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On Punishment Severity and Crime Rates

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On punishment severity and crime rates

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Abstract

Punishment severity and crime rates vary across jurisdictions. Some countries have punitive sanctions and nevertheless experience relatively high crime rates. This paper explores potential sources of the interjurisdictional heterogeneity in the optimal law enforcement model, paying particular attention to the possibility that the *high crime despite high sanctions* outcome can be socially optimal.

Keywords: crime, deterrence, optimal sanctions, fairness, political economy

JEL: K42

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1 Introduction

There is abundant empirical evidence that increases in punishment severity, whether in the form of increased policing or longer prison sentences, deter crime (see, e.g., the survey by Levitt and Miles 2007). At the same time, cross-country analyses of crime and punishment have shown that "it is possible to have less crime without more punishment" (Smith 1999: 316). In particular, several recent studies have noted that the United States has a much higher incarceration rate compared to other developed countries, but that has not translated into a correspondingly lower crime rate, even after controlling for other factors that affect crime.[1] Spamann (2016) suggests that one explanation is the "low effectiveness of mass incarceration" (p. 36), but if that is true, one wonders why punitiveness remains so high.

This paper presents an analysis, within the framework of the standard Becker (1968) model, that yields the result that there are circumstances in which raising sanctions can be socially optimal even if this implies higher crime rates. Our analysis relies on two factors. The first is a version of the optimal law enforcement model in which offenders can invest in avoidance (Malik 1990). In our framework, higher sanctions may induce a higher crime rate because the probability of apprehension may decrease after an increase of the sanction due to the offender's avoidance efforts. The second factor takes account of variation in citizens' preferences for specific sanction magnitudes, based, for example, on differing notions of fairness, which results in a trade-off that may overcome the increased costs from imposing higher sanctions in the form of more crime.

There is empirical evidence showing that citizens indeed have strong opinions about what constitutes the appropriate punishment, and that these attitudes vary across jurisdictions. For example, Van Dijk et al. (2007) present evidence for 18 European countries based on results from the European Crime and Safety Survey, showing a stark contrast in punitiveness

[1] See Tonry and Farrington (2005), McCrary and Sanga (2012), and Spamann (2016).

between Austria (on the low end) and the United Kingdom (on the high end). Similarly, Doob and Webster (2006) explain Canada's resistance to the trend toward harsher punishments in the U.S. based on differing attitudes towards punishment. For example, they note that the greater independence of Canadian judges from political pressure has "ensured a 'human face' in the sentencing process, arguably rendering the process more human." As a result, "Canada has not displayed values and attitudes associated with increased punitiveness" (Doob and Webster 2006: 359).

The extensive literature on the economics of crime has incorporated fairness into the determination of social welfare.[2] Generally, this takes the form of a social preference for an "ideal" punishment – one that fits the crime – which enters the welfare calculation along with the costs of crime. Usually, the inclusion of fairness limits punishment, given the tendency for the Becker model to produce maximal sanctions, but we will show that it can also generate variations in punishments across jurisdictions if preferences regarding fairness vary. And when this variation is combined with the impact of offender avoidance, it is possible to obtain optimal outcomes involving high punishments and high crime rates.

The remainder of the paper is structured as follows. Section 2 describes the model, and Section 3 develops the principal analysis. Section 4 then discusses how two extensions to the model would influence our findings. Finally, Section 5 concludes.

2 The model

We consider a population of risk-neutral individuals. Potential offenders observe their private benefit from crime b, where $b \in [0, a]$ according to the cumulative distribution function $F(b) = b/a$.[3] An offender is detected with probability p and – in the event of detection – is

[2] See Harris (1970), Miceli (1991), and Polinsky and Shavell (2000).

[3] Assuming a uniform distribution of b on the interval $[0, a]$ simplifies the exposition, but is not critical for the qualitative results. For example, Bebchuk and Kaplow (1992) use the same assumption for the distribution of benefits.

punished with the sanction s, $s \leq S$. For the main analysis, we assume that the sanction is a fine, but given that most evidence on crime and punishment is based on incarceration rates, we extend the analysis to the case of imprisonment in our discussion in Section 4. The detection probability $p(e, x)$ is increasing in the enforcement authority's effort, denoted e, and decreasing in the avoidance effort of the offender, labeled x. Specifically, we assume $p_e > 0 > p_x$ and $p_{xx} > 0 > p_{ee}$.[4] The marginal productivity of each kind of effort is thus diminishing with respect to the level of the detection probability.

Our agents interact in two stages. In the first stage, the level of the sanction to be imposed on detected offenders is chosen by a social planner seeking to maximize a welfare function. In the second stage, individuals choose whether or not to offend and – if so – what level of avoidance to choose, while the enforcement authority influences the probability of detection by expending effort. Our setup of the second stage follows Malik (1990) in assuming that avoidance and enforcement effort are determined simultaneously.

3 The analysis

Using backward induction, we analyze first how potential offenders and the enforcement authority behave in Stage 2, taking as given the level of the sanction as determined in Stage 1. We then turn to the welfare-maximizing choice of the sanction.

3.1 Stage 2: Crime rate and detection probability

A risk-neutral individual learns about the private benefit from crime b and – for a given level of enforcement effort e – seeks to maximize his own expected payoff from a criminal opportunity

$$\max\{0; \max_{x \geq 0}[b - p(e, x)s - x]\}. \tag{1}$$

[4] Subscripts denote partial derivatives.

Accordingly, should an individual offend, he seeks to minimize the expected costs C from the offense by the choice of the avoidance effort x, that is,

$$\min_x C(e,x) = p(e,x)s + x. \tag{2}$$

The cost-minimizing avoidance level, denoted $x^*(e,s)$, solves the first-order condition[5]

$$C_x = p_x(e,x^*)s + 1 = 0, \tag{3}$$

which defines the offender's best-response function, $x^*(e,s)$. It follows that optimal avoidance varies with the enforcement effort according to

$$x_e^* = -\frac{p_{xe}(e,x)}{p_{xx}(e,x)} \tag{4}$$

which is positive when $p_{ex} < 0$ and negative when $p_{ex} > 0$. As for the effect of the sanction, the offender's best-response function shifts outwards in the (x,e) space when the level of the sanction is increased since

$$x_s^* = -\frac{p_x(e,x)}{p_{xx}(e,x)s} > 0. \tag{5}$$

The result that avoidance effort increases with the level of the sanction was obtained in Malik (1990), and has been interpreted as one of the key explanations for why we rarely observe maximal sanctions in practice (e.g., Garoupa 1997).

We next turn to the determination of the enforcement effort level. For a given level of avoidance, we assume that the enforcement authority sets the enforcement effort to minimize the expected costs K from offending and enforcing,[6]

$$\min_e K(e,x) = (1 - C(e,x)/a)h + e = (1 - (p(e,x)s + x)/a)h + e, \tag{6}$$

[5]This is a cost minimum given that $C_{xx} = p_{xx}(e,x)s > 0$.

[6]The assumption that the enforcement authority minimizes the expected social costs from the criminal opportunity is used in many analyses (e.g., Feess and Walzl 2004). Polinsky and Shavell (2007), for instance, explain that the main consequence from including criminal gains in the trade-off is that society would want to achieve a lower deterrence. The objective function of the social planner in Stage 1 will be more general than K.

where $1 - C/a$ represents the "number" of offenders, which results from our assumption about the uniform distribution of benefits and the definition of C as the level of deterrence. The cost-minimizing enforcement effort, denoted $e^*(x, s)$, solves the first-order condition[7]

$$K_e = -p_e(e^*, x)sh/a + 1 = 0 \tag{7}$$

and varies with criminals' avoidance effort according to

$$e_x^* = -\frac{p_{xe}}{p_{ee}}. \tag{8}$$

Thus, it is increasing in x when $p_{xe} > 0$ and decreasing in x when $p_{xe} < 0$. The authority's best-response to a given level of avoidance effort also increases with the level of the sanction since

$$e_s^* = -\frac{p_e}{p_{ee}s} > 0. \tag{9}$$

Thus, the enforcement authority has stronger incentives to invest in raising the detection probability when the sanction imposed in the event of detection is higher, *ceteris paribus*. Finally, we have that the enforcement authority's efforts are increasing in the density $1/a$:

$$e_a^* = \frac{p_e}{p_{ee}a} < 0. \tag{10}$$

The influence of the level of the sanction The equilibrium of the subgame that starts at the second stage gives us equilibrium effort levels $e^*(s)$ and $x^*(s)$ as functions of the level of the sanction. Graphically, these result from the intersection of the best-response functions $e^*(x, s)$ and $x^*(e, s)$. The preceding analysis implies that $e^*(x, s)$ is upward-sloping and $x^*(e, s)$ downward-sloping in the (x, e)-space when $p_{xe} > 0$ and *vice versa* when $p_{xe} < 0$. An increase in the level of the sanction shifts both best-response functions outwards, as explained above. This intuitively suggests that an increase in the level of the sanction will

[7]This is a cost minimum given that $K_{ee} = -p_{ee}(e, x)sh > 0$.

unambiguously increase one level of effort (enforcement effort when $p_{xe} > 0$ and avoidance effort when $p_{xe} < 0$) but ambiguously influence the other kind of effort. For example, Figure 1 shows the case where $p_{xe} < 0$, which is the case where an increase in s causes x to rise but has an ambiguous effect on e.

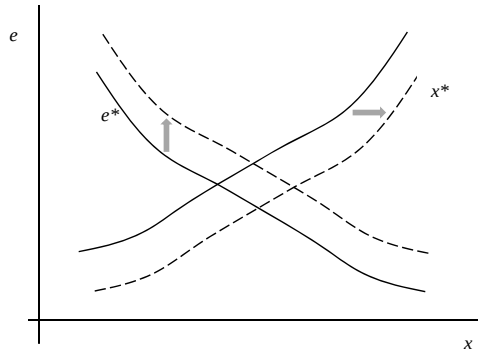

Figure 1: Best-response functions for a low and a high sanction level when $p_{xe} < 0$

This intuition about the effect of a higher sanction on the equilibrium of the second stage is confirmed in the following analysis. In order to formally understand how changes in the level of the sanction influence the cost-minimizing levels of x^* and e^* in equilibrium, we need to evaluate

$$\begin{pmatrix} p_{xx}s & p_{xe}s \\ -p_{xe}sh/a & -p_{ee}sh/a \end{pmatrix} \begin{pmatrix} dx^* \\ de^* \end{pmatrix} = \begin{pmatrix} -p_x \\ p_e h/a \end{pmatrix} ds \tag{11}$$

from which we get

$$\frac{dx^*}{ds} = \frac{sh/a}{H} \left[p_x p_{ee} - p_{xe} p_e \right] \tag{12}$$

$$\frac{de^*}{ds} = \frac{sh/a}{H} \left[p_{xx} p_e - p_x p_{xe} \right], \tag{13}$$

where

$$H = s^2 h/a[(p_{xe})^2 - p_{ee}p_{xx}] > 0 \tag{14}$$

denotes the determinant of the Hessian matrix.

We summarize the comparative-statics results for the level of the sanction regarding equilibrium effort levels as follows:

Proposition 1 *(i) Suppose that $p_{xe} < 0$. Then, the level of avoidance effort increases with the level of the sanction, while the level of enforcement effort may increase or decrease. (ii) Suppose that $p_{xe} > 0$. Then, the level of avoidance effort may increase or decrease with the level of the sanction, while the level of enforcement effort increases. (iii) At least one effort level increases with the level of the sanction.*

Proof. Parts (i) and (ii) directly follow from (12)-(14). To address part (iii), we use the inequalities that would have to hold when both levels decrease, $-K_{es}C_{xx} < -C_{xs}K_{xe}$ and $-C_{xs}K_{ee} < -K_{es}C_{xe}$, and multiply each side to get $K_{ee}C_{xx} < C_{xe}K_{xe}$, which cannot hold due to $H = K_{ee}C_{xx} - C_{xe}K_{xe} > 0$. ■

Proposition 1 shows that there is some ambiguity regarding the responses of equilibrium effort levels to a higher sanction level. While the direct effect of an increase in the level of the sanction is to increase both avoidance and enforcement, the total effect is ambiguous for the effort level that follows a substitutionary relationship with the other effort level (i.e., the effort described by a decreasing best-response function in the (x, e)-space).

A change in the distribution of criminal benefits as measured by an increase of the parameter a will decrease the enforcement expenditure and affect the equilibrium level of avoidance effort according to whether the two efforts are either strategic complements (i.e., $p_{xe} < 0$) or strategic substitutes (i.e., $p_{xe} > 0$) from the criminal's standpoint:

$$\frac{dx^*}{da} = \frac{p_e p_{xe} s^2 h/a^2}{H} \tag{15}$$

$$\frac{de^*}{da} = -\frac{p_e p_{xx} s^2 h/a^2}{H} < 0. \tag{16}$$

The crime rate Returning to the maximization in (1), potential offenders will undertake the criminal act only if $b \geq C^*(s)$, where $C^*(s)$ incorporates $e^*(s)$ and $x^*(s)$. This optimizing

on the part of potential offenders translates into an equilibrium crime rate of $\Omega = 1 - C^*(s)/a$, which changes with the level of the sanction as follows

$$\frac{d\Omega}{ds} = -\frac{(p_e^* \frac{de^*}{ds} s + p^*)}{a}, \tag{17}$$

where de^*/ds is detailed in (13).[8] Expression (17) highlights the fact that the level of crime decreases in the level of the sanction when $de^*/ds > 0$, whereas it may increase in response to a higher sanction otherwise. We thus find:

Proposition 2 *(i) Suppose that $p_{ex} < 0$. Then, the crime rate may increase or decrease with the level of the sanction. A necessary condition for $d\Omega/ds > 0$ is $de^*/ds < 0$. (ii) Suppose that $p_{ex} > 0$. Then, the crime rate decreases with the level of the sanction.*

The intuition for this possibility can be explained as follows: Although the direct effect that results from a higher level of the sanction clearly points towards less crime, this can be counteracted by a sufficiently strong decrease in the equilibrium enforcement effort, as this implies a lower detection probability and thus an overall ambiguous deterrence effect from the higher sanction level.

A change in the distribution of criminal benefits as measured by an increase of the parameter a will increase the equilibrium crime rate since

$$\frac{d\Omega}{da} = -\frac{p_e^* \frac{de^*}{da} sa - C^*(s)}{a^2} > 0. \tag{18}$$

This result follows, first, from shifting density to potential offenders with levels of b in excess of C^* and, second, from the discouragement of enforcement efforts.

Cost levels We conclude the description of this stage by briefly describing the influence of an increase in the sanction level on parties' expected payoffs. As is clear from our discussion

[8] Note that the influence of the sanction via x^* cancels out by application of the Envelope theorem.

above, the offender's costs change with the level of the sanction according to

$$\frac{dC^*}{ds} = -\frac{d\Omega}{ds}a, \tag{19}$$

which is positive only when the total effect has the sign of the direct effect. In contrast, the enforcement authority's costs unambiguously change with the level of the sanction according to

$$\frac{dK^*}{ds} = -p^*h/a < 0. \tag{20}$$

In other words, the enforcement authority is clearly better off when a higher sanction is put in place. This result will be qualified in Section 4 in our discussion of the scenario in which sanctions are prison terms.

3.2 Stage 1: The level of the sanction

The level of the sanction critically influences the interaction between potential offenders and the enforcement authority in the second stage (as described in Proposition 1). We assume that the level of the sanction is selected to maximize a welfare function for which we consider different specifications.

The level of the sanction has indirect value regarding the maximization of welfare via its impact on the level of crime and the level of enforcement expenditures. These are the channels usually focused on in the pertinent literature (e.g., the survey by Polinsky and Shavell 2007). There are, however, contributions to the literature that propose disregarding payoff repercussions for criminals (e.g., Feess and Walzl 2004, Hotte and van Ypersele 2008, Lewin and Trumbull 1990). This would lead to

$$W_1(s) = -K^*(s). \tag{21}$$

The maximization of W_1 demands the imposition of the maximal sanction (i.e., $s = S$), a result that is independent of the characteristics of the maximization problem (such as

the level of a). The result that $dK^*/ds < 0$ as long as deterrence is incomplete has been described above (see equation (20)).

Proposition 3 *If policy makers are concerned only about the social costs from crime as measured by the expected harm and the enforcement expenditure, then sanction policies should be uniform across jurisdictions and should prescribe the maximal sanction.*

Most of the literature, however, subscribes to the utilitarian idea that criminals' payoffs should be included in the welfare calculation (e.g., Polinsky and Shavell 2007). In the present context, including all benefits and costs means considering criminal benefits from crime and criminals' avoidance costs. For concreteness, we will assume that $h > a$, ruling out the so-called overdeterrence outcome. In this case, we obtain the objective function

$$W_2(s) = \int_{C^*(s)}^{a} (b - h - x^*(s))/a \, db - e^*(s) \tag{22}$$

The first-order condition can be stated as

$$\frac{dW_2}{ds} = (C^* - h - x^*)\frac{d\Omega}{ds} - \frac{de^*}{ds} - \frac{dx^*}{ds}\Omega \tag{23}$$

The first term represents the direct benefit from a higher level of deterrence. The second term shows the payoff effect from the induced change in enforcement effort (whereas the deterrence effect from the induced change in enforcement effort is part of $d\Omega/ds$). The final term represents an additional payoff consequence of raising the level of the sanction, namely, a variation in the level of avoidance costs (which may be either positive or negative – like de^*/ds – as described in Proposition 1).

The expression in (23) allows us to make some statements about sanction policy:

Proposition 4 *If policy makers are concerned about the social costs from crime and criminals' payoffs, then (i) the optimal sanction may be non-maximal, (ii) any interior optimal*

sanction will be tailored to the specifics of the jurisdiction (such as the level of a), and (iii) raising the level of the sanction may in some circumstances be socially advantageous even when it induces more crime.

Proof. Applying the envelope theorem, substituting de^*/ds and dx^*/ds according to (12) and (13), and collecting terms in (23), we obtain

$$\frac{1}{sa}\left[(h-ps)ps - \frac{[p_{xx}p_e - p_x p_{xe}]}{(p_{xe})^2 - p_{ee}p_{xx}} p_e p s^2 - \frac{[p_x p_{ee} - p_{xe}p_e]}{(p_{xe})^2 - p_{ee}p_{xx}}\left(a - (ps + x^*(s))\right)\right]. \tag{24}$$

This may be equal to zero at an interior sanction level since real marginal costs join the deterrence benefit captured in the first term, establishing claim (i). The statement in (24) and the preceding arguments relating to the influence of the parameter a establish claim (ii). Claim (iii) would hold when either de^*/ds or dx^*/ds is negative and sufficiently high. ■

The possibility of a non-maximal sanction is due to the presence of avoidance efforts (as first studied by Malik (1990)), which are increasing with the level of the sanction. Whenever a non-maximal sanction obtains, the optimal level will closely reflect the characteristics of the welfare maximization task. The benefit distribution has a direct bearing on the marginal effects in (23) and additionally shapes how the interaction in stage 2 unfolds precisely. Taking a as one potential channel representing interjurisdictional heterogeneity, we therefore expect to observe some variation in sanction policies in different countries.

Finding that countries continue to increase the level of the sanction even when this means that the crime rate goes up may in the present setting happen only when enforcement (or avoidance) effort savings are strong enough to dominate both the detrimental crime rate and avoidance (or enforcement) effort repercussions.

The analysis that is based on welfare function W_2 attributes cross-country variation in observed crime-punishment outcomes to differences in the distribution of criminal opportunities (see Proposition 4 (ii)). Countries with similar socio-economic characteristics, however,

would presumably have similar such distributions, and so this appears not to be a compelling explanation for the stark differences observed across developed countries.

We thus now introduce a different explanation by allowing for a direct impact of the level of the sanction on welfare based on differing preferences regarding the "right" or "just" punishment for criminal offenses. Assume, for simplicity, that there is a fairness ideal s^f for the criminal act that is independent of both the crime rate and the enforcement effort and that welfare is strictly concave in the sanction level. Thus, the responsive part of welfare, denoted $v(s, \theta)$, increases with the sanction when $s < s^f$ and decreases with the sanction when $s > s^f$.[9] There is empirical evidence strongly suggesting that the fairness ideal varies across jurisdictions; that is, $s^f = s^f(\theta)$, where θ is a preference parameter representing different jurisdictions (e.g., Van Kesteren 2009).[10]

Fairness concerns will now be added to both welfare functions, W_1 and W_2. In Figure 2, we represent the trade-offs occurring for the welfare function

$$W_{1F}(s) = W_1(s) + \alpha v(s, \theta), \tag{25}$$

that is, the combination of W_1 and fairness concerns. Now, the change in the sanction level has a direct welfare repercussion, which represents a marginal benefit when $s < s_f$ and a marginal cost when $s > s_f$. As a result, fairness concerns may elicit non-maximal sanctions. The level of total enforcement costs K^* is decreasing with the level of the sanction at all levels (as long as deterrence is incomplete). This is shown in the upper quadrant in Figure 2. The fairness aspect is represented by the inverted u-shaped curves, which have their maximum at the ideal sanction $s^f(\theta)$. The sanction that maximizes W_{1F} obtains at a point of tangency in the (s, K^*) space, where the sign of the direct effect $\alpha \partial v / \partial s$ depends on the level of the fairness ideal and thus on the jurisdiction θ. In the lower quadrant, we have depicted the

[9] Our representation of fairness closely follows Miceli (2008) and builds on Polinsky and Shavell (2000).

[10] In addition to the cross-sectional variation considered here, there is variation over time for many jurisdictions.

implication of the sanction level for the crime rate, $\Omega(s)$, allowing for the non-monotonicity of this function as a result of $de^*/ds < 0$.

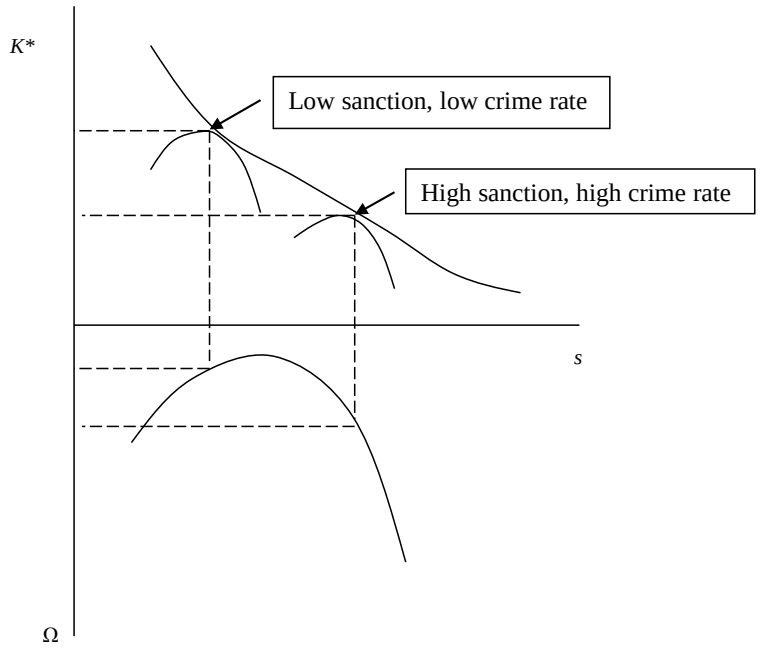

Figure 2: Different equilibria with different fairness ideals

Proposition 5 *If policy makers care about the social costs from crime and fairness, then (i) the optimal sanction may be non-maximal, (ii) any interior optimal sanction will be tailored to the specifics of the jurisdiction, and (iii) raising the level of the sanction may in some circumstances be socially advantageous even when it induces more crime.*

The final specification of welfare is a combination of W_2 with the fairness aspect, which leads to

$$W_{2F}(s) = W_2(s) + \alpha v(s, \theta). \tag{26}$$

The first-order condition defining the optimal sanction is

$$\frac{dW_{2F}}{ds} = \frac{dW_2}{ds} + \alpha \frac{\partial v}{\partial s}. \tag{27}$$

The marginal incentives of the approach manifested by W_2 are now augmented by the marginal effects stemming from fairness concerns. We explain possible outcomes in:

Proposition 6 *If policy makers care about the social costs from crime, criminals payoffs, and fairness, then (i) the optimal sanction may be non-maximal, (ii) any interior optimal sanction will be tailored to the specifics of the jurisdiction, and (iii) raising the level of the sanction may in some circumstances be socially advantageous even when it induces more crime.*

Proof. The term in (27) contains dW_2/ds for which the three claims have been established above. The additional term that reflects the marginal welfare effect stemming from having a sanction that is more or less fair will not distort these properties in principle, in particular in view of the degree of freedom concerning s^f. ■

Taking fairness considerations into account is thus not critical for explaining non-maximal sanctions, but it increases the scope of finding jurisdictions that choose to have a higher sanction despite the adverse effects on crime. A higher level of the sanction thus may induce enforcement authorities to lower their efforts and thereby may even reduce the total costs experienced by criminals, yet still be seen as desirable because citizens feel better about the higher level of the sanction on fairness grounds. In other words, citizens trade a higher crime rate for a fairer sanction.

4 Discussion

In this section, we will briefly discuss two factors that have a bearing on the issue at hand, but were for simplicity's sake not explicitly addressed in the model.

4.1 Imprisonment as sanction

The model has focused on monetary sanctions, but given that most empirical evidence on crime is based on incarceration rates, we briefly comment on how our results would be affected if the sanction considered is imprisonment. As a precursor, it is important to recall that in the Polinsky and Shavell (2007) setup, the optimal sanction, although now costly, is also maximal when enforcement effort is endogenous. This is true because when the probability of apprehension is lowered, the sanction is imposed less often.

With respect to our approach, while the objective of the criminal remains the same, the enforcement authority's objective would now be

$$K^I = \Omega(h + p\beta s) + e \tag{28}$$

where β represents the imprisonment cost per unit. This modification implies that the enforcement authority is no longer necessarily better off due to a higher sanction since

$$\frac{dK^I}{ds} = -p/a(h + p\beta s) + \Omega\beta \left[p + s\frac{dx^*}{ds}\right]. \tag{29}$$

is ambiguous in sign. This makes arriving at a non-maximal sanction possible even for the most restrictive understanding of welfare that includes only the social costs. Moreover, interjurisdictional heterogeneity may show in variations in the sanction policies. However, the general conclusion that the combination of a high sanction and a high crime rate may be optimal continues to hold.

4.2 Political economy issues

As elaborated above, fairness concerns are an influence that may guide sanction choices away from standard considerations and allows for heterogeneity in punishment levels across jurisdictions. Another realistic option to achieve the same end lies in understanding the choice of the sanction as emerging from an election in which the so-called median voter

is decisive. The objective function of the median voter with a type parameter θ may be defined as $U = U(\Omega, e^*, s, \theta)$.[11] Then, both the marginal utility effect from a higher crime rate and the one from a higher enforcement expenditure (i.e., U_Ω and U_{e^*}) will depend on the position of the median voter in terms of victimization probability (as this moderates the importance of an increase in the crime rate) and in terms of tax payments (as this moderates the importance of an increase of the public enforcement expenditures). Specifically, when $U_{\Omega\theta} > 0$ and $U_{e^*\theta} < 0$, then countries with a higher θ will have a law enforcement policy that is relatively more focused on lowering public expenditures than on lowering the crime rate. When an increase in the level of the sanction reduces the optimal enforcement expenditure (i.e., $de^*/ds < 0$) but increases the level of crime (i.e., $d\Omega/ds > 0$), then jurisdictions with politically decisive voters who have a relatively low victimization probability and/or a relatively high financing share will have higher sanctions with higher levels of crime.

5 Conclusion

This paper was motivated by the anomalous observation that some countries (notably, the United States) experience both a high crime rate and a high rate of punishment, even after controlling for all relevant factors. This finding seems to be inconsistent with the economic theory of crime, which is based on the objective of deterrence, and hence posits an inverse relationship between punishment severity and crime. The analysis in this paper has sought to resolve this paradox by suggesting, first, that stiffer criminal sanctions will increase the avoidance efforts of offenders, thereby leading to an ambiguous relationship between punishment severity and the crime rate; and second, that citizens in different countries may disagree about the appropriate (or just) level of punishment for a particular crime, irrespective of its deterrent effect. We showed that in combination, these two factors can

[11] Here, the understanding is that criminals are not part of the voters. For a different approach, see Langlais and Obidzinski 2016).

produce, within the context of the standard economic theory of crime, the observed positive correlation between crime rates and punishment severity.

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