ECON 522 - DISCUSSION NOTES ON CRIMINAL LAW

1. Criminal Law

One of the main messages of the criminal law section of class is that the marginal cost of deterrence may be positive or negative. This is because deterring crime may lead to fewer convictions, and thus less (administrative) cost for punishment, or it could lead to more convictions, and a higher (administrative) cost. I've borrowed the example from lecture/Fall 2008 final to illustrate the point.

Example-Marginal cost of deterrence. Suppose a particular crime causes $12,000 in lost value (per crime committed) for society (not including the criminal), but increases the payoff for the criminal by $2,000. Assume that each crime is associated with a unique criminal (i.e., there are no repeat offenders). If a criminal is caught, it costs society $100,000 to try and punish the offender. Now suppose this society is trying to decide whether or not to hire new police officers, and that it knows that hiring the new officers will lead to an increase in the fraction of criminals caught from 15% to 20%.

a. Suppose the new police officers cause the number of crimes committed to drop to 700 from 1000.

   i. Calculate the effect that hiring the new policemen would have on the social cost of crimes committed.

   ii. Calculate the effect it would have on the cost of trying and punishing offenders.

   iii. From an efficiency point of view, what is the most that the city should be willing to pay for the new policemen?

b. Suppose the new police officers cause the number of crimes committed to drop to 900 from 1000.

   i. Calculate the effect that hiring the new policemen would have on the social cost of crimes committed.

   ii. Calculate the effect it would have on the cost of trying and punishing offenders.

   iii. From an efficiency point of view, what is the most that the city should be willing to pay for the new policemen?

c. Defend the following statement applied to this type of crime: "Even when detection is cheap, more detection is only efficient if the supply of crimes is elastic."

Solutions.

a. Suppose the new police officers cause the number of crimes committed to drop to 700 from 1000.

   i. The total social cost refers only to the direct cost of the crimes, which in this case is \$10,000 per crime (\$12,000 cost per crime minus the \$2,000 benefit that the criminal receives). Thus the change in total social cost is the change in the number of crimes times \$10,000:

$$\begin{aligned}\text{Change in Social Cost} &= (700 - 1000)10,000 \\ &= -300 \times 10,000 \\ &= -\$3,000,000\end{aligned}$$

   Thus society would save \$3 million.

   ii. This calculation is similar to the previous one, except now what's changing is not only the number of crimes, but also the probability of catching a criminal:

$$\begin{aligned}\text{Change in Cost of Punishment} &= (.2 \times 700 - .15 \times 1000)100,000 \\ &= (140 - 150)100,000 \\ &= -10 \times 100,000 \\ &= -\$1,000,000\end{aligned}$$

   Thus society would save \$1 million.

   iii. Society should be willing to pay up to the point where it is indifferent between having the new officers and not, which is at the point where it is paying exactly as much as it is saving, which is \$4 million.

b. Suppose the new police officers cause the number of crimes committed to drop to 900 from 1000.

   i. The social cost is still \$10,000 per crime, but the number of crimes committed is different:

$$\begin{aligned}\text{Change in Social Cost} &= (900 - 1000)10,000 \\ &= -100 \times 10,000 \\ &= -\$1,000,000\end{aligned}$$

   Thus society would save \$1 million. When deterrence is increased, society should always be saving money in terms of the social cost of crime (because there should be less crime).

   ii. Just as before, except with 900 crimes committed:

$$\text{Change in Cost of Punishment} = (.2 \times 900 - .15 \times 1000)100,000$$

$$= (180 - 150)100,000$$
$$= 30 \times 100,000$$
$$= \$3,000,000$$

Thus society would lose $3 million.

iii. Society should be willing to pay up to the point where it is indifferent between having the new officers and not, which in this case would mean that the officers would have to pay $2 million ($1,000,000-$3,000,000=-$2,000,000) to be hired, which of course wouldn't happen. Thus society would choose not to hire the officers.

c. Inelastic $\Rightarrow$ small changes in the benefit of crime (to criminals) lead to small changes in the number of crimes committed.
Elastic $\Rightarrow$ small changes in the benefit of crime (to criminals) lead to large changes in the number of crimes committed.

These are rough definitions of what it means to be elastic/inelastic. The point is that if crime is very sensitive to deterrence (elastic supply), then deterrence is more likely to be cost effective. However if crime is not very sensitive to deterrence (inelastic), then deterrence may not be cost effective.

Solutions to Example 2 from last week.

1. Threat points are the outside options, i.e. what each side can guarantee themselves by walking away from a bargain. In this case, if there is no pre-trial settlement, then each side gets it's expected payoff from going to court, which for me is $7000 ($10,000 damages minus $3,000 legal fees), and for you is -$15,000 ($10,000 damages paid plus $5,000 legal fees).

2. If we settle we avoid excess legal fees in the amount of $6000 (fees from going to court are $5,000+$3,000=$8,000, fees from settling are $1,000+$1,000=$2,000, the difference is $8,000-$2,000=$6,000), so this is our potential gains from trade.

3. We should each get $(1/2)6000 = \$3,000$ more than our threat points, so I get $10,000 ($7,000+$3,000), and you get -$12,000 (-$15,000+$3,000). This is achieved by a settlement of $11,000. To see this note:

$$\text{My payoff } = S - \text{ Legal Fees} = \$10,000 = S - \$1,000 \Rightarrow S = \$11,000$$

Or,

$$\text{Your payoff } = -S - \text{ Legal Fees} = -\$12,000 = -S - \$1,000 \Rightarrow S = \$11,000$$