Public law enforcers and political competition

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Abstract

In this paper, we analyze crime deterrence under political competition. The elected law enforcer’s incentives depart from those of a benevolent authority, which is the most frequent assumption made in the literature on crime deterrence since Becker (1968). The article concludes that: (1) for minor offenses, elections lead to efficiency, (2) for larger offenses, two equilibria can emerge. Which equilibrium prevails depends on the level of harm generated by offenses relative to the marginal cost of enforcement. For moderately harmful acts, a ”weak enforcement” equilibrium emerges, and the issue of under-deterrence is exacerbated. For harmful acts, a ”strong enforcement” equilibrium emerges, and enforcement’s expenditures exceed the efficient level of deterrence. For the highest level of harm, enforcement’s expenditures under election are lower the efficient level of deterrence. This ”rent seeking” effect exerted by the majority of law abiding people appears when offenders are rich enough.

Keywords : public law enforcement, deterrence, monetary sanctions, electoral competition.

JEL classification codes : D72, D73, H1, K14, K23, K4.

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1 Introduction

Political views are often at stake when the public law enforcer chooses the level of sanction, or the means given to the police. Under the simple majority rule, a candidate has to present the campaign’s platform preferred by a majority of voters in order to win the election. In real life, a public law enforcer might be a chief of police, a judge, a prosecutor, a regulator, a city mayor, the Parliament, etc. In many cases, election plays a role, and a realistic view of the law enforcer is to consider that her/his decisions regarding the level of sanction and the means given to detection, apprehension and conviction are influenced by the electoral process, and as such, by citizens’ preferences. The intuition, supported by statistics (for instance, Levitt, 1997), is that enforcement expenditures will increase under the threat of (re)election. Increasing enforcement expenditures is nevertheless costly, and voters are also taxpayers.

By contrast, we also observe some laws which are not enforced or weakly enforced. Examples are numerous. Many Parisian cyclists do not abide to traffic law. Many citizens throw their cigarettes butts on the street. The fines provided for by the law are respectively 90 euros (running red lights) and 68 euros (for throwing the cigarettes), but are scarcely applied. This observation raises the issue of the efficient level of deterrence, and besides, the influence of election on deterrence. The purpose of our theoretical paper is to understand why and how deterrence policy might be affected when the law enforcer is elected compare to the standard case where he is simply a benevolent dictator, depending on the magnitude of harm.

The main result of the paper is to show that deterrence policy under political competition departs from efficiency, when the level of harm is high enough relative to the marginal cost of enforcement. When the external cost is small enough (such as throwing a cigarette butt), the social welfare maximizing policy is the absence of deterrence. Even if a legal rule providing the fine exists, the rule is very rarely (or never) enforced, and the deterrence level is low. Electoral process in this case leads to the efficient policy. For higher level of harm, three solutions are possible. First, when the harm is limited (not paying a parking tickets, not abiding to traffic laws when riding bicycle), a "weak enforcement" equilibrium emerges. Enforcement’s expenditures are lower than the optimal ones, and the proportion of undeterred offenders is large. Second, for larger offenses (such as violent crimes), when the level of harm generated by offenses relative to the marginal cost of enforcement is much higher, a "strong enforcement" equilibrium prevails. The enforcement’s expenditures exceed the efficient level of deterrence. Third, above a certain level of harm, the sign is reversed, and enforcement’s expenditures are lower than the efficient level when offenders are rich enough.

A large body of empirical literature has documented the influence of election on the probability of detection, apprehension and conviction. Dyke (2007) shows that the district attorneys are less likely to dismiss cases in the election.

\[^{1}\text{In addition to Levitt, op. cit.}\]
Berdejó and Yuchtman (2012) present evidence that elected judges (in the State of Washington) tend to respond to political pressure by increasing the severity of their judgment: sentences are around 10% longer at the end of a judge’s political cycle than at the beginning. Prosecutors running for elections tend also to take more cases to trial rather than plea bargain (McCannon, 2013). Makowsky and Stratmann (2009) shows that the probability of getting a ticket (rather than a warning) for excessive speed and the size of the fine is positively affected by the fact to reside out of the town. In other words, policemen tend to favor local constituents.

Despite this large body of empirical studies, the theoretical public law enforcement literature stemming from Becker’s (1968) seminal article has largely ignored the objectives of enforcers, with the exception of Friedman (1999). Friedman (1999) argues that the public law enforcer is merely self interest (as any other agent), and observes that the literature about law enforcement considers criminals as highly sophisticated and rational individuals, while the State is usually considered as a simple “proxy” (benevolent automate) or “a wise, benevolent and wholly altruistic organization”. However, as Friedman emphasized, societies do not generally choose the most efficient way to enforce law in practice. One explanation lays with the objectives of law enforcers; they wish to maximize their own rents rather than the social welfare, thus departing from the socially optimal solution of the literature. Therefore, Constitutions should impose costly punishment (such as prison) in order to avoid excessive punishment.

In relation with the seminal work of Friedman, Garoupa and Klerman (2002) developed a such as the rent seeking model of government. The objective function of the rent seeker government is to maximize the revenues minus the harm to the government and the cost of law enforcement. Wickelgren (2003) also build from the point made by Friedman (1999) and justifies the use of costly forms of sanctions (prison rather than corporal punishments), in a model with two enforcing authorities acting sequentially. However, in Wickelgren’s work both levels of the enforcement system share a similar objective, i.e. maximizing a (weighted) social welfare function.

Our paper is in the same spirit of Friedman (1999), Garoupa and Klerman (2002) and Wickelgren (2003). However, rather than being exogenously fixed, the objective function of the elected public law enforcer is a result of the electoral game. Our aim is to discuss in a simple framework whether/how political competition may (or not) promote the toughness of the sanctions in the various domains of administrative law and penal law.

The paper is organized as follows. Section 2 sets the general framework and recall the results obtained in the standard beckerian approach relying on

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2 but corruption, see for instance
3 See Friedman, 1999, p. 262.
4 See also Gradstein (1993), for an analysis of the impact of a rent seeking government for the provision of public goods. Dittrman (2004) adresses the case where the government puts some weight on the residual budget of the prosecution policy.
5 This issue of self-interest has been raised for judges’ decision making notably by Epstein (1990) and Posner (1993). Examining the case of ordinary tenured judges, Posner (1993) examines the case where their utility is affected by income, leisure, and judicial voting.
a benevolent planner in order to define our benchmark. Section 3 analyzes
the case where the public enforcer is elected with a simple model of Downsian
electoral competition. Section 4 concludes.

2 Model and assumptions

We introduce here our basic framework, which elaborates on the model of law
enforcement à la Becker. As a benchmark, we focus on the enforcement strategy of the
authority when it is assumed to behave according to a benevolent social planner.

Let us consider the case where an illegal activity allows non abiding (risk
neutral) individuals to benefit from $b$. The benefits people retrieve from not
abiding the law vary in the population. Public authorities do not observe the
type $b$, but only know that benefits are distributed according to the uniform law
on $[0,1]$. The uniform distribution assumption makes easier the exposition of
results. The (external) loss/harm to the rest of the society in case of an offense
is $h$, whatever the private benefit for the offender.

Monitoring the illegal activity entails a cost for public authorities, equal to
$m(p)$, where for the sake of simplicity $p$ is the probability of control (encom-
passing apprehension and conviction for an illegal behavior). The enforcement
cost function writes as $m(p) = m.p$, with $m > 0 \forall p \in [0,1]$.

Furthermore, we assume that the marginal cost of enforcement is high enough, but
lower than the legal wealth $w$.

\textbf{Assumption 1.}

\[ w > m > (h - w)w \] (1)

Also, we assume that the enforcement cost is financed through a lump sum
tax $t$ plus the expected fine $f$ levied on the fraction $q$ of the population which is
seen as offenders. We assume that the management costs (associated with the
monetary penalty) are negligible. Throughout the paper, we will consider only
balance-budget policies. The public budget constraint writes as:

\[ m(p) = t + qp f \] (2)

We also assume that the maximal fine is the legal wealth of the population $w$,
i.e. $f \in [0, w]$: we consider that $w$ is large enough in order for (almost) all
equilibria to be defined as interior solutions.

In this case, the game (or sequence of moves) between the public authority
and the citizens is the usual one: after Nature moves (choosing the type of

\textsuperscript{6}See the surveys by Garoupa (1997) and Polinsky and Shavell (2000).

\textsuperscript{7}See technical appendix for a generalization of the results.

\textsuperscript{8}In order to ensure an interior solution.

\textsuperscript{9}This assumption seems quite reasonable.
citizens, not observable for public authorities) at stage 0, the authority makes at stage 1 its announcement regarding the level of fine applied; at stage 2, citizens decide whether or not they abide the law; at stage 3, the law is enforced.

2.1 Offenders and law abiding citizens

We assume that an offense hurts citizens through a pure external term affecting individuals’ utility level, depending on the proportion of non abiding people. As usual in the literature on law enforcement, we will show that the proportion of offenders equals

\[ q = (1 - \bar{b}) , \]

with \( \bar{b} \) the deterrence threshold. Let us denote the utility level of a risk neutral offender as:

\[ u_c = w + b - t - pf - (1 - \bar{b}) h \]

with \((1 - \bar{b})h \) the externality term.

For a law abiding individual, we have:

\[ u_h = w - t - (1 - \bar{b}) h \]

Both the criminal and the honest people suffer from the externalities imposed by offenses.\(^{10}\)

Hence as usual, \( \bar{b} \) is defined by \( u_c = u_h \); a potential criminal decides to undertake the activity if the benefit he receives from doing it is higher than the expected punishment, i.e. if \( b \geq pf = \bar{b} \).

2.2 The social welfare maximizing deterrence policy

The benevolent law enforcer determines both the level of fine \( f_u \) and the probability of detection \( p_u \). The pair \((p_u; f_u)\) denotes the optimal enforcement policy.

\[ S = \int_0^b u_h db + \int_{\bar{b}}^1 u_c db \]

\[ = w - t + \int_{\bar{b}}^1 (b - pf - h) db \]

and substituting with (1) yields:

\[ S = w + \int_{pf}^1 (b - h) db - mp \]

which is the standard formulation considered in the literature. The first (integral) term of \( S \) correspond to the expected private benefit associated with

\(^{10}\)Examples of such offenses are numerous (see, for instance, Polinsky and Shavell, 1979): polluting the air (while non respecting a regulatory standard), speeding or double parking, car theft, throwing cigarettes butts, drug consumption, etc. Each of these offense imposes a cost to the rest of the society.
the illegal activity. The last one is the cost of monitoring for public authorities. The fine paid by the offender when arrested is a mere transfer (the expected probability of paying the fine, is equal to the expected probability of collecting it).

We will denote as $h_1 = \frac{m}{w}$; then we have:

**Proposition 1** The optimal enforcement policy $(p_u, f_u)$ may be one of the two following solutions:

i) Assume $h < h_1$; then the optimal policy is $p_u = 0$, i.e. no enforcement expenditures, and it is associated with zero deterrence.

ii) Assume $h > h_1$; then the optimal policy is $p_u = (h - h_1)\frac{1}{w} > 0$, $f_u = w$, and is associated with under deterrence: $p_u w < h$.

**Proof.** The derivatives of $S$ with respect to $f$ and $p$ are given by:

$$\frac{\partial S}{\partial f} = (h - pf)p$$

$$\frac{\partial S}{\partial p} = (h - pf)f - m$$

We have:

$$\left(\frac{\partial S}{\partial p}\right)_{p=0} = hf - m$$

$$\left(\frac{\partial S}{\partial p}\right)_{p=1} = (h - f)f - m$$

i) Thus, if $hw - m < 0 \Leftrightarrow h < \frac{m}{w}$, then $\left(\frac{\partial S}{\partial p}\right)_{p=0} < 0$ and it must be that $p = 0$, and the choice of $f$ is of no matter.

ii) On the other hand, if $hw - m > 0$, then it is not optimal to choose $f = h/p < w$ since this would imply $\frac{\partial S}{\partial p} < 0$. Hence, it must be that $f_u = w$. Moreover, there exist an interior solution under assumption 1 and $p_u$ is defined by:

$$(h - p_u w)w - m = 0$$

(4)

Solving for $p_u$ yields $p_u = (h - h_1)\frac{1}{w} > 0$ and implies $h - p_u w > 0$.

Proposition 1 establishes that the optimal enforcement policy for the smallest offenses ($h < h_1$) is the *laissez-faire*. In contrast, for offenses severe enough ($h > h_1$), the best policy consists in enforcement expenditures mixed with a maximal fine, and under deterrence occurs.

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11To give a more complete picture, note that any solution must also verify $S \geq 0$, meaning that $m(p_u)$ must be small enough. Otherwise, even general enforcement expenditures may be too costly, in which case the optimal policy would be the *laissez-faire*. The same remark applies to the next propositions of the paper.
3 Law enforcement under political competition

In this section, we depart from the usual assumption that the enforcer is benevolent. We introduce a simple model of electoral competition in the vein of the framework known as Downsian model (see Downs, 1957).

Assume there exist two candidates $i = 1, 2$ representative of two political parties, competing for national (presidential or legislative) or local (municipal) elections. Competing for elections here is alike a rent seeking contest, where $V$, the exogenous rent obtained in case of victory is attached to holding offices, ministries and so on.

The objective of politician $i$ is to maximize the expected value of the rent $\alpha_i V$, where $\alpha_i$ is the probability that he wins the elections. To this end, candidate $i$ proposes to electors an electoral platform $(f_i, p_i)$. We consider the (simple) majority rule for voting. All citizens are electors and do participate: each voter simply votes for the candidate whose platform allows him to reach the highest utility level, and if he is indifferent, he tosses a coin to decide for whom he votes.

The electoral competition game between the candidates and the citizens/voters is as follows: after Nature moves at stage 0 (choosing the type of citizens, not observable for politicians), the electoral competition begins at stage 1, which is a simultaneous move (non cooperative) game between the candidates, where they both choose and announce their platforms $(f_1, p_1)$, $(f_2, p_2)$, both satisfying the balanced budget constraint (1); at stage 2, elections take place, and citizens simultaneously choose between the two candidates; at stage 3, the elected candidate implements his policy, it becomes a law; at stage 4, citizens choose to abide or not the law; at stage 5, law is enforced.

In the next paragraphs, we solve for the equilibrium. To this aim, we specifically highlight two main stages: stage 2, where citizens vote (3.1), and stage 1 where candidates choose their policies (3.2).

3.1 Analysis of citizens’ best policies

Solving backward, it comes that at stage 4, any policy $(p, f)$ that is implemented after the elections will induce a screening of citizens between those who abide the law, and those who do not. According to paragraph 2.2, it is straightforward that the deterrence threshold at equilibrium is still $b = pf$.

At stage 2, citizens vote for their preferred policy, taking into account that in the future, either they will comply or not to the law.

\[^{12}\]Every citizen votes, anticipating their future behavior, i.e. whether they will behave as honest people or criminals.

\[^{13}\]i.e., we assume that candidates commit to their own electoral platform – without specifying the reasons explaining neither why those platforms are credible announcements, nor how they become a law. These (obviously important) issues are beyond the scope of the paper.
3.1.1 Best decision of a citizen who will comply

For a citizen who anticipates he will comply to the law, we define now the preferred policy at stage 2 as: 

$$(f, p) = \arg \max_{(f, p)} \{u_h \text{ under (1)}\}.$$ 

Substituting (1) in $u_h$ leads to:

$$u_h = w - m.p + (1 - pf)(pf - h)$$

We have:

**Proposition 2** The enforcement policy preferred by compliant citizens $(p_h, f_h)$ is 

$$p_h = (1 + h - h_1) \frac{1}{2w}, f_h = w.$$ 

**Proof.** The derivatives of $u_h$ with respect to $f$ and $p$ are:

$$\frac{\partial u_h}{\partial f} = (1 + h - 2pf)p$$

$$\frac{\partial u_h}{\partial p} = (1 + h - 2pf)f - m$$

We have:

$$\left(\frac{\partial u_h}{\partial p}\right)_{p=0} = (1 + h)f - m$$

$$\left(\frac{\partial u_h}{\partial p}\right)_{p=0} < 0$$ can not be negative when $f = w$.

Furthermore, it is not rational for an individual to choose $f \neq w$ (i.e. such that $\frac{\partial u_h}{\partial f} = 0$) since this would imply that $\frac{\partial u_h}{\partial p} = -m < 0$. Thus, $f_h = w$, and $p_h$ is defined according to $\frac{\partial u_h}{\partial p} = 0$, or:

$$1 + h - 2p_hw = \frac{m}{w}$$

Solving for $p_h$ yields $p_h = (1 + h - h_1) \frac{1}{2w} > 0$, which implies $h - p_hw \geq 0$. The solution is interior as long as $w(h - w) + w(1 - w) < m$. □

At equilibrium, if the majority of voters are compliant, two kinds of distortions may occur:

- strong deterrence of slightly and moderately harmful acts: A citizen who anticipates abiding the law prefers to deter even minor offenses ($0 \leq h \leq h_1$), while efficiency would imply a ”laissez-faire” policy ($p_h = p_u \equiv 0$). In the range of offenses which are worth to deter from the point of view of efficiency ($h > h_1$), law abiding citizens prefer a policy based on larger enforcement expenditures $p_h > p_u > 0$ as long as $h < h_1 + 1$.

- weak deterrence of very serious offenses: when $h > h_1 + 1$, honest citizens would choose lower enforcement expenditures $p_u > p_h > 0$. 

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3.1.2 Best decision of a citizen who will not comply

For a citizen who anticipates he will not be law abiding, let us denote the stage 2 preferred policy as: \((f_c, p_c) = \arg \max_{(f,p)} \{u_c \text{ under (1)}\}\). Substituting (1) in \(u_c\) yields:

\[
 u_c = w + b - m(p) - pf + (1 - pf)(pf - h)
\]

We have now:

**Proposition 3** The enforcement policy preferred by not compliant citizens \((p_c, f_c)\) may be one of the two following solutions:

i) Assume \(h < h_1\); then the policy is \(p_c = 0\) and is associated with zero deterrence.

ii) Assume \(h > h_1\); then the policy is \(p_c = (h - h_1) \frac{1}{2w}, f_c = w, \) and is associated with under deterrence: \(p_cw < h\).

**Proof.** We have:

\[
 \frac{\partial u_c}{\partial f} = (h - 2pf)p \\
 \frac{\partial u_c}{\partial p} = (h - 2pf)f - m
\]

We obtain:

\[
 \left(\frac{\partial u_c}{\partial p}\right) \bigg|_{p=0} = hf - m
\]

i) Thus, if \(hw - m < 0 \Leftrightarrow h < \frac{m}{w}\), then \(\left(\frac{\partial u_c}{\partial p}\right) \bigg|_{p=0} < 0\) and it must be that \(p = 0\).

ii) On the other hand, if \(h > h_1\), then it is not rational to choose \(f \neq w\) (such that \(\frac{\partial u_c}{\partial f} = 0\)), since this would also imply that \(\frac{\partial u_c}{\partial p} = -m'(p) < 0\); thus it must be that \(f_c = w, \) and \(p_c\) is defined by:

\[
 h - 2p_cw = \frac{m}{w}
\]

Solving for \(p_c\) yields \(p_c = (h - h_1) \frac{1}{2w} > 0\), such that \(h - p_cw > 0\). □

Notice that non compliant citizens prefer the efficient level of enforcement expenditure \((p_c = p_u = 0)\) as long as \(h \leq h_1\). For higher level of harm, offenders prefer a level of enforcement expenditure lower than the efficient level \(p_u > p_c > 0\).

A straightforward result is also that the deterrence level is at least as high in an equilibrium where \((p_h, f_h)\) is chosen, as compared to an equilibrium where \((p_c, f_c)\) arises:
Proposition 4 Compliant citizens vote for a higher expected sanction than non-compliant citizens.

Straightforward, since \( p_h \geq p_c \).

3.2 Analysis of equilibria

Now, we turn to the stage of electoral competition, where candidates announce their policy, and characterize the perfect subgame equilibrium. At stage 2, candidates propose a policy for which the number of voters is maximized, anticipating that when implemented, this policy will induce a screening of citizens. We obtain the next results, depending on the size of the external cost of offense \( h \) we consider:

Proposition 5 Assume that \( h < h_1 \). The unique equilibrium is such that both candidates announce the laissez-faire policy: \( p_c = 0 \).

Proof. We have to compare the proportion of citizens voting for the policy \((p_h, w)\), which is \( p_h w \), to the proportion voting for \((p_c = 0, f)\): \( 1 - p_c f = 1 \). The result is straightforward.

In words, electoral competition creates no (additional) distortion when wrongful acts have an external cost to society small enough: the equilibrium policy emerging from elections is the optimal policy that a benevolent enforcer would choose. In contrast, for larger offenses, we will show that different outcomes may occur through the electoral process.

Proposition 6 Assume that \( h > h_1 \). Two equilibria may be obtained:

i) If \( h < h_1 + \frac{1}{2} \), then the unique "weak enforcement" equilibrium is such that both candidates announce the policy \((p_c = (h - h_1) \frac{1}{2w}, w)\).

ii) If \( h > h_1 + \frac{1}{2} \), then the unique "strong enforcement" equilibrium is such that both candidates announce the policy \((p_h = (1 + h - h_1) \frac{1}{2w}, w)\).

Proof. When \( h > h_1 \), let us compare the proportion of citizens voting for \((p_h, w)\), which is equal to \( p_h w \), to the proportion voting for \((p_c, w)\), which is \( 1 - p_c w \). Either: \( p_h w > 1 - p_c w \) and thus both candidates maximize their chances to win the election soon as they propose \((w, p_h)\); or: \( p_h w < 1 - p_c w \) and thus both candidates maximize their chances to win the election when they propose \((w, p_c)\).\(^{14}\) i) Thus, substituting for \( p_h \) and \( p_c \), the condition \( p_h w < 1 - p_c w \)

\(^{14}\)Note that we focus only on pure strategies equilibria. Note also that in an equilibrium, each candidate wins with probability \( \frac{1}{2} \) (the same remark applies to the next propositions).

\(^{15}\)It is obvious that when \( p_h w = 1 - p_c w \), both candidates maximize their chances to win the election when they propose either \((w, p_h)\) or \((w, p_c)\) indifferently. However, we let aside this kind of situation, where asymmetric equilibria may be obtained.
writes equivalently as $h < \frac{12}{w} + \frac{1}{2}$. ii) is straightforward following the same argument. Furthermore, $p_h > p_u$ as long as $h < 1 + h_1$. ■

In the case of illegal acts for which society suffers from at least moderate external costs ($h > h_1$), we find that political competition leads to the maximal fine ($w$). This maximal fine is associated with enforcement’s expenditures which may be lower than the optimal one ($p_c < p_u$) under the "weak enforcement equilibrium" for moderate level of harm ($h < h_1 + \frac{1}{2}$). Enforcement expenditures may also be higher than the efficient level ($p_h > p_u$) under the "strong enforcement equilibrium" as long as $h_1 + \frac{1}{2} < h < h_1 + 1$. For the most serious offenses (above $h_1 + 1$), enforcement expenditures at the voting equilibrium are lower than the efficient level.

Let us consider now figure 1, which represents the probability $p$ of detection which will emerges at the voting equilibrium and figure 2 which represents the proportion of offenders $q$ depending on the level of harm $h$. Recall that $q = 1 - pf$. $q_u$ represents the efficient level of offenders, $q_h$ the preferred level of offenders by compliant citizens and $q_c$ by offenders. The bold lines represent respectively the probability of detection and proportion of offenders emerging at the voting equilibrium.

![Figure 1: Detection at the voting equilibria](image)
For the least harmful offenses (below \( h_1 = \frac{m}{w} \)), there is no deterrence at equilibrium as shown in proposition 5 and no citizen comply the law. This result is efficient, since \( p_u = 0 \) for all \( h < h_1 \). The intuition is that the harm is so small relative to the marginal cost of enforcement that it is not worth spending some money on deterrence.

For moderately harmful acts (between \( h_1 \) and \( h_1 + \frac{1}{2} \)), the "weak enforcement" equilibrium prevails as shown in proposition 6. A majority of citizens decide not to abide the law. Enforcement expenditures are lower than the social welfare maximizing one, and the proportion of offenders exceeds the social welfare maximizing one.

For harmful acts (between \( h_1 + \frac{1}{2} \) and \( h_1 + 1 \)), the "strong enforcement" equilibrium emerges, and the resulting probability of detection is higher than the social welfare maximizing. In such a case, a majority decides to abide the law. However, enforcement expenditures are higher than the efficient level, and consequently the proportion of offender is lower than what would require efficiency.

Note also that \( p_u \) exceeds \( p_h \) when \( h > h_1 + 1 \). In other words, for the highest level of harm, the level of enforcement’s expenditures chosen by the compliant people (the majority) is lower than the efficient one. Furthermore, efficiency requires that all offenders are deterred, which is the case at the voting equilibrium for all \( h > h_1 + 1 \). This result must be interpreted carefully, keeping in mind that, according to assumption 1, \( h < \frac{m}{w} + w \). Consequently, \( h \) higher than \( h_1 + 1 \) implies that \( w > 1 \). That is, an equilibrium such \( p_u > p_h \) exists if and only if the legal wealth exceed the maximal benefit. This result can be interpreted as a rent seeking effect (Garoupa, Klerman 2004), which may

**Figure 2:** Deterrence at the voting equilibria
appear when people are rich enough \((w > 1)\). As harm increases, a higher level of deterrence is needed. However, as more people are deterred, the fines’ revenue decreases. Recall that the majority in this situation decides to abide the law. Therefore, their preferences takes into account taxes, while the taxes were a mere transfer under the social welfare function.

Which one of the low/high enforcement equilibrium emerges depend mainly on the marginal cost of enforcement’s expenditures \((m)\). The lower it is, the more likely (1) the offense is deterred with a positive probability (shift of \(h_1\) to the left), (2) the “strong enforcement” appears (shift of \(h_1 + \frac{1}{2}\) to the left), (3) both \(p_h\) and \(p_c\) are higher. This last point on the cost of law enforcement can be related to the works of Friedman (1999) and Wickelgren (2004) who analyses the case of a rent seeker public law enforcer. The idea of Friedman (1999) is that a social planer can avoid excessive punishment by making punishment costly. For instance, the Constitution can forbid cruel punishment and promotes imprisonment. In our framework, an increase in the marginal cost of detection would leave more offenses undeterred (shift of \(h_1\) and smaller probability of detection), and decrease the likelihood of ”strong enforcement”. For instance, imagine that a higher standard of proof is needed to convict a potential offender (Constitutional reform). The marginal law enforcement cost increases which will reduce the likelihood of falling in the ”strong law enforcement equilibrium”.

4 Concluding remarks

The central issue of our paper is the relationships between law enforcers’ incentives and the public enforcement of law. Our model assumes that citizens vote before deciding whether or not to abide the law. Depending on the level of harmfulness of the act and the marginal cost of enforcement, either a ”strong” or a ”weak” law enforcement equilibrium can emerge. When the ”strong enforcement” equilibrium emerges, the preferences of offenders (and thus, crime benefits) are no longer taken into account to design the monetary sanctions - in a sense; in this case criminals’ preferences are not representative of social preferences, since these correspond to the majority of citizens. But, it cannot be ignored that a ”weak enforcement” equilibrium might also emerge, in which the criminals’ preferences become representative of social preferences.

The paper contributes to the debate concerning the limits of the beckerian approach, and mainly the early criticisms that focused on the inclusion of crime benefits in the social welfare function (Lewin and Trumbull, 1990, Dau-Schmidt, 1990). According to Lewin and Trumbull (1990), including criminal benefits in the social welfare function lowers the deterrence threshold. Dau-Schmidt (1990) also argues that it is morally shocking to include criminal benefits in the social welfare function. Our paper re-conciliates in a way the two positions, by establishing a clear distinction between what is socially optimal (the beckerian approach) and what should emerge from a political process (deterrence under
election). We show that what emerges from the political process does not maximize social welfare (the social welfare is lower under democracy than in the implausible utilitarian social planner).

Our paper also provides an explanation for a paradox in crime deterrence: on the one hand, the issue of criminality became a main concern in electoral campaigns for more than a decade in most European countries; on the other hand, there is an ongoing debate about the non criminalization/legalization of some offenses, such as drug consumption (except in relation with international traffics and criminal networks) or illegal downloading. In the first case, the growing place of crime deterrence in electoral campaigns can be seen as a consequence of the election strategies of the politicians, anticipating the ”strong enforcement” equilibrium for major crimes. In the second case, some offenses such as illegal downloading might be considered as involving minor harm relatively to their private benefits (the evaluation of those depending on cultures).

The intriguing empirical result of Lin (2007) is partly explain by our paper. Lin (2007) attempted to verify empirically whether differences arise in criminal law enforcement policies (in particular fighting minor and major crimes) according to the level and quality of democracy. Using an index of political liberty from the comparative freedom survey to distinguish ”low democracies” from ”high democracies”, he shows that countries characterized by a higher level of democracy tend to punish major crimes relatively more severely as compared to countries with a lower level of democracy, the reverse being true for minor crimes. More precisely, the deterrence of homicides is quite strong and the homicide rate lower in high democracy by comparison with low democracy. On the contrary, it seems that democracy has a negative impact on less serious crimes such as burglary, robbery, car theft. However, no explanation of such an empirical result has been yet provided. When the harm generated by an offense is small (large) relative to the marginal cost of enforcement, a ”weak (strong) enforcement” equilibrium should emerged, provided that the offenders (respectively, honest citizens) represent the majority. It is possible that the harm generated by car theft is quite low relative to the marginal cost of detecting, apprehending and convicting the offenders, therefore leading to a relatively weak enforcement. The reverse being true for homicide.

A limitation of the model is the quite strong assumption on the commitment of elected law enforcers to enforce their electoral platform. Here, we deal with pre-election politics, and assume that electoral promises are binding and enforceable. A significant extension would be to study the case where politicians could decide not to implement the announced policy despite reelection concerns. We also abstract from the existence of lobbying activities that yield other kinds of imperfections on the political market. We leave for future research the analysis of public enforcement when industry pressures exist, which will allow to study the effects of different assumptions departing from the one of a benevolent enforcer.

To complete the picture, two extensions might develop. First, the interplay

16 According to multiple criteria: average prison length, average clearance rates.
of the voting model with social norms (Acemoglu, Jackson 2015) can be worth been investigated. For instance, some moral or social reasons can impede people to do illegal acts, even if law is in practice not enforced (for instance, illegal downloading or throwing cigarettes butts in France). Second, another significant extension of the paper might be to consider the case of error. McCannon (2013) shows that, in addition of taking more case to trial (rather than plea bargain) during reelection campaign, prosecutors face a decreased probability of having the conviction being upheld by the appellate court. An interesting point would be investigate the relation between election and accuracy in conviction.

References


In this appendix, we provide some insights about the way our results in section 3 may be generalized, relaxing our basic simplifying assumptions. First, let us assume that $b$ is distributed according to a general, continuous law represented by a density $g > 0$ and a cumulative function $G$ defined on $[0, B]$. Wlog, we will assume that $\frac{1-G}{g}$ is decreasing on $[0, B]$. Second, regarding the monitoring costs associated with the control of illegal activities, we will assume the following conditions hold: $\forall p \in [0, 1], m' > 0, m'' > 0, \text{ and } m'(1) \to \infty$.

At stage 4, any policy $(p, f)$ will induce a screening of citizens between those who abide the law, and those who become criminals. Using the analysis of paragraph 2.1, it is straightforward that the deterrence threshold at equilibrium is $\bar{b} = pf$. Honest people (criminals) will be thereafter characterized with the subscript $h$ (respectively $c$).

At stage 2, citizens vote for their preferred policy, taking into account that in the future, either they will act as criminals or not.

For a citizen who anticipates to behave honestly, we define now the preferred policy as: $(f_h, p_h) = \arg \max_{(f, p)} \{u_h \text{ under (1)}\}$. Substituting (1) in $u_h$ leads to:

$$u_h = w - m(p) + (1 - G(pf)) (pf - h)$$

We have:

**Proposition 7** The enforcement policy preferred by honest citizens $(p_h, f_h)$ may be one of the two following solutions:

1. Assume $h < h_1 - \frac{1}{g(0)}$; then the policy is $p_h = 0$, and is associated with zero deterrence.
2. Assume $h > h_1 - \frac{1}{g(0)}$; then the policy is $p_h > 0, f_h = w$, and is associated with either over or under deterrence: $p_h w \gtrless h$.

**Proof.** The derivatives of $u_h$ with respect to $f$ and $p$ are:

$$\frac{\partial u_h}{\partial f} = [(1 - G(pf)) - g(pf)(pf - h)] p$$

$$\frac{\partial u_h}{\partial p} = [(1 - G(pf)) - g(pf)(pf - h)] f - m'(p)$$

We have:

$$\left(\frac{\partial u_h}{\partial p}\right)_{p=0} = (1 + g(0))h - m'(0)$$
i) Thus, if \((1 + g(0)h)w - m'(0) < 0 \Leftrightarrow h < \frac{m'(0)}{g(0)} - \frac{1}{g(0)}\), then \(\left(\frac{\partial u_c}{\partial p}\right)_{p=0} < 0\) and the solution is \(p_h = 0\) whatever \(f\) is.

ii) On the other hand, if \(h > \frac{m'(0)}{g(0)} - \frac{1}{g(0)}\), then it is not rational to choose \(f \neq w\) such that \(\frac{\partial u_c}{\partial f} = 0\) since this would imply that \(\frac{\partial u_c}{\partial p} = -m'(p)\). Thus, \(f_h = w\) such that \(\left(\frac{\partial u_c}{\partial f}\right)_{p_hw} > 0\), and \(p_h\) is defined according to:

\[
h - p_hw + \left(1 - G(p_h)\right) = \frac{m'(p_h)}{g(p_h)w}
\]

which implies \(h - p_hw \geq 0\).

Now, for a citizen who anticipates to become a criminal, let us denote the preferred policy as: \((f_c, p_c) = \text{arg max}_{(f, p)} \{u_c \text{ under } (1)\}\). Substituting (1) in \(u_c\) yields:

\[
u_c = w + b - m(p) - pf + (1 - G(pf)) (pf - h)
\]

We have now:

**Proposition 8** The enforcement policy preferred by criminals \((p_c, f_c)\) may be one of the two following solutions:

i) Assume \(h < h_1\); then the policy is \(p_c = 0\) and is associated with zero deterrence.

ii) Assume \(h > h_1\); then the policy is \(p_c > 0, f_c = w\), and is associated with under deterrence: \(p_cw < h\).

**Proof.** We have:

\[
\frac{\partial u_c}{\partial f} = [-G(pf) - g(pf)(pf - h)] p
\]

\[
\frac{\partial u_c}{\partial p} = [-G(pf) - g(pf)(pf - h)] f - m'(p)
\]

We obtain:

\[
\left(\frac{\partial u_c}{\partial p}\right)_{p=0} = g(0)(h)f - m'(0)
\]

i) Thus, if \(g(0)h w - m'(0) < 0 \Leftrightarrow h < \frac{m'(0)}{g(0)}\), then \(\left(\frac{\partial u_c}{\partial p}\right)_{p=0} < 0\) and it must be that \(p = 0\).

ii) On the other hand, if \(h > h_1\), then it is not rational to choose \(f \neq w\) such that \(\frac{\partial u_c}{\partial f} = 0\), since this would also imply that \(\frac{\partial u_c}{\partial p} = -m'(p) < 0\); thus it must be that \(f_c = w\) satisfying \(\left(\frac{\partial u_c}{\partial f}\right)_{p_cw} > 0\), and \(p_c\) is defined by:
\[ h - p_c w - \left( \frac{G'}{g} \right)_{p_c w} = \frac{m'(p_c)}{g(p_c w)w} \]  

such that \( h - p_c w > 0 \). \( \blacksquare \)

Now, we turn to the initial stage of the game, and characterize the perfect subgame equilibrium. We obtain the next results, depending on the size of the external cost of crime we consider:

**Proposition 9** Assume that \( h < h_1 \). Under electoral competition, the unique equilibrium is such that both candidates announce the laissez-faire policy: \( p_c = 0 \).

**Proof.** Note first that when \( h < h_1 - \frac{1}{g(0)} \), both honest citizens and criminals prefer the laissez-faire. Hence, an equilibrium cannot exist except when both candidates announce \( p = 0 \).

Assume now that \( h_1 - \frac{1}{g(0)} < h < h_1 \); we have to compare the proportion of citizens voting for \((p_h, w)\): \( G(p_h, w) \), to the proportion voting for \((p_c = 0, f)\): \( 1 - G(p_c, f) = 1 \). The result is straightforward.

Finally, remark that at equilibria, each candidate wins with probability \( \frac{1}{2} \) (the same applies in the next propositions). \( \blacksquare \)

**Proposition 10** Assume that \( h > h_1 \). Under electoral competition, two equilibria may be obtained: defining \( \theta = \frac{g(p_c, w)}{g(p_h, w) + g(p_c, w)} \), we have:

i) If \( h < [\theta p_h + (1 - \theta)p_c] w + \frac{1}{w} \left( \frac{m'(p_h) + m'(p_c)}{g(p_h, w) + g(p_c, w)} \right) \) then the unique equilibrium is such that both candidates announce the policy \((p_c, w)\). The associated rate of crime is \( q = 1 - G(p_c, w) \).

ii) If \( h > [\theta p_h + (1 - \theta)p_c] w + \frac{1}{w} \left( \frac{m'(p_h) + m'(p_c)}{g(p_h, w) + g(p_c, w)} \right) \) then the unique equilibrium is such that both candidates announce the policy \((p_h, w)\). The associated rate of crime is \( q = 1 - G(p_h, w) \).

**Proof.** When \( h > h_1 \), let us compare the proportion of citizens voting for \((p_h, w)\): \( G(p_h, w) \), to the proportion voting for \((p_c, w)\): \( 1 - G(p_c, w) \). Either: \( G(p_h, w) > 1 - G(p_c, w) \) and thus both candidates maximize their chances to win the election soon as they propose \((w, p_h)\); or: \( G(p_h, w) < 1 - G(p_c, w) \) and thus both candidates maximize their chances to win the election when they propose \((w, p_c)\).

i) Thus, note that using (4) and (5), the condition \( G(p_h, w) < 1 - G(p_c, w) \) writes equivalently as:

\[ h < [\theta p_h + (1 - \theta)p_c] w + \frac{1}{w} \left( \frac{m'(p_h) + m'(p_c)}{g(p_h, w) + g(p_c, w)} \right) \]

In order that the policy \((p_c, w)\) is a consistent equilibrium, it must be verified that \([\theta p_h + (1 - \theta)p_c] w + \frac{1}{w} \left( \frac{m'(p_h) + m'(p_c)}{g(p_h, w) + g(p_c, w)} \right) < h_1 \).
ii) is straightforward to obtain following the same argument. ■

Which one of the low/high enforcement outcome arises, depends mainly on the mean level of enforcement expenditures $(\theta p_h + (1 - \theta)p_c)$ and their marginal costs $(m'(p_h) + m'(p_c))$: the smaller (larger) they are, the more likely a strong (respectively weak) enforcement equilibrium emerges. Thus for the most severe offenses, our analysis predicts symmetrically either high (with maybe over deterrence) or low (with under deterrence) enforcement expenditures.