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The theoretical remarks about the shadow economy

Part VI




ECONOMIC MODELS USED FOR ANALYSIS OF ILLEGAL ACTIVITIES

Gary Becker' model



Outline

- **1. COMBINING LEGAL AND ILLEGAL ACTIVITIES AND FACTORS AFFECTING TO THE INDIVIDUAL CHOICE**
 - **2. THE AMOUNT OF CRIMES IN A CERTAIN PERIOD**
 - **3. PUNISHMENTS IN THE MODEL**
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Goal of this lecture:

- Considering the article of Gary Becker "Crime and Punishment: The Economic Approach".
- Analyzing the main statements of the model
- Analyzing how punishment and likelihood of detained and incurred can affect on an individual's choice
- Considering the function of the amount of crimes
- Analyzing how level of risk can affect on an individual's choice
- Defining the affect of punishments on the amount of crimes



COMBINING LEGAL AND ILLEGAL ACTIVITIES AND FACTORS AFFECTING TO THE INDIVIDUAL CHOICE

- ▶ The rational explanation of the causes of criminal behavior of people appeared in science only in 1968 in the classic article by Gary Becker "Crime and Punishment: The Economic Approach".
- ▶ In the first place, obedience to law is not taken for granted, and public and private resources are generally spent in order both to prevent offenses and to apprehend offenders. In the second place, the conviction is not generally considered sufficient punishment in itself; additional and sometimes severe punishments are meted out to those convicted. What determines the amount and type of resources and punishments used to enforce a piece of legislation? In particular, why does enforcement differ so greatly among different kinds of legislation?

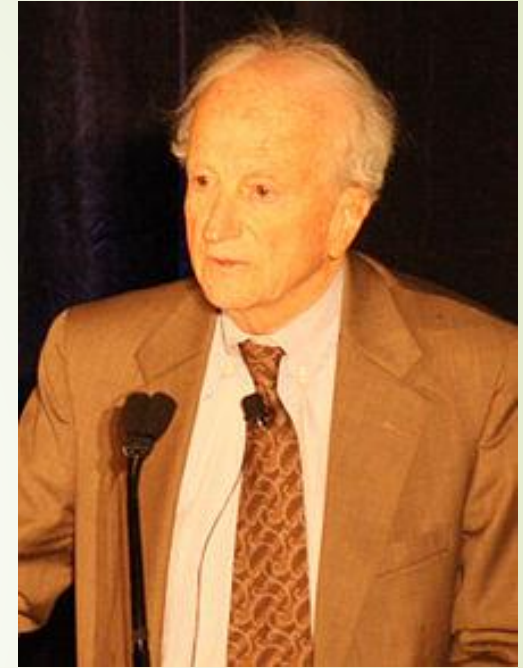


Gary Becker: Crime and Punishment: An Economic Approach (1968)

- “Classic” article that signaled the rebirth of classical school ideas
 - Recast deterrence in “economic language”
- Major Assumption
 - “A person commits an offense if the expected utility to him exceeds the utility he could get by using his time and other resources at other activities”

Gary Stanley Becker (December 2, 1930 – May 3, 2014) was an American economist and empiricist. He was a professor of economics and sociology at the University of Chicago. Described as “the most important social scientist in the past 50 years” by *The New York Times*, Becker was awarded the Nobel Memorial Prize in Economic Sciences in 1992 and received the United States Presidential Medal of Freedom in 2007. A 2011 survey of economics professors named Becker their favorite living economist over the age of 60, followed by Ken Arrow and Robert Solow.


Becker was one of the first economists to branch into what were traditionally considered topics that belonged to sociology, including racial discrimination, crime, family organization, and drug addiction (see rational addiction). He was known for arguing that many different types of human behavior can be seen as rational and utility maximizing. His approach included altruistic behavior of human behavior by defining individuals' utility appropriately. He was also among the foremost exponents of the study of human capital. Becker was also credited with the "rotten kid theorem."




Deterrence Theory

- Became popular in the 1970s with Gary Becker's work
- Has had an enormous impact on contemporary crime control policies
 - The U.S. criminal justice system has largely abandoned rehabilitation as a crime control strategy
 - Instead, the CJS focuses on increasing the certainty and severity of punishment
 - Examples: Three-strikes laws and juvenile waivers
- Rate of imprisonment has increased fivefold from to early 2000s





The main purpose of article by Gary Becker "Crime and Punishment: The Economic Approach" is to answer normative versions of these questions, namely, **how many resources and how much punishment should be used to enforce different kinds of legislation? Put equivalently, although more strangely, how many offences should be permitted and how many offenders should go unpunished?** The method used formulates a measure of the social loss from offences and finds those expenditures of resources and punishments that minimize this loss. The general criterion of social loss is shown to incorporate as special cases, valid under special assumptions, the criteria of vengeance, deterrence, compensation, and rehabilitation that historically have figured so prominently in practice and criminological literature



The approach taken here follows the economists' usual analysis of choice and assumes that a person commits an offence if the expected utility to him exceeds the utility he could get by using his time and other resources at other activities. Some persons become "criminals," therefore, not because their basic motivation differs from that of other persons, but because their benefits and costs differ.

This approach implies that there is a function relating the number of offenses by any person to his probability of conviction, to his punishment if convicted, and to other variables, such as the income available to him in legal and other illegal activities, the frequency of nuisance arrests, and his willingness to commit an illegal act.



Economic factors

- ▶ "Price obedience to the law" consists from:
- ▶ access to the law (costs for registration of a legal entity, for obtaining a license, for opening a bank account, for obtaining a legal address and performing other formalities);
- ▶ continuation of activities within the law (payment of taxes, compliance with the requirements of the law in the field of labor relations, payment of court costs in resolving conflicts within the legal system).



Economic factors

- Thus, there is a direct relationship between the high price of obedience to the law and the scale of the shadow economy. The decision on whether an economic entity chooses a legal or non-legal institutional environment for its business is determined by comparing the transaction costs that arise when transactions are made in the first and second cases. Incentives for voluntary submission to the law appear in the individual only on the condition that the state is able to promote the realization of its interests through the reduction of transaction costs in the legal sector of the economy



Making a decision about whether to make it a crime or to give up this idea, the individual focuses on his expected utility from the commission of the crime:

$$EU = pU(Y - F) + (1 - p)U(Y),$$


where EU - the criminal's expected utility from committing a crime;
 p - the probability that the offender will be detained and incurred;
 U - the criminal's utility function;
 Y - income from crime (including intangible income) of the criminal;
 F - the severity of punishment (in money equivalent).



Becker cont.

What affects “expected utility?”


1. Probability of arrest/conviction
 - a. analogous to the probability of having to “pay”
2. Severity of punishment
 - b. analogous to “price”
3. “Other variables”
 - a. Income available in legal or illegal activities
 - b. Willingness to commit an illegal act
 - c. Intelligence, age, education, family upbringing....




Since only convicted offenders are punished, in effect there is "price discrimination" and uncertainty: if convicted, he pays f per convicted offense, while otherwise he does not. An increase in either p , or f would reduce the utility expected from an offense and thus would tend to reduce the number of offenses because either the probability of "paying" the higher "price" or the "price" itself would increase.

The net cost or damage to society is simply the difference between the harm and gain and can be written as

$$D(O) = H(O) - G(O).$$



The effect of changes in some components of u could also be anticipated. For example, a rise in the income available in legal activities or an increase in law-abidingness due, say, to "education" would reduce the incentive to enter illegal activities and thus would reduce the number of offences. Or a shift in the form of the punishment, say, from a fine to imprisonment, would tend to reduce the number of offences, at least temporarily, because they cannot be committed while in prison.



This approach also has an interesting interpretation of the presumed greater response to a change in the probability than in the punishment. An increase in p "compensated" by an equal percentage reduction in f , would not change the expected income from an offense could change the expected utility, because the amount of risk would change. It is easily shown that an increase in p would reduce the expected utility, and thus the number of offenses, more than an equal percentage increase in f . The increase in would have the greater effect if he has aversion to risk; and they would have the same effect if he is risk neutral. The widespread generalization that offenders are more deterred by the probability of conviction than by the punishment when convicted turns out to imply in the expected-utility approach that offenders are risk preferrers, at least in the relevant region of punishments

criminals - are risktakers individuals, an increase of 1% in the likelihood of punishment will be more conducive to reducing the level of crime in society than an increase of the same 1% of its severity.

Consider the absolute values of elasticity expected utility of the criminal on probability of punishment and its severity

$$(\partial EU / \partial p < 0; \partial EU / \partial F < 0)$$

The elasticity of the expected utility in the probability of punishment will be higher than its elasticity in severity if:

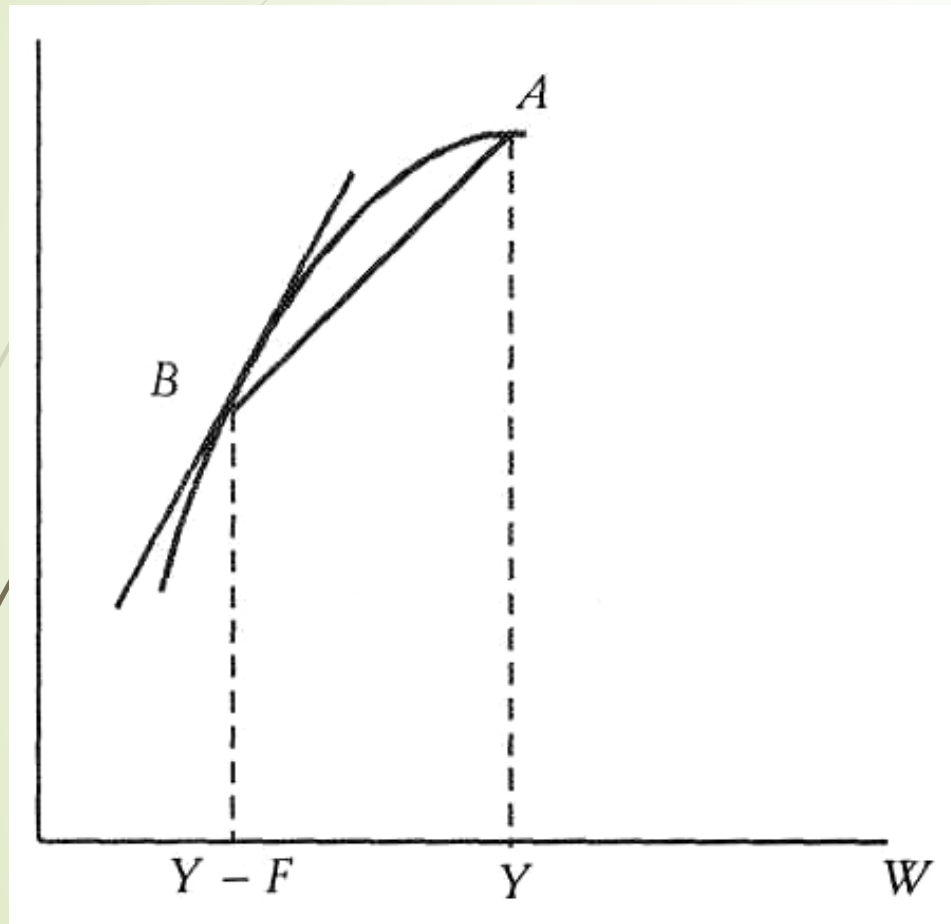
$$\eta_p^{EU} \equiv \frac{\partial EU}{\partial p} \frac{p}{EU} = [U(Y) - U(Y - F)] \frac{p}{EU};$$

$$\eta_p^{EU} \equiv \frac{\partial EU}{\partial F} \frac{F}{EU} = pU'(Y - F) \frac{F}{EU};$$


$$\frac{U(Y) - U(Y - F)}{F} > U'(Y - F).$$

But risk preference is defined by $U > 0$, neutrality by $U = 0$, and aversion by $U < 0$.

Dependence of the expected utility of the offender on the severity and likelihood of punishment




Here is shown the dependence of the utility of the individual U on his wealth W (wealth does not necessarily have to take a monetary form). Obviously, the income from crime increases the wealth of the individual, and punishment - on the contrary, reduces. The left side of the above inequality is the tangent of the slope of the chord AB , and the right-hand side is the tangent of the slope of the tangent to the curve U at the point $W = Y - F$. the utility of the individual increases with the growth of his wealth at an increasing rate.



The amount of crimes committed by an individual over a certain period of time is a function of the severity of the punishment, the likelihood that the individual will be punished. Of course the amount of crime depends on other factors, the most important of them is the alternative income that an individual could receive if he were engaged legal activity not related to the commission of crimes:


$$\Theta = \Theta(p, F, U).$$



At the same time, the number of crimes committed by an individual over a certain period of time is related to an inverse relationship with the severity of the punishment and its probability:

$$\Theta_p = \frac{\partial \Theta}{\partial p} < 0;$$


$$\Theta_F = \frac{\partial \Theta}{\partial F} > 0.$$



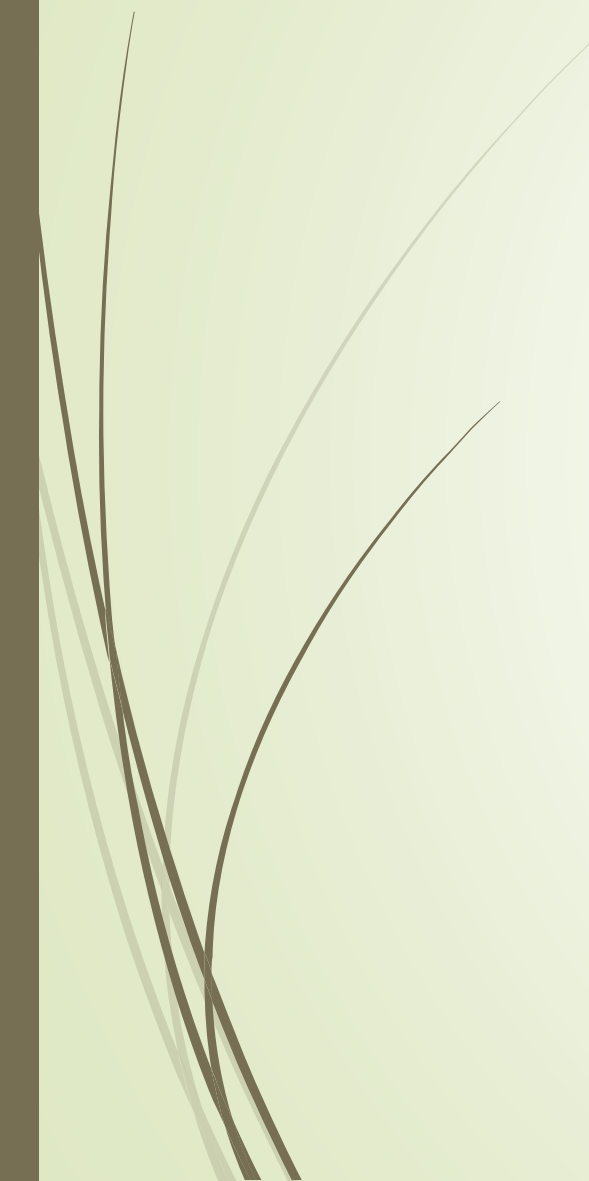
The most important factor not explicitly included in the criminal behavior model proposed by Gary Becker is the individual's income from legal activities that he loses if he commits a crime and is exposed. If we enter this parameter into the Becker model, the formula for the expected utility of the offender will look like this:

$$EU = pU(W_t - F) + (1 - p)U(W_t + Y),$$

where **W_t** - current income of an individual from legal activity




Thus, the main factors that influence the choice of the individual between criminal and legal activities are the severity of the punishment, its probability and the expected relative income of the individual from legal activity.






PUNISHMENTS

Mankind has invented a variety of ingenious punishments to inflict on convicted offenders: death, torture, branding, fines, imprisonment, banishment, restrictions on movement and occupation, and loss of citizenship are just the more common ones. In the United States, less serious offenses are punished primarily by fines, supplemented occasionally by probation, petty restrictions like temporary suspension of one's driver's license, and imprisonment. The more serious offenses are punished by a combination of probation, imprisonment, parole, fines, and various restrictions on choice of occupation.




Punishments affect not only offenders but also other members of society. Aside from collection costs, fines paid by offenders are received as revenue by others. Most punishments, however, hurt other members as well as offenders: for example, imprisonment requires expenditures on guards, supervisory personnel, buildings, food, etc. Currently about \$1 billion is being spent each year in the United States on probation, parole, and institutionalization alone, with the daily cost per case varying tremendously from a low of \$0.38 for adults on probation to a high of \$11.00 for juveniles in detention institutions (President's Commission, 1967b, pp. 193—94).



The total social cost of punishments is the cost to offenders plus the cost or minus the gain to others. Fines produce a gain to the latter that equals the cost to offenders, aside from collection costs, and so the social cost of fines is about zero, as befits a transfer payment. The social cost of probation, imprisonment, and other punishments, however, generally exceeds that to offenders, because others are also hurt. The derivation of optimality conditions in the next section is made more convenient if social costs are written in terms of offender costs as

$$f' = bf$$

Where f' is the social cost and b is a coefficient that transforms f into f' .



The size of b varies greatly between different kinds of punishments:

$b = 0$ for fines, while **$b > 1$** for torture, probation, parole, imprisonment, and most other punishments. It is especially large for juveniles in detention homes or for adults in prisons and is rather close to unity for torture or for adults on parole.



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Thank
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