When State Building Backfires: Elite Divisions and Collective Action in Rebellion*

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Abstract

We examine the complementary roles of state weakness, elite divisions, and popular grievances on rebellion. We argue that state-building efforts increase division between local and national elites, which undermines provincial peacekeeping efforts and provides an opening for popular rebellion. For a given level of grievance, revolts from below are therefore more likely to be attempted and more likely to spread in areas where local elites harbor grievances over earlier state-building efforts. We provide support for the theory using subnational data on rebellion, tax centralization, and drought from the late 17th-century to the Mexican War of Independence. We show that droughts led to peasant uprisings throughout the late colonial period, but it was not until the weakening of national institutions following the fall of the Bourbon dynasty in 1808 that these uprisings grew into a large-scale insurgency. Insurgent mobilization during the Independence War was more likely in drought-affected areas that had higher exposure to the Bourbon centralization of tax collection, which reduced the rents available to the local elite and thus elite loyalty to the government.

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1. Introduction

Subsistence crises are a powerful motivation for political unrest from below (Scott 1976; Tutino 1986; Miguel 2005; Dell 2012). However, as has been long recognized, popular grievances alone are not sufficient to explain rebellion. Severe droughts and famines are often accompanied by little to no unrest, while a relatively minor shock during a critical period can lead to large-scale insurgency. As numerous scholars have noted, whether localized crises spill over into large-scale violence depends critically on whether there is a political opening for revolt brought on by state weakness, elite divisions, or other forces (Moore 1966; Wolf 1969; Tilly 1978). In this paper, we examine how state-building efforts, intended to raise revenue and strengthen the government's hold over territory, can perversely increase vulnerability to low-level shocks by creating divisions between elites and the central government, thus opening up opportunities for generalized revolt.

Building on classic and contemporary theories of collective action and repression, we advance a theory of rebellion that focuses on the role of local elites as intermediaries between the popular masses and national institutions. In contexts where the state relies on local elites to maintain political order, government efforts to strip these intermediaries of economic or political power can make central rulers more vulnerable to political unrest from below during times of subsistence crisis. In determining whether to invest in repressive activities, elites weigh the anticipated costs of peacekeeping against any benefit that they receive from siding with the government. If commoners sense that local elites are dissatisfied with the central ruler, they anticipate that these intermediaries may shirk on peacekeeping, reducing the cost of revolt during a crisis. This in turn raises the expected cost of repression for elites and decreases their confidence that the government can survive the shock. Small and localized uprisings that may be easy to contain in other circumstances can thus spread into a broader political crisis that threatens the survival of the central ruler. This prospect may be especially dangerous when the central government is weakened by other factors, such as during an external conflict, further reducing resilience to shocks.

While there are many potential sources of discord between local elites and the central government, state-building efforts—investments in strengthening a state's fiscal capacity—represent an important set of policies that may target elite interests. Many scholars have noted that strong and centralized states are better able to control territory, establish peace, and provide the institutional foundation necessary to encourage development (Fearon and Laitin 2003; Dincecco and Katz 2014; Acemoglu, Garcia-Jimeno and Robinson 2015). However, the consolidation of state authority often entails stripping power and influence from local elites or traditional authorities who may be the first line of defense against popular uprising (North, Wallis and Weingast 2009; Besley and Persson 2009; Garfias 2018; Garfias and Sellars 2018). Our theory highlights how state-building efforts can backfire. Though these policies can increase state capacity over the long term, they also reduce the state's resilience to localized shocks in the short term by sowing discord among elite intermediaries and therefore providing an opening for generalized rebellion.

We provide empirical support for the theory using subnational evidence on localized rebellion and generalized insurgency in late colonial Mexico. During the late 18th century, the Spanish Crown undertook a series of reforms aimed at centralizing control over the Empire, including an important tax reform that stripped provincial elites of the ability to extract rents from local taxpayers. This reform angered elites during a time of renewed peasant unrest in the countryside. In line with our theory, we find that small-scale peasant revolts were more likely during localized droughts, but that these shocks did not lead to large-scale unrest until after the weakening of royal authority due to the Napoleonic invasion of Spain in 1808. This political crisis, which occurred alongside a famine in much of the country, precipitated the Hidalgo revolt, which began Mexico's War of Independence. However, the outbreak of violence was not uniform across the colony. We show that insurgent violence was concentrated in regions where elites had been disproportionately affected by the earlier state-building efforts. Though the centralization of tax collection increased revenue collection and bureaucratic control, these reforms also left the Crown vulnerable to elite defections and peasant revolt during this time of crisis.

Our paper contributes to several literatures on the political economy of protest and revolution. Most directly, we build on classic work on the economic and structural factors leading to peasant rebellion (e.g., Moore 1966; Wolf 1969; Paige 1975; Scott 1976). Like much of this literature, our theory focuses on the interplay between peasant subsistence shocks and broader political opportunity structures that can amplify or diminish the possibility of rebellion. Peasants' motivations for revolt are often based on localized factors unrelated to national political conflict. However, even severe local grievances may not lead to revolt in the absence of factors that facilitate or encourage collective action (e.g., Moore 1978; Tilly 1978; Wood 2003). By focusing on the interaction between the strategic problems of elite coordination and peasant revolt, our model highlights how national politics can influence highly localized collective action and vice versa. This connection is critical to understanding why highly localized aspects of the peasant economy, such as temporary drought shocks, can have repercussions for elite coordination, and why peasant villages with little interest in broader political struggles may look to shifts in national politics when determining how to respond to temporary crises.

More narrowly, this paper contributes to two influential strands of the contemporary literature on conflict. The first of these is the large and growing literature on climate shocks and rebellion (e.g., Miguel, Satyanath and Sergenti 2004; Dell 2012; Dube and Vargas 2013). As in much of this literature, we show that temporary shocks to the peasant economy that reduce the opportunity cost of conflict, such as droughts, are destabilizing. However, we extend this analysis both theoretically and empirically in several ways. Our model clarifies why the consequences of drought shocks on conflict may be contingent on national and elite politics, and offers an explanation for why most observed climate shocks do not lead to rebellion, while slight shocks during a political crisis can have wide-ranging effects. Furthermore, our work highlights an additional channel through which drought shocks or similar climate fluctuations can have political consequences. Because climate shocks tend to be correlated (e.g., Dell, Jones and Olken 2014), they also provide information about conditions elsewhere, and can thus play an important and overlooked strategic role beyond their direct effects

on peasant opportunity costs. In a setting where there may be important political spillovers or coordination problems between regions (as the elites face in our model), this informational channel can amplify the direct effects of a weather shock on the propensity to rebel by raising expectations that other regions will rise up as well.

The second contemporary literature we contribute to is formal theoretic work on coordination and regime change under incomplete information, most directly work using global-games or similar modeling strategies (e.g., Bueno de Mesquita 2010; Edmond 2013; Boix and Svolik 2013; Cooper and Tyson 2014; Passarelli and Tabellini 2017; Gehlbach and Finkel 2018; Sellars n.d.; Tyson and Smith 2018). Our model builds most directly on work examining the strategic interplay between elites and commoners in collective action (e.g., Bueno de Mesquita 2010; Cooper and Tyson 2014) and examining spillovers between national and localized patterns of grievance and revolt (e.g., Passarelli and Tabellini 2017; Gehlbach and Finkel 2018). Like this work, our model places information and coordination across regions and between elites/commoners at the center of analysis, but the mechanisms we emphasize are somewhat different, focusing in particular on the role of elite intermediaries as peacekeepers. Our model provides additional insight into how elite concerns can influence peasant collective action and viceversa, even when the motivations of these actors are fundamentally distinct.

Beyond conflict, the paper also contributes to our understanding of the risks to political stability posed by state building efforts. Past work has offered a rationale for the observed pervasiveness of low-capacity states based on intra-elite conflict (North, Wallis and Weingast 2009; Besley and Persson 2009; Garfias 2018). Efforts to strengthen state capacity can benefit central rulers, but might also shift the existing balance of power away from powerful elites, and thus disrupt existing political equilibria. Our model illustrates one important way in which these efforts, by inducing elite backlash, can backfire and threaten incumbent rulers. On its own, elite backlash is not enough in our model to deter state-building efforts; commoner uprisings, induced by subsistence crises, provide an opportunity for disgruntled elites to coordinate against the ruler. Thus, the argument we

present can also rationalize observed failed state-building efforts, since rulers may still find these efforts to be ex-ante appealing.

Finally, our paper contributes to work on the causes of Mexico's War of Independence. This work has highlighted explanations at three different levels of analysis: imperial weakness in the wake of the Napoleonic Invasion (e.g., Rodríguez 1998), regional conflicts between disaffected elites and the central government (e.g., Hamnett 1986; Pietschmann 1991), and peasant crises related to the drought and famine of 1808 (e.g., Florescano 1969; Tutino 1986). In addition to providing rigorous empirical evidence on each of these explanations, our theory formally integrates all three and illustrates how they relate to one another.

The remainder of the paper proceeds as follows. In Section 2, we present our theoretical model and derive the comparative statics. In Section 3, we examine the empirical support for the model in the context of small- and large-scale rebellions in late colonial Mexico. We follow with a broader discussion of the scope conditions of the theory in Section 4. We conclude in Section 5.

2. A Theory of Elite Divisions and Collective Action in Rebellion

Our theory builds on the observation that state-building efforts, though designed to consolidate fiscal or bureaucratic control over a territory, can generate instability by disrupting existing power relationships (North, Wallis and Weingast 2009; Besley and Persson 2009; Garfias 2018). Governance arrangements in weakly institutionalized states often depend on the cooperation of elite intermediaries—local warlords, traditional leaders, or members of the aristocracy—to maintain control over the population. These arrangements can benefit both a central ruler and the intermediaries themselves—if provincial elites are more able to effectively monitor and coerce the local population, a ruler may decide to delegate the task of governing territory to them in exchange for a share of government revenues or other rents from the center (Gerring et al. 2011; Naseemullah and Staniland 2016; Garfias and Sellars 2018). Efforts to centralize authority may strip these elites of important sources of revenue and power, undermining their loyalty to the central government and increasing the attractiveness of defection.

State-building is not the only possible source of elite dissatisfaction with the central ruler, and the model we describe below could be generalized to other sources of elite disloyalty. Our focus, however, is on how efforts to centralize control can have downstream effects on generalized revolt. Elite defection against a central ruler can take the form of outright rebellion against the center, but it may also play a more subtle rule in shaping patterns of uprising among commoners. In contexts where elites act as the first line of defense against generalized revolt, state-building efforts that affect elite loyalty to the central ruler can reduce intermediaries' investment in repressive activities. This lowers the cost of rebellion for commoners, making the state more vulnerable to revolt from below during times of crisis. This is true even when the crisis among commoners is unrelated to state-building efforts themselves.

2.1 Model setting

The model is a simultaneous game of incomplete information. We consider a society consisting of a continuum of districts of mass one, indexed by i, and a central government, which is unmodeled. Each district contains a representative elite (E) and a representative peasant[1] village (P). The peasant village in the district faces the option of whether to collectively rebel (v_i=1) or not (v_i=0). Elites in the district face the option of whether to side with the government and put down local rebellion ($e_i = 1$) or whether to defect and shirk on their repressive activities ($e_i = 0$).

If peasants choose to rebel, they receive some benefit $\beta > 0$. This benefit can include goods seized during rioting, feelings of belonging, or other benefits held only by those who join in the action (e.g., Wood 2003; Passarelli and Tabellini 2017). Peasant mobilization is also costly. If the local elite chooses to side with the government and enforce local order (i.e., if $e_i = 1$), peasants participating in collective action must pay a punishment cost $\tau > 0$. When peasants choose to participate in collective action, they also pay an opportunity cost, which can be high or low, $\omega_i \in \{\omega_L, \omega_H\}$, where $\omega_L < \omega_H$. In an agrarian society, ω_L could include negative shocks such as a drought, which lowers

[1] We use "peasant" as the term for non-elite actors in the theory as our empirical focus is on an agrarian society. However, we believe that the theory extends beyond agrarian societies to other contexts, as we discuss below.

the marginal value of labor in the subsistence sector and reduces the relative cost of conflict (e.g., Miguel, Satyanath and Sergenti 2004; Dell 2012; Dube and Vargas 2013). More generally, ω_i could also be thought of as the inverse of peasant grievances.

The realization of ω_i is observed by both local peasants and elites in district i at the beginning of the game. We assume that local conditions are generated by some society-wide state of the world Ω, which is chosen by Nature. During normal conditions, Ω_N, the probability of receiving $\omega_i = \omega_L$ is p (and probability of $\omega_i = \omega_H$ is $1-p$). During crisis years, Ω_C, $q > p$ districts receive $\omega_i = \omega_L$ and $1-q$ receive ω_H. Let that the baseline probability that $\Omega = \Omega_C$ be r. We assume that $\beta - \tau < \omega_L < \omega_H < \beta$, so that all peasants may choose to rebel if the probability of repercussions is sufficiently low.[2]

The elites' choice of whether to remain on the side of the government or to defect depends on their idiosyncratic level of loyalty to the government, θ_i, which is also revealed at the beginning of the game. This parameter can be interpreted as a composite of an elite's status-quo payment and his attachment to the regime.[3] Elite loyalties are correlated across districts. Specifically, idiosyncratic elite loyalties θ_i are uniformly distributed on $[\theta - \delta, \theta + \delta]$, where θ, the average level of loyalty of elites to the government, is unknown. Prior beliefs of all actors are that θ may take on any value on $\mathbb{R}$ with equal probability.[4] Elites privately observe their individual θ_i, and from this form beliefs about average conditions. In particular, the posterior belief of an elite with loyalty θ_i is to treat θ as distributed $Unif[\theta_i - \delta, \theta_i + \delta]$. Peasants do not directly observe local elite loyalty θ_i. However, they receive a signal s_i where $s_i \sim Unif[\theta_i - \sigma, \theta_i + \sigma]$. Given their uninformative prior, peasants' posterior beliefs are to treat θ_i as a random variable distributed $Unif[s_i - \sigma, s_i + \sigma]$. We assume that the realization of elite loyalties is independent of the realization of peasant opportunity costs ω_i.

[2]The comparative statics we derive on opportunity costs would be amplified if $\omega_H > \beta$ (no peasants rebel during good conditions), $\omega_L < \beta - \tau$ (all peasants rebel during bad conditions), or both.

[3]Note that θ_i is not restricted to be positive. A negative θ_i could be thought of as harboring grievances against the government or as having an affinity for rebels.

[4]If the assumption of complete prior ignorance seems strong, an alternative is to think of θ as a deviation from average elite loyalty.

Elites choosing to side with the government must engage in peacekeeping activities in their districts. The cost of putting down the rebellion is $\mu > 0$ if local peasants rebel (i.e., $p_i = 1$) and 0 otherwise. If an elite decides to defect, he does not need to pay this cost of peacekeeping.[5] However, if he defects and the central government survives, he pays a punishment cost of $\pi > 0$ for his defection. Note that because elite decision-making is based on the relative benefits of cooperation with or without defection against the regime, π also includes benefits paid to cooperating elites, whenever the government survives. Let h represent the mass of elites who defect (i.e., those choosing $e_i = 0$). We assume that the central government falls if enough elites defect (if h exceeds some exogenous threshold k, representing the strength of the regime). We assume that this threshold k is common knowledge.

A summary of payoffs is as follows. Peasants will rebel if the expected benefit of doing so is higher than the expected cost, or if:

$$\beta - \tau \mathbb{1}\{e_i = 1\} > \omega_i \tag{2.1}$$

where β is the benefit of collective action, τ is the cost of collective action if the rebellion is put down, $\mathbb{1}\{e_i = 1\}$ is an indicator function taking the value 1 if the elite sides with the government and 0 otherwise, and ω_i is the peasant opportunity cost. The peasant village forms expectations about the likely actions of elites based on their signal s_i of the local elite's loyalty θ_i and based on the direct observation of local conditions ω_i. Taking expectations, the expected benefit of rebelling relative to not rebelling is:

$$\beta - \tau Pr(e_i = 1 | s_i, \omega_i) - \omega_i \tag{2.2}$$

Likewise, elites will choose to side with the government if the expected value of doing so is higher than the expected cost, or if:

$$\theta_i - \mu \mathbb{1}\{v_i = 1\} > -\pi \mathbb{1}\{h \leq k\} \tag{2.3}$$

[5] It is possible that a local elite may bear other costs from peasant rebellion through looting, vandalism, or the threat of violence. To incorporate these additional costs, the parameter μ captures the cost of repression relative to inaction in the face of peasant revolt.

where θ_i is the idiosyncratic benefit of remaining loyal to the government, μ is the cost of putting down rebellion locally, and π is the punishment of defection should the government survive. The indicators $\mathbb{1}\{v_i = 1\}$ and $\mathbb{1}\{h \leq k\}$ take the value 1 if the peasants choose to rebel and if the government survives respectively and 0 if not. While both v_i and h are endogenous, an elite forms beliefs about the likely actions of the local peasantry and of the elite in other regions based on his observations of θ_i and ω_i. Thus, the expected relative benefit of siding with the government is:

$$\theta_i - \mu Pr(v_i = 1|\theta_i, \omega_i) + \pi Pr(h \leq k|\theta_i, \omega_i)) \tag{2.4}$$

2.2 Analysis

We solve for the unique Bayesian Nash Equilibrium of this game. We do this in the following steps. We first establish that both the expected relative benefit of rebellion for peasants and the expected relative benefit of defection for elites are strictly decreasing in local elite loyalties and local peasant opportunity costs. We then solve for the threshold levels of θ_i and s_i where elites and peasants will be indifferent between their two possible actions, given ω_L or ω_H. Given that this is a global game (the expressions of relative benefits both exhibit two-sided limit dominance and strategic complementarity), the "cutpoint" equilibrium that we derive is unique (Morris and Shin 2003).

Consider the elites' payoff function in Equation 2.3. For high enough θ_i (i.e., $\theta_i > \mu$), the elite will side with the government, regardless of what he expects either the local peasantry or other elites to do. Conversely, for low enough θ_i (i.e., $\theta_i < -\pi$), the elite will choose to defect even if he believes that he will be punished for his actions and that he will face no local peacekeeping cost. For moderate levels of θ_i, an elite's best response depends on the expected actions of peasants and elites in other districts ($Pr(v_i = 1|\theta_i, \omega_i)$ and $Pr(h \leq k|\theta_i, \omega_i)$).

Turning attention to the peasants, all peasants will rebel if the expected probability of elite repression, $Pr(e = 1|s_i, \omega_i)$, is sufficiently low and will choose not to rebel otherwise. Equation 2.2 implies that a peasant village is indifferent between rebelling and not when:

$$Pr(e_i = 1|s_i, \omega_i) = \frac{\beta - \omega_i}{\tau} \tag{2.5}$$

By the assumption that $\omega_L < \omega_H$, this expression is smaller when $\omega_i = \omega_H$, indicating that peasants need greater assurance that elites will not repress before they decide to rebel. Peasants form beliefs about the likelihood that elites will side with the government based on observing ω_i and their signal s_i. Given the signal-generating process for s_i, observing a higher s_i implies a higher level of local elite loyalty on average, and thus a higher likelihood that elites will side with the government. If s_i is high enough, given opportunity costs ω_i, peasants will choose not to rebel as the threat of repression is too great. If s_i is low enough given ω_i, the expected probability of elite reprisal is low enough that peasants will choose to rebel. This implies a cutpoint strategy where peasants rebel only if s_i is low enough given ω_i. Let $\bar{s}(\omega_i) \in \{\bar{s}_H, \bar{s}_L\}$ represent the cutpoint signals for those with high and low opportunity costs respectively, where $\bar{s}_H < \bar{s}_L$ by expression 2.5.

Given the signal-generating process, upon seeing s_i, the peasants' strategy is to treat $\theta_i \sim Unif[s_i - \sigma, s_i + \sigma]$. If $s_i - \sigma > \mu$, the peasants know that the elite will side with the government with certainty and do not rebel. By contrast, if $s_i + \sigma < -\pi$, the peasantry knows that the local elite will defect and thus decide to rebel. For middle values, the cutpoint strategy implies that the peasantry rebels only if $s_i \leq \bar{s}(\omega_i)$. The peasants' strategy as a function of s_i and θ_i is therefore:

$$p_i = \begin{cases} 0 & \text{if } s_i > \mu + \sigma \text{ or if } s_i \in [-\pi - \sigma, \mu + \sigma] \text{ and } s_i > \bar{s}(\omega_i) \\ 1 & \text{if } s_i < -\pi - \sigma \text{ or if } s_i \in [-\pi - \sigma, \mu + \sigma] \text{ and } s_i \leq \bar{s}(\omega_i) \end{cases} \tag{2.6}$$

For elites with especially high and low values of θ_i, the unique best response is to side with the government or defect respectively, regardless of what peasants and other elites are expected to do. For elites with $\theta_i \in [-\pi, \mu]$, the best response depends on the anticipated actions of others. Given the cutpoint strategy employed by peasants, where peasants rebel given sufficiently low signal s_i, and the signal-generating process for s_i, the expression $\mu Pr(v_i = 1 | \theta_i, \omega_i)$ is declining in θ_i. In addition, given the correlation of elite loyalties across society, observing a high level of θ_i implies higher elite loyalty on average in other regions. If θ_i is sufficiently high, the elite believes that all other elites will side with the government and none will defect ($h = 0$). If θ_i is sufficiently low,

the elite believes that no elites will side with the government ($h = 1$). In between, the expression $\pi Pr(h \leq k|\theta_i, \omega_i))$ is increasing in θ_i: more elites are expected to remain loyal, so fewer defect.

Turning attention to peasant opportunity cost ω_i, we can see that, for $\theta_i \in [-\pi, \mu]$, elite's best response depends on peasant conditions. Though ω_i does does not enter elite preferences directly, it influences both the propensity of peasants to rebel ($\bar{s}_H < \bar{s}_L$) and it influences the posterior belief that other elites are facing likely rebellion in their districts. In particular, given the prior belief that $Pr(\Omega = \Omega_C) = r$ and given that $Pr(\omega_L|\Omega_C) = q$ and $Pr(\omega_L|\Omega_N) = p$, the posterior belief that $\Omega = \Omega_C$ given that $\omega_i = \omega_L$ is $Pr(\Omega_C|\omega_L) = \dfrac{qr}{qr + p(1-r)}$, and given that $\omega_i = \omega_H$ is $Pr(\Omega_C|\omega_H) = \dfrac{(1-q)r}{(1-q)r + (1-p)(1-r)}$. Note that $Pr(\Omega_C|\omega_L) > Pr(\Omega_C|\omega_H)$ by the assumption that $p < q$. This implies that the posterior belief is that a higher fraction of elites is facing disadvantageous rebellion conditions at home, lowering expectations about the proportion likely to side with the government.

Together, these features of preferences suggest a cutpoint strategy for elites as well, where the elite will side with the government if his loyalty θ_i is sufficiently high relative to the observed ω_i. We call these cutpoint signals $\bar{\theta}(\omega_i) \in \{\bar{\theta}_L, \bar{\theta}_H\}$. For elites, this threshold level rises when $\omega_i = \omega_L$, as siding with the government implies greater risk. The best response of elites is thus:

$$e_i = \begin{cases} 1 & \text{if } \theta_i > \mu \text{ or if } \theta_i \in [-\pi, \mu] \text{ and } \theta_i \geq \bar{\theta}(\omega_i) \\ 0 & \text{if } \theta < -\pi \text{ or if } \theta_i \in [-\pi, \mu] \text{ and } \theta_i < \bar{\theta}(\omega_i) \end{cases} \tag{2.7}$$

We solve for the peasant and elite cutpoints, beginning with the peasants' problem.

A peasant is indifferent between rebelling and not when equation 2.5 is satisfied, given ω_i. Conditional on the local elite's strategy in expression 2.7 and the posterior belief of peasants that $\theta_i \sim Unif[s_i - \sigma, s_i + \sigma]$, the subjective probability that the local elite will side with the government given s_i and ω_i is:

$$P(e_i = 1|s_i, \omega_i) = \begin{cases} 1 & \text{if } s_i > \mu + \sigma \\ \dfrac{s_i + \sigma - \bar{\theta}(\omega_i)}{2\sigma} & \text{if } s_i \in [-\pi - \sigma, \mu + \sigma] \\ 0 & \text{if } s_i < -\pi - \sigma \end{cases} \tag{2.8}$$

We concentrate on the interior case, noting that peasants' unique best response is to always rebel when $s_i < -\pi - \sigma$ and to never rebel when $s_i > \mu + \sigma$, regardless of ω_i. In other cases, a peasant is indifferent between rebelling and not when:

$$\frac{\bar{s}(\omega_i) + \sigma - \bar{\theta}(\omega_i)}{2\sigma} = \frac{\beta - \omega_i}{\tau} \tag{2.9}$$

solving for the cutpoint signal given ω_i yields:

$$\bar{s}(\omega_i) = \frac{2\sigma(\beta - \omega_i)}{\tau} - \sigma + \bar{\theta}(\omega_i) \tag{2.10}$$

which depends on ω_i directly and indirectly (i.e., through $\bar{\theta}(\omega_i)$).

We use expression 2.10 to solve for the cutpoint strategy of elites as a function of parameters of the model. Again, we focus on interior solutions, noting that elites will always side with the government when $\theta_i > \mu$ and will never side with the government when $\theta_i < -\pi$. An elite at the cutpoint is indifferent between defecting and not when:

$$\bar{\theta}(\omega_i) - \mu Pr(v_i = 1 | \bar{\theta}(\omega_i), \omega_i) = -\pi Pr(h \leq k | \bar{\theta}(\omega_i), \omega_i)) \tag{2.11}$$

The peasants' strategy is to rebel if $s_i \leq \bar{s}(\omega_i)$. The local elite knows that the peasants are receiving a noisy signal of his own level of loyalty θ_i, where $s_i \sim Unif[\theta_i - \sigma, \theta_i + \sigma]$. He directly observes ω_i and therefore knows the favorability of peasant conditions. Given expression 2.10, for the elite at the cutpoint $\bar{\theta}(\omega_i)$, the subjective probability he will be facing a peasant revolt is therefore:

$$Pr(v_i = 1 | \bar{\theta}(\omega_i), \omega_i) = \frac{\bar{s}(\omega_i) - (\bar{\theta}(\omega_i) - \sigma)}{2\sigma} = \frac{\beta - \omega_i}{\tau} \tag{2.12}$$

using expression 2.10 and cancelling terms. This expression is decreasing in ω_i, indicating that the probability of revolt is lower when peasant opportunity costs are higher. Plugging this into the indifference equation, we have that elites are indifferent between defecting and not when:

$$\bar{\theta}(\omega_i) - \frac{\mu(\beta - \omega_i)}{\tau} = -\pi Pr(h \leq k | \bar{\theta}(\omega_i), \omega_i)) \tag{2.13}$$

Note that the cutpoints for elites observing ω_L and ω_H will differ. This is for two reasons. First, elites in regions with low (high) peasant opportunity costs expect to face more (less) rebellion at home, which determines the expected cost of peacekeeping. Second, elites update their beliefs about the probability that society is facing a generalized subsistence crisis (and thus the probability

that other elites will be facing a rebellious peasantry) on the basis of observing local conditions. Because peasant opportunity costs are correlated, observing droughts or other subsistence shocks at home increases the elite's subjective probability that elites in other districts will defect. This further increases the relative benefits of defection over remaining loyal.

In Appendix A, we solve for the two cutpoints, $\bar{\theta}_L$ and $\bar{\theta}_H$ as explicit functions of the parameters of the model. Using these expressions, we then solve for the cutpoint signals for peasants with high (ω_H) and low (ω_L) opportunity costs respectively. We then derive comparative statics to motivate our empirical analysis in Appendix Section A.2.

2.3 Summary of Comparative Statics

We summarize and provide some intuition for the main model predictions below:

- The probability of elite defection is decreasing in the local level of elite loyalty or status quo payoff θ_i. This is for both direct and indirect reasons. Directly, the level of loyalty or status quo payoff determines the willingness of elites to participate in peacekeeping efforts or to defect. Indirectly, peasants receive signals of the local elite's level of satisfaction or dissatisfaction with the government. In equilibrium, the elite knows that peasants are more likely to rebel when they perceive an elite to be less loyal to the government.
- Peasants become more likely to rebel if local peasant conditions ω_i decline. This is both because they hold greater grievances and because of the possibility of elite defections. For elites with moderate levels of loyalty/disloyalty, elites become more likely to defect as peasant conditions deteriorate. This is for two reasons. First, the probability of having to engage in costly peacekeeping activities increases. Second, upon observing $\omega_i = \omega_L$, they update their beliefs about the possibility that elites' in other regions will be facing costly local peasant rebellions and will choose to defect. Because drought shocks are correlated, seeing drought makes elites think that others may be tempted to defect from the government.
- Both elite defection and peasant rebellion are increasing in the benefits of collective action β and decreasing in the costliness of repression for peasants τ.

- A weakened government (i.e., one where k is lower) will lead to more elite defections as defectors are less likely to be punished. While peasants' preferences depend only on local conditions, they also become more likely to rebel as the central government becomes weaker because this makes it less costly for elites to shirk on their peacekeeping duties.

We evaluate these predictions in the remainder of the paper.

3. Empirical Evidence

Our theory highlights the interplay between localized peasant grievances, idiosyncratic elite loyalties, and national political stability in rebellion. In this section, we discuss how the theory sheds light on instances of unrest (and lack of unrest) in places where the scope conditions for the theory are met: a weak central government which relies on local notables to guarantee order, and a large population of commoners vulnerable to subsistence shocks.

3.1 Rebellion in Late Colonial Mexico

As in many contexts, scholars have struggled to explain temporal and spatial patterns of peasant uprisings in Mexico. The motivation for peasant participation in these revolts is a puzzle. As historian John Tutino notes, "Ultimately, peasants rarely win. They neither become the ruling elite, nor force existing elites to rule primarily in the peasants' interests" (1988, p. 95). Moreover, the periodic waves of rural revolts in Mexican history are poorly explained by classic grievance-based theories of mobilization. Central Mexico experienced over two centuries of relative political calm following the Conquest, despite high levels of oppression, violence, and famine in rural communities and despite the massive overhaul of political and economic institutions that took place under colonial rule (Tutino 1986; Coatsworth 1988; Katz 1988, p. 77). It was not until the 18th century, alongside a major push to centralize and strengthen Crown control of the Empire, that unrest began to increase in the Mexican countryside.

Several reasons have been proposed for the relative absence of agrarian conflict in the 200 years following the Conquest. The devastation of Mexico's indigenous population, a decline of upwards

of 90% according to some estimates (e.g., Cook and Borah 1971; Knight 2002), undermined traditional institutions that had facilitated peasant collective action, leaving survivors "demoralized and disorganized" (Katz 1988, p. 80). In addition, efforts by the Church and the Crown to protect the indigenous population—a target of evangelization efforts and an important source of tribute revenue—may have reduced the threat of revolt by increasing the legitimacy of colonial rule and providing institutional mechanisms for challenging elite excesses through courts and other legal channels (Katz 1988; Franco-Vivanco 2017). This situation began to change at the beginning of the 18th century as the indigenous population rebounded. This increased pressure on scarce resources and exacerbated grievances while the collective capacity for revolt was rising through improved social organization (Tutino 1986; Katz 1988; Van Young 1981).

The economic and political shifts associated with Bourbon state-building efforts themselves also had destabilizing consequences, as our theory would predict. During the 1700s, the Bourbon monarchy embarked on a series of reforms aimed at modernizing and centralizing the administrative state. The reforms were broad in scope,[6] and they succeeded in modernizing the colonial state and economy in many respects. However, these policy changes had important intended and unintended consequences for both peasant grievances and elite loyalties to the Crown. New Spain saw a return to economic growth with booms in the mining and commercial sectors (Doblado and Marrero 2011), which, though perhaps beneficial in the aggregate, was also accompanied by widening class divides (Challú 2010). The boom also precipitated a series of crises in the subsistence sector as more agricultural land was diverted to feeding growing cities at the expense of the countryside (Tutino 1986, p. 61–2). The economic and demographic expansion brought about by the reforms thus exacerbated grievances in some sectors despite high levels of overall growth.

Importantly, the Bourbon's modernizing reforms also came at the expense of regional elites. The

[6]Reforms included a reorganization of the military and the subnational administration of the territory through the introduction of *intendencias*; the suppression of office-selling and a staffing policy for colonial high offices that privileged peninsular Spaniards over American-born creoles; the implementation of free trade policies within the Empire; and the restructuring of the tax administration, among others (Brading 1971; Pietschmann 1991; Stein and Stein 2003; Marichal 2007).

reforms were designed to centralize state authority, stripping power from local potentates who had enjoyed de facto autonomy under Hapsburg rule (Rodríguez 1998; Mahoney 2010). Consolidating administrative functions like tax collection in the state administrative apparatus deprived elites of the rent-seeking opportunities that they had previously enjoyed through privatized institutions like tax farms or charters. While effective at building state capacity by many measures—notably in increasing revenue to the Crown, as we discuss in Section 3.2—the centralization efforts also weakened the political loyalty of many local elites that had profited from decentralized rent-seeking arrangements.[7] This was dangerous from the perspective of social stability. In 18th-century Mexico, as in many other contexts, provincial elites financed and organized the local militias and other repressive institutions that the central government relied on to maintain political order (Archer 1987). Royal officials were thus dependent on constructing an "alliance for repression" with local elites during times of crisis (Tutino 2011, p. 237). By driving a wedge between elites and the central government, state-building efforts raised the possibility that angered intermediaries might defect on their side of the repression contract.

The theory in Section 2 develops the broader implications of creating cleavages—or perceived cleavages—between elites and the central government. A peasant's decision to rebel depends not only on local opportunity costs or grievances but also on the perceived repercussions of mobilization. If peasants believe that elites may choose not to repress an uprising, this lowers the expected costs of rebellion. This may explain why peasant revolts in Mexico tended to coincide with conflicts between local elites and central or higher-level authorities, going back to the pre-Columbian era (Katz 1988). The strategic interaction between elites and the peasantry may also help to explain why the 18th century, a time of general economic and demographic increase, also saw a renewed wave of peasant mobilization.

[7]The Crown, anticipating resistance to some of these state-building reforms, allowed the mining elite to organize into the Mining Tribunal. Through this corporation, the mining elite was able to protect their economic interests, which enabled the Crown to credibly commit not to overextract the mining sector with its newly gained fiscal capacity (Garfias 2019). This type of arrangement, however, did not materialize for other elite groups outside of the mine owners in the wake of the *alcabala* reform.

Though 18th-century peasant revolts may have coincided with higher-level political conflicts, the evidence suggests that they were not aimed at effecting large-scale change. Colonial Mexico experienced a handful of larger rebellions during this time—notably the Tzeltal Revolt and Canek's Revolt in the south—but almost all cases of unrest were limited in scope and short in duration (Florescano 1969; Tutino 1986; Coatsworth 1988; Katz 1988). Most revolts were restricted to a single community and usually only lasted a day or two (Taylor 1979, p. 114; Tutino 1986, p. 42). The grievances expressed during the uprisings were highly local, often related to anger at perceived encroachment on village lands, at changes in taxation rates, or at renewed tax enforcement (Taylor 1979; Katz 1988). In his influential study of late colonial rebellions, Taylor (1979, p. 114) describes these events as "localized mass attacks, generally limited to restoring a customary equilibrium" as opposed to aiming for revolutionary change.

Though small in size and scope, these rebellions were not unrelated to grievances. Our theory suggests that, for a given level of government strength and elite loyalty to the Crown, rebellion should be more likely where peasant opportunity costs are lower (represented by ω_i in the model). Moreover, the threshold opportunity cost that is necessary to induce a rebellion should be lower where elite loyalties, as well as government strength, are weaker. To examine these predictions in the context of peasant rebellion in late colonial Mexico, we identify and digitize peasant uprisings in central Mexico and Oaxaca from 1680 to 1810 using the list presented in Taylor (1979), based on his archival work. We supplement these data with information on insurgent activity and mobilization during Mexico's War of Independence (1810–1821) from Ortiz Escamilla (2014). We aggregate the data to the district level, the territorial administrative unit in place by 1786, using the information in Gerhard (1993*a*). This allows us to use covariates from other sources in our analysis.

As our measure of peasant opportunity costs, we examine temporal and spatial variation in drought conditions. In an agrarian society like Mexico in the 18th and early 19th centuries, severe drought led to crop failure (e.g., Florescano 1976; 1995). This lowered peasants' opportunity cost

of participating in an uprising and increased grievances.[8] Our drought data come from Cook and Krusic (2004), who estimate drought for a series of grid points in North America using tree-ring chronologies. These data are recorded in terms of the Palmer Drought Severity Index (PDSI), a common measure of soil moisture that is standardized to measure deviations in local conditions, where negative values correspond with drier-than-average conditions and positive values with wetter-than-average conditions. We rasterize these data using inverse distance weighting between grid points and then spatially extract the minimum and space-weighted average PDSI within each district-year.[9]

To examine the relationship between drought and peasant uprisings, we first estimate:

$$Rebellion_{i,t} = \beta_0 PDSI_{i,t} + \Theta_t X_i + \Pi U_{i,t} + \lambda_t + \gamma_i + \varepsilon_{it}, \tag{3.1}$$

where $Rebellion_{i,t}$ indicates any uprising in district i in year t; $PDSI_{i,t}$ is the space-weighted average PDSI; λ_t and γ_i represent year and district fixed effects; and $\varepsilon_{i,t}$ is an error term. As control variables, we include $U_{i,t}$, the standard deviation of the district's PDSI (a measure of climatic variation), and X_i, a vector of time-invariant covariates interacted with each year. This vector includes geographic variables (elevation, surface area, whether the district is in a malarial zone, and distance to Mexico City, and maize suitability) that may have had a differential effect on the probability of rebellion over time. Elevation and distance data were calculated based on information from the Mexican National Institute for Statistics and Geography (INEGI), and the measure of maize suitability is the space-weighted average productivity of rain-fed, low-input maize according to the Food and Agriculture Organization's Global Agro-Ecological Zones dataset. The theory predicts that more severe drought conditions—larger negative values of PDSI—should lead to more rebellion (i.e., $\beta_0 < 0$).

Our theory indicates that more rebellion should occur where peasant opportunity costs are low (or grievances are high), but it also shows that the threshold level of grievance needed to spark rebellion

[8] As noted above, grievances in the model can be thought of as the inverse of opportunity costs ω_i.

[9] For a assessment of the reliability of these drought data using modern precipitation figures, see Sellars and Alix-Garcia (2018). In section B of the appendix we show that, as expected, local crop prices increase in periods of drought: we estimate a strong, negative association between PDSI and maize prices in Mexico City.

should depend on broader societal factors, as these influence the likelihood of repression. To assess this prediction, we examine changes in the effect of drought on rebellion before and after a major shock to higher-level political institutions: the 1808 Napoleonic invasion of Spain, which deposed Charles IV from the throne and precipitated a coup and political crisis in Mexico City. This series of events weakened the imperial state and, importantly for the model, the perceived loyalty of elites to the Crown. To assess whether this political crisis altered the relationship between drought and rebellion, we modify equation 3.1 by interacting the drought measure, $PDSI_{i,t}$ with a post-crisis indicator (taking the value 1 for the time period between 1808 and 1821). Our theory predicts that the relationship between drought and rebellion should be amplified when the government is experiencing a political crisis, which implies that the coefficient on the interaction term should be negative (i.e., the effect of drought should be larger in magnitude).

Table 1: Drought, Government Strength, and Uprisings in Central Mexico, 1680–1821

	Peasant Uprisings Pre-1808 Coup Period (1680–1808)		Peasant Uprisings Pre-Independence Period (1680–1821)	
	(1)	(2)	(3)	(4)
Avg. PDSI	-0.0080**	-0.0017	-0.0079**	-0.00082
	(0.0036)	(0.0053)	(0.0036)	(0.0052)
Avg. PDSI × Post 1808			-0.019	-0.072*
			(0.034)	(0.042)
Std. Dev. PDSI	No	Yes	No	Yes
Controls × Year FE	No	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes
Within-District Mean of DV	0.024	0.023	0.029	0.028
Within-District SD of DV	0.13	0.13	0.15	0.14
R sq.	0.057	0.25	0.094	0.30
Observations	3712	3584	4118	3976
Number of districts	29	28	29	28

OLS estimations. See equation (3.1) for the baseline econometric specification. The unit-of-analysis is the district-year. Standard errors (clustered a the district level) in parentheses.

The first two columns in Table 1 present the baseline results, focusing on the pre-1808 period. In line with the theory, the estimates in column 1 show that rebellions were more likely when

PDSI was lower: a decline of a within-district one standard deviation PDSI leads to an increase in the probability of rebellion of 1.6 percentage points, which corresponds to more than half of the within-district baseline probability. Including time-interacted geographic controls in column 2 reduces the magnitude and precision of $\hat{\beta}_0$, but its implied effect is still meaningful, if more modest: a reduction of one within-district standard deviation PDSI leads to an increase in the probability of rebellion of about 10 percent of the within-district baseline probability.

Columns 2 and 3 include data for the entire set of years (1680–1821) and add an interaction term between PDSI and the post-1808 political crisis indicator. These results suggest similar magnitudes of the effect of drought on rebellion for the pre-1808 period, but, in line with the theory, the impact of drought becomes more pronounced following the high-level political crisis. After the crisis of 1808, a decrease of one within-district standard deviation PDSI leads to an increase of between 5 and 13 percentage points in the probability of rebellion in that year (columns 3 and 4). While the data are limited, the point estimate on the interaction term is statistically distinguishable from 0 in the model that includes time-interacted geographic controls (column 4).

These results provide initial empirical support for the theory. However, the model produces several additional empirical implications as well. First, the model highlights the role of *local* elites, not those in Mexico City or Madrid, as important intermediaries between national political events and institutions, on the one hand, and localized peasant grievances, on the other. In particular, rebellion should be more likely where elites are dissatisfied, or perceived to be dissatisfied, with the central government, because this raises the possibility that these elites will renege on their commitment to repress local revolt. The model also illustrates the broader, indirect influence of peasant opportunity costs, elite disloyalty, and national weakness on mobilization. Because both peasant grievances and elite loyalties are correlated across districts, observing local conditions that are favorable to revolt leads actors to believe that other regions may be experiencing similar conditions. This further raises the possibility of revolt because the ultimate survival of the central government—and its ability to punish defecting elites—rests on the level of revolt in the entire

country. While peasants' motivations to rebel in the model are not directly related to the central government, they still need to consider broader-level political factors because these influence their local elite's incentives to invest in repression.

The model therefore illustrates how purely localized peasant revolts can initiate a larger political crisis under the right circumstances. To empirically examine these factors in greater detail, we turn our attention to one such rebellion in the next subsection: the revolt led by Miguel Hidalgo that sparked Mexico's War of Independence.

3.2 The Hidalgo Revolt

In 1810, Miguel Hidalgo led a massive rebellion of tens of thousands of peasants in north-central Mexico, starting what eventually became known the Mexican War of Independence. Though ultimately unsuccessful, the Hidalgo Revolt represented the most severe challenge to Spanish control of the colony in several centuries. Beginning in prosperous Bajío region of north-central Mexico, the insurgents quickly captured a large swath of territory and marched to the edge of Mexico City. However, Hidalgo's rebellion was crushed within a year. Though smaller waves of guerrilla warfare continued in the countryside, these also collapsed in the face of repression. The successful push for independence came later, led by a dramatically different coalition of conservative elites. Why did Hidalgo's revolt begin when and where it did, and why was it ultimately unsuccessful?

The timing of the revolt was arguably overdetermined. As noted above, Napoleon's invasion of Spain and the abdication of Charles IV in 1808 precipitated a major political crisis in the center of the Empire. The viceroy and *Ayuntamiento* in Mexico City responded by seeking increased autonomy from the Crown, only to be overthrown later that year by a group of peninsular Spaniards who feared that American-born (creole) elites would displace them from power. These parallel crises reduced the strength of colonial power and angered regional power-holders, many of whom continued to harbor grievances against the Crown following the Bourbon reforms discussed in the section above. Crucially, these events occurred alongside a severe drought, which led to the failure

of the maize crop in 1808 and a deadly famine in central Mexico. The famine was exacerbated by Crown policies and angered peasants in much of the country (Tutino 1986).

In summary, explanations for the Hidalgo revolt focus on factors at three levels of analysis: national or imperial factors, including state weakness in the wake of the Napoleonic Invasion (e.g., Rodríguez 1998), regional elite factors, such as creole grievances and divisions due to earlier reforms (e.g., Hamnett 1986; Pietschmann 1991), and localized peasant concerns, including the subsistence crisis associated with the famine (e.g., Florescano 1969; Tutino 1986). The theory in Section 2 formally weaves together these three levels and shows how they relate to one another. Because of the strategic relationship between peasants and elites and between elites and the central government, subsistence shocks may have very different consequences when accompanied by either a shock to elite loyalties to the Crown, a reduction in the strength of the central government, or both. The drought of 1808 was not the first subsistence shock to affect the Mexican countryside. In fact, an especially severe famine had occurred in the Bajío region, the heartland of the Hidalgo revolt, only a couple of decades earlier in 1785–6. This famine killed upwards of 80,000 people, and yet it did not precipitate a large-scale rebellion as that following the 1808 crisis (Tutino 1986). Though evidence suggests that peasant participation in the Hidalgo uprising was motivated by localized concerns rather than higher-level political goals (e.g., Hamnett 1986; Van Young 2007), our theory suggests that the divisions (or perceived divisions) between elites and the central government were critical in shaping the rebellion.

The theory also makes specific predictions about where the outbreak of violence should have occurred following these higher-level political crises. While the shock to the strength of the central government was common across the colony, we should expect to see more rural rebellion in areas where elites harbored more severe grievances against the Crown and thus would be more likely to defect from repressive activities. To evaluate this prediction, we focus on the effects of a major reform undertaken by King Charles III in 1776, which centralized the administration of the *alcabala*,

a sales and turnover tax.[10] The main objective of the *alcabala* reform had been to increase revenue for the Crown during a time of increased fiscal pressure due to ongoing warfare in Europe. While arguably successful in this respect, the reform also angered local elite intermediaries, with important consequences for the later uprising.

Prior to the reform, the *alcabala* was collected in three different ways. In some districts, agents of the Crown—*corregidores* and *alcaldes mayores*—collected the tax directly. In others, the tax was farmed out for a period of time to individual merchants through a bidding process. Finally, some city councils or merchant consortia received fixed-term charters to collect the tax internally (Smith 1948; Litle 1985; Sánchez Santiró 2001). The choice of tax-collection method was driven by a bidding process; where no private bids were offered, often because of an absence of potential revenue in the district, central authorities would collect the tax directly (see Table 2 below). Indirect collection of the tax—either by private tax farmers or through charters—provided the Crown with a steady revenue stream without requiring royal agents to set up a bureaucratic apparatus and incur high administrative costs. By granting local elites the right to enforce taxation policy, the Crown insulated them from overzealous officials and endowed them with tools to extract rents from local taxpayers and shift the tax burden to others. This created buy-in for royal authority. Available data shows that *Alcabala* revenue was higher on average in districts with charters, followed by those with individual farms and those that were directly administered, as might be expected based on the bidding process.

Under the reform, private tax arrangements were eliminated and a central *alcabala* administration began collecting the tax across the colony. As Table 2, following the centralizing reform, *alcabala* revenue increased markedly in all districts (see also Sánchez Santiró 2001).

However, a consequential side effect of this change was that it stripped regional elites of a major source of revenue and local influence, decreasing the benefit of participating in the colonial

[10] We consider a different source of elite discontent, the expulsion of the Jesuits in 1767, in Appendix Section C.

Table 2: Alcabala Tax Revenue Before and After Centralization

Type of Tax Administration 1775	Alcabala Tax Revenue (log) 1775	Alcabala Tax Revenue (log) 1778	Districts
Pre-Centralization	Pre-Centralization	Post-Centralization	
Direct	7.3	8.1	16
Farmed	7.9	8.6	30
Chartered	8.2	9.1	41
Total	8	8.8	87

Note: The sample includes districts with revenue data for both periods and information on pre-centralization type of administration. The total number of districts with information on pre-centralization type of administration, revenue for 1775, and revenue for 1778 is 141, 91, and 98, respectively.

administration and increasing elite dissatisfaction with the Crown. The reform entailed the unilateral revocation of tax farm contracts that were set to expire well after centralization program. The sudden repeal of existing contracts, especially in the most profitable farms, generated a forceful resistance and numerous legal challenges, though the Council of Indies ultimately upheld the Crown's policy (Sánchez Santiró 2001). The centralization of the *alcabala* further harmed the local elite by increasing enforcement through the introduction of new and more effective tax collection methods. Prior to the reform, tax regulations varied by district and were rife with idiosyncratic exemptions and personal favors to delay payments (e.g., Litle 1985). The new administration implemented an aggressive crackdown on tax avoidance by eliminating loopholes and applying uniform regulations across the colony, such as using market prices to assess tax burden rather than relying on sworn statements by taxpayers, as had been customary. Not surprisingly, these reforms were highly unpopular with tax-paying elites. In the port town of Acapulco, for example, the newly appointed tax administrator "found fierce opposition to his work from the most affluent families, who through their power had been evading tax payments for many years, or at least paying below the stipulated amounts" (Hernández Jaimes 2008, p. 55).

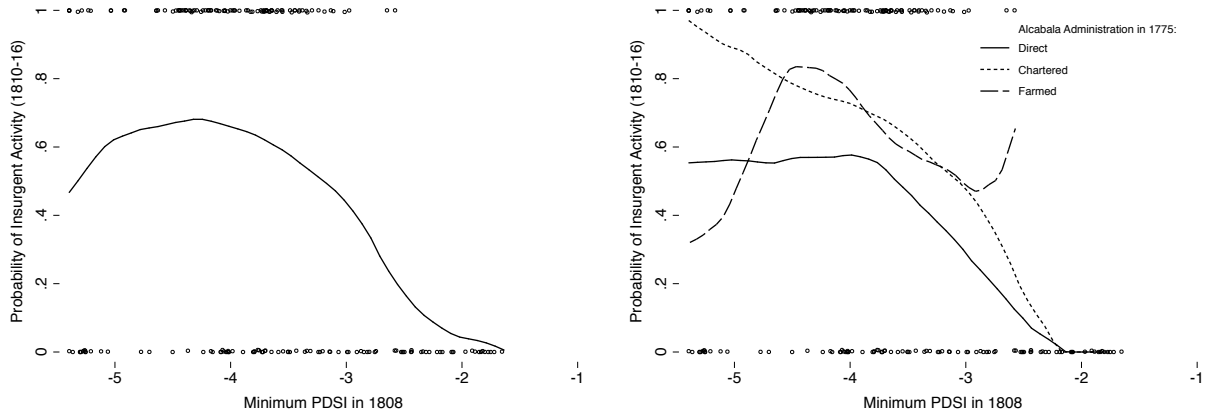
Despite some overt signs of elite discontent, however, the far-reaching political consequences of the *alcabala* centralization were not immediately apparent. While a generalized, regional rebellion broke out in Peru in the 1780s following the reform, no similar uprising occurred in Mexico until

Hidalgo's revolt in 1810. However, we argue that the confluence of this shock alongside the weakening of the central government and subsistence crisis of 1808 can best explain the patterns of insurgency observed in 1810. Our model predicts that the dissatisfied elites that lost access to *alcabala* rents during the Bourbon reform should be less likely to back the government during a crisis, especially once the perceived threat of government reprisal had declined following Napoleon's invasion. Further, the model suggests that peasants in reform-affected districts should be more likely to rebel, even conditional on the subsistence shock, because the perceived threat of repression should be lower in these areas.

To assess these predictions, we examine subnational patterns of insurgency during the War of Independence using insurgency data from Ortiz Escamilla (2014). As above, the measure of the severity of drought comes from Cook and Krusic (2004). While the insurgency data are recorded across modern Mexico, we exclude the far southeast of the country, as there is no reported drought data in this region. To obtain a measure of elite exposure to the tax reform, we use colonial administrative data on pre-reform *alcabala* administration and identify the prior tax-collection arrangement in each district. We construct the tax administration categories in two steps. First, we identify the type of tax collection by regional customs office in 1775, just prior to the reform, using official data reported in Sánchez Santiró (2001). We then identify the operative area of each customs office through lists of dependent towns, from Garavaglia and Grosso (1988). Finally, we georeference each town using information from Gerhard (1993*a*;*b*;*c*) and Tanck Estrada, Alvarez Lobato and Miranda (2005) and aggregate the data to the 1786 administrative district level (as above).[11] We provide a map of the geographic distribution of pre-reform administration in Appendix Section D. To review, we predict that the level of rebellion should be higher in areas where elites had lost power and privilege following the tax reform: those with indirect tax administration (i.e., private tax farms and charters) as of 1775.

[11] If a district contains a customs office, we assign that office's form of tax collection. If a district does not have a customs office, we aggregate the type of *alcabala* tax collection from dependent towns, giving equal weight to each type (direct, farmed, or chartered).

Figure 1: Drought, Exposure to the Bourbon Tax Reform, and Insurgency, 1810-1821



(a) Drought and rebellion

(b) By exposure to reform

Figure 1 provides initial graphical evidence on the relationship between elite dissatisfaction, peasant grievances and rebellion in this context. In the left panel, we plot the proportion of districts experiencing insurgent violence over the drought conditions (measured in PDSI) during the 1808 crisis. On the right, we disaggregate the district by the type of pre-reform tax administration. Two clear patterns emerge from the figure. First, the probability of experiencing insurgent violence was higher in areas experiencing a more severe subsistence shock in 1808. Second, the districts that were more exposed to the centralization of the *alcabala*—those in which the local elite collected rents through tax farms and especially charters—display a higher likelihood of rebellion.

To explore this relationship more systematically, we examine the conditional correlations between insurgent violence during the rebellion, the severity of the subsistence shock in 1808, and exposure to the tax reform. Our estimating equation is:

$$Rebellion_{i,1810-1821} = \beta_0 PDSI_{i,1808} + \alpha Tax\ Farm/Charter_{i,1775} + \Theta_t X_i + \Pi U_{i,1808} + \varepsilon_i, \quad (3.2)$$

where $Rebellion_{i,1810-1821}$ indicates that whether district i experienced any insurgent activity during the War of Independence (1810–1821); $Tax\ Farm/Charter_{i,1775}$ is an indicator for districts with indirect tax collection prior to the *alcabala* reform; $PDSI_{i,1808}$ is space-weighted average PDSI during the drought of 1808; $U_{i,1808}$ is the standard deviation of the district's PDSI in 1808 (across

pixels in the raster); X_i is the vector of controls, including pre-reform *alcabala* revenue and the geographic variables discussed above (elevation, surface area, whether the district is in a malarial zone, and distance to Mexico City, and maize suitability); and ε_i is the error term.

Table 3: Correlates of Insurgency During Mexico's Independence War, 1810-1821

	Insurgent Activity, 1810-1821				
	(1)	(2)	(3)	(4)	(5)
Avg. PDSI in 1808	-0.15***	-0.21***			-0.14**
	(0.033)	(0.050)			(0.066)
Farmed/Chartered Alcabala in 1775			0.28***	0.24**	0.25*
			(0.097)	(0.096)	(0.13)
Alcabala Revenue Pre-Centralization (1775)					0.045
					(0.047)
Std. Dev. PDSI in 1808		1.22***			1.16**
		(0.36)			(0.46)
Maize Suitability		0.11		0.027	0.039
		(0.080)		(0.098)	(0.12)
Avg. Altitude (log)		-0.051		-0.11**	-0.100*
		(0.040)		(0.042)	(0.055)
Surface Area (log)		0.086**		0.11**	0.049
		(0.043)		(0.050)	(0.068)
Malarial Zone		0.025		0.089	0.063
		(0.083)		(0.091)	(0.11)
Dist. to Mexico City (log)		-0.079		-0.24***	-0.14
		(0.049)		(0.055)	(0.092)
Constant	-0.031	-0.32	0.34***	1.50***	0.41
	(0.11)	(0.56)	(0.085)	(0.48)	(0.70)
Mean of DV	0.50	0.53	0.56	0.58	0.67
SD of DV	0.50	0.50	0.50	0.49	0.47
R sq.	0.091	0.23	0.055	0.25	0.27
Observations	191	178	140	132	83

OLS estimations. See equation (3.2) for the econometric specification. The unit-of-analysis is the district. Robust standard errors in parentheses.

The results are shown in table 3. Districts in which the local elite lost control of the *alcabala* administration during the Bourbon reforms were substantially more likely to experience insurgency during the war (between 24 and 28 percentage points more likely) as compared to districts that were already under direct administration. These conditional correlations remain stable with the inclusion of geographic controls and when conditioning on pre-reform *alcabala* revenue (the major

determinant of pre-reform institutions, as discussed above). As before, a decline in the peasants' opportunity cost of rebelling, measured by the intensity of the 1808 drought, is associated with a higher likelihood of insurgency as well. The implied effect is large, and comparable to that of column 4 in table 1 of the prior section: a one standard deviation drop in the PDSI is associated with an increase in the probability of insurgency of between 14 and 21 percentage points.[12]

To summarize, these results provide further evidence in support of the theory. We see more rebellion where peasant grievances, as operationalized by drought conditions, were higher and in areas where elite dissatisfaction dating back to the *alcabala* reform would have been more acute. More broadly, the model helps to explain why the Hidalgo revolt originated in the Bajío, where elites had been disproportionately affected by the earlier tax reform, and not in drought-affected areas without apparent elite divisions. In fact, while the timing of the revolt may have been "overdetermined" by the Napoleonic invasion, the widespread drought and famine, and growing tensions with creole elites over the tax reform and other policies (von Wobeser 2006; Marichal 2007), participation in the conflict was concentrated in just a few regions, and the uprising was put down relatively quickly. As one historian writes, the story of Hidalgo's uprising is ultimately one about a series of deadly errors, which led insurgents to overestimate the possibility of successful rebellion:

> Unfortunately, the insurgents of 1810 could not know that Hidalgo and other rebel leaders were but marginal members of the provincial elite....Thus they could not know that the apparent opportunity of insurrection in September of 1810 was but a deadly illusion. When faced with mass insurrection, the colonial state did not prove weak...[and] colonial elites were not divided. That absence of opportunity for sustained insurrection helps explain the calamitous failure of the uprising. Yet the clear appearance of that opportunity (however false) was essential to the outbreak of the Hidalgo revolt. (Tutino 1986, p. 100)

[12] Arias and de la Calle (2018) also find a negative relationship between PDSI and insurgency during the War of Independence.

Following the twin high- and low-level crises of 1808, peasants and elites across Mexico were faced with the difficulty of predicting one another's behavior in an environment of high strategic uncertainty. As in the model, members of both groups were faced with the task of anticipating the actions of their counterparts in other regions. The model helps to explain the mistaken impressions of peasants and elites in the Bajío as well as their actions. Disproportionately affected by the Bourbon reforms and unlucky enough to receive an abnormally severe drought shock in 1808, those in the Bajío radically overestimated the willingness of peasants in other regions to join the revolt and underestimated the willingness of elites in other regions to repress the insurgency. The result was catastrophic for Hidalgo and his followers.

4. Discussion

The results of Section 3 provide strong empirical support for the model in the context of late colonial Mexico. In this section, we consider the scope conditions of our theory and briefly discuss other cases where we believe it could provide insights on observed temporal and spatial patterns of rebellion.

Two features of our model are worth highlighting. First, our model examines a setting in which local elites act as as the first line of defense in containing mass rebellion and thus are important intermediaries for maintaining political control. These sorts of arrangements can be found in places where central authorities either cannot or choose not to directly fund or control repressive institutions, but rather delegate day-to-day peacekeeping responsibilities to regional or provincial elites. Examples of such places include many hard-to-govern frontier areas, regions under colonial rule, and weakly institutionalized states where central authorities are not able to establish direct control over territory (Gerring et al. 2011; Naseemullah and Staniland 2016). This is a relevant set of cases to examine given our substantive focus on state building efforts as a source of elite grievances. The model illustrates how attempts to build state capacity, and thus strip elite intermediaries of power, can increase vulnerability to mass rebellion during subsistence crises (e.g., Garfias and Sellars 2018).

A second notable feature of our theory is the way in which the interdependence of elites and peasants is modeled. We make the somewhat stark assumption that peasants are motivated solely by localized concerns rather than ideology, preferences about regime change, or other broad, national-level considerations. While there is considerable historical support for this assumption in the environment we consider (e.g., Taylor 1979, p. 115–6; Tutino 1986, p. 42), it clearly is not true of all uprisings. In some of the "caste wars" of southeastern Mexico, for example, peasant motivations were linked closely to broad religious or ideological symbolism, and creole elites themselves were specific targets for reprisal (e.g., Coatsworth 1988, p. 25–30). However, our focus on localized shocks to peasant opportunity cost as a motivation for revolt can translate to many contexts outside colonial Mexico, as evidenced by the large literature on the relationship between climate shocks and rebellion (e.g., Miguel, Satyanath and Sergenti 2004; Dell 2012; Dube and Vargas 2013). Furthermore, though a substantive focus of our paper is peasant collective action in an agrarian society, we believe that the strategic interaction between mass and elite actors and between localized and national motivations for rebellion applies to many other non-agrarian contexts as well (Moore 1978 , p. 191–196; Bueno de Mesquita 2010; Tyson and Smith 2018).

Beyond the centralization of *alcabala* administration, the theory helps to explain why peasant revolts followed other major reforms targeting elites in the Spanish Empire and beyond. In Appendix C, we present suggestive evidence that the Crown's expulsion of the Jesuits in 1767 also affected insurgent participation in the War of Independence. The Jesuits had been important providers of elite education, and the expulsion of this religious order—intended to consolidate royal control—became another source of elite dissatisfaction during the late 18th century (e.g., Gerhard 1993*a*). Consistent with our theory, the amount of insurgent activity during the War was greater in areas where Jesuit schools or colleges had been located and thus where elites would have been most affected by the Jesuit expulsion, even conditional on exposure to the tax reform and to drought conditions.

Our model can also help to explain other outbreaks of rebellion, as well as their conspicuous absence, in the Spanish Empire. One historical puzzle about Spanish colonial rule as been the

relative lack of mass revolt despite high peasant grievances (e.g., Tutino 1986, p. 42–3; Katz 1988, p. 5–6). We believe it is notable that two major peasant rebellions—the Tupac Amaru insurgency and the Comunero rebellion in South America during the 1780s—also occurred following the implementation of reforms to *alcabala* administration, which also affected provincial elites in these regions, and following major subsistence crises affecting the peasantry (e.g., Coatsworth 1988). The model can also potentially shed light on the spatial distribution of insurgency during the Mexican Revolution in the 20th century. There is evidence that peasant mobilization during the Revolution was amplified in drought-affected areas (e.g., Dell 2012), but the regional patterns of fighting also call attention to the importance of longer-term grievances following Porfirian state-building efforts (e.g., Knight 1986, p. 153–155).

5. Conclusion

In this paper, we highlight the complementarity between subsistence crisis, elite conflict, and state strength for rebellion. We show that state-building efforts can have serious consequences for unrest when unanticipated crises occur. Though reforms are often undertaken with the idea of strengthening state institutions, these efforts can undermine political control by alienating local elites, who serve as important intermediaries between the government and commoners.

In our theory, as in many others, peasants are more likely to rebel when they are facing poor conditions at home. However, we show that national institutions and elite preferences enter into the peasants' calculus, even when peasants are solely motivated by local agrarian concerns. Because elites are concerned with national politics, and because local elites are the repressive force in charge of maintaining order, peasants must consider these broader factors when determining whether to rebel. They anticipate that they will face less elite repression of collective action when they sense disloyalty among elites and when they know that national institutions capable of punishing defecting elites are weak. Likewise, elites strategically consider peasants' preferences when determining whether to remain loyal to the government. Even when they are insulated themselves from subsistence shocks, elites are more likely to defect during times of drought because they

anticipate that they will face greater rebellion at home and because they believe other elites might be facing costly local uprisings as well, making the survival of the central government more uncertain. This exacerbates the effects of drought when the state is weak and when elites are divided: peasants are more likely to rebel not just because of their grievances, but also because they sense a political opportunity—elites become reluctant to take on costly peacekeeping activities.

We find support for our theory using subnational panel data on rebellion in Mexico from 1680 to 1821 and on insurgency during Mexico's War of Independence. We show that small-scale peasant rebellions were more common during droughts, but also that the effects of drought shocks increased by an order of magnitude when the strength of the state was weakened by the 1808 Napoleonic invasion and the subsequent coup in Mexico City. During the war, we show that insurgent fighting was more severe in areas subjected to the centralization of the *alcabala* tax in the 1770s, which deprived elites of local revenue and created resentment toward the government. These findings highlight the interplay between national factors, elite divisions, and peasant grievance in shaping patterns of rebellion.

References

Acemoglu, Daron, Camilo Garcia-Jimeno and James A. Robinson. 2015. "State Capacity and Economic Development: A Network Approach." *The American Economic Review* 105(8):2364–2409.

Archer, Christon I. 1987. "Bourbon Finances and Military Policy in New Spain, 1759-1812." *The Americas* 37(3).

Arias, Luz Marina and Luis de la Calle. 2018. "The Legacy of War Dynamics on State Capacity: Evidence from 19th Century Mexico." CIDE Discussion Paper No. 612.

Arroyo-Abad, Leticia. 2007. "Prices in Mexico." http://gpih.ucdavis.edu/files/Mexico_1701-1813.xls.

Besley, Timothy and Torsten Persson. 2009. "The Origins of State Capacity: Property Rights, Taxation and Politics." *The American Economic Review* 99(4):1218–1244.

Boix, Carles and Milan Svolik. 2013. "The Foundations of Limited Authoritarian Government: Institutions, Commitment, and Power-sharing in Dictatorships." *Journal of Politics* 75(2):300–316.

Brading, David A. 1971. *Miners and Merchants in Bourbon Mexico, 1763-1810*. Cambridge University Press.

Bueno de Mesquita, Ethan. 2010. "Regime Change and Revolutionary Entrepreneurs." *American Political Science Review* 104(3):446–466.

Challú, Amílcar E. 2010. The Great Decline: Biological Well-Being and Living Standards in Mexico, 1730-1840. In *Living Standards in Latin American History: Height, Welfare, and Development, 1750-2000*, ed. Ricardo Salvatore, John H. Coatsworth and Amílcar E. Challú. Harvard University Press.

Coatsworth, John H. 1988. Patterns of Rural Rebellion in Latin America: Mexico in Comparative Perspective. In *Riot, Rebellion, and Revolution: Rural Social Conflict in Mexico*. Princeton, NJ: Princeton University Press.

Cook, E. R. and P. J. Krusic. 2004. *The North American Drought Atlas*. New York, NY: Lamont-Doherty Earth Observatory and National Science Foundation.

Cook, Sherburne Friend and Woodrow Wilson Borah. 1971. *Essays in population history: Mexico and the Caribbean*. Vol. 1 Univ of California Press.

Cooper, Brett Allen and Scott A. Tyson. 2014. "Popular Protest and Elite Coordination in a Coup d'etat." *Journal of Politics* 76(2):548–564.

Dell, Melissa. 2012. "Path Dependence in Development: Evidence from the Mexican Revolution." Manuscript, Harvard University.

Dell, Melissa, Benjamin F. Jones and Benjamin A. Olken. 2014. "What Do We Learn from the Weather? The New Climate–Economy Literature." *Journal of Economic Literature* 52(3):740–798.

Dincecco, Mark and Gabriel Katz. 2014. "State Capacity and Long-run Economic Performance." *The Economic Journal* 126(590):189–218.

Doblado, Rafael and Gustavo A. Marrero. 2011. "The Role of the Spanish Imperial State in the Miningled Growth of Bourbon Mexico's Economy." *The Economic History Review* 64(3):855–884.

Dube, Oeindrila and Juan F. Vargas. 2013. "Commodity Price Shocks and Civil Conflict: Evidence from Colombia." *The Review of Economic Studies* 80(4):1384–1421.
URL: *http://dx.doi.org/10.1093/restud/rdt009*

Edmond, Chris. 2013. "Information Manipulation, Coordination, and Regime Change." *Review of Economic Studies* 80:1422–1458.

Fearon, James D. and David D. Laitin. 2003. "Ethnicity, Insurgency, and Civil War." *American Political Science Review* 97(1):75–90.

Florescano, Enrique. 1969. *Precios del maíz y crisis agrícolas en México (1708–1810)*. México, DF: El Colegio de México.

Florescano, Enrique. 1976. *Origen y desarrollo de los problemas agrarios de México, 1500–1821*. México, DF: Editorial ERA.

Florescano, Enrique. 1995. *Breve historia de la sequía en México*. Mexico, DF: CONACULTA.

Franco-Vivanco, Edgar. 2017. "Redistributive Justice and Social Order: Indigenous Claims in the Courts of Colonial Mexico." Manuscript, Stanford University.

Garavaglia, Juan Carlos and Juan Carlos Grosso. 1988. *Las alcabalas novohispanas (1776-1821)*. Archivo General de la Nación.

Garfias, Francisco. 2018. "Elite Competition and State Capacity Development: Theory and Evidence from Post-Revolutionary Mexico." *American Political Science Review* 112(2):339–357.

Garfias, Francisco. 2019. "Elite Coalitions, Limited Government, and Fiscal Capacity Development: Evidence from Bourbon Mexico." *The Journal of Politics* 81(1):94–111.

Garfias, Francisco and Emily A. Sellars. 2018. "From Conquest to Centralization: Domestic Conflict and the Transition to Direct Rule." Manuscript, UCSD/Yale University.

Gehlbach, Scott and Evgeny Finkel. 2018. "The Tocqueville Paradox: When Does Reform Provoke Rebellion?" UW–Madison.

Gerhard, Peter. 1993*a*. *A guide to the Historical Geography of New Spain: Revised Edition*. University of Oklahoma Press.

Gerhard, Peter. 1993*b*. *The North Frontier of New Spain*. Norman, OK: University of Oklahoma Press.

Gerhard, Peter. 1993*c*. *The Southeast Frontier of New Spain*. Norman, OK: University of Oklahoma Press.

Gerring, John, Daniel Ziblatt, Johan Van Gorp and Julián Arévalo. 2011. "An Institutional Theory of Direct and Indirect Rule." *World Politics* 63(3):377–433.

Hamnett, Brian R. 1986. *Roots of Insurgency: Mexican Regions, 1750–1824*. New York: Cambridge University Press.

Hernández Jaimes, Jesús. 2008. "Alcabalas y presión fiscal en Acapulco, 1777-1809." *Tzintzun: Revista de Estudios Históricos* (47):43–74.

Katz, Friedrich. 1988. Rural Uprisings in Preconquest and Colonial Mexico. In *Riot, Rebellion, and Revolution: Rural Social Conflict in Mexico*. Princeton, NJ: Princeton University Press.

Knight, Alan. 1986. *The Mexican Revolution*. Lincoln, NE: University of Nebraska Press.

Knight, Alan. 2002. *Mexico: The Colonial Era*. New York, NY: Cambridge University Press.

Litle, Marcella McCrary. 1985. Sales Taxes and Internal Commerce in Bourbon Mexico, 1754-1821 PhD thesis Duke University.

Mahoney, James. 2010. *Colonialism and Postcolonial Development: Spanish America in Comparative Perspective*. New York: Cambridge University Press.

Marichal, Carlos. 2007. *Bankruptcy of Empire: Mexican Silver and the Wars Between Spain, Britain and France, 1760–1810*. Cambridge University Press.

Mehlum, Halvor, Edward Miguel and Ragnar Torvik. 2006. "Poverty and Crime in 19th Century Germany." *Journal of Urban Economics* 59(3):370–388.

Miguel, Edward. 2005. "Poverty and Witch Killing." *Review of Economic Studies* 72(1153–1172).

Miguel, Edward, Shanker Satyanath and Ernest Sergenti. 2004. "Economic Shocks and Civil Conflict: An Instrumental Variables Approach." *Journal of Political Economy* 112(4):725–753.

Moore, Barrington. 1966. *Social Origins of Dictatorship and Democracy:Lord and Peasant in the Making of the Modern World*. Boston: Beacon Press.

Moore, Barrington Jr. 1978. *Injustice: The Social Bases of Obedience and Revolt*. White Plains, NY: M.E. Sharp.

Morris, Stephen and Hyun Song Shin. 2003. Global Games: Theory and Applications. In *Advances in Economics and Econometrics: Theory and Applications (Proceedings of the Eighth World Congress of the Econometric Society)*, ed. Mathias Dewatripont, Lars Peter Hansen and Stephen J. Turnovsky. New York: Cambridge University Press pp. 56–114.

Naseemullah, Adnan and Paul Staniland. 2016. "Indirect Rule and Varieties of Governance." *Governance* 29(1):13–30.

North, Douglass, John Joseph Wallis and Barry R. Weingast. 2009. *Violence and social orders: a conceptual framework for interpreting recorded human history*. Cambridge University Press.

Ortiz Escamilla, Juan. 2014. *Guerra y gobierno: Los pueblos y la independencia de México, 1808–1825*. México, DF: Colegio de México.

Osorio Romero, Ignacio. 1979. *Colegios y Profesores Jesuitas que Enseñaron Latin en Nueva España (1572-1767)*. Universidad Nacional Autónoma de México.

Paige, Jeffrey. 1975. *Agrarian Revolution: Social Movements and Export Agriculture in the Underdeveloped World*. New York: Free Press.

Passarelli, Francesco and Guido Tabellini. 2017. "Emotions and Political Unrest." *Journal of Poltical Economy* 125(3):903–946.

Pietschmann, Horst. 1991. "Consideraciones en torno al protoliberalismo, reformas Borbónicas y revolución. La Nueva España en el último tercio del siglo XVIII." *Historia Mexicana* 41(2):167–205.

Rodríguez, Jaime E. 1998. *The Independence of Spanish America*. Cambridge University Press.

Sánchez Santiró, Ernest. 2001. La hacienda reformada: la centralización de la renta de alcabalas en Nueva España (1754-1781). In *Finanzas y política en el mundo iberoamericano, 1754-1850*, ed. Sánchez Santiró, Jáuregui and Ibarra. UNAM.

Scott, James. 1976. *Moral Economy of the Peasant: Rebellion and Subsistence in South Asia*. New Haven, CT: Yale University Press.

Sellars, Emily A. n.d. "Emigration and Collective Action." *Journal of Politics* . Forthcoming.

Sellars, Emily A. and Jennifer Alix-Garcia. 2018. "Labor Scarcity, Land Tenure, and Historical Legacy: Evidence from Mexico." *Journal of Development Economics* 135:504–516.

Smith, Robert Sidney. 1948. "Sales Taxes in New Spain, 1575-1770." *The Hispanic American Historical Review* 28(1):2–37.

Stein, Stanley J. and Barbara H. Stein. 2003. *Apogee of Empire: Spain and New Spain in the Age of Charles III, 1759-1789*. Johns Hopkins University Press.

Tanck Estrada, Dorothy, Jose Antonio Alvarez Lobato and Jorge Luis Miranda. 2005. "Atlas ilustrado de pueblos de indios de la Nueva Espana, 1800." *Journal of Latin American Geography* 4(2):97–109.

Taylor, William B. 1979. *Drinking, Homicide, and Rebellion in Colonial Mexican Villages*. Stanford, CA: Stanford University Press.

Tilly, Charles. 1978. *From Mobilization to Revolution*. Addison-Wesley.

Tutino, John. 1986. *From Insurrection to Revolution in Mexico: Social Bases of Agrarian Violence, 1750–1940*. Princeton, NJ: Princeton University Press.

Tutino, John. 1988. Agrarian Social Change and Peasant Rebellion in Nineteenth-Century Mexico: The Example of Chalco. In *Riot, Rebellion, and Revolution: Rural Social Conflict in Mexico*. Princeton University Press.

Tutino, John. 2011. *Making a New World: Founding Capitalism in the Bajío and Spanish North America*. Duke University Press.

Tyson, Scott A. and Alastair Smith. 2018. "Dual-Layered Coordination and Political Instability: Repression, Cooptation, and the Role of Information." *American Journal of Political Science* 80(1):44–58.

Van Young, Eric. 1981. *Hacienda and Market in Eighteenth-Century Mexico: The Guadalajara Region, 1675–1820*. Second edition ed. Oxford, UK: Oxford University Press.

Van Young, Eric. 2007. Of Tempests and Teapots: Imperial Crisis and Local Conflict in Mexico at the Beginning of the Nineteenth Century. In *Cycles of Conflict, Centuries of Change: Crisis, Reform, and Revolution in Mexico*, ed. Elisa Servín, Leticia Reina and John Tutino. Durham, NC: Duke University Press.

von Wobeser, Gisela. 2006. "La consolidación de vales reales como factor determinante de la lucha de independencia en México, 1804-1808." *Historia Mexicana* 56(2):373–425.

Wolf, Eric. 1969. *Peasant Wars of the Twentieth Century*. New York: Harper and Row.

Wood, Elisabeth Jean. 2003. *Insurgent Collective Action and Civil War in El Salvador*. New York, NY: Cambridge.

Supporting Information

When State Building Backfires: Elite Divisions and Collective Action in Rebellion

Contents

Appendix

A. Derivation of Bayesian Nash Equilibrium

A.1 Solving for cutpoint elite loyalties

In this section, we derive the cutpoint strategies for elites and peasants as a function of ω_i and the other parameters of the model. We then derive the comparative statics that motivate our empirical exercise.

We begin with the elite who has observed conditions ω_H. For this elite, the posterior probability that the state of the world is Ω_C is $Pr(\Omega_C|\omega_H)$ and the posterior probability that the state of the world is Ω_N is $1-Pr(\Omega_C|\omega_H)$. He knows that if the state of the world is Ω_C, proportion q of other elites will be facing adverse peasant conditions at home, and if the state of the world is Ω_N, proportion $p<q$ will be facing adverse conditions at home. By assumption, the distribution of these shocks is independent of the distribution of elite loyalties θ_i, which are distributed uniformly on $[\theta-\delta,\theta+\delta]$. The elites' strategy to side with the government if $\theta_i \geq \bar{\theta}(\omega_i)$ (and thus to defect if $\theta_i < \bar{\theta}(\omega_i)$). For a given realization of θ, the expected mass of elites h who will defect, conditional on observing ω_H, is therefore:

$$Pr_{C|H}\left[\frac{q(\bar{\theta}_L-(\theta-\delta))}{2\delta}+\frac{(1-q)(\bar{\theta}_H-(\theta-\delta))}{2\delta}\right]+(1-Pr_{C|H})\left[\frac{p(\bar{\theta}_L-(\theta-\delta))}{2\delta}+\frac{(1-p)(\bar{\theta}_H-(\theta-\delta))}{2\delta}\right]$$

where $P_{C|H}$ is the posterior belief that $\Omega=\Omega_C$ having seen $\omega_i=\omega_H$. The expression for those observing ω_L is nearly identical. The strategy of elites is the same (to defect if θ_i falls under some threshold given ω_i). The only difference is that posterior beliefs about the probability of generalized crisis are higher by $Pr_{C|L}>Pr_{C|H}$, where $Pr_{C|L}$ is the posterior belief that $\Omega=\Omega_C$ having seen $\omega_i=\omega_L$. This yields that the expected value of h given θ is:

$$Pr_{C|L}\left[\frac{q(\bar{\theta}_L-(\theta-\delta))}{2\delta}+\frac{(1-q)(\bar{\theta}_H-(\theta-\delta))}{2\delta}\right]+(1-Pr_{C|L})\left[\frac{p(\bar{\theta}_L-(\theta-\delta))}{2\delta}+\frac{(1-p)(\bar{\theta}_H-(\theta-\delta))}{2\delta}\right]$$

We use these expressions to solve for $Pr(h\leq k|\bar{\theta}(\omega_i),\omega_i))$. From the perspective of the cutpoint elite, θ is a random variable distributed uniformly on $[\bar{\theta}(\omega_i)-\delta,\bar{\theta}(\omega_i)+\delta]$, where $\bar{\theta}(\omega_i)=\bar{\theta}_H$ if $\omega_i=\omega_H$ and $\bar{\theta}_L$ if $\omega_i=\omega_L$. The posterior probability that $h\leq k$ is thus:

$$Pr(h\leq k|\bar{\theta}_H,\omega_H)=k+(\bar{\theta}_H+\delta)\left[\frac{1-P_{C|H}(1-q)-(1-P_{C|H})(1-p)}{2\delta}\right]+(\bar{\theta}_L+\delta)\left[\frac{-P_{C|H}q-(1-P_{C|H})p}{2\delta}\right]$$

for cutpoint elites having observed ω_H and

$$Pr(h \leq k|\bar{\theta}_L, \omega_L) = k + (\bar{\theta}_H + \delta)\left[\frac{-P_{C|L}(1-q) - (1-P_{C|L})(1-p)}{2\delta}\right] + (\bar{\theta}_L + \delta)\left[\frac{1 - P_{C|L}q - (1-P_{C|L})p}{2\delta}\right]$$

for cutpoint elites having observed ω_L. We insert these expressions into the indifference equations for elites in low and high peasant opportunity cost regions from expression 2.13 to solve for $\bar{\theta}_L$ in terms of the parameters of the model.

Let the probability of peasant revolt conditional on seeing ω_H be $M_H = \frac{\mu(\beta - \omega_H)}{\tau}$ and the probability of peasant revolt conditional on seeing ω_L be $M_L = \frac{\mu(\beta - \omega_L)}{\tau}$. Let:

$$A_H = \frac{1 - P_{C|H}(1-q) - (1-P_{C|H})(1-p)}{2\delta} \qquad B_H = \frac{-P_{C|H}q - (1-P_{C|H})p}{2\delta}$$
$$A_L = \frac{P_{C|L}(1-q) - (1-P_{C|L})(1-p)}{2\delta} \qquad B_L = \frac{1 - P_{C|L}q - (1-P_{C|L})p}{2\delta}$$

Then solving for $\bar{\theta}_H$ and $\bar{\theta}_L$ we have:

$$\bar{\theta}_L = \frac{\delta(B_H A_L \pi - A_H B_L \pi - A_L - B_L) + k(A_L\pi - A_H\pi - 1) + A_H M_L - A_L M_H + M_L/\pi}{A_H B_L \pi - B_H A_L \pi + A_H + B_L + 1/\pi} \tag{A1}$$

and

$$\bar{\theta}_H = \frac{\delta(B_H A_L \pi - A_H B_L \pi - A_H - B_H) + k(B_H\pi - B_L\pi - 1) + B_L M_H - B_H M_L + M_H/\pi}{A_H B_L \pi - B_H A_L \pi + A_H + B_L + 1/\pi} \tag{A2}$$

A.2 Comparative statics

Using the expressions derived in the previous subsection, we derive the comparative statics that motivate our empirical analysis.

Note that $A_H, B_L > 0, A_L, B_H < 0$ by the assumption that $p, q \in (0,1)$. Notice also that $A_H + B_H = A_L + B_L = 0$. Simplifying, we demonstrate that $\bar{\theta}_L > \bar{\theta}_H$:

$$\bar{\theta}_L - \bar{\theta}_H = \frac{2\delta(M_L - M_H)}{2\delta + \pi(1 - (P_{C|H} - P_{C|L})(q-p))} > 0 \tag{A3}$$

by the assumptions that $\omega_L < \omega_H$ (so $M_L > M_H$) and that $P_{C|H}, P_{C|L}, q, p < 1$. We now take derivatives to find comparative statics with respect to k, M_L, M_H, and δ. Starting with k, we have:

$$\frac{\partial \bar{\theta}_H}{\partial k} = \frac{\partial \bar{\theta}_L}{\partial k} = -\pi \tag{A4}$$

which is negative, by the assumption that $\pi > 0$. This implies that, in conditions of greater regime strength, the threshold level of loyalty is lowered. Next, we take the derivatives with respect to M_L and M_H:

$$\frac{\partial \bar{\theta}_L}{\partial M_L} = \frac{\pi(P_{C|H}p - P_{C|H}q - p) - 2\delta}{\pi((P_{C|H} - P_{C|L})(p-q)) - 1) - 2\delta} \qquad \frac{\partial \bar{\theta}_H}{\partial M_L} = \frac{\pi(P_{C|H}p - P_{C|H}q - p)}{\pi((P_{C|H} - P_{C|L})(p-q)) - 1) - 2\delta}$$

$$\frac{\partial \bar{\theta}_L}{\partial M_H} = \frac{\pi(P_{C|L}q - P_{C|L}p - 1)}{\pi((P_{C|H} - P_{C|L})(p-q)) - 1) - 2\delta} \qquad \frac{\partial \bar{\theta}_H}{\partial M_H} = \frac{\pi(P_{C|L}p - P_{C|L}q + p - 1) - 2\delta}{\pi((P_{C|H} - P_{C|L})(p-q)) - 1) - 2\delta}$$

All of these partial derivatives are positive (both numerators and denominators are negative) by the assumptions that $q > p$ and that probabilities are between 0 and 1. Using that $M_L = \frac{\mu(\beta - \omega_L)}{\tau}$ and $M_H = \frac{\mu(\beta - \omega_H)}{\tau}$, we have that cutpoints are increasing in β and μ decreasing in τ and ω_L and ω_H. This implies that elites are more likely to remain loyal when the cost of peacekeeping is low and when the relative benefits of collective action for peasants are smaller (in either drought-affected or non-drought affected regions).

Turning attention to 2.10, we can see that elite cutpoints enter linearly in the expression for the peasants' cutpoints $\bar{s}(\omega_i)$. First, notice that $\bar{s}_H < \bar{s}_L$ by $\bar{\theta}_H < \bar{\theta}_L$ and by the assumption that $\omega_H > \omega_L$. This implies that peasants with high opportunity costs need more assurance that elites hold less loyalty to the government in order to rebel. Second, because the elite cutpoints enter positively in the expressions for $\bar{s}_H$ and $\bar{s}_L$, the sign of comparative statics with respect to μ, β, τ, ω_L, ω_H, and k are the same. This implies that $\bar{s}(\omega_i)$ is higher (and thus peasants are more willing to rebel) when β and μ are high, when τ and ω_i are low, and when the government is weak (k is low).

B. Drought and Maize Prices in Mexico City

In this section, we present evidence linking droughts—measured through the Palmer Drought Severity Index—and maize prices in Mexico City. Bid-ask price data come from Florescano (1969), who compiled it from the *pósito y alhóndiga* books produced by city council officials. The *alhóndiga* was the city's official maize distribution facility; in principle, all maize brought into the city had to be taken there, and only there could the grain be sold to the public. We use the standardized data produced by Arroyo-Abad (2007).

Figure B.1: Maize Prices and Drought in Mexico City, 1720-1813

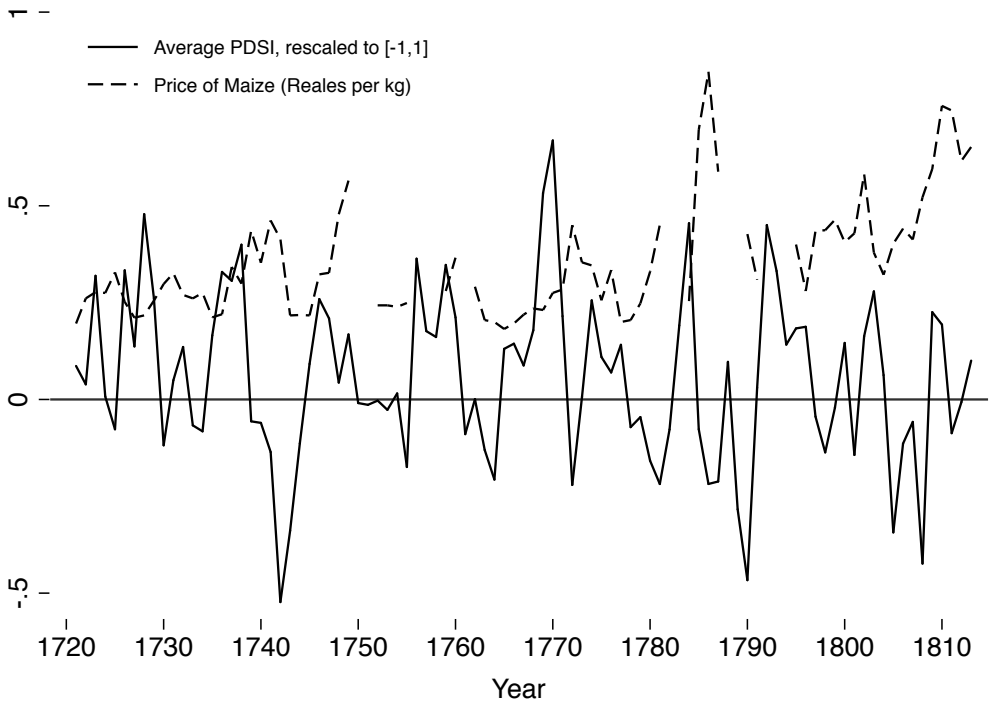


Figure B.1 and table B.1 show that bad weather is associated with higher maize prices. This finding is in line with one mechanism highlighted in past work that finds a relationship between drought and conflict (e.g., Mehlum, Miguel and Torvik 2006; Dell, Jones and Olken 2014).

Table B.1: Maize Prices and Drought in Mexico City, 1720-1813

	Maize Prizes (Reales/kg)			
	Avg. PDSI in Mexico City		Avg. PDSI in New Spain	
	Levels	First Difference	Levels	First Difference
	(1)	(2)	(3)	(4)
Avg. PDSI	-0.016**		-0.017***	
	(0.0069)		(0.0048)	
Avg. PDSI (First Difference)		-0.015**		-0.016***
		(0.0071)		(0.0050)
Constant	0.36***	0.014	0.36***	0.014*
	(0.016)	(0.011)	(0.012)	(0.0079)
Mean of DV	0.35	0.36	0.35	0.36
SD of DV	0.15	0.15	0.15	0.15
R sq.	0.039	0.098	0.044	0.100
Observations	80	73	160	146

OLS estimations. The unit-of-analysis is the year. Robust standard errors in parentheses.

C. The Expuslion of the Jesuits and Insurgency in 1810–1821

Our theory indicates that dissatisfied elites should be less likely to put down peasant rebellion if the threat of government punishment falls, making unrest from below more likely. For the Spanish Crown, this spell of weakness came about after Napoleon's invasion. In section **??**, we evaluate the role of one important source of elite disloyalty during this period of vulnerability, exposure to the centralization of the *alcabala* tax, which affected regional elites differentially. In this section, we explore a second source of elite grievance: the expulsion of the Jesuits by the Crown in 1767.

The Jesuit order, since its establishment in New Spain in 1572, engaged in missionary work in the nortwest, but primarily focused on providing education to the colonial elite, through the establishment of schools and colleges (e.g., Osorio Romero 1979; Gerhard 1993*a*). The Jesuits, in contrast to other religious institutions in the Spanish Empire, were perceived to be fiercely loyal to the pope. To consolidate royal authority, as well as to benefit from the expropriation of the order's wealth, the Crown forcibly and suddenly expelled the Jesuits in the summer of 1767. This move was not well received by local elites, many of whom were students and alumni from Jesuit institutions.

We leverage this Crown policy and implement an alternative operationalization of θ_i by using the presence of Jesuit educational institutions in a district prior to the expulsion. Data on the geographic presence of the Jesuits comes from Osorio Romero (1979); we focus on the location of Jesuit educational institutions by the year of the expulsion. Our theoretical expectation is that those districts with Jesuit presence, and in which the local elite were likely to have strong ties with the order, should be more likely to experience rebellion during the War of Independence.

The estimates, shown in Table C.1, provide suggestive evidence that the Jesuit expulsion played a role in promoting unrest during the War of Independence. Districts with Jesuit presence experience more insurgent episodes (columns 4-6), and are more likely to experience rebellion (columns 1-3, though these coefficients are not precisely estimated). This source of elite dissatisfaction predicts insurgent unrest even after conditioning for the exposure to the *alcabala* centralization, which suggests that the Bourbon reforms may have created multiple sources of elite grievance.

Table C.1: The Expulsion of the Jesuits and Insurgency During Mexico's Independence War, 1810-1821

	Insurgent Activity, 1810-1821					
	Any Insurgent Activity			Number of Insurgent Episodes		
	(1)	(2)	(3)	(4)	(5)	(6) est6
Jesuit School by 1767	0.038	0.075	0.12	3.38*	3.83*	7.64**
	(0.12)	(0.13)	(0.17)	(1.94)	(1.98)	(3.31)
Avg. PDSI in 1808		-0.21***	-0.16**		-0.79**	-0.23
		(0.051)	(0.065)		(0.34)	(0.66)
Alcabala Chartered in 1775			0.31**			3.66**
			(0.15)			(1.53)
Alcabala Farmed in 1775			0.26*			1.21
			(0.15)			(1.10)
Alcabala Revenue Pre-Centralization (1775)			0.026			-0.69
			(0.053)			(0.56)
Std. Dev. PDSI in 1808		1.19***	1.23**		5.90	2.92
		(0.36)	(0.48)		(4.74)	(7.49)
Maize Suitability		0.11	0.049		0.96	1.07
		(0.080)	(0.13)		(0.66)	(1.18)
Avg. Altitude (log)		-0.053	-0.11*		0.21	-0.41
		(0.040)	(0.057)		(0.37)	(0.52)
Surface Area (log)		0.086**	0.038		1.13***	1.35**
		(0.042)	(0.071)		(0.38)	(0.64)
Malarial Zone		0.029	0.066		0.44	1.02
		(0.083)	(0.12)		(0.72)	(1.32)
Dist. to Mexico City (log)		-0.079	-0.15		-0.87**	-2.29***
		(0.050)	(0.090)		(0.34)	(0.76)
Constant	0.49***	-0.33	0.63	1.67***	-8.60*	6.61
	(0.038)	(0.56)	(0.76)	(0.20)	(4.90)	(5.99)
Mean of DV	0.49	0.53	0.67	2	2.16	3.05
SD of DV	0.50	0.50	0.47	3.80	3.93	4.97
R sq.	0.00050	0.23	0.28	0.070	0.24	0.38
Observations	195	178	83	195	178	83

OLS estimations. See equation (3.2) for the econometric specification. The unit-of-analysis is the district. Robust standard errors in parentheses.

D. Supplementary information on empirics

Figure D.1: Map of pre-reform tax administration