



Econ 137

Urban Economics

Lecture Notes V

Guillermo Ordonez, UCLA



Questions for Lecture Notes V

- How does economics help us to understand crime?
- How to understand crime help us to deal with it?
- What is special about housing decisions?

Crime - Facts

- FBI collects data from local police departments on seven index crimes.
 - Personal crimes: Murder, Rape, Aggravated assault, Robbery
 - Property crimes: Burglary (illegal entry of a building), Larceny (purse snatching, pocket picking, bicycle theft, etc) and Auto Theft.
- Only crimes reported to the police (around 38% of all property crimes and 48% of all personal crimes).
- Department of Justice makes surveys of victimization rates.

Crime - Facts

TABLE 12-1 FBI Index Crimes, 1960-2003

	Number of Crimes per 100,000 People					
	1960	1970	1980	1990	1995	2003
<i>Personal Crime</i>						
Murder	5.0	7.8	10.2	9.4	8.2	5.7
Rape	9.5	18.6	36.8	41.2	37.1	32.1
Aggravated assault	85	177	299	424	418	295
Robbery	60	187	251	257	221	142
<i>Property Crime</i>						
Auto theft	182	457	502	658	561	433
Larceny	1,024	2,124	3,167	3,184	3,045	2,415
Burglary	504	1,152	1,684	1,236	988	741
<i>Total Index Crimes</i>	1,870	3,949	5,950	5,820	5,278	4,064

Source: U.S. Federal Bureau of Investigation, *Crime in the United States, Various Years* (Washington, DC: U.S. Government Printing Office).

Crime - Facts

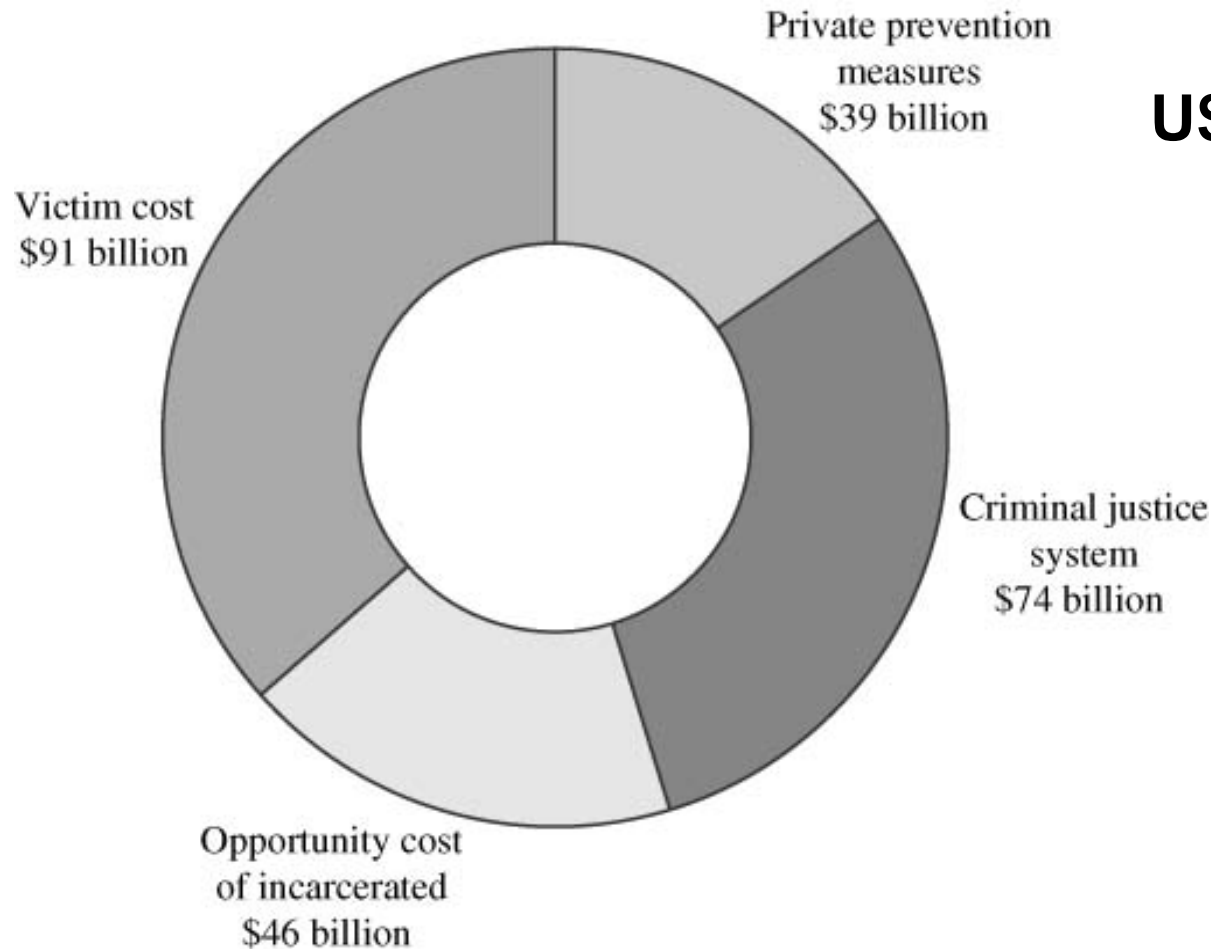
TABLE 12-2 Criminal Victimization Rates, 2003

	Population (million)	Violent (per 1,000 people)			Property (per 1,000 households)			
		Total	Robbery	Assault	Total	Burglary	Motor Vehicle Theft	Theft
<i>Household Income</i>								
Less than \$7,500	8	49.9	9	39.3	204.6	58	6.3	140.3
\$7,500-\$14,999	16	30.8	4	25	167.7	42.2	7.3	118.3
\$15,000-\$24,999	25	26.3	4	21.5	179.2	38.4	8.9	131.9
\$25,000-\$34,999	24	24.9	2.2	21.8	180.7	35.3	12.3	133.1
\$35,000-\$49,999	32	21.4	2.1	18.3	177.1	27.6	9.5	140
\$50,000-\$74,999	35	22.9	2	20.4	168.1	24.9	8.4	134.7
\$75,000 or more	48	17.5	1.7	15.4	176.4	20.8	11.9	143.7
<i>Region</i>								
Northeast	45	21	2.7	18.1	122.1	20.5	7.2	94.4
Midwest	56	23.6	2.7	19.4	160.2	32.5	6.9	120.9
South	86	21.1	2.5	17.8	160.5	32.2	7.8	120.4
West	52	25.2	2.1	22.5	207.4	30.6	15.2	161.6
<i>Residence</i>								
Central city	66	28.2	3.7	23.8	216.3	38.7	13	164.7
Suburban	116	21.3	2.3	18.1	144.8	24	9.3	111.6
Rural	57	18.6	1.6	16.4	136.6	30.5	4	102.1

Source: U.S. Bureau of Justice, "Criminal Victimization in the United States, 2003" (Washington DC, 2005).

Crime – Cost to society

FIGURE 12–1 The Costs of Crime



Total Cost (in 1992)

**U\$S 250 billion per year
3.8% of GDP !!!**

Source: Based on Richard Freeman, "Why Do So Many Young American Men Commit Crimes and What Might We Do About It?" *Journal of Economic Perspectives* 10, no. 1 (1996), pp. 25–42.

Economics of Crime

- Criminals are rational, as everybody.
- They are in a **risky** “business”
- Criminals commit the crime when the **expected benefits** are greater than the **expected costs**.

- **A criminal. To be, or not to be.
That is the question**

Economics of Crime - Risk Aversion

- Assume a utility function (and consumption=income)

$$U = u(c) = u(y)$$

- Absolute coefficient of risk aversion $ARA = -\frac{u''(y)}{u'(y)}$

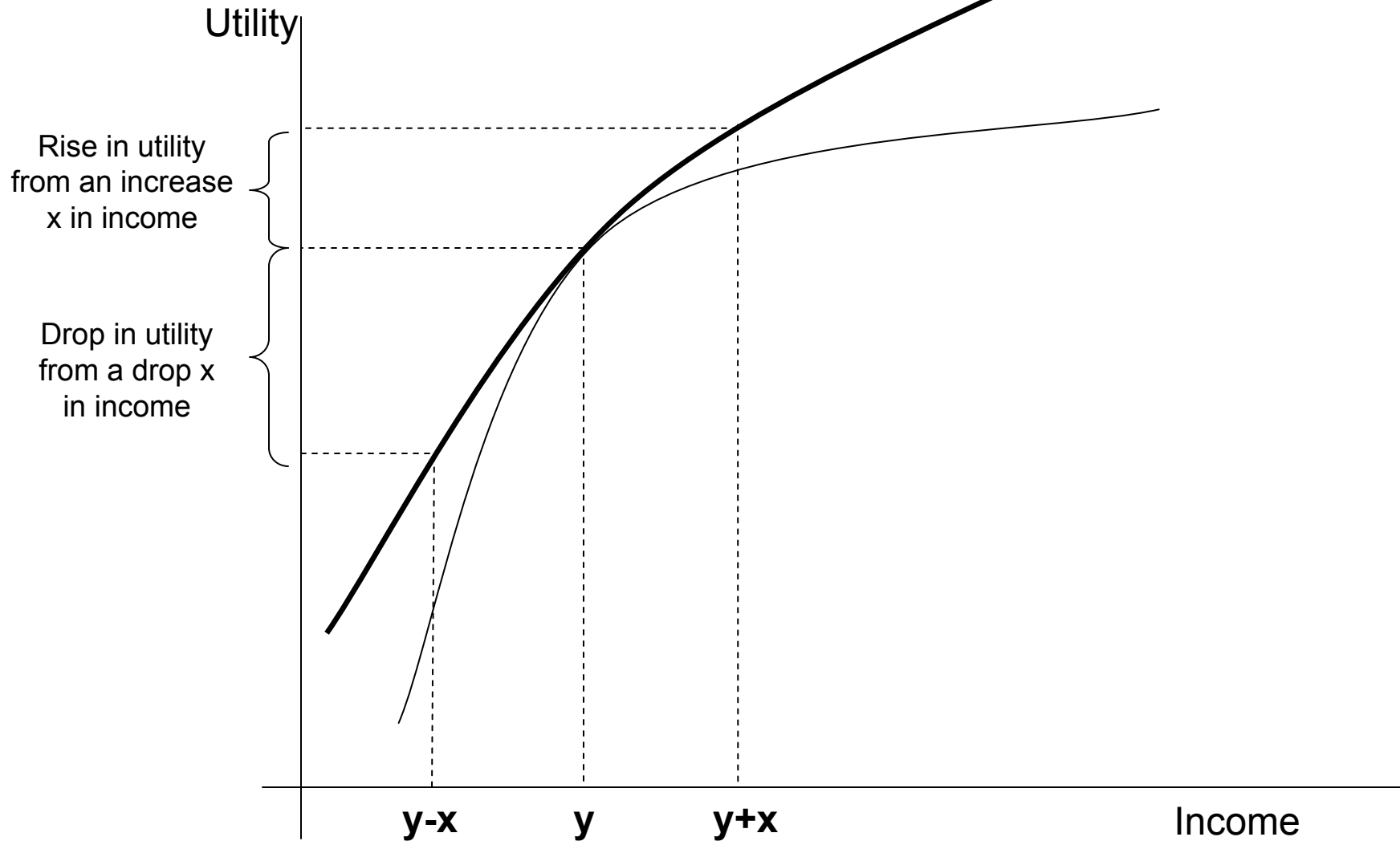
- Relative coefficient of risk aversion $RRA = -\frac{u''(y)}{u'(y)}y$

- For example, assume $U = y^{1-\rho}$ hence $ARA = \frac{1}{2y}$ and $RRA = \frac{1}{2}$

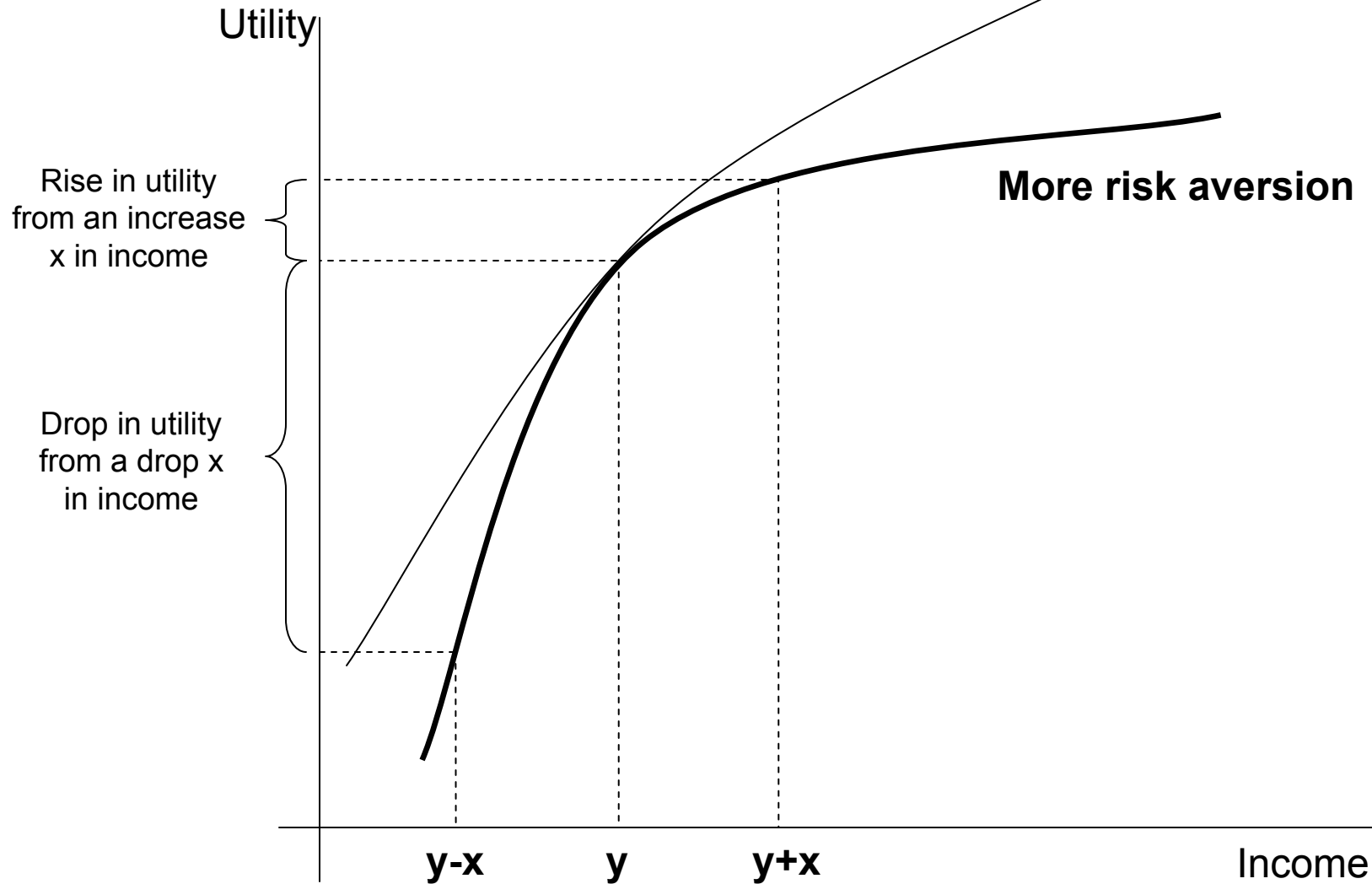
$$U = \frac{y^{1-\rho}}{1-\rho} \quad (\text{for } \rho \in [0,1]), \quad ARA = \frac{\rho}{y}, \quad RRA = \rho$$

$$\text{For } \rho = 1, \quad U = \ln(y), \quad ARA = \frac{1}{y}, \quad RRA = 1$$

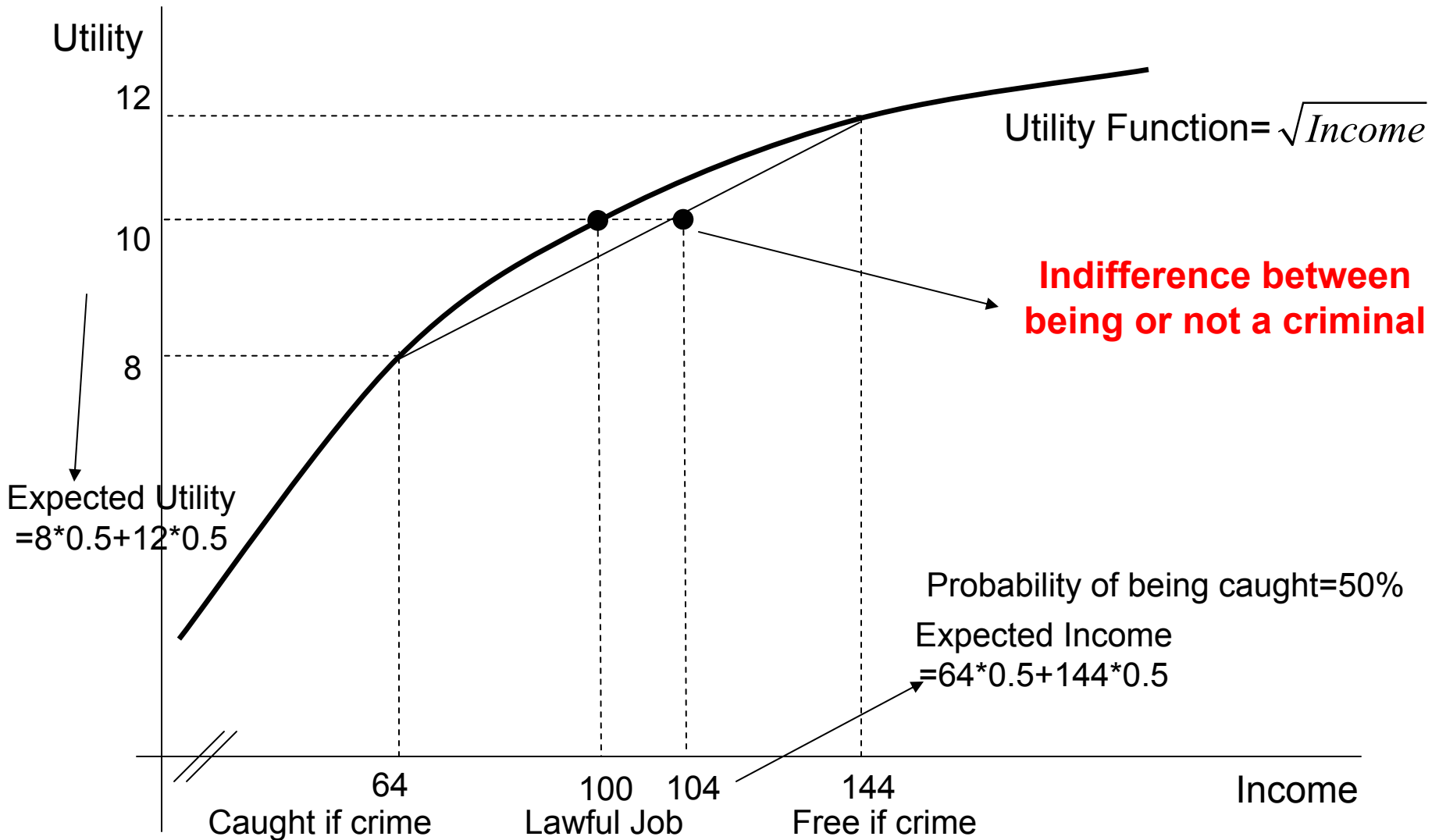
Economics of Crime - Risk Aversion



Economics of Crime - Risk Aversion

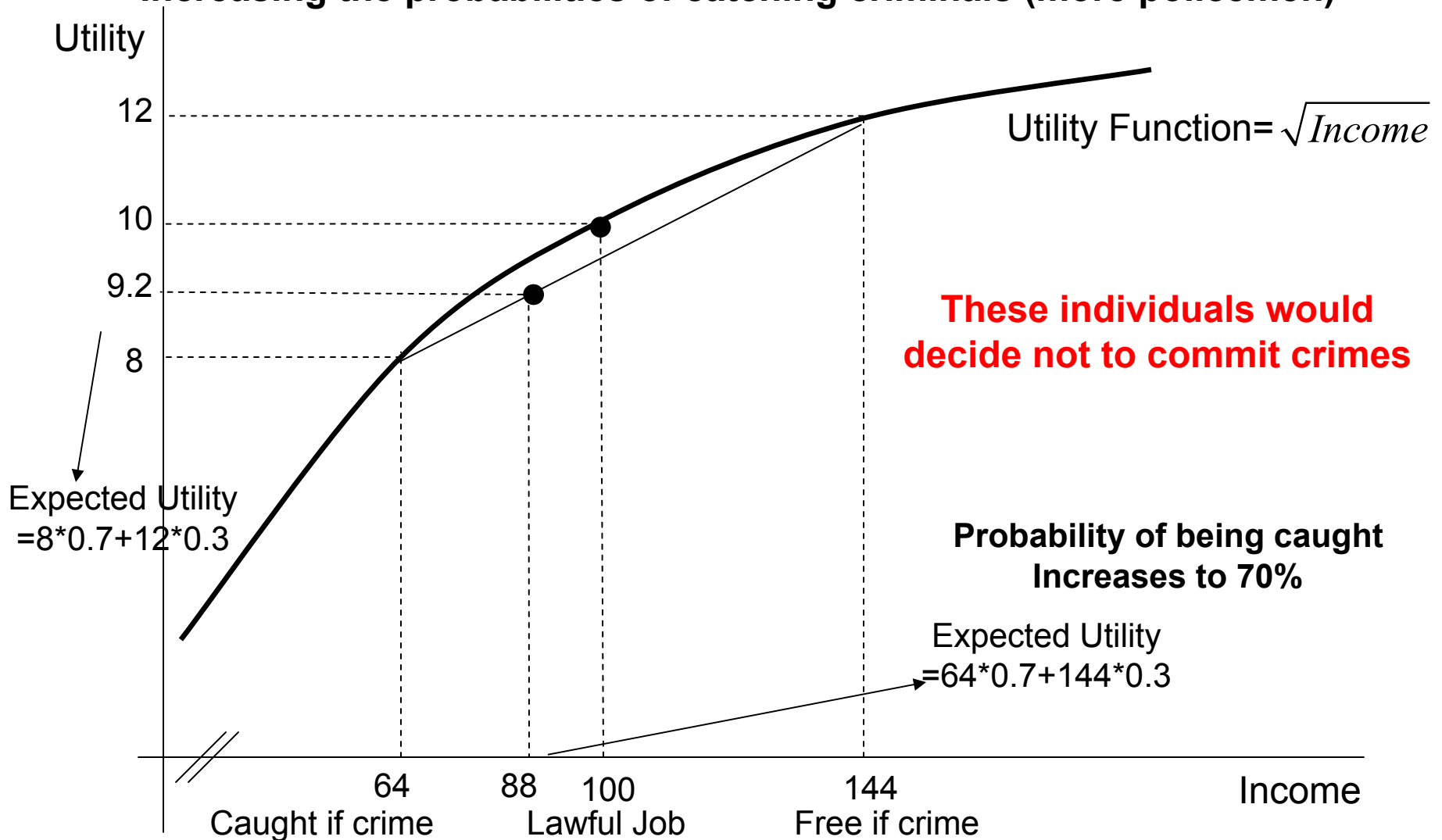


Economics of Crime



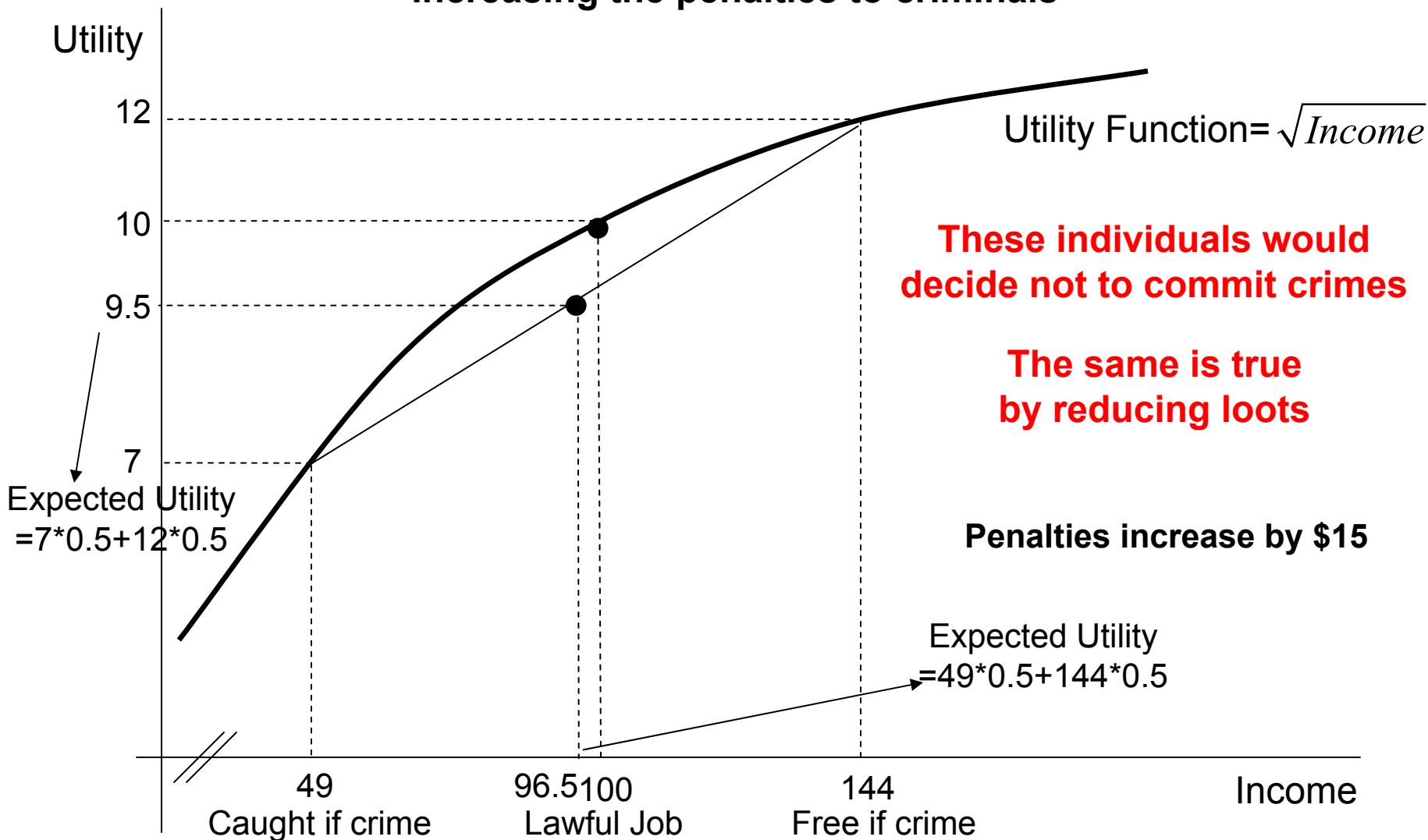
Economics of Crime-Changing incentives

Increasing the probabilities of catching criminals (more policemen)



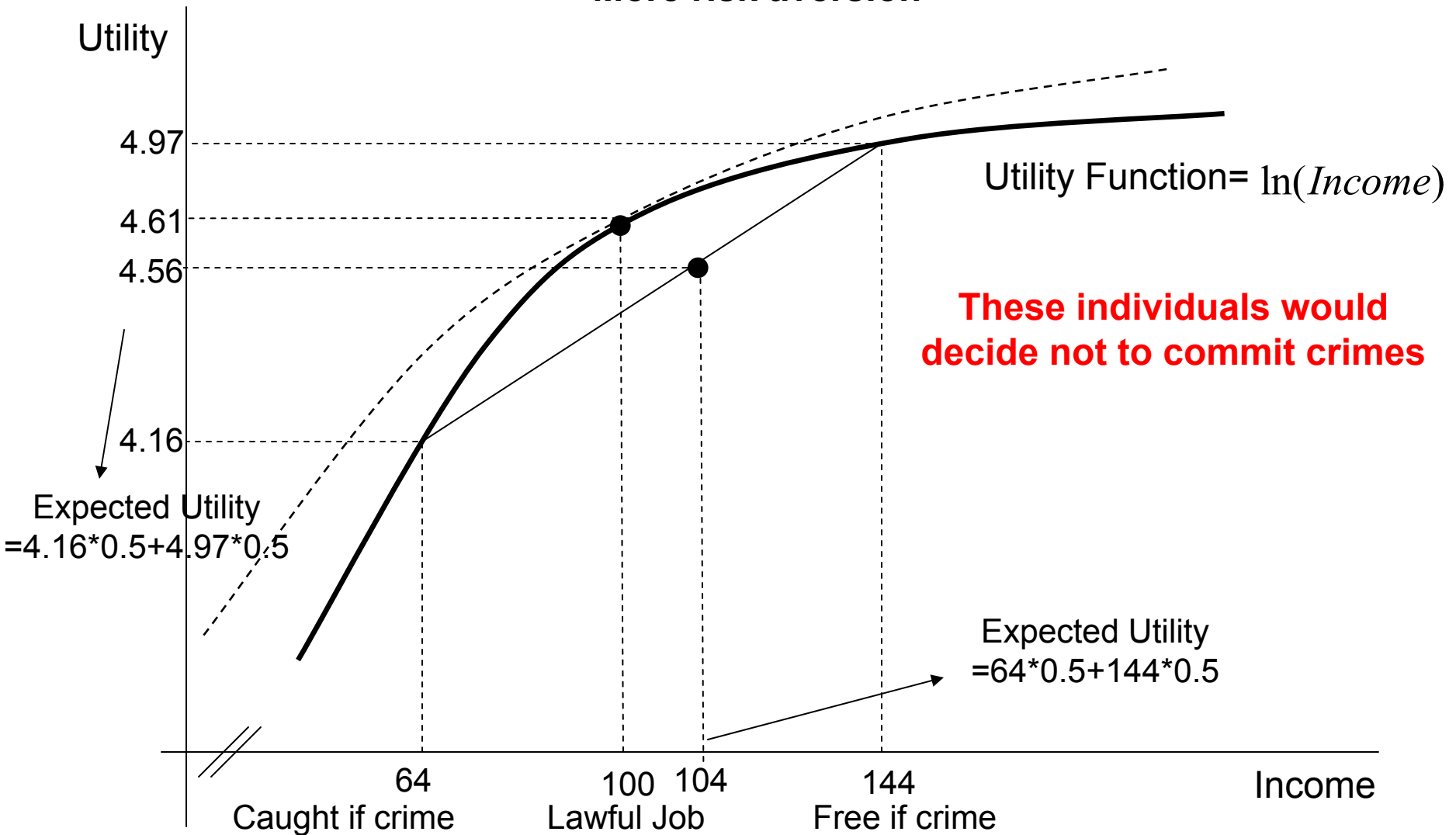
Economics of Crime-Changing incentives

Increasing the penalties to criminals



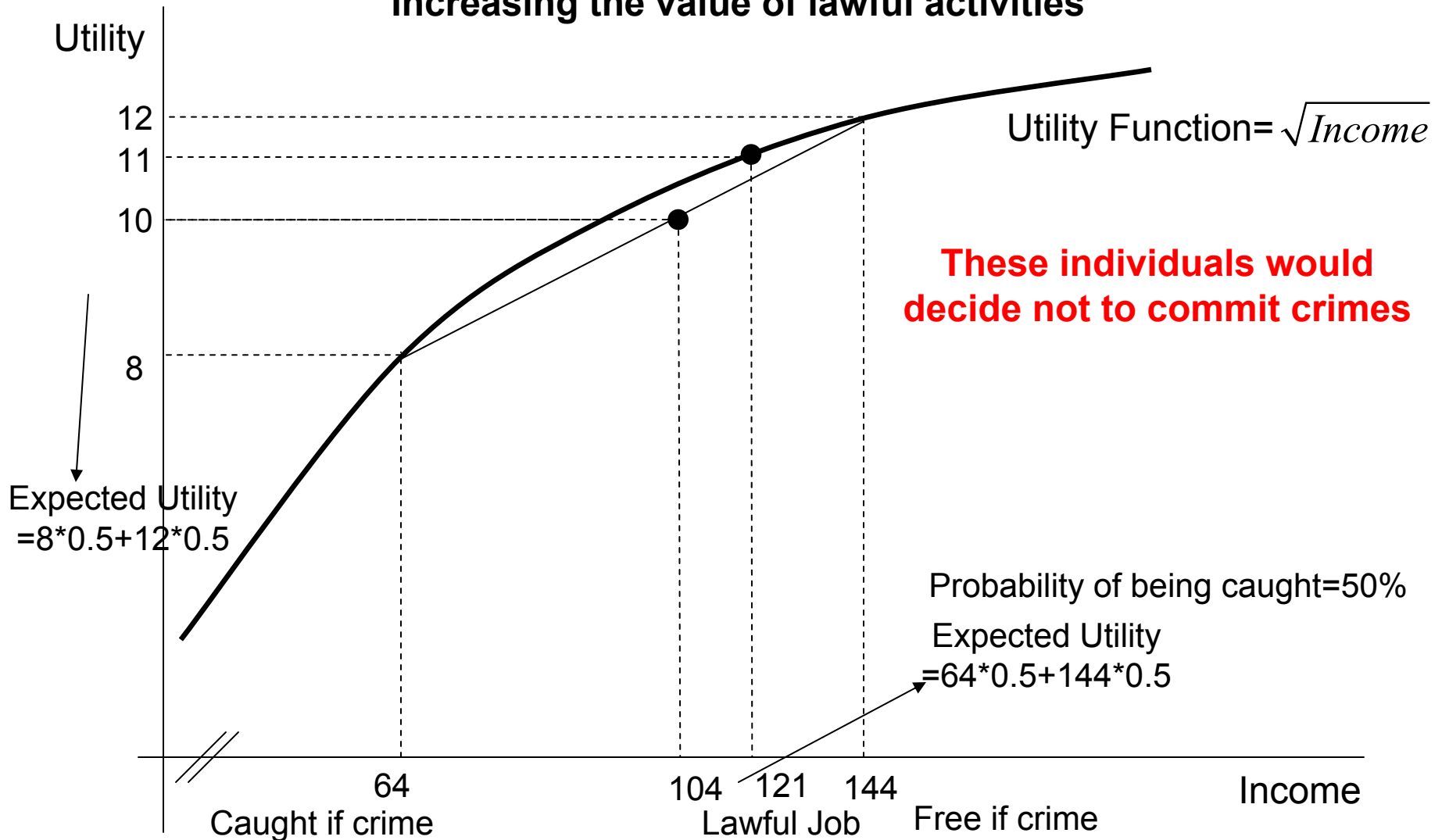
Economics of Crime-Changing incentives

More risk aversion

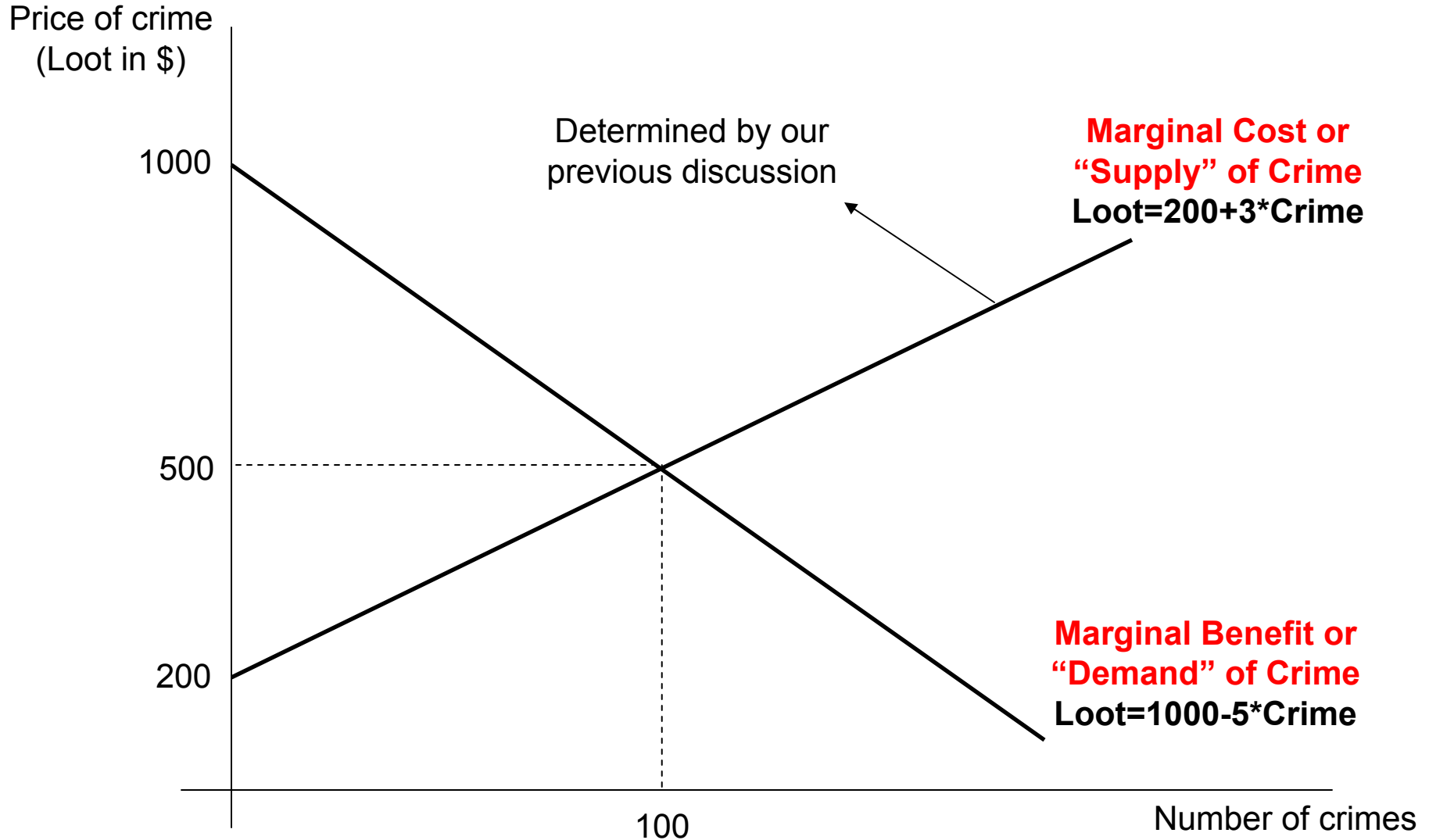


Economics of Crime-Changing incentives

Increasing the value of lawful activities

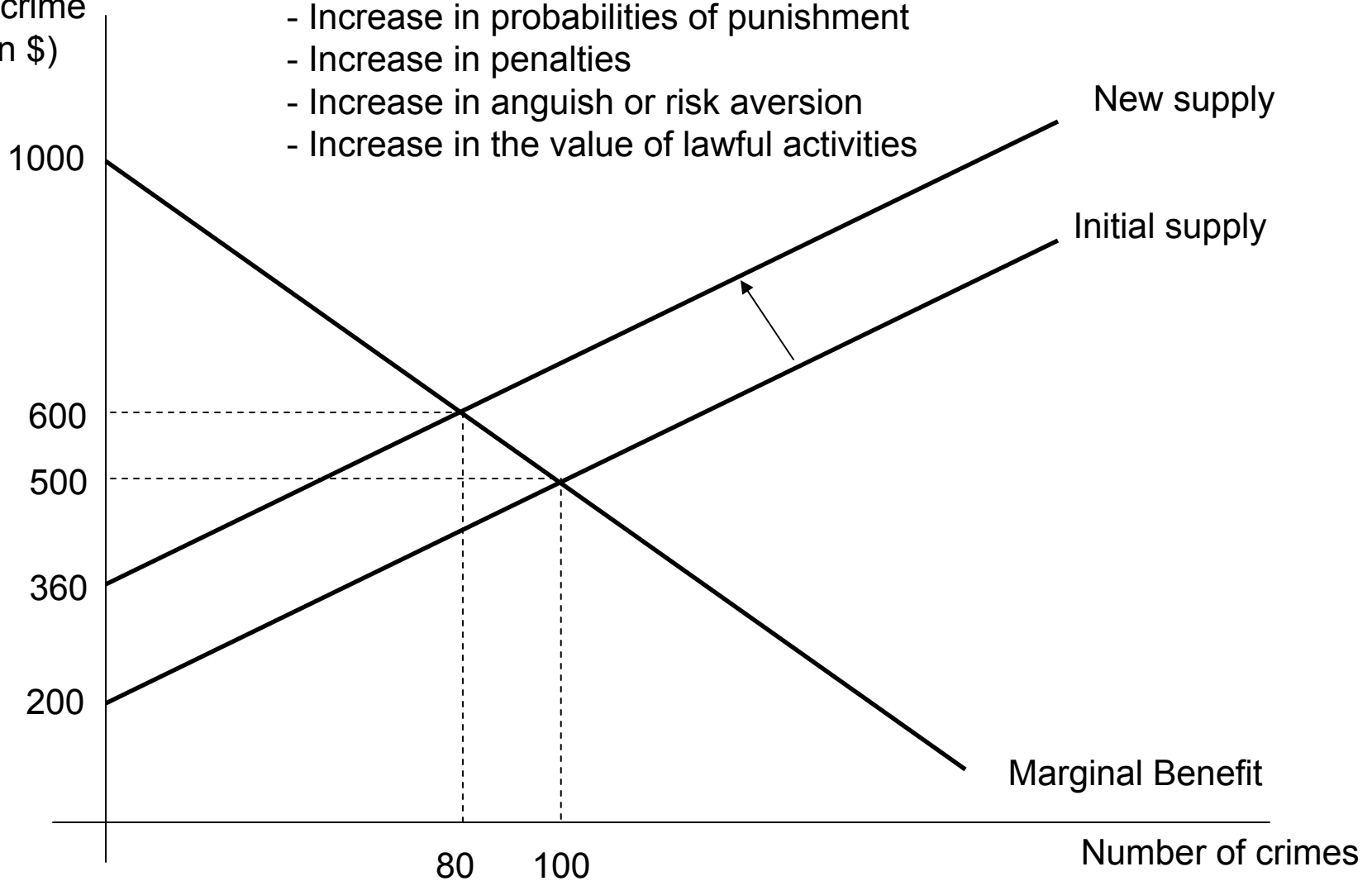


Economics of Crime



Economics of Crime

Price of crime
(Loot in \$)



- Increase in probabilities of punishment
- Increase in penalties
- Increase in anguish or risk aversion
- Increase in the value of lawful activities

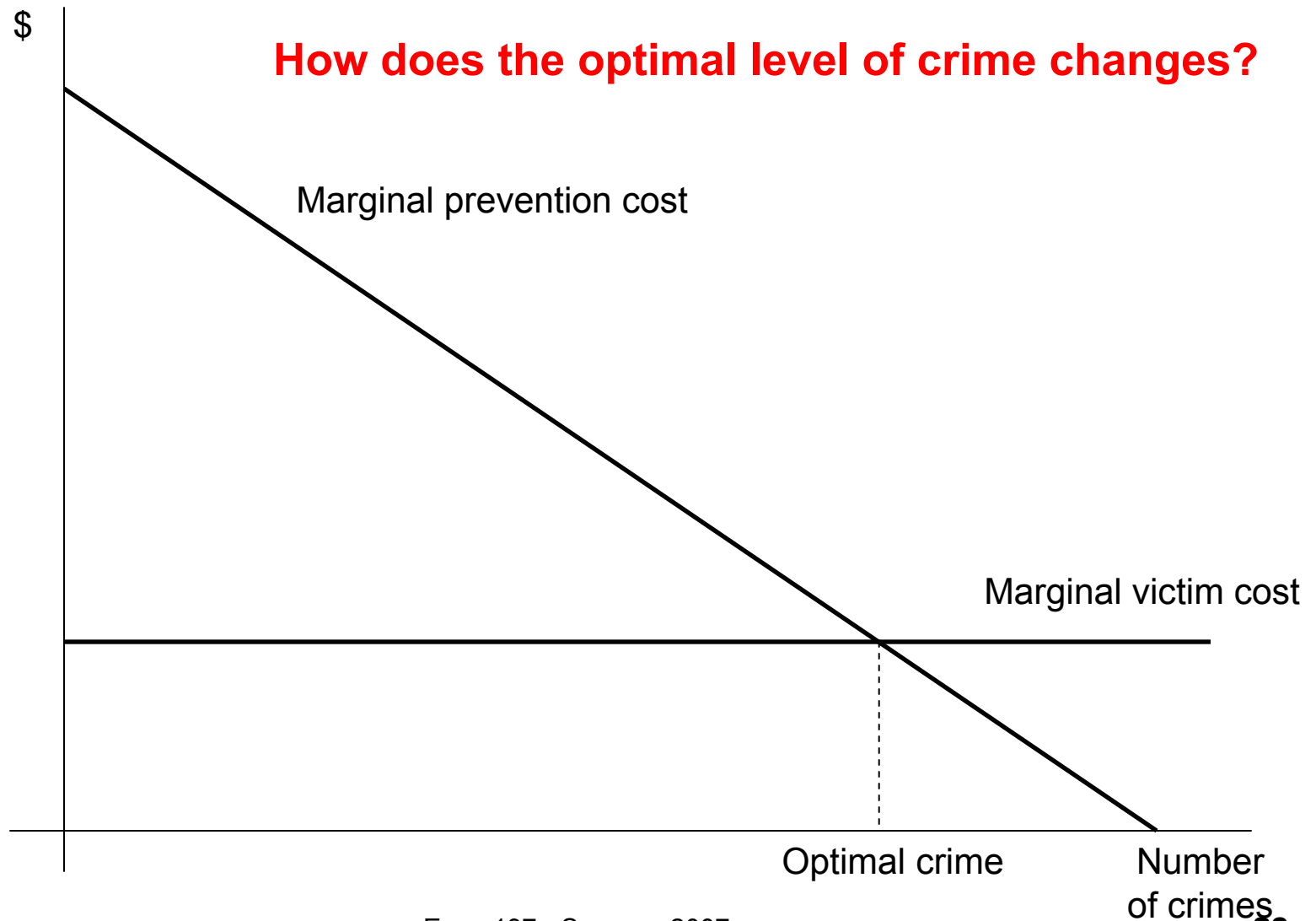
Economics of crime

- Some elasticities, (of crime with respect to)
 - Probability of imprisonment:- 0.3
 - Arrest ratio:- 0.3
 - Number of police officers: - 0.45
 - Length of prison: Almost 0.
 - The worst punishment is the lose of freedom, not so much how many years criminals spend in prison after they lose freedom.
 - Hardening the criminal (reduction in anguish).
 - Prison schooling (by other prisoners).
 - Wages of low skilled workers: Between- 1 and- 2

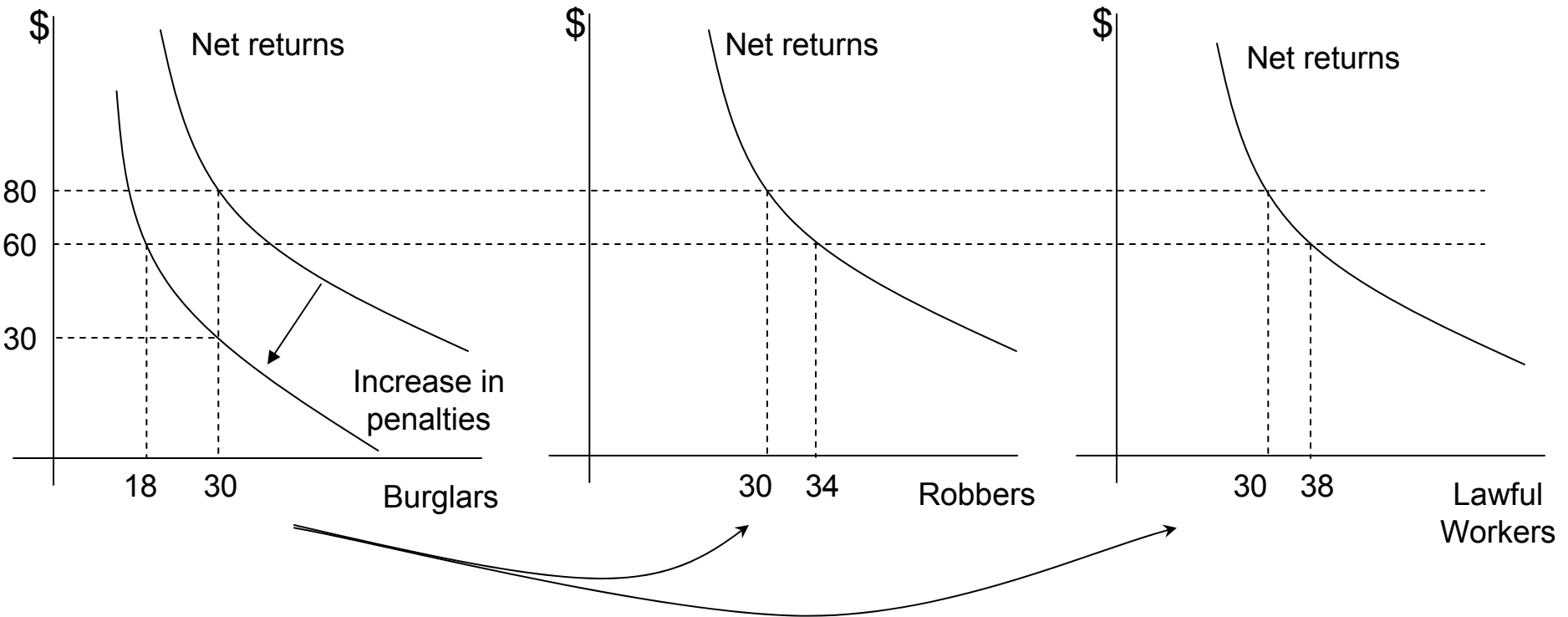
Economics of crime

- Education as a Crime Fighting Policy
 - Additional year of high school: Decreases the crime participation rate by about 0.1 percentage points for white males and 0.4 percentage points for black males.
 - Graduation from high school: Decreases the crime participation rate by 10% for violent and property crimes.

Optimal crime level




Optimal penalties (General Equilibrium)



Is this increase in penalties a good idea if the cost of one robbery to society is equivalent to four burglaries ?

What if one robbery is like two burglaries ?



Crime in cities – Two big facts

- Crime rates are higher in big cities than in small ones.
- Crime rates decreased in the US during the nineties (by around a third)

Crime in cities – Two big facts

- Crime rates are higher in big cities than in small ones.
 - Large cities (population more than 250,000) have **twice** as much violent crime and 30% more property crimes than small cities (population less than 10,000)
 - Elasticity of crime with respect to city size: **0.15**
- Why? (Glaeser and Sacerdote, 1996)
 - More female-headed houses: (explains 50% of the difference). Children less skilled and less ethical ?????
 - More loot: (explains 25% of the difference) Average value per crime \$900 against \$550
 - Lower probability of arrest: (explains 15% of the difference) Larger pool of criminals and less helpful “neighbors”

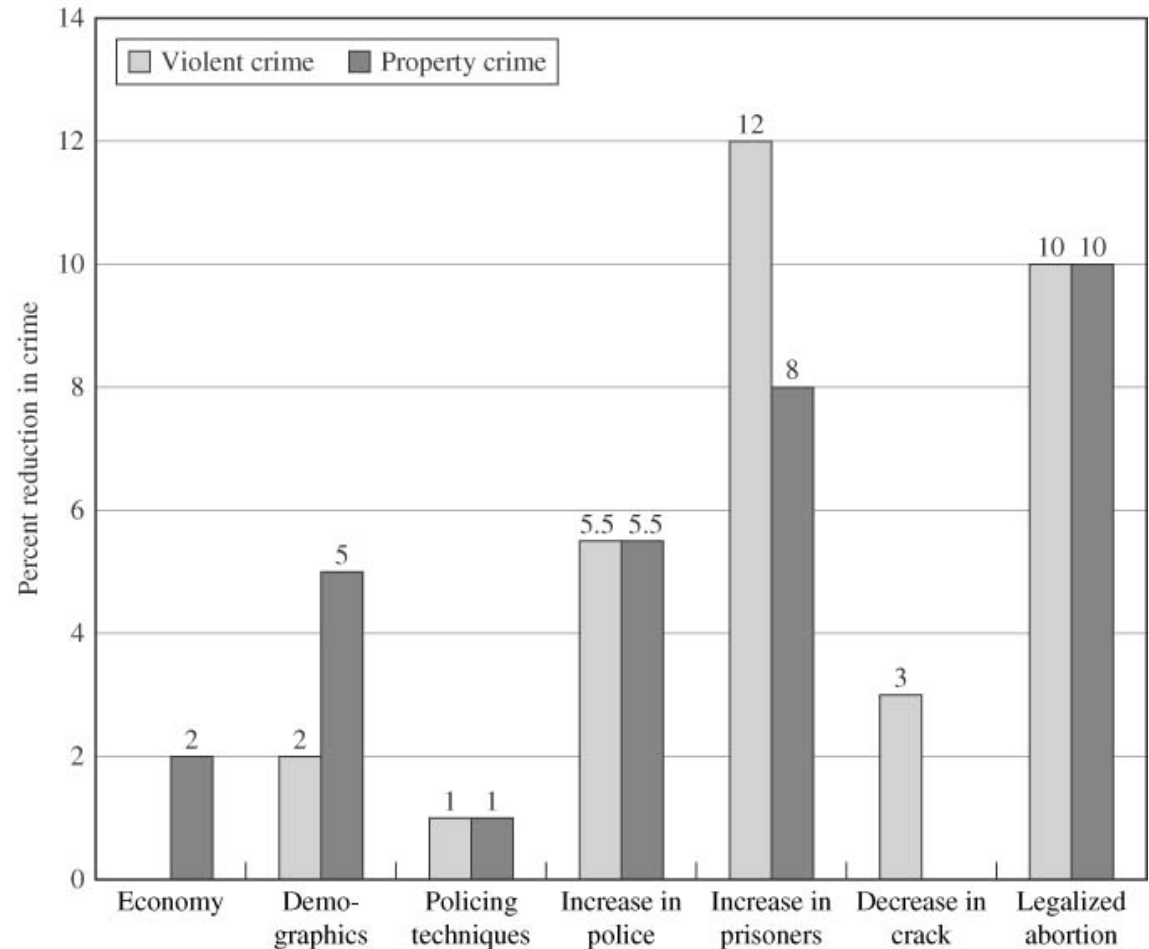
Crime in cities – Two big facts



Crime in cities – Two big facts

- Crime rates decreased in the US during the nineties (by around a third)
- Why? (Levitt, 2004)

FIGURE 12-7 Why Did Crime Drop in the 1990s?



Source: Data from Steven Levitt, "Understanding Why Crime Fell in the 1990s: Four Factors That Explain the Decline, and Six That Do Not." *Journal of Economic Perspectives* 18 (2004), pp. 163–190.

Summary Ch. 12 O'Sullivan

- Crime is a risky business because there is a chance of being caught and paying a large penalty. A potential criminal compares the certain utility of lawful jobs to the expected utility of criminal activities
- An increase in the probability of punishment has a larger deterrent effect than an increase in the severity of punishment.
- The optimum amount of crime is the level at which the marginal victim cost equals the marginal prevention cost.
- Education reduces crime by increasing the opportunity and payments of lawful jobs.
- Increase in penalties to some specific crimes not necessarily increases welfare to society.



Housing

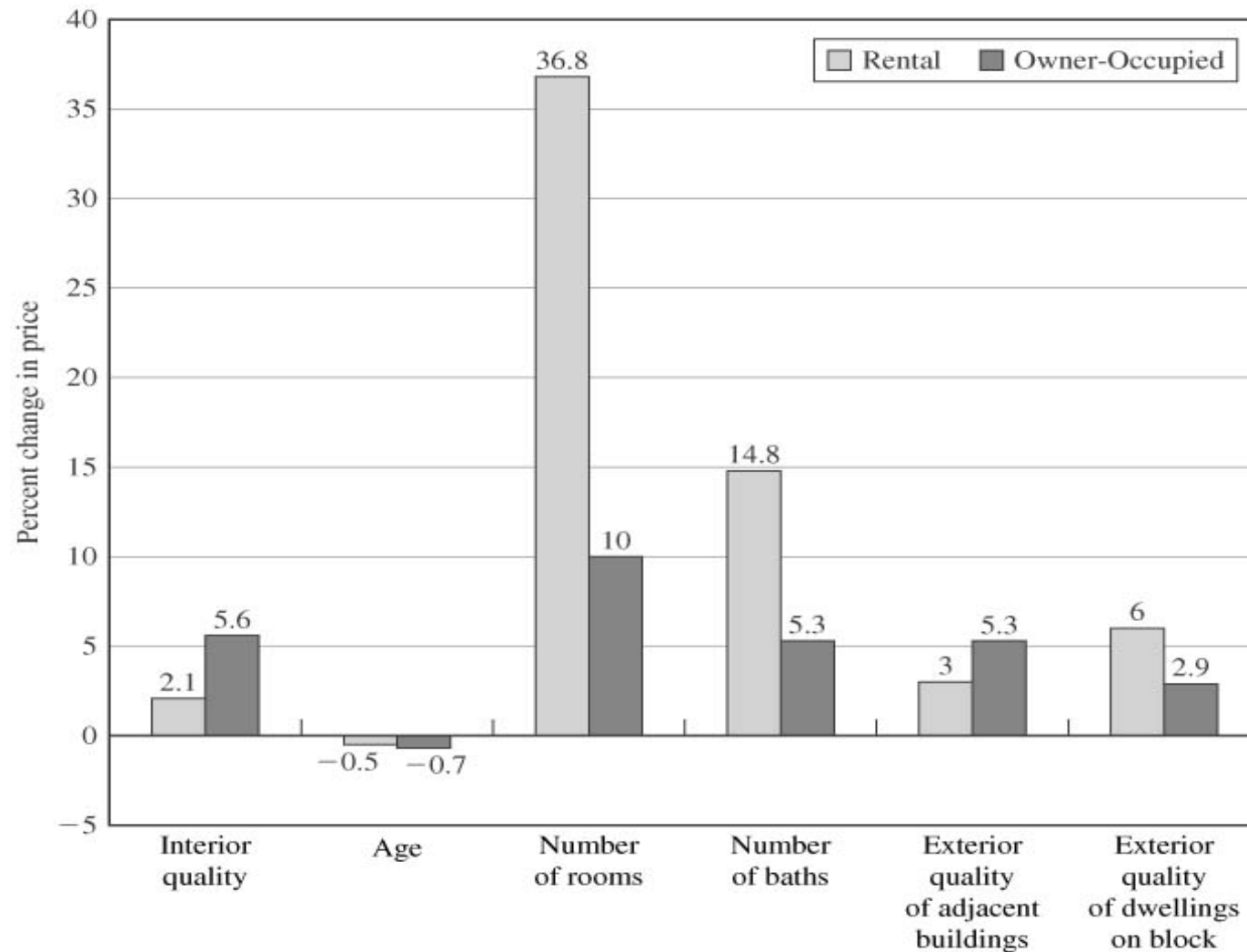
- Three unique characteristics of housing
 - Heterogeneity and hedonics
 - Durability
 - High moving costs

Housing - Heterogeneity

- A house is a bundle of characteristics or housing services, each with an implicit price.
- Size, layout, style, utilities, quality of the interior and exterior, neighborhood, access to schools and services, etc.
- Under the hedonic approach the price of a house is determined by each part of the housing bundle.

Housing - Heterogeneity

FIGURE 13-1 Results of Hedonic Study

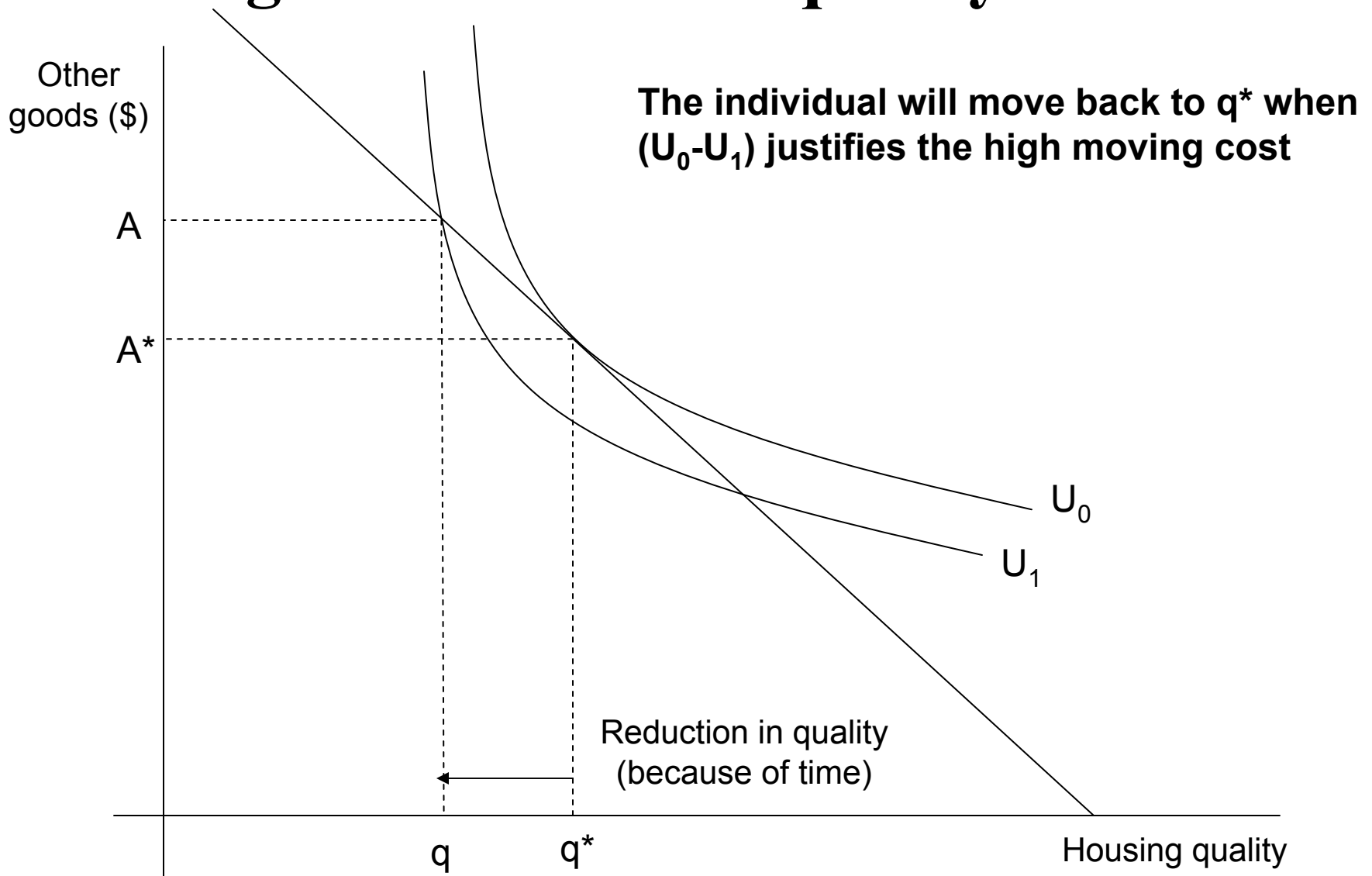


Source: Based on John Kain and John Quigley. "Measuring the Value of Housing Quality." *Journal of the American Statistical Association* 65 (1970), pp. 532-48.

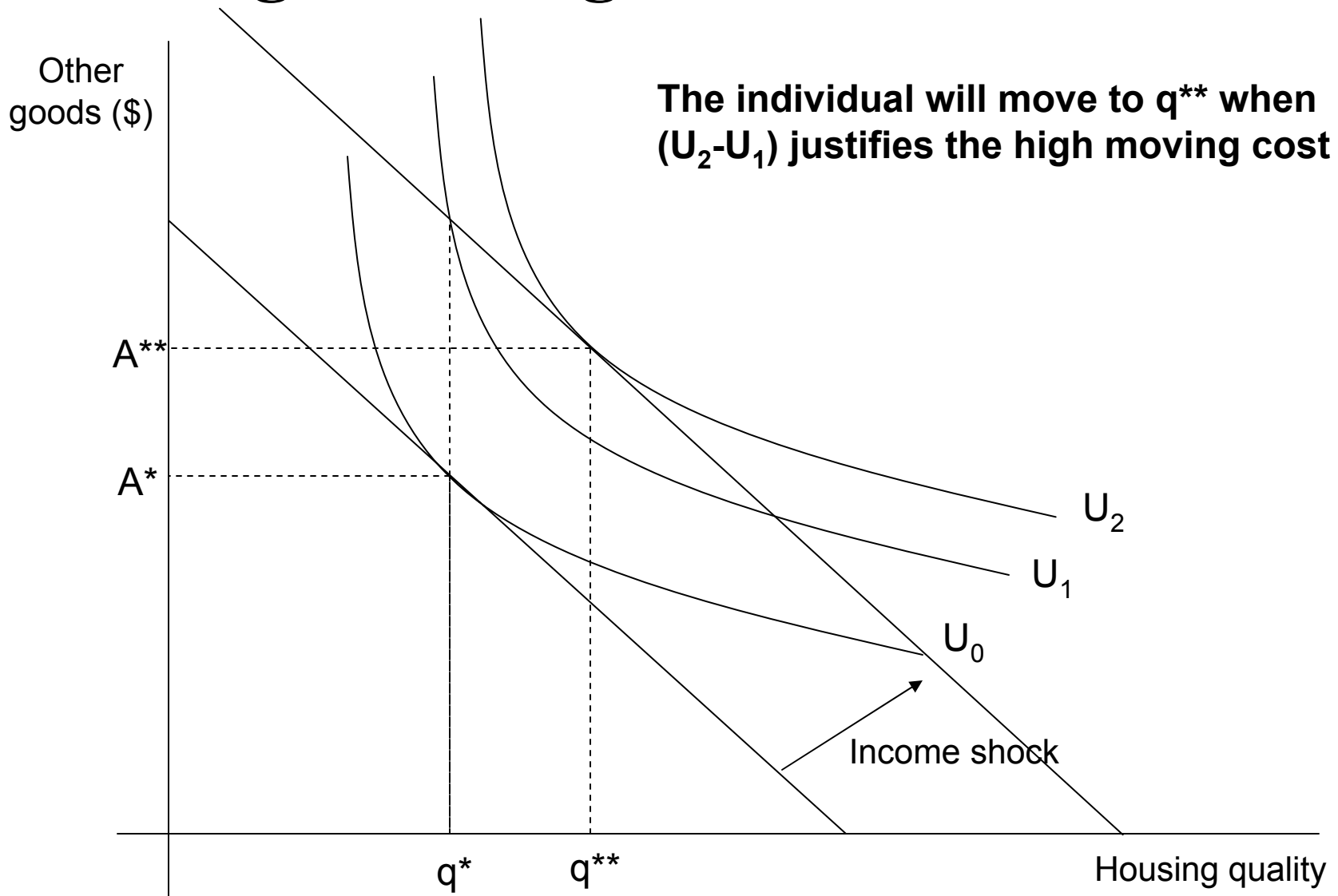
Housing - Durability

- A house can last more than a century.
- Naturally, quality (one of the main determinants of prices and rents) deteriorates along time.
- The owner of the house should decide the degree of maintenance to equalize the benefits from a better rent or price and the costs of repair.
- Basically the owner's objective is to maximize profits deciding the quality of the dwelling.
- If maintenance is not profitable, the owner may decide between boarding up, conversion or abandonment.
- Abandonment generates negative externalities.

Housing – Reduction in quality



Housing – Moving costs





Summary Ch. 13 O'Sullivan

- The hedonic approach is based on the notion that a dwelling is composed of a bundle of housing services, each with an implicit price.
- Housing is durable and the owner controls its position on the quality ladder by spending on maintenance, repair, renovation and remodeling.
- The cost of moving is relatively large, so households change their housing consumption infrequently and make large changes when they move.



Questions for Lecture Notes V

- How does economics help us to understand crime?
- How to understand crime help us to deal with it?
- What is special about housing decisions?

Practice Exercises - Lecture Notes V

■ O'Sullivan

- Chapter 12: Exercises 2, 3 and 4.
- Chapter 13: Exercises 1 and 2.