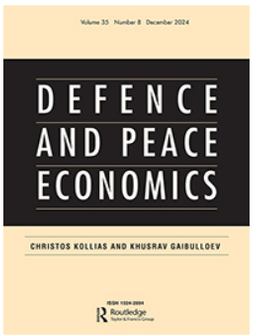

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No, Punitive House Demolition Does Not Reduce Suicide Bombing: Revisiting Evidence from the Second Intifada

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ABSTRACT

Punitive house demolitions were intensified by the Israeli government during the Second Intifada with the intent of curbing suicide bombings. Using econometric analysis, Benmelech et al. (2015) suggest that this policy is effective, citing deterrence as the driving factor. In 2014, the Israeli Supreme Court relied on the findings of an earlier draft of the Benmelech paper to reject a petition against the resumption of punitive housing demolition. In this research, I show that the Benmelech findings are spurious due to misspecified modelling and that the reported effect of punitive house demolition camouflages confounding factors. I also show that among the multiple security measures put in place during the Second Intifada, arrest campaigns did negatively impacted suicide bombings. I provide suggestive evidence that explains individual motives for suicide bombings and why punitive house demolition lacks a deterrence effect. The motives are likely related to the aggravation of grievances from excessive state oppression, willingness to exact revenge, and the glorification of self-sacrifice and martyrdom in asymmetric conflict.

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Introduction

Whether state-led repression curbs insurgency has been central to political scientists' interest. Building on the rational choice theory (Becker 1968; Crenshaw 1987; LaFree and Ackerman 2009), a main strand of the literature suggests that amplifying the (perceived) cost of engaging in violent activities, relative to the associated utility, is key to deterring insurgents (Dugan and Chenoweth 2012; Hafez 2006; LaFree, Dugan, and Korte 2009). This hypothesis emanates from the opportunity cost mechanism of engaging in political violence, which asserts that individuals engage in a cost-benefit analysis when deciding whether to resort to violent acts (Grossman 1991). It then follows that states may choose to adopt punitive measures to reduce resistance and gain political concession (Davenport 2007). Though, empirical research shows mixed results (Davenport 2007,Hultquist 2021; Lichbach 1987).

Several researchers suggest that the effectiveness of punitive measures is, in principle, linked to whether they are indiscriminate or selectively targeting insurgents (Toft and Zhukov 2012; Kalyvas 2006; Kocher, Pepinsky, and Kalyvas 2011; Lyall 2009; Souleimanov and Siroky 2016). Selective punitive measures are considered effective as the state sends a clear signal that perpetrators of political violence will be punished (Jaeger and Siddique 2011; Kalyvas 2006). On the other hand, inflicting heavy casualties on civilians using indiscriminate measures may backfire.[1] Still, several researchers show that selective measures might be counterproductive, mainly if the target is a

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symbolic militant or ideological leader (Condra and Shapiro 2012; Jaeger et al. 2012; Pape 2003). Other researchers argue that punishing violent behavior, even if selective, might not deter insurgents as they care less for punishments but are concerned with revenge against state oppression, gaining self-significance, or giving weight to the larger goals of insurgency movements (Araj 2008; Hamm 2004).

During the Second Intifada (2000-2005), the Israeli army intensified punitive house demolitions targeting houses of suicide bombers or individuals who committed or were suspected of committing deadly acts against Israeli citizens or soldiers. This policy aimed to deter potential suicide bombers by inflicting a high cost on their families (Shnayderman 2005). Benmelech et al (2015)[2] examined the effect of house demolition using micro-level data that identify the time and location of all house demolitions and suicide bombing attacks, among other security measures. Using Poisson regression model, the authors suggest that increases in punitive house demolition in a given district reduced future suicide attacks originating from the same area. While Benmelech et al (2015) support the claim of the Israeli army that punitive house demolition is deterring, they suggest that the effect is constrained in the short run.[3]

To date, the Israeli army uses the punitive house demolition policy, even though suicide attacks stopped with the end of the Second Intifada. Since 2014 the Israeli army has demolished/sealed 116 houses for families of Palestinians who committed fatal attacks against Israelis.[4] The findings of Benmelech et al (2015) seem to have entrenched the long-standing ruling of the Israeli Supreme Court that has sided with this policy despite criticism of human rights institutions and activists who have constantly asserted that punitive house demolition is a collective punishment (Farrell 2002; Darcy 2003). In November 2014, several Israeli human rights organizations filed a petition before the Israeli Supreme Court to challenge the resumption of this policy after the Israeli army suspended it in 2005 (see below for more discussion). A three-justice panel of the court unanimously rejected the petition relying on the assessment of the Israeli army and the findings of an early version of the authors' research (Benmelech et al 2010).[5] Still, the judges urged the Israeli authority to examine the effectiveness of house demolition from time to time and provide the court with data-based assessments (Kretzmer and Ronen 2021).

In this paper, I show that the findings of Benmelech et al (2015) are invalid as they fail to successfully sort out confounding factors. These factors can be divided into two groups; those that monthly vary at the national and district/locality levels. Both types of shocks changed the level of violence, including suicide bombings, and the extent of punitive house demolition. National-level shocks encompass various interlinked events such as the 11 September 2001 attacks on New York City and Washington DC, which the Israeli government capitalized on to intensify military activities in the Occupied Palestinian territories (oPt). As a result, the cycle of violence was exacerbated with more suicide attacks and a greater number of Israeli-induced Palestinian fatalities, including the assassination of prominent leaders. These factors paved the way for the Israeli army to change tactics and undertake major incursions into the oPt, mainly Operation Defensive Shield which took place between April and May of 2002. During this operation, the number of punitive house demolition dramatically increased while the frequency of suicide attacks started to decline. Political Factors also affected the level of violence and accordingly extent of house demolition. The international community pressured, in different points in time, the Palestinian and Israeli sides to de-escalate violence and revive peace talks (Jaeger and Paserman 2008). Although Benmelech et al (2015) do not discuss such shocks *per se*, they attempted to account for them in their regression analysis using year fixed effects. Nonetheless, year fixed effects do not properly sort them out as the model they used allow for the suicide bombing and house demolition to change per month. They should have utilized month fixed effects instead.

Incursion operations into the oPt also reflect shocks that vary per district/locality and month due to variations in the intensity of military activities. Incursions helped the Israeli army assassinate and arrest key militants as well as destroy combat equipment, including bomb workshops. Incursions also helped impose curfews to help undertake these operations and facilitate razzing houses of

Palestinian suspects. With incursions, the Israeli army was able to weaken militant capabilities in areas where suicide bombers originated. These areas witnessed high rates of punitive house demolitions. Shocks that vary per district/locality and month also include the installation of barriers such as roadblocks and checkpoints around the Palestinian communities. A main aim of the barriers was to prevent militants from accessing to Israel and thus reduce suicide attacks (see Byman 2012; Freilich 2017; Perliger, Hasisi, and Pedahzur 2009).

I correct the econometric modeling of Benmelech et al (2015) by controlling both for the monthly national shocks and, to the extent possible, the district/locality month shocks. The findings, obtained using their data set[5] as well as new security data (number of arrested Palestinians), show that the effect of punitive house demolition downsizes in magnitude and becomes statistically insignificant. This conclusion holds even when using various intensity measures of home demolition that Benmelech et al (2015) utilize (house units, house area, and the number of residents per house). It also holds when tested against several robustness checks that the authors undertook, including the use of an alternative regression model (negative binomial regression) and exclusion of locality-month cells with a high correlation between punitive house demolition and Palestinian fatalities. I further show that the authors' findings are not robust to measuring house demolition at the district versus locality level or using alternative estimation techniques as they claim. Notably, out of multiple security measures that the Israeli army undertook during incursions, I provide evidence that the arrest of Palestinians did reduce suicide bombing.

Admittedly, the foundation of the linkages between the deterrence effects the and propensity to engage in violent acts is well established in the literature; an assertion that this paper does not attempt to challenge. However, the focus is to show that the effectiveness of deterrence is directly linked to the context of the conflict. The spatial and temporal variation of punitive house demolition during the Second Intifada represent a good case study to examine the effectiveness of the demolition policy. This research provides evidence that refutes the findings of Benmelech et al (2015) and the long-standing claim of the Israeli army that punitive house demolition deters future attacks. To this end, I document suggestive evidence that potentially explains the rise in suicide bombings during the Second Intifada, including exacerbated grievances from excessive state oppression, revenge, and glorification of self-sacrifice and martyrdom in asymmetric conflict. Overall, the empirical results are also consistent with the conclusion of an Israeli military committee, formed in 2005 by Moshe Ya'alon (then the army chief), showing that the house demolition policy is ineffective and thus does not deter potential suicide bombers. Accordingly, in February 2005, the Israeli army suspended the practice of punitive house demolition[6] until 2014.

This study belongs to a strand of literature that tackles the Political economics of the Palestinian-Israeli conflict. The closest paper is Calì and Miaari (2015) who investigate another aspect of the opportunity cost of engaging in political violence, focusing on the effect of trade shocks on the intensity of the uprising during the Second Intifada. Amodio et al (2021) also examine the impact of Israel's policy of import restrictions on political violence in the West Bank between 2008-2012. Other researchers looked at the impact of the mobility restrictions during the Second Intifada (Calì and Miaari 2018), the effect of house raids on Child well-being (Hallaq and Fallah 2022), and the impact of labor market shocks on the education outcome (Saad and Fallah (2020) (see also Brück, Di Maio, and Miaari 2019; Di Maio and Sciabolazza 2023; Jaeger et al 2012).

In what follows, section 2 provides a brief view of punitive house demolition along with a discussion on the associated legal and rights debate. Section 3 provides information regarding data sources with a highlight on the main characteristics of the data set used in the empirical analysis. Section 4 summarizes the empirical methodology and main findings of Benmelech et al (2015). Section 5 explains the main drawbacks of the authors' modeling, focusing on identifying unaccounted shocks and how they impact their results. The empirical analysis in section 6 controls for these shocks and provides evidence that nullifies the hypothesis that punitive house demolition reduces future suicide bombings. This section also suggests reasons to explain this finding, before the paper concludes in section 7.

Punitive House Demolitions: A Back Ground

The Israeli army issues house demolition orders using the power granted in Regulation 119 of Defense (Emergency) Regulations 1945 'Forfeiture and Demolition of property, etc.', which dates back to the era of the British mandate.[7] In the late 1960s, post the occupation of the WBG in 1967, the Israeli army demolished about 1,400 houses. This was the major wave of house demolition until the start of the First Intifada (1987-1992) when about 500 houses were demolished (Benmelech, Berrebi, and Klor 2015).

About a year since the start of the Second Intifada (October 2001), the Israeli army resumed its house demolition policy after it had refrained from entering areas under the control of the Palestinian Authority (PA), where most of the Palestinians live (Shnayderman 2005). Between October 2001 and 2005, the Israeli army demolished 628 houses (645 housing units), which accommodated 4,073 occupants. The rate of demolished houses intensified after the Israeli army launched Operation Defensive Shield between March 29th and May 10th of 2002 (see section 5). The monthly number of demolished houses jumped from 7 in June of 2002 to 54 in December of the same year. Throughout the 2002-2003 period, the average monthly number of demolished houses amounted to 26 with a standard deviation of 16. The demolishing rate started to decline afterward until it was halted by the end of 2005 (see Figure 1).

As commonly stated by Israeli officials, the policy of punitive house demolition aims to deter Palestinians from committing attacks against Israeli citizens and soldiers.[8] The Spokesmen of the Israeli army often state that house demolition sends a message that attacking Israelis comes at a high price (Shnayderman 2005). The Israeli Supreme Court also cites the deterrence effect in its ruling to often reject petitions presented on behalf of the occupants of houses deemed to be demolished. An Israeli judge was once quoted as saying 'We are aware that the demolition will leave Petitioner 1 and her children without a roof over their heads, but this is not the aim of the demolition. It is not a punitive measure. It aims, rather, to deter. It has a harsh outcome for the family, but Respondent believes that this measure is essential to prevent further attacks on innocent people … … There is no absolute assurance that this measure is effective. But considering the few measures left available to the state to defend against these "human bombs", we should not discount this one.'[9]

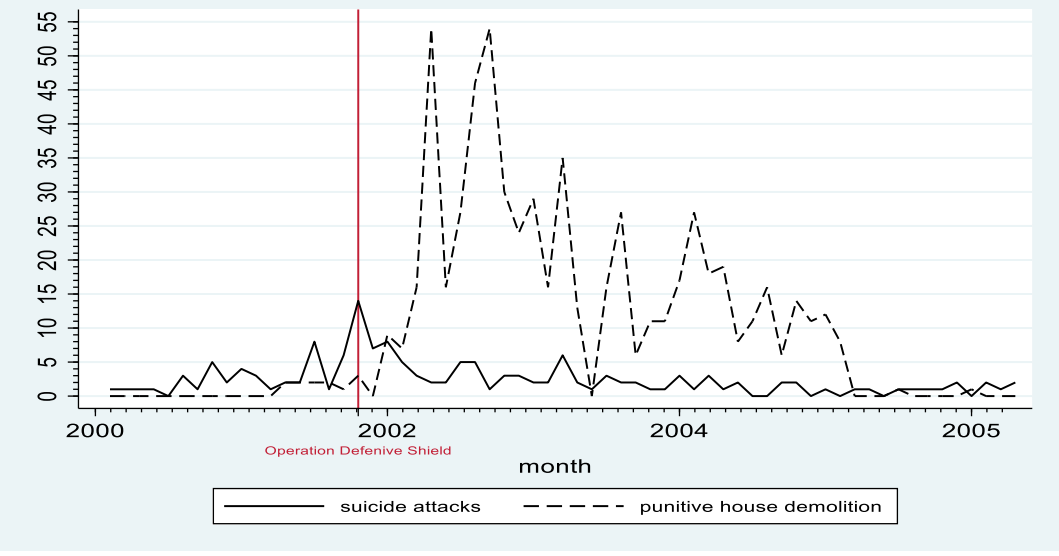

Figure 1. Monthly changes in the number of suicide attacks and punitive house demolitions in the WBGs.

Opponents of punitive house demolition assert that it is considered a collective punishment and blatant violation of human rights as it harms innocent individuals (family members of the attackers) who did not commit any offense (Darcy 2003; Farrell 2002); a grave violation of Article 33 of the Fourth Geneva Convention.[10] Of all suspects whose houses were demolished, 32% were detained in Israeli prisons at the time of demolition, 21% were wanted, and 47% were killed (Shnayderman 2005). They also contend that punitive house demolition violates international law regarding the right to housing (Article 11 (1) of the International Covenant on Economic, Social, and Cultural Rights of 1966) and the protection of civilians in times of war (Article 53 of the Fourth Geneva Convention Relative to the Protection of Civilian Persons in time of War of 1949.) The latter stipulates that 'any destruction by the occupying power of real or personal property belonging individually or collectively to private persons, or to the State, or to other public authorities, or to social or cooperative organizations, is prohibited, except where such destruction is rendered absolutely necessary by military operations'.[11]

Yet, Israeli officials claim that demolishing houses of Palestinian militants accords with the exception stipulated in Article 53. For example, the ex-Attorney General and former Supreme Court President Meir Shamgar indicated that such a practice does not violate Article 53 since 'military operations' are not limited to typical military fighting, but also effective military response (Shamgar 1971). Also, the Israeli Supreme Court ruled against a petition submitted by Israeli rights organizations against the renewal of the house demolition/sealing policy in 2014[12] noting that deterrence is a legitimate military necessity whereas only disproportionate use of demolition violates Article 53 (see Ronen and Telman 2015). Though the official commentary of the International Red Cross frames military operations differently defining military necessity as 'the movement, maneuvers, and actions of any sort, carried out by the armed forces with a view to combat.'[13] Consistently, human rights activists assert that punitive house demolition also breaches Article 147 of the Fourth Geneva Convention- related to the protection of civilians in times of war, which states that 'extensive destruction and appropriation of property, not justified by military necessity and carried out unlawfully and wantonly is a grave breach of the convention' (Darcy 2003).[14] In this vein, Human Rights Watch called upon Israel to stop the house demolition of Palestinian suspects in the oPt as it potentially amounts to a war crime.[15]

Data

This research makes use of the same data set of Benmelech et al (2015). Obtained from B'Tselem, the data encompass district/locality and monthly information on punitive house demolition during the Second Intifada, including location, size, number of residents, number of units per house, and demolition time. The data set also covers universal information on the suicide bombers (150 attackers) for the same period, including their place of residence and their targets (The source of this data is Benmelech and Berrebi 2007).[16]

The data on punitive house demolition and the origin of suicide bombers exhibit spatial heterogeneity across the oPt. Out of the 16 districts, most of the suicide bombers originated from Nablus; Jenin; Bethlehem; Tulkarim; Nablus; Gaza city; and Jabalia. Typically, these districts experienced most of the house demolitions (see Table 1). Benmelech et al (2015) also use data on security measures, obtained from B'Tselem, comprising Israeli-induced Palestinian fatalities from targeted killing, other fatalities from targeted killing (non-targeted individuals killed during targeted killing operations), and other fatalities (fatalities not in targeted killing). The security measures also include average curfew days per month, which was obtained from the United Nations Office for the Coordination of Humanitarian Affairs (OCHA). The authors, augmented the aforementioned variables with the district's economic and demographic characteristics that they obtained from the Palestinian Central Bureau of Statistics (PCBS). Data on these controls are collected quarterly using the labour force survey and are nationally represented at the district level. Table (B.1) in appendix I documents a summary of statistics on these variables.

Table 1. Summary of suicide bombing, punitive house demolition, and security measures during the second intifada (2000-2005).

District	No. of Suicide Bombers††	Punitive House Demolition†	Arrested Palestinians‾	Targeted Killing†	Other fatalities from targeted killings†*	Other Fatalities†	Average Curfew Days per month‡
Jenin	25	79	3,653	12	6	275	3.05
Tubas	2	4	440	7	5	30	0.02
Tulkarm	9	44	1,908	11	1	186	3.87
Nablus	42	109	3,734	27	3	379	4.02
Qalqilya	7	10	912	2	0	57	1.74
Salfit	0	13	217	3	1	27	0.07
Ramallah	6	29	4,261	1	1	139	2.00
Jericho	0	1	88	0	0	9	0.04
Jerusalem	3	8	1,288	0	0	47	0.01
Bethlehem	14	76	2,674	11	7	87	2.06
Hebron	11	121	4,996	6	2	183	4.60
Jabalia	9	43	203	12	12	352	0
Gaza City	10	22	330	64	65	366	0
Deir Al Balah	7	37	222	7	2	227	0
Khan Younes	4	12	241	7	6	307	0
Rafah	1	20	239	21	5	362	0
Total	150	628	25,406	191	116	3033	

†Source of data is B'Tselem.
‡Source of data is OCHA.
††Source of data is Benmelech and Berrebi (2007).
‾Source of data is the Palestinian Commission of Detainees and Ex-Detainees Affairs.
* Other fatalities from targeted killings are non-targeted individuals killed during targeted killing operations.

To serve the purpose of this research, I obtained a district-month indicator of the number of arrested Palestinians during the Second Intifada from the Palestinian Commission of Detainees and Ex-Detainees Affairs.[17] The arrest data, like that of security measures, are generally higher in districts with more punitive house demolition and suicide bombers, such as Jenin, Nablus, and Bethlehem (see Table 1). This suggests that the arrest of Palestinian suspects might confound the house demolition effect and thus exploring this venue, as shown in the analysis below, is key to testing the validity of Benmelech et al (2015) findings.

Empirical Strategy of Benmelech et al (2015)

Effect of Punitive House Demolition: Model Specification

To estimate the effect of punitive house demolition on suicide bombings, Benmelech et al (2015) utilize a Poisson estimation model as follows:

$$E[\text{suicide bombing}_{it}/x_{it-1}) = \exp(B_1 HD_{it-1} + B_2 xit_{-1} + \lambda_i + \gamma_t \quad (1)$$

The outcome variable is defined as the number of suicide bombers originating from district *i* in month *t*. $HD_{it\text{-}1}$ is the treatment variable measuring the district's number of demolished houses in the previous month. The authors also focus on various severity measures of punitive house demolition including the number of house units, number of residents per house, and house size measured in hundred square meters. In separate regressions, the outcome variable is measured using locality-month cells. In this setting, the estimated coefficient (B_1) reflects the short run effect on the subsequent number of suicide bombers.

Model (1) accounts for several potential confounding factors ($x_{it\text{-}1}$) that are measured at the district-month level, including security-related controls namely average curfew days and Israeli-induced Palestinian fatalities. The latter encompasses targeted killings of Palestinian leaders and militants, other fatalities in targeted killing, and other fatalities. The Israeli army has used targeted killing to serve multiple objectives such as preemption, revenge, and retribution. During the Second Intifada, the Israeli army assassinated 191 Palestinians using various methods including shooting

from close range, air missiles, and explosive devices. Most of the targeted killings (about 75%) were carried out against operatives or low-rank militants versus military leaders or political/ideological leaders (Kober 2007).

Model (1) also controls for the district's economic and demographic characteristics, including unemployment rate; share of workers employed in the Israeli labor market; average years of schooling; average age; and share of males and share of the married population. As indicated above, these controls only vary at the quarter and district level. Notably, all the covariates in model (1) are measured in *t*-1 except for the curfew variable, which is measured in time *t*.[18] Data on curfew days are only available from May 2002 onward and thus including this variable in model (1) reduces the number of observations from 1008 to 704. Nonetheless, I show below that measuring curfew days contemporaneously with the outcome variable is empirically problematic due to the simultaneity concern.

Furthermore, model (1) controls for district fixed effect (λ_i) to account for unobserved district-invariant characteristics. It also adds year fixed effects (γ_t) to account for any year-varying confounding factors (national shocks) that are common across all districts. Still, since the model allows the number of suicide bombings and punitive house demolition to vary monthly, including year fixed effects fails to separate the effects of the monthly national shocks. These, as shown below, include the ramifications of the 11 September 2001 attacks on New York City, the targeted killing of Palestinian military and political leaders, and efforts from the international community to reduce violence. Lastly, model (1) accounts for district-year trends to control for any confounding factors that linearly change over time in a given district. To estimate model (1), the error terms are assumed to cluster at the district level.

Main Findings of Benmelech et al (2015): Effect of Punitive House Demolition

Benmelech et al (2015) estimated various specifications of model (1), ranging from including a subset of the control variables (Column 1 to 5 of Table I in appendix II)[19] to including all of the control variables (Columns 6 and 7).[20] To save space, the discussion in this paper mainly focuses on the latter. The findings in Column (6) show a negative and statistically significant effect of punitive house demolition on the subsequent number of suicide bombers originating from the same district. The reported effect suggests that increasing punitive house demolition by one standard deviation decreases the number of suicide bombers by 11.7%. Qualitatively, this finding is robust even when controlling for the district's curfew days (Column 7), but the effect is marginally significant (only at a 10% level). In terms of the effects of the security measures, the findings show that the Israeli-induced fatalities, even if driven by targeted killing, play no role. It is only curfew that matters with a positive effect. The rationale, as explained by the authors, is that restricting mobility and access to employment via imposing a curfew generates a radicalization effect. Below, I argue against this claim.

Table (II) reports the corresponding estimates using locality-month cells. To this end, model (1) examines the effect of punitive demolition in a given district on the subsequent number of suicide bombers originating from his locality of residence in that district.[21] In this respect, the sample size amounts to 43 localities (out of 683 localities); including only those where at least one suicide bomber originated. With these modifications, model (1) controls for locality fixed effects and assumes that the error terms are clustered at the locality level. As asserted by the authors, using data at this level generates a more precise estimation compared to the district-month model (model 1) and 'by comparing the results from both district-month and locality-month aggregations, we make sure that the results are not unduly affected by the elimination from the sample of localities in which suicide attacks did not originate' (p. 35). The findings in Columns (6) and (7) consistently show that punitive house demolition reduces the subsequent number of suicide bombers. Nevertheless, as I show below, this effect disappears (becomes statistically insignificant) if to measure house demolition at the locality level. The authors extend the analysis to explore the severity effect of punitive house demolition. Using the same specifications as in Tables (I) and (II), they show that their findings

qualitatively remain the same regardless of how the treatment variable is measured; using the number of apartment units, number of residents, or house size, and whether the number of suicide bombings is aggregated at the district or the locality level (Table III).

The authors also used alternative estimation technique (negative binomial regression) in case the assumption of Poisson distribution of equal mean and variance is violated. As they stated, the findings of the punitive house demolition are robust if focusing on district-month cells or locality-month cells. Nonetheless, the estimates of the former, as reported in Table (A.6) of Benmelech et al (2015), are irreplicable.[22] In fact, the effect is statistically significant only when measuring the outcome variable using the number of residents in demolished houses (Table V).

Benmelech et al (2015) also examine the persistence of the deterrence effect over an extended period (two to six-month lags). Using the same specification as in Column (5) of Table 2, as reported in their paper, the authors show that the effect fades away a month after their occurrence (the estimate converges to zero for higher order lags) even if utilizing different intensity measures of punitive house demolition. Still, the authors provide no reasonable justification to explain this finding. If the estimate of demolition does reflect the deterrence effect, it is hard to understand why it is short-lived even though implementing the policy of punitive house demolition was not restricted in a given period, and thus for potential suicide bombers the consequences are certain. I revisited this test using the same model specifications except that the monthly fixed effect is controlled for rather than year fixed effect. The results show no lagged effects even when using other intensity measures of house demolition except for that of the number of residents. At odds with Benmelech et al (2015) conclusion, the findings of the latter model show that the effect is positive and statistically significant for most of the lags (see Table B.6 in Appendix 1)

The authors further extend the analysis to examine if the deterrence effect dissipates geographically. This is to test if the subsequent number of suicide bombers decreases when punitive house demolition increases in neighboring districts. To undertake this test, they added to model (1) a covariate measuring the number of house demolitions in the rest of the districts in the same region. The authors find that punitive house demolition has no dissipation effect. As they claim, only obtaining a localized effect suggests that suicide bombers are myopic since the demolition policy is universally implemented. Below, I provide evidence that refutes the hypothesis of the local deterrence effect.[23]

The Effect of Punitive House Demolition: Unaccounted Confounding Factors

A main aspect of Benmelech et al (2015) econometric modeling is that it allows punitive house demolition and subsequent suicide bombings to vary per month and district. Thus, the effect of punitive house demolition should be estimated taking into account two types of confounding factors. The first is related to monthly varying shocks that are common to all districts/localities in the oPt, while the second reflects shocks that vary per district/locality and month. For both shocks, I provide below examples of events that correlated with monthly changes in house demolitions and the number of suicide bombings. These examples along with the empirical analysis in section (6) illustrate how the reported effect of punitive house demolition in Benmelech et al (2015) is a product of spurious correlation.

Shocks That Affected the Trend of Suicide Bombing (National Level Shocks)

Jaeger and Paserman (2008) identify a number of shocks that changed the dynamic of the conflict during the Second Intifada. A main one is the 11 September 2001 attacks on New York City and Washington DC. The Israeli government has capitalized on these attacks, by associating them with the suicide attacks against the Israelis, to intensify military operations across the oPt including incursions into areas controlled by the PA. Another key reason that contributed to the escalation of violence during this period is the targeted killing of senior Palestinian militants. Notably, on

Table 2. The effect of punitive house demolitions on the number of suicide attacks during the second intifada: district level analysis.

Variable	-1-†	-2-†	-3-‡	-4-‡	-5-‡	-6-‡	-7-‡	-8-‡
Punitive house demolition	−0.019	−0.019	−0.047	−0.025	−0.034*	−0.032	−0.034	−0.038
	(0.036)	(0.036)	(0.052)	(0.050)	(0.020)	(0.023)	(0.030)	(0.035)
Districts' economic and demographic Characteristics								
Unemployment	−7.546	−6.937	−6.536	−7.151	−5.374	−14.662	−15.469	−10.757
	(6.100)	(6.006)	(7.936)	(7.162)	(6.999)	(13.097)	(12.224)	(7.565)
Percentage employed in Israel	3.843	4.580	−17.663	−8.884	−9.970	−10.013	−1.434	−6.221
	(6.290)	(6.335)	(12.801)	(10.028)	(10.953)	(20.469)	(16.580)	(10.336)
Years of schooling	0.511	0.430	−0.432	−0.507	−0.377	1.102	1.518	−0.230
	(0.688)	(0.683)	(1.127)	(1.126)	(1.055)	(1.088)	(1.076)	(1.151)
Age	0.693***	0.694***	0.059	−0.096	0.100	0.560	0.710	−0.077
	(0.228)	(0.241)	(0.441)	(0.473)	(0.392)	(0.412)	(0.540)	(0.416)
Married	−2.344	−1.916	3.846	2.672	2.256	−7.453	−8.588	2.094
	(6.641)	(6.544)	(9.621)	(10.598)	(10.665)	(13.581)	(13.074)	(12.039)
Share of Males in Population	13.792	14.673	−6.360	2.289	−8.958	−1.748	6.662	−3.301
	(15.023)	(15.797)	(14.805)	(16.086)	(10.823)	(10.696)	(10.462)	(11.241)
Security related variables								
Fatalities not in targeted killings	0.011	0.023	−0.043	−0.060	−0.040	−0.034	−0.044	−0.058
	(0.013)	(0.017)	(0.082)	(0.087)	(0.054)	(0.054)	(0.061)	(0.067)
Targeted killings	−0.169**	−0.170**	0.078	−0.301	0.145	0.138	−0.281	−0.342
	(0.080)	(0.077)	(0.186)	(0.285)	(0.183)	(0.160)	(0.334)	(0.344)
Other fatalities from targeted killings	−0.009	−0.014	−0.059	−0.104	−0.097	−0.133*	−0.167	−0.129
	(0.103)	(0.105)	(0.068)	(0.146)	(0.062)	(0.070)	(0.193)	(0.231)
Number of arrested Palestinians		−0.004	−0.021***	−0.016**	−0.018***	−0.021***	−0.017**	
		(0.004)	(0.006)	(0.007)	(0.006)	(0.006)	(0.006)	
Days with curfews at time t			0.099***		0.075***	0.094**		
			(0.023)		(0.024)	(0.038)		
Days with curfews at time *t*-1				0.033			0.065	0.038
				(0.029)			(0.042)	(0.039)
District fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes	No	No	No	No
District-specific linear year trends	Yes	Yes	No	No	No	No	No	No
Year fixed effects	No	No	No	No	Yes	Yes	Yes	Yes
District-specific linear monthly trend	No	No	No	No	No	Yes	Yes	No
N	1008	1008	704	688	704	704	688	688

The estimates are obtained using panel Poisson regression model. The dependent variable is the number of suicide bombing attacks originating in district *i* at month *t*. Standard errors, in brackets, are estimated assuming that the error terms are clustered at the district level. Unless stated, all independent variables are measured at lag.

†The data set covers the period between October 2000 to December 2005.

‡The data set covers the period between May 2002 to December 2005 *p-value < 0.10, **p-value <0.05, and ***p-value<0.001.

January 2002, the Israeli army assassinated Raed Al-Karmi, the leader of Fatah's Al-Aqsa Martyrs Brigades in the West Bank. As a result, Fatah joined other Palestinian factions in carrying out suicide bombings against Israelis.[24] Two months after, tens of Israelis were killed in 20 suicide attacks (Schweitzer 2010). Notably, none of these attacks originated from Al-Karmi's district of residence (Tulkarm). While Benmelech et al (2015) accounted for the district's number of Israeli-induced fatalities, including targeted killing, it only captures the effect on future suicide bombings originating from a given district (local effect). This escalation culminated on the 27th of March, when a suicide bomber struck the Park Hotel in the city of Netanya, killing 30 Israelis and wounding 140. Then, the Israeli army dramatically shifted its security tactic and undertook its first major incursion (Operation Defensive Shield) into the main Palestinian cities in the West Bank (see below more discussion). The extent of punitive house demolition and suicide attacks significantly changed shortly after this operation was launched (see Figure 1).

Efforts from the international community to de-escalate the spiral of violence and resume peace talks are other elements that affected the level of violence. Pushed by the U.S. administration, Mahmoud Abbas, then the Palestinian prime minister, convinced leaders of the main Palestinian factions (Hamas and Islamic Jihad) to cease fire in the end of June 2003. As a result, attacks induced by the Palestinians declined; such that the number of suicide attacks decreased from 6 in May to 2 in June and 1 in July. During this period, punitive house demolition also declined from 35 to 13 in June and zero in July. Nonetheless, August 19 of the same year marked the end of the ceasefire as Hamas claimed responsibility for a suicide bombing in Jerusalem that killed 23 Israelis (Jaeger and Paserman 2008). Though, the extent of suicide attacks and house demolition that occurred in the following months had never bounced to earlier levels as in 2002 (see Figure 1).

Other national-level shocks include the assassination of Ahmad Yassin, the spiritual leader of Hamas, on March 20 of 2004. On the same date, the Israeli army imposed a complete closure on the oPt. In the absence of such a measure, attacks against Israelis could have shortly spiraled. This is an example that illustrates how consequences of a national-level shock, in case is not accounted for, could confound linkages between punitive house demolition and subsequent suicide bombings.[25] Another example is the unexpected death of Yasser Arafat (then the president of the PA and chairman of PLO) on November 11th of the same year. Israel has accused Arafat of providing arms to Palestinian factions and financing attacks against Israel during the Second Intifada (Frisch 2003). His death marked the time when the dynamic of the conflict changed by paving the way to elect a new president (Mahmoud Abbas) on January 2005. Pressured by the international community, Abbas and Sharon (the late Israeli Prime minister) met in Sharm Al-Sheikh in February of 2005, when Israel agreed to gradually transfer security control to the PA; leading eventually to the end of the Second Intifada.

These are observed events of national-level events that shifted violence over multiple points in time within a given year. Overall changes in the intensity of violence could also be related to unobserved events including undeclared shifts in Israel's security tactics or changes in the attitudes of the Palestinian public toward political gains from the peace process (De Mesquita 2005). The effects of the within-year shocks need to be separated to tease out the causal impact of punitive house demolitions. Reasonably, including month fixed effects, rather than year fixed effects as in model (1), would deliver.

The source of data for the suicide attack variable is Benmelech and Berrebi (2007). Source of data for the house demolition is B'Tselem.

Shocks Varying per District and Month

As shown above, several events including the September 11th attack and assassination of militant leaders have aggravated the cycle of violence and paved the way for the Israeli army to launch Operation Defensive Shield. Embedding 30,000 Israeli troops, the Israeli army aimed to destroy the infrastructure of the PA and incapacitate militants' ability to conduct further suicide attacks.

Although Operation Defensive Shield represented a paradigm shift in Israel's counterinsurgency tactics, it also reflects shocks that vary per district/locality and month. This operation targeted selected areas in the West Bank with different time intervals as follows: Ramallah (March 29th to May 1st); Bethlehem (March 1st to May 10th); Jenin camp (3rd to 19th of March); Nablus (3rd–21st of March); Qalqilya (April 31st to March 9th) and Tulkarm (1st to 9th of March).[26] The incursion of these cities enabled the Israeli army to regain human intelligence; impose curfews to conduct house-by-house searches; assassinate and arrest key militants; as well as destroy combat equipment including bomb workshops (Jones 2013; Esposito 2005; Martin 2020).

Available data on the outcome of Operation Defensive Shield show that the number of Israeli-induced Palestinian fatalities jumped from 122 in March to 204 in April of 2002. Also, arrests significantly shifted from a monthly average of 180, before the operation, to a monthly average of 485 arrests for the remaining period of the Second Intifada with a peak of 1,420 arrests in April. The data further show that the extent of arrest varies by district, leveling at 156 arrests in Bethlehem versus 290 and 364 arrests in Jenin and Nablus, respectively. Markedly, the number of arrests is higher in areas with a higher frequency of punitive house demolition. The correlation between these two variables throughout the period of the Second Intifada is 0.29 (p-value = 0.00). Consistently, the trend of punitive house demolition and arrested Palestinians covaried mainly after the Israeli army had launched its incursion operations (see Figure 2).

The source of data for the arrest variable is the Palestinian Commission of Detainees and Ex-Detainees Affairs. The source of data for the house demolition is B'Tselem.

Following Operation Defensive Shield, the capability of the Palestinian militants to conduct attacks weakened in which the number of suicide bombings declined from 14 attacks at the end of March to 7 attacks in April and 8 attacks in May. The number of attacks further decreased to 3 in July of the same year after the Israeli army launched Operation Determined Path.[27] As the Israeli army has adopted a policy of short time incursions and the number of arrested Palestinians shifted upward, the trend of suicide attacks relatively followed a downward pattern (Figure 3).[28] To assure that the reported effect of punitive house demolition is unbiased, the effect of incursions should be properly accounted for. In the following section, I provide empirical evidence that in the aftermath of

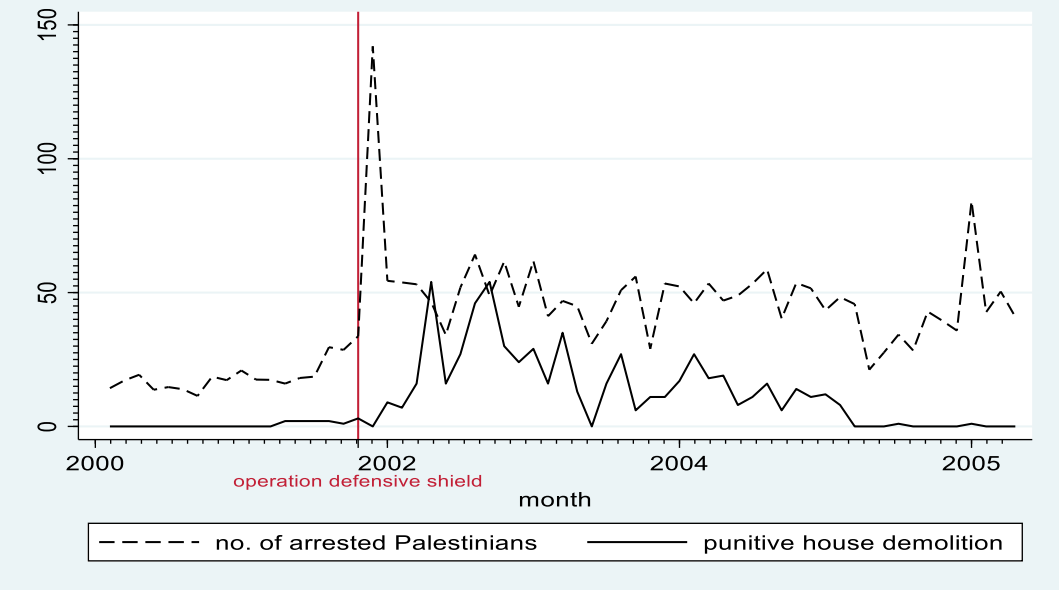

Figure 2. Punitive house demolition and arrested Palestinians during the second intifada (2000-2005).

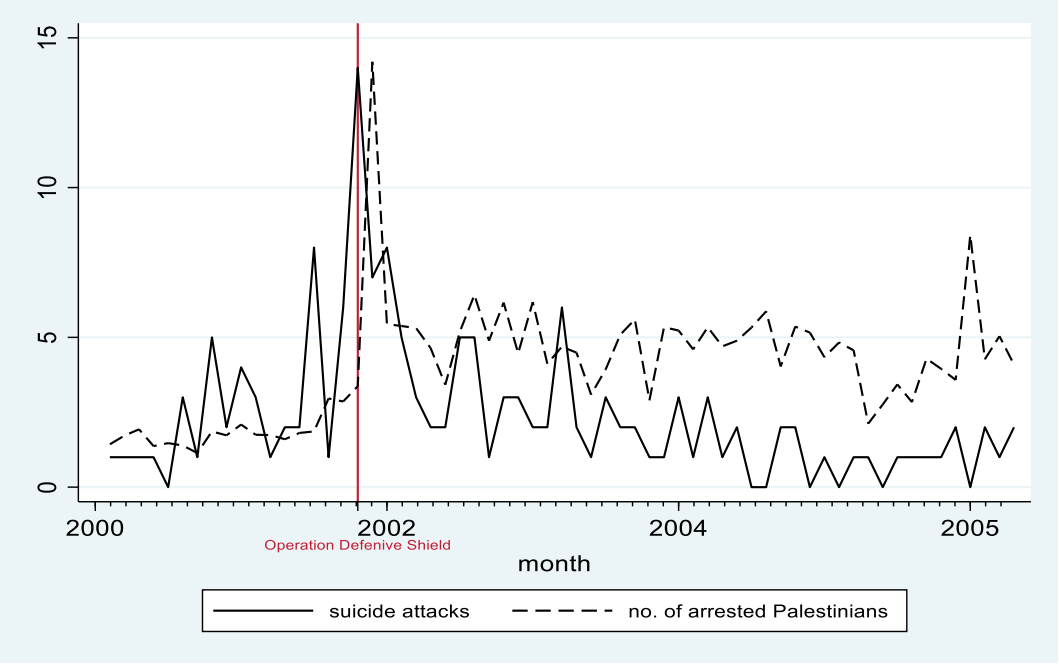

Figure 3. Suicide bombing attacks and arrested Palestinians during the second intifada (2000–2005).

Operation Defensive Shield, the arrest variable did indeed lower the subsequent number of suicide bombers and significantly reduced the effect of punitive house demolition. I also show that alternatively excluding observations with a high correlation between punitive house demolition and security measures, as suggested by Benmelech et al (2015), fails to address these types of concerns.

The source of data for the suicide attack variable is Benmelech and Berrebi (2007). The source of data for the arrest variable is the Palestinian Commission of Detainees and Ex-Detainees Affairs.

Another security measure that the Israeli army implemented was the installation of barriers, including roadblocks and checkpoints around Palestinian communities to constrain the mobility of militants into Israel (Byman 2012; Freilich 2017; Perliger, Hasisi, and Pedahzur 2009). Governed by Israeli security tactics, these barriers vary in number, location, and time throughout the period of the Second Intifada (see Calì and Miaari 2018). In June 2002, Israel approved the construction of the first stage of the 'separation wall' with an expected length of 680 km. The official purpose of the wall, as announced by the Israeli government, is to prevent attacks (Shnayderman 2005).[29] The construction of the wall began in the northern West Bank with one-third being completed by the end of 2005. Unfortunately, data on barriers, including the separation wall, are not readily available at the district/locality-month level and thus their effects cannot be directly separated. Alternatively, I add to some model specifications district- month trend to account for the linear monthly changes per district including that of the barriers' effect.

Controlling for Other Confounding Factors

Empirical Analysis

In the previous section, I identified various factors that correlated with suicide bombings and punitive house demolition during the Second Intifada. In what follows, I investigate the extent to which accounting for these factors alters the findings of Benmelech et al (2015). To achieve this objective; I undertook a number of modifications to Model (1) using firstly data aggregated at the

district level. Column (1) of Table 2 includes month fixed effects, instead of year fixed effects, to account for monthly changes in national-level shocks. To this end, the magnitude of the house demolition coefficient drops from about 0.05, as documented in Columns (6) and (7) of Table (I), to about 0.002 and becomes statistically insignificant. The same conclusion holds when the number of arrested Palestinians (Column 2) or curfew days is controlled for (Column 3). In a different model specification, I keep year fixed effects among the aforementioned controls to check whether only accounting for district-month confounding factors alters the findings of Benmelech et al (2015). The results in Column (5) show that with the arrest variable included, the magnitude of the house demolition coefficient drops to 0.034, but remains marginally significant at the 10% level (see below more discussion). Nonetheless, the effect becomes insignificant once the district-month linear trend is accounted for (Column 6).

In terms of the effect of the security measures, the findings are at odds with those of Benmelech et al (2015) but confirm *priori* expectations. The authors show that curfew is the only factor that matters, such that an increase in the average curfew days in a given district raised the odds that a suicide bomber originated from that district in the subsequent month. They claim that the radicalization effect is a potential transmission mechanism. But this argument is not so plausible for two reasons. Firstly, while the Israeli army regularly utilized curfew as a collective punishment that disrupted daily norms (Lein 2001), it was not often imposed for an extended period. Descriptive statistics show that the average curfew days was 1.3 per month with a standard deviation of 4.06 days. Therefore, it is less likely that locals did experience severe shortages in basic needs to the extent that the radicalization effect materialized.

Secondly, as explained above, the Israeli army often imposes curfews mainly during incursion operations to arrest suspected militants and dismantle their networks to curb future attacks. [30] Thus, the reported positive effect of the curfew variable is expectedly biased due to simultaneity as curfew is often imposed in districts where suicide bombers originate and accordingly where house demolitions are more frequent (the correlation between the curfew variable and punitive house demolition is 0.33). Consistent with modeling other security measures, I included lagged curfew days. The results show that its effect becomes statistically insignificant (see Column 7 of Table 1), indicating that curfew *per se* does not reflect the radicalization effect (see also Column 3). More importantly, I also re-estimated model (1) using the same specification as in Benmelech et al (2015) except that the curfew days variable is lagged. The findings show that the effect of punitive house demolition decreases to zero (column 8). This suggests that the authors' reported demolition effect for the May 2002 onward period might be a product of the aforementioned simultaneity bias.

Among the Israeli-induced Palestinian fatality variables, the results in Table (1) show that only targeted killing is statistically significant. The increase in targeted killings in a district subsequently decreased the odds that a suicide bomber originated from that district. However, this effect becomes statistically insignificant when restricting the sample to the post-May 2002 period.[31] It turns out that the effect of targeted killing is not robust because it varies per model specification (see Table 3). Still, the effect of targeted killing may exert effects that extend to other areas, but I leave this investigation to future research.

As for the arrest variable, the findings show that it exerts a negative and statistically significant effect across all model specifications when restricting the analysis to May 2002-December 2005. During this period, the number of arrested Palestinian substantially shifted, as a result of multiple Israeli incursions, relative to the preceding period (see Figure 3). As discussed above, it appears that incursions allowed the Israeli army to intensify arrests to the extent that it reduced suicide bombings. This might explain why this effect matters only for this period and that including the preceding period in the regression analysis unduly distorts this conclusion.

Following the steps of Benmelech et al (2015), I conduct a similar estimation exercise focusing on locality-month cells. In this respect, locality fixed effects are included instead of district fixed effects. Consistent with the findings in Table 2, the negative impact of punitive house demolition is no longer statistically significant once month fixed effects are controlled for (Column 1 of

Table 3. The effect of punitive house demolitions on the number of suicide attacks during the second intifada: locality level analysis.

	(1)†	(2)†	(3)‡	(4)‡	(5)‡	(6)‡
Punitive house demolition	−0.015	−0.014	−0.043*	−0.040	−0.062	−0.042
	(0.032)	(0.032)	(0.024)	(0.029)	(0.046)	(0.047)
Districts' economic and demographic Characteristics						
Unemployment	−7.028	−6.757	−5.424	−8.541	−6.041	−7.884
	(5.283)	(5.195)	(6.862)	(7.284)	(7.383)	(6.701)
Percentage employed in Israel	3.537	3.705	−10.646	−3.538	−15.917	−6.890
	(8.409)	(8.576)	(11.636)	(10.429)	(13.261)	(13.442)
Years of schooling	0.419	0.383	−0.235	−0.248		
	(0.691)	(0.703)	(0.938)	(1.087)		
Age	0.656**	0.658**	0.129	−0.022		
	(0.276)	(0.282)	(0.422)	(0.492)		
Married	−2.337	−2.199	2.387	2.475		
	(5.496)	(5.399)	(8.222)	(9.172)		
Share of Males in Population	13.688	13.771	−8.631	−3.045	−7.772	2.401
	(13.091)	(13.244)	(10.487)	(10.242)	(13.177)	(13.858)
Security related variables						
Fatalities not in targeted killings	0.007	0.012	−0.016	−0.019	0.001	−0.013
	(0.017)	(0.023)	(0.068)	(0.072)	(0.083)	(0.092)
Targeted killings	−0.198	−0.205	−0.146	−0.687**	−0.212	−0.699***
	(0.289)	(0.290)	(0.398)	(0.318)	(0.440)	(0.243)
Other fatalities from targeted killings	−0.087	−0.086	−0.016	−0.026	−0.029	−0.076
	(0.127)	(0.127)	(0.110)	(0.127)	(0.116)	(0.148)
Number of arrested Palestinians		−0.001	−0.018**	−0.014*	−0.021**	−0.016*
		(0.004)	(0.008)	(0.008)	(0.008)	(0.009)
Days with curfews at time t			0.073*		0.101***	
			(0.028)		(0.034)	
Days with curfews				0.041		0.032
				(0.036)		(0.029)
Month fixed effects	Yes	Yes	Yes	No	Yes	Yes
Year Fixed Effects	No	No	Yes	Yes	No	No
Locality fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
District-specific linear yearly trends	Yes	Yes	No	No	No	No
N	2666	2666	1849	1806	1849	1806

The estimates are obtained using panel Poisson regression model. The dependent variable is the number of suicide bombing attacks originating in locality *j* at month t. Standard errors, in brackets, are estimated assuming that the error terms are clustered at the locality level. Unless stated, all independent variables are measured at lag.

†The data set covers the period between October 2000 to December 2005.

‡The data set covers the period between May 2002 to December 2005.

*p-value < 0.10, **p-value <0.05, and ***p-value<0.001.

Table 3). I also attempted to include the curfew variable, respectively measured at time *t*-1 and *t*, but the models do not converge. With this setting, it turns out that Poisson model is sensitive to numerical complexity in some of the district's demographic controls (years of schooling, average age, and share of the married).[32] Alternatively, I rely on alternative modifications such that Column (3) of Table 3 keeps the year fixed effects, curfew days at time *t*, the arrest variable, among the other controls. The findings show that the effect of punitive house demolition is negative and marginally significant. Nonetheless, the effect becomes statistically insignificant if the curfew day variable is lagged (Column 4). The findings remain the same even when keeping month fixed effects; current or lagged curfew days; and the other security measures; but excluding the demographic controls (Columns 5 and 6). In terms of the effect of the security measures, the findings show that targeted killing did not play a factor. Still, the effect of the arrest variable is consistent with the above findings.

Tables (B.2) and (B.3), in appendix I, repeat the estimation of model (1), as reported in Tables 2 and 3 but focus on the severity measures of house demolition. Furthermore, Tables (B.4) and (B.5) in appendix II estimate these models using negative binomial regression. The findings show that the effect of punitive house demolition is statistically insignificant. In sum, the analysis in this section

consistently shows that once confounding factors are accounted for, the estimate of punitive house demolition downsizes to zero.

Another drawback in the modeling of Benmelech et al (2015) is that the findings of locality level regression are driven by aggregating house demolition data at the district level. I re-estimated the same version of their Poisson models reported in Columns (6) and (7) of Table (II) in appendix II, except that the variable of punitive house demolition is aggregated at the locality level to better reflect a localized effect (within the same locality). The findings in Columns (1) and (2) of Table (4) show that effect of house demolition becomes statistically insignificant. The same conclusion applies if to repeat the same estimation exercise of the models reported in Columns (2) to (6) in Table (3) using all measures of house demolition (Table 4). These findings add another layer of concern over the robustness of the authors' conclusions.

Revisiting Robustness Checks of Benmelech et al (2015)

Benmelech et al (2015) addressed a number of identification concerns that may threaten the validity of their findings. Firstly, they tested for reverse causality by regressing the number of houses demolished on the lagged number of suicide bombers originating from the same locality. The regression holds constant demographic/economic characteristics and the other security controls as specified in Model (1). The findings show no statistically significant correlation between the number of demolished houses and lagged suicide bombings. The authors also show that this conclusion is robust even when considering the dynamic correlation between the two variables. I tested against the reverse causality hypothesis utilizing a similar model specification as in Table 2. The findings are consistent with those of Benmelech et al (2015)[33] who reasonably suggest that the timing of house demolition is likely random since it is commonly governed by the approval of the Israeli Supreme Court and/or the time needed to indict suspects.

The authors also attempted to address other identification challenges in which they rightfully argue that the reported estimate of the punitive house demolition may reflect the effects of other security measures that the Israeli army has implemented in areas where suicide bombers originated. In this vein, they admit that 'if house demolitions occur simultaneously with the detention or killing of the of a local terror cell, the observed temporary effect of house demolitions could be due to incapacitation' (p. 337). While model (1) includes some of these factors (curfew days and Israeli-induced Palestinian fatalities), other factors such as arrests of suspected militants and imposition of barriers (roadblocks, checkpoints, and the separation wall) are not taken into consideration.

Nonetheless, Benmelech et al (2015) tried to isolate the effects of the unaccounted confounding factors by eliminating month-locality cells with a high correlation between punitive house demolition and security measures. These observations exhibit a high positive correlation (0.45) between house demolition and Israeli-induced Palestinian fatalities relative to that of the rest of the observations (0.018). This is assuming that unobserved security tactics are disproportionately employed in areas with a greater number of Palestinian fatalities. Undertaking this exercise, they show that the negative impact of punitive house demolition remains the same even when using various intensity measures of house demolition (Table IV). However, when controlling for the other reported security measures, the estimate becomes marginally significant (at a 10% level) for all outcome measures except the number of residents in demolished houses (Column 4).

To investigate the validity of this conclusion, I applied the same testing methodology using the same restricted data set. The estimates are reported in Table 5 in which Column (1) adds the arrest variable and month fixed effects along with the other demographic/economic and other security controls. Column (2) keeps the same covariates except that national shocks are modeled using year fixed effects and that the curfew variable is lagged. Column (3) and (4) keep month fixed effects but respectively excludes the district's economic/demographic controls and the security controls. The findings, across the board, show that the effect of punitive house demolition is statistically insignificant. Thus, it can be concluded that excluding month-

Table 4. The effect of punitive house demolitions on the number of suicide attacks during the second intifada: localized effects.

Variable	-1-†	-2-†	-3-†	-4-‡	-5-‡	-6-‡	-7-‡
No. of Houses Demolished[T]	−0.049	−0.075	0.009	−0.057	−0.055	−0.071	−0.063
	(0.063)	(0.054)	(0.063)	(0.059)	(0.064)	(0.076)	(0.071)
No. of apartment units[T] demolished	−0.063	−0.088	−0.013	−0.070	−0.068	−0.087	−0.078
	(0.063)	(0.058)	(0.060)	(0.065)	(0.068)	(0.075)	(0.069)
No. of residents in demolished houses[T]	−0.004	−0.006	0.000	−0.003	−0.003	−0.004	−0.003
	(0.007)	(0.007)	(0.004)	(0.007)	(0.007)	(0.008)	(0.008)
Size of house demolished (100 sq m) [T]	−0.007	−0.032	0.045	−0.016	−0.015	−0.007	−0.006
	(0.044)	(0.054)	(0.043)	(0.049)	(0.052)	(0.057)	(0.056)
Districts' economic and demographic Characteristics							
Unemployment	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Percentage employed in Israel	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Years of schooling	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Age	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Married	Yes	Yes	No	Yes	Yes	Yes	No
Share of Males in Population	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Security related variables							
Fatalities not in targeted killings	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Object of targeted killings	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other fatalities from targeted killings	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of arrested Palestinians	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Days with curfews at time t	No	Yes	Yes	Yes	Yes	No	No
Days with curfews	No	No	No	No	No	Yes	Yes
Month fixed effects	No	No	Yes	Yes	No	Yes	Yes
Year Fixed Effects	Yes	Yes	No	Yes	Yes	No	No
Locality fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District-specific linear yearly trends	Yes	No	Yes	No	No	No	No
N	2666	1849	2666	1849	1806	1849	1806

The estimates are obtained using panel Poisson regression model. The dependent variable is the number of suicide bombing attacks originating in locality j at month t. Standard errors, in brackets, are estimated assuming that the error terms are clustered at the locality level. Unless stated, all independent variables are measured at lag.

[T]Punitive House Demolition is aggregated at the locality level.

†The data set covers the period between October 2000 to December 2005.

‡The data set covers the period between May 2002 to December 2005.

*p-value < 0.10, **p-value <0.05, and ***p-value<0.001.

locality cells with a high correlation between punitive house demolition and Israeli-induced Palestinian fatalities fails to account for the omitted confounding factors. This conclusion, as shown in Table 5, is confirmed even by focusing on the intensity measures of house demolition.

Benmelech et al (2015) also tested against an alternative mechanism that may provide different explanations to their conclusion. They emphasized the possibility that militant networks may have adopted a 'lay low' tactic after successful suicide attacks to lessen the chances of being exposed and accordingly dismantled. In such a case, the estimate of punitive house demolition is likely spurious and does not reflect the deterrence effect. To address this concern, the authors resorted to controlling for the locality's lagged number of suicide bombings. Though, the main drawback of estimating this model is that the estimators are biased since the latter is correlated with error terms. The authors attempted to correct this bias by utilizing the Arellano-Bond instrumental variable estimation (Arellano and Bond 1991). The findings show that the effect of punitive house demolition, using various house demolition measures, is negative and statistically significant. The authors also show that this finding remains the same even when relying on additional moment conditions (Arellano and Bover 1995; Blundell and Bond 1998).

While Arellano-Bond estimator is often used in settings of the dynamic linear panel, it is designed for datasets with many panels and few periods, among other requirements (Alvarez and Arellano 2003). The data set includes 41 localities (16 districts) and 63 months, and accordingly does not satisfy this condition. Even if this caveat is addressed, one cannot conclude that the estimate of

Table 5. The effect of punitive house of demolitions on the number of suicide attacks: restricted data Set[T].

Variable	-1-[†]	-2-[‡]	-3-[‡]	-4-[†]
Punitive house demolition	−0.002	−0.038	−0.031	−0.004
	(0.037)	(0.032)	(0.049)	(0.037)
Number of apartment units demolished	−0.011	−0.042	−0.039	−0.014
	(0.035)	(0.032)	(0.048)	(0.036)
Number of residents in demolished houses	−0.006	−0.009*	−0.01	−0.006
	(0.006)	(0.006)	(0.009)	(0.006)
Size of house demolished (100 sq m)	−0.015	−0.034	−0.032	−0.012
	(0.034)	(0.03)	(0.039)	(0.03)
Economic and demographic Characteristics				
Unemployment	Yes	Yes	No	Yes
Percentage employed in Israel	Yes	Yes	No	Yes
Years of schooling	Yes	Yes	No	Yes
Percentage employed in Israel	Yes	Yes	No	Yes
Age	Yes	Yes	No	Yes
Married	Yes	Yes	No	Yes
Share of Males in Population	Yes	Yes	No	Yes
Security related variables				
Fatalities not in targeted killings	Yes	Yes	Yes	No
Object of targeted killings	Yes	Yes	Yes	No
Object of targeted killings	Yes	Yes	Yes	No
Other fatalities from targeted killings	Yes	Yes	Yes	No
Number of arrested Palestinians	Yes	Yes	Yes	No
Days with curfews	No	Yes	Yes	No
locality Fixed effects	Yes	Yes	Yes	Yes
Month fixed effects	Yes	No	Yes	Yes
Year fixed effects No		Yes	No	No
District specific linear year trend	Yes	No	No	No
N	2646	1787	1787	2646

The estimates are obtained using panel Poisson regression model. The dependent variable is the number of suicide bombing attacks originating in locality j at month t. Standard errors, in brackets, are estimated assuming that the error terms are clustered at the locality level. Unless stated, all independent variables are measured at lag.

[T]The sample excludes month-locality cells with a high correlation between punitive house demolition and security measures.

[†]The data set covers the period between October 2000 to December 2005.

[‡]The data set covers the period between May 2002 to December 2005.

*p-value < 0.10, **p-value <0.05, and ***p-value<0.001.

punitive house demolition reflects the deterrence effect without properly accounting for the confounding factors. Thus, I do not pursue this avenue further in the following empirical analysis.

Why Did Punitive House Demolition Not Matter?

The analysis in the previous section provides evidence that increases in punitive house demolitions did not curb suicide bombing during the Second Intifada. The deterrence hypothesis of Benmelech et al (2015) is rejected upon accounting for confounding factors. The question then becomes why suicide bombers, or at least most of them, did not factor in punitive house demolition when planning for the attack? The answer likely hinges on an intersection of multiple factors including grievances from excessive state oppression, vengeance against injustice, and glorifying self-sacrifice and martyrdom in asymmetric conflict.

Several researchers show that using excessive force to curb insurgency or protests, mainly in occupied countries, generates grievances among the locals and radicalizes insurgent strategies. One example is Ireland, where state oppression was a key driver of IRA violence (LaFree, Dugan, and Korte ; Piazza and Walsh 2009; White 1989). In Palestine too, the spiral of violence and suicide attacks during the Second Intifada was directly linked to Israel's oppressive military tactics (Brym and Araj 2006; Araj 2012; Hafez 2006). Remarkably, the suicide attacks started in March of 2001; months after the start of the Second Intifada. Preceding this date, the Israeli army excessively used live ammunition to quell demonstrations and started using heavy weaponry

against the Palestinian militants, including air crafts and tanks. In the first three months of the Second Intifada, 267 Palestinians were killed, where 101 were killed in demonstrations, as opposed to 40 fatalities on the Israeli side (source of data is B'Tselem). Existing research (see Hafez 2006) suggest that inflicting heavy casualties on the Palestinians generated additional grievances, humiliation, and trauma that exacerbated the sentiment of revenge and retaliation. In the same vein, polls taken by Jerusalem Media and Communication Center show that the support of suicide bombing among the Palestinians shifted from a wide disapproval rate of 74% in March of 1999, before the eruption of the Second Intifada, to an approval rate of 66% by December of 2000.[34]

Hafez (2006) utilized content analysis of the last wills and statements of over a hundred suicide bombers during the Second Intifada to uncover their motivations. He shows that the decision to commit attacks is shaped by the desire to end injustice and seek vengeance in a conflict defined by asymmetric power relations. He also shows that, in this context, religion plays an important role to enforce self-sacrifice via glorifying martyrdom and after-death rewards as well as fulfilling the duty to the country and God. In the same vein, Brym and Araj (2006) collected information on the circumstances and motives of 101 suicide attacks during the Second Intifada.[35] They consistently show that revenge and retaliation were the primary motives for the majority of the suicide bombers (71 bombers). Almost all in this group (69 bombers) revealed that they sacrificed their lives to avenge the killing of close relatives/friends (personal revenge) or generally the killing of Palestinian people (see also Araj 2012).[36]

In light of the aforementioned evidence, the argument that suicide bombers are rational actors who utilize calculated cost and benefit to weigh their actions, as implied by Benmelech et al (2015), is an oversimplification of what drives them to participate in extreme violence. Self-sacrifice contradicts the essence of rational behavior as a rational actor expects to share the benefits of risk sharing (Hafez 2006). After all, for those willing to pay the ultimate price for the reasons stated above, does house demolition really matter!

Conclusion

Benmelech et al (2015) are the first and only researchers to empirically demonstrate a negative impact of punitive house demolition on suicide bombing and claim that deterrence is the transmission mechanism. This paper challenges their conclusion and provides evidence that their empirical analysis fails to account for confounding monthly shocks that vary at the national and district/locality levels. Accounting for these shocks, the findings of this paper show that punitive house demolition does not matter and thus exerts no deterrence effect. The reason could be related to the incentives of suicide bombers. Excessive use of force by the Israeli army and the resulting heavy casualties on the Palestinian side seem to aggravate grievances which in turn glorify self-sacrifice and martyrdom. These factors, in a context of unbalanced conflict, may have induced some to exact revenge using extreme violence with little consideration if their families pay the price. While the policy of punitive house demolition is not common worldwide, only applied by the Israeli army in the occupied West Bank and the Gaza Strip, the conclusion of this paper has a far-reaching implication. The effectiveness of state-led repression to quell political violence may depend on the context of the conflict.

To date, the Israeli army, supported by the Israeli Supreme Court, still razes houses of Palestinians who commit or are suspected of committing deadly attacks against Israelis and still cites deterrence as a main justification. At the other end of the spectrum, rights organizations constantly assert that punitive house demolition is a collective punishment since the families of these individuals suffer the consequences of acts they did not commit. Hopefully, the outcome of this paper helps settle the discussion on the effectiveness and legality of this practice.

Notes

1. Indiscriminate counterinsurgency measures are often perceived as unfair and generate moral-outrage, motivate dissent, accumulate grievances within localities where insurgents operate, and create more support for militants (Kocher, Pepinsky, and Kalyvas 2011; Toft and Zhukov 2011; Kress and Szechtman 2009)
2. In the following discussion, I use 'the authors' and Benmelech et al (2015) interchangeably.
3. Benmelech et al (2015), also tested the effect of 'precautionary' house demolition on the extent of suicide bombings committed by Palestinians during the Second Intifada. The Israeli army used this measure in 2004 to indiscriminately erase houses in an attempt to prevent attacks by clearing areas used by Palestinian militants to fire shells at Israeli targets. As documented by Benmelech et al (2015), the Israeli army razzed 1172 houses (1421 housing units) primarily in Rafah area along the Egyptian border and close to army posts, in the Northern Gaza Strip, and where Israeli settlements were located before the Israel government vacated them in 2005. The occupants of these houses (10778 individuals) are innocent civilians and were not suspected of any offensive act (Shnayderman 2005). Benmelech et al (2015) show that the rise in the number of 'precautionary' demolitions backfired as the frequency of suicide attacks increased.
4. Source of data is *United Nations Office for the Coordination of Humanitarian Affairs – occupied Palestinian territory| Data on demolition and displacement in the West Bank*. (n.d.). United Nations Office for the Coordination of Humanitarian Affairs – Occupied Palestinian Territory. https://www.ochaopt.org/data/demolition.
5. The supplementary material of Benmelech et al (2015), including the data set and stata codes (do file), are posted on the personal website of Esteban F. Klor (http://pluto.huji.ac.il/~eklor/HD_data).
6. Harel, A. (2005) *IDF panel recommends ending punitive house demolitions for terrorists' families – Haaretz Com*. Available at: https://www.haaretz.com/2005-02-17/ty-article/idf-panel-recommends-ending-punitive-house-demolitions-for-terrorists-families/0000017f-da82-dc0c-afff-dbdb4dcf0000.
7. The Emergency Defense Regulations of 1945 were implemented by the acting British Commissioner for Palestine based on Section 6 of the Palestine (Defense) Order in Council. See *Palestine Gazette*, No. 675, Supp. No. 2, 24 March 1937, p. 267. Section of Regulation 119 states that 'a Military Commander may by order direct the forfeiture to the Government of Palestine of any house, structure, or land from which he has reason to suspect that any firearm has been illegally discharged, or any bomb, grenade or explosive or incendiary article illegally thrown, or of any house, structure or land situated in any area, town, village, quarter or street the inhabitants or some of the inhabitants of which he is satisfied to have committed, or attempted to commit, or abetted the commission of, or been accessories after the fact to the commission of, any offense against these Regulations involving violence or intimidation or any Military Court offense; and when any house, structure or land is forfeited as aforesaid, the Military Commander may destroy the house or the structure or anything on growing on the land'.
8. House demolition has never been implemented against Israeli civilians who committed acts that warrant such a punishment (Shnayderman 2005).
9. See Section 14 Israeli Supreme Court response, HCJ 7473/02. https://hamoked.org/files/2014/1159002_eng.pdf.
10. Article 33 of the Fourth Geneva Convention states that 'No protected person may be punished for an offence he or she has not personally committed. Collective penalties and likewise all measures of intimidation or of terrorism are prohibited. Pillage is prohibited. Reprisals against protected persons and their property are prohibited.' See ICRC Database, Treaties, States Parties and Commentaries, Convention (IV) relative to the Protection of Civilian Persons in Time of War. Geneva, 12 August 1949., Article 33 - Individual responsibility, collective penalties, pillage, reprisals, https://ihl-databases.icrc.org/en/ihl-treaties/gciv-1949/article-33.
11. ICRC Database, Treaties, States Parties and Commentaries, Convention (IV) relative to the Protection of Civilian Persons in Time of War. Geneva, 12 August 1949., Commentary of 01.01.1958, Article 53 - Prohibited destruction, https://ihl-databases.icrc.org/en/ihl-treaties/gciv-1949/article-53/commentary/1958.
12. See Petition HCJ8091/14 submitted to the Israeli Supreme Court. https://hamoked.org/files/2014/1159000_eng.pdf.
13. ICRC, Commentary on the Additional Protocols of 8 June 1977 to the Geneva Conventions of 12 August 1949, Par. 152, p. 67.
14. Opponents of punitive house demolition further argue that the policy of punitive house demolition is discriminatory as this policy only applies to Palestinians and not to Jews involved in similar conduct. The Israeli Supreme Court rejects this argument indicating that the scale of attacks by the latter does not necessitate deterrence (see Ronen and Telman 2015).
15. *Israel: Stop Punitive Home Demolitions* (2020). Available at: https://www.hrw.org/news/2014/11/21/israel-stop-punitive-home-demolitions.
16. Benmelech, E. and Berrebi, C., 2007. Human capital and the productivity of suicide bombers. *Journal of Economic Perspectives*, *21*(3), pp.223-238.
17. http://cda.gov.ps/index.php/en/.
18. The construct of all variables in model (1) are specified in the STATA do file of Benmelech et al (2015).
19. The replicated estimates of Benmelech et al (2015) are reported in appendix II.
20. I replicated the findings of Benmelech et al (2015) using their own stata codes.

21. Benmelech et al. (2015) do not state in their locality level analysis that punitive house demolition is measured at the district level. The construct of all variables is available in their stata do file.
22. Unlike all other models, stata's do file of Benmelech et al (2015) do not include the codes of the negative binomial regressions.
23. To save space, I do not reproduce the dynamic and geographic effect of punitive house demolition, which are respectively reported in Table (A.8) and (A.9) in the online appendix of Benmelech et al (2015).
24. Aderet, O. (2020) *The killing of the terrorist with nine lives changed the course of the second intifada – Israel News*. Available at: https://www.haaretz.com/israel-news/2020-09-29/ty-article/.premium/the-death-of-the-terrorist-with-nine-lives-changed-the-course-of-the-second-intifada/0000017f-da76-dea8-a77f-de763fdd0001.
25. Harel, A. and Arnon Regular, Uri Ash Haaretz Service, Agencies (2004) *Security forces on heightened terror alert – Haaretz Com*. Available at: https://www.haaretz.com/2004-03-22/ty-article/security-forces-on-heightened-terror-alert/0000017f-e881-dc7e-adff-f8ad8ddc0000.
26. See Jones (2007) for more discussion on the Operation Defensive Shield.
27. See Jones (2007).
28. See Esposito (2005) for more discussion on the Israeli induced operation during the Second Intifada.
29. Out of the total length of the separation wall, about twenty percent of the barrier's route is planned to run along the border between the West Bank and the Green Line (1949 armistice line). Lein (2006) argues that while the official purpose of constructing the wall was to prevent attacks, the route of the wall is designed in a fashion that enables the expansion of Israeli settlement in the West Bank. On July 9th of 2004, The International Court of Justice (ICJ) issued an advisory opinion asserting that the building of the separation wall is illegal and must stop and that Israel should make reparation for any related damages: https://news.un.org/en/story/2004/07/108912.
30. See Amnesty International (2001) 'Israel and the Occupied Territories: Broken Lives – a year of Intifada'. Index Number: MDE 15/083/2001. Accesses online on October 21, 2022. https://www.amnesty.org/en/documents/mde15/083/2001/en/.
31. The Israeli army has used targeted killing to serve multiple objectives including preemption, revenge, and retribution. During the Second Intifada the Israel army conducted 191 successful targeted killing using various methods including shooting from close range, air missiles, and explosive devices. Available data shows that about 75% of the targeted killings were carried out against operatives or low rank militants as opposed to the rest who were either military leaders or political/ideological leaders.
32. See Santos Silva and Tenreyro (2010) for more discussion on the sensitivity of estimating Poisson models.
33. The findings are not reported to save space, but available on request from the author.
34. Jerusalem Media and Communication Center, Poll No.31 Part I, March 1999 and Poll 39 Part II, December 2000. http://www.jmcc.org/polls.aspx.
35. The data that Brym and Araj (2006) used are obtained from multiple sources including: the wills and recorded statements of the suicide bombers; online database of the International Policy Institute for Counter-Terrorism (ICT) in Herzliya, Israel; the website of Israel's Ministry of Foreign Affairs; the East Coast evening edition of the *New York Times;* and two authoritative Arabic newspapers – al-Quds, published in Jerusalem, *and al-Quds al-A rabi*, published in London.
36. Other studies traced avenge actions prior to the Second Intifada (De Figueiredo and Weingast 2000; Weinberg, Pedahzur, and Canetti-Nisim 2003). For example, De Figueiredo and Weingast (2000) suggest that the suicide bombing attacks in the 1990's were provoked by the Hebron Massacre by Baruch Goldstein in 1994 and the assassination of Yahya Ayyash (Hamas military leader and bomb maker) in 1996.

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Appendix I

Table A1. Summary statistics on localities' number of suicide terrorists, Palestinian Fatalities, and House demolitions (using only the 43 localities where suicide bombers originated).

	Mean	Standard Deviation	Median	Minimum	Maximum
Suicide bombers originating from locality[††]	3.47	5.329	2	1	30
Israeli-Induced Palestinian Fatalities	63.5	103.44	14	0	490
Targeted Killing[†]	3.98	10.32	0	0	64
Other Fatalities from Targeted Killing Operations[†]	2.53	9.78	0	0	64
Other Fatalities[†]	57.07	88.07	14	0	362
Punitive House Demolition[†]	10.63	14.55	6	0	88
Units Demolished-Punitive[†]	11	14.52	6	0	88
Number of Residents in House Demolished-Punitive[†]	69.93	118.9	36	0	765
Size of House Demolished-Punitive[†]	1,360	1,744	750	0	9,755

[†]Source of data is B'Tselem[††]Source of data is Benmelech and Berrebi (2007).

Table A2. The effect of punitive house demolitions, using intensity measures, on the number of suicide attacks during the second intifada: district level analysis.

Variable	−1-[†]	−2-[†]	−3-[‡]	−4-[‡]	−5-[‡]	−6-[‡]	−7-[‡]	−8-[‡]
Number of apartment units demolished	−0.028	−0.028	−0.058	−0.033	−0.040**	−0.039*	−0.041	−0.042
	(0.031)	(0.031)	(0.048)	(0.046)	(0.019)	(0.021)	(0.027)	(0.033)
Number of residents in demolished houses	−0.008	−0.008	−0.013	−0.009	−0.008*	−0.007	−0.010	−0.011*
	(0.007)	(0.008)	(0.012)	(0.010)	(0.004)	(0.005)	(0.006)	(0.006)
Size of house demolished (hundred square meters)	−0.022	−0.023	−0.037	−0.023	−0.025	−0.021	−0.025	−0.032
	(0.040)	(0.039)	(0.046)	(0.044)	(0.020)	(0.025)	(0.033)	(0.031)
Districts' economic and demographic Characteristics								
Unemployment	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Percentage employed in Israel	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Years of schooling	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Age	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Married	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Share of Males in Population	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Security related variables								
Fatalities not in targeted killings	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Targeted killings	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other fatalities from targeted killings	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of arrested Palestinians	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Days with curfews at time t	No	No	Yes	Yes	Yes	Yes	No	No
Days with curfews	No	No	No	No	No	No	Yes	Yes
District fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes	No	No	No	No
District-specific linear year trends	Yes	Yes	No	No	No	No	No	No
Year fixed effects	No	No	No	No	Yes	Yes	Yes	Yes
District-specific linear monthly trend	No	No	No	No	No	Yes	Yes	No
N	1008	1008	704	688	704	704	688	688

The estimates are obtained using panel Poisson regression model. The dependent variable is the number of suicide bombing attacks originating in district i at month t. Standard errors, in brackets, are estimated assuming that the error terms are clustered at the district level. Unless stated, all independent variables are measured at lag.

[†]The data set covers the period between October 2000 to December 2005.

[‡]The data set covers the period between May 2002 to December 2005.

*p-value <0.10, **p-value <0.05, and ***p-value <0.001.

Table A3. The effect of punitive house demolitions, using intensity measures, on the number of suicide attacks during the second intifada: locality level analysis.

Variable	−1-†	−2-†	−3-‡	−4-‡	−5-‡	−6-‡
Number of apartment units demolished	−0.023	−0.023	−0.048*	−0.044	−0.071	−0.049
	(0.03)	(0.03)	(0.025)	(0.029)	(0.044)	(0.044)
Number of residents in demolished houses	−0.008	−0.008	−0.009**	−0.010*	−0.014	−0.012
	(0.006)	(0.006)	(0.005)	(0.005)	(0.009)	(0.009)
Size of house demolished (100 sq m)	−0.019	−0.018	−0.034	−0.032	−0.049	−0.038
	(0.032)	(0.032)	(0.022)	(0.027)	(0.039)	(0.04)
Economic and demographic Characteristics						
Unemployment	Yes	Yes	Yes	Yes	Yes	Yes
Percentage employed in Israel	Yes	Yes	Yes	Yes	Yes	Yes
Years of schooling	Yes	Yes	Yes	Yes	No[T]	No[T]
Age	Yes	Yes	Yes	Yes	No[T]	No[T]
Married	Yes	Yes	Yes	Yes	No[T]	No[T]
Share of Males in Population	Yes	Yes	Yes	Yes	No[T]	No[T]
Security related variables						
Fatalities not in targeted killings	Yes	Yes	Yes	Yes	Yes	Yes
Object of targeted killings	Yes	Yes	Yes	Yes	Yes	Yes
Other fatalities from targeted killings	Yes	Yes	Yes	Yes	Yes	Yes
Number of arrested Palestinians	No	Yes	Yes	Yes	Yes	Yes
Days with curfews at time t	No	No	Yes	No	Yes	No
Days with curfews	No	No	No	Yes	No	Yes
Locality fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	No	No	Yes	Yes
Year fixed effects	No	No	Yes	Yes	No	No
District-specific linear monthly trend	Yes	Yes	No	No	No	No
N	2666	2666	1849	1806	1849	1806

The estimates are obtained using panel Poisson regression model. The dependent variable is the number of suicide bombing attacks originating in locality j at month t. Standard errors, in brackets, are estimated assuming that the error terms are clustered at the locality level. Unless stated, all independent variables are measured at lag.

[T]Excluded from the regression model to avoid non-convergence.

†The data set covers the period between October 2000 to December 2005.

‡The data set covers the period between May 2002 to December 2005.

*p-value <0.10, **p-value <0.05, and ***p-value <0.001.

Table A4. The effect of punitive house demolitions on the number of suicide attacks during the second intifada: District Level Analysis using negative binomial regression.

Variable	−1-†	−2-†	−3-‡	−4-‡	−5-‡	−6-‡	−7-‡	−8-‡
Number of Houses Demolished	−0.019	−0.019	−0.047	−0.025	−0.037	−0.032	−0.034	−0.046
	(0.036)	(0.036)	(0.052)	(0.050)	(0.030)	(0.023)	(0.030)	(0.046)
Number of apartment units demolished	−0.028	−0.028	−0.058	−0.033	−0.043	−0.039*	−0.041	−0.050
	(0.031)	(0.031)	(0.048)	(0.046)	(0.028)	(0.021)	(0.027)	(0.044)
Number of residents in demolished houses	−0.008	−0.008	−0.013	−0.009	−0.008*	−0.007	−0.010	−0.011*
	(0.007)	(0.008)	(0.012)	(0.010)	(0.005)	(0.005)	(0.006)	(0.007)
Size of house demolished (100 sq m)	−0.022	−0.023	−0.037	−0.023	−0.028	−0.021	−0.025	−0.038
	(0.040)	(0.039)	(0.046)	(0.044)	(0.030)	(0.025)	(0.033)	(0.040)
Districts' economic and demographic Characteristics								
Unemployment	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Percentage employed in Israel	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Years of schooling	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Age	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Married	Yes	Yes	Yes	No$^{\overline{T}}$	Yes	Yes	Yes	No$^{\overline{T}}$
Share of Males in Population	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Security related variables								
Fatalities not in targeted killings	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Object of targeted killings	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other fatalities from targeted killings	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of arrested Palestinians	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Days with curfews at time t	No	No	Yes	Yes	Yes	Yes	No	No
Days with curfews	No	No	No	No	No	No	Yes	Yes
District fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes	No	No	No	No
District-specific linear year trends	Yes	Yes	No	No	No	No	No	No
Year fixed effects	No	No	No	No	Yes	Yes	Yes	Yes
District-specific linear monthly trend	No	No	No	No	No	Yes	Yes	No
N	1008	1008	704	688	704	704	688	688

The estimates are obtained using panel negative binomial regression model. The dependent variable is the number of suicide bombing attacks originating in district i at month t. Standard errors, in brackets, are estimated assuming that the error terms are clustered at the district level. Unless stated, all independent variables are measured at lag.

†The data set covers the period between October 2000 to December 2005.

‡The data set covers the period between May 2002 to December 2005.

$\overline{T}$Share of married population is excluded from the model to avoid non-convergence.

*p-value <0.10, **p-value <0.05, and ***p-value <0.001.

Table A5. The effect of punitive house demolitions on the number of suicide attacks during the second intifada: Locality Level Analysis using negative binomial regression.

Variable	−1-†	−2-†	−3-‡	−4-‡	−5-‡	−6-‡
Number of houses Demolished	0.016	0.016	−0.046*	−0.044	−0.062	−0.043
	(0.036)	(0.036)	(0.028)	(0.032)	(0.047)	(0.046)
Number of apartment units demolished	−0.025	−0.025	−0.051*	−0.048	−0.071	−0.049
	(0.033)	(0.033)	(0.028)	(0.032)	(0.044)	(0.044)
Number of residents in demolished houses	−0.008	−0.008	−0.010**	−0.011*	−0.014*	−0.012
	(0.006)	(0.007)	(0.005)	(0.006)	(0.009)	(0.009)
Size of house demolished (hundred square meters)	−0.02	−0.019	−0.036	−0.036	−0.043	−0.038
	−0.036	−0.035	(0.025)	(0.028)	(0.034)	(0.04)
Economic and demographic Characteristics						
Unemployment	Yes	Yes	Yes	Yes	No$^{\overline{T}}$	Yes$^{\overline{T}}$
Percentage employed in Israel	Yes	Yes	Yes	Yes	No$^{\overline{T}}$	Yes$^{\overline{T}}$
Years of schooling	Yes	Yes	Yes	Yes	No$^{\overline{T}}$	No$^{\overline{T}}$
Age	Yes	Yes	Yes	Yes	No$^{\overline{T}}$	No$^{\overline{T}}$
Married	Yes	Yes	Yes	Yes	No$^{\overline{T}}$	No$^{\overline{T}}$
Share of Males in Population	Yes	Yes	Yes	Yes	No$^{\overline{T}}$	No$^{\overline{T}}$
Security related variables						
Fatalities not in targeted killings	Yes	Yes	Yes	Yes	Yes	Yes
Object of targeted killings	Yes	Yes	Yes	Yes	Yes	Yes
Other fatalities from targeted killings	Yes	Yes	Yes	Yes	Yes	Yes
Number of arrested Palestinians	No	Yes	Yes	Yes	Yes	Yes
Days with curfews at time t	No	No	Yes	No	Yes	No
Days with curfews	No	No	No	Yes	No	Yes
Locality fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	No	No	Yes	Yes
Year fixed effects	No	No	Yes	Yes	No	No
District-specific linear monthly trend	Yes	Yes	No	No	No	No
N	2666	2666	1849	1806	1849	1806

The estimates are obtained using panel Poisson regression model. The dependent variable is the number of suicide bombing attacks originating in locality j at month t. Standard errors, in brackets, are estimated assuming that the error terms are clustered at the locality level. Unless stated, all independent variables are measured at lag.

The following variables are aggregated at the district level: economic and demographic variables, number of arrested Palestinians, and curfew days.

$\overline{T}$: Exclude from the regression model to avoid non-convergence.

†The data set covers the period between October 2000 to December 2005.

*p-value <0.10, **p-value <0.05, and ***p-value <0.001.

‡The data set covers the period between May 2002 to December 2005.

Table A6. The dynamic effects of punitive house demolition: lag effects.

Variable	Lag1†	Lag 2†	Lag 3†	Lag 4†	Lag 5†	Lag 6†
No. of Houses Demolished	−0.016	0.022	−0.005	−0.005	−0.006	−0.003
	(0.034)	(0.028)	(0.023)	(0.013)	(0.015)	(0.01)
No. of apartment units demolished	−0.025	0.011	−0.012	−0.012	−0.011	−0.009
	(0.03)	(0.027)	(0.023)	(0.013)	(0.014)	(0.011)
No. of residents in demolished houses	−0.007	0.005***	0.001	0.004**	0.004**	0.003*
	(0.006)	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)
Size of house demolished (100 sq m)	−0.015	0.019	−0.006	−0.006	−0.005	−0.005
	(0.031)	(0.024)	(0.026)	(0.015)	(0.017)	(0.012)
Districts' lagged economic and demographic Characteristics						
Unemployment	Yes	Yes	Yes	Yes	Yes	Yes
Percentage employed in Israel	Yes	Yes	Yes	Yes	Yes	Yes
Years of schooling	Yes	Yes	Yes	Yes	Yes	Yes
Age	Yes	Yes	Yes	Yes	Yes	Yes
Married	Yes	Yes	Yes	No	Yes	Yes
Share of Males in Population	Yes	Yes	Yes	Yes	Yes	Yes
Security related variables						
Fatalities not in targeted killings	No	No	No	No	No	No
Object of targeted killings	No	No	No	No	No	No
Other fatalities from targeted killings	No	No	No	No	No	No
Number of arrested Palestinians	No	No	No	No	No	No
Days with curfews	No	No	No	No	No	No
Month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	No	No	No	No	No	No
District fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
District-specific linear yearly trends	No	No	No	No	No	No
N	992	976	960	944	928	912

†The estimates reflect the persistence of the deterrence effect over an extended period (up to six-month lags).

The estimates are obtained using panel Poisson regression model. The dependent variable is the number of suicide bombing attacks originating in locality j at month t. Standard errors, in brackets, are estimated assuming that the error terms are clustered at the locality level.

*p-value < 0.10, **p-value <0.05, and ***p-value<0.001.

Appendix II: Replication Findings of Benmelech et al (2015)

Table B1. The effect of punitive house demolitions on the number of suicide attacks (all data aggregated at the district level).

Variable	−1	−2	−3-	−4-	−5-	−6-	−7-
Punitive house demolition	0.0633*	0.0281	−0.0186	−0.0607***	−0.0609***	−0.0540***	−0.0466*
	(0.0334)	(0.0303)	(0.0264)	(0.0181)	(0.0203)	(0.0190)	(0.0261)
Districts' economic and demographic Characteristics							
Unemployment					−2.0040	−8.4726*	−8.2341
					(4.0750)	(4.5295)	(7.0368)
Percentage employed in Israel					1.5980	0.7078	−10.7679
					(3.2752)	(3.1335)	(11.8131)
Years of schooling					−0.2781	0.2926	−0.3074
					(0.4931)	(0.6227)	(0.9248)
Age					0.2900*	0.5534***	−0.0006
					(0.1647)	(0.1437)	(0.3402)
Married					−0.3319	−2.6406	2.1049
					(6.7455)	(7.9828)	(10.5107)
Share of Males in Population					11.0700	8.8814	−7.8776
					(12.8058)	(11.1761)	(11.1235)
Other Security related variables							
Fatalities not in targeted killings						0.0108*	−0.0519
						(0.0062)	(0.0592)
Object of targeted killings						−0.0794	0.1322
						(0.0767)	(0.1825)
Other fatalities from targeted killings						−0.0663	−0.0995
						(0.0896)	(0.0673)
Days with curfews at time t							0.0621**
							(0.0245)
District fixed effects	No	No	Yes	Yes	Yes	Yes	Yes
Year fixed effects	No	Yes	No	Yes	Yes	Yes	Yes
District-specific linear time (year) trends	No	No	No	No	No	Yes	No
N	1008	1008	1008	1008	1008	1008	704

The estimates are obtained using panel Poisson regression model. The dependent variable is the number of suicide bombing attacks originating in locality j at month t. Standard errors, in brackets, are estimated assuming that the error terms are clustered at the district level.

†The data set covers the period between October 2000 to December 2005.

‡The data set covers the period between May 2002 to December 2005.

*p-value <0.10, **p-value <0.05, and ***p-value <0.001.

Table B2. The effect of punitive house demolitions on the number of suicide attacks (data aggregated at the locality level).

Variable	−1-†	−2-†	−3-†	−4-†	−5-†	−6-†	−7-‡
Punitive house demolition	−0.0136	−0.0505	−0.0213	−0.0608**	−0.0609**	−0.0545**	−0.0564*
	(0.0438)	(0.0396)	(0.0294)	(0.0239)	(0.0254)	(0.0251)	(0.0302)
Districts' economic and demographic Characteristics							
Unemployment					−1.9330	−8.1353*	−8.4726
					(3.5977)	(4.3764)	(7.0554)
Percentage employed in Israel					1.6018	0.5891	−11.3847
					(5.2878)	(5.1821)	(12.0347)
Years of schooling					−0.2519	0.2491	−0.1180
					(0.4957)	(0.6114)	(0.8710)
Age					0.2953*	0.5645***	0.0228
					(0.1720)	(0.1935)	(0.3898)
Married					−0.1299	−2.0385	2.0944
					(5.5717)	(6.1647)	(7.9590)
Share of Males in Population					11.1163	8.2780	−7.7607
					(9.4514)	(9.0585)	(10.6913)
Other Security related variables							
Fatalities not in targeted killings						0.0091	−0.0301
						(0.0126)	(0.0887)
Object of targeted killings						−0.1387	−0.1776
						(0.2621)	(0.4250)
Other fatalities from targeted killings						−0.1171	−0.0105
						(0.1015)	(0.1227)
Days with curfews							−0.0673
							0.0592**
							(0.0266)
Locality fixed effects	No	No	Yes	Yes	Yes	Yes	Yes
Year fixed effects	No	Yes	No	Yes	Yes	Yes	Yes
District-specific linear time (year) trends	No	No	No	No	No	Yes	No
N	42346	42346	2666	2666	2666	2666	1849

The estimates are obtained using panel Poisson regression model. The dependent variable is the number of suicide bombing attacks originating in locality j at month t. Standard errors, in brackets, are estimated assuming that the error terms are clustered at the locality level.

†The data set covers the period between October 2000 to December 2005.

‡The data set covers the period between May 2002 to December 2005.

*p-value <0.10, **p-value <0.05, and ***p-value <0.001.

Table B3. The effect punitive house demolitions on the number of suicide attacks (data aggregated both at the district level and locality level).

	All Data is aggregated at district level				Using data at locality level[T]			
	−1-[†]	−2-[†]	−3-[†]	−4-[‡]	−5-[†]	−6-[†]	−7-[†]	−8-[‡]
Number of Apartment Units Demolished	−0.0632***	−0.0640***	−0.0586***	−0.0513**	−0.0632***	−0.0640**	−0.0585**	−0.0609**
	(0.0173)	(0.0194)	(0.0176)	(0.0238)	(0.0238)	(0.0254)	(0.0247)	(0.0303)
Number of Residents in Demolished Houses	−0.0131***	−0.0135***	−0.0130***	−0.0111**	−0.0132***	−0.0135***	−0.0129***	−0.0127***
	(0.0039)	(0.0043)	(0.0043)	(0.0045)	(0.0039)	(0.0042)	(0.0042)	(0.0049)
Size of House Demolished (100 sq m)	−0.0463***	−0.0467***	−0.0445**	−0.0380	−0.0464**	−0.0467**	−0.0445**	−0.0471*
	(0.0153)	(0.0167)	(0.0175)	(0.0234)	(0.0198)	(0.0208)	(0.0217)	(0.0275)
District Fixed Effects	Yes	Yes	Yes	Yes				
Locality Fixed Effects					Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Economic and Demographic Controls	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Other Proxies for Counterinsurgency measures	No	No	No	Yes	No	No	No	Yes
District Specific Linear Time (year) trend	No	No	Yes	No	No	No	Yes	No
N	1008	1008	1008	704	2666	2666	2666	1849

The estimates are obtained using panel Poisson regression model. The dependent variable is the number of suicide bombing attacks in month t and originating in district i, for models in columns (1 to 4) and locality j for models in columns (5 to 8). Standard errors, in brackets, are estimated assuming that the error terms are clustered at the district level. The economic and demographic controls and other proxies for counterinsurgency measures are the same as used in Table (I) and (II).

[T]Punitive House Demolition is aggregated at the district level.

†The data set covers the period between October 2000 to December 2005.

[‡]The data set covers the period between May 2002 to December 2005.

*p-value <0.10, **p-value <0.05, and ***p-value <0.001.

Table B4. The effect of punitive house demolitions on the number of suicide attacks using a negative binomial Model (data aggregated both at the district level and locality level).

	All Data is aggregated at district level				Using data at locality level††			
	1	2	3	4	5	6	7	8
Number of houses demolished	−0.0559***	−0.0579**	−0.0508**[T]	−0.0556[T]	−0.0633**	−0.0649**	−0.0576**[T]	−0.0628*[T]
	(0.0212)	(0.0228)	(0.0202)	(0.0399)	(0.0268)	(0.0282)	(0.0270)	(0.0355)
Number of Apartment Units Demolished	−0.0593***	−0.0614***	−0.0545***	−0.0601[T]	−0.0662**	−0.0681**	−0.0608**	−0.0672*[T]
	(0.0205)	(0.0218)	(0.0190)	(0.0371)	(0.0269)	(0.0285)	(0.0269)	(0.0356)
Number of Residents in Demolished Houses	−0.0121**	−0.0126**	−0.0121**	−0.0122**[T]	−0.0136***	−0.0141***	−0.0133***	−0.0137**
	(0.0047)	(0.0050)	(0.0050)	(0.0057)	(0.0044)	(0.0046)	(0.0046)	(0.0055)
Size of House Demolished (100 sq m)	−0.0417**	−0.0453**	−0.0414**	−0.0459[‡]	−0.0483**	−0.0504**	−0.0468**	−0.0534*[T]
	(0.0174)	(0.0193)	(0.0192)	(0.0355)	(0.0217)	(0.0233)	(0.0238)	(0.0320)
District Fixed Effects	Yes	Yes	Yes	Yes				
Locality Fixed Effects					Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Economic and Demographic Controls	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Other Proxies for Counterinsurgency measures	No	No	No	Yes	No	No	No	Yes
District Specific Linear Time (year) trend	No	No	Yes	No	No	No	Yes	No
number of obs	1008	1008	1008	704	2666	2666	2666	1849

The estimates are obtained using Negative Binomial regression model. The dependent variable is the number of suicide bombing attacks in month t and originating in district i, for models in columns (1 to 4) and locality j for models in columns (5 to 8). Standard errors, in brackets, are estimated assuming that the error terms are clustered at the district level. The economic and demographic controls and other proxies for counterinsurgency measures are the same as used in Table (I) and (II).

[T]Using same model specifications as in Benmelech et al (2015), the estimates are irreplicable.

††Punitive House Demolition is aggregated at the district level.

[†]The data set covers the period between October 2000 to December 2005.

[‡]The data set covers the period between May 2002 to December 2005.

*p-value <0.10, **p-value <0.05, and ***p-value <0.001.

Table B5. The effect of punitive house of demolitions on the number of suicide attacks (excluding localities-month cells with suicide attacks and house demolitions).

	−1-†	−2-†	−3-†	−4-‡
Number of Houses Demolished	−0.0563**	−0.0573**	−0.0495*	−0.0533*
	(0.0248)	(0.0269)	(0.0262)	(0.0314)
Number of Apartment Units Demolished	−0.0593**	−0.0609**	−0.0529**	−0.0579*
	(0.0252)	(0.0274)	(0.0263)	(0.0315)
Number of Residents in Demolished Houses	−0.0122***	−0.0126***	−0.0115***	−0.0116**
	(0.0040)	(0.0043)	(0.0044)	(0.0048)
Size of House Demolished (100 sq m)	−0.0460**	−0.0468**	−0.0430*	−0.0478*
	(0.0203)	(0.0219)	(0.0225)	(0.0286)
Locality Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Economic and Demographic Controls	No	Yes	Yes	Yes
Other Proxies for Counterinsurgency measures	No	No	No	Yes
District Specific Linear Time (year) trend	No	No	Yes	No
N	2646	2646	2646	1830

The estimates are obtained using panel Poisson regression model. The dependent variable is the number of suicide bombing attacks in month t and originating in locality j. Standard errors, in brackets, are estimated assuming that the error terms are clustered at the district level. The economic and demographic controls and other proxies for counterinsurgency measures are the same as used in Table (I) and (II).

†The data set covers the period between October 2000 to December 2005.

‡The data set covers the period between May 2002 to December 2005.

*p-value <0.10, **p-value <0.05, and ***p-value <0.001.