

# Decentralized Terrorism and Social Identity

by

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**Abstract:** This paper offers a theory of decentralized, non-state-sponsored terrorism that is characteristic of contemporary reality, and that explains the rise of homegrown terrorism. We argue that the sense of social identity is a prime motivator of non-strategic terrorist activities, and we investigate its consequences and implications for defence against terrorism. Terrorist responses to perceived affronts to identity increase with altruism towards in-groups and with endogenous intensity of hate towards out-groups. We show that, while out-group spite is the more essential feature of identity pertinent to decentralized terrorism, the intensity of terrorist actions is magnified by in-group altruism because it plays an important role in overcoming the potential free-riding of terrorists. This makes individual terrorist activities possible without coordination. We use our formulation to provide an alternative explanation for why counterterrorism measures often fail, and frequently can have a backlash effect of increasing terrorism. Our results point to the need for western democracies to reformulate their foreign policies to take account of the role these policies play in instigating contemporary terrorism.

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# 1 Introduction

There has been a notable increase in the world-wide number of terrorist incidents in recent years. Although only a small fraction of this, the incidence of terrorism in western democracies—especially Europe and, to a smaller extent, in North America and Australia—shows an alarming upward trend [Institute for Economics & Peace (2016), Cordesman (2017)]. The evidence suggests that these incidents are not orchestrated directly by terrorist organizations. Rather, the terrorist acts are of a *decentralized* nature, though the perpetrators may claim some loose connection with terrorist organizations.<sup>1</sup> Furthermore, the bulk of these terrorist acts are of the homegrown variety, that is, they are perpetrated by a country’s own citizens [Vidino et al (2017)]. This development is extremely disturbing because the cost of averting or controlling it can easily burden the financial resources of even the most developed countries.<sup>2</sup> Therefore, it is imperative that we understand the root causes of such terrorism. While it is widely recognized that the spread of radicalization is largely responsible for the phenomenon<sup>3</sup> this appears to be only a *proximate* cause; it is not necessarily the fundamental cause of this dire development. Before adopting extensive homeland security measures, counterterrorism policies, and inflicting draconian measures on a country’s own citizens, it is necessary for scholars, governments, and policy makers to isolate the root causes of decentralized terrorism. In this paper, we formulate a theory based on one hitherto unexplored approach that is consistent with many of the facts of this recent manifestation of terrorism.

We deviate from the literature that is based on the premise that terrorism is used

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<sup>1</sup>For example, 98% of all deaths due to terrorism in the U.S. since 2006 has been due to lone actors [Institute for Economics and Peace (2016, p.6)]. In the context of Islamic terrorism, Sageman (2008) has referred to this phenomenon as ‘Leaderless Jihad’.

<sup>2</sup>For example, Mueller and Stewart (2011) estimate that the U.S. increased spending on homeland security by \$360 billion annually between 2001 and 2011.

<sup>3</sup>See, for example, Varvelli (2016).

for strategic purposes.<sup>4</sup> While that approach is very insightful when individual terrorist groups are sufficiently large to influence foreign policies through terrorism, it is less compelling when innumerable terrorist activities are conducted in a decentralized manner. We offer a theory of how the existence of social identity contributes to the motivation of individuals to become terrorists and determines the allocation of their effort.<sup>5</sup> We construct and analyze an economic model in which self-selecting terrorists operate in a decentralized manner, and where a root cause of terrorism is an offense against a group whose solidarity is cemented by social identity.<sup>6</sup> This emphasis on decentralized terrorism is consistent with robust evidence provided in the recent literature to the effect that much terrorism is not strategically employed to achieve policy goals.<sup>7</sup> The theory we propose explains why terrorists may make sacrifices that are very costly to themselves<sup>8</sup>, and clarifies what the target countries stand to lose by ignoring the social identity of potential terrorists. For example, if foreign occupation of land is perceived not merely as an illegitimate appropriation of alienable property but also an assault on people with a shared identity, the willingness to commit resources to resistance will be far greater than otherwise.

In our analysis of terrorism, we begin with well-established, universal preferences in all humans that clearly dictate a distinction between ‘Us’ and ‘Them’. These preferences

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<sup>4</sup>There is a large class of papers that analyzes terrorism in game-theoretic models. Some of the prominent papers related to the theme of our paper but in a strategic setting are Rosendorff and Sandler (2004), Siqueira and Sandler (2006), Bueno de Mesquita and Dickson (2007).

<sup>5</sup>For example, the most serious terrorist attack in Canada to date was the Kanishka tragedy in which Air India Flight 182 was blown up in 1985 off the coast of Ireland, killing all 329 people on board. This was very directly the result of Sikhs in Canada perceiving that the group sharing their social identity was assaulted by the Indian government’s attack on the Golden Temple in Punjab, India.

<sup>6</sup>The role of identity is a potentially important but neglected aspect of terrorism. At the level of formal analysis, we are aware only of one paper, Sambanis and Shayo (2013), that incorporates identity into an analysis of ethnic conflict.

<sup>7</sup>See Abrahms and Gottfried (2016) and the references therein.

<sup>8</sup>Pape (2006) and Pape and Feldman (2010) demonstrate that (suicide) terrorism is closely associated with foreign occupation. Since attachment to the country to which one belongs is an important component of one’s identity, our focus on identity fits well with Pape’s hypothesis.

have been rigorously demonstrated recently to arise in an evolutionary context by Eaton et al (2011) and by Konrad and Morath (2012). They capture the strong sense of social identity with which all of us are innately endowed.<sup>9</sup> A conflict with foreigners, deemed to be ‘Them’, simultaneously summons a sense of solidarity and therefore altruism towards those deemed ‘Us’ and generates a feeling of hostility or malevolence towards ‘Them’. Any damage inflicted on ‘Them’—for example in retribution for a perceived aggression—will be motivated not only by the direct personal satisfaction it generates for the actor, but also by the gratification it offers *all* members of the group who are deemed ‘Us’.<sup>10</sup> Even a slight degree of altruism towards fellow group members can generate exceptional sacrifices that could not be rationalized on the basis of individual cost-benefit calculations. The presence of altruism amongst terrorists is well-documented (see, for example, Pape (2006, Ch. 9), Atran (2010)). Pape has persuasively argued that much of suicide terrorism is driven by altruistic motives.<sup>11</sup>

While our paper is concerned with terrorism in general and not explicitly with suicide terrorism, altruism plays a key role. Leaders and members of terrorist groups may be respected in their communities as patriots, and are usually not viewed as self-serving

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<sup>9</sup>Self-concept is an important notion in the social psychology literature [Tajfel and Turner (1979), Tajfel (1982), Brewer (1999)]. Social psychological analysts have argued that the identity that people embrace may motivate terrorism [Arena and Arrigo (2005), Hogg and Reid (2006), Schwartz et al (2009)]. The salience of identity to conflict is also revealed in experiments performed with Palestinians and Jews in the West Bank; it is seen that a perceived offense to identity cannot be compensated for by money [Ginges et al (2007)]. Social identity is also used as an explanatory concept in some recent papers in political science: Shayo(2009), Sambanis et al. (2013) and Sambanis et al. (2015). The emphasis there is not on Us vs Them preferences, as it is here.

<sup>10</sup>To quote Atran(2010, p.13):“Maybe people don’t kill and die simply for a cause. They do it for friends—campmates, schoolmates, workmates, soccer buddies, bodybuilding buddies, paintball partners—action pals who share a cause. Maybe they die for dreams of jihad—of justice and glory—*and* devotion to a family-like group of friends and mentors who act and care for one another, of ‘imagined kin’, like the Marines.”

<sup>11</sup>Choi and Bowles (2007) argued that lethal wars between groups may have promoted the evolution of in-group altruism and out-group hostility because they increases the group’s chances of survival. Bowles (2009) provides some archaeological evidence for this from the Late Pleistocene and Early Holocene period of human evolution and from ethnographic accounts of hunter-gatherers.

criminals or psychopathic deviants. Resistance or freedom-fighting is very much a public service and must therefore contain altruistic motives, though only towards a well defined in-group. In this paper, we incorporate altruistic motives by terrorists and examine their not-so-benign—and often horrific—consequences for those whom they deem to be enemies.

Models of terrorism usually assume that terrorism is strategically used to achieve political goals. Although our model emphasizes decentralized, non-strategic behavior, some themes arise here that also appear in strategic models. Rosendorff and Sandler (2004) set out a two-person game-theoretic model comprising the government and the terrorist organization in which they show that proactive counterterrorism by the government could increase terrorism and inflict a negative externality on other countries. Siqueira and Sandler (2006) examine the implications in a strategic setting of grassroots support and outside sponsorship of terrorism, and identify conditions under which counterterrorism reduces or increases terrorism. Bueno de Mesquita and Dickson (2007) set out a strategic model in which they identify when a terrorist organization may provoke a repressive reaction from the government in order to increase the number of recruits into terrorism. Azam (2005) provides a model of rationally motivated terrorism. (including suicide as a limiting case) by considering the individual to exhibit altruism towards future generations of his kin, which may be broadly defined. If a current terrorist act can provide a future payoff to his kin then altruism towards kin can induce that act despite its personal cost to the actor. Bueno de Mesquita (2005) and Ferrero (2006) also offer theories of (suicide) terrorism based on economic models of expected benefits and costs. Our theory emphasizes altruism towards the current in-group rather than future kin, but it otherwise complementary to these approaches.

A feature of terrorism that requires careful attention is that the enemy comprises

a large number of individuals or groups making decentralized decisions [Kroenig and Pavel (2012)]. This matters because one rational theoretic reason for terrorism (as exemplified by Pape (2006) and Pape and Feldman (2010)) is that it is a vehicle for strategically forcing foreign governments to change their policies. As pointed out above, this view is plausible when terrorism is conducted by a state or is state-sponsored. It is less plausible, however, when terrorism is decentralized since each terrorist has only so much power and cannot hope to single-handedly change a foreign government's policy. In a careful empirical study, Abrahms and Gottfried (2016) have recently shown that terrorism does not generally succeed in coercing democratic governments into making concessions, that is, terrorism does not pay.<sup>12</sup> The motivation for terrorist activity, then, has to be something else—and this, we argue, is provided by the desire for retaliation stemming from a sense of social identity.<sup>13</sup> What distinguishes our approach from the papers using strategic models cited above is that we explore the implications of social identity for terrorism. This enables us, first, to eschew the motivation usually assumed in models of terrorism, namely, that terrorism is a means for achieving political goals, and, second, to model decentralized terrorism.

Religious affiliation frequently cements the sense of group solidarity (but is not necessary for it). A high degree of altruism towards fellow group members is our explanation for why religious terrorist organizations are often more successful in accomplishing their goals than secular ones. In this respect our explanation differs from that of Berman (2011), who emphasizes the role of religion in controlling individual free-riding in successful terrorist organizations. In his approach it is the demand for terrorists by terrorist

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<sup>12</sup>See also Abrahms (2008, 2011).

<sup>13</sup>Our approach does not presume that all terrorists seek to coordinate their actions or to behave as a monolithic unit. However, even when terrorists do operate in groups, they usually have separate cells that function independently in order to minimize the chances of detection [Chai (1993)]. Our framework thus models decentralized terrorism to a good approximation; it does not merely represent 'lone wolf' terrorism.

organizations that is central—organizations subject a, perhaps abundant, supply of potential terrorists to stringent screening mechanisms to weed out potential free-riders, thereby determining who will ultimately become active terrorists. Bueno de Mesquita (2005) has a similar organizational screening mechanism where “ability” is the key characteristic screened for. Our approach, in contrast, abstracts from the demand side and focuses on the decentralized source of supply, in order to isolate and investigate the role played by social identity. In general, one would expect both the demand and the supply sides to be relevant.

We apply our framework to examine the efficacy of counterterrorism, by which we mean strategies for actively tracking down, attacking, and neutralizing terrorists (as opposed to implementing defensive measures against terrorism). We show that, consistent with the observed evidence, when terrorism is motivated by social identity counterterrorism may well increase rather than decrease terrorism. By augmenting out-group hate, counterterrorism measures increase the pool of recruits into terrorism and this can offset the decline in terrorists neutralized by the measures. This has important policy implications for the current war on terror. By identifying the source of terrorism in the broad context of social identity, there is scope for western nations to effect Pareto-improving outcomes by redirecting their counter-terrorism resources on a more focused approach to the war on terror. Our explanation for the failure of counterterrorism complements those of strategic models of terrorism alluded to above.

The theory of this paper delivers several insights. First, altruism towards in-group members plays an important role in overcoming the potential free-riding of terrorists in the provision of what would be deemed a ‘public good’ for the in-group. Second, social identity makes individual terrorist activities possible without coordination and so decentralized terrorism can occur and, furthermore, can benefit the in-group even when

it is not organized or state-sponsored. Third, terrorist responses to what are perceived as egregious affronts to the group to which social identity is tethered increase with the intensity of altruism towards in-groups. Fourth, while the intensity of terrorist actions is magnified by in-group altruism, it is out-group spite that is the more essential feature of social identity that is pertinent to terrorism. Fifth, the cost of ignoring identity considerations of terrorism can be considerable to the country defending against it. Sixth, our theory identifies a source of terrorism that can explain both the international and the homegrown kind. Seventh, the possibility that counterterrorism increases rather than reduces terrorism is shown. Eighth, our theory sheds some light on the aspects of Islam that permit terrorist responses to perceived unwarranted and reprehensible actions by western democracies in the Middle East. Finally, ninth, our findings provide a firm theoretical foundation for the claim that, by ignoring the consequences of social identity, the foreign policies of western democracies are seriously contributing to the proliferation of terrorism.

## 2 Social Identity in a Model of Terrorism

Our goal here is to provide a model of decentralized terrorism in a manner that brings out the essential role of social identity in the phenomenon.<sup>14</sup> We set out a model of conflict between two countries, denoted  $A$  and  $B$ , where  $B$  has control of a resource in which  $A$  has an interest. We envisage development of the conflict taking place in a one-shot game with two stages. In Stage 1, to secure its interest,  $A$  applies an invasion effort  $X_A$  against  $B$ . In return  $B$  applies a defensive effort  $Z_B$ . (In this paper, the variable  $X$  will stand for aggressive action and the variable  $Z$  for defensive action.) The

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<sup>14</sup>In the field of economics, identity considerations are relatively recent, pioneered by Akerlof and Kranton (2000, 2010). Work by Eswaran and Neary (2014) has demonstrated how evolution might hardwire a sense of proprietary rights that simulates a sense of self (identity).

efforts  $X_A$  and  $Z_B$  together determine the share of the resource that  $A$  acquires. Denote this share by  $S_A(X_A, Z_B)$ , where  $S_A$  is increasing in  $X_A$  and decreasing in  $Z_B$ ;  $B$  gets the complementary share  $S_B(X_A, Z_B) \equiv 1 - S_A(X_A, Z_B)$ . We presume that these shares are given by the form that is standard in the conflict literature:

$$S_A(X_A, Z_B) = \frac{X_A}{X_A + Z_B}; \quad S_B(X_A, Z_B) = \frac{Z_B}{X_A + Z_B}. \quad (1)$$

In Stage 2, some citizens of  $B$  mount a terrorist campaign against  $A$ , with aggregate terrorist effort  $X_B$ . Thus, while the formal defensive effort of  $B$  is undertaken by the state, the aggressive action emanating from  $B$  is decentralized and undertaken by individual terrorists. This is a core feature of the contemporary terrorism [Kroenig and Pavel (2012), Sageman (2008)]. The terrorists' expenditure of resources is driven by social-identity motivations (modeled below) against the backdrop of the inter-country resource conflict.<sup>15</sup>

We represent country  $B$ 's population as a continuum of agents, of measure 1. In the absence of social identity considerations the utility of a representative citizen of  $B$  depends only on the costs and outcome of conflict with  $A$ . This is given by the citizen's per-capita share of the net resource remaining to  $B$  after conflict has determined the fraction of the total resource  $V$  that each country gets. In this scenario, the utility of a representative individual of  $B$  can be written

$$\bar{u}_B = S_B(X_A, Z_B)V - Z_B. \quad (2)$$

Throughout this paper, we attribute to the government of country  $B$  the goal of defending its material interests only, that is, the welfare function of  $B$  is the aggregate of

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<sup>15</sup>Later on, we shall see how our model also captures homegrown terrorism.

(2) over its citizens. Apart from affording tractability, this has the advantage that any decentralized terrorism from  $B$  is not used strategically and, therefore, enables us to examine rational but non-state, non-strategic terrorism. There is no role for individual terrorist activity with this specification of a person’s utility since the latter is determined entirely by the aggregate state-level efforts,  $X_A$  and  $Z_B$ , of the two countries. Inter-country conflict over a resource, however, often brings social identity considerations into play, with favoritism towards the in-group and spite against the out-group, even when acting on these biases proves costly from the point of view of an individual [Tajfel and Turner (1979, 1986)].<sup>16</sup>

To model the relevant aspects of social identity we introduce to each individual’s utility function a pair of parameters,  $(\alpha, \lambda)$ . The parameter  $\alpha$ , defined on the interval  $[0, 1]$ , captures the degree of altruism that the individual feels towards his own country’s citizens. The parameter  $\lambda$ , defined on the open interval  $[0, \infty)$ , captures the idea of discrimination or spite felt towards the other country and its citizens. These parameters are intimately related to the concept of social capital, which facilitates cooperation within and across groups [Guiso et al (2011)].<sup>17</sup> The values of these parameters vary across individuals, and we denote the density function associated with the distribution of the parameters by  $f(\alpha, \lambda)$ .

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<sup>16</sup>Our approach to modelling social identity is complementary to other applications found in the literature. Individuals who care about social identity “derive utility from belonging to larger social groupings, preferring, all else equal, to identify with higher-status groups and favoring in-group members at the expense of out-group members.” Sambanis et al. (2015, p.5). Shayo(2009), Sambanis et al. (2013) and Sambanis et al. (2015) focus on the importance of high or increasing status of the group, and on how events or policies may induce sub-national groups to overcome perceived intra-group differences and identify with an inclusive national group if the national group has sufficiently higher status than the sub-national groups. We assume here that country  $B$ ’s population already is unified in identity terms, so that only the Us vs. Them aspect of social identity is relevant.

<sup>17</sup>The aggregate value of the parameter  $\alpha$  would embody what Putnam (2000) has called ‘bonding’ social capital within the group and would facilitate in-group cooperation. The aggregate value of the parameter  $\lambda$  would represent an inverse measure of what Putnam (2000) referred to ‘bridging’ social capital between this group and the others—inverse measure because the higher this aggregate, the more difficult it would be to form a bridge between this community and the rest.

We draw a distinction between an individual’s out-group spite parameter,  $\lambda$ , and the out-group hate<sup>18</sup> that he experiences. The latter depends on the spite parameter, but also on the nature and magnitude of the perceived offense of the out-group. If the out-group (here  $A$ ) has invaded  $B$ ’s country with a military force of size  $X_A$ , then we may take  $X_A$  as an index of the magnitude of the offense. We measure the level of the individual’s out-group hate as  $\lambda X_A$ ; the larger the offense, the greater the out-group hate. This also is the utility the citizen of  $B$  derives from his out-group hate when a unit of damage is inflicted on  $A$ . Spite is exogenous to the individual, but the extent of his hate is endogenous.<sup>19</sup>

In anticipation of terrorist activity by  $B$ , country  $A$  will undertake expenditures to reduce the damage. We denote this expenditure by  $Z_A$ . In reality, we can broadly classify two different types of expenditure. First, there is the expenditure undertaken to protect life and property within  $A$ . We refer to this as  $A$ ’s defensive expenditure, and would include precautions taken such as screening at airports, prevention of radicalization, etc. In this section,  $Z_A$  is restricted to refer to this sort of expenditure. Second,  $A$  can also undertake expenditures to identify terrorists, locate them, pursue them, and neutralize or assassinate them. This latter form of expenditure is what we define in this paper as ‘counterterrorism’. In a subsequent section of this paper, we allow  $Z_A$  to include counterterrorism. Sandler (2011) refers to these two expenditures, respectively, as ‘defensive’ and ‘proactive’ counterterrorism measures. In this paper, we refer only to the latter as counterterrorism and, for clarity, to the former as homeland security.

In our decentralized model, the damage inflicted on  $A$ , by an individual from  $B$  with preference parameters  $(\alpha, \lambda)$ , is taken to be given by  $D_A(Z_A)x_B(\alpha, \lambda)$ , where

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<sup>18</sup>Or *schadenfreude* or *epicaricacy*.

<sup>19</sup>See Sageman (2008, Ch.4) for a description of the development of in-group love and out-group hate in the process of radicalization.

$x_B(\cdot) \in \{0, 1\}$  is the effort applied by the individual to causing damage, and  $D_A(\cdot)$  measures the expected damage caused per unit of effort. This expected per-unit damage level is a decreasing, convex function of  $Z_A$ . The total damage inflicted on  $A$  through decentralized terrorism arising in  $B$  will therefore be  $D_A(Z_A)X_B$ , where  $X_B = \int_0^1 d\alpha \int_0^\infty x_B(\alpha, \lambda) f(\alpha, \lambda) d\lambda$  measures total terrorist activity summed over  $B$ 's population.

The utility of out-group hate that an individual in  $B$  experiences from the total damage inflicted on  $A$  is  $\lambda X_A D_A(Z_A) X_B$ . Further, the individual also positively values, according to the weight  $\alpha$ , the utility of the other members of  $B$  as a result of the positive damage inflicted on  $A$  by the activities  $X_B$ ; that is, the individual values the positive valuation that other citizens of  $B$  receive from damage done to group  $A$ . Thus the individual's total perceived benefit from terrorism may be written as

$$(\lambda + \alpha\Lambda)X_A D_A(Z_A)(x_B(\alpha, \lambda) + X_B),$$

where  $\Lambda \equiv \int_0^1 d\alpha \int_0^\infty \lambda f(\alpha, \lambda) d\lambda$  is the average value of the spite parameter in the  $B$  population. Both  $\Lambda$  and  $X_B$ , the aggregate terrorist effort in  $B$ , are taken as parametric by an individual.

We may then write the total utility function,  $u_B$ , of the representative individual in group  $B$  as

$$u_B(\alpha, \lambda) = \bar{u}_B + (\lambda + \alpha\Lambda)X_A D_A(Z_A)(x_B + X_B) - x_B, \quad (3)$$

where the last term in  $x_B$  (with  $x_B \in \{0, 1\}$ ) is the assumed disutility (or opportunity cost) of effort.

Taking  $\Lambda$  and  $X_B$  as given, an individual of  $B$  will devote himself to the terrorist cause of inflicting damage on  $A$  when the perceived marginal benefit is at least as large

as the opportunity cost of personal effort, that is,  $x(\alpha, \lambda) = 1$  when

$$(\lambda + \alpha\Lambda)X_AD_A(Z_A) \geq 1. \quad (4)$$

Individuals for whom this strict inequality is reversed will choose a zero level of terrorist activity. Thus the effort,  $x_B(\alpha, \lambda)$ , that maximizes the above utility function can be written<sup>20</sup>

$$x_B(\alpha, \lambda) = 0 \quad \text{if} \quad (\lambda + \alpha\Lambda)X_AD_A(Z_A) < 1, \quad (5)$$

$$= 1 \quad \text{if} \quad (\lambda + \alpha\Lambda)X_AD_A(Z_A) \geq 1. \quad (6)$$

It follows that the aggregate effort  $X_B$  is equal to the number of people in the population that turn terrorist. The boundary case in which an individual is on the verge of becoming active occurs when (4) holds with strict equality. We identify the boundary that demarcates terrorists from non-terrorists as the set of social identity parameters  $(\alpha, \lambda)$  such that

$$\lambda + \alpha\Lambda = \chi(X_A, Z_A), \quad (7)$$

where  $\chi(X_A, Z_A) \equiv 1/(X_AD_A(Z_A))$ . This variable  $\chi(\cdot)$  on the right hand side is the ratio of the opportunity cost of an individual's terrorist effort to the marginal benefit per unit of his/her terrorist effort. Since both  $X_A$  and  $Z_A$  are endogenous, so is  $\chi(X_A, Z_A)$ . With this notation we can write both the number of terrorists ( $T$ ), and the level of terrorist activity as

$$X_B = T(X_A, Z_A) = \int_0^1 d\alpha \int_{\chi - \alpha\Lambda}^{\infty} f(\alpha, \lambda) d\lambda$$

Who becomes a terrorist and who does not is illustrated in  $(\alpha, \lambda)$  space as in Figure

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<sup>20</sup>When the weak inequality holds with equality, the individual applies effort 1.

1. For a given  $\chi$ , the terrorist/non-terrorist boundary equation, (7), rewritten as

$$\lambda = \chi(X_A, Z_A) - \Lambda \alpha,$$

is shown as the downward-sloping line  $ED$ . Every individual with parameter values within the population who is below this line is a non-terrorist in that their effort commitment to terrorism,  $x_B(\alpha, \lambda)$ , is zero. Every individual who is in the population but with  $(\alpha, \lambda)$  values putting them on or above the locus is a terrorist with strictly positive activity,  $x_B(\alpha, \lambda) = 1$ . The precise location of the line  $ED$  depends on the aggressive and defensive efforts,  $X_A$  and  $Z_A$  respectively, of  $A$ , and on country  $B$ 's average spite level,  $\Lambda$ .

In general, intuition suggests that individuals who are most spiteful, that is, those who have the highest  $\lambda$  values, are most likely to be terrorists. However, we have also seen that feelings of altruism towards in-group members are important in providing motivation for spiteful acts. In the figure, what can be seen in general is that it is  $(\alpha, \lambda)$  pairs in which each parameter tends to be relatively high that are more likely to give rise to terrorism. That is, terrorism is most likely when the individual is strongly motivated by both aspects of social identity, the spiteful and the altruistic. Indeed, given the location of the locus  $ED$  in Figure 1, we see that some spiteful individuals in the population will not become terrorists unless they have a sufficient degree of altruism towards fellow citizens. Studies of terrorists have shown that membership in altruistic organizations that provide various public services is a commonly shared characteristic.<sup>21</sup> Our approach to terrorism based on social identity shows why such an unexpected trait may underlie reprehensible behavior, consistent with the evolutionary arguments of Choi

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<sup>21</sup>For example, see Flanigan (2008) for a description of such services provided by Hezbollah and the Tamil Tigers.

and Bowles (2007) and Bowles (2009).

Social capital facilitates terrorism. But there is an important caveat. Even in the absence of in-group altruism there would be terrorist effort, albeit diminished. The reverse, however, is not true. Since terrorism is conducted only against the out-group, if there were no out-group spite no amount of in-group altruism would generate terrorist effort when it is decentralized. It is important to recognize that, when there is some spite, even a small amount of altruism towards each in-group member can greatly magnify a terrorist's effort. It explains why terrorists often claim that they are patriots. It is in-group altruism that sets them apart from common, self-centered criminals. It is their wanton disregard for the lives of out-group members, however, that sets them apart from patriots and renders them terrorists.<sup>22</sup>

There is a well-recognized moral hazard problem here with terrorist activity: each terrorist is tempted to free-ride on the effort of others in the defense of  $B$ . This is the focus of models of terrorism in Berman (2011). But we note here that when an individual has the slightest degree of altruism ( $\alpha > 0$ ), the payoff of a unit of effort devoted to terrorist activity that inflicts damage on  $A$  increases from  $\lambda X_A D_A(Z_A)$  to  $(\lambda + \alpha\Lambda)X_A D_A(Z_A)$ . Since country populations are typically large (in the millions), even the smallest amount of altruism among terrorists for their in-group can greatly increase their individual effort. This is likely to overwhelm the effect of free-riding among terrorists. By ignoring altruism among potential terrorists for their fellow citizens and focusing on the potential free-riding aspect,  $A$  would be vastly underestimating the scale of terrorist effort.

Comparative statics for the individual level of terrorist effort defined in (5) and (6)

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<sup>22</sup>The logic of our model reveals why it is not appropriate to represent identity with a single parameter in this model. It might seem that a single parameter ( $\alpha$  say) could do double-duty—higher values of  $\alpha$  representing greater in-group altruism *and* lower out-group spite. But such an expedient would wash out aspects of preferences that have different effects on terrorism.

are straightforward. Either an increase in  $A$ 's initial offensive effort,  $X_A$ — which increases out-group hate, or a decrease in  $A$ 's defensive efforts,  $Z_A$ , which acts to increase the damage inflicted by terrorism, will shift the intercept value,  $\chi(\cdot)$ , of the line  $ED$  downwards; this will increase the measure of parameter values  $(\alpha, \lambda)$  for which equation (7) is satisfied, so increasing the number of terrorists and the level of terrorism. Conversely, either a decrease in  $X_A$  or an increase in  $Z_A$  will increase  $\chi(X_A, Z_A)$ , thereby decreasing the level and number of terrorists.

On the other hand, an increase in the average spite-level  $\Lambda$  prevalent in  $B$ 's population rotates the boundary of indifference between terrorist and non-terrorist in the clockwise direction pivoted around point  $E(= \chi(\cdot))$ , so that the boundary becomes  $ED'$  in Figure 1. An individual with a given amount of spite  $\lambda$  requires a lower level of altruism towards the in-group in order to be induced into terrorism. This is because, the aggregate perceived benefit from terrorist damage to country  $A$  is now greater and so a smaller degree of in-group altruism is sufficient to maintain indifference. Note, however, no matter how large the average spite  $\Lambda$  is, there will be no terrorists unless  $X_A > 0$ . In the absence of a grievance induced by foreign oppression, no amount of spite will produce terrorists.<sup>23</sup>

*Lemma 1:* The number of terrorists  $T$ , and the aggregate level of terrorist activity,  $X_B$ : (i) are each increasing in  $X_A$ ; (ii) are each decreasing in  $Z_A$ ; (iii) are each increasing in  $\Lambda$ .

For later use we will record the aggregate response of terrorists' effort to what they take as given in Stage 2 as:

$$X_B = X_B^R(X_A, Z_A; \Lambda),$$

where the function  $X_B^R$  is increasing in  $X_A$  and decreasing in  $Z_A$ .

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<sup>23</sup>This is because, as  $X_A \rightarrow 0$ , on the right hand side of (7)  $\chi \rightarrow \infty$ .

We now complete the modelling of Stage 2. Country  $A$ , faced with the terrorist activity  $X_B$ , solves its homeland security problem by minimizing the sum of damage and security expenditures. We assume Nash behavior on the part of both the terrorists and the government of  $A$ . In Stage 2, country  $A$  solves

$$\min_{Z_A} D_A(Z_A)X_B + Z_A, \quad (8)$$

taking  $X_B$ , under Nash behavior, as parametric. The solution to this problem,  $Z_A^R(X_B)$ , will determine the optimal degree of homeland security given its foreign commitment and the level of terrorist activity. This reaction function will be increasing in  $X_B$ , with  $Z_A^R(0) = 0$ .

The outcome in Stage 2 will be determined by the solution to the simultaneous equations

$$X_B = X_B^R(X_A, Z_A); \quad Z_A = Z_A^R(X_B). \quad (9)$$

Denote this Nash equilibrium by the doublet  $[\hat{X}_B(X_A), \hat{Z}_A(X_A)]$ , which depends on  $A$ 's invasion effort,  $X_A$ , in Stage 1. The properties of this equilibrium are stated in the following result.

*Lemma 2:* In the Stage 2 Nash equilibrium,

- (i)  $B$ 's aggregate terrorist effort,  $\hat{X}_B$ , is increasing in  $A$ 's invasion effort,  $X_A$ ;
- (ii)  $A$ 's defensive effort,  $\hat{Z}_A$ , is increasing in its invasion effort,  $X_A$ .<sup>24</sup>

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<sup>24</sup>*Proof:* (i) Substituting  $Z_A = Z_A^R(X_B)$  into the right hand side of the first equation in (9), we obtain

$$\hat{X}_B = X_B^R(X_A, Z_A^R(\hat{X}_B)).$$

Taking the total derivative of the above equation with respect to  $X_A$  and rearranging, we obtain

$$\left[1 - \frac{\partial X_B^R}{\partial Z_A} \frac{\partial Z_A^R}{\partial X_B}\right] \frac{d\hat{X}_B}{dX_A} = \frac{\partial X_B^R}{\partial X_A},$$

In view of the result in Lemma 2,  $A$  will have to recognize that a more aggressive invasion in Stage 1 will induce a greater terrorist response in the next stage that, in turn, will require more resources for homeland security. In other words, if  $A$  is foresighted, it will undertake its actions in Stage 1 with full awareness of its consequences. Computation of the subgame perfect Nash equilibrium, of course, requires that we work backwards from Stage 2 to Stage 1 to ensure that expectations are consistent with what will actually transpire.

Turning now to Stage 1, we suppose that the two countries play a Nash game with respect to the choice of the country-level variables  $X_A$  and  $Z_B$ . In Stage 1, given our assumption that  $B$  does not use the decentralized terrorism of its citizens strategically,  $B$  will choose its defensive effort  $Z_B$  to maximize its objective,  $W_B$ :

$$\max_{Z_B} W_B \equiv S_B(X_A, Z_B)V - Z_B, \quad (10)$$

where the objective function is the aggregation of (2) across the citizens of  $B$ .

In Stage 1,  $A$  will take into account the fact that the action  $X_A$  will induce a terrorist response  $X_B$  in the Stage 2 Nash equilibrium, and so its Stage 1 objective will be to maximize  $W_A$ :

$$\max_{X_A} W_A \equiv [S_A(X_A, Z_B)V - X_A] - D_A(\widehat{Z}_A(X_A))\widehat{X}_B(X_A) - \widehat{Z}_A(X_A), \quad (11)$$

where the first square bracket captures the benefit to  $A$  from acquiring foreign resources and the remaining terms are the costs associated with terrorist retaliation and homeland security in the Stage 2 Nash equilibrium. Denote the Nash equilibrium solution to the

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Since  $\partial X_B^R/\partial Z_A < 0$ ;  $\partial Z_A^R/\partial X_B > 0$ ;  $\partial X_B^R/\partial X_A > 0$ ; it follows that  $d\widehat{X}_B/dX_A > 0$ .

(ii) Since  $Z_A^R(X_B)$  is increasing in its argument, it follows from (i) that  $d\widehat{Z}_A/dX_A > 0$ .  $\square$

game described by (10)-(11) as  $(X_A^*, Z_B^*)$ . This Nash solution determines the subgame perfect equilibrium (SPE) of the overall game.

If social identity concerns were completely absent, no damage due to terrorism would be incurred by  $A$  and it would need to put in place no homeland security measures. The game would essentially reduce to Stage 1, and the optimizations confronting countries  $A$  and  $B$  would simply become, respectively,

$$\max_{X_A} [S_A(X_A, Z_B)V - X_A]; \quad \max_{Z_B} [S_B(X_A, Z_B)V - Z_B]. \quad (12)$$

What we have here is the standard conflict model [e.g. Hirshleifer (1988), Skaperdas (1992)]. A resource worth  $V$  is being contested and the shares of  $V$  accruing to the contenders are given by their relative invasion and defensive efforts. Denote the Nash equilibrium of this standard conflict scenario by  $(X_A^\dagger, Z_B^\dagger)$ , and it is readily seen that  $X_A^\dagger = Z_B^\dagger = V/4$ .

The magnitude of  $A$ 's optimal invasion expenditure when it ignores social identity will obviously exceed its optimal magnitude when it correctly anticipates the implications of social identity. This follows from the fact that  $A$ 's reaction function for  $X_A$  in terms of  $Z_B$  when it ignores identity sets the marginal benefit of greater resource appropriation to the resource cost of the marginal effort in invasion. When it takes identity into account, the marginal benefit remains the same but the latter cost now includes the extra cost of terrorism and of homeland security. Therefore,  $A$ 's best response for  $X_A$  in terms of  $Z_B$  will be lower than before. However, the reaction function for  $B$ 's defensive expenditure  $Z_B$  in terms of  $X_A$  stays the same. Thus the equilibrium value of  $X_A$  will be lower when  $A$  correctly accounts for identity in terrorist attacks. When  $A$  ignores the effects of identity, and thus does not anticipate terrorism and also the need for devoting resources to homeland security, it will incur damage from unanticipated

terrorist activity. While this cost of ignoring identity is not theoretically surprising, it is worth noting from a policy perspective because countries often seem to ignore potential terrorist responses that can arise in a *decentralized* manner.<sup>25</sup>

### 3 The Commitment Role of Social Identity

Without an explicit organization, social identity plays a role in coordinating the actions of terrorists who act in a decentralized fashion. As a result, it achieves some benefits for  $B$  that would not have otherwise been possible. Furthermore, social identity performs the important function of supplying the commitment to retaliate for perceived grievances, which the government of country  $B$  cannot do in this one-shot game.<sup>26</sup> To see these important roles of social identity, let us consider the model without social identity (laid out in the above subsection as the standard conflict model). We keep the argument reasonably informal so as to minimize technical machinery in delivering the core intuition.

In the standard model of conflict, suppose we introduce the possibility of the government of  $B$  somehow *credibly committing* to inflicting damage on  $A$  in Stage 2 that may be state-sponsored terrorism or simply “resistance”. Suppose that we denote this retributive, aggressive effort of  $B$  in aggregate by  $X_B$ . The welfare,  $\bar{W}_B$ , of  $B$  would be given by

$$\bar{W}_B = S_B(X_A, Z_B)V - Z_B - X_B. \quad (13)$$

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<sup>25</sup>In his book entitled *Imperial Hubris*, the ex-CIA analyst Michael Scheuer claimed that U.S. Intelligence had all the information available about impending terrorist danger from al Qaida before 9/11 happened but chose to ignore it. In the preface to his book he wrote, “Bin Laden has been precise in telling America the reasons he is waging a war on us. None of the reasons have anything to do with our freedom, liberty, and democracy, but have everything to do with U.S. policies and actions in the Muslim world.”

<sup>26</sup>This is important because in many, if not most of the scenarios pertaining to the interactions relevant to our context, the one-shot model is more appropriate than the standard contrivance of an infinitely repeated game that is invoked to facilitate retribution.

For a single individual, the optimal effort will obviously be  $x_B = 0$  because there is no individual benefit to “resistance” of this nature. However, there could be a collective benefit. If the government of  $B$  arranges by fiat a non-zero, stage-two collective effort of resistance  $X_B$ , it will inflict a total damage of  $D_A(Z_A)X_B$  on  $A$ . This would call forth some resources for homeland defense,  $Z_A$  in  $A$ , which would solve (8), the solution to which we denoted by  $Z_A^R(X_B)$ . Thus in Stage 1, the problem confronting  $A$  would be to maximize an objective,  $\bar{W}_A$ :

$$\max_{X_A} [S_A(X_A, Z_B)V - X_A] - D_A(Z_A^R(X_B))X_B - Z_A^R(X_B). \quad (14)$$

As we have argued at the end of the previous section, the solution to (14) for  $X_A$ , call it  $\tilde{X}_A(X_B)$ , when  $X_B > 0$  will clearly be less than the Nash equilibrium value  $X_A^\dagger$  of the standard conflict game. This in turn could benefit  $B$  because the maximized objective in (13) may be higher in the new Nash equilibrium that is contingent on  $X_B$ . In other words, the higher share of the resource value  $V$  that  $B$  obtains in the conflict may be enough to compensate for the expenditure of the precommitted resistance effort  $X_B$ .

To see when this might obtain, suppose  $B$  could precommit to choosing a value of  $X_B$  through a “Tit-for-Tat” sort of strategy in order to impinge on the Stage 1 incentives of  $A$ . Such a strategy might be modeled, for example, by positing that  $X_B$  would be proportional to  $A$ ’s invasion force,  $X_A$ . That is,  $X_B = \theta X_A$ , where the constant of proportionality  $\theta$  ( $\geq 0$ ) could depend on the culture of  $B$ , how affluent the country is, etc. Then  $B$  would maximize  $\bar{W}_B$ :

$$\max_{Z_B} S_B(X_A, Z_B)V - Z_B - \theta X_A, \quad (15)$$

while  $A$  would maximize  $\overline{W}_A$ :

$$\max_{X_A} [S_A(X_A, Z_B)V - X_A] - D_A(Z_A^R(\theta X_A))\theta X_A - Z_A^R(\theta X_A). \quad (16)$$

When  $\theta = 0$ , these two optimizations reduce to those of the standard conflict problem stated in (12) and the Nash equilibrium would be given by  $(X_A^\dagger, Z_B^\dagger)$ . What happens when  $\theta > 0$ ? The first order condition for  $Z_B$  is then

$$\frac{\partial S_B(X_A, Z_B)}{\partial Z_B} V = 1, \quad (17)$$

while that for  $X_A$  is

$$\frac{\partial S_A(X_A, Z_B)}{\partial X_A} V = 1 + D'_A(Z_A^R(\theta X_A))Z_A^{R'}(\theta X_A)\theta^2 X_A + D_A(Z_A^R(\theta X_A))\theta + Z_A^R(\theta X_A)\theta \quad (18)$$

$$= 1 + D_A(Z_A^R(\theta X_A))\theta \quad (19)$$

where primes denote derivatives with respect to the argument, and where we have used the Envelope Theorem.

Since  $D_A(\cdot)$  is positive,  $A$ 's best response for given  $Z_B$  is lower relative to the case when  $\theta = 0$ . The best response of  $B$ 's defensive effort  $Z_B$ , however, remains the same as before (since its first order condition remains unchanged). Denote the Nash equilibrium by  $(X_A^*(\theta), Z_B^*(\theta))$ . It is easy to verify that, when  $\theta > 0$ , we must have  $X_A^*(\theta) < X_A^*(0) = X_A^\dagger$  and, because  $Z_B$  and  $X_A$  are strategic complements in this region,  $Z_B^*(\theta) < Z_B^*(0) = Z_B^\dagger$ . So when  $\theta > 0$ , as expected,  $A$ 's invasion effort is lower and so is  $B$ 's defensive effort.

To examine whether  $B$  is better off in the equilibrium in which it implements a

concerted resistance by way of retribution, we examine the derivative of the equilibrium value of  $B$ 's objective function in (15) and evaluate it at  $\theta = 0$ . Again invoking the Envelope Theorem, we have

$$\begin{aligned}
\frac{d\bar{W}_B}{d\theta} &= -VS_X \frac{\partial X_A^*}{\partial \theta} - VS_Z \frac{\partial Z_B^*}{\partial \theta} - \frac{\partial Z_B^*}{\partial \theta} - X_A^*(\theta) - \theta \frac{\partial X_A^*}{\partial \theta}. \\
&= -VS_X \frac{\partial X_A^*}{\partial \theta} - X_A^*(\theta) - \theta \frac{\partial X_A^*}{\partial \theta} \\
&= -(1 + D(Z_A^R(\theta X_A))\theta) \frac{\partial X_A^*}{\partial \theta} - X_A^*(\theta) - \theta \frac{\partial X_A^*}{\partial \theta}
\end{aligned}$$

The first term on the right is positive: an increase in  $\theta$  reduces  $X_A$  and so increases  $B$ 's share of  $V$ . The second term tells us the marginal cost to  $B$  of increasing  $\theta$ , which is an increase in  $X_B \equiv \theta X_A(\theta)$ ; thus  $dX_B/d\theta = \theta dX_A/d\theta + X_A$ . This effect must be positive. We wish to show that, for  $\theta$  in a neighbourhood of 0, the marginal benefit of increasing  $\theta$  outweighs the marginal cost. Given the simple form of the conflict-shares model it is straightforward to compute that the derivative  $\frac{d\bar{W}_B}{d\theta} \Big|_{\theta=0}$  is positive if and only if  $D_A(0) - 1$  is positive. If the extent of terrorist damage to  $A$ , in the absence of defensive effort ( $Z_A = 0$ ), is sufficiently large, then country  $B$  could increase its welfare by pre-committing to a range of positive expenditures on  $X_B$  in stage 2, in order to reduce  $A$ 's initial invasion effort,  $X_A$ . The following result is proved in the Appendix.

*Proposition 1:* When  $D_A(0) > 1$ , then for some interval of positive retribution factors,  $\theta > 0$ , the precommitted retributive action by  $B$  would increase its welfare relative to that in the equilibrium with no retribution.

The above proposition identifies a condition under which it pays  $B$  to precommit to some punitive resistance that inflicts a damage on  $A$ . This punitive action by  $B$ , however, is generally *not credible* when undertaken by the state because it does not have any vehicle to precommit. In this one-shot, two-stage model that can have no

reputation effects, it is not in the self-interest of  $B$  to undertake a positive expenditure  $X_B$  in Stage 2 after  $X_A$  has already been incurred in the previous stage. And we have also seen that this resistance cannot be undertaken by individual citizens acting in decentralized fashion if preferences are atomistic because each citizen of  $B$  will perceive no private benefit to such effort.

It is precisely here that *social identity* works to the advantage of  $B$  in this context. Social identity preferences are exogenous; they have become hardwired during the long period of human evolution. The human brain essentially comprises three different parts that evolved during different periods, since natural selection builds on what already exists rather than starting from scratch. The first is the reptilian brain (responsible for instinctive motor functions); the second is the old-mammalian brain (responsible for the emotions), and last and most recent is the neo-mammalian brain (essentially the neo-cortex that is responsible for rational thinking) [Maclean (1989)]. The older parts of the brain exert greater influence because they are more entrenched, and so the emotional brain can overwhelm the rational when the two are in conflict [Panksepp (1998, p. 301)]. More specifically, spite and altruism are hormone-induced responses that may bypass rational calculation [see e.g. De Dreu (2012)].

When preferences embody a suitable amount of social identity, decentralized terrorist efforts are undertaken so that  $X_B > 0$ . In the subgame perfect equilibrium recognition of this will curtail's  $A$ 's aggressive effort and thereby increase  $B$ 's welfare. It is the reaction against a perceived foreign assault on individual and social identity that motivates terrorist action here, not the lure of rational benefits.<sup>27</sup> In other words, the existence of social identity solves, to some extent, the standard problem of free-riding in “public

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<sup>27</sup>In a review of evidence from several disciplines, Osgood (2017) finds that, although there is ample evidence that revenge is motivated by the goals of both retributive justice and deterring future transgressions, the weight of the evidence is in favor of the former.

good” provision.

To be ex post worthwhile for  $B$ , the terrorist activities of its citizens must sufficiently reduce  $A$ 's aggression—the reduction in  $X_A$  in anticipation of  $X_B$  should be sufficiently elastic. Pape (2003) has shown that acts such as suicide terrorism inflict the maximum damage on the targets.<sup>28</sup> So we would expect that  $D_A(0) > 1$  for such terrorist acts, and would result in a sharp decline in  $A$ 's aggressive effort  $X_A$ .<sup>29</sup> This shows that rational choice models that ignore identity seriously underestimate the intensity of the rival's non-state response of defense.

We summarize the discussion above in the following proposition.

*Proposition 2:* Compared to the scenario where preferences are strictly atomistic, when preferences exhibit in-group altruism and out-group spite, the citizens of  $B$  can be strictly better off in material terms in the equilibrium because social identity induces decentralized individual terrorist activities the anticipation of which will serve to curtail  $A$ 's aggression.

If  $A$  does not account for  $B$ 's terrorist response stemming from social identity,  $A$ 's realized gains will clearly be lower than it anticipates: its welfare will be lower than what it would expect from the standard conflict model. Indeed, it is not hard to see that the cost of this oversight may be so large as to overwhelm all possible gains from aggression—resulting in an ex post welfare that is below the status quo welfare when it engages in no invasion at all. This is all the more likely when terrorist activity is extremely sensitive to perceived foreign oppression, when the perceived benefits of terrorism are non-monetary, when the form that terrorism takes is particularly damaging (like suicide terrorism), and when the costs of advance detection and prevention are exorbitant (as when the

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<sup>28</sup>Suicide attacks account for 3% of all terrorist attacks but 48% of all the deaths.

<sup>29</sup>For example, the suicide bombing by the terrorist group Hezbollah of the U.S. Marine barracks in Beirut, Lebanon, in October 1983 led to a withdrawal of U.S. troops from Lebanon in February 1984.

terrorism is decentralized). And this oversight regarding social identity is likely to occur when governments of western democracies attribute terrorism to incorrect causes. Furthermore, the policy of not negotiating with terrorists only makes it more likely that  $A$  will find itself worse off than before. Even if the government of  $A$  were open to the possibility of negotiating with the terrorists once their response has been initiated, it may prove futile when terrorism is decentralized because there is no entity with which  $A$  can negotiate. The defensive effort against terrorism will be an ongoing expenditure unless the original cause of offense (occupation, say) has been removed by reversal of that decision.

## 4 Why Counterterrorism Campaigns May Fail

Our theory is well-poised to provide a simple explanation for the persistent empirical finding that counterterrorism tends to fail. After 9/11, the U.S. set up an increasing number of counterterrorism programs, and other western democracies have followed suit. The expenditures on these counterterrorism measures has been escalating [Mueller and Stewart (2014), Lum et al (2016)]. These programs can take many forms like targeting terrorists for assassination or imprisonment, engaging in an overt war on terror, etc. Very few studies have examined the effectiveness of these programs, however. The few that have studied them (see below) find that counterterrorism programs are having little or no success and often are responsible for an increase in terrorism.

It is useful to draw a distinction made in the literature between counterterrorism campaigns that are *deterrent* (that is, they reduce terrorism) from those that promote (that is, they increase terrorism). Lafree et al (2009) examined the effects of six counterterrorism campaigns against the Irish Republican Army in Northern Ireland between 1969 and 1992. They find the evidence is in preponderantly in favor of the backlash ef-

fect. Daxecker and Hess (2012) found, using data on terrorist groups between 1976 and 2006 that government repression led to an increase in the duration of terrorism in democracies. However, it reduced the lifespan of terrorist groups in autocratic regimes, a point which we comment on below. Using data from all countries between 1995 through 2005, Daxecker (2017) has found that repressive counterterrorism measures such as torture radicalizes sympathizers and increases terrorism.

In a meta-analysis of the literature on the effectiveness of counterterrorism measures implemented in the U.S. after 9/11, Lum et al (2006) found that most of the numerous programs were ineffective and some actually increased terrorism. Carson (2017) showed that counterterrorism by the U.S. in the form of high profile targeted killings is not productive and may, in fact, increase terrorism.

In a very interesting paper, Benmelech et al (2015) examined the effects of counterterrorism in Israel after the second Palestinian Intifada, in which Israelis demolished houses of Palestinians as a response to terrorism. The paper shows that punitive house demolitions, which targeted the houses of terrorists, had a negative effect on terrorism. However, precautionary house demolitions, which were indiscriminate in targeting the houses they demolished, increased terrorism substantially.

The simple analysis of counterterrorism in the presence of social identity that we now present is capable of explaining *all* of the above findings. In Section 2, we defined  $A$ 's defensive action  $Z_A$  as being directed at protecting the country's military, civilians, infrastructure, etc. all of which were intended to make its citizens safer. It was not directed explicitly at tracking down potential terrorists and killing them.

Now suppose that in Stage 1  $A$  applies the same aggressive effort,  $X_A$ , as before but its effort,  $Z_A$ , in Stage 2 is of the nature of a counterterrorism campaign to neutralize the terrorists. This effort which is directly intended to harm terrorists, we argue, may well

add to the spite of  $B$ 's citizens and thereby increase the wedge between 'Us' and 'Them' by intensifying out-group hate. We assume that counterterrorism prevents damage just as efficaciously as before (that is, the damage function remains  $D(Z_A)$ ), but in addition it also harms potential terrorists.<sup>30</sup>

Let  $p(Z_A)$  denote the probability that a terrorist will be caught and prevented from doing damage, and  $C$  denote the punishment inflicted on the terrorist if caught. The magnitude of  $p(Z_A)$  will depend, of course, on how efficient the counterterrorism strategies are. We posit the following properties for  $p(Z_A)$  and its derivatives:  $p'(Z_A) \geq 0$  and  $p''(Z_A) < 0$ , with  $p(0) = 0$  and  $p'(0) = 0$ ; also,  $p(Z_A) \rightarrow 1$  as  $Z_A \rightarrow \infty$ . We denote the odds of a terrorist being caught by  $Q(Z_A) \equiv p(Z_A)/(1 - p(Z_A))$ . Note that  $p'(0) = 0$  implies that  $Q'(0) = 0$ ; we assume that the odds function is strictly convex in  $Z_A$ .

We suppose all individuals to be risk-neutral. As before, individual  $(\alpha, \lambda)$  of  $B$  will devote himself to the terrorist cause of inflicting damage on  $A$  when the perceived expected marginal benefit is at least as large as the expected cost, that is, when

$$(\lambda + \alpha\Lambda)(X_A + Z_A)D_A(Z_A)(1 - p(Z_A)) \geq 1 + p(Z_A)C. \quad (20)$$

Individuals for whom this strict inequality is reversed will choose a zero level of terrorist activity. Note that the counterterrorism effort  $Z_A$  augments  $X_A$  in the generation of out-group hate because both are seen as aggressive actions towards the citizens of  $B$ . Thus the effort,  $x_B(\alpha, \lambda)$ , of individual  $i$  that maximizes his expected utility is given by

$$x_B(\alpha, \lambda) = 0 \quad \text{if} \quad (\lambda + \alpha\Lambda) < \chi'(X_A, Z_A), \quad (21)$$

$$= 1 \quad \text{if} \quad (\lambda + \alpha\Lambda) \geq \chi'(X_A, Z_A), \quad (22)$$

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<sup>30</sup>We are allowing  $Z_A$  to do "double duty" and, therefore, are assigning greater efficacy to the counterterrorism campaign than would be the case in reality. By doing so, we are rigging the case against ourselves in our demonstration that counterterrorism campaigns are not necessarily helpful.

where  $\chi'(X_A, Z_A) \equiv (1 + p(Z_A)C)/((X_A + Z_A)D_A(Z_A)(1 - p(Z_A)))$ . The boundary that demarcates terrorists from non-terrorists in this scenario is the set of social identity parameters  $(\alpha, \lambda)$  such that

$$\lambda = \chi'(X_A, Z_A) - \Lambda\alpha. \quad (23)$$

Now we can inquire whether counterterrorism, as we have defined it, will reduce the pool of terrorists. To determine this, we need to compare  $\chi'(X_A, Z_A)$  with  $\chi(X_A, Z_A)$  in Section 2. If  $\chi'(X_A, Z_A) < \chi(X_A, Z_A)$ , counterterrorism will increase terrorism, and conversely. The former case is illustrated in Figure 2, where the  $\chi'(\cdot)$  boundary between terrorists and non-terrorists in  $(\alpha, \lambda)$  space is shown as the schedule  $E'D'$ . This lies in a south-westerly direction relative to the boundary  $ED$  when the expenditure  $Z_A$  is entirely defensive as in Section 2. Here counterterrorism increases the measure of recruits into terrorism, all else constant, and this increase is given by the area of the shaded parallelogram  $E'D'DE$ .

Substituting for these expressions and simplifying, we see that  $\chi'(X_A, Z_A) < \chi(X_A, Z_A)$ , if and only if

$$\frac{X_A}{X_A + Z_A} < \frac{1 - p(Z_A)}{1 + p(Z_A)C},$$

which may be rewritten as

$$\frac{Z_A}{X_A} > Q(Z_A)(1 + C). \quad (24)$$

The left hand side of this inequality is linear in  $Z_A$ , while the right hand side is strictly convex in  $Z_A$ . The slope of the left-hand side,  $(1/X_A)$ , exceeds the slope of the right-hand side evaluated at  $Z_A = 0$ ,  $Q'(0)(1 + C) = 0$ ; it follows that there is a positive value  $Z_A^* = Z_A^*(X_A, C)$  that solves  $Z_A^*/X_A = Q(Z_A^*)(1 + C)$ . Further,  $Z_A/X_A > Q(Z_A)(1 + C)$  for all values of  $Z_A$  that lie in the open interval  $(0, Z_A^*)$ —see Figure 3. For  $Z_A > Z_A^*$ ,

inequality (24) is reversed.<sup>31</sup> This gives the result

*Proposition 3:* For  $Z_A \in (0, Z_A^*)$  the number of recruits into terrorism increases in response to counter-terrorism, while if  $Z_A > Z_A^*$ , then counter-terrorism reduces the number of recruits into terrorism.

Intuitively, there are two forces at work. An increase in counter-terrorism expenditure,  $Z_A$ , will deter terrorism by threatening the terrorist with capture and punishment. But an increase in counter-terrorism expenditure encourages terrorism by increasing the perceived offense. When  $Z_A$  is not too high then the second effect dominates, and counter-terrorism increases the terrorist response; and conversely. The two effects are offsetting at the critical value  $Z_A^*$ . This critical value is increasing in  $X_A$  and decreasing in the cost  $C$ . Thus, the more egregious is the magnitude of the initial offense,  $X_A$ , the larger must the minimum counter-terrorism effort be to ensure that terrorism is reduced. On the other hand, the larger is the punishment,  $C$ , that is inflicted, the smaller is the minimum counter-terrorism effort needed to ensure that terrorism is deterred.

It might appear that the result in the above proposition is in line with Becker (1968), who argued that a sufficiently large punishment will deter crime. However, inflicting higher punishments in the case of terrorism may be extremely expensive. Locating terrorists, intercepting communications, discerning their plans, and killing them are very expensive operations, and so there are serious financial costs to increasing the punishment to terrorists.<sup>32</sup> Furthermore, if the severity of the punishment also feeds into the ‘Us v. Them’ dichotomy, it is entirely conceivable that increasing  $C$  would in itself raise, rather than reduce, the number of recruits. Thus, it should be noted that,

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<sup>31</sup>In verifying whether these inequalities hold, one must exercise caution. Mueller and Stewart (2014) show that after 9/11 the U.S. is spending too much on counterterrorism. So, redundant (that is, unproductive) spending on counterterrorism should clearly be excluded from the computation.

<sup>32</sup>Rosendorff and Sandler (2004, p. 658) point out that in 2004, the U.S. spent around \$53 billion on fighting terrorism, of which around 45% was for defensive measures and much of the rest went for proactive measures.

even apart from financial considerations for country  $A$ , there are limits on the punitive costs that can be inflicted on terrorists. For example, for suicide terrorists even losing their lives seems entirely acceptable; so it is not feasible to deter terrorism by increasing  $C$  in such scenarios.

In short, there is no presumption that counterterrorism will reduce terrorism in general. This is particularly the case if, for reasonable values of  $Z_A$ , the odds of a terrorist being apprehended or killed are small, that is,  $Q(Z_A) \ll 1$ , which is consistent with the available evidence.<sup>33</sup> Social identity harnesses counterterrorism efforts into recruiting more terrorists because it adds to the initial outrage. The effects of counterterrorism may at best be a temporary decline in terrorism. Over time the cost of mounting a continuing counterterrorism campaign will escalate because these expenditures increasingly call forth more terrorists. This explains why most of the studies on the effectiveness of counterterrorism find that it is either ineffective or actually tends to promote more terrorism. Our explanation complement those of Rosendorff and Sandler (2004), Siqueira and Sandler (2006), Bueno de Mesquita and Dickson (2007), which rely on terrorism being used strategically to obtain political ends.

Counterterrorism measures such as holding suspected terrorists in prison camps like Abu Ghraib and Guantanamo Bay are likely to augment terrorism. The horrific incidents of torture and human violations in Abu Ghraib could only entrench hatred towards Americans, given the social identity considerations, but also alienated its allies. Johnson et al (2016) find that foreign fighters were attracted to terrorism in Iraq by the exposed torture at Abu Ghraib, and though they constituted only 10% of the fighters they

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<sup>33</sup>In an analysis of the efficacy of counterterrorism spending using data from 34 countries between 2000 and 2009, Danzell and Zidek (2013) found that increased counterterrorism spending does reduce terrorist incidents and fatalities at statistically significant levels but the effects are very small. An increase in spending of \$1 billion reduced the number of terrorist incidents (international and domestic) within a country by only 0.036.

conducted 90% of the suicide bombings (the most damaging kind of terrorist attacks). So torture not only helps recruit more terrorists, it also helps recruit those that conceive the greatest out-group hate as a response to torture. Likewise, incarcerating people virtually permanently without charging them, as in Guantanamo Bay, would elicit a similar response. There is yet another consideration, apart from social identity, that we should be aware of. Kalyvas and Kocher (2007) have argued that the free rider problem in insurgencies is exaggerated because it presumes that survival chances are much higher with non-participation. But if this is not so, there is no downside to an insurgent participating, and so there would be no ‘free rider’ problem. Their paper gives some evidence for this claim. A similar argument would apply here. A terrorist sympathizer who might have otherwise have remained inactive because of the potential retribution might be induced into becoming active if the retribution is indiscriminate.

A basic difficulty with models of terrorism is that they rarely identify and incorporate what terrorists perceive as the *initial offending act*. As long as the initial affront—modeled here as a resource grab by *A*, with an associated military presence—is not acknowledged and addressed by western governments, counterterrorism efforts will either have negligible effects or, more likely, exacerbate the problem. And the predictions of models that do not incorporate the initiating cause will be at odds with the facts. We record this inference in the following.

*Proposition 4:* Counterterrorism can only reduce terrorism temporarily and, even that, only if the number of terrorists neutralized is substantial. In any event, social identity considerations will ensure that in the long run the number of terrorists will increase.

We now discuss the two scenarios alluded to above in which counterterrorism seems to work. We argue that this evidence, too, is consistent with our model incorporating

social identity. The first is the finding of Benmelech et al (2015) that targeted punitive house demolitions by Israelis reduced terrorism among the Palestinians (though untargeted demolition increased it). When the houses of terrorists are destroyed, clearly the terrorists will at least temporarily be put out of action and so we would expect an obvious short-term reduction in terrorism. But there is an interesting reason why it may dissuade terrorists in the long-run, too. For convenience, we have modeled the intensity of altruistic feelings to be the same across all in-group members. In reality, the parameter  $\alpha$  can vary across members of the in-group. In particular, an individual's  $\alpha$  would be higher for family members than for non-family members of the in-group. This will introduce a trade-off between a terrorist's altruism between the in-group at large—on whose behalf, largely, he executes terrorist acts—and his own family that is put into serious difficulties by the house demolition. Indeed, the punitive cost  $C$  in our model may be interpreted to include the cost borne by a terrorist's immediate family. A terrorist may not care for his own life, but he may well care about the wellbeing of his family. So part (b) of Proposition 3 is not without bite, though implementing it would require one to abandon liberal values of what is normally deemed 'just action'. By exploiting this wedge between altruism for the in-group at large and the greater altruism for the immediate family, targeted house demolition may well reduce even long-term terrorism. House demolitions that were not tied to the identity of the owner as terrorist, on the other hand, cause outrage and would be seen as an increase in aggression—which we would expect to increase terrorism, as is indeed observed.<sup>34</sup>

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<sup>34</sup>An analogous argument possibly explains the findings of Collard-Wexler (2014), who reexamines Pape's finding that suicide attacks occur in occupied regions by drawing a distinction between 'foreign' occupation and 'domestic' occupation. The latter is alleged occupation by the country's own citizens of land claimed by a group that wants to secede from a country. Collard-Wexler (2014) replicates Pape's (2003) findings only for foreign occupation; domestic occupation is not correlated with the incidence of suicide attacks. He attributes this to the hardening of targets in the case of foreign occupation in the sense that they provide a concrete target, whereas in the domestic case the "occupation" is diffused. Our theory provides an alternative explanation for this if we posit that, when the groups have been

The second piece of evidence showing that counterterrorism can sometimes work is that from Daxecker and Hess (2012), in which repression of terrorist groups in autocratic regimes is seen to reduce their lifespan. Our theory relies on social identity to explain the phenomenon of terrorism; bonding through in-group altruism, in particular, plays an important role. In an autocratic regime, there is more distrust, all else constant. Consequently, repression will not summon the action of sympathizers through a sense of outrage and so terrorism will be suppressed. The fact that social capital is lower in autocratic regimes has been shown in a careful study of repression in China by Xue and Koyama (2016). By examining the effects of persecutions during the Qing dynasty (1644-1911) for suspicions of holding subversive views, they show that trust declined during the period and had long-lasting effects right down to modern China. Nunn and Wantchekon (2011) have shown that those African countries that had greater exposure to the slave trade and, therefore, fear of being sold into slavery, experienced greater mistrust and the legacy of that persists till today. In terms of our model, this would correspond to lower values of the in-group altruism parameter  $\alpha$ . This would explain why, more generally, repression of terrorism has opposite effects in democracies and autocratic regimes.<sup>35</sup> Autocratic regimes are inimical to the evolution of social capital—including that which supports terrorism.

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living together, the  $\lambda$  of the insurgents will not be as high as when they are facing foreign occupation since the distinction between ‘Us’ and ‘Them’ will not be as trenchant.

<sup>35</sup>See also Guiso et al (2011) for an illuminating perspective on, among other things, the long-term effects of autocracy on social capital.

## 5 Discussion

### 5.1 Contemporary Islamic Terrorism

Religion has frequently been implicated in terrorism, as is well-known. Since much of contemporary terrorism in the West seems tied to Islam and the Middle East<sup>36</sup>, it is imperative that we outline how our theory explains with this phenomenon. We focus on this in the present subsection.

To investigate the putative connection between religion and suicide terrorism, in particular, Ginges et al (2009) conducted two surveys of Palestinian Muslims in the West Bank and Gaza, and performed a third exercise involving Jews, typically Ultra-orthodox Jews, living in the West Bank and Gaza. They found that religion per se in the sense of belief in God did not contribute to views in favor of suicide terrorism. Rather, it was the joint performance of religious rituals—which presumably cements bonds within the group—that seems to promote sympathy for suicide terrorism. In other words, in the telling phrase of Davie (2002) ”believing and belonging”, it is the belonging aspect of religion (social capital), not the belief aspect, that seems to promote the feeling of altruism towards the group members and spite towards outsiders. Our model captures precisely this role of altruism and spite in terrorism.

This sense of belonging is promoted by the performance of religious rituals together [Ruffle and Sosis (2007)]. Chwe (2003) has argued that the performance of rituals ensures that an individual can act under the presumption that the relevant information is common knowledge. Each member is exposed to some information and he/she knows that others have been, too, and that they know that he/she knows, etc. The assumption

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<sup>36</sup>Figure 8.5 on p. 176 of the *Arab Human Development Report 2016* shows that even though the Middle East has only one-twentieth of the world’s population, it has nearly a fifth of the world’s conflicts and over two-thirds of the world’s battle-related deaths.

of common knowledge enables people to coordinate decisions without explicit communication. If we credit this hypothesis, we may accept the view that people belonging to the same religion can behave more cooperatively in any joint endeavor—even if that is terrorism.

This would be true of all religions. What is special about Islam? In his comparison between Christianity and Islam, Marshall (1960) has argued that Islam, for example, is a community-oriented religion while Christianity is individually oriented. If this view is correct, Islam is likely to contribute to group solidarity.<sup>37</sup> This is supported by the Koran, which strongly endorses donations to fellow Muslims; this is one of the five pillars of Islam. Egalitarianism is an important part of Islam. Evolutionary theories have it that egalitarianism arose from an evolved tendency for third parties to intervene when weaker members of a group are harassed and bullied out of their resources [Grivilets (2012)]. This hardwired proclivity for egalitarianism in humans is harnessed in Islam and made mandatory. This emphasis on egalitarianism emerged because it was the solution to the economic problems that confronted Islam at its incipience in the 7th Century CE [Michalopoulos et al (2016)]. Thus for historical as well as theological reasons, the sense of in-group solidarity might be expected to be relatively strong among Muslims.

In a persuasive piece of research, Clingsmith et al (2009) showed that Islam does not promote hostility—even the mandatory Hajj pilgrimage produced greater tolerance not only towards other Muslims but also towards non-Muslims. For hostility to emerge in the community exhibiting strong group solidarity, there needs to be a provoking cause. Muslims feel obliged to retaliate when they perceive their coreligionists to be oppressed. What may be perceived as terrorism by the target populations may be viewed by the putative terrorists as a defensive action against an assault on people with shared social

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<sup>37</sup>See Ferrero (2017). This effect is absent in other religions like Hinduism, for example, in which, like in Christianity, the highest ideal is the pursuit of individual salvation.

identity.<sup>38</sup> In 2003, the U.S. and a coalition of western democracies waged a war against Iraq under the erroneous intelligence that Saddam Hussein possessed weapons of mass destruction. Hagopian et al (2016) have recently estimated that, between March 2002 and June 2011, this war has directly or indirectly resulted in nearly half a million Iraqi deaths. That the pool of terrorists surged following the outrage felt at the U.S. invasion of Iraq in 2003 [Sageman (2008, Ch. 4)] should not be a surprise in the light of such numbers. This event also marked the rise of homegrown terrorism in the U.S. and the coalition countries that participated in the invasion (in particular, Britain, Spain, Australia).<sup>39</sup>

Homegrown terrorism—the phenomenon where someone who has been born and raised in Britain, say, turns against his own country and terrorizes the British population—is puzzling and begs for an explanation. It is clear that, in this instance, identity is not nailed down by citizenship; rather, shared religion figures more importantly. The historian Lewis (2003) puts the matter of religious identity quite cogently: “In the Western world, the basic unit of human organization is the nation, which is then subdivided in various ways, one of which is by religion. *Muslims, however, tend to see not a nation subdivided into religious groups but a religion subdivided into nations.*” (p. xx, emphasis

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<sup>38</sup>In retaliation for the horrific 9/11 terrorist attack New York engineered by al-Qaida in which about 3,000 people died, the U.S. launched a war in Afghanistan in 2001 for harboring al-Qaida terrorists. The number of Afghan civilians killed in this war till 1 July 2016 is over 31,000 and the number injured is nearly 41,000 [Crawford (2016)]. The disproportionate number of civilian deaths (10:1) in the retaliation should make us wonder about the resentment it may cause among Muslims.

<sup>39</sup>Our argument entailing shared social identity suggests a reason why religious terrorist organizations are more lethal than non-religious terrorist organizations. The in-group identity cemented by religion enhances altruism and reduces free-riding. This reason is different but not orthogonal to that emphasized by Berman (2011), namely, religious terrorist groups typically provide social (public) services to the in-group and are required to become adept at weeding out free-riding. In-group identity, of course, does not require religious affiliation though it helps. The Tamil Tigers who sought autonomy in Sri Lanka did not view themselves as religious; nevertheless, they extensively practiced suicide bombings in their attempt to achieve their goals [Hopgood (2005)]. It is shared social identity that was the driving force.

added).<sup>40</sup> The sense of the in-group transcends national boundaries and encompasses other Muslim nations. Not common nationality so much but shared social identity would be the bond that invites empathy for grievances.<sup>41</sup> If the government of one's own country is seen as an oppressor of Muslims elsewhere, we will observe homegrown terrorism. This is very likely the prime reason for the rising menace of homegrown terrorism being witnessed in many western democracies. Adam Smith (1759/2000) and David Hume (1738/2000) emphasized that the ability to feel empathy is the foundation of morality. If we accept this view, the prime motivation for such terrorists could be viewed as attempts at being moral human beings as opposed to being zealots pursuing an ideology stemming from some fundamental difference in values. In effect, social identity considerations can help explain not only transnational terrorism but also homegrown terrorism.

Sageman (2008, Ch. 5) points out that Europe is much more prone to homegrown terrorism than is the United States.<sup>42</sup> He argues that the U.S. is very selective in its immigration policy, and typically allows only highly qualified professionals to immigrate and these immigrants naturally find jobs and assimilate into the 'melting pot' that the country is. Muslims in Europe, he argues, are less qualified and they have relatively easy access into countries once they have entered the European Union. Since Europe does not have well-honed programs for helping them assimilate, they face greater unemployment and remain in the fringes of society. In terms of our model, the distinction between 'Us' and 'Them' among Muslims in Europe is much greater than that in the U.S. This would

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<sup>40</sup>Elsewhere, he notes, "Islam is not only a matter of faith and practice; it is also an identity and a loyalty—for many an identity and loyalty that transcend all others." (p. 17)

<sup>41</sup>Recall the perceptive observation by Adam Smith (1759/2000): "The agreeable passions of love and joy can satisfy and support the heart without any auxiliary pleasure. The bitter and painful emotions of grief and resentment more strongly require the healing consolation of sympathy." (p. 13)

<sup>42</sup>Terrorist-related arrests per capita of the Muslim population in six times higher in Europe than in the U.S. in the post 9/11 period.

make homegrown terrorism more likely in the former.

Our view raises the following question: What actions of western democracies constitute such grave offences for Muslims that transnational and homegrown terrorism is the response? This leads us to the issue of foreign policy that we discuss in the next subsection.

## 5.2 The Role of Foreign Policy

There is evidence that stable democracies experience more terrorism than other political regimes [Eubank and Weinberg (2001), Walsh and Piazza (2010), Chenoweth (2010)]. Democracies by their very nature are influenced by the preferences of voters. And so it might seem that terrorists exploit this and increase their attacks on democratic enemies to change their policies. As we have noted, this argument cannot be an explanation for the decentralized terrorism that is widely prevalent in Europe. Savun and Phillips (2009) have shown that it is the foreign policy of a country, not its democratic nature per se, that determines transnational terrorism. Neumayer and Plümper (2009, 2011) have shown that terrorism against the U.S. is also very much a response to the military aid given to the terrorists' home governments. This is consistent with our premise that it is the assault on people with shared identity, directly or by abetting it, that instigates decentralized terrorism.

Governments in western democracies tend to focus on the incendiary rhetoric of charismatic leaders in inciting terrorist activities, such as Islamic State's (now deceased) spokesman al-Adnani. His hateful announcements have been taken to be the reason why terrorist activities in the past three years have been devolved to individuals who have at best a loose connection to the Islamic State. There is no doubt that such rhetoric may indeed increase transnational and homegrown terrorism. In the framework of this paper,

the average spite-level  $\Lambda$  in the in-group would increase and, as we saw in the previous section, this can increase the number of terrorists and their aggregate effort. But this effect is contingent on there being a grievance that causes hostility in the first place: no amount of spite will induce terrorist activities unless there is a perceived offence. By focusing exclusively on radicalization—suspecting people of it, anticipating it, monitoring it, preventing it, etc.—governments of western countries absolve themselves of their role in intervening in the Middle East for self-serving purposes.<sup>43</sup> The treatment of Muslims in the Middle East beginning with the fall of the Ottoman empire—first by Britain and France, and then also by the United States—provides ample grievance to Muslims on account of the ill-treatment of fellow Muslims at the hands of the West [Lewis (2003)]. Wike and Grim (2007) conducted a survey of non-Muslims in eight countries on negative attitudes towards Muslims and a survey of Muslims in ten countries on negative attitudes towards non-Muslims. They found that Muslims hold more negative views about westerners than do westerners about Muslims.<sup>44</sup>

A recent empirical study of the Islamic State’s terrorist attacks in Europe and North America between June 2014 and June 2017 found that, of the 51 attacks, but none of them took place in Spain and Italy despite their large Muslim populations [Vidino et al (2017, p. 45)]. The attacks were mostly in France, U.S., Germany, and the UK. Our theory provides a simple explanation for this finding: these countries have foreign policies that are much more interventionist in the Middle East, and it is this that provides the impetus for radicalization. The need for western democracies to reconsider

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<sup>43</sup>In a recent article Giraldi (2017) points out that one of the reasons Britain cannot prevent terrorist attacks is that the government does not acknowledge what it is doing to Muslims overseas. This claim is completely consistent with our analysis, which emphasizes the importance of social identity. See also the article of Hewitt (2017) and the lecture by Manningham-Buller (2011). The latter draws a clear link between terrorism and Britain’s foreign policy.

<sup>44</sup>They found that Muslims hold more negative views about westerners than do westerners about Muslims. Among European Muslims, British Muslims had the most negative views about non-Muslims. Perhaps the dominant role Britain played in accompanying the U.S. in the 2003 Iraq war is the reason.

foreign policy in the light of how it may be responsible for precipitating terrorism—both foreign and homegrown—through the vehicle of social identity is the most important implication of our paper for policy makers.<sup>45</sup>

Finally, we should note that ignoring social identity and its terrorist consequences can prove very costly. In the previous section, we examined the subgame perfect Nash outcome in our two-stage model that incorporated social identity. However, it is reasonable to question whether governments acknowledge the role of social identity and anticipate this equilibrium. Prominent examples suggest that perhaps they frequently do not. For example, the recently released *Chilcot Report* in Britain revealed that the British government was appraised by the Joint Intelligence Committee in 2003 of the potential terrorist response to British occupation in Iraq [Hewitt (2017)]. The subsequent terrorist attacks in Britain, from the horrific 2005 tube attack in London to the recent appalling massacre in Manchester in May 2017, may be viewed as the cost of ignoring social identity issues in foreign policy. Generally, it is unclear to what extent the terrorist predicament western democracies find themselves in is of their own making (because of unwarranted interventions in the Middle East and elsewhere) and is maintained by a misreading of the signals in terrorists attacks.<sup>46</sup>

## 6 Conclusions

In the view of this paper, contemporary terrorism is not necessarily to be seen as a ‘Clash of Civilizations’, to borrow a well-known phrase from Huntington (1993), but rather as

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<sup>45</sup>As pointed by Giraldi (2017), the Labour Party’s leader Jeremy Corbyn has recently alluded to the link between terrorism and Britain’s foreign policy in the Middle East, a fact rarely acknowledged by politicians.

<sup>46</sup>A recent report of the House of Lords Select Committee on International Relations (2017) has acknowledged the need for UK to change its foreign policy in the Middle East, though it doesn’t identify the specific reasons we suggest here.

a consequence of ignoring the importance of social identity. Our premise in this paper is that an important instigator of terrorism when there is a perceived assault on members of a group is the shared identity of the group, and we construct a model that isolates the explicit role of this social identity. In standard models, terrorism cannot arise in a decentralized manner; state-sponsorship is required. Our formulation shows terrorism can obtain as a decentralized phenomenon, and is consistent with much of contemporary terrorist activity. Furthermore, we show that altruism towards in-group members magnifies terrorist effort—which, in a decentralized world, requires spite. We suggest that governments incur considerable costs due to decentralized terrorism when they ignore identity considerations. Our model based on social identity provides a credible vehicle for terrorist retribution and explains homegrown terrorism in addition to transnational terrorism. We also demonstrate that, consistent with facts, counterterrorism campaigns are usually ineffective and often increase terrorism. They may temporarily delay the surge in terrorism but will not alter the inevitability of it. Our theory firmly points to foreign policy as the primary instigator of terrorism and the firm policy implication that emerges from our analysis is that western democracies beleaguered by terrorism should be more circumspect in their foreign policies.

The analysis of this paper shows that it is not possible to ensure greater safety for ourselves against terrorism while ignoring our past and present actions in the Middle East and elsewhere. Domestic or foreign policies that widen the gap between ‘Us’ and ‘Them’ in minorities by providing the environment necessary for this hardwired human proclivity to manifest are likely to redound to our own loss. Social identity in potential terrorists tends to reflect our behavior towards—and perceptions of—them by converting our assumptions into self-fulfilling prophecies.<sup>47</sup>

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<sup>47</sup>It is not an accident that a small European country like Belgium provides the largest number of foreign jihadists per capita going to Iraq and Syria from Western Europe. Government policies and

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right-wing organizations, that alienate the country’s Muslim population and make them feel unwelcome, spur many of them to seek their identity elsewhere [Vlierden (2016)].

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## APPENDIX

First, write the two stage-1 first-order conditions as functions of  $\theta$ :

$$\begin{aligned} Z_B : \quad & -VS_Z(X_A^*(\theta), Z_B^*(\theta)) - 1 = 0 \\ X_A : \quad & VS_X(X_A^*(\theta), Z_B^*(\theta)) - 1 - D(Z_A^R(\theta X_A^*(\theta)))\theta = 0. \end{aligned}$$

Totally differentiating these conditions with respect to  $\theta$  we obtain:

$$-VS_{ZX}(X_A^*(\theta), Z_B^*(\theta))\frac{\partial X_A^*(\theta)}{\partial \theta} - VS_{ZZ}(X_A^*(\theta), Z_B^*(\theta))\frac{\partial Z_B^*(\theta)}{\partial \theta} = 0$$

and

$$\begin{aligned} VS_{XX}(X_A^*(\theta), Z_B^*(\theta))\frac{\partial X_A^*(\theta)}{\partial \theta} + VS_{XZ}(X_A^*(\theta), Z_B^*(\theta))\frac{\partial Z_B^*(\theta)}{\partial \theta} \\ - D(Z_A^R(\theta X_A^*(\theta))) - \theta D'(\cdot)\frac{\partial (Z_A^R(\theta X_A^*(\theta)))}{\partial X_B}(X_A^*(\theta) + \theta\frac{\partial X_A^*(\theta)}{\partial \theta}) = 0. \end{aligned}$$

The equations can be rewritten in matrix form as

$$\begin{bmatrix} -VS_{ZX} & -VS_{ZZ} \\ VS_{XX} - \theta^2 D'(\cdot)\frac{\partial Z_A^R(\theta X_A^*(\theta))}{\partial X_B} & VS_{XZ} \end{bmatrix} \begin{bmatrix} \frac{\partial X_A^*(\theta)}{\partial \theta} \\ \frac{\partial Z_B^*(\theta)}{\partial \theta} \end{bmatrix} = \begin{bmatrix} 0 \\ D(Z_A^R(\theta X_A^*(\theta))) + \theta X_A^*(\theta)D'(Z_A^R(\cdot))\frac{\partial Z_A^R(\cdot)}{\partial X_B} \end{bmatrix}$$

Solving this gives

$$\frac{\partial X_A^*(\theta)}{\partial \theta} = \frac{S_{ZZ}}{\Delta} \left[ D(Z_A^R(\theta X_A^*(\theta))) + \theta X_A^*(\theta)D'(Z_A^R(\cdot))\frac{\partial Z_A^R(\cdot)}{\partial X_B} \right]$$

where

$$\Delta = -[\theta^2 D'(\cdot)(\partial Z_A^R(\cdot)/\partial X_B)S_{ZZ} + V(S_{XZ}^2 - S_{ZZ}S_{XX})]$$

Evaluating this at  $\theta = 0$  yields

$$\left. \frac{\partial X_A^*(\theta)}{\partial \theta} \right|_{\theta=0} = D(Z_A^R(0)) \frac{S_{ZZ}}{-V(S_{XZ}^2 - S_{ZZ}S_{XX})}$$

Finally, evaluating the terms  $S_{XX}, S_{ZZ}, S_{XZ}$  at  $X_A = Z_B = V/4$ , and using  $D(Z_A^R(0)) = D(0)$  yields

$$\left. \frac{\partial X_A^*(\theta)}{\partial \theta} \right|_{\theta=0} = D(0) \frac{-V}{4}$$

The term to be signed, from (10), is thus

$$\left. \frac{\partial \bar{W}_B(\theta)}{\partial \theta} \right|_{\theta=0} = -\left. \frac{\partial X_A^*(\theta)}{\partial \theta} \right|_{\theta=0} - X_A^*(0) = D(0) \frac{V}{4} - \frac{V}{4},$$

which is positive if and only if  $D(0) > 1$ .

FIGURES

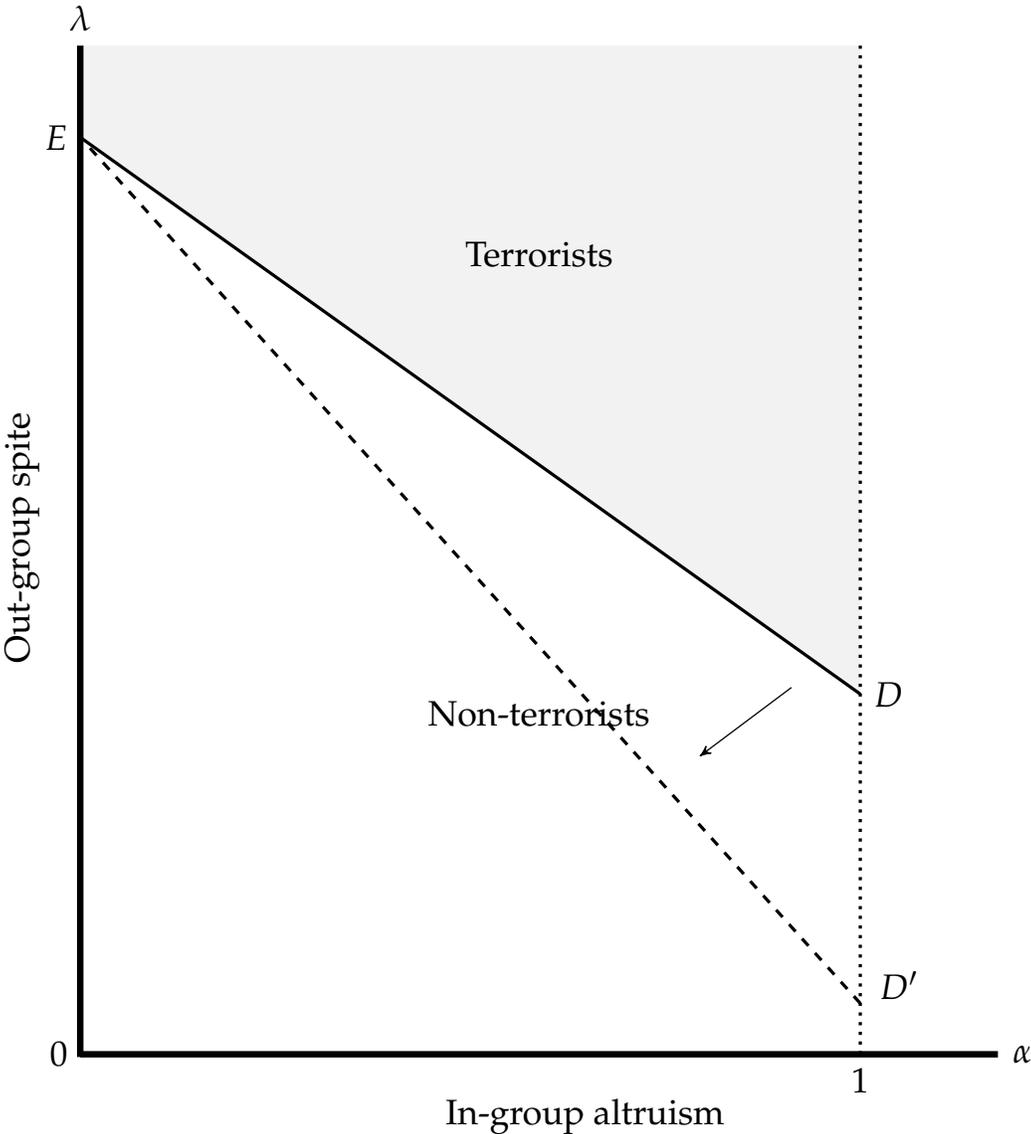


Figure 1: Partitioning of  $B$ 's Population into Terrorists and Non-Terrorists

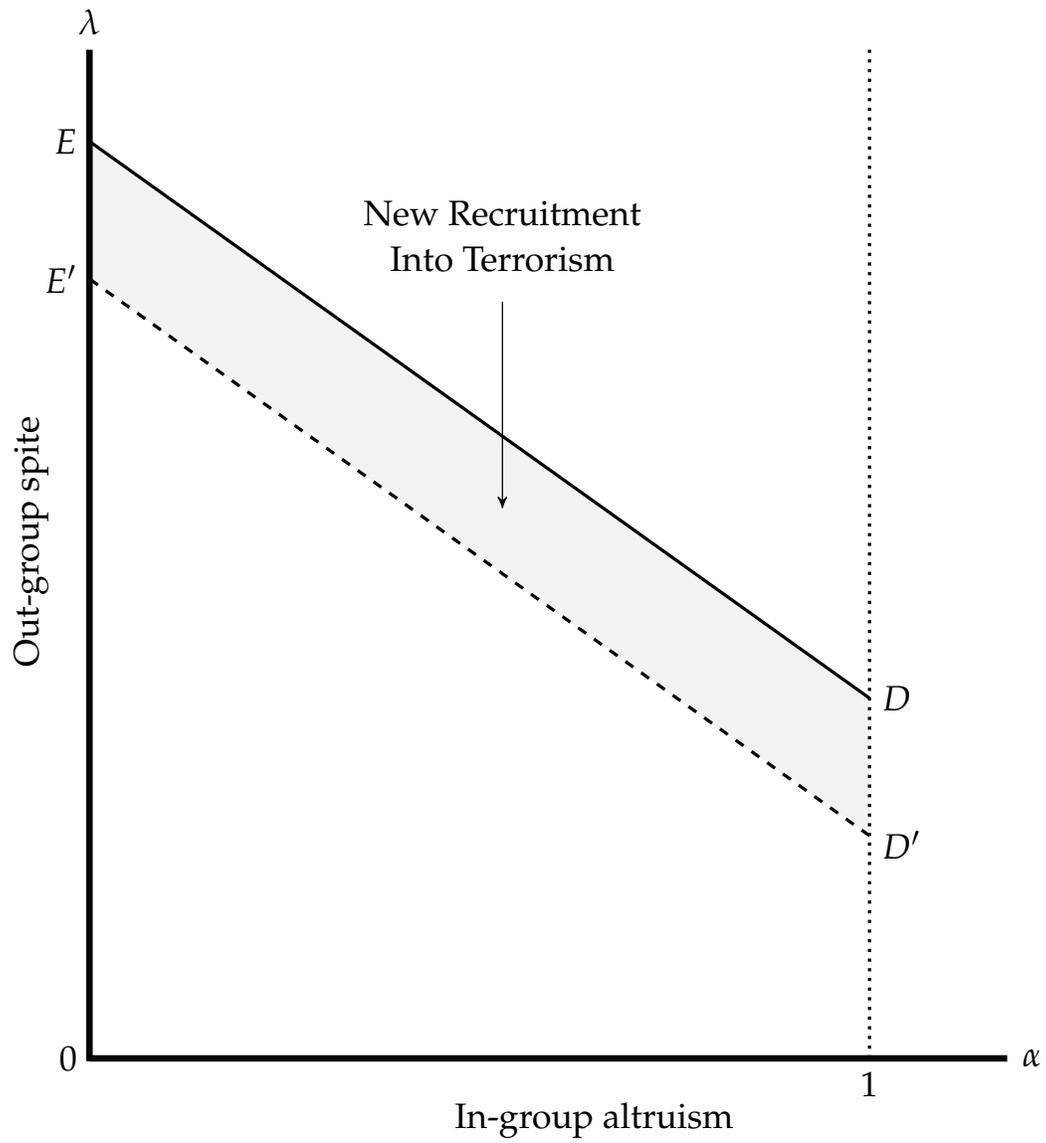


Figure 2: When Counterterrorism Increases Recruits for Terrorism

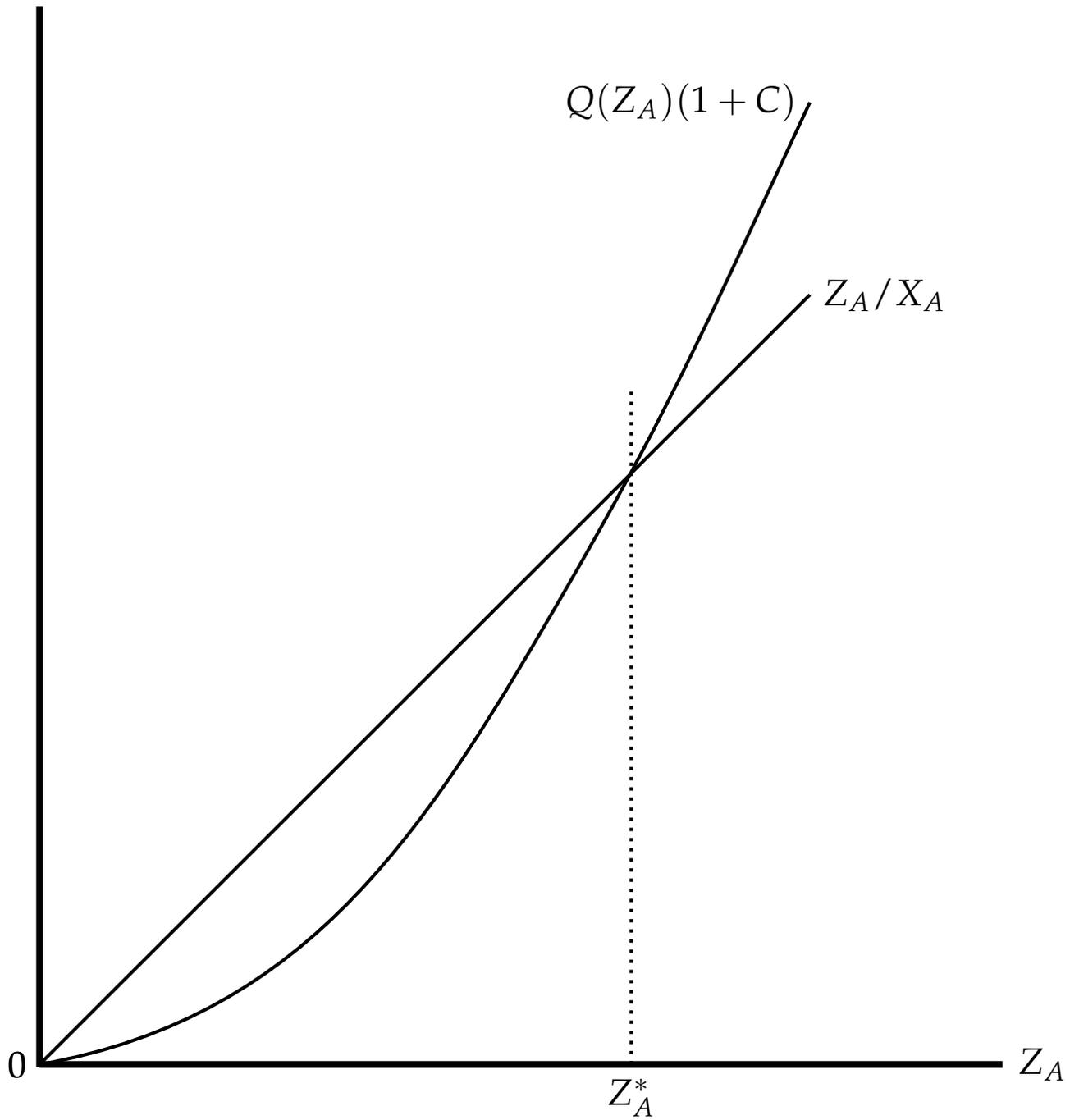


Figure 3: Where Counterterrorism Increases Terrorism