VALUES AND PUBLIC POLICY

Henry J. Aaron
Thomas E. Mann
Timothy Taylor

Editors

The Brookings Institution
Washington, D.C.

Library of Congress Cataloging-in-Publication data:

Values and public policy / [editors] Henry J. Aaron, Thomas E. Mann, Timothy Taylor.
p. cm.
Includes bibliographical references and index.
ISBN 0-8157-0056-3 ISBN 0-8157-0055-5 (pbk.)
1. Social values—United States. 2. United States—Social policy. 3. Social ethics—United States. I. Aaron, Henry J. II. Mann, Thomas E. III. Taylor, Timothy.
HM216.V47 1994
303.3'72—dc20

93-38466
CIP

9 8 7 6 5 4 3 2 1

The paper used in this publication meets the minimum requirements of the American National Standard for Information Sciences—Permanence of Paper for Printed Library Materials, ANSI Z39.48-1984.

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Gang Behavior, Law Enforcement, and Community Values

George Akerlof and Janet L. Yellen

Between 1960 and 1990 crime rates in the United States increased dramatically: murder rates rose from 5.0 to 9.4 per 100,000; aggravated assaults increased from 85 to 424 per 100,000; and auto theft was up from 182 to 658 per 100,000.[1] The response to this upsurge has been increased law enforcement activity, with the incarceration rate more than doubling.[2] Has this policy been the correct response? Are there policy alternatives that have not been adequately pursued? The "bricks-and-sticks" approach to crime ignores the possibility that changing community attitudes toward crime and law enforcement play a role in the current crime wave and that the proper response must involve a conscious attempt to alter those values. This essay focuses on the role of community values in controlling crime. Community cooper-

We thank Jack Wang for valuable research assistance, Gary Burtless, Roger Conner, William Dickens, John DiIulio, B. Curtis Eaton, Elhanan Helpman, Benjamin Hermalin, Lawrence Katz, Lester Lave, Jonathan Leonard, David Levine, David Lilien, Richard Lipsey, David Romer, Paul Romer, Nathan Rosenberg, Ed Safarian, Andrei Shleifer, Oliver Williamson, Michael Wolfson, and Donald Vereen for comments. We are indebted to the National Science Foundation for research support under grant SES 92-10826. The first author also thanks the Canadian Institute for Advanced Research for generous financial support.

ation with local police is essential to law enforcement. Community members decide to cooperate either with the police—since the criminals have violated their values—or with the criminals, if the legal authorities represent an untrusted, alien culture, and the criminals are capable of nasty reprisals. Two conclusions follow from our analysis of the role of community values in deterring crime. First, we stress that manipulation of social values is as important in the control of crime as harsh punishments and high public expenditures for police. Second, we argue that these traditional approaches to crime control may prove counterproductive in the long run if they undermine community values.

The bricks-and-sticks approach to crime and punishment stems naturally from the economic theory of crime developed by Gary Becker. Becker's seminal article[3] provides a framework for answering basic questions: how many resources should be devoted to law enforcement? What should be the form and severity of punishments? How much crime will occur? To answer these questions, Becker developed what later became known as a principal-agent model to characterize criminal activity. The principal-agent approach has proved a productive way of understanding outcomes in a number of relationships in which one person or group (the principal) sets incentives to which another person or group (the agent) responds. Some examples are manager as principal/worker as agent; shareholder as principal/CEO as agent; voter as principal/congressman as agent; there are many others. In crime, the agent is the criminal, whose offenses are an optimal response to the incentives set by the government—the principal. The government determines the penalties imposed on offenders who are apprehended, and the intensity of the law enforcement effort determines the probability of apprehension.

In crime and punishment, as in all other situations involving principals and agents, the outcome depends on who knows what about whom. Becker's analysis implicitly assumes that police detect criminal activity with a probability dependent on law enforcement effort or "monitoring expenditures" for short. However, in reality, police do not operate in a vacuum; in solving crimes they rely greatly on tips from civilian observers. In fact, the major deterrent to crime is not an active police presence but rather the presence of knowledgeable civilians, prepared to report crimes and cooperate in police

investigations. As Jane Jacobs has emphasized, crowded city streets are safe city streets, because busy streets are full of observers.[4] This chapter focuses on the fact that crime occurs in a social setting where the incentive of community members to cooperate with the police depends on the behavior of the criminals, and criminals in turn act so that community members will not reveal what they know. Thus, the principal-agent relationship between government and criminal is complicated by the presence of a third party—the community. We build a model that we use to analyze the implications of these interactions for the level of crime and policies to control it.

Becker assumes that criminals take the odds of detection as determined by factors outside their control, such as the monitoring effort of law enforcement officials. In contrast, we assume that criminals know that the chance of being detected depends both on law enforcement monitoring and on the behavior of the community—and that they can influence the community. This logic has little impact on isolated criminals, who know that their individual behavior has little effect on the community one way or another. But for youth gangs (or organized crime) the interaction is more important. These groups control territory and the openly committed crime within their neighborhoods. They thus have an incentive to control their activity in order to dissuade community members from cooperating with the police. Our focus, therefore, is on gangs, whose members are responsible for a substantial share of inner-city crime, and who manipulate their community's willingness to report crime to their own advantage.

We describe a scenario, increasingly common in American inner cities, in which crime is limited primarily by the (rational) reluctance of gang members to alienate their communities: the police lack control in the sense that community members are unwilling to cooperate. Nevertheless, monitoring and penalties have an indirect effect on crime. Our model points to the necessity for strong community norms against crime. Indeed, we show that in the absence of sufficiently strong norms, there is the frightening possibility that crime will increase indefinitely. This result will occur if community tolerance for local crime rises and community cooperation with the police erodes as the level of crime in society at large rises. Our entire approach thus emphasizes the role of community norms and the legitimacy of the judicial system.

The discretionary role of outside observers in offering or withholding cooperation from the "principal" has been described in similar contexts. Gerald Mars gives numerous examples of "fiddles" with a large number of observers.[5] For example, Newfoundland dockers cause "accidents," which spill out the contents of containers. The workers appropriate the goods, while the supervisors, who share in the loot, look on. More generally, Jean Tirole shows how coalitions among agents and informed observers, supported by side payments, may arise in an organization to manipulate the information received by the principal.[6] We develop a model with a similar coalition between gangs and the community to conceal information from the police. The community conceals information to avoid retaliation and because they are more sympathetic to the gangs than to the police. The gang "bribes" the community by limiting the scope of violence and protecting the community from outside gangs. The willingness of local residents to reveal information to the police, we shall argue, depends partly on the behavior of the local gang but importantly also on the legitimacy of the police in the community.[7]

We begin by describing the behavioral building blocks of the model: the motives of gangs, members of the community, and the government. We then formalize this discussion and describe the possible outcomes in the short run, in which norms and values are fixed. Finally, we discuss long-run outcomes in which norms and values are shaped by past history and the determination of a gang's size and territory. An appendix presents the mathematical details of the model.

The Protagonists: Gangs, Community, Government

The level of criminal activity in the inner city is determined by the interactions among three groups: gangs, community members, and police. The behavior of each of these groups will be described in turn.

Gangs

Territorial control is the defining aspect of gang organization. Indeed in the Midwest gangs (or groups of gangs) commonly refer to

themselves as "nations." Thus the Vice Lord Nation controls a whole area of Chicago. R. Lincoln Keiser gives a precise description of what it means to control territory: Vice Lord territory is that part of Chicago where Vice Lords but not members of other clubs are relatively free from attack.[8]

Fighting is central to gang life because of its role in maintaining territorial control. Its importance is evident, for example, in initiation rights. In Los Angeles barrios, gangs commonly require initiates to fight a group of gang members for a long count of 30. Moderately serious injuries—a broken nose or a dislocated jaw—are common. The analogy between gangs and countries is more than superficial: like countries, gangs have leaders, and governments with both civilian and military wings. The civil authority typically includes a president, treasurer, and secretary; the military authority is typically headed by a so-called warlord.

Gangs typically control the trade in drugs, protection, and numbers in their territory. Gangs are aware of activities that occur in their domain and use their fighting power to ensure that no open activities occur without their tacit consent. Outside gangs cannot freely enter (except for occasional raids). Gangs use this power to extract as much money as possible through the conduct of crime.

Our model of gang behavior is analogous to economic historian Douglass North's theory of feudal governments as rent-seeking monopolists.[9] North and Mancur Olson view feudal lords as monopolists who maximize their income by choosing the "tax rate" that maximizes their revenues. Such high tax rates considerably distort economic activity. Gangs will also try to maximize their revenues, but their control will be even more economically destructive: while a feudal lord must at least be concerned about his ability to extract revenues over the long run, because of high turnover in leadership and a lack of legitimacy, gangs will choose behavior reflecting little concern for adverse long-run effects on inner-city business.

The most important constraint on the criminal activities of gangs comes from the police power of the larger society outside its territory and the attitudes of local residents toward cooperation with the police. Local residents are quite aware of the economic dealings of the gangs in their neighborhood, since such activities as drug dealing require some degree of openness; buyers and sellers must be aware of the locations and times at which trades can take place. If

the residents of poor neighborhoods cooperate with the police, then the police can exact penalties on the gangs. This constraint dictates the gang's strategy: they can pursue their activities only up to the point at which the neighborhood threatens to cooperate with the police rather than with the gang.

Martín Sánchez Jankowski provides evidence that fear of community retaliation constrains gang operations. His evidence comes from many sources: statements by members of the community (who fail to reveal to the authorities what they know about the gangs), by the police, by community workers, and also gang members themselves. The statement of Duck, a Los Angeles teenager is illustrative, showing the restraints placed by one Hispanic gang on its dealings with the community:

> When I was younger I was selling pills to young kids at school. You know, kids in grade school. Well, the parents found out about it and complained to some of the leaders [gang leaders]. Hey, at the time, I was young and thought I could do anything I wanted, I also thought that the gang would let you do what you wanted, so a couple of days later I peddled some more pills to these kids. Then at the next meeting they [the gang] really beat me up, I mean they really took me apart. I couldn't do anything for two weeks. I even had blood in my piss from getting kicked in the kidneys . . . but I got the message, and I stopped . . . I didn't like getting it at the time, but now I understand that if you [the gang] ain't got the community with you it's just a matter of time before you got to close up shop. It's crazy, but I just voted the other day to punish some homey for screwing up with the community.[10]

Other factors may also constrain the rent-seeking behavior of gangs: in the barrios of Los Angeles, gang behavior is possibly tempered by the large family sizes of the barrios, so that gang members are likely to be related by blood or marriage, if not by friendship, to large numbers of the other barrio residents.

Some criminologists have concluded that gangs are not important in crimes such as drug dealing because drug dealing is not recorded in police records as gang-related activity.[11] Nevertheless

there is certainly heavy involvement in drug dealing by gang members. Jerry Sarnecki found that the thirty-five most delinquent juveniles in a Swedish community were linked by gang membership.[12] A significant fraction of other offenders in this community (30 percent) had been accomplices of the same thirty-five juveniles. Thus while many offenses are committed by individuals or small groups in underclass neighborhoods, the gang is a very important node in the networks of many people who undertake crimes.

Our model of gangs emphasizes their pursuit of economic gain and rationality. This view coincides with that of Sánchez Jankowski. However, other observers (for example, James Vigil, John Hagedorn, and Léon Bing) emphasize the importance of noneconomic motives for gang membership and the irrationality of aspects of gang behavior.[13] According to all accounts, gang members spend considerable time hanging out together, which involves verbal sparring, recreational sports, and social activities. Crime is less than a full-time activity. Moreover, not all gang violence is undertaken as a rational defense of territory for economic gain. Raids into foreign territory are sometimes undertaken simply for fun. Such observations, however, do not contradict the premises of our model. An unusual taste for fun does not imply a lack of economic motivation. There is as much reason that a person whose thrill comes from a driveby shootout will take the opportunity to earn a buck as someone whose pleasure comes from Beethoven's Ninth Symphony.

Recent ethnographies furthermore reveal an increase in the economic motivation for gang membership. This change has been associated with an increase in the age of gang members, and greater violence.[14] Jerome Skolnick's interviews of California inmates in 1988 and 1989 showed the rising importance of the gang as a business. In the words of one informant: "[Being a gang member] is just an easier way to get in [to drug dealing]. It's like if you going to get a job and you have a high school diploma. If you don't have one you ain't goin' to get the job."[15]

Lest there be any doubt about the role of gangs in drug dealing, and in community relations, an exception proves the rule. Terry Williams's careful five-year study of a teenage drug ring in the Fort Washington area of New York does not once mention the role of gangs.[16] Does this remarkable omission imply that drug dealing is just done by independent agents? The answer to this question is

supplied by Richard Neely.[17] The Fort Washington area reportedly is controlled by big-time drug traders, who are the gang leaders in this neighborhood. Not only do the big-time dealers control the sale of drugs (as can be seen in Williams's account) but they also use their armed power and inside knowledge to curb other crimes, as we have argued above. According to Neely, "The ordinary law-abiding residents . . . tolerated (the drug dealers) faute de mieux, because (they) protected the neighborhood."

The Community

Gangs live and work within communities whose members are well aware of their activities. Nonworking welfare mothers stay at home and observe what occurs on their streets. Through a network of contacts, their children are also aware of gang activity. Alex Kotlowitz's vivid account of three years in the life of a typical family (the Rivers family) in a crime-ridden Chicago public housing project (the Henry Horner homes) illustrates how much people know and how the information is acquired.[18] It also illustrates the motivations for and against revealing this information to the police.

It is easy to compile a long list of unreported incidents in the Rivers's apartment complex that, in a middle-class area, invariably would have been reported to the police: for example, there were frequent gang shoot-ups in which bullets entered apartments; a hole had been dug through one wall as part of an escape route that would be secret to the police but to no one in the complex; vacant apartments were used as a gang clubhouse; and street dealing was visible to all residents.

Two opposing motives vie with each other in determining the cooperation of the significant fraction of community residents with middle-class aspirations.[19] On the one hand, and most predominantly, residents fear retaliation if they are detected revealing information to the police. On the other hand, there is considerable hatred of the gangs and their drug dealing, even on the part of some addicts. In the most gang-dominated neighborhoods fear typically predominates. Again, the Rivers family is illustrative: a friend of LaJoe Rivers (the mother) was observed tearing up the sheet of paper on which she had outlined a recent gang shoot-up for fear of potential retaliation; residents of the Henry Horner homes did not

use the 911 emergency number for fear that police would show up at their doorstep.

It might be thought that the fear of retaliation is so dominant that residents would never cooperate. This view is incorrect, however, because in some instances tipsters have a high probability of anonymity—partly because so many people are aware of local criminal acts. And, as Sánchez Jankowski and other ethnographers demonstrate, gang members who are apprehended have a high probability of going to jail. Thus, the benefits of tipping off the police may more than compensate the costs of possible retaliation. The fate of the local gang leader in the Henry Horner homes gives a good illustration. The local gang was the Conservative Vice Lords (one wing of the Vice Lord nation) and the well-known leader was Henry Lee. While the residents of Henry Horner homes were in great fear of him, and of the retaliation of his gang on an informer, the police did use an anonymous tip that he was in possession of unlicensed weapons. They raided his apartment with a warrant, found not only the weapons but a considerable stash of drugs, and he received a jail sentence of thirty years.

While the primary motives for and against cooperation with the police by members of the community are hatred of the gangs and fear of retaliation, other secondary motives are also important. First, there is some sympathy for the gangs because of their positive contributions to the community. Since the gangs live in the neighborhood they have an opportunity to show their human side. Thus they curb the selling of drugs to young children; they prevent undesirable outsiders from coming into the neighborhood; and on occasion they use their armed power or their money to support neighborhood functions. For example, in Chicago the gang leaders throw an annual bash in one of the parks. The Players' Picnic features free food and entertainment including games and a jazz band for dancing. The police direct the crowds and traffic with a curfew at ten o'clock, the normal curfew hour for events in Chicago's public parks.

The attitude of community residents toward the police is an important additional influence on their willingness to cooperate. More frequently than not, community residents view the police as another outside, potentially hostile gang: their procedures are often unfair and punishments do not always fit the crimes. The substantial number of false accusations and arrests by the police reinforce this at-

titude. Again, the experience of the Rivers family is illustrative. Over the course of three years, one son was sent to prison for a crime he did not commit (although he had committed probably hundreds like it). Another son was roughed up by the police on one occasion and convicted in juvenile court for running from the scene of a crime (theft of a radio) where he had been an innocent passerby. A friend of the family's with no involvement in crime was shot dead while running away from detectives who were looking for a suspect who, unfortuitously, had the same first name. Although part of the problem is simply police not doing their job well, one must also recognize the difficulty of their job. In underclass neighborhoods, as protection, youth with middle-class aspirations camouflage those values, so they are not prey to the gangs. Police find it difficult to distinguish those who are gang members from those who are affecting gang dress and behavior as protective camouflage.[20] Because of their own violence and error, the police are viewed far more ambiguously in the ghetto than in middle- and upper-class communities.

In the following pages the members of the community who are potential informers will be modeled as "representative agents," all with identical preferences. This use of a representative agent is a common device among economists when they wish to look at an entire group—like consumers or firms—without emphasizing individual characteristics. This tactic involves two simplifications of reality. First, because all representative agents are alike, the diversity in the community is understated. According to Elijah Anderson a central theme of black life in America is the interplay between the large fraction of the community with middle-class values that emphasize the work ethic and those with "street values" that emphasize the returns to hustling. Second, the assumption of well-formed preferences misses the factors involved in the formation of values. Anderson and William Julius Wilson have emphasized the role of community leaders in instilling the work ethic in youth, by their example of hard work and with their fund of homilies for the ready listeners from their own families and from others.[21] In former times these leaders would not only lecture the children of the community; they would also discipline them (including children who were not their own). Both Anderson and Wilson lament the flight of the black middle class from the inner city. Now, they say, the black middle class who remain preach their message warily, because they are

prepared for the disdain of their young listeners who see the meager returns from low-wage jobs as offering little hope of achieving middle-class status and are attracted by the fast (but fleeting) bucks of the drug-dealing gangs. This demographic shift affects the willingness of community members to cooperate with the police. Furthermore, youth are less resistant to joining gangs; and having joined, they have less inhibition against crime and feel less shame from incarceration.

Government

The third protagonist in our drama is the government, which determines the procedures whereby offenders are apprehended, indicted, sentenced, punished, and paroled. The government also sets the budgets for the police and other law enforcement agencies and determines the penalties for various offenses.

We shall view the government as pursuing two goals: keeping crime low and holding spending down. It needs to strike a balance between them. A more general (perhaps more realistic) account would describe the government's actions in more detail. It would allow for the possibility of payoffs between the gangs and government agents who in theory are their monitors.

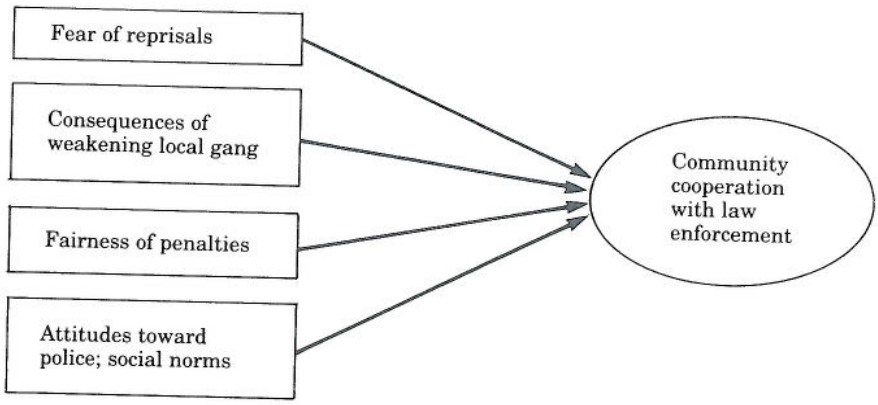
A Model of Gang Behavior

In the following pages we verbally describe a formal model that systematically characterizes the factors affecting the behavior of each of the three main protagonists in the drama of inner-city crime—communities, gangs, and government. The purpose is to explore how the interactions among these groups determine the level of crime and to pinpoint the parameters critical to the outcome. A technical appendix provides a mathematical presentation of the model and its solution.

The Community

Figure 7-1 shows the four factors that we assume affect the willingness of community members to reveal information to the police:

Figure 7-1. Factors Influencing Community Cooperation in Law Enforcement



fear of retaliation, the likely consequences of a weakening of the local gang, perceptions about the fairness of penalties, and attitudes toward the police.

The community's fear of gang reprisals is the first factor limiting its willingness to cooperate in law enforcement. This fear of retaliation lowers cooperation more, the greater the severity of retaliation and the higher the probability that it occurs. We initially assume that there is a fixed probability of retaliation and later discuss the more realistic possibility that the probability of retaliation is proportional to the benefits derived from crime.

The concern of community members with the impact of revelation on the level of crime in the neighborhood is a second factor affecting the community's willingness to cooperate. The expected gain to members of the community from cooperation with the police depends on how the level of crime, with the community under the control of the current gang, compares with the level of crime in other, similar neighborhoods. Community members might reason that, if their local gang is eliminated or seriously weakened, the neighborhood will fall prey to outside gangs. The community will be disinclined to cooperate if the local gang is perceived as less destructive than gangs in other neighborhoods and more inclined to cooperate if local crime exceeds that in other communities. If increasing crime outside the neighborhood raises the tolerance of the community for local crime,

the potential exists for an upward spiral of crime over the longer term.

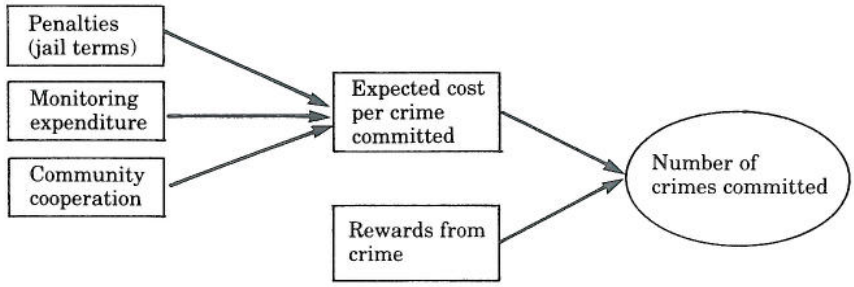
The community's perception of the fairness of the criminal justice system is a third influence on the community's willingness to cooperate with police. Community members are assumed to be less willing to cooperate the higher the gap, positive or negative, between the penalties leveled against offenders and those considered fair by the community. Thus, if penalties are either too low or too high, observers of crimes are less likely to reveal information to the police.

Finally, the community's attitudes toward the police and, more generally, the social norms of the community concerning cooperation with the criminal justice system affect cooperation. In middle-class communities, where attitudes toward police tend to be positive, strong norms for the reporting of crime exist and revelation may even be considered therapeutic. In poor neighborhoods, however, the police play an ambiguous role, preserving some modicum of order but also imprisoning members of the community, sometimes unfairly.

Figure 7-1 omits the level of monitoring by law enforcement, which affects the community's willingness to cooperate ambiguously. On the one hand, higher monitoring raises the community's willingness to report, because with higher police expenditure there is a greater chance that information that is revealed will lead to a conviction. On the other hand, higher monitoring may discourage reporting if penalties are considered unfair, because information that is revealed may lead to the imposition of an unfair penalty. We discuss below the consequences of this potential dependence of reporting on the level of monitoring.

Faced with these factors, the representative community member must decide whether to cooperate or not. Under simplifying assumptions (specifically, a linear utility function), as the level of crime increases there is a critical level of crime where the representative community member switches from noncooperation to cooperation. We call this critical point the cooperation/noncooperation boundary. If community cooperation is needed to police crime, equilibrium typically occurs on this boundary.[22] The gang has an incentive to commit crime right up to the point where people will cooperate with the police; but beyond that point, the community will cooperate and crime will not pay.[23]

Figure 7-2. Determinants of the Number of Crimes Committed by Gangs



Gangs

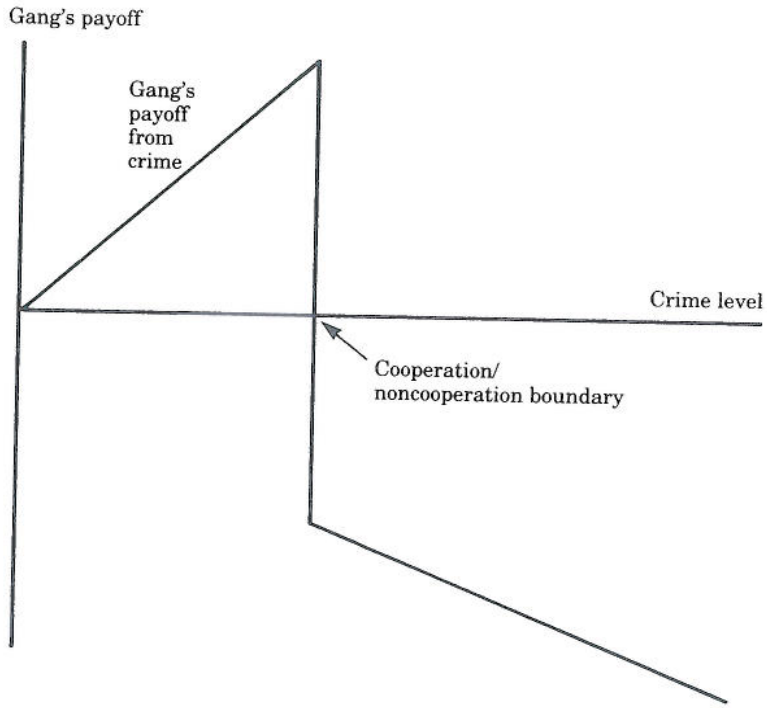
Figure 7-2 shows that gangs determine the number of crimes committed by comparing the benefits and costs of criminal activity.

The attractiveness of outside economic opportunities is a key determinant of the costs and benefits of criminal activity. These opportunities differ systematically between rich and poor neighborhoods. The differential reward to crime is greater in poor neighborhoods, whose residents earn low rewards from legitimate economic activities. Similarly, the opportunity cost of incarceration is lower in poor than in rich neighborhoods. Anderson and Wilson have also emphasized the lack of norms against incarceration and in favor of the work ethic in underclass neighborhoods, because of the departure of middle-class leaders.[24]

Figure 7-2 also shows the factors determining expected penalties. We assume that the expected penalty, per crime, depends on three factors: the jail term (punishment) exacted; the expenditures on monitoring; and the cooperation of the community.

Gangs choose the level of crime subject to the behavior of the community.[25] For sufficiently high values of monitoring and punishments, gangs optimize by pushing the community to its limits of tolerance—on the cooperation/noncooperation boundary. Any higher level of crime would trigger the community's cooperation, resulting in expected penalties so great that crime would have a negative return. Any lower level of crime is suboptimal. Without the cooperation of the community, no penalties can be exacted on the gang, and additional crimes create benefits for the gang without imposing

Figure 7-3. The Relationship between the Gang's Payoff from Crime and the Level of Crime



costs.[26] Figure 7-3 illustrates how the level of crime is determined by the gang.

The broken line in figure 7-3 shows how the gang's total payoff from crime varies with the level of crime, under the simplifying assumptions made in the appendix to this chapter. For sufficiently low levels of crime the community will not cooperate with the police, so crime goes unpunished. Under these conditions crime pays and the total reward to crime is proportional to the amount committed. As crime rises, however, the community's willingness to cooperate increases. Eventually, under our assumptions, there comes a point where the community switches from being uncooperative to being cooperative with the police. This is just at the cooperation/noncooperation boundary mentioned above. At this point, there is a discrete drop in the gang's payoff since at this point the police can exact criminal penalties. In the scenario depicted in figure 7-3, the gang's

net benefits become negative at this critical point. And for increases in crime beyond this critical point, figure 7-3 shows the gang's net benefit declining even further. This result assumes that there is sufficient monitoring that, with community cooperation with the police, crime does not pay. Faced with the payoff function shown in figure 7-3, criminal gangs rationally choose to commit crimes at the level that is on the cooperation/noncooperation boundary.[27]

Community Norms and Crime Fighting Strategies

Our model can be used to ask what strategies the government should optimally pursue to control crime given that law enforcement is costly and, at least in the short run, community values must be taken as given. In other words, we can solve our model for the optimal incentive scheme that the principal (the government) should create to control the agent (the gang) given the attitudes of the community (the observer) and the behavior of the community and the gangs. The optimal strategy to fight crime, and the resulting amount of crime consistent with this strategy, depends on five key parameters: the social cost of crime, the cost of monitoring, neighborhood income, the fair punishment norm, and the community's reporting propensity. The community's reporting propensity depends, in turn, on community norms concerning cooperation with law enforcement efforts, the severity and probability of retaliation against informants, and the level of crime outside the neighborhood. The first three parameters represent factors that have been emphasized in previous economic models of crime and punishment. The last two parameters represent the innovation of this paper.

Table 7-1 summarizes the implications of our model. This table shows how changes in each of the five key parameters affect crime, punishment, and the law enforcement effort, when the government is pursuing the socially optimal strategy. The first column of table 7-1 shows the qualitative response of crime to its key determinants, with socially optimal punishments and monitoring. As would be expected, crime is higher the lower its social cost and the higher the cost of law enforcement. Neighborhood income also matters: poor neighborhoods will experience more crime than rich ones because the reward to gang activity will be higher in areas where outside

Table 7-1. Factors Affecting the Level of Crime and Optimal Law Enforcement Strategy

Factors affecting outcome	*Outcomes and optimal policies*		
	Level of crime	*Level of monitoring*	*Level of punishment*
Cost of monitoring	≥ 0	≤ 0	≥ 0
Social cost of crime	≤ 0	≥ 0	≤ 0
Neighborhood income	≤ 0	< 0	≤ 0
Community reporting propensity	≤ 0	≤ 0	≥ 0
Fair punishment norm	≤ 0	≤ 0	≥ 0

opportunities are poorer, and it simply does not pay to fully offset this higher incentive for crime with higher monitoring expenditure, although, as table 7-1 shows, monitoring levels would be higher in these poorer neighborhoods. This column also shows the sensitivity of crime to community attitudes: greater willingness of the community to report crimes and higher community norms concerning fair punishments contribute to a reduction in crime. Indeed, with sufficiently high norms for cooperation, a crime-free outcome may be attained.

The second column of table 7-1 shows that community attitudes also influence the cost of crime control. Other things equal, less money needs to be spent on law enforcement, and tougher penalties are possible, the higher are community reporting propensities and norms concerning fair punishments.

The third column of table 7-1 shows the qualitative impact of traditional economic factors and community norms on optimal punishments. In our model punishments are assumed, for simplicity, to be costless for the government to impose. Nevertheless, the optimal crime-fighting strategy does not call for punishments at infinitely high levels. The logic for this result is simply that such high penalties would be considered unfair: in response, the community would

withhold its cooperation from the police and crime would rise, rather than fall. In many situations, the optimal punishment under our assumptions is whatever penalty the community considers fair. In some cases the government may find it optimal to set penalties a bit in excess of the levels deemed fair by the community in order to economize on costly monitoring expenditures. But any such violation of community standards is costly in that it lowers community cooperation with the police, enabling the gangs to engage in more crime without triggering community cooperation with the police.[28] The presumption in criminal cases that guilt must be established beyond a reasonable doubt is typically rationalized as a way of protecting the rights of innocent citizens against the state. Extending the logic of our model with respect to punishments, it is apparent that such a stringent criterion for conviction may actually serve to lower crime. Court decisions that are considered unfair could easily undermine the perceived legitimacy of the judicial system, thereby compromising the willingness of the public to cooperate with the police. In effect, fair rules that protect the rights of the innocent, like fair punishments, may increase the willingness of the community to cooperate in the law enforcement effort.

Our concern with the willingness of observers to reveal information applies to more than cops and robbers in the U.S. inner city; the role of informants in altering the structure of principal-agent interactions is crucial in other contexts. For example, sociologists beginning with Max Weber have described purpose, hierarchy, rules, authority, career paths, and decisionmaking in bureaucracies. Weber argued that the bureaucratic form of organization was widely adopted because it used information efficiently.[29] While economic models of information afford insight into such characteristics as the hierarchical structure of bureaucracies, there is no obvious informational interpretation of why, in bureaucracies,[30] decisionmaking procedures should have the "rule of law as [an] ideal."[31] In our model the rule of law is an ideal because well-known and fairly applied procedures maximize the willingness of members of the community of potential observers to reveal their information. Thus something approximating the rule of law is informationally efficient.

Our model takes societal norms as given, but policies to alter such attitudes provide a potentially potent strategy for controlling crime. Previous economic models have viewed punishments and

monitoring as the important tools for fighting crime. This model points out that there are additional tools for fighting crime: policies that affect community willingness to report crimes, community norms for fairness of punishment, and community tolerance for crime will also influence crime. Expenditures directed at altering these other variables that enter our model may prove more cost-effective than direct expenditures on monitoring or longer jail sentences. These conclusions will come as no surprise to sociologists nor, perhaps, to the authorities who deal with crime on a day-to-day basis, but they may be very important for public policymakers, who need to understand why bricks and sticks may be self-defeating.

Long-Run Consequences of Changing Norms

In a recent interview, Los Angeles County Sheriff Sherman Block expressed fears about the long run: "If we don't make a dramatic change in our value system, in our cultural approach, in our return to a concept of individual accountability, then I really fear for the future. Because what I see happening, and what scares me more than anything, is not merely the level of violence, but the level of *tolerance* for violence that is developing."[32] Sheriff Block sees an ever-increasing norm for violence leading to ever-higher levels of crime. Our model illustrates the logic of this concern.

In modeling the short-run determination of crime in a single community, we took as given average crime in nearby communities, which conditions the expectations of community members about how the destruction of the local gang would influence crime in the neighborhood. In our model, community members assume that if the local gang is destroyed the neighborhood will not become crime free; rather, other gangs, similar to those in nearby neighborhoods, would dominate the local neighborhood, and crime would approach levels elsewhere. Thus, the community's tolerance for the local gang, in our model, depends on whether its behavior is better or worse than average. Over the longer run, however, the level of crime considered normal will change, rather than remaining fixed, and the level of crime in one community influences the expectation of crime in its neighbors. High crime outside the neighborhood raises the local com-

munity's tolerance of gang violence; high crime in the local neighborhood induces greater criminal activity in neighboring territories.

When one neighborhood's tolerance for crime depends on the actual levels of crime in other neighborhoods, there is clear potential for escalating levels of crime over the longer term. Indeed, under the simple assumptions of our model, a vicious upward spiral of crime is a distinct possibility. Suppose that the individual neighborhood we have modeled is surrounded by many identical communities. Further, assume that actual crime in each community at a given time depends on the "expected level of crime" in neighboring communities because higher outside levels of crime diminish community willingness to cooperate in the law enforcement effort. Finally, assume that the expected level of crime gradually changes based on actual experience. Our model generates the extreme outcome that, over time, the level of crime will spiral upward indefinitely in the absence of sufficiently strong reporting norms. With sufficiently weak reporting norms, Sheriff Block's fears are realized.[33]

This simple model could be modified in four realistic directions. First, the set of factors assumed to influence community reporting behavior could be expanded to include the possibility that a higher probability of apprehension of offenders will raise the willingness of the community to supply information. This provides a new rationale for law enforcement expenditures: since the chance of catching criminals rises with the level of monitoring, higher monitoring expenditures raise community cooperation besides directly raising the cost of criminal activity to gang members.

Another alteration of the model takes into account the possibility that the gangs' incentives for retaliation depend on the profits they are making from their criminal activities. If the probability of retaliation in our model is proportional to these profits the model is apt to generate two possible outcomes—what economists call dual equilibria.[34] With a sufficiently large initial level of crime, the odds of retaliation are very high, and the community will be unwilling to report. As discussed earlier, crime then spirals upward, without bound in our model. In contrast, if crime is initially sufficiently low, the rewards from retaliation are small and the probability of retaliation is low, so that the community is more willing to cooperate with the police. There is then the chance that the system converges

to a crime-free, long-run equilibrium. Thus, as Anderson and Wilson have emphasized, the norms of the community toward crime (and the work ethic) are extremely important in determining how much crime will occur in the long run.

A third alteration of the model may also lead to dual equilibria. Suppose that the willingness of members of the community to report crime depends on the probability of apprehension, which depends in turn on the willingness of other community members to report. If potential informants believe the police will be ineffective, and derive little pleasure from cooperation for its own sake, no one will inform; as a consequence, the police *are* ineffective and crime is infinite. Alternatively, if potential informants believe that the police will be effective and therefore are willing to inform, the police *are* effective and, with sufficiently high reporting norms, neighborhoods are crime free.

An example dramatically illustrates the existence of such dual equilibria. In a study of the Mafia in Sicily, Anton Blok found that the three major protagonists were the landless or almost landless peasants (the community of observers), the absentee landowners, who lived in Palermo (the principals), and their overseers, who were Mafia members (the agents).[35] The landowners faced the problem that if they did not appoint strong and violent men as their overseers, other strong and violent men would raid their holdings and rustle their cattle. Thus landlords had an incentive to appoint members of the Mafia as overseers. In turn these Mafia members had agreements, sometimes as the result of formal meetings, regarding which lands were in the hands of which members and were therefore not to be raided. If an overseer began to get into trouble with the law, the landowners would protect their own overseers because the landowners needed the support of their overseers against outsiders. The peasants, who were aware of the crimes committed by the overseers, maintained silence, except in rare instances of unusual personal harm, when their desire for retribution was overwhelming. Cooperation with the authorities would have been ineffective—because of the landowners' influence on the court on behalf of their overseers—and also dangerous—because the overseers would take reprisals.

The existence of dual equilibria is demonstrated by the complete loss of control of the Mafia in 1924 after a vigorous prosecutor used an "anti-conspiracy" law and rounded up the local Mafia in large groups.

A new equilibrium was established in which the landowners were happy without their Mafia overseers because the overseers had been taking more than their share of rent for protection as well as overseeing services. The peasantry were also happy with this outcome because they had suffered from the Mafia's impoverishing demands. In the absence of the Mafia the peasants were not afraid of informing about the odd crime that occurred. The system, however, reverted immediately to the pre-1924 equilibrium after the Allied invasion in 1943. Again the landlords were afraid of raids from the outside and felt that violent overseers constituted better protection than distant and ineffective courts.

A fourth modification of the model results in the possibility of dual equilibria for yet another reason. Community willingness to cooperate depends on the fairness of police procedures; and the fairness of police procedures, in turn, depends on the cooperation of the community with the police, because, with cooperation, it is easier to distinguish between the guilty and the innocent. There is thus the possibility that inner-city neighborhoods may be caught in a crime-ridden equilibrium in which the innocent are punished along with the guilty and, because this occurs, the community resents and frustrates the police.

Control over Territory

Our model of the determination of crime in inner-city neighborhoods takes as given the boundaries of each gang's territory. We have not thus far addressed the question of what determines the size of gangs and their territorial boundaries. This question is important, since much of the violent crime involving gangs is concerned with fighting over territorial boundaries. Insofar as these fights are for economic reasons, because of the gains from control of territory, a model of the economic behavior of gangs should explain territorial domain.

Gangs have the opportunity to control more territory by enlarging the size of their membership and fighting for marginal territory at their boundaries. If economic considerations alone determine gang activity, gangs would choose their size and boundaries by weighing the rewards from monopolizing crime in a larger territory against the cost of acquiring that territory and dividing the monop-

oly rents among a larger membership. The marginal cost of acquiring new turf may rise with the size of the territory. Larger memberships are more difficult to coordinate, and territory more distant from the gang's clubhouse is more difficult (requires more men) to control.

An increase in the reward to crime owing, say, to an increase in the demand for drugs or a reduction in their cost, raises the reward to territorial expansion and thus leads to more strife among gangs. Taking the sizes of other gangs as given, each gang has an incentive to increase the size of its own membership to fight for marginal territory. This yields one economic explanation why the discovery of crack has resulted in a considerable increase in gang violence and death.[36]

Increased revenues from the sale of drugs may also produce escalating violence through another channel: with higher incomes, gang members are able to buy fancier guns and cars (which are used as tanks), thus enlarging and increasing the violence of their "games" against their enemies. Although we have argued that gang members weigh costs and benefits rationally in their pursuit of crime, considerable evidence shows that some fighting occurs simply for the thrill of it. This attitude is reflected in Bing's report of a "Gang Class" at Camp Kilpatrick, a Los Angeles youth correction camp.[37] The counselor asked the boys to name good reasons to kill someone. Thirty-seven reasons were named. The first of these, reflecting the capture-the-flag-with-guns nature of gang wars, was "For the f . . . of it." Greg Davis (street name Batman and one of the last surviving founders of the Crips), commenting on the fragility of the recent truce between the Bloods and Crips in Los Angeles, noted, "A lot of us been doing this for years and don't want it to stop. We're killing each other off and a lot of us don't really care. A lot of these brothers thrill on this violence."[38]

Conclusion

This paper has developed a model of crime and punishment in which the willingness of community members—who are observers of much crime—to report what they know, is central to the success of law enforcement. The dependence of crime and punishment on

the behavior of anonymous observers highlights the importance of community norms in the determination of crime and suggests that nontraditional strategies for crime prevention—measures other than increasing expenditures on police or imposing tougher jail sentences on the convicted—may have high payoffs. We have in mind social programs aimed at strengthening such value-building community institutions as churches and parent support groups, promotion of community grass roots efforts to organize citizen patrols and neighborhood cleanups, and also a return to a strategy of community policing with the objective of improving rapport between police and local community members.[39] Moreover, the model points to the possibility that the traditional tools for crime control—more police cars cruising the neighborhood and longer jail sentences—wrongly applied, will be counterproductive because they undermine community norms for cooperation with the police.

In *Pride and Prejudice*, Mr. Bennett observed: "For what do we live but to make sport for our neighbors and to laugh at them in our turn?"[40] This chapter shows that this interest in the neighbors must be harnessed for the control of crime.

Appendix

This appendix describes the mathematical model discussed informally in the text and derives its implications for the determination of crime in the short run and over the longer run. The subscripts/superscripts c, s, and m denote respectively the community, the offenders (s for sellers of drugs), and the government (m for monitors). The same letters denote the actions of the corresponding agents.

The Community

We assume that the representative community member derives "utility from cooperation" of the form:

$$U^c = \{-a_c p\bar{R} + B_c(s-\bar{s}) - C_c \mid f-\bar{f} \mid + d_c\}c \tag{1}$$

where

U^c is the utility of a representative community member resulting from cooperation
$\overline{R}$ is the cost of retaliation by the gang
p is the probability of retaliation
s is the gang's current level of crime
$\bar{s}$ is the norm for the amount of crime expected in the absence of the current gang
f is the level of penalty (fine)
$\bar{f}$ is the fair level of the penalty
c is the degree of cooperation.

a_c, B_c, and C_c are all positive constants; d_c is a constant, which may be positive or negative, dependent on the norms of the community; c, the level of cooperation, is between 0 and 1.

The first term in the utility function captures the community's fear of gang retaliation: we assume that the level of retaliation is $\overline{R}$, and that there is a fixed probability p of retaliation. The second term of the utility function reflects the concern of community members with the impact of revelation on the level of crime in the neighborhood. We assume that this depends on how the actual level of crime, s, compares with $\bar{s}$, the level of crime in other, similar neighborhoods. The third term of the utility function reflects the community's sense of fairness: community members are assumed to lose utility from revelation insofar as the actual penalty, f, deviates from what would be considered fair, $\bar{f}$. (In this appendix we will follow Becker in calling the penalties fines.) Finally there is a constant term, d_c, which may be positive or negative, reflecting other factors influencing the utility of revealing information to the police, such as attitudes toward the police and the norms of the community.

The representative community member chooses the level of cooperation, c ($0 \leq c \leq 1$), to maximize utility. If the community reveals all of its information to the police, $c = 1$; if it reveals none, $c = 0$. The community takes the fine f, the amount of crime s, the probability of retaliation, p, the norm for the crime, $\bar{s}$, and the norm for fines, $\bar{f}$, as given. Members of the community choose c in a purely reactive way. Accordingly they choose

$$c = 1 \text{ if } A_c + B_c s - C_c \mid f - \bar{f} \mid > 0 \tag{2}$$

$$c = 0 \text{ if } A_c + B_c s - C_c \mid f - \bar{f} \mid \leq 0 \tag{3}$$

where $A_c = d_c - a_c p\overline{R} - B_c\bar{s}$. For convenience we let $c = 0$ on the boundary at which $A_c + B_c s - C_c \mid f-\bar{f} \mid = 0$.

The assumption of a linear utility function, although restrictive, results in a tractable model that clearly emphasizes the role of the community's revelation of information. There is a unique level of crime [$s = (C_c \mid f-\bar{f} \mid - A_c)/B_c$] at which the community switches from noncooperation to full cooperation with the police. We refer to this switching point as the cooperation/noncooperation boundary. Equilibrium typically occurs on this boundary.

Gangs

Gangs are assumed to maximize a utility function (chosen to be linear, for simplicity), which depends negatively on the magnitude of the expected penalties and positively on the number of crimes committed. The utility function of the gang is

$$U^s = -A_s(\theta)r + B_s(\theta)s \tag{4}$$

where r denotes the expected penalties and s the number of crimes committed. $A_s(\theta)$ and $B_s(\theta)$ are constants that depend on a shift parameter θ, reflecting, in part, the outside opportunities of potential offenders. We assume that the expected penalties exacted for criminal behavior depend on four factors: the number of crimes committed, s; the fine exacted, f; the expenditures on monitoring, m; and the cooperation of the community, c. In particular we assume

$$r = s \cdot f \cdot m \cdot c. \tag{5}$$

Gangs choose the level of crime, s, $(0 \leq s \leq \infty)$ to maximize utility subject to the behavior of the community.[41] If $-A_s(\theta)fm + B_s(\theta)$ is nonpositive (so that crime does not pay if the community cooperates), the utility of an offender, U^s, is maximized by choosing s on the cooperation/noncooperation boundary (or at zero, if that boundary occurs at a negative value of s). This case is illustrated in figure 7-3 of the text. In this case

$$s = \max\left[(-A_c + C_c \mid f-\bar{f} \mid)/B_c, 0\right] \tag{6}$$

$$\text{if } [-A_s(\theta)fm + B_s(\theta)] \leq 0.$$

In contrast, if $-A_s(\theta)fm + B_s(\theta)$ is positive (so that crime pays, *even if* community members cooperate with the police), the utility of offenders increases proportionately with s beyond the cooperation/noncooperation boundary. Utility is thus unbounded and the maximum value of U^s is obtained at $s = +\infty$. In this case

$$s = \infty \quad \text{if } [-A_s(\theta)fm + B_s(\theta)] > 0. \tag{7}$$

The Government

We assume, for simplicity, that the government's utility depends negatively on the number of crimes committed and also on the budget allocated to monitoring crimes. Specifically,

$$U^m = -A_m s - B_m m \tag{8}$$

where s is the number of crimes committed and m is the expenditure on monitoring. We assume that the government chooses f and m optimally, subject to the behavior of offenders, which has been summarized by (6) and (7).

Short-Run Equilibrium

In the short run, the community's norms, $\bar{s}$, which determine its expectations about the level of crime if the crimes are reported and criminals are incarcerated, are given. (In the long-run equilibrium we assume that $\bar{s}$ is determined endogenously.)

The government's problem is to maximize its utility, U^m given the behavior of the community and the gangs. To prevent crime from being infinite even with community cooperation, fines and monitoring must be high enough to satisfy the following constraint, derived from (6) and (7):

$$fm \geq B_s(\theta)/A_s(\theta). \tag{9}$$

We term (9) the *crime control constraint*. If it is not satisfied, crime pays even when the community fully cooperates with the police and the government's utility is $-\infty$.

The problem of maximizing U^m, as given by (8), subject to (6) and (9) turns out to be equivalent to the following simpler, constrained

maximization problem: choose optimal values of f and m (denoted f^* and m^*) to maximize

(10a) $$U^m = -A_m(-A_c + C_c(f-\bar{f}))/B_c) - B_m m$$

subject to

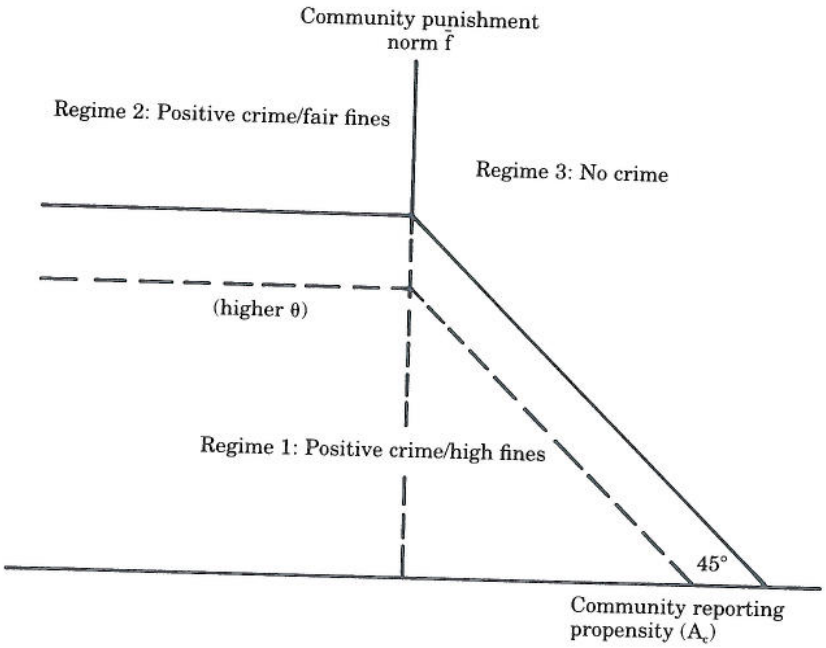
(10b)	$fm = B_s(\theta)/A_s(\theta)$	Crime control constraint
(10c)	$f \geq \bar{f}$	Fair fines constraint
(10d)	$s = (-A_c + C_c(f-\bar{f}))/B_c \geq 0$	Nonnegative crime constraint

The government's optimization problem can be rewritten in this simple form because the crime control constraint, under our assumptions, is always satisfied with equality; because the optimal level of fines is always high enough to make the level of crime on the cooperation/noncooperation boundary $(-A_c + C_c(f-\bar{f}))/B_c$, nonnegative; and, furthermore, because the level of fines is at least as high as $\bar{f}$.

According to (10b), the crime control constraint (9) is satisfied with equality. The rationale is straightforward: monitoring is costly and, from (6), the level of monitoring has no direct effect on the equilibrium level of crime.[42] According to (10c), fines are always set at least at the fair level. The logic is simple: if $f < \bar{f}$, an increase in f either decreases or has no effect on crime (according to [6]) but lowers the level of costly monitoring needed to satisfy the crime control constraint. Thus, the optimal f cannot occur in this region. If f is sufficiently low that (10d) is not satisfied, an increase in f will cause no increase in crime, since crime is zero according to (6). Again, however, such an increase permits a reduction in the level of monitoring needed to satisfy the crime control constraint. Thus, with the optimum value of f, $(-A_c + C_c(f-\bar{f}))/B_c \geq 0$. Finally, since f is not less than $\bar{f}$ at an optimum, both the utility function (10a) and the level of crime (10d) can be written without absolute value signs.

Depending on parameter values, the solution of the government's optimization problem falls into one of three distinct regimes, corresponding to which constraints are binding: only the crime control constraint or, in addition, either the fair fines constraint or the nonnegative crime constraint. Figure 7-4 illustrates the correspondence between parameter values and regimes.

Figure 7-4. Parameter Values and Crime Regimes



Note: This figure shows the relationship between parameter values and regimes. In the positive crime/high fines regime, $f^* > \bar{f}$ and $s^* > 0$. In the positive crime/fair fines regime $f^* = \bar{f}$ and $s^* > 0$. In the no crime regime $f^* = \bar{f} + A_c/C_c$ and $s^* = 0$. The community punishment norm is $\bar{f}$. The community reporting propensity is $A_c = d_c - a_c p\bar{R} - B_c s$. The intercept of the boundary between regime 1 and regime 3 on the x-axis is $(B_s(\theta)B_m B_c C_c/A_s(\theta))^{1/2}$. The slope of this boundary is 45°. An increase in θ causes a decrease in this intercept, and a decline in the size of regime 1, and an increase in the size of regimes 2 and 3 as pictured by the dashed line labeled (higher θ) in the figure.

Regime 1: Positive Crime/High Fines

In the positive crime/high fines regime, only the crime control constraint, (10b), is binding. Utility is maximized by setting fines above the level considered fair by the community. Although the imposition of fines in excess of $\bar{f}$ raises crime, higher fines enable the government to economize on monitoring costs in satisfying the crime control constraint. The equilibrium levels of crime, fines, and monitoring, all positive, denoted s^*, f^*, and m^*, are

$$(11a) \quad s^* = -(A_c + C_c\bar{f})/B_c + \{(B_m B_s(\theta) C_c)/(A_m A_s(\theta) B_c)\}^{1/2}$$

$$(11b) \quad f^* = [(B_m B_s(\theta) B_c)/(A_m A_s(\theta) C_c)]^{1/2} > \bar{f}$$

(11c) $$m^* = [(A_m B_s(\theta) C_c)/(B_m A_s(\theta) B_c)]^{1/2}.$$

Regime 2: Positive Crime/Fair Fines

In the positive crime/fair fines regime, both the crime control constraint, (10b), and the fair fines constraint, (10c), are binding. Utility is maximized at a corner, at which $f = \bar{f}$: the government sets fines at the level considered fair by the community and there is positive crime. Although the government could save money on monitoring expenditures by raising fines, it is not optimal to do so. An increase in fines above the fair level lowers the community's willingness to cooperate and raises the equilibrium level of crime. The loss in utility from higher crime outweighs the gain in utility from reduced expenditure on monitoring. In this case, the equilibrium values of s^*, f^*, and m^* are:

(12a) $$s^* = -A_c/B_c$$

(12b) $$f^* = \bar{f}$$

(12c) $$m^* = B_s(\theta)/(A_s(\theta)\bar{f}\,).$$

Regime 3: No Crime

In the no crime regime, both the crime control constraint, (10b), and the nonnegative crime constraint, (10d), are binding. The government is able to achieve a crime-free equilibrium. The community's norm for cooperation is sufficiently high that no crimes are committed when the fine is set at the fair level ($f = \bar{f}$). This provides an opportunity for the government to economize on monitoring expenses without raising crime. The government raises fines and lowers monitoring expenditures until it reaches the highest fine consistent with $s = 0$: $f^* = \bar{f} + (A_c/C_c)$. Fines are not raised above this level because the loss in utility from higher crime owing to increasingly unfair fines outweighs the gain in utility owing to lower monitoring expenditures along the crime control constraint. In this case

(13a) $$s^* = 0$$

(13b) $$f^* = \bar{f} + (A_c/C_c)$$

(13c) $$m^* - B_s(\theta)/[A_s(\theta)(\bar{f} + (A_c/C_c))].$$

Figure 7-4 illustrates the relationship between parameter values and regimes. The vertical axis plots the community's punishment norm, $\bar{f}$; the horizontal axis plots the parameter A_c, which measures the community's reporting propensity. This is a composite, the sum of three factors: d_c, the community cooperation norm; $a_c p\bar{R}$, the community's concern about retaliation; and $B_c\bar{s}$, the community norm for crime, reflecting crime in similar communities. A high value of A_c indicates high community willingness to report. As figure 7-4 shows, low values of A_c and low punishment norms, $\bar{f}$, lead to equilibria in regime 1, with positive crime and fines in excess of those considered fair. With low reporting norms (low A_c) and high punishment norms ($\bar{f}$), equilibrium occurs in regime 2, with positive crime and fair fines. With a high community reporting propensity and high punishment norms, equilibrium lies in the "no crime regime"—regime 3.

The location of the boundaries between regimes, as well as the equilibrium levels of crime, fines, and monitoring within regimes, depends on parameter values in intuitive ways. Consider the model's prediction concerning differences in crime between rich and poor neighborhoods. In richer neighborhoods where outside economic opportunities are better, or in neighborhoods where there is a stronger anticrime ethos, θ is higher, and the ratio $B_s(\theta)/A_s(\theta)$ is lower. A higher value of A_s reflects higher disutility of incarceration or other criminal penalties; a lower value of B_s reflects lower economic gains from crime in comparison with alternative activities and also, perhaps, greater guilt. A higher value of θ results in less crime and lower optimal monitoring and fines, assuming an initial equilibrium in the positive crime/high fines regime. Because a rise in θ shifts the boundary in figure 7-4 down, there is also the possibility that a neighborhood may switch from either the positive crime/high fines regime (1) or from the fair fines regime (3) into the no crime regime (3).

In spite of its simplicity, the model illustrates the importance of community values toward cooperation and reporting in determining equilibrium levels of crime, fines, and needed police expenditures. For example, in the crime-ridden regimes (1 and 2), an increased community propensity to cooperate, reflected in a higher value of A_c, results in lower equilibrium levels of crime. Within the crime-free regime (3), increased willingness to cooperate instead permits the

government to raise fines and lower costly monitoring, thus raising the government's utility. As is apparent from figure 7-4, an increase in A_c increases the chances that the equilibrium lies in the crime-free regime 3. The model also shows how the community's attitude toward fair punishments for offenders, as reflected in $\bar{f}$, matters to the control of crime. An increase in community tolerance for penalizing offenders raises the level of fines that are optimally imposed by the government, in turn, either lowering equilibrium crime (in regime 1) or else reducing monitoring expenditures.

Long-Run Equilibrium and Extensions of the Model

In our model, the level of crime in a given community depends on the average amount of crime outside the community, which we have taken as given in the short run. Over the longer run, however, the level of crime considered normal is endogenous, rather than exogenously determined.

To analyze the longer-term behavior of crime in a given neighborhood we assume that actual crime in each community, in period t, s_t, depends on the expected level of crime in neighboring communities $\bar{s}_t$. $\bar{s}_t$ affects s_t by altering the value of A_c, which, in turn, determines crime in 11a and 12a, in regimes 1 and 2 respectively. Assuming adaptive expectations about $\bar{s}$, expected crime rises whenever actual crime exceeds expected crime; specifically, assume that $\bar{s}$ rises by a fraction γ of the gap between actual and expected crime in the previous period. The long-run behavior of crime, starting from an initial equilibrium with positive crime (in regimes 1 or 2), is then determined by the following equation:

$$(14)\quad \Delta s = s_t - s_{t-1} = -\gamma(d_c - a_c p\bar{R})/B_c + \gamma(C_c/B_c)\max[\{(B_m B_s B_c/A_m A_s C_c)^{1/2} - \bar{f}\}, 0].$$

The righthand side of (14) is a constant that depends on parameter values. Starting from an equilibrium with positive crime, crime will be constantly rising or constantly falling. The parameter d_c, reflecting the community's reporting norm, plays a particularly important role: reporting norms must be sufficiently high to attain a

long-run outcome without crime. Otherwise, the long run is characterized by ever-rising levels of crime.

We noted in the text the possibility that dual equilibria may occur if the gangs' incentives for retaliation depend on the profits they are making from their criminal activities. In our model, those profits are $B_s(\theta)s$. Now suppose that p, the probability of retaliation, is proportional to these profits ($B_s(\theta)s$). Dual equilibria occur if $d_c > C_c \max[\{(B_m B_s B_c / A_m A_s C_c)^{1/2} - \bar{f}\}, 0]$. With a sufficiently large initial value of s, the odds of retaliation are very high and the community will be unwilling to report. As discussed earlier, crime then increases without bound. In contrast, if s is initially sufficiently low, the rewards from retaliation are small and the probability of retaliation is low, so that the community is more willing to cooperate with the police (A_c is higher) and the system may converge to a crime-free long-run equilibrium.

Notes

1. See Department of Commerce, *Statistical Abstract of the United States, 1968* (Washington, 1968), table 206, and *Statistical Abstract of the United States, 1990* (Washington, 1990), table 287.

2. See Department of Commerce, *Statistical Abstract of the United States, 1965* (Washington, 1965), tables 217, 219, and *Statistical Abstract of the United States, 1992* (Washington, 1992), tables 328, 329.

3. See Gary S. Becker, "Crime and Punishment: An Economic Approach, *Journal of Political Economy*, vol. 76 (March–April 1968), pp. 169–217.

4. See Jane Jacobs, *The Death and Life of Great American Cities* (Random House, 1961).

5. See Gerald Mars, *Cheats at Work: An Anthropology of Workplace Crime* (Allen and Unwin, 1982).

6. See Jean Tirole, "Hierarchies and Bureaucracies: On the Role of Collusion in Organizations," *Journal of Law, Economics and Organization*, vol. 2 (Fall 1986), pp. 181–214. In Tirole's model, agents bribe their supervisors to conceal information from the principal. Side payments are possible because the identity of the observers is known to the agents. In contrast, in the case of social crime, observers are frequently numerous, and their identities are often unknown to the offender. Subcontracts involving private payoffs are therefore impossible; the "bribes" offered by the gangs to the observers are typically social goods; and whether or not the information is revealed depends on the "values" of the observers. While our model is for-

mally similar to Tirole's, the conclusions we draw are quite different: measures taken to enhance legitimacy are a potential policy tool of the principal in manipulating the behavior of the observers, and therefore, in turn, of the agents. Furthermore, the policies of the principal, which might be optimal, taking values and therefore legitimacy as fixed, are likely not to be optimal when these policies affect the observers' perceptions of legitimacy. One example concerns the policies of the Los Angeles police department. With values fixed, it would appear that tough law enforcement would be the best deterrent to crime. However, the negative symbolism of the Rodney King episode was, in fact, the spur to the Los Angeles riots. In principal-agent theory generally, for example in the Shapiro-Stiglitz model, workers are punished for malfeasance. See Carl Shapiro and Joseph E. Stiglitz, "Involuntary Unemployment as a Worker Discipline Device," *American Economic Review*, vol. 74 (June 1984), pp. 433–44. In fact, however, if the punishments are considered illegitimate, so that they reduce observers' willingness to report to managers, they will be counterproductive.

7. See Martín Sánchez Jankowski, *Islands in the Street: Gangs and American Urban Society* (University of California Press, 1991).

8. See R. Lincoln Keiser, *The Vice Lords: Warriors of the Streets* (Holt, Rinehart and Winston, 1969), p. 22.

9. See Douglass C. North, *Structure and Change in Economic History* (Norton, 1981); and Mancur Olson, "Autocracy, Democracy, and Prosperity," in Richard J. Zeckhauser, ed., *Strategy and Choice* (MIT Press, 1991), pp. 131–57. Within their territories we view gangs as local monopolists, who act like rent-seeking feudal governments maximizing revenues.

10. See Sánchez Jankowski, *Islands in the Street*, p. 208.

11. Albert Reiss found that most crimes are committed either by single offenders or small groups of co-offenders. See Albert J. Reiss, Jr., "Why Are Communities Important in Understanding Crime," in Albert J. Reiss, Jr., and Michael Tonry, eds., *Communities and Crime: Crime and Justice: A Review of Research*, vol. 8 (University of Chicago Press, 1986), pp. 1–33; see also Albert J. Reiss, Jr., "Co-offending and Criminal Careers," in Michael Tonry and Norval Morris, ed., *Crime and Justice: A Review of Research*, vol. 10 (University of Chicago Press, 1988), pp. 117–70.

12. See Reiss, Jr., "Co-offending and Criminal Careers," p. 128.

13. See James Diego Vigil, *Barrio Gangs: Street Life and Identity in Southern California* (University of Texas Press, 1988); John Hagedorn with Perry Macon, *People and Folks: Gangs, Crime and the Underclass in a Rustbelt City* (Lake View Press, 1988); and Léon Bing, *Do or Die* (Harper Collins, 1991).

14. See Ronald C. Huff, ed., *Gangs in America* (Sage Publications, 1990).

15. See Jerome H. Skolnick, *Gang Organization and Migration* (State of California, Department of Justice, 1990), p. 5.

16. See Terry Williams, *The Cocaine Kids: The Inside Story of a Teenage Drug Ring* (Addison-Wesley Publishing, 1989).

17. See Richard Neely, *Take Back Your Neighborhood: A Case for Modern Day "Vigilantism"* (Donald I. Fine, 1990), p. 155, note 10.

18. See Alex Kotlowitz, *There Are No Children Here* (Doubleday, 1991).

19. See Elijah Anderson, *Street Wise: Race, Class, and Change* (University of Chicago Press, 1990).

20. See Anderson, *Street Wise*.

21. See Anderson, *Street Wise*; and William Julius Wilson, *The Truly Disadvantaged: The Inner City, the Underclass and Public Policy* (University of Chicago Press, 1987).

22. We are assuming that any individual community member has only a small chance of observing any particular criminal act. Thus, while most criminal activities occurring within the community are observed by somebody, very few are observed by large numbers of individuals. Under this assumption, the average level of cooperation in the community affects the probability of catching criminals, even if there are a few cooperative mavericks who are prepared to report *any* wrongdoing. The raid on Henry Lee, mentioned earlier, is a case in point. Although Lee was captured on the basis of information supplied by a single individual, the fact that Lee was generally hated by all members of the community raised the odds that the police would receive this critical tip.

23. Similarly, in the model of unemployment by Shapiro and Stiglitz, equilibrium occurs on the "nonshirking boundary." See Shapiro and Stiglitz, "Involuntary Unemployment."

24. See Anderson, *Street Wise*; and Wilson, *The Truly Disadvantaged*.

25. Our model (see, in particular equation (5) in the appendix) makes, for simplicity, the extreme assumption that, in the absence of community cooperation, there is no chance of apprehending criminals.

26. Alternative outcomes are also possible. If the values of monitoring and fines are too low, crime pays even if the community cooperates, and the optimal level of crime for the gang is infinite. However, the government would never set fines and monitoring sufficiently low to permit this perverse outcome to occur.

27. For sufficiently low levels of fines and monitoring, the gang's payoff may have a different shape. Beyond the cooperation/noncooperation point, the payoff function will increase with the level of crime if crime pays even when the community cooperates with the police. In this case, the optimal choice of criminal activity by the gang will be infinite. As noted, the government would not optimally set fines and monitoring sufficiently low to permit such an outcome.

28. The possibility that increasing penalties may result in increased crime was discovered when the Puritans tried to suppress Quakerism, which was considered to be a crime in Massachusetts in the mid-seventeenth century. Despite a prior record of snitching on their neighbors for the most trivial infractions of the law, the residents of Salem allowed Quaker meetings to be held in their midst for more than twenty years without any reports to authorities. The penalty of death for offenders was

considered too severe. See Kai Erikson, *Wayward Puritans: A Study in the Sociology of Deviance* (John Wiley, 1966). A. Mitchell Polinsky and Steven Shavell and James Andreoni have given other reasons for less than maximal penalties to deter offenses. Polinsky and Shavell suggest that optimal fines may not be maximal because of risk aversion and the existence of private gains from activities that exceed their social cost. See A. Mitchell Polinsky and Steven Shavell, "The Optimal Tradeoff between the Probability and Magnitude of Fines," *American Economic Review*, vol. 69 (December 1979), pp. 880–91. According to Andreoni, fines may be less than maximal because juries' standard of reasonable doubt rises with the level of fines. With higher fines, they are less likely to convict. See James Andreoni, "Reasonable Doubt and the Optimal Magnitude of Fines: Should the Penalty Fit the Crime?" *Rand Journal of Economics*, vol. 22 (Autumn 1991), pp. 385–95.

29. See Max Weber, *Economy and Society* (University of California Press, 1978).

30. See, for example, Raaj K. Sah and Joseph E. Stiglitz, "The Architecture of Economic Systems: Hierarchies and Polyarchies," *American Economic Review*, vol. 76 (September 1986), pp. 716–27.

31. Leonard Broom and Philip Selznick, *Sociology: A Text with Adapted Readings*, 6th ed. (Harper and Row, 1977), p. 208.

32. Bing, *Do or Die*, p. 275. Emphasis in original.

33. With sufficiently strong reporting norms, crime is gradually eliminated over time in our model. Our formulation of the government's optimization problem is myopic, failing to take account of the changes in levels of crime considered normal that occur because of present levels of crime. We feel that, unfortunately, governments behave in this way. As it turns out, in this simple model, there are circumstances in which the government is unable to prevent crime from drifting toward infinity through appropriate choice of fines and monitoring. The extreme simplifying assumptions of our model also generate the dramatic result that, with insufficient reporting norms, crime rises indefinitely rather than ultimately leveling off.

34. The possibility of multiple equilibria in models of crime has been discussed by Jens Chr. Andvig and Karl Ove Moene, "How Corruption May Corrupt," *Journal of Economic Behavior and Organization*, vol. 13 (January 1990), pp. 63–76.

35. See Anton Blok, *The Mafia of a Sicilian Village, 1860-1960: A Study of Violent Peasant Entrepreneurs*, 2d ed. (Polity Press, 1988).

36. This approach represents a natural extension of Steven Salop's model of the geographic distribution of firms on a circle. In that model customers who are distributed evenly along a circle prefer to frequent nearby stores; firms must lower their prices to attract customers who live farther away. In choosing their "territorial boundaries" Salop's firms thus weigh the costs owing to the price reduction needed to attract new business against the benefits of greater sales. In Salop's model, an increase in market demand, or a decrease in marginal cost, shifts up each competitor's reaction function: for given prices charged by rivals, each firm finds it optimal to

raise its own price. See Steven Salop, "Monopolistic Competition with Outside Goods," *Bell Journal of Economics*, vol. 10 (Spring 1979), pp. 141–56.

37. See Bing, *Do or Die*, p. 121.

38. *New York Times*, July 18, 1992, p. A8.

39. For a discussion of the role of community activism in combating drug dealing see Roger Conner and Patrick Burns, *The Winnable War: A Community Guide to Eradicating Street Drug Markets* (Washington: American Alliance for Rights and Responsibilities, 1991).

40. Jane Austen, *Pride and Prejudice*, (Macmillan, 1894), chap. 37.

41. Equation (5) makes, for simplicity, the extreme assumption that, in the absence of community cooperation, there is no chance of apprehending criminals.

42. In a more general framework, this constraint is not always binding. For example, if the community's willingness to cooperate varies positively with the probability of a conviction that, in turn, depends on the level of monitoring, it may be optimal to do more monitoring than is needed to satisfy the crime control constraint, since such expenditures reduce crime.