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Criminal Solicitation, Entrapment, and the Enforcement of Law

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Abstract

This paper examines the optimal use of criminal solicitation as a law enforcement strategy. The benefits are greater deterrence of crime (due to the greater likelihood of apprehension), and the savings in social harm as some offenders are diverted away from committing actual crimes through solicitation. The costs are the expense of hiring undercover cops and the greater likelihood of punishment. The optimal use of solicitation balances these factors. The paper also examines the justification for the entrapment defense, which exonerates those caught in a criminal solicitation but who otherwise had no predisposition to commit a crime.

Journal of Economic Literature Classification: K14, K42

Keywords: Entrapment, criminal solicitation, law enforcement

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Criminal Solicitation, Entrapment, and the Enforcement of Law

1. Introduction

Law enforcers often solicit individuals to commit criminal acts as a way of lowering the cost of apprehending and convicting offenders. Examples include the use of undercover cops to apprehend drug dealers and prostitutes, or their customers. The presumption underlying the use of this strategy is that the target of the solicitation has a predisposition to commit the crime in question and therefore will likely commit an actual crime if not first apprehended by the police sting. Further, the increased threat of capture may deter some potential offenders from committing crimes in the first place. This logic suggests that criminal solicitation can be an effective tool in the arsenal of law enforcers.

The principal objection to solicitation, of course, is that it may induce a criminal act by someone who otherwise had no intention of breaking the law. This is the sort of person that the entrapment defense is meant to protect. Specifically, entrapment is defined to be the unlawful arrest of a person who was not "predisposed" to commit the crime in question (Posner, 2003, p. 231; Shavell, 2004, pp. 564-565). It is therefore aimed at protecting innocent people from overzealousness on the part of law enforcers.[1]

The purpose of this paper is to incorporate the use of criminal solicitation into the standard economic model of law enforcement (Polinsky and Shavell, 2000). The goals of the analysis are twofold. The first is to characterize the optimal use of solicitation as part of an overall enforcement strategy. This involves amending the standard model to allow search by potential offenders for "criminal opportunities," some of which may represent

[1] Entrapments do not necessarily imply corrupt police officers, however, in that there is no necessary intent to falsely arrest someone (Stevenson, 2004). This is what distinguishes entrapment from "framing" innocent people. On the latter activity, see Polinsky and Shavell (2001).

"stings" by law enforcers. For example, a drug dealer searches for buyers, knowing that some may be undercover cops. We characterize two types of social benefits as arising from the use of this strategy: the first is a *deterrence effect*, which is due to the lower crime rate as some offenders are deterred from committing any crimes by the higher expected probability of apprehension; and the second is a *diversion effect*, which is the savings in social harm as some offenders are diverted away from committing actual crimes by means of the solicitation. At the optimum, these benefits are weighed against the marginal enforcement cost (the cost of the last undercover cop hired) plus the increased punishment cost (in the case of jail) resulting from the greater certainty of apprehension.

The second goal of the analysis is to use the model to examine the economic justification for, and impact of, the entrapment defense. We argue that, within the context of the model, two types of defendants can claim entrapment: those who were actively seeking criminal opportunities but would not have found one but for the solicitation, and those who claim that, although they located a criminal opportunity, they would not have committed the crime in question but for the extra encouragement of the undercover agent. As to the first claim, it is true that some defendants may argue that they would have failed to locate a criminal opportunity if not for solicitation because solicitation increases the probability of success (by design). However, this is not a good legal (or economic) defense against prosecution because the very act of searching for an opportunity to commit a crime imposes an expected cost on society.

The second claim is more legitimate because undercover agents often do offer extra inducements to would-be offenders in an effort to obtain an arrest, but the pivotal

question is whether this caused the defendant to commit a crime that he otherwise would not have committed. This of course is the crux of the entrapment defense, but it is a difficult claim to prove one way or the other because it depends on the predisposition of the defendant. We therefore argue that a better approach is to focus on the conduct of the police in making a case for entrapment, a trend that courts in fact seem to be following (Stevenson, 2004).

The only previous economic analysis of sting operations and entrapment is by Hay (2005), who models the court's problem as one of Bayesian inference, given that a certain fraction of offenders caught in a sting are "law-abiding" in the sense that they would not have committed the crime but for the sting. In addition to this sorting (or informational) function of stings, Hay examines their deterrent function. Specifically, he argues that stings deter would-be offenders (i.e., those actually seeking to commit a crime) because they fear that an apparent criminal opportunity may be a sting. In this sense, stings are like low quality goods (or "lemons") in ordinary markets, which can have the effect of reducing the supply of high quality goods (actual criminal opportunities), thereby lowering the crime rate.

The model in this paper extends and elaborates Hay's model by incorporating the use of stings as an enforcement tool into the standard economic model of deterrence. Section 2 sets up the model; Section 3 examines the behavior of potential offenders; Section 4 derives the optimal use of criminal solicitation; and Section 5 discusses the implications of the analysis for the entrapment defense. Finally, Section 6 concludes.

2. The Model

The model differs from the standard economic model of crime in that it assumes potential offenders must search for criminal opportunities, and that, in a given time period, they may or may not be successful in locating one. In this context, the goal of criminal solicitation by law enforcers (the use of "sting" operations) is to create what appear to be criminal opportunities (e.g., an undercover cop offering to buy drugs) as a way of diverting offenders from actual opportunities, thereby easing apprehension and avoiding the social harm caused by the crime. To capture this formally, suppose that in the absence of solicitation there are n potential criminal opportunities available to offenders seeking to commit an offense, and x of these represent actual opportunities, where $x \leq n$.[2] For example, the n opportunities might represent locations where drug dealers are known to hang out, and on a given night there is an actual dealer at x of those locations. Thus, a person who visits one of those n locations at random in hopes of buying drugs will be successful with probability x/n.

Now suppose that the police create y new opportunities, for example by disguising undercover cops as drug dealers. This makes the total number of potential criminal opportunities $n+y$, and the number of actual opportunities (including stings) $x+y$. As a result, the probability that a potential buyer will succeed in locating an actual opportunity (a willing dealer) is now $(x+y)/(n+y)$, and the probability that he will fail is $(n-x)/(n+y)$. If the buyer succeeds in locating a dealer, the conditional probability that it is a sting is $y/(x+y)$, in which case the buyer is apprehended and punished with certainty. In contrast, the conditional probability that it is an actual dealer is $x/(x+y)$, in which case

[2] The reason for allowing $x<n$ will become apparent in the discussion of the entrapment defense in Section 5 below.

the offender commits the crime and is only later caught and punished with probability $p<1$. This situation is depicted schematically in Figure 1.

The model makes use of the following additional notation:

s = dollar value of the sanction (fine or prison) imposed on the offender if caught;[3]

$k(s)$ = social cost of punishment if it is prison, $k'>0$, $k''\geq 0$;

$e(y)$ = cost of a sting operation, $e'>0$, $e''\geq 0$;

$c(p)$ = cost of apprehension if the offender commits an actual crime, $c'>0$, $c''\geq 0$;

h = social harm from an actual criminal act;

g = dollar gain to the offender from committing a criminal act;

$\hat{g}$ = critical gain beyond which the offender commits a criminal act.

In addition to creating additional criminal opportunities, sting operations are also usually designed to be especially attractive to potential offenders compared to actual criminal opportunities. We capture this by assuming that the perceived gain to offenders from committing the crime is on average higher for stings as compared to actual opportunities, reflecting, for example, the extra enticement that undercover agents offer as a lure to offenders. Formally, we assume that the distribution function of g for stings, $F_2(g)$, is shifted rightward (in the sense of first-order stochastic dominance) compared to the distribution of gains for actual criminal opportunities, $F_1(g)$. That is,

$$F_2(g) < F_1(g), \quad \text{for all } g>0. \tag{1}$$

Thus, for a given $\hat{g}$, an offender who makes contact with an undercover cop will be more likely to commit the offense than one who contacts an actual dealer.

[3] We assume that the punishment is the same whether or not the offender is caught in a sting.

Figure 2 depicts the sequence of decisions of a potential offender, and shows the resulting payoffs to the offender (O) and society (S) for each of the possible outcomes. The game begins when the offender decides to seek a criminal opportunity.[4] As noted above, he succeeds in locating one with probability $(x+y)/(n+y)$, and fails with probability $(n-x)/(n+y)$. If he fails, the game ends, but if he succeeds, he takes a draw of g and commits the act if and only $g \geq \hat{g}$. (The value of $\hat{g}$ will be derived below.) Crucially, an offender who locates a criminal opportunity does not know whether he has located a sting or an actual opportunity. (This is indicated by the dashed line connecting the two nodes in Figure 2.) Thus, he does not know whether he is drawing g from $F_1(g)$ or $F_2(g)$. If the opportunity turns out to be a sting (which occurs with conditional probability $y/(x+y)$), the offender is caught immediately and incurs punishment of s, whereas if it is an actual opportunity (which occurs with conditional probability $x/(x+y)$), he receives an expected payoff of $g-ps$.[5]

As for the social payoffs, note that society incurs the cost of enforcement, consisting of the costs of the sting plus apprehension costs $e(y)+c(p)$, in all states of the world. This reflects the fact that these costs are independent of the offender's behavior and hence do not depend on whether the offender fails in his search for a criminal opportunity, or whether he locates an actual opportunity or a sting.[6] In the case where punishment is jail time, the punishment cost, $k(s)$, is incurred with certainty if the offender is caught in a sting, and with probability p if he commits an actual crime.

[4] We assume that those individuals who do not seek a criminal opportunity are never caught in a sting.
[5] Note that the current model collapses to the standard model in the case where $y=0$ and $x=n$.
[6] More generally, apprehension costs will vary depending on whether the offender is caught in a sting to the extent that some of these costs are variable (i.e., to the extent that they depend on the actual crime rate). We adopt the standard assumption here that all such costs are fixed. It is worth noting, however, that in Becker's original model, the costs of apprehension depended positively both on the apprehension rate, p, and the crime rate. In this formulation, another benefit of stings would be to lower expected apprehension costs.

Finally, we assume that the offender's gain, g, and the social harm from an offense, h, are only realized when the offender commits an actual crime.[7]

3. The Offender's Optimal Behavior

Consider first the optimal behavior of a potential offender. Note that the only choice the offender makes is whether or not to commit a crime once he has located a criminal opportunity. (We treat his decision to seek a criminal opportunity in the first place as exogenous.) To examine this choice, we need to calculate the critical gain, $\hat{g}$. Based on the various possible outcomes of his search and the associated probabilities, we can calculate the offender's expected return from committing a crime, once he has located a criminal opportunity and observed g, to be

$$\left(\frac{x}{n+y}\right)(g - ps) - \left(\frac{y}{n+y}\right)s . \qquad (2)$$

The offender will commit the crime if and only if this return is positive, or if and only if

$$g \geq (p + y/x)s \equiv \hat{g} . \qquad (3)$$

It follows immediately from this condition that use of criminal solicitation as an enforcement strategy increases deterrence, all else equal (i.e., $\partial \hat{g} / \partial y > 0$). This is due to the increased probability that the offender will be apprehended, conditional on his locating a criminal opportunity, as y increases.

4. Socially Optimal Solicitation

[7] We adopt the convention that the offender's gain is counted as part of social welfare. See the discussion of this point in Polinsky and Shavell (2000, p. 48, especially at note 12).

This section derives the socially optimal level of criminal solicitation, taking as given the optimal behavior of offenders. We first consider the case where *s* is a fine and then extend the analysis to the case where it is jail time.

4.1. Optimal Solicitation when Punishment is a Fine

In the case where punishment is a fine, there is no social cost of punishment, so $k(s) \equiv 0$. Combining the social costs of the various outcomes in Figure 2 with the relevant probabilities yields expected social welfare of

$$SW = \frac{x}{n+y}\int_{\hat{g}}^{\infty}(g-h)dF_1(g) - e(y) - c(p), \qquad (4)$$

where $\hat{g}$ is defined by (3). As noted, the net gains from crime are only realized when the offender commits an actual crime (that is, neither *g* nor *h* are realized when he is caught in a sting). In this sense, the outcomes where the offender is caught in a sting and where he is deterred completely have the same impact on social welfare. (This is true because fines are costless to impose and all enforcement costs are fixed.) The social problem is the choose *y*, *p*, and *s* to maximize welfare.

Consider first the optimal level of solicitation, denoted *y**. Taking the derivative of (4) with respect to *y* yields the first-order condition

$$-\frac{x}{n+y}(\hat{g}-h)f_1(\hat{g})(s/x) - \frac{x}{(n+y)^2}\int_{\hat{g}}^{\infty}(g-h)dF_1(g) = e'. \qquad (5)$$

The two terms on the left-hand side of (5) reflect the marginal benefit of solicitation. Together, these terms must be positive at the optimum. Note that a necessary condition for this to be true is[8]

$$\hat{g} < h\,. \tag{6}$$

Thus, there is some degree of underdeterrence. This is a standard result, reflecting the fact that deterrence is costly, so crimes are optimally deterred only up to the point where the last dollar spent on enforcement (in this case, on *y*) equals the net social loss from the marginal crime.

Returning to (5), note that the first term on the left-hand side is the marginal benefit from increased deterrence of crime as *y* increases; what we refer to as the *deterrence effect*. This must be positive given (6). The second term is the expected savings in net social harm as some offenders are solicited to commit crimes by the police rather than committing actual crimes.[9] This is what we call the *diversion effect*. At the optimum, the sum of the deterrence and diversion effects must equal the marginal cost of solicitation.

Consider next the optimal apprehension rate for those offenders who commit actual crimes. Taking the derivative of (4) with respect to *p* (and rearranging) yields the first-order condition

$$-\frac{x}{n+y}(\hat{g}-h)\,f_1(\hat{g})s = c'(p) \tag{7}$$

[8] That is, if (6) holds, the first term on the left-hand side of (5) is positive while the second term may be positive or negative. However, at the optimum, the first term must dominate. In contrast, if (6) does not hold, both terms on the left-hand side are negative, which is inconsistent with $e'>0$.

[9] It is possible that this term is negative, meaning that the diversion effect actually reduces the net *gain* to society from the act in question. This possibility is a consequence of counting *g* as part of social welfare. If only *h* is counted, the diversion effect will always be positive.

This has the standard interpretation that the marginal benefit of the greater deterrence from increased p should be equated to the marginal cost. (Note again that the left-hand side is positive by (6).)

Given condition (6), it is interesting to ask how use of solicitation affects the optimal apprehension rate. That is, are y and p complements or substitutes? To answer this, differentiate (7) with respect to p and y, treating y as a parameter. The result is $\partial p/\partial y<0$.[10] That is, the optimal apprehension rate goes down as y is increased, implying that when solicitation is used as a part of an enforcement strategy, the police can devote less effort to apprehension. Thus, not surprisingly, solicitation and apprehension efforts are substitutes.

Finally, consider the optimal fine. As in standard enforcement models, the fine should be maximal (i.e., equal to the offender's wealth, w) because it is costless to increase the fine. As usual, this is proved by assuming that s is less than maximal. Then, s can be raised while p and/or y are lowered so as to hold $\hat{g}$ (and hence the crime rate) fixed. But since this causes social costs to fall, the original s could not have been optimal. It follows that $s^*=w$.

4.2. Optimal Solicitation when Punishment is Jail Time

When punishment takes the form of jail time, $k(s)>0$, and social welfare becomes

$$SW = \frac{x}{n+y}\int_{\hat{g}}^{\infty}[g-h-pk(s)]dF_1(g) - \frac{y}{n+y}\int_{\hat{g}}^{\infty}k(s)dF_2(g) - e(y) - c(p), \qquad (8)$$

[10] See the Appendix for details. In order to sign $\partial p/\partial y$, it is necessary to assume that $f_1'\leq 0$, or $f_1'>0$ but small. The sign of f_1' reflects marginal changes in the crime rate. Thus, $f_1'\leq 0$ is sufficient (but not necessary) to ensure a diminishing marginal benefit of enforcement.

where $\hat{g}$ continues to be given by (3) and *s* is now interpreted as the dollar cost to the offender of jail time. Optimal solicitation in this case is found by maximizing (8) with respect to *y*. The relevant first-order condition is

$$-\frac{x}{n+y}[\hat{g}-h-pk(s)]f_1(\hat{g})(s/x)+\frac{y}{n+y}k(s)f_2(\hat{g})(s/x)$$

$$-\frac{x}{(n+y)^2}\int_{\hat{g}}^{\infty}[g-h-pk(s)]dF_1(g)+\frac{n}{(n+y)^2}[1-F_2(\hat{g})]k(s)=e'(y). \qquad (9)$$

The first two terms on the left-hand side represent the deterrence effect of solicitation, while the next two terms represent the diversion effect. The difference here compared to the case of fines is that these benefits now account for the saved punishment costs for those crimes that are deterred, as well as the offsetting increase in costs for those offenders who are caught by the sting. Since the net effect of these punishment costs is ambiguous (given that a sting results in punishment with certainty), *y* may be higher or lower here compared to the case of fines.

The optimal choice of *p* in this case solves the first-order condition

$$-\frac{x}{n+y}[\hat{g}-h-pk(s)]f_1(\hat{g})s-\frac{x}{n+y}[1-F_1(\hat{g})]k(s)$$

$$+\frac{y}{n+y}k(s)f_2(\hat{g})s=c'(p), \qquad (10)$$

which has the same interpretation as (7), except for the addition of *k(s)*. Finally, the optimal prison term solves the first-order condition

$$\left\{-\frac{x}{n+y}[\hat{g}-h-pk(s)]f_1(\hat{g})+\frac{y}{n+y}k(s)f_2(\hat{g})\right\}\left(p+\frac{y}{x}\right)$$

$$=\left\{\frac{x}{n+y}[1-F_1(\hat{g})]p+\frac{y}{n+y}[1-F_2(\hat{g})]\right\}k'(s) \qquad (11)$$

In contrast to the fine, the optimal prison term is not necessarily maximal but instead balances the marginal benefits from increased deterrence (the left-hand side) against the marginal cost of punishment (the right-hand side).[11]

5. Application to the Entrapment Defense

Entrapment is a defense that can be raised by a criminal defendant who claims that solicitation by an undercover agent caused him to commit a crime that he otherwise would not have committed. Thus, it is not a claim that the defendant is in fact innocent of the crime in question, but rather that the police unduly contributed to his guilt. Consequently, the traditional test for entrapment places primary emphasis on the defendant's state of mind at the time he committed the crime (Stevenson, 2004).

From this perspective, the model provides two possible justifications for entrapment. First, the offender could argue that, although he was seeking a criminal opportunity, he would not have found one but for the solicitation. To evaluate this claim, recall that the probability of locating a criminal opportunity, conditional on searching for one, is given by $(x+y)/(n+y)$, which is increasing in y (given $n>x$). Thus, the use of criminal solicitation as a law enforcement strategy (i.e., the fact that $y>0$) does indeed increase the likelihood that an offender will locate a criminal opportunity of some sort.

From an economic perspective, however, this is a weak argument for exonerating a defendant because, once he has made the decision to seek a criminal opportunity, he increases the expected costs of law enforcement, regardless of whether he is subsequently caught in a sting, or whether he commits any crime at all. Any offender who

[11] This result is in contrast to Polinsky and Shavell (2000, p. 54) who showed that when punishment is exclusively jail time and p is endogenous, the optimal jail term is maximal. The same result would hold here if $y=0$ and $k''=0$.

purposefully seeks a criminal opportunity (i.e., all defendants in the current model) has criminal intent (or *mens rea*) and therefore should be punished as a way of enhancing deterrence.[12] In this sense, punishing offenders caught in a sting serves the same purpose as fining speeders or punishing failed criminal attempts (Shavell, 2003, pp. 556-559).

The second possible basis for an entrapment claim according to the model is that an offender caught in a sting could argue that, although he succeeded in locating a criminal opportunity, he would not have committed the act but for the extra encouragement offered by the undercover agent. That is, the sting caused the realized gain from committing the crime to exceed the critical gain, $\hat{g}$, thereby inducing the defendant to commit a crime that he otherwise would have found unprofitable. In terms of the model, this argument would be valid if the sting lowered $\hat{g}$, increased g, or both. As to the first possibility, recall from (3) that $\hat{g}$ is increasing in y, implying that the use of a sting actually *reduces* the likelihood that an offender will commit a given act, owing to the deterrence effect. The model therefore does not support this basis for an entrapment claim.

It does, however, support the argument that the extra inducement offered by the undercover agent may raise the perceived gain from the crime enough to surpass the critical level, thereby inducing the offender to commit the act. Formally, because the sting shifts the distribution of gains to the right (as implied by condition (1)), it must be the case that for a given $\hat{g}$,

[12] Hay (2005) considers the possibility that some "law-abiding" citizens will be caught in a sting, but because he does not formally model the decision of offenders to commit crimes, it is not clear how individuals without criminal intent are caught. Clearly, it never promotes deterrence to punish individuals who did not actually intend to commit a crime (indeed, punishment of innocent people dilutes deterrence—see Polinsky and Shavell (2000, p. 60)), but as noted above, "victims" of entrapment are not truly innocent in this sense.

$$1-F_2(\hat{g}) > 1-F_1(\hat{g}). \quad (12)$$

That is, the offender is more likely to commit a crime when his search for a criminal opportunity turns up a sting rather than an actual opportunity. Taken together, the two effects suggest that the use of stings as an enforcement tool has an ambiguous effect on the crime rate: on one hand, it deters crime because of the increased chance of apprehension, but on the other, it encourages crime by enhancing the perceived gain. The paradigmatic entrapment case therefore depends on the defendant's proving that, in his particular case, the second effect dominated the first. In other words, the realized g would not have exceeded $\hat{g}$ but for the extra inducement offered by the undercover agent (suggesting that the defendant was not "predisposed" to commit the crime in the absence of the sting).

The preceding analysis reveals the difficulty in proving an entrapment claim under the traditional test, given its dependence on the defendant's state of mind. A better approach, and one that courts are increasingly adopting, focuses attention not on the defendant's circumstances, but on the observable behavior of the police (Stevenson, 2004). In this perspective, the function of the entrapment defense is to distinguish legitimate undercover activities by the police (those that raise welfare), from illegitimate ones (those that lower welfare).[13] In applying this test, courts consider evidence of police misconduct or overzealousness in the conduct of sting operations,[14] rather than case-specific factors pertaining to the defendant. In terms of the model, this would involve

[13] Both Posner (2003, p. 231) and Shavell (2004, pp. 564-565) make this point.
[14] There is a large literature on police corruption. See, for example, Becker and Stigler (1974), Mookherjee and Png (1995), Polinsky and Shavell (2001), and Garoup and Klerman (2004).

asking whether $y>y^*$, or whether F_2 is shifted too far to the right compared to F_1.[15] In either case, the finding of entrapment would be independent of the proclivities of any individual defendants caught in the sting.

In economic terms, this represents a sensible change because it replaces a subjective test with a more objective one (Stevenson, 2004, p. 72).[16] More importantly, however, it focuses the court's attention on policies under the control of the police and hence represents a more direct way of promoting optimal law enforcement, which after all is the true economic function of the entrapment defense.

6. Conclusion

This paper has shown that criminal solicitation, or the tempting of individuals to commit criminal acts by police deception, can be a useful component of an overall law enforcement strategy. Solicitation provides the dual benefits of deterring some offenders from committing crimes altogether (because they anticipate the higher probability that they will be caught), and of diverting others from committing actual crimes that would have imposed actual harm on victims. The primary drawback of solicitation is the risk that it may "entrap" individuals who otherwise would not have committed a crime, thereby artificially increasing the crime rate. By invalidating such false arrests, the entrapment defense provides an important safeguard against excessive use of solicitation by the police.

[15] We treated this shift as exogenous in the model, but it could be made endogenous by writing the distribution of gains from a sting as $F(g,a)$ where a is a shift factor reflecting the extent of inducements offered by undercover police.

[16] It is presumably easier for courts to observe evidence of police misconduct than the predisposition of defendants.

The results suggest, however, that the proper test for entrapment should be based on the conduct of the police rather than the predisposition of the defendant to commit the crime in question. Such a test is preferred both because it involves an evaluation of evidence that will generally be more objective in nature, but also because it focuses attention on the true function of entrapment as a tool for promoting more efficient law enforcement. Recent trends suggest that courts are in fact moving in this direction.

Appendix

This appendix derives the expression for $\partial p/\partial y$ referred to in the text. Totally differentiating (7) with respect to p and y yields:

$$\left[-\frac{x}{n+y} f_1 s^2 - \frac{x}{n+y}(\hat{g}-h)s^2 f_1' - c''\right]dp +$$

$$\left[\frac{x}{(n+y)^2}(\hat{g}-h) f_1 s - \frac{x}{n+y} f_1\left(\frac{s^2}{x}\right) - \frac{x}{n+y}(\hat{g}-h)s f_1'\left(\frac{s^2}{x}\right)\right]dy = 0 .$$

The first term in brackets is negative by the second order condition for an optimal p, and the second term in brackets is also negative if either $f_1' \leq 0$, or $f_1' > 0$ but small. (Recall that $\hat{g} - h < 0$ by (6).) Thus, $f_1' \leq 0$ is sufficient but not necessary for $\partial p/\partial y < 0$, as asserted in the text.

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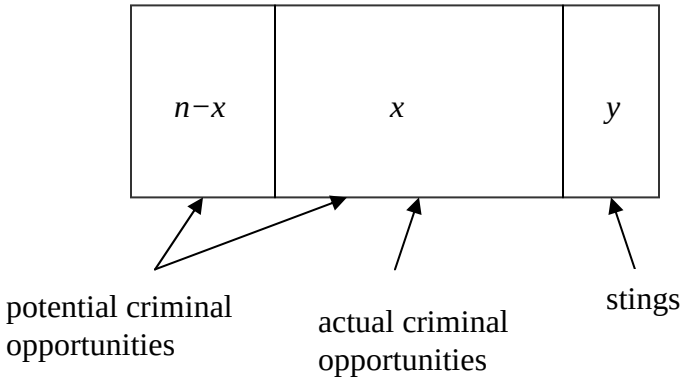

Figure 1. Schematic depiction of a potential offender's criminal opportunities.

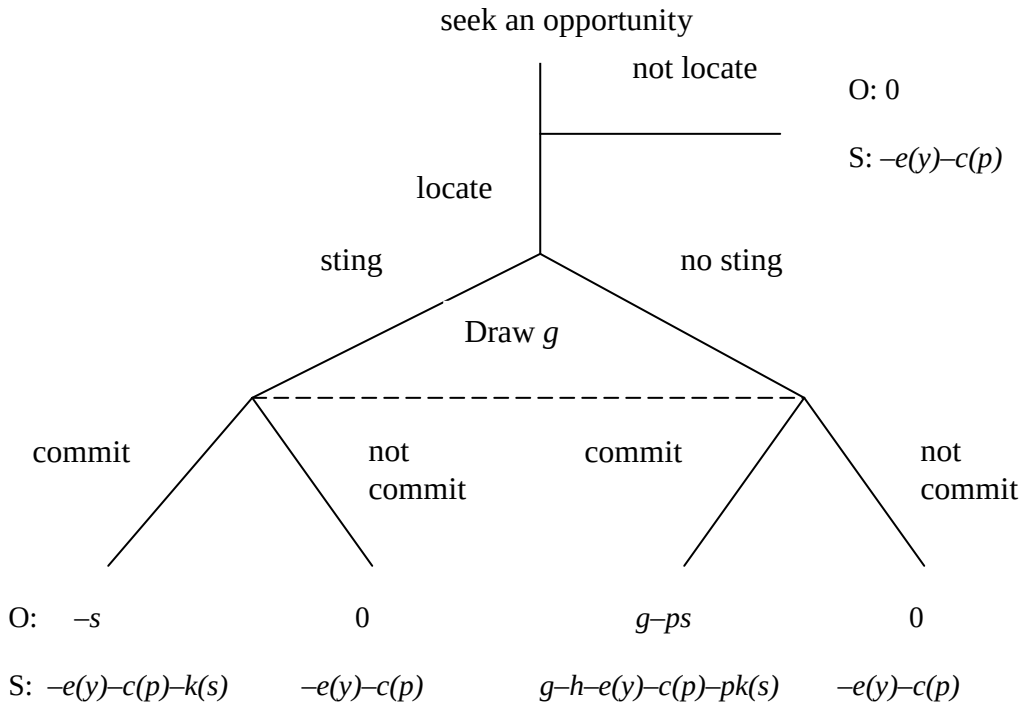

Figure 2. Sequence of decisions by a potential offender with the resulting payoffs to the offender (O) and society (S).