

Corruption and Private Law Enforcement: Theory and History

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This article analyzes private law enforcement in an environment with corruption. The effect of corruption is studied both under the assumption of monopolistic enforcement by a single private enforcement agency and under the assumption of competitive enforcement by many private enforcers. In addition, the model takes into account the different objectives of a benevolent, social-welfare-maximizing group and a self-interested, rent-seeking group, as well as the possibility of a government divided between welfare-maximizing and rent-seeking groups. Among the central results of the paper are (1) corruption is especially problematic under monopolistic enforcement, (2) when governmental decision making is divided, a rent-seeking group which is unable to control the level of fines and rewards usually prefers monopolistic to competitive enforcement. The article demonstrates the plausibility and relevance of the model by examining corruption and private law enforcement in pre-modern England.

1. INTRODUCTION

This article presents the first rigorous model of private law enforcement which takes into account corruption. Corruption is modeled both under the assumption of monopolistic enforcement and under competitive enforcement. The article demonstrates the plausibility and relevance of the model by examining corruption and private prosecution in pre-modern England. Since English history provides examples of both monopolistic and competitive enforcement, and since the English government contained both groups which valued social welfare and those which emphasized revenue, English history provides tests and support for some of the conclusions of the model.

Corruption has been a key issue in the literature on private and public law enforcement. In their seminal article, Becker and Stigler (1974) argued that it

might be advantageous to extend private enforcement to the criminal law and other areas where the law is now enforced publicly. Their principal argument was that public enforcement creates incentives to bribery which undermine deterrence. If law enforcement were privatized, however, competitive private enforcers could be rewarded with the fines offenders paid, and enforcers would have no incentive to take bribes.

Subsequent articles have responded to and refined the Becker and Stigler analysis. Landes and Posner (1975) showed that public enforcement may be superior to private enforcement, because public enforcers can more easily enforce the combination of high fines and low probabilities of detection which Becker (1968) showed to be optimal. Polinsky (1980), Friedman (1984), Shavell (1993), and Garoupa (1997b) made additional improvements.¹

None of this literature, however, modeled corruption with private enforcement. Corruption was not a problem in Becker and Stigler (1974), because they assumed that the marginal reward would equal the fine (hence effectively implementing a corruption-proof solution). Landes and Posner (1975) and subsequent models relaxed that assumption in order to optimize the probability of detection, but in doing so they reintroduced incentives to corruption. Landes and Posner (1975) and Friedman (1984) gave some attention to the issue, but only in short discussions of “extensions” or “problems.” Only in the last dozen years have scholars begun to pay more attention to corruption. Bowles and Garoupa (1997), Polinsky and Shavell (2001), and Garoupa and Klerman (2004) model corruption under a regime of public enforcement.

This article contributes to the economic analysis of law enforcement in two ways: (1) by modeling corruption in the context of private enforcement, and (2) by using English history to test the theoretical predictions.

Section 2 analyzes corruption, that is, bribery of enforcers after the offense. When the reward is lower than the fine, both offenders and enforcers will find it beneficial to negotiate a bribe. Under monopolistic enforcement, corruption is used to generate additional rents to the enforcement agency. Under competitive enforcement, the analysis of corruption is complicated by the possibility that bribing one enforcer may not prevent prosecution by another. When information about wrongdoing is widespread, the danger of subsequent prosecution may substantially reduce or even eliminate corruption. When information about wrongdoing is not widespread, however, there is less danger of subsequent prosecution and corruption will be common.

A unitary government dominated by a welfare-maximizing group prefers a

competitive market structure that eliminates corruption, because doing so will enable it to achieve its optimal combination of probability and severity of punishment. A rent-seeking group usually prefers a monopoly that mimics its preferred probability and severity of punishment. In a divided government where the welfare-maximizing group chooses the fines and rewards, but the rent-seeking group controls whether enforcement is competitive, the rent-seeking group will also usually choose monopolistic enforcement.

In addition to ordinary bribery, we also consider a form of corruption we call *collusion*. In this form of corruption, enforcers pay citizens to commit crimes in order to collect the reward. This is an unambiguously bad situation, and all forms of government will attempt to prevent it. Collusion only occurs when the reward is higher than the fine. The easiest way to prevent collusion is to set rewards lower than (or at most equal to) fines.

Section 3 illustrates and confirms the conclusions of Section 2 by turning to English history. The English government experimented with many forms of private law enforcement between 1200 and 1900, and examples can be found of both competitive and monopolistic enforcement, as well as rewards lower than and higher than fines. In addition, because the king was often concerned predominantly with revenue, while Parliament and the courts were usually more concerned with social welfare, English history includes examples of both rent-seeking and social-welfare-maximizing motivations for law enforcement. This section shows that corruption and collusion occurred exactly when theory suggests they should. In addition, as the model predicts, because Parliament was involved in setting rewards and fines, kings often preferred and implemented monopolistic enforcement.

Section 4 concludes the paper.

2. BASIC MODEL

Our model follows the standard literature surveyed in Garoupa (1997a) and Polinsky and Shavell (2000, 2007). The framework we use for private enforcement is inspired by Polinsky (1980), Besanko and Spulber (1989) and Garoupa and Klerman (2002).

We start by assuming that each risk-neutral individual chooses whether or not to commit an offense, for example, smuggling or theft. The gain from committing the offense is b , which is distributed across the population according to a uniform probability density function $g(b) = 1$ and a cumulative density function $G(b) = b$ with support in $[0, 1]$. The harm caused by the offense is h . As usual, we do not assume that $h > 1$, thus

allowing for the possibility that some harmful acts should not be deterred even if enforcement were costless.

Offenses are detected and punished with probability p . Under a regime of public enforcement, the government sets p directly by hiring enforcement agents and designing enforcement policy. Under private enforcement, the probability of detection p is set by enforcement agencies subject to the privatization contract. The form of the contract between the government and the enforcers depends on the existence of asymmetric information concerning enforcement. In the simplest case, there is perfect symmetric information between the government (the principal) and the enforcers (the agents). In that case, the contract will set the probability p and give the enforcers a fixed reward or price. Because, under the assumption of full information, the probability p is observable and verifiable, there is no need for an incentive compatibility constraint. In the more realistic asymmetric information (hidden action) case, the contract cannot specify p because it is unobservable and unverifiable. In this situation, the contract will include a reward that will depend on the number of criminals successfully prosecuted, because that number is easily observable and verifiable. The reward will be set to solve the moral hazard problem and induce enforcers to set the probability preferred by the government.² Under private enforcement, the contract may also include a fixed payment from the enforcement agency to the government by which the government extracts any profits that the agency may make in enforcement. That is, the government might auction off the right to enforce the law (and thus to collect rewards).

Each enforcer $j = 1, \dots, n$ chooses the enforcement effort e_j . We assume that enforcement effort is perfectly substitutable, hence the probability p is determined by total effort $E = \sum e_j$, in particular $p = E$. The government pays a reward γ for each detected offender. Besides designing the privatization contract, the government also chooses the fine f imposed on convicted offenders and collected by the government, and whether enforcement will be delegated to a single private enforcement agency (monopolistic enforcement) or to many potential private enforcement agencies (competitive enforcement). The fine f is assumed to be costless to impose, as is conventional in the law enforcement literature, and upper bounded by individuals' entire wealth, F . For simplicity, we assume $F \leq 1$. This assumption is consistent with the probability density function, which assumed that benefit b was also less than or equal to 1.³ The analysis of corruption depends crucially on whether γ is less than f (bribery makes both offender and enforcer better off), equal to f (corruption-proof solution), or

higher than f (collusion could become a problem). In the basic model, we focus on $\gamma \leq f$. We postpone to the end of this section the discussion of $\gamma > f$. In other words, we focus now on corruption taking place after detection, that is, *ex post corruption*. There are other types of corruption briefly mentioned at the end of this section. When the marginal reward is greater than the fine, enforcers have an incentive to bribe potential offenders to break the law. We call this form of corruption *collusion*. There is also the possibility of *ex ante collusion* by which offenders would be willing to pay for a license to commit the crime.

In the absence of corruption, the reward is set so that the probability chosen by enforcers is efficient. While that is not a problem under competitive enforcement, it could be difficult to implement such a policy in a monopolistic environment because a high probability undermines revenues for the enforcement agency, a problem we refer to as the strategic effect (Polinsky, 1980; Garoupa and Klerman, 2002).

2.1. MONOPOLISTIC ENFORCEMENT

Consider first monopolistic enforcement. That is, there is only one enforcement agency. When an offender is apprehended, the offender and the private enforcement agency bargain over the amount of the bribe, v_m . The offender pays v_m , in exchange for charges being dropped. For simplicity, we assume $v_m = \gamma$.⁴ Under the assumption that $\gamma < f$, bribery is always successful and takes place with probability 1. Conversely, when $\gamma \geq f$, *ex post corruption* never takes place.

It is also important to note that the enforcement agency is assumed to be constrained by reputation or by some other mechanism so that it cannot collect the bribe and then prosecute (or threaten to prosecute) the offender. Otherwise, rational offenders would anticipate such behavior and would be reluctant to pay a bribe.⁵

A potential offender commits a crime if the illegal gain exceeds the expected punishment, that is, if $b > E\gamma$. The number of offenders in this economy, when the population is normalized to 1 and the distribution of gains follows a uniform distribution with support in $[0, 1]$, is $l(E, \gamma) = 1 - E\gamma$. The monopolistic agency has the following expected profits:

$$R = E\gamma(1 - E\gamma) - x(E)$$

where the first term refers to revenues from enforcement, and the second term refers to enforcement costs, where we assume constant returns to scale,

in particular $x(E) = xE$.⁶

The private enforcement agency sets the enforcement effort by pointwise maximization, thus choosing:

$$E_m = \frac{\gamma - x}{2\gamma^2}$$

as long as $\gamma > x$, and zero otherwise. Under these assumptions, we can easily confirm that the expected profits are always strictly positive.⁷

Normalizing to zero the opportunity cost for the monopoly, the government will be able to sell the right to be the monopolistic enforcement agency for a fixed payment y that satisfies the participation constraint. Thus $y = R$. This should be interpreted as the government auctioning off the right to be the monopolistic enforcement agency for R .

2.2. COMPETITIVE ENFORCEMENT

Let us now assume that the market for law enforcement is competitive. The literature offers several possible frameworks with which to analyze competitive enforcement. We loosely follow Polinsky (1980) and Garoupa and Klerman (2002).⁸ The main difference is that, while Polinsky (1980) assumes a zero-profit constraint, we explicitly derive the first-order condition. The two approaches are mathematically equivalent under the assumption of a linear cost function. Our model is thus analogous to the standard neoclassical model of perfect competition, in that each enforcement agency takes the number of criminals as given (much as, in the perfect competition model, firms are price takers).⁹

All n potential enforcement agencies are assumed to be identical. We also assume that the enforcement cost function is the same under monopoly and under competition.¹⁰ Finally, we assume that a given enforcement agency j apprehends a fraction e_j/E of the total number of detected criminals (i.e., agency j has a market share given by e_j/E). On average, each enforcer's share will be $1/n$.

When enforcement is competitive and there are multiple potential enforcement agencies, it is possible that more than one agency will have information about the same offense. As a consequence, if the offender negotiates a bribe with one enforcement agency, there is a probability that another agency will apprehend and prosecute the offender for the same crime. If information about the offense is concentrated, the probability of prosecution after bribery is low. If information is widespread, the probability of prosecution after bribery is high. For simplicity, we assume two polar

cases: where the probability of prosecution after bribery is zero and where the probability of prosecution after bribery is 1.¹¹

2.2.1. *Competitive Enforcement with Concentrated Information*

Let us start by considering competitive enforcement when only one enforcement agency has information about the offense. In this situation, the probability that another enforcement agency will prosecute an offender who has bribed one enforcement agency is zero. The total expected profits generated by competitive enforcement for a representative enforcer j are given by:

$$R_j = e_j \gamma (1 - E\gamma) - x e_j$$

If the number of enforcers is large, it is reasonable to assume that each enforcement agency takes the number of offenders as exogenous (just as in perfect competition, each producer takes price as exogenous). That is, in competitive enforcement, there is no strategic effect. Put another way, a monopolistic enforcer must take into account the fact that increases in enforcement effort have two effects - increasing the percentage of offenders detected and decreasing the number of offenders. While enforcement by competitive enforcers has the same two effects, if the number of enforcers is large, each enforcer will ignore the effect of its enforcement on the total number of enforcers, because most of the decrease in the number of offenders is externalized to other enforcers. That is, an individual enforcer gains the entire benefit of increasing the probability of detection, but is affected by only a fraction ($1/n$, on average) of the decrease in the number of offenders. As n goes to infinity, the effect perceived by each enforcer of decreasing the number of offenders goes to zero. This is analogous to the fact that when a competitive producer increases its output, it does not take into account the effect that output will have on price, because the price effect is shared with all producers, while the increase in output benefits only the producer who supplies it.

Under these modeling assumptions, total effort is given by:

$$E_{cc} = \sum_{j=1}^n e_j = \frac{\gamma - x}{\gamma^2}$$

as long as $\gamma > x$, and zero otherwise.¹²

2.2.2. *Competitive Enforcement with Widespread Information*

Now consider the situation where information about the offense is widespread among enforcers. If the offender bribes one enforcement agency, another will have the information necessary to prosecute. When that enforcement agency prosecutes, the offender will have to pay another bribe. Because there are no barriers to entry into the enforcement business, there is no finite number of bribes that will prevent prosecution. Bribery is therefore futile. Competitive enforcement and the widespread nature of information therefore completely deter corruption. Under these assumptions, the expected profits generated by competitive enforcement for a representative enforcer j are:

$$R_j = e_j \gamma (1 - Ef) - x e_j$$

By the same reasoning as before:

$$E_{cw} = \sum_{j=1}^n e_j = \frac{\gamma - x}{\gamma f}$$

as long as $\gamma > x$, and zero otherwise.

Depending on the specific relationship between γ and f , the level of total enforcement effort can be more or less than with monopoly. Effort would be lower if $f > 2\gamma$. In that situation, the high fine would deter so many offenders that the marginal benefit of effort would be lower under competitive enforcement. Expected profits are necessarily zero.

2.3. CHOICE OF ENFORCEMENT REGIME UNDER A UNITARY GOVERNMENT

We consider two types of groups which might control a unified government, as modeled by Garoupa and Klerman (2002).¹³

Let us start by assuming that a welfare-maximizing group controls the government. In the absence of corruption, the government has the following standard objective function (Polinsky and Shavell, 2000, 2007):

$$W = \int_{Ef}^1 (b - h) db - x \sum_{j=1}^n e_j = \int_{Ef}^1 (b - h) db - xE$$

The efficient enforcement effort is given by:

$$E^* = \frac{hf - x}{f^2}$$

as long as $hf > x$, and zero otherwise. For the rest of the paper, we assume that $hf > x$, since delegating zero enforcement does not pose an interesting problem.

The optimal solution for a welfare-maximizing government, under the assumption of no corruption, is to set the optimal fine to F for the standard Beckerian reasons; hence the efficient number of criminals is $l^* = 1 - E^*F$.

Since enforcement is delegated to private agents, a welfare-maximizing government uses γ and f to achieve simultaneously the efficient probability of detection E^* and the efficient number of criminals l^* , taking into account the possibility of corruption (i.e., recognizing that offenders do not pay the fine but a bribe). In the presence of corruption, $l = 1 - E\gamma$, because offenders pay a bribe equal to the reward rather than the fine.

In order to get the efficient number of criminals, l^* , the government should set:

$$\gamma_m = \frac{xF}{(1 - 2h)F + 2x}$$

$$\gamma_{cc} = \gamma_{cw} = \frac{xF}{(1 - h)F + x}$$

These rewards decentralize the efficient number of criminals, but not necessarily the optimal enforcement level, E^* , because of the existence of corruption.¹⁴ Let us start by assuming that these rewards are feasible, that is, the efficient number of criminals can be delegated through private enforcement.¹⁵

If information is widespread and enforcement is competitive, the government simply sets $f = F$ and $\gamma = \gamma_{cw}$ so that $E_{cw}(\gamma_{cw}, F) = E^*$. In this case, because corruption is completely deterred, the government can delegate both the efficient probability and the efficient sanction, and thus achieve the efficient number of criminals. Unfortunately, if information is concentrated or if the market structure is a monopoly, the government might not be able to implement the efficient enforcement level. The only way the government can implement the efficient Beckerian maximal sanction ($f = F$) would be to set $\gamma = F$ (since criminals pay γ and not the fine). However setting $\gamma = F$ does not generate the efficient number of criminals since γ_{cc} and γ_m are strictly less than F . By imposing γ_{cc} and γ_m the government could achieve the efficient number of criminals, but with a combination of probability and

bribe (less than F) that is not socially optimal. Put more abstractly, because the offender does not pay the fine but rather a bribe equal to the reward, the government is effectively left with only one instrument (the reward, γ) to simultaneously manipulate two outcomes (the efficient probability of detection and the efficient number of criminals). As a result, the government needs to maximize in γ the following social welfare function:

$$W = \int_{E\gamma}^1 (b - h)db - xE$$

Under our assumptions, and unlike the case of competitive enforcement with widespread information, the social welfare function is convex in γ .¹⁶ Consequently, the government sets the reward equal to the maximal fine, F , hence effectively eliminating corruption. However, this solution necessarily implements a second-best probability, because the reward is very high. The high reward induces too much enforcement effort, thus misallocating societal resources to law enforcement. In particular,

$$E_m = \frac{F - x}{2F^2}$$

$$E_{cc} = \frac{F - x}{F^2}$$

These expressions suggest that total enforcement effort will be lower under monopoly (because of the strategic effect), and thus that the number of offenders will be higher. If information is concentrated, the choice between monopoly or competitive market structure balances the costs in terms of criminal activities against savings in enforcement. The precise ranking of these two potential candidates to be the second-best solution depends on the parameters of the model.¹⁷

In conclusion, if information about offenses is widespread, a welfare-maximizing government favors a competitive market structure, because it eliminates corruption and allows the government to implement a socially optimal law enforcement policy. If information is concentrated, a welfare-maximizing government has to search for a second-best solution that balances the costs of harmful offenses versus savings in enforcement. The second-best solution when information is concentrated may be either monopolistic enforcement or competitive enforcement.

Now consider a situation where a pure rent-seeking group controls the government. The government, therefore, has the following objective function in the absence of corruption:

$$U = \int_{Ef}^1 Efdb - x \sum_{j=1}^n e_j = Ef(1 - Ef) - xE$$

Note that we assume that the rent-seeking government does not care about the harm created by offenses.¹⁸

The efficient probability for this government is:

$$E^{**} = \frac{f-x}{f^2}$$

as long as $f > x$, and zero otherwise. We assume that $F > x$ since delegating zero enforcement does not pose an interesting problem.

The optimal solution for a rent-seeking government is to set the optimal fine to F for the standard Beckerian reasons. The preference for maximal fine is even stronger for a rent-seeking government than for a social-welfare-maximizing government. Not only does the rent-seeking government, like the social-welfare-maximizing government, prefer to economize on enforcement expenditures by raising the fine, but, in addition, higher fines may generate more revenue. So the efficient number of criminals is given by $l^{**} = 1 - E^{**}F$.

In order to get the efficient number of criminals l^{**} , the government should set:

$$\begin{aligned} \gamma_m &= F \\ \gamma_{cc} = \gamma_{cw} &= \frac{2xF}{F+x} \end{aligned}$$

The rent-seeking government can trivially achieve its favorite enforcement policy with monopolistic enforcement by setting $\gamma = F$. By doing so, the government makes the enforcement agency its perfect agent. Like the government, the enforcement agency seeks to maximize revenue and gets F for each crime solved. Although the very high reward is a drain on the government's finances, the government offsets this loss by auctioning off the right to be the monopolistic enforcer. The government thus extracts the maximal profit *ex ante*. Note also, that by setting $\gamma = F$, the government implements a corruption-proof solution. No bribery occurs.

A rent-seeking government can also choose the appropriate γ to implement its favorite policy in a competitive market with widespread information. In this situation there is no corruption, so the rent-seeking

group can set the Beckerian maximal fine and use the reward to set the revenue-maximizing probability of detection. By construction, the rents obtained by the government are the same under monopolistic enforcement and competitive enforcement with widespread information.¹⁹

A rent-seeking government would never choose competitive enforcement with concentrated information, because that structure generates no rents. Because all prosecutions result in bribery, the government collects no revenue from fines. In addition, because we have defined competitive enforcement to mean free entry, the government cannot auction off the right to be an enforcer.

This result can be easily generalized to any case where competitive enforcement does not completely eliminate corruption. That is, if we relax the assumption that the probability of prosecution after bribery is either zero (concentrated information) or one (widespread information) and consider intermediate cases, where the probability of prosecution is between zero and one, the rent-seeking government will always prefer monopolistic enforcement, because competitive enforcement with corruption necessarily reduces rents.

Summing up, a rent-seeking government prefers monopolistic enforcement when information is concentrated, but is indifferent between monopoly or competitive enforcement when information is widespread. In contrast, a welfare-maximizing government favors a competitive market if information is widespread, but will sometimes prefer monopolistic enforcement to competitive enforcement when information is concentrated (and vice versa).

2.4. CHOICE OF ENFORCEMENT REGIME UNDER A DIVIDED GOVERNMENT

We now consider a divided government. This model is particularly helpful in understanding the historical examples discussed in Section 3, because the English government can be (crudely) thought of as a government divided between a welfare-maximizing legislature (Parliament) and a rent-seeking executive (the king). We model a divided government in which the welfare-maximizing group first chooses the fine and reward, and the rent-seeking group then chooses the market structure (competitive or monopolistic enforcement). The solution to the game is obtained by backward induction. First, we figure out the conditions under which the rent-seeking government will choose competitive or monopolistic enforcement. Then, we figure out the fine and reward chosen by the welfare-maximizing group.²⁰

Note that neither group can choose between competitive enforcement with widespread information (no corruption) and competitive enforcement with concentrated information (with corruption). Whether information is widespread or concentrated is determined by nature, not by the government. Both the welfare-maximizing group and the rent-seeking group have to take the structure of information as exogenous.

First consider the situation where information is concentrated. In this case, the rent-seeking group always chooses monopolistic enforcement, because competitive enforcement generates zero rents. Given that enforcement will necessarily be monopolistic, the welfare-maximizing group sets the policy we have discussed in Section 2.3 – fine and reward equal the maximal fine.

From the viewpoint of the welfare-maximizing group this is not a first-best solution. Sometimes the result will be to implement the welfare-maximizing group's second-best enforcement policy, because, as discussed in Section 2.3 above, for low-harm offenses, monopolistic enforcement sometimes will be second best. At other times (when competitive enforcement is second best), the social-welfare-maximizing group will only be able to implement a third-best policy.

Now consider the situation where information is widespread. In this case, the rent-seeking group prefers monopolistic enforcement under some conditions. If the reward is below a critical level, the rent-seeking group actually prefers a competitive structure. On the other hand, if the reward is above the critical level, the rent-seeking group favors monopoly.²¹ The intuition is the following. Suppose the reward is close to the fine. Then the situation is very close to a corruption-proof solution, and as we have seen in Section 2.3, a rent-seeking group's preferred policy is monopolistic enforcement with no corruption. On the other hand, if the reward is too low, then monopolistic enforcers have too little incentive to catch offenders, and revenue to the government is too low. In this situation, the rent-seeking group prefers competitive enforcement, because it leads to more effort and thus higher revenue from fines.

A social-welfare-maximizing group anticipates the preferences of a rent-seeking group. If the social-welfare-maximizing group's optimal reward under competitive enforcement with widespread information is less than the critical value, then the social-welfare-maximizing group obviously chooses that reward, because doing so allows it to implement the first-best solution.

Inevitably, the choice of a social-welfare-maximizing group is more complex when the optimal reward for competitive enforcement with widespread information is above the critical value, because in this case the

rent-seeking group implements a monopoly. In this situation, a social-welfare-maximizing group implements a second-best solution that can be either the monopoly or a competitive market structure as described in Section 2.3.²²

Summing up, we expect a rent-seeking group to choose monopoly unless information is widespread and the reward is so low as to damage rents generated by corruption. Anticipating this behavior, a welfare-maximizing group will choose the appropriate combination of fine and reward which, in general, is not first-best, but rather a second-best solution.

2.5. COLLUSION

Collusion and bribery are two sides of the same coin. Bribery arises when the reward is lower than the monetary sanction, so it is mutually beneficial for the offender to bribe the enforcement agency not to prosecute. Collusion arises when the reward is larger than the monetary sanction. In this situation, a rational enforcement agency bribes people to violate the law so that the agency can collect the reward.

Collusion has two negative consequences. First, it induces more offenses since the agency, in effect, subsidizes crime. And second, the government loses money, because it pays more in reward than it gains in fines. Thus, from both a social welfare and a rent-seeking perspective, collusion is suboptimal.

To eliminate or at least reduce collusion, the government would need to lower the reward to the level of the fine. The fine cannot be increased because it is already maximal. A result will be under-deterrence, because it will be impossible to induce the optimal level of enforcement effort.

3. CORRUPTION IN PRIVATE ENFORCEMENT IN ENGLISH HISTORY

English history provides substantial confirmation of the theory outlined in the previous sections, because (1) most offenses were prosecuted privately until at least the mid-nineteenth century, and (2) the rules governing private prosecution were different for different offenses and at different times. It is helpful to consider three enforcement regimes:

- 1) Minor offenses prosecuted by information,
- 2) Felonies prosecuted by indictment, and

3) Crimes prosecuted by appeal.

3.1. MINOR OFFENSES PROSECUTED BY INFORMATION

For much of the early modern period, a wide array of non-felonious offenses were prosecuted solely by a process called “information.” Statutes set fines and rewards for various offenses, and laws were enforced by private prosecutors, who were called “informers.” An informer who brought a successful prosecution received a portion of the fine, often half, as his reward. The relevant offenses ranged from recusancy (refusal to attend Church of England services) to illegal export of strategic materials (such as brass). Informers were forbidden to accept bribes not to prosecute. That is, they were forbidden to settle cases out of court. To illegally settle a case was called “compounding.” This prohibition, however, was largely unenforceable, and prosecutions for compounding were rare. Usually the relevant statute gave all persons the right to inform (prosecute). In some periods, however, especially under Queen Elizabeth and King James I, the monarch unilaterally granted one person the sole right to inform (Holdsworth, 1924:355-62; Beresford, 1957).

Because the prosecutor’s reward was usually less than the fine the defendant paid on conviction (typically only half), theory predicts that corruption should be a serious problem, especially under monopolistic enforcement. This is confirmed by the historical record. Monopolistic enforcers were notorious for their “blackmailing” tendencies. Complaints about one such enforcer, Sir Stephen Proctor, were so serious that James I was forced to imprison him in the Tower of London, and the Commons refused to grant James new taxes unless this monopoly was revoked (Beresford, 1957:232). When enforcement was open to all, and hence competitive, there was some check on corruption. Notorious violators would refuse to compound with (i.e., settle with or bribe) their accusers, because they feared subsequent prosecution by other (competing) prosecutors (Beresford, 1957:230, 231). Nevertheless, because only a single informer might have knowledge of the violation, even when prosecution was formally competitive, an informer might be able to extract a bribe.

Collusion was rare, because the reward was usually less than the sanction. The laws against vagrancy, however, were a fascinating exception. According to a 1744 statute, someone who turned a beggar over to a magistrate received a ten shilling reward, while the beggar’s penalty was a few days in a house of correction (prison). This imprisonment seems to have caused beggars less

than a few shillings of disutility, so they were willing to commit acts of vagrancy if paid by enforcers. According to one historian, “Collusion between vagrants and those who caught them was common everywhere. Often they were induced or even bribed to commit an act of vagrancy so that the reward might be obtained and then divided between the parties” (Radzinowicz, 1957:307-8).

Finally, theory predicts that, if decision making is divided between a mixed group which controls the levels of fines and rewards, and a rent-seeking group which controls the choice between monopolistic and competitive enforcement, the rent-seeking group will usually favor monopolistic enforcement. This aspect of the theory corresponds to the fact that the king was often preoccupied with revenue, while Parliament usually had broader concerns. Parliament and the crown jointly set the rewards and fines (because the approval of both was required for legislation), while the king, at least until the early seventeenth century, had the unilateral power to grant a monopoly on the right to enforce the law. As Section 2.4 predicts, the king regularly chose to grant enforcement monopolies. The practice of granting enforcement monopolies to private parties generated considerable opposition from Parliament and the courts and was eventually banned (Holdsworth, 1924:357-59).

Unfortunately, the fact that rewards were usually one-half of the fines does not accord with theory. The previous sections of this article would suggest that the reward should vary with the fine, the harm, and the cost of effort. There are many possible reasons for this divergence. Perhaps a simple fifty-fifty split was easier to administer. Perhaps ideology, factional politics, or interest-group bargaining prevented crime-by-crime adjustment of rewards. Or perhaps, although Parliament and the Crown seem to have had a reasonably good understanding of the advantages and disadvantages of competitive and monopolistic enforcement, they were not sophisticated enough to set the optimal reward.

3.2. FELONIES PROSECUTED BY INDICTMENT

Until the late nineteenth century, there were no public prosecutors in England for most serious crime. From the 15th through the 20th centuries, crimes were ordinarily prosecuted by indictments framed by private parties. In theory, anyone could bring an indictment (Williams, 1955:596-97). In practice, the victim was almost always the prosecutor, because he had the best information and because a victim might benefit from developing a reputation for prosecuting crimes against himself (Friedman, 1995). Such a

reputation might deter future offenses. Indictments were technically made ('presented') by the grand jury, which could accuse individuals based on their own knowledge. For serious crimes, however, indictments were ordinarily based on the complaint of the victim, and, if the victim decided not to continue the prosecution, the case did not go forward. So bribing the victim would effectively block prosecution (Powell, 1988:78, 113; Beattie, 1986:35-36). If the prosecution was successful, the defendant was usually hanged, or, after 1718, transported (exiled) to America or Australia as an indentured servant. Felons also forfeited all of their possessions, although they ordinarily had very little. The forfeitures were paid to the royal treasury, not the prosecutor. Starting in the late seventeenth century, however, rewards were offered to induce prosecution of some crimes. Such crimes, however, represented only a small fraction of crimes prosecuted by indictment (Radzinowicz, 1957:57-60).

As with the prosecution of minor offenses by information, theory predicts substantial corruption in the prosecution of felony by indictment. Penalties (hanging and forfeiture) were often maximal, and even lesser penalties such as transportation were quite severe. In contrast there was usually no reward. This large gap between maximal fine and zero reward meant that offenders had a large incentive to buy off prosecution. Such bribery, known as compounding a felony, is generally considered to have been widespread (Hay, 1983:168-171, 174).

Offenders, however, were often poor and so lacked the means to effect the bribe. Thieves, however, surmounted this problem by offering the return of the stolen goods in exchange for immunity from prosecution (Radzinowicz, 1957:314-18; Beattie, 1986:39). In such instances, the crime itself provided the criminal with the means with which to effect the bribe. The fact that enforcement was competitive (anyone could sue) might have limited the extent of corruption, if offenders feared that settlement would leave them vulnerable to later prosecution. The fact that victims were usually the only ones with sufficient knowledge to bring a prosecution, however, meant that offenders who compounded had little reason to fear prosecution by another prosecutor.

Because rewards for felonies were never higher than the sanctions, collusion was not a problem. Prosecution of felony by indictment is probably not the result of a rent-seeking governmental strategy. Although a convicted felon forfeited all of his possessions, since most felons had little wealth, the criminal law produced little revenue. The system was plausibly welfare-maximizing. The main defect was probably the victim's lack of incentive to prosecute. As a result, many offenses were probably not

prosecuted. Nevertheless, since penalties were close to maximal (hanging and forfeiture), low levels of prosecution (and thus low probabilities of punishment) may have been socially optimal.²³

3.3. CRIMES PROSECUTED BY APPEAL

For much of the middle ages, and technically until the early nineteenth century, many crimes (including homicide, rape, theft and assault) could be prosecuted by a process called “appeal,” as well as by indictment (Baker, 1990). Appeal was a form of private prosecution. If convicted, the defendant was hanged or fined, with the fines going solely to the royal treasury. No rewards were paid to the prosecutor. Prosecutors were supposed to be eyewitnesses, which, in practice usually restricted prosecution to the victim himself, or in homicide cases, to a close relative. As theory predicts, because of the wide gap between sanction and (zero) reward, corruption was common. Klerman (2001) estimates that in the early thirteenth century, about forty percent of appeals were settled. That is, in nearly half, the offender bribed the prosecutor to drop charges. Nevertheless, in the mid-thirteenth century, royal judges found an ingenious method to reduce corruption. They referred non-prosecuted cases to jury trial.²⁴ In effect, the judges acted as public prosecutors in settled appeals. In terms of our model, they made the probability of subsequent prosecution after settlement (bribery) 1. As the model predicts, settlements (bribery) became less common, because settlement no longer protected defendants from further prosecution. In addition, since there was no reward for a successful appeal, when the ability to profit through corruption was removed, victims had little incentive to prosecute. As a result, as Klerman (2001) shows, the number of appeals dropped by more than fifty percent, and public prosecution emerged as the dominant mode of law enforcement.

4. FINAL REMARKS

This article has shown that corruption considerably enriches and complicates the analysis of private law enforcement. When corruption is possible, a competitive market structure is usually better from a social welfare perspective. This is particularly true if information is sufficiently widespread so as to deter corruption. However, when governmental decision making is divided, a rent-seeking group which is unable to control the level of fines and rewards usually prefers monopolistic to competitive enforcement. English history confirms the plausibility of the model.

Endnotes

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1. Another recent view of criminal justice institutions and private enforcement is provided by Ekelund and Dorton (2003).
2. See Polinsky (1980) and Garoupa and Klerman (2002) for private enforcement with hidden action.
3. For nonmonetary sanctions, see Garoupa and Klerman (2004).
4. This essentially assumes that the offender possesses all of the bargaining power. Alternative specifications could include symmetric Nash bargaining, hence $v_m = (f + \gamma)/2$. The chosen specification produces the same general results without generating cumbersome analytics.
5. If enforcement agencies could prosecute after receiving a bribe, the situation would be similar to competitive enforcement with widespread information, which is modeled below in Section 2.2. These observations relate to a broader problem, namely the time consistency of law enforcement policies. See Boadway et al. (1996).
6. Different assumptions concerning enforcement technology are discussed in Garoupa and Klerman (2002).
7. In fact, $R = (\gamma - x)^2/4\gamma^2 \geq 0$.
8. Other interpretations of competitive private enforcement are possible. For example, the victim could "own" the offense and auction the right to prosecute to competing private enforcement agents.
9. Besanko and Spulber (1989) modeled essentially a Nash-Cournot and a Nash-Stackelberg version of the enforcement model which corresponds to oligopolistic markets.
10. The fact that several enforcement agencies might simultaneously investigate and prosecute the same crime results in some duplication of enforcement effort and thus may increase law enforcement costs. See Polinsky (1980:107).
11. The consideration of two polar cases allows us to identify the relevant trade-offs.

Intermediate probabilities of prosecution after bribery should increase with the reward, since a higher reward should make enforcement agencies more aggressive in detecting and prosecuting offenders.

12. The first-order condition yields that $\gamma(1 - E\gamma) - x = 0$. We prove by contradiction that the unique equilibrium is $E = E_{cc}$. Suppose $E > E_{cc}$, then the first-order condition is negative, and all enforcement agencies exert zero effort, which is inconsistent with the assumption. Suppose now $E < E_{cc}$, then the first-order condition is positive, and all enforcement agencies exert infinite effort, which is also inconsistent with the assumption. Therefore, $E = E_{cc}$ is necessarily the unique equilibrium.
13. For simplicity, we consider the two polar cases: either a welfare-maximizing group controls the government or a rent-seeking group controls the government. For consideration of intermediate cases, see Garoupa and Klerman (2002).
14. We assume that the parameters of the model are such that $\gamma < F$ for all market structures.
15. As discussed below, efficient delegation would not be possible if b were so high as to make the denominator in the above expressions negative (and thus the rewards negative). Infeasibility in this situation corresponds to the situation where the harm imposed by an offense is so high that a welfare-maximizing government would attempt to deter it completely (or nearly completely). Such a policy is not possible with private enforcement, because high levels of deterrence generate very little revenue. See Garoupa and Klerman (2002).
16. With a local minimum in x/b if the market is competitive (with concentrated information) and $7x/(2b + 3)$ if the market is a monopoly.
17. In particular, a monopoly is better if the condition $3F + 5x - 8bF > 0$ is satisfied.
18. This is a simplification to highlight the trade-offs in a divided government. Garoupa and Klerman (2002) extensively consider a rent-seeking government that takes into account a fraction of the harm, either the harm borne directly by the government or social harm that a government might care about either for its own survival or for altruistic reasons.
19. They are $U = (F - x)^2/4F^2 \geq 0$.
20. Formally, the welfare-maximizing group moves first, and the rent-seeking group moves second.
21. The critical level is $5x/(4x + f)$. For example, in a situation where rewards equal half the fine (the usual English situation), monopoly would be preferred if $f < 6x$. This seems plausible in most cases. Notice, nevertheless, that in our model the efficient reward does not generally equal half the fine.
22. As we have seen, the precise choice will depend on the parameters of the model.
23. See Friedman (1995) for a general discussion.
24. Because the jury was 'self-informing' in this period, prosecution was still effective, even though the victim (the likely first prosecutor) was unlikely to testify or otherwise cooperate (Klerman, 2003).

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