

Violent Rebellions and Criminal States

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Abstract

A legitimate state uses violence to enforce contractual agreements within its territory. Criminal organizations may enforce transactions that are legally restricted or banned, or otherwise ignored by the legitimate state. In this sense, criminal organizations may also function as states. Legitimate states may be threatened by violent rebellions. I model how legitimate states and rebellions may settle conflict by agreeing to share the market for contract adjudication, which effectively turns the rebellion into a criminal state. Empirical evidence suggests this strategy has been a widely-employed response to rebellion during the second half of the 20th century. *JEL*: D74, F52, H11, K42

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I. Introduction

In April 2008, neighboring clans in the Ziarat District of Pakistan were embroiled in a dispute over the operation of a shared mine. Pakistani officials refused to intervene, so local leaders voluntarily turned to Taliban forces and invited them to occupy the region. The Taliban arrived and quickly adjudicated the dispute. Shortly thereafter, they began to arbitrate other commercial disputes, collect taxes, and operate courts and prisons. Conventional wisdom may suggest that the emergence of the Taliban in Ziarat is indicative of incompetence or indifference on the part of the Pakistani government. However, I offer an alternate explanation. The Pakistani government may simply have employed its efficient response to a credible rebellion.¹

A vast set of exchange requires violence-backed, third-party enforcement. A legitimate government provides this service by adjudicating contractual disputes and enforcing its rulings. Yet all governments legally restrict or prohibit some activities, and perhaps ignore others. As a result, opportunities exist for other violence-wielding, third-party enforcers to profit. Diego Gambetta (1993) writes, “[E]very time the state decrees a particular transaction or commodity illegal, a potential market for private protection is created. Trading becomes by definition vulnerable, and illegal dealers have an incentive to seek the protection of other agencies.”

¹ See Shah-Perlez (2008) for more detailed reporting on this event. As compensation for settling the initial dispute, the Taliban received commissions totaling \$45,000 and the right to levy a \$7 tax on each truckload of marble extracted, which yields up to \$500 per day in revenue. On the margin, the Taliban fighters involved in these activities are not actively fighting the Pakistani military. From the Pakistani government’s point of view, the revenue lost to the Taliban may be a relatively inexpensive strategy to deal with this rebellious group. In 2009, the Pakistani government launched well-publicized offensives against the Taliban in several districts, most notably the Swat Valley. However, as of December 2009, there are no reports of any attempts to remove the Taliban from Ziarat.

Protecting trade is a method to delineate economic rights. Delineation may be viewed as a service that is provided by multiple entities, henceforth called states. The distinction between legitimate and criminal states is that criminal states enforce agreements prohibited or ignored by the legitimate state. Both legitimate and criminal states must cope with rival organizations seeking to supplant them. In the case of a legitimate state, the rival is a rebellion. In my model, conflict is a result of imperfect information between the combatants. From this perspective, conflict is a method by which each party obtains better information about the other's capabilities. As information improves, the parties are encouraged to reach the efficient outcome.

I consider scenarios in which sustained conflict has occurred, and I argue the efficient solution in those cases requires the legitimate state to reduce its level of adjudication service. In other words, assuming an agreement is enforceable, the legitimate state should "buy off" or co-opt the rebellion by providing the opportunity to profit as a criminal state. If the rebellion accepts this offer, then it benefits from the policies of the incumbent and is less likely to continue to seek his overthrow. As an empirical test, I analyze panel data from 126 countries during the period from 1960 to 2000. I find that the "relative political capacity" metric is significantly lower in post-conflict periods than it was prior to conflict. This evidence supports the model's theoretical implications.

II. The Role and Motivation of the State

I define a state as an entity that provides third-party adjudication services to individuals who voluntarily engage in exchange. I denote the legitimate incumbent state as the protector. Third-party enforcers other than the protector may also function as states, and those entities are denoted as criminal states. The rights delineated by a criminal state certainly exist, but they are outside the law (and thus not “legal rights”). The notion that criminal organizations may fulfill the role of a state has been well developed by the economics literature.² It is empirically supported by the work of Sobel and Osoba (2009), who find that youth gangs in the Los Angeles area effectively serve as “protection agencies” that reduce violent crime in the areas in which they operate (violent crime is not a rebellious activity, but their evidence supports the notion that criminal organizations function as states).

Following Weber ([1919] 1994) and Lane (1958), a legitimate state is frequently defined as the entity that monopolizes the use of force within a given territory. Yet in contrast to a conventional monopoly, the protector’s status as a monopolist does not preclude the existence of competing enforcers. Following Barzel (2002), I define “power” as the ability to impose cost.³ Third-party adjudication requires the use of violence to impose costs on transactors who violate an agreement, and in this sense the protector is powerful.

² This notion was introduced to economics by Nozick (1974) and Buchanan (1975). For analyses that further develop and explore this idea, see Anderson (1995), Skaperdas (2001), Barzel (2002), Mehlum-Moene-Torvik (2002), Bandiera (2003), Holcombe (2004) and Leeson (2007).

³ Many scholars distinguish “power” from “coercion.” Hayek (1960) defines power as the “capacity to achieve what one wants,” and coercion as the ability to “force other men to serve one’s will by the threat of inflicting harm.” So Hayek’s definition of coercion is equivalent to Barzel’s definition of power.

In order to defend his market share, the protector may use his power against other third-party enforcers, as well as any transactors who employ them. This power is the fundamental basis of the protector's monopoly.

The protector's power is not uniformly distributed over the territory under his control. It should be expected that the protector is most powerful in the regions where the central government is located and weakest in remote and outlying areas. So the protector's monopoly over adjudication is not absolute, but rather one of degrees. In areas where the protector's power is relatively weak, criminal states should be expected to emerge to fill the void.

Credible rebellions are apt candidates to serve as criminal states. They possess expertise in the use of violence. In anticipation of replacing the protector, they may have developed competence at delineating economic rights. Hernando de Soto ([1989] 2002) described this situation in Peru, where the "Shining Path" effectively operated as a state. He writes, "[R]esearch told us that one the primary functions of terrorists in the Third World—what buys them acceptance—is protecting the possessions of the poor, which are typically outside the law. In other words, if a government does not protect the assets of the poor, it surrenders this function to terrorists."

The protector's choice of how much service to provide is made in an attempt to maximize some objective, and I assume that objective is the protector's private wealth maximization. The wealth-capture motive was introduced to economics by Gordon

Tullock (1971). In the case of rebellious groups, Paul Collier and Anke Hoeffler (2004) find empirical support for the motive.⁴ The wealth-capture motive does not require the unconditional repudiation of other motives, such as ideology. However, so long as a wealth-capture motive exists, a tradeoff exists between wealth and other margins. If rebellious organizations were strictly ideological, then the legitimate state's only viable responses to a credible insurgency would be to undermine the rebel's support, employ violent suppression, or abdication. However, given the wealth-seeking motive, the protector has another strategy: provide the opportunity for the rebellion to profit as a criminal state.

⁴ As noted by Collier and Hoeffler, the motive of private wealth maximization has been assumed by a small literature in economics, typified by Grossman (1991). This approach contrasts with a larger literature in political science that views political or social grievances as the primary motive for rebellion. Collier and Hoeffler analyzed civil conflicts occurring from 1960 to 1999, and found "little evidence for grievances as a determinant of conflict. Neither inequality nor political oppression increase the risk of conflict." While they did not reject the "grievance" model, their "greed model" of behavior offered more explanatory power. In this sense, their results support the notion that rebel groups are rational, wealth-maximizing agents. For further discussion of the rationality of revolutionary groups, see Wintrobe (2006).

III. Model

The protector possesses the exclusive legal right for providing third-party adjudication services within the physical territory under his control. The level of adjudication service and the protector's cost are denoted as s and $c_1(s)$, respectively. In this model, the protector is unable to engage in price discrimination.⁵ As a result, his preference is to offer a uniform service at the monopoly price p^M and provides a level of adjudication service equivalent to s^M . This scenario is illustrated in Figure 1 (the second marginal cost curve $c_2(s)$, is explained below).

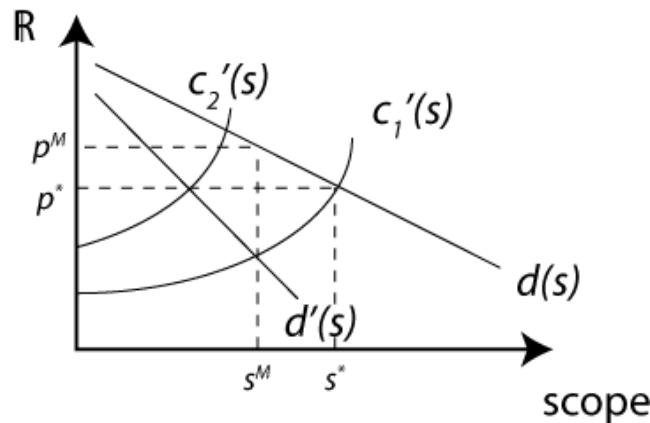


Figure 1: the supply of and demand for adjudication services.

Consider a competing enforcer, henceforth denoted as the mafia. The mafia's marginal cost curve is $c_2(s)$, where $c_1 < c_2$ and $c_1' < c_2' \forall s$. These constraints reflect two

⁵ In reality, all monopolists should be expected to exert resources to learn about demand in order to engage in some form of price discrimination. However, so long as the monopolist's information is imperfect, he cannot engage in perfect first-degree price discrimination. The absence of perfect information is the fundamental basis of this model's principal implication.

factors. First, the mafia is inefficient relative to the protector (*ceteris paribus*, the illegality of its operation is costly). Second, to properly adjudicate a transaction, an enforcer must gather information about the value of the transaction and the transactors themselves, and this information could be used to exploit the transactors *ex post*. I expect transactors are aware and wary of this risk. On the margin, this wariness increases the provider's cost to serve a given level of demand. While the protector may exploit the populace to some degree, I assume the mafia is "more exploitative" in expected terms (the mafia's *ex ante* commitment to avoid exploitation is less credible than the protector's). This serves to increase the mafia's costs.

Even though the mafia is relatively inefficient, it may still profit by serving the segment of the market neglected by the protector. Figure 2 represents this scenario, where the mafia's marginal cost curve is shifted accordingly. Suppose the protector held a credible belief that the mafia would cooperate and serve only the protector's excess demand. In this scenario, the protector would tolerate the mafia's existence. That may be true even if it was costless to eliminate the mafia, because from society's point of view, the mafia increases social welfare so long as the deadweight loss it mitigates dominates the costs of its exploitative behavior. To the degree that the protector's position as the incumbent government is a function of social welfare, then the mafia may benefit the protector.⁶

⁶ Without the mafia, the protector may be compelled to provide a level of service greater than s^M in order to reduce the deadweight loss and capture that benefit. This implies that the mafia's existence may reduce the protector's level of service, *ceteris paribus*. Yet the mafia's exploitative behavior may reduce social welfare, which likely compels the protector to expand his policing operations.

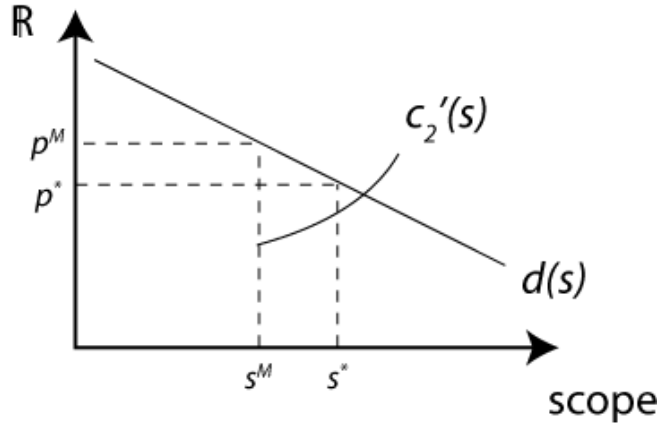


Figure 2: the supply of and demand for the mafia's adjudication services.

The mafia may pose a risk to the protector, however, in that it may not accept the protector's monopoly. If the mafia chooses to compete for market share, then conflict arises. In this case, the mafia has evolved into a rebellion. Had perfect information been assumed, the Coase Theorem (1960) applies and rebellions would never occur. However, the existence of conflict in reality implies that information is imperfect, and that the degrees of imperfection vary across societies. For example, it has been widely observed that wealthy countries are less likely to experience civil conflict. This may be because protectors in wealthier nations have better information about criminal states within their territory, either due to the society's underlying economic institutions or because of the wealth those societies devote to policing mafias. Moreover, mafias in wealthy societies may have better information about the protector's capabilities, and thus avoid the mistake of rebelling against a strong protector.

My framework follows Tullock (1974, 1980), who argued that rebellions force protectors to play a game with wealth-reducing constraints. I consider a repeated, three-stage game

between the protector and the mafia. During the first stage, the protector sends a signal to the mafia concerning the protector's power. During the second stage, the mafia chooses either to adhere to the protector's segmentation of the market, or to engage in Cournot competition. Finally in the third stage, both parties choose a level of service, and the protector can choose to engage in conflict with the mafia. At the conclusion of the third stage, each player receives his payoff and the game is repeated.

If the mafia acquiesces to the protector's segmentation of the market, then the protector receives a profit of $p^M s^M - c_1(s^M)$, where the superscript m denotes the monopoly level. The mafia receives a payoff of $\hat{p}\hat{s} - c_2(\hat{s})$, where \hat{p} and \hat{s} denote the price and level of service offered by the mafia. If the mafia chooses to rebel, then each player simultaneously chooses a quantity of s to supply. Each player receives the payoff $d(s_1, s_2)s_N - c_N(s_N)$ for $N \in \{1, 2\}$, where the protector and mafia are denoted as players 1 and 2, respectively.

In a conventional Cournot game, the players choose s_1^* and s_2^* to simultaneously solve the first-order conditions. Periods of conflict are inherently unstable, and both parties are discouraged from signaling any potential weakness or distress to their opponent. So I do not impose the conventional equilibrium solution on the players, and I do not derive refutable propositions about how the level of service changes during an active conflict. I assume the players will choose some s_1 and s_2 , and the process by which that occurs is common knowledge. If the mafia's expected payoff from rebellion (conditional on s_1

and s_2 , among other factors) dominates the payoff from cooperation, then the mafia will rebel.

If rebellion occurs, the protector may choose to fight during the third stage, which is costly to both the protector and rebellion. The protector could choose to fight a mafia that has not evolved into a rebellion, but in this model he has no incentive to do so because it lowers his current-period profit without altering his expected profit from the repeated game (in reality, protectors might fight mafias preemptively, but the dynamic factors that motivate preemptive conflict are outside the scope of this model). If the protector chooses to fight, then the protector's and rebellion's payoffs are reduced by the amounts $\omega_1(W)$ and $\omega_2(W)$, respectively.

The protector uses conflict as a way to reestablish his control of the market, and consequently the mafia's decision to rebel is a tradeoff between the gains from competition and the cost of fighting the protector. However, from the protector's perspective, competition and conflict are costly. To avoid those costs, the protector may signal its strength to the mafia. The signal provides information about the curve ω_1 , which influences the protector's willingness to fight. During the second period, the mafia must choose to rebel or not. Its decision is driven by the payoffs $\hat{p}\hat{s} - c_2(\hat{s})$ and $d(s_1, s_2)s_2 - c_2(s_2) - E[\omega_2(W)]$. This implies that the protector faces a first-period tradeoff between $p^M s^M - c_1(s^M) - \sigma$, where σ is the cost of the signal, and

$d(s_1, s_2)s_1 - c_1(s_1) - \omega_1(W)$.⁷ In the first case, the protector sends a signal that his power is sufficient to punish the mafia for deviating from cooperation. In the latter case, the protector foregoes the cost of the signal and instead resigns himself to conflict.

At this juncture, I restrict my analysis to scenarios in which sustained conflict exists between the protector and the rebellion. In other words, the protector's signal was insufficient to compel the mafia to cooperate, and after a round of fighting, neither the protector nor the rebellion is willing to concede to the other. Consequently, the protector and rebellion's payoffs are $d(s_1, s_2)s_N - c_N(s_N) - \omega_N(W)$ where $N \in \{1, 2\}$.

Both parties would gain by eliminating warfare entirely. If transaction costs are low relative to the costs of conflict, then the parties are expected to settle. Settlement implies stability, which implies the equilibrium strategies of s_1^* and s_2^* . The difference in quantities may be large ($s_1^* \gg s_2^*$), since the parties' cost curves may differ substantially. However, under all but extreme circumstances, it is expected that $s_1^* < s^M$. This result is this model's principal implication: in scenarios in which extended civil conflict has occurred, the protector's level of adjudication service will be lower post-conflict than it was pre-conflict, *ceteris paribus*.

⁷ On the margin, the protectors' cost of acquiring power may be influenced by the populace's attempts to control him (see Barzel (2002)). So a protector facing a revolution is expected to lobby the populace to lower his cost of acquiring power, so that he may acquire more of it. In this sense, "states of emergency" and legislation like the USA PATRIOT Act may be thought of as negotiated agreements between the populace and the protector to lower the protector's costs, which implies the protector's cost function is not necessarily constant across scenarios.

Intuitively, the protector's decision to share the adjudication market provides an opportunity for the rebellion to profit beyond what it did as a mafia. This may be thought of as a "rent" paid to a rebellion, in order for it to cease hostilities and return to operating as a mafia. In the presence of perfect information, the parties would have reached the post-conflict outcome without engaging in conflict. However, conflict arose precisely because information was imperfect, and conflicted provided each party better information about the other (the signal σ was replaced with an actual choice of W , which provided better insight on ω_1 than σ alone).

There are at least four reasons why this model may fail to describe reality. First, in this model the parties are not encouraged to eliminate their rival. Yet perhaps they are in reality, due to ideology, religious beliefs or ethnic tensions. Or perhaps dynamic incentives exist that encourage one party to eliminate the other. For example, the threat of a disproportionate response may be a factor that prevents mafias from evolving into rebellions, and if so, the protector will need to follow through on the threat when a rebellion occurs. Regardless of the reason, if either the revolution collapses or the incumbent abdicates, then the post-conflict level of service should equal the pre-conflict level, *ceteris paribus*.

Second, rebellions in this model arise as a result of the mafia's private wealth maximization. In reality, perhaps some rebellions are fomented by widespread dissent over the deadweight losses from the protector's monopoly. This motivation was espoused by De Soto, who writes, "[O]ne way to put terrorists out of business is for the

government to assume its modern role as the enforcer of property rights.” His argument implies that revolutions may be subdued by increasing the protector’s level of service.⁸ If his argument is generally applicable, then the protector’s level of service in the post-conflict state should exceed its pre-conflict level.

Third, perhaps protectors do co-opt rebellions, but they do so via explicit payoffs (bribery) rather than sharing the adjudication market. For example, Stevenson (1996-97) describes how Sinn Fein’s Gerry Adams was permitted to raise funds in the U.S. in exchange for a 1994 ceasefire. In 2007, it was widely reported that American forces paid Sunni insurgents in Iraq to “switch sides” and fight against al Qaeda, rather than with them. In cases in which explicit payoffs occur, there is no reason why the protector’s level of service will decrease, and in fact it may increase.

Finally, this strategy may be employed not only in response to an established rebellion, but also to prevent one. Preemption weakens the empirical support for this model, since it discourages conflict and thus decreases the protector’s level of service in non-conflict countries. For example, Tanzania has not experienced a civil conflict as defined by this study. However, tensions have existed between the secular government in Dar es Salaam and Islamic organizations in Zanzibar, and through the 1990s al Qaeda was reported to operate along the northern border with Kenya. In 1990, *The New York Times* reported

⁸ In this model, rebellions occur when mafias that believe the protector is “too weak” to defend his monopoly (decisions are driven by imperfect information, not real shocks). However, suppose an exogenous shock occurred that compelled a protector to reduce his level of service. If the mafia observed this shock, it would expand accordingly. If the protector sought to reestablish his share after the shock and the mafia resisted, then conflict may ensue. The implications of this scenario would be consistent with De Soto’s argument, in that the protector’s post-conflict level of service should exceed the pre-conflict level.

that “much of [Tanzania’s] bountiful natural wealth - gold, rubies, tanzanite - is smuggled across the border into Kenya with the collusion of Government officials” (Perlez (1990)). In 2001, *The Wall Street Journal* reported, “According to miners and local residents, Muslim extremists loyal to bin Laden buy stones from miners and middlemen, smuggling them out of Tanzania ...bin Laden supporters trading tanzanite today face no interference from Tanzania authorities,” even though the smuggling represented a substantial loss of revenue (Block-Pearl (2001)). Given that Tanzanian officials are not enforcing this trade, the legitimate state’s level of service is lower, *ceteris paribus*. While this behavior is typically interpreted as corrupt or incompetent, it may be an attempt to preemptively co-opt a rebellion.

In reality, civil conflicts are complicated events, and all four of these reasons (among others) appear to be relevant in different cases. However, none of these competing theories suggest the protector’s level of service should decrease post-conflict. The importance of these competing theories relative to the analysis in this study is inherently an empirical matter. If the protector’s post-conflict level of service is lower, *ceteris paribus*, then this analysis may describe a consequential aspect of the protector’s behavior.

IV. Data and Empirical Identification

The dependent variable in the theoretical model is the level of adjudication services offered by the legitimate state. This variable is not directly observable. However, Hendrix (forthcoming) reviews various measures of state capacity in the political science literature, and he enumerates the strengths and weaknesses of each metric. One measure, “relative political capacity” (RPC), seems an apt proxy for a protector’s level of service.

The notion of RPC was first developed by Organski and Kugler (1980). Following Kugler and Arbetman (1997) and Feng, Kugler, and Zak (2000), the specific metric I employ is the ratio of actual tax revenue to predicted tax revenue. Predicted tax revenues are calculated as a function of a government’s size and structure. Given similar structures, states that extract more taxes have higher RPC. *Ceteris paribus*, I assume those states also provide higher levels of adjudication. My logic is that governments which are more tightly integrated into third-party transactions have more knowledge about opportunities to earn tax revenue. Assuming governments capitalize on this knowledge, level of adjudication will be positively correlated with RPC.

Tax revenue data is available from a large number of countries, and this data serve as the RPC numerator. The RPC denominator may be estimated by regressing actual tax revenues on a range of economic characteristics, such as the percentage of GDP from various industrial sectors. The fitted line from those regressions may then serve as the denominator. RPC data was generously provided by Kristin Johnson (see Arbetman-

Rabinowitz and Johnson (2007) for details of her methodology to calculate the metric).⁹ Her data set includes 126 countries from 1960 to 2000 (data does not exist for every year for every country, so the panel is unbalanced).

It should be expected that both GDP and actual tax revenues will decrease during an active conflict, if only because the government's ability to operate will be impaired in some regions. GDP and tax revenue may also be lower in post-conflict states because of structural damage from the conflict. However, RPC accounts for these issues by incorporating GDP into the calculation of the metric. If conflict's effects on GDP and actual tax revenues are similar, then the predicted tax revenues will move in tandem with actual tax revenues. So even if conflict significantly influences GDP and tax revenues, it does not inherently alter a nation's RPC.

Following Small and Singer (1982), I define a "civil conflict" as an event with at least 1,000 combat-related deaths in which government forces and identifiable rebel organizations each suffer at least 5% of the fatalities. Collier and Hoeffler (2004) identify seventy-nine conflicts across forty-nine countries that meet this definition from the period 1960 to 1999. Sixty-three of the conflicts identified by Collier and Hoeffler are included in Johnson's RPC data, from a total of thirty-six different nations.

⁹ Only one developed country (Turkey) in my sample has experienced a civil conflict, so I use the RPC metric Johnson calculated specifically for developing countries. This incorporates agricultural production as a regressor in calculating the fitted line, and according to Johnson, it is a more reliable measure of state capacity in developing countries.

This definition of conflict does not hold the nature of conflicts constant across countries. For example, a conflict with 1,000 fatalities should be expected to have a more consequential influence on Peru's government than on China's, since China's population is roughly fifty times larger than Peru's. Therefore, this definition identifies "smaller" and less consequential conflicts in larger countries, but not in small countries. If incumbent governments are marginally less responsive to "small" civil conflicts, then this definition will systematically bias the analysis. However, given that my prediction is that states are responsive to conflict when choosing a level of adjudication service, then a non-responsive bias would not refute my results.

I construct a panel of nations over this period, with three time-period indicators. The first, *ACTIVE*, is set to one during periods of conflict. As previously discussed, I have no refutable implication for the sign of its coefficient. The second, *BETWEEN*, exists because fourteen countries in the sample have experienced multiple conflicts. So this indicator identifies the time periods between conflicts. Finally, *POST* is set to one for periods after the conclusion of the final conflict within a nation. These indicators are all set to zero for nations that did not experience a civil conflict, as well as during periods before the first conflict began.

The distinction between *POST* and *BETWEEN* merits discussion. In those fourteen countries, whatever solution existed after the first conflict evidently failed to prevent future conflict. This suggests that an inefficient strategy may have been employed. In those cases, I assume the protector failed to cede as much of the market as was necessary

to terminate conflict, which eventually led a rebellion to reemerge. Therefore, the empirical implications of the theoretical model are that the coefficient on *POST* is negative, and the difference between the coefficients on *BETWEEN* and *POST* is positive.

I test these relationships via a fixed-effect panel model, represented by equation (1). As controls, I employ per-capita GDP, OECD status, and the ratios of tax revenue and non-tax revenue to GDP. I expect a strong positive relationship between tax revenue and *RPC*, given that the metric fundamentally measures the ability of governments to collect taxes. I anticipate the coefficient on non-tax revenue will be negative, since governments with multiple margins to earn revenue may not be encouraged to exploit any one of those margins as extensively as they would otherwise. *A priori*, I have no predictions for per-capita income or OECD status.

$$RPC_{i,t} = X_{i,t}\beta + \gamma_1 * ACTIVE_{i,t} + \gamma_2 * BETWEEN_{i,t} + \gamma_3 * POST_{i,t} + \varepsilon \quad (1)$$

A static model is appropriate so long as the error terms are not serially correlated. However, suppose error terms systematically decrease over time. In that case, the point estimates of *BETWEEN* and *POST* would be downwardly biased, and *POST* more so than *BETWEEN*. This suggests the need to control for trends over time. Yet different nations are at different stages of their evolution during the same period of time, so it is not expected that behavior across countries would be conditional on a time fixed effect. To address this issue, I estimate equation (1) with a dynamic panel model that incorporates a

lagged dependent variable. This model implements the estimator from Blundell and Bond (1998), which was based on the work of Arellano and Bond (1991).

I treat the indicator variables as exogenous. Regarding *ACTIVE*, this is supported by Thies (forthcoming), who employs a simultaneous-equations framework and finds that state capacity does not influence the onset of civil war (he reports that state capacity decreases during conflict, which suggests the coefficient on *ACTIVE* should be negative). Regarding *BETWEEN* and *POST*, Mason and Fett (1996) consider how combatants in a civil conflict agree to discontinue hostilities. Their empirical model incorporates a range of variables, including the size of the protector's army, battle death rates, and indicator variables for ethnic conflicts, separatist conflicts, and the presence of international mediators. They find that the conflict's duration is the only factor with significant predictive power. My interpretation is that conflicts generally "run their course" (in the context of this model, conflicts continue until the parties' information about their competitor's cost curve is sufficient to engender a stable equilibrium in the Cournot game) Only after this occurs does the protector choose his post-conflict level of service.

Simultaneity clearly exists between RPC and tax revenues. However, it is not an issue in this study because tax revenue is uncorrelated with all the indicators of interest (correlations range from -0.03 to -0.08). So the point estimates of the indicator variables will be consistent, and including tax revenue serves to reduce the regression's variance.

Descriptive statistics are reported in Table 1. Conflict countries are significantly poorer, and their governments seem “less capable,” than their “non-conflict” peers. Considering just the restricted sample of conflict countries, active conflicts occurred in 32% of the years sampled. The frequency of conflict suggests information costs in conflict countries must be high (and in a small number of cases, prohibitive).

Table 1: Descriptive statistics, by full sample and segmented by conflict status. Means with standard deviations in parentheses. The column *t-test* reports the truncated p-values associated with the null hypothesis that the reported means are equal across conflict status.

<i>Sample</i>	Full	Non-conflict	Conflict	<i>t-test</i>
<i>Observations</i>	5,131	3,656	1,475	
<i>Countries represented</i>	126	90	36	
<i>RPC</i>	1.005 (0.471)	1.024 (0.469)	0.958 (0.472)	0.00
<i>GDP_CAPITA</i>	6.238 (7.904)	7.836 (8.760)	2.278 (2.260)	0.00
<i>OECD</i>	0.189 (0.392)	0.255 (0.436)	0.028 (0.164)	0.00
<i>TAX_GDP</i>	0.158 (0.090)	0.170 (0.092)	0.126 (0.077)	0.00
<i>NONTAX_GDP</i>	0.039 (0.061)	0.042 (0.068)	0.029 (0.034)	0.00
<i>ACTIVE_CONFLICT</i>	0.091 (0.288)	0	0.317 (0.466)	
<i>BETWEEN_CONFLICT</i>	0.033 (0.180)	0	0.116 (0.320)	
<i>POST_CONFLICT</i>	0.076 (0.265)	0	0.264 (0.441)	

V. Empirical Analysis

Table 2 reports results from the fixed-effect panel regressions. The full sample contains all observations, while the restricted sample contains observations from “conflict countries” only. In the static model, the Wald test rejects the null hypothesis that no autocorrelation exists. So I focus on results from the dynamic model, which includes a lagged *RPC* variable as a regressor. The 2nd order Arellano-Bond tests the null of no autocorrelation, and in both samples the null is not rejected. So my interpretation is that the dynamic model results are appropriate to evaluate.

For both the full and restricted samples, the coefficient on *POST* is negative, *BETWEEN* is greater than *POST* and both results are significant at the 1% level. My interpretation is that these results support the theoretical model. Protectors may not explicitly recognize the strategy of co-opting a revolution. Yet evidence suggests that is precisely what they do, or at least the strategy is pursued in a sufficient number of cases to generate this empirical result.

Two other results merit discussion. First, consistent with Thies’ finding, the coefficient on *ACTIVE* is negative. However, it is larger than the coefficient on *POST*, which suggests that protectors resist decreasing the level of service during conflict, perhaps from the fear of engendering a perception of weakness (signaling that their cost curve is higher than its actual level). This resistance might be an efficient strategy given the bargaining process with the rebellion, or perhaps it is an obstinate refusal to acknowledge

that the efficient solution to conflict may require a decrease in share. The second result of interest is that the coefficient on *BETWEEN* is significantly higher than the coefficient on *ACTIVE*. This suggests the protector's level of service increases at the conclusion of the first conflict, perhaps in an attempt to regain lost share. However, this strategy evidently led to future conflict, which suggests their choice was inefficient, both in regards to their private wealth maximization and social welfare, in general.

Table 2: Fixed-effect panel models, with *RPC* as the dependent variable. In each box, point estimates are located in the top left, with robust standard errors in parentheses below. In the top right corner, p-values are reported testing the null that the point estimate differs from zero.

<i>Model</i>	Static				Dynamic	
	Full		Restricted		Full	Restricted
<i>Sample</i>	5,131		1,475		5,005	1,439
<i>Observations</i>	5,131		1,475		5,005	1,439
<i>Groups</i>	126		36		126	36
<i>RPC_LAG</i>	NA		NA		0.419 (0.063)	0.421 (0.091)
<i>GDP_CAPITA</i>	0.000 (0.000)	.798	0.000 (0.000)	.117	0.000 (0.000)	.161
<i>OECD</i>	-0.042 (0.031)	.179	NA		0.033 (0.126)	.794
<i>TAX_GDP</i>	4.479 (0.287)	.000	4.690 (0.529)	.000	3.328 (0.411)	.000
<i>NONTAX_GDP</i>	-0.408 (0.435)	.350	-0.587 (0.461)	.211	-0.260 (0.420)	.537
<i>ACTIVE_CONFLICT</i>	0.000 (0.040)	.998	-0.012 (0.039)	.767	-0.131 (0.051)	.011
<i>BETWEEN_CONFLICT</i>	0.093 (0.039)	.020	0.076 (0.039)	.059	-0.021 (0.074)	.781
<i>POST_CONFLICT</i>	-0.117 (0.051)	.024	-0.137 (0.051)	.011	-0.283 (0.086)	.001
<i>CONSTANT</i>	0.324 (0.043)	.000	0.381 (0.063)	.000	0.150 (0.045)	.001
F statistic <i>BETWEEN = POST</i>	28.76		29.84		11.03	20.03
F statistic <i>ACTIVE = POST</i>	9.43		10.83		6.60	9.28
F statistic <i>ACTIVE = BETWEEN</i>	12.71		11.62		5.41	3.09
Wald test H_0 : no autocorrelation	105.5		29.1		NA	NA
2 nd order Arellano-Bond test	NA		NA		0.277	-1.192
<i>Within R</i> ²	0.586		0.561		NA	NA
<i>Between R</i> ²	0.586		0.710		NA	NA
<i>Overall R</i> ²	0.576		0.636		NA	NA

VI. Discussion

An example of this “power sharing” strategy in practice may come from Sicily in the mid-nineteenth century. James Fentress (2000) details the Sicilian revolts of 1820, 1848 and 1860, the last of which successfully overthrew Bourbon rule and enabled Sicily to join the emerging Italian state. Fentress reports that local factions remained discontented after 1860, and in 1866 locals rebelled against Italian authorities in Palermo. The rebellion was suppressed, but afterwards the Italian state effectively pulled out of Sicily. Fentress argues those failed rebels evolved into the Sicilian Mafia, which is fundamentally an organization that acts as a criminal state.¹⁰

Lucy Riall (1992, 1998) corroborates Fentress’ account. She argues the central government had limited authority in Sicily after 1866, and it was preoccupied with setbacks in other parts of the country, including a currency crisis and military losses in the Veneto region. There is no evidence that Italian officials explicitly attempted to co-opt the 1866 rebels to become a criminal organization. Yet regardless of whether the strategy was cunningly or accidentally employed, it appears to have succeeded. Sicily produced four major revolts between 1820 and 1866, but it has not rebelled against its governing authority since. Italian officials evidently recognized that success, and continued to employ the strategy for decades.¹¹

¹⁰ Numerous claims exist about the origins of the Sicilian mafia, and some observers have attempted to trace it back to antiquity. However, contemporary historians appear in consensus that it emerged in Sicily during the mid-nineteenth century.

¹¹ The application of the strategy appears to have been inconsistent since the 1920s. In 1924, Benito Mussolini initiated a campaign to systematically “crack down” on the mafia, which he saw as incompatible with a fascist state (see Reece (1973)). Mussolini’s attempts were ultimately unsuccessful, as have been

In the case of the Sicilian mafia, the protector simply withdrew and permitted the criminal state to emerge in his absence. However, this strategy may be implemented via other options, including legal prohibition. If a transaction is outlawed, then transactors cannot depend on the protector's adjudication. If the transaction's benefits exceed its costs after accounting for the illegality, then criminal organizations are expected to emerge and fulfill the role of the state.¹²

When protectors employ this strategy, dynamic risks exist that a criminal state may acquire enough wealth to eventually overthrow the legitimate state (in the context of the model, additional wealth may enable the mafia to eliminate the gap between its cost functions and those of the protector). To minimize this risk, the legitimate state should withdraw its adjudication services from activities that (i) have low economic value; (ii) are idiosyncratic; and (iii) considered "exploitive" by the populace, or associated with a widely-held social stigma. These factors serve to limit the criminal state's revenue, increase its costs, and potentially damage its reputation with the populace (which decreases the expected profit from replacing the protector via rebellion). The protector can further facilitate a stable (non-conflict) equilibrium by acquiring power that is useful

every attempt since. So while some degree of conflict has existed between the mafia and the Italian state for nearly 90 years, the continued existence of the mafia as a criminal state implies the Italian government continues to employ this strategy, at least on the margin.

¹² Criminal organizations are also expected to engage in exploitative behavior, and focusing on that aspect of their operations may obscure their emergence as criminal states. Tavernise (2009) reports on Taliban fighters in Karachi, Pakistan, who have been engaged in organized criminal activity. She focuses exclusively on activities that exploit the local populace, such as kidnapping and bank robbery. Those incidents certainly occur, but they do not necessarily represent the entirety of the Taliban's activity in Karachi, which Tavernise notes "has been free of the bombings that have tormented Pakistan's other major cities" throughout much of 2009.

to fighting revolutionary movements, but less so at policing the newly-prohibited activity. This implies military power increases at the expense of policing power. Moreover, the legitimate state is expected to prohibit activities that are not easily policed, which serves to increase the credibility of its actions.

Drug trafficking is universally outlawed, and rebellious groups are frequently reported to engage in the drug trade. Might drug prohibitions be an attempt at subduing rebellions? At first blush, the drug trade is a poor fit with the criteria above. Anecdotally, the drug trade seems to thrive in several countries with ongoing conflicts, such as Afghanistan, Colombia and Myanmar. While the direction of causality is unclear, it seems that the drug trade may be more likely to sustain conflict than prevent or terminate it.

This model provides some insight on the conflict between NATO forces and Taliban fighters in Afghanistan. According to an article in *The Economist* (2009), the Taliban in southern Afghanistan has the “proven ability to arbitrate local disputes in a fairly reasonable way,” especially in contrast to American soldiers who are “ignorant of the ways of the Pushtuns.” In the context of this analysis, the Taliban is the low-cost provider of adjudication. As a result, it may be insightful to consider the Afghan government as the insurgent group, or at least to distinguish this conflict from civil insurrections in which the protector is more capable than the rebels.

VII. Conclusion

I model how imperfect information may lead to conflict between legitimate and criminal states. In scenarios in which sustained conflict exists, I predict the efficient solution will be for the legitimate state to relax its monopoly on third-party adjudication. In a sense, the protector “buys off” or co-opts the rebellion to operate as a criminal state. I test this model via a panel dataset of 126 countries from 1960 to 2000. I find that that the legitimate state’s post-conflict level of service is significantly lower the pre-conflict levels. My interpretation is this evidence supports the model’s theoretical implications.

This analysis suggests that a legitimate state’s tolerance of illegal activity and black markets may not be symptomatic of ineptitude or rent-seeking on the part of corrupt officials. Rather, in some cases, it may simply be the wealth-maximizing response to a rebellious threat. This model further suggests that conflict is a mechanism by which competing parties may gain better information about their rival’s capacity, so conflict leads to an efficient outcome. Given the extraordinary social costs involved, I do not suggest that conflict is socially efficient. However, if combatants consider only their private benefits and costs, then the existence of conflict implies that information costs in some societies are high relative to the private costs of conflict.

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