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Does Efficient Deterrence Require that the Wealthy Should Be Able To Buy Justice?

by

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Abstract

It has been argued that there will be more efficient deterrence if no restrictions are placed on the ability of the rich to buy better legal representation than the poor when accused of a crime: such restrictions lead to over-deterrence of the wealthy. We show that the conclusion does not hold when account is taken of the effect of restrictions on legal defence expenditure on the extent of under-deterrence.

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1 Introduction

There has been debate about whether individuals should be allowed to spend as much as they please on legal defence when accused of a crime. In particular, after the O. J. Simpson case, many media commentators argued that the ability to spend on legal defence should be limited to prevent wealthy individuals "buying justice". In terms of the law and economics deterrence literature, commentators are suggesting that the wealthy are under-deterred because they have a lower probability of conviction and punishment.

In a much cited paper Lott (1987) argues that the popular sentiment against "buying justice" is not well founded; rather the fact that the rich are able to afford better legal representation when accused of a crime, and thus have lower conviction probabilities, may move the justice system closer to efficiency. His argument is (a) the optimal expected sanction for a criminal act is the social harm it imposes, so that the only crimes committed are those where the benefit to the criminal exceeds the harm. (b) The rich have a greater opportunity cost from imprisonment. (c) Prison sentences for those convicted depend on the crime, not on the wealth of those convicted. (d) Hence the sanction imposed on the rich is greater than that imposed on the poor and so either the poor will be under deterred or the rich will be over-deterred if they have the same probability of conviction. (e) If the rich spend more on legal defence their probability of conviction will be smaller and thus the expected sanction they face will be reduced. This will reduce the extent of their over-deterrence and thus move the system closer to the efficient situation where all potential criminals face an expected sanction equal to the social cost of the crime.[1]

In these notes we examine the argument. Section 2 sets out the argument more formally. We correct a mistake in the argument and show that the ability of the rich to buy a lower conviction probability can never lead to the expected sanction for a crime being the same at all income levels. We show that whilst a restriction on legal defence expenditure increases the proportion of individuals who are inefficiently over-deterred, it also reduces the proportion who are inefficiently under-deterred. Hence the efficiency implications are ambiguous.

The efficiency criterion that the expected punishment should equal social harm is not derived from an explicit welfare analysis In section 3 we therefore examine a more fully specified welfare model which takes account of other policy instruments, including expenditure on policing and the severity of the

[1] Lott (1992) presents an empirical analysis of high income individuals' deterrence and concludes that they are over-deterred.

sanction. We show that regulations to limit legal defence expenditure or taxation of it can raise or lower welfare. Section 4 concludes.

2 A simple model

2.1 The Lott (1987) argument

The social harm from a criminal act is h. All criminals face a trial with probability 1. Their probability of conviction is $p(a, e)$, where a is the defence expenditure of the accused and e is prosecution expenditure. Conviction probability is a decreasing convex function of the defendant's expenditure. The sanction imposed on a convicted accused is $s(y, T)$, $s_y > 0$, $s_T > 0$, where y is the defendant's income and T some index of the severity of the sanction, such as the length of the sentence. The assumption that $s_y > 0$ captures the idea that individuals with higher incomes have greater opportunity costs of imprisonment. The basic argument is unaffected if y is interpreted as any index of opportunity cost (for example age, education, location, family circumstances, sex etc), though the implications drawn would be less provocative .

Lott (1987) argues that those with greater y will spend more on defence when arrested since the cost of the sanction is greater for them, so that $a = a(y, \cdot)$, $a_y > 0$.

The penalty Ω incurred by a convicted criminal includes the cost of their unsuccessful defence expenditure:

$$\Omega = s(y, T) + \frac{a(y, \cdot)}{p(a, e)} = \Omega(y, a, \cdot) \tag{1}$$

The penalty will maximize social wealth if the expected penalty is equal to the social cost of the crime h:[2]

$$p(a, e)\Omega(y, a, \cdot) = h \tag{2}$$

In order for there to be efficient deterrence (2) must hold for all income levels. Totally differentiating with respect to income and rearranging, the

[2]Throughout section 2 we restrict attention to the direct harm so that h does not include the costs of defendant and prosecution. As Lott (1987, footnote 4) notes this makes no essential difference to his argument or to our comments on it in this section. Section 3 has a fuller specification of the social cost of crime.

y	income
$s(y,T)$	sanction
T	severity parameter
$c(T)$	public sector cost of sanction
$p(a,e)$	probability of conviction
a	legal defence expenditure
e	prosecution expenditure
$q(m)$	arrest probability
m	policing expenditure
b	benefit from crime
g, G	density, distribution of benefit
f, F	density, distribution of income
h	direct harm from crime
W	welfare function

Table 1: Notation

expected penalty will equal the cost of the crime, irrespective of income when

$$\frac{\Omega_y + \Omega_a a_y}{\Omega} = -\frac{p_a a_y}{p} \tag{3}$$

The right hand side is the proportionate decline in the probability of punishment due to the rich spending more on defence. The left hand side is the proportionate increase in penalty Ω as income increases, arising both from the increase in the sanction with income and the increase in defence expenditure. If (3) holds the expected penalty $p\Omega$ is the same at all income levels and all potential criminals face the correct signal (once T and e are appropriately chosen) and will only commit crimes whose benefit exceeds their harm. Hence leaving the choice of defence expenditure unregulated (letting the wealthy "buy justice") can lead to efficient deterrence.

2.2 A difficulty

There is a serious difficulty with the formal argument: (3) cannot be true if defendants choose their legal defence expenditure rationally. When arrested the defendant will choose a to minimize $p\Omega$, implying

$$p_a\Omega + p\Omega_a = 0 \tag{4}$$

Using this to substitute Ω_a/Ω for $-p_a/p$ in the right hand side of (3) gives

$$\frac{\Omega_y + \Omega_a a_y}{\Omega} = \frac{\Omega_a a_y}{\Omega} \tag{5}$$

which cannot hold since $\Omega_y = s_y > 0$.

The problem appears more clearly as an application of the envelope theorem. Defendants at each income level choose a to minimize the left hand side of (2), and so differences in y have only a direct effect on $p\Omega$, since the induced change in defence expenditure has a zero marginal value:

$$\begin{aligned} \frac{d(p\Omega)}{dy} &= \frac{d[p(a(y,\cdot),e)\Omega(y,a(y,\cdot),\cdot)]}{dy} \\ &= p\Omega_y + [p_a\Omega + p\Omega_a]a_y = p\Omega_y = ps_y > 0 \end{aligned} \tag{6}$$

Thus richer defendants are worse off: they face a higher expected sanction, even allowing for their greater defence expenditure, than poor defendants. The expected sanction increases with income so that if there is some income level such that (2) holds, it is inevitable that poorer defendants will be under-deterred and richer defendants over-deterred.

2.3 Will restrictions on defence expenditure reduce efficiency?

Can we salvage anything from the Lott (1987) argument? Permitting free choice of defence expenditure by the rich cannot lead to full efficiency in the sense that (2) holds at all income levels. The expected sanction will still increase with income. But the ability of rich to spend on defence means that the expected sanction increases less with income than if their defence expenditure is restricted. This suggests that deterrence may be more efficient, though less than fully efficient, if defence expenditure is not restricted.

When the expected sanction varies with income poor defendants are under-deterred and rich defendants are over-deterred. An assessment of restrictions on defence expenditure must take account of its effects on these two types of inefficiency. We present a simple diagrammatic analysis to show that the restrictions may increases or reduce efficiency.

In Figure 1 individuals differ in both their income y and their benefit from crime b. The social harm h from their crime is the same for all crimes.[3]

[3] We continue to assume that the harm consists only of the direct cost to the victims. We could easily allow for other factors such as the cost of the defence expenditure, the prosecution and the cost of imprisonment. The effect of including defence costs in the definition of the cost of crime would be that the social cost increased with the income of

It is efficient to deter all crimes with $b < h$. The curve $\gamma(a(y,\cdot),y,\cdot)$ plots the expected penalty for the crime

$$\gamma = \gamma(a(y,\cdot),y,\cdot) = p(a(y,\cdot),e)s(y,T) + a(y,\cdot) \tag{7}$$

when individuals can freely choose their defence expenditure. In Figure 1 only individuals with income $\hat{y}$ face the correct expected penalty equal to the harm their crime imposes. There are two types of inefficient deterrence. First, criminals with incomes greater than $\hat{y}$ and benefits less than γ but greater than h are wrongly deterred. Second, criminals with incomes less than $\hat{y}$ and benefits greater than γ but less than h are wrongly not deterred.

Figure 2 shows the effect of imposing a restriction on defence expenditure. No individual is permitted to spend more than a^o. In the figure the restriction is quite tight in the sense that it binds on individuals with incomes in the range $(y^o, y^{\max}]$, where $y^o = a^{-1}(a^o,\cdot) < \hat{y}$. Those individuals who face a binding restriction on legal defence expenditure are worse off and face a greater expected sanction than if there were no restriction. Their expected sanction is shown by the curve $\gamma(a^o,y,\cdot)$.

The constraint on defence expenditure has two effects on the efficiency of deterrence. First, individuals in the stippled area, who have b greater than h but less than $\gamma(a^o,y,\cdot)$ are now over deterred. Second, individuals in the diagonally shaded area who previously inefficiently committed the crime are now efficiently deterred. In the example shown the first effect outweighs the second but it is clearly possible to construct examples in which the first outweighs the second and efficiency is on balance increased.

We will not consider in detail here the optimal level of the constraint a^o on defence expenditure because we investigate the issue in a more completely specified model in the next section. However we can note a few points. First, relaxing the restriction is efficiency increasing when $a^o \geq a(\hat{y},\cdot)$: in this range increasing a^o does not have any social cost in terms of under-deterrence of those whose benefit is less than h and only reduces the inefficiency associated with over deterrence of the rich. Second, over the range $(0, a(\hat{y},\cdot))$, very precise information on the technology $(p(\cdot),\ s(\cdot))$ is required to determine whether marginal changes in a^o on balance increase or reduce the efficiency of deterrence.

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the potential criminal: the curve corresponding to h would be positively sloped rather than horizontal. As the reader can check an upward sloping social cost curve would not have any essential effect on our conclusions in this section. The analysis in the next section has a more complete specification of the cost of crime.in which the social cost of crime is increasing in the wealth of the criminal.

3 A model of law enforcement

The welfare analysis so far has been somewhat *ad hoc*: it has not taken formal account of the costs of policing, prosecution and incarceration and has not considered variations in these policy variables. It also embodies a number of assumptions which look very strong and which might appear to have some bearing on the results, for example the assumption that all criminals are arrested for sure. In this section we set out a specification which makes the context explicit, but which is similar to the standard specification of models of deterrence, to facilitate the analysis of the effects of the features we wish to concentrate on.[4]

We assume that there is a population of risk neutral individuals who differ only in income and the benefits b from crime. We assume that these are distributed independently with distribution functions $F(y)$,$G(b)$.

The probability of arrest of those who decide to commit a crime is $q(m)$, which is an increasing concave function of policing expenditures m.[5]

An individual with income y who commits a crime gains a benefit b. If he is arrested he chooses defence expenditure a to maximize[6]

$$[1-p(a,e)][y+b-a]+p(a,e)[y+b-s(y,T)-a] \\ = y+b-a-p(a,e)s(y,T)$$

which is equivalent to minimizing $\gamma = p(a,e)s(y,T)+a$. The first order condition in the interior solution case is

$$p_a(a,e)s(y,T)+1=0 \tag{8}$$

and the solution is $a^* = a(y,T,e)$, which is increasing in y if the sanction is more costly for wealthier individuals. The minimized value of γ is $\gamma(a(y,T,e),y,T,e)$.

The individual chooses dishonesty if

$$(1-q)[y+b]+q[y+b-\gamma(a(y,T,e),y,T,e)]>y \tag{9}$$

[4]For a survey of the literature see Garoupa (1997) and Polinsky and Shavell (2000).

[5]We assume that deterrence system makes only type II errors: it fails to arrest and convict all criminals, but never arrests the honest. See Gravelle and Garoupa (1998) for analysis of a system with type I and type II errors when all accused can reduce their probability of conviction by legal defence expenditure.

[6]If part of the sanction $s(y,T)$ is financial and sufficiently large it is possible that the individual might choose a level of defence expenditure which leads to bankruptcy if convicted. This has implications for the optimal sanction we explore in Gravelle and Garoupa (1998) but which would overly complicate the current analysis.

or

$$b > q\gamma(a(y,T,e),y,T,e) = z(y,T,e,m) \tag{10}$$

The amount of crime in per capita terms is therefore

$$K = \int_0^{y^{\max}} \int_z^{\infty} dG(b)dF(y) \tag{11}$$

which is decreasing in T, e, and m since, as application of the envelope theorem shows, z is increasing in T, e, and m. We can therefore use z as a measure of deterrence since increases in z lead to reductions in the amount of crime.

The public sector cost of the deterrence system (policing, prosecution and punishment) is covered by an equal lump sum tax on all individuals.

The welfare function is an unweighted sum of the expected utility of criminals and honest individuals less the direct social harm h per crime. Expected income is constant so we can write the welfare function as

$$\begin{aligned} W &= \int_0^{y^{\max}} \int_z^{\infty} [b-z]dG(b)dF(y) \\ &\quad - \int_0^{y^{\max}} \int_z^{\infty} [h+qpc+qe]dG(b)dF(y) - m \\ &= \int_0^{y^{\max}} \int_z^{\infty} [b-h-q(ps+a+pc(T)+e)]dG(b)dF(y) - m \end{aligned} \tag{12}$$

where $c(T)$ is the cost per convicted and punished criminal.

The policy maker does not observe either the benefit or the income of any individual and knows only their distribution. She chooses policing expenditure m, the severity of the sanction T and prosecution expenditure e to maximize W subject to $T \leq T^o$. The constraint on the severity of the sanction may arise in the case of imprisonment because of the finite length of life.[7] Forming the Lagrangean function $L = W + \lambda(T^o - T)$, the non-trivial optimal policies satisfy:

$$\begin{aligned} L_m &= \int_0^{y^{\max}} [h+q(pc+e)]g(z)z_q q' dF \\ &\quad - \int_0^{y^{\max}} \int_z^{\infty} (ps+a+pc+e)q' dG(b)dF(y) - 1 = 0 \end{aligned} \tag{13}$$

[7] In our model, the policy maker can commit to a level of prosecution expenditure in advance. In Kobayashi and Lott (1996) defendant and prosecutor can plea bargain and the prosecutor cannot commit to a level of prosecution expenditure. Legal expenditure at trial is therefore greater and provides a greater incentive for plea bargaining.

$$L_T = \int_0^{y^{\max}} [h + q(pc + e)]g(z)z_T dF - \int_0^{y^{\max}} \int_z^{\infty} q[p(s_T + c_T)]dG(b)dF(y)$$
$$- \int_0^{y^{\max}} \int_z^{\infty} qc(T)p_a a_T dG(b)dF(y) - \lambda = 0 \quad (14)$$

$$L_e = \int_0^{y^{\max}} [h + q(pc + e)]g(z)z_e dF - \int_0^{y^{\max}} \int_z^{\infty} q[p_e(s + c)]dG(b)dF(y)$$
$$- \int_0^{y^{\max}} \int_z^{\infty} qc(T)p_a a_e dG(b)dF(y) = 0 \quad (15)$$

plus the complementary slackness condition on the Lagrange multiplier on the constraint. Note that we have used the fact the defendant choose defence expenditure to satisfy $p_a s + 1 = 0$ to simplify the third term in (14).

Our formulation encompasses several interesting special cases previously analysed in the literature.

Monetary sanctions, no defence expenditure

In the canonical Becker (1968) model the sanction is a socially costless fine: the cost imposed on the convicted accused is exactly offset by a reduction in public expenditure (a gain to taxpayers). There are also no defence or prosecution expenditures to reduce the probability of conviction. Becker (1968) shows that in these circumstances optimal policy would have a fine of maximum severity: $T^* = T^o$. We can capture these assumptions in our model by setting $s = T$, $c = -T$ and $p_a = 0, p_e = 0$. Making these substitutions, the first order conditions on policing and T reduce to

$$L_m = \int_0^{y^{\max}} [h - qpT]g(z)z_q q' dF - 1 = 0 \quad (16)$$

$$L_T = \int_0^{y^{\max}} [h - qpT]g(z)z_T dF - \lambda = 0 \quad (17)$$

The first term in (16) is positive which implies that the first term in (17) must also be positive and the constraint on T must bind. When punishment is costless efficient deterrence requires punishments be maximal to economise on costly deterrence instruments such as policing. The result still holds if we allow for costly prosecution expenditure to increase the probability of conviction: raising the fine permits both prosecution and policing costs to be reduced for a given level of deterrence.

Monetary sanctions, defence expenditure

When criminals can reduce their conviction probability by costly legal defence and the sanction has a net social cost, it can be optimal not to impose the most severe penalty, so that the Becker (1968) result does not hold.[8] In Malik (1990) the punishment is a fine so that $s = -c = T$ and $s_T = -c_T$ and the criminal can indulge in a costly avoidance activity (legal defence expenditure in our terminology) which reduces the probabilty of conviction. Given that a is chosen so that $p_a s + 1 = 0$, the first order condition on T can be written as

$$\int_0^{y^{\max}} [h - q(pT + e)]g(z)z_T dF + \int_0^{y^{\max}} \int_z^{\infty} Tqp_a a_T dG(b)dF(y) - \lambda = 0 \tag{18}$$

The integrand in the second term is positive, so that the first order condition can be satisfied with $\lambda = 0$: a non-maximal fine can be optimal. There is a positive marginal social cost of increasing the severity of punishment because increased severity induces additional socially wasteful defence activities.

Nonmonetary sanctions

In Polinsky and Shavell (1984) there is no defence expenditure but punishment is not a costless transfer because it includes imprisonment and so both s_T and c_T are positive. There would be no third term in (14) but the second term would not vanish and there would be a positive marginal cost of punishment. This would imply that punishment need not be maximal because it is no longer a costless substitute for other ways of increasing deterrence.

Nonmonetary sanctions, defence expenditure

Our specification is the same as Polinsky and Shavell (1984) except that we have allowed the probability of conviction to depend on defence and prosecution expenditure. As a consequence the third term in (14) must also be taken into account. When the severity of punishment increases the defendent increases defence expenditure and the probability of punishment falls. Since punishment is costly the reduction in its probability is an additional motivation for more severe punishment. Hence the third factor works to increase the optimal level of punishment compared with a situation in which there is no defence expenditure.

[8] Polinsky and Shavell (1984); Malik (1990); Gravelle and Garoupa (1998).

3.1 Should the punishment fit the crime?

The requirement for efficient deterrence used by Lott (1987) and given in section 2, was that the expected costs ($z = q\gamma$ in this section, γ in the notation of section 2 where the probability of arrest is 1) imposed on a criminal should equal the social costs of the crime defined as:[9]

$$\sigma = h + q(ps + a + pc + e) \tag{19}$$

The requirement that "the punishment fit the crime" ($z = \sigma$) is correct only under special, and we would argue, implausible, circumstances. The marginal value of an increase in deterrence z is

$$\begin{aligned} W_z &= \int_0^{y^{\max}} [h - z + q(ps + a + pc + e)]g(z)dF \\ &= \int_0^{y^{\max}} [h + q(pc + e)]g(z)dF \end{aligned} \tag{20}$$

Deterrence can be increased by increasing policing expenditure, prosecution expenditure, the severity of the sanction and by restricting defence expenditure by the accused. If the punishment fits the crime the marginal value of deterrence is zero and this cannot be efficient if policies which affect deterrence have a positive marginal cost.

Indeed the rule that punishment must fit the crime cannot be optimal if there are *any* costs (fixed or otherwise) of prosecuting or punishing criminals. If either c or e is positive then it is impossible for z to equal $h + q(ps + a + pc + e) = h + z + q(pc + e)$.

In the simplest Becker (1968) type model with a costless fine and no defence or prosecution expenditure the integrand in (20) is $h - qpT$. The technology may be such that it is possible to set a fine $T = h/qp$, so that expected punishment equals the social harm from the crime: $z = h$. In these circumstances the optimal policy will be to increase T to T^o, reducing m to smallest level such that $T^o = h/q(m^*)p$. However if the technology is such that $h/q(\infty)p < T^o$ then even in this simple and implausible world expected punishment is less than the social cost of the crime.[10]

In a world with defence and prosecution expenditure and in which punishment has a social cost, criminals are efficiently deterred with an expected penalty ($z = q(ps + a)$) which is less than the social cost ($h + z + q(pc + e)$) of their crime.

[9] Here we are assuming that the social costs of crime include both the direct harm h and the expected consequential costs of legal defence, prosecution and the private and public sector costs of punishment.

[10] See Polinsky and Shavell (2000) for further discussion.

3.2 Regulation of defence expenditure

Suppose the policy maker imposes a constraint $a \leq a^o$ on individuals' choice of defence expenditure. This constraint binds only for those with income greater than y^o such that $a(y^o, T, e) = a^o$. Increases in a^o therefore only affect the expected sanction of those with income greater than y^o who would like to have defence expenditure greater than a^o. We re-write the welfare function as

$$\begin{aligned} W &= \int_0^{y^o} \int_z^{\infty} [b - h - q(ps + a + pc + e)] dG(b) dF(y) \\ &\quad + \int_{y^o}^{y^{\max}} \int_{z^o}^{\infty} [b - h - q(p^o s + a^o + p^o c + e)] dG(b) dF(y) - m \end{aligned} \tag{21}$$

where $p^o = p(a^o, e)$ and $z^o = z^o(a^o, y, T, e, m) = q\left[p(a^o, e)s(y, T) + a^o\right]$. Note that $z^o(a^o, y^o, T, e, m) = q\left[p(a(y^o, \cdot), e)s(y^o, T) + a(y^o, \cdot)\right]$ where $a(y, \cdot)$ is the privately optimal defence expenditure which minimises $ps + a$ and hence $q[ps + a]$. Hence the lower limits of integration with respect to b in the first and second terms in (21) are equal.

The marginal effect on welfare of relaxing the constraint on defence expenditure is:

$$\begin{aligned} \frac{\partial W}{\partial a^o} &= \int_{y^o}^{y^{\max}} [h + q(p^o c + e)] z_a^o g(z^o) dF(y) \\ &\quad - \int_{y^o}^{y^{\max}} \int_{z^o}^{\infty} [q(p_{a^o}^o (s + c) + 1)] dG(b) dF(y) \end{aligned} \tag{22}$$

The first term is negative (since z_a^o is negative) and measures the marginal loss from less deterrence. The second term is negative[11] and measures the marginal reduction in the social cost of punishment.

Imposing a limit on individuals' choice of defence expenditure certainly augments deterrence. However, there is a downside: the expected cost of punishment borne by society also increases. It is not possible to say in the absence of very detailed assumptions about the technology and the distribution functions whether the optimal solution is one which there are no restrictions on defence expenditure.

Figures 3 and 4 illustrate the argument. The curves σ and z plot the social cost of the crime and the expected cost to the criminal when there are no restrictions on defence expenditure. Individuals in the area above σ are efficiently not deterred since their benefits exceed the social cost of their

[11] Remember that $p_a s + 1 < 0$ at a^o.

crimes and their private costs. Individuals below z are efficiently deterred since the their benefits are less than the social cost and their private costs. In the absence of a costless sanction which does not affect defence expenditure it is not optimal to set $z = \sigma$ and in the area between the two curves there are individuals who are under-deterred: it is not optimal to deter them even though their crimes have a social cost which exceeds their benefits.

Figure 4 shows the effect of imposing a constraint $a \leq a^o = a(y^o, \cdot)$. Individuals with incomes $y > y^o$ who commit a crime are made worse off by the constraint and the deterrence curve is shifted upward to $z(y, a^o) = q\gamma(a^o, y)$. However, the constraint on defence expenditure also increases the social cost of crimes by individuals with $y > y^o$. They have a higher private cost (which is part of the social cost on our welfare assumptions) and there is a greater public sector cost because criminals spend less on defence and are more likely to be convicted and to require costly punishment. Since σ includes the private cost z as well as the cost of punishment it is increased by more than the private cost. Hence the area between the σ and z curves where individuals are underdeterred is made larger by the constraint on defence expenditure: the area between $\sigma(y, a^o)$ and $\sigma(y, a^*)$ is greater than the area between $z(y, a^o)$ and $z(y, a^*)$. However, this does not mean that the restriction on defence expenditure has reduced welfare by increasing the amount of under-deterrence: if there is a greater mass of individuals in the area A between $z(y, a^o)$ and $z(y, a^*)$ than in the area B between $\sigma(y, a^o)$ and $\sigma(y, a^*)$, welfare is increased.

3.3 Taxation of defence expenditure

Suppose that the policy maker can influence the choice of defence expenditure by those who have been charged by placing a proportional tax on it, with the proceeds returned to the population by a reduction in the lump sum tax. The accused will choose a to minimize $p(a, e)s(y, T) + (1 + \theta)a$, with solution $a(y, T, e, \theta)$ and $a_\theta < 0$. The marginal effect on welfare of the tax is

$$\begin{aligned} \frac{\partial W}{\partial \theta} &= \int_0^{y^{\max}} [h + q(pc + e)]g(z)z_\theta dF \\ &\quad - \int_0^{y^{\max}} \int_z^\infty q(p_a s + 1 + p_a c)a_\theta dG(b)dF(y) \end{aligned} \tag{23}$$

Using $z = q[p(a(y, T, e, \theta), e)s(y, T) + a(y, T, e, \theta)(1 + \theta)]$ so that $z_\theta = a > 0$ and the first order condition $p_a s + 1 + \theta = 0$, we get

$$\frac{\partial W}{\partial \theta} = \int_0^{y^{\max}} [h + q(pc + e)]ag(z)dF + \int_0^{y^{\max}} \int_z^\infty q(\theta - p_a c)a_\theta dG(b)dF(y) \tag{24}$$

The first term is positive and measures the marginal welfare gain from additional deterrence. Because the marginal crook faces an expected sanction which is less than the social cost of his crime the effect of the tax on defence which increases the expected sanction is socially valuable. At $\theta = 0$, which corresponds to no control on defence expenditure, the second term is negative because introducing a tax and reducing defence expenditure has a social cost in that the probability of costly punishment is increased. Thus in general it is not clear whether defence expenditure should be taxed or subsidized.

4 Final Remarks

Lott (1987) has argued that if the rich buy better legal representation when accused of a crime, the criminal justice system is closer to efficiency than if their purchase of defence expenditure is restricted. His argument is based on the observation that by reducing their probability of detection and punishment the extent to which the rich are over-deterred because they have higher opportunity cost of punishment is reduced.

This argument is incomplete, even in the very simply specified model used, in that it ignores under-deterrence: there will be individuals who do not face a sufficiently high sanction to align their private cost with the social cost of their crime. A restriction on defence expenditure will make such individuals worse off if they choose to commit a crime and will reduce the extent of under-deterrence. The net welfare effect is ambiguous.

With a more fully specified model with an explicit welfare function in which the policy maker can influence the probability of detection and of punishment and the level of punishment it is in general never optimal to choose these deterrence instruments so as to over-deter potential criminals. Indeed the optimal defence policy leaves individuals at all income levels under-deterred in that some of them will commit crimes with a social cost in excess of their private benefit. Restrictions on defence expenditure increase both the social and private costs of crime and thus the set of individuals who are under-deterred. Depending on the distribution of benefits and incomes welfare may be increased or reduced by the restriction.

Although we have shown that arguments based on efficient deterrence do not imply that there should be no restrictions on individuals' choice of defence expenditure, we have not established the converse: efficient deterrence does not necessarily require restrictions on defence expenditure. We suspect that arguments based on efficient deterrence are unlikely to have much impact on the debate about whether or not individuals free to choose their legal defence expenditure. First, even in the simple models outlined in the paper

very detailed information is required to show that restrictions are or are not efficient. Second, such efficient deterrence models take no account of libertarian or equity considerations.

[10 February 2000. Lott1g.tex]

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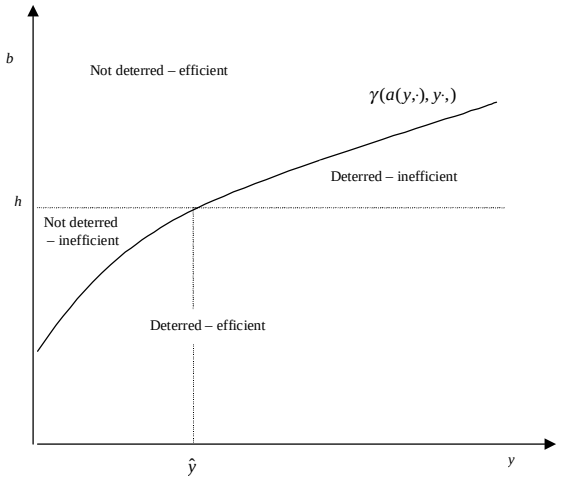

Figure 1: Efficient and inefficient deterrence

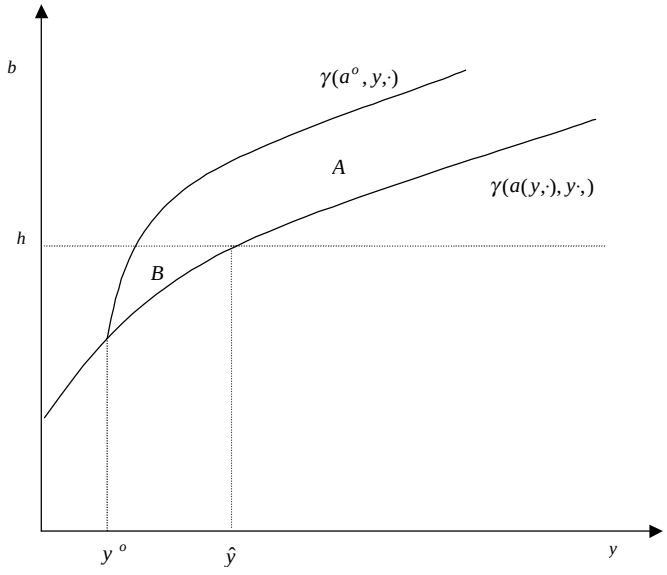

Figure 2: Restriction $a \leq a^o$on legal defence expenditure reduces inefficient undeterrence by B and increases inefficient over-deterrence by A.

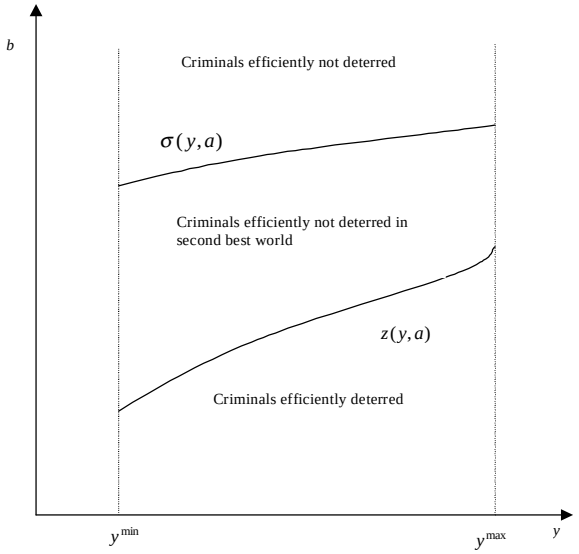

Figure 3: Efficient deterrence with in second best world with positive marginal deterrence cost. Potential criminals differ in benefit b and income y. Social cost of crime: σ, deterrence z.

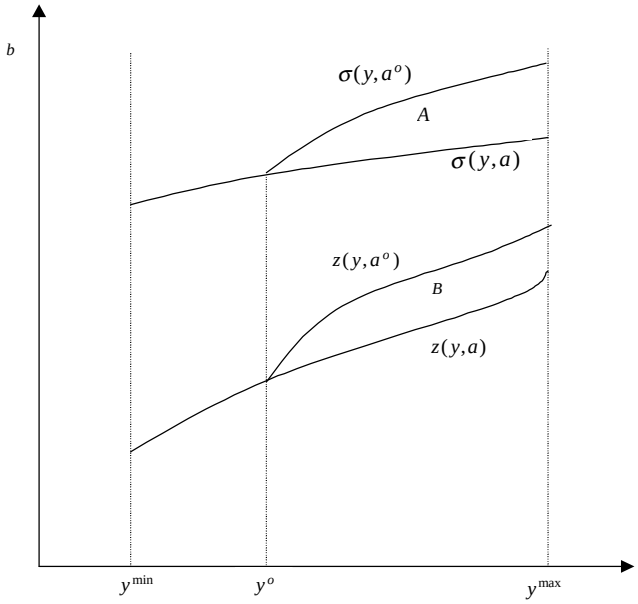

Figure 4: Imposition of binding constraint a^o on legal defence expenditure increases both deterrence z and social cost of crimes σ for those constrained. Effect on welfare depends on mass of potential criminals in areas A and B.