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# SECURITY AND GOVERNMENT CREDIBILITY

T. Randolph Beard, Richard Alan Seals Jr., and Michael L. Stern\*

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## 1. INTRODUCTION

Political institutions are crucial for economic growth and development (North and Thomas 1973; North 1981; North and Weingast 1989; Acemoglu and Robinson 2000). The establishment of secure property rights, facilitated by the coercive power of the state, is the most direct channel by which political institutions affect economic performance (e.g., Acemoglu and Johnson 2005; North, Wallis and Weingast 2009). In the absence of adequate security, individuals are reluctant to make investments in either human or physical capital due to the risk of output expropriation. Hence, a stable security apparatus and the rule of law are antecedents of sustained economic growth (North, Wallis and Weingast 2009; Acemoglu and Robinson 2012).

Creation of a state which can monopolize the use of force yet still provide continuity of privileges to citizens has dominated political thought for centuries (e.g., see Hobbes 1651[1994]; Rousseau 1762[1968]; Smith 1776[1982]; Hamilton, Madison and Jay 1787[2009]; Hayek 1944, 1960; Buchanan and Tullock 1962; Buchanan 1975). More recent literature focuses on political mechanisms which oblige a strong central authority to commit to protect the property and contracting rights of its constituency (North and Weingast 1989; Weingast 1997; Acemoglu and Robinson 2000; Fleck and Hanssen 2006). However, the security necessary to allow for investment and income growth is evidently quite difficult to establish in many areas of the world in which governments are weak, corrupt, or dysfunctional. As a consequence, a prescriptive political objective is to strengthen the government's ability to make credible commitments to establish security in various regions under its ostensible control.

A critical examination of this narrative—that security and, therefore, economic development is well served by establishing a stronger, more credible central authority—is the purpose of this

paper. Our analysis takes as its starting points two basic observations. First, “security” is, in many circumstances, the result of actions taken by both a central authority (the “Government”) and a local actor or actors (the “Warlord”). While the Government might be capable of establishing a minimum level of security, the ultimate security outcome depends on the actions of both parties. Further, these actions can vary in their costs and effectiveness, and there may be varying degrees of complementarity between them.

Second, the interests of the central authority and those of the local actors, while not identical, are frequently coincident. Putting aside the issue of rebellions, for example, in the great majority of cases both the central government and the local strongman benefit directly from increases in wealth and production in the local area. Thus, the joint provision of security has somewhat the character of a public goods contribution game, although the extent to which the parties share in the benefits of economic development will often vary.

We model the production of security in regions characterized by relatively weak central governments as a pseudo-public goods provision game in which both national and local authorities make contributions which jointly determine the level of public security. Both the central authority and the local political actor have an ability to extract some share of the social product that security provision allows, although their shares may differ. This social product—an amalgamation of goods, services, and leisure activities locally produced—depends both on the initial endowments of citizens and the outcome of investment in security made jointly by the formal/central and informal/local governments. By specifying the production of security as the outcome of a game, we are able to examine the underlying incentives of security provision and how they are determined by the constraints faced by the political actors. We allow the Government and the Warlord to differ in the efficiency of their security provisioning, in their

abilities to extract social output, and in their abilities to credibly commit to providing minimum levels of security. Further, the production of security is assumed to exhibit some level of complementarity, and the extent of this complementarity is an important determinant of the resulting security equilibrium.

Our analysis allows us to establish several results useful for understanding the failure of security provision in many regions. First, we show that strategic underinvestment in security by the Government occurs whenever the Government is able to credibly pre-commit to a minimum level of public safety. Governments which have this capability may exploit it through strategic underinvestment in security, thereby “free-riding” on the efforts of the local Warlord. By contrast, when the central government is unable to pre-commit, aggregate security (and economic output) is higher than under pre-commitment, and overall security increases as the Warlord becomes more efficient at security provision. These conclusions are strongly at variance with much of the literature on economic governance, which suggests that government’s ability to make credible commitments is a political precursor for investment and growth (Acemoglu and Robinson 2000, Fleck and Hanssen 2006, Weingast 1995, North and Weingast 1989). Our findings may explain several “anomalies” in the empirics of security which are difficult to reconcile with the conventional view.

The rest of the paper proceeds as follows. In Section 2, we give a brief review of two related strands of the theoretic literature, that on public goods contribution games and the economic analysis of alliances. Section 3 presents our model, and we derive several results relevant to the problem of economic development in poor regions. Section 4 provides some informal empirical analysis relevant to the hypothesis of security free-riding by credible government authorities. We examine evidence from the sociology and economics literature on criminal gangs as well as

neighborhood-level survey data from Chicago, and we argue that our theoretical framework is a useful, if discouraging, characterization of government and gang behavior. We focus on evidence from the United States for two reasons: 1) the gangs in urban areas of the U.S., particularly Chicago, have been more thoroughly documented than gangs in any other country and 2) the United States has a strong central government, presumably with the capacity to make credible commitments, and confirmation of our key theoretical predictions supports the plausibility of these effects in less developed countries. Section 5 provides a conclusion.

## **2. Background Literature**

The analysis presented in this paper is related to previous work in the areas of public good contribution games and the economic theory of alliances, and our approach shares some important elements with the literature on the political economy of development (North and Weingast 1989; Weingast 1995; Acemoglu and Robinson 2000; Acemoglu and Robinson 2001; Acemoglu and Johnson 2005; Acemoglu and Robinson 2008). Traditionally, security has been treated as a pure public good in much of the literature.<sup>1</sup> This postulate, combined with the claim that security will in many cases be *jointly produced*, immediately gives rise to the important problem of public goods provision by a group, with all the incentive problems such circumstances imply.

The earliest and most famous application of this idea is probably Olson and Zeckhauser (1966), who proposed a highly influential theory of “Alliances” in which multiple agents (“allies”) make contributions to their common defense, which is treated as a pure public good. Olson and Zeckhauser sought to explain the widespread conclusion that, in important strategic alliances such as NATO, larger participants with higher benefits (e.g., the United States) disproportionately shouldered the material burdens of the agreements, a result they derived

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<sup>1</sup> There are exceptions. See Hoppe (1989) for a dissenting view.

within their model as an immediate consequence of the incentive logic of public good provision. Subsequent developments of the Olson-Zeckhauser model allow security to be an impure public good, examine optimal alliance size, alliance stability, and other complications.<sup>2</sup> The theory of alliances can be seen as an application of the general class of public goods contributions games. Varian (1994) first examined the consequences of different strategic scenarios for the equilibrium levels of public goods obtained. In particular, Varian (1994) establishes a result which has an analog in our analysis: the Stackelberg (perfect information sequential) contribution game exhibits lower equilibrium levels of public good supply than does the Cournot (simultaneous, almost perfect information) version. We are able to obtain an analogous result for our set-up, in which costs and benefits of the good vary and there is production complementarity, an extension which becomes useful when the sequentiality of security investments is interpreted in terms of the *credibility* of the agents.

An important literature in economics focuses on institutional changes which increase government credibility by limiting its future choice set. The outcome of such an institutional change is a self-enforcing agreement which is mutually beneficial for the government and interested citizens (e.g., see North and Weingast 1989). North and Weingast (1989) point out that the discount rates of monarchs can change over time and are more volatile during war. If there is sufficient concern that changing discount rates will affect the risk of expropriation of private property or default on government debts, interested parties will devise institutions *ex ante* to circumvent the risk. As an example, the authors cite the dramatic increase in both economic growth and the British crown's capacity to raise funds through issuance of debt following the parliamentary reforms of the Glorious Revolution of 1688. This literature has also yielded more complex analyses of credible commitments such as that implied by Federalism, in which a

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<sup>2</sup> See extensive reviews are given by Sandler (1993) and Sandler and Hartley (2001).



dominant central authority cedes power to smaller governmental entities which have the ability to construct their own social contracts within the limits set by the central government (e.g., see Weingast 1995; de Figueiredo and Weingast 2005). However, a key assumption in this literature is that monopoly power over contract enforcement, necessary to initiate these credible commitments, belongs to the central authority.<sup>3</sup>

Most economically underdeveloped regions are not governed by a strong central government. The political environment in unstable areas is commonly characterized by a less extreme distribution of coercive power. Recent literature on the political economy of economic growth in insecure areas emphasizes these mixed scenarios by modeling the incentives of elites to choose institutional arrangements which help them avoid rebellion (Acemoglu and Robinson 2008, Acemoglu and Robinson 2000, Acemoglu and Robinson 2001). In context of an ongoing rebellion, Acemoglu, Robinson and Santos (2010) investigate the extent to which local paramilitary groups can influence a national government's policy through manipulation of political actors. Miquel and Yared (2012) model the relationship between a central authority and Warlord in a dynamic principal-agent model of security provision. In their setup, the principal (government) is assumed militarily superior to the agent (warlord) and the threat of interventions by the principal, which become necessary during civil disruptions (riots etc.), incentivize the agent to provide security locally.<sup>4</sup> Hence, models of the (implicit) cooperative production of security between stronger and weaker agents are examples of the broader general trend in the literature. It is in this setting that we suggest our analysis should be placed.

### **3. Model**

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<sup>3</sup> Tiebout (1956) was the first to illustrate the market mechanisms by which a federalist system of public goods provision would work. However, many of the assumptions in his model, such as costless movement of citizens between locally governed areas, assumes that a central authority has the power to issue sub-governments license to operate and that it can enforce citizens' freedom of choice among those local governments.

<sup>4</sup> We discuss the model by Miquel and Yared (2012) in more detail below.

### 3.1.Environment

The elements of our model are suggested by the study of several important historical examples. To oversimplify, the following stylized facts appear to characterize a number of situations involving relatively weakly-governed districts in many social settings. First, security is ordinarily a shared responsibility between national and local agents outside of circumstances of insurrection. Second, there is ordinarily a large gap between the qualities of resources the parties can contribute to security efforts. Further, credible commitments towards security enhancement often take the form of capital investments such as roads, police buildings, military installations, prisons, telecommunications infrastructure and so on, and these tasks are ordinarily the province of the more powerful central authority. Finally, the degree to which the Government and the Warlord benefit from local economic activity varies greatly, with many central governments lacking effective tax collection. Stylized expressions of these observations will direct model specification.

Security production is a result of costly efforts by two parties, labeled here the “Government”,  $G$ , and the “Warlord”,  $W$ . Both parties benefit from security since both are assumed to obtain shares of the resulting economic output in the form of “taxes”. We assume that the associated “tax rates”, denoted  $\alpha_g$  and  $\alpha_w$ , are exogenous, and the determination of their values is not our focus. However, we will examine the roles of these tax parameters in determining equilibrium security and the likelihood of insurrection by the Warlord.

Our approach resembles the public good contributions framework of Varian (1994). In contrast to Varian (1994), however, we assume from the outset that “tastes” for security play no role: both  $G$  and  $W$  are interested solely in the revenues net of their security spending. Additionally, we allow the production of security to be characterized by differing levels of

technical efficiency which reflect the particular political or social dimensions of the relevant environment. Finally, we consider the role of precommitment by  $G$  in a setting where, contrary to a public good problem, the various agents necessarily receive only partial shares of any gain in the social output occasioned by an improvement in security. Thus, security in our model is not a pure public good.

To begin, we introduce the following notation:

$g$ : security expenditure by  $G$ .  
 $w$ : security expenditure by  $W$ .  
 $\alpha_g$ : output share captured by  $G$ .  
 $\alpha_w$ : output share captured by  $W$ .  
 $V$ : social output.

We will use the subscripts  $s$ ,  $n$ , and  $c$  to denote what we will define as the “sequential” ( $s$ ), “simultaneous Nash” ( $n$ ), and “collusive” ( $c$ ) outcomes.

The way in which “security” is produced by the combined activities of the relevant actors is an important aspect of the analysis. First, security efforts are gross substitutes: if one party reduces its efforts, the other party can, in principle, fill in the void, although the cost of doing so may depend on the level of effort of both parties. Secondly,  $G$  and  $W$  presumably differ in the relative efficiency of their security provision. In order to capture both these effects, yet retain a tractable structure, we specify the security level  $S$  as:

$$S = \lambda w + \theta w g + g \tag{1}$$

where  $\lambda \geq 0, \theta \geq 0$  represent the relative efficiency of the Warlord’s security effort and the degree of positive complementarity in security, respectively. We will assume in what follows that  $\theta > 0$ , so that there is at least a minimal benefit to “working together”. The consequences of this assumption are discussed further below.

We turn finally to the social output function  $V$ . Two properties seem essential:  $V$  must be increasing and, given the linearity of (1), concave in  $S$  and  $V$  to be tractable. Both requirements are satisfied by the simple form:

$$V = A \cdot \ln(s) \tag{2}$$

where  $A$  represents inherent social wealth or the local endowment.<sup>5</sup>

### 3.2. Equilibrium in Three Cases

We turn next to a characterization of the equilibrium points  $(g^*, w^*, S^*)$  for three initial strategic scenarios selected to reflect the nature of the political interactions available to  $G$  and  $W$ . Our interest focuses on the abilities of the parties to enter into certain forms of binding agreements or, similarly, their ability to credibly commit to a course of action. In particular, the order of moves will represent the ability (or lack thereof) of the parties to commit to some level of security effort. Our interpretations of the meanings of these different strategic environments reflect our readings of the conflict literature discussed in Section 2.

As is usual, we interpret the sequential choice version of the game (the “Stackelberg” scenario) in which  $G$  selects  $g$ ,  $W$  perfectly observes  $g$  and then responds with  $w$ , as indicative that the central government can credibly commit to provide a (minimum) level of security  $g$ , perhaps by making sunk investments in infrastructure, entering into contracts with international agencies, and so on. It seems more reasonable to view  $G$  as having this capability rather than  $W$ , but the analysis can be interpreted alternatively at no cost. We term this model the “Sequential Version” ( $SV$ ) and its equilibrium  $(g_s^*, w_s^*, S_s^*)$ .

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<sup>5</sup> The particular functional form in (2) is not essential for some of our results, but facilitates the analysis sufficiently to obviate the necessity of numerical simulations.

When  $G$  and  $W$  pick simultaneously and non-cooperatively, neither is viewed as able to credibly commit to any level of security choice. In this case, we denote the scenario the “Nash Simultaneous” ( $NS$ ) model, with equilibrium point  $(g_n^*, w_n^*, S_n^*)$ .

Finally, one can imagine that both parties are able to enter into binding commitments, thus acting to maximize the sum of their payoffs. We term this case the “Collusive” ( $C$ ) scenario and denote the associated equilibrium point as  $(g_c^*, w_c^*, S_c^*)$ .

### 3.2.1. Sequential Choice ( $SV$ )

For reasons to be made clear below, we turn first to the sequential case. First,  $G$  selects  $g$ .  $W$  sees  $g$  and chooses  $w$ . Thus,  $W$  solves:

$$\max_w \{ \alpha_w A \ln(\lambda w + \theta w g + g) - w \} \quad (3)$$

with best reply  $w^*(g)$ .  $G$  solves:

$$\max_g \{ \alpha_g A \ln(\lambda w^*(g) + \theta w^*(g)g + g) - g \} \quad (4)$$

We obtain a unique interior<sup>6</sup> equilibrium point given by:

$$g_s^* = \alpha_g A - (\lambda/\theta) \quad (5)$$

$$w_s^* = \alpha_w A - 1/\theta + \lambda/(\theta^2 \alpha_g A) \quad (6)$$

$$S_s^* = \alpha_w \alpha_g \theta A^2 \quad (7)$$

Several points are illustrated by (5). First, the relative efficiency of the Warlord in providing security,  $\lambda$ , *does not affect total equilibrium security* because of substitution in efforts in equilibrium. Thus, when  $G$  can credibly commit to a security investment, an increase in the efficiency of  $W$ 's efforts will not raise security in the society. This is due to “free riding” by the

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<sup>6</sup> Note that the maximization in (4) has an implicit non-negativity constraint on the optimal level of  $g_s$ . Hence, if  $\lambda$  is too large or  $\theta$  is too small, then (5) will corner at zero. In this case, the associated corner solutions for  $w_s$  and  $S_s$  would be  $\alpha_w A$  and  $\lambda \alpha_w A$ , respectively.

central authority  $G$ : as  $W$  becomes more competent,  $G$  exploits this altered circumstance by reducing its efforts even though  $g$  and  $w$  are complementary ( $\theta > 0$ ). In contrast to this strong invariance result, the effects of changes in shares  $\alpha_g$ ,  $\alpha_w$ , social wealth  $A$ , and the extent of security complementarity  $\theta$  are all intuitive: higher shares lead to more internalization of the output effect of security, while a wealthier society and/or higher complementarity makes investments in security more lucrative for authorities.

We note finally an “implicit bias” for the central authorities to “shirk” their efforts when precommitment is possible: if, for example,  $\alpha_g = \alpha_w$  (so both parties share equally in any output) and  $\lambda = 1$ , then  $g_s^* < w_s^*$ . We will return to the disincentive effects of credibility on  $G$ 's security efforts in the next section.

### 3.2.2. Nash Simultaneous (NS)

Suppose that neither  $G$  nor  $W$  is able to credibly commit to its security efforts. This may be the case, for example, for regions in which making contracts with third parties is impossible, or the participants are too poor to use a precommitment such as constructing a road. In this scenario, our game is just:

$$\max_g \{ \alpha_g A \ln(\lambda w + \theta w g + g) - g \} \quad (8)$$

$$\max_w \{ \alpha_w A \ln(\lambda w + \theta w g + g) - w \} \quad (9)$$

The equilibrium point  $(g_n^*, w_n^*, S_n^*)$  is given by:

$$g_n^* = \frac{S_n^*}{\alpha_w A \theta} - (\lambda/\theta) \quad (10)$$

$$w_n^* = \frac{S_n^*}{\alpha_g A \theta} - (1/\theta) \quad (11)$$

$$S_n^* = \frac{S_s^* + \sqrt{(S_s^*)^2 + 4 \frac{\lambda}{\theta} S_s^*}}{2} \quad (12)$$

where  $S_S^*$  is defined earlier in (7). Notice that  $S_n^*$ , the security level under simultaneous choice, is expressed in terms of  $S_S^*$ , the security level under sequentiality.

We may now obtain a result analogous, in our context, to Varian's (1994) finding that sequential contributions to a public good result in lower provision than simultaneous contributions. In particular, by (12) we have  $S_n^* \geq S_S^*$ : the ability of the central authority to credibly commit to a minimum security level  $g$  ( $S=g$  when  $w=0$ ) results in lower security due to strategic "underinvestment" by  $G$ . The "rulers", in effect, "free ride" on the equilibrium security contributions of the "locals". This is a disturbing and counter-intuitive conclusion. It is ordinarily the goal of most development efforts to provide national governments with sufficient expertise and stability so that government actions are seen as credible. It is ironic that such credibility may be exploited, resulting in a less secure environment.<sup>7</sup>

In addition to this finding, several further conclusions, potentially relevant to the economics of security, are available from (5-7) and (10-12). First, increases in shares  $\alpha_g, \alpha_w$  will increase equilibrium security under  $MS$ . Further, and unlike the sequential/commitment case, increases in warlord's relative efficiency,  $\lambda$ , will, in equilibrium, increase total security.<sup>8</sup> Thus, a sharp distinction can be drawn: when the central authority cannot pre-commit, improvements in the efficiency of the warlord security apparatus will increase public safety, but cannot be relied on to do so when pre-commitment is available.

As a corollary to the result described above, consider the special case in which  $\lambda = 0$ . This refers to a situation in which the warlord has no independent margin, and can affect security only by combining his efforts with those of  $G$ . In this case,  $S_n^* = S_S^*$  and the sequential nature of security choices has no effect.

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<sup>7</sup> Of course, most development programs seek not just to make the government "credible", but also competent, transparent, and honest. Thus, the point should not be stretched too far.

<sup>8</sup> To see this, recall that  $S_S^*$  is not a function of  $\lambda$ .

### 3.2.3. Collusion between Warlord and Central Authority

Our final scenario is strategically the simplest. Suppose both  $G$  and  $W$  can enter into binding contracts either with each other or strong outside parties, so that one can think of them acting “collusively”, i.e. maximizing their joint payoff. In this case,  $G$  and  $W$  solve:

$$\max_{g,w} \{\alpha A \ln(\lambda w + \theta w g + g) - w - g\} \quad (13)$$

where  $\alpha = \alpha_g + \alpha_w$  indicates their combined share of social output. Optimal choices  $(g^*, w^*, S_c^*)$  satisfy:

$$\alpha A(\lambda + \theta g) = S \quad (14)$$

$$\alpha A(1 + \theta w) = S \quad (15)$$

$$w = (S - g)/(\lambda + \theta g) \quad (16)$$

To derive the implications of this, let  $\mu = \left(\frac{\alpha^2}{\alpha_w \alpha_g}\right) > 1$ . Then we have:

$$S_c^* = \frac{\mu S_s^* + \sqrt{(\mu S_s^*)^2 + 4 \frac{\lambda}{\theta} \mu S_s^*}}{2} \quad (17)$$

where  $S_c^*$  is expressed in terms of  $S_s^*$ , the sequential security level, and the factor  $\mu > 1$ . Thus, by inspection we can conclude that:

$$S_c^* > S_n^* \geq S_s^* \quad (18)$$

Hence, joint maximization leads to higher security than non-cooperative behavior which, however, is nevertheless better than the outcome obtained when only a single party can commit itself. Again,  $S_c^*$  increases in  $\lambda$ ,  $W$ 's efficiency, but  $S_c^* > S_n^* = S_s^*$  when  $\lambda=0$ .

### 3.2.4. Summary

The theoretical analysis to this point gives a few lessons regarding the probable determinants of security when two authorities jointly govern the same area. The ability of one authority to commit (e.g.,  $G$ ) *ceteris paribus*, reduces security since it leads to strategic underinvestment.



In contrast, an inability of the central government to pre-commit can actually improve local security, since in this case the Warlord can expect greater contributions from the central authority, leading him to increase his own efforts. Although the analysis is greatly simplified in many respects, this conclusion may be applicable in some important cases. As we show in the next section, free riding by central powers on local authorities accurately describes the security structure of prisons and many other settings.

We note also that a hallmark of the sequential/pre-commitment scenario is invariance of public security to the efficiency of the Warlord: programs that increase the security impact of Warlord effort will be negated by the central government's "cut and run" tactics. Thus, in situations in which one suspects free riding, outside investment to raise the locals' abilities may be ineffective in improving public security.

#### **4. CRIMINAL ORGANIZATIONS, SECURITY PROVISION, AND ENFORCEMENT OF CONTRACTS**

In the theoretical framework, we have emphasized joint production of security between the Government and Warlord. In many circumstances, criminal gangs could fill the role analogous to the Warlord. Anecdotal evidence from the ethnographic literature and econometric analysis of available survey data on gangs provide an opportunity to evaluate the key predictions of the theory. The primary comparative static results relevant to this exercise are: (1) underinvestment and free-riding by the central authority in cases in which that authority can credibly pre-commit to provide a minimal level of security, and (2) the futility of efforts to improve overall security by increasing the efficiency of the local authority to provide security. While the theoretical model can be used to characterize many developing countries which possess a central government "strongman" who is buttressed by local "warlords", the majority of the evidence we

present is from the United States. We present the evidence from U.S. sources because it suggests that the model describes a relatively broad incentive compatibility problem between central and local authorities, beyond those frequently observed in developing countries.

#### **4.1. Street Gangs**

The sociology literature on street gangs is extensive and spans over 80 years (Thrasher 1927, Short and Strodtbeck 1965, Moore 1991, Jankowski 1991, Hagedorn 1998, Venkatesh 2000).<sup>9</sup> The majority of the research in this area comes from ethnographic accounts of life in and around gangs, and provides a nuanced picture of the relationship between gangsters and citizens.

Several aspects of gang activity appear consistent with our model predictions. First, street gangs provide security services, even if the gang is not the residents' first choice; hence, they contribute to aggregate security. Opposite the police and courts, gang justice is less costly to administer and more decisive.<sup>10</sup> As a result, gangs have a comparative advantage in "protecting" the individuals of the community because gang members generally live in the community and are not encumbered by the civil rights of those they seek to punish (Jankowski 1991). Levitt and Venkatesh (2000) also show that drug-dealing-street gangs have an incentive to maintain civil order as violence greatly increases the costs of peddling drugs. Sobel and Osoba (2009) corroborate our key assumption that street gangs provide security. The authors present econometric evidence that street gangs reduce violent crime within their sphere of influence which suggests security is indeed a joint product of official and informal governments in these neighborhoods.

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<sup>9</sup> The governance activities of extortion-based groups have also been widely studied (Schelling 1984; Skaperdas 1992; Skaperdas and Syropoulos 1995; Konrad and Skaperdas 1998; Skaperdas and Syropoulos 2002).

<sup>10</sup> Because the residents of poor, inner-city neighborhoods are often engaged in the underground economy, they cannot rely on the police to resolve contract disputes related to illicit transactions (Venkatesh 2006).

Because civil authority is frequently inattentive, some residents of economically disadvantaged communities prefer the local gang, over whom they have some direct influence, to police, while others may fear gang justice and refuse to cooperate with law enforcement (Jankowski 1991). Hence, community cooperation, either implicit or explicit, is essential for street gang proliferation.<sup>11</sup> Intelligence gathered from the local population is necessary for apprehension of criminals and, consequently, police officers also require community cooperation in order to do their jobs efficiently. However, the residents of poor neighborhoods are generally mistrustful of police officers, and the paramilitary tactics often utilized by police to subdue crime further undermines the effort to gain favor with the community (Jankowski 1991; Hagedorn 1998; Anderson 1999; Venkatesh 2000).<sup>12</sup> Akerlof and Yellen (1994) model this effect of government policy on the social norms relevant to street gang activity. In the case of “crime-accepting” community norms, the police and judicial system must act with a *consistent* and *credible* crime prevention strategy; otherwise, the gang’s role in the community will be reinforced by the already aberrant temperament of citizens toward the government (Akerlof and Yellen 1994). In this scenario, the government is perceived by the citizens to have the resources to enforce the rule of law but instead chooses to partially cede control to the gang. In context of our model,  $\alpha_g > 0$  and  $\theta > 0$  but one or both are relatively “small” compared to wealthier areas.

The behavior of the civil authority in gang territory described by Akerlof and Yellen is consistent with the “free riding” result presented in this paper. The literature provides further confirmation, by documenting a conspicuously low level of police presence in gang-controlled

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<sup>11</sup> See Jankowski (1991) for an extensive discussion of community acceptance of gang activity. In the terminology of Weingast (1995), the community has a “constitution” in which the citizenry relinquish freedoms to a government (gang) in order to solve the collective action problem of security provision.

<sup>12</sup> Additionally, many gang members are the children, brothers, and cousins of people who live in the community, and while the families of gang members may not want them to be involved with a gang, these family members also do not want them to be incarcerated (Jankowski 1991; Padilla 1992).

areas (e.g., see Venkatesh 2000). During the 1970s, Chicago police who were responsible for Robert Taylor Homes, one of the nation's most violent housing projects, later admitted in a federal investigation that they were not providing the same level of protection to Robert Taylor as they did in other neighborhoods (Venkatesh 2000, footnote 5).<sup>13</sup> With an inattentive police force gang activity rapidly increased such that, “the young gang leaders had become local politicians, each a statesman who inspired fear in some, awe or repugnance in others, but interest in nearly everyone” (Venkatesh 2000, 154).

Cook, et al. (2007) find that the Chicago police have an unwritten agreement with gangs to suppress the underground market for guns in exchange for allowing gangs to engage in other illegal activities—primarily the drug trade. The agreement is enforced by the Chicago police's credible threat of disrupting drug-dealing operations, which is a core revenue generator for many of Chicago's gangs. The dynamic principal-agent model of Miquel and Yared (2012) is relevant to this scenario between the police and gangs: the gangs are expected to exert costly effort in the suppression of gun violence while the police periodically intervene to reinforce the agreement. However, Cook, et al. (2007) also point out that the gangs use the police to help reduce agency costs associated with members violating rules on gun ownership/use within the gang and neighborhood. In this case, the gang and the police (government) have coincidentally aligned interests with respect to gun control, so a more secure environment is desirable for both the gang's business and the city government's broader political objectives. The jointly-provided-

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<sup>13</sup> “Law enforcement officials argued that they could not easily enter some areas and so were unable to respond to criminal activity. They did not feel safe approaching the buildings because they stood exposed in external spaces” (Venkatesh 2000, 72).

security game we describe in this paper is likely more representative of the situation described by Cook et al. (2007).<sup>14</sup>

A remarkable example of formal government relying on local warlord governance can be found in the Tivoli Gardens section of Kingston, Jamaica. At the behest of the United States Government in 2010, the Jamaican central government attempted to arrest Christopher Coke, a powerful organized crime leader who governed Tivoli Gardens with impunity for two decades (Schwartz 2011).

“Coke does not appear menacing—he is five feet four inches tall, with a round baby face—but his dominion in Tivoli Gardens was absolute. His organization, known to residents as “the system,” had its own penal process, including a jail, magistrates, and executioners. Coke’s code was simple—“No robbing, no raping, no killing”—and his justice stringent: teen-age thieves had one hand broken, rapists were beaten, anyone foolish enough to persistently dissent was exiled or killed.” (Schwartz 2011)

Coke had become so powerful that the Jamaican government feared his arrest and extradition, on charges of running a huge cocaine and marijuana smuggling network in the U.S. from Tivoli Gardens, would cause civil disorder in the country (Schwartz 2011). Prime Minister Bruce Golding even authorized the hiring of a law firm in Washington, D.C. to lobby the federal government to delay Coke’s extradition to the United States (Schwartz 2011). Seventy-four civilians died in the ensuing arrest operation, for which a Jamaican police spokesman (ironically) explained, “the objective was to establish law and order in a place where there was none” (Schwartz 2011).

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<sup>14</sup> Miquel and Yared (2012) use evidence from various colonial/imperialistic scenarios from history, such as the Roman Empire’s reliance on local warlords to provide security. The authors point out that the Roman Legions were a relatively small number of military personnel to police the empire—probably less than 500,000 troops. In Miquel and Yared’s setup, the Romans used the legions strategically as an offensive force to solve the principal-agent problem of security provision by the warlord. We would also note that Rome’s strategy is also consistent with our free-riding result.

#### **4.2. Evidence from the Project on Human Development in Chicago Neighborhoods**

We now present econometric evidence from a novel neighborhood survey of Chicago as an additional informal test of the key theoretical predictions. Data from the Project on Human Development in Chicago Neighborhoods (PHDCN) is used to examine neighborhood residents' beliefs concerning the role of government and local gangs on security provision. The PHDCN was designed to measure the experiences of Chicagoans in their neighborhood environment. Average neighborhood responses to a community survey conducted in 1994 of approximately 7,000 residents are used to explain variation in average responses concerning neighborhood gang activity in 2003. The responses in 2003 are from a parallel longitudinal study, which also began in 1994, from a subset of the neighborhoods used in the 1994 community survey.

Responses to the survey questions were coded as dummy variables in which a 1 is assigned for affirmative answers and 0 otherwise. Mean responses were then generated for the 83 neighborhoods in the sample, such that all the variables are continuous on the interval [0,1]. In Table 1, average neighborhood attitudes toward police in 1994 are shown in relation to the average responses concerning relevant gang activity in the neighborhood in 2003. Those residents of neighborhoods with a favorable view toward gangs were less likely to have a favorable attitude toward police. The consistency of the neighborhood responses across such a long period of time is remarkable, given the dramatic demographic changes in Chicago neighborhoods during this same period (Wilson and Taub 2006).

Table 2 shows sample means and regression results for the effect of police performance on community attitudes toward gangs. We chose "Police Do Not Do a Good Job in Preventing Crime?" and "Excessive Force by Police a Problem?" as explanatory variables because the former more closely captures the outcome of interest—security provision—and the latter gives

some information as to the tactics used by police. “Excessive Force by Police a Problem?” is not a statistically significant predictor of neighborhood attitudes toward gangs. However, “Police Do Not Do A Good Job Preventing Crime” from the 1994 survey increases average neighborhood residents’ beliefs in 2003 that the “neighborhood gang helps kids” and the “neighborhood gang helps residents” by approximately 11 and 12 percent, respectively.<sup>15</sup>

Note that the unit of observation is the “neighborhood” as defined by the PHDCN researchers. One concern might be the potentially endogenous relationship between neighborhood attitudes toward police and gangs, as these characteristics may partially determine the unit of observation.<sup>16</sup> That is, PHDCN staff may have used gang territory as a marker for neighborhood boundaries. However, the results are robust to the inclusion of other security variables from 1994 such as attitudes toward gang activity, the frequency of gang fights, and police tactics. We also control for potential selection bias with variables concerning the 1994 survey participants’ plans for moving from the neighborhood and the reasons for their planned move.

The results from the PHDCN first establish that gangs are providing utility for residents, most likely in the form of security services. Additionally, the regression results corroborate the ethnographic evidence (cited earlier) that gangs provide public goods to their respective communities. However, the strength of the association between attitudes toward police effectiveness in 1994 and the perception of neighborhood gangs as providing legitimate services in 2003 is also consistent with our free-riding result.

### **4.3. Prison Gangs**

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<sup>15</sup> The results were similar when we used the other police variables as explanatory variables.

<sup>16</sup> “The PHDCN Scientific Directors defined *neighborhoods* spatially, as a collection of people and institutions occupying a subsection of a larger community.” Information accessed at <http://www.icpsr.umich.edu/icpsrweb/PHDCN/sampling.jsp>.

In U.S. prisons, security provision by the bona fide authorities is abysmal. For example, in 2003 Congress passed the Prison Rape Elimination Act in response to widespread sexual assaults in the prison system. According to the National Inmate Survey, approximately five percent of inmates reported sexual victimization by other inmates or staff in 2010.<sup>17</sup> As a consequence of the limited protection offered by prison officials to inmates, gangs have developed intricate methods of governance to protect (and discipline) their members and exploit non-members (Skarbek 2010 and Skarbek 2011).<sup>18</sup>

Skarbek (2012) argues prison gangs formed to provide protection to inmates, in the California Correction system, following the rapid increase in the inmate population from the late 1940s to the late 1960s. As recently as 2011, the U.S. Supreme Court ruled that California's prisons were unable to provide inmates basic security and medical services (Brown v. Plata et al. 2011). According to a Corcoran State Prison Correctional Officer, there is only one option available to the incoming inmate; "When you come to prison, you have to join a gang. You have no choice. It's a must...because you have no protection. You're on your own. And anything can happen to you." (Skarbek forthcoming, quoted from MSNBC). Warden Robert Ayers sums up the overall security apparatus within San Quentin; "Basically what's happened is, over the years, the Department of Corrections has pretty much given over control of the general populations to gangs" (MSNBC 2010). Hence, strategic underinvestment by the civil authority could also account for the overpopulation of jails and the increased prominence of prison gangs.

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<sup>17</sup> <http://bjs.ojp.usdoj.gov/content/pub/pdf/pdca11.pdf>

<sup>18</sup> These studies are part of a broader literature which investigates the ability of small groups to solve collective action problems and other property rights issues in the absence of formal government (Ostrom, Walker and Gardner 1992, Ostrom 1990, Ellickson 1989). Recent research in this area has also focused on the various internal mechanisms, such as democratic constitutions, organized criminal groups use to solve agency problems (Leeson 2007a, Skarbek 2010, 2011). Additionally, much of this literature focuses on "pockets of anarchy", which in many instances may be created through the strategic interactions described in this paper.



A prison in Venezuela provides a striking example of the substitution away from central government as the local “authority” becomes more proficient at security provision.<sup>19</sup> Within the confines of San Antonio prison on Margarita Island, inmates have carte blanche with respect to guns, drugs and female visitors (Romero 2011). Although violence is still common, the prison is governed by a powerful gang, which has managed to turn San Antonio into a weekend getaway for tourists interested in vice (Romero 2011). As the de facto leader of the prison, Teófilo Rodríguez, states, “there’s more security in here than out on the street” (Romero 2011).

The gang-based evidence presented above, while strongly suggestive and broadly consistent with our theoretical findings, does not establish the reality of the security free-riding hypothesis. Credibility, as used here, is not something one can directly observe. Worse, credibility will inevitably encompass an inter-temporal element, since time must elapse between a promise and its fulfillment. Thus, one can speak of both static and inter-temporal notions of credibility, and as has been widely noted, democratic governments may be unable to behave consistently over time for quite fundamental reasons.<sup>20</sup> The primary result asserts a consequence of a discrete change in government credibility on the ultimate level of (local) security. Identifying such a causal effect is problematic outside of the laboratory.

## **5. Conclusion**

In many areas, security is the product of joint investments by a central government and a local authority. The local authority in question need not be a lawful body: many settings include local security operations by criminal gangs, unrecognized tribal or ethnic groups, or actual

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<sup>19</sup> Skarbek (2010) studies the inmate-governed San Pedro prison La Paz, Bolivia in which inmates developed an extensive division of labor, due to a flourishing trade with non-inmates, and an intricate set of property rights to prison real estate. The relative safety of the prison, allows for regular sightseeing excursions for foreign travelers through the prison (Skarbek 2010). The only security provided by prison guards is to keep the prisoners behind prison walls (Skarbek 2010). Indeed, prisoners are not assigned cells by prison administration but rather must purchase living accommodations from other inmates and are given the keys to their own cells (Skarbek 2010).

<sup>20</sup> Chari and Kehoe (2009) is an example of the time inconsistency problem of the benevolent regulator.

“Warlords” of one sort or another. Further, the security investment of the central authority may or may not be credible, and the efficiency of the parties in providing security is likely to vary by circumstance.

It is a common goal of “state-building” efforts to endow the national political authority with credibility in the belief that only through such a display will local areas have adequate incentive to make necessary investments. However plausible this goal might appear, there is a potentially serious problem that arises when security is jointly provided: a credible government will “free ride” on its ability to commit, and public safety will actually be lower than in the case where no such credible action is available. This result is both counter-intuitive and unfortunate, but there are reasons to believe that it is a reasonable description of many challenging “hot spots”, from Kingston, Jamaica to poor neighborhoods in Chicago, to prisons the world over. When the security choice of the central authorities is credible- so that the local actors know what the government will do- the government will exploit the incentives of the locals to provide security, and strategically speaking, the security contributions are substitutes. The resulting level of public security (and, by implication, investment and production) will then be lower than that obtained with simultaneous or cooperative security provision. Worse, this phenomenon is not merely consistent with some commonality of interest between the central government and the Warlord: the finding relies on this alignment of preference.

The pathology described here is doubly troubling because, by and large, actions which increase the security capability of the local authority will trigger reductions in security contributions by the government and, in the extreme case, result in no improvement in security whatsoever. Thus, the difficulty cannot be remedied by building up the capabilities of the local governing groups. Although, in principle, a central power with sufficient ability to commit to

actions *contingent on the steps taken locally* can avoid this trap, because the actors involved are sovereigns of one kind or another, such a course appears problematic. Building a road is one thing, but getting some third party to force a government to keep its promises is quite another.

Finally, there is nothing in this analysis which precludes its application to certain relations between nation states, e.g., the relations between the U.S. and the government of Afghanistan. In this interpretation, the U.S. is G, and the Afghan authorities are W. The U.S. can clearly credibly commit in the sense of the model: the U.S. can build roads, police facilities, train local officers, and so on. Yet, the U.S. knows that the Afghan authorities have incentives to provide security where that is practical and to the extent that they share in the resulting economic production. The model then predicts both a disincentive for the U.S. to provide “adequate” security, and, even more pointedly, that increases in the capabilities of the Afghans will result in reduced U.S. efforts and little or no improvement in security. Somewhat ironically, such reductions, like the “Vietnamization” of another U.S. war, are presented as the desired and desirable scenario.

## **References**

- Acemoglu, Daron, and James A. Robinson. "A Theory of Political Transitions." *The American Economic Review* 91, no. 4 (2001): 938-963.
- Acemoglu, Daron, and James A. Robinson. "Persistence of Power, Elites, and Institutions." *American Economic Review* 98, no. 1 (2008): 267-293.
- Acemoglu, Daron, and James A. Robinson. "Why Did the West Extend the Franchise? Democracy, Inequality, and Growth in Historical Perspective." *The Quarterly Journal of Economics* 115, no. 4 (2000): 1167-1199.
- . *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*. New York: Crown, 2012.
- Acemoglu, Daron, and Simon Johnson. "Unbundling Institutions." *Journal of Political Economy* 113, no. 5 (2005): 949-995.
- Acemoglu, Daron, James A. Robinson, and Rafael J. Santos. "The Monopoly of Violence: Evidence from Columbia." *unpublished manuscript*, 2010.

- Acemoglu, Daron, Simon Johnson, and James A. Robinson. *Institutions as the Fundamental Cause of Long-Run Growth*. Vol. 1A, in *Handbook of Economic Growth*, by Phillipe Aghion and Steven N. Durlauf, 385-472. Amsterdam: Elsevier, 2005.
- Akerlof, George A., and Janet L. Yellen. "Gang Behavior, Law Enforcement and Community Values." In *Values in Public Policy*, edited by Henry J. Aaron, Thomas E. Mann and Timothy Taylor, 173-2009. Washington, D.C.: Brookings Institution Press, 1994.
- Anderson, Elijah. *Code of the Street: Decency, Violence, and the Moral Life of the Inner City*. New York: W.W. Norton & Company, 1999.
- Brown v. Plata et al.* 09-1233 (Supreme Court, May 23, 2011).
- Buchanan, James M. *The Limits of Liberty: Between Anarchy and Leviathan*. Chicago: University of Chicago, 1975.
- Buchanan, James M., and Gordon Tullock. *The Calculus of Consent: Logical Foundations of Constitutional Democracy*. Ann Arbor: University of Michigan Press, 1962.
- Chari, V. V., and Patrick J. Kehoe. *Bailouts, Time Inconsistency and Optimal Regulation*. Minneapolis: Federal Reserve Bank of Minneapolis, 2009.
- Cook, Phillip J., Jens Ludwig, Sudhir Venkatesh, and Anthony A. Braga. "Underground Gun Markets." *Economic Journals* 117, no. 524 (2007): F588-F618.
- de Figueiredo, Rui J., and Barry R. Weingast. "Self-Enforcing Federalism." *Journal of Law, Economics, and Organization* 21, no. 1 (2005): 103-135.
- Ellickson, Robert C. "A Hypothesis of Wealth-Maximizing Norms: Evidence from the Whaling Industry." *Journal of Law Economics and Organization* 5, no. 1 (1989): 82-97.
- Fleck, Robert K., and F. Andrew Hanssen. "The Origins of Democracy: A Model with Application to Ancient Greece." *Journal of Law and Economics* 49, no. 1 (2006): 115-146.
- Hagedorn, John M. *People and Folks: Gangs, Crime and the Underclass in a Rustbelt City*. 2nd Edition. Chicago: Lake View Press, 1998.
- Hamilton, Alexander, James Madison, and John Jay. *The Federalist Papers*. New York: Classic Books International, 1787 [2009].
- Hayek, Friedrich A. *The Constitution of Liberty*. Chicago: University of Chicago Press, 1960.
- . *The Road to Serfdom*. Chicago: University of Chicago Press, 1944.
- Hobbes, Thomas. *Leviathan*. Indianapolis: Hackett Publishing, 1651[1994].
- Hoppe, Hans-Hermann. "Fallacies of the Public Goods Theory and the Production of Security." *Journal of Libertarian Studies* 9, no. 1 (1989): 27-46.
- Jankowski, Martin Sanchez. *Islands in the Street: Gangs and American Urban Society*. Berkeley: University of California Press, 1991.
- Konrad, Kai A., and Stergios Skaperdas. "Extortion." *Economica* 65, no. 260 (1998): 461-477.
- Leeson, Peter T. "An-arrgh-chy: The Law and Economics of Pirate Organization." *Journal of Political Economy* 115, no. 6 (2007): 1049-1094.
- Levitt, Steven D., and Sudhir A. Venkatesh. "An Economic Analysis of a Drug-Selling Street Gang's Finances." *Quarterly Journal of Economics* 115, no. 3 (2000): 755-789.

- Miquel, Gerard Padro, and Pierre Yared. "The Political Economy of Indirect Control." *Quarterly Journal of Economics* 127, no. 2 (2012): 947-1015.
- Moore, Joan W. *Going Down to the Barrio: Homeboys and Homegirls in Change*. Philadelphia: Temple University Press, 1991.
- MSNBC. "Lockup: San Quentin." *Extended Stay: The Gang's All Here*. 2010.
- North, Douglass C. *Structure and Change in Economic History*. New York: W.W. Norton & Company., 1981.
- North, Douglass C., and Barry R. Weingast. "Constitutions and Commitment: The Evolution of Institutional Governing Public Choice in Seventeenth-Century England." *The Journal of Economic History* 49, no. 4 (1989): 803-832.
- North, Douglass C., and Robert Paul Thomas. *The Rise of the Western World: A New Economic History*. New York: Cambridge University Press, 1973.
- North, Douglass C., John Joseph Wallis, and Barry R. Weingast. *Violence and Social Orders: A Conceptual Framework for Interpreting Recorded Human History*. New York: Cambridge University Press, 2009.
- Olson, Jr., Mancur, and Richard Zeckhauser. "An Economic Theory of Alliances." *Review of Economics and Statistics* 48, no. 3 (1966): 266-279.
- Ostrom, Elinor. *Governing the Commons*. New York: Cambridge University Press, 1990.
- Ostrom, Elinor, James Walker, and Roy Gardner. "Covenants With and Without a Sword: Self-Governance is Possible." *American Political Science Review* 86, no. 2 (1992): 404-417.
- Padilla, Felix M. *The Gang as an American Enterprise*. New Brunswick: Rutgers University Press, 1992.
- Romero, Simon. "Where Prisoners Can Do Anything, Except Leave." *New York Times*, June 3, 2011: A1.
- Rousseau, Jean-Jacques. *The Social Contract*. New York: Penguin Classics, 1762 [1968].
- Sandler, Todd. "The Economic Theory of Alliances: A Survey." *Journal of Conflict Resolution* 37, no. 3 (1993): 446-483.
- Sandler, Todd, and Keith Hartley. "Economics of Alliances: The Lessons for Collective Action." *Journal of Economic Literature* 39, no. 3 (2001): 869-896.
- Schelling, Thomas C. *Choice and Consequence: Perspectives of an Errant Economist*. Cambridge: Harvard University Press, 1984.
- Schwartz, Mattathias . "A Massacre in Jamaica." *The New Yorker*, December 12, 2011.
- Short, James F., and Fred L. Strodbeck. *Group Process and Gang Delinquency*. Chicago: University of Chicago Press, 1965.
- Skaperdas, Stergios. "Cooperation, Conflict, and Power in the Absence of Property Rights." *The American Economic Review* 82, no. 4 (1992): 720-739.
- Skaperdas, Stergios, and Constantinos Syropoulos. "Gangs as Primitive States." In *The Economics of Organized Crime*, by Gianluca Fiorentini and Sam Peltzman, 61-82. New York: Cambridge University Press, 1995.
- Skaperdas, Stergios, and Constantinos Syropoulos. "Insecure Property and the Efficiency of Exchange." *The Economic Journal* 112, no. 476 (2002): 133-146.
- Skarbek, David. "Governance and Prison Gangs." *American Political Science Review* 105, no. 4 (2011): 702-716.

- Skarbek, David. "Prison Gangs, Norms, and Organizations." *Journal of Economic Behavior and Organization* 82, no. 1 (2012): 96-109.
- Skarbek, David. "Putting the "Con" into Constitutions: The Economics of Prison Gangs." *Journal of Law, Economics, and Organization* 26, no. 2 (2010): 183-211.
- Skarbek, David. "Self-Governance in San Pedro Prison." *Independent Review* 14, no. 4 (2010): 569-585.
- Smith, Adam. *An Inquiry into the Nature and Causes of the Wealth of Nations (The Glasgow Edition of the Works & Correspondence of Adam Smith)*. Indianapolis: Liberty Press, 1776 [1982].
- Sobel, Russell S., and Brian J. Osoba. "Youth Gangs as Pseudo-Governments: Implications for Violent Crime." *Southern Economic Journal* 75, no. 4 (2009): 996-1018.
- Thrasher, Frederic M. *The Gang: A Study of 1,313 Gangs in Chicago*. Chicago: University of Chicago Press, 1927.
- Tiebout, Charles M. "A Pure Theory of Local Expenditures." *Journal of Political Economy* 64, no. 5 (1956): 416-424.
- Varian, Hal R. "Sequential Contributions to Public Goods." *Journal of Public Economics* 53, no. 2 (1994): 165-186.
- Venkatesh, Sudhir A. *American Project: The Rise and Fall of a Modern Ghetto*. Cambridge: Harvard University Press, 2000.
- . *Off The Books: The Underground Economy of the Urban Poor*. Cambridge: Harvard University Press, 2006.
- Weingast, Barry R. "The Economic Role of Political Institutions: Market-Preserving Federalism and Economic Development." *Journal of Law, Economics, and Organization* 11, no. 1 (1995): 1-31.
- Weingast, Barry R. "The Political Foundations of Democracy and the Rule of Law." *The American Political Science Review* 91, no. 2 (1997): 245-263.
- Wilson, William J., and Richard P. Taub. *There Goes the Neighborhood: Racial, Ethnic, and Class Tensions in Four Chicago Neighborhoods and Their Meaning for America*. New York: Alfred A. Knopf, 2006.
- Wilson, William Julius. *The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy*. Chicago: University of Chicago Press, 1987.

Table 1: Community Attitudes Toward Police

	<u>Gangs Help Neighborhood Kids?</u>		<u>Gangs Help Residents?</u>	
	Above Avg.	Below Avg.	Above Avg.	Below Avg.
Excessive Force by Police a Problem?	0.207 (0.139)	0.129 (0.135)	0.225 (0.140)	0.119 (0.126)
Police Respond to Calls?	0.563 (0.147)	0.573 (0.155)	0.535 (0.145)	0.596 (0.151)
Police Do a Good Job Locally?	0.495 (0.141)	0.532 (0.155)	0.458 (0.129)	0.561 (0.149)
Police Do Not Do a Good Job in Preventing Crime?	0.327 (0.118)	0.216 (0.131)	0.354 (0.103)	0.199 (0.119)
Observations	39	44	37	46

Notes: The unit of observation is the neighborhood as defined by the researchers of Project on Human Development. Standard Deviations are in parentheses. "Above Avg." indicates neighborhood residents more often responded in the affirmative, while "Below Avg." indicates neighborhood residents more often responded in the negative to the particular question about gang activity.

Table 2: Gangs and the Communities they Protect and Serve

Average Neighborhood Response	Mean (StdDev)	Dep. Variable= Gangs Help Kids?	Dep. Variable= Gangs Help Residents?
Gangs Help Kids?	0.0688 (0.0506)	--	--
Gangs Help Residents?	0.0492 (0.0404)	--	--
<u>Community Survey 1994</u>			
<u>Security</u>			
Police Do Not Do Good Job in Preventing Crime?	0.268 (0.136)	0.107* (0.0576)	0.116** (0.0498)
Excessive Police Force a Problem?	0.166 (0.142)	-0.0213 (0.0480)	-0.00678 (0.0415)
# of Gang Fights Last 6 mos.	0.416 (0.220)	0.0956** (0.0392)	0.0404 (0.0338)
Gang Fights Should Be Ignored By Police?	0.0330 (0.0403)	0.0815 (0.108)	0.0293 (0.0929)
<u>Demographics</u>			
Percent Married	0.376 (0.140)	0.0197 (0.0473)	-0.000902 (0.0409)
Avg. Age	42.23 (5.049)	0.00272** (0.00115)	0.00178* (0.000994)
Percent Black	0.326 (0.364)	0.0715*** (0.0206)	0.0558*** (0.0178)
Percent Hispanic	0.307 (0.301)	0.0179 (0.0312)	0.0353 (0.0269)
Avg. Income	25,000 (5,000)	-0.201 (0.333)	-0.151 (0.288)
<u>Selection Out of the Neighborhood</u>			
Moving to Get Away from Crime?	0.541 (0.170)	0.0579 (0.0924)	-0.00397 (0.0798)
Moving to Get Away from Drugs?	0.525 (0.178)	-0.162** (0.0757)	-0.0811 (0.0654)
Moving to be in a Safer Neighborhood?	0.564 (0.175)	-0.0120 (0.0818)	-0.0566 (0.0706)
Moving to Get Children Away from Kids Who Are Bad Influence?	0.424 (0.170)	0.0897* (0.0528)	0.111** (0.0456)
Likely to Move in Next Five Years?	0.474 (0.138)	-0.0348 (0.0520)	-0.0174 (0.0449)
Constant		-0.117* (0.0632)	-0.0693 (0.0546)
<i>Observations</i>	83	83	83
<i>R-square</i>		0.598	0.530

Notes: The unit of observation is the neighborhood as defined by the researchers of Project on Human Development. Avg. Income is a categorical variable and was recoded as a dummy for whether the neighborhood income was above the mean of \$25,000. Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$