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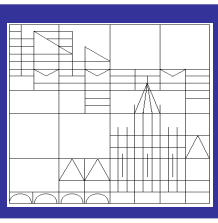

# Tempting Righteous Citizens? On the Counterintuitive Effects of Increasing Sanctions

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# Tempting righteous citizens?
# On the counterintuitive effects of increasing sanctions

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**Abstract**

This paper demonstrates that increasing the expected sanctions for a crime may increase this crime's prevalence, using a principal-agent model with different crimes. The intuition is that the policy change may increase the principal's expected payoff from crime by decreasing the information rent required by the agent.

*Keywords:* Crime, principal-agent relation, information rent

*JEL-Code: K42, H23*

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# 1 Introduction

The question addressed in this paper is whether higher punishment for a crime may increase the crime's incidence. In criminal law scholarship, it is commonly understood that higher sanctions will help deter crimes (e.g., Meares et al. 2004). We conclude that increasing the sanction for or the detection probability of a crime may induce more of this crime.[1]

To explain how we have arrived at this conclusion, we sketch the framework we will analyze. We consider organized crime undertaken by a principal-agent pair, since it is characteristic for organized crime groups to be hierarchical in structure (Kumar and Skaperdas 2009). In contrast to other research on organized crime (such as Garoupa 2000, Garoupa 2007), we allow for asymmetric information regarding the agent's crime choice. The principal and the agent prefer different crimes of which one involves violence and the other does not. Examples would be robbery versus burglary, or extortion versus fraud. The use of violence increases the detection probability relative to the other crime, but also implies a status gain for the agent.[2] The principal must grant an information rent to the agent in order to incentivize the agent to choose the non-violent crime. If the expected sanction for the violent crime is increased, the information rent decreases, since the agent's preference for the violent crime over the other is weakened.[3] As a result, the principal's expected payoff from crime may increase, inducing more principals to opt for crime.

Our argument relies on the conflict of interests between the principal and the agent. Several accounts show that this is an important factor in real-life criminal situations. For example, Levitt and Venkatesh (2000, p. 781), in their description of the workings of a drug-selling gang, describe how gang wars, which run counter to the gang's best interests, were repeatedly provoked by low-level members seeking to build a reputation for toughness. Similarly, Anderson (1995) reports that American mafia leaders struggle to prevent members from engaging in activities that would endanger

[1] Note here the difference to the marginal deterrence argument that increasing the sanction for or the detection probability of a given crime may increase levels another crime (Stigler 1970, Shavell 1992).

[2] Violence is a considerable source of status in criminal subcultures (see, e.g., Anderson 1999, Dur and van der Weele 2011).

[3] Recently, there have been moves to increase sanctions for violent crimes in Sweden, among other countries ("Sweden to get tougher on violent crime", *The Local*, 28 January 2010).

other members.

We will identify a relationship between expected punishment and crime using information rents, which applies to both the level of the sanction and the detection probability. In a related paper, Poutvaara and Priks (forthcoming) consider a principal-agent setup with hidden agent types to study how a gang leader's demands on members in terms of crimes are affected by variations in the unemployment level, where unemployment enters the gang member's optimization via their outside option. In the literature, Andreoni (1991) and Feess and Wohlschlegel (2009) have argued that higher sanctions may reduce deterrence, relying on the concept that jurors will become less likely to convict a suspect if the punishment is severe.

# 2 Model and analysis

We consider a setup in which the population is split into two distinct groups. Type L individuals have little human capital and both a legal income and a wealth level set at zero. Type H individuals are paid their marginal product $\theta$ when legally employed. There are at least as many type L individuals as type H ones. Type H's marginal product comes from the interval $[\underline{\theta}, \bar{\theta}]$ according to $G(\theta)$. Apart from legal work, it is possible to earn income in the criminal sector.[4] If a type H individual opts to commit a crime, he may face a context in which both a property crime P and a violent crime V are possible, or one in which only crime V is possible. The probability of the former (latter) contingency is $\lambda$ $(1-\lambda)$. Type H individuals planning criminal activities hire a type L individual to commit the act. In the situation with two possible types of crimes, there is asymmetric information regarding the crime selected by the agent.[5]

We now characterize crimes P and V. The expected monetary payoff is $\Omega$ irrespective of the type of offense. P will be detected with probability $p_P$ and detection implies a non-monetary sanction with a monetary equivalent for the principal (agent) of $f^{PR}$ ($f_P^A$). V will be detected with probability $p_V$, $p_V > p_P$, and detection implies a non-monetary sanction with a monetary equivalent for the principal

[4]We consider the empirically supported "crime as work" model (Grogger 1998, Williams and Sickles 2002).

[5]This assumption is also used, for example, in the literature on project selection (see, e.g., Bester and Krähmer (2008).

(agent) of $f^{PR}$ ($f_V^A$).[6] The principal prefers crime P to V, when all else is equal. In contrast, the agent prefers crime V to P, because the commission of V transfers a status of value $s$ to the agent, i.e., it holds that

$$s > p_V f_V^A - p_P f_P^A \tag{1}$$

The timing of the game is as follows: (1) Type H individuals determine whether they want to work in the legal or the criminal sector. (2) Principals learn whether only crime V or both crimes are possible. (3) The principal offers a contract to a type L individual, consisting of transfers in the detection and the no-detection state of the world. (4) Detection takes place. (5) Principals pay agents according to the contract terms, because actual payment is required to maintain the principal's credibility.

## 2.1 Stage 3

**Crimes P and V possible:** The principal who seeks to ensure the agent's selection of crime P needs to guarantee that both the agent's participation and the incentive compatibility constraint hold. Designating the transfer from the principal to the agent $T_{PV}(\Omega)$ if the principal's (gross) payoff is $\Omega$ and both crimes are possible, we can state the participation, incentive compatibility, and limited liability constraint of the agent as follows:

$$(1-p_P)T_{PV}(\Omega) + p_P T_{PV}(\Omega - f^{PR}) - p_P f_P^A \geq 0 \tag{2}$$

$$(1-p_P)T_{PV}(\Omega) + p_P T_{PV}(\Omega - f^{PR}) - p_P f_P^A \geq (1-p_V)T_{PV}(\Omega) + p_V T_{PV}(\Omega - f^{PR}) + s - p_V f_V^A \tag{3}$$

$$T_{PV}(\Omega),\, T_{PV}(\Omega - f^{PR}) \geq 0 \tag{4}$$

The principal tries to

$$\max_{T_{PV}(\Omega), T_{PV}(\Omega - f^{PR})} (1-p_P)[\Omega - T_{PV}(\Omega)] + p_P[\Omega - T_{PV}(\Omega - f^{PR}) - f^{PR}] \tag{5}$$

subject to (2), (3), and (4). Since $p_P < p_V$, it is clear that setting $T(\Omega - f^{PR}) = 0$ serves this objective. Furthermore, the principal will increase $T(\Omega)$ only enough to ensure that (3) holds with

[6] Thus, without our results depending on it, we presume that the sanction imposed on the principal does not depend on the crime type.

equality. We use this fact to arrive at an explicit expression for the transfer in the event the crime is not detected

$$T_{PV}(\Omega) = \frac{p_P f_P^A + s - p_V f_V^A}{p_V - p_P} \tag{6}$$

Using this expression in (2), we obtain

$$(1 - p_P)(s - p_V f_V^A) > -(1 - p_V) p_P f_P^A \tag{7}$$

that is, a strict inequality due to (1), which implies the principal's transfer of an information rent to the agent to induce crime P. In summary, the principal obtains an expected payoff of

$$\pi_{PV} = \Omega - (1 - p_P) T_{PV}(\Omega) - p_P f^{PR} \tag{8}$$

Alternatively, he could let the agent choose crime V. The agent participates in crime V if transfers are such that his participation constraint is fulfilled. This constraint is given by

$$(1 - p_V) T_V(\Omega) + p_V T_V(\Omega - f^{PR}) + s - p_V f_V^A \geq 0 \tag{9}$$

and implies that paying

$$T_V(\Omega) = \frac{p_V f_V^A - s}{1 - p_V} \tag{10}$$

and $T_V(\Omega - f^{PR}) = 0$ is satisfactory. Due to (1), it follows that $T_{PV}(\Omega) > T_Y(\Omega)$. Allowing the agent to choose crime V implies an expected payoff for the principal of

$$\pi_V = \Omega - (1 - p_V) T_V(\Omega) - p_V f^{PR} \tag{11}$$

As a consequence, it will hold that the principal induces crime P if $\pi_{PV} > \pi_V$, that is, if

$$(p_V - p_P) f^{PR} > (1 - p_P) T_{PV}(\Omega) - (1 - p_V) T_Y(\Omega) \tag{12}$$

We assume that this condition is fulfilled. Inducing crime P instead of V implies that the principal is sanctioned with probability $p_P$ instead of $p_V$. However, this comes at the cost of having to transfer $T_{PV}$ to the agent with probability $1 - p_P$ instead of $T_V$ with probability $1 - p_V$.

**Only crime V possible:** The principal only needs to ensure that the participation constraint holds. As a consequence, the principal pays $T_V(\Omega)$ as specified in (10) and $T_V(\Omega - f^{PR}) = 0$, and thereby arrives at the expected payoff $\pi_V$ detailed in (11).

## 2.2 Stage 1

In the first stage, type H individuals with marginal product $\theta$ choose whether to work in the legal or the criminal sector, and prefer legal work if

$$\theta \geq \lambda \pi_{PV} + (1 - \lambda)\pi_V \tag{13}$$

We assume that there is a critical level $\theta_c$, at which the left-hand side in (13) is equal to the right-hand side. As a consequence, the total crime level is given by $G(\theta_c)$. An increase in $\theta_c$ implies an increase in the level of both crimes, given that there is a condition, in which crimes P and V are possible but P is induced, and another condition, in which only crime V is possible and induced.

It is our assertion that an increase in punishment can result in an increase in crime. To understand this, first note that the critical level can be explicitly stated, using the definitions (6) and (10) from above, as

$$\theta_c = \Omega - \lambda(1 - p_P)\frac{p_P f_P^A + s - p_V f_V^A}{p_V - p_P} - (1 - \lambda)(p_V f_V^A - s) - p_V f^{PR} + \lambda(p_V - p_P) f^{PR} \tag{14}$$

This allows derivation of our finding:

**Proposition 1** *(i) An increase in the sanction $f_V^A$ increases the level of crime if it holds that*

$$\lambda > \frac{p_V - p_P}{1 - p_P + p_V - p_P} = \lambda_1$$

*(ii) An increase in the probability $p_V$ increases the level of crime if it holds that*

$$\lambda > \frac{(p_V - p_P)^2 (f^{PR} + f_V^A)}{(1 - p_P)[p_P(f_P^A - f_V^A) + s] + (p_V - p_P)^2 (f^{PR} + f_V^A)} = \lambda_2$$

**Proof.** Claims (i) and (ii) result from $\partial\theta_c/\partial f_V^A > 0$ and $\partial\theta_c/\partial p_V > 0$. Note that $p_P(f_P^A - f_V^A) + s > 0$ due to (1) so that $\lambda_1$, $\lambda_2 < 1$. ■

The change in the enforcement policy weakens the agent's preference of V over P.[7] This lowers $T_{PV}$ and thereby increases $\pi_{PV}$. In the case of increasing $p_V$, the principal is additionally negatively affected by the higher probability of being sanctioned.

[7] We consider an exogenous status. Note, however, that, if harsher punishment were to increase status, this would not necessarily put our qualitative findings into question.

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