

Do Foreign Occupations Cause Suicide Attacks?

Journal of Conflict Resolution
2014, Vol. 58(4) 625-657
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DOI: 10.1177/0022002713478558
jcr.sagepub.com



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Abstract

The phenomenon of suicide attacks has dramatically expanded over the last twenty years, rising from no events in 1980 to a total of 1,398 events by 2008. A prominent theory has argued that suicide attacks are a coercive strategy aimed at ending foreign military occupation by democracies. Yet these conclusions are based on a research design that is affected by selection bias and that fails to distinguish foreign occupations from cases of groups seeking independence or autonomy, which we term domestic occupations. Analyzing an original data set that distinguishes the different types of occupation, we find that only foreign occupations have a strong and consistent effect on the incidence of suicide attacks. The reason, we argue, is that suicide attacks only become cost effective when targets are both hardened and accessible, a strategic environment that is more common to civil wars and foreign occupations than to domestic occupations.

Keywords

suicide attacks, foreign occupation, terrorism, insurgency

The phenomenon of suicide attacks has dramatically expanded over the last twenty years, rising from no events in 1980 to a total of 1,398 events by 2008. Recently, an influential theory has posited that foreign military occupation by democracies is a principal driver of suicide attacks (Pape 2003, 2005; Pape and Feldman 2010). This

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theory of suicide attacks has garnered substantial attention in the public debate in the context of the United States' troubled occupations of Afghanistan and Iraq.¹

The purpose of this article is to test quantitatively the hypothesis that foreign occupations cause suicide attacks. In so doing, we posit that existing studies fail to distinguish foreign occupations proper from cases of ethnic groups seeking autonomy or independence from a dominant domestic group, what we term domestic occupations. This article proceeds as follows. First, we review the literature's key claims and findings regarding foreign occupation and suicide attacks. Second, taking stock of existing critiques, we posit that a major flaw in the literature is the failure to distinguish foreign and domestic occupations. In particular, we explain how target hardening makes suicide attacks a more rational strategy under foreign occupation than under domestic occupation. Third, we propose an empirical research design to test the distinct effects of foreign and domestic occupations and the impact of target hardening. We find that foreign occupations face a greater risk of suicide attacks than non-occupation cases, consonant with Pape's theory. However, consistent with our critique, domestic occupations are not associated with a higher risk of suicide attacks. Moreover, as our argument implies, we find that the more mechanized a foreign occupier's forces the more likely they are to be targets of suicide attacks. Finally, we expected to find an association between suicide attacks and civil wars, as civil war environments, similarly to foreign occupations, are likely to be characterized by target hardening. However, we find evidence of a robust relation only for a subset of civil wars—those involving groups seeking independence or autonomy—which suggests that both nationalist motives and target hardening may need to be present for the occurrence of the phenomenon.

Occupation and Suicide Attacks

In a series of articles and books, Robert Pape argues that suicide attacks are a form of coercion by punishment (Pape 2003, 2005; Pape and Feldman 2010). Far from being the irrational outcome of poverty or religious fanaticism, suicide attacks serve to advance well-defined nationalist goals. More specifically, Pape argues that suicide attacks serve “to compel modern democracies to withdraw military forces from territory that the terrorists consider to be their homeland” (Pape 2005, 4). Foreign occupations are especially severe provocations to nationalist sentiment since they can instill among members of a local community the fear of losing the ability to perpetuate their political, social, economic, and religious institutions. This in turn motivates members of the occupied community to make extreme sacrifices to prevent the loss of their way of life (Pape and Feldman 2010, 21).

Democracies represent especially attractive targets for suicide attacks for three reasons. First, democracies are generally perceived as highly casualty averse and thus easily coercible. Second, militants are aware that democratic responses to suicide attacks are likely to be constrained by human rights norms and public opinion, thus reducing the risk of a massive retaliation that could eliminate the militant group

and its popular base of support. Third, the openness and individual freedoms characterizing democracies facilitate the planning and execution of suicide attacks.

Pape further argues that there is an interaction effect between foreign occupation by democracies and religious differences between occupiers and the occupied community. This religious clash increases the likelihood that suicide attacks will be employed because the situation is more likely to be interpreted in zero-sum terms by the occupied community. As such, occupiers can more easily be demonized and religion can provide a rationale for martyrdom (Pape 2005, 89–91). Thus, religious radicalism per se is not a cause of suicide attacks, but merely an instrument used by nationalist leaders to motivate and control their followers. Pape also argues that suicide attacks are a last resort, used once other violent antioccupation tactics have failed. Therefore, suicide attacks should be expected to occur in the context of a protracted insurgency (Pape 2005, 92). In sum, Pape argues that four key factors increase the likelihood of suicide attacks: (a) occupation, (b) democracy, (c) religious clash, and (d) ongoing rebellion.

Pape supports his argument with a cross-tabulation of occupations by democracies in the years 1980 to 2008 (Pape 2005, 99–100; Pape and Feldman 2010). He finds that his theory, combining occupation, democracy, religious difference, and an ongoing rebellion, correctly predicts the occurrence of a suicide attack campaign in forty-nine of the fifty-eight cases. Two other studies also provide some support to Pape's argument (Bloom 2005; Piazza 2008).

Critiques

Pape's argument has been attacked on substantive and methodological grounds.² First, the theory does not seem to explain recent trends in suicide attacks. During the 1980s and 1990s, the near totality of suicide attacks was indeed associated with occupation struggles. However, in the 2000s, a substantial number of attacks occurred in countries that can hardly be defined as being under occupation (e.g., Pakistan and Yemen).³ Scholars have taken issue with Pape's claim that Al-Qaeda's principal objective is the removal of US occupying forces from the Arabian Peninsula since it is unclear that the US presence in the region should be conceptualized as occupation (Atran 2006; Boot 2001; Crenshaw 2007; Goodwin 2006; Moghadam 2006; Pedahzur 2006). Al-Qaeda is not only the hardest test of Pape's theory but also its most important one, given that it directly affects US security interests.

Second, where suicide attacks do occur in the context of occupations, such as in Iraq or Afghanistan, they tend to target conationals as often as foreigners (Moghadam 2009). In addition, in those cases where suicide attacks are carried out in occupied countries against occupying forces, the attacks are often performed by nationals of nonoccupied countries.

Third, Atran (2006) has noted that all existing studies lack critical data. Most studies rely on Pape's original data set, which only covers the time period from 1980 to 2003 and as such excludes the peak period of suicide attacks between

2003 and 2008. Indeed, the 1,457 suicide attacks conducted since 2003 constitute 84 percent of all the 1,730 ever executed (Chicago Project on Security and Terrorism [CPOST] 2010).⁴ Given the relatively small overall number of suicide attacks, such rapid changes can radically alter statistical findings.

Fourth, Pape's work has also been criticized on methodological grounds. In his 2003 article, Pape examined only cases where suicide attacks are executed. Ashworth et al. (2008a) point out that Pape is therefore selecting on the dependent variable. Without including null cases where suicide attacks did not occur the dependent variable is invariant and therefore inference cannot be made regarding the causes of suicide attacks.⁵ In his 2005 book, Pape addressed part of this selection bias by examining all occupations undertaken by democracies as his unit of analysis, thus also including cases where suicide attacks did not occur. However, this study also suffers from selection bias: Pape cannot infer whether democratic occupiers are more likely targets of suicide attacks because he does not examine cases in which the occupation and democracy variables take on different values (Ashworth et al. 2008b).

Wade and Reiter (2007) seek to replicate Pape's findings, while correcting for this selection bias. Analyzing all countries, regardless of whether or not they have experienced suicide attacks, they find that neither democracies nor states with religiously distinct minorities, which they use as a proxy for occupation, are more likely to be targeted by suicide attacks than nondemocracies or states without relevant minorities. The authors do find a substantively small interaction effect between democracy and occupation. Overall, they find that partial democracies with several religiously distinct minorities are far more likely targets of suicide attacks than either full democracies or autocracies.

Distinguishing Foreign and Domestic Occupations

Beyond these critiques of Pape's theory, we argue that a major flaw of existing research on occupation and suicide attacks is that it conflates societies occupied by a foreign state with minority groups seeking independence or autonomy. The former constitutes what we call foreign occupation: a state invades and occupies another state. The latter constitutes what we call domestic occupation: a minority group perceives itself as under occupation and seeks autonomy or independence. This conflation is significant for four reasons. First, existing research fails to provide a clear and replicable definition of domestic occupation. Second, the definition of domestic occupation does not correspond to the common understanding of occupation under international law. Third, foreign and domestic occupations have different effects on the probability of suicide attacks. The explanation for this difference is that foreign occupations tend to involve hardened targets. Fourth, foreign and domestic occupations should be considered separately because they require different policy responses.

Clarity and Replicability

Existing scholarship fails to provide a clear and replicable definition of domestic occupation. Pape defines occupation broadly as “the exertion of political control over territory by an outside group” (Pape 2005, 83). This definition includes both foreign and domestic occupations. A critical requirement for identifying domestic occupation is that a state controls the homeland of a distinct minority. Pape generally codes domestic occupations as instances where there is a “minority at risk” (MAR) as classified by Gurr et al. (Minorities at Risk Project 2009). A minority at risk is defined as an “ethnopolitical group (nonstate communal group) that collectively suffers or benefits from systematic discriminatory treatment vis-à-vis other groups in a society; and/or collectively mobilizes in defense or promotion of its self-defined interests” (Minorities at Risk Project 2009). Pape is not consistent in his coding, however. As noted by Wade and Reiter (2007, 338), “most of Pape’s occupations (56 out of 58) are instances of a minority at risk within a democracy listed in the MAR data set. However, Pape did not code all MAR-listed groups in all democracies as perceiving occupation,” excluding cases without explicitly stating why. Wade and Reiter instead proxy perceived occupation as the presence in a state of religiously distinct minorities at risk, effectively excluding all cases of foreign occupation from their analysis and ruling out the possibility of occupation without religious differences. By this definition, the Kurds in Turkey would not qualify as a domestically occupied group.

Both codings of domestic occupation are problematic. Pape’s coding is inconsistent as it lacks a complete or replicable methodology for identifying perceived occupation. Wade and Reiter’s coding is incomplete because it only identifies religiously dissimilar minorities at risk as being under perceived occupation. However, there is no theoretical reason for why all religiously dissimilar minorities should perceive themselves as occupied. Conversely, this coding fails to identify groups such as the Quebecois, the Basque, or the Corsicans, who most definitely see themselves as distinct from their coreligious majorities in Canada, Spain, and France, respectively. Moreover, by restricting perceived occupation to religiously dissimilar minorities at risk, Wade and Reiter are unable to isolate the effect of religion on suicide attacks.

A more fundamental problem of domestic occupation lies in the universe of cases. Foreign occupation tends to be easily identifiable since state borders tend to be clearly defined, unlike for domestic occupation where there is no bounded universe of social groups that could potentially feel occupied by their own state. Since there is no predefined list of social groups, it is impossible to define the “null” social groups that do not fight against domestic occupations. Instead, researchers tend to identify domestically occupied groups as those that mobilize politically. However, this creates selection bias: by overlooking peaceful domestic occupations, the false conclusion may be reached that all domestic occupations cause political mobilization and potentially violence.

Pape obscures matters further by broadening the concept to include “indirect occupation” and “threat of occupation.” Indirect occupation means that large

segments of a local community believe their government's foreign policy is under the control of an outside group while threat of occupation means that a foreign military power stations troops in territory immediately adjacent to a given country and has the military power to invade it (Pape and Feldman 2010, 21). Indirect occupation cannot effectively be measured because there exists no cross-national public opinion survey on perceptions of foreign state influence. Thus, Pape can only identify relevant cases based on the existence of groups conducting violent political action against a perceived foreign threat, causing selection bias. What about those groups who perceive an indirect occupation but do not act? The conflation of occupation and threat of occupation is even more problematic. Consider, for example, that the United States has military facilities in some thirty-eight countries (US Department of Defense 2009). This figure, drawn from the US Base Structure Report, excludes bases in Afghanistan, Iraq, and Kosovo. The countries that house US military facilities border another 103 states. Therefore, employing Pape's notion of threat of occupation, the United States would be occupying 115 countries (taking into account that several countries with US military facilities are neighbors). Clearly, Pape does not mean to say this, but his definition fails to provide sufficiently clear criteria to properly identify occupations.

Common Usage

The concept of domestic occupation does not correspond to common usage of occupation under international law, where occupation is carried out by states in the context of armed conflict. The two main treaties pertaining to occupation are the 1907 Hague Conventions on the Laws and Customs of War on Land and the 1949 Geneva Convention Relative to the Protection of Civilian Persons in Time of War. Both Conventions were signed by states (High Contracting Parties) and govern the conduct of interstate war. For instance, the Hague Convention refers to "Military Authority Over The Territory of the Hostile State." Additionally, Paragraph 2 of Article 2 of the Geneva Convention reads, "The Convention shall . . . apply to all cases of partial or total occupation of the territory of a *High Contracting Party*, even if the said occupation meets with no armed resistance" (International Committee of Red Cross [ICRC] 1949, emphasis added). Many of the articles of the Hague and Geneva Conventions are nonsensical in the context of domestic occupation and in the absence of interstate war. For instance, Article 43 of the Hague Conventions states, "The authority of the legitimate power having in fact passed into the hands of the occupant, the latter shall take all the measures in his power to restore, and ensure, as far as possible, public order and safety, while respecting, unless absolutely prevented, the laws in force in the country." More absurdly still, in the context of domestic occupation, both the Hague and Geneva Conventions would be interpreted as preventing a state from modifying its own laws.

The concept of domestic occupation clearly goes against the spirit and letter of international law as well as current scholarship on occupation. Benvenisti (1993, 4) defines occupation as "the effective control of a power. . . over a territory to which that power has no sovereign title, without the volition of the sovereign of that

territory.” This definition would preclude domestic occupation since domestic occupiers have sovereign title over the territory. Similarly, Roberts (1984) defines occupation as “operations involving the armed forces of a state exercising some kind of domination or authority over inhabited territory outside its borders.” According to the US Law of Land Warfare (FM 27-10), “Belligerent occupation in a foreign war, being based upon the possession of enemy territory, necessarily *implies that the sovereignty of the occupied territory is not vested in the occupying power*” (US Department of the Army 1956, emphasis added). It is therefore clear that the core characteristics of occupation under international law, namely armed conflict by foreign states, apply to foreign but not domestic occupations.

Hardening and Incentives for Suicide Attacks

Foreign and domestic occupations represent different strategic environments. Foreign occupations almost universally involve military units that tend to be better armored than civilian and nonmilitary government targets. They constitute what we consider to be “hard” targets. In contrast, because the vast majority of domestic occupations are peaceful, they rarely involve military units and therefore tend to involve what we consider to be “soft” targets. This difference in the strategic environment—“hardening”—shapes incentives to employ suicide attacks as opposed to other insurgent tactics.

Why does hardening encourage suicide attacks? We assume that insurgents have limited resources. They will seek to maximize their utility by selecting tactics that produce the desired effect with the greatest probability at the lowest cost. Various tactics offer different mixes of cost-effectiveness. Suicide attacks are effective at penetrating hardened targets and inflicting heavy damage (Sprinzak 2000; Berman and Laitin 2008; Horowitz 2010). By dispensing with exit strategies, suicide attacks provide insurgents with greater tactical flexibility. Because operatives die in the attacks, there is no risk that they will be captured, interrogated, and reveal critical information. Suicide attacks also produce greater casualties than do other forms of terrorism on average (though not necessarily more than other insurgent strategies).

If it were simply a matter of effectiveness, we would expect to see many more suicide attacks than we actually do. However, suicide attacks are also distinctively costly as they necessitate specialized recruitment, indoctrination, and training of individuals and require the loss of highly motivated cadres in a single attack. As the modal operative is a young male, suicide attacks also kill the breadwinners in the insurgents’ constituency. As a result, certain groups also pay compensation to the families of suicide bombers (Juergensmeyer 2003, 72). Importantly, suicide attacks involve the violation of widely held social taboos that could reduce the legitimacy and appeal of insurgent groups. The use of extreme tactics could also signal to adversaries that the group is fanatical, thus precluding the chance of a negotiated settlement (Abrahms 2006). Bearing in mind such costs, we should only expect insurgent groups to employ suicide attacks when necessary to achieve their objectives.

Whether or not different tactics will be effective depends on the defenses of the adversary, what is commonly referred to as hardening. We assume that hardening reduces the probability of success of all insurgent tactics, but affects the probability of each at different rates. The difference in the probability of success and effect of suicide and nonsuicide tactics is the variable δ . The difference in cost between suicide attacks and nonsuicide attacks is assumed to be a positive constant (α). Nonsuicide tactics will be favored so long as $\delta > \alpha$ since insurgents will want to achieve the greatest effect at the lowest cost. This relationship is illustrated in Figure 1.

Hardening is a product of *access* and *protection*. Access refers to the ability of an assailant to get in striking distance of a target. Protection refers to the ability of a target to withstand an attack. If hardening reduces vulnerability, why wouldn't actors always choose the maximum amount of hardening? Simply put, hardening is costly and actors have limited resources. In times of peace, actors will eschew such costly measures. Moreover in times of war, hardening can prevent forces from gathering valuable intelligence from the local population (Lyll and Wilson 2009). Different combinations of protection and access produce different kinds of strategic environments, which impact incentives to employ suicide attacks. These strategic environments are summarized in Figure 1.

Type I. First, high access and high protection occur in environments such as insurgencies and foreign occupation. Importantly, typically only those domestic occupations that also involve civil wars are Type I environments. These are usually asymmetric conflicts, where there is no clear separation between civilians and insurgents as rebels hide among the civilian population. In response, government or foreign military units mingle with civilians, to police the population, deter attacks, and track down insurgents. Unlike in conventional warfare, civilians can legitimately come into range of military units and military units do not assume that all approaching civilians are hostile. In fact, counterinsurgency requires cooperation with local civilians to build trust and gather intelligence on insurgents. Rebels exploit the counterinsurgents' need to gather information from civilians and their inability to reliably screen insurgents and their supporters from the rest of the population, what Kalyvas (2006) called the identification problem. Foreign occupiers may be at a greater disadvantage in this regard due to their lack of local knowledge. The mingling of military and civilians—that is, access—provides an opportunity for insurgents to get close to their targets to stage suicide attacks. The relative protection of military targets increases the appeal of suicide attacks compared to other tactics. Since protection will decrease the probability of success of nonsuicide attacks more rapidly than the probability of success of suicide attacks, suicide attacks will become more appealing (decreasing δ). The Israeli occupation of Lebanon and the International Security Assistance Force's (ISAF) occupation of Afghanistan are classic cases of Type I environments: troops mingle with the local population in the course of patrols, thereby generating exposure. The presence of accessible hard targets, in turn, makes suicide attacks more likely.

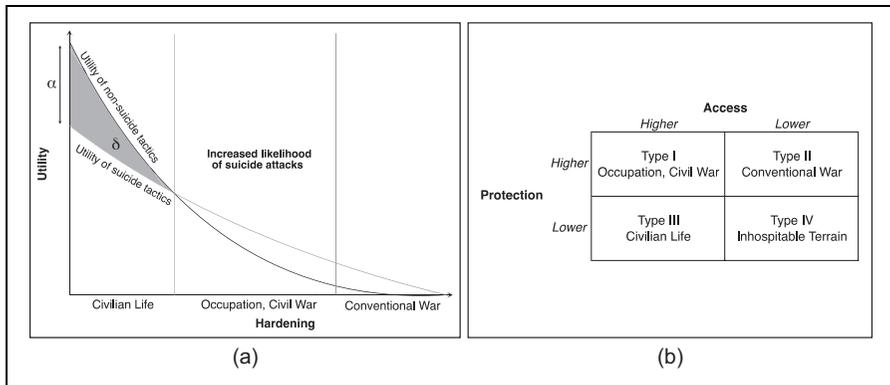


Figure I. (a) & (b) Theoretical framework.

Type II. Second, low access and high protection occur during conventional warfare and/or in a highly fortified environment. Clearly identified units on a military front guard reinforced positions separate from the civilian population and seek to destroy opposing enemy units. Since military forces maintain a distance from civilians, they view individuals seeking to approach them. Insurgents may have strong incentives against hardened units and fortified positions but they lack the range and the element of surprise to successfully execute such attacks. This is part of the reason why suicide attacks have not been widely adopted in conventional warfare.⁶ Fortification need not necessarily occur in times of war. The separation barrier between Israel and the Palestinian territories of Gaza and the West Bank is a good example of low access and high protection outside of conventional war. Indeed, since the implementation of the separation barrier suicide attacks dropped from 38 per year in 2002 to between 0 and 1 per year between 2006 and 2010 (CPOST 2010).

Type III. Third, high access and low protection occur in normal civilian life. Civilians move freely and most targets are not hardened. When there are fewer threats, protection is unnecessarily costly and restricted access impedes commerce and social interactions. As a result, “soft targets” abound in civilian environments. Faced with such soft targets, potential insurgents are more likely to employ traditional guerrilla tactics, including non-suicide terrorism, which can produce the desired effects at lower cost. It is important to note that most domestic occupations are Type III environments as they do not involve civil war or insurgency.

Type IV. Finally, low access and low protection is a residual category that occurs in particularly inhospitable environments. Here the principal barriers to access are natural, such as highly mountainous, desertic, or arctic zones. Suicide attacks are rare because of difficulty of access and dearth of targets.

Thus, hardening theory divides the world into four categories. In foreign occupation, violent domestic occupation, and civil war, protection and access are both high (Type I). In conventional war, protection and access are both low (Type II). In civilian life, access is high and protection is low (Type III). Finally, in remote and inhospitable terrain, both access and protection are low (Type IV).

Hardening theory provides a clear set of predictions for when we should expect to see suicide attacks. Suicide attacks will be more likely when both access and protection are high, in other words, when there is both the opportunity and the incentive to carry out such attacks.⁷ Hardening theory also explains why foreign and domestic occupations are best considered separately. Because foreign and domestic occupations generally involve different degrees of hardening, they have different effects on the expected utility of suicide attacks.

Policy Implications

The distinction between foreign and domestic occupations is not merely of academic relevance as different forms of occupation may require very different policy responses. For instance, offshore balancing may be an appropriate policy to address suicide attacks caused by foreign occupations, but it would not have an impact on suicide attacks caused by domestic occupations. Conversely, policies of regional autonomy or devolution may be appropriate for suicide attacks associated with domestic occupations, but they would be irrelevant in the context of foreign occupation. Moreover, it is possible that domestic and foreign occupations have different effects on suicide attacks. If suicide attacks tend to occur in the absence of foreign occupations, then proscribing occupation would be unnecessary and prescribing offshore balancing ineffective. Similarly, if suicide attacks tend to occur in the absence of domestic occupations, then regional autonomy will be unnecessary and ineffective.

Data and Coding

So far, we have argued that conflating foreign and domestic occupation is flawed on conceptual, legal, theoretical, and policy grounds. Using a novel data set of foreign occupations, this section seeks to address the flaws in existing research on occupation and suicide attacks and demonstrate how and why foreign and domestic occupations have different impacts on the likelihood of suicide attacks.

Unit of Observation

The units of observation are country-years for every state in the international system. The list of states is drawn from the Polity IV data set (Marshall, Gurr, and Jaggers 2009). The period is from 1981 (the year prior to the first suicide attack) to 2007 (the last year for which data on all the variables is available).

Dependent Variable

We seek to explain the targeting of suicide attacks. The terms suicide terrorism, suicide missions, suicide bombings, and suicide attacks tend to be used interchangeably. We opt for the term suicide attacks, which is more accurate and less politicized. The CPOST data set used in this analysis refers to suicide attacks, not suicide terrorism, as the defining feature of its cases. The perpetrator of a suicide attack “does not expect to survive the mission and often employs a method of attack . . . that requires his or her death in order to succeed. In essence, a suicide terrorist kills others at the same time that he kills himself” (Pape 2005, 10). The dependent variable is the number of attacks against a target state per year. All data on suicide attacks, including their targets, are drawn from the CPOST suicide attack database (CPOST 2010). According to CPOST, thirty-two states in 160 country-years have been targeted by suicide attacks. Most states experience 0 attacks in a given year, whereas the maximum is 389 (United States in Iraq and Afghanistan in 2007). It is important to note that according to this coding, a state can be targeted without the attack occurring on its soil. For example, the attack on the USS *Cole* in October 2000, which killed 19 US sailors, was aimed at the United States but took place in Yemen.

Principal Independent Variables

Occupation. The principal independent variable is occupation. We distinguish foreign and domestic occupations and define the former as *the stationing of armed forces by a state or an intergovernmental organization in all or part of a foreign state’s territory after the cessation of interstate hostilities on the territory, which exercise coercive authority over the local population*. The list of foreign occupations is drawn from an original data set on foreign occupations.⁸ Using this definition, we create a dummy variable termed *Occupier*. There have been seventy-four foreign occupations totaling 490 state-occupation-years between 1981 and 2007. In addition, we create a dummy variable, *Occ. Religious Clash*, for foreign occupation where the plurality of the occupying country is of a different religion than the plurality of the occupied country (Buddhist, Christian, Confucian, Hindu, Jewish, Muslim, Orthodox, Shinto, Taoist, or other).

We code domestic occupation using the MAR’s separatism index (SEPX; Marshall, Gurr, and Jagers 2009). We use the existence of separatist/autonomist groups as a proxy for the perception of domestic occupation and code the domestic occupation variable *Separatist* for countries with active separatist/autonomist movements in the past fifty years. Few domestic occupations are violent: only 9 percent (203 of the 2,207 state-years) of domestic occupation years are marked by separatist civil war.⁹ We also code whether the separatist group is of a different religion from the plurality group and create a dummy variable, *Sep. Group Rel. Clash*, for domestic occupations with a religious clash.

This coding decision has the drawback of focusing on behavior, rather than perception of occupation, thus potentially introducing selection bias. Not all cases of perceived domestic occupation need to be characterized by separatist or autonomist activism; in particular, occupiers may deter political mobilization with the threat of

violence. However, short of creating a data set of perception of domestic occupation, this approach represents the only way to test Pape's claims about domestic occupation's effects. The following is a summary of the predicted effect of the occupation variables on the probability of suicide attacks.

Hypothesis 1: States occupying other states are more likely to be the target of suicide attacks than are nonoccupiers.

Hypothesis 2: States occupying religiously dissimilar states are more likely to be the target of suicide attacks than are states occupying religiously similar states.

Hypothesis 3: States with separatist/autonomist groups are more likely to be the target of suicide attacks than are states without separatist/autonomist groups.

Hypothesis 4: States with religiously distinct separatist/autonomist groups are more likely to be the target of suicide attacks than are states without religiously distinct separatist/autonomist groups.

Hardening. We argue that suicide attacks will be more likely against hardened targets, since hardening increases the cost-effectiveness of suicide attacks as compared to other tactics. Specifically, we argue that only Type I hardening—hardening that involves high access and high protection—is associated with suicide attacks.

We operationalize Type I hardening using four variables. First, we assume that all foreign occupations entail Type I hardening since they involve military units interacting with civilians, and military units are usually better protected than their civilian counterparts. We use the variable *Occupier* as the measure of foreign occupation. Second, we assume that all civil wars involve Type I hardening since protected military units typically mingle with civilians. Pape argues that all domestic occupations cause suicide attacks, whereas hardening theory argues that only domestic occupations also involving hardening will increase the likelihood of suicide attacks. We assume that separatist civil wars represent domestic occupations with hardening. We use the Uppsala Conflict Data Program (UCDP)/Peace Research Institute of Oslo (PRIO) Armed Conflict Data set to identify civil wars. We then identify the subset of civil wars, called *Separatist Civil War*, as those which also involve domestic occupation (Gleditsch et al. 2002). All other civil wars are assumed to be nonseparatist civil wars (*Non Separatist Civil War*), which do not involve domestic occupation.¹⁰ Finally, to account for variation in hardening across occupations, we interact *Occupier* with *Log Mech.*, which measures the extent of a state's mechanization (Sechser and Saunders 2010). The variable is an index that reports the number of armored vehicles per 100 soldiers for odd country-years between 1979 and 2001.¹¹ In sum, four variables are considered to represent Type I hardening: foreign occupation, its interaction with military mechanization, separatist civil wars, and nonseparatist civil wars.

Hypothesis 5: States occupying other states are more likely to be the target of suicide attacks than are nonoccupiers.

Hypothesis 6: States experiencing separatist civil wars are more likely to be the target of suicide attacks than are states not experiencing separatist civil wars.

Hypothesis 7: States experiencing nonseparatist civil wars are more likely to be the target of suicide attacks than are states not experiencing civil wars.

Hypothesis 8: More highly mechanized occupiers are more likely to be the target of suicide attacks than are less mechanized occupiers.

A corollary of hardening theory is that states engaged in interstate wars (Type II environment) should not be especially at risk of experiencing suicide attacks. We operationalized *Interstate War* using the Correlates of War (COW) interstate war data set (Sarkees and Wayman 2010).

Hypothesis 9: States engaged in interstate war are as likely to be the target of suicide attacks as states not engaged in interstate war.

Control Variables

Democracy. Regime type has frequently been proposed as a cause of terrorism. Pape, adopting the dichotomous definition of democracy proposed by Przeworski et al. (2000), argues that solely occupations by democracies result in suicide terrorism (Pape 2005, 43). Critics have argued that purported democratic targets of suicide attacks, such as Sri Lanka and Russia, are not in fact democratic (e.g., Bloom 2005). Eschewing debates about the cutoff point for democracy, we code democracy using the ordinal Polity 2 variable in the Polity IV data set (Gurr et al. 2009). Polity II ranges from -10 to 10 , with -10 being the most autocratic and 10 the most democratic.

Demography, Economic Conditions, and Islam. Population size can be a predictor of rebellion and insurgency (Fearon and Laitin 2003; Collier and Hoeffler 2004). Larger countries are generally more likely to include groups with discordant political objectives and may hold a higher number of potential insurgent or terrorist recruits. Additionally, states may find it more difficult to police populous territories. We therefore include a logged measure of the state's population, *Log Pop*.

A country's economic conditions may influence the risk of suicide attacks. Several scholars have argued that suicide attacks, and insurgency more broadly, can be driven by economic despair. Poorer individuals may be more likely to hold strong grievances against their government or may have a lower opportunity cost for risking their own lives in combat. In addition, poorer states may lack the resources necessary to conduct effective counterterrorism and counterinsurgency. We therefore control for the log of real per capita gross domestic product (GDP) by including the variable

Log GDP. We draw our measure of per-capita GDP (in constant 2005 prices) from Penn World tables (Heston, Summers, and Aten 2009).

Finally, we add a variable termed *Muslim* that measures the proportion of a state's population that is Muslim. Although Pape argues that suicide attacks are not a uniquely Muslim phenomenon, 55 percent of the targets of suicide attacks are Muslim majority states and 93 percent of terrorist attacks are committed by groups that are Muslim or in states that have Muslim majorities. This does not prove that Islam is a cause of suicide attacks, but indicates that this factor should be controlled for. We draw data on the Muslim share of the population from Fearon and Laitin (2003) and the *CIA World Factbook* (Central Intelligence Agency [CIA] 2010).

Prior Attacks and Civil War. Suicide attacks may be correlated across time. Once an attack has occurred in a state or against a target, this may increase the likelihood that future attacks will occur. This autocorrelation may be due to the fact that once a group has crossed the moral, cognitive, or technical threshold for using suicide attacks, it will be more likely to use them again. Alternatively, suicide attacks could be used by insurgent groups to outbid each other in the use of violence, as Bloom (2005) argues. More simply, the occurrence of suicide attacks could spur other groups to undertake copycat attacks. In order to capture these potential effects, we create a variable, *Cumulative Attacks Local*, indicating the number of suicide attacks that occurred in a state prior to a given year and another variable, *Cumulative Attacks Global*, indicating the number of suicide attacks that occurred anywhere in the world prior to the year.

Finally, we include a control for civil wars to account for the occurrence of large-scale violence within a country in a given country-year. We code this variable based on the list of civil and extrasystemic wars in the COW data set (Sarkees and Wayman 2010). This variable combines the COW lists of intrastate and extrasystemic wars. Intrastate wars are wars that are fought within state borders between a government and nongovernment forces (civil war), or at least two nongovernment forces (intercommunal war). Extrasystemic wars are defined as wars between a state and a nonstate entity. Including extrasystemic wars is important since they represent critical cases such as the resistance to the Soviet occupation of Afghanistan, the Palestinian Intifadas, the resistance in Afghanistan in 2001–2007, and the Iraqi resistance in 2003–2007.¹²

Model Specifications

The dependent variable, the number of suicide attacks in a given country-year, is a count variable. Suicide attacks are a relatively rare event, occurring in 3.4 percent of country-years. A simple dispersion tests indicates that the data are overdispersed and therefore a negative-binomial count model is most appropriate. Standard errors in all estimates are clustered by country.

In order to test the effect of foreign and domestic occupation as well as hardening, we run two sets of models. First, we compare tests of Pape's theory of occupation

and suicide attacks using an improved research design (combining foreign and domestic occupations, constituting what we term the naïve understanding of occupation), with tests that show that foreign and domestic occupations have different effects on the likelihood of suicide attacks. Second, using proxies for hardening, we show that the main reason for the different effect of foreign and domestic occupation is the causal mechanism of hardening.

We generally interpret the coefficients as the percentage change in the number of suicide attacks as follows: $\text{attacks} = 100 \times \text{IRR} - 1$, where attacks is the percentage change in the number of suicide attacks and the IRR, or the incidence rate ratio, is calculated as $\exp(\beta_k \times \delta)$, where β_k is the coefficient for the particular variable, and δ is the unit change for the estimated effect. The IRR, which is also reported in some cases, is interpreted as the expected change in the rate of suicide attacks in a country-year expressed as a factor given δ .

Findings

Naïve, Foreign, and Domestic Occupation Models

In this section, we first test Pape's theory of suicide attacks and we then unpack the concept of occupation by distinguishing foreign and domestic occupations. In model 1 in Table 1, we begin with a naïve definition of occupation, corresponding to the dummy variable *Pape Occupier*, which combines domestic and foreign occupations. This definition also makes no distinction between occupations that involve religiously dissimilar groups and those that do not. The model indicates that occupiers (*Pape Occupier*) suffer 13.31 times more suicide attacks than nonoccupiers, holding all other variables constant at their mean or mode. Democracy alone, as measured by a state's Polity score, is not a predictor of suicide attacks.

Model 2 includes an interaction for occupation and democracy. Consistent with Pape's theory, we find a strong interaction effect. Among occupiers, as defined by Pape, those with a Polity value of -5 have an annual number of suicide attacks that is estimated to be 2 times greater than countries at the same Polity value that are not occupiers (.27, 3.73).¹³ For countries at the mean value of Polity, 1.36, the annual number of suicide attacks is estimated to be 7.98 (6.45, 9.31) times higher for occupiers, while the corresponding figure for countries at the maximum Polity value, 10, is 52.39 (50.81, 53.98).¹⁴ This means that the difference between the annual number of attacks for occupying versus nonoccupying democracies is greater than the difference for occupying versus nonoccupying nondemocracies (Table 1).

Model 3 unpacks the occupation variable using two occupation dummies, one indicating occupations with a religious clash between occupiers and occupied (*Pape Occ. Clash*) and one without (*Pape Occ. No Clash*). We find that occupations involving religiously distinct groups have a positive and statistically significant effect on the number of suicide attacks: occupiers of a different religion suffer 38.85 times more suicide attacks than nonoccupiers. Occupations without religious

Table 1. Naive, Foreign, and Domestic Occupation, and Hardening Models.

	1	2	3	4	5	6	7	8
Pape Occupier	2.59*** (0.59)	1.77* (0.70)						
Pape Occ. × Polity		0.22** (0.07)						
Pape Occ. Clash			3.65*** (0.58)					
Pape Occ. No Clash			-0.23 (0.58)					
Occupier				2.85*** (0.46)		2.91*** (0.45)	1.99*** (0.40)	6.16*** (1.22)
Separatist Group				0.85* (0.42)	4.16*** (0.45)	0.77 (0.42)	0.79 (0.43)	0.43 (0.40)
Occ. Religious Clash					0.17 (0.53)			
Occ. No Clash					0.54 (0.54)			
Sep. Group Rel. Clash					0.48 (0.39)			
Sep. Group No Clash								
Separatist Civil War								
No Separatist Civil War						2.95* (1.15)		
Interstate War						0.76 (0.77)		
Log Mech.						-0.16 (0.41)		
Log Mech. × Occupier							0.45 (0.27)	0.01 (0.23)
Civil War	1.53 (0.81)	1.22 (0.77)	1.59*** (0.61)	2.40** (0.92)	2.51** (0.84)		1.82** (0.61)	1.15*** (0.31)
Polity	0.11* (0.05)	0.00 (0.05)	0.11** (0.04)	0.08* (0.04)	0.07* (0.03)	0.09* (0.04)	0.10* (0.04)	1.55** (0.53)
Log Pop.	0.49** (0.17)	0.68*** (0.18)	0.43*** (0.15)	0.45*** (0.13)	0.22 (0.12)	0.45** (0.14)	0.04 (0.17)	0.09* (0.04)
Muslim	0.02** (0.01)	0.02** (0.01)	0.03*** (0.01)	0.02** (0.01)	0.02*** (0.01)	0.02** (0.01)	0.01* (0.01)	0.02** (0.01)
Log GDP	1.78*** (0.30)	1.57*** (0.31)	1.83*** (0.30)	1.54*** (0.28)	1.28*** (0.24)	1.55*** (0.28)	0.35 (0.28)	0.28 (0.27)
Cum. Attacks Global	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	0.00 (0.00)	0.00 (0.00)
Cum. Attacks Local	0.17*** (0.05)	0.17*** (0.05)	0.13** (0.04)	0.17*** (0.04)	0.15*** (0.04)	0.16*** (0.05)	0.21*** (0.04)	0.21*** (0.04)
Constant	-27.55*** (3.34)	-27.06*** (3.19)	-27.74*** (3.28)	-24.81*** (3.06)	-20.11*** (2.54)	-24.87*** (3.08)	-7.59* (3.38)	-10.07*** (2.89)
Observations	3,920	3,920	3,920	3,920	3,920	3,920	2,796	2,796
Countries	154	154	154	154	154	154	145	145
Wald χ^2	112.37	137.16	139.20	148.79	197.21	147.86	265.37	281.02
Prob > χ^2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: GDP = gross domestic product. Standard errors, clustered by country, reported in parentheses. Negative binomial regressions. Dependent variable is the number of suicide attacks per country-year.

* $p < .05$. ** $p < .01$. *** $p < .001$.

clashes are not statistically significant, however. This supports Pape's argument that occupations involving religious clashes are especially at risk of experiencing suicide attacks.

Next, in model 4, we further unpack the occupation variable by distinguishing foreign (*Occupier*) and domestic occupations (*Separatist Group*). The results show a striking difference between the two. The effect of foreign occupation is substantively strong and statically significant, whereas the effect of domestic occupation is much weaker and less robust. Foreign occupiers suffer 17.45 times more suicide attacks than nonoccupiers. The effect of domestic occupations is 2.3 times more attacks. As we will see later, this effect is not robust. This finding has far-reaching policy implications. Not only does resistance to foreign and domestic occupations require different responses, but they also appear to have substantively different effects on the likelihood of suicide attacks.¹⁴

Model 5 introduces the interaction between religious clash and the foreign/domestic occupation variables (*Occ. Religious Clash* and *Sep. Group Rel. Clash*). Here, once again only foreign occupations with religious clash have a statistically significant effect on suicide attacks. The magnitude of the effect is also substantial. Foreign occupations where the occupier and the occupied have different religions suffer 64.7 times more suicide attacks than nonoccupiers on average. Interestingly, occupations without a religious clash and all domestic occupations do not register statistically significant effects. The results would appear to indicate that a small subset of occupations—foreign occupations with religious clash—are driving much of the observed effect.

The control variables provide some additional insight regarding the determinants of suicide attacks. We find that *Civil War* has a positive effect on the likelihood of a country being targeted by suicide attacks in three of five models. The magnitude of the effect of civil war is comparable to that of occupations as defined by Pape. *Log Pop.* is found to have a positive and statistically significant effect in all but the last model. *Log GDP* also has a positive and statistically significant effect on the likelihood of being targeted by a suicide attack. The positive effect of population size is consistent with the civil war and insurgency literature, but the positive effect of per capita GDP runs contrary to much of the conventional wisdom about the impact of poor economic conditions on violence.¹⁵ As for the history of attacks, we find evidence that both the number of past attacks within a given country (*Cumulative Attacks Local*) and globally (*Cumulative Attacks Global*) predict a greater likelihood of future attacks.

We find a significant effect for the percentage of the state's population that is Muslim. Pape argues that Islam per se is not the cause of suicide attacks, but rather religion is used instrumentally by nationalist groups to recruit and indoctrinate operatives to carry out attacks. Were this the case, it should be true of all religions, and yet suicide attacks are still predominantly associated with the Islamic world. By controlling for other factors, including occupation, this finding therefore casts doubts on Pape's assertion that there is no link between Islam and suicide attacks.

Despite this empirically robust finding, the linkage between Islam and suicide attacks remains undertheorized. Most arguments about the effect of Islam are based on inductive observation rather than on deductive theory.¹⁶ We control for the effect of Islam because it is an important part of the debate on suicide attacks. Undoubtedly, more work needs to be done regarding this issue, but this goes beyond the scope of the article.

Hardening Mechanism Models

The previous models identified a major difference in the effect of foreign and domestic occupations on the incidence of suicide attacks. We argue that the different effects can be explained by differences in target hardening. Indeed, hardening is more prevalent in foreign occupations and civil wars than in domestic occupations. These effects are shown in Table 1, model 6. Consistent with the previous set of models, foreign occupation is found to increase the likelihood of being targeted by suicide attacks. In this model, we find that states involved in foreign occupations experience about 18.35 times more suicide attacks than those that are not. Separatist civil wars, that is, domestic occupations with hardening, exhibit similar effects. States experiencing separatist civil wars have more than 17.27 times more suicide attacks, on average. However, domestic occupations, proxied by the existence of separatist or autonomist groups, do not exhibit any statistically significant effect. This is what hardening theory would expect, since attacking soft targets using costly tactics is inefficient. Finally, consistent with hardening theory, interstate wars show no statistically significant effect on the likelihood of experiencing suicide attacks. Although nationalist fervor and incentives for suicide tactics may be strong in interstate wars, operatives generally lack the access to successfully execute suicide attacks.

These findings suggest that hardening is a causal mechanism for the effect of occupation on suicide attacks, but do not rule out a causal role for nationalistic resentment toward occupation. If Type I hardening alone were sufficient to drive suicide attacks, we would observe a significant relationship between nonnationalist civil wars and suicide attacks. The fact that we do not (only nationalist civil wars are significant) suggests that nationalism and Type I hardening may interact to cause suicide attacks. The finding of a different impact of the two types of civil war on the risk of suicide attacks, however, is not robust to the use of an alternative data set (see the following section).

So far, we have assumed that all foreign occupations involve greater hardening than domestic occupations. However, hardening may vary across occupations in such a way as to affect the probability of suicide attacks. Models 7 and 8 therefore employ an additional proxy for hardening, *Log Mech.* (Sechser and Saunders 2010). Occupations with greater degrees of military mechanization will tend to have more hardened targets and therefore should have higher probability of experiencing suicide attacks. This is indeed what we observe. When *Log Mech.* is interacted with *Occupier*, we find that foreign occupations undertaken by states with higher

mechanization are associated with more suicide attacks, confirming our expectation that those occupations are in fact the ones where this tactic is most viable.

Calculating the IRR of the interaction term of *Occupier* \times *Log Mech.* at different values of *Log Mech.* using the results estimated in model 8, we find that while occupying countries with the mean value of *Log Mech.* in the sample (-4.35) experience 3.18 (2.37, 3.99) times more suicide attacks than nonoccupiers, occupiers with the maximum value of *Log Mech.* in the sample (-1.60) experience 74.64 (73.16, 76.13) times more suicide attacks than nonoccupiers. Thus, the difference in the annual number of attacks occupiers experience relative to nonoccupiers increases with their level of mechanization.¹⁷

Figure 2 plots the IRR of *Occupation* \times *Log Mech.* at different values of *Log Mech.* Where the IRR can be distinguished from 1 (as indicated by the regions of the plots where the estimate's 95 percent confidence interval does not overlap with the horizontal line overlaid on the graph), it is statistically significant at the $p < .05$ level. When *Log Mech.* is above roughly -4.5 , the IRR becomes statistically significant and begins to increase exponentially. The superimposed kernel density plot of *Log Mech.* shows that the IRR is significant for over half of observed mechanization values.

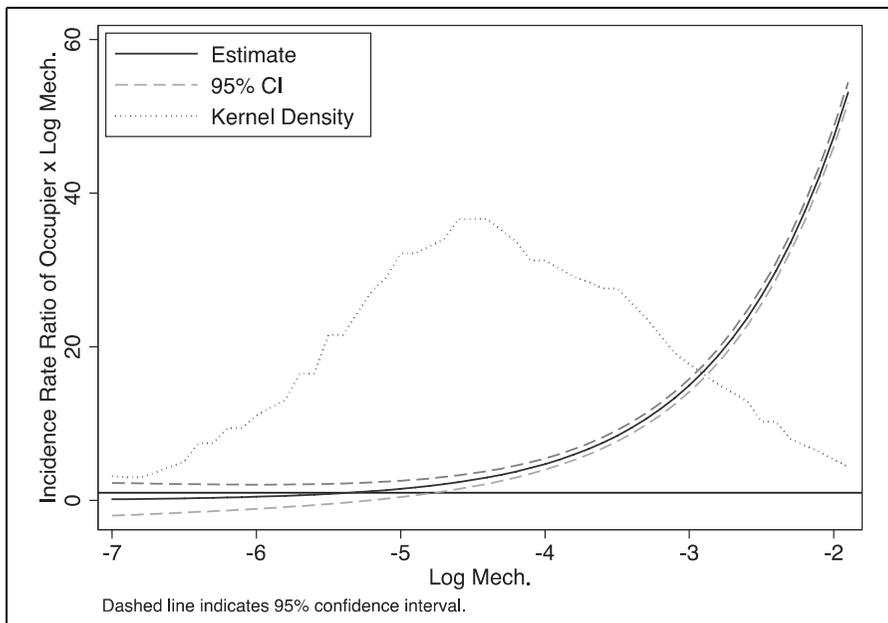


Figure 2. Interaction effect of *Log Mech.* and *Occupier* calculated using the results from table 1, model 8. The graph shows the IRR of the interaction term at different values of *Log Mech.* The thick dashed lines indicate the 95 percent confidence interval of the estimate and the thin dashed lines the kernel density estimate of *Log Mech.*

Counterpoints

The last section showed the effect of hardening and foreign occupation on suicide attacks. This section outlines and addresses some potential counterpoints to the findings.

Outliers, Alternative Coding, and Serial Correlation

A first counterpoint is that the findings may be sensitive to outliers and alternative coding. First, since the period after 2001 accounts for a disproportionate number of suicide attacks, this period could be driving the results. Table 5 in the Supplementary Appendix replicates models 1 through 6 from Tables, dropping the post-2001 period.¹⁸ Dropping this period does not significantly affect the main results.

The findings could also be sensitive to the definition and coding of suicide attacks. We therefore replicate models 2 through 6 and 8 from Table using data from the GTD; National Consortium for the Study of Terrorism and Responses to Terrorism Global Terrorism Database ([START] 2011) and Pedahzur's (2006) coding of suicide attacks. The results are displayed in the Supplementary Appendix as Tables 6 and 7. The main results appear to be robust.

Finally, the correlation of suicide attacks over time may not be properly modeled by the use of the two cumulative attacks variables. Thus, we employ an alternative measure, *Attack, Prev. Year*, to control for suicide attacks clustering in particular countries. This dummy variable takes on the value of 1 if a country experienced a suicide attack in the prior year and 0 otherwise. Models 2 through 6 and 8 from Table are replicated in this fashion. Our results (shown in Table 8 in the Supplementary Appendix) remain broadly consistent.

Endogeneity

A second counterpoint is that the effect of hardening on suicide attacks is endogenous. It is possible that states will harden targets in response to suicide attacks. Therefore, rather than creating the strategic environment conducive to suicide attacks, hardening is a product of suicide attacks. A similar, but distinct, counterpoint is that the effect of hardening on suicide attacks is spurious. Because hardening is usually a product of preexisting violence, perhaps some unmeasured characteristics of societies lead to violence, hardening, and suicide attacks. For instance, a radical group that is more willing to risk the lives of its members in launching rebellion may plausibly be more likely to invite them to take their lives in suicide attacks. Thus, preexisting radicalism explains the escalation to civil war and civil war leads to the hardening of forces and radicalism also explains the use of suicide attacks. In this sense, hardening is a by-product of escalation, not a causal factor in its own right.

Concerns regarding endogeneity and spuriousness can be partly addressed by distinguishing domestic occupations and civil wars from foreign occupations. Because

they involve military units, foreign occupations always entail some degree of hardening. Therefore, hardening is not an endogenous response to violence. Spuriousness may be present in domestic occupations and civil wars because the factors leading to escalation may be the same factors causing suicide attacks. The same cannot be said for foreign occupations. Foreign occupations are more likely to be exogenous, which means that the process determining foreign occupation and suicide attacks are not the same.

An additional endogeneity concern may arise regarding the definition of civil war. We use the UCDP/PRIO Armed Conflict Data set to identify separatist and non-separatist civil wars. This data set has a threshold of twenty-five battle deaths for the identification of civil wars. With such a low threshold, reverse causation is possible: suicide attacks could lead to a state-year being coded as a civil war rather than hardening in civil wars leading to the use of suicide attacks, as hypothesized. In order to address this concerns, we examine battle deaths in the forty-three state-years where a state was coded as experiencing both civil war and suicide attacks. We find no case where the state-year was coded as a civil war solely due to casualties caused by suicide attack.

Spurious Effect of Occupation

A third counterpoint is that the statistical relationship between occupation and suicide attacks is spurious because both are related to rebellion. In other words, occupation is associated with violent rebellion, of which suicide attacks are one possible tactic. Therefore, it would be rebellion—not occupation—that causes suicide attacks. As an analogy, saying that occupation causes suicide attacks is like saying that interstate territorial disputes cause the use of tanks, when in reality interstate territorial disputes are associated with land warfare and it is land warfare that can take the form of (and thus, in a sense, cause) tank warfare.¹⁹

To address such potential spuriousness, we show that foreign occupation is statistically associated with suicide attacks but not with rebellion, thus severing the purported link between foreign occupation and rebellion. We do this in two ways: first, in Table 2, we estimate the effect of foreign occupation on three different measure of violence, using logit models. The dependent variables are dummy indicators of whether or not suicide attacks, civil war, or conventional terrorism occur in a given country-year.²⁰ We employ the same controls as in the main analysis, save for the cumulative global and local terrorist attacks variables, with robust standard errors clustered at the country level.²¹

In the first model, we find that *Occupier* has a statistically significant and positive impact on the likelihood of suicide attacks whereas *Separatist Group* does not. Consistent with prior results, the control variables are statistically significant and in the expected direction. In the second model, we employ *Civ. War* as a proxy for rebellion in a given state-year. Here, we find that *Occupier* has no statistically significant effect on the likelihood of rebellion, whereas control variables are statistically

Table 2. Addressing Spuriousness.

	Suicide	Civ. war	Terror dummy
Occupier	1.61* (0.63)	-0.23 (0.35)	0.30 (0.21)
Separatist Group	0.45 (0.60)	0.37 (0.40)	0.58*** (0.17)
Polity	0.09* (0.04)	0.00 (0.02)	0.04** (0.01)
Log Pop.	0.41 (0.25)	0.36** (0.11)	0.47*** (0.06)
Log GDP	0.64** (0.25)	-0.70*** (0.12)	0.24** (0.07)
Muslim	0.02** (0.01)	0.00 (0.00)	0.00 (0.00)
Constant	-14.84*** (3.57)	-0.16 (1.39)	-6.80*** (0.76)
Observations	3,920	3,920	3,920
Countries	154	154	154
Pseudo R2	0.25	0.12	0.14
Wald χ^2	51.07	45.78	160.99
Prob > χ^2	0.00	0.00	0.00

Note: GDP = gross domestic product. Logit regressions. Standard errors, clustered by country, reported in parentheses.

* $p < .05$. ** $p < .01$. *** $p < .001$.

significant and in the expected direction. Therefore, we find that there is no systematic relation between occupation and rebellion. *Separatist Group* is also not significant. In the final model, the dependent variable, *Terror Dummy*, takes on a value of one when any form of terrorist attack occurs in a country-year as identified by the GTD (START 2011).²² Here, we find no statistical relation between *Occupier* and terrorism, while domestic occupations are found to increase the likelihood of terrorism, consistent with hardening theory.

Second, we construct four alternative dependent variables using the GTD data set: *Nonsuicide*, a count of the number of nonsuicide terrorist attacks as defined by the GTD that occur for every country-year; *Suicide*, a count of the number of suicide terrorist attacks as defined by the GTD that occur in every country-year; *All*, a count of every terrorist attack that occurs in a country-year; and *Ratio*, constructed as *Suicide* divided by *All*.

As a first form of analysis, we run three negative binomial regressions as before. Results are shown in the first three columns of Table 3. As dependent variables, we first use *Suicide*, then *Nonsuicide*, and finally *All*. The results when using only nonsuicide attacks and all terrorist attacks are very similar, which is not surprising given that the vast majority of terrorist attacks are non-suicidal.²³ *Occupier* is statistically significant and positive in the first model but insignificant in the second and third. This finding supports our claim that foreign occupations cause suicide terrorism specifically but not terrorism generally and is in accordance with the findings in the prior logit models. The proxy for domestic occupation is borderline significant, but its effect is substantially smaller than the effect of foreign occupation. Contrary to the findings reported

Table 3. Alternate Dependent Variables.

	Suicide	Nonsuicide	All	Ratio	Ratio	Ratio
Occupier	1.34*** (0.37)	0.26 (0.33)	0.26 (0.33)	0.16 ^{***} (0.06)	0.12* (0.05)	0.55** (0.20)
Separatist Group	0.83* (0.34)	0.74* (0.31)	0.74* (0.31)	0.09 (0.05)	0.10* (0.05)	0.08 (0.05)
Separatist Civil War	2.15*** (0.55)	1.12*** (0.26)	1.12*** (0.26)	0.30*** (0.07)		
No Separatist Civil War	2.32*** (0.50)	2.89*** (0.29)	2.89*** (0.29)	0.26** (0.08)		
Interstate War	-0.46 (0.38)	-0.04 (0.20)	-0.05 (0.20)	-0.04 (0.07)		
Log Mech.					0.02 (0.03)	-0.02 (0.03)
Log Mech. × Occupier						0.11* (0.05)
Polity	0.06* (0.03)	0.03 (0.02)	0.03 (0.02)	0.01 (0.00)	0.01 (0.00)	0.01 (0.00)
Log Pop.	0.41* (0.16)	0.61*** (0.10)	0.61*** (0.10)	0.07* (0.03)	0.04 (0.03)	0.05* (0.02)
Log GDP	1.04*** (0.15)	0.32*** (0.10)	0.33*** (0.10)	0.14*** (0.03)	0.05* (0.03)	0.05* (0.02)
Muslim	0.02*** (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.00*** (0.00)	0.00* (0.00)	0.00** (0.00)
Cum. Attacks Global	0.00*** (0.00)	-0.00*** (0.00)	-0.00*** (0.00)	0.00*** (0.00)	0.00 (0.00)	0.00* (0.00)
Cum. Attacks Local	0.12*** (0.03)	0.05* (0.02)	0.05* (0.02)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)
Constant	-19.19*** (2.13)	-6.93*** (1.11)	-6.96*** (1.10)	-2.93*** (0.64)	-1.64*** (0.63)	-1.85** (0.62)
Observations	3,920	3,920	3,920	3,920	2,796	2,796
Countries	154	154	154	154	145	145
Prob > χ^2/F	0.00	0.00	0.00	0.00	0.00	0.00
Pseudo R ²	—	—	—	0.42	0.43	0.45

Note: GDP = gross domestic product. Models 1 through 3 report negative binomial regressions using the number of suicide attacks, nonsuicide attacks, or suicide and nonsuicide attacks combined as dependent variable. Models 4 through 6 report tobit regression estimates addressing the left-censored nature of the data. The dependent variable is the ratio of suicide to all terrorist attacks. Standard errors, reported in parentheses, are clustered by country.
 *p < .05. **p < .01. ***p < .001.

in table above, both nationalist and nonnationalist civil wars have a positive impact on the number of suicide attacks.²⁴

Next, we analyze the ratio of suicide attacks to total terrorist attacks. As most country-years do not witness any form of terrorist attacks, the ratio has a value of 0 for the vast majority of observations. In order to address the heavily left-censored nature of this variable, we perform a series of tobit analyses in the three rightmost columns of table. In the first model, we again attempt to assess the impact of environments we argue represent different degrees of hardening. As our theory predicts, foreign occupation has a positive and significant impact on the ratio of suicide terrorism to total terrorism. As in the model with the count of suicide attacks as dependent variable, *Separatist Civil War* and *No Separatist Civil War* are both positive and significant. In the next model, we consider the impact of military mechanization by including the *Log Mech.* variable. As we found previously, this variable on its own is statistically insignificant. In the final model, we include the interaction between *Log Mech.* and *Occupier* and again find that the impact of occupation is increasing in the degree of mechanization when using the ratio dependent variable.²⁵

Target Substitution

A fourth counterpoint is that the impact of hardening is theoretically indeterminate: it does not necessarily lead to suicide attacks. Faced with increasingly hardened targets, insurgents can choose to change tactics or change targets. Thus, instead of changing tactics, insurgent groups can engage in target substitution using the same tactics against softer targets. So does this mean that hardening does not cause suicide attacks? Not necessarily. First, the logic of substitution assumes that the targets do not have inherent value and insurgents are therefore not discriminate in their targeting. This assumption will not hold when insurgents seek to erode the coercive capacity of enemy forces rather than indiscriminately inflict pain. Second, while substitution may be a response to hardening, the logic of escalation of tactics and the logic of substitution of targets are not mutually exclusive. Insurgents may select different tactics, different targets, or both, when faced with hardening. Third, even if some insurgents choose target substitution, the likelihood of suicide attacks may still be greater when faced with hardening than otherwise.

Indeed, the record of terrorist attacks at a global level and in the context of the Afghanistan and Iraq wars suggest that even though terrorists pursue different targets, suicide attacks are more common against military targets than other less hardened targets. According to the GTD data set, approximately 687 of 1,616 suicide attacks, some 43 percent, are directed against “hard” targets understood as military, police, and diplomatic targets as compared with 27 percent of attacks against “soft” targets.²⁶ The GTD data set also allows us to explore the dynamics of target selection in the Afghanistan (2001–2008) and Iraq (2003–2008) conflicts involving extensive use of both suicide and nonsuicide attacks. Further, as both of these are cases of occupations, the complete set of countries in the GTD data set is also employed

Table 4. Explaining Suicide Attacks in the GTD Data Set.

	Afghanistan	Iraq	Iraq	Both	All
Military target	1.55*** (0.21)	0.85*** (0.14)		1.08*** (0.11)	0.98*** (0.07)
Police target	0.60*** (0.18)	0.75*** (0.10)		0.70*** (0.09)	0.64*** (0.07)
Military or police target			0.78*** (0.09)		
Government target	0.60*** (0.17)	0.24 (0.13)	0.24 (0.13)	0.041*** (0.10)	0.28*** (0.07)
Constant	-2.64*** (0.17)	-3.36*** (0.15)	-3.37*** (0.15)	-3.08*** (0.11)	-3.51** (0.08)
Observations	2,449	6,326	6,326	8,791	83,032
Pseudo R ²	0.07	0.09	0.09	0.07	0.21
Wald χ^2	122.53	412.43	411.96	437.45	3,688.52
Prob > χ^2	0.00	0.00	0.00	0.00	0.00

Note: GTD = Global Terrorism Database. Logit models. Dependent variable is dummy indicating whether a terrorist attack involved suicide tactics. Standard errors in parenthesis. Year dummies included in all models but coefficients are suppressed.

* $p < .05$. ** $p < .01$. *** $p < .001$.

in order to see whether these dynamics are generalizable. The logit models in table 4 thus examine every terrorist attack (suicide or not) listed in the GTD for Afghanistan and Iraq independently, for the two countries pooled, and for all countries in the data set. The dependent variable is the dummy variable *Suicide* indicating whether a terrorist attack involves suicide tactics. The independent variables *Military Target*, *Police Target*, and *Government Target* denote the degree of target hardening, based on coding provided by GTD. These variables represent movements away from the baseline case, *Civilian Target*, and the combination of all four dummies composes the universe of cases. Year dummies are included in all models to control for temporal conflict dynamics within each country that may impact the likelihood of the use of suicide attacks. Generally speaking, we should expect military targets to be better hardened than police targets, and military and police targets to be better hardened than generic government targets, and all of these targets to be more hardened than civilian ones. Hardening theory would therefore predict a higher probability of suicide attack against military targets than police targets, followed by government targets and other civilian targets.²⁷

The results support hardening theory. Looking both at Afghanistan and Iraq, we find that military targets are indeed more likely to be the victim of suicide attacks than police and government targets, although the difference between military and police targets in Iraq is statistically indistinguishable.²⁸ Thus, results were also estimated using a single dummy variable for both military and police targets in the Iraq case. To examine the impact of the presence of different target types, marginal effects were calculated for the various types of targets in Afghanistan and Iraq exclusively and then for a pooled model, holding all other variables at zero. For the case of Afghanistan, the presence of a military target as opposed to a civilian target increases the likelihood that a terrorist attack will involve suicide tactics by 18 percent. The presence of police targets rather than civilian ones increases the likelihood by 4.8 percent. In the case of Iraq, the presence of either a military or police target

increases the likelihood of the use of suicide tactics by 3.7 percent, while for government targets the figure is 0.8 percent (this value is only statistically significant at the 90 percent level). When both Iraq and Afghanistan are pooled, the results are in line with the hardening theory predictions: all three variables have a statistically significant, positive impact, and the magnitude of the impact increases from government to military targets.

In the final model, results are estimated using every country in the GTD data set and marginal effects calculated holding every other variable at zero. Again, the presence of military targets as opposed to civilian targets has the largest impact on the likelihood of the use of suicide tactics (4.4 percent), while the marginal effect for police targets is 2.5 percent and for government targets 0.1 percent. Thus, regardless of the occupation environment, or of the country in question, military targets, hypothesized as being the most hardened kind of target, are most likely to be associated with the use of suicide tactics.

Of course, due to the limitations of the GTD data set and the absence of a full battery of controls, these results should be considered suggestive at best. However, they provide added confidence that groups can select different tactics to destroy hardened targets rather than redirecting the same tactics against softer targets.

Nonmilitary Objectives

A fifth counterpoint is that hardening theory assumes that the main purpose of suicide attacks is military coercion. However, a number of studies suggest that coercion is only one of the several uses of suicide attacks and terrorism more broadly. For instance, Kydd and Walter (2006, 51) note that terrorism can be used for intimidation, provocation, spoiling, and outbidding. In fact, hardening theory does not imply a single strategic logic; suicide attacks against hardened targets could be used, for example, to spoil a peace process or to provoke government retaliation. In addition, in as much as some suicide attacks follow a strategic logic incompatible with hardening (e.g., intimidation of civilians), we should be less likely to find a relation between hardening and suicide attacks. The fact that we find a significant relation in the context of foreign occupation despite the presence of alternative motives for suicide attacks should provide us with increased confidence in the causal mechanism we identify.

Conclusion

This article has examined the effect of occupation on the probability of suicide attacks. The findings illustrate the effect of the strategic environment in the selection of tactics. In so doing, they provide important support but also caveats to Pape's claims. First, using an improved research design, we find that occupation is associated with a greater risk of suicide attacks, as predicted by Pape. Second, when we treat foreign and domestic occupations separately, we find that foreign occupations

are associated with a higher risk of suicide attacks, while there is no consistent evidence of association between domestic occupations and the occurrence of suicide attacks. Thus, we should be wary of the generalizations made by Pape. Third, we argue that the different effect of domestic and foreign occupations is due to hardening of targets. Paradoxically, certain kinds of hardening, combining high access and high protection, tend to increase the likelihood of suicide attacks. In addition to a consistent effect of foreign occupations on the risk of suicide attacks, we find that the more mechanized (a proxy for degree of hardening) the foreign occupier's forces, the higher the probability of the occupier being the target of suicide attacks. Finally, we find some evidence (albeit not robust) that among civil wars, which we consider as rough proxies for the presence of hardened targets, nationalist conflicts have a stronger impact on the risk of suicide attacks. This suggests that nationalism may be playing an important role in addition to the logic of hardening.

Overall, the findings suggest important caveats to the argument that occupations are drivers of suicide attacks. The finding that foreign and domestic occupations have different effects appears particularly robust when we consider that measures of domestic occupation may tend to underreport perceived occupation. The measure of domestic occupation—an active separatist or autonomist group—only identifies groups as occupied if they are politically active. However, as discussed previously, many other groups may perceive themselves as being occupied but perhaps too weak or too repressed to mobilize. Thus, there is potential selection bias. Those groups identified as domestically occupied would be a disproportionately active segment of the universe of potentially domestically occupied groups, leading us to overestimate the effect of domestic occupation. The fact that we do not find a consistent effect on the probability of suicide attacks among the more active subset of domestically occupied groups provides additional confidence in the results.

The findings have a number of policy implications. First, if policy makers are concerned about the effect of occupations on suicide attacks, they should focus their attention on foreign occupations rather than domestic ones. Second, the finding that certain types of hardening increase the risk of suicide attacks is significant and counterintuitive. It means that some force protection and homeland security measures, such as up-armoring troops and hardening critical buildings, may actually increase incentives to employ suicide attacks as opposed to other asymmetric tactics. While problematic for other reasons, such as demographic separation, may provide the protection and restricted access necessary to deter suicide attacks.

Third, it is important to keep a sense of perspective. The baseline probability of any state experiencing a suicide attack in a given year is low. Suicide attacks occurred in only 3.6 percent of country-years. Therefore, although the magnitude of the effect of foreign occupations and civil wars may be great, the actual change in the number of attacks is still generally small. All foreign and defense policies have potential negative side effects and trade-offs which states need to consider. While states undoubtedly want to reduce their exposure to attacks, they also need

to take into account the magnitude of these side effects in crafting effective policies.

Acknowledgments

We wish to thank Page Fortna, Jack Snyder, Austin Long, Yotam Margalit, Jordan Kyle, Zuri Linetsky, Jon Blake, the participants of the Columbia University International Politics Seminar, and the two anonymous reviewers for their useful feedback.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This research was funded in part by the Social Sciences and Humanities Research Council of Canada (SSHRC), the Trudeau Foundation, and the Brookings Institution.

Notes

1. See Pedahzur (2006) and Crenshaw (2007) for an overview of the literature.
2. In this section, we focus on the literature dealing directly with Pape's main claim that suicide attacks are used against democratic occupiers. Several other studies have tackled other parts of Pape's logic. For example, Abrahms (2006, 2012) challenges Pape's premise that suicide attacks' tactical destructiveness makes them relatively effective coercive tools; he points out that, when the victims are civilians, target audiences tend to infer from the immediate consequences of an attack that the perpetrators have maximalist goals and thus become unwilling to make concessions. In addition, Abrahms (2007) disputes Pape's claim that democracies are ideal targets for suicide attacks by providing evidence that democracies are better at counterterrorism than other regime types. Stephan and Chenoweth (2008) indirectly challenges Pape's contention that armed groups rationally select suicide attacks as the best available strategy for the achievement of their goals by showing that nonviolent resistance succeeds significantly more often.
3. Some criticism of Pape may be unfair since it demands him to prove a deterministic rather than probabilistic, causal effect.
4. See Figure 1 in the Supplementary Appendix.
5. For a rebuttal, see Pape (2008).
6. Exceptions may include Japan in World War II and Iran in the Gulf War.
7. The theory presented here improves on preexisting hardening theory (for instance, Bertran and Laitin 2008) by recognizing that hardening has two dimensions—protection and access—that lead to opposite predictions regarding the likelihood of suicide attacks. Increased hardening can lead to *more* suicide attacks when it involves higher access and *fewer* suicide attacks when it involves lower access.

8. Our definition and list of foreign occupation differ from other studies. Pape identified four foreign occupations by democracies since 1980: Lebanon versus United States, France, and Israel (1982 to 1986), Palestinians versus Israel (1968 to present), Afghanistan versus United States (2001 to present), and Iraq versus United States (2003 to present). Piazza does not explicitly define occupation but states that it must involve 10,000 troops or more (Piazza 2008, 33). This arbitrary threshold is potentially misleading. Consider, for example, the war in Afghanistan, where the United States did not deploy more than 6,000 troops during the first year of the campaign. Moreover, the number of troops in a country should in theory be proportional to the geographic or demographic size of the country.
9. Two examples can make this distinction clearer. Contrast the peaceful domestic occupation of Quebec with the violent domestic occupation of Aceh. Quebec has a strong separatist/nationalist movement and there is no question that many Quebecers perceive the exertion of political control over territory by an outside group, as Pape defines occupation. Pape himself includes Quebec in his list of occupations (2005). Yet Quebec is not a hardened environment. With the exception of the October Crisis of 1970 (which is not in this study's time frame), there were never troops or armored vehicles patrolling the streets. The strategic environment was much different in Aceh, Indonesia. Aceh has a distinct religious and cultural identity from the rest of Indonesia and sought independence under the Free Aceh Movement (known by its Indonesian acronym GAM). In response to mounting violence by GAM, Indonesia imposed martial law in 1989 and declared Aceh an area of special military operation. Indonesia flooded the province with troops to conduct counterinsurgency operations (Davies 2006). Thus, both Quebec and Aceh are cases where there was strong nationalist sentiment, reflected in the existence of active separatist groups. Yet, only Aceh had a military presence that created hardened targets.
10. We recode the nonnationalist civil war cases of Afghanistan and Lebanon as nationalist cases since the targets of attacks were foreign occupiers.
11. Sechser and Saunders (2010) construct the index only for odd years as mechanization rates change slowly. In order to exploit the data to its fullest, we infill this series such that even years between 1980 and 2002 hold the values reported for the prior country-year.
12. Summary statistics are displayed as Table 3 in the Supplementary Appendix.
13. Values reported in parentheses represent the 95 percent confidence interval.
14. These values were calculated following Hilbe (2011).
15. These findings present both similarities and differences with studies by Piazza (2008) and Wade and Reiter (2007). Consistent with Piazza, we find a significant effect for foreign occupation, even if our studies use very different definitions and lists of cases of occupation. Piazza does not find a regime type effect, while some of our models do, but this effect is not robust. The main difference is that we find an interaction effect between regime type and occupation, while Piazza does not. The different finding is likely the result of our adoption of different research designs to answer different questions. We use country-years as unit of analysis to examine why suicide attacks affect some country-years but not others. Piazza uses terrorist attacks as the unit of analysis to identify when a terrorist attack will take the form of suicide terrorism. Like Pape, we are interested in

explaining the occurrence of suicide attacks, regardless of whether they amount to terrorist acts, and thus Piazza's research design would not be useful for our analysis. Wade and Reiter adopt a country-year research design similar to ours. Our results are broadly consistent. Wade and Reiter do not find a significant regime type effect while we find significant results in some specifications only. We both find a significant interaction effect between regime type and a proxy for occupation (even if this result is only borderline significant for Wade and Reiter). Our respective findings about occupation are hardly comparable, however, given that Wade and Reiter use the number of religiously dissimilar minorities at risk as a proxy for occupation (See discussion in the Clarity and Replicability section).

16. This finding is consistent with other large-*n* studies of terrorism and suicide terrorism (Wade and Reiter 2007; Piazza 2008; Berman and Laitin 2008; Savun and Phillips 2009) and seems to be related to the fact that wealthier countries are better able to provide force protection (as shown later in the models in which we introduce a measure of the mechanization of a country's forces). According to the logic of hardening, more force protection/hardening would make suicide attacks a more cost-effective tactic and therefore would increase the likelihood of their occurrence.
17. One exception is Horowitz (2010).
18. The reported interaction effect is robust to the exclusion of the domestic occupation variable.
19. Models 7 and 8 are excluded from this exercise as the limitation of the *Log Mech.* variable to years prior to 2003 renders it redundant.
20. We thank an anonymous reviewer for this point.
21. The suicide, civil war, and terrorism dummies are drawn from the CPOST, COW, and the GTD data sets, respectively.
22. The results reported in Table 2 are substantively identical if the cumulative attacks variables are included. The results are available from the authors upon request.
23. Terrorism is defined by the GTD as "the threatened or actual use of illegal force and violence by a non state actor to attain a political, economic, religious, or social goal through fear, coercion, or intimidation." The data set includes attacks against both combatants and civilian targets.
24. *Nonsuicide* and *All* correlate at a value of 0.99 in the data.
25. The finding that civil wars are predictors not only of suicide terrorism but also of nonsuicide terrorist attacks does not amount to a contradiction of hardening theory for two reasons. First, the occurrence of civil wars captures incentives related to the presence of accessible hardened targets, but also represents a proxy for a broad set of incentives and motives to commit terrorist violence (see, e.g., Kalyvas 2006). Second, the broad definition of terrorism adopted by GTD (see note 23) raises concerns about causal distance between the dependent variable (count of nonsuicide terrorist attacks) and the independent variables (civil war dummies): the database includes episodes that are essentially hit-and-run attacks, which are almost by definition characteristics of civil wars.
26. Similar results are found below when using the GTD's count of suicide attacks discussed in earlier section "Spurious Effect of Occupation."

27. Here we use the GTD data set instead of the CPOST data set because the GTD data set restricts itself to what it considers terrorist attacks, whereas the CPOST data set includes all suicide attacks, whether they are narrowly defined as terrorist or not. Comparing records of suicide attacks from CPOST with nonsuicide attacks from GTD would be problematic since attacks, suicide or not, against military targets would be less likely to be coded as terrorism in the GTD, therefore biasing the comparison toward hardening theory. Restricting our comparison to the GTD data set helps control for this bias.
28. Summary statistics are shown as Table 4 in the Supplementary Appendix.
29. A Wald test with the null hypothesis that the two coefficients are equal to each other cannot be rejected.

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