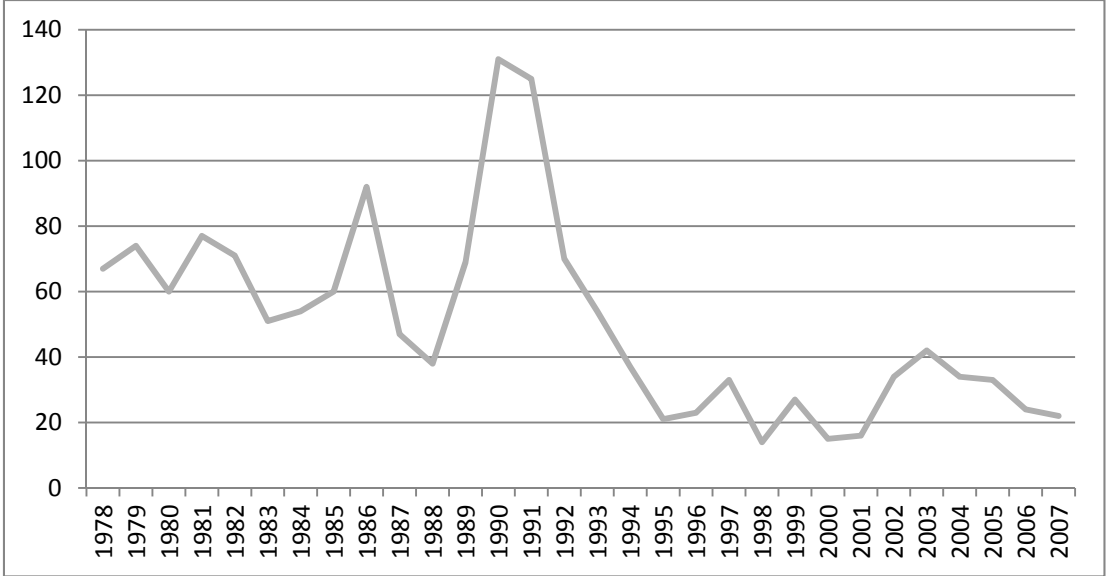


Table 1: Summary Statistics

Variable	Mean	Std. Dev.	Minimum	Maximum
Terrorist Attacks against the U.S.	50.5	29.760	14	131
U.S. Military Abroad (log)	12.080	0.186	11.764	12.671
U.S. Military Abroad to total U.S. Military Forces	0.103	0.020	0.082	0.156
U.S. Foreign Policy Position (Reputation)	-0.302	0.174	-0.549	0.254
U.S.-World Policy Difference over Arab-Israeli conflict	0.727	0.211	0.411	1.141
U.S. Merchandise Exports (log)	5.636	0.257	5.164	6.066
U.S. Share of Global Merchandise Exports	0.111	0.012	0.083	0.124
U.S. (Outward) FDI Flows	4.657	0.553	3.033	5.595
U.S. Share of Global (Outward) FDI Flows	0.216	0.093	0.017	0.421
U.S. Export of Cultural Goods (log)	9.663	0.334	8.999	9.989
U.S. Cultural Goods Export to Global Merchandise Trade	0.001	0.001	0.001	0.002
U.S. GDP (log)	12.879	0.119	12.699	13.067
U.S. Share of Global GDP	0.297	0.006	0.285	0.308
Cold War Dummy	0.4	0.498	0	1
Post 9/11 Dummy	0.233	0.430	0	1
Global Trade Openness	42.133	6.593	33.684	57.281

Table 2: Anti-American Terrorism and U.S. Politico-Military Power

Variable	(1)	(2)	(3)	(4)
U.S. Military Abroad (log) t_{-1}	0.6049 (5.05)***			
U.S. Military Abroad to total U.S. Military Forces t_{-1}		4.2924 (3.51)***		
U.S. Foreign Policy Position t_{-1}			-0.4068 (2.58)**	
U.S.-World Policy Difference over Arab-Israeli conflict t_{-1}				0.4430 (3.53)***
Cold War t_{-1}	0.3243 (4.38)***	0.4471 (7.26)***	0.3825 (7.49)***	0.5129 (11.03)***
Post 9/11 t_{-1}	0.6040 (3.17)***	0.5825 (3.07)***	0.4925 (3.73)***	0.4906 (3.66)***
Global Trade Openness t_{-1}	-0.0514 (2.27)**	-0.0529 (2.34)**	-0.0462 (2.75)***	-0.0410 (3.26)***
Lagged DV	0.0076 (5.34)***	0.0093 (7.27)***	0.0097 (8.51)***	0.0118 (13.30)***
Model Deviance	2.4486	2.5248	2.5141	2.5407
Mean VIF	4.28	4.56	3.59	3.86
Log Likelihood	-139.0926	-139.1307	-139.1253	-139.1386
Number of Observations	29	29	29	29

Notes: Dependent variable is the (global) number of terrorist attacks against U.S. interests in a given year. Absolute z-values based on heteroskedasticity and autocorrelation consistent (HAC) Newey-West standard errors in parentheses. Constant not reported. ** $p < 0.05$; *** $p < 0.01$.

Cold War t_{-1}	0.7451	0.5545	0.5406	0.4356	0.8185	1.0742	0.5581	0.4424
	(7.45)***	(7.92)***	(6.93)***	(8.75)***	(6.99)***	(6.67)***	(5.04)***	(7.45)***
Post 9/11 t_{-1}	0.5745	0.6947	0.5049	0.5448	0.5879	0.7319	0.4740	0.5432
	(4.40)***	(12.18)***	(3.03)***	(3.37)***	(4.27)***	(7.38)***	(2.65)***	(3.68)***
Global Trade Openness t_{-1}	-0.0617	-0.0270	-0.0378	-0.0412	-0.0432	-0.0055	-0.0460	-0.0363
	(3.68)***	(2.02)**	(2.17)**	(2.34)**	(2.77)***	(0.32)	(2.67)***	(2.08)**
Lagged DV	0.0118	0.0118	0.0116	0.0106	0.0117	0.01195	0.0114	0.0103
	(10.02)***	(12.62)***	(9.42)***	(10.85)***	(9.57)***	(9.93)***	(8.50)***	(8.62)***
Model Deviance	2.4553	2.4533	2.5419	2.5928	2.4307	2.3194	2.5664	2.5893
Mean VIF	9.29	4.23	3.77	3.46	6.63	8.71	6.64	3.47
Log Likelihood	-139.0959	-139.0949	-139.1392	-139.1647	-139.0836	-139.0280	-139.1514	-139.1629
Number of Observations	29	29	29	29	29	29	29	29

Notes: Dependent variable is the (global) number of terrorist attacks against U.S. interests in a given year. Absolute z-values based on heteroskedasticity and autocorrelation consistent (HAC) Newey-West standard errors in parentheses. Constant not reported. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 4: Unit Root Tests

Data Series	ADF Test Statistic	CMR/PV Test Statistic	Break Dates from CMR/PV Test
Anti-U.S. Terrorist Attacks	-3.356*	-8.178**	1989, 1993
U.S. Military Abroad (log)	-2.737*	-5.564**	1988, 2003
U.S. Military Abroad to total U.S. Military Forces	-3.943**	-5.164*	1988, 2003
U.S. Foreign Policy Position	-3.505**	-5.454*	1992, 2001
U.S.-World Policy Difference over Arab-Israeli conflict	-3.924**	-5.347*	1992, 1995
U.S. Merchandise Exports (log)	-3.166	-3.198	1989, 1997
U.S. Share of Global Merchandise Exports	-0.686	-4.304	1989, 2002
U.S. FDI (log)	-4.597***	-5.376*	1984, 1992
U.S. Share of Global FDI	-3.947***	-2.529	1979, 2002
U.S. Cultural Exports (log)	1.129	-4.364	1987, 1991
U.S. Cultural Exports to Global Trade	-0.612	-2.226	1991, 2001
U.S. GDP (log)	-3.747**	-2.692	1989, 1999
U.S. Share of Global GDP	-2.041	-3.120	1995

Notes: *ADF Test*=Augmented Dickey-Fuller Test. *CMR/PV Test*=Clemente-Montañés-Reyes Test or Perron-Vogelsang Test. See main text for further discussion. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$ (denotes rejection of null hypothesis of unit root presence).

Table 5: Hsiao-Granger Causality Tests

Data Series (DS)	FPE ₁ (m*,0)	FPE ₁ (m*,n*)	Causality from terror to DS?	FPE ₂ (m*,0)	FPE ₂ (m*,n*)	Causality from DS to terror?
U.S. Military Abroad (log)	0.01933 (1,0)	0.01970 (1,1)	NO	452.378 (2,0)	364.0639 (2,3)	YES (+)
U.S. Military Abroad to total U.S. Military Forces	0.000306 (1,0)	0.000328 (1,1)	NO	452.378 (2,0)	445.010 (2,3)	YES (+)
U.S. Foreign Policy Position	0.00407 (2,0)	0.00341 (2,4)	YES (+)	452.378 (2,0)	409.426 (2,4)	YES (-)
Δ U.S.-World Policy Difference over Arab-Israeli conflict	0.02798 (2,0)	0.02560 (2,4)	YES (+)	452.378 (2,0)	451.264 (2,4)	YES (+)
Δ U.S. Merchandise Exports (log)	0.000909 (2,0)	0.000950 (2,1)	NO	452.378 (2,0)	395.794 (2,2)	Yes (+)
Δ U.S. Share of Global Merchandise Exports	0.000029 (1,0)	0.000031 (1,2)	NO	452.378 (2,0)	389.1136 (2,2)	YES (+)
U.S. FDI (log)	0.1739 (1,0)	0.1594 (1,1)	YES (-)	452.378 (2,0)	483.730 (2,1)	NO
Δ U.S. Share of Global FDI	0.00732 (4,0)	0.00782 (4,1)	NO	452.378 (2,0)	468.061 (2,1)	NO
Δ U.S. Cultural Exports (log)	0.001480 (1,0)	0.001580 (1,1)	NO	452.378 (2,0)	396.845 (2,2)	YES (+)
Δ U.S. Cultural Exports to Global Trade	0.0000000107 (1,0)	0.0000000114 (1,1)	NO	452.378 (2,0)	384.866 (2,3)	YES (+)
Δ U.S. GDP (log)	0.0000379 (4,0)	0.0000197 (4,4)	YES (-)	452.378 (2,0)	487.467 (2,1)	NO
Δ U.S. Share of Global GDP	0.0000112 (4,0)	0.0000077 (4,3)	YES (-)	452.378 (2,0)	487.039 (2,1)	NO

Notes: Δ=first-difference operator. m^* and n^* denote the lags leading to the smallest *FPE* (Final Prediction Error) in each case, where the maximum lag length was four. FPE₁ refers to the respective FPE for the data series of interest, while FPE₂ always refers to the FPE derived from the VAR for the terrorism series. Causality inferences are drawn from a comparison of the two FPE. (+) and (-) describe positive or negative causal effect as it follows from the signs of the regression coefficients. Exogenous vector of controls includes a constant, lagged dummy variables for the Cold War and post-9/11 period, and lagged values of the first-difference of global trade openness (results not reported). See the main text and appendix for a further discussion.

Appendix

This appendix gives a more technical presentation of Hsiao's (1982) version of testing for Granger causality in VARs. As argued in the main text, a major advantage of this method is that it allows for more flexibility regarding lag length selection, while conventional tests tend to employ rather arbitrary lag lengths as all variables are constrained to enter at the same lag length. Granger's (1969) definition of non-causality states that if it is easier to predict a series y when including information from a series x instead of only employing lagged values of y (and a set of controls), then x Granger-causes y . Bidirectional causality (feedback) is present when y also Granger-causes x . By combining this definition of Granger causality with Final Prediction Error (FPE) [Akaike, H. (1969). Fitting autoregressions for prediction. *Annals of the Institute of Statistical Mathematics* 21, 243-247.], we can apply Hsiao's version of testing for Granger causality between time series.

As a first step, we consider the following model:

$$y_t = \alpha + \sum_{i=1}^m \beta(L)y_t + \gamma(X'_{t-1}) + u_t$$

Here, $\sum(L)$ indicates the lag order of the series y running from 1 to m . We work with a maximal lag order of $m=4$ due to the relative shortness of our time series. u is a white noise term with the usual statistical properties. α is a constant term. X' describes a vector of controls. We include the lagged ($t-1$) values of the Cold War dummy, the post-9/11 dummy and the first-difference of global trade openness. Note that y is operationalized depending on the unit root test results. We may use first-differenced data when the series is found to be $I(1)$ or use the unadjusted data when the series is found to be $I(0)$.

Using the model specified above, we choose the lag order of the dependent variable that yields the smallest FPE, denoted $FPE_y(m^*, 0)$. The individual FPE are calculated from the following equation with lags varying from 1 to m ($m=4$ in our case):

$$FPE_y(m, 0) = \frac{(T + m + 4)}{(T - m - 4)} \times \frac{RSS}{T}$$

Here, T is the number of observations and RSS is the residual sum of squares. Note that the 4 relates to the inclusion of a constant and the lagged controls.

Then, we let another variable x —the causal variable—enter our model, so we receive at the subsequent model:

$$y_t = \alpha + \sum_{i=1}^{m^*} \beta_1(L)y_t + \sum_{i=1}^n \beta_2(L)x_t + \gamma(X'_{t-1}) + u_t$$

Again, we may employ a first-difference filter to achieve stationarity of x , depending on previous unit root test results. While y steadily enters this model with the previously determined lag order that yields the smallest $FPE(m^*)$, x enters with a sequence of lags varying from 1 to n ($n=4$ in our case). The FPE of this model are computed, with the specific lag order being chosen that generates the smallest FPE ($FPE_y(m^*, n^*)$):

$$FPE_y(m^*, n) = \frac{(T + m + n + 4)}{(T - m - n - 4)} \times \frac{RSS}{T}$$

By comparing the two minimal FPE, we can draw conclusions regarding causality. If $FPE_y(m^*, 0) > FPE_y(m^*, n^*)$, then Granger causality is established. In other words, if the inclusion of the causal variable improves the predictive power of the model (i.e., the FPE becomes smaller), then causality is established. If $FPE_y(m^*, 0) < FPE_y(m^*, n^*)$, then no Granger causality is detected.

Note that testing for Granger causality running from y to x requires us to repeat the previously described steps this time with x as the dependent and y as the causal variable.