

# Optimal Law Enforcement with a Rent-Seeking Government

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This article analyzes public and private law enforcement when the government is motivated by rent seeking. A rent-seeking government seeks primarily to maximize revenue. The article concludes as follows: (1) if offenders have sufficient wealth, a rent-seeking government is more aggressive than a social-welfare-maximizing government in enforcing laws against minor crimes (such as parking violations) but more lax in enforcing laws against major crimes; (2) competitive private enforcement is usually better and never worse than monopolistic private enforcement; (3) The choice between competitive private enforcement and public enforcement depends on which is cheaper and on the severity of the offense.

## 1. Introduction

This article presents the first rigorous model of law enforcement under a rent-seeking government. Previous analyses have assumed that the government aimed to maximize social welfare. This article breaks new ground by comparing the different policies of a benevolent,

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social-welfare-maximizing government and a self-interested, rent-seeking government. Both public law enforcement and private law enforcement are analyzed.

In the law enforcement literature, the optimal policy is usually derived by maximizing social welfare, which is assumed to be the government's objective function. In this context, social welfare is the sum of the offenders' benefits from committing offenses, minus the harm caused by offenses, minus governmental law enforcement expenditures (Garoupa, 1997b; Polinsky and Shavell, 2000).

Friedman (1999) argues that by considering a social-welfare-maximizing government, the law enforcement literature couples highly sophisticated opportunistic individuals with a benevolent government and thus fails to recognize the self-interest of policy makers. We build on this insight by analyzing a government motivated partially or entirely by rent seeking. This view of the government is quite common in public choice scholarship (Gradstein, 1993). A rent-seeking government designs enforcement and punishment with the goal of appropriating the rents of the criminal market. Deterrence is still relevant in this context, although, paradoxically, it is something that often impedes the government's objective. When high probabilities of detection and high fines deter offenses too much, revenue from fines goes down.

Even if one believed that most modern, democratic governments seek to maximize social welfare, the model of a rent-seeking government would still be important as a tool for understanding nondemocratic governments, both in the developing world today and in the not-so-distant past of many currently democratic countries. In addition, although the exposition assumes a unitary government with a single objective function, the model could also apply to bureaucracies or agencies with their own agendas. For example, even if a modern democratic government sought, in general, to maximize social welfare, the model of a rent-seeking government might still apply to an independent agency which was able to keep its own fines.<sup>1</sup> If such an agency aimed to maximize its fine revenue, its behavior could be analyzed with the rent-seeking model developed here.

We also consider public and private law enforcement. Becker's seminal 1968 article derived the optimality of a high-fine, low-probability policy

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1. See, for example, *Wall Street Journal* (1991).

in the context of public law enforcement, where the government could set both the sanction and the probability of punishment. In their 1974 article, Becker and Stigler 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 paid by offenders. If so, 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 in many contexts, because public enforcers can more easily enforce the combination of high fines and low probabilities of detection which Becker (1968) showed to be optimal. Garoupa (1997a), Friedman (1984), Polinsky (1980), and Shavell (1993) refined this analysis and reached somewhat different conclusions. This article extends this debate about public and private law enforcement to regimes which are motivated either partially or entirely by rent seeking.

Section 2 compares social-welfare-maximizing and rent-seeking governments in the context of public law enforcement. It shows that if offenders have sufficient wealth, a rent-seeking government will define more acts as illegal and will be more aggressive in prosecuting minor offenses (such as parking violations) but more lax in enforcing laws against major offenses. Section 3 extends the comparison to private enforcement. It shows that the literature's conclusions about the advantages and disadvantages of private enforcement apply equally well to rent-seeking governments. Section 4 briefly considers nonmonetary sanctions and corruption. Appendix A contains proofs of the propositions, and Appendix B contains a technical extension of our model.

## 2. Public Law Enforcement

Like Becker (1968) we start by assuming that each risk-neutral individual chooses whether to commit an offense—for example, theft or smuggling. The offender's gain from committing the offense is  $b$ , which is distributed across the population according to a uniform probability density function with support  $[0, 1]$ . The assumption of a uniform

distribution is useful for exposition. The results are the same with more general distributions.

Offenses are detected and punished with probability  $p$ . When punished, the offender bears a monetary penalty  $f$ .<sup>2</sup> An individual commits an offense if and only if  $b \geq pf$ . That is, an individual commits an offense if his gains exceed the expected sanction. The number of offenders in this economy when the population is normalized to one is given by

$$n(p, f) = \int_{pf}^1 db = 1 - pf. \quad (1)$$

When law enforcement is public, the government has direct control over the fine,  $f$ , and the probability that an offender will be punished,  $p$ , and sets them to maximize its objective function, whether that be social welfare or rents.

### 2.1. Social-Welfare-Maximizing Government

In the optimal law enforcement literature, social welfare generally equals the sum of offenders' gains from committing the offense, minus the harm caused by offenses, minus expenditure on law enforcement:

$$W = \int_{pf}^1 (b - h) db - xp, \quad (2)$$

where  $h$  is the harm caused by the offense, and  $xp$  is the cost function of law enforcement, where  $x > 0$ . The parameter  $h$  can be greater than one (in which case the harm is always greater than the offender's gain) or smaller than one (in which case the harm is sometimes smaller than the offender's gain). Although  $h$  will ordinarily be best interpreted as harm, it can be negative. When  $h$  is negative, the "offense" is socially beneficial. Although inclusion of the offender's benefit from violating the law,  $b$ , in the government's objective function is controversial among legal scholars, it is conventional in the law and economics literature. Shavell (1993) has argued that the main results of this literature are robust to

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2. We assume that all offenders, if caught, pay the same fine. This assumption is not crucial. Even if the government could vary the fine, it would not do so, because the maximal fine is always optimal. Of course, as discussed in note 6, if offenders vary in their wealth, the maximal fine might also vary. Another justification for a uniform fine is that if the government cannot observe the offender's gain,  $b$ , it cannot condition punishment upon it. We assume that the government cannot measure an individual's gain,  $b$ , but knows its distribution across the population.

different specifications. We assume that the monetary sanction is socially costless (i.e., a pure transfer without transactions costs), as is conventional in the law enforcement literature.<sup>3</sup>

In making enforcement costs a function of the probability of punishment, we follow Polinsky (1980) and Polinsky and Shavell (2000).<sup>4</sup> This specification has the intuitive property that more effective law enforcement (i.e., catching a greater proportion of criminals) costs more money.<sup>5</sup> Also, because our population is normalized to one, our cost function can be interpreted as varying with the population of potential criminals.

The government maximizes the social welfare function in  $f$  and  $p$  subject to the constraint that the fine,  $f$ , is upper bounded by the offender's wealth  $F$ ,  $0 < F < 1$ .<sup>6</sup>

*Proposition 1.* Define  $h_1 = x/F$  and  $h_3 = x/F + F$ . Under a social-welfare maximizing government which has chosen public enforcement, the optimal fine is maximal,  $F$ , and the optimal probability is (i) zero if  $h < h_1$ , (ii)  $[h - x/F]/F$  if  $h_1 \leq h \leq h_3$ , (iii) one if  $h > h_3$ .

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3. Costly, nonmonetary sanctions are analyzed in Garoupa and Klerman (2000a).

4. This is the standard specification of enforcement costs. See Garoupa (1997b) and Polinsky and Shavell (2000). All results that we obtain for  $xp$  are general to any  $x(p)$ , with  $x' > 0$  and  $x'' \geq 0$ . Like Polinsky (1980) and Friedman (1984), we assume constant returns to scale in order to derive results that are easier to illustrate with a graph.

5. Alternatively, one could specify that enforcement costs are a function of the number of offenders punished, rather than the probability of punishment. See Becker (1968), Landes and Posner (1975), and Friedman (1993). Such a cost function has the counterintuitive property that more effective enforcement might be cheaper. Nevertheless, it can be shown that the main results of section 2 of the article remain true even if enforcement costs are proportional to offenders punished, rather than to the probability of punishment. The results in section 3, relating to private enforcement, however, become quite strange under this alternative specification of enforcement costs: (1) the probability of punishment is independent of the reward ( $\gamma$ ) and of enforcement technology ( $x$ ), and (2) in the case of competitive enforcement there could be complete deterrence with zero enforcement costs. See "Note on the Cost Function," on file with the American Law and Economics Review.

6. Appendix B discusses the case in which  $F \geq 1$ . We are implicitly assuming here that all offenders have the same wealth, as is conventional in the literature. See Polinsky and Shavell (1991) and Garoupa (2000) for the enforcement model when wealth varies. A felon's forfeiture of all his wealth under classical English law provides an historical example of a maximal fine which varied with the offender's wealth.

The proof of this, and all other propositions, can be found in Appendix A. The optimal probability is an increasing function of  $h$  and a decreasing function of  $x$ . For less harmful acts, in particular if  $h < x/F$ , the optimal probability of punishment is zero. In other words, acts which are beneficial or only slightly harmful should not even be considered offenses. Conversely, when  $h > x/F + F$ , the optimal probability of punishment is one. Very harmful acts should be punished with certainty. These results replicate those that are well known in the literature and provide a basis for comparison to the new analysis of a rent-seeking government in the next section.

## 2.2. Rent-Seeking Government

Although the economic literature on law enforcement generally assumes a benevolent, social-welfare-maximizing government, this article considers the public choice perspective of a self-interested, rent-seeking government. A rent-seeking government's objective function equals the sum of revenues minus the fraction of the harm borne by the government minus expenditure on law enforcement:

$$\Pi = \int_{pf}^1 (pf - \alpha h) db - xp, \quad (3)$$

where  $\alpha \in [0, 1]$  is the fraction of the harm borne directly by the government. Even a government indifferent to the welfare of its people would perceive homicide, for example, as harmful to itself, because it would reduce tax revenue and, perhaps, military strength. The parameter  $\alpha$  measures the degree to which the rent-seeking government perceives an offense as a harm to itself. A rent-seeking government differs from a social-welfare-maximizing one in that (1) it considers revenue from fines to be a benefit rather than a neutral transfer, (2) it considers as detriment only that portion of the harm that affects the government directly, rather than the total social harm borne by the entire population, and (3) it does not consider the benefit the offender reaps from crime.

In our present specification, the government is concerned only with revenues, enforcement costs, and criminal activity that directly harms the government. Our rent-seeking government ignores the indirect benefits and harms of criminal activity. That is, it ignores the fact that a thief may invest and pay taxes, or that fear of criminal activity may reduce output, cause popular revolt, or reduce tax revenue. The mixed government model,

discussed in the next subsection, enriches the pure rent-seeking model by giving some weight to criminal gains and to societal loses.<sup>7</sup>

Because its objective function is different, a rent-seeking government pursues a different law enforcement strategy.

*Proposition 2.* (1) Let  $\alpha \in (0, 1]$ . Define  $h_0 = (x - F)/\alpha F$  and  $h_4 = (x/F + 2F - 1)/\alpha$ . Under a rent-seeking government which has chosen public enforcement, the optimal fine is maximal,  $F$ , and the optimal probability is (i) zero if  $h < h_0$ , (ii)  $[1 + \alpha h - x/F]/(2F)$  if  $h_0 \leq h \leq h_4$ , (iii) one if  $h > h_4$ .

(2) Let  $\alpha = 0$ . Under a rent-seeking government which has chosen public enforcement, the optimal fine is maximal,  $F$ , and the optimal probability is (i) zero for all  $h$ , if  $x \geq F$ , and (ii)  $[1 - x/F]/(2F)$  for all  $h$ , if  $x < F$ .

Note that in this context, and indeed whenever we are talking about a rent-seeking government, “optimal” means maximizing the government’s objective function. As will be discussed below, however, what is optimal for a rent-seeking government is different from what is optimal from a social welfare perspective.

It is a well-known result in the literature that a social-welfare-maximizing government always chooses an expected sanction less than the harm caused by the offense (Garoupa, 2000; Polinsky and Shavell, 2000).<sup>8</sup> This result is clear from Proposition 1: the expected sanction is less than the harm caused by an offense, because enforcement is costly.

7. Alternatively, we could rewrite the rent-seeking government’s objective function to take into account indirect benefits:

$$\Pi = \int_{pf}^1 (\tau b + pf - \alpha h) db - xp,$$

where  $\tau \in [0, 1]$ . This objective function has properties similar to that of a mixed government as discussed in the next subsection. The policy results would be similar to Proposition 3, where  $\underline{h} = (x/F - 1)/\alpha$  and  $\bar{h} = [x/F - 1 + (2 + \tau)F]/\alpha$ . Note, however, that this objective function might require reinterpretation of  $b$ , the offender’s gain from the offense.  $b$  is usually interpreted as the illegal gain actually received by the criminal, net of fines or taxes. See Polinsky and Shavell (2000). Under the interpretation presumed in the alternative objective function considered in this note, however,  $b$  might need to be interpreted as the offender’s gross gains, and rational offenders would commit an offense only if  $(1 - \tau)b \geq pf$ .

8. For a model in which this result does not hold, see Friedman (1993).

When rent seeking is considered, however, the expected sanction is not necessarily less than the harm caused by the offense. That is,  $pF$  can be greater than  $h$ . The intuition is that sanctioning aims at raising revenue instead of, or in addition to, deterrence. When the harm is low, the desire for revenue induces a rent-seeking government to set an expected sanction which more than compensates for the harm done. Consider, for example, the case where  $\alpha$  is zero. In this situation, the expected sanction will be the same for any harm,  $h$ . Since the expected sanction can be very high, while  $h$  can become very low, it is clear that the expected sanction will sometimes exceed the harm.

The relationship between harm and the optimal probability is most interesting when the government bears some of the harm from offenses (i.e.,  $\alpha > 0$ ) and when offenders have more than minimal wealth, in particular, when  $F - (2 - \alpha)F^2 < x(1 - \alpha) < F$  (the reason for these conditions will be discussed further below). Figure 1 compares the optimal probability chosen by social-welfare-maximizing and rent-seeking governments under these assumptions.

As the figure makes clear, for the least harmful acts ( $h \leq h_0$ ), both governments pursue the same policy. They set the probability to zero and thus effectively decline to define the acts as offenses. Criminalizing such

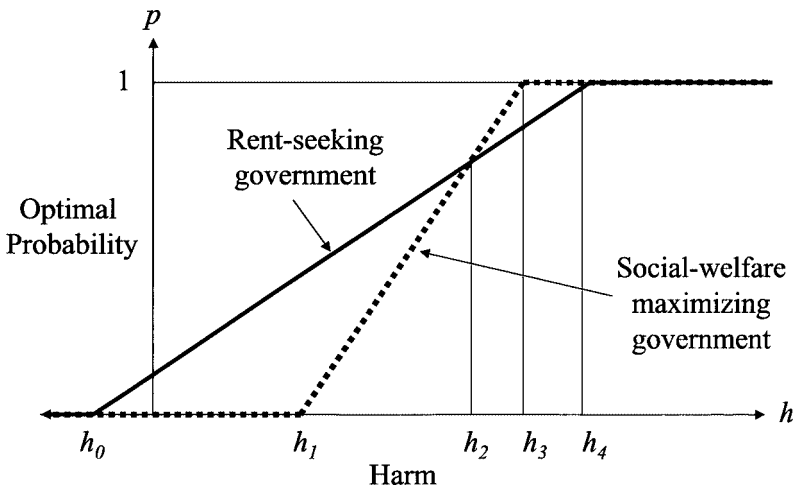


Figure 1. Harm and optimal probability when  $\alpha > 0$  and  $F - (2 - \alpha)F^2 < x(1 - \alpha) < F$ .

acts does not make sense, because neither deterrence nor revenue can justify the cost of enforcing laws against such acts. In the figure,  $h_0$  is negative, indicating that the only acts that both governments fail to define as offenses are socially beneficial ones. This, however, is not necessary.  $h_0$  might be positive, in which case both governments would categorize some slightly harmful acts as legal. Note that when  $h_0$  is negative, the rent-seeking government receives some direct benefit ( $\alpha h$ ) from the act. This provides another reason for the rent-seeking government not to define such acts as offenses.

For offenses that are very harmful ( $h \geq h_4$ ), both governments set probability equal to one. That is, they try to completely deter these offenses, because the harm is so high that it justifies maximal enforcement.

For other levels of harm, the governments pursue different strategies. If an act is at worst only slightly harmful (i.e.,  $h_0 < h \leq h_1$ ), a social-welfare-maximizing government declines to criminalize it. For these acts, the benefit of law enforcement, if any, is simply too low to justify its costs. In contrast, a rent-seeking government would criminalize (i.e., set probability greater than zero for) these acts, because the revenue thus generated is greater than the combined cost of enforcement and of possibly deterring acts from which the government derives benefit. Both governments impose sanctions for moderately low-harm offenses ( $h_1 < h < h_2$ ), but the rent-seeking government sets a higher probability, because doing so increases revenues.<sup>9</sup> For moderately high-harm offenses ( $h_2 < h < h_4$ ), the social-welfare-maximizing government sets higher probabilities, because its primary goal is to deter harmful offenses. High levels of deterrence, however, reduce revenue, so a rent-seeking government is more moderate in its punishment of these offenses. By decreasing the expected punishment, the rent-seeking government induces more people to commit the offenses and is thus able to collect more revenue.

The previous paragraph and Figure 1 assumed that  $\alpha > 0$  and  $F - (2 - \alpha)F^2 < x(1 - \alpha) < F$ . These conditions assured that  $h_0 < h_1 < h_2 < h_3 < h_4$ . The next three paragraphs relax those assumptions. First, suppose that  $x(1 - \alpha) \geq F$ . This inequality will hold when offender wealth

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9. It can be seen that  $h_2$  is the harm level at which both kinds of government set the same probability, where  $h_2 = (x + F)/[(2 - \alpha)F]$ .

( $F$ ) is low relative to enforcement costs ( $x$ ) and the government does not bear all the harm ( $\alpha < 1$ ). Although this inequality may hold even when the government bears much of the harm (i.e., when  $\alpha$  is high), it is more likely to be true when the government bears very little of the harm (i.e., when  $\alpha$  is low). When the inequality holds, a rent-seeking government will always set a probability lower than or equal to that set by a social-welfare-maximizing government.<sup>10</sup> The intuition behind this result is that additional law enforcement does not generate additional net revenue, because law enforcement is expensive while low offender wealth keeps even maximal fines low. As a result, law enforcement can be justified only in terms of deterrence. Since the inequality holds only when the rent-seeking government values deterrence less than a social-welfare-maximizing government (i.e., when  $\alpha < 1$ ), the rent-seeking government derives less benefit from enforcement. So the rent-seeking government sets a lower probability.

Now suppose that  $\alpha > 0$  and  $F - (2 - \alpha)F^2 \geq x(1 - \alpha)$ . The latter inequality will hold only when wealth is low, but not too low. As wealth gets high, the left side of this inequality becomes negative, while the right side is always positive or zero. Conversely, as wealth approaches zero, the left side of this inequality also becomes zero. In addition to requiring low wealth, this inequality will hold only if enforcement is inexpensive (i.e.,  $x$  is low), or the government bears much of the harm (i.e.,  $\alpha$  is high), or both. When these conditions are met, the rent-seeking government always sets a probability higher than or equal to that set by a social-welfare-maximizing government.<sup>11</sup> The intuition behind this result is somewhat complex and requires consideration of the relationship between offender wealth ( $F$ ), probability ( $p$ ) and gross revenue (i.e., revenue without subtracting law enforcement costs). When wealth is high, increasing the probability may decrease revenue, because doing so may completely or almost completely deter offenses. On the other hand, when wealth is sufficiently low, increasing the probability always increases revenue, because low wealth means low fines, and low fines have little deterrent effect. As a result, when wealth is low, increased enforcement is more attractive to a rent-seeking government than to a social-welfare-maximizing government,

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10. In mathematical terms, this is because  $h_2 \leq h_1 \leq h_0$ .

11. In mathematical terms, this is because  $h_4 \leq h_3 \leq h_2$ .

so long as the cost of enforcement ( $x$ ) is also low. In addition, even if the cost of enforcement is high, increasing enforcement will still be more attractive to a rent-seeking government, so long as the government bears a high proportion of the harm and wealth is low. In this situation, if harm is low, both a social-welfare-maximizing government and a rent-seeking government will set probability equal to zero, because the cost of enforcement is too high. When harm becomes high, however, both governments will benefit from deterrence. A rent-seeking government, however, will also benefit from the increase in revenue. As a result, it will set a higher probability.

When  $\alpha = 0$ , a rent-seeking government does not care at all about the harm imposed by the offense, because none of the harm is borne by the government. Its only concerns are revenue and law enforcement costs. As mentioned above, if enforcement costs are sufficiently high compared to offender wealth (i.e., if  $x \geq F$ ), then the government always sets probability equal to zero. That is, law enforcement is too costly to be worthwhile, no matter what the harm imposed by an offense. On the other hand, if wealth is sufficiently high (i.e., if  $x < F$ ), then, according to the model, such a government would define every act, even if socially beneficial, as a punishable offense. Monetary sanctions would become just a form of taxation, and probably an inefficient one. This odd result suggests that the model of a pure rent-seeking government is too simple. One way to make the analysis more plausible is to model governments that are concerned about both rents and social welfare. The next subsection takes up that task.

### 2.3. Mixed Government

Most governments are neither purely rent seeking nor purely social welfare maximizing. A government usually combines both social welfare objectives and rent-seeking objectives. Even a government that was only maximizing its rents might adopt policies to enhance social welfare in order to increase taxes or retain power. Conversely, even public-spirited rulers care about their own salaries and perks. We call governments concerned about both social welfare and rents “mixed governments.” One can also think of a mixed government as the outcome of a contest between two groups, one that favors maximizing social welfare and another that favors maximizing rents. The objective function of a mixed government

can be written as

$$U = (1 - \sigma)W + \sigma\Pi = \int_{pf}^1 [(1 - \sigma)b + \sigma pf - (1 - \sigma + \sigma\alpha)h] db - xp, \quad (4)$$

where  $\sigma \in [0, 1]$  reflects the degree to which rent-seeking motivation is relevant in designing law enforcement policies. If  $\sigma$  is zero, the objective function is the usual social welfare objective function. If  $\sigma$  is one, the objective function describes a pure rent-seeking government.

One way of interpreting the mixed government is that it is a rent-seeking government that takes into account the indirect harms and benefits of illegal activity. The fact that the mixed government's objective function includes a fraction of the offenders' gains— $(1 - \sigma)b$ —can be interpreted as taking into account indirect benefits of illegal activity, such as a thief's investments or tax payments. Conversely, the fact that the objective function includes a larger fraction of the harm— $(1 - \sigma + \sigma\alpha)h$  rather than just  $\alpha h$ —takes into account indirect harms from criminal activity, such as lower taxes or an increased chance of insurrection. Note that  $\sigma$  can be interpreted as measuring the magnitude of these indirect effects. A lower  $\sigma$  means that the indirect effects are greater. In addition, by varying both  $\sigma$  and  $\alpha$ , one can adjust the relative weight given to indirect harms and benefits.

Define  $p'$  as follows:

$$p' = \frac{(1 - \sigma + \sigma\alpha)h + \sigma - x/F}{(1 + \sigma)F}. \quad (5)$$

The optimal governmental policy is characterized as follows:<sup>12</sup>

*Proposition 3.* Define  $\underline{h} = (x/F - \sigma)/(1 - \sigma + \sigma\alpha)$  and  $\bar{h} = [x/F - \sigma + (1 + \sigma)F]/(1 - \sigma + \sigma\alpha)$ . Under a mixed government which has chosen public enforcement, the optimal fine is maximal,  $F$ , and the optimal probability is (i) zero if  $h < \underline{h}$ , (ii)  $p'$  if  $\underline{h} \leq h \leq \bar{h}$ , (iii) one if  $h > \bar{h}$ .

Note that in this context, and indeed whenever we analyze a mixed government, "optimal" means maximizing the government's objective function, which is not necessarily synonymous with maximizing social welfare.

Having found the optimal probability set by the government, we can analyze how enforcement policy changes as the government becomes more

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12. It is assumed that  $\sigma(1 - \alpha) < 1$ . Otherwise, see the second part of Proposition 2.

(or less) concerned with rent seeking. The relationship between the optimal probability  $p'$  and  $\sigma$  is given by

$$\frac{\partial p'}{\partial \sigma} = \frac{1 + x/F - h(2 - \alpha)}{(1 + \sigma)^2 F} = \frac{(2 - \alpha)(h_2 - h)}{(1 + \sigma)^2 F}. \quad (6)$$

The relationship between governmental motivation and probability of detection is not monotonic. The sign of the derivative depends on the parameters of the model. As in section 2.2., the value of the harm,  $h$ , plays a central role. If harm is low ( $h < h_2$ ), the optimal probability  $p'$  set by the government increases with  $\sigma$ . That is, as rents become a more important governmental objective, more resources are invested in detection and punishment. On the other hand, if harm is high ( $h > h_2$ ), as rent seeking becomes more central, fewer resources are invested in law enforcement. Of course, the derivative expression above and this paragraph so far have assumed that  $\underline{h} \leq h \leq \bar{h}$ . When  $h < \underline{h}$ , optimal probability is zero and does not change with small changes in  $\sigma$ . Similarly, when  $h > \bar{h}$ , the optimal probability is one and does not change with small changes in  $\sigma$ .

Although modeling a mixed government is important primarily because most real governments are probably mixed, this modeling is also useful for another reason: it helps simplify the analysis of private law enforcement, which is the topic of the next section. Since pure social-welfare-maximizing governments and pure rent-seeking governments are special cases of mixed governments ( $\sigma = 0$  and  $\sigma = 1$ ), analysis of the mixed government's objective function yields not only results about governments which pursue both rents and social welfare, but also results about pure rent-seeking and pure social-welfare-maximizing governments.

### 3. Private Law Enforcement

#### 3.1. Monopolistic Enforcement

Suppose the government privatizes law enforcement by delegating apprehension and prosecution of offenders to a single private enforcement agency. The private agency gets the right to apprehend individuals and is paid a reward  $\gamma$  for each individual it catches and convicts. The government sets and collects the fine  $f$  paid by offenders.

The profits of the private agency are given by

$$R = \gamma pn(p, f) - xp, \tag{7}$$

where the first term refers to the revenues raised by the private enforcement agency and the second term refers to its costs, that is, the private agency's expenditures on law enforcement. In this section and 3.2., we assume that the cost function,  $xp$ , is the same for public and private enforcement. This assumption is relaxed in section 3.3.

The private agency maximizes profits so that:

*Proposition 4.* Define  $\hat{p} = [1 - x/\gamma]/2f$ . The probability set by the private agency is (i) zero if  $\gamma \leq x$ , (ii)  $\hat{p}$  if  $\gamma > x$ .

The probability of detection and conviction  $\hat{p}$  set by the private agency increases with the reward  $\gamma$ , because detecting offenders becomes more profitable. On the other hand, the probability decreases with the fine  $f$ , because fewer individuals will be offenders, which reduces the incentive to look for them.

From Proposition 4, it is clear that the reward must satisfy  $\gamma > x$ , because otherwise the private agency sets a zero probability. That is, if the reward is too low, the private enforcement agency will not find it profitable to enforce the law, even though it has a monopoly.

So long as the reward is sufficiently high to make monopolistic private enforcement plausible (i.e.,  $\gamma > x$ ), enforcement will be profitable to the agency. There is no reason, however, for the government to leave this profit with the agency. Rather, a sensible government would auction the right to be the sole private enforcement agency, thus appropriating all of the agency's profits ( $R$ ). The government's objective function is thus

$$U = \int_{\hat{p}f}^1 [(1 - \sigma)b + \sigma \hat{p}f - (1 - \sigma + \sigma\alpha)h] db - x\hat{p}. \tag{8}$$

Note that the reward does not appear in the government's objective function, because money paid out in rewards is recouped through sale of the right to be the enforcement agency.

The government's policy (choice of fine and reward) follows easily from its objective function and the definition of  $p'$  from the previous section. Define  $\gamma(p)$  as

$$\gamma(p) = x/(1 - 2pF). \tag{9}$$

*Proposition 5.* Under a mixed government which has chosen private enforcement, the optimal fine is maximal,  $F$ , and the optimal reward is (i) zero if  $h < \underline{h}$ , (ii)  $\gamma(p')$  if  $\underline{h} \leq h \leq \bar{h}$ , (iii)  $\gamma(1)$  if  $h > \bar{h}$ .

The argument for a maximal fine is the usual Beckerian one. The reward is set so that the probability chosen by the private agency is optimal from the government's viewpoint. That is, the reward is set to induce the agency to set  $\hat{p}$  to the optimal probability derived in Proposition 3.

So long as the government can set the reward in this fashion, monopolistic private enforcement is as good as public enforcement, because the government's objective function takes the same value. The problem is that there is no guarantee that the appropriate reward can be set. If  $p'$  is too high, that is, if  $p' \geq 1/(2F)$ , there is no (finite) reward that induces the agency to set the optimal probability. According to Proposition 4, as the reward approaches infinity, the probability set by the agency approaches  $1/(2F)$ . Therefore, the agency will never choose a probability equal to or higher than  $1/(2F)$ . Equivalently, since  $p'$  is a function of  $h$  and  $x$ , we can say that monopolistic enforcement fails to induce the optimal probability ( $p'$ ), and is thus problematic, when  $h \geq \hat{h} = [(1 + \sigma)/2 + x/F]/(1 - \sigma + \sigma\alpha)$ . The critical value,  $\hat{h}$ , defines an upper bound on the level of harm such that optimal enforcement can be delegated to a monopolistic agency.

As is discussed in Polinsky (1980), the problem of delegating enforcement to a monopoly comes from the fact that the agency knows that by detecting and punishing more offenders fewer individuals will become offenders, which reduces the agency's incentive to look for them. The private agency does not care about the social damage caused by crime but only about the revenues. For very harmful acts that the government seeks to completely or almost completely deter, the agency is not willing to enforce the policy favored by the government. From section 2.3, we know that a rent-seeking government seeks to completely or almost completely deter fewer very harmful offenses than a social-welfare-maximizing government.<sup>13</sup> Therefore, when the government is captured by a rent-seeking group, the problem is much reduced. In fact, if the government is purely rent seeking ( $\sigma = 1$ ) and bears none of the harm

13. This sentence follows from the fact that  $p'$  is decreasing with  $\sigma$  if harm is high ( $h > h_2$ ), and from the fact that  $\hat{h}$  is also decreasing in  $\sigma$ . See section 2.3.

directly ( $\alpha = 0$ ), then the government can always delegate its optimal enforcement policy (because  $\hat{h}$  is infinite).

One way to solve the problem generated by monopolistic enforcement would be to require the agency to insure a fraction of the harm. Similarly, the government could pay the agency an additional reward inversely related to the number of offenses. These mechanisms could induce even a monopolistic private agency to set the appropriate level of deterrence.<sup>14</sup> Unfortunately, they are also informationally demanding, as the government would need to know the amount of crime. Because it is very difficult to measure the incidence of crime, we have assumed that the government cannot rely on such mechanisms.<sup>15</sup> In addition, in compensating enforcers with fixed per-conviction rewards, our model corresponds to historical systems of private enforcement and follows most of the economic literature on law enforcement (Beresford, 1957; Landes and Posner, 1975; Polinsky, 1980).<sup>16</sup>

In summary, given the assumption of equal public and private enforcement costs, monopolistic private enforcement is sometimes as good as public enforcement, but sometimes worse. For less harmful acts, any government is indifferent between private monopolistic enforcement and public enforcement. For more harmful acts, however, private enforcement does not satisfy the objectives of the government. Thus, for more harmful acts, public enforcement is superior to monopolistic private enforcement. Monopolistic private enforcement is less problematic, however, when the government is concerned primarily with rents.

### 3.2. Competitive Enforcement

Let us now assume that there are many private enforcement agencies, each of which can apprehend and prosecute crimes. Following Landes and Posner (1975), we assume that the first enforcer to apprehend and

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14. On the conflict of interests of a principal-agent relationship within law enforcement, see Besanko and Spulber (1989).

15. A similar criticism applies to the solution proposed by Friedman (1984). In his article, the government sets the expected sanction,  $pf$ , and allows the enforcement agency to choose both probability and severity of punishment.

16. For a different system of private enforcement, see Friedman (1984).

convict the offender is entitled to the reward.<sup>17</sup> The private enforcers are constrained to zero profits because the market is contestable (Landes and Posner, 1975; Polinsky, 1980), so the probability set by a competitive agency,  $\hat{p}$ , is easily found by solving  $R = 0$ :

$$\hat{p} = [1 - x/\gamma]/f. \quad (10)$$

As with monopolistic private enforcement, the reward must satisfy  $\gamma > x$ , because otherwise the private agencies set a zero probability. That is, if the reward is too low, no private agency will enforce the law, because the costs are greater than the revenue generated by the rewards.

Redefine  $\gamma(p)$  as

$$\gamma(p) = x/(1 - pF). \quad (11)$$

The optimal policy is described by Proposition 5. For the usual reasons, the optimal fine is maximal ( $F$ ), and the government sets the reward so that the probability chosen by a competitive agency is optimal from the government's perspective.

The reward  $\gamma(p')$  is smaller when enforcement is competitive than when it is monopolistic. Nevertheless, this does not provide any net benefit to the government, because the lower reward payouts are exactly offset by the fact that, under competitive enforcement, the government gets no revenue from auctioning the right to be an enforcer.

As with monopolistic private enforcement, if the government can set the reward equal to  $\gamma(p')$ , the probability set by the private agency is optimal from the government's viewpoint. Unlike the monopolistic context, however, the appropriate reward can almost always be set. So long as  $p'F < 1$ , a finite reward can motivate competitive enforcement agencies to set the government's optimal probability  $p'$ . It is important to note that  $p'F = 1$  implies complete deterrence of all offenders, because potential offenders commit an offense only if  $b \geq pf$ , and both  $b$  and

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17. 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, p. 107). The effect of higher law enforcement costs is discussed in section 3.3. 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. In order to highlight the effect of rent seeking, we have retained the model of competitive enforcement developed by Landes and Posner (1975) and Polinsky (1980).

$p$  are bounded above by one. Thus, so long as the government does not seek complete deterrence, delegating law enforcement to competitive private agencies can implement the government's optimal policy. Complete deterrence ( $p'F = 1$ ) cannot be achieved through private enforcement, because such enforcement yields no rewards and thus provides no revenues which would justify enforcement effort by a private agency. Thus, when the government seeks complete deterrence, public enforcement is superior.

Under monopolistic private enforcement, delegation of the optimal probability is more difficult because the agency behaves strategically and anticipates that a high probability would reduce profits. In a competitive enforcement environment, that strategic effect is not present because profits are zero. Even if one agency tried to raise profits by lowering the probability, other competing agencies would simply increase the number of offenders they prosecute, thus bringing the probability up to the level set by the government ( $p'$ ).

In summary, given the assumption of equal enforcement costs, the government is indifferent between competitive private enforcement and public enforcement. The only exception would be when the government seeks complete deterrence of all offenses.

### 3.3. Comparison of Enforcement Methods

So far we have analyzed private enforcement under the assumption that public and private enforcers share the same cost function,  $xp$ . In this section we relax that assumption and compare public and private enforcement.

Let  $x_1p$  and  $x_2p$  be the cost functions of law enforcement for public and private enforcement, respectively. We consider the possibility that  $x_1$  is less than, equal to, or greater than  $x_2$ . That is, public enforcement can be cheaper, equally expensive, or more expensive than private enforcement. Table 1 compares the enforcement mechanisms under various assumptions about cost functions and harm levels.

The third column, labeled, "Private and Public Enforcement Equally Expensive ( $x_1 = x_2$ )," summarizes the conclusions of the article so far. When public and private enforcement are equally costly, private competitive enforcement and public enforcement are equally good, except for very harmful offenses that the government would seek to completely deter.

**Table 1.** Comparison of Enforcement Mechanisms

Harm Level	Optimal Enforcement Mechanism		
	Private Enforcement Cheaper ( $x_2 < x_1$ )	Private and Public Enforcement Equally Expensive ( $x_1 = x_2$ )	Public Enforcement Cheaper ( $x_1 < x_2$ )
Very low ( $h \leq \hat{h}$ )	C or M or P	C or M or P	C or M or P
Low ( $\hat{h} < h < \hat{h}$ )	C or M	C or M or P	P
High ( $\hat{h} \leq h < \hat{h} + (1 + \sigma)/2$ )	C	C or P	P
Very high ( $h \geq \hat{h} + (1 + \sigma)/2$ )	C or P, depending on the extent to which $x_1 > x_2$	P	P

*Notes:* C = Competitive Private Enforcement, M = Monopolistic Private Enforcement, and P = Public Enforcement.

For such offenses, public enforcement is superior. Monopolistic private enforcement is fine for very low- and low-harm offenses, but inferior to both competitive private enforcement and public enforcement for high- and very high-harm offenses.

This analysis is easily extended to situations in which private enforcement is cheaper than public enforcement,  $x_2 < x_1$ , or vice versa. The second and fourth columns summarize the results for these conditions. As is clear from the table, no enforcement mechanism is always best. Monopolistic private enforcement is never better than the other two mechanisms.<sup>18</sup> Nevertheless, for low-harm offenses, it is as good as competitive private enforcement. Competitive private enforcement is always at least as good as monopolistic enforcement, but not as good as public enforcement when the harm is very high or when public enforcement has a cost advantage. When private agencies are more efficient in detecting offenders (i.e., when  $x_2 < x_1$ ), public enforcement is potentially superior only when harm is very high. Even for very harmful offenses, however, public enforcement is not necessarily preferred to competitive private

18. This, of course, assumes that private monopolistic and private competitive enforcement share the same cost function,  $x_2 p$ . As mentioned in the previous section, however, duplication of costs might make competitive enforcement more expensive. If so, monopolistic private enforcement would be superior to competitive private enforcement, except for high- or very high-harm offenses. Even for high- or very high-harm offenses, monopolistic enforcement might be superior, if its cost advantage were large enough. On the other hand, competition might put pressure on costs, which might make competitive private enforcement cheaper than monopolistic private enforcement.

enforcement. The possible advantage of public enforcement derives from the fact that it is impossible to achieve the desired complete deterrence through competitive enforcement. Nevertheless, in spite of this impossibility, competitive private enforcement will still sometimes be better, because if private enforcement is sufficiently cheap relative to public enforcement the benefit of reducing costs will be larger than the harm in not completing deterring offenses.

These results are generally consistent with the conclusions of Polinsky (1980), which suggests that, although Polinsky assumed a social-welfare-maximizing government, his results remain valid even when the government also pursues rents.<sup>19</sup>

## 4. Extensions

### 4.1. Nonmonetary Sanctions

Nonmonetary sanctions differ from monetary sanctions, because they are costly (both to society and to the government) and because they do not generate revenue. Polinsky and Shavell (1984) demonstrate that a social-welfare-maximizing government should exhaust the deterrent effect of fines first and then, if necessary, combine maximal monetary sanctions with nonmonetary sanctions. This result follows from the fact that the marginal social cost of a monetary sanction is zero, whereas the marginal social cost of a nonmonetary sanction is strictly positive. As is discussed more fully in Garoupa and Klerman (2000a), a government partially or entirely motivated by rents may use nonmonetary sanctions more or less often than a social-welfare-maximizing government. The fact that such a government may be less interested in deterring offenses, because it may bear only part of the harm,  $\alpha h$ , means that it may use nonmonetary sanctions less often. On the other hand, the fact that the government ignores part or all of convicted offenders' disutility from the imposition of nonmonetary sanctions makes nonmonetary sanctions more attractive. In the special cases of a pure rent-seeking government when  $\alpha$  is zero, nonmonetary sanctions should be set to zero, because nonmonetary sanctions are

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19. Polinsky (1980) analyzes private enforcement both under the assumption that the reward equals the fine and under the assumption that the reward can be different from the fine. This article makes the latter assumption, and our results are consistent only with the part of Polinsky (1980) that also makes that assumption.

costly and do not raise revenue, and because such a government does not care at all about deterrence.

#### 4.2. Corruption

In this article, we have ignored the incentives for corruption that private enforcement produces. As is discussed more fully in Garoupa and Klerman (2000b), the fact that the optimal fine is usually different from the optimal reward means that an agreement advantageous to both offender and enforcer can often be reached. When the fine is higher than the reward, the offender can bribe the enforcer not to prosecute. Such agreements dilute deterrence and make it difficult for the government to achieve its optimal policy through private law enforcement. Nevertheless, this problem is less severe when private enforcement is competitive, because the possibility that an offender may be prosecuted by one agency after bribing another reduces the incentive to engage in corruption. Corruption is also less of a problem when the government is concerned primarily about rents and  $\alpha$  is low, because such a government is not disturbed by the dilution in deterrence.

When rewards are higher than fines, it is worthwhile for an enforcement agency to collude with a potential offender to commit an offense, because the agency can use the reward to reimburse the offender for the fine. Such collusion results both in more crime and in higher enforcement costs. As a result, it is unambiguously bad, no matter what the government's objective function is.

### 5. Final Remarks

This article has shown that consideration of rent seeking enriches the analysis of both public and private law enforcement. If offender wealth is sufficiently high, a rent-seeking government behaves differently than one motivated by social welfare, in that it is more aggressive in enforcing laws against minor crimes, while it is more lax in enforcing laws against major crimes. With regard to the choice between public enforcement, private enforcement with competing agencies, and private enforcement with one monopolistic agency, this article shows that Polinsky's (1980) conclusions for a social-welfare-maximizing government hold true

also for rent-seeking and mixed governments. Competitive private enforcement is always at least as good and usually better than monopolistic private enforcement. The choice between competitive private enforcement and public enforcement depends on which is cheaper and on whether the government seeks to completely deter offenses.

## Appendix A

*Proof of Proposition 1:* The first-order conditions of the optimization problem are

$$W_p = (h - pf)f - x = 0,$$

and

$$W_f = (h - pf)p > 0.$$

As Becker demonstrated, the optimal fine is maximal,  $F$ . See proof in Garoupa (1997b) for technical details. The second-order condition is satisfied:

$$W_{pp} = -F^2 < 0,$$

so the optimal probability follows. ■

*Proof of Proposition 2:* The first-order conditions of this problem are

$$\Pi_p = \int_{pf}^1 f db + (\alpha h - pf)f - x = 0,$$

and

$$\Pi_f = \int_{pf}^1 p db + (\alpha h - pf)p > 0,$$

and the optimal fine must be maximal for any  $h$ . The second-order condition is satisfied:

$$\Pi_{pp} = -2F^2 < 0,$$

so the optimal probability follows. ■

*Proof of Proposition 3:* The first-order conditions of this problem are

$$U_p = [(1 - \sigma + \sigma\alpha)h - pf]f + \int_{pf}^1 \sigma f db - x = 0,$$

and

$$U_f = [(1 - \sigma + \sigma\alpha)h - pf]p + \int_{pf}^1 \sigma p db > 0,$$

and the optimal fine is maximal for any  $\sigma$ . The second-order condition is satisfied:

$$U_{pp} = -(1 + \sigma)F^2 < 0,$$

so the optimal probability follows. ■

*Proof of Proposition 4:* The first-order condition of this problem are

$$R_p = \int_{pf}^1 \gamma db - \gamma pf - x = 0,$$

and the second-order condition is satisfied, given the assumptions of the model:

$$R_{pp} = -2\gamma f < 0,$$

so the probability follows. ■

*Proof of Proposition 5:* The first-order conditions of this problem are

$$U_\gamma = U_p(\hat{p})\hat{p}_\gamma = 0,$$

and

$$U_f = [(1 - \sigma + \sigma\alpha)h - \hat{p}f]\hat{p} + \int_{\hat{p}f}^1 \sigma \hat{p} db + U_p(\hat{p})\hat{p}_f > 0,$$

and the optimal fine is maximal, because the reward,  $\gamma$ , is set so that the probability chosen by the private agency,  $\hat{p}$ , is optimal from the government's viewpoint. ■

## Appendix B

In the body of the article, we assumed that  $F < 1$ . If, instead, one assumed that  $F \geq 1$ , the math changes slightly, but the main results are the same.

*Proposition 1.* Define  $h_1 = x/F$  and  $h_3 = x/F + 1$ . Under a social-welfare maximizing government which has chosen public enforcement, the optimal fine is maximal,  $F$ , and the optimal probability is (i) zero if  $h < h_1$ , (ii)  $[h - x/F]/F$  if  $h_1 \leq h \leq h_3$ , (iii)  $1/F$  if  $h > h_3$ .

*Proposition 2.* Let  $\alpha \in (0, 1]$ . Define  $h_0 = (x - F)/\alpha F$  and  $h_4 = (x/F + 1)/\alpha$ . Under a rent-seeking government which has chosen public enforcement, the optimal fine is maximal,  $F$ , and the optimal probability is (i) zero if  $h < h_0$ , (ii)  $[1 + \alpha h - x/F]/(2F)$  if  $h_0 \leq h \leq h_4$ , (iii)  $1/F$  if  $h > h_4$ .

*Proposition 3.* Define  $\underline{h} = (x/F - \sigma)/(1 - \sigma + \sigma\alpha)$  and  $\bar{h} = (x/F + 1)/(1 - \sigma + \sigma\alpha)$ . Under a mixed government which has chosen public enforcement, the optimal fine is maximal,  $F$ , and the optimal probability is (i) zero if  $h < \underline{h}$ , (ii)  $p'$  if  $\underline{h} \leq h \leq \bar{h}$ , (iii)  $1/F$  if  $h > \bar{h}$ .

The proofs of these three propositions follow easily from Appendix A. These propositions are nearly identical to those in the main part of the article, except that complete deterrence is achieved by setting the probability equal to  $1/F$ , whereas in the body of the article complete deterrence is never achievable because  $pF < 1$ .

Section 3 of the article is not affected by the assumption, except that in Proposition 5 (iii),  $\gamma(1)$  should be replaced by  $\gamma(1/F)$ .

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