Unjust Laws and Illegal Norms*

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Abstract:

Due to a variety of circumstances, lawmakers occasionally create laws whose aims are perceived as outright unjust by the majority of the people. In other situations, the law may utilize improper means for the pursuit of a just goal. In all such cases, lawmaking processes generate rules that do not reflect the values of the underlying population. In these cases individuals may face legal commands or prohibitions that conflict with their sense of justice or fairness. Individuals can oppose unjust laws through protest. Social opposition to unjust laws may trigger social norms that can have countervailing effects on legal intervention. The dynamic effects of these phenomena are the object of this paper.

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"If a man does not keep pace with his companions,
perhaps it is because he hears a different drummer."

Henry David Thoreau

1 Introduction

Studies of individual behavior in response to legal commands generally support the argument that the law affects human choice by creating external incentives and promoting the individual internalization of the values expressed by the law. These studies predict that higher expected sanctions and more restrictive laws increase legal compliance. In this paper we consider the impact of expressed social opinion on the effects of legal intervention. Expressed opinion is a key factor in the formation of social norms. The interaction between social norms and the law may undermine the deterrent effects of legal intervention when the law departs from commonly held opinions. Traditional models have often disregarded such interaction, with consequent inaccurate predictions and policy recommendations.

According to the literature on the economics of deterrence, legal rules can create incentives by affecting the relative cost of alternative behavioral choices. For example, by imposing a fine for a given illegal activity, the law raises the "price" of this activity relative to others, which may lead to a substitution effect. Legal rules can also affect behavior through expression and internalization. The enactment of a law may let individuals internalize the values expressed by the law and trigger self-enforcement mechanisms that foster legal compliance.[1] Recent work in experimental and behavioral law and economics has brought to light situations in which the observed effects of legal intervention are at odds with the predictions of the economic models.[2]

The basic premise of our analysis is that human behavior is affected by a series of factors, including individual values, social norms and legal rules.[3] The law occasionally utilizes improper means to achieve its goals or pursues goals that are not aligned with current social values. For example, due to a variety of

[1] In his foundational papers on expressive law, Cooter (1998 and 2000) considers the three distinct ways in which law can influence behavior: deterrence, expression, and internalization. Bohnet and Cooter (2001) use an experimental methodology to study the effects of the introduction of a sanction that leaves expected payoffs unchanged on behavior. They find that in games with multiple Nash equilibria sanctions induce risk-neutral individuals to coordinate on the Pareto-dominant equilibrium, although in principle their behavior should not change.

[2] Gneezy and Rustichini (2003) provide experimental evidence of behavior opposite to that predicted by the deterrence model. Also, the results of their field study in day-care centers are widely known (Gneezy and Rustichini, 2000): they found that imposing a fine on late-coming parents significantly increased their number. Bohnet, Frey and Huck (2001) present an experiment where increasing the probability of detection in environments with weak institutions crowds out virtuous social norms and trustworthy behavior.

[3] Bicchieri (2005) provides an account of how social norms emerge. She argues that social norms evolve in ways that may heavily depend upon the psychological disposition of individuals.

circumstances legal systems may generate laws that do not reflect widespread consensus and are perceived by society as unjust. In these cases, individuals may face the command of rules conflicting with their sense of justice or fairness. A legal rule may be perceived as unfair in two alternative ways - excess or defect. A law fails in excess when it punishes conduct perceived as harmless or socially desirable; it fails in defect when it fails to provide adequate punishment for harmful and undesirable behavior.[4]

Laws departing substantially from current social values may trigger widespread opposition. Social opposition affects the deterrent impact of the law. A high number of people opposing the law may reinforce or weaken its deterrent effect, depending on whether the law falls short or in excess of current social values. In either case, if the legislator fails to take into account the influence of individual values and social norms, the final outcome of legal implementation is likely to be different from that initially sought and generally far from the social optimum.

Although countervailing effects of social norms have been already examined by the literature, to our knowledge we are the first to point out that higher sanctions and stricter laws may increase crime.[5]

Policy recommendations that can be drawn when the influence of individual values and social norms is considered are drastically different from the recommendations deriving from traditional models that imply an inverse relationship between strictness of the law and the rate of crime.

We organize the paper as follows: Section 2 considers the interaction between various effects of law, including incentive creation and value expression, and highlights the possibility of countervailing effects of legal intervention. In Section 3, we formulate a model to study the effects of legal change on human behavior. This model provides the basic framework for the interaction between three important elements of legal intervention: incentives, expressive effects, and social reaction. In Section 4, we extend the basic model to consider the role of incentives and the interaction between the incentive and expressive functions of the law. In Section 5, we build on the previous results, introducing the effects of social response to legal rules perceived to be unjust or excessively strict. We study the dynamic interaction between incentives, expression, and social reaction in producing legal deterrence. We identify the conditions under which legal intervention may be counterproductive and where legal enforcement could generate negative net effects. We present an interesting policy corollary that

[4] In other situations the legal sanction may be viewed as too harsh or too lenient relative to the preexisting social norm. When the legal sanction falls short of the perceived fair sanction, individuals may be inclined to "add" social sanctions (e.g. disapprobation) to the behavior. When the legal sanction exceeds the perceived fair sanction, individuals may be inclined to "subtract" social sanctions (e.g. tolerance of infringers, protest, or civil disobedience, etc.) to the behavior.

[5] Bar-Gill and Harel (2001) reverse the causal relationship between expected sanctions and the rate of crime, showing how a high rate of crime may dilute enforcement. Harel and Klement (2007) prove the existence of an inverse relation between stigma and the rate of detection. Both papers rely on the concept of "extralegal sanctions" as means of second and third party enforcement. On the contrary, we rely on legal sanctions to prove our results. There are also empirical papers showing that legal enforcement can have ambivalent effects on the number of violators. For instance, Depoorter and Vanneste (2005) and Oksanen and Välimäki (2007) provide evidence of an increase in file sharing after the music companies started suing users of peer to peer technology for illegal music downloading.

identifies optimal lawmaking strategies for the enforcement of unpopular laws. Section 6 develops some extensions, discussing two effects which may entail sudden large reactions to legal change. We call them the announcement effect and the social acceptance effect. Consideration of these effects allows us to present further policy strategies that can be employed when legal intervention is likely to trigger countervailing norms. Section 7 concludes.

2 Building Blocks: Incentives, Expressive Effects and Social Response

This Section examines the ways in which the law influences behavior. Law and economics literature has developed a general theory of how legal rules can affect behavior. As mentioned above, according to this literature the law creates a price system on which individuals base their choices (external incentives) and/or favors the internalization of the values it embodies.

Through internalization, the enactment of a law triggers self-enforcement mechanisms that foster legal compliance.[6] Laws can affect behavior even in the absence of direct incentives when individuals internalize the value expressed by the law.[7] This happens through two connected channels. On the one hand, people have an intrinsic taste for obeying the law, meaning that, independently of the content of the law and of the individual's internal values, violation is costly. Social psychological research confirms that citizens tend to internalize the values expressed by the law and obey out of internal respect for the law in general. This is what we could define as first-party enforcement. On the other hand, the law acts as a signal for others observing violations, who now feel entitled to exert extra-legal second- and third-party enforcement. Finally, legal rules may also serve as focal points facilitating coordination and the emergence of a social norm (see McAdams, 2000).We shall generically refer to these various effects as "expressive effects".[8]

In this paper, we suggest that the effects of law further depend on the "social response" triggered by the enactment and enforcement of a new rule. Social reaction to a new law may vary greatly, according to the degree of consistency of the new law with prior social values. Reaction may reinforce or undermine the effect of legal intervention. A law that reflects prior social values is likely to enjoy

[6] According to Cooter (1998), there are different ways in which the expression of legal rules can induce behavioral change. First, law can exert an external influence upon citizens by creating legal sanctions that impose costs; the law may modify the observed patterns of behavior while leaving individual preferences undisturbed. In turn, law may prompt citizens to adopt social norms without changing their preferences, or "tastes." Second, citizens may internalize norms through changing their own tastes. Cooter defines "taste" as "strength of individual commitment to the norm" (Cooter 1998: 589).

[7] According to Cooter (1998, 2000), through its expressive function a law can have an impact on behavior even in the absence of a sanction punishing violations.

[8] The way in which expressive laws influence behavior is very information-intensive. Expressive law is most effective when it aligns with pre-existing social values: it then may simply reduce the costs of private enforcement and thus facilitate the values' turning into norms. There is, however, a danger that the law may crowd out moral norms rather than create them. Individuals might feel it unnecessary to sanction violators of a norm if the government assumes this task.

immediate acceptance and support. A law that departs too visibly from prior values will enjoy less immediate acceptance and in some cases may trigger opposition. These alternative social reactions may boost or weaken the effects of legal intervention. As recently shown in the literature, the alignment of legal precepts and decisions of authorities with shared values and norms has a positive influence on whether people comply with law, even when it is not in their self-interest to do so.[9] Legitimacy is undermined when the content of the law departs from social norms, be they based on moral, ethical, or merely cultural values. Tyler (1990) and Sunshine and Tyler (2003) provide support for the argument that the public's perceptions of illegitimacy and unfairness of laws undermines people's compliance with law and police orders.[10] Absent such initial alignment between legal rules and social values, legislators can ensure compliance with law with the creation of incentives. But, as it will be suggested below, expressed social opinion and reaction to unjust laws may undermine the effect of legal incentives. Legal coercion may be counterproductive in these cases.

As a working example, let's consider the case where the lawmakers' intent is not aligned with existing social values. This may be the case when the lawmaker wishes to engage in paternalistic legal intervention aimed at changing a well-rooted social behavior through incentives (e.g. the enactment of no drinking laws in communities accustomed to regular alcohol consumption; or the enactment of animal-rights statutes prohibiting hunting). The new laws could impose a sanction to deter individuals from engaging in the behavior that the lawmaker deems undesirable (drinking alcohol or hunting, in our example). These sanctions would de facto increase the relative price of the sanctioned activity relative to others and possibly lead to a substitution towards other non-sanctioned activities. Changes in behavior (reduction in alcohol consumption or hunting) that follow from this substitution effect would be the result of the external incentives created by the new law.

In addition to these incentives, the laws may affect the evolution of preexisting social values through internalization. The new law may express values that are internalized by people and gradually modify pre-existing social opinions (internalization).[11] In this case, the new laws receive public acceptance and affect current opinions.[12] In our working example, a new statute that prohibits alcohol consumption or that establishes animal-rights expresses a value that may be internalized by individuals. If individuals internalize the value expressed by the law, the law could increase its effectiveness, and potentially affect behavior even

[9] See Tyler (1990) with respect to law, and Tyler & Huo (2002) with respect to the decisions of authorities.

[10] The findings of Sunshine and Tyler (2003) extend prior research by the author (Tyler, 1990) and support the arguments of Weber (1968) about the normative basis of public reactions to authority. Tyler (1994) evaluates the role of procedural justice in shaping reactions to legal rules and policies. People might comply with a law or a decision by an authority when it is obtained through deliberations that they view as procedurally just, even when the outcomes are not favorable to them. Often preference is accorded to procedural justice even over distributive fairness.

[11] This is similar to the expressive function of law studied by Cooter (1998)

[12] According to Cooter (2000), citizens are often willing to pay to do their civic duties, among which following the rules. Enacting a strict law, that punishes heavily a given behavior, is a clear signal that the State considers of primary importance that citizens are deterred from performing the sanctioned action. A law with a strong expressive power is a law citizens are willing to pay a lot to obey and this effect outweighs the possible effect of countervailing social norms.

in the absence of direct incentives. In the specific example, non-legal enforcement mechanisms could be triggered. Individuals who internalize the value expressed by the law could engage in first-party enforcement, suffering guilt or shame when violating the prohibition. Likewise, second-party and third-party enforcement could be carried out by non-smokers and animal-right activists against those who violate the prohibition. Internalization of the value expressed by the law reduces and possibly eliminates the need to enforce the legal incentives.[13]

A new law that is contrary to current social values or more restrictive than what the average person would support may trigger opposition by seeming unfair. In our example, if the new legal prohibitions clash with existing social values, they may induce reaction. A statute that prohibits alcohol consumption would likely lead to negative reactions and uproar if enacted and strictly enforced in a community accustomed to regular alcohol consumption. Likewise an animal-rights statute could trigger negative reactions and protest if enacted in a community of hunters. The degree of reaction to a law would vary according to the extent to which the legal prohibition aligns with prior social values. Individuals can generally show opposition to unfair laws by openly expressing their dissent or ostensibly engaging in civil disobedience. By engaging in one of these forms of protest individuals reveal their values to others.[14] Negative social reactions to the new law may weaken and undermine the effects of legal intervention. In this paper we show, through an opinion formation process, that negative reactions by some individuals may reinforce other individuals' dislike of the law. If the expressive power of the law is not very strong, a sudden increase in the strictness of the law may lead to countervailing effects, where the situation after the legal change is one with high protest and an increased rate of violations compared to the initial situation. An initial reaction to unfair laws may occasion a shift in equilibrium behavior opposing the intended effect of the law. [15]

When legal innovation is not aligned with preexisting social values, internalization and reaction will play opposite roles. The ability of a new law to achieve its goal depends on the relative magnitude of incentive, internalization and reaction effects. A law will have a positive marginal impact on behavior when the sum of incentives and internalization outweighs the reaction effects. In the following Sections we will study the dynamic interaction of these three factors and their impact on legal compliance, identifying several possible scenarios.

3 The Model

Imagine a simple framework, where there is one action *a*, which the law can either allow or forbid. For instance, we might think of actions like smoking in

[13] Another interesting example concerning tax compliance can be found in Posner (2000).

[14] In many instances, protest may be a more powerful vehicle of opinions than actions and thus prove to be a more effective way of combating unfair laws. Violations of the law can be the result of civil disobedience, but they can also be motivated by private benefit. It is difficult for observers to disentangle the real motivation of violators.

[15] For an empirical analysis of cases where the law had countervailing effects, see Parisi and von Wangenheim (2006) and references therein. See also Robinson (2000); and Stuntz (2000).

public spaces, illegally copying recorded music, or carrying out abortions. The law can either allow or forbid such actions under specified circumstances.

When the law prohibits an action, it may also provide a sanction and choose a level of enforcement to punish those who violate the prohibition. The sanction can vary in both its severity and frequency of application. For simplicity, we assume risk-neutrality and define S as the expected sanction in case of non-compliance. S increases as the severity of the sanction or the level of its enforcement increase. We also consider laws prohibiting the action without providing any sanction, in which case $S = 0$.[16]

An enacted law without an enforceable sanction ($S = 0$) only fulfills an expressive function. We define L as the expressive power of the law. When individuals internalize the value expressed by the law, laws can begin producing their effect even prior to enforcement. Laws with higher values of L have stronger expressive power and are more likely to affect behavior independently of the enforcement of legal sanctions. Moreover, L is clearly zero if no law regulates activity a. Similarly, if $L = 0$ then $S = 0$, since no sanction can be imposed in the absence of law.[17]

Individuals hold prior opinions on what they perceive to be desirable or undesirable behavior. Let v_i denote the individual's value judgment of how wrongful or socially undesirable action a is. A low value of v_i means that individual i believes that it is fine to perform action a, whereas a very high value of v_i implies that individual i considers action a highly wrongful or undesirable. It is therefore natural to consider v_i as the individual psychological cost of performing action a and an indicator of what constitutes just punishment if a is committed. Values v_i are distributed in the population according to the density function $f(v)$, and $F(v)$ is their cumulative distribution. We assume that $f(v)$ is single-peaked.

The values of v_i are initially opaque, but can be revealed to others through the expression of opinions about action a and about laws regulating and sanctioning a. Let p_t be the proportion of individuals who approve of a and/or protest against a law that sanctions a at time t. In the following, we will briefly say that $1 - p_t$ is the fraction of individuals that agree or otherwise acquiesce to the law.

To simplify the analysis, we assume that individuals can voice two possible opinions: accept the law as imposing an adequate sanction or object to the law for being too restrictive or severe.[18] To understand how the process of opinion

[16] A negative value of S would be a subsidy to the activity. We refrain from discussing this case in detail, but our results could be easily extended in this direction.

[17] However, the opposite is not necessarily true, as we can have an enacted law that prescribes no sanction in case of violation, as well as situations where nominal sanctions are left without enforcement. We will discuss this special case below, in Section 6.2.

[18] There are several examples of protest against laws that were perceived by society as being too lenient. For instance, consider the protest that followed decriminalization of homosexuality amongst adults in Germany in the sixties or the recent protest in Italy following a proposed bill allowing gay marriage. Similarly, the promulgation of laws supporting a woman's right to terminate a pregnancy have given rise to political and social battles over abortion rights in many countries. In the US this happened in 1973, with the Supreme Court decision Roe v. Wade. . We argue that this type of protest is likely to have no countervailing effects on behavior. As

formation proceeds, it should be recalled that individuals with a high value v_i are more likely to disapprove of action *a*, whereas those with a low v_i are more likely to accept *a*. Similarly, those with a low v_i are more likely to protest against a law prohibiting and sanctioning action *a*.[19] However, the expression of opinions and protest are costly. Some of these costs are financial opportunity costs, like taking time off work or leisure to protest against an unjust law. Some others are psychological costs, like the cost of expressing opinions that run contrary to prevailing social norms. Such psychological costs will be lower when an individual's preference regarding *a* and her possible dislike of the law are also reflected by the expressed social preferences and by a generalized discontent. We thus assume that an individual's choice to publicly support action *a* and to protest against laws sanctioning *a* is also influenced by the observation of p_t.[20]

Consider first a case where no law regulating action *a* is implemented. An individual with value v_i will express an opinion in favor of *a* when the cost of expressing such opinion is not too high and the same opinion is widely supported by others in the group. Analytically, an individual supports action *a* if and only if

$$v_i \leq \lambda p_t - c_p \tag{1}$$

where the parameter c_p is the opportunity cost of protesting. The parameter $\lambda > 0$ measures the effect that the views of others have on individual opinions. The proportion of approving individuals reveals the current social norm: when many people express an opinion in favor of action *a*, society believes that *a* should be allowed. Consequently, any legal rule prohibiting *a* and any associated sanction may be deemed as unduly restrictive or unjust.

Consider now the case where a law exists, prohibiting action *a* and assume that a sanction *S* is levied against infringers. The presence of a sanction unambiguously increases the share of people expressing opinions in favor of action *a*, thus supporting those who engage in action *a*.[21] To understand why, it should be

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mentioned above, when people protest against a law being too strict, they protest against its enforcement, which might reduce the "social stigma" for those violating the law, thus lowering deterrence. When people protest against a law being too soft, this effect on deterrence is absent, and we might even observe private enforcement of social norms, with the imposition of private sanctions. This may result in strengthened deterrence and further reduction of violations. There is evidence that antiabortion activities have had a significant impact on the reduction of the quantity of abortion services demanded and supplied in the US (Kahane, 2000).

[19] As mentioned above, opposition could be in the form of either open expression of dissent or civil disobedience. The latter, however, is likely to be a less powerful tool of opposition (*supra note 14*). In what follows, we therefore neglect civil disobedience and consider only the expression of dissent as a means of protest.

[20] This assumption is compatible both with models of opinion-formation and information cascades (see Bikhchandani et al., 1992) and with models studying the evolution of social norms (see Binmore and Samuelson, 1994; Sugden, 1998).

[21] The intuition behind this statement can be provided by the following example. Consider the case where individual *i* believes that sharing music over the internet is wrongful and believes that somebody downloading one song should be fined $10. Now assume that the law prescribes a fine equal to $2000. Such an individual could disapprove of the excessive harshness of the law and empathize with the "wrongdoer" who suffers a harsh punishment for such a minor crime.

recalled that v_i represents an indicator of what individual *i* believes it is a just punishment for *a*. Therefore, individual *i* will considered a law as too strict if the legal sanction *S* exceeds his perceived just punishment, $v_i < S$. In principle, all individuals with $v_i < S$ disapprove of the law. However, due to the above mentioned costs, only some of these individuals will actively express opinions and engage in protest. Others, though disliking the law, will acquiesce to a new law. Acquiescence will be more likely when the law does not depart too substantially from individual *i*'s preexisting belief v_i and/or when such individual find himself alone in carrying out the protest. The individual will instead protest when the law substantially departs from his or her belief and/or protest is widely carried out by others in the group. Analytically, an individual chooses to protest against the strictness of the law, if and only if

$$S - v_i \geq c_p - \lambda p_t \tag{2}$$

which implies that all individuals with

$$v_i \leq S + \lambda p_t - c_p \tag{3}$$

do protest.[22]

Define as $\Delta p_t = p_{t+1} - p_t$ the change in the proportion of individuals supporting action *a* and protesting against the strictness of the law in each period. Assume that only a small, randomly chosen fraction σ_p of all individuals whose value v_i satisfies the condition expressed by equation (3) adapt their behavior in each time period. The expected proportion of violators at time $t+1$ is given by

$$p_{t+1} = \left(1 - \sigma_p\right) p_t + \sigma_p F\left(S + \lambda p_t - c_p\right) \tag{4}$$

so that

$$\Delta p_t = \sigma_p \cdot \left(F\left(S + \lambda p_t - c_p\right) - p_t\right) \tag{5}$$

Finally, to simplify the analysis, we have made the implicit assumption that protest is not affected by the enactment of a law without an enforceable sanction. Therefore a merely expressive law without an enforceable sanction does not trigger protest. This assumption will be relaxed in Section 6.3.[23]

[22] Note from equations (1) and (3) that all individuals supporting action *a* in the absence of a sanction also support it when a sanction is introduced. Moreover, all those supporting *a* when $S = 0$ will protest against the strictness of the law as soon as $S > 0$ is introduced. Hence, expressing an opinion in favor of *a* and protest are the same thing when $S > 0$. It should also be noted that an increase in the sanction may raise the number of protesters, since now both those who approve *a* and those who believe that the sanction is excessively harsh may protest against the law.

[23] From an empirical point of view, such an assumption is especially plausible in all cases where the expressive effect on opinions is small, as it seems to be in all examples presented above (copyright infringement, abortion, gay rights). Moreover, the expressive effect is likely to be much smaller in the case of opinions than in the case of infringement, since the main reasons why people tend to internalize a law are their taste for obedience and second and third party enforcement.

We now turn to the effect that enacted laws and threatened sanctions have on individual decisions to perform action *a*. When a new law is enacted, individuals have two possible choices: they can either comply or violate the law. Let x_t and *1* - x_t be the respective proportions of individuals who violate and comply at time *t*.

In order to decide whether to violate a legal prohibition, individuals compare the costs and benefits of performing activity *a* as usually described. Let B be the benefit of performing the action *a*.[24] The costs of violating a legal prohibition are given by $v_i + S + \delta(1-x_t) - \beta p_t + L$, which is the sum of the individual psychological cost v_i, the expected legal sanction *S*, the loss due to social stigma $\delta(1-x_t)$, which is larger the fewer individuals violate the law $(\delta \geq 0)$ and *L*, the internalized value expressed by the law. The costs of infringing a legal prohibition are lower when society has expressed a disapproval of the new law. The larger the number of people that oppose the law through objection or protest, the lower the individual's cost of a legal violation. The parameter $\beta > 0$ measures the impact of social opinions and norms on individual choices.[25]

Given these costs and benefits of legal compliance, the individual will decide to violate the law if and only if

$$v_i \leq B - S - \delta(1-x_t) + \beta p_t - L \qquad (6)$$

This indicates that an individual violates the law only if his internal belief regarding the desirability of the prohibited activity compensates for the expected net costs associated with violating the law.

Recall that the various factors that enter the expressive function of law are captured by the parameter $L > 0$ in equation (6). These include people's intrinsic taste for obeying the law, as well as the impact of law on first-, second- and third-party enforcement. All these expressive effects of law are represented in our model. As it can be seen from equation (6), the higher the expressive value of the law, *L*, the lower the propensity of the individual to break the law.

Applying the same argument we used for the dynamics of opinions and protest p_t, we get:

$$\Delta x_t = \sigma_x \cdot \left(F\left(B - S - \delta(1-x_t) + \beta p_t - L \right) - x_t \right) \qquad (7)$$

[24] For simplicity, we assume *B* to be the same for all individuals and concentrate all heterogeneity in v_i.

[25] In the process of opinion formation we have described above we have ruled out an impact of the proportion of violations on opinions and protest. However, protest might be a cause of social stigma, thus inversely related to the frequency of violations. The expression of an opinion criticizing the sanction might indicate that those who protest are "wrongdoers". For example, if somebody protests against heavy sanctions for the personal use of drugs, this might induce other people to think she is herself a drug user. To simplify our presentation, we don't consider this effect. Our assumption may well be justified by the argument that one would expect the effect of expressed social norms on behavior to be much larger than the reverse effect. It is possible to show that extending the model in this sense would not change our main results.

which describes the dynamics of the proportion of violators. Equations (5) and (7), respectively expressing the dynamics of protest and violations, are the core of our model of co-evolving social norms and behavior.

3.1 Long – Run Equilibria

By definition, the dynamics described in equations (5) and (7) reach an equilibrium (steady state) if and only if $\Delta p_t = 0$ and $\Delta x_t = 0$, *i.e.* when $p_{t+1} = p_t = p$ and $x_{t+1} = x_t = x$, so that both the levels of activity and protest remain constant and equal to x and p from the time when the equilibrium is reached onwards.

Equating the expressions for Δp_t in (5) and for Δx_t in (7) to zero, the equilibrium values of x and p are given by the simultaneous solution of

$$p = F\left(S + \lambda p - c_p\right) \tag{8}$$

and

$$x = F\left(B - S - \delta(1-x) + \beta p - L\right) \tag{9}$$

for x and p. Formal proofs are relegated to Appendix A.

Figure 1 plots the function $p(x)$ implicitly defined by equation (9). As shown in the figure, the function $p(x)$ may have a decreasing part for intermediate values of x. [26] In such a case, there might be either one or three equilibria. The horizontal lines in Figure 1 represents equation (8), which does not depend on x and is therefore parallel to the x axis. We might have a unique equilibrium when p^* is high enough (specifically, when the horizontal line at p^* lies above the maximum of the function $p(x)$) or p^* is low enough (and the horizontal line lies below the minimum of $p(x)$). These cases are depicted by the dashed lines in Figure 1. Whenever the equilibrium value of p lies between the maximum and the minimum of $p(x)$, we have three equilibria. The solid line in Figure 1 represent this latter case, since it lies between the maximum and the minimum of $p(x)$.

Intuitively, when protest is very high, its impact on action is decisive and a unique equilibrium with a high frequency of action ensues. Similarly, when protest is very low social norms are aligned with the law and this weighs in favor of legal compliance leading to equilibria with a small fraction of violators. When current protest is neither too high nor too low, the observed levels of legal compliance may affect others' behavior towards equilibria with either high or low frequencies of infringement.

Interestingly, not all the equilibria are dynamically stable. Only stable equilibria resist small shocks that change the frequency of both protest and action. It is therefore important to distinguish stable from unstable equilibria as only the

[26] As proven in Appendix A2, there exist parameter constellations under which the function in equation (9) is monotonic (typically, always decreasing). However, these extreme cases seem to be neither empirically relevant nor analytically interesting. Therefore we do not analyze them in detail.

former can be long-run rest points of the dynamics, whereas the latter constitute only temporary solutions.

As proven in Appendix A3, whenever the equilibrium is unique, that equilibrium is also stable. Conversely, when there are three equilibria, the one with the intermediate level of x is always unstable, whereas those with low and high x and unique equilibria are always stable. In Figure 1, stable equilibria are represented by black circles, whereas unstable ones by empty circles.

4 The Functions of the Law: Incentives and Expression

As we have previously discussed, the law affects behavior through different channels. First of all, according to the traditional view, the law affects individual choices through deterrence. Secondly, the law operates though expression and internalization. In this Section we will give a full account of all these possible effects of law, as well as their important interactions. In Section 5 we will build on this model to consider the case in which the message of the law interacts with social opinion generating possible countervailing effects on behavior.

We will proceed discussing how changes in the law, intended both as the introduction of a new law and as variations in the level of the sanction S, affect the equilibrium value of p determined through equation (8), as well as the function $p(x)$.

Applying the implicit function theorem to equation (8) yields:

$$\frac{dp^*}{dS} = \frac{f(\cdot)}{1-\lambda f(\cdot)} \tag{10}$$

As shown in Appendix A3, $\lambda f(\cdot)$ is less than unity in the correspondence of stable equilibria. Then we know that the derivative in expression (10) is positive for stable equilibria. Hence p^* increases in S. In other words: a more severe law induces higher stable-equilibrium values of protest and vice-versa.[27]

Totally differentiating equation $p(x)$ obtained in (9) we can see that an increase in the fine S shifts $p(x)$ upwards in terms of Figure 1:

$$\frac{dp(x)}{dS} = \frac{1}{\beta} \tag{11}$$

since β is positive. Conversely, the graph of $p(x)$ shifts downwards when S decreases.

[27] Situations where an increase in the severity of a law which is generally considered too strict reduces the current level of protest are extremely rare in the real world, especially in the short run. The model could be extended to consider this case by introducing the expressive effect on opinions and assuming it is large enough.

We are now ready to discuss the effect of a change in the law on the equilibrium levels of protest and activity which will be reached. In the following we consider cases for which the results are independent of the speed by which protest and action react to legal changes. In the subsequent Sections we will consider two further effects, the existence of which does depend on the idea that changes in protest may occur faster than changes in aggregate behavior.

4.1 The Role of Incentives

In order to evaluate the impact of the feedback process between protest and action assume initially that neither affects the individual decision of whether to violate the law. This implies that both β and δ in equation (6) are equal to zero. It also implies that the law has no expressive value, so that *L=0*. Hence the decision to violate the law is affected exclusively by the benefit *B*, by the sanction *S* and by the personal value v_i.

According to basic cost – benefit analysis, individual *i* violates the law if and only if $B \geq v_i + S$, *i.e.* if $v_i \leq B - S$.

In such a simple framework, the proportion of violators is fixed and equal to

$$x = F(B - S) \tag{12}$$

where $x > 0$ if and only if $B > S$, else $x = 0$.

The effect of a change in *S* on the frequency of legal violations is consistent with the prediction of the conventional economic model: an increase in the sanction reduces violations. In fact, totally differentiating expression (12), we have

$$\frac{dx}{dS} = -f(B - S) < 0. \tag{13}$$

Clearly, then, a decrease in *S* increases *x*.

We shall now consider how the result of the conventional model of legal deterrence is changed when we allow for social protest and observed levels of legal violation to affect individual compliance decisions.

4.2 The Role of Expression and Internalization

In this subsection we look at the impact that expression and internalization have on legal compliance. In the previous analysis, we have discussed the expressive effects of law by considering a law that prohibited action *a* (so that $L > 0$) and to which a sanction $S > 0$ was subsequently applied.

To examine this case and separate the expressive effects of law from the effects of deterrence, we will consider a case where a law is passed that prohibits action *a* but does not provide a sanction in case of violations. What happens when a new law is passed, which prohibits an action *a* but imposes a sanction $S = 0$?

As it will be seen, the enactment of law without a sanction has no incentive effects. If expressive effects are present, the legal change will nevertheless cause a "one-time" jump upward in legal compliance.[28] Let us assume that initially action *a* is not regulated by any law. The level of activity in that case would be

[28] Successive changes in *S* after the implementation of the law will only affect compliance through expression (11).

$$x = F\left(B - \delta(1-x) + \beta p\right) \tag{14}$$

since both *S* and *L* are zero. The level of activity thus depends only on expressed opinions *p* and social stigma $(1-x)$.[29] Equation (14) identifies a function $p^{NL}(x)$ (where the superscript *NL* stands for "no law"), which has the same characteristics as the ordinary function $p(x)$ we have seen so far.

Assume now that a law prohibiting *a* is passed, but that no sanction is introduced to punish violations. In this special case, the level of activity (that now becomes the level of violations) is

$$x = F\left(B - \delta(1-x) + \beta p - L\right). \tag{15}$$

As it can be seen in Figure 2, after the introduction of the law, the schedule $p^{NL}(x)$ moves upwards to $p(x)$, whereas expressed opinion *p* does not change. The law thus leads to a new equilibrium with a reduction in the levels of the (now prohibited) activity, even if no sanction is actually threatening violators.

Therefore the simple introduction of the law moves behavior in the direction desired by the legislator, as in Cooter (1998, 2000). Here internalization works in the sense of increasing the individual's cost from performing action *a* by adding the extra cost *L*, representing the psychological cost of disobedience (first-party enforcement) plus second- and third-party enforcement.

This result has interesting policy implications. The enactment of a new law without a corresponding sanction for violators helps the subsequent enforcement of a sanction. As argued above, the introduction of the law prohibiting *a* without a sanction reduces activity with almost no effect on expressed opinions. Thanks to expression and internalization, the law obtains the desired effect: prohibition of an action leads to the reduction in the level of activity.

Although the reduction in activity produced by the expressive effects of law may be limited and insufficient for adequate levels of compliance in the absence of an enforceable sanction, the enactment of a law without sanction ($L > 0$; $S = 0$) may usefully prepare the ground for legal enforcement. The immediate enforcement of a sanction to punish violators could spur protest, which could lead to countervailing effects, as we will show below. A two-stage legal intervention with delayed enforcement of an enacted law may avoid some of these problems.

Lawmakers can thus exploit the expressive value of a law strategically. By introducing a law without a sanction, the legislator induces a (possibly small) decrease in activity. When the sanction is then introduced, at a subsequent stage, and protest starts, the level of activity *x* is lower than it would have been in case of immediate legal enforcement with an increased likelihood that the law will produce its intended effects. We will prove this in Section 6.2.

[29] In should be noted that in this case stigma is simply the desire to conform to the prevalent behavior in the society and not violate a social norm. For example, one may feel bad if they lit a cigarette in a room where nobody else smokes.

5 Feedback and Social Reaction: Rethinking the Effects of Legal Intervention

In the previous Section, we developed a model to study the incentive and expressive functions of the law. In this Section we will extend the analysis to study the important interactions that incentives and expression have on the creation of deterrence when the adoption of a new law generates "social feedback." As it will be seen, when a social feedback is triggered by legal intervention, the reinforcement of a legal sanction can have countervailing effects on behavior. In some cases, this may undermine the goals pursued by the lawmaker.

In this Section we will study the interaction of the two effects studied in Section 4 (incentives and expression) with social feedback, considering how the three affect deterrence. We refer to the aggregate effects of these three factors on deterrence as "net deterrence." As it will be seen in subsections 5.1 and 5.2, net deterrence can be positive or negative. With positive net deterrence, the objective pursued by the lawmaker can be achieved, in spite of the negative social feedback. This case is studied in subsection 5.1. With negative net deterrence, the impact of the negative social feedback dominates the effects of incentives and expression. This case is studied in subsection 5.2. In subsection 5.3, we will consider a possible use of social reaction as a policy instrument. The dynamic effects of social reaction are used instrumentally by the lawmaker to achieve policy objectives.

We shall proceed considering the feedback between expressed opinions p and action x when a lawmaker implements a change in the severity of the sanction S. The equilibrium levels of x and p are again given by equations (8) and (9) and the impact of a change in the sanction S is described by expressions (10) and (11).

5.1 The Case of Positive Net Deterrence

Assume first that the impact of a change in S on expressed opinions is relatively weak compared to the impact that sanctions have on behavior through incentives (impact of S on the frequency of violations x). Formally, this implies that

$$\frac{dp(x)}{dS} > \frac{dp^*}{dS} \tag{16}$$

which means that a change in S, starting from a given equilibrium, induces a shift in the graph of the function $p(x)$ that is bigger than the shift in the horizontal line p^*.[30]

With an increase in S the law becomes more severe. The lawmaker increases the sanction to boost incentives and reduce the frequency of violations. An increase in the expected sanction shifts the graph of $p(x)$ upwards by more than it shifts the relevant p^* upwards (cf. Figure 3.a). As a consequence, the horizontal line $p^{*\prime}$, corresponding to the new equilibrium level of protest,

[30] Note that we are considering a change in the sanction of a law that is already in force ($L > 0$).

intercepts the new schedule $p(x)'$ only once.[31] Hence the equilibrium on the increasing right branch of $p(x)$ in the vicinity of the local minimum disappears. The system will therefore move (following the arrow in our figure) to a new equilibrium defined by a slightly increased equilibrium level of protest p^{*}' and a sensibly lower level of violations. The little increase in the severity of the sanction has a small positive impact on protest but radically reduces the number of violations.

In terms of our model, this effect occurs when the impact of expressed opinions on behavior (measured by β in equation (9)) is small enough to be completely outweighed by the incentive effect of *S*. An increase in legal sanctions induces "positive net deterrence," since the incentive effects produced by a severe legal sanction prevail over the effects that the sanction has on protest. Legal intervention in this case yields its intended result, albeit with a reduced impact due to the effects of social reaction.[32]

We should complete the analysis considering the impact of a decrease in *S*. In this case, a reduction in *S* will cause a reduction in incentives that dominates the mitigation in social reaction. A reduction in *S* will thus lead to an increase in the equilibrium activity level. The mechanism justifying this result is the same beneath the "positive net deterrence". Under these parameters, a decrease in the sanction reduces positive incentives and this effect prevails on the indirect effect of the reduction in protest on behavior. In the following subsection we will discuss the case of "negative net deterrence," in which the impact of a change in the sanction *S* is stronger on expressed opinions than on activity.

5.2 The Case of Negative Net Deterrence: Countervailing Effects of Legal Intervention

The incentive effects created by legal intervention do not always dominate those produced by social reaction. When the countervailing effects of legal intervention are sufficiently strong, unjust laws may produce negative net deterrence. Assume now that $\frac{dp^{*}}{dS} > \frac{dp(x)}{dS}$: this means that a change in *S*, starting from a given equilibrium, induces a shift in the graph of the function *p(x)* that is less than the shift in the horizontal line p^{*}. This implies that the initial impact of the sanction on protest is stronger than the impact on behavior.

When the inequality above holds, an increase in the sanction has an effect that yields exactly the opposite outcome than what observed in subsection 5.1. Paradoxically, in spite of increased positive incentives we observe an increase in the level of violations. That is why we term this case "negative net deterrence".

To see how legal enforcement $S > 0$ can have counterproductive effects, consider Figure 3.b. The horizontal line p^{*}', corresponding to the new equilibrium level of protest, intercepts the new schedule $p(x)'$ only once. This time, however,

[31] The increase has to be slight. To observe the result described, the new horizontal line *p*'* must lie below the maximum of $p(x)'$.

[32] This effect builds on the self-reinforcing mechanism of formation of social norms: the more individuals adhere to a norm, the more are willing to follow it.

the equilibrium will be on the right-hand increasing portion of $p(x)$ and the equilibrium on the left-hand increasing branch, close to the local maximum, disappears. The system moves to a new equilibrium defined by much higher equilibrium levels of both protest p^{*}' and violations. A stricter law will induce a higher number of individuals to express their opposition. By way of an avalanche, this will induce additional individuals to voice their disapproval of the law. The large number of protesters will eventually sustain a higher level of violations. The new stricter law has counterproductive effects, ultimately defeating the lawmaker's policy objective.[33]

Such effect is more likely to occur in our model when behavior is strongly affected by the amount of protest (i.e. β is large) but reacts relatively weakly to the size of the sanction. Figure 3.b also reveals that such effect is more likely to occur if the original equilibrium is close to the local maximum of the graph of $p(x)$ (and, of course, on its upward-sloping branch). In that case, even a slight increase in *S* could result in negative net deterrence.

This effect is an example of the possible countervailing effects of social intervention. Here the impact of the public response on behavior more than offsets the incentive and the expressive effects of law, leading to negative net deterrence.[34]

This is exactly what happened in response to increased sanctions against copyright infringers and music downloaders in the US in the summer of 2003. It is estimated that the number of music downloaders using major P2P platforms fell in September 2003, when the Recording Industry Association of America (RIAA) started suing individuals who downloaded and shared music files over the Internet. However, strong negative reactions and protest occurred both among music downloaders and individuals who did not download. By October 2003, *i.e.* just one month later, downloading activity had resumed to a level much higher than before the RIAA started suing.[35]

It should finally be noted that in some situations the effects of social protest will perfectly offset the incentive and expressive effects of legal intervention, leading the limiting case of "zero net deterrence." Formally, suppose $\frac{dp^{*}}{dS} \approx \frac{dp(x)}{dS}$. Then both the equilibrium value p^{*} and the graph of the function $p(x)$ shift upwards by approximately the same amount. If the change in the law is small enough and the impact of a change in *S* on p^{*} and $p(x)$ is almost the same, the new equilibrium will be very close to the original one. In general, protest will

[33] This "avalanche" process is due to the fact that the increase in protest due to the new law allows it to reach a critical mass. A similar effect can be found also in Kuran (1989), in his seminal paper on East European sudden revolutions.

[34] If this effect occurs in various, possibly interrelated fields of law, a revolution is factually taking place, in a fashion similar to that described by Kuran (1989).

[35] See Borland on CNET News.Com, Dec. 4, 2003.

increase by a small amount and the level of the regulated activity may increase or decrease, but only slightly.[36]

A decrease in *S* has similar effects. Both the graphs of equilibrium protest and action shift down by approximately the same amount. The final level of protest unambiguously decreases, whereas x^* can either increase or decrease by a small amount.

5.3 A Normative Corollary

An interesting policy corollary can be formulated at this point.

This policy corollary concerns the use of the countervailing effects of social reaction as a policy instrument. Due to their peculiar characteristics, lawmakers could make instrumental use of the countervailing effects of law and increase deterrence by softening legal enforcement. This paradoxical effect is the mirror case of what we termed "negative net deterrence" above. When $\frac{dp^*}{dS} > \frac{dp(x)}{dS}$, a decrease in the expected sanction shifts p^* downwards by more than it shifts downwards the graph of $p(x)$ (cf. Figure 3.c). The new line p^{*}', corresponding to the equilibrium level of protest after the sanction has been decreased, intercepts the new schedule $p(x)'$ only once. If the jump in p^* relative to $p(x)$ is large enough, in the final situation there will be a unique equilibrium (B in Figure 3.c) on the left-hand increasing branch of $p(x)'$. The equilibrium on the increasing branch close to the local maximum disappears. Thus the system moves to a new equilibrium defined by much lower levels of both protest p^{*}' and violations. A more lenient law substantially reduces the number of individuals who express their opposition to the law. The perceived social norm will then be much less favorable to violators who, notwithstanding the reduced sanction, will be induced to refrain from committing action *a*.

The effect of the reduction in *S* can thus be used strategically by the legislator. Suppose that a law prescribing a high sanction has had unexpected countervailing effects, leading to point A in Figure 5c. Alternatively, suppose that a legislator wants to reduce the level of violations of a very controversial law, which raises a lot of protest. Then there are situations where the best policy is not to increase the punishment but, paradoxically, to reduce it. An increase in the sanction would in fact lead to an unambiguous increase in violations, whereas a decrease reduces them.

Again, this strategy might work in case of copyright infringement and sale of counterfeit goods. In Italy, for instance, a reduction in the sanction has been extensively advocated. Provocatively, we might say that society would feel much less pity and protest a lot less if an individual who has downloaded tens of thousands of songs is fined a few hundred dollars than if a single mother of three is

[36] In particular, only if $\frac{dp^*}{dS}$ is slightly greater than $\frac{dp(x)}{dS}$ (that is, if the effect of protest on the amount of action β is large), will the amount of action increase in the new equilibrium, otherwise it will decrease. This statement may be proven by applying the implicit function theorem to the system of equations (8) and (9).

fined $222,000 for having downloaded 24 songs from the internet ($9,250 per song downloaded).[37]

6 Legal Intervention and the Dynamics of Opinion Formation

So far we have assumed that legal intervention has effects on both behavior and protest, and that both of these variables react at the same speed to changes in the law. The direct implication of this assumption in our model is that the schedules p^* and $p(x)$ shift simultaneously. Sudden large reactions to minor legal changes were possible when the number of equilibria declined.

In this section, we discuss two effects which may entail sudden large reactions to minor legal changes even when no equilibrium disappears. Both effects are based on the countervailing effects of social protest and are observed when the initial enforcement of a new legal sanction has a more immediate impact on protest than on the level of compliance (action). According to their theoretical basis, we call these effects the "announcement effect" and the "social acceptance effect." The first of these effects may be explained with the very simple version of the model we used so far, while the other requires the introduction of slight variations.

6.1 Delaying the Entry into Force of Law: The Announcement Effect

Changes in the law are usually announced some time before a new law takes effect, at least as far as statutory law is concerned. The idea of the announcement effect is the following: legal sanctions that are announced but are not yet applicable are unable to deter current behavior, but could nevertheless immediately trigger a social reaction. When the entry into force of an enacted law is delayed, social reaction is likely to be triggered before the law is able to produce its incentive effects. When the law eventually comes into force, it will be applied to a modified environment. Anticipatory protest may guide the social system into a different equilibrium from that we could expect when incentives and social reaction materialize simultaneously.

In terms of our model, the announcement of a more severe law would shift the relevant equilibrium schedule p^* upwards. The equilibrium amount of action depends on the level of protest expressed in equation (9) and in the function $p(x)$. In the period between the enactment of the law and its entry into force, violations are not yet deterred by sanctions, but behavior is affected by the observed social reaction. Due to this sequential shift of the two functions, the relevant equilibrium schedules p^* and $p^{*\prime}$ may cross the respective functions $p(x)$ and $p(x)'$ three times. Therefore, there may be two stable equilibria, both before the

[37] Such a fine was applied to a woman from Minnesota. See Jeff Leeds, Labels Win Suit Against Song Sharer, New York Times, Published: October 5, 2007, http://www.nytimes.com/2007/10/05/business/media/05music.html.

announcement of the new law and after the new law has become effective, while there is only one equilibrium during the transitional phase when there is only an announcement effect. A strict law may thus cause a short-term surge in the prohibited behavior. This level of action will remain unchanged for some time, until the new expected sanction is enforced. Since the equilibrium level of protest has already increased, while the function $p(x)$ has remained constant, this unique equilibrium has to be on the right increasing branch of $p(x)$ (cf. Figure 4). With a longer transitional phase, the system will get progressively closer to this unique equilibrium. When the legal sanction then comes into force, the incentive effects will be triggered, thereby lowering the activity level, but the system will be too close to the high-activity-level equilibrium on $p(x)'$ to leave its basin of attraction. Hence, after the transitional phase, the system will generate a high level of violations, in spite of the enforceability of the new legal sanction. At the same time, it will be characterized by a high level of protest against the severity of the law.

The announcement effect is due to the immediate upsurge of protest when the law is announced, before it is actually implemented. In order to reduce the impact of this effect on violations, it is important that protest is kept at a low level during the transitory phase. There are several strategies that the lawmakers could implement to avoid the announcement effect. Among them, four are worthy of mention: (i) shortening the lag between enactment and entry into force of the law; (ii) proceeding with piecemeal legislation; (iii) sunset clauses; and (iv) executive legal intervention. [38]

By shortening the enforcement time lag the lawmaker can reduce the duration of the transitional period. This leaves the social dynamics with less time to get into the basin of attraction of the high-activity-level equilibrium. For example, if in Figure 4 the higher sanction becomes effective when the system has evolved only to point C_1, the law would come into force when the evolved reality is still in the basin of attraction of the low-activity-level equilibrium and is thus most likely to evolve towards it. The normal dynamics of legal intervention studied in Section 5 would not be disturbed by a short-term announcement effect.

Piecemeal legislation may also solve the problem by avoiding the transitional increase of protest and disappearance of the low-activity-level equilibrium. In an initial phase, the lawmaker could implement the law with low sanctions to let both the high-activity-level equilibrium and the low-activity-level equilibrium persist. The announcement effect of a moderate law would then be sufficiently contained and would not disturb the normal dynamics of legal intervention studied in Sections 4 and 5. The first phase would then be characterized by a small sanction and a small reduction in the activity level. When the sanction introduced in phase one becomes effective, the social system will evolve towards the low-activity-level equilibrium as desired, because it will not have left its basin of attraction regardless of the duration of the transitional

[38] We could of course think of several other strategies. For example, limitation of the freedom of speech during the transitory phase would clearly reduce the social reaction, and possibly limit or eliminate the announcement effect. But it would violate modern constitutional or democratic principles.

phase.[39] Once the social system has evolved sufficiently close to the new low-activity-level equilibrium, the second step of the piecemeal legislation can be undertaken, with an increase in the sanction. The stricter law would trigger an increase in protest, but this reaction would take place in an environment characterized by higher levels of compliance, as obtained in the previous phase. In this way, by introducing small consecutive increments in the strictness of the law, piecemeal legislation could more effectively achieve the chosen policy objective and avoid undesirable announcement effects.

Another possible method through which lawmakers could mitigate the announcement effect when the enactment of a strict law is unavoidable is by introducing a "sunset clause." A sunset clause operates as a sort of termination date beyond which the law will expire and the sanction will go back to its original level. This potentially reduces protest and prevents the realization of the announcement effect. This was the tactic used by Congress when the U.S. Patriot Act was passed on October 24, 2001, just a few weeks after the terrorist attack on the World Trade Center in New York. The Act contains some substantial reductions of human rights, justified by the need to protect one of the fundamental freedoms protected by the Universal Declaration of Human Rights, the freedom from fear.[40] Although the Patriot's Act was approved almost with no dissent in the aftermath of September 11, the law was set to expire in the year 2005. This was due to strong criticism that the Act excessively weakened the protection of civil liberties. After its "sunset", the bill was reauthorized (with no substantial change) in March 2006 and is now set to expire on December 31st, 2009. As we will see in the next section, the use of sunset clauses is also useful when people "adjust" to the new law over time.

Finally, one last strategy would be to avoid publicizing future legal changes while implementing them in a rapid fashion. A law enacted with no prior notice and rendered immediately effective would simultaneously trigger incentive effects and social reaction, generating a dynamic similar to the one we studied in Sections 4 and 5 above. There are several examples of rapid legal changes in both common law and civil law countries, notwithstanding the complex procedures to pass laws in the latter.

One example is the recent (November 2007) passing of a bill in Italy containing provisions to improve security and reduce crime after a woman was robbed, raped, and killed by a Romanian illegal immigrant. The main provisions in the bill are directed at immigrants, who can be repatriated not only if they reside in the country illegally but also if they are unable to prove that they have a job and enough income to make a living. The bill was passed using an expedited procedure to defeat protests claiming that the government was using immigrants as scapegoats and unfairly punishing the poor. According to the Italian procedure, the

[39] One should be aware that during the transitional phase random effects may more easily push the system into the basin of attraction of the high-activity-level equilibrium. Therefore, the small steps undertaken by the piecemeal legislation should not drive the transitory equilibrium too close to the maximum of the graph of $p(x)$, since then this equilibrium's basin of attraction is very narrow.

[40] The Act allows measures that in practice imply invasions of privacy, "scapegoating" immigrants and refugees, the creation of "extra-legal zones", most prominently at the naval base at Guantánamo Bay in Cuba. Finally, it implies a reduced American human-rights presence through the rest of the globe (see Koh in The Economist, 30th October 2003).

bill will have to be confirmed by the Parliament. In the meantime, however, it is enforceable. The announcement effect has been avoided.

6.2 Another Normative Corollary

A second policy corollary can be formulated at this point. This corollary refers to two-step legal intervention to maximize the impact of legal sanctions and to avoid the possible countervailing effects of announcement before actual application of sanctions. Figure 4 suggests that accelerated protest can sometimes be avoided with two-step legal intervention. To escape the countervailing effects of strict legal sanctions, a new law establishing a principle without legal enforcement might be a desirable first step. The introduction of the law without a sanction can be a strategy for expressing aspirational value and to lead to some gradual internalization of this value by community members. As shown in subsection 4.2, the expressive effect of a law can induce a (possibly small) decrease in activity, even in the absence of an enforceable legal sanction. This implies that the schedule $p(x)$ shifts upwards, crossing the line at p^* at a lower level of x. In the second step the lawmaker can introduce an enforceable sanction, which may not be applicable until some future date. The introduction of this sanction will unavoidably trigger an increase in protest without exerting any incentive effects on violations, but the effects of this protest will be mitigated by the prior internalization of the value expressed by the law. When the sanction is introduced in step two and protest increases, it is more likely that the final equilibrium will be on the initial increasing trait of $p(x)'$. To see why that might be the case, one should consider that when the announcement of the sanction triggers protest, the system starts from an equilibrium that is further away from the basin of attraction of the high-activity, high-protest equilibrium. It will thus take longer for the dynamics to reach the basin of attraction of such an equilibrium with countervailing effects. This gives the policymaker more time to implement the sanction S when the system is still within the reach of the equilibrium of the left increasing branch of $p(x)'$. By adopting a two step legal intervention, the lawmaker can avoid a problem of countervailing norms while accomplishing some of her policy objectives.

6.3 Getting Used to Unjust Law: The Acceptance Effect

Laws that are perceived as excessively strict or even unjust when enacted could be tolerated and eventually accepted over time. In this Section we allow for internalization to affect opinions in addition to actions. This is tantamount to saying that the expressive effect reduces protest.

Consider a situation where a new law is passed, increasing the sanction prescribed from a given level S_0 to a level $S > S_0$. Assume that protest p_t and its change Δp_t depend not only on the absolute size of the sanction S (as they did before), but also on how much it changed relative to the original value S_0.

Formally, this assumption can be introduced in our model by adding a term $\kappa_t \cdot \Delta S$ to the right-hand side of equation (3), where $\Delta S = S - S_0$ is the difference between the old and the new legal standard introduced at time t_o. The parameter

$\kappa_t > 0$ measures the way in which the change in *S* impacts on protest at time *t*. The change in protest is then given by the expression

$$\Delta p_t = \sigma_p \cdot \left(F\left(S + \lambda p_t + \kappa_t \cdot \Delta S - c_p \right) - p_t \right) \tag{17}$$

This assumption simply means that public opinion reacts not only when a new law contains a harsh and unjust sanction, but also when the new law departs substantially from the previous state of the law. For instance, if a given criminal action such as substance abuse in public spaces was previously punished with six months in jail and then a new law is passed increasing the sanction to five years, public opinion will react much more than in the case where the sanction is raised from four years to five years. Even if the prescribed sanction is similarly strict, the former change triggers greater reaction, given its substantial departure from the prior state of the law.

The assumption that protest reacts not only to the objective severity of the law but also to the extent of the change from prior law implies the existence of a "habituation effect": people adjust to the law over time, even to those laws that were initially perceived as unjust. Protest against an excessively strict or unjust law gradually fades. After their first reaction and protest, individuals have an opportunity to revise their beliefs. The social acceptance of the law could be a relatively slow process. In other words, the upsurge of protest and the change in opinions, motivated by the change in the law and by current protest, is much faster than the process of internalization. In terms of our model, internalization implies that $\lim_{t\to\infty} \kappa_t = 0$. In other words, when an individual internalizes the new law, he or she progressively reacts less to the difference between the new law and the original standard S_0. In the long-run (when $t \to \infty$), internalization is complete and $\kappa_t = 0$. An individual continues to oppose the law through protest if and only if $v_i \leq S + \lambda p_t - c_p$.

The idea behind this habituation effect is fairly straightforward. Recent experience of an excessively strict law induces a wave of protest which fades away as individuals get used to the higher legal sanction. Similar to what we observed in subsection 6.1, this wave of protest may shift the social system to an equilibrium characterized by higher levels of violations and protest compared to the levels that preceded legal intervention.

The long-run equilibria following legal intervention are then still expressed by the simultaneous solution of equations (8) and (9), given that the term $\kappa_t \Delta S$ converges to zero. To understand the short-run dynamics, however, one has to take into account the newly introduced term $\kappa_t \Delta S$. Before habituation to the new law occurs, the social dynamics triggered by the law are given by equations (7) for *x* and (17) for *p*.

Setting $\Delta p_t = 0$ in equation (17) yields

$$p = F\left(S + \kappa_t \cdot \Delta S + \lambda p - c_p \right) \tag{18}$$

which may be solved for p exactly as we did for equation (8).The difference now is that the solution depends on time t, since it changes as κ_t changes over time. As before, we concentrate on the case where only one solution exists and we simply denote it by $p^*(t)$. At the limit, for very large t, the solution of (18), coincides with that of (8). Referring to the discussion of the effect of a change in S on the solutions of (8) in Section 4, $p^*(t)$ increases in ΔS and the magnitude of the increase is proportional to κ_t.

The shock created by a legal rule that departs substantially from prior law can be similar to that produced by announcement before implementation, as discussed in subsection 6.1. To see this we can refer to the graphical representation of $p(x)$ and the solutions to equation (18). As usual, values of the parameters are such that $p(x)$ has a decreasing part and three equilibria exist before the legal change (cfr. Figure 5.a). Let the social system be close to the equilibrium with little action, equilibrium *A*. Now suppose that an increase in the legal sanction S induces an upward shift of $p(x)$ and p^* (the long-run equilibrium schedule for protest) to $p(x)'$ and $p^*{}'$ respectively. In the absence of the shock caused by the sudden and substantial legal change, the short-run and the long-run equilibrium would coincide and would take place at point A', with a moderate increase in protest and a decrease in activity level *x*. Viewed in this light, a policy decision to increase the sanction would seem sensible at first glance.

However, due to the additional effects produced by the sudden change in law, the short-run equilibrium level of protest $p^*(t)$ may increase substantially above the long-run equilibrium value $p^*{}'$. In particular, $p^*(t)$ may increase beyond the local maximum of $p(x)$. In that case, the social system is clearly attracted towards the intersection of $p(x)$ and $p^*(t)$ (point $B'_\Delta(t)$ in Figure 5.a), for which the value of x is far larger than in the original equilibrium *A*. When taking into account the possible reaction to the sudden legal change, an otherwise desirable decision to increase the sanction would not be advisable.

By assumption, people gradually adjust to sudden legal changes, so that the outburst in public protest is only temporary and κ_t slowly declines over time. Therefore, the short-run level of protest gradually decreases (at a speed given by the speed of social acceptance) and the schedule $p^*(t)$ moves back along the curve $p_a(x)'$. When $\kappa_t \Delta S = 0$, society has fully adjusted to the sudden legal change and the schedule $p^*(t)$ coincides with $p^*{}'$, the long-run equilibrium level of protest. However, given that all the intersections of $p^*(t)$ and $p(x)'$ along the increasing branch of $p(x)'$ are stable equilibria, the final situation will be at point B' in Figure 5.a. Protest has reached its long-run equilibrium level, but crime has increased as a consequence of legal intervention. Due to the initial reaction to the new law, legal intervention produces countervailing effects.

The case above should now be contrasted to one where lawmakers proceed in a stepwise fashion to avoid the initial reaction to sudden legal change. Consider a case where the lawmaker introduces gradual legal change (Figure 5.b). The objective of the lawmaker is to implement a legal rule S_1 while avoiding an initial

surge in protest that may have countervailing effects (point B_{Δ}^{1}). Assume that the government initially changes the sanction from S_0 to S_2, with $S_0 < S_2 < S_1$. Crime and protest would reach a short-term equilibrium B_2. Individuals would gradually adjust to the new legal rule and the final equilibrium will be point A', with a lower crime rate. The government could then move from S_2 to S_1. Given that this second legal change has a small ΔS, there will be a limited increase in protest. This would allow the lawmaker to reach a long-run equilibrium in A'' in Figure 5.b. The lawmaker has successfully avoided the countervailing effects by introducing stepwise legislation and avoiding sudden legal change.

Besides gradualism in the implementation of new laws, sunset clauses can help reduce the impact of what we have termed the "acceptance effect". Sunset clauses, by limiting the period of time during which a restrictive law is implemented, have the likely effect of decreasing κ_t, thus lowering the impact of the change ΔS on protest.

7 Conclusions

In this paper we have analyzed the interaction between law and social opinion. We have considered laws that do not align with pre-existing moral norms and social beliefs, thus allowing for paternalistic intervention aimed at manipulating social beliefs and behavior.

The law affects human choice by creating incentives and altering the cost of alternative behavioral choices. Legal rules can also affect behavior by promoting the individual internalization values expressed by the law. In this paper, we have shown that the effectiveness of legal intervention further depends on the "social response" triggered by the enactment and enforcement of a new rule. In general, it is likely that rules that depart from current social values trigger opposition, possibly leading to an upsurge in protest and in some cases to an increase in the level of violations.

We have studied the case where individuals in society can express their opinion on a given law by opposing and expressing their dissent regarding the enacted law. By engaging in protest and disobedience, individuals reveal their values to others. This may reinforce others' dislike of the law and lead to an increased level of legal disobedience. When laws clashing with existing social values are enacted, those social values may be crowded in. We have shown the interesting relationship between the expressive effects of the law and the feedback provided by the reaction of society to the new law. When society is very reactive to new laws, an increase in the strictness of the law may lead to countervailing effects featuring high protest and an increased rate of violations.

Countervailing effects may occur also when changes in the law are announced some time before they actually take effect. Given the complementarities between social protest and the level of activity that the new law is going to sanction, the raise in protest has the immediate effect of increasing the level of activity, before the new law is able to exert its incentive effects. To avoid this, lawmakers should minimize the time lag between enactment and enforcement of new statutes, introduce sunset clauses and proceed with piecemeal legislation.

The need to proceed with gradual enactment of strict laws yields an interesting normative corollary. Often, it is advisable to start by introducing a law without providing a sanction for infringers. The expressive effect of a law induces a decrease in activity, even in the absence of a sanction. At a later time an enforceable sanction can be introduced, which may not be immediately applicable. The introduction of this sanction will produce an increase in protest without affecting the rate of violations, but the impact of the increase in protest on crime will be mitigated by the expressive effect. Then it is more likely that the final equilibrium will be the one intended by the legislator.

Statutes intending to induce substantial shifts from current norms may have to proceed in a gradual fashion for a further reason. Often, social reaction depends not only on the absolute size of the sanction S but also on how much it changed compared to the initial level. To avoid countervailing effects, legal changes have to proceed in small steps with periodic upward adjustments in the severity of sanctions. Policymakers should also employ all possible means to keep protest down, such as sunset clauses.

Finally, our paper points out an interesting and somewhat paradoxical result: lawmakers can exploit the countervailing effects of protest and social reaction to increase deterrence by means of softer legal enforcement. The idea is that a more lenient law reduces protest, thus moving the perceived social norm towards one less supportive of violators. This effect of an increased perceived social disapproval counteracts the reduced incentives of the lower sanction. Surprisingly, if the impact of social norms is sufficiently high, a reduction in the sanction may actually reduce violations.

Future extensions should consider alternative instruments to optimize the net deterrence of intervention in a comparable dynamic setting. For example, when gradual adjustments are not possible, lawmakers could adopt instruments such as taxes to avoid triggering countervailing effects by taking advantage of their different framing power. More generally, future extensions of our analysis may provide valuable insights into the effect of positive and negative incentives. The rewards of a non-violation are traditionally seen as equivalent (in incentive terms) to the sanctioning of a violation. This equivalence may be lost when taking into account the expressive and countervailing effects of legal intervention. Rewarding those who comply with a law, for example, may be viewed as a softer and less restrictive instrument than punishing violators. While it is plausible that positive and negative incentives might have comparable expressive effects, it is also likely that they will differ to the extent they trigger social reaction. Finally, our analysis of the countervailing effects of legal intervention may clarify the optimal combination of probability and magnitude for a penalty in light of our results suggesting the countervailing effects of legal intervention. This might quite substantially change the policy recommendations drawn from the conventional model.

References

Bicchieri, Cristina (2006). *The Grammar of Society: the Nature and Dynamics of Social Norms*. New York: Cambridge University Press.

Bikhchandani, Sushil, David Hirschleifer and Ivo Welch (1992). "A Theory of Fads, Fashion, Custom and Cultural Change as Informational Cascades." *Journal of Political Economy* 58: 211-221.

Bar-Gill, Oren and Alon Harel (2001). "Crime Rates and Expected Sanctions: The Economics of Deterrence Revisited." *Journal of Legal Studies* 30: 485-501.

Binmore, Ken and Larry Samuelson (1994). "An Economist's Perspective on the Evolution of Norms." *Journal of Institutional and Theoretical Economics* 150: 45- 63.

Bohnet, Iris and Robert Cooter (2001). "Expressive Law: Framing or Equilibrium Selection?" Berkeley Olin Program in Law & Economics, 31 Working Paper Series, 2001.

Bohnet, Iris, Bruno S. Frey and Steffen Huck (2001). "More Order with Less Law: On Contract Enforcement, Trust and Crowding." *American Political Science Review* 95: 131-144.

Borland, John (2003). "Lawsuits Yield Mixed Results." CNET News. Com, Dec. 4, 2003.

Cooter, Robert (1998). "Expressive Law and Economics." *Journal of Legal Studies* 27: 585-608.

Cooter, Robert (2000). "Do Good Laws Make Good Citizens? An Economic Analysis of Internalized Norms" *Virginia Law Review* 86: 1577.

Depoorter, Ben and Sven Vanneste (2005). "Norms and Enforcement: The Case Against Copyright Litigation." *Oregon Law Review* 84: 1127-1180.

Gneezy, Uri and Aldo Rustichini (2000). "A Fine is a Price." *Journal of Legal Studies* 29(1) 1-17.

Gneezy, Uri and Aldo Rustichini (2003). "Incentives, Punishment and Behavior," in *Behavioral Economics* (edited by Colin Camerer, George Loewenstein and Matthew Rabin), Princeton University Press, Princeton, New Jersey, USA.

Harel, Alon and Alon Klement (2007). "The Economics of Stigma: Why More Detection of Crime May Result in Less Stigmatization." *Journal of Legal Studies* 36: 355-377.

Kahane, L.H. (2000). "Anti-Abortion Activities and the Market for Abortion Services. Protest as a Disincentive." *American Journal of Economics and Sociology* 59: 463-485.

Koh, Harold H. (2003). "Rights to Remember. How Has September 11th Changed America's Approach to Human Rights?" (excerpts from the 2003 John Galway Foster lecture delivered in London on October 21st, 2003), The Economist, 30th October.

Kuran, Timor (1989). "Sparks and Prairie Fires: A Theory of Unanticipated Political Revolution." *Public Choice* 61: 41-74.

Leeds, Jeff (2007). "Labels Win Suit Against Song Sharer." *The New York Times*, October 5, http://www.nytimes.com/2007/10/05/business/media/05music.html.

McAdams, Richard H. (2000). "A Focal Point Theory of Expressive Law." *Virginia Law Review* 86: 1649.

Oksanen, Ville and Mikko Välimäki (2007). "Theory of Deterrence and Individual Behavior. Can Lawsuits Control File Sharing on the Internet?" *Review of*

Law and Economics 3(3):Article 4.
http://www.bepress.com/rle/vol3/iss3/art4

Parisi, Francesco and Georg von Wangenheim (2006). "Legislation and Countervailing Effects from Social Norms" in *Evolution and Design of Institutions* (edited by C. Schubert and G. von Wangenheim), Routledge, UK: 25-55.

Posner, Eric (2000). "Law and Social Norms: The Case of Tax Compliance." *Virginia Law Review* 86: 1781.

Robinson, Paul H. (2000). "Why Does the Criminal Law Care What the Layperson Thinks Is Just - Coercive Versus Normative Crime Control." Virginia Law Review 86: 1839.

Stuntz, William J. (2000). "Self-Defeating Crimes." Virginia Law Review 86: 1871.

Sugden, Robert (1998). "Normative Expectations: The Simultaneous Evolution of Institutions and Norms" in *Economics, Value, and Organization* (edited by Ben-Ner, A. and Putterman, L.), Cambridge: Cambridge University Press.

Sunshine, Jason and Tom R. Tyler (2003). "The Role of Procedural Justice and Legitimacy in Shaping Public Support for Policing." *Law and Society Review* 37: 555-589.

Tyler, Tom R. (1990). *Why People Obey the Law*. New Haven: Yale.

Tyler, Tom R. (1994). "Psychological Models of The Justice Motive." *Journal of Personality and Social Psychology* 67: 850-863.

Tyler, Tom R. and Y.J. Huo (2002). *Trust in the Law*. N.Y.: Russell-Sage. 31

Weber, Max (1968). *Economy and Society*. (G. Roth and C.Wittich, eds.). Berkeley: University of California Press.

Appendix A: Existence, Multiplicity of Equilibria and Stability

A1: Existence and Multiplicity of Equilibria

Due to the assumption of single-peakedness of $f(\cdot)$ and restriction of $F(\cdot)$ to the unit interval, a solution for equation (8) exists and there are either one or three[41] solutions (considering the fact that $0 \le F(\cdot) \le 1$, the proof is obvious from Figure A1). For any of these equilibrium values of p, equation (9) may have one or three solutions by the same argument.

The number of equilibrium values of *p* determined by equation (8) depends on the slope of the function $F(\cdot)$, In this case, this is determined by the parameter λ. Specifically, multiple equilibria exist for intermediate values of λ, whereas a very high λ implies the existence of a unique equilibrium with high protest. A very low λ implies the existence of a unique equilibrium with low protest. To understand the intuition for this result, one should recall that λ measures how current protest affects the choice of voicing dissent. A high λ implies that the current level of protest has a strong impact on the decision of individuals to voice dissent. It is therefore intuitive that the result will be a unique equilibrium where protest is high (see dotted line in Figure A1). Similarly, when λ is low, dissent is not very reactive with respect to the current level of protest and the final equilibrium will be one with low protest (dashed line in Figure A1). Multiple equilibria exist only in the case where λ is neither too high nor too low (solid *S*-shaped line in Figure A1). If the solution is unique we label it p^*, and if there are three solutions, p_ℓ^*, p_u^*, and p_h^* denote the lowest, the middle and the highest equilibrium value, respectively.

A similar argument can prove that, for any of these equilibrium values of p, equation (9) may have one or three solutions. Clearly the existence of multiple equilibria will depend on the slope of the function $F(\cdot)$ on the right hand side of equation (9), and given that now we are looking at the behavior of *x*, the slope is measured by the parameter δ, the reactivity of action to social stigma.

A2: Shape of the Function $p(x)$

For further reference, it will be helpful to take a closer look at the function $p(x)$ implicitly defined by equation (9). Obviously, this function need not be defined for values of x sufficiently close to zero. Applying the implicit function theorem to equation (9), one gets

$$\frac{dp(x)}{dx} = \frac{1-\delta f(\cdot)}{\beta f(\cdot)} \tag{19}$$

[41] We neglect the special case where two of these solutions coincide so that only two solutions remain.

as the first derivative. This first derivative is positive unless $f(\cdot) > 1/\delta$. For sufficiently large δ and a probability distribution very close to a uniform distribution within some interval, the first derivative is negative in the entire range for which $p(x)$ is defined. However, we chose to concentrate on cases where the graph of $p(x)$ is generally increasing and may have a decreasing part in that middle range for which $f(\cdot)$ is largest.

The second derivative is given by:

$$\frac{d^2 p(x)}{dx^2} = \frac{-1}{\beta\left[f(\cdot)\right]^2}\left(\beta f'(\cdot)\frac{dp(x)}{dx} + \delta f'(\cdot)\right) = -\frac{f'(\cdot)}{\beta\left[f(\cdot)\right]^3} \tag{20}$$

Due to the assumption of single-peakedness of the density function, the graph of $p(x)$ is concave for small values of x (which imply small values of the argument of $f'(\cdot)$ by the definition of $p(x)$) and convex for large values of x.[42]

A3: Stability of Equilibria

To determine the dynamic stability of various equilibria we take the first derivatives of equations (21) and (7). We hence get:

$$\frac{d\Delta x_t}{dp} = \sigma_x \beta f(\cdot) > 0 \tag{22}$$

and

$$\frac{d\Delta p_t}{dp} = \sigma_p\left(\lambda f(\cdot) - 1\right) \tag{23}$$

The derivative in equation (22) proves that x_t increases over time whenever p_t lies above the function $p(x)$ and decreases whenever p_t lies below $p(x)$. From Figure A1, one can easily see that for the unique solution (p^*) and for the two extreme of the three solutions (p_ℓ^* and p_h^*), the slope of $F\left((1-\gamma)S + \lambda p - c_p\right)$ is less than unity, i.e. $\lambda f(\cdot) < 1$. Only for the middle one of the three solutions, the slope of $F\left((1-\gamma)S + \lambda p - c_p\right)$ is larger than unity, i.e. $\lambda f(\cdot) > 1$. Hence from the derivative in equation (23), we see that p_t increases for $p_t < p^*$ in case of a unique equilibrium, for $p_t < p_\ell^*$ and for $p_u^* < p_t < p_h^*$ in case of multiple equilibria. Conversely, p_t decreases for $p_t > p^*$, for $p_\ell^* < p_t < p_u^*$ and for $p_t > p_h^*$. For any given level of x_t, p^* as well as p_ℓ^* and p_h^* are stable, while p_u^* is unstable (whence the index u).

The intuition for this result can be found again in the feedback process characterizing protest. High protest induces protest, whereas low protest

[42] One should note that the dividing line may be outside the definition range of $p_a(x)$ and thus the graph of $p_a(x)$ may be concave or convex over the entire definition range. We concentrate, however, on the analytically more interesting case of a reversed-*S*-shape function of the graph of $p_a(x)$.

discourages it. An intermediate level of p_t is therefore unstable, since a small increase can bring the system towards a high protest equilibrium. Likewise a small decrease can lead to low protest.

The same can be proven for the level of activity x. In case of multiple equilibria, the equilibrium with the intermediate level of x is always unstable. Equilibria with low and high x and unique equilibria are always stable.

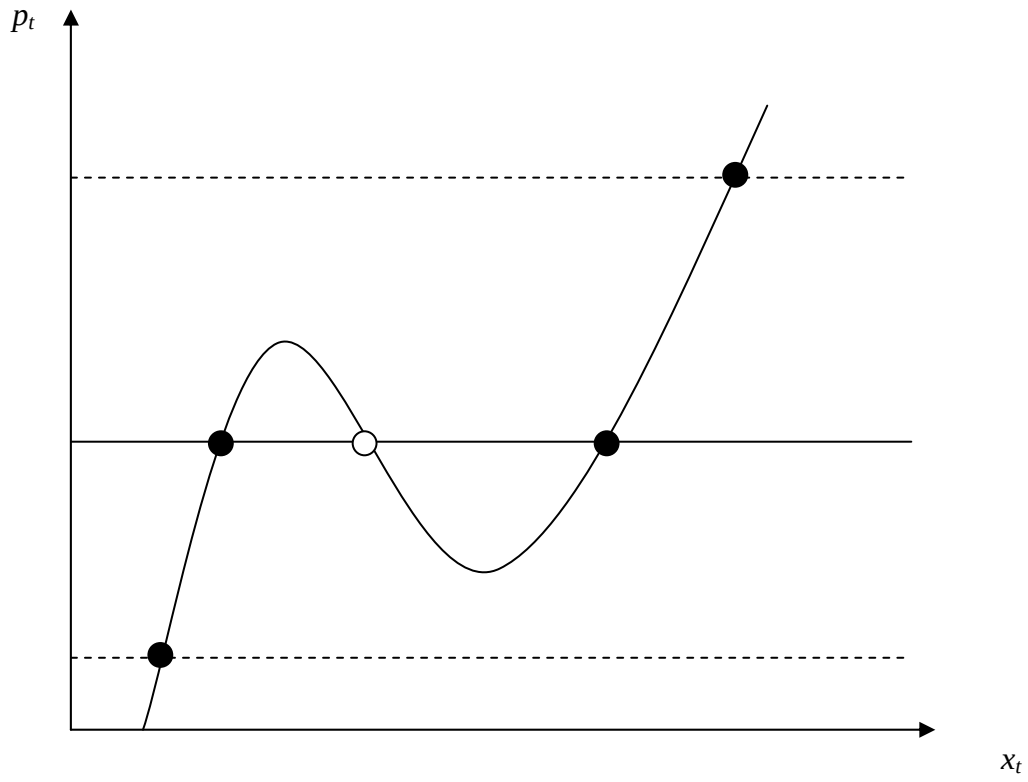


FIGURE 1: Long – Run Equilibria

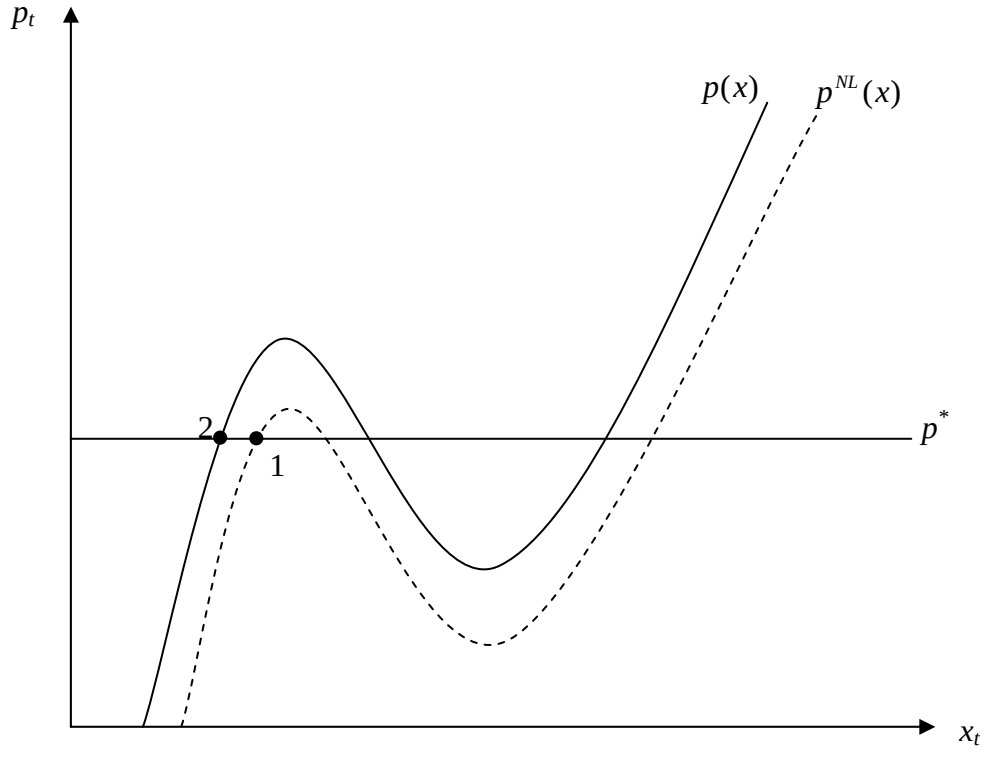
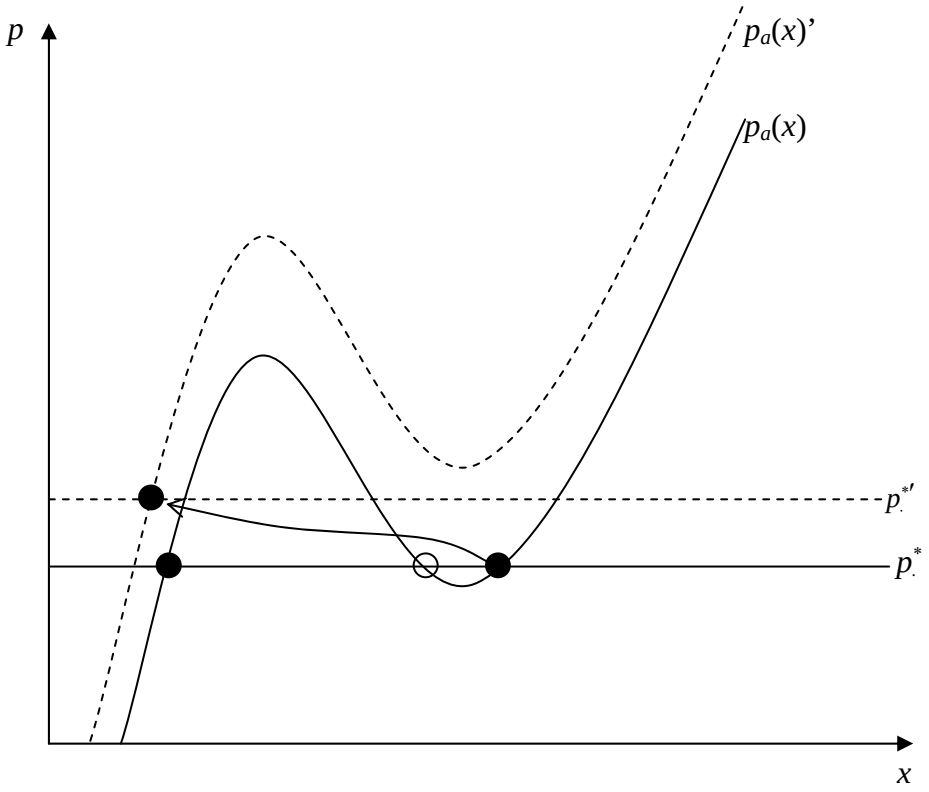
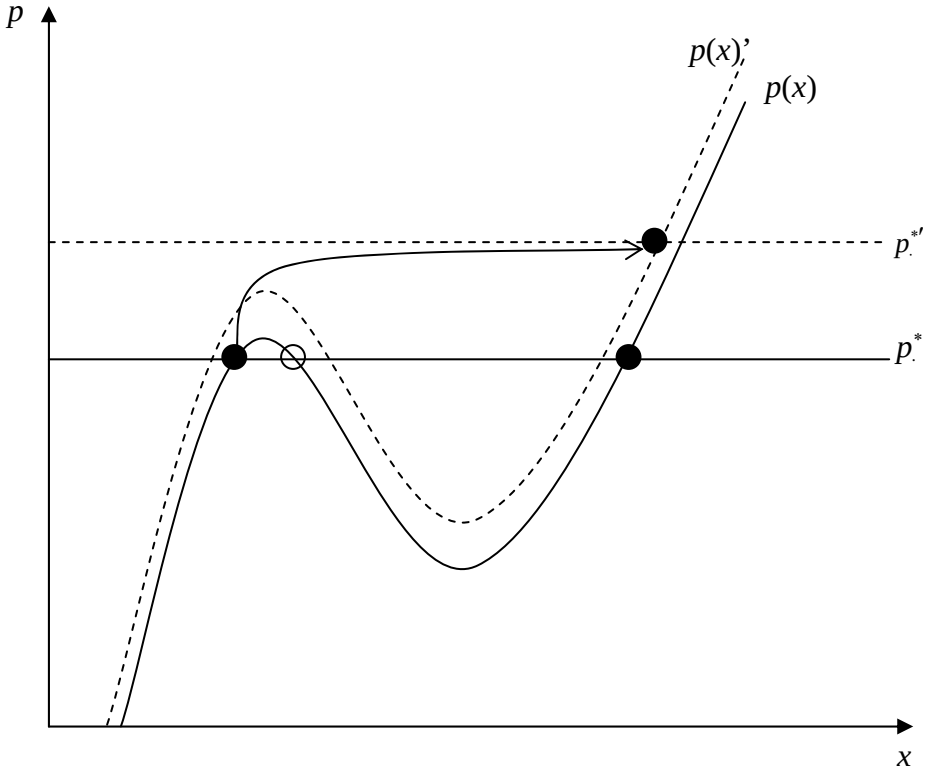


FIGURE 2: The Impact of Expression and Internalization



(a)



(b)

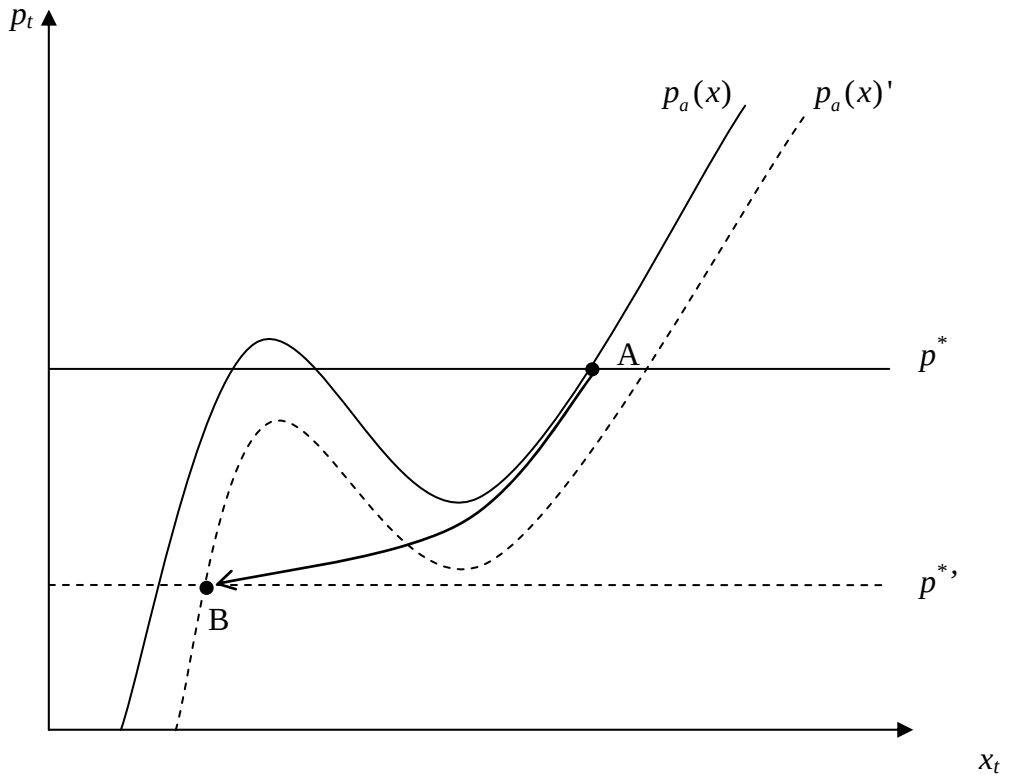


FIGURE 3: The effects of law: (a) net deterrence, (b) negative net deterrence, (c) countervailing effect of reducing S.

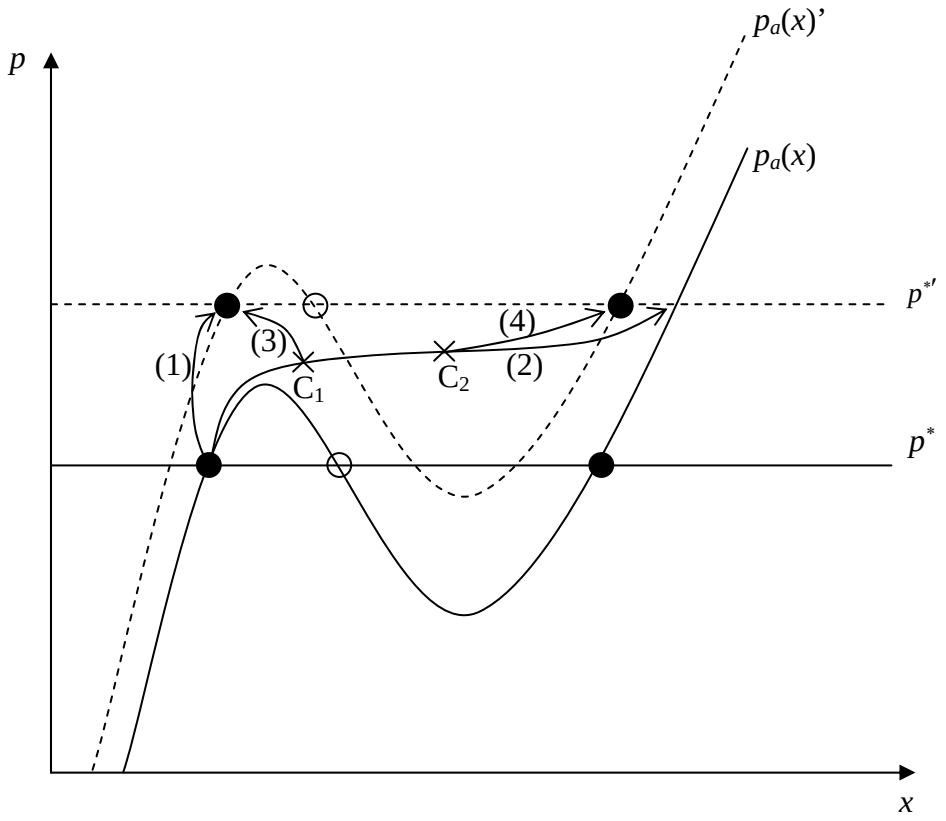
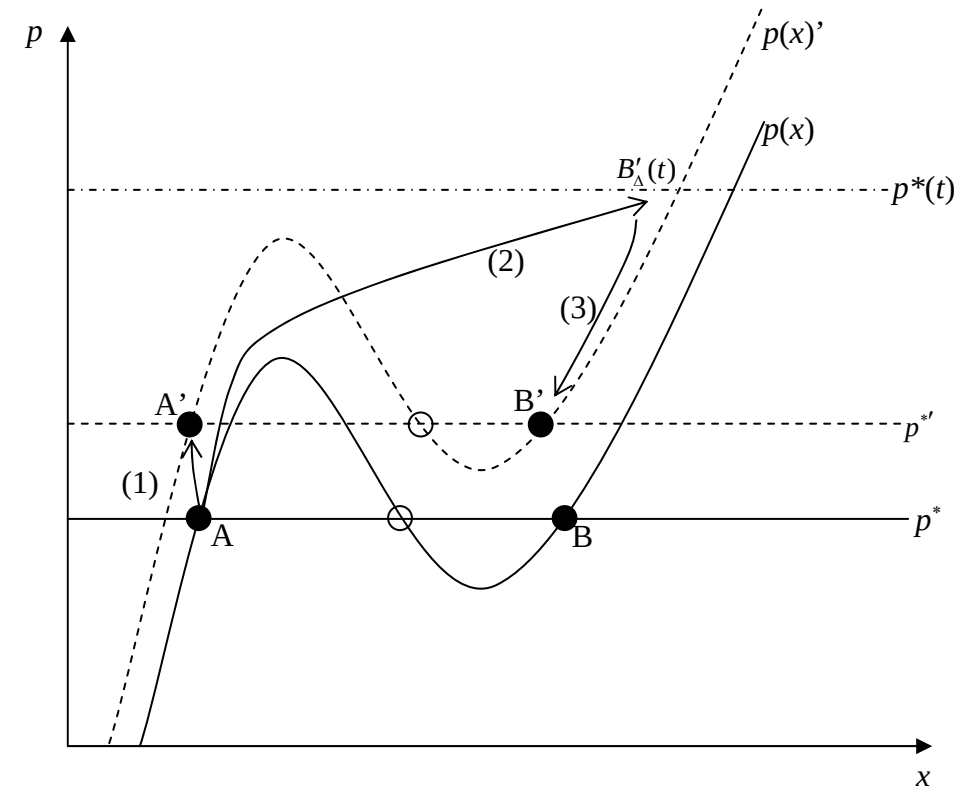
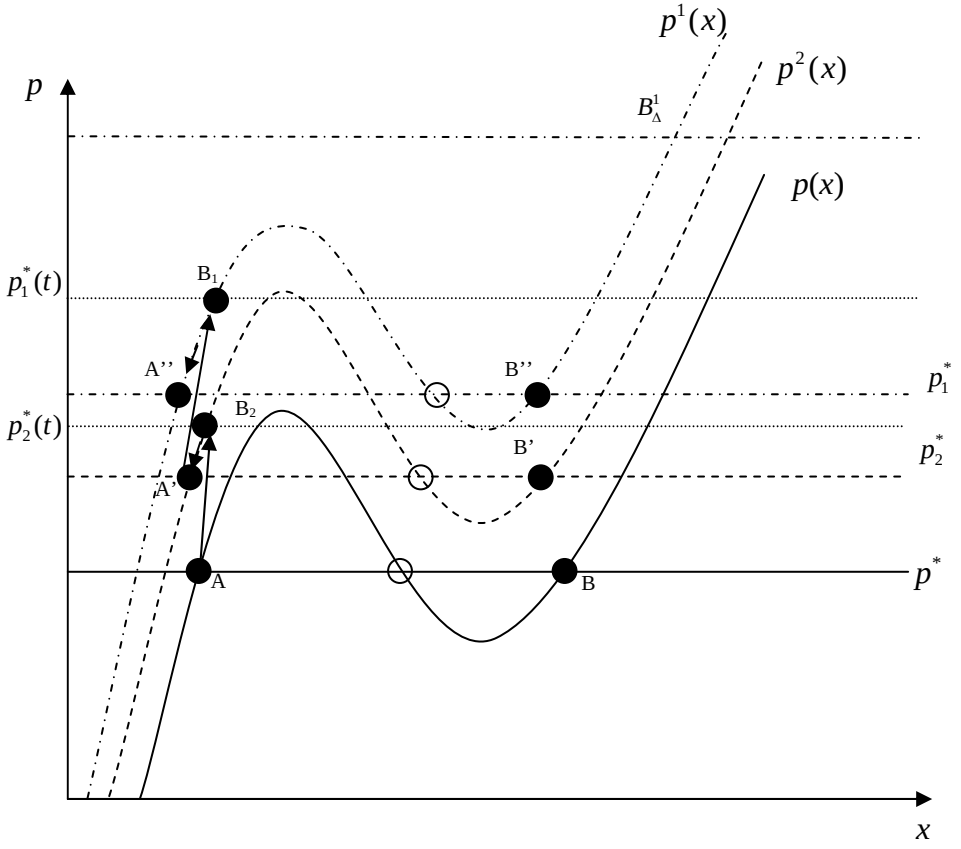


FIGURE 4: Announcement-effect. Arrows indicate paths of the social system:
(1) normal effect;
(2) announcement effect before stricter law comes into force (at times t_1 and t_2 the path goes through C_1 and C_2, respectively),
(3) announcement effect after stricter law comes into force at time t_1
(4) announcement effect after stricter law comes into force at time t_2



(a)



(b)

FIGURE 5: The Social Acceptance Effect. (a) (unique p^*), paths of social system: (1) no public reaction, (2) public reaction before acceptance, (3) gradual social acceptance. (b) stepwise implementation of new laws.

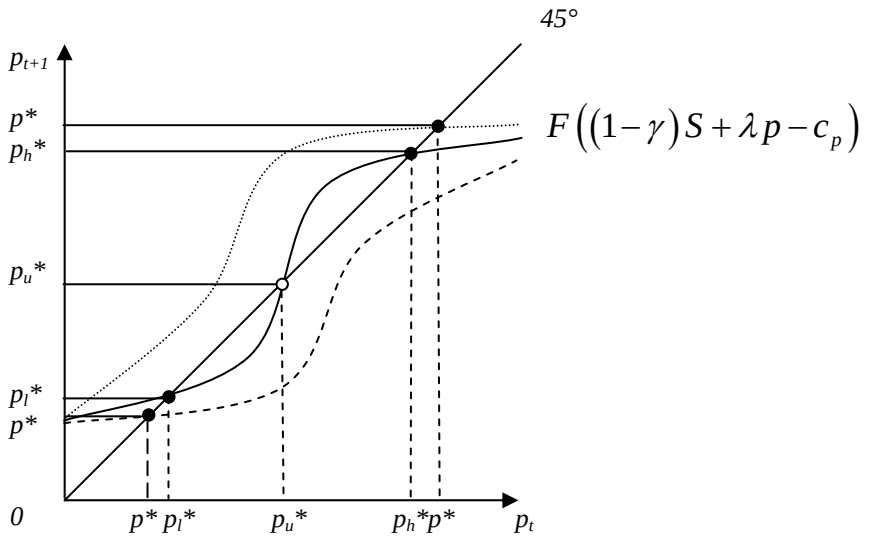


FIGURE A1: Equilibrium values of protest (equation (8)).