



# Ventura County District Attorney

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Why public law enforcement and  
civil penalties?

# Economic theory as applied to punishment for violations of law

- Economists' goal: to maximize social welfare through a system of optimal **incentives and deterrents.**

# Basic economic principles behind enforcement and penalties

- "Optimal Penalty" model of Gary  
Becker (Nobel Prize in Economics,  
1992)



# "Optimal Penalty" model of Gary Becker

- Individuals and firms consider both the probability of detection and severity of punishment if detected and convicted.
- thus, they will tend to commit the harmful act if the expected gain ( $g$ ) from doing so exceeds the fine ( $f$ ), multiplied by the probability of detection ( $p$ ).
- tendency to violate if  $g > fp$ 
  - Example, if the expected fine is \$100,000, and the probability of detection is 1/10, the subject will violate if the expected gain is  $> \$10,000$ .
- *Note: Expected costs and expected benefits dictate the conduct.*

# A prosecutor's perspective

- Enforcement works

# *Transition from the anecdotal to the empirical*

- Do penalties and fines **actually** discourage subsequent polluting behavior?
  - (Shimshack and Ward's 2005 empirical study)

# The Study

- EPA's Permit Compliance System collects, and makes public, data on:
  - Plant emissions
  - Permitted effluent limitations
  - Enforcement actions taken.

# The Study

- Study covered civil penalties
  - BOD and TSS
  - In the pulp and paper industry

# The Study

- 99 out of 217 plants violated at least 1x
- Violations in all 23 jurisdictions

# The Study

- Considered fines, as well as non-fine but formal “intermediate enforcement actions”
  - Like AEO’s, Notices of Noncompliance and Administrative Consent Orders

# Study assumptions

Plant is rational economic decision-maker that violates its effluent standard when the benefits exceed the cost (expected penalties).

- **Benefits** (increased production and decreased compliance expenses) are *known*.
- **Costs** (amount of penalty upon detection and conviction) are *uncertain*.

# STUDY FINDINGS

- The imposition of fines had a deterrent effect on both the fined plant and on other plants regulated by the same authority.
  1. 67% decrease in violations by **the fined plant.**
  2. 64% decrease in violations by **all facilities within the jurisdiction in the following year.**
- "*Enhanced Regulator Reputation*" Effect.

# Uncertainty of penalty

- The plant learns about the uncertain regulatory environment through experience.
- The principal source of credible information is the regulator's actual enforcement history.
- The plant will adjust its expectations upward or downward depending on observations of sanctions *against other plants in its jurisdiction*, as well as its own enforcement history.

# STUDY CONCLUSION

“Empirically, large improvements follow even from modest sanctions, as long as they have economic ‘teeth.’”



# STUDY FINDINGS

- “We detect **no impact** of less severe intermediate enforcement actions on environmental compliance”.

# STUDY CONCLUSION

The *enhanced regulator reputation* effect is the primary deterrence mechanism.



# STUDY CONCLUSION

“Consequently, a substantial improvement in water quality might be achieved from a relatively small additional investment in traditional adversarial enforcement. Given this result, it is perhaps an interesting institutional research question why fines are not imposed with greater regularity.”

- Jay Shimshack & Michael Ward (2005) "Regulator Reputation, Enforcement, and Environmental Compliance", *Journal of Environmental Economics & Management*, 50 (2005): 519-540.
- Available free online at [http://www.tufts.edu/~jshims01/Regulator\\_Reputation.pdf](http://www.tufts.edu/~jshims01/Regulator_Reputation.pdf)

Thank You





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# Survey of economic issues relating to penalties

From: *The Theory of Public Enforcement of Law*, Polinsky & Shavell (National Bureau of Economic Research

<http://www.nber.org/papers/w11780>.)

# Harm-based vs. Act-based penalties

# Harm-based vs. Act-based penalties

- Economic approach to optimal deterrence:
  - If the tank has a 10% chance of rupturing, and the harm would be \$10M, the expected harm from using the tank is \$1M.
- Under harm-based approach, the optimal fine would be \$10M.
- Under act-based sanction, the optimal fine is equal to the expected harm due to use of the substandard tank, ( $\$10M \times 1/10$ ) or \$1M.

# Marginal deterrence



# Principal-Agent Issues



Penalty amount when violation is  
self-reported

Repeat offenders

# Incapacitative sanctions

The tendency of violators to  
misrepresent wealth

(Source: *The Theory of Public Enforcement of Law*, Polinsky & Shavell (National Bureau of Economic Research  
(<http://www.nber.org/papers/w11780>.)