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THE NEED FOR ENEMIES*

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We develop a model where some politicians have an edge in undertaking a task and this gives them electoral advantage, creating an incentive to underperform in the task. We test the empirical implications in the context of fighting against insurgents, using Colombian data. The main prediction is that large defeats for the insurgents reduce the probability that these politicians fight them, especially in electorally salient places. We find that after the largest victories against FARC rebels, the government reduced its counterinsurgency efforts, especially in politically important municipalities. Politicians need to keep enemies alive in order to maintain their political advantage.

If an agent is hired by a principal to work until a particular task is completed, then by completing the task the agent is putting himself out of a job. This phenomenon may be particularly important in politics. It is often claimed that some politicians are elected because 'they are the person for the job' perhaps because they have a particular skill or comparative advantage. Once the job is over this skill will be less valued and the politicians, even if they have successfully completed the job for which they were selected, may be replaced. A salient historical example may be Winston Churchill who, though not particularly successful as a peacetime politician, was thought to be the man for the job in 1940 to lead Britain to victory in the Second World War as prime minister. As soon as the war was won in 1945, British voters, instead of rewarding him, immediately removed him from office. A related example is Margaret Thatcher. She was selected as the conservative leader in 1975 because she was known to be very antitrade union, at times when the median voter in Britain was swinging against the union movement. After being elected in 1979, Mrs. Thatcher passed a gamut of anti-union legislation and acted very toughly. She destroyed the power of the union movement, with the private sector unionisation rate falling from 57% in 1980 to 39% in 1990 (Visser, 2006) and was rewarded by being removed by the party as its leader in 1990.

In these cases Winston Churchill and Mrs. Thatcher did the job they were appointed to do because the stakes were high. Not defeating Hitler would have been a disaster for Britain and Churchill and leaving the trade union movement unreformed would have been a huge setback for the Conservative Party and Mrs. Thatcher. Nevertheless, when the stakes are lower these examples suggest that other mechanisms may be important: if Mrs. Thatcher had been less successful at decimating the trade union movement, the Conservative Party would have needed her longer. Such a mechanism belongs to a class of examples which the social anthropologist Frederick Bailey (1998) described as 'the need for enemies'. Both Churchill and Thatcher were selected because they were

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thought to be particularly good at removing a particular threat, Nazi Germany and the trade union movement. But in both cases they needed the 'enemies' they faced in order to maintain power themselves.¹

In this article we develop a political economy model of this need for enemies, showing how a politician who is good at undertaking a particular task has an incentive not to complete it fully since he needs to keep the task alive in order to maintain his strategic advantage in an election. We focus on the particular case of an ongoing civil war where incumbent politicians have to make a decision about whether or not to fight the insurgents. There are two types of politicians, one of whom has a comparative advantage in fighting the insurgency in the sense that if he did so he would have a greater probability of defeating it. We show that such a politician's incentive to fight the insurgents is mitigated by the fact that if he did so he would destroy his electoral advantage. He needs to keep his enemy alive in order to sustain his political power.

The model's main testable implication stems from the interaction between two key parameters. The first parameter is the exogenous component of the probability that the incumbent politician succeeds if he decides to fight the insurgents. The greater is this probability, the higher is the chance that the insurgents will actually be eliminated when the incumbent attempts to fight them. While this creates a benefit (namely, peace), it also entails a cost if the incumbent values rents from office: it removes the strategic advantage of the incumbent in the upcoming election. Whether or not the incumbent attempts to eliminate the enemy with an increase in this probability thus depends on the importance attached to rents from office. Most important for our analysis, however, is the interaction between this probability of defeating the insurgents and the sensitivity of voters to policy outcomes (captured in our probabilistic voting model by the density of swing voters). Since electoral advantage is most affected in places where citizens are more responsive, the model predicts that the disincentive effect is greater the more sensitive voters are to policy.

We test these implications using data from Colombia. In 2002, Álvaro Uribe was elected president on an explicit platform to fight against the left-wing insurgent guerrilla groups the *Fuerzas Armadas Revolucionarias de Colombia* (FARC) and *Ejército de Liberació n Nacional* (ELN). Uribe, whose father was murdered by the FARC, was widely seen as having a major political advantage in his loathing for the groups, particularly relative to the traditional politicians who had a long history of trying to negotiate with them; see Kline (2007) for the failure of the most recent attempt during the previous presidency of Andrés Pastrana. Thus Uribe was a political environment where the stakes were not too high. There was no chance of the FARC capturing any large city such as Bogotá or Medellín, and Colombian politicians had happily coexisted for many years with non-state armed actors, including the FARC and ELN. In such a situation our model suggests that, as long as the values rents from office as well as peace, Uribe's

¹ An alternative interpretation of Churchill's loss is that the Conservative Party was overconfident that his performance during the war ensured his re-election, and it ran a poor campaign. This interpretation is not inconsistent with the idea that voters value current issues more than past actions but it suggests that the performance of Churchill during war had nothing to do with the stakes at play. Rather, it was driven by the misperception about the issues that were important for the electorate. These explanations need not be mutually exclusive.

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incentive to attack the guerrillas is mitigated by the fact if he eliminates them, he removes his own electoral advantage.

We test the predictions of the model by identifying events in the Colombian civil war which correspond to a high probability of defeating the guerrilla. These include the release of information on 24 May 2008 that the FARC's long-standing leader Manuel Marulanda Vélez, known as *Tirofijo* ('Sureshot') had died from natural causes, the killing by the Colombian military of FARC's spokesman and Secretariat member Raúl Reyes in Ecuador on March 1 of the same year, and the rescue to long-time hostage and 2002 presidential candidate Ingrid Betancourt in 'Operación Jaque' on 2 July also of 2008. All three events were major positive shocks for the government in the sense that they signalled that if the government tried to eliminate the FARC, they would have a greater chance of success. In the case of *Tirofijo* and Reyes this was because of the central military role these leaders played and in the case of Betancourt it was because this was a demoralising defeat for the FARC. As such they capture a positive shock in the exogenous component of the probability of defeating the FARC.²

Our model implies that such a situation would lead to a reduced incentive to fight the FARC, especially in places which are politically salient in the sense that they contain a lot of swing voters. To distinguish such municipalities, we take advantage of another key component of Uribe's presidency: his weekly *Consejos Comunales* (Community Councils). The councils were held each weekend in a different municipality and broadcast live on national television. Uribe's *Consejos Comunales* enable us to identify the municipalities where the president believed voters were most responsive.

Examining these three events and sets of municipalities, we find evidence which is highly consistent with our model. In regressions for government military activity against the guerrillas, our estimates reveal that after each of the events, government military initiative dropped in places where Uribe had organised *Consejos Comunales*, relative to areas where he had not. In other words, the coefficient on the interaction between a post-event dummy and a dummy variable that equals one if Uribe had organised a *Consejo Comunal* in the municipality is negative and significant.

This result is robust to the inclusion of municipality-level fixed effects and to controlling for differential trends, parametrised as functions of various observable baseline characteristics, suggesting that it is not driven by omitted variable bias. Also, we test the validity of our key identification assumption (namely, the existence of parallel trends between municipalities with and without *Consejos Comunales* before these key events) by replicating our main regression one year before the events actually took place. We find no significant effects in such regressions, assuaging concerns about pre-existing differential trends. Moreover, we perform a series of additional robustness checks to study alternative mechanisms that could be driving our results.

Although we are not aware of any study that develops the same mechanism as our model, our article is related to a number of previous political economy contributions. The most related article is Bardhan and Mookherjee (2010) who show in West Bengal that left-wing politicians who favour land reform refrain from doing it in office because they are better able commit to do it in the future. This again is a case where politicians

 $^{^{2}}$ See subsection 3.3 for a discussion of the extent to which these events can be considered exogenous.

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refrain from doing something they prefer in order to manipulate future election results.³ They also provide empirical evidence supporting this hypothesis. This article is part of a larger literature developed by Aghion and Bolton (1990), Milesi-Ferretti and Spolaore (1994), Milesi-Ferretti (1995), Besley and Coate (1998), Biais and Perotti (2002), Robinson and Torvik (2005, 2009) and Saint-Paul et al. (2012). These articles all developed in different contexts the idea that incumbent politicians have an incentive to set policy inefficiently to increase the demand for their own services, thus inducing voters to support them. The mechanism through which this works is that current policy influences a state variable which helps to determine future voting intentions of citizens. For example, in Aghion and Bolton's (1990) article a conservative government that dislikes taxing, borrowing and printing money, might be willing to create debt today so as to create a large stock of debt in the future. This could be advantageous electorally because the conservative government can then better commit to pay off the debt rather than inflate it away, thus encouraging voters who hold the debt to vote for it. In addition to that, our article covers civil conflict; these articles all differ from ours in the modelling and in the implications. In this previous literature the incentive of politicians to act strategically arises from disagreements in policy, which allows some politicians to offer a certain type of policy more credibly in the future. In contrast, in our model there is no disagreement on policy. Everyone has the same utility of peace. Also, a new result in our model is that when the achievement of a common political goal (peace in our case) becomes easier, then in fact the political incentives to achieve it may be reduced. Finally, another difference worth mentioning is that our model delivers a testable empirical prediction on where such perverse political incentives should play out the strongest, namely in

Although the mechanism is very different from us, another related article is Acemoglu *et al.* (2013). In contrast to us, and the literature above, they assume that politicians can commit to policy, with the result of policy convergence. Paramilitaries coerce voters into voting for one politician and this politician thus has the incentive not to get rid of paramilitaries. Thus, in contrast to the mechanism in our model where the incentive is to keep the enemy alive, in their model the incentive is to keep political allies alive. We see these approaches as complementary. Their model explains why President Uribe had weak incentives to eradicate paramilitaries, ours why he had weak incentives to eradicate the guerrillas. The continued presence of both these groups is important to explain the duration of the conflict in Colombia.⁴

municipalities where politicians have campaigned most intensively.

³ An informal variant of this argument is made in the literature on the politics of Zimbabwe. The delay in agrarian reform after independence in 1980 has been explained by the fact that President Mugabe wanted to keep the issue 'up his sleeve' because he needed to be able to use it when he became less popular and he could credibly commit to do so. This explains why fast track land reform was only promoted after 2000 when Mugabe faced strong political opposition (Meredith, 2007).

⁴ Also, even within the Acemoglu *et al.* (2013) framework, the relationship between the state and the guerrillas is distinct to the relationship with the paramilitaries. The key reason is that while the guerrillas have national ambitions and attempt to overthrow the state, the right-wing paramilitaries emerged as private armies to fight against the guerrillas but had no intention of overthrowing the government. Acemoglu *et al.* (2013, p. 17), when observing that unlike paramilitaries the FARC do not systematically influence electoral outcomes, point out that 'factoring in the national ambitions of non-state armed actors reduces the scope for a coalition or a symbiotic relationship between these groups and the executive'. Hence, an explanation for the persistence of the guerrillas lies elsewhere and this article suggests one possible answer.

Though none of these articles discuss civil war, the case study literature on civil wars has noted phenomena akin to those we study. For example, in Nepal it is commonly argued (International Crisis Group, 2005) that after the civil war broke out in 1996 King Dipendra, who controlled the army, refrained from committing it to the war in order to make himself more indispensable to the democratic politicians with the aim of regaining some of the constitutional powers he had previously lost.

One can also think of our model as related to the political economy literature on the difficulty of making efficiency enhancing reforms, such as Alesina and Drazen (1991), Fernandez and Rodrik (1991) and Drazen and Grilli (1993), in the sense that if the incumbent is better able to reform the economy than the challenger the incumbent has the incentive to delay reform to sustain the demand for this services. Cukierman and Tommasi (1998) also present a model where the politician who cares most about doing something is the least likely to do it but their argument rests on asymmetric information.

Finally there is also a large literature on social psychology on the notion of the need for enemies (Volkan, 1985, 1994; Barash, 1994; Murray and Meyers, 1999; Abecassis, 2003) but we develop very different non-behavioural ideas based on rational choice.

The rest of the article is organised as follows. In Section 1 we set up a very simple model and in Section 2 we solve the model and derive our main theoretical results. In Section 3 we test the main predictions from the model using data from Colombia. In Section 4 we conclude.

1. Model

1.1. Private Agents

The society we consider has M municipalities, each populated by a continuum of citizens with measure normalised to unity, thus the size of the total population is M. There are two national politicians (or parties), denoted by I and O respectively, and a guerrilla group (the 'enemy') which has a local branch present in each municipality.

In period 1 a politician $i \in \{I, O\}$ holds power, and at the end of period 1 there is an election to decide who is in power in period 2. Private citizens derive utility from private income *y* in each period and additional net utility P > 0 if there is peace in their municipality. There is peace if the guerrilla group which is initially active is eradicated. Thus the utility of peace may alternatively be interpreted as hatred of the enemy. Denoting the probability of peace in municipality *m* in period *t* by $\Phi_{m,b}$ expected period *t* utility of income and peace for a private agent in municipality *m* is given by

$$y + \Phi_{m,t}P$$
.

Agents also have preferences over ideology and other characteristics of politicians, which we will term popularity (our model is a version of the probabilistic voting model of Lindbeck and Weibull (1987) and Persson and Tabellini (2000)). Each agent *j* has an ideological bias σ^{j} in favour of politician *I*. We assume that σ^{j} is constant over time,

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and in a municipality *m* uniformly distributed on the interval $[-1/(2s_m), 1/(2s_m)]$ with density $s_m > 0$. We order the different municipalities according to the size of s_m , where $s_1 \ge s_2 \ge ... \ge s_M$.⁵ The relative popularity of politician *I* in municipality *m*, which we denote ρ_m , can potentially be affected by political campaigning and is given by

$$\rho_m = \rho + \lambda (C_m^I - C_m^O),$$

where ρ is stochastic and is governed by a uniform distribution with support on the interval [-1/2h, 1/2h] and with density h > 0.6 If politician $i \in \{I, O\}$ campaigns in municipality *m* then $C_m^i = 1$, while if he does not campaign then $C_m^i = 0$. The effectiveness of campaigning in boosting popularity is measured by $\lambda \ge 0$. Both politicians have the same time for campaigning at disposal but this time is too limited for politicians to campaign in all *M* municipalities. Thus they need to choose in which N < M municipalities to campaign.

1.2. Politicians

Politicians value peace and rents from power. A politician $i \in \{I, O\}$ in power in period *t* receives rents $R_t^i = R$ per period.

In each period $t \in \{1, 2\}$, the politician in power has to decide whether or not to try to eradicate the guerrilla group in each municipality. The probability of success for a politician that attempts to eradicate the enemy depends on his own ability or effort, as well as exogenous factors outside the control of the politician. Thus, let the probability of success if politician *i* attempts to eradicate the enemy be given by $\alpha q^i \leq 1$, where q^i represents the ability or effort of the politician and α is a stochastic variable representing exogenous factors affecting the possibility of eradication. α has mean $\bar{\alpha}$, and a cumulative density function $H(\alpha)$ with support on $(0, 1/q^I)$.

The key assumption in our model is that the two politicians may differ in their preferences or in their ability when it comes to eradication of the enemy. To model this in the simplest possible way we can think of, let the politicians simply share the preferences of the private agents so that the per period net pay-off of an eradicated enemy is *P* in each municipality but, if politician *I* decides to try to eradicate the enemy, he can do that with a probability that is higher than the politician *O*, i.e. $q^{I} \ge q^{O}$. Thus politician *I* has a greater chance of eradicating the enemy than politician *O*.

Since discounting does not matter for our mechanisms we assume that all agents value the future as much as the present. The expected net present value of utility of politician i at the start period 1 is then given by

⁵ Thus, as in other models of probabilistic voting, s_m is a measure of voters' responsiveness to policy in each municipality. A high s_m implies a municipality in which policies that marginally increase the utility of voters attract many additional votes because people care more about policy relative to ideology.

⁶ This formulation follows closely from the work on lobbying by Baron (1994) and Grossman and Helpman (1996). See also Strömberg (2008).

 $^{7^{\}circ}$ An alternative interpretation is that the abilities of politicians are the same but that politician *I* hates the enemy more than politician *O* (for instance in the Colombian case because FARC murdered Uribe's father). This induces a higher effort which, in turn, gives him a higher probability of success should he decide to try to eliminate the enemy. The exact interpretation of the possible asymmetry between politicians is not crucial for our analysis. However, if there is no asymmetry our mechanism is not present as will be seen below.

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(1)

where $E_1(R_t^i)$ is period 1 expectation of rents in period t.

1.3. Timing of Events and Equilibrium

The timing of events in this society is as follows.

- (*i*) α is revealed and the politician $i \in \{I, O\}$ in power decides whether to try to eradicate the enemy or not in each municipality *m*. If he decides to attempt eradication of the enemy in municipality *m* the indicator variable A_m^i takes value one, while if he decides not to then A_m^i equals zero.
- (*ii*) The outcome of the eradication decision is observed. If the enemy is eradicated in municipality *m* the indicator variable B_m equals one, while if the enemy is not eradicated B_m equals zero.
- (*iii*) First period pay-offs are realised, politicians decide where to campaign, the popularity shock ρ is revealed and agents vote.
- (*iv*) The politician $i \in \{I, O\}$ with most votes takes office in period 2.
- (v) If the enemy has not already been eradicated in municipality m, the politician in power decides whether to try to eradicate the enemy or not.
- (vi) Second period pay-offs are realised and the game ends.

As usual, we look for the pure strategy subgame perfect equilibrium and thus below we solve the model by backwards induction.⁸

2. Analysis

2.1. Period 2

Consider first the municipalities where the enemy has been eradicated in period 1. In these municipalities, the politician in power in period 2 has no problem to solve. Consider next the municipalities where the enemy has not been eradicated in period 1. In these municipalities, the politician in power in period 2 will attempt to eradicate the enemy, as both politicians have a positive net pay-off of peace. Given that politician *i* is in power in period 2, the probability of second period peace in each of these municipalities is αq^i .

2.2. Period 1

Denote the expected re-election probability of the incumbent politician $i \in \{I, O\}$ by Ω^i . The expected net present value of utility of an incumbent politician *i* is given by

⁸ We could have allowed a new drawing of the shock to α in period 2, by letting α be time dependent and given by $\alpha_{t+1} = \alpha_t + v$, where *v* is stochastic with expectation zero. This gives a solution to the model which is identical to the one we have.

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$$U^{i} = R + \alpha q^{i} P \sum_{m=1}^{M} A_{m}^{i}$$

$$+ \alpha q^{i} P \sum_{m=1}^{M} A_{m}^{i} + \Omega^{i} \left[R + \alpha q^{i} \left(M - \alpha q^{i} \sum_{m=1}^{M} A_{m}^{i} \right) P \right]$$

$$+ (1 - \Omega^{i}) \alpha q^{-i} \left(M - \alpha q^{i} \sum_{m=1}^{M} A_{m}^{i} \right) P$$

$$= (1 + \Omega^{i}) R + 2\alpha q^{i} P \sum_{m=1}^{M} A_{m}^{i}$$

$$+ \Omega^{i} \alpha (q^{i} - q^{-i}) \left(M - \alpha q^{i} \sum_{m=1}^{M} A_{m}^{i} \right) P + \alpha q^{-i} \left(M - \alpha q^{i} \sum_{m=1}^{M} A_{m}^{i} \right) P.$$

$$(2)$$

If politician *i* tries to eradicate the enemy in $\sum_{m=1}^{M} A_m^i \leq M$ municipalities, his probability of successful eradication is αq^i in each of them and thus his expected period 1 pay-off is $R + \alpha q^i P \sum_{m=1}^{M} A_m^i$ as given by the first line in (2). The second and third lines in (2) show the expected period 2 pay-off. In the $\alpha q^i \sum_{m=1}^{M} A_m^i$ municipalities where the enemy was eradicated in the first period, peace is maintained in period 2 giving a payoff of $\alpha q^i P \sum_{m=1}^{M} A_m^i$. In $(M - \alpha q^i \sum_{m=1}^{M} A_m^i)$ municipalities the enemy is still around in period 2. With probability Ω^i the incumbent politician *i* wins the election and enjoys rents *R*. If he wins the election, he succeeds in creating peace with probability αq^i in each of the $(M - \alpha q^i \sum_{m=1}^{M} A_m^i)$ municipalities where the enemy has not been eradicated. With probability $1 - \Omega^i$ he loses the election, gets no rents and a probability of peace given by the probability of success of the other politician (denoted by -i) αq^{-i} in each of the municipalities where the enemy is still around.

From (2), we note that the expected utility of an incumbent politician I is increasing in his probability of winning the election Ω^{I} . In the continuation, we will also assume that politician O prefers to win rather than to lose the election, i.e. that the utility given by (2) is increasing in $\Omega^{O.9}$

Since politicians have different abilities, their election probabilities will differ in equilibrium. Let Ω denote the election probability of politician *I* (Thus if politician *I* is also the incumbent $\Omega = \Omega^{I}$). In Appendix A.1 we show that Ω is given by

$$\Omega = \frac{1}{2} + \frac{h\alpha(q^{I} - q^{O})P}{sM} \sum_{m=1}^{M} s_{m}(1 - B_{m}) + \lambda s_{m}(C_{m}^{I} - C_{m}^{O}),$$
(3)

where s denotes the average s_m . The election probability of politician O is given by $1 - \Omega$. We note that, among other variables, the election probability depends on the number of municipalities where the guerrillas are still active $(1 - B_m)$ and campaign decisions C_m^i .

⁹ As seen from (2) this will always be the case provided R is not too small. A higher re-election probability of politician O increases his expected rents but decreases the probability of future peace because politician Iis more likely to succeed in creating peace than politician O. In isolation, the latter effects pulls in the direction that politician O would like to lose the election. In such a case the model becomes uninteresting and thus we focus on the case where both politicians compete in the election with the aim of winning.

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Thus both politicians chose where to campaign so as to maximise their expected utility, subject to Ω being given by (3). The incumbent politician $i \in \{I, O\}$ also chooses where to attempt eradication of the enemy, subject to Ω being given by (3) and subject to the expectation of B_m being given by $\alpha q^i A_m^i$. Thus, the solution to the maximisation problem for an incumbent politician *i* consists of *N* campaign decisions C_m^i and *M* decisions on eradication attempts A_m^i . The solution of the maximisation problem for an opposition politician *i* consists of *N* campaign decisions C_m^i . As will be clear below a well-defined solution to the maximisation problem of both politicians always exists.

We start out with the solution for the campaign decisions. From (2) and (3) we note that campaigning only affects the utility through the election probability. Since politician I aims to maximise Ω , while politician O aims to minimise Ω , both politicians choose to campaign in the N municipalities where voters are the most responsive, i.e. where s_m is the highest. More formally, we have the following Proposition:

PROPOSITION 1.
$$C_m^I = C_m^O = 1$$
 for $m \le N$, $C_m^I = C_m^O = 0$ for $m > N$.

Proof. When politicians can campaign in N municipalities then from (3), irrespective of the campaigning decision politician O, politician I increases Ω the most by campaigning in the N municipalities where s_m is the highest. In the same way, irrespective of the campaigning decision of politician I, politician O decreases Ω the most by campaigning in the N municipalities where s_m is the highest. Thus, for both politicians the dominant strategy is to campaign in the N municipalities where s_m is the highest. Thus, for both politicians the dominant strategy of municipalities according to the size of s_m , are those with $m \leq N$.

Taking into account the campaigning decisions, the election probability for politician *I* reduces to

$$\Omega = \frac{1}{2} + \frac{h\alpha(q^{I} - q^{O})P}{sM} \sum_{m=1}^{M} s_{m}(1 - B_{m})$$

Since B_m in general depends on who is in power, so do the election probabilities. Recall that above we defined Ω^i as the re-election probability of politician *i*. Thus, given that politician *I* is in power, taking into account that in that case B_m has expectation $\alpha q^I A_m^I$, we can calculate his expected re-election probability as a function of his eradication decision variables A_m^I , to be

$$\Omega^{I} = \frac{1}{2} + \frac{h\alpha(q^{I} - q^{O})P}{sM} \sum_{m=1}^{M} s_{m}(1 - \alpha q^{I}A_{m}^{I})$$
$$= \frac{1}{2} + h\alpha(q^{I} - q^{O})P\left(1 - \frac{\alpha q^{I}}{sM} \sum_{m=1}^{M} s_{m}A_{m}^{I}\right).$$
(4)

There are two noteworthy implications of this expression. First, the re-election probability is decreasing in A_m^I . Thus the more municipalities where eradication is attempted, the lower is the expected re-election probability of the most able © 2014 Royal Economic Society.

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incumbent. The intuition for this is that the more municipalities that remain with active guerrillas, the more important it is for voters that the most able politician holds

active guerrillas, the more important it is for voters that the most able politician holds future power. Second, the expected reduction in the re-election probability with an eradication attempt is stronger in municipalities where voters are more responsive, that is the higher is s_m . The intuition for this is that in municipalities where voters care much about political results relative to ideology, the expected gain in votes by keeping the enemy alive is higher.

In contrast, should the least able politician O hold power his re-election probability is increasing in A_m^O , as it is given by

$$\Omega^{O} = \frac{1}{2} - h\alpha (q^{I} - q^{O}) P\left(1 - \frac{\alpha q^{O}}{sM} \sum_{m=1}^{M} s_{m} A_{m}^{O}\right).$$
(5)

The least able politician has a disadvantage if there are many municipalities without peace, as voters realise he will be less likely to succeed in creating future peace.

To characterise the remaining part of the solution to the maximisation problem, namely the M eradication decisions of the incumbent, we proceed in two steps. First, we look at a municipality and ask: for given eradication decisions in other municipalities, what is the optimal eradication decision in the municipality we are looking at. Second, we move to the full characterisation of the solution to the maximisation problem.

We start out with the following Proposition:

PROPOSITION 2. Consider a municipality k for given eradication decisions in all other municipalities.

- (i) Let politician I be in power in period 1. Then in municipality k there may or may not be an attempt to eradicate the enemy.
- (ii) Let politician O be in power in period 1. Then there will always be an attempt to eradicate the enemy.

Proof. See Appendix A.2.

Note that in this society all politicians and private agents agree that the per period net utility gain of eradicating the enemy in a municipality is P > 0. Despite this, when the politician in power is the most able one he may choose not to try to eradicate the enemy. *Per se* there is no conflict of interest in the eradication of the enemy; everyone agrees that the enemy is a problem. The reason the able incumbent may choose not to eradicate is a commitment problem: voters cannot commit to vote for a politician independently of which problems remain unresolved. In turn, when the incumbent has a comparative advantage in solving the problem, this creates an incentive for him *not* to solve it. In particular, as can be seen from (A.1) in Appendix A, this incentive is stronger the higher the rents from holding office. The intuition is that when these rents are high, an increase in the re-election probability is more valuable.

When politician O is in power it follows from Proposition 2 that he will always attempt eradication in all municipalities. The interesting case that remains to be fully

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analysed is thus when politician I holds power. In the remainder of the analysis we thus focus on this case.

To characterise the possible solutions to the maximisation problem fully when politician I is the incumbent, it is useful to start with the following Proposition:

PROPOSITION 3. Suppose politician I is in power, and consider a municipality k. The incentive for eradication is weaker the more responsive voters in the municipality are, that is the higher is s_k .

Proof. See Appendix A.3.

Thus, irrespective of eradication decisions in other municipalities, it is always less attractive to eradicate the enemy in municipalities with more responsive voters. The reason for this is that by not eradicating the enemy, the increase in the re-election probability of politician I is then higher. In turn, a large increase in the re-election probability of politician I has a stronger negative impact on the incentive for eradication for two reasons. First, a large increase in the re-election probability means that the expected increase in rents by avoiding eradication is higher. Second, a large increase in the re-election probability that it will be the most able politician that will undertake future eradication attempts. Therefore, the increase in the expected future value of peace is higher the more the re-election probability of politician I increases.

We now have sufficient information to characterise the possible solutions for eradication decisions by politician I fully: if the rents of power R are sufficiently high there will not be eradication attempts in any municipality. For lower values of the rents of power R, there may be eradication attempts in some or all municipalities. When there is an eradication attempt in less than all municipalities, say in G < M municipalities, then there will only be an eradication attempt in the $G \ge 0$ municipalities with the least responsive voters. Thus, $A_m^I = 0$ for $m \le M - G$, $A_m^I = 1$ for m > M - G. Finally, it can be verified from (A.1) in Appendix A that when R and h are sufficiently low there will be an eradication attempt in all municipalities.

 10 Note that the solution to the maximisation problem of the incumbent is the combination of eradication decisions that yields the global maximum of U^{I} . This involves the investigation of all combinations of eradication decisions that has the properties stated in the text (but no other combinations of eradication decisions). Since this is a simultaneous problem, a closed form solution cannot be derived. We have now found all properties of this solution that are necessary for our purpose. Nevertheless, it is also instructive to explain the intuition for the simultaneity in the solution procedure to the maximisation problem of the incumbent. Consider, for example, a situation where R and h are sufficiently low that an eradication attempt is undertaken in all municipalities, and then let R increase so that an eradication attempt is (viewed in isolation) no longer profitable in municipality 1. Then the utility of politician Iincreases if the attempt is not made. Moreover, not making the eradication attempt in municipality 1 also reduces the incentive to make eradication attempts in other municipalities, which can be verified by the fact that from (A.1) in Appendix A D_k^I is increasing in A_1^I . Thus, it might be that utility is now higher also by avoiding eradication in, for example, municipality 2. In turn this just strengthens the reason for not undertaking the eradication attempt in municipality 1. It may also be that, given that an eradication attempt is not made in municipalities 1 and 2, it is not optimal in municipality 3 either, and so on. This means that any solution to the maximisation problem must have the properties stated in the text, and also clarifies why the M equations given by (A.1) can only be used to present sufficient but not necessary conditions for a global optimum of the maximisation problem.

We next investigate how better possibilities for eradicating the enemy affect the incentives for eradication. When exogenous factors make it more likely an attempt of eradication will be successful, i.e. when the draw of α is high, we get the following:

PROPOSITION 4. Suppose politician I is in power. A high α , i.e. a good opportunity to eradicate the enemy, may increase or decrease the incentive for eradication. When the rents of power R are sufficiently high the incentive to eradicate decreases.

Proof. See Appendix A.4.

Thus, an exogenous increase in the probability that the enemy will be eradicated, should eradication be attempted, may actually make it less likely that the incumbent will aim to eradicate the enemy. The intuition for this result is on the one hand that when α increases, the expected pay-off of trying to eradicate the enemy is higher simply because one is more likely to create peace. This pulls in the direction of making eradication more attractive. But on the other hand, a higher α also makes the competitive edge that politician *I* gets by not attempting eradication larger, thus pulling in the direction of not trying to eradicate. If the rents of power are sufficiently high this effect will dominate.¹¹

2.3. Discussion and Hypothesis

Interpreting the model in the light of the Colombian situation it seems clear that Uribe built his popularity on being seen as more likely to succeed in eradicating the guerrillas. Thus, under 'normal circumstances' in the sense of a close to expectation drawing of α , Uribe could have been expected to aim for eradication in most or all municipalities. However, circumstances did not become normal. Within a short time period in 2008 the guerrillas faced unprecedented setbacks that produced a unique possibility for eradicating them. In the interpretation of the model; the drawing of α became unusually high. A remaining question is if it is possible that a president that under normal circumstances will aim at eradication in all municipalities, may in fact

¹¹ We have developed a two-period model. A possible criticism of this approach is to ask if our mechanism is valid also if the model is extended to many periods. In particular, why would voters in the first place vote for a politician that may not attempt eradication, when there is another politician available that will always attempt eradication? Since our model takes the initial politician as exogenously given, it does not directly speak to this question. Note, however, that our mechanism is present also if we were to relax this assumption. There are two reasons for this. First, and least interestingly, since we have a probabilistic voting model where voters care about additional characteristics of politicians, they may still vote for such a candidate. Second, and more interestingly, it may in fact be the case that the initial election probability of the politician that not always attempts eradication is the highest. The intuition for this is the following. Since a is stochastic, the value will not be known when voters elect an initial incumbent. Initially, voters then face a trade-off. On the one hand, they realise that the most able politician is the least likely to attempt eradication. But on the other hand, the most able politician is also the most likely to create peace should he make an attempt. When the second effect dominates the first, the expected utility of peace for voters is the highest by electing the most able politician, then his re-election probability will be the highest.

Note, finally, that the above argument does not depend on the game having a finite number of periods but can be extended to a model with infinite horizon. Thus, our two-period formulation simplifies our model but is not crucial for the mechanism we focus on to be present.

choose to not attempt eradication in some municipalities when the expected success of such eradication improves.¹² The following Corollary answers this question:

COROLLARY 1. There always exists an $h < h^*$ and $a R > R^*$ such that when $\alpha = \overline{\alpha}$ the most able politician I attempts to eradicate the guerrillas in all municipalities and, when α increases, then the incentive to eradicate the guerrillas decreases (at least) in the municipalities where voters are the most responsive.

Proof. See Appendix A.5.

Thus, even if Uribe was expected to be the man for the job under normal circumstances, it may be that, as found in Proposition 4, when the prospects of eradication improved this may in fact have produced an incentive not to eradicate. And moreover, because of Proposition 3, the model predicts that in such a case the incentive not to eradicate shall be particularly strong (or only present) in the municipalities where voters are the most responsive, i.e. in the municipalities where s_m is high (since as we have seen in Proposition 3 the incentives to eradicate is always lower in such municipalities). Finally, because of Proposition 1, the model predicts that this is the same municipalities where Uribe held *Consejos Comunales* (prior to the 2008 events).

We now aim to test if in fact it was the case that Uribe reduced military activity when the possibilities of eradicating the guerrillas improved and, more importantly, if such effects are more pronounced in municipalities where the voters are the most responsive.

3. Empirical Evidence

3.1. Background

Colombia has a long history of rebel activity. The roots of the current internal armed conflict can be traced back to at least the period known as *La Violencia* which began in the late 1940s. A brutal civil war between the Liberal and Conservative parties, this period finally ceased in 1958 when the parties signed a peace treaty and set up a system of power sharing institutions known as the National Front. The National Front ended the historical bipartisan conflict but also excluded other political groups from power. Liberal and Communist guerrillas of *La Violencia* transformed themselves into armed groups.

In particular, in 1964 the *Fuerzas Armadas Revolucionarias de Colombia* (FARC) and *Ejército de Liberación Nacional* (ELN) were formed. FARC and ELN survive to date and their armed opposition is active, especially in the case of FARC. These 'left-wing' guerrilla groups were relatively small during the 1960s and 1970s but began to expand rapidly in the 1980s.

¹² As shown in the Appendix, the existence of a parameter space where this holds is not obvious, because those parameters that make it likely that $D_k^I > 0$ may also make it unlikely that $dD_k^I/d\alpha < 0$. Thus, the existence of such a parameter space needs to be proven and cannot simply be assumed.

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In addition to the rebels and the government forces, the conflict has featured a third armed group since the late 1970s: the so-called 'paramilitary forces'. These right-wing militias were originally created by local elites, landowners and drug lords to counteract guerrilla extortion and ransom in the rural areas of Colombia. The paramilitaries were effectively private armies. By the mid 1990s, these groups joined forces in order to boost their counterinsurgency effort under an umbrella organisation (called *Auto-defensas Unidas de Colombia*, AUC).

A major peace negotiation process with the FARC was launched by President Andrés Pastrana (1998–2002). During this period, there was a growing perception that the government conceded too much without demanding anything. The FARC enjoyed the demilitarisation of 42,000 square kilometres, known as *Zona de Distensión* and did not agree to a cease fire during the negotiation period. Talks were tortuous and the government accused the FARC of using the *Zona de Distensión* to rearm, prepare attacks and conduct drug trade and even the FARC's apologists, such as Leech (2011), argue that kidnappings fell after the collapse of the *Zona de Distensión* because the FARC did not have anywhere safe to keep their prisoners. In 2001, negotiations finally broke up a few hours after a plane was hijacked by the FARC.

The conflict with the FARC dominated the 2002 presidential electoral campaign. Traditionally a member of the Liberal Party, Uribe ran as an independent and his 'right-wing' speech of cracking down hard on rebel groups gained prominence as voters grew disillusioned with Pastrana's peace process. He ultimately obtained the first ever first round presidential election victory since the introduction of the 1991 Constitution.

There is no doubt that Uribe was seen as the candidate with the better chance of eradicating the guerrillas. Not only did he emphasise a hard-line against the rebels early on in the campaign. His personal and political record also made him stand out among other candidates. As we noted, his father was killed by the FARC and, as a Governor of Antioquia, Uribe had been an important supporter of the CONVIVIR, a national programme of neighbourhood watch groups established in 1994 which facilitated the expansion of paramilitary groups that fought the guerrilla.

As president, Uribe's policy of so-called 'Democratic Security' included an important growth of military expenditure to fight the guerrillas. Another major programme was the dismantling of the AUC between 2003 and 2007, following a peace process with the government (though splinter paramilitary groups including former AUC fronts are still active in the country). The Democratic Security policy delivered a number of positive results in the fight against the FARC. The army obtained some major victories against the FARC, guerrilla attacks and kidnappings decreased, demobilisations of guerrilla members increased, the overall homicide rate fell and the general public perception of security increased. However, the FARC remained an active group. For instance, it continues to hold hostages and recruit fighters (Echandía-Castilla, 2011).

Another key component of Uribe's presidency, allegedly an important determinant of his overwhelming popularity together with his stance against the FARC, were the weekly *Consejos Comunales*. The councils were held each weekend in a different municipality and broadcast live on national television. They showed Uribe exchanging directly with local authorities and cabinet members, publicly hearing and discussing various concerns.

Before 2006, the President of Colombia was elected for one four-year term with no possibility of re-election. But by the end of his first presidential period, Uribe took advantage of his popularity to change the Constitution and remove the one-term limit. He was re-elected on a landslide and led the country for an additional term, from 2006–10.

Another attempt by Uribe's supporters to change the Constitution once again and let Uribe run for a third period failed in 2010 when the Constitutional Court ruled it unconstitutional. Nonetheless, Uribe remained very popular and his successor and former Defence Minister Juan Manuel Santos was elected largely on a platform that emphasised continuity with Uribe's Democratic Security policy, especially the commitment to beat the rebels. In hindsight, therefore, we can be confident that Uribe was indeed concerned about his electoral appeal to the citizens (or that of a candidate with a similar political agenda and comparative advantage) even if he was not certain about whether or not he could run again for a third time for president.

3.2. Data

We look empirically both at whether the military activities of the government fall after major victories against the FARC and also whether it responds differentially in municipalities formerly visited by President Uribe during his *Consejos Comunales*. That is, we focus on Proposition 4 and, more importantly, Corollary 1. Our main proxy for government military activity is the sum of the number of attacks by the army and the number of combats per day against the guerrillas.¹³ In some of the robustness checks, we also use the number of guerrilla attacks as the dependent variable.

Our Colombian-conflict data are an original event-based dataset that covers the period 2002–9. For each conflict event we record the date, location, type, perpetrator and victims involved in the incident. We distinguish whether the incident was an uncontested attack, carried out by an identified armed group against a specific military or civilian target, or a clash, which involves an exchange of fire between two or more groups. We also record whether attacks were carried out by the guerrillas, the paramilitary or the government, and the groups involved in a clash. Finally, we code the number of casualties separately for combatants and civilians. Our data update that of Restrepo et al. (2004) and rely on the same sources. In particular, we created our database using events listed in the periodical Noche y Niebla published quarterly by the Colombian NGO CINEP. The publication presents a detailed description of chronologically ordered violent events in Colombia, including date of occurrence, geographical location, the group or groups, deemed responsible for causing an event, individuals killed and injured and the group to which the victims are thought to belong. As primary sources, Noche y Niebla relies on press articles from more than 20 daily newspapers with both national and regional coverage, as well as reports gathered directly by members of human rights NGOs and other organisations on the ground

¹³ Our results are robust to using the number of combats only. The frequency of government unilateral attacks (mostly bombing of enemy camps and anti-kidnapping operations) is, however, extremely low and hence we cannot use the attacks' variables alone.

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such as local public ombudsmen and, particularly, the clergy. Since the Catholic Church is present even in the most remote areas of the country, we can be very confident of the coverage and accuracy of these data.

In terms of our main independent variable of interest, we downloaded from the website of the Colombian presidency, information on each one of 305 *Consejos Comunales* held by President Uribe during his eight-year term. Specifically, by recording the date and location of these visits, we were able to construct dummies pertaining to the municipalities visited by the president up to the moment when the events under consideration occurred.

We also have a rich set of municipal-specific controls that include: (the log of) rural population (from DANE, the National Statistics office), geographical and distance controls (from IDEAM, the National Climate office, and IGAC, the Geographic Institute) and the *unmet basic need* proxy of poverty (also from DANE) which gives the proportion of the population of each municipality with unmet basic needs. There is no information on GDP *per capita* at the municipality level, so we rely on local taxes on trade and industry *per capita* (from the National Department of Planning, DNP) as a proxy for local development.

Descriptive statistics for our main dependent variables, government military activity and guerrilla attacks at the municipality level, as well as for our main set of control variables are presented in Table 1.¹⁴ In the case of government and guerrilla attacks, we present summary statistics for the 12-month period before and after the major victories of the government against the guerrillas since, as we detail next, this is key in our empirical approach. One feature of potential interest is the raw data in rows 3–6. Here we first report the average of government activity per day before and after major events in municipalities where there was a Consejo Communal. This drops from 0.00421 to 0.00152. The next two rows report the raw data for municipalities where there were no Consejos. Prior to the major events the mean here is lower, 0.00187 and it falls to 0.00065. Notice that, in absolute terms, the fall is indeed larger in municipalities with Consejos, as predicted.¹⁵

3.3. Empirical Approach

Our main empirical specification takes advantage of the most important victories of the government over the guerrillas during Uribe's presidency. These are: the death of Manuel Marulanda, a.k.a *Tirofijo* ('Sureshot'), FARC's founder and chief; the bombing-

¹⁴ Data sets and programs that allow replication of all the results in the article are available in the journal's website.

 $^{^{15}}$ However, in percentage terms both fall by a similar amount (close to 75%). Thus, when measured in percentage terms, the raw data do not show the main pattern of interest. This is perhaps not surprising given the number of potentially conflating factors, such as unobservable differences across municipalities. But, also, this functional form dependence is a common concern with difference-in-differences strategies where the 'treatment' and 'control' groups may exhibit different means before treatment. Ideally, one would take logs of the dependent variable to make sure that results go through also when measuring percentage changes. Unfortunately, our dependent variable contains a lot of zeros. However, to make sure our results are not simply an artifice of the different scales of government activity in both types of municipalities, we verified that when taking logs of (1+ government initiative) as an approximation our main results still hold. This robustness to functional form dependence reassures that our results are not just an artifice of scale.

Variable	Mean	SD	Minimum	Maximum	No. of observation
Government military	0.00211	0.00479	0	0.04167	917
activity (before major hits)					
Government military	0.00074	0.00235	0	0.025	917
activity (after major hits)			_		
Government military activity (before hits & $CC = 1$)	0.00421	0.00656	0	0.02778	95
Covernment military	0.00159	0.00389	0	0.01944	95
activity (after hits & $CC = 1$)	0.00132	0.00302	0	0.01544	55
Government military	0.00187	0.00448	0	0.04167	822
activity (before hits & $CC = 0$)					
Government military	0.00065	0.00211	0	0.025	822
activity (after hits & $CC = 0$)			_		
Guerrilla attacks (before major hits)	0.00075	0.00246	0	0.025	917
Guerrilla attacks (after major hits)	0.00039	0.00164	0	0.01667	917
Guerrilla attacks (before hits & $CC = 1$)	0.0019	0.00427	0	0.025	95
Guerrilla attacks (after hits & $CC = 1$)	0.00114	0.0034	0	0.01667	95
Guerrilla attacks (before hits & $CC = 0$)	0.00062	0.00212	0	0.025	822
Guerrilla attacks (after hits & $CC = 0$)	0.0003	0.00126	0	0.01389	822
Consejo comunal dummy (CC)*	0.1036	0.30491	0	1	917
Consejo comunal count*	0.15812	0.56079	0	6	917
Altitude (metres)	1,128.7	1,169.34	2	25,221	917
Soil erosion index	1.96	1.03	0	5	917
Soil quality index	2.66	1.22	0	8	917
Distance to capital (km)	131.92	107.01	0	790	917
Average yearly rainfall	1,984.18	1,068.77	160	9,200	917
Poverty index (unmet basic needs)	46.42	22.09	7.22	104.53	917
Average local industry &	0.01	0.02	0	0.27	915
trade taxes per capita, 1993–2007					
Log of population (2002)	9.75	1.07	7	15.72	917
Guerrilla presence index [†]	1.23	2.2	0	26.45	917
Paramilitary presence index [†]	0.14	0.3	0	3.62	917
Colonel dummy [‡]	0.33	0.47	0	1	873

Table 1Descriptive Statistics

Notes. Government military activity and guerrilla attacks are summarised for the (plus and minus) one-year estimation window before and after the three main events presented in Table 2. *The Consejo Comunal Dummy equals 1 if Uribe held a Consejo prior to March 1 of 2008, the first of our set of three main hist against the FARC. The Consejo Comunal count instead counts the number of visits before this date. [†]Paramilitary and guerrilla presence are measured as in Acemoglu *et al.* (2013), i.e. total paramilitary (and guerrilla) attacks between 1997 and 2005 in municipality *m* per 1,000 inhabitants where the population measure is the average population between the 1993 and 2005 censuses. ^{*}The Colonel Dummy equals 1 if the municipality is under the jurisdiction of a Brigade led by a colonel during 2007.

to-death in Ecuador of Raúl Reyes, FARC's deputy chief during so-called 'Operation Fenix'; and the rescue of Ingrid Betancourt and other political prisoners in the so-called 'Operación Jaque' (Operation Check Mate).¹⁶

 16 In our model α is an exogenous parameter. With the exception of the death of Sureshot the events studied are arguably not fully exogenous in that they require a lot of planning and intelligence. However, they necessarily entail some randomness that is manifest in the specific date in which each event takes place and in the fact that these are ultimately successful hits. The military constantly plans operations against their enemies and, because of several unforeseen circumstances related with the complexity of the war, many do end up in a major hit. While the great majority of the 'non-hits' is never made public, one relevant example, that we use in subsection 3.5 for a falsification exercise, is a failed rescue of Ingrid Betancourt that was planned with the support of the French government. This particular failure was filtered and made it into the press most probably because of the involvement of a foreign government. But there are many other such failed hits. Hence, the events studied necessarily have to involve some randomness.

Recent FARC blows:	Date	No. of news hits
Rescue of Ingrid Betancourt	7 July 2008	13 200
Killing of Raul Reves	1 March 2008	8,140
Death of <i>Tirofijo</i>	25 May 2008	1.570
Escape of politician Fernando Araujo	5 January 2007	103
Escape of policeman John Pinchao	15 May 2007	96
Killing of guerrilla Negro Acacio	1 September 2007	72
Capture of guerrilla Rodrigo Granda	12 December 2004	28
Capture of guerrilla Martin Caballero	25 October 2007	28
Capture of guerrilla Sonia	10 February 2004	21

 Table 2

 Newswire Search of Press Coverage of Recent Guerrilla Setbacks

For obvious reasons, assessing the extent to which an illegal organisation is affected by actions against it is not a simple task. However, there are various reasons to believe that the three events we selected are the most major setbacks for the FARC during Uribe's presidency. Table 2 shows the results from a newswire search of press coverage of recent guerrilla setbacks. We counted around 13,000, 8,000 and 1,500 hits for the rescue of Ingrid Betancourt, the killing of Reyes, and *Tirofijo*'s death respectively. Following these events, the next most noteworthy event, the escape of politician Fernando Araujo (later Minister of Foreign Affairs) after six years' captivity has just around one hundred hits. Hence, these three dates arguably represent the most important positive opportunity shocks (increases in α in our model). The press coverage index probably captures not just the perceived importance of news to the public but also to some extent the importance that experts and policymakers attach to these events for the organisation. In addition, some direct evidence on the importance of these hits comes from data on demobilisation of FARC members around the key dates. Data from the Ministry of Defence reveals that, in the six months leading up to the first of our three events (from September of 2009 to February 2010), 1,104 FARC members defected, for a monthly average of 184 guerrilla members. In turn, during the six months after our main hits (from July to December 2008) this figure rose to 1,526 individuals, a monthly average of 254 combatants. This entails a 38% increase in demobilisations, suggesting these were indeed major setbacks for the FARC.¹⁷

We study the pattern of government activity against the guerrillas around these key dates and across different types of municipalities. Indeed, Corollary 1 of Proposition 4 suggests that it is more important for the president not to eradicate the guerrillas the more responsive voters are (measured by the density of the valence term in the model). In turn, Proposition 1 states that the president will target his attention (and thus will most likely visit) such municipalities, as in Strömberg (2008). Hence, we use Uribe's *Consejos Comunales* to identify the municipalities where the president views voters as most responsive. Notice that in our context the data on where the president went is a more natural proxy of which municipalities (the president believes) have the most

 $^{^{17}\,}$ Also in the interim between the first and last of our events, guerrilla member defections remained high, at an average of 255 per month.

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responsive voters than other measures of 'swing' voters commonly used in the literature. For example, going to 'swing' municipalities in the sense that they are around 50% in support for Uribe is irrelevant in national presidential elections where the only relevant thing is the national number of votes; see Ansolabehere and Snyder (2006), for discussion. Also, measuring citizen responsiveness by looking at historical variation in party support at the municipality level is not simple in Colombia given the multiplication of political parties and movements since the adoption of changes to the electoral system in the 1980s and with the 1991 Constitution (Dargent and Muñoz, 2011). Indeed, this presumably excessive fragmentation of political parties, aside from making it very hard to define party loyalty, has been a growing source of concern in Colombia (Botero, 2006).

With this in mind, we estimate the following model specification for municipality m at time t:

$$Y_{m,t} = \beta_1 + \beta_2 post.event_t + \beta_3 (CC_m \times post.event_t) + \beta_4 (X_m \times post.event_t) + \delta_m + \varepsilon_{m,t}$$
(6)

where $Y_{m,t}$ is the outcome (typically government military activity except for placebo regressions in which we use guerrilla attacks), *post.event*_i is a dummy variable that equals 1 after the main event (Sureshot's death, Operation Fenix and Operation Check Mate), and CC_m is a dummy variable that equals 1 if Uribe hosted a Consejo Comunal in municipality *m* before the event. All our specifications include a full set of municipality fixed effects δ_m , to absorb any time-invariant characteristics of municipalities that could be correlated with the level of military activity (such as size, population, geographical characteristics, level of development). Note, also, that for this reason we do not include the direct effect of CC_m in (6) as it is absorbed by the fixed effect. $\varepsilon_{m,t}$ is the error term. Throughout, we consider just two time periods: before and after the event.¹⁸ The dependent variable, $Y_{m,t}$ is simply computed as the average of Y over different timewindows before and after the event. Our benchmark regressions have a 12-month before–after window and we exclude the month around the event (the 15 days before and after the event). We show below that our results are robust to different time-windows.

The main potential threat to our strategy is that the estimated β_3 is capturing differential trends between municipalities with or without *Consejos Comunales*. Since these potential differential trends may depend on unobservable characteristics, the threat is ultimately untestable. However, we perform a number of robustness checks that lend credibility to the results. First, we run regression as in (6) in periods preceding the major blows to the FARC in search for pre-existing differential trends. Second, we examine the robustness of our results to the inclusion of differential trends, parameterised as functions of various observable baseline characteristics. If differential trends due to observables do not change our results, we are more confident about our identification strategy. To verify this, the interaction term ($X_m \times post.event_t$), where X_m are observable municipality characteristics, is included in our robustness checks.

¹⁸ As Bertrand *et al.* (2004) show, standard errors in difference-in-differences specifications may be severely biased due to serial correlation. They also prove that collapsing the time-series information into a 'pre' and a 'post' period, as we do in this article, is a simple way of taking this problem into account. Also, note that no clustering is needed in this case.

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Also, notice that the three main blows to the FARC are relatively close to each other, occurring within a window of five months in 2008: Fenix (March 1), Sureshot (May 24) and Jaque (July 2). Thus, in an additional exercise we lump together the events, and let *post.event*_t = 0 before Fenix and *post.event*_t = 1 after Jaque, excluding the dates in between.

This specification tests the implications of Proposition 4 and its Corollary. In particular, the theory suggests that if rents from power are sufficiently high, government military activity decreases when there is an opportunity to eradicate the guerrillas. If this is the case we should observe a decrease in government activity after a major army hit or guerrilla setback ($\beta_2 < 0$). Notice from Table 1 that during the 12month period preceding the three main adverse events for the guerrillas, there were on average 0.00211 government actions against the guerrillas per day, and that these fell quite markedly after the three main blows (down to 0.00074). That is, government activity fell to about a third of its previous level. However, remember that theoretically the incentive not to eradicate the enemy may be absent in the 'average' municipality, and present only in municipalities with most responsive voters. Moreover, a limitation of this test is that there are alternative plausible explanations for a potential decrease in government military activity after a major army achievement. For example, it may take a while before a major operation can be planned and executed, or the guerrillas may seek refuge in strategic safe havens that are harder to reach for the army right after a major setback. Indeed, Table 1 also reveals a fall in guerrilla activity after the major hits took place (albeit smaller than the fall in government activity, since guerrilla attacks fell from a daily average of 0.00075 per municipality in the year preceding the attack to a bit over half this amount in the following year).

More importantly, the corollary suggests an additional prediction which is harder to reconcile with alternative hypotheses. In particular, Corollary 1 identifies conditions under which the decrease in government activity should be more pronounced in electorally relevant places ($\beta_3 < 0$). As we will show below, the fall in government activity is concentrated in places that President Uribe chose to visit, which according to our model are the electorally salient municipalities. We next use our data to examine these predictions and explore the robustness of the results to a variety of additional checks.

3.4. Main Results and Robustness

We now look at the military activity of the government after each of the main positive victories against the guerrilla, comparing the areas visited by President Uribe with those he did not. Table 3 is divided into four panels. There is one panel for each one of the events considered, plus a fourth panel that lumps the three events together. In each panel, we report the coefficient associated with *post.event*_t and the interaction term.

The first column of Table 3 reports the baseline difference-in-differences specification with no controls (though all specifications control for municipality fixed effects). In all the specifications the coefficient on *post.event*_b, β_2 , is negative and statistically significant, as predicted by the theory for high rents from power. For example in column 1, panel (*a*), $\beta_2 = -0.00104$ with a standard error of 0.000123 and

Table 3

Dependent variable: government military activity (all regressions include municipality fixed effects) (1)(2)(3)Panel (a): killing of Raul Reyes -0.00104 ***-0.0002590.00107Post (0.000123)(0.000649)(0.000814)-0.00139*** -0.00132^{***} $CC \times post$ -0.00121 **(0.000474)(0.000472)(0.000462) \mathbb{R}^2 0.7870.790 0.809 Panel (b): death of Sureshot -0.00105 ***-0.0002990.000299 Post (0.000116)(0.000426)(0.000627) $CC \times post$ -0.000758*-0.000851 **-0.000732*(0.000420)(0.000420)(0.000405) \mathbb{R}^2 0.769 0.7710.795Panel (c): rescue of Ingrid Betancourt -0.00100 ***-0.0001020.000353 Post (0.000115)(0.000417)(0.000647) $CC \times post$ -0.000735*-0.000862 **-0.000749*(0.000435)(0.000436)(0.000421) \mathbb{R}^2 0.7550.757 0.781Panel (d): all events Post -0.00121 ***-0.0003600.00103 (0.000131)(0.000653)(0.000853) $CC \times post$ -0.00148 ***-0.00169 ***-0.00159 ***(0.000515)(0.000508)(0.000488) \mathbb{R}^2 0.7480.7430.774Controls for differential trends Geography х х Department х 1.834 Observations 1,834 1,834

Benchmark Results: Major Guerrilla Setbacks and Government Military Reaction

Notes. Robust standard errors in parentheses. All regressions include municipality fixed effects. CC is a dummy that equals 1 for the municipalities that President Uribe visited prior to the event of each one of the panels. Post is a dummy that equals one for the months after each event took place. Column 2 includes the interaction of Post with the following geographical variables: altitude, soil quality and soil erosion, distance to departmental capital and average rainfall. Column 3 adds, in addition, the interaction department fixed effects with this post dummy. *is significant at the 10% level, **is significant at the 5% level, ***is significant.

so is highly significant. Looking at panels (b), (c) and (d) we also see that the coefficient estimate on *post.event*_t is very similar for these different events.

As we noted, however, there are other plausible interpretations of $\beta_2 < 0$. Hence the estimated coefficient of more interest is that pertaining to the interaction between CC_m and *post.event*. In all panels of column 1 this is negative and significant and this is so across all three events as well as in panel (*d*) where all the major guerrilla setbacks are lumped together. This implies that the government military initiative dropped in CC_m areas relative to other municipalities after each one of the events took place. In particular, the killing of Raúl Reyes was followed by a relative reduction in army involvement in offensive military operations and conflicts in areas previously visited by the president, and the same happened after the death of Sureshot and the rescue of Ingrid Betancourt.

In columns 2 and 3, we show that this result is robust to controlling for differential trends parametrised as functions of a number of observable municipality-specific characteristics. Column 2 includes the interaction of a number of geographical variables with the *post.event*_t dummy, namely: altitude, soil quality and soil erosion, distance to departmental capital and average rainfall. Column 3 adds, in addition, the interaction department fixed effects with this post dummy.¹⁹ The interaction coefficient of interest survives the inclusion of all the control sets. Moreover, the coefficient does not change much in magnitude across specifications, which further points to the robustness of the finding. This is very reassuring evidence that the results for the coefficient of interest are unlikely to be driven by other differential trends across municipalities with and without *Consejos Comunales*. We will return to this issue below and provide further evidence along these lines, when we examine the most important correlates of Uribe's visits.

It is interesting that, in all of the specifications in columns 2 and 3, once we add the covariates, the direct effect of the *post.event*_t dummy becomes statistically insignificant. This suggests that after the big victories which the military secured against the guerrillas, the only places in which army military activity fell was in those which were electorally important for President Uribe. To gauge the size of the effects, take the case when considering all events together as in panel (*d*). The estimated coefficient with full controls in column 3, of about -0.00159, implies that following the major drawbacks for the guerrillas, attacks by the government fell to about a quarter of their pre-existing average in the year before the event (0.0021, recall Table 1) and that this fall occurred only in places that Uribe visited.

While column 3 in Table 3 already suggests that our results are not driven by other differential trends between municipalities with and without *Consejos Comunales*, Table 4 presents an additional exercise to assuage these concerns. In particular, it

 Table 4

 Testing for Parallel Trends: One Year Before Major Guerrilla Setbacks and Government Military Reaction

Dependen	t variable: government r	nilitary activity (all reg	gressions include municipality f	ixed effects)
	(1) Killing of Raul Reyes	(2) Death of Sureshot	(3) Rescue of Ingrid Betancourt	(4) All events
Post	0.000182	8.16e-05	-0.000116	0.000184
$CC \times post$	0.000695	-0.000387	(0.000130) -0.000258 (0.000258)	0.000594
\mathbb{R}^2	(0.000539) 0.785	(0.000486) 0.803	(0.000531) 0.800	(0.000519) 0.784
Observations	1,834	1,834	1,834	1,834

Notes. Robust standard errors in parentheses. All regressions include municipality fixed effects. CC is a dummy that equals 1 for the municipalities that President Uribe visited prior to the event of each one of the columns. Post is a dummy that equals 1 for the year *before* each of the events took place and 0 one year earlier (hence, two years before the event). *is significant at the 10% level, **is significant at the 5% level, ***is significant at the 1% level.

¹⁹ In Colombia's political division, the about 1,000 Colombian municipalities are equivalent to US counties and the 33 departments are equivalent to US states.

repeats our baseline regressions but moving the *post.event*_t dummies one year before. Hence, this Table tests for the existence of pre-existing differential trends for municipalities that President Uribe visited one year before each actual major hit to the guerrilla took place. The results are very supportive of our strategy. Both β_2 and, most importantly, the interaction term β_3 are statistically insignificant when the regression is replicated one year prior to each one of the events and to all the events considered together (in columns 1–4 respectively). Hence, we conclude that our results are not driven by pre-existing non-parallel trends or by differential trends based on municipality characteristics other than their electoral responsiveness.

In our baseline regression, we code CC_m equal 1 only if Uribe visited the municipality in a community council before the event. This choice reflects the idea that later visits could in fact be endogenous to the events (for instance if the army offensive measures improved security allowing Uribe to visit the municipality). Also, notice that we use a simple dichotomous variable. This is because, while some municipalities had multiple visits, most municipalities where visited only once or not at all. Indeed, the descriptive statistics in Table 1 show that 90% of the municipalities where not visited by Uribe before the main events and that the municipality visited most was visited 6 times (this corresponds to Medellín, the second most important city in the country and Uribe's birthplace). Further details are available in Table 5, showing the distribution of the number of visits among those places visited at least once: 70.5% of these municipalities where visited only once, and 85.2% where visited at most twice. In short, only a small share of municipalities where visited multiple times.

Despite these considerations, Table 6 verifies the robustness of our benchmark results to the number and timing of *Consejos Comunales*. The Table has a similar structure to our baseline Table 3, yet we show results only for all events taken together to save space. In panel (*a*), we run our baseline regression but code $CC_m = 1$ only if a given municipality is visited after the three main events. While these visits could be endogenous, it could be argued that as elections in 2010 approached Uribe was more concerned about electoral saliency and hence this is a more precise measure of citizen responsiveness. Panel (*b*), in turn, shows the case when $CC_m = 1$ if municipality *m* was visited at any point in time during the two presidential terms. Finally, despite the small variation in the number of visits, since these could reflect how intensely Uribe cared about the local electorate, panel (*c*) runs the baseline regression where instead of a *CC* dummy we count the

No. of <i>Consejos</i>		Cumulative
Comunales	%	%
1	70.5	70.5
2	14.7	85.2
3	8.4	93.6
4	5.3	98.9
6	1.1	100

 Table 5

 Number of Consejos Comunales (Municipalities Visited at Least Once Before the Three Main Events)

1041

Table 6

Dependent varia	ble: government military activit	y (all regressions include munic	cipality fixed effects)
	(1)	(2)	(3)
Panel (a): $CC = 1$ if C	Uribe visited after the three main ev	eents	
Post	-0.00128***	-0.000435	0.000219
	(0.000132)	(0.000638)	(0.000715)
$CC \times post$	-0.00116**	-0.00143 **	-0.00124**
1	(0.000585)	(0.000583)	(0.000540)
\mathbb{R}^2	0.741	0.746	0.772
Panel (b): $CC = 1$ if U	Uribe visited at any point in time		
Post	-0.00117***	-0.000326	0.000831
	(0.000134)	(0.000628)	(0.000770)
$CC \times post$	-0.00128***	-0.00148***	-0.00126^{***}
1	(0.000417)	(0.000410)	(0.000396)
\mathbb{R}^2	0.746	0.751	0.776
Panel (c): CC is the n	umber of times Uribe visited before t	he three main events	
Post	-0.00125***	-0.000355	0.00154
	(0.000129)	(0.000651)	(0.00111)
$CC \times post$	-0.000734^{***}	-0.000893***	-0.000853***
1	(0.000278)	(0.000277)	(0.000260)
\mathbb{R}^2	0.745	0.750	0.776
Controls for differer	ntial trends		
Geography		х	х
Department			х
Observations	1,834	1,834	1,834

Major Guerrilla Setbacks and Government Military Reaction Robustness to Number and Timing of Consejos Comunales

Notes. Robust standard errors in parentheses. All regressions include municipality fixed effects. Post is a dummy that equals one for the months after the three main events took place. Column 2 includes the interaction of Post with the following geographical variables: altitude, soil quality and soil erosion, distance to departmental capital and average rainfall. Column 3 adds, in addition, the interaction department fixed effects with this post dummy. *is significant at the 10% level, **is significant at the 5% level, ***is significant at the 1% level.

number of visits Uribe made before the main events. Notice that, in all cases, the message from our baseline regressions is robust to these specification checks.

Our main result suggests that President Uribe was able to push the military for more or less action in different areas in the country. This naturally raises the question on whether the military were in fact such a perfect agent of President Uribe. While we can offer no definite proof, there is sufficient anecdotal evidence regarding President Uribe's leading style and his relation to the military to support the necessary mechanisms. Uribe was a micromanager who got directly involved in the decisions of his top, and even second-tier, public officials. To provide just a couple of examples, when analysing the end of his first term the leading political magazine *Semana* highlighted Uribe's interest in controlling every detail, often bypassing the role of his own subordinate functionaries (*Semana*, 2006). Yet another summary of Uribe's main achievements, this time at the end of his second term states that 'Uribe, with micromanaging and by giving them the necessary tools, was able to take the military out of their quarters to combat the guerrilla effectively' (León, 2010). Quite

tellingly, this second example refers explicitly to Uribe's direct involvement in the minutiae of military action, a possibility enhanced by Uribe's close relation to the military. The closeness of their relation is well acknowledged, and it has even survived after Uribe left office. For instance, in May of 2013, President Uribe not surprisingly, given our theory, a strong opponent of the current peace process with the guerrillas, leaked on Twitter the coordinates, only known to a handful of top army officials, of an area from which a member of the FARC was to be taken to Havana, Cuba, to participate in the peace talks.

We end this subsection with a final robustness check, concerning the estimation window around the event. As noted above, our benchmark regressions have a 12-month before–after window and we exclude the month around the event (the 15 days before and after the event). In Figure 1, we show that we would have obtained similar results for our main interaction coefficient of interest had we considered any estimation window from 6 to 24 months. This Figure plots the interaction coefficient and confidence bands for regressions with estimation windows varying from 1 to 24 months. Given the low frequency of civil war events, it is unsurprising that when few months of activity are included (windows from 1 to 5 months) we fail to find significant effects and there is a large uncertainty around the point estimate. But starting with a window of about six months, the point estimate becomes very stable and typically significantly different from zero.

There is one alternative story that could confound our results. In particular, suppose the major blows to the guerrillas, constituting an important achievement by the government, were exploited as an opportunity to shift resources away from the military



Fig 1. Coefficient of CC × Post for the Regression of All Events Using Different Before–After Window Lengths © 2014 Royal Economic Society.

into other politically profitable activities (such as welfare expenditures). This strategy would be consistent with decreasing military activity in electorally relevant municipalities. To the extent that the type of substitution of public resources that this alternative mechanism entails has to go through the formal budget approval process in Congress, which takes places annually, then this story is less likely to explain our results. Indeed, Figure 1 finds significant and very stable effects within the year of the events. However, if expenditures that can be used for electoral purposes may be allocated without clearing the formal budget process, then we cannot entirely rule out this confounder and in this case our results should be interpreted with caution.

With this in mind, we continue to present results for a 12-month estimation window in what follows. In the next subsection, we discuss further robustness checks.

3.5. Additional Robustness Checks

The evidence presented this far is very supportive of our theory. However, there are alternative hypotheses that could be consistent with these patterns. Perhaps, the most obvious objection is that the patterns of government activity after a major blow are in fact not so much determined by the government's own initiative but by reaction to the guerrillas' activity. Thus, for instance, a weakened guerrilla force may reduce its activity after major blows and this would be reflected in the government's operations and a reduced number of clashes between the army and the guerrillas. This could explain $\beta_2 < 0$ in our estimation of (6). While it is harder to think of reasons why this would also explain why $\beta_3 < 0$, we can investigate this alternative hypothesis further by estimating (6) again with guerrilla attacks, and not government activity, as the dependent variable. The results are presented in Table 7. Indeed, while we find that $\beta_2 < 0$, β_3 is not significantly different from zero (and the estimated coefficient is very small).

A second alternative hypothesis is that these patterns are explained by the incentives of army members and not by those of democratically elected officials (in this case, the president). Indeed, it could be argued that army members derive rents from the persistence of the internal conflict, and hence they will try to avoid eradicating the

Depen	dent variable: guerrilla :	attacks (all regressions in	nclude municipality fix	ed effects)
	Reyes	Sureshot	Betancourt	All
Post	-0.000372^{***}	-0.000180^{***}	-0.000147 **	-0.000318***
	(7.34e-05)	(6.33e-05)	(6.46e-05)	(7.42e-05)
$CC \times post$	-0.000505	-9.76e-05	-0.000174	-0.000443
1	(0.000378)	(0.000284)	(0.000249)	(0.000390)
Observations	1,834	1,834	1,834	1.834
\mathbb{R}^2	0.662	0.720	0.714	0.688

 Table 7

 Alternative Hypothesis 1: Guerrilla Reaction to Major Setbacks

Notes. Robust standard errors in parentheses. All regressions include municipality fixed effects. CC is a dummy that equals 1 for the municipalities that President Uribe visited prior to the event of each one of the columns. Post is a dummy that equals one for the months after each event took place. *is significant at the 10% level, **is significant at the 5% level, ***is significant at the 1% level.

guerrillas when the opportunity is ripe.²⁰ While this is a reasonable hypothesis, it cannot explain why one would observe a differential pattern depending on how electorally salient a municipality is. For this to arise, the argument would have to be somewhat more involved. For example, army members would need to be aware of which municipalities are more electorally salient and which politician is more likely to benefit from the 'need for enemies'. If so, they may have an incentive to reduce military actions after a big blow to the rebels, especially in electorally salient municipalities, so as to favour the politician who holds a comparative advantage in the fight against the rebels. Note also, that for this story to make sense, army members should expect greater rents when such a politician is in power (perhaps a reasonable assumption given the politician's emphasis on fighting the rebels).

To test whether army members' incentives may be driving our results, in Table 8 we compare the military activity across army brigades which are led by different army officers. In particular, we run a specification similar to our baseline regression were the dependent variable is government military activity, but where instead of a dummy variable for electorally salient municipalities, our main independent variable of interest is a dummy that equals 1 for municipalities in the jurisdiction of army brigades commanded by colonels (and zero if the leader is a general). The specification includes our standard *post* dummy, and its interaction with the colonel dummy. The motivation for this specification is that colonels and generals have different incentives to sustain conflict against the guerrillas. More specifically, since colonels have yet to rise in the rank ladder, they typically have stronger incentives than generals.²¹ However, as columns 1 to 4 in Table 8 show (for each of the three events and the events lumped together respectively), the interaction of the *colonel* dummy with the *post* dummy is never significant. Moreover, the estimated coefficients are very small.²² Hence, we take these results as evidence that our main conclusions are in fact not driven by army members' incentives.

As an additional exercise to assuage concerns regarding our key dates, we can run regressions for alternative, 'placebo' dates. In particular, we can choose events that represented important army operations or offensive attempts against the guerrillas, but did not turn out to be a major blow to the FARC. For example, if the time it takes to build new operations (especially in some areas more than others) explain the patterns above, then we should see an effect in these types of regressions as well. The first two columns of Table 9 explore this. In particular, in column 1 we use the failed rescue of governor of Antioquia Guillermo Gaviria and former Defence Minister, Gilberto

²² Also, in non-reported specifications in which we dropped the municipality fixed effects and included the direct effect of the colonel dummy, we did not find a direct significant effect either.

²⁰ Such a mechanism has been suggested elsewhere in the literature on civil wars as an explanation for why they persist, for instance in El Salvador (Schwartz, 1991). See Giustozzi (2011, pp. 174–5) for other similar examples, for instance in Pakistan.

 $^{^{21}}$ Indeed, in ongoing research Acemoglu *et al.* (2014) we have found that army brigades led by colonels are more likely to produce the 'false positives' we referred to before (killings of civilians to be presented as rebel members killed in combat in search of monetary rewards and promotion). Admittedly, if colonel appointment to certain brigades is endogenous, for instance if colonels are sent to areas where fighting the guerrillas is either harder or easier, then the dynamics of government activity in colonel-led brigades after the major hits could be driven by characteristics of these municipalities rather than by army incentives. However, in our ongoing work, we find that the different behaviour of colonel and general-led brigades is robust to the inclusion of a large set of municipal characteristics.

Table 8

Dependent variable: government military activity (all regressions include municipality fixed effects) Sureshot All Reyes Betancourt Post -0.00114 ***-0.00111***-0.00108***-0.00129***(0.000147)(0.000138)(0.000138)(0.000152) $Colonel \times post$ -3.07e-06-5.56e-05-3.98e-05-0.000156(0.000271)(0.000255)(0.000256)(0.000298)1,746 1.7461,746 1.746Observations \mathbb{R}^2 0.789 0.7700.7550.746

Alternative Hypothesis 2: Reaction of Colonel-led Army Brigades to Major Guerrilla Setbacks

Notes. Robust standard errors in parentheses. All regressions include municipality fixed effects. Colonel is a dummy that equals 1 for the municipalities in the jurisdiction of army brigades commanded by colonels in 2007. Post is a dummy that equals one for the months after each event took place. *is significant at the 10% level, **is significant at the 5% level, **is significant at the 1% level.

Table 9

Robustness Check: Military Reaction to Placebo Government Hits and to Guerrilla Hits

Dependent	variable: governmer	nt military activity (all regressions i	nclude municipality	fixed effects)
	Failed government hits		Guerrilla hits		
	Failed rescue of governor and minister	Failed rescue of Betancourt	Kidnap of American citizens	Kidnap of 8 foreign tourists	Ambush and killing of 25 army members
Post	-0.000159 (0.000186)	-0.000479^{***} (0.000176)	0.000209 (0.000228)	-0.000695^{***} (0.000180)	-0.000669^{***} (0.000148)
$CC \times post$	0.000344 (0.00122)	0.000744 (0.00111)	-0.00214 (0.00150)	-0.000508 (0.00106)	-0.00139 (0.000905)
Observations R ²	$\begin{array}{c} 1,834\\ 0.793\end{array}$	$\begin{array}{c} 1,834\\ 0.807\end{array}$	$1,834 \\ 0.734$	$1,834 \\ 0.791$	$1,834 \\ 0.750$

Notes. Robust standard errors in parentheses. All regressions include municipality fixed effects. CC is a dummy that equals 1 for the municipalities that President Uribe visited prior to the event of each one of the columns. Post is a dummy that equals one for the months after each event took place. *is significant at the 10% level, **is significant at the 5% level, ***is significant at the 1% level.

Echeverri on 5 May 2003 as a 'placebo event'. The FARC had kidnapped Gaviria and Echeverri a year earlier during a peace march, and upon a failed rescue attempt by the government, these politicians were assassinated together with eight soldiers. Along the same spirit, in column 2 we use the failed attempt of the army, in July of 2003, to rescue Ingrid Betancourt with support of the French government. In both cases β_3 is not distinguishable from zero.

Along these lines, as additional robustness, columns 3–5 consider an alternative group of 'placebo events'. Instead of major hits on the guerrillas, we run our main specification where the relevant *post.event*_t is defined relative to important hits by the guerrillas. These include: the announcement by the FARC, in February of 2003, that they held hostage three Americans (who were conducting anti-narcotics operations for the US when their plane went down over FARC-controlled territory); the kidnapping, in September of 2003, of eight foreign tourists in 'Ciudad Perdida' (Lost City), an

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ancient ruin on a jungle-covered mountain (the Sierra Nevada de Santa Marta); and the killing of 25 Colombian troops in an ambush by the FARC on June 2005, which constituted the worst death toll from a single operation since Uribe was in power. These were all important developments in the civil war but it is hard to argue that they changed the likelihood that the guerrillas could be eliminated. If they did, one could arguably expect a symmetric, positive effect in our interaction term. However, the interaction term is negative and not significant. This shows that it is not just important events that matter, only those that make it more likely that the guerrillas lose.²³

Finally, as emphasised before it is important to verify that our results are not driven by other characteristics of municipalities, correlated with Uribe's Consejos Comunales, but not really related to the electoral response of these areas. Our tests in Table 3 for differential trends depending on geographical characteristics and allowing for a different trend for each of 33 departments are already indicative that this is unlikely. But to test this possibility more fully, we now proceed in two steps. First, we run a simple OLS regression in which we seek to establish which are the major observable determinants of Consejos Comunales occurring in a given municipality. Table 10 presents the results. In column 1, we run a regression for the CC_m dummy relative to the killing of Reyes (Operation Fenix). That is, CC_m equals 1 if Uribe visited municipality *m* before the killing of Reves and zero otherwise. Columns 2 and 3, on the other hand, define the CC_m dummy relative to the death of Sureshot and Operation Check Mate (Betancourt's rescue). Finally, in column 4 the dependent variable is a dummy that equals 1 if Uribe organised a Consejo Comunal, regardless of whether it occurred before any of the major events. In all cases, we find some observable characteristics that more strongly correlate with Uribe's Consejos. These are: population; size (area of the municipality); a poverty index and distance to the department capital. That population correlates positively with Uribe's visits is quite telling, as places with many people are places with many voters, in line with our hypothesis. Finally, the presence of paramilitary attacks, with a negative coefficient, is also important in the regressions for Consejos Comunales before the main events. Guerrilla attacks, however, are not significant correlates of Uribe's visit.²⁴

A couple of results from Table 10 deserve special mention. First, the lack of significance of government prior military attacks as a correlate of Uribe's visits. This

²³ Notice that finding $\beta_2 < 0$ in these regressions could seem at odds with our idea that the government is relatively less (more) aggressive against the guerrillas when they are weak (strong). Thus, this test of our theory is less clear-cut in favour of our hypothesis. Nevertheless, as we have emphasised throughout, both our theory and empirical considerations invite us to focus on the interaction term. From a theoretical standpoint, as our discussion in subsection 2.3 makes explicit, an increased opportunity to eradicate the enemy implies that the incentive not to eradicate should be particularly strong (or only present, see Corollary 1) in the municipalities where voters are most responsive. Hence, one should focus on the estimation of β_3 . From an empirical perspective, it is easy to think of omitted variables explaining the negative coefficient of the direct effect following major blows to the army. For instance, it could reflect a general downward trend in army activity that both strengthens the guerrilla allowing them to achieve these hits and the negative coefficient on the post dummy. Instead, it is harder to come up with alternative stories explaining why government activity would behave differently precisely in places with *Consejos Comunales*.

²⁴ Table 10 also includes geographical variables like altitude, soil characteristics and rainfall. Indeed, a number of articles on civil conflict emphasise the role of geography in explaining violence (Aguirre, 2011; Miguel *et al.*, 2004). Thus, if geography also partly determined Uribe's visits to municipalities (for instance, if some areas are less accessible), our results could have been driven by this omitted variable explaining differential patterns in civil conflict at the local level. However, these variables turn out not to be important determinants of *Consejos Comunales*.

Dependent variable: dummy for municipality visited by Uribe previous to each event					
	CC pre Reyes	CC pre Sureshot	CC pre Betancourt	All CC	
Log of population	0.111***	0.111***	0.114***	0.135***	
0 1 1	(0.0129)	(0.0129)	(0.0129)	(0.0130)	
Poverty index	-0.00210 ***	-0.00204 ***	-0.00209***	-0.00256***	
,	(0.000503)	(0.000540)	(0.000548)	(0.000622)	
Industry and trade taxes	0.571	0.546	0.422	-0.0501	
,	(0.639)	(0.639)	(0.631)	(0.608)	
Surface area	2.23e-05***	2.04e-05***	2.04e-05***	1.60e-05**	
	(7.22e-06)	(7.13e-06)	(7.14e-06)	(7.00e-06)	
Altitude	-4.03e-06	-5.80e-06	-6.16e-06	-8.25e-06	
	(5.89e-06)	(5.96e-06)	(5.98e-06)	(6.49e-06)	
Soil erosion	0.00216	-0.000269	-0.000592	0.00526	
	(0.00888)	(0.00902)	(0.00909)	(0.00999)	
Soil quality	-0.00125	0.000186	0.00149	-0.00980	
1 /	(0.00788)	(0.00818)	(0.00833)	(0.00880)	
Distance to capital	-0.000134	-0.000155*	-0.000160*	-0.000202**	
1	(8.69e-05)	(8.89e-05)	(8.92e-05)	(9.83e-05)	
Distance to major market	0.000124	0.000125	0.000114	0.000212**	
5	(9.15e-05)	(9.37e-05)	(9.42e-05)	(0.000101)	
Average yearly rainfall	1.43e-05	1.35e-05	1.23e-05	1.85e-05*	
8 / /	(9.23e-06)	(9.59e-06)	(9.59e-06)	(1.10e-05)	
Guerrilla attacks 1997–2005	0.00435	0.00283	0.00283	0.00777	
	(0.00317)	(0.00332)	(0.00335)	(0.00704)	
Paramilitary attacks 1997–2005	-0.0494 **	-0.0543 ***	-0.0515 **	-0.0307	
,	(0.0210)	(0.0209)	(0.0213)	(0.0297)	
Previous goverment offensive	0.000928	0.00225	0.00212	0.00193	
8	(0.00186)	(0.00188)	(0.00187)	(0.00201)	
Constant	-0.953***	-0.954***	-0.966***	-1.136***	
	(0.125)	(0.125)	(0.125)	(0.129)	
Observations	915	915	915	915	
\mathbb{R}^2	0.240	0.243	0.240	0.239	

 Table 10

 Determinants of Uribe Visits to Consejos Comunales Before Each Event

Notes. Robust standard errors in parentheses. Dependent variable (in column headings) is a dummy that equals 1 for the municipalities that President Uribe visited prior to each event. *is significant at the 10% level, **is significant at the 5% level, ***is significant at the 1% level.

result tellingly suggests that one obvious alternative hypothesis lacks support in the data. This alternative is that Uribe visited places where he had a lot to show off in terms of the fight against the guerrillas, and that government attacks in those places would naturally fall after his visit since most of the work had been done before his Consejo (a sort of mean reversion). However, in all the regressions for determinants of Uribe's visits, previous government offensive attacks in the municipality show a small an insignificant coefficient, giving little credence to this hypothesis.

Second, Table 10 shows that Uribe, if anything, visited places with intense paramilitary activity less than those with strong paramilitary activity. Thus, it is unlikely that a fall in government action in *CC* municipalities is capturing a fall in action in places with intense presence of paramilitaries. This finding is important as around 2008 and afterwards, Uribe was concerned with the approval of a law removing the two-terms limit, and he needed the votes of congressmen linked to paramilitaries. Hence, one hypothesis could be that military policy in this period was aimed at not attacking paramilitaries. However,

since paramilitary activity was in fact already low where Uribe visited it is unlikely that this explains the limited government activity in CC municipalities after the major hits.²⁵

Returning to our test on the role of other *Consejos Comunales* determinants, in a second step we use the information on the most significant correlates of Consejos from Table 10 to verify that they are not explaining our main results. In particular, in Table 11 we estimate the following version of our main regression

$$Y_{m,t} = \beta_1 + \beta_2 post.event_t + \beta_3 (CC_m \times post.event_t) + \beta_4 (Det_m \times post.event_t) + \delta_m + \varepsilon_{m,t},$$

where all variables are defined as before and Det_m is either a dummy variable that categorises municipalities in terms of one of the four observable significant determinants of *Consejos Comunales* identified (panels (*a*) to (*d*)), or the measure of paramilitary presence which was also found to be important (panel (*e*)). Thus, in panel (*a*) Det_m equals 1 if municipality *m* is above the median in terms of its population, in panel (*b*) it equals 1 if the municipality is above the median size, in panel (*c*) if it is above median poverty and in panel (*d*) if the distance to the department capital is above the median. In panel (*e*), Det_m we use the measure of right-wing paramilitaries in each municipality suggested in Acemoglu *et al.* (2013).²⁶ Results are very similar if, instead of the continuous measure of attacks, we take categories for above or below the median, but since many places in Colombia have no guerrilla and (especially) no paramilitary attacks, we prefer the specification with the continuous variable in this case.

If these correlates, and not the electoral responsiveness of the municipalities (that Uribe can measure better than us), are driving the results, then their inclusion in the regression together with the interaction with the post-event dummy should render our main coefficient of interest (β_3) insignificant. In general, we find that β_3 is still significant with the expected sign. All regressions include municipality fixed effects, and the results generally hold for each of the three key events and when we lump them together as a single major positive outcome for the government. Hence, these results are very reassuring of our main conclusions. An exception is in regressions where we add the categories according to population and area, where β_3 is not significant anymore for Betancourt's rescue and for Reyes' killing; but for Sureshot and lumping the events together the main prediction still holds. Moreover, it is unsurprising that these determinants which capture the scale of the municipality, especially population, compete most with CC_m as a proxy of the responsiveness of voters. Indeed, large municipalities may in fact be responding differently precisely because of our theory regarding their greater electoral responsiveness.

²⁵ Moreover, our measure of government action concerns action against the guerrilla only. Also, given the different nature of the two armed groups, paramilitaries and the army often colluded rather than confronted each other. Finally, by 2008, the major demobilisation of paramilitaries following peace talks with them had already taken place.

 $^{^{26}}$ Paramilitary presence is measured as total paramilitary attacks between 1997 and 2005 in each municipality per 1,000 inhabitants, where the population measure is the average population between the 1993 and 2005 censuses. A similar measure captures guerrilla presence. Also, even though guerrilla attacks are not significantly correlated with *Consejos*, we checked that results are very similar when using guerrilla attacks as *Det_m*.

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Additional Robustness Checks: Controlling for Main Correlates of Uribe Visits Interacted with the Post Dummy

Dependent variable: government military activity				
	Reyes	Sureshot	Betancourt	All
Panel (a): controlling for m	unicipalities with popul	ation above the median		
(All regressions include r	nunicipality fixed effe	ects)		
CC × post	-0.000353	-0.000844*	-0.000349	-0.00103 **
	(0.000446)	(0.000480)	(0.000431)	(0.000521)
Population \times post	-0.000989 ***	-0.000965 ***	-0.00105^{***}	-0.00118***
	(0.000216)	(0.000234)	(0.000218)	(0.000248)
\mathbb{R}^2	0.759	0.790	0.774	0.748
Panel (b): controlling for ma	unicipalities with surfac	e above the median		
CC × post	-0.000484	-0.000951 **	-0.000511	-0.00118 **
1	(0.000428)	(0.000459)	(0.000409)	(0.000496)
Area \times post	-0.00136 ***	-0.00160 ***	-0.00144 ***	-0.00180 ***
1	(0.000205)	(0.000219)	(0.000206)	(0.000233)
\mathbb{R}^2	0.764	0.797	0.779	0.756
Panel (c): controlling for m	unicipalities with povert	v above the median		
$CC \times post$	-0.000852^{*}	-0.00137 ***	-0.000888**	-0.00167 ***
	(0.000438)	(0.000476)	(0.000423)	(0.000518)
Poverty \times post	-0.000839***	-0.000952 ***	-0.000902***	-0.00116^{***}
7 1	(0.000219)	(0.000234)	(0.000219)	(0.000250)
\mathbb{R}^2	0.758	0.790	0.773	0.749
Panel (d): controlling for m	unicipalities with distar	ncia to capital above the	e median	
$CC \times post$	-0.000779*	-0.00130***	-0.000801*	-0.00158 ***
	(0.000437)	(0.000473)	(0.000421)	(0.000512)
Distance capital \times post	-0.000302	-0.000542 **	-0.000282	-0.000687***
	(0.000223)	(0.000239)	(0.000223)	(0.000254)
\mathbb{R}^2	0.755	0.788	0.769	0.745
Panel (e): controlling for ba	ramilitary attacks			
$CC \times post$	-0.000744*	-0.00199**	-0.000764*	-0.00149***
ee x post	(0.000435)	(0.00122)	(0.000420)	(0.000113)
par 9705 x post	-0.000216	-0.000228	-0.000124	-0.000368
Pm_croo x post	(0.000210)	(0.000265)	(0.000279)	(0.000314)
\mathbb{R}^2	0.755	0.787	0.769	0.743
Observations	1,834	1,834	1,834	1,834

Notes: Robust standard errors in parentheses. All regressions include municipality fixed effects. CC is a dummy that equals 1 for the municipalities that President Uribe visited prior to the event of each one of the columns. Post is a dummy that equals one for the months after each event took place. *is significant at the 10% level, **is significant at the 5% level, ***is significant at the 1% level.

A final reason why these last results are important is that *Consejos Comunales* were broadcast on national TV. Hence, it could be that visits where not chosen merely because of the importance of attracting voters of a given municipality, but voters elsewhere in the country who were especially mobilised by seeing Uribe travel to certain types of municipalities. However, it is also clear that when Uribe travelled to a certain municipality he was sure that he would reach voters in that municipality, whereas reaching voters elsewhere depended on whether or not they tuned in to the broadcast. Hence, even with national broadcasts the responsiveness of voters in the municipalities is an important factor determining Uribe's choice on where to visit. Moreover, if this is a noisy measure of citizen responsiveness, then if anything these should go against us finding significant results. The fact that we do find effects is, therefore, quite reassuring. Of course, if the error with which we measure citizen responsiveness is not random but is actually systematically related to certain municipal characteristics, then our estimates could be biased. Thus, this concern also highlights the importance of the robustness check in Table 11.

4. Concluding Remarks

In this article, we argue that an incumbent politician who is good at undertaking a particular task has an incentive not to complete it fully to maintain his strategic advantage when facing re-election. We examine this idea in a simple model of electoral competition in the context of civil war. In our set-up, the incumbent politician has a comparative advantage in fighting a rebel group while his opponent in an upcoming election does not. Our model implies that, when opportunities to eradicate the guerrilla improve, it is less likely that the incumbent attempts to eradicate the guerrillas, especially in electorally salient places in which voters are more responsive.

Evidence from Colombia, where President Álvaro Uribe (2002–10) was elected (and re-elected) on an explicit platform to fight against the left-wing insurgent guerrilla groups and was widely regarded as 'the man for the job' lends strong support to our predictions. We identify events in the Colombian civil war which correspond to a high probability of defeating the guerrillas, and municipalities where the president believed voters were most responsive. The patterns of government military activity reveal that such activity significantly decreases after each of the major events in electorally relevant places. This result is robust to controlling for differential trends parameterised as functions of municipality-specific characteristics, including those that are correlated with the electoral responsiveness of places, suggesting that it is not driven by omitted variable bias. Moreover, we offer evidence that it is not driven by a reaction to guerrilla activity, by time to build up new military operations, or by army members' incentives. Overall, our results provide compelling evidence in favour of our suggested mechanism.

Appendix A. Analytical Derivations

In this Appendix, we show the detailed calculations and proofs left out of the main text.

A.1. Derivation of Ω , the Election Probability of Politician I

Recall that the indicator variable $B_m=1$ if in municipality *m* the enemy is eradicated, while $B_m=0$ otherwise. Private agents vote for the candidate which gives them the highest expected utility. Then a private agent *j* in municipality *m* supports politician *I* in the election if

$$y + B_m P + (1 - B_m) \alpha q^I P + \sigma^j + \rho_m > y + B_m P + (1 - B_m) \alpha q^O P,$$

or alternatively if, $\sigma^j > -(1 - B_m)\alpha(q^I - q^O)P - \rho - \lambda(C_m^I - C_m^O).$

The number of voters from municipality *m* who supports politician *I*, S_m^I , is then given by

$$S_m^I = \int_{-(1-B_m)\alpha(q^I - q^O)P - \rho - \lambda(C_m^I - C_m^O)}^{\frac{1}{2}s_m} s_m dj = \frac{1}{2} + (1 - B_m)\alpha(q^I - q^O)Ps_m + \rho s_m + \lambda(C_m^I - C_m^O)s_m.$$

The election probability of politician I is given by the probability that at least half of the voters support him:

$$\begin{split} \Omega &= \Pr\left\{\sum_{m=1}^{M}S_m^I \geq \frac{1}{2}M\right\} \\ &= \Pr\left\{\sum_{m=1}^{M}s_m(1-B_m)\alpha(q^I-q^O)P + s_m\rho + \lambda s_m(C_m^I-C_m^O) \geq 0\right\}, \end{split}$$

where the second line follows after inserting for S_m^I . Denoting the average s_m by s, so that $\sum_{m=1}^{M} s_m = sM$, this can be simplified to (3). Since the election probabilities sum to one, the election probability of politician O is given by $1 - \Omega$.

A.2. Proof of Proposition 2

Consider first the case where politician I holds power. Let all eradication decisions in all other municipalities than k be given. Denote by $U_{A_k=1}^I$ the total expected utility of the incumbent when attempting eradication in municipality k (for given eradication decisions in all other municipalities m) and by $U_{A_k=0}^I$ his total expected utility when not attempting eradication in municipality k (for given eradication decisions in all other municipality k (for given eradication decisions in all the other municipalities). A sufficient (but not necessary) condition for an eradication attempt, $A_k^I = 1$, is that $D_k^I = U_{A_k=1}^I - U_{A_k=0}^I > 0$ for all combinations of eradication decisions in other municipalities. A sufficient (but not necessary) condition for an eradication attempt not to be made, $A_k^I = 0$, is that $D_k^I = U_{A_k=1}^I - U_{A_k=0}^I < 0$ for all combinations of eradications of eradication attempt not to be made, $A_k^I = 0$, is that $D_k^I = U_{A_k=1}^I - U_{A_k=0}^I < 0$ for all combinations of eradication decisions in other municipalities. Inserting for (4) in (2), and then inserting for $A_k^I = 1$ when eradication is attempted and $A_k^I = 0$ when it is not, we find

$$D_{k}^{I} = \left[2 - \alpha q^{O} - \frac{h\alpha^{2}(q^{I} - q^{O})^{2} P s_{k}}{sM} \left(M - \alpha q^{I} \sum_{m=1}^{M} A_{m}^{I}\right)\right] \alpha q^{I} P$$

$$- \left\{\frac{1}{2} + h\alpha (q^{I} - q^{O}) P \left[1 - \frac{\alpha q^{I}}{sM} \left(\sum_{m=1}^{M} s_{m} A_{m}^{I} + s_{k}\right)\right]\right\} \alpha^{2} q^{I} (q^{I} - q^{O}) P$$

$$- \frac{h\alpha^{2} q^{I} (q^{I} - q^{O}) P s_{k}}{sM} R.$$
(A.1)

Part (*i*) of Proposition 2 then follows from noting that (for all combinations of possible eradication decisions A_m in all other municipalities *m*) the sign of D_k^I in (A.1) may always be positive or may always be negative. (In particular, it will always be negative for a sufficiently high R and always positive for a sufficiently low h.)

Part (*ii*) of Proposition 2 follows straight forward from (5) in (2), since by this for all combinations of eradication attempts in the other municipalities an eradication attempt in municipality k both increase the probability of peace and also the re-election probability of politician *O*.

A.3. Proof of Proposition 3

From (A.1) we note that 27

$$\frac{\mathrm{d}D_k^I}{\mathrm{d}s_k} = -\frac{h\alpha^2 q^I (q^I - q^O) P}{sM} \left\{ R + \alpha (q^I - q^O) P \left[M - \alpha q^I \left(1 + \sum_{m=1}^M A_m^I \right) \right] \right\} < 0.$$

A.4. Proof of Proposition 4

We use (A.1) to find after some calculations that

$$\frac{\mathrm{d}D_{k}^{I}}{\mathrm{d}\alpha} = \left(2 - \alpha q^{O} - \alpha q^{I}\right)q^{I}P - 3h\alpha^{2}q^{I}(q^{I} - q^{O})^{2}P^{2} + \frac{4h\alpha^{3}(q^{I})^{2}(q^{I} - q^{O})^{2}P^{2}}{sM} \left(\sum_{m=1}^{M} s_{m}A_{m}^{I} + s_{k}\right) - \frac{h\alpha^{2}q^{I}(q^{I} - q^{O})^{2}P^{2}s_{k}}{sM} \left(3M - 4\alpha q^{I}\sum_{m=1}^{M}A_{m}^{I}\right) - \frac{2h\alpha q^{I}(q^{I} - q^{O})Ps_{k}}{sM}R.$$
(A.2)

We note that this may take any sign but that if R is sufficiently high the incentive to eradicate will always decrease (for all combinations of eradication decisions).

A.5. Proof of Corollary 1

Starting with (A.1) and $\alpha = \bar{\alpha}$, we find that in the municipality with the most responsive voters, municipality 1, $D_1^I > 0$ when

$$h < \frac{2 - \bar{\alpha}q^{O} - \frac{1}{2}\bar{\alpha}(q^{I} - q^{O})}{\bar{\alpha}(q^{I} - q^{O})P\left[\begin{array}{c} 1 - \frac{\bar{\alpha}q^{I}}{sM}\left(\sum_{m=2}^{M} s_{m}A_{m}^{I} + s_{1}\right) + \\ \frac{s_{1}}{sM}\left(M - \bar{\alpha}q^{I}\sum_{m=2}^{M}A_{m}^{I}\right) + \end{array} \right] + \frac{s_{1}}{sM}R \right\}}.$$
(A.3)

The right-hand side of this expression is increasing in the number of eradication attempts in other municipalities, A_m^I . Thus, a sufficient condition for an eradication attempt to be made in municipality 1 is that $D_1^I > 0$ even in the (hypothetical) case where there are no eradication attempts in other municipalities. Thus, a sufficient condition for an eradication attempt to be made in all municipalities when $\alpha = \bar{\alpha}$ is that $h < h^*$, with h^* defined by

$$h^{*} \equiv \frac{2 - \bar{\alpha}q^{O} - \frac{1}{2}\bar{\alpha}(q^{I} - q^{O})}{\bar{\alpha}(q^{I} - q^{O})\left[\bar{\alpha}(q^{I} - q^{O})P\left(1 - \frac{\bar{\alpha}q^{I}}{sM} + \frac{s_{1}}{s}\right) + \frac{s_{1}}{sM}R\right]}.$$
 (A.4)

As the numerator and denominator are both positive, it can easily be verified that $h^* > 0$.

²⁷ To avoid unnecessary notation we have here assumed that there are sufficiently many municipalities that a marginal increase in s_k does not affect the average *s*. Obviously the property that $dD_k^I/ds_k < 0$ is independent of this.

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From (A.2) and $\alpha = \bar{\alpha}$ we find that $dD_1^I/d\alpha < 0$ when

$$R > \frac{sM}{2s_{1}h\bar{\alpha}(q^{I}-q^{O})P} \left(2 - \bar{\alpha}q^{O} - \bar{\alpha}q^{I}\right) + \frac{4\bar{\alpha}^{2}q^{I}(q^{I}-q^{O})P}{2s_{1}} \left(\sum_{m=2}^{M} s_{m}A_{m}^{I} + s_{1}\right) - \frac{3sM\bar{\alpha}(q^{I}-q^{O})P}{2s_{1}} - \frac{\bar{\alpha}(q^{I}-q^{O})Ps_{k}}{2s_{1}} \left(3M - 4\bar{\alpha}q^{I}\sum_{m=2}^{M}A_{m}^{I}\right).$$
(A.5)

Thus, for any combination of eradication attempts in other municipalities, when the rents of power *R* are sufficiently high, a larger probability of eradicating the guerrillas always weakens the incentives to eradicate. Now let R^* be defined as the *R* that solves (A.5) with equality for the combination of eradication attempts in other municipalities that maximises the right-hand side of (A.5). Then a sufficient condition for $dD_1^I/d\alpha < 0$ is that $R > R^*$.

Note, however, that since h^* is a function of R, and R^* is a function of h, we must also prove existence, i.e. we must show that $h < h^*$ and $R > R^*$ can always hold simultaneously. To prove existence we first insert for $h = h^*$ in (A.2) with $\alpha = \overline{\alpha}$. A sufficient condition for existence is then that $(dD_1^I)/(d\alpha) < 0$ for a sufficiently high R. Using (A.2) and (A.5) the condition for this reduces after some calculation to

$$2 - \bar{\alpha}q^I > 0.$$

This condition is always fulfilled, and the corollary follows. (Finally, note that we have here proved the corollary with sufficient conditions. Thus, the Corollary may hold even in cases with $h > h^*$ and/or $R < R^*$).

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Additional Supporting Information may be found in the online version of this article:

Data S1.

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