Border Control and Insurgent Tactics*

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Abstract

Where cross-border sanctuary enables rebels to marshal external support, classical theories of counterinsurgency extol the strategic value of border control. By sealing borders, counterinsurgents can erode transnational rebels' resources, degrading the quality of rebellion. Building on theories linking resources and technologies of rebellion, I posit a fortification dilemma inherent in border control strategies. Well-resourced rebels with external support can afford conventional attacks and indiscriminate violence. When counterinsurgent border control efforts interdict foreign logistics, insurgents compensate by cultivating greater local support. In turn, rebels prefer more irregular attacks and reduced civilian victimization. These effects are mitigated when rebels enjoy active sponsorship from state patrons and where rebels can access alternate smuggling routes, both of which subvert counterinsurgents' border interdiction efficacy. Because counterinsurgent border control efforts trade-off reduced insurgent capabilities for greater competition over local hearts-and-minds, border control is best used in tandem with population-centric counterinsurgency. I illustrate this theory with archival evidence from the Algerian War of Independence, and test it using declassified microdata on border fortification and violence in a difference-in-differences setting in Iraq.

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Introduction

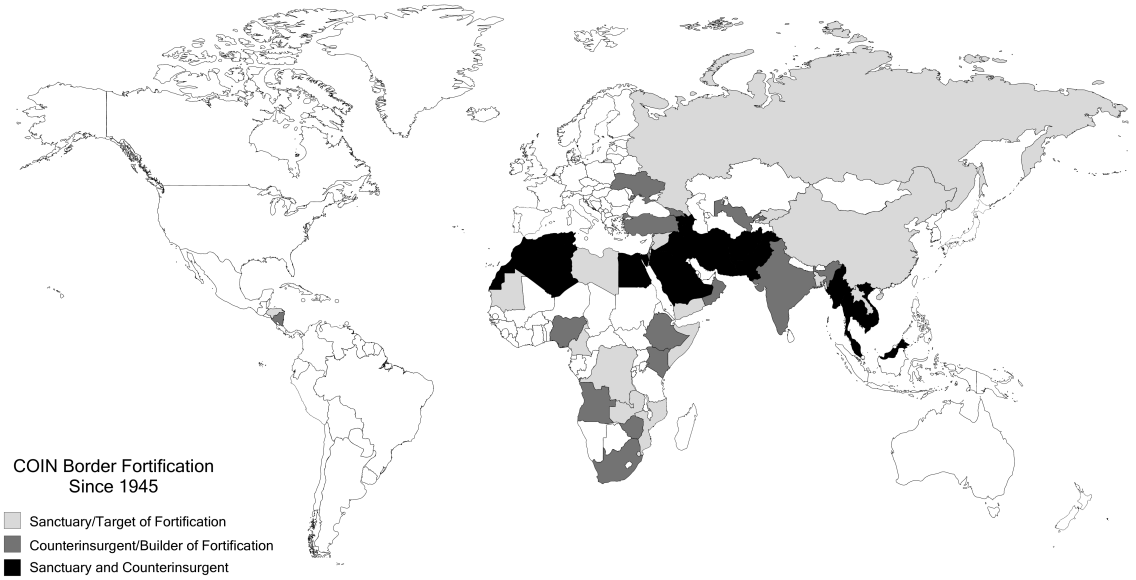
In June 2018, just six months after declaring Iraq 'liberated' from the Islamic State (ISIS), Iraqi security forces confirmed that they were working to fortify the border with Syria, installing fences, trenches, and surveillance cameras to inhibit cross-border infiltration (Sulaivany 2018). In particular, Iraqi forces intended to deny ISIS militants in Iraq the ability to shelter and resupply from the group's bases in Syria, and thereby to resurge. Similar efforts aimed at interdicting cross-border rebel sanctuaries and logistical networks are under way in Myanmar (Marshall 2014), Jordan (Opall-Rome 2016), Ukraine (Sharkov 2016), and Kenya (Odhiambo 2019), among others. Nor are counterinsurgent border control strategies exclusive to the post-2001 period, or limited to the Middle East.[1] As reflected in Figure 1, at least 31 countries have used border fortifications to interdict transnational rebel sanctuaries since 1945, and this variation cannot be explained merely by regional clustering.

The rationale behind these efforts is simple: insurgents need resources to survive and fight, and often secure them from sanctuaries and supporters in neighboring countries. By fortifying borders, counterinsurgents can deny militants the ability to move fighters and matériel from external sanctuaries—or at least raise the costs of doing so—thereby degrading rebels' capabilities and heightening the prospects of rebel defeat. This logic manifests in classical theories of counterinsurgency (COIN) (Galula 2006; Leites and Wolf 1970; Sepp 2005), and military doctrine (United States Army and Marine Corps 2006).

In this paper I study counterinsurgent border control, defined as a strategy wherein government forces deploy human-made barriers and surveillance devices for the explicit purpose of detecting and interdicting transnational rebel activities. Specifically, I focus on how border control efforts affect insurgent tactics. Though practitioners' accounts (Galula 2006) and extant scholarship (Staniland 2005; Connable and Libicki 2010: 183-84) recognize the imperative of border control when rebels command external support, the empirical record is mixed. Some studies are sanguine about the contributions of border control to counterinsurgent success (Staniland 2005; Avdan and Gelpi 2017). However, other work suggests that border fortification

[1] Table A.1 lists counterinsurgent border fortifications since 1945. At least 22 countries in 3 continents employed counterinsurgent border control between 1945 and 2000.

Figure 1: Border Control is a Common Counterinsurgent Strategy



Note: Light gray countries are targets of counterinsurgent border control, meaning at least one neighboring state has sought to fortify its border with the target to impede rebel access to the target's territory. Dark gray countries are builders of counterinsurgent border fortifications, meaning these countries have sought to control their border with at least one neighboring state in the course of their operations against rebels. Black countries are both targets and builders of counterinsurgent border fortifications. Not reflected in the map are builders whose border control efforts took place in conflicts outside their metropolitan territories, including the US, UK, France, Portugal, and the Soviet Union. Table A.1 lists all corresponding builder-target pairs since 1945.

is largely performative (Andreas 2000; Gavrilis 2008; Vallet 2016), and that its security impacts are small (Donaldson 2005; Sterling 2009) or conditional (Linebarger and Braithwaite 2020).

Mixed evidence in the empirical record warrants closer attention in order to unpack how, when, and why different mechanisms apply, and gain a fuller picture of the role of border control in counterinsurgency. Above all, extant research, which relies on cross-national data and case studies, confronts key inferential limitations given the strategic imperatives that drive state decision-making about border security. To I address these limitations, I leverage granular, subnational microdata on border fortification and violence in a difference-in-differences setting. As such, this paper offers the first plausibly causal estimates of the effect of border control on insurgent violence. This micro-empirical approach also offers an important theoretical advantage: whereas past work focuses on how border control affects the *quantity* of militant violence (e.g. Avdan and Gelpi 2017), I explore how efforts to interdict transnational insurgent networks also affect the *quality* of rebellion, including the tactical portfolios insurgents employ and the character of their interactions with civilians.

Extending theories linking rebels' resource endowments and their production of violence (Bueno de Mesquita 2013; Wright 2020), I argue that counterinsurgent border control efforts generate discrete trade-offs for combatants. By raising the price of foreign support, border control reduces transnational rebels' resources.[2] Well-supplied rebels prefer resource-intensive conventional operations, but as border control interdicts transnational logistics, rebels substitute conventional attacks for less costly (and risky) irregular operations. To compensate for resource losses owing to counterinsurgent border control, rebels in turn seek to cultivate greater support from civilians in the counterinsurgent state. These efforts manifest in the form of increased service provision and reduced civilian victimization. This is the fortification dilemma: by reducing rebels' access to foreign resources, counterinsurgent border control efforts trade-off reduced rebel capacity for greater competition between rebels and counterinsurgents over local civilian loyalties. Unless counterinsurgents pair border control with population-centric programs geared at winning "hearts-and-minds," rebels whose military capabilities are reduced by interdiction of external resources may succeed in winning local civilian support, and ultimately, surviving despite reduced capacity.

I develop this theory using qualitative, archival evidence on French border control efforts during the Algerian War of Independence. The Algerian Front de Libération Nationale (FLN) relied on extensive sanctuaries in Tunisia and Morocco to shelter, recruit, and arm. To deny FLN access to these transnational bases, French forces constructed an unprecedented barrier system consisting of electrified fences, minefields, and mobile response units (Horne 2006). Border interdiction imposed severe resource constraints on FLN fighters in the Algerian interior. Isolated from external support, these fighters substituted conventional clashes with French forces for irregular tactics, like sabotage, ambushes, and hit-and-run attacks. The FLN also moved to improve relations with Algerian civilians in the face of border control. Fighters carried out discriminate terrorism aimed at Europeans, while increasing service provision in rural Algerian villages. French population-centric operations reduced the efficacy of FLN efforts to cultivate local civilian support.

[2]Counterinsurgents need not block all foreign support to rebels so long as border control raises the costs to rebels of accessing transnational resources, for example by pushing militants to take more risky cross-border routes or raising the fees charged by smugglers.

To test the theory I combine declassified microdata on insurgent violence (Condra and Shapiro 2012), reconstruction spending (Berman, Shapiro, and Felter 2011), and US-led border fortification efforts in Iraq between 2003 and 2009 in a difference-in-differences setting. For identification, I leverage spatial and temporal variation in the roll-out of border fortification. Plausibly exogenous bureaucratic delays and idiosyncratic reallocation of funds driven by high-level reprogramming in reconstruction financing mean the resources devoted to border control efforts were locally random at the monthly level during Operation Iraqi Freedom.[3]

I find that border fortification caused insurgents to substitute high-risk, direct fire (conventional) attacks on Coalition and Iraqi forces for low-risk indirect fire (irregular) attacks. In addition, border fortification induced insurgents to reduce civilian victimization and become more selective in their attacks against non-combatants. These effects are heightened in homogeneous (versus mixed) sectarian districts, where insurgent efforts to cultivate civilian support were more credible, and hence where insurgents had the best prospects for cultivating improved civilian relations. Using newly-released data on insurgent ratlines, I show that these effects are also attenuated where insurgents can access hard-to-interdict, alternate smuggling routes.

Using granular data on US reconstruction spending, I find that border fortification is most effective when paired with population-centric counterinsurgency efforts. Population-centric COIN initiatives like government service provision undercut insurgents' border interdiction-induced efforts to cultivate local ties. When this occurs, competition between the government and insurgents over hearts-and-minds can induce insurgents to engage in counterproductive civilian victimization.

The question of how counterinsurgent border control impacts technologies of rebellion holds important theoretical and strategic implications, but has received little attention to date. As Leites and Wolf (1970: 76) noted five decades ago, "The problem of devising efficient barrier systems... warrants more attention than it has received in the abundant literature on insurgency." However, with few exceptions (e.g. Staniland 2005), this remains the case today. This prevailing neglect of COIN border control, and particularly its influence on insurgent tactics, owes to three factors: (1) a tendency to treat rebel access to external resources as static; (2) a tendency to

[3] I describe how and why bureaucratic hurdles divorced border control funding from local conditions in greater detail below.

study different tactics in isolation; and (3) practical limitations on the availability of data on border control efforts, particularly in conflict zones.

First, although classical theories of counterinsurgency recognize the imperative of sanctuary denial, prominent theoretical (Leites and Wolf 1970) and empirical (Weinstein 2007) models treat external support as an exogenous source of rebel capabilities.[4] This static view militates against studying whether and how counterinsurgents can influence rebels' access to transnational resources. Data limitations have compounded this issue. Because of their violent, clandestine nature, it is difficult to systematically track variation in access to external resources over time *within* rebel movements. As such, existing data code variation in external support *across* but not within insurgencies (Cunningham, Gleditsch, and Salehyan 2013), or rely on slow-moving, highly-aggregated measures (Högbladh, Pettersson, and Themnér 2011).

Given these constraints, scholarship focuses on durable, but largely time-invariant causes of external support, like interstate rivalry and ethnic geography (Salehyan, Gleditsch, and Cunningham 2011; Lee 2020), or border artificiality under border fixity norms (Atzili 2011). This fact limits the feasibility of inference about how shifts in rebel access to external support affect the production of violence. Promisingly, some recent work recognizes that rebel access to foreign sanctuaries may shift over time. However, these studies examine sponsor-side factors influencing the termination of external support to militants (Karlén 2019), or focus on how *gaining access* to external havens affects rebel violence (Martínez 2017; Stewart and Liou 2017). These perspectives neglect the role of counterinsurgent operations in directly degrading rebels' transnational resources.[5] As this paper makes clear, it is at least as common that rebels *lose access* to foreign support, owing directly to counterinsurgent border control.

Second, scholars have generally privileged studying civil conflict onset, duration, and termination, with less attention paid to how conflict is waged. When past scholarship has studied rebel tactics, the tendency has been to model terrorism, guerrilla, and conventional violence separately (Blattman and Miguel 2010; Carter 2015b). Canonical work by Kalyvas and Balcells (2010) and Bueno de Mesquita (2013) show how and why tactics vary *across* insurgencies, em-

[4] But see Hazen (2013).

[5] Zhukov (2017) studies the interdiction of external support, but focuses on how external resource losses affect government rather than rebel violence.

phasizing the interaction of rebel and state capacity, and economic conditions. But as recent studies show, tactics also vary *within* militant organizations over time (Horowitz, Perkoski, and Potter 2018; Wright 2020). Studying tactical diversity in militant violence is critical for developing generalized theories of political violence (Sambanis 2004).

Third, assessing the effect of counterinsurgent border control on insurgent tactics requires granular data on efforts to fortify borders in remote areas of conflict-afflicted countries. In counterinsurgent contexts, details of military operations and security infrastructure are held close. Sanctuary denial is sensitive, and information is paramount to (counter-)insurgent success (Berman, Felter, and Shapiro 2018), as intelligence gives military advantages (Sonin and Wright 2019). Even in non-conflict settings, governments privilege secrecy surrounding border control infrastructure (Laughlin 2019), not least because of the politically sensitive nature of border barriers. These factors have inhibited careful quantitative analyses because granular data on counterinsurgent efforts to control borders have been systematically unavailable.

This paper uses data on 349 border security projects including 297 border forts gleaned from declassified, project-level records of 73,600 reconstruction projects conducted during Operation Iraqi Freedom.[6] These data comprise the Iraq Reconstruction Management System (IRMS) maintained by the U.S. Army Corps of Engineers' Gulf Region Division, and were declassified and released to researchers at the Empirical Studies of Conflict (ESOC) project (Berman, Shapiro, and Felter 2011). Because the data track the universe of U.S. reconstruction spending in Iraq, they offer a novel and principled way to study the evolution of counterinsurgent border control efforts during Operation Iraqi Freedom.[7]

In sum, this paper makes several important contributions. By analyzing how counterinsurgents attempt to degrade transnational rebellion, namely through border control, this paper problematizes an assumption in much existing work about the fixed character of rebel access to external resources. Studying counterinsurgents' efforts to eliminate or deny cross-border

[6] Apart from border forts, other border control efforts include projects to restore and improve cargo monitoring equipment at ports of entry, to build training academies for Iraqi Directorate of Border Enforcement (DBE) personnel, and to construct roads and wells for use by deployed DBE forces.

[7] More specifically, IRMS describe the universe of U.S. reconstruction spending in Iraq but for $8 billion disbursed in 2003. None of this unmeasured funding was allocated to border control operations, however. The first border control projects were funded under the supplemental Iraq Relief and Reconstruction Fund (IRRF 2). IRRF 2 funds were appropriated in November 2003, but not released until January 2004 (SIGIR 2009: 126), at which point they were recorded in IRMS.

logistics highlights the under-appreciated fact that the transnational nature of rebellion is often the subject of contestation in and of itself. In addition, while existing work focuses on the pathologies of transnational insurgency, including heightened risks of interstate conflict (Salehyan 2009), this paper addresses antecedent questions about how targets of violence can counter transnational insurgencies. Studying how states fight transnational rebels lends nuance to theoretical models showing why it is difficult to deter external support in civil conflicts (Schultz 2010; Carter 2015a), and how transnational rebellion affects bargaining (Salehyan 2009).

More generally, by shifting attention to insurgent tactics, this paper extends existing theories linking armed groups' resources and their production of violence (Weinstein 2007; Bueno de Mesquita 2013; Wright 2020). Studying a common and important state policy, counterinsurgent border control, I highlight the effects of variation in insurgent access to transnational resources on battlefield violence. One notable result, that rebels reduce civilian victimization in the face of border control, suggests an important modification to extant theoretical accounts predicting a positive association between resource losses and violence against civilians (Hultman 2007; Wood 2014). The fact that interdiction of external havens can spur greater rebel forbearance in relations with civilians is more consistent with accounts that emphasize how combatants carefully anticipate civilian reactions and calibrate behavior accordingly (Zhukov 2017; Polo and González 2020). Broadly, this finding comports with theories emphasizing civilian agency in conflict (Kalyvas 2006; Berman, Shapiro, and Felter 2011) and reinforces the imperative of avoiding collateral damage (Condra and Shapiro 2012; Schutte 2017).

Finally, as borders harden around the world, a growing literature examines the political economy of border security. To date, however, most work has focused on the *macro-level* determinants of state's choices about how to secure their borders (Hassner and Wittenberg 2015; Carter and Poast 2017; Simmons and Kenwick 2019). This paper builds on a burgeoning research program on the *micro-level* consequences of border control (Getmansky, Grossman, and Wright 2019), and especially on the effects of border control on conflict (Laughlin 2019). The results temper Gavrilis's (2008) contention that militarized border control is counterproductive for security. Rather, the evidence here suggests counterinsurgent border control can effectively reduce rebel capabilities, at least when rebels' external support is tacit and foreign sponsors do

not directly subvert border control efforts.[8]

From a policy perspective, this study is important given the proliferation of counterinsurgent border control and the often exorbitant costs involved in fortifying remote and rugged borders in midst of rebellion.[9] In a context where basic internal security is threatened, the costs required to control international borders might be better spent on development and infrastructure-oriented reconstruction projects, governance and security sector reforms, condolence payments, kinetic operations, or any number of other counterinsurgent programs designed to undermine insurgent support domestically. My findings suggest that border fortification can reduce rebel capacity, but it should be paired with population-centric efforts. Unless states also invest in winning civilian loyalties, the reduction in rebel capacity stemming from effective border control may be compensated by a concomittant increase in rebels' local civilian support.

The Logic of Border Control in Counterinsurgency

Resources are critical for rebels because it is costly to produce violence and provide services. Each of these outputs—violence and governance—requires manpower, funds, and matériel (Taber 1965; Weinstein 2007). For instance, carrying out attacks requires, at minimum, fighters and arms. Conducting more sophisticated attacks requires additional resources like safe-houses from which to plan, training camps, and intelligence on targets (Sonin and Wright 2019). Service provision, likewise, requires funds to disburse and personnel to administer projects. Increasing the production of violence and service provision bolsters territorial control, endogenously increasing resources (Wood 2003; Carter 2015b). As such, rebels and governments engaged in conflict have incentives to seek larger resource endowments.

To secure additional resources, rebels' often turn externally, seeking sanctuaries, funds, personnel, arms, and matériel from an array of actors, including state sponsors, diaspora communities, and non-state actors in foreign countries (Weinstein 2007; Salehyan, Gleditsch, and Cunningham 2011). Indeed, 82% of insurgencies receive some form of outside support (Jones

[8] Gavrilis (2008) rightly notes that border control can have unintended consequences, like incentivizing the rise of adaptive, professional smugglers.

[9] For instance, in 1980 Morocco sunk the equivalent of 40% of its annual GDP into a fortified berm built between Moroccan-controlled and Polisario-controlled areas along the Mauritanian frontier (Damis 1983). Similarly, Kenya's border control efforts have cost about $3.5 million per secured kilometer (Odhiambo 2019), while Jordan's efforts cost more than $97 million in total (Opall-Rome 2016).

2017: 136-137). This transnational dimension of civil war has become more important over time (Hazen 2013).

Insurgents' desire for access to external resources induces them to value control of territory along and across international borders (Byman 2005). Transnational safe havens allow insurgents to melt from the path of domestic counterinsurgent operations, regroup, and dictate the subsequent tempo and terms of engagement, striking the enemy when it is opportune, and avoiding direct action when it is not. But cross-border havens also provide key strategic resources apart from territory. As Galula (2006: 37) recognized, "Supply from abroad, if such a possibility exists, imposes on the insurgent the necessity of acquiring bases on or near the international border of the country, close to the source of supply." Recruitment, procurement, and training can all be organized with relative ease from border sanctuaries—either through co-ethnics, diaspora brokers, or state sponsors. For example, the Algerian FLN received millions of rounds of ammunition and thousands of weapons from Eastern European and Middle Eastern states via Tunisian bases during the Algerian War of Independence (Horne 2006).

In addition to the benefits of sanctuary, insurgents also have incentives to control transnational territory because border control endows regulation of cross-border traffic. Governing routes across international borders provides lucrative revenue-generating opportunities, including smuggling and taxation. For typically cash-strapped groups, transnational resources can thus help sustain prolonged operations, even if rebels receive no direct external sponsorship. The Taliban, for instance, have profited despite years of counterinsurgent pressure as a result of their control of opium and arms trafficking routes. Similarly, the rise of ISIS was due in part to the lucrative tax and smuggling regimes the group imposed at the border. Apart from rebels' direct profits from cross-border activities, smuggling and tax rents also represent lost income for state coffers strained by civil conflict. Lost government revenue translates to reduced government fighting capacity (Wright 2020). Because cross-border rebel activities have the dual effect of increasing rebel capacity and reducing state capacity, counterinsurgents have strong incentives to control borders against transnational insurgencies.

While materialist incentives are powerful drivers of rebel strategy, there may also exist complementary immaterial incentives for rebels to seek transnational resources. In particular,

many revolutionary and secessionist groups desire the symbolic alteration of borders. Control of border regions, then, can serve as an extension of rebels' normative aspirations. For revolutionary groups like ISIS, transnational control reflects a broader effort to erode the foundations of the international system, a pillar of which is territorial sovereignty (Zacher 2001). Counterinsurgent border control, then, can also be interpreted as an attempt by states to reassert territorial sovereignty and improve legibility (Frowd 2018), in turn facilitating military effectiveness by improving the state's information about borderland populations.

In total, rebels have diverse incentives to seek external resources, including sanctuaries, smuggling routes, funds, fighters, and matériel. Above all, external resources help relax acute financing and budget constraints, bolstering rebels' abilities to produce violence and provide services. The logic of counterinsurgent border control stems from the dual facts that: (1) resources are integral to rebel success; and (2) rebels frequently secure resources from external sources. The first fact, the centrality of resources in conflict, imposes on counterinsurgents the need to separate the insurgent foe from its bases of support. As noted in the U.S. Army/Marine Corps Counterinsurgency Field Manual, "It is easier to separate an insurgency from its resources and let it die than to kill every insurgent."[10] The second fact, the commonality of rebel reliance on outside support, imposes a specific need for counterinsurgents to reduce the flow of resources to insurgents from foreign sources. As Leites and Wolf (1970: 40) explain, "successful counterrebellion has always required either the absence of significant external support... or the shutting off of such support... ."

Because resources are essential and rebels seek them from abroad, counterinsurgents can use border control to interdict rebels' transnational logistical networks. In other words, counterinsurgent border control aims at "input-denial" (Leites and Wolf 1970: 76). If COIN border control efforts raise the cost to rebels of obtaining external resources, they should degrade the overall resource base rebels can marshal, and thereby degrade the quality of rebellion.

[10] United States Army and Marine Corps (2006): I-23.

Counterinsurgent Border Control and Rebel Tactics

The logic outlined above suggests that resources are critical for rebels because they affect the production of violence and provision of services. Rebels resources' often come from external sources, and it is precisely these resource flows that counterinsurgent border control efforts aim to interdict. To inflict resource losses on externally-supported rebels, all border fortification must do is reduce the quantity of foreign resources rebels can obtain at a given cost. Counterinsurgent border control can affect the price of external resources in many ways. For instance, border controls may force rebels moving matériel across borders to take longer and more dangerous routes, or pay higher smuggling fees or bribes to border guards. Similarly, border control efforts that channel cross-border traffic through government-controlled ports-of-entry can deprive rebels the ability to extort this traffic.[11] If counterinsurgent border control efforts affect rebel resources, then classical models imply these efforts will affect the quantity of violence rebels isolated from external resources can produce.

But rebel resources do not only affect how many attacks rebels can conduct. Because different technologies of rebellion are priced differently (Butler and Gates 2009), border control efforts can also affect the quality of rebel violence—i.e., the types of attacks rebels conduct. If rebels face budget constraints and resource losses owing to counterinsurgent border control, they will shift allocation of scarce resources to lower priced tactics. This argument extends models linking economic endowments and rebel tactics (Bueno de Mesquita 2013; Wright 2020).

Combat Tactics

Bueno de Mesquita (2013) formalizes insurgent tactical repertoires as a function of mobilization and the outside option. The supply of rebellion increases when economic prospects in the licit economy worsen, reducing the opportunity costs of rebellion, and enhancing rebel mobilization. When rebel mobilization is high, meaning rebels have ample manpower and matériel, they produce more conventional attacks, which require direct operations against government forces and entail substantially greater risk. The main benefit of employing conventional tactics,

[11] Border controls that channel cross-border traffic through government-controlled checkpoints would have the dual effect of reducing rebels' abilities to tax cross-border flows, and increasing government rents (and hence fighting capacity) from doing so.

despite the greater risks involved, is that these tactics are more effective for seizing territory (de la Calle and Sánchez-Cuenca 2015). Territorial control yields further opportunities for extraction, in turn increasing rebels' resources (Carter 2015b). Consequently, conventional tactics endogenously beget more conventional tactics.[12] By contrast, when the outside option improves, the opportunity costs of rebelling are higher, and rebel mobilization decreases, since only hardcore ideologues, for whom the fight has option value, will continue violent resistance. Reduced rebel mobilization induces a shift from conventional to irregular tactics, which are cheaper to use because they require fewer fighters to carry out, and typically entail lower risk (Carter 2016). In sum, resource shocks enhancing rebel capacity increase conventional attacks, while those reducing rebel capacity increase irregular attacks (Wright 2020). These effects vary at the local level within rebel movements.

Civilian Victimization

In addition to combat tactics, shifts in rebels' access to external resources also affect their behavior vis-á-vis civilians. Resources and civilian support are vital to insurgents and counterinsurgents (Johnson 1962; Kalyvas 2006). Rebels need civilian support—and attendant resources and information civilians can provide—to sustain their campaigns against militarily superior government forces. Governments need civilian support—and attendant information—to track and degrade mobile insurgent foes (Berman, Shapiro, and Felter 2011). With greater civilian support, rebels and governments hold superior information about the capabilities of their adversaries (Berman, Felter, and Shapiro 2018), and can more effectively apply force selectively to disrupt attacks and deter collaboration with the enemy (Kalyvas 2006). Because the extent to which armed groups victimize civilians is a function of whether they rely on local or external support, civilian victimization is highly responsive to shifts in rebels' resource bases. Local and external resources are generally substitutable, so greater access to external resources reduces the need for domestic civilian support (Weinstein 2007; Stewart and Liou 2017), making civilian victimization more likely.

Without external resources, rebels are more reliant on local extraction, which depends on

[12] Taber (1965): 56 offers another explanation for endogenous cycles of conventional violence. Conventional engagements between insurgents and the government can help insurgents seize government arms, so conventional attacks endogenously beget conventional attacks as captured arms bolster rebel fighting capacity.

local civilians' support. Two strategies exist for local extraction: coercion to compel civilian compliance with rebel demands, and service provision to win civilian loyalties and cultivate support organically (Weinstein 2007). Although coercion may be effective in helping groups meet local resource needs in the short-term, this strategy is generally counterproductive in the long-term (Kalyvas 2006). Because civilians have agency, coercive strategies of victimization to meet local resource needs create incentives for civilians to collaborate with the government (Kalyvas 2006; Condra and Shapiro 2012).

But rebel groups do not always enjoy long time-horizons. Under repression, reductions in rebels' time horizons may spur them to engage in more indiscriminate civilian victimization, despite the long-term counterproductive nature of this choice, because extracting resources to recuperate from short-term losses takes precedence (Hultman 2007; Wood 2014). Still, the production of civilian victimization is about resources and civilian perceptions. Polo and González (2020) show that public opinion conditions rebel violence against civilians even when rebels' resource losses could incentive them to pursue coercive local extraction. When rebels expect popular backlash, they may not resort to victimization despite suffering major setbacks. This is particularly the case because civilians are likely to respond to rebel abuses by collaborating with counterinsurgent forces (Condra and Shapiro 2012; Schutte 2017; Shaver and Shapiro 2020). For already hard-pressed rebels, counterinsurgent operations fueled by tips from civilians could spell a death knell.

In sum, rebels' choice to engage in civilian victimization hinges both on resources endowments and on civilian perceptions. Externally-supported rebels are less reliant on local support and therefore subject to fewer constraints on their use of violence against civilians. Rebels reliant on local extraction, by contrast, must generally avoid indiscriminate civilian victimization because, although this strategy can help groups secure resources, it incentives civilian defection and collaboration with the government, undermining rebel capacity in the long-term by raising the risk of government suppression. Short-term resource losses, however, can shift locally-reliant rebels' calculi. If losses shorten time-horizons and raise the costs of providing services to elicit voluntary civilian support, they may spur coercive civilian victimization. Still, the possibility for civilians to defect and inform on rebel activities in retribution for predation should

make locally-dependent rebels reticent to victimize civilians even after losses.

The Fortification Dilemma

The preceding discussion outlines the parameters of my theory. Resources are central to rebel violence, affecting not only whether and how much rebels can produce, but also the type and quality of violence. In order to meet resource needs, rebel groups frequently pursue external resources, like sanctuary in neighboring states. Counterinsurgent success hinges on degrading rebels' resources, so counterinsurgents often use border control in an effort to interdict rebels' external support. Border control efforts need not completely deny the support rebels can marshal from abroad. So long as counterinsurgent border control efforts raise the price to rebels of acquiring external resources, these efforts will negatively affect rebels' total resource endowments. As a result, counterinsurgent border control should affect the tactics rebels employ. Tactical changes made by insurgents in the face of counterinsurgent border control yield the fortification dilemma.

Well-resourced rebels with access to external support—whether sanctuary, fighters, training grounds, funds, or matériel—are relatively more capable, and as a result, can afford to produce more conventional violence. Especially for insurgents facing powerful counterinsurgents like the US, initiating direct attacks is risky, requiring substantial resources and coordination to execute. These sorts of attacks are easiest when rebels have more resources, and particularly more external resources, like cross-border havens to which they can flee, military-grade equipment from state sponsors, and a supply of foreign fighters. In contrast, irregular tactics—characterized by lower-risk attacks like indirect fire—are predominantly used by resource-constrained rebels seeking to avoid forceful state responses (Carter 2016; Wright 2020). Unlike conventional tactics, irregular tactics are suitable for small groups or even individuals to carry out, and can generally be executed with less planning and coordination. Thus, counterinsurgent border control efforts that interdict rebels' external support negatively shock rebel capacity. As a result, counterinsurgent border control prompts rebels to substitute conventional for irregular tactics.

> **H_1: Insurgents substitute conventional attacks for irregular attacks in the face of counterinsurgent border fortification.**

In addition to the choice between conventional versus irregular combat tactics, resources also influence rebel behavior vis-á-vis civilians. Civilian agency in conflict means that civilians can punish malfeasance, such as collateral damage, by supplying information to government forces. Although rebels may be able to deter civilian collaboration through indiscriminate violence in the short-run, this violence is counterproductive in the long-term, so deterring civilian collaboration with the government ultimately requires rebels to cultivate civilian loyalties. Rebels with access to external resources are less reliant on local civilian support, so they can afford to engage in more civilian victimization. In contrast, rebels that rely on local resources are more dependent on civilians, and so must take care to avoid counterproductive violence.

Resource losses can trigger short-sighted rebel predation. However, if it is sufficiently likely that rebels' will not be able to recover the lost source of resources because losses were triggered by a durable setback (e.g. counterinsurgent border control), rebels will adapt. In general, this means compensating for lost resources by cultivating new bases of support. As Weinstein (2007: 263) notes, in response to resource losses and backlash over predation, "a rebel group [could begin] enforcing discipline and implementing a new code of conduct as part of a public campaign to win popular support and dampen resistance." In the case of lost external resources, rebels will seek to compensate by reducing civilian victimization in order to cultivate greater local civilian support. This effect is compounded because engaging in civilian victimization requires resource expenditures in manpower and matériel, so victimization also reduces rebels' ability to produce anti-government violence. Thus, counterinsurgent border control efforts that interdict rebels' external resources force rebels to seek more resources locally in order to recoup external losses. As a result, counterinsurgent border control prompts rebels to reduce civilian victimization in order to cultivate greater civilian support, and thereby to improve local extractive capacity.[13] This effect should be greatest in areas where rebels share identity ties (e.g. co-ethnicity, co-sectarianism) with the civilian populace, since rebel outreach is most credible among in-group civilians (Polo and González 2020).

> **H_2: Insurgents reduce civilian victimization, particularly against in-group civilians, in the face of counterinsurgent border fortification.**

[13] An additional implication is that rebels will respond to border control by increasing small-scale governance initiatives to earn the goodwill of the populace. I bracket this expectation in this paper because I lack data to test how border fortification affected rebel governance in Iraq.

Combining these arguments, the fortification dilemma emerges. On one hand, counterinsurgent border control reduces rebel capabilities, inducing rebels to substitute conventional for irregular tactics, which are less effective for taking territory and fighting government forces. On the other hand, rebels facing the interdiction of external supply lines and resources in the form of border control will move to compensate external losses by cultivating greater local support from the counterinsurgents' populace. In other words, counterinsurgent border control reduces rebel capacity, but perversely incentivizes rebels to invest more resources in building local support from civilians in the counterinsurgent's territory.

These insurgent tactical adaptations to border fortification impose on counterinsurgents an imperative to contest rebel efforts to build local support. Specifically, unless counterinsurgents pair border fortification with population-centric efforts to cultivate civilian loyalty, the combat gains that accrue because of reduced rebel capacity may be offset by a concomitant increase in civilian support for the rebels. Because combat tactics are endogenous to mobilization (Bueno de Mesquita 2013), improved rebel-civilian relations in the long-term could help rebels reestablish a reliable resource base, in turn allowing them to recover conventional capabilities and improve combat performance. An efficient way for counterinsurgents to undermine rebel efforts to cultivate civilian support is through population-centric efforts like service provision and development assistance. By providing governance and development programs, particularly those that are attentive to local needs and preferences, counterinsurgents lower the threshold for civilian informing (Berman et. al. 2013). In other words, population-centric COIN efforts increase civilian willingness to supply counterinsurgents with information, enhancing counterinsurgents' ability to target rebel forces. In response, population-centric counterinsurgency efforts may force rebels to engage in more civilian victimization to discourage collaboration and attempt to regain territorial control (Crost, Felter, and Johnston 2014; Sexton 2016; Weintraub 2016). For counterinsurgents, provoking rebel civilian victimization undercuts rebel efforts to cultivate civilian support. Thus, while using border control to reduce insurgent capabilities, counterinsurgents should also contest rebel efforts to build civilian support domestically by investing in population-centric counterinsurgency.

> **H_3: When counterinsurgent border fortification is paired with population-centric counterinsurgency efforts, insurgents increase civilian victimization.**

The Morice Line: Illustrating the Mechanisms

To illustrate the theoretical logic outlined above, consider France's Morice Line, a border fortification built during the Algerian War of Independence. Rather than a decisive test of the argument, this case is a plausibility probe, and serves to highlight the theoretical mechanisms outlined above. Consistent with my expectations, archival and secondary source evidence suggests that the success of the Morice Line forced FLN insurgents to devote greater resources to cultivating domestic civilian support, hampering French success.[14] French border control efforts caused an insurgent tactical shift from conventional to irregular attacks. Similarly, FLN fighters reduced indiscriminate violence against Algerian civilians in response to border control. Limited population-centric efforts by the French impeded FLN efforts to cultivate support.

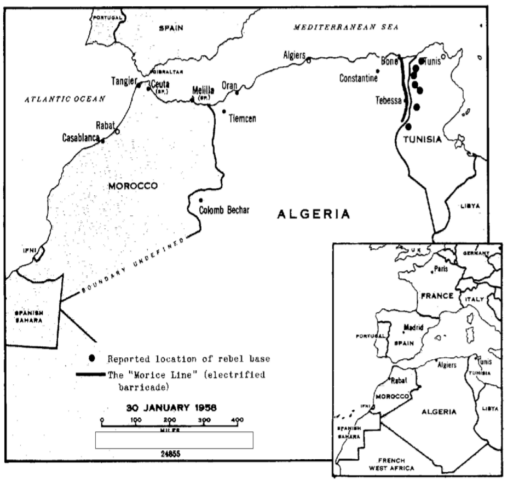
The French military completed construction of the Morice Line, running nearly the full length of the border between Algeria and Tunisia, in September 1957. The Line was designed to deter cross-border attacks and gun-running by the Front de Libération Nationale (FLN)'s armed wing, the Armée de Libération Nationale (ALN), and given its tremendous cost and size, maintaining its integrity was a core military objective for France in 1957 and 1958. In composition, the Line included eight-foot electrified fencing charged with 5000 volts, flanked on both sides by 50-yard anti-personnel mine belts, and on the eastern side, a continuous barbed wire entanglement. On the western side ran a dirt track frequently patrolled and illuminated at night. Electronic sensors along the fence transmitted breach locations to automatically-sighted artillery. At least 40,000 French troops were directly involved in its defense (Horne 2006). Figure 2 presents declassified maps of the location of the Morice Line in northeast Algeria, along with locations of ALN irregular attacks and sanctuaries at various points in 1958 and 1959, from CIA archival sources.

Initially, the ALN invested a great deal of manpower into operations to breach the Morice Line, which had effectively cut off access to units inside Algeria. Approximately 10,000 ALN fighters were based in the Tunisian frontier, and these forces tried various breaching tactics, including attacks with high-tension wire-cutters and Bangalore torpedoes, tunneling, climbing insulated ramps, and raids with delayed-action mines. French estimates suggest that several

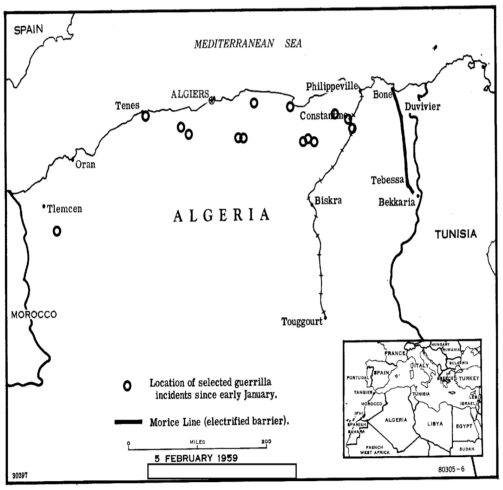
[14] Section A.2 describes archival sources.

Figure 2: The Morice Line and FLN/ALN Activities

(a) The Morice Line and CIA-reported ALN Sanctuaries in January 1958



(b) The Morice Line and CIA-reported ALN attacks in January/February 1959



Note: The left panel depicts the location of the Morice Line in northeastern Algeria, along with locations of FLN/ALN bases in western Tunisia (CREST: CIA-RDP79-00927A001600060001-9). The right panel depicts the location of the Morice Line in northeastern Algeria, along with locations of ALN attacks in Algeria (CREST: CIA-RDP79-00927A002100050001-5).

thousand ALN fighters died in breaching missions. Nevertheless, the French military's technological advantage, and especially its use of air interdiction and paratroopers to track down breaching parties that crossed the Morice Line, created severe operational difficulties for rebels in the Algerian interior (Shrader 1999). French intelligence estimated that thousands of weapons and hundreds of thousands of rounds of ammunition were interdicted monthly along the Morice Line from 1958-1961. CIA reports noted that "serious shortages of matériel and the isolation of 3,000 [ALN] troops in Tunisia" were "attributable to French border barriers."[15]

Given that the Morice Line reduced the FLN's external resources, how did the Line affect rebel tactics? Immediately after the completion of the Morice Line, the FLN began a campaign of irregular violence, which continued throughout 1958-1959. In response to French interdiction, rebel operatives inside Algeria doubled-down on their efforts to assassinate French soldiers, carrying out a string of sabotage and hit-and-run attacks on French positions. CIA reports from March 6, 1958 noted, "Guerrilla activity by the Algerian rebels continues at the stepped up level... ." Also in March 1958, as the FLN slowed its efforts to breach the Morice Line, it moved to consolidate territorial control in northeastern Algeria. The American consul general

[15]CREST: 02989934.

reported that the Bone region, just west of French garrisons along the Morice Line, was "at the 'complete mercy' of the rebels each night," and that "even the main highways throughout that area are now unsafe... ."[16] More broadly, interdiction forced the FLN to table plans for a conventional offensive in eastern Algeria in spring 1958, and to revert to irregular operations (Shrader 1999: 146-47). The shift toward irregular tactics persisted into 1959, as rebels "increased their ambush attacks on small French Army units, as well as their terrorist and sabotage operations... aimed particularly at transport and communication routes and facilities... ."[17]

Apart from inducing the FLN's tactical shift from conventional operations to irregular attacks, the Morice Line also induced shifts in rebel-civilian relations. To be sure, the FLN continued to victimize civilians in Algeria. However, the increase in civilian victimization after completion of the Morice Line was concentrated in French-dominated urban centers, and targeted European rather than Algerian civilians. As external losses mounted, the FLN's use of violence against local Algerian civilians declined.[18] In other words, counterinsurgent border control prompted the FLN to reduce victimization of in-group civilians—precisely those whose support they had to cultivate in order to recoup resource losses.

After completion of the Morice Line, the FLN also began a widespread effort to improve civilian relations through governance and service provision. Despite battlefield setbacks stemming from resource interdiction at the border, rebel commanders inside Algeria directed a campaign to distribute medical supplies to the Algerian populace (Onyedum 2012). Moreover, throughout 1958 and early 1959, the FLN accelerated its recruitment within Algeria, targeting disaffected Muslims subjected to French "scorched earth tactics" along the Morice Line. The FLN's recruitment effort went so well that in February 1959, the CIA noted "the rebel army's apparent ability, to continue fighting indefinitely."[19] Likewise, in April 1959, intelligence reports suggested the FLN was "confident in its own ability to replace its casualties with fresh recruits and periodically to intensify its terroristic and guerrilla operations."[20] Extensive rebel recruitment of Algerian civilians in the wake of border fortification is consistent with improved

[16]CREST: CIA-RDP79T00975A003600050001-6.
[17]CREST: CIA-RDP79-00927A002100050001-5.
[18]CREST: CIA-RDP79T00975A003600050001-6; CREST: CIA-RDP79-00927A001600060001-9.
[19]CREST: CIA-RDP79-00927A002100050001-5.
[20]CREST: CIA-RDP61-00549R000200110003-9.

rebel ties, and suggests that counterinsurgent border control can enhance rebel efforts to cultivate local civilian support if border fortification displaces communities and disrupts economies in border regions.

Although the French campaign in Algeria was largely coercive, population-centric reforms to the French approach complicated the FLN's efforts to build Algerian civilian support. French population-centric efforts were channelled through the Sections Administratives Spécialisé (SAS), a French civil-military affairs corps formed in 1955 and expanded after 1959. Via SAS, French administrators offered Algerian communities educational, medical, and agricultural services. US intelligence sources praised these efforts, noting "Army special services officers are winning the grudging respect of many villages and towns where they are at work bringing agricultural and sanitation techniques to an indigent people."[21] For the FLN, the success of SAS in contesting for civilian support made "it increasingly difficult to obtain succour from the local populations for their military operations" (Horne 2006: 254).

In sum, France's efforts at counterinsurgent border fortification in Algeria support the notion of a fortification dilemma. Counterinsurgents facing transnational insurgencies confront a challenging bind. On one hand, controlling borders insurgents use for sanctuary and resupply is critical to isolating insurgents from their sources of external support, which often provide key resources and staying power. On the other hand, the very efforts counterinsurgents take to fortify international borders and isolate insurgents from external sources of support drive insurgent tactical shifts that complicate the counterinsurgent's own pacification efforts. Because counterinsurgent border control causes insurgents to adopt irregular tactics, and to devote greater efforts to cultivating civilian support, counterinsurgent border control is best combined with population-centric efforts.

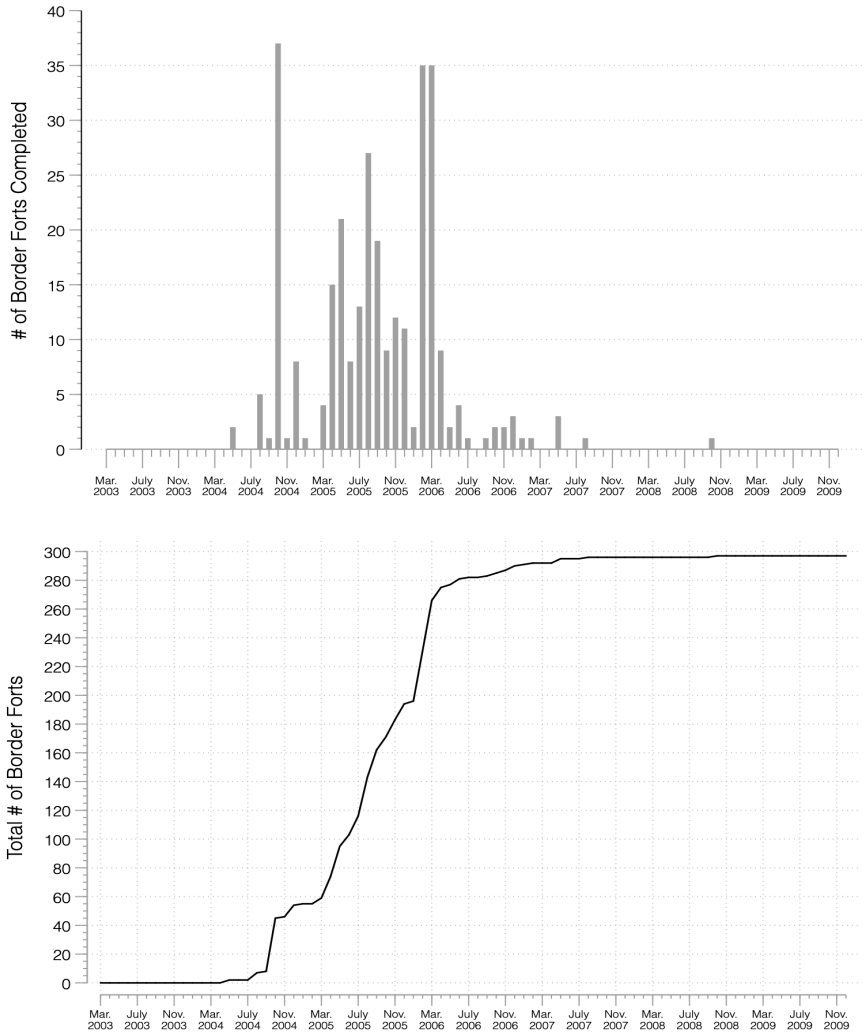
Border Control During Operation Iraqi Freedom

In order to more fully evaluate my theory, I study border fortification during the Iraq War. When the U.S. invaded Iraq in 2003, the primary focus was on Baghdad, and other key cities in the Iraqi interior. However, as the insurgency evolved, the U.S. quickly moved to implement

[21] CREST: CIA-RDP61-00549R000200110003-9.

border control measures to reduce the flow of fighters, arms, and illicit goods across Iraq's long, historically-porous borders. Saddam Hussein's regime had maintained hundreds of small border posts along Iraq's frontiers, and paid off local tribal militias to patrol various remote sectors. However, the pre-invasion Iraqi border security apparatus was dismantled under de-Baathification pursuant to Coalition Provisional Authority (CPA) Order 2, which disbanded the Saddam-era security forces and barred their members from public service.

Figure 3: Border Fort Construction Over Time (Top Panel) and the Cumulative Number of Border Forts (Bottom Panel)



Note: Data come from the IRMS. The top panel shows the number of border forts completed each month. The bottom panel shows the cumulative number of forts built.

In the wake of de-Baathification, Iraq's borders went unsecured, and as the insurgency matured, many insurgent groups leveraged cross-border havens and supply lines, drawing on contacts in established smuggling networks, overt support from Iranian security forces, and

tacit support from other neighboring states, especially Syria and Jordan. In response to the transnationalization of the insurgency, the US-led Coalition invested in border control efforts. On August 24, 2003, the CPA created the Iraqi Directorate of Border Enforcement (DBE) (Bateman 2006: 44), and between May 2004 and December 2009, US forces funded and built 297 border forts to interdict and deny insurgents' external support. Figure 3 depicts the timeline of the construction effort and the cumulative number of forts built along Iraqi borders over time. Approximately 92% of all Iraqi border forts were built between May 2004 and March 2006, when the sectarian insurgency reached near peak levels of violence.

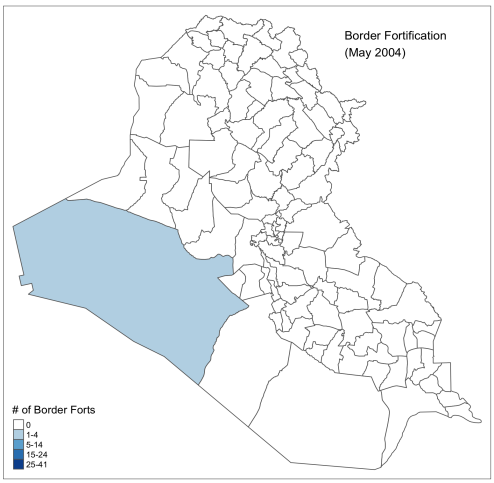
Figure 4 depicts spatio-temporal variation in the implementation of US-led border fortification. Geographically, border fortification efforts where widespread, occurring in all 11 governorates contiguous to Iraq's international borders, and 27 of 30 Iraqi border districts.[22] Fortification efforts were predominately concentrated in three districts: Al-Rutba, bordering Syria, Jordan, and Saudi Arabia (41 forts); and Khanaqin and Sulaymaniya, near Iran (21 forts each). On average, forts in districts along Iraq's borders were spaced every 32 kilometers, with mobile patrols, electronic sensors, and aerial surveillance employed to monitor border areas between forts. Border forts took an average of 278 days to construct, with a median of 247 days. These projects began 27 days earlier than forecasted and ended 27 days later than forecasted on average.

Between March 2003 and December 2009, US forces also rebuilt or constructed 52 non-fort border security facilities, including ports-of-entry (POEs), academies or headquarters for training troops of the DBE, and wells and roads for DBE use. In total, US border control projects in Iraq cost $264,591,634.17, not including sums paid to stand up and train various border forces attached to the DBE and the Iraqi Ministry of the Interior. Estimates of the total cost of American border control initiatives in Iraq in this period approach $1 billion when training costs are added to the total costs of border fortification. Still individual border forts were a relatively modest investment, costing just $621,983.90 to construct on average, with a median cost of $450,000.

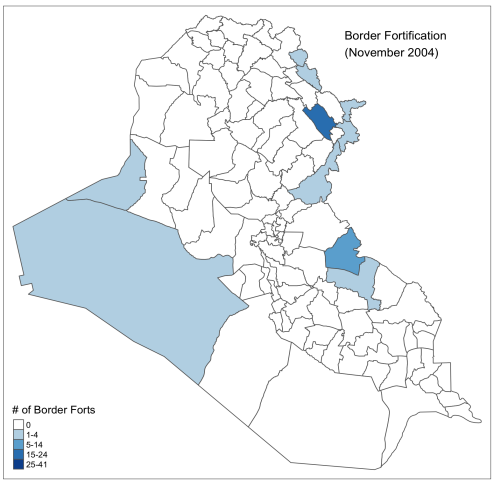
[22] The three never-fortified border districts are Amedi, Mergasur, and Soran, all in Kurdistan.

Figure 4: District-Level Border Fortification, May 2004 - November 2006

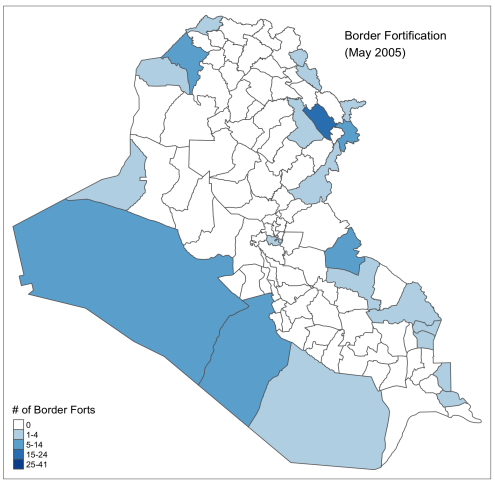
(a) Forts in May 2004



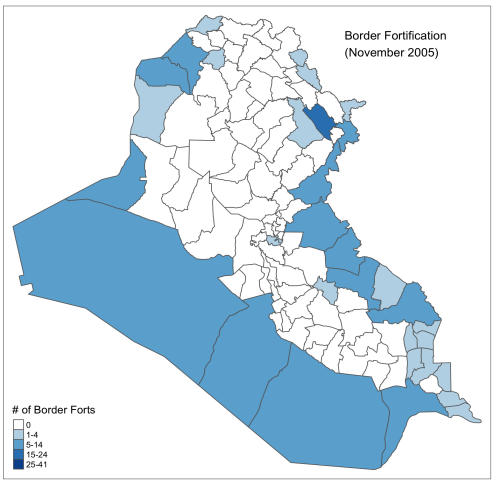
(b) Forts in November 2004



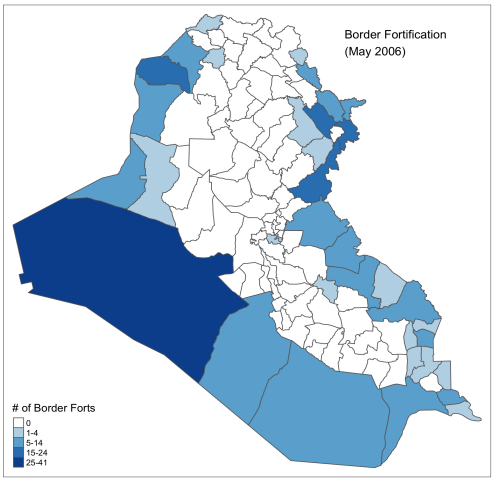
(c) Forts in May 2005



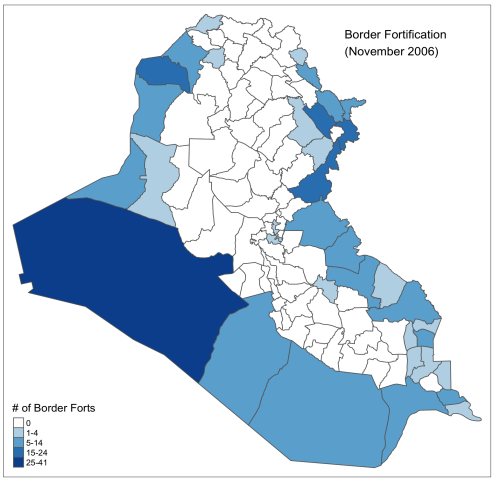
(d) Forts in November 2005



(e) Forts in May 2006



(f) Forts in November 2006



Note: Data come from the IRMS. Darker shades indicate more forts.

Why Study Iraq?

The Iraqi case is an ideal for setting for identifying the effects of counterinsurgent border control on insurgent tactics. First, many insurgent groups in Iraq were organized along lines closely matching Iraq's district borders, and managed finances at the local level (Bahney et. al. 2010). These features make it is possible to identify how border control affected insurgent tactics in discrete areas. Second, Iraq has long, porous land borders with six neighboring states, and these neighbors varied substantially in the extent to which they supported different insurgent groups during Operation Iraqi Freedom.

On Iraq's eastern border, Iran supported a range of Shi'a militias, providing military-grade weapons and training, and also engaging in active subversion of Coalition and Iraqi security forces (Felter and Fishman 2008). In some instances, Iranian forces, mainly covert operatives from the Iranian Revolutionary Guard Corps-Quds Force (IRGC-QF), maneuvered directly against troops engaged in border control operations. On Iraq's western border, Syria, Jordan, and Saudi Arabia were more tacit conduits for insurgent support. These countries allowed some insurgent logistical activities, and all three were used by couriers and foreign fighters transiting into Iraq. In addition, Syrian intelligence facilitated the transfer of military-grade weapons and explosive vests for suicide attacks to al-Qaeda in Iraq (AQI) and several other Sunni groups led by former regime elements. Tribal smuggling between Iraq and Syria was also extensive.

Along Iraq's northern border, Turkey exerted influence on insurgent activities in Kurdistan. The Turkish government supported the leading Kurdistan Democratic Party (KDP) in the Kurdistan Regional Government, and conducted military operations against the Kurdistan Workers' Party (PKK), which held sanctuaries in northern Iraq. Turkey generally cooperated with US-led border security efforts, but was a conduit for the smuggling and sale of Iraqi oil stolen by insurgent groups, namely AQI. Finally, along Iraq's southern border Kuwait maintained a comprehensive border security regime, and cooperated with US efforts. By virtue of Kuwaiti border security measures instituted after the Persian Gulf War, Kuwait effectively denied insurgent cross-border logistics, though it did produce foreign fighters who made their way into Iraq mainly via Saudi Arabia. In addition, Iraq's southern seaports were actively used in insurgent smuggling, chiefly by Shi'a militias. Variation across Iraq's neighbors in the extent

of support to insurgents presents a unique opportunity to compare the efficacy of border control when insurgents enjoy varying degrees of external support. Moreover, the porous nature of Iraq's borders meant virtually all insurgent groups relied to some extent on external resources.

Data

Border Fortification

In order to assess my hypotheses, I leverage project-level data on US border control initiatives extracted from the declassified Iraq Reconstruction Management System (IRMS) maintained by the US Army Corps of Engineers' Gulf Region Division. These data were originally obtained through Freedom of Information Act (FOIA) requests by researchers at ESOC (Berman, Shapiro, and Felter 2011), and represent a near-complete record of US reconstruction projects during Operation Iraqi Freedom. Specifically, the IRMS data describe the construction timelines, costs, project details, and funding sources for 73,600 individual projects undertaken by US forces during Operation Iraqi Freedom.

With this unique data, I am able to chart the construction and completion of border fortifications in Iraq at the district-month level between 2003 and 2009. This level of granularity enables causal identification of the effect of border control on militant violence. From the project data I construct my core independent variable, *border fortification*, which takes a value of 1 in all district-months with a completed border fort, and 0 otherwise. Border fortification is a bundled treatment that includes the presence of a border post and troops manning it, as well as berms and barriers extending out from border garrisons, and enhanced surveillance and reconnaissance capabilities employed by Coalition and Iraqi DBE forces in border monitoring.[23] In this sense, border fortification is best thought of as a system-of-systems (Skirlo 2007).

Insurgent Violence

To assess the effect of border control initiatives on insurgent tactics, I use geocoded event data on the incidence of violence in Iraq. I capture the tactics and intensity of insurgent-initiated violence against US and Iraqi forces using measures drawn from the MNF-I SIGACT

[23] Coalition forces used drones extensively to monitor Iraq's borders.

III database (Berman, Shapiro, and Felter 2011).[24] Significant activity (SIGACT) data are collated from reports filed by Coalition and Iraqi forces, and provide a rich set of information about the location, date, and type of insurgent violence. An advantage of using SIGACT data is that they approximate the "universe" of insurgent violence in Iraq (Weidmann 2016: 211).

To capture conventional insurgent violence I study direct fire attacks. These are attacks in which insurgents engaged counterinsurgent forces within the line-of-sight. Most direct fire incidents are close range firefights. These operations entail higher levels of insurgent coordination and risk, and thus represent a good proxy for conventional attacks. To measure irregular violence I study indirect fire attacks. Indirect fire incidents are those in which insurgents engaged counterinsurgent forces beyond the line-of-sight. Most indirect fire incidents are mortar and rocket attacks. These are a good proxy for irregular tactics because they require less insurgent coordination and far less physical risk than direct engagements against Coalition forces (Berman, Felter, and Shapiro 2018: 202). Combining these measures gives the primary dependent variable, *irregular share*, which represents the proportion of projectile-fire SIGACTs in a district-month that are indirect fires.[25] This variable takes a value of 0 in all months with no insurgent-initiated, projectile-fire SIGACTs, and otherwise equals $\frac{\text{Indirect Fire}}{\text{Indirect Fire} + \text{Direct Fire}}$.[26]

SIGACT data are not ideal for measuring insurgent violence against civilians because events are only recorded when counterinsurgents witness or engage in a given event. SIGACT-based measures of civilian victimization, then, are biased downward (Berman, Shapiro, and Felter 2011: 790). Instead, to operationalize insurgent civilian victimization, I study geocoded data from Iraq Body Count (IBC), a non-profit that compiles data on civilian deaths from media, hospital, and morgue reports (Condra and Shapiro 2012). These data provide information on the date, location, attack type, and casualties caused by militant groups against civilians. From IBC I draw measures of *insurgent collateral damage* and *sectarian killings*. The former measure records the number of incidents in which insurgents kill civilians in the course of combat operations against Coalition or Iraqi forces; the latter measure records the number of incidents

[24] I focus on the set of SIGACTs reflecting insurgent-initiated attacks.

[25] Wright (2020) employs a similar measure in the Colombian context.

[26] Results are substantively identical if we define the measure as $\frac{\text{Indirect Fire}}{\text{Indirect Fire} + \text{Direct Fire} + \text{IEDs}}$, which captures the share of all insurgent-initiated SIGACTs that are indirect fires. Like direct fires, IEDs require relatively more planning and coordination, and are more susceptible to civilian informing than indirect fires (Berman, Felter, and Shapiro 2018: 202).

in which insurgents kill civilians outside the course of combat. I also study *insurgent civilian casualties*, which records the total number of casualties from insurgent-initiated attacks against civilians. This measure is drawn from the World Incidents Tracking System (WITS) collected by the National Counterterrorism Center. Civilian victimization outcomes are divided by 1000s of district residents for interpretability.[27]

Covariates

Control variables come from a variety of sources. To measure district population, I use population estimates from the World Food Programme (WFP)'s food security surveys conducted in 2003, 2005, and 2007 (Berman, Shapiro, and Felter 2011).[28] Like population, the sectarian composition of each district is important. Following Berman, Shapiro, and Felter (2011), I use governorate-level voter returns from the December 2005 parliamentary election. If a Shi'a, Sunni, or Kurdish party secured at least 66% of the vote share in a district, it is defined as homogeneous and controlled by the respective sect. Otherwise, the district is coded as mixed sectarian. Data on district-level resource endowments like oil reserves come from Berman, Shapiro, and Felter (2011), while data on unemployment come from the Iraq Living Conditions Survey 2004, a household survey carried out by the Central Organization for Statistics and Information Technology of Iraq. In different specifications I control for additional factors like the presence of Sons of Iraq (IRMS) and Provincial Reconstruction Teams (Berman et. al. 2013); spending on reconstruction programs (IRMS); and Coalition-caused civilian casualties (IBC).[29]

Estimation Strategy

My empirical strategy leverages variation in border fortification over district-months. In the main analyses I compare fortified and non-fortified districts in border governorates, where anecdotal evidence suggests Saddam Hussein's border forces also operated (Demarest and Grau 2005). This helps preclude the possibility that the border forts I analyze represent new border control efforts constructed as a strictly endogenous response to the conflict in Iraq.

[27] In Figure A.3 and Table A.4 I discuss and rule out potential systematic biases in the civilian victimization data.
[28] Reliable estimation of district population is difficult, but the WFP's repeated measures reduce vulnerability to bias driven by internal displacement.
[29] Table A.5 provides variable definitions. Table A.6 presents descriptive statistics.

While carefully selecting districts for comparison helps alleviate some concerns about differences between districts with and without border forts, I also leverage plausibly exogenous, monthly variation in the roll-out and completion of these projects owing to bureaucratic wrangling. Border fortification was funded in the context of the broader US reconstruction effort in Iraq. Within this massive effort, reconstruction funding was subject to numerous and idiosyncratic bureaucratic hurdles, meaning the completion of projects is plausibly exogenous to violence at the district-month level.[30]

Border control efforts were first funded under the supplemental appropriation to the Iraq Reconstruction and Relief Fund (IRRF 2) in November 2003. Until June 2004, IRRF 2 was controlled by the CPA, and the relatively slow initial roll-out of border fortification efforts from the time of the first appropriation in November 2003 to the time the first fort was completed in May 2004 is attributable to major bureaucratic wrangling between the CPA and the Office of Management and Budget (OMB) over the spending strategy. OMB did not apportion any funds to border control until January 2004. Subsequently, the inexperience of the small CPA staff responsible for issuing task orders for projects contributed to further delays. As Pentagon Comptroller Dov Zakheim noted, "OMB became kind of a black hole, from which funds would emerge on what appeared to be a *whimsical basis*... ."[31]

After June 2004, when the CPA transitioned authority to the interim Iraqi Government, the Departments of State and Defense shared responsibility for reconstruction management, with Defense taking the lead on security projects like border fortification. Under Defense Department oversight, the slow process of reconstruction spending was accelerated drastically, with contracts awarded in 90 days that would have taken 14-18 months to approve under normal circumstances (SIGIR 2009: 133.) The drastic change in spending strategies in this period of transition fueled additional, bureaucracy-driven variation in the implementation of border control projects. Further, between 2004 and June 2005, the Defense Department also undertook three reprogrammings, which saw previously allocated funds re-allocated on the basis of political priorities. For instance, funds were surged into governance activities just before the 2005 parliamentary election. Changes in the priority border security projects received during

[30] Sexton (2016) and Silverman (2020) rely on similar strategies.
[31] SIGIR (2009): 126. Emphasis added.

these reprogrammings created additional, plausibly exogenous variation in the implementation of border fortification projects across district-months.

Several tests validate the proposition that spatio-temporal variation in border fortification was unrelated to conflict trends at the district-month. In Table A.7 I show that trends in violence are uncorrelated with differences in forecasted and actual award, start, or completion dates of border control projects. If conflict dynamics systematically affected the implementation and construction of border fortification, we would expect a significant association between trends in insurgent violence and differences in forecasted versus actual project start and completion dates. For instance, if violence caused frequent construction delays, we would expect to observe projects taking longer than initially forecasted. In Table A.8 I show that violence trends do not predict treatment (i.e. fortification) onset. In Table A.9 I conduct a temporal placebo test, and show that border fortification does not significantly predict past levels of violence. In Figure A.10 I plot mean differences in pre-treatment covariates between treated and control districts. There are no significant differences in pre-treatment means of the four focal dependent variables after adjusting for secular trends. These tests build confidence that border fortification efforts were plausibly exogeneous to conflict dynamics.

Leveraging these features, I estimate a generalized difference-in-differences model:

$$Y_{j,t} = \alpha_j + \beta_t + \delta(\text{BorderFort}_{j,t-1}) + \gamma_{X_{j,t-1}} + \epsilon_{j,t}$$

Where $Y_{j,t}$ are conflict-related outcomes of interest including the share of irregular insurgent-initiated attacks, and insurgent civilian victimization in district j in month t. α_j are district fixed effects that capture time-invariant characteristics of districts, like terrain and historical conditions; β_t are year-specific month fixed effects that control for factors common to Iraqi districts in a given month; $X_{j,t-1}$ is a vector of lagged covariates that varies across specifications, but includes controls like CERP spending, presence of Sons of Iraq forces, and oil production; and $BorderFort_{j,t-1}$ is a dummy variable which equals 1 if the district j has a completed border fort in month $t-1$.The coefficient δ recovers the extent to which border fortification induces a change in insurgent tactics relative to non-fortified districts in border governorates.

Identifying Assumptions

The validity of this estimation strategy hinges on two assumptions. First, I assume that in the absence of border fortification, the average change in the outcome variables would be the same for treated and control districts. As reflected in Figure 5, this parallel trends assumption appears reasonable. Values of the pre-treatment response variables are fairly symmetric in trends and levels among treatment and control units. Difference-in-slopes tests reported in Figure 5 show that just 12% or fewer of pre-treatment trends are statistically non-parallel, and only for two outcomes—the irregular share and insurgent civilian casualties. All results are robust to dropping these non-parallel periods. Tests based on the lag-lead approach in Figure A.11 also suggest the parallel trends assumption is satisfied.

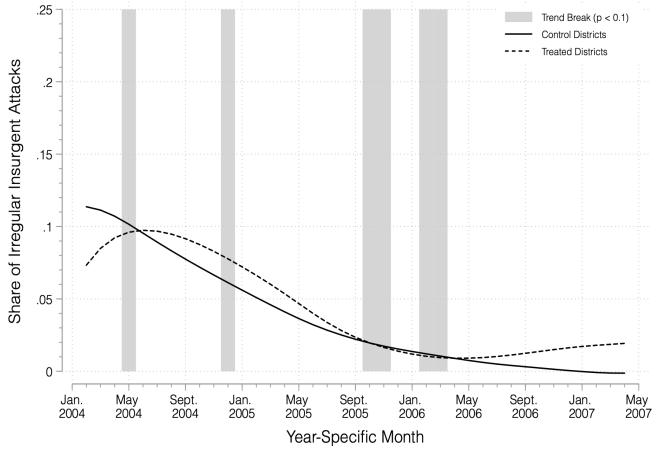
To recover the causal effect of border fortification, my empirical strategy also requires border fortification not to coincide with other pertinent policy changes. Given my expectation that insurgents substitute into irregular attacks, namely indirect fires, one obvious policy change that could confound the results would be shifts in the deployment of counter-indirect fire systems by counterinsurgent forces. Though data from Iraq do not permit a direct test, qualitative evidence described in Section A.12 do not indicate that deployments of counter-indirect fire systems shifted with border fortification. More broadly, in Table A.13 I show that border control in Iraq did not coincide with changes in: the number of Coalition maneuver battlions deployed, expansion of the cellular communications network, CERP spending per capita, the price-weighted volume of oil production, Coalition-caused civilian casualties, per capita spending on condolence payments, per capita spending on police, per capita spending on checkpoints, per capita spending on non-border-related Ministry of Interior and Ministry of Defense facilities, Provincial Reconstruction Team or Civil Military Operations Center presence, or provincial Iraqi control. In sum, the identifying assumptions seem reasonable in this context, supporting a causal interpretation of the results.

Empirical Results

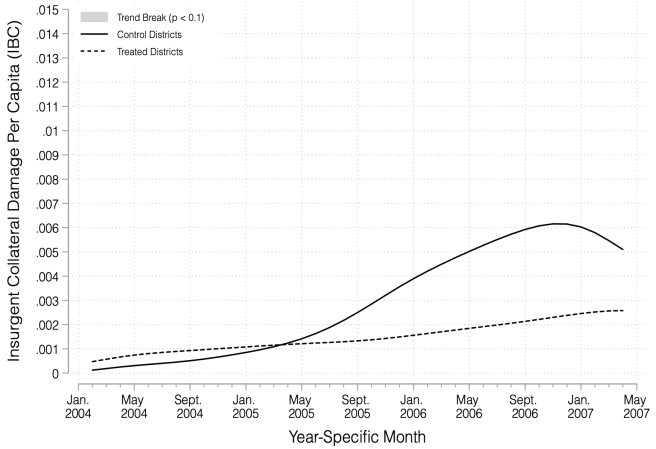
The quantitative analyses proceed in several steps. First, I outline core results pertinent to hypotheses 1 (insurgent shifts into irregular tactics) and 2 (reduced insurgent civilian victimiza-

Figure 5: Parallel Trends in Insurgent Tactics

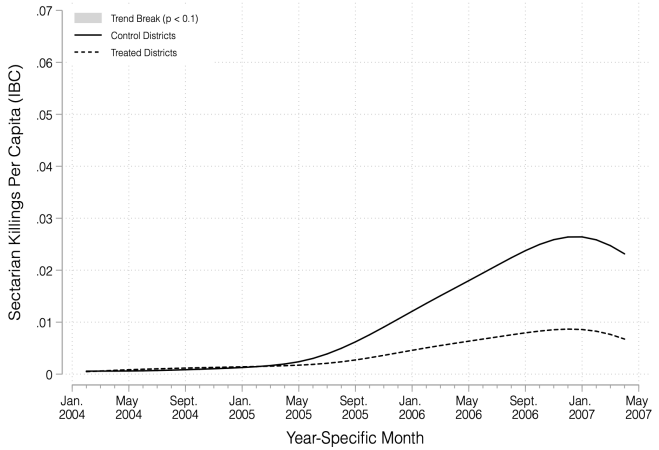
(a) Irregular Share



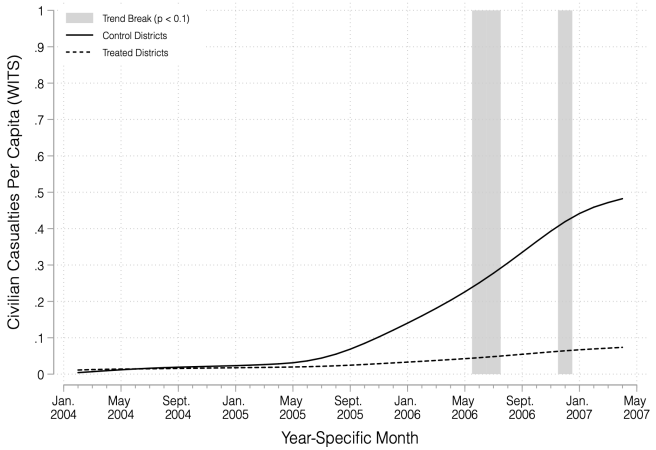
(b) Insurgent Collateral Damage



(c) Sectarian Killings



(d) Insurgent Civilian Casualties



Note: Each plot shows pre-treatment trends in the corresponding outcome variable for control and treatment districts. Lines are locally weighted scatterplot smoothing. Treatment districts are districts where US-led border fortification occurred. Control districts are non-fortified districts in governorates contiguous to Iraq's international borders. Gray bars denote statistically significant trend breaks at the 10% level or lower based on difference-in-slopes tests.

tion), along with a number of robustness tests and empirical extensions. Then, I test hypothesis 3, which posits that border fortification is most effective when paired with population-centric counterinsurgency efforts. Finally, I conclude by exploring additional implications of the theory and conducting placebo tests.

Tactical Substitution

Table 1 offers a direct test of hypothesis 1, which predicts that counterinsurgent border control induces rebel shifts into irregular tactics. Across models, there is a significant positive effect of border fortification, indicating that counterinsurgent border control induces insurgents to substitute conventional, direct fire attacks for irregular, indirect fire attacks. Taking estimates from column 4, border fortification causes an 8 percentage point increase in the proportion of insurgent attacks that are irregular, amounting to more than a one-half standard deviation increase.

Column 1 represents the most basic difference-in-differences specification with district and year-specific month fixed effects. Column 2 adds political and socioeconomic controls, and year by Sunni vote share fixed effects, which absorb broad sectarian shifts over the conflict. Column 3 introduces additional, security-related controls, and column 4 introduces a spatial lag of the dependent variable to account for spatial autocorrelation. Given non-parallel trends in a small number of periods, column 5 verifies that the core results are robust to dropping significantly non-parallel trend breaks. Column 6 adds district-specific linear trends. Finally, columns 7-10 expand the focal sample from districts in border governorates. Models 7 and 8 restrict the analysis to districts where two different insurgent movements—Al Qaeda in Iraq and the Sunni Rejectionist groups (e.g. the 1920 Revolution Brigades)—held influence. Both AQI and Rejectionist groups relied heavily on cross-border support, so border fortification was largely focused on interdicting these groups' bases of transnational support. Consistent with this view, the magnitude of the effect of border fortification on tactical substitution is greatest in model 7. Finally, in model 9 I expand the analysis to all governorates except Baghdad, and in model 10 I study all districts in Iraq, since insurgent tactical shifts may affect nationwide patterns of insurgent violence, not just localized violence in border regions. Across all models, border fortification causes a significant substitution into irregular tactics, with the estimated

effect size ranging from 3 to 10.1 percentage points.

To probe the robustness of these results, in Table 2 I conduct a number of additional tests, all of which corroborate the large, positive effect of border fortification on insurgent tactical substitution from conventional to irregular violence. In particular, column 1 of Table 2 includes a lag of the dependent variable to control for dynamic effects in rebel tactical use. Columns 2 and 3 adjust for potential spatial dependence by allowing for clustering across districts within governorates and within DBE regions respectively.[32] In column 4, estimates are scaled using population weights, which further mitigate the threat of heteroskedasticity and identify heterogeneous treatment effects by district population. In column 5, I exploit variation in the intensive margin of violence, scaling estimates by up-weighting districts with more per capita insurgent-initiated SIGACTs. Column 6 excludes district-months in which no projectile-fired SIGACTs occurred, and column 7 includes IEDs in the denominator of the dependent variable. I verify the results are robust to controlling for per capita spending on non-fort border security projects and the total number of border forts in a district-month in column 8.

The main OLS results offer straightforward interpretation; however, because the dependent variable is a proportion, least squares estimates could fall outside the unit interval. In column 9 I re-estimate the core specification using a two-limit tobit estimator. Tobit estimates are substantively larger and more precise, suggesting the main results are likely conservative, understating the true effect of border fortification. Finally, in columns 10 and 11 I directly estimate the effect of border fortification on per capita levels of indirect fire and direct fire attacks, disaggregating the proportion variable into its constituent terms. All tests suggest that counterinsurgent border control induces rebel shifts from conventional to irregular tactics.

An additional test sheds light on the theoretical mechanisms underpinning the fortification dilemma. The logic of the dilemma implies that counterinsurgent border control causes rebel shifts into irregular tactics because it negatively affects rebels' resources. An alternative mechanism, information-sharing, potentially operates in parallel. Civilian informing is a key constraint on insurgent violence (Schutte 2017; Shaver and Shapiro 2020). Direct fire and IED attacks are susceptible to exposure if civilians alert counterinsurgent forces. Indirect fire attacks

[32] DBE units were organized into 5 areas of responsibility during Operation Iraqi Freedom.

Table 1: Border Fortification and the Proportion of Irregular Attacks

VARIABLES	(1) Irregular Share	(2) Irregular Share	(3) Irregular Share	(4) Irregular Share	(5) Irregular Share	(6) Irregular Share	(7) Irregular Share	(8) Irregular Share	(9) Irregular Share	(10) Irregular Share
Border Fortification	0.034**	0.030*	0.080***	0.082***	0.074**	0.062**	0.101**	0.076*	0.049**	0.047**
	(0.015)	(0.015)	(0.025)	(0.025)	(0.031)	(0.029)	(0.040)	(0.043)	(0.024)	(0.021)
District FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year-Specific Month FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Sunni x Year FE		Y	Y	Y	Y	Y	Y	Y	Y	Y
Political/Socioeconomic Controls		Y	Y	Y	Y	Y	Y	Y	Y	Y
Security Controls			Y	Y	Y	Y	Y	Y	Y	Y
Spatial Lag				Y	Y	Y	Y	Y	Y	Y
District-Specific Linear Trend						Y	Y	Y	Y	Y
Sample Includes Districts in:	Border Governorates	Border Governorates	Border Governorates	Border Governorates	Border Governorates No Trend Breaks	Border Governorates	AQI Areas	Rejectionist Areas	All But Baghdad	All of Iraq
Constant	0.025***	0.299	0.079	0.108	-0.243	0.733	0.026	-0.405	-0.017	0.166
	(0.006)	(0.203)	(0.615)	(0.614)	(0.731)	(0.896)	(0.987)	(0.945)	(0.730)	(0.626)
Observations	4,148	4,080	2,109	2,109	1,961	2,109	1,767	1,596	3,078	3,591
R^2	0.138	0.155	0.211	0.215	0.215	0.246	0.340	0.367	0.246	0.267
Log-Likelihood	2433	2402	1025	1030	993.1	1072	902.8	881.8	1428	1758
AIC	-4862	-4787	-2012	-2020	-1946	-2105	-1766	-1724	-2817	-3476

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered by district are in parentheses. Border governorates are Anbar, Basrah, Dahuk, Diyala, Erbil, Missan, Muthanna, Najaf, Ninewa, Sulaymaniyah, and Wassit. AQI-influenced areas are the governorates of Anbar, Babylon, Baghdad, Diyala, Erbil, Ninewa, Salah al-Din, Tameem, and Wassit. Rejectionist-influenced areas are all districts in the governorates of Babylon, Baghdad, Diyala, Ninewa, Salah al-Din, Tameem, and Wassit, and the districts of Falluja, Haditha, Heet, and Ramadi in Anbar governorate. Political/socioeconomic controls are population, population density, CERP spending/capita, unemployment rate, price-weighted oil reserves, and price-weighted oil production. Security controls are total cell phone towers, new cell phone towers, Sons of Iraq, police station density, Coalition maneuver battalions, Coalition collateral damage, condolence spending/capita, police spending/capita, Provincial Reconstruction Teams, Civil Military Operations Centers, and provincial Iraqi control. The mean of irregular share is 0.051, with a standard deviation of 0.156.

Table 2: Robustness of Hypothesis 1

VARIABLES	(1) Irregular Share	(2) Irregular Share	(3) Irregular Share	(4) Irregular Share	(5) Irregular Share	(6) Irregular Share	(7) Irregular Share	(8) Irregular Share	(9) Irregular Share	(10) Indirect Fires/Capita	(11) Direct Fires/Capita
Border Fortification	0.075***	0.082***	0.082***	0.068***	0.101***	0.113***	0.055**	0.079***	0.296***	0.005***	-0.014*
	(0.023)	(0.014)	(0.014)	(0.023)	(0.026)	(0.040)	(0.025)	(0.025)	(0.106)	(0.002)	(0.008)
District FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year-Specific Month FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Sunni x Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Political/Socioeconomic Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Security Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Spatial Lag	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Lagged DV	Y										
Governorate Clustered SEs		Y									
DBE Region Clustered SEs			Y								
Population Weights				Y							
Violence Weights					Y						
Excluding Districts-Months w/o SIGACTs						Y					
Including IEDs in Denominator							Y				
Additional Border Controls								Y			
Two-Limit Tobit									Y		
Constant	0.098	0.108	0.108	-1.136	-1.433	-1.475	0.317	0.141	2.256	-0.037	0.070
	(0.556)	(0.452)	(0.425)	(0.998)	(1.425)	(1.814)	(0.564)	(0.612)	(4.491)	(0.056)	(0.124)
Observations	2,109	2,109	2,109	2,109	1,320	1,051	2,109	2,109	2,109	2,109	2,109
R^2	0.222	0.215	0.215	0.246	0.452	0.308	0.207	0.215	0.376	0.216	0.511
Log-Likelihood	1040	1030	1030	1143	1037	285.7	1814	1030	-610.9	6108	2536
AIC	-2038	-2020	-2020	-2246	-2034	-531.4	-3588	-2016	1296	-12176	-5032

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered by district are in parentheses unless otherwise noted. Models are estimated with OLS unless otherwise noted. The sample includes all districts in border governorates. Column 9 reports pseudo R^2. Controls are described in the notes for Table 1. The mean of irregular share is 0.051, with a standard deviation of 0.156. The mean of indirect fires per capita is 0.003, with a standard deviation of 0.015. The mean of direct fires per capita is 0.034, with a standard deviation of 0.119.

are less vulnerable to informing because they can be set-up at long-range. As such, insurgent substitution from direct fire into indirect fire attacks is consistent with a shift into cheaper tactics (the resource mechanism), and with a shift into tactics less prone to informing (the information-sharing mechanism).

I investigate the information-sharing mechanism further in Table A.14, where I study per capita insurgent suicide attacks as the dependent variable. Suicide attacks are highly resistant to exposure, and so should increase in border fortification if the information-sharing mechanism predominates. Instead, results show that border fortification has a precise null effect on suicide attacks. While relatively cheap, suicide attacks were primarily perpetrated by foreign fighters in Iraq, whose travel into the country was impeded by counterinsurgent border control. This finding is more consistent with the resource mechanism. Still, I cannot rule out that information-sharing is complementary to the resource-centric logic of tactical substitution under the fortification dilemma. Indeed, information-sharing is a key mechanism underpinning the effect of border fortification on insurgent civilian victimization.

Civilian Victimization

Hypothesis 2 anticipates an association between border fortification and reduced insurgent civilian victimization, as insurgents attempt to cultivate local support in response to interdiction of their external resources. Columns 1-3 of Table 3 test this proposition, estimating a series of equations for the three civilian victimization outcomes described above. Parameters follow the specification from column 4 of Table 1. While coefficients are negatively signed, estimated effects are substantively small and statistically insignificant. These initial results offer little support for hypothesis 2.

Recall, however, the Algerian case. In response to French border control efforts, FLN rebels sought to improve relations with the local Algerian populace (i.e. their in-group), but engaged in *more* violence against out-group civilians, namely Europeans in Algerian cities. This example suggests border fortification can influence rebel-civilian relations, but that effects are moderated by social cleavages like ethnic identity.

Table 3: Sectarianism Conditions the Effect of Border Fortification on Civilian Victimization

VARIABLES	(1) Insurgent Collateral Damage/Capita	(2) Sectarian Killings/Capita	(3) Insurgent Civilian Casualties/Capita	(4) Insurgent Collateral Damage/Capita	(5) Sectarian Killings/Capita	(6) Insurgent Civilian Casualties/Capita
Border Fortification	-0.001	-0.001	-0.018	0.002***	0.005	0.150***
	(0.001)	(0.001)	(0.018)	(0.001)	(0.004)	(0.037)
Border Fortification x Homogeneous				-0.003***	-0.008*	-0.186***
				(0.001)	(0.004)	(0.034)
District FE	Y	Y	Y	Y	Y	Y
Year-Specific Month FE	Y	Y	Y	Y	Y	Y
Sunni x Year FE	Y	Y	Y	Y	Y	Y
Political/Socioeconomic Controls	Y	Y	Y	Y	Y	Y
Security Controls	Y	Y	Y	Y	Y	Y
Spatial Lag	Y	Y	Y	Y	Y	Y
Constant	-0.001	0.051	0.061	0.003	0.059	0.256
	(0.011)	(0.055)	(0.403)	(0.010)	(0.052)	(0.331)
Observations	2,109	2,109	2,109	2,109	2,109	2,109
R^2	0.489	0.512	0.252	0.492	0.513	0.262
Log-Likelihood	8727	6213	1167	8732	6216	1181
AIC	-17414	-12386	-2294	-17423	-12390	-2320

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered by district are in parentheses. The sample includes all districts in border governorates. Constituent terms for homogeneous districts are absorbed by district fixed effects. Controls are described in the notes for Table 1. The mean of insurgent collateral damage per capita is 0.001, with a standard deviation of 0.006. The mean of sectarian killings per capita is 0.004, with a standard deviation of 0.014. The mean of insurgent civilian casualties per capita is 0.043, with a standard deviation of 0.164.

Because rebels' choices about civilian victimization hinge on resources and civilian perceptions (Lyall, Blair, and Imai 2013; Polo and González 2020), the reduction in civilian victim-

ization that follows the interdiction of insurgents' external logistics should manifest most acutely in areas where rebels' prospective civilian supporters are concentrated. In contexts where stark boundaries exist between groups, such as in Iraq, where society is divided along sectarian lines, insurgents typically draw support from one primary community (e.g. ethnic group, sect, political party). In these contexts, rebel choices about civilian victimization are complicated by the nature of societal cleavages. In particular, in sectarian settings, the relationship between counterinsurgent border control and rebel violence against civilians is likely to be conditioned by social ties between rebels and their civilian constituents.

Where rebels share identity ties with civilians, their efforts to cultivate local support in response to border fortification are likely to be magnified for several reasons. First, if social cleavages have produced pervasive intergroup bias—meaning civilians express systematic favor for their own community and antagonism against others—homogeneous areas with large concentrations of civilians sharing social ties with rebels represent a convenient base. Rebels interested in generating internal support, including resources and recruits, will find it easiest to curry favor where in-group privilege lowers the cost of obtaining civilian support. Second, and relatedly, rebel overtures intended to win civilian support will be most credible to civilians in homogeneous areas, where civilians are already predisposed to support rebels with whom they share social ties (Lyall, Blair, and Imai 2013). Rebel forbearance in heterogeneous areas with concentrations of in-group and out-group civilians is less efficient because out-group antagonism means civilians will still be skeptical of efforts by out-group rebel groups to win support.

Third, if out-group antagonism is sufficiently high, rebels seeking to cultivate local support may even find that in-group civilians favor retributive attacks against out-group civilians. In this case, the civilians rebels seek to cultivate loyalty from may demand violence against out-group civilians, while opposing violence against in-group civilians (Polo and González 2020). Here, rebels' efforts to cultivate greater local support to compensate for external resource losses may lead them to engage in more civilian victimization against out-group civilians, while reducing civilian victimization against in-group civilians.

Ethnic geography provides a heuristic for potential civilian supporters to evaluate insurgent civilian victimization. Insurgent violence against civilians in homogeneous districts is

likely to target in-group members, sparking backlash and alienating civilian supports. Backlash may in turn spur in-group civilians to collaborate with counterinsurgent forces, further weakening rebels.[33] In contrast, civilian victimization in heterogeneous districts is more likely to target out-group civilians; intergroup bias in polarized socities means in-group civilians are more likely to tolerate or even support this violence. In sum, border fortification may spur insurgents to reduce civilian victimization against in-group civilians in homogeneous districts, while increasing violence against out-group civilians in mixed areas.

To test this proposition, in columns 4-6 of Table 3 I interact the border fortification indicator with an indicator for homogeneous districts, defined as districts where a Sunni, Shia, or Kurdish party won at least 66% of the vote share in the 2005 election (Berman, Shapiro, and Felter 2011). Insurgents operating in homogeneous districts are likely to share in-group identity ties with the dominant sect, and civilians in these districts recognize that insurgent victimization harms co-sectarians, triggering backlash. Correspondingly, border fortification in homogeneous districts is associated with a 0.52 standard deviation reduction in insurgent collateral damage, a 0.57 standard deviation reduction in sectarian killings, and a 1.14 standard deviation reduction in insurgent civilian casualties. These effects reverse in mixed districts, where rebel violence can more easily target out-group civilians that rebels' civilian constituents are more likely to tolerate or even condone targeting (Polo and González 2020). Border fortification in mixed districts is associated with a 0.36 standard deviation increase in insurgent collateral damage, a 0.41 standard deviation increase in sectarian killings, and a 0.92 standard deviation increase in the insurgent civilian casualties.

One possible concern is that border fortification causes a reduction in insurgent civilian victimization simply because it impedes insurgent production of violence, not because insurgents adapt to fortification by cultivating civilian support. However, sectarian heterogeneity in the effect of border fortification is inconsistent with this view. I would not observe a significant increase in insurgent civilian victimization in mixed districts if border fortification simply reduced the ability of insurgents to produce violence against civilians. Additionally, the negative effects in homogeneous districts are striking because they show insurgents responded to bor-

[33] Lyall, Blair, and Imai (2013) show that insurgent abuses against co-ethnic civilians may not spur collaboration with counterinsurgents. However, insurgent violence against in-group civilians does still reduce insurgent support.

der fortification by reducing civilian victimization despite also shifting into indirect fire attacks, which are generally less discriminate. The ability of insurgents to reduce civilian collateral damage despite adopting less precise tactics is strongly suggestive of conscious insurgent effort to minimize civilian harm. Insurgent discrimination in spite of substitution into less precise tactics also possibly indicates improved information flows from civilians as a result of insurgent efforts, though I cannot directly test this proposition.

Several additional tests confirm the robustness of these results. In Table A.15 I show substantively identical results emerge if the sample is subset to homogeneous districts, rather than parameterizing sectarian heterogeneity via an interaction as in columns 4-6 of Table 3. In Figure A.16 I disaggregate the results by sect. The negative effect of border fortification on civilian victimization is largest in Sunni districts. Results are substantively weaker but also significantly negative in Kurdish districts. By contrast, border fortification had a generally insignificant but negatively signed effect in Shia districts, and a positive effect in mixed districts.[34] As noted above, US border fortification efforts chiefly focused on interdicting external support to AQI and Rejectionist groups, which operated mostly in Sunni areas of western and northern Iraq. Figure A.16 also confirms that results are robust to operationalizing districts' sectarian composition using population rather than vote shares. In Table A.17 I show results are robust to alternate specifications and estimators.

Overall, the evidence yields robust support for a conditional variant of hypothesis 2. Border fortification reduces insurgent civilian victimization in areas where rebels share social ties with civilians, and hence can more credibly cultivate support in order to recoup external losses. In contrast, fortification in mixed sectarian districts exacerbates rebel violence against civilians.

Border Control and Population-Centric Counterinsurgency

As shown above, insurgents respond to counterinsurgent border control by substituting into irregular attacks, and by reducing civilian victimization—at least in areas where they have pre-existing social ties to civilians—in order to compensate external losses by cultivating greater local support. Because counterinsurgent border control incentivizes rebels to invest more resources in building local support from civilians, counterinsurgents must pair border control with

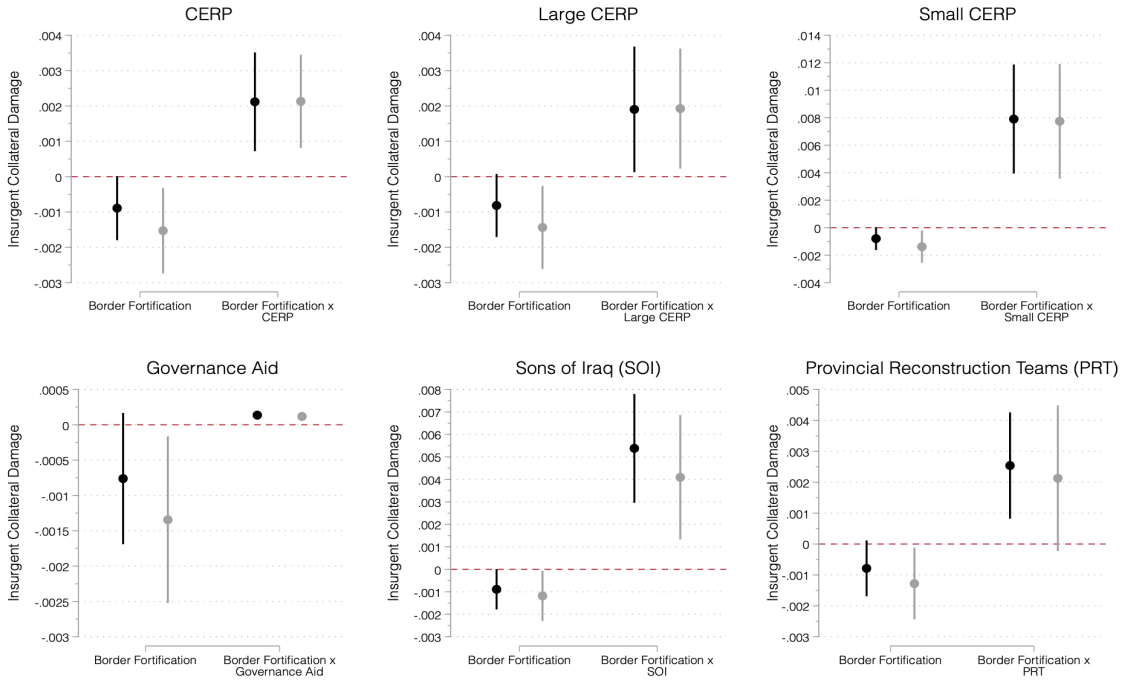
[34] I probe effects in Shia districts further when discussing Iranian subversion of border control efforts below.

population-centric efforts to cultivate civilian loyalty. Hypothesis 3 expects that when counterinsurgents pair border control efforts with their own efforts to cultivate civilian support, the attendant competition between rebels isolated from external resources and counterinsurgents engaged in "hearts-and-minds" efforts will induce rebels to engage in more civilian victimization (Crost, Felter, and Johnston 2014; Sexton 2016; Weintraub 2016).

To test hypothesis 3 I interact the indicator for border fortification with six measures of important population-centric programs. Specifically, I interact border fortification with measures of per capita spending on the Commander's Emergency Response Program (CERP), along with separate measures of per capita spending on large CERP projects (costing $>$ \$50,000) and per capita spending on small CERP projects (costing $<$ \$50,000). CERP was at the heart of the US counterinsurgent effort in Iraq and Afghanistan, and through the program, commanders granted money for small-scale reconstruction, development assistance, and humanitarian relief projects. Existing research suggests small CERP projects, which were most attentive to local community needs, were a highly effective means of cultivating civilian support for counterinsurgent forces (Berman et. al. 2013). Apart from CERP, I also interact border fortification with per capita spending on democracy and good governance programs, and indicators for the presence of Sons of Iraq (SOI) groups and Provincial Reconstruction Teams (PRT). SOI were US-funded militia units of primarily tribal Sunnis opposed to abusive AQI tactics; these units gave a local face to counterinsurgent efforts. Similarly, PRT were civil-military affairs units formed to support locally-sensitive reconstruction.

Figure 6 validates the expectation that border fortification can induce insurgent civilian victimization when paired with population-centric counterinsurgency. Absent government service provision, insurgents move to cultivate civilian loyalties by reducing civilian victimization in the face of border control. However, by pairing border control efforts with service provision aimed at winning "hearts-and-minds," counterinsurgents can induce rebels to engage in civilian victimization as a means of deterring collaboration. In line with previous research (Berman et. al. 2013), the effects are significantly larger for small than large CERP projects (two-sided p = 0.029). Substantively, in the average district border fortification without small CERP spending causes insurgents to perpetrate 0.29 fewer collateral damage incidents, or about 1 fewer

Figure 6: Border Fortification Induces Insurgent Civilian Victimization When Paired with Population-Centric Counterinsurgency



Note: Bars are 90% confidence intervals based on robust, district clustered standard errors. Plots depict OLS coefficients from a series of models interacting an indicator for border fortification with measures of population-centric counterinsurgency programs denoted in the respective plot title. The sample includes all districts in border governorates. Black markers denote models with district, year-specific month, and year by Sunni vote share fixed effects, political/socioeconomic and security controls, and spatial lags. Gray markers add district-specific linear trends. Controls are described in the notes for Table 1.

insurgent-caused civilian death, per month. By contrast, an equivalent *increase* in collateral damage incidents and civilian deaths per month results when border fortification is paired with $0.36 in small CERP spending per capita in the average district. This level of per capita spending implies a total expenditure on small CERP of just $75,986 per month in order to reverse the negative effect of border fortification on insurgent civilian victimization in the average district. Since insurgent civilian victimization reduces civilian support for insurgents and induces collaboration with counterinsurgent forces (Schutte 2017; Shaver and Shapiro 2020), these effects suggest population-centric COIN initiatives that compete with insurgents for civilian "hearts-and-minds" are a vital complement to COIN border control.

While Figure 6 studies insurgent collateral damage, in Table A.18 I show that similar effects emerge for sectarian killings and insurgent civilian casualties. Though some estimates are less precise, pairing border control with population-centric COIN programs, especially small

CERP spending, is associated with increased insurgent civilian victimization. Together, these results support hypothesis 3. Pairing population-centric investments with border control can aid counterinsurgents in contesting rebel attempts to cultivate improved civilian relations.

Additional Implications and Robustness

Rebel Smuggling

Insurgents in Iraq maintained expansive smuggling networks. By using illicit trafficking routes, insurgents could continue to access foreign support even after border fortification impeded access through formal crossings. As US officials were acutely aware: "[c]ontrol and secure the border anywhere and smugglers, criminals, AQI, FF [foreign fighters] will detour to one of many other border crossing locations" (MNC-I 2007). Tactical shifts along smuggling routes could also cause conflict spillovers, biasing estimates. Spatial lags in the main analyses help account for spillovers, but to further probe smuggling dynamics I study ratlines geotraced from a declassified military map of insurgent logistical networks (Figure A.19). If tactics hinge on insurgents' abilities to sustain external resource flows, then by extension, the effect of border fortification should attenuate where insurgents have access to alternate smuggling routes.

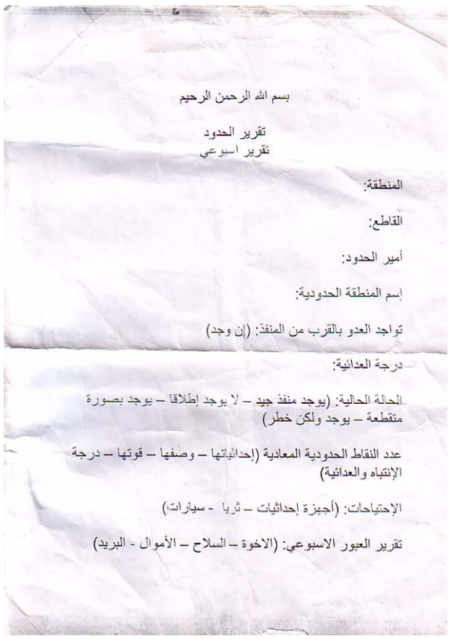
I test this implication in Figure A.20. Consistent with the main logic of the fortification dilemma, border fortification caused insurgent shifts into irregular tactics and reduced civilian victimization where insurgents did not have access to ratlines that could facilitate external resupply. However, border fortification caused precisely the opposite effects—more conventional attacks and civilian victimization—where insurgents maintained alternate trafficking routes and counterinsurgent surveillance was less intense. Finally, along high-density trafficking nodes where insurgents could access multiple smuggling routes but counterinsurgent surveillance was concentrated, border fortification had no significant effect on insurgent violence. These intuitive results comport with evidence that border control efforts can affect violence by altering the value of smuggling routes (Getmansky, Grossman, and Wright 2019; Laughlin 2019).

Rebel Intelligence Operations

For insurgents interested in retaining access to external support and concerned about the effects of border control, a natural reaction would be to focus intelligence-gathering efforts on

counterinsurgent border security operations. For instance, by collecting intelligence on where counterinsurgent border infrastructure and personnel were deployed, insurgents could identify relatively safer and cheaper smuggling routes. Captured AQI documents released by the US military (Figure 7) reveal the group did just that. AQI established a "Border Emirate" to manage its foreign logistics, and compiled weekly reports about border security.

Figure 7: Insurgents Compiled Intelligence on Counterinsurgent Border Control



بسم الله الرحمن الرحيم

تقرير الحدود
تقرير اسبوعي

المنطقة:

القاطع:

أمير الحدود:

إسم المنطقة الحدودية:

تواجد العدو بالقرب من المنفذ: (إن وجد)

درجة العدائية:

الحالة الحالية: (يوجد منفذ جيد – لا يوجد إطلاقا – يوجد بصورة متقطعة – يوجد ولكن خطر)

عدد النقاط الحدودية المعادية (إحداثياتها – وصفها – قوتها – درجة الإنتباه والعدائية)

الإحتياجات: (أجهزة إحداثيات – ثريا - سيارات)

تقرير العبور الاسبوعي: (الاخوة – السلاح – الأموال - البريد)

In the name of God the most Merciful, the most Compassionate

Borders Report
Weekly Report

Area:
Sector:
Borders' Emir:
Name of the border area:
Enemy locations near the port of entry: (if any)

Level of hostility:
Current situation: (there is a good port of entry – there is none at all – there is an intermittent port of entry – there is a port of entry but it's dangerous.)

Number of enemy border checkpoints (coordinates – description – strength – level of attention and hostility.)

Equipments required: (coordinates systems – cell phones – vehicles.)

The weekly crossing report: (the brothers – weapons – funds – mail.)

End of document / translation

Note: The scanned document on the left is a template of the weekly border activity reports compiled by al-Qaeda in Iraq (AQI) spies. The document was captured by US forces in western Iraq in 2007. Text on right is a translation provided by the Combating Terrorism Center at the US Military Academy. Harmony Program: NMEC-2007-658008.

Rebel Finances

The fortification dilemma should emerge whenever counterinsurgent border control increases the price to rebels of obtaining external support. No tactical shifts will be observed if border control does not make it costlier for rebels to access foreign resources. On the other hand, if border control raises the price of accessing external support, there should be a positive association between border fortification and rebel expenditures in border areas. As it becomes more expensive to maintain cross-border smuggling routes and bribe border guards, for example, expenditures will necessarily increase. Unique data based on captured insurgent financial records (Bahney et. al. 2010) permit an exploratory test of this implication. The records detail

fiscal transfers from AQI's province-level financial administration to cells in sectors of Anbar between June 2005 and October 2006.

Results in Table A.21 suggest that increasing sector-level border fortification is positively associated with province-to-sector monetary transfers per capita and transfers as a share of provincial revenue. Each additional border fort in a sector increased total fiscal transfers per month from the provincial administration by $7,264 for the average sector population and $24,794 for the average provincial revenue. Other records reveal why border control increased local militant expenditures—fortification raised smugglers' fees for coordinating cross-border insurgent logistics. AQI financial ledgers indicate the group was paying as much as $4,985 dollars to smugglers every two weeks, with an average expenditure of $3,425 per month from April-August 2007, not including costs for vehicles used in cross-border trafficking.[35]

Iranian Subversion

Subversion by hostile neighboring states frequently undermines state capacity in peripheral regions (Lee 2020). During Operation Iraqi Freedom, Iran actively countered border interdiction efforts. Iranian forces used bribes and occasional military incursions to ensure resources continued to reach their Iraqi surrogates (Felter and Fishman 2008). An implication is that border control should not cause tactical shifts in areas dominated by Iranian proxy groups, which could rely on Iranian subversion to sustain external resource flows.

I explore this implication in Table A.22, focusing on areas where Jaish al-Mahdi (JAM), the primary Iranian-supported militia, was active. As expected, there is no effect of counterinsurgent border control in JAM-influenced districts. This suggests that the effect of counterinsurgent border control is conditional on interstate dynamics between fortifying states and neighboring, sanctuary countries. These heterogeneous effects also highlight important limits of unilateral border control (Gavrilis 2008).

Temporal Dynamics

Insurgents innovate and adapt. The possibility of insurgent learning suggests the effect of border fortification on violence may decay over time. On the other hand, without alternate

[35] Harmony Program: NMEC-2007-657731; NMEC-2007-657777; NMEC-2007-657860.

smuggling routes or more active support from a state sponsor capable of subverting border controls, insurgents may be unable to fully restore external resource access. This would imply that so long as COIN forces continue to police border access, insurgent tactical shifts should endure.

I take two approaches to understanding temporal dynamism in the effect of border fortification. First, in Table A.23 I replicate the core results over district-quarters, district-half years, and district-years, rather than district-months. All results hold over these longer windows. Second, in Figure A.24 I take a more flexible approach, re-estimating the effect of border fortification for each period from treatment onset to 36 months post-treatment. These results suggest the effect of border fortification on irregular attacks attenuates within about 6 months, while the effects on civilian victimization attenuate between 12 and 22 months. The fact that the tactical substitution effect attenuates before the civilian victimization effect may suggest insurgents' efforts to cultivate local support in the wake of border fortification succeeded in mobilizing civilians, relaxing constraints on insurgent production of conventional violence (Bueno de Mesquita 2013).

Placebo Tests

The logic of the fortification dilemma implies that border fortification affects insurgent tactics by interdicting insurgents' foreign logistics. One concern is that the observed effects of border fortification merely capture generic effects of Iraqi counterinsurgent presence, rather than unique effects of counterinsurgent border control. Placebo tests using the construction of non-fort security infrastructure—DBE support facilities (e.g. wells), DBE academies, Ministry of Defense and Interior bases, police checkpoints, police stations, and police academies—help rule out this possibility. While the expansion of these security facilities meant a greater Iraqi role in counterinsurgency, they were not used to interdict the borders, and so should not have the same effects as border forts. Results in Table A.25 confirm that security infrastructure not intended to interdict insurgents' transnational logistics had no effect on insurgent tactics or civilian victimization. These tests also verify that increasing indirect fire attacks as a result of border fortification do not occur simply because border forts are fixed installations, which pose a convenient indirect fire target.

Conclusion

While the conventional wisdom on counterinsurgency strategy suggests border control is critical for defeating transnational insurgents, I argue that this unqualified prescription neglects important insurgent tactical dynamics. In particular, to the extent border control efforts seal borders and degrade transnational rebels' external resources, rebels are likely to adapt by seeking to cultivate better relations with the civilian population in the target state. As a result, border control efforts, while they may reduce the fighting capacity of insurgents, can also induce greater competition between insurgents and counterinsurgents for the loyalties of the civilian populace. Counterinsurgents contemplating whether or not to pursue border control must weigh whether the good consequences—reduced insurgent capability and civilian victimization—outweigh the bad—increased insurgent guerrilla attacks and competition for hearts-and-minds. Results presented in this article extend important theories linking rebel resources and tactics, and provide evidence that border fortification efforts during Operation Iraqi Freedom caused reductions in insurgent conventional attacks and violence against civilians, but the latter effect indicates insurgent efforts to cultivate civilian relations as a means of recouping resource losses. Perhaps most critically, this paper highlights the importance of viewing transnational dimensions of civil war as a subject of contestation in themselves; external sanctuaries and resources are not exogenous or incontestable characteristics of rebellion.

The policy implications are clear. While border control efforts can help degrade transnational insurgents' fighting capacity, counterinsurgents must be prepared to endure irregular campaigns, and to invest in hearts-and-minds initiatives designed to raise living standards and civilian livelihoods. Otherwise, border control-induced competition from insurgents over civilians' loyalties may ultimately make the counterinsurgents' task more difficult. Population-centric programs must be employed in tandem with counterinsurgent border control.

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Supplementary Materials for Border Control and Insurgent Tactics

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Counterinsurgents Often Fortify Borders

Counterinsurgent border fortifications since 1945 are listed below. Data are based on original data collection and collation of multiple sources, including Hassner and Wittenberg (2015), Avdan and Gelpi (2017), and Carter and Poast (2017).

Table A.1: Instances of Counterinsurgent Border Fortification

Name	Counterinsurgent (Patron)	Neighbor/Sanctuary	Start Year	End Year	Confidence
De Lattre Line	Indochina (France)	China	1950	1954	High
	Malaya (U.K.)	Thailand	1950	1960	Low
Pedron Line	Algeria (France)	Morocco	1957	1962	High
Morice Line	Algeria (France)	Tunisia	1957	1962	High
Cordon Sanitaire	Zimbabwe (Rhodesia)	Zambia	1966		High
McNamara Line	South Vietnam (U.S.)	Cambodia	1967	1968	High
McNamara Line	South Vietnam (U.S.)	Laos	1967	1968	High
McNamara Line	South Vietnam (U.S.)	North Vietnam	1967	1968	High
	Israel	Egypt	1968	1973	High
	Angola (Portugal)	Democratic Republic of the Congo	1971	1975	Low
	Israel	Syria	1973		High
Hornsbeame Line	Oman (U.K., Iran)	South Yemen	1973	1976	High
Cordon Sanitaire	Zimbabwe (Rhodesia)	Mozambique	1974		Moderate
	Israel	Lebanon	1975		High
	South Africa	Mozambique	1975		Moderate
The Berm	Western Sahara/Morocco	Mauritania	1980		High
	Nigeria	Cameroon	1981		Low
	Israel	Jordan	1981		Moderate
	Afghanistan (USSR)	Pakistan	1981	1989	Moderate
	Afghanistan (USSR)	China	1981	1989	Moderate
Cordon Sanitaire	Nicaragua	Honduras	1981	1990	Low
	Afghanistan (USSR)	Iran	1982	1989	Moderate
	Egypt	Gaza	1982		Moderate
Dogob Defensive Line	Ethiopia	Somalia	1982	1982	Low
Vat Cong Defensive Line	Cambodia (Vietnam)	Thailand	1983	1991	High
	Turkey	Iran	1985		Low
	Turkey	Iraq	1985		Low
	India	Bangladesh	1986		High
	South Africa	Swaziland	1986		Moderate
	Azerbaijan	Armenia	1991		Low
	Armenia	Azerbaijan	1991		Low
	Iran	Pakistan	1991		Low
	India	Pakistan	1992		High
	Malaysia	Thailand	1993		Moderate
	Israel	Gaza	1994		High
	Uzbekistan	Kyrgyzstan	1999		Moderate
	Iran	Afghanistan	2000		High
	Israel	West Bank	2000		High
	Uzbekistan	Afghanistan	2001		High
	India	Myanmar	2003		Moderate
	Thailand	Malaysia	2004		Moderate
	Pakistan	Afghanistan	2005		High
	Iraq (Coalition)	Syria	2005		High
	Iraq (Coalition)	Iran	2005		High
	Iraq (Coalition)	Saudi Arabia	2005		High
	Iraq (Coalition)	Kuwait	2005		High
	Iraq (Coalition)	Jordan	2005		Moderate
	Jordan	Iraq	2006		High
	Saudi Arabia	Yemen	2008		High
	Georgia	Russia/South Ossetia	2008		High
	Georgia	Russia/Abkhazia	2008		High
	Myanmar	Bangladesh	2009		High
	India	Myanmar	2010		High
European Wall/Great Wall	Ukraine	Russia	2013		High
	Turkey	Syria	2013		High
	Tunisia	Libya	2015		High
	Morocco	Algeria	2015		Low
Jordan Great Wall	Jordan	Syria	2016		High
Jordan Great Wall	Jordan	Iraq	2016		High
Al Shabaab Wall	Kenya	Somalia	2016		High
	Iraq	Syria	2018		Moderate

Section A.2: Archival Sources

In the main text I use a case study of French border control efforts during the Algerian War of Independence to illustrate the logic of the fortification dilemma. The case study relies on two sets of sources: (1) declassified archival sources from the US Central Intelligence Agency's CIA Records Search Tool (CREST) housed at The National Archives at College Park, Maryland (NARA II); and (2) secondary historical sources on the war, which describe French and Algerian archival materials. In the manuscript, references to archival documents follow this convention:

$$\text{CREST} : \text{FOIA}/\text{ESDN Document ID}$$

where CREST indicates the document was sourced from the CIA Records Search Tool, and the FOIA/ESDN Document ID refers to the Executive Standard Document Number (ESDN), an internal Agency tracking number. All documents can be searched via https://www.cia.gov/library/readingroom/home.

There are several benefits of using American intelligence documents to understand Algerian insurgents' tactical adaptations to French border control efforts. First, compared to secondary sources, which could be plagued with historiographical bias (Lustick 1996), primary source documents, and especially intelligence estimates, leave less room for subjective interpretation. Second, the US did not have a prominent role in the Algerian War of Independence, and although it was allied with France, the US sought to avoid deep intervention, balancing competing needs to sustain good relations with France and Algeria's Arab neighbors. In particular, the United States gently urged France to agree to eventual Algerian independence, while providing tepid military support to the counterinsurgency effort. Above all, the US sought to balance the risk of alienating Algeria's Arab neighbors, who were supportive of the FLN and vulnerable to Soviet influence, with the risk that France could reduce or withdraw support for NATO, and especially West Germany, if the US pushed France too hard over Algeria (Wall 2001). Because the US role in Algeria was moderate and minimal, there is little reason to suspect systematic bias—either pro-French or pro-FLN—in US intelligence estimates. Third, although the overall set of documents and the specific sections of documents that are declassified is clearly non-random, US materials that I use are 58-61 years old, making virtually all of them subject to mandatory declassification review under US law (e.g. Executive Order 13526). As such, selection bias stemming from the process of declassification (Darnton 2018) should be minimal.

Potential Biases in Civilian Victimization Data

In the main text I study insurgent violence against civilians using data from Iraq Body Count (IBC) and the World Incidents Tracking System (WITS). For reference, IBC data are described in greater detail in Condra and Shapiro (2012), while WITS data are introduced in Wigle (2010). IBC records violent incidents resulting in death, and captures the date and location, at a minimum, for each incident. IBC events are coded from English language commercial media reports, including reports originating in non-English languages and translated by major Middle Eastern and Iraqi press agencies, along with NGO reports, and hospital and morgue records provided by Iraqi Medico-Legal Institutes and the Iraqi Ministry of Health.

WITS records incidents of politically-motivated violence against civilians, and captures the date, location, and number killed, at a minimum, for each incident. WITS data are maintained by the US National Counterterrorism Center (NCTC), and represent the source for the data on terrorism reported in Congressionally-mandated annual terrorism reports, including the State Department's Country Reports on Terrorism and the NCTC Report on Terrorism. WITS events are machine coded from commercial newswires, the US Government's Open Source Center, and local press reports, and then cross-checked by human researchers at the NCTC. A common set of sources and search strings is maintained by NCTC for quality control.

I rely on IBC and WITS for data on civilian victimization because insurgent violence against civilians is undercounted in the MNF-I SIGACT III database, from which I draw measures of insurgent-initiated violence against Coalition and Iraqi forces. As Berman, Shapiro, and Felter (2011: 790) explain, the SIGACT data "capture violence against civilians and between nonstate actors only when U.S. forces are present and so dramatically undercount sectarian violence... ." While IBC and WITS are hence preferable to MNF-I SIGACT III for measuring civilian victimization, because these alternative data sources are coded from media reports it is possible that they are subject to reporting bias. Recent scholarship shows that reporting biases in media focus can affect statistical results (Dafoe and Lyall 2015; Weidmann 2016), raising concerns about bias in the IBC and WITS data I study.

Overall, I am sanguine that reporting biases in the IBC and WITS data are unlikely to drive the observed negative effect of border fortification on civilian victimization for several reasons. First, consider situations where reporting bias in IBC and WITS data could be systematically correlated with border fortification. This could happen if the implementation of border fortification led to the deployment of more Coalition troops and embedded reporters, in turn improving media reporting of insurgent civilian victimization. Alternatively, what if the implementation of border fortification meant improved security conditions, such that cell phone service providers could expand coverage of the cell network in peripheral border regions, in turn improving reporting of insurgent civilian victimization by facilitating mobile penetration. In both of these plausible scenarios, the direction of bias between border fortification and reporting bias in IBC and WITS is positive. In other words, I would be more likely to observe a spurious positive effect of border fortification on insurgent civilian victimization if the roll-out of border forts led to increased media or troop presence or expansion of the cell network. I identify precisely the opposite effect in the main text: border fortification reduces insurgent civilian victimization, at least in homogeneous sectarian districts. Second, all of the arguments I can think of for reporting bias in IBC and WITS point in the same direction, whereas I find heterogeneous effects of border fortification on insurgent civilian victimization by district sectarianism. Third, in Table A.11, I find no significant correlations between border fortification and deployments of

Coalition troops or changes in cell coverage. These results suggest that border fortification did not induce policy changes that could also affect reporting bias in IBC and WITS data. Fourth, IBC and WITS draw extensively on local Iraqi media, which operated widely throughout the conflict. It is unlikely that local press reporting varied much month-to-month within districts. Hence, while IBC and WITS may contain some measurement error orthogonal to the relationship of interest, this is an issue of statistical precision, not bias.

To more formally probe potential biases in IBC and WITS I take a few steps. First, I estimate coefficients of proportionality (δ) for the models reported in columns 4-6 of Table 3 using the method described in Oster (2019). Conceptually, δ represents the degree of selection on unobservables relative to observables (i.e. controls) required to explain away an estimated effect.[1] For the insurgent collateral damage outcome (column 4 of Table 3), δ = -3.278 for the effect of border fortification in homogeneous districts and 4.062 for the effect of border fortification in mixed districts. For the sectarian killings outcome (column 5 of Table 3), δ = -1.016 for the effect of border fortification in homogeneous districts.[2] For the insurgent civilian casualties outcome (column 6 of Table 3), δ = -2.276 for the effect of border fortification in homogeneous districts and 4.734 for the effect of border fortification in mixed districts. Negative values of δ across the border fortification $\times$ homogeneous interaction term indicate that controlling for observables strengthens the estimated negative effect of border fortification on insurgent civilian victimization in homogeneous districts relative to a model without controls. Negative δs are uninformative about the size of potential bias, but they do indicate that results are unlikely to be driven by omitted variables like reporting biases in IBC and WITS data. In mixed districts, positive δs indicate that unobservables would have to be about 4.1 and 4.7 times more important than observables in order to drive the observed positive effects of border fortification on insurgent collateral damage and insurgent civilian casualties (respectively) to 0. These tests build confidence that our results are not driven by unobserved bias in the IBC or WITS data.[3]

Second, in Figure A.3 I employ a variant of the test suggested by Weidmann (2016) to determine the influence of mobile coverage on reporting bias in the IBC and WITS data. The logic of the test is that if reporting bias owing to cell phone coverage is affecting data, we should see the effect of cell phones on violence significantly differ for less severe attacks than for more severe attacks. As Weidmann (2016: 214-15) explains: "a small event with one casualty is likely to go unreported due to difficulties in communication, but a major attack that leaves 15 people dead will be reported no matter whether cellphone coverage exists at the location of the attack. This means that if selective reporting affects our results, a positive effect of cellphone coverage should be weaker or even disappear if we analyze high-fatality events as compared to low-fatality ones, since the former will suffer less from reporting being driven by cellphone coverage."

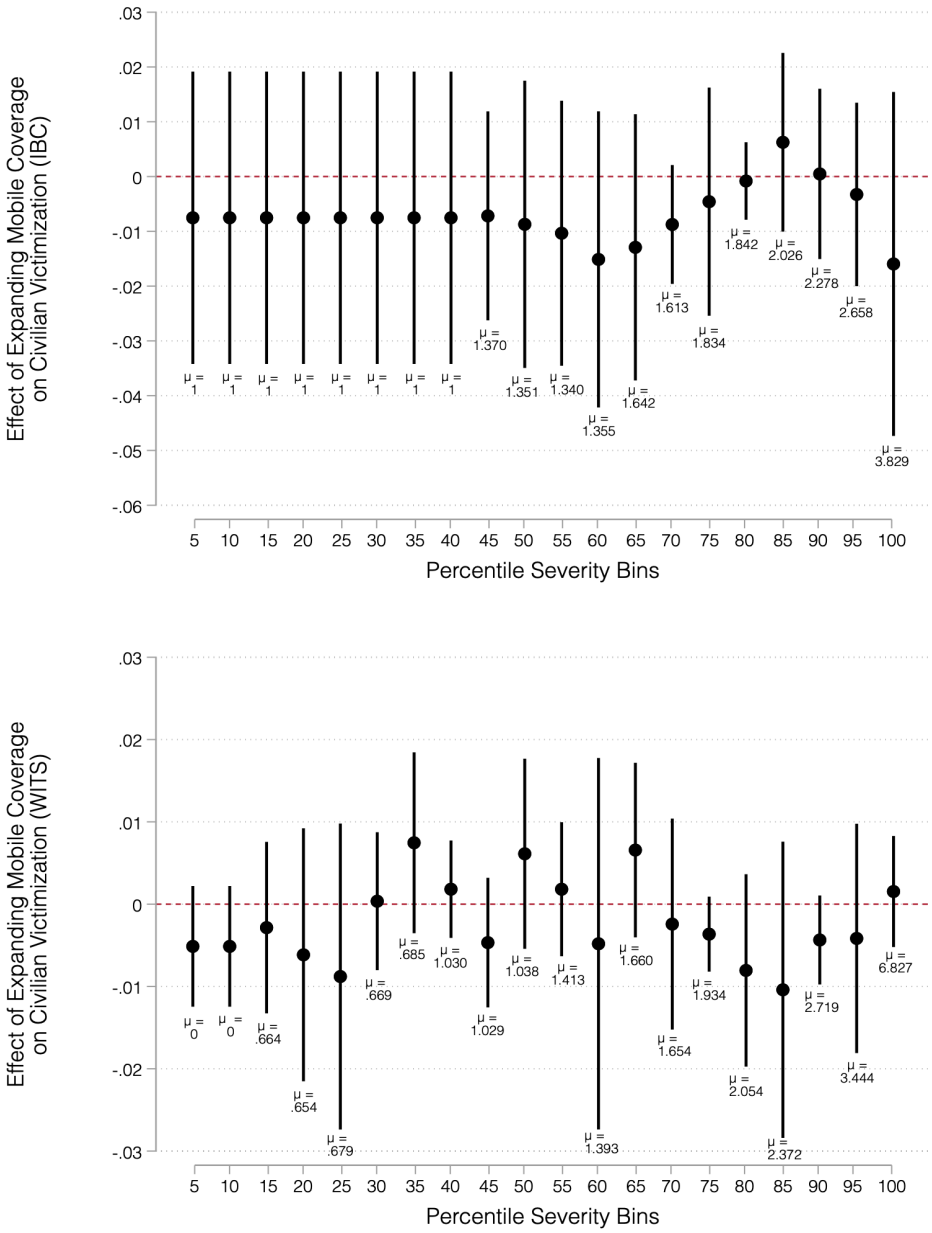
I implement this test for IBC data on insurgent collateral damage and WITS data on

[1] Per Oster's (2019) recommendation, I base the calculation of δ on a maximum R^2 of $1.3 \times R^2_{Full}$, where R^2_{Full} equals the within-district R^2 from the full model with controls reported in the respective column 4-6 of Table 3 in the main text.

[2] I do not estimate δ for the effect of border fortification on sectarian killings in mixed sectarian districts because the estimated effect is not statistically significant.

[3] I am not concerned about reporting bias in the irregular share dependent variable based on MNF-I SIGACT III data, but I estimate δ for models of the effect of border fortification on irregular tactics anyway to assess their sensitivity. For the main irregular share model (column 4 of Table 1), δ = -1.236. As with the civilian victimization outcomes, this indicates that the irregular share results are unlikely to be driven by omitted variables.

Figure A.3: The Effect of Cell Coverage on Civilian Victimization Does Not Vary Over Incident Severity



Note: Bars are 95% confidence intervals based on robust, district clustered standard errors. Estimates are from OLS models, and show the effect of the lagged first-difference in the number of new cell phone towers built in a district on insurgent civilian victimization from IBC (top panel) and WITS (bottom panel). Each model includes controls for population, population density, the urban population share, a spatial lag of the insurgent civilian victimization dependent variable, and district and year-specific month fixed effects. The μ under each estimate equals the mean severity of attacks in the respective bin.

insurgent civilian casualties. The specific procedures for the results reported in Figure A.3 are as follows. First, I split IBC and WITS data by the reported severity of each attack in increments of five percentiles from 0 to 100. For IBC this means splitting the data by the maximum number of deaths in each event, and for WITS this means splitting the data by the total number of casualties in each event. Then, I subset the data to include all attacks at or below the severity level of the lowest (i.e. 5^{th}) percentile bin. This leaves 1,309 attacks for IBC and 2,621 attacks for WITS. I then collapse these attacks, summing their incidence at the district-month level. Finally, I estimate the effect of expanding cell tower coverage on the number of attacks in a least squares regression framework. I repeat this procedure for successive bins, moving in increments of five percentiles. For instance, for the 50^{th} percentile bin I subset the data to include all attacks at or below the severity level of the 50^{th} percentile for the IBC and WITS variables. Then I randomly sample 1,309 events from the IBC subset and 2,621 events from the WITS subset. I collapse these random subsamples to the district-month and repeat the regression analysis. Mean severity generally increases over successive bins. Results show no evidence that the effect of expanding cell coverage on either civilian victimization measure significantly differs for high severity versus low severity attacks.

Table A.4: Correlations Between IBC/WITS and SIGACTs Data on Civilian Victimization

	Civilian Victimization at the Military Division-Month				Coalition-Caused Civilian Casualties at the Governorate-Month	
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Insurgent Civilian Victimization (WITS)	Insurgent Civilian Victimization (WITS)	Sectarian Killings (IBC)	Sectarian Killings (IBC)	Coalition-Caused Civilian Casualties (IBC)	Coalition-Caused Civilian Casualties (IBC)
Sectarian Incidents (SIGACTs)	0.396***	0.174***	0.322***	0.081***		
	(0.092)	(0.024)	(0.055)	(0.019)		
Coalition-Caused Civilian Casualties (SIGACTs)					0.007***	0.003**
					(0.002)	(0.001)
Unit FE		Y		Y		Y
Year-Specific Month FE		Y		Y		Y
Constant	46.907	58.494***	29.710	42.299***	4.253*	4.762***
	(29.888)	(1.268)	(17.145)	(0.980)	(2.243)	(0.183)
Observations	224	224	224	224	1,056	1,056
R^2	0.353	0.923	0.396	0.775	0.010	0.152
Log-Likelihood	-1278	-1039	-1211	-1101	-5059	-4977
AIC	2560	2082	2426	2205	10122	9958

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered by military division (columns 1-4) and governorate (columns 5-6) are in parentheses. Unit fixed effects are for military divisions in columns 2 and 4, and for governorates in column 6. Models estimated using OLS.

Finally, in Table A.4 I compare data from WITS and IBC to data on civilian victimization contained within the MNF-I SIGACT III database. The US military have released SIGACTs data on sectarian incidents at the military-division month level for January 2006 through August 2008, and SIGACTs data on Coalition and Iraqi forces-caused civilian casualties at the governorate-month level for January 2004 through August 2008. These newly-released data are based on instances of violence against civilians observed directly by or locally reported to Coalition and Iraqi military forces, which were deployed across Iraq, and whose reporting was not affected by the availability of cellular communications technologies or the presence of embedded reporters. If the variation in the WITS/IBC data on killings of civilians are broadly consistent with these administrative sources, concerns about systematic measurement error in WITS and IBC are reduced. Regressing sectarian/insurgent civilian victimization SIGACTs against WITS incidents and sectarian incidents recorded in IBC (columns 1-4) show that SIGACTs victimization data are highly correlated with WITS/IBC data, and explain a high proportion of total model variability. A similarly strong correlation emerges between SIGACT and IBC data on Coalition-caused civilian casualties. Shaver and Shapiro (2020) also validate a high correlation between IBC data and not-yet-publicly-available SIGACTs data on civilian victimization.

Variable Definitions and Sources

Table A.5: Variable Definitions and Sources

Variable	Definition	Source
Dependent Variables		
Irregular Share	$\frac{\text{Indirect Fire}}{\text{Indirect Fire} + \text{Direct Fire}}$	MNF-I SIGACT III
Insurgent Collateral Damage	Incidents of insurgent combat operations causing civilian death per 1,000 capita	IBC
Sectarian Killings	Incidents of insurgent non-combat operations causing civilian death per 1,000 capita	IBC
Insurgent Civilian Casualties	Number of casualties from insurgent attacks per 1,000 capita	WITS
Independent Variables		
Border Fortification	Border fort operating	IRMS
Control Variables		
Population	$asinh$(Population from WFP censuses in 2003, 2005, and 2007)	ESOC
Population Density	Population per ten square kilometers	ESOC
Sunni Vote Share	Vote share for Sunni-aligned political parties in the 2005 parliamentary election	ESOC
CERP Spending	Per capita spending on Commander's Emergency Response Program	IRMS
Unemployment Rate	Unemployment rate	ESOC
Oil Reserves	$asinh$(Oil reserves weighted by price)	ESOC
Oil Reserves	$asinh$(Oil production weighted by price)	ESOC
Total Cell Phone Towers	Number of cell phone towers	Shapiro and Weidmann (2015)
New Cell Phone Towers	Number of newly-built cell phone towers	Shapiro and Weidmann (2015)
Sons of Iraq	Sons of Iraq group operating	IRMS
Police Density	Police stations constructed per ten square kilometers	IRMS
Coalition Maneuver Battalions	Coalition battalions engaged in combat operations	Lee (2011)
Coalition Collateral Damage	Per capita number of civilian deaths from Coalition combat operations	IBC
Condolence Spending	Per capita spending on condolence payments and battle damage	IRMS
Police Spending	Per capita spending on police	IRMS
Provicial Reconstruction Team	Provincial Reconstruction Team operating	Berman, Felter, Shapiro, and Troland (2013)
Civil Military Operations Center	Civil Military Operations Center operating	Silverman (2020)
Provincial Iraqi Control	Provincial Iraqi control	Original

Note: The unit of analysis is the district-month.

Descriptive Statistics

Descriptive statistics for variables used in the main analysis can be found here.

Table A.6: Summary Statistics

	Observations	Mean	Std. Dev.	Minimum	Maximum
Dependent Variables:					
Irregular Share	6344	0.051	0.156	0	1
Insurgent Collateral Damage/Capita	7800	0.001	0.006	0	0.240
Sectarian Killings/Capita	7800	0.004	0.013	0.000	0.425
Insurgent Civilian Casualties/Capita	7488	0.043	0.164	0	3.957
Independent Variables:					
Border Fortification	8528	0.250	0.433	0	1
Cumulative Number of Border Forts	8528	1.813	4.880	0	41
Border Fort Construction	8528	0.072	0.259	0	1
Non-Fort Border Infrastructure	8528	0.084	0.277	0	1
Directorate of Border Enforcement Academy	8528	0.039	0.194	0	1
Control Variables:					
Population	8528	5.781	1.052	2.546	8.086
Population Density	8528	4.260	15.998	0.001	138.914
Sunni Share	6240	0.208	0.284	0	0.917
Shia Share	6240	0.409	0.384	0	0.902
Kurdish Share	6240	0.245	0.384	0	0.993
CERP Spending	8528	0.087	0.848	0	59.743
Unemployment Rate	6240	0.105	0.069	0	0.509
Price-Weighted Oil Reserves	6448	7.663	7.062	0	17.588
Price-Weighted Oil Production	6448	10.862	11.803	0	27.177
Cell Phone Towers	3780	17.903	38.540	0	296
New Cell Phone Towers	3780	0.519	1.833	0	35
Sons of Iraq	8528	0.121	0.326	0	1
Police Density	6768	0.016	0.026	0	0.200
Coalition Maneuver Battalions	3591	0.929	1.629	0	15.500
Coalition Collateral Damage	7800	0.004	0.042	0	1.946
Condolence Spending	6768	0.007	0.073	0	3.839
Police Spending	6768	0.020	0.105	0	2.946
Provincial Reconstruction Team	6240	0.108	0.310	0	1
Civil Military Operations Center	6448	0.174	0.380	0	1
Provincial Iraqi Control	8528	0.275	0.446	0	1

Table A.7: Violence Trends and Differences Between Forecasted and Actual Dates of Border Control Project Award, Start, and Completion

VARIABLES	(1) Award	(2) Award	(3) Award	(4) Award	(5) Start	(6) Start	(7) Start	(8) Start	(9) Finish	(10) Finish	(11) Finish	(12) Finish
SIGACTs (Prior Month)	0.105				0.203				0.321			
	(0.074)				(0.301)				(0.315)			
SIGACTs (3 Month Lagged MA)		0.190				0.301				0.605		
		(0.127)				(0.520)				(0.579)		
SIGACTs (6 Month Lagged MA)			0.274				0.356				0.847	
			(0.180)				(0.711)				(0.794)	
SIGACTs (12 Month Lagged MA)				0.512*				0.813				1.731
				(0.298)				(1.323)				(1.239)
District FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year-Specific Month FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Constant	1.190	-0.031	-1.196	-5.084	25.242***	24.170***	23.586**	18.626	-23.952***	-27.852***	-30.643***	-46.802**
	(1.037)	(1.812)	(2.552)	(4.310)	(4.234)	(7.416)	(10.065)	(19.157)	(4.384)	(8.177)	(11.130)	(17.781)
Observations	705	699	687	570	705	699	687	570	699	693	681	565
R^2	0.466	0.478	0.498	0.469	0.762	0.769	0.792	0.785	0.600	0.600	0.601	0.636
Log-Likelihood	-2814	-2786	-2729	-2268	-3665	-3625	-3532	-2936	-4225	-4190	-4121	-3428
AIC	5633	5576	5463	4540	7334	7254	7067	5876	8453	8384	8246	6860

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered by district are in parentheses. Models estimated using OLS. MA = moving average. The dependent variables are mean differences in $\mathrm{forecasted} - \mathrm{actual}$ award, start, and finish dates for border control projects ongoing in a given district-month. Higher (lower) values indicate the project finished earlier (later) than expected.

Violence Does Not Predict Treatment Onset

Table A.8: Violence Trends and Treatment Onset

VARIABLES	(1) Treatment Onset	(2) Treatment Onset	(3) Treatment Onst	(4) Treatment On
SIGACTs (Prior Month)	-0.0000079			
	(0.0000104)			
SIGACTs (3 Month Lagged MA)		-0.0000075		
		(0.0000086)		
SIGACTs (6 Month Lagged MA)			-0.0000102	
			(0.0000095)	
SIGACTs (12 Month Lagged MA)				-0.0000062
				(0.0000049)
District FE	Y	Y	Y	Y
Year-Specific Month FE	Y	Y	Y	Y
Constant	-0.107	-0.111	-0.115	0.009**
	(0.075)	(0.0777)	(0.080)	(0.004)
Observations	4,592	4,383	4,073	3,487
R^2	0.113	0.124	0.175	0.227
Log-Likelihood	4785	4554	4260	4055
AIC	-9565	-9101	-8514	-8105

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered by district are in parentheses. Models estimated using OLS. MA = moving average. The dependent variable is an indicator for the first month a district is fortified. All models also include a control for district population.

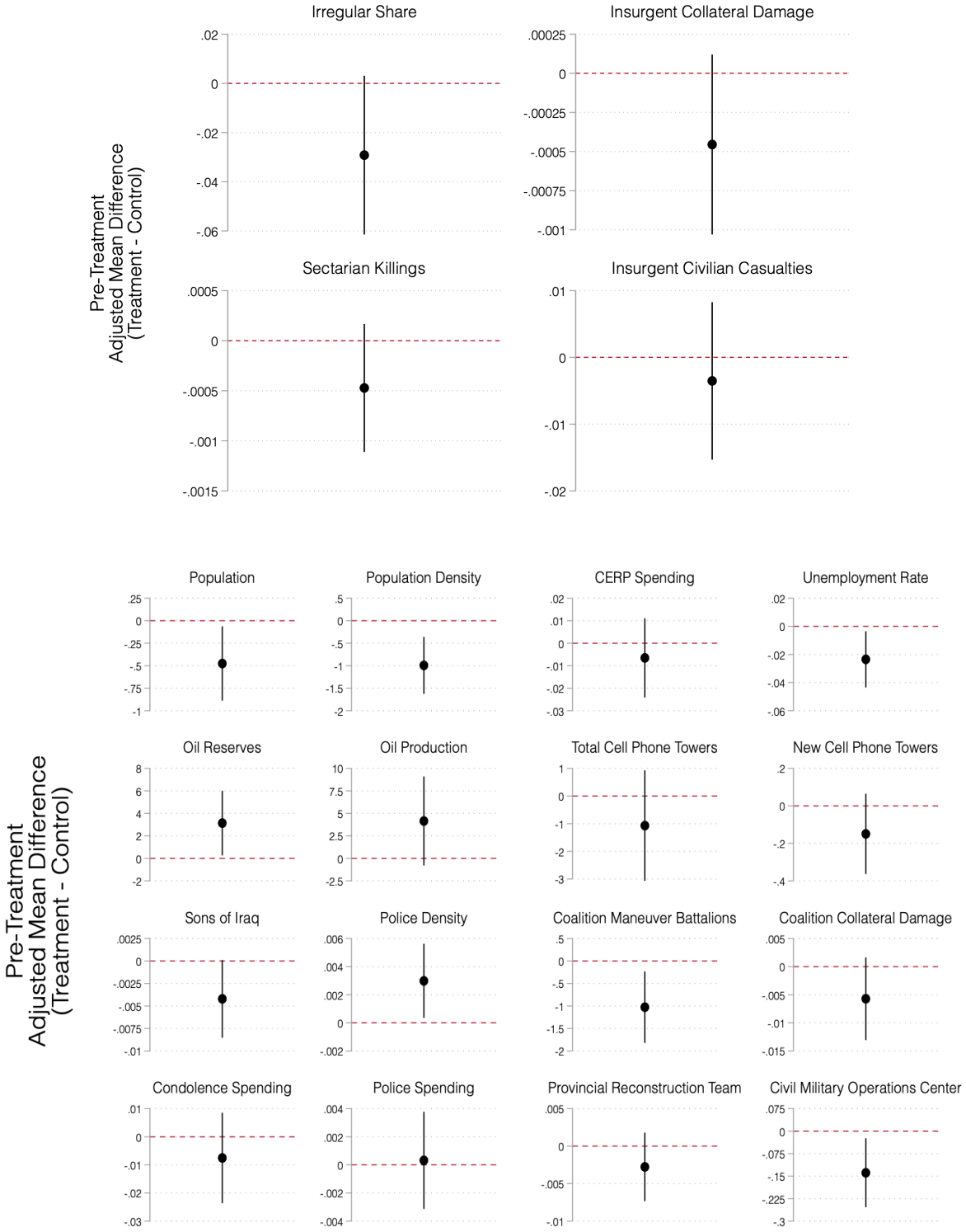
Fortification Does Not Predict Past Violence

Table A.9: Placebo Test: Border Fortification and Past Violence

VARIABLES	(1) SIGACTS (Prior Month)	(2) SIGACTs (3 Month Lagged MA)	(3) SIGACTs (6 Month Lagged MA)	(4) SIGACTs (12 Month Lagged MA)
Border Fortification	-6.336	-5.697	-4.388	-1.678
	(5.587)	(5.615)	(6.013)	(6.591)
District FE	Y	Y	Y	Y
Year-Specific Month FE	Y	Y	Y	Y
Constant	28.638***	29.229***	29.854***	30.883***
	(1.576)	(1.638)	(1.845)	(2.204)
Observations	6,344	6,136	5,824	5,200
R^2	0.609	0.645	0.682	0.757
Log-Likelihood	-33118	-31705	-29786	-25943
AIC	66240	63414	59576	51890

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered by district are in parentheses. Models estimated using OLS. MA = moving average. The dependent variables are respective lags of insurgent-initiated SIGACTs listed in the table header.

Figure A.10: Adjusted, Pre-Treatment Mean Differences in Dependent Variables (Top Panel) and Covariates (Bottom Panel) Across Treatment and Control Districts

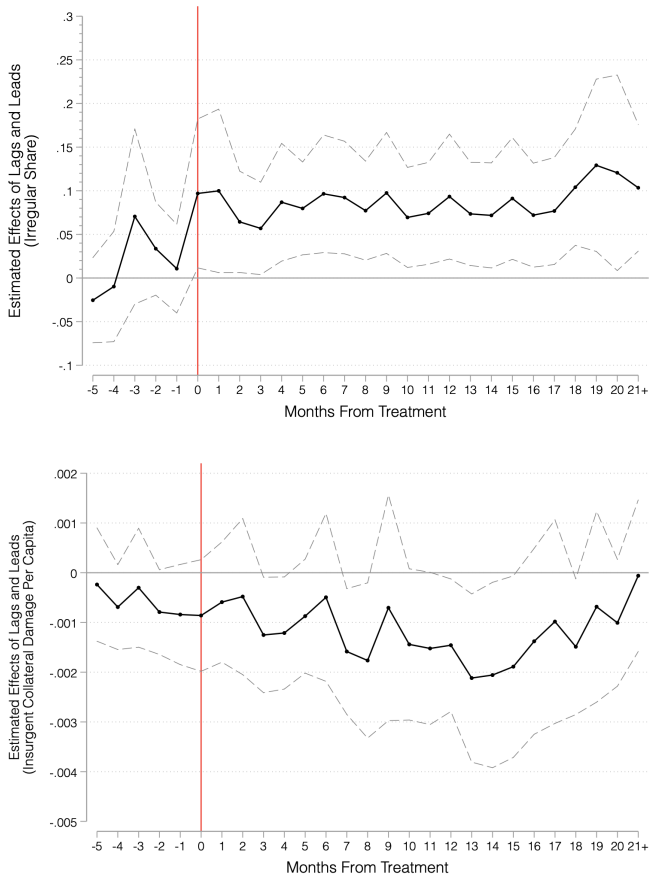


Note: Bars are 90% confidence intervals based on robust, district clustered standard errors. Mean differences are calculated from OLS regressions of treatment status on the respective outcome, with year-specific month fixed effects to adjust for secular trends, and robust standard errors clustered by district.

Lags and Leads

As a test of the parallel trends assumption, I implement the lag-lead approach described in Autor (2003). Before treatment, estimates are statistically indistinguishable from 0. After treatment, coefficients are in the direction anticipated by the theory, and generally significant.

Figure A.11: Assessing Parallel Trends With Lags and Leads



Note: Dashed lines denote 90% confidence intervals. The solid black line denotes the estimated effect.

Section A.12: Border Fortification and Counter-Indirect Fire

It is difficult to gather data on all possible policy shifts in fortified districts. One particularly acute concern is that districts with border forts could have been more or less likely to receive deployments of counter-battery (CB) and counter-rocket/artillery/mortar (C-RAM) systems. These systems were an integral part of U.S. force protection in Iraq, and were designed to provide warning (and potentially neutralize) incoming indirect fires. If border fortification affected CB/C-RAM deployments, effects on indirect fires could owe to these changes, rather than border control-induced insurgent tactical shifts. However, qualitative evidence suggests border fortification did not affect CB/C-RAM deployments. Instead, CB/C-RAM were deployed at forward operating bases (FOBs) in all Multi-National Division (MND) commands. FOB locations, in turn, were determined by a variety of logistical constraints unrelated to border control efforts (MNC-I 2007b).

Table A.13: Border Fortification Does Not Predict Key Policy Changes

VARIABLES	(1) Maneuver Battalions Deployed	(2) Total Cell Towers	(3) New Cell Towers	(4) CERP Spending/Capita	(5) Oil Production	(6) Coalition-Caused Civilian Casualties/Capita	(7) Battle Damage Spending/Capita	(8) Police Spending/Capita	(9) Checkpoint Spending/Capita	(10) MoD/MoI Spending/Capita	(11) PRT	(12) CMOC	(13) PIC
Border Fortification	0.218	-4.968	-0.032	0.103	0.037	0.004	0.008	0.010	0.000	0.096	-0.055	-0.006	0.016
	(0.173)	(5.015)	(0.084)	(0.108)	(0.057)	(0.004)	(0.008)	(0.014)	(0.001)	(0.153)	(0.036)	(0.035)	(0.037)
District FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year-Specific Month FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Constant	-0.596	112.644*	1.545**	0.404*	7.104***	0.003	0.024	-0.031	0.002	-0.071	-0.148	-0.254	0.867***
	(1.396)	(66.027)	(0.725)	(0.203)	(0.739)	(0.007)	(0.022)	(0.033)	(0.002)	(0.357)	(0.184)	(0.357)	(0.299)
Observations	2,109	2,220	2,220	5,508	4,148	5,032	4,248	4,248	4,248	4,248	4,080	4,216	5,508
R^2	0.743	0.717	0.214	0.147	1.000	0.052	0.095	0.263	0.101	0.148	0.539	0.907	0.757
Log-Likelihood	-2079	-8464	-3691	-7639	1518	8905	4619	4174	17528	-6023	2605	3609	339
AIC	4164	16934	7388	15283	-3030	-17804	-9232	-8341	-35049	12052	-5203	-7213	-672.1

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered by district are in parentheses. Columns 1-4 and 6-13 include a control for district population. Column 5 includes a control for price-weighted oil reserves. PRT = Provincial Reconstruction Team; CMOC = Civil Military Operations Center; PIC = Provincial Iraqi control.

Does an Information-Sharing Mechanism Drive Tactical Substitution?

The effect of border fortification on insurgent substitution from conventional (direct fire) to irregular (indirect fire) attacks is consistent with a resource mechanism, whereby reduced external resources lead insurgents to engage in more irregular attacks, and an information-sharing mechanism, whereby greater counterinsurgent pressure leads insurgents to prefer attacks more resistant to civilian informing. These mechanisms are complementary, and likely operate in parallel. To determine which is most important for the tactical substitution I observe, here I repeat the core models taking per capita insurgent suicide attacks as the outcome. Suicide attacks are planned under high secrecy by motivated militants, making them highly resistant to pre-attack exposure. The information-sharing mechanism would hence expect border fortification to cause an increase in suicide attacks. On the other hand, the resource mechanism anticipates a small (if any) effect of border fortification on suicide attacks. Suicide attacks are cheap to perpetrate, costing just $150 on average (Hoffman 2003), which means resource-constrained rebels should prefer more of them.[1] Yet, most suicide attacks in Iraq were perpetrated by foreign fighters, many of whom faced difficulty crossing into Iraq as a result of counterinsurgent border control (MNC-I 2005). The resource mechanism predicts null effects of border fortification on suicide attacks because such attacks were cheap (↑), but relied on an important external resource, foreign fighters, to conduct (↓).

Table A.14: Border Fortification and Per Capita Suicide Attacks

VARIABLES	(1) Suicide Attacks/Capita	(2) Suicide Attacks/Capita	(3) Suicide Attacks/Capita	(4) Suicide Attacks/Capita	(5) Suicide Attacks/Capita	(6) Suicide Attacks/Capita	(7) Suicide Attacks/Capita	(8) Suicide Attacks/Capita	(9) Suicide Attacks/Capita
Border Fortification	-0.0003	-0.0001	0.00002	0.00002	0.00003	0.00002	-0.0004	-0.0001	-0.00002
	(0.0003)	(0.0001)	(0.00017)	(0.00016)	(0.00030)	(0.00048)	(0.0004)	(0.0003)	(0.00024)
District FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year-Specific Month FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Sunni x Year FE		Y	Y	Y	Y	Y	Y	Y	Y
Political/Socioeconomic Controls		Y	Y	Y	Y	Y	Y	Y	Y
Security Controls			Y	Y	Y	Y	Y	Y	Y
Spatial Lag				Y	Y	Y	Y	Y	Y
District-Specific Linear Trend					Y	Y	Y	Y	Y
Sample Includes Districts in:	Border Governorates	Border Governorates	Border Governorates	Border Governorates	Border Governorates	AQI Areas	Rejectionist Areas	All But Baghdad	All of Iraq
Constant	0.001***	0.008*	0.009	0.008	0.014	0.028	0.025	0.001	-0.002
	(0.0001)	(0.005)	(0.009)	(0.009)	(0.015)	(0.020)	(0.018)	(0.015)	(0.013)
Observations	4,148	4,080	2,109	2,109	2,109	1,767	1,596	3,078	3,591
R^2	0.133	0.174	0.214	0.214	0.241	0.237	0.350	0.213	0.208
Log-Likelihood	18276	18045	8984	8985	9021	7342	7290	13511	15910
AIC	-36548	-36074	-17931	-17931	-18003	-14644	-14539	-26981	-31780

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered by district are in parentheses. Border governorates are Anbar, Basrah, Dahuk, Diyala, Erbil, Missan, Muthanna, Najaf, Ninewa, Sulaymaniyah, and Wassit. AQI-influenced areas are the governorates of Anbar, Babylon, Baghdad, Diyala, Erbil, Ninewa, Salah al-Din, Tameem, and Wassit. Rejectionist-influenced areas are all districts in the governorates of Babylon, Baghdad, Diyala, Ninewa, Salah al-Din, Tameem, and Wassit, and the districts of Falluja, Haditha, Heet, and Ramadi in Anbar governorate. Controls are described in the notes for Table 1. The mean of suicide attacks per capita is 0.0005, with a standard deviation of 0.003.

[1] Hoffman's (2003) estimates are specific to body-borne IEDs (BBIEDs) like explosive vests. Suicide vehicle-borne IEDs (SVBIEDs), another prominent vector for suicide attacks in Iraq, are somewhat costlier, since a motor vehicle is needed.

Insurgent Civilian Victimization by Sectarian Geography

Table 3 in the main text parameterizes the conditional effect of border fortification on insurgent civilian victimization with an interaction term, yielding a difference-in-difference-in-differences model. Here I show that substantively identical results emerge if re-run the core models while subsetting to a sample of homogeneous (Sunni, Shia, or Kurdish-dominated) districts (columns 1-3) and a sample of mixed districts (columns 4-6). Consistent with the conditional logic outlined in the paper, insurgents in homogeneous districts are significantly less likely to victimize civilians in response to border fortification. In mixed districts, the effect of border fortification is inconsistently estimated and substantively small. Statistical insignificance in columns 4-6 is not due merely to the drop in sample size.

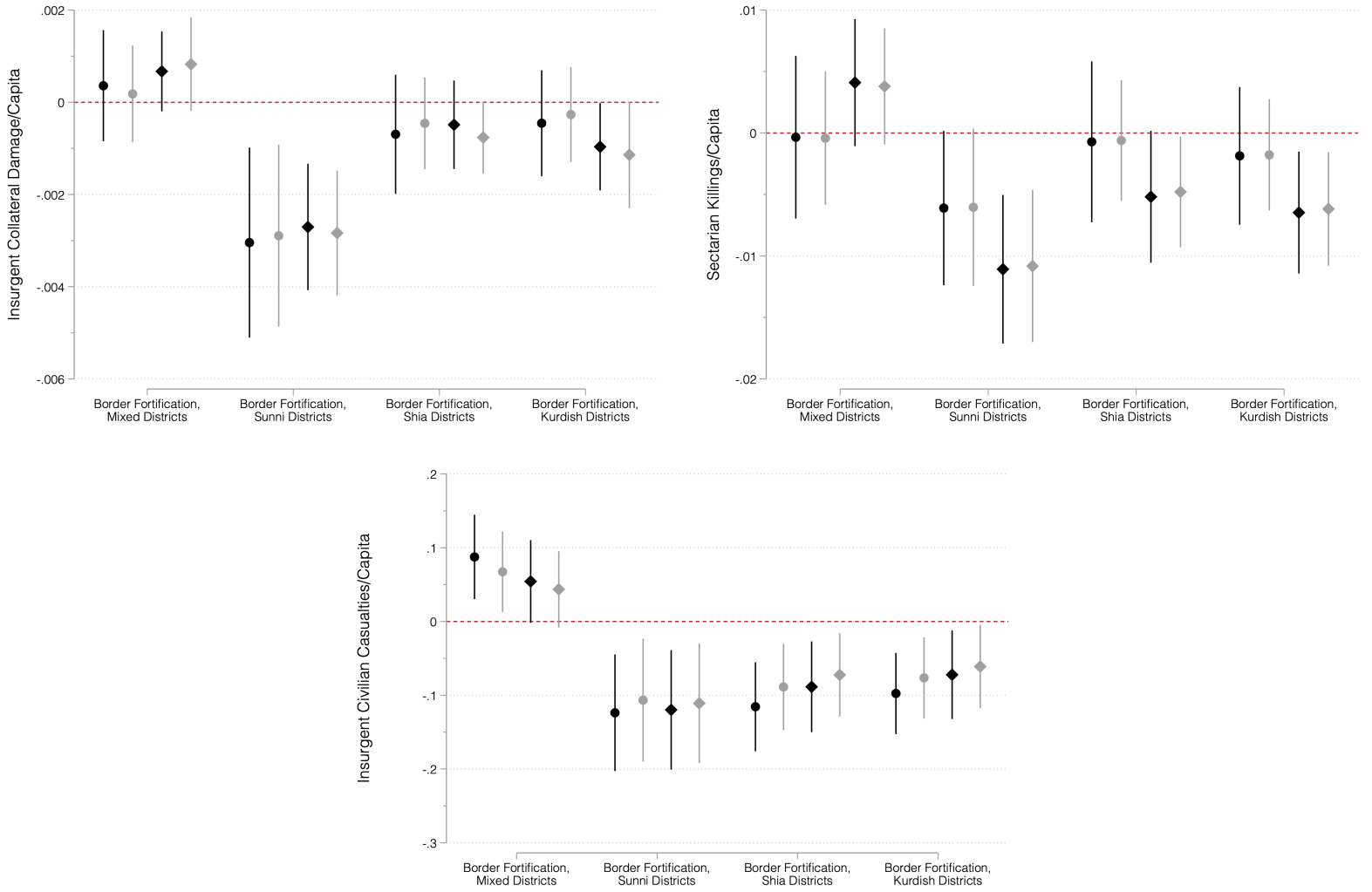
Table A.15: Border Fortification and Civilian Victimization in Homogeneous Versus Mixed Sectarian Districts

VARIABLES	(1) Insurgent Collateral Damage/Capita	(2) Sectarian Killings/Capita	(3) Insurgent Civilian Casualties/Capita	(4) Insurgent Collateral Damage/Capita	(5) Sectarian Killings/Capita	(6) Insurgent Civilian Casualties/Capita
Border Fortification	-0.001*	-0.002**	-0.019*	0.00002	-0.00002	-0.035
	(0.0004)	(0.001)	(0.011)	(0.001)	(0.005)	(0.038)
District FE	Y	Y	Y	Y	Y	Y
Year-Specific Month FE	Y	Y	Y	Y	Y	Y
Sunni x Year FE	Y	Y	Y	Y	Y	Y
Political/Socioeconomic Controls	Y	Y	Y	Y	Y	Y
Security Controls	Y	Y	Y	Y	Y	Y
Spatial Lag	Y	Y	Y	Y	Y	Y
Sample Includes:	Homogeneous Districts	Homogeneous Districts	Homogeneous Districts	Mixed Districts	Mixed Districts	Mixed Districts
Constant	0.007	0.002	0.244	0.008	0.133	-0.243
	(0.006)	(0.015)	(0.182)	(0.023)	(0.162)	(0.919)
Observations	2,736	2,736	2,736	855	855	855
R^2	0.257	0.379	0.159	0.585	0.588	0.649
Log-Likelihood	12361	10153	2138	3409	2224	341.4
AIC	-24682	-20267	-4237	-6780	-4409	-644.8

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered by district are in parentheses. Controls are described in the notes for Table 1. The mean of insurgent collateral damage per capita is 0.001, with a standard deviation of 0.006. The mean of sectarian killings per capita is 0.004, with a standard deviation of 0.014. The mean of insurgent civilian casualties per capita is 0.043, with a standard deviation of 0.164.

In Figure A.14 I further disaggregate the effect of border fortification across sectarian areas. Taking the core specifications from Table A.13, I interact border fortification with separate indicators for Sunni districts, Shia districts, and Kurdish districts. To verify the robustness of the results to the operationalization of district-level ethnicity, I take two strategies. First, as in the main text, I define districts using results of the 2005 Iraqi provincial election. Districts are defined as belonging to the respective sect if a clearly sectarian party captured $\geq 66\%$ of the vote (Berman, Shapiro, and Felter 2011). Second, I define districts using ethnic maps and fine-grained population data from LandScan (2008). Results show that the negative effect of border fortification on civilian victimization is significantly largest in Sunni districts for all outcomes—insurgent collateral damage, sectarian killings, and insurgent civilian casualties. Border fortification also consistently and significantly reduces insurgent collateral damage and insurgent civilian casualties in Kurdish districts. Effects are statistically insignificant in Shia districts except for on insurgent civilian casualties, which is negative as expected. In mixed sectarian districts, effects are positive, though only significantly so for insurgent civilian casualties.

Figure A.16: Sectarian Heterogeneity in the Effect of Border Control on Insurgent Civilian Victimization



Note: Bars are 90% confidence intervals based on robust, district clustered standard errors. Models include district, year-specific month, and year by Sunni vote share fixed effects, political/socioeconomic and security controls, and spatial lags. To avoid dropping Kurdish regions of northern Iraq due to covariate missingness, models omit controls for cell towers and Coalition maneuver battalions, though this choice is not consequential for the results. Circles denote estimates from the sample of districts in border governorates. Diamonds denote estimates from the sample of all Iraqi districts. Black markers denote estimates that define district ethnic composition based on vote share. Gray markers denote estimates that define district ethnic composition based on LandScan (2008) population data. Controls are described in the notes for Table 1.

Robustness of Insurgent Civilian Victimization Results

Dependent variables vary across panels: insurgent collateral damage (A), sectarian killings (B), and insurgent civilian casualties (C). Columns 1 and 2 add a lagged dependent variable. Columns 3 and 4 cluster standard errors by governorate. Columns 5 and 6 cluster standard errors by Directorate of Border Enforcement (DBE) region. Columns 7 and 8 scale estimates using population weights. Columns 9 and 10 scale estimates using violence weights. Columns 11 and 12 add controls for the total number of border forts and per capita spending on non-fort border security projects. Columns 13 and 14 use a Poisson estimator and count outcomes. Columns 15 and 16 drop trend breaks identified in difference-in-slopes tests.

Table A.17: Robustness of Hypothesis 2

Panel A	DV: Insurgent Collateral Damage/Capita												DV: Insurgent Collateral Damage			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)		
Border Fortification	-0.001	0.002***	-0.001	0.002**	-0.001	0.002*	-0.000	0.002***	-0.002*	0.002	-0.001*	0.002**	-0.070	1.254**	—	—
	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.001)	(0.002)	(0.000)	(0.001)	(0.309)	(0.584)	—	—
Border Fortification x Homogeneous		-0.003***		-0.003**		-0.003*		-0.003***		-0.005**		-0.003***		-2.118***	—	—
		(0.001)		(0.001)		(0.001)		(0.001)		(0.002)		(0.001)		(0.681)	—	—
Constant	-0.000	0.003	-0.001	0.003	-0.001	0.003	-0.008	-0.004	0.128	0.143	0.001	0.003	-14.737	-5.318	—	—
	(0.009)	(0.008)	(0.011)	(0.010)	(0.011)	(0.010)	(0.015)	(0.014)	(0.119)	(0.117)	(0.010)	(0.009)	(22.604)	(21.465)	—	—
Observations	2,109	2,109	2,109	2,109	2,109	2,109	2,109	2,109	1,320	1,320	2,109	2,109	1,596	1,596	—	—
Log-Likelihood	8745	8750	8727	8732	8727	8732	9042	9045	4678	4680	8729	8733	-940.1	-934.7	—	—
AIC	-17448	-17455	-17414	-17423	-17414	-17423	-18044	-18048	-9316	-9319	-17414	-17421	1920	1911	—	—
Panel B	DV: Sectarian Killings/Capita												DV: Sectarian Killings			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)		
Border Fortification	-0.001	0.003	-0.001**	0.005	-0.001*	0.005	-0.001	0.005	-0.007	0.006	-0.001	0.006*	-0.560	0.430	—	—
	(0.001)	(0.002)	(0.000)	(0.004)	(0.001)	(0.004)	(0.002)	(0.004)	(0.005)	(0.010)	(0.001)	(0.003)	(0.409)	(0.308)	—	—
Border Fortification x Homogeneous		-0.004		-0.008		-0.008		-0.006		-0.016**		-0.008**		-1.638***	—	—
		(0.002)		(0.005)		(0.005)		(0.005)		(0.006)		(0.003)		(0.481)	—	—
Constant	0.024	0.028	0.051	0.059	0.051	0.059	0.001	0.009	0.566*	0.614*	0.050	0.058	0.495	9.213	—	—
	(0.020)	(0.019)	(0.035)	(0.042)	(0.030)	(0.041)	(0.063)	(0.061)	(0.331)	(0.310)	(0.051)	(0.050)	(17.574)	(17.645)	—	—
Observations	2,109	2,109	2,109	2,109	2,109	2,109	2,109	2,109	1,320	1,320	2,109	2,109	1,881	1,881	—	—
Log-Likelihood	6624	6624	6213	6216	6213	6216	6240	6241	3066	3068	6213	6216	-1765	-1757	—	—
AIC	-13205	-13205	-12386	-12390	-12386	-12390	-12441	-12441	-6093	-6094	-12382	-12386	3570	3555	—	—
Panel C	DV: Insurgent Civilian Casualties/Capita												DV: Insurgent Civilian Casualties		DV: Insurgent Civilian Casualties/Capita	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Border Fortification	-0.018	0.149***	-0.018	0.150**	-0.018**	0.150*	-0.008	0.132***	-0.032	0.120*	-0.025	0.123***	-0.468	0.285	-0.019	0.159***
	(0.018)	(0.041)	(0.010)	(0.053)	(0.005)	(0.054)	(0.018)	(0.037)	(0.033)	(0.061)	(0.015)	(0.039)	(0.451)	(0.664)	(0.020)	(0.040)
Border Fortification x Homogeneous		-0.185***		-0.186***		-0.186**		-0.156***		-0.192***		-0.161***		-1.289*		-0.196***
		(0.039)		(0.040)		(0.044)		(0.034)		(0.059)		(0.038)		(0.730)		(0.037)
Constant	0.059	0.254	0.061	0.256	0.061	0.256	-0.341	-0.105	-2.365	-1.820	0.178	0.307	-43.545***	-37.200**	0.070	0.278
	(0.395)	(0.329)	(0.467)	(0.356)	(0.493)	(0.354)	(0.591)	(0.501)	(1.732)	(1.698)	(0.356)	(0.314)	(16.567)	(17.745)	(0.408)	(0.336)
Observations	2,109	2,109	2,109	2,109	2,109	2,109	2,109	2,109	1,320	1,320	2,109	2,109	1,881	1,881	1,998	1,998
Log-Likelihood	1167	1181	1167	1181	1167	1181	1841	1853	484	489.2	1176	1186	-14777	-14702	1059	1074
AIC	-2293	-2318	-2294	-2320	-2294	-2320	-3642	-3663	-927.9	-936.3	-2308	-2325	29593	29446	-2079	-2105
District FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year-Specific Month FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Sunni x Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Political/Socioeconomic Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Security Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Spatial Lag	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Lagged DV	Y	Y														
Governorate Clustered SEs			Y	Y												
DBE Region Clustered SEs					Y	Y										
Population Weights							Y	Y								
Violence Weights									Y	Y						
Additional Border Controls											Y	Y				
Poisson													Y	Y		
No Trend Breaks															Y	Y

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered by district are in parentheses unless otherwise noted. The sample includes all districts in border governorates. Controls are described in the notes for Table 1. The mean of insurgent collateral damage per capita is 0.001, with a standard deviation of 0.006. The mean of insurgent collateral damage is 0.415, with a standard deviation of 1.440. The mean of sectarian killings per capita is 0.004, with a standard deviation of 0.014. The mean of sectarian killings is 1.669, with a standard deviation of 7.396. The mean of insurgent civilian casualties per capita is 0.043, with a standard deviation of 0.164. The mean of insurgent civilian casualties is 19.801, with a standard deviation of 116.496.

Border Fortification and Population-Centric Counterinsurgency

Figure 6 in the main text studies how population-centric COIN initiatives condition the effect of border fortification on insurgent civilian victimization. The outcome of interest in Figure 6 is insurgent collateral damage/capita. In Table A.18 I also study how population-centric COIN efforts condition the effect of border fortification on sectarian killings/capita and insurgent civilian casualties/capita. While most effects are less precisely estimated than those in Figure 6, these additional tests do confirm that small CERP spending has a particularly important conditional effect, increasing sectarian killings and insurgent civilian casualties in response to border control.

Table A.18: Border Fortification Increases Insurgent Civilian Victimization When Paired With Population-Centric COIN, Especially Small CERP Spending

VARIABLES	(1) Sectarian Killings/Capita	(2) Insurgent Civilian Casualties/Capita	(3) Sectarian Killings/Capita	(4) Insurgent Civilian Casualties/Capita	(5) Sectarian Killings/Capita	(6) Insurgent Civilian Casualties/Capita	(7) Sectarian Killings/Capita	(8) Insurgent Civilian Casualties/Capita	(9) Sectarian Killings/Capita	(10) Insurgent Civilian Casualties/Capita	(11) Sectarian Killings/Capita	(12) Insurgent Civilian Casualties/Capita
Border Fortification	-0.003	-0.027	-0.003	-0.029	-0.003	-0.027	-0.003	-0.026	-0.003	-0.025	-0.003	-0.030
	(0.002)	(0.018)	(0.002)	(0.019)	(0.003)	(0.018)	(0.003)	(0.018)	(0.002)	(0.019)	(0.002)	(0.018)
CERP Spending/Capita	0.004	0.008										
	(0.004)	(0.019)										
Border Fortification x CERP Spending/Capita	-0.004	-0.005										
	(0.004)	(0.020)										
Large CERP Spending/Capita			0.002	-0.007								
			(0.002)	(0.012)								
Border Fortification x Large CERP Spending/Capita			-0.001	0.011								
			(0.002)	(0.012)								
Small CERP Spending/Capita					-0.013	-0.086						
					(0.008)	(0.056)						
Border Fortification x Small CERP Spending/Capita					0.017*	0.052						
					(0.009)	(0.051)						
Governance Aid/Capita							0.0001	0.003***				
							(0.0001)	(0.001)				
Border Fortification x Governance Aid/Capita							0.0002***	-0.001				
							(0.0001)	(0.001)				
Sons of Iraq (SOI)									-0.006	-0.038*		
									(0.004)	(0.022)		
Border Fortification x SOI									0.007	0.100		
									(0.008)	(0.078)		
Provincial Reconstruction Teams (PRT)											-0.009	0.150
											(0.007)	(0.110)
Border Fortification x PRT											0.010	-0.152
											(0.010)	(0.110)
Constant	0.036	-0.316	0.035	-0.312	0.033	-0.332	0.034	-0.324	0.045	-0.191	0.045	-0.441
	(0.083)	(1.126)	(0.080)	(1.126)	(0.077)	(1.133)	(0.080)	(1.134)	(0.085)	(1.100)	(0.084)	(1.116)
Observations	2,109	2,109	2,109	2,109	2,109	2,109	2,109	2,109	2,109	2,109	2,109	2,109
R2	0.547	0.292	0.547	0.292	0.545	0.292	0.544	0.292	0.548	0.295	0.547	0.294
Log-Likelihood	6293	1224	6291	1225	6288	1224	6286	1224	6294	1228	6293	1227
AIC	-12544	-2407	-12540	-2407	-12534	-2407	-12530	-2405	-12545	-2415	-12543	-2411
District FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year-Specific Month FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Sunni x Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Political/Socioeconomic Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Security Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Spatial Lag	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
District-Specific Linear Trend	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

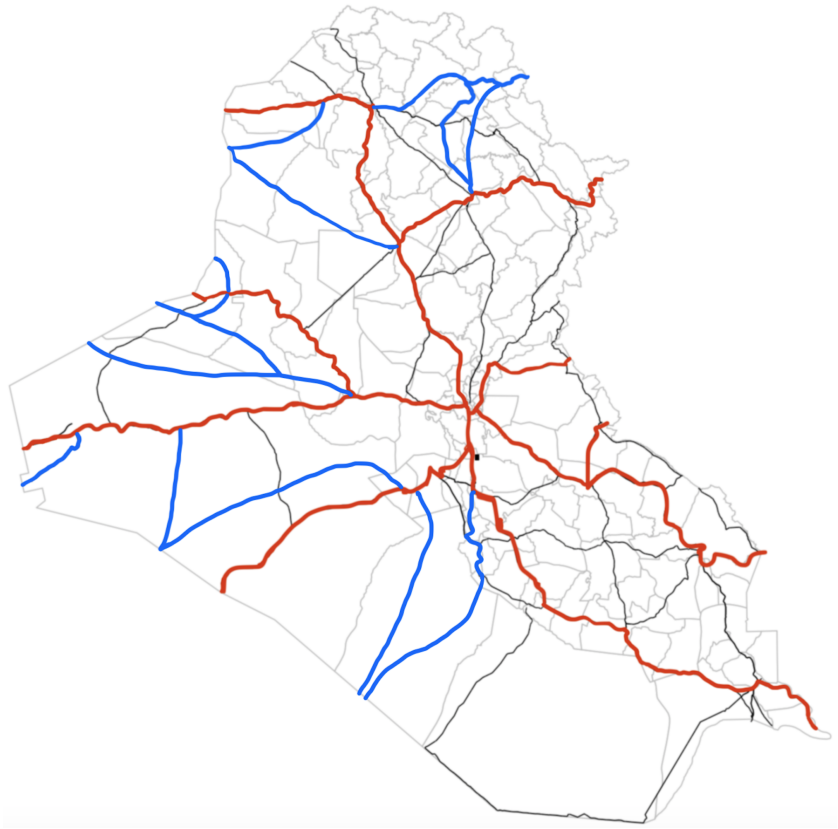
Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered by district are in parentheses. The sample includes all districts in border governorates. Controls are described in the notes for Table 1. The mean of sectarian killings per capita is 0.004, with a standard deviation of 0.014. The mean of insurgent civilian casualties per capita is 0.043, with a standard deviation of 0.164.

Insurgent Smuggling Networks

Using a declassified document created by Multi-National Corps Iraq (MNC-I) Headquarters in 2005 and provided by U.S. Central Command (MNC-I 2005), I geotraced primary and secondary insurgent ratlines, or smuggling routes. Whereas primary ratlines followed the Iraqi highway network, secondary ratlines do not typically follow existing paved roads, but rather denote historical smuggling trails and informal paths. The Iraqi road network overlaid on the map comes from the United Nations Office for the Coordination of Humanitarian Affairs (OHCA) in collaboration with the U.S. National Imagery Mapping Agency (NIMA), and reflects roads designated by OHCA as "primary routes" as of January 2003, three months prior to the U.S. invasion of Iraq.

Insurgent smuggling through districts otherwise unaffected by counterinsurgent border control could cause conflict spillovers if insurgents respond to border fortification by shifting patterns of violence along smuggling routes. I control for spillovers in the main analyses using spatial lags. As an additional test, I show that, consistent with Getmansky, Grossman, and Wright (2019) and Laughlin (2019), access to alternate smuggling routes relaxed insurgents' tactical adaptations to border fortification.

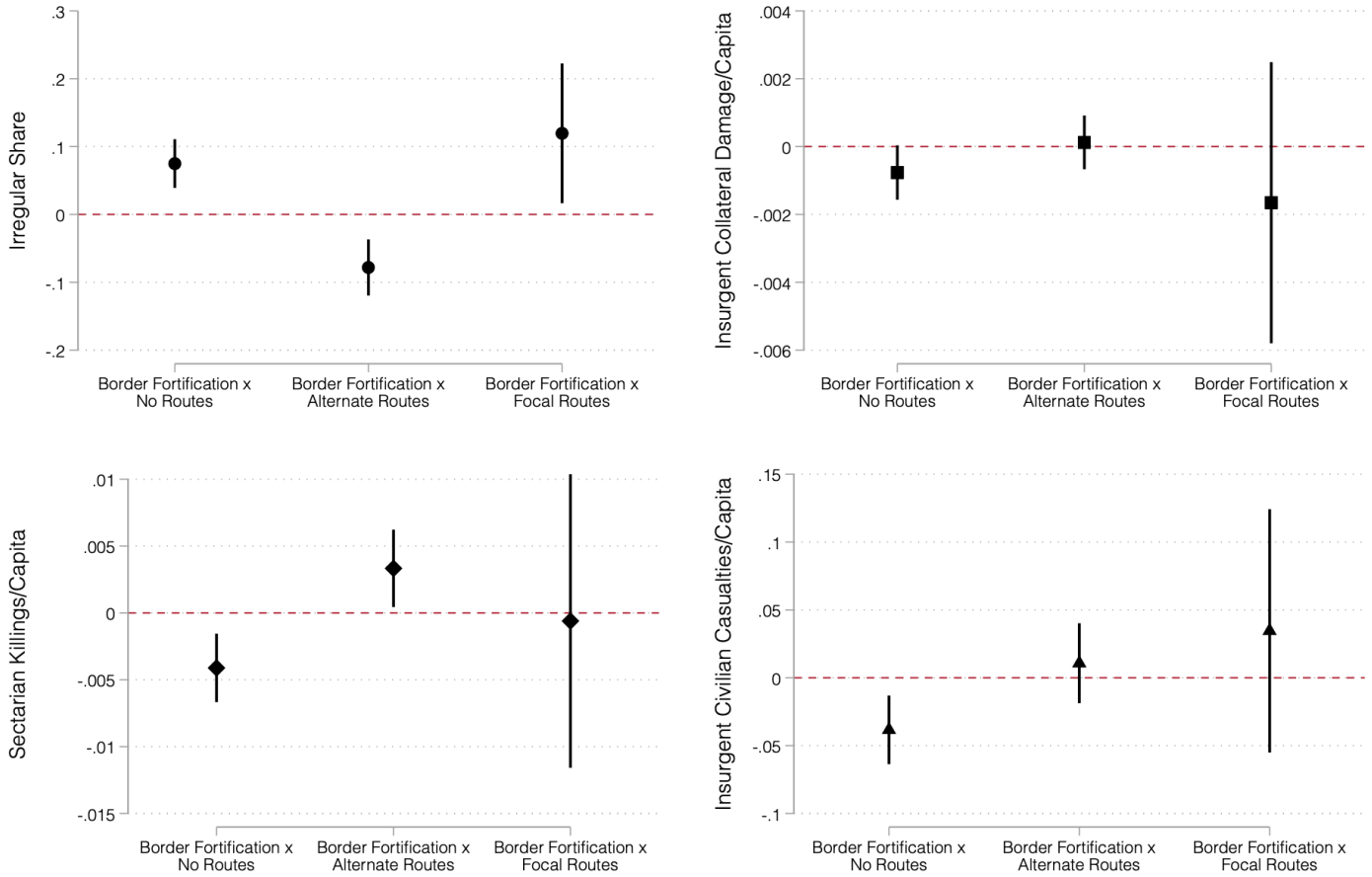
Figure A.19: Geotraced Insurgent Ratlines



Note: Primary ratlines are marked in red and secondary ratlines are marked in blue. Dark gray lines mark sections of the Iraqi road network not used as primary or secondary trafficking routes.

Laughlin (2019) shows that US border control efforts raised the value of trafficking routes

Figure A.20: Heterogeneity in the Effect of Border Control Along Smuggling Routes



Note: Bars are 90% confidence intervals based on robust, district clustered standard errors. Models include district, year-specific month, and year by Sunni vote share fixed effects, political/socioeconomic and security controls, spatial lags, and district-specific linear trends. Controls are described in the notes for Table 1. No routes denote districts without insurgent ratlines. Alternate routes denote districts with primary or secondary ratlines but not both. Focal routes denote districts known to be high-density trafficking nodes, with both primary and secondary ratlines. These areas were a focus of US counterinsurgent surveillance.

in un-walled sections of the US-Mexico border, increasing violence in those areas as cartels competed for control of cross-border routes. Getmansky, Grossman, and Wright (2019) show that in response to the Israel-Palestine border wall, criminal gangs increased car thefts in non-fortified areas, while those whose smuggling routes were interdicted shifted into criminal activities that did not rely on cross-border smuggling. These analyses imply that the effect of border fortification on insurgent tactics should be conditioned by insurgent access to trafficking routes.

In districts where insurgents lack convenient and well-established ratlines for cross-border trafficking, border fortification should increase the proportion of insurgent attacks that are irregular (H1) and reduce insurgent civilian victimization (H2), as insurgents have no other convenient means of recouping external resource losses. In districts with a high-density of primary and secondary routes (i.e. focal routes), insurgents have some means of subverting border control by leveraging smuggling routes, but counterinsurgent pressure is also greatest, as surveillance assets associated with border fortification intensely monitor high-density trafficking nodes (Williams 2007: 521). Relative to districts with less-trafficked, alternate routes only, high-density trafficking nodes in focal districts were significantly more likely to be classified by US forces as "controlled" in August 2007 (MNC-I 2007a). In focal districts, then, border fortification should have a weak or insignificant effect on insurgent tactics, since insurgents can subvert border fortification, but face higher costs to doing so owing to greater counterinsurgent attention. Finally, in districts with low-density, alternate smuggling routes, where insurgents can subvert border fortification by shifting trafficking to less heavily surveilled and harder-to-interdict routes, border fortification does not affect insurgents' foreign logistics, as alternate routes provide a means of sustaining foreign support. In these areas, insurgents retain resources and have to cultivate less local civilian support, meaning they can continue to produce conventional violence and victimize civilians.

I test these expectations in Figure A.20. I cannot calculate optimal smuggling routes and trafficking equilibria a la Dell (2015) because most secondary ratlines do not follow defined roads, but rather use unpaved and historical paths and shepherds' trails. Instead, I repeat the main analyses while interacting border fortification with indicators for the status of district smuggling routes. These regressions reveal support for the expectations outlined above. The hypothesized effects—increasing irregular attacks and reduced civilian victimization—consistently emerge in fortified districts without smuggling routes. Fortification in districts without ratlines significantly increases the proportion of attacks that are irregular ($p = 0.001$), and reduces the number of sectarian killings ($p = 0.009$) and insurgent civilian casualties ($p = 0.014$). The reduction in insurgent collateral damage is nearly statistically significant ($p = 0.116$).

Opposite effects emerge in districts with alternate routes, where insurgents could subvert border controls by leveraging cross-border trafficking networks. Fortification in these significantly reduces the proportion of attacks that are irregular ($p = 0.002$), and increases the number of sectarian killings ($p = 0.059$). Effects on insurgent collateral damage and insurgent civilian casualties are imprecisely estimated but consistently positively signed. In comparison, focal smuggling districts with a high-density of routes but expansive counterinsurgent monitoring see generally insignificant effects. Here, however, insurgents do still shift toward irregular attacks ($p = 0.057$).

Border Fortification Predicts Insurgent Spending

Bahney et. al. (2010) describe financial records captured by U.S. forces from al-Qaeda in Iraq (AQI). One subset of the data detail revenues and expenditures of AQI in Anbar governorate. The data record transfers from the Anbar provincial administration to local AQI sectors in the province. If border control efforts increase the price insurgents pay for accessing external resources, border forts should be positively correlated with local requirements for funding. Data described in Bahney et. al. (2010) were recovered from figures in the manuscript using digital extraction software because the authors no longer have access to replication materials.

Consistent with a border control-induced price effect, local AQI spending is increasing in border fortification. Because controls are included for Coalition maneuver battalions and per capita CERP spending in sectors we can rule out that the effect of border fortification owes solely to increased AQI spending in response to greater US/Coalition deployments. It is also unlikely that increased spending is solely geared at compensating fighters for increased local operations against the Coalition because compensation in AQI was not based on risk (Bahney et. al. 2013), and because border control spurred insurgents to engage in fewer high-risk direct fire attacks and more low-risk indirect fire attacks.

Table A.21: Border Fortification and Provincial AQI Transfers to Local Sectors

VARIABLES	(1) Sector Transfers/Capita	(2) IHS Sector Transfers/Capita	(3) Sector Transfers/Provincial Revenue	(4) IHS Sector Transfers/Provincial Revenue
Number of Border Forts	0.090**	0.066**	0.013*	0.012*
	(0.023)	(0.015)	(0.005)	(0.004)
Sector FE	Y	Y	Y	Y
Year-Specific Month FE	Y	Y	Y	Y
Sector-Specific Linear Trend	Y	Y	Y	Y
Constant	-0.279	-0.074	0.093	0.093
	(0.201)	(0.190)	(0.142)	(0.135)
Observations	85	85	85	85
R^2	0.486	0.502	0.426	0.430
Log-Likelihood	-33.48	-6.439	42.28	47.97
AIC	75	20.90	-76.60	-87.90

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered by sector are in parentheses. The sample includes al-Qaeda in Iraq (AQI) sectors in Anbar governorate. Models include controls for the number of Coalition maneuver battalions and for CERP spending per capita. IHS = inverse hyperbolic sine. The mean of sector transfers per capita is 0.369, with a standard deviation of 0.503. The mean of IHS sector transfers per capita is 0.323, with a standard deviation of 0.372. The mean of sector transfers as a share of provincial revenue is 0.155, with a standard deviation of 0.195. The mean of IHS sector transfers as a share of provincial revenue is 0.150, with a standard deviation of 0.183.

Border Fortification Did Not Affect Iranian Proxies' Tactic

Counterinsurgent border control efforts cannot affect insurgent tactics if insurgents have state sponsors that actively subvert counterinsurgent efforts such that border control does not affect flows of external resources to insurgents. Qualitative accounts suggest Iran engaged in extensive subversion of U.S. border control in this manner. For instance, US forces began adding observation towers to border forts along the Iran border after it emerged that Iranian forces where coordinating arms smuggling into Iraq via cargo trucks (MND-C 2007), through which rockets, guns, and Explosively Formed Penetrators (EFPs) and other IED components were shipped to Iranian-sponsored groups. US special forces also engaged in several direct clashes with Iranian Revolutionary Guard Corps-Quds Force (IRGC-QF) operatives in Diyala province in 2006-2007 (CJSOTF-AP 2007). Consistent with these accounts, I observe no effect of border forts on the tactics in districts influenced by Jaish al-Mahdi (JAM), the main Iranian proxy in Iraq. These results indicate Iran often successfully subverted border fortification.

Table A.22: JAM Tactics Were Unaffected by Border Fortification

VARIABLES	(1) Irregular Share	(2) Insurgent Collateral Damage/Capita	(3) Sectarian Killings/Capita	(4) Insurgent Civilian Casualties/Capita
Border Fortification	0.027	-0.00003	0.001	-0.019
	(0.020)	(0.0002)	(0.001)	(0.013)
District FE	Y	Y	Y	Y
Year-Specific Month FE	Y	Y	Y	Y
Sunni x Year FE	Y	Y	Y	Y
Political/Socioeconomic Controls	Y	Y	Y	Y
Security Controls	Y	Y	Y	Y
Spatial Lag	Y	Y	Y	Y
Sample Includes Districts in:	JAM Areas	JAM Areas	JAM Areas	JAM Areas
Constant	0.725	0.009*	0.014	0.248
	(0.522)	(0.005)	(0.015)	(0.229)
Observations	2,394	2,394	2,394	2,394
R^2	0.236	0.259	0.582	0.589
Log-Likelihood	1278	11821	8773	1997
AIC	-2522	-23609	-17512	-3959

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered by district are in parentheses. JAM areas are the following governorates: Baghdad, Basrah, Kerbala, Missan, Najaf, Qadissiya, Thi-Qar, and Wassit. Controls are described in the notes for Table 1. The mean of irregular share is 0.051, with a standard deviation of 0.156. The mean of insurgent collateral damage per capita is 0.001, with a standard deviation of 0.006. The mean of sectarian killings per capita is 0.004, with a standard deviation of 0.014. The mean of insurgent civilian casualties per capita is 0.043, with a standard deviation of 0.164.

The Effect of Border Fortification Over Time

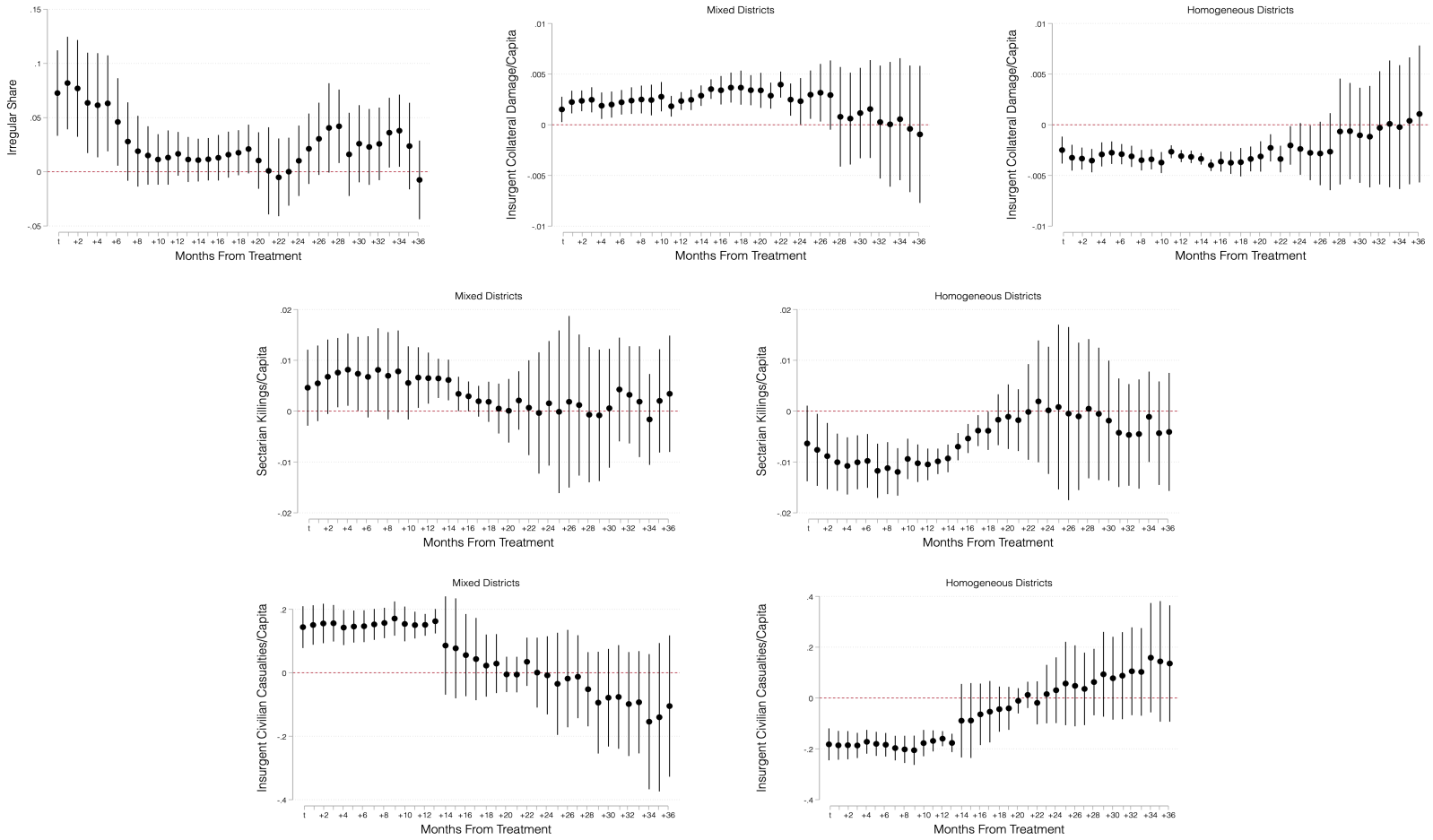
I take two approaches to understanding temporal dynamism in the effect of border fortification. In Table A.23 I replicate the core results over district-quarters, district-half years, and district-years, rather than district-months. In Figure A.24 I re-estimate the effect of border fortification for each period from treatment onset to 36 months post-treatment.

Table A.23: Border Fortification Over Longer Temporal Windows

Panel A	Unit of Analysis: District-Quarters			
	(1)	(2)	(3)	(4)
VARIABLES	Irregular Share	Insurgent Collateral Damage/Capita	Sectarian Killings/Capita	Insurgent Civilian Casualties/Capita
Border Fortification	0.074*	0.007***	0.021*	0.430***
	(0.043)	(0.002)	(0.011)	(0.087)
Border Fortification x Homogeneous		-0.011***	-0.028***	-0.515***
		(0.002)	(0.010)	(0.075)
Constant	0.504	-0.025	0.076	-0.053
	(1.375)	(0.028)	(0.091)	(0.932)
Observations	740	740	740	740
R^2	0.294	0.639	0.591	0.487
Log-Likelihood	352.6	2512	1515	8.448
AIC	-665.2	-4983	-2988	25.10
Panel B	Unit of Analysis: District-Half Years			
	(5)	(6)	(7)	(8)
VARIABLES	Irregular Share	Insurgent Collateral Damage/Capita	Sectarian Killings/Capita	Insurgent Civilian Casualties/Capita
Border Fortification	0.092*	0.014***	0.047**	0.818***
	(0.046)	(0.004)	(0.022)	(0.145)
Border Fortification x Homogeneous		-0.021***	-0.066***	-1.035***
		(0.004)	(0.015)	(0.131)
Constant	0.953	-0.104	-0.152	-2.111
	(1.338)	(0.096)	(0.196)	(1.524)
Observations	370	370	370	370
R^2	0.383	0.722	0.640	0.639
Log-Likelihood	250	1075	540.9	-137.1
AIC	-460	-2107	-1040	316.2
Panel C	Unit of Analysis: District-Years			
	(9)	(10)	(11)	(12)
VARIABLES	Irregular Share	Insurgent Collateral Damage/Capita	Sectarian Killings/Capita	Insurgent Civilian Casualties/Capita
Border Fortification	0.085**	0.024*	0.128***	1.379***
	(0.041)	(0.013)	(0.041)	(0.370)
Border Fortification x Homogeneous		-0.043**	-0.208***	-1.660***
		(0.016)	(0.039)	(0.294)
Constant	-0.028	-0.392	-1.353	-8.320
	(0.501)	(0.305)	(1.011)	(5.142)
Observations	185	185	185	185
R^2	0.384	0.775	0.694	0.785
Log-Likelihood	171	442.6	169.4	-132.6
AIC	-302	-843.1	-296.9	307.2
District FE	Y	Y	Y	Y
Time FE	Y	Y	Y	Y
Sunni x Year FE	Y	Y	Y	Y
Political/Socioeconomic Controls	Y	Y	Y	Y
Security Controls	Y	Y	Y	Y
Spatial Lags	Y	Y	Y	Y

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered by district are in parentheses. The sample includes all districts in border governorates. Time fixed effects are for year-specific quarters in panel A, for year-specific half years in panel B, and for years in panel C. Controls are described in the notes for Table 1.

Figure A.24: Temporal Dynamism in the Effect of Border Fortification



Note: Bars are 90% confidence intervals based on robust, district clustered standard errors. Plots show coefficients from regressions of border fortification on leads of the respective outcome for each period from treatment onset t to 36 months after treatment $t + 36$. Models include district, year-specific month, and year by Sunni vote share fixed effects, political/socioeconomic and security controls, and spatial lags. Controls are described in the notes for Table 1. Estimates of civilian victimization come from models interacting border fortification with an indicator for homogeneous districts. This yields two plots for each civilian victimization outcome–one for the effect of border fortification in mixed sectarian districts and one for the effect of border fortification in homogeneous districts.

Placebo Test: Other Security Infrastructure

Table A.25: Non-Fort Security Infrastructure Have No or the Opposite Effects

Panel A						
VARIABLES	(1) Irregular Share	(2) Irregular Share	(3) Irregular Share	(4) Irregular Share	(5) Irregular Share	(6) Irregular Share
DBE Support Facilities	0.005					
	(0.030)					
DBE Academies		0.071				
		(0.047)				
Ministry of Defense and Ministry of Interior Bases			-0.004			
			(0.017)			
Checkpoints				0.005		
				(0.025)		
Police Stations					0.002	
					(0.022)	
Police Academies						-0.020
						(0.051)
Constant	-0.393	-0.289	-0.399	-0.402	-0.393	-0.391
	(0.689)	(0.649)	(0.697)	(0.695)	(0.690)	(0.695)
Observations	2,109	2,109	2,109	2,109	2,109	2,109
R^2	0.205	0.206	0.205	0.205	0.205	0.205
Log-Likelihood	1016	1018	1016	1016	1016	1016
AIC	-1993	-1997	-1993	-1993	-1993	-1993
Panel B						
VARIABLES	(7) Insurgent Collateral Damage/Capita	(8) Insurgent Collateral Damage/Capita	(9) Insurgent Collateral Damage/Capita	(4) Insurgent Collateral Damage/Capita	(10) Insurgent Collateral Damage/Capita	11) Insurgent Collateral Damage/Capita
DBE Support Facilities	0.001					
	(0.001)					
DBE Academies		0.001				
		(0.001)				
Ministry of Defense and Ministry of Interior Bases			0.001			
			(0.001)			
Checkpoints				-0.0003		
				(0.0004)		
Police Stations					-0.001	
					(0.001)	
Police Academies						0.0001
						(0.0007)
Constant	0.004	0.006	0.004	0.0041	0.003	0.0037
	(0.010)	(0.010)	(0.011)	(0.0110)	(0.011)	(0.0108)
Observations	2,109	2,109	2,109	2,109	2,109	2,109
R^2	0.489	0.489	0.489	0.488	0.489	0.488
Log-Likelihood	8727	8727	8727	8726	8727	8725
AIC	-17414	-17413	-17415	-17412	-17415	-17411
Panel C						
VARIABLES	(12) Sectarian Killings/Capita	(13) Sectarian Killings/Capita	(14) Sectarian Killings/Capita	(15) Sectarian Killings/Capita	(16) Sectarian Killings/Capita	(17) Sectarian Killings/Capita
DBE Support Facilities	-0.002					
	(0.004)					
DBE Academies		0.002				
		(0.009)				
Ministry of Defense and Ministry of Interior Bases			0.006**			
			(0.002)			
Checkpoints				-0.001		
				(0.003)		
Police Stations					-0.004	
					(0.003)	
Police Academies						-0.002
						(0.005)
Constant	0.058	0.062	0.066	0.061	0.054	0.060
	(0.058)	(0.049)	(0.061)	(0.062)	(0.058)	(0.060)
Observations	2,109	2,109	2,109	2,109	2,109	2,109
R^2	0.512	0.512	0.517	0.512	0.514	0.512
Log-Likelihood	6213	6213	6225	6213	6217	6213
AIC	-12387	-12386	-12411	-12386	-12395	-12385
Panel D						
VARIABLES	(18) Insurgent Civilian Casualties/Capita	(19) Insurgent Civilian Casualties/Capita	(20) Insurgent Civilian Casualties/Capita	(21) Insurgent Civilian Casualties/Capita	(22) Insurgent Civilian Casualties/Capita	(23) Insurgent Civilian Casualties/Capita
DBE Support Facilities	-0.009					
	(0.046)					
DBE Academies		0.107				
		(0.072)				
Ministry of Defense and Ministry of Interior Bases			0.025**			
			(0.012)			
Checkpoints				-0.013		
				(0.013)		
Police Stations					-0.031	
					(0.028)	
Police Academies						-0.012
						(0.027)
Constant	0.168	0.332	0.198	0.189	0.135	0.174
	(0.411)	(0.328)	(0.413)	(0.416)	(0.425)	(0.417)
Observations	2,109	2,109	2,109	2,109	2,109	2,109
R^2	0.252	0.256	0.253	0.252	0.254	0.252
Log-Likelihood	1166	1171	1168	1167	1168	1166
AIC	-2293	-2303	-2296	-2293	-2297	-2292
District FE	Y	Y	Y	Y	Y	Y
Year-Specific Month FE	Y	Y	Y	Y	Y	Y
Sunni x Year FE	Y	Y	Y	Y	Y	Y
Political/Socioeconomic Controls	Y	Y	Y	Y	Y	Y
Security Controls	Y	Y	Y	Y	Y	Y
Spatial Lags	Y	Y	Y	Y	Y	Y

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered by district are in parentheses. The sample includes all districts in border governorates. Controls are described in the notes for Table 1. The mean of irregular share is 0.051, with a standard deviation of 0.156. The mean of insurgent collateral damage per capita is 0.001, with a standard deviation of 0.006. The mean of sectarian killings per capita is 0.004, with a standard deviation of 0.014. The mean of insurgent civilian casualties per capita is 0.043, with a standard deviation of 0.164.

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