

# The Scope of Punishment: an Economic Theory

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1st Esnie Post-doctoral Workshop

April 3, 2009

The harm of many acts is not certain *ex ante* : it occurs with some probability.

For example:

- Storing chemicals
- Shooting
- Driving fast

Furthermore, in many of these circumstances, even the probability of harm is unknown *ex ante* to the public enforcer or to the injurer.

- New activities, new types of crimes such as bioethics offences or computer hacking, or new regulatory violations such as the misuse of more sophisticated financial instruments.
- Path dependence with previous regulatory experience such as zoning regulations.

To control these risks, the enforcer has two possibilities:

- Punish *ex ante*: use of act-based sanctions
- Punish *ex post*: use of harm-based sanctions

Definition: act-based sanctions

A sanction is imposed if a certain act has been committed independently of the harmful consequences.

Definition: harm-based sanctions

A sanction is only imposed if harm has been produced, observed and verified by a court of law or an independent adjudicator.

## Criminal law

Harm-based sanctions prevail: the intention to create harm is a condition for criminal conviction.

## Administrative law, including traffic law, and regulation

Act-based sanctions prevail: enforcers often intervene even before the harm has been generated, once they observe that individuals have engaged in certain acts.

## Remark

*Not all criminal punishment is harm-based (consider the case of attempts). Equivalently, not all regulatory punishment is act-based (consider the case of environmental liability).*

- The objective of the paper is to provide a more comprehensive economic theory of harm-based versus act-based legal policies in the public enforcement of the law.
- In a sense, the conventional model of law enforcement (Polinsky and Shavell, 2000) mainly considers act-based policy because the harm is certain.
- Many apparently unrelated articles in law and economics look at some of the issues but no structured economic theory has been proposed.

## Law enforcement

Shavell (1993), Polinsky and Shavell (2000)

## Rules vs. standards

Ehrlich and Posner (1974), Kaplow (1992, 2000)

## *Ex post* liability vs. *ex ante* regulation

Kolstad, Ulen and Johnson (1990) Schmitz (2000) Shavell (1984a 1984b)

## Sanctioning attempts

Shavell (1990), Friedman (1991), Ben Shahr et Harel (1996)

- 1 Under a harm-based sanction regime, no reform of law is needed when learning is required. Therefore, law is more stable under harm-based sanctions.
- 2 When assessments concerning the likelihood of harm vary significantly across the population, a certain act-based policy can be substantially better than harm-based one.

- The harm is unknown *ex ante* to the government and to the potential criminals, although it is known *ex post*.
- $\sigma$  is the likelihood of harm  $h$  (with  $0 < \sigma < 1$ ).
- $\sigma$  is estimated to be  $\sigma_e$  by individuals and  $\sigma_g$  by the government.
- Individuals are risk neutral.



The government as either the possibility to set harm-based sanction or act-based sanction. The law is enforced with the exogenous and invariant probability  $p$  (with  $0 < p < 1$ ).

### Under act-based sanctions

An individual undertakes the activity iff  $b \geq pf$  where the individual knows  $f$  as defined *ex ante* by law.

### Under harm-based sanctions

An individual undertakes the activity iff  $b \geq \sigma_e ps$  where the individual knows  $s$  as defined *ex ante* by law.

- Social welfare is defined as in the standard literature (Polinsky and Shavell, 2000), where  $g(b)$  is the density and  $G(b)$  is the cumulative distribution of benefits with support in  $[0, B]$ .
- We assume that the sanction is imposed without cost (Becker, 1968).
- Under act-based sanctions:

$$W = \int_{pf}^B (b - \sigma_g h) dG(b) \quad (1)$$

- Under harm-based sanctions:

$$W = \int_{\sigma_{eps}}^B (b - \sigma_g h) dG(b) \quad (2)$$

We found that  $f = \sigma_g h/p$  and  $s = \sigma_g/\sigma_e \times h/p$ . In both cases the expected sanction is the same and given by  $\sigma_g h$ .

### Remark 1

Although the optimal harm-based sanction is higher than the optimal act-based sanction, the expected punishment is the same and hence it makes no difference in terms of social welfare.

## Remark 2

Since the expected sanction is the same under both regimes and solely determined by the perception of the government, there is no incentive for the government to disseminate information or to change the beliefs of individuals.

- Costly punishment: harm-based sanction (Fewer individuals are prosecuted and convicted)
- Judgment-proofness: act-based sanction
- Avoidance activities possible: harm-based sanction (Reduce the likelihood of social damage and increase the proportion of individuals engaged in the activity when it is socially beneficial)
- Risk averse: act-based sanctions (Risk averse individual also care of the risk premium)
- Possible to acquire information about harmfulness: harm-based sanction (Some potential criminals will acquire costly information and will engage in the activity only when it is beneficial)

- Consider now the case where the expected value of  $\sigma_e$  is the government's expectation.
- We get the following solutions,  $f = \sigma_g h/p$  and  $s = h/p$ .
- No reform of law is required under harm-based sanctions as government and potential criminals adjust expectations whereas, under act-based sanctions, fines must be adjusted when it is realized that  $\sigma \neq \sigma_g$

### Remark 3

The law should be more stable under harm-based sanctions than under act-based sanctions, a result very much consistent with patterns of legal reform across administrative and criminal law.

- Suppose now that  $\sigma_e$  varies across the population according to a density  $v(\sigma_e)$  and cumulative  $V(\sigma_e)$  with support in the interval  $[0, 1]$ .
- The government cannot observe individual probabilities but knows the distribution.
- Under act-based sanction:

$$W = \int_0^1 \int_{pf}^B (b - \sigma_g h) dG(b) dV(\sigma_e) \quad (3)$$

- Under harm-based sanction:

$$W = \int_0^1 \int_{\sigma_e ps}^B (b - \sigma_g h) dG(b) dV(\sigma_e) \quad (4)$$

- $f = \sigma_g h/p$  and  $s = \rho \sigma_g h/p$ , where  $\rho$  is  $\int_0^1 \sigma_e g(p\sigma_e s) dV(\sigma_e)$  divided by  $\int_0^1 \sigma_e^2 g(p\sigma_e s) dV(\sigma_e)$ , with  $\rho > 1$ .
- For some individuals who have the lowest estimation of the risk ( $\sigma_e$  less than  $1/\rho$ ), the expected sanction is higher under an act-based regime.
- For others ( $\sigma_e$  higher than  $1/\rho$ ), the expected sanction is higher under a harm-based regime.



We show, by calculating the difference between the social welfare under act-based sanction and under a harm-based sanction that as long as  $\sigma_g$  is close to  $\sigma$  an act-based sanction is generally better than a harm-based sanction.

#### Remark 4

If the government's expectations with respect to harm are not substantially wrong, an act-based sanction is generally better when assessments concerning the likelihood of harm vary significantly across the population.

- If the government is generally better informed, act-based sanctions should prevail.
- If individuals are systematically better informed, harm-based sanction are more efficient.
- Criminal law fits well in the first case while administrative law is closer to the second case, although there are obvious exceptions.

- Neither harm-based nor act-based sanction uniformly dominate public law enforcement in response to controlling risks.
- We have provided a typology to choose between these two regimes.
- Some advantages of harm-based sanction fit well in the usual dichotomy between administrative and criminal law.
- If the government is not substantially too wrong, act-based sanction should be preferred.
- In many cases the offender is better informed such as in corporate crime, tax evasion and regulatory violations.