5-1-1973

Crime: An Economic Approach

Pamela E. Lynch

Adviser: Donald J. Hunter

Follow this and additional works at: https://digitalcommons.ursinus.edu/bus_econ_hon

Part of the Behavioral Economics Commons, Criminology and Criminal Justice Commons, Economic Theory Commons, and the Social Statistics Commons

Click here to let us know how access to this document benefits you.
CRIME:
AN ECONOMIC APPROACH

Pamela E. Lynch
May 1, 1973
in fulfillment of
the requirements for
Departmental Honors
Dr. Donald J. Hunter, 
advisor

Donald J. Hunter
TABLE OF CONTENTS

INTRODUCTION  
I. AMOUNT OF CRIME AND TRENDS  
II. THE ECONOMIC IMPACT OF CRIME  
III. AN ECONOMIC MODEL FOR CRIMINAL BEHAVIOR  
IV. SUMMARY AND CONCLUSIONS  
FOOTNOTES  
BIBLIOGRAPHY
CRIME CLOCKS 1971

SERIOUS CRIMES
11 EACH MINUTE

VIOLENT CRIMES
ONE EVERY 39 SECONDS

MURDER
ONE EVERY 30 MINUTES

FORCIBLE RAPE
ONE EVERY 13 MINUTES

AGGRAVATED ASSAULT
ONE EVERY 86 SECONDS

ROBBERY
ONE EVERY 82 SECONDS

BURGLARY
ONE EVERY 13 SECONDS

LARCENY ($50 and over)
ONE EVERY 17 SECONDS

AUTO THEFT
ONE EVERY 33 SECONDS

An economic analysis in the area of crime has been a long time in coming. It is generally accepted that any effective control of crime must involve the allocation of a massive portion of our national resources to the struggle. But while this recognition may have been slow in being realized, the upsurge of public pressure and the consequent appropriations at the national, state, and local levels are evidence that, in the ranking of social crises, crime prevention and control are now among the high priority concerns. Until recently, economists were reluctant to attempt any sophisticated economic techniques in attaining efficiency in the allocation of resources in the fight against crime, but today this sociological concern has taken on a very economic hue.

The literature of criminology and sociology has long attributed major importance to the impact of economic conditions on the generation of crime. Crime is not a problem which is as easily solvable or explainable as other social ills. It is different. In essence, it is human behavior under economic conditions. Combined with this are heredity and environment, the interaction of individual and society, and the totality of human nature and experience, and all together these make up the elemental origins of crime. Each single crime is a response to a specific situation by a person with an infinitely complicated psychological and emotional makeup who is subject to a series of infinitely complicated external pressures. And crime as a whole is millions of such responses.
There are some crimes so irrational, unpredictable, explosive, and resistant to analysis that they can no more be prevented or guarded against than can a volcanic eruption or tidal wave. Then again there are, at the other extreme, the meticulously planned careful operations of the professional criminal. The moves of these individuals are so exceedingly rational that in understanding the particular motivations of the crime we can comprehend preventative measures also. But the basic problem still remains. Predicting and discouraging sudden criminal outbursts is as difficult and baffling a problem as how to keep competent and intelligent individuals from taking up crime as their life's work.

What we do know of crime is that when it occurs, there are individuals who have such disregard for the systems and standards of society, who at that moment have so little concern for the welfare of others, or have so little control over themselves that they are willing to take something which is not theirs or violate the law in some other way, for whatever reason. So long as there exists in society this sort of individual, crime will occur, and there is not really anything we can do about it. No matter how effective the government attempts to be in its efforts to control crime, as long as the citizens have the will to violate the law, the government is waging a battle it cannot possibly hope to win.

From the would-be criminal's point of view, there are many crimes which would never have been committed, no matter what kind of people their perpetrators were, if only the victim had understood the real risk they were running. Often the victim of an auto theft is someone who had left his keys in the car, the victim of an assault the one
who started the fight, or the victim of a loan shark someone who
lost his month's rent money at the local race track.

Reluctance, or inability to take action against crime may be
included as another possible cause of crime. Public tolerance of
something as widespread as white collar crime is prevalent because
in the eyes of many, on the corporate level, when making money, anything
goes.¹ Employers are reluctant to seriously prosecute employees for
matters of internal theft, and shoplifters more often than not escape
with a warning. Too, many slum dwellers feel so totally entrapped
by the atmosphere of flourishing crime and vice which surrounds them
that they eventually begin to accept it, not as a matter of neglect
or apathy, but with frustration and futility.

In a sense, social and economic conditions may be said to be
the real causes of crime. Crime flourishes in the ghetto. City
slums with their overcrowded living conditions, racial malice, class
hatred, envy, economic deprivation, and social disruption are virtual
hotbeds of crime and its related activities. At the other end of
the spectrum, crime flourishes under conditions of affluence, where
the desire for material goods is matched only by their increased
availability. Crime flourishes when there are many restless young
people in a population; and crime flourishes when standards of morality
are undergoing change.²

Finally, the very institutions in our society which are meant
to prevent crime before it has a chance to happen are failing in their
appointed tasks. Otherwise preventable crimes will occur if the
police are starved for manpower or inefficient. If they are over-
zealous, people better left alone will be drawn into criminal careers.
If the court system fails to convict guilty parties with reasonable certainty and promptness, its value as a deterrent may be blunted, if not entirely eliminated. If correctional institutions continue in their failure to "correct," all that is produced is an individual who is thoroughly criminally oriented.

Successful strategies for fighting and reducing crime in the long run depend almost entirely on a basic understanding of the causal factors associated with every different major class of crime. The present reporting system is inadequate in terms of efficiency, accuracy, and national uniformity. At the present time we have little precise information, without which we cannot accurately assess success (or failure) of our present crime prevention policies. The problem is indeed one of national concern. Social research is an economic necessity but will directly depend on an improvement of techniques of crime reporting and analysis. The Uniform Crime Reports published annually by the Federal Bureau of Investigation are attempting to fill the void with only spotty success. The task is one which will be difficult, costly, and time consuming, but information must be gathered from which possible policy action may rationally be formulated.

The causes of crime are truly numerous, mysterious, and inextricably intertwined. Even to begin to understand them mammoth amounts of research must be undertaken concerning the amounts and trends of crime, estimations, where possible, of the costs of crime, studies of the conditions under which crime thrives, identification of criminals and the victims of crime, and surveys of the public's attitudes and reactions to crime; for no one way of viewing the problem could describe it well enough as a situation endemic to our very social structure.
The whole field of criminology is a province of knowledge and action only recently developed as a scientific discipline. The only difficulty that arises in developing new basic research in this field is one which British criminologist Charles Mercier noted fifty years ago. He said, "There is no subject on which so much nonsense has been written as crime and the criminal," and perhaps he is right. However, there are few disciplines which have not encountered this sort of problem in their attempts to answer the vague types of unanswerable questions which pervade the entire field of crime. The questions which arise are as impossible to answer as they are impossible to ignore. In the words of Ramsey Clark, "Crime is the ultimate human degradation. It reflects the character of a people. We have no higher obligation than to reduce its presence to the lowest possible levels. We know how. The question is whether we care."

Social scientists have long rejected the idea that there can be any possible all-inclusive theory to explain the crime problem. The trends which are observable in crime and labor market conditions may suggest that the gains associated with crimes are regarded as an alternative to honest pursuits. The area of analysis in which most crimes appear explainable is concerned with crimes against property, for such crimes yield a situation of almost certain economic gain for the criminal. Property crimes account for 86% of the total crime picture. One can then see the necessity for viewing the crime problem in terms of economic analysis.

The normal behavior of an individual is to offer his labor or time in return for an economic gain. From an economic viewpoint, it doesn't matter whether the gain is paid in money or goods which are
convertible to money. The laws which are enacted to prohibit certain types of economic activities create the classification "crime" and the penalties imposed are potential costs to the individual. A rational individual then, will consider only those unlawful activities on which the potential gains exceed the net gains from alternative lawful activities. However, the difficulty arises that economic analysis relies on the assumption of rationality and hence may not be completely adequate to explain crimes of an unpremeditated or impulsive nature as efficiently as it explains crimes against property.

The purpose of this paper is to briefly summarize the crime problem and to offer an economic alternative to the explanation of the phenomenon of illegal behavior.
I. AMOUNT OF CRIME AND TRENDS

The types of actions which fit under the general heading "crime" are numerous indeed. On a federal level there are 2,800 types of actions which all come under this heading, and depending on where checks are made throughout the United States, there is a much greater number of state and local "crimes." There are those which are purportedly the dominion of the young, such as vandalism, and those considered in the adult realm, such as intoxication. Some are spontaneous actions while others are ruthlessly and systematically perpetrated, and their range of effect extends from mild loss and/or bodily harm to regulation of the economy.

However, the type of crime which concerns the average American most is that which affects him personally, and it is of this realm which we are speaking when discussing such abstract terms as "the crime rate." Our source of national statistics regarding the number of offenses known to the police are collected from local police officials by the FBI and published annually as a part of its report, Crime in the United States, Uniform Crime Reports. So far it remains the best tool we have available to assess the incidence of crime. As such, it is a product of a nationwide system under which some 8,000 local police agencies covering 92% of the total population report offenses they know of to the FBI. Each year the report contains a summary geared supposedly for the general reader interested in the general crime picture, and usually it is a picture of increasing gloom and imminent doom. According to Norvel Morris, author of The Honest Politician's Guide to Crime Control, this is actually far from the general picture, for the evidence recorded is extremely selective.
and invariably emphasizes the increase in serious crime. He contends that the crime rate rise of 6-17% per year is monotonous and not seen in its proper perspective. Citing one example, the UCR of 1960 notes a 98% increase in the amount of crime over 1950, and this is extremely misleading to the general public, for over this same time period there was a substantial population increase. When adjustments to the data had finally been made and the new and proper crime rate calculated (i.e. crimes per 100,000 inhabitants) the actual increase over the 10 year time period is noted by Morris at only 22%.9

We must remember too that the substantial changes and developments in the reporting and estimating procedures which occurred between 1950 and 1960 may have merely brought into light more of what is referred to as the dark figure of crime and thus produced an increase that was in some part statistical in nature without being of the magnitude one might at first suspect.

The UCR itself is the product of a nationwide system of reporting that the FBI has painstakingly developed over the years. The compilation is, however, no better than the underlying information which the local agencies supply to the FBI. There are, in fact, many criminal acts committed which are not reported to official sources. Estimates as to the levels reached in unreported crime can be developed through costly victim interview surveys, but this would in no way remedy the reluctance of victims to report all crimes to law enforcement agencies.

It is the UCR's job to estimate as best it can within a reasonable doubt a relative count of crime, so it logically moves to the only reasonable universe it has at it's disposal, which is those crimes
which come to the attention of the police. The crimes used in their Crime Index are those which are reported with the greatest consistency and the compilations of crime trends are based on these data. Although the UCR may tend to overstate the rise in the crime rate, it has the tendency to understate the total volume of crimes committed. With the presently available statistics, there is no way yet to prove conclusively that the U.S. is indeed experiencing a mammoth crime wave, nor does anyone really know how much crime there is in the U.S. Nevertheless, in the judgement of the President's Crime Commission, "There is much crime in America, more than ever is reported, far more than ever is solved, far too much for the health of a nation." Perhaps this suggests that on a federal level, general acceptance has been made of the assumption made by the nineteenth century Belgian pioneer statistician Adolphe Quetelet, that the amount of known crime bears a constant relation to the amount unknown.

From a study of apparent increases in crimes of violence in postwar England, we find demonstrated that the general increase in reported crime may seriously be due to a variety of other factors, apart from the greater uniformity and efficiency in recording to which so many criminologists attribute the rise today. To mention a few of the factors indicated by the study, then, as now, we have better facilities available to the public for obtaining assistance from the police. This is in large part due to continually increasing expenditures and and ever-changing technology. Precincts are equipped with emergency telephone systems placed strategically in given areas, and there are an increased number of radio-equipped police vehicles. These changes go arm in arm with an increased readiness on the part of the police to respond to calls and a decrease on the part of the public
to tolerate criminal behavior. All these factors could conceivably lead to an artificial increase in the crime rate. There is also the possibility that in such circumstances the standards of behavior of the community may actually have improved rather than declined, but this possibility is slim.

Along with the reluctance of public toleration of criminal behavior goes an increased fear for individual safety, a subject which we will look at later. However, this fear, while creating an uneasiness in community life, may have some redeeming social value. A better climate may be generated for dealing with the whole crime problem. Out of sheer fear for survival, if nothing else, will come better public support for better methods of prevention and treatment of criminal behavior. Unfortunately any type of change in social attitude will take time.

Today what we are faced with is a virtually worthless dissemination of resources into meaningless, misleading information. The total crime figures we have are doing a great disservice to the public and perhaps creating their own self-fulfilling prophecy. What we need is some sort of reliable view, one which can be trusted and whose reliability is comparable to the public expenditures made in its behalf.

Norvel Morris, for one, calls for a series of surveys which would essentially be soundings in place and time. These surveys must make use of sample as well as census techniques if we truly are to begin to measure the changes in the extent of crime with any sort of precision for social planning.

As mentioned earlier, the crimes with which most Americans are concerned are those which are likely to involve them personally. The
most frequent and serious of crimes of violence against the person as noted by the UCR's are forcible rape, willful homicide, aggravated assault, and robbery. The FBI also collects offenses known statistics for three property crimes, burglary, larceny of $50 and over, and motor vehicle theft. These seven crimes are grouped together to form the basis of the UCR Index of serious crimes upon which so many base their research. Figure 1 shows the totals of these offenses for 1971.

Compiled in this index are the number of incidents reported to the police, and not the number of criminals who committed them or the number of injuries they caused. The climate of fear in America is fostered by the fear of harm from a stranger. In the UCR statistics, the legitimacy of this fear is perhaps best measured by the frequency of robberies, since, according to the UCR and other sources, about 70% of all willful killings, nearly two-thirds of all aggravated assaults, and a high percentage of rapes are committed by friends, family members, or other persons who have previously known the victim.

For UCR compilation purposes, robbery is the taking of property from a person by use of threat or force with or without a weapon.
On a national scale, only slightly more than half the robberies reported involve weapons, and about one-half are street, purse-snatching type robberies. Of those robberies reported to UCR statistical bureaus, an unknown percentage is made up of attempted robberies.

The term aggravated assault covers all assaults with intent to inflict bodily harm, whether or not the use of a dangerous weapon is involved. Included are all cases of attempted homicide. Cases in which bodily injury is a subsidiary in the course of a rape or burglary are included in the count for those crimes rather than with the figures for aggravated assault. While there are no even imprecise figures for aggravated assaults which involve serious injury, a 1960 UCR study showed that juvenile gangs committed less than 1% of all aggravated assault, a fact which is indeed interesting.

About one-third of the UCR total for forcible rape is attempted rape, but all those rapes counted involved the use of force or threat of some kind. Criminal homicides, on the other hand, most often occur in the course of attempting some other offense. However, unlike above, these offenses occur on the homicide count rather than in the totals for the other offenses. It is interesting to note that only 1% of all forcible rapes reported ever end in homicide.

While there is not as much personal danger involved in the property crimes as with other crimes, the possibility must not be entirely discounted. Burglary, as described by the UCR, is the unlawful entering of a building to commit a felony or theft whether or not force is employed. Only about half of all burglaries involve residences, and about half of all residential burglaries are committed during daylight hours. According to the UCR, 32% of the entries into
residences are made through unlocked doors and windows. But it is only when an unlawful entry results in a violent confrontation with the occupant that the incident would be recorded as a robbery rather than a burglary. On a national scale, only about one-fortieth of all residential burglaries involve such confrontations.

The point I am trying to make here is, that according to UCR statistics, although drastic increases in the crime rate are repeatedly noted year after year, the great fear of harm which the public has experienced in the light of these statistics is a little out of proportion to the actual likelihood of harm. The chance for personal attack on any American is a given year is about 1 in 550. Many sources agree also on the fact that the risk of such an attack from friends or acquaintances and spouses and other family members is about twice as great as it is from strangers on the street. Studies also suggest that the injury inflicted by family members or acquaintances is likely to be much more severe than that inflicted by strangers. As shown by Table 1, the chance of death by willful homicide is about 1 in 20,000.\textsuperscript{17}

<table>
<thead>
<tr>
<th>Table 1.--Deaths From Other Than Natural Causes\textsuperscript{17} in 1965 (Per 100,000 inhabitants)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor vehicle accidents ........................................ 25</td>
</tr>
<tr>
<td>Other accidents .................................................. 12</td>
</tr>
<tr>
<td>Suicide .......................................................... 12</td>
</tr>
<tr>
<td>Falls ............................................................. 10</td>
</tr>
<tr>
<td>Willful homicide .................................................. 5</td>
</tr>
<tr>
<td>Drowning ........................................................... 4</td>
</tr>
<tr>
<td>Fires .............................................................. 4</td>
</tr>
</tbody>
</table>

The property crimes make up approximately 87% of all the Index crimes and include automobile theft, larceny, and burglary. The figures reported by the UCR constitute a reasonable reliable indicator of the total volume of such crimes reported to the police but they can in no way assess the seriousness of the monetary losses involved. Law Enforcement Assistance Administration studies seem to indicate that the non-Index crimes such as fraud and embezzlement are much more significant in dollar value, however, there are no statistics readily available to substantiate this argument.

The UCR is intended merely as a tool and not as an absolute crime indicator. It is not intended to assist in assessing all serious national crime problems. For example, the offense statistics are not sufficient to assess the incidence of crime connected with corporate activity. Likewise such Federal crimes as antitrust violations, food and drug violations, and tax evasion are not included. Although such crimes constitute only a small percentage of all offenses, crimes such as those shown in Table 2 are also important in considering the national crime picture.18

<table>
<thead>
<tr>
<th>Table 2.--Selected Federal Crimes 18</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Cases filed in court--1966)</td>
</tr>
<tr>
<td>--------------------------------------</td>
</tr>
<tr>
<td>Antitrust</td>
</tr>
<tr>
<td>Food and Drug</td>
</tr>
<tr>
<td>Income tax evasion</td>
</tr>
<tr>
<td>Liquor revenue violations</td>
</tr>
<tr>
<td>Narcotics</td>
</tr>
<tr>
<td>Immigration</td>
</tr>
<tr>
<td>7</td>
</tr>
<tr>
<td>350</td>
</tr>
<tr>
<td>863</td>
</tr>
<tr>
<td>2,729</td>
</tr>
<tr>
<td>2,293</td>
</tr>
<tr>
<td>3,188</td>
</tr>
</tbody>
</table>

(Source: Department of Justice)

Police statistics do indicate much crime today, however, they do not even begin to indicate the full amount. Those crimes which are directly reported to prosecutors do not usually show up in police statistics anywhere. Often citizens do not report a crime which
which has been committed, either because they feel it won't do any
good or because police will arrive too late and there appears to be
no chance of apprehending the criminal. Other crimes may be reported
to the police but never get into the statistical system. In an
attempt to probe this problem more fully, the President's Commission
on Law Enforcement and Administration of Justice initiated a costly
national survey of crime victimization, for it is only through this
sort of full and accurate knowledge about the amount and kinds of
crime that better crime prevention and control programs may be
initiated. A survey of 100,000 households was conducted by the
National Opinion Research Center of the University of Chicago.
Participants were asked whether the person questioned or any member
of their household had been a victim of a crime during the past year,
if the crime had been reported, and if not, why.

Other surveys were conducted in cities in a number of high and
medium crime rate areas of Chicago, Boston, and Washington, D.C. by
the Bureau of Social Science Research of Washington, D.C., and the
Survey Research Center of the University of Michigan. For purposes
of analysis, all the surveys dealt with households. The findings
indicated that the actual amount of crime in the United States is
actually several times that which is reported in the UCR. (see Table 3
on the following page).¹⁹

When individuals were questioned as to why, in certain instances
they had not reported their victimization to the police, the answers
were varied. The most frequently given response in the national
survey was that the police could not do anything to help. As shown
in Table 3, 68% of those individuals reporting malicious mischief
Table 3.--Comparison of Survey and UCH Rates *9
(Per 100,000 population)

<table>
<thead>
<tr>
<th>Index Crimes</th>
<th>NOHC survey 1965-66</th>
<th>UCR rate for individuals 1965</th>
<th>UCR rate for individuals and organizations 1965</th>
</tr>
</thead>
<tbody>
<tr>
<td>Willful homicide</td>
<td>3.0</td>
<td>5.1</td>
<td>5.1</td>
</tr>
<tr>
<td>Forcible rape</td>
<td>42.5</td>
<td>11.6</td>
<td>11.6</td>
</tr>
<tr>
<td>Robbery</td>
<td>94.0</td>
<td>61.4</td>
<td>61.4</td>
</tr>
<tr>
<td>Aggravated assault</td>
<td>218.3</td>
<td>106.6</td>
<td>106.6</td>
</tr>
<tr>
<td>Burglary</td>
<td>949.1</td>
<td>299.6</td>
<td>605.3</td>
</tr>
<tr>
<td>Larceny ($50 and over)</td>
<td>606.5</td>
<td>267.4</td>
<td>393.3</td>
</tr>
<tr>
<td>Motor vehicle theft</td>
<td>206.2</td>
<td>226.0</td>
<td>251.0</td>
</tr>
<tr>
<td><strong>Total violence</strong></td>
<td>357.8</td>
<td>184.7</td>
<td>184.7</td>
</tr>
<tr>
<td><strong>Total property</strong></td>
<td>1,761.8</td>
<td>793.0</td>
<td>1,249.6</td>
</tr>
</tbody>
</table>

(Source: "Uniform Crime Reports," 1965, p. 51. The UCR national totals do not distinguish crimes committed against individuals or households from those committed against businesses or other organizations. The UCR rate for individuals is the published national rate adjusted to eliminate burglaries, larcenies, and vehicle thefts not committed against individuals or households. No adjustment was made for robbery.)

responded in this manner, and 60% of those not reporting burglaries and larcenies of $50 and over believed this to be true. However, according to the commission report, the results may not demonstrate the inability of the police to help, but merely the victim's rationalization of his failure to report. In cases of assault and family crime, fear of reprisal was noted with frequency. The category in which extent of failure to report was highest was in consumer fraud (90%) and lowest for auto theft.20

Although there are still a number of methodological problems inherent in the survey technique of crime assessment, the information discovered in this manner has proven itself of considerable value. The President's Commission on Law Enforcement and Administration of Justice believes this technique to have a great untapped potential in providing information concerning the relative effectiveness of
Table 4.--Victims' Most Important Reason for Not Notifying Police (In percentages)

<table>
<thead>
<tr>
<th>Crimes</th>
<th>Percent of cases in which police not notified</th>
<th>Reasons for not notifying police</th>
<th>Fear of reprisal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Felt it was private matter or did not want to harm offender</td>
<td>Police could not be effective or would not want to be bothered</td>
<td>Did not want to take time</td>
</tr>
<tr>
<td>Robbery</td>
<td>35</td>
<td>27</td>
<td>45</td>
</tr>
<tr>
<td>Aggravated assault</td>
<td>35</td>
<td>50</td>
<td>25</td>
</tr>
<tr>
<td>Simple assault</td>
<td>54</td>
<td>50</td>
<td>35</td>
</tr>
<tr>
<td>Burglary</td>
<td>42</td>
<td>30</td>
<td>63</td>
</tr>
<tr>
<td>Larceny ($50 and over)</td>
<td>40</td>
<td>23</td>
<td>62</td>
</tr>
<tr>
<td>Larceny (under $50)</td>
<td>63</td>
<td>31</td>
<td>58</td>
</tr>
<tr>
<td>Auto theft</td>
<td>11</td>
<td>*20</td>
<td>*60</td>
</tr>
<tr>
<td>Malicious mischief</td>
<td>62</td>
<td>23</td>
<td>68</td>
</tr>
<tr>
<td>Consumer fraud</td>
<td>90</td>
<td>50</td>
<td>40</td>
</tr>
<tr>
<td>Other fraud (bad checks, swindling, etc.)</td>
<td>74</td>
<td>41</td>
<td>35</td>
</tr>
<tr>
<td>Sex offenses (other than forcible rape)</td>
<td>49</td>
<td>40</td>
<td>50</td>
</tr>
<tr>
<td>Family crimes (desertion, non-support, etc.)</td>
<td>50</td>
<td>65</td>
<td>17</td>
</tr>
</tbody>
</table>

Source: NOHC Survey.

**Less than 0.5%.

*There were only 5 instances in which auto theft was not reported.
Figure 2
INDEX CRIME TRENDS, 1933-1965
Reported crimes against the person

21 Note: Scale for willful homicide and forcible rape enlarged, to show trend.
Source: FBI, Uniform Crime Reports Section.

Figure 3
INDEX CRIME TRENDS, 1933-1965
Reported crimes against property

22 Note: The scale for this figure is not comparable with that used in Figure 2.
Source: FBI, Uniform Crime Reports Section.
different crime control programs.23

Of all the possible conditions which may be cited for the apparently spiraling increase in the crime picture, the first is indeed obvious. If we assume merely that the proportion of crimes to population were to remain stable and neither increase or decrease, the total volume or absolute amount of crime would show a marked increase every year, merely as a result of the population increase. For example, if, in a given year the population was noted a 150 million or so, and in ten years it had increased to 200 million, then ceterus paribus, a 25% increase in the crime rate would automatically be noted. It can be assumed that with greater population densities higher crime rates will be noted, however this does not change the fact that the amount of crime has increased at a much faster rate than has the population.

Figure 4

CRIME AND POPULATION 1966-1971
Percent change over 1966

- Crime up 83%
- Crime Rate up 74%
- Population up 5%
and therefore high crime rates. But there are too many unexplained variables for this to be a total explanation. The relationship between crime rates and urbanization is not simple and precise causal factors are probably indeterminate. It is possible that no single socioeconomic variable is strongly correlated to the level of crime, but the complex configuration of many of these variables is likely to produce an environment which encourages crime.

Affluence itself is considered to be one of the major causes of crime. Besides the fact that wealth is unevenly distributed throughout our society, there are an increased number of criminal opportunities which present themselves. This combined with increased mass media portrayal of wealth creates a climate of increasing material aspirations, and this is reflected in increased offenses against property which constitute about 86% of all index crimes in the U.S. This increased affluence may also have led indirectly to a certain amount of breakdown in parental control, thus creating greater juvenile independence and increased expectations of police protection and therefore increases in the crime which is reported.

The ideas mentioned as to the existing crime picture lend support to the concept that there has not only been an increase in the volume and rate of crime, but also that unless some sort of drastic and immediate vigorous action is taken this trend will continue. The climate in America is one of increasing fear which serves to diminish the amenity of life just as much if not more so than real crime and reduces confidence and freedom in social interaction. It is turning the American Dream into the American nightmare.
Perhaps more important than an absolute population increase is the changing age structure of that population. Youths under 18 account for over 54% of total larceny arrests for each race. For the age groups between 14 and 24, arrest rates for youths in the economic felonies (robbery, burglary, larceny, and auto theft) are one or two orders of magnitude higher than for youths a generation older. The marked increase of this segment of the population may have originally been due to the post-war baby boom so that the size of this group would grow disproportionally to the rest of the population. The median age in the United States has been shown to have declined from 30.3 years in 1952 to 27.7 in 1967; and in the words of Carol S. Vance, a D.A. in Houston, Texas, "Too many parents and adults have let this become a kid's world without exercising the concern and discipline needed today."[^25]

Also significant is the overall population distribution in rural, suburban, urban, and inner city areas. With increasingly large cities, increasingly larger crime rates have been reported. Average rates of offenses are at least two times as great in cities of more than one million than in suburbs or rural areas. Just within the last 30 years, the greatest percentage crime increase has been in cities with populations of more than one-half million, which, with less than 18% of the total population, account for over half the reported index crimes against the person and almost a third of the reported index property crimes.

The problem stems not only from the fact that cities have large populations, but these urban individuals often find themselves heavily concentrated in poor areas which already have high delinquency rates
And if the first reaction to all of this is that increased public expenditure for public welfare programs lies the root of all desirable change, I have but to cite an article which appeared in the U.N. Monthly Chronicle. In discussing comparative crime rates, it noted, from survey work which had been completed, that it was significant to note that countries having the highest levels of health, education, and national income generally are the ones most plagued by crime. Then, too, one cannot say that their dollars were not well spent. True, great sums were expended on improving housing, health, working conditions, welfare, and social security, but seemingly in a way which was not sufficiently aimed at prevention of crime. This could be part of the problem in America.
II. THE ECONOMIC IMPACT OF CRIME

"It is worth noting that research commands only a small fraction of 1% of the total expenditure for crime control. There is probably no subject of comparable concern to which the nation is devoting so many resources and so much effort with so little knowledge of what it is doing."  

Present increased budget appropriations to fight the war on crime does indeed raise some interesting questions about the most advantageous strategy to follow. Although the distribution of this budget among the various crime prevention possibilities is partially a political decision, it should be accompanied by some sort of economic rational, or the intended crime prevention services might never be realized and resources wasted.

Simon Rottenberg points out in his article in Crime In Urban Society that from society's point of view, the eradication of all crime can be a much too expensive project to attempt to undertake. If we follow a method of analysis similar to Rottenberg's, we find that it is possible to form a feasible strategy for determining the optimal mix of crime prevention services which society should supply.  

For each class of crime, the rate at which crime prevention costs for that crime will vary with the crime rate for that offense. For example, Figure 5 shows two crimes, A and B. If we assume the present crime rate to be a maximum of 100%, the expenditure of funds in the prevention program of either crime will result in a lower rate for each crime. At some given level of the new reduced crime rate, the cost of further reduction will increase very rapidly and, as Rottenberg suggests, become prohibitive. However, as suggested in the figure, some crimes can be reduced substantially (crime A) before
costs will rise rapidly. For some other crimes (like crime B) rising costs are experienced very early in the war on crime. Something such as the illegal use of marijuana might fall into the B category.\(^{30}\) The deployment of crime prevention resources at points of entry into the country can probably reduce the supply of marijuana and possible raise its resale price in all the nation's cities. The quantity of "pot" which would then be demanded would therefore be reduced. However, since the illegal act of consumption is usually committed in private with little damage to third parties, it is extremely difficult to detect. To reduce this crime rate further it would be necessary to assign substantially more narcotics personnel, but the likelihood of results is slim with this course of action. The appropriate strategy is therefore likely to involve something like the cessation of expenditure of resources on crime B long before they are stopped on crime A.\(^{31}\)

But to provide a complete economic rationale for crime prevention strategies it is not enough to merely have a knowledge of the relative
cost levels in the crime relationship. As Rottenberg has pointed out, an estimate for the benefits of crime prevention programs for each type of crime is also important.\textsuperscript{32} Such benefits can only really be obtained through extensive survey and information compilation techniques which include the avoidance of costs caused by criminal acts, the cost of property destroyed by criminals or in their capture, the costs of operating the criminal justice system, and the loss of victim's earnings.\textsuperscript{33}

In such a cost-benefit ratio, the economic rationale can be expressed by recommending that resources be allocated to crime prevention programs as long as the benefits which result exceed costs and up to the point where extra (marginal) benefits equal extra (marginal) costs. Figure 6 illustrates this optimizing strategy.

Figure 6.--Hypothetical Cost-Benefit Relationship for Several Crimes

Here we assume we are dealing with a universe of three crimes. For the sake of simplicity, we shall assume marginal cost to be constant. For the first crime, the marginal benefits decline quickly and fall below the marginal cost of $x$. The optimum dollar cost which has been allocated to this crime is represented by OA. Similarly, OB and
OC represent the crime prevention funds which should be allocated to the other two crimes, MB₂ and MB₃.

There is, however, a difficulty which arises in this approach. In determining the optimal mix combination it assumes a crime prevention budget which is totally flexible all the way up to the equilibrium position of marginal cost-marginal benefit equality. But practically speaking, the actual budget size is the result of political manoeuvres and the budget which eventually emerges may not allow the equilibrium position for each class of crime to be achieved. (The size of the crime prevention budget depends on its relative cost-benefit ratio with other public service programs. If there were to be more funds allocated to crime prevention programs it could mean that there would be less for health and education programs. Then, indeed, this may serve to show that there exists a painfully economic explanation for the present crime prevention budget being insufficient for optimization of expenditures on each class of crime.) The difficulties then become more complex in this determination, for it becomes necessary to estimate the costs of benefits of various levels of prevention effort, thus attempting to stimulate the benefits at different levels. Then, given the limited total budget which is available, we might hope to optimize the mix of crime prevention services. Economic factors are extremely important in the formation of policies and attitudes.

The whole community suffers to some degree from crime's heavy economic burden. Relative risks cannot be ascertained until the full extent of economic loss is known. As mentioned earlier, policies cannot be formulated until it is generally known which crimes cause the greatest economic loss and which the least.
costs of preventing the crime or protecting against it must be assessed as well as whether or not a particular general crime situation warrants further expenditures for control or prevention, and if so, which type of expenditure is likely to have the greatest impact. 36

The amount of insurance a plant or business carries and the size of its internal security force and even the number of policemen employed in a given geographical area are controlled to some degree by economics - in a simple balance arrangement, weighing that which is to be gained against additional expenditures. If property protection is involved, the economic loss from the crime must be directly weighed against the costs of better preventative measures or control. The information available about the economic cost of crime is most usefully presented as a series of public and private costs as well as specific property losses in the total, overall picture. The same conditions apply to any cost discussion as those which applied to the incidence discussion. Estimates reached by adding together all sorts of costs related to crime in an effort to present some total figure as to the end cost of crime to the community is an economic absurdity. The lumping together of such varied items as the fees paid for the one-time illegal abortions, the potential earnings of prisoners, the actual earnings of policemen, the earnings of a prostitute, and the overall costs of operating our legal system to assess the cost of crime by many so-called authoritative sources is indeed foolish. The ultimate dollars and cents value could only realistically be determined if we could assess the global total of national income as it would be if there were no crime and everyone's morals were ideal, and then subtract from that the national income
as it exists with conditions of vice and organized crime. However, even this would involve so many cosmic assumptions that realistic economic analysis would be impossible. It is therefore far wiser to attempt to seek answers to questions more limited in scope.

Figure 7 represents six different categories of relative economic impacts of crime, both public and private (see following page). Numerous crimes were omitted due to lack of figures and as such, those included are merely estimates from recorded data and are therefore not of absolute reliability.

Concerning the economic impact of individual crimes, the President's Commission on Law Enforcement and the Administration of Justice has the following to report:

The picture of crime as seen through cost information is considerably different from that shown by statistics portraying the number of offenses known to the police or the number of arrests:

(1) Organized crime takes about twice as much income from gambling and other illegal goods and services as criminals derive from all other kinds of criminal activity combined.

(2) Unreported commercial theft losses, including shoplifting and employee theft, are more than double those of all reported private and commercial thefts.

(3) Of the reported crimes, willful homicide, though comparatively low in volume, yields the most costly estimates among those listed in the UCR Index.

(4) A list of the seven crimes with the greatest economic impact includes only two, willful homicide and larceny of $50 and over (reported and unreported), of the offenses included in the crime Index.

(5) Only a small proportion of the money expended for criminal justice agencies is allocated to rehabilitative programs for criminals or for research.

Cost analysis would also put other crimes that appear with great frequency in police statistics in a new and different perspective. According to the President's Commission, the number of reported
Figure 7.—Economic Impact of Crimes and Related Expenditures
(Estimated in Millions of Dollars)

<table>
<thead>
<tr>
<th>Crimes Against Person (loss of earnings, etc.)</th>
<th>Crimes Against Property (transfers and losses)</th>
<th>Unreported Commercial Theft</th>
<th>Property Destroyed by Arson and Vandalism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homicide</td>
<td>Assault and Other</td>
<td>Embezzlement</td>
<td></td>
</tr>
<tr>
<td>$750</td>
<td>$65</td>
<td>$815</td>
<td></td>
</tr>
<tr>
<td>$1400</td>
<td></td>
<td>$200</td>
<td>$82</td>
</tr>
<tr>
<td>Index Crimes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Robbery, Burglary, Fraud)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unreported</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Counterfeit, Larceny, Over, Auto Theft)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Crimes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Driving under Influence</td>
<td>Tax Fraud</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$1816</td>
<td>$100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Crimes</td>
<td>Abortion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$2036</td>
<td>$120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illegal Goods and Services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loansharking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$350</td>
<td>Alcohol</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$350</td>
<td>$150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Narcotics</td>
<td>Prostitution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$350</td>
<td>$225</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$225</td>
<td>Gambling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$7000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$8075</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prosecution and Defense</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$125</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Police</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$2729</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrections</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$1034</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Courts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$261</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$4212</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private Costs Related to Crime</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$1350</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insurance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$300</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prevention Services</td>
<td>Prevention Equipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$1350</td>
<td>$20</td>
<td></td>
<td>$60</td>
</tr>
<tr>
<td>Private Counsel, Bail, Witness Expenses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$1910</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
offenses for these crimes accounts for less than one-sixth of the estimated total dollar loss for all property crimes. An even lower percentage would be constituted by the categories which include robbery, burglary, larceny, and auto theft, and lower still if there were any accurate way of estimating the extremely large sums involved in extortion, blackmail, and other property crimes. The economic impact of many other crimes is difficult to assess. On the corporate level, the ultimate cost to the consumer cannot easily be described without further information; and losses due to public fear of crime are virtually impossible to measure.

Crime's economic impact must also be measured in its ultimate cost to society. The taking of another's wealth clandestinely offers a difficult assessment problem. How can its socio-economic cost be measured so that decisions can be made on how to allocate resources for prevention? In a legal situation in which gifts are given freely, the economic fraternity would label the situation as one in which a transfer payment had been made. It would consider wealth and income not to have either risen or fallen, except in one sense. If the total utility of the transfer payment (that includes the utility of that which is given but excludes the utility involved in the act of giving) is larger for the receiver than for the giver, aggregate income may be thought of to have risen. If it is smaller, we may assume that aggregate income has fallen.

Since the utility of income falls with any rise in the quantity possessed, it is sometimes thought that aggregate real income will rise if transfer payments are made from the rich to the poor à la Robin Hood. The fact that the transfer payment is outside the
bounds of legal activity should have no bearing on its utility. A clandestime transfer payment (any form of fraud, thievery, etc.) can be considered socially costly or gainful depending on whether the mean income of the defrauder or thief is less or more than the mean income of the victim.\textsuperscript{43}

A clandestime transfer payment, as it was described, is clearly socially costly. The loss of an individual's personal property in this manner is like a 100\% tax on that fraction which is taken, the mathematically expected tax rate being 100 times the probability that it will occur.\textsuperscript{44} Also, less income may be produced throughout the economy as a direct result. The uncertainty of retention of private property (insecurity of prevention) is the causal factor here. Some quantity of time which might otherwise be expended in income-generating activities would now be spent in other ways as an effect of the climate of fear. While this time element may go unnoticed, the overall output of goods in the economy could be made smaller by some measurable increment.\textsuperscript{45}

Then, too, the uncertainty of who will suffer has proven itself costly to some, but a lucrative endeavor to others. Precautions are taken to prevent theft through the purchase of safes, vaults, safety-deposit boxes, mirrors, service of guards, accumulation of information to protect oneself against fraud, and services of accountants to defend against embezzlement. One cannot overlook the possible alternative uses to these costs.

Crime costs can be measured, too, in the aggregate loss of productive labor. While no accurate figure can be developed as to the probable amount of economic loss of this sort chargeable to the
diversion from productive channels of the potential man-power of criminals, the amount is unquestionably large considering our overcrowded prison system. At the same time, no figures can accurately be developed as to the loss of labor incident to the defense of criminals in court, including costs of jurors and witnesses. Neither can the business of insuring against crime nor the loss of labor and materials used in the manufacture of crime prevention devices be ascertained in any feasible manner. In the case of prisoners and law enforcement offices, however, some general idea of the order of magnitude of loss can be worked out. Detailed monetary figures are used primarily for illustrative purposes, except in cases of some specific classes of costs, particularly certain aspects of the cost of criminal administration.

Once again the question must be raised concerning the optimum combination of crime control strategies. In attempting to answer this question we must keep in mind that our police and court system do not constitute the only universe of crime preventers. In principle, teachers, schools, churches, and all other social control institutions that espouse some type of moral and obedience instruction should be included. These, along with mechanical devices of increased technology should be combined in specific proportions to optimally minimize both the amount of crime and the cost of prevention. However this position can only be attained if the position of equimarginality is attained. Costs would them be minimized if the expenditure for each aspect of a particular strategy would prevent the same number of offenses. One can see then, that if this position is not attained, that it would indeed pay society to reallocate the resources at its disposal.
The cost of crime can be assumed to be the actual sum of successfully consummated crime and the costs of crime prevention. This is true despite the fact that these two sums are inversely proportional in a sense—the higher the cost of crime prevention, the larger the quantity of resources employed in prevention strategies, the (supposedly) larger the amount of prevented crime, the smaller the amount of successfully carried out crime, and therefore the costs of completed crimes would be smaller.

This would seem to be a plausible explanation of what should happen. Some sources contend, however, that even though this inverse relation exists in theory, the actual crime rate has been on the rise as its cost to the taxpayer has indeed tripled in an eleven year time span and is still rising. The amount spent on police, courts, and penal institutions, in the fiscal year ending June 30, 1960 was $3.5 billion; and in 1971, the total was more than $10 billion. Although in some cities the additional expenditures did begin to mildly decline from their previous "all time highs," there is no relief in sight for the taxpayer, who bears the brunt of enlarged police departments and court systems as well as rising pay scales.

Figure 8.
HOW COSTS ARE SOARING
Spending in U.S. for Police, Courts, and Prisons

<table>
<thead>
<tr>
<th></th>
<th>1960</th>
<th>1969</th>
<th>1971</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$3.5</td>
<td>$7.3</td>
<td>$10.1</td>
</tr>
<tr>
<td></td>
<td>billion</td>
<td></td>
<td>billion</td>
</tr>
</tbody>
</table>

The amount spent on police, courts, and penal institutions, in the fiscal year ending June 30, 1960 was $3.5 billion; and in 1971, the total was more than $10 billion. Although in some cities the additional expenditures did begin to mildly decline from their previous "all time highs," there is no relief in sight for the taxpayer, who bears the brunt of enlarged police departments and court systems as well as rising pay scales.
Crime Spending Totals
Figure 9.--Who Puts up Money

Federal Government 1.2
State Governments 2.5
Local Governments 6.4
Total All Governments 10.1 billion

A rather interesting table presented in the UCR each year is a state by state comparison of anticrime spending. With data of this sort you can get a general idea of where your state stands on a national scale. The figures cited include spending by state and local governments with federal appropriations included. For the entire United States, the bill total was nearly $8.6 billion in 1969, or approximately $42.20 per person. Tables 5 and 6 are included on the following page.

Such data as these as to crime costs furnish no real and direct aid in the solution of problems of law enforcement. Ascertaining the facts as to the economic effects of crime and as to the financial aspects of criminal justice is merely one of the steps necessary in order to make it possible to survey the problem of crime as a whole. Figures cannot truly be determined with any iota of accuracy, but we may safely assume that their magnitude is of enormous proportions. From a purely economic standpoint then, effective and adequate crime control is of the utmost importance.
### Table 5: Your State's Anticrime Spending
(Year ended June 30, 1970)

<table>
<thead>
<tr>
<th>State</th>
<th>Spending Total (police, courts, prisons)</th>
<th>Spending/Person</th>
<th>State</th>
<th>Spending Total (police, courts, prisons)</th>
<th>Spending/Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>D.C</td>
<td>108.5</td>
<td>43.30</td>
<td>Missouri</td>
<td>139.9</td>
<td>29.70</td>
</tr>
<tr>
<td>S.C.</td>
<td>49.9</td>
<td>29.70</td>
<td>Minn.</td>
<td>104.7</td>
<td>27.50</td>
</tr>
<tr>
<td>Alas.</td>
<td>21.2</td>
<td>10.50</td>
<td>N.C.</td>
<td>134.8</td>
<td>26.50</td>
</tr>
<tr>
<td>Nev.</td>
<td>33.3</td>
<td>68.00</td>
<td>Maine</td>
<td>26.1</td>
<td>26.30</td>
</tr>
<tr>
<td>N.Y.</td>
<td>1187.2</td>
<td>65.10</td>
<td>Louis.</td>
<td>95.4</td>
<td>26.20</td>
</tr>
<tr>
<td>Calif.</td>
<td>1171.2</td>
<td>58.70</td>
<td>Mont.</td>
<td>17.8</td>
<td>25.70</td>
</tr>
<tr>
<td>Md.</td>
<td>189.6</td>
<td>48.30</td>
<td>Texas</td>
<td>283.2</td>
<td>25.30</td>
</tr>
<tr>
<td>Del.</td>
<td>26.2</td>
<td>47.90</td>
<td>Iowa</td>
<td>69.6</td>
<td>24.60</td>
</tr>
<tr>
<td>Haw.</td>
<td>35.9</td>
<td>46.60</td>
<td>Kansas</td>
<td>55.3</td>
<td>24.60</td>
</tr>
<tr>
<td>N.J.</td>
<td>313.7</td>
<td>43.80</td>
<td>Tenn.</td>
<td>96.1</td>
<td>24.50</td>
</tr>
<tr>
<td>Mass.</td>
<td>240.3</td>
<td>42.20</td>
<td>Vir.</td>
<td>113.2</td>
<td>24.30</td>
</tr>
<tr>
<td>Ill.</td>
<td>444.1</td>
<td>40.00</td>
<td>Ga.</td>
<td>111.4</td>
<td>24.30</td>
</tr>
<tr>
<td>Ariz.</td>
<td>70.0</td>
<td>39.50</td>
<td>Idaho</td>
<td>17.2</td>
<td>24.20</td>
</tr>
<tr>
<td>Wash.</td>
<td>128.1</td>
<td>37.60</td>
<td>Utah</td>
<td>25.3</td>
<td>23.90</td>
</tr>
<tr>
<td>Conn.</td>
<td>113.6</td>
<td>37.50</td>
<td>Neb.</td>
<td>34.6</td>
<td>23.30</td>
</tr>
<tr>
<td>Oreg.</td>
<td>77.5</td>
<td>37.50</td>
<td>Okla.</td>
<td>58.2</td>
<td>22.80</td>
</tr>
<tr>
<td>Wis.</td>
<td>160.0</td>
<td>36.20</td>
<td>S.D.</td>
<td>14.7</td>
<td>22.10</td>
</tr>
<tr>
<td>Mich.</td>
<td>319.8</td>
<td>36.00</td>
<td>Kent.</td>
<td>70.7</td>
<td>22.00</td>
</tr>
<tr>
<td>Fla.</td>
<td>239.1</td>
<td>35.20</td>
<td>N.H.</td>
<td>15.9</td>
<td>21.50</td>
</tr>
<tr>
<td>Colo.</td>
<td>73.1</td>
<td>33.10</td>
<td>Ind.</td>
<td>111.4</td>
<td>21.40</td>
</tr>
<tr>
<td>A.I.</td>
<td>31.2</td>
<td>32.90</td>
<td>Ala.</td>
<td>68.2</td>
<td>19.80</td>
</tr>
<tr>
<td>Pa.</td>
<td>386.1</td>
<td>32.70</td>
<td>S.C.</td>
<td>49.9</td>
<td>19.30</td>
</tr>
<tr>
<td>Ohio</td>
<td>345.0</td>
<td>32.40</td>
<td>Miss.</td>
<td>40.1</td>
<td>18.10</td>
</tr>
<tr>
<td>N. Mex.</td>
<td>32.8</td>
<td>32.40</td>
<td>W. Va.</td>
<td>29.2</td>
<td>16.80</td>
</tr>
<tr>
<td>Ver.</td>
<td>13.8</td>
<td>31.10</td>
<td>Ark.</td>
<td>27.3</td>
<td>14.20</td>
</tr>
<tr>
<td>Wyo.</td>
<td>10.0</td>
<td>30.10</td>
<td>U.S.</td>
<td>7592.8</td>
<td>37.40</td>
</tr>
</tbody>
</table>

Note: figures include spending by State and local governments with Federal Government included, total U.S. was nearly $8.6 billion, or $42.20 per person.

### Table 6: Law Enforcement Costs $8.6 Billion

<table>
<thead>
<tr>
<th>Category</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Police (Federal, state, local)</td>
<td>$5.0</td>
</tr>
<tr>
<td>Penal System</td>
<td>1.8</td>
</tr>
<tr>
<td>Court System</td>
<td>1.8</td>
</tr>
</tbody>
</table>

| Total take by organized crime from illegal goods & services | 19.7 |
| Crimes against property & business (excluding org. crime)   | 13.1 |
| Other crimes                                               | 4.2  |
| Law enforcement costs                                      | 8.6  |
| Private crime costs (cost of services & equipment)          | 6.5  |
| **Total crime expenses**                                    | 51.1 |
The cost of administering criminal justice, while large, is of less economic impact than the losses inflicted by the criminal. It seems of much more economic importance to society to increase the efficiency of the administration of criminal justice than to decrease its costs. True economy in administering the criminal law may very well require a material and perhaps substantial increase in expenditures for enforcing the law in order to secure increased efficiency and deal adequately with the problem of crime; and unfortunately the taxpayers will probably feel it most sharply.
III. AN ECONOMIC MODEL FOR CRIMINAL BEHAVIOR

Almost the entire body of literature concerning criminology suggests that crime is a sociological phenomenon. However, the idea has been forwarded that, at least in part, crime is a direct response to economic conditions, as measured by job security, income levels, and the rate of unemployment. But even in those studies which use economic variables in their discussions of criminal behavior, the basic relationships are usually set in terms of sociological theory.

Several sources have agreed that there are indeed crimes which are economic in nature. There is one grouping of crime which is considered almost entirely economic, and this includes crimes of antitrust, false advertising, and other financial manipulations. Further, Daniel Bell has suggested that some crimes are a response to the American desire of economic gain as a measure of success in certain groups in society.

The ideas forwarded by men such as Bell led a young man by the name of David Sjoquist to examine the possibility that some crimes may be explainable totally by economic theory. In a paper sponsored by the National Institute of Law Enforcement and Criminal Justice, Sjoquist examines this possibility thoroughly and comprehensively using data concerning the crimes of robbery, larceny, and auto theft. The hypothesis tested was whether, under certain conditions, criminals may be treated as economic beings and behave in much the same economic manner as any other individual making a rational, economic decision under conditions of risk. The approach he used followed closely the analysis of behavior under risk as presented by Friedman and Savage. In the following pages, I will attempt to summarize
Sjoquist's endeavor.

As suggested in "Crime and Punishment: An Economic Approach," Gary Becker, in order to relate the amount of criminal activity and the criminal justice system, develops a theoretical model to analyze the relative costs of each. In essence, he uses the economic theory of behavior under risk to aid in his analysis.\(^5\) To determine the amount of criminal activity, Becker "follows the economist's usual analysis of choice and assumes that a person commits an offense if the expected utility to him exceeds the utility yielded by using his time and other resources at other activities."\(^6\) Thus his parameters in determining the amount of crime include the probability of conviction, the type of punishment if convicted, income, and the willingness to commit crime.

Sjoquist's hypothesis and testing follow much of the same lines. In a given amount of time, an individual is free to choose the activities to fill up that time. If we can assume the two alternative choices to be between legal and illegal activities, the legal activities have two dimensions, work and leisure, while for purposes of discussion, the illegal is assumed to have only one, crimes against property.

Leisure is expected to result in only psychic gain, while work is assumed to yield financial reward. If work and leisure are equally valued at the margin, the net gain per additional unit of time from legal activity can be measured. The total gain an individual would experience from legal activity would then depend upon the wage rate and the time allotted to that activity. The gains resulting from illegal activity would then depend upon the wage rate and the time
allotted to that activity. The gains resulting from illegal sorts of activities are twofold. A psychic gain is experienced from having out-witted or out-smarted others and "gotten away" as well as there being monetary gains in the obvious financial rewards potential. For Sjoquist's purposes, he assumed the psychic gain to measured by "that quantity of money which the individual is willing to pay to obtain the psychic gain." 59

As with legal activities, the financial gains resulting from illegal activities can be directly computed from the dollar value to the criminal of the goods stolen; however, the magnitude of this figure is left purely to chance. An individual undertaking this sort of endeavor would normally have some idea of the financial gains which would be involved, depending on the age or apparent social status of this victim; but all in all, the expected financial gain from illegal activity is a function of the time spent in the activity and the probability distribution of the possible gains. This can be noted further by examination of Table 7. 60

<table>
<thead>
<tr>
<th>Theft #</th>
<th>$ Loss</th>
<th>Theft #</th>
<th>$ Loss</th>
<th>Theft #</th>
<th>$ Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2.</td>
<td>12.</td>
<td>3.</td>
<td>25.</td>
<td>23.</td>
</tr>
<tr>
<td>3.</td>
<td>3.</td>
<td>15.</td>
<td>1500.</td>
<td>16.</td>
<td>25.</td>
</tr>
<tr>
<td>4.</td>
<td>2100.</td>
<td>17.</td>
<td>189.50</td>
<td>18.</td>
<td>28.</td>
</tr>
<tr>
<td>5.</td>
<td>139.</td>
<td>19.</td>
<td>289.50</td>
<td>20.</td>
<td>29.</td>
</tr>
<tr>
<td>6.</td>
<td>92.</td>
<td>4.</td>
<td>120.</td>
<td>22.</td>
<td>30.</td>
</tr>
<tr>
<td>7.</td>
<td>8716.</td>
<td>5.</td>
<td>59.50</td>
<td>23.</td>
<td>31.</td>
</tr>
<tr>
<td>8.</td>
<td>5.</td>
<td>6.</td>
<td>175.</td>
<td>6.</td>
<td>32.</td>
</tr>
<tr>
<td>9.</td>
<td>30.</td>
<td>7.</td>
<td>40.</td>
<td>7.</td>
<td>33.</td>
</tr>
<tr>
<td>10.</td>
<td>25.</td>
<td>8.</td>
<td>3.</td>
<td>9.</td>
<td>34.</td>
</tr>
<tr>
<td>11.</td>
<td>61.</td>
<td>9.</td>
<td>200.</td>
<td>10.</td>
<td>25.</td>
</tr>
<tr>
<td>12.</td>
<td>3.</td>
<td>10.</td>
<td>25.</td>
<td>11.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>11.</td>
<td>3.</td>
<td>12.</td>
<td></td>
</tr>
</tbody>
</table>
Another interesting assumption Sjoquist makes concerns the costs which arise in like manner whether one engages in legal or illegal activities. The costs include expenses for schooling, tools, and equipment. Further, the assumption is made that while there are (presumably) no psychic costs involved with legal activities, there are with those of an illegal nature. Arrest and conviction yield the psychic costs of loss of prestige and scandal. If a conviction takes place, probation may result, the psychic cost of which includes time and inconvenience as well as court restriction on one's activities. The value given these psychic costs is that amount of money having an equivalent value to the individual as the cost. Financial costs arise from legal fees and reduction in potential earnings resulting from a criminal record. Imprisonment results in loss of earnings, measured by the discounted value of income forgone while in prison less any benefits received such as vocational training.

Another significant assumption is that the psychic and financial costs associated with conviction and arrest are quasi-fixed costs, that is, if arrested and convicted, the cost is the same regardless of the actual amount of time the individual has spent in his illegal activities. As Sjoquist suggests, these quasi-fixed costs may be the most important component of the cost of illegal activity. If this were true, then were the length of the sentence increased for a given crime, the total cost to the criminal at this point would only be increased by a small percent. The net effect, then, would be that variations in the length of the sentence would have little real effect on the amount of time an individual spent in illegal activities.
In our model, it has been assumed that individuals have a subjective evaluation of the probabilities of arrest, conviction, and imprisonment, and these will be assumed to be the sum of a quasi-fixed component and a variable component. The latter figure is assumed to depend upon the time spent in illegal activity (the theory behind this being, the more time spent, the greater the likelihood of arrest and conviction). Relative gains and costs from legal and illegal activities are evaluated individually by each person according to his preference ordering.

Von Neuman and Morgenstern, in their book, The Theory of Games and Economic Behavior, set forth the following hypothesis: in a situation involving risk, the choice an individual will make between alternatives will be an attempt to maximize the expected utility value. Among all the utility indicators which describe preferences, a single one can be attained which can be predicted through calculations of the expected utility of the alternatives, assuming that an individual is attempting to maximize his expected utility. When such a utility function has been ascertained, a linear function will serve the same purpose. In Sjoquist's model, the utility indicators seem to follow the Neuman-Morgenstern axioms.

Financial and psychic costs are measured in the same units as are gains. One would expect, however, that the dollar value associated with arrest, conviction, and imprisonment to be of a different sort than the dollar gains associated with legal and illegal activities. To counter this apparent discrepancy, Sjoquist uses an additive utility function such that the disutility of arrest, conviction, and punishment is independent of the gain from legal and illegal activity. This assumption places strong restrictions on the resulting preference
orderings. The implication is that if the slopes of the indifference curves are observed at two points, the whole field can be determined through extrapolation. It seems likely, though, that the distaste for arrest and imprisonment would not change, even if a larger gain were received from either legal or illegal activities. This is not to imply that an individual's willingness to suffer a prison sentence will not change, only that his distaste for prison does not change.

The Formal Model:

The formal model Sjoquist has formulated makes detailed use of the preceding assumptions in mathematical form. Letting $t_0$ represent the total time in the period under consideration, $t_1$ and $t_2$ will represent the time allocated respectively to legal and illegal activities where $t_0 = t_1 + t_2$.

The net gain from legal activity, $g_1$, is a function of $t_1$, $g_1 = g_1(t_1)$, where the gain increases at a constant or decreasing rate. Therefore,

$$\frac{dg_1(t_1)}{dt_1} \geq 0, \text{ and } \frac{d^2g_1(t_1)}{dt_1^2} \leq 0.$$  \hspace{1cm} 63

This gain is generated with certainty with all associated costs included in $g_1$.

If we assume temporarily that the net gain from illegal activities, $g_2$, is generated with certainty and is solely a function of $t_2$, all costs other than those associated with arrest, conviction, and punishment being included in $g_2$. Therefore, $g_2 = g_2(t_2)$ where the gain
would increase as more time is spent in that activity, but increases at a constant or decreasing rate, or

\[ \frac{dg_2(t_2)}{dt_2} > 0, \quad \text{and} \quad \frac{d^2g_2(t_2)}{dt_2^2} \leq 0. \]

Later the assumption of certainty will be dropped and the effect on the model will be shown of having \( g_2 \) distributed according to a frequency function.

If we assume (temporarily) that the probability of conviction and punishment conditioned on arrest as one, the joint probability of arrest, conviction, and punishment will equal the probability of arrest. (Later this too will be dropped and effects on analysis of treating each probability separately shown.) If \( r \) is set to represent the probability of arrest, conviction, and punishment (that is, the probability of incurring financial and psychic costs associated with arrest, conviction, and punishment), and \( r \) is a function of \( t_2 \) and \( r^* \) is a quasi-fixed risk, then

\[ r = r^* + r(t_2), \quad \text{where} \quad r^* \begin{cases} = 0 & \text{if } t_2 = 0 \\ > 0 & \text{and constant if } t_2 > 0. \end{cases} \]

\( r \) will increase as \( t_2 \) increases, thus

\[ \frac{d^2r(t_2)}{dt_2^2} > 0, \]

and assume

\[ \frac{dr(t_2)}{dt_2^2} \leq 0. \]

If we accept the above assumption concerning \( r \) we can then combine all the costs associated with arrest, conviction, and punishment.
Sjoquist separates these costs, \( p \), into quasi-fixed costs, \( p^* \), and variable costs, \( p(t^2) \), so
\[
p = p^* + p(t^2),
\]
where \( p^* \) is given as
\[
\begin{cases} 
= 0 & \text{if } t^2 = 0 \\
> 0 & \text{and constant if } t^2 > 0.
\end{cases}
\]
He assumes then that
\[
\frac{dp(t^2)}{dt^2} > 0 \text{ and } \frac{d^2 p(t)}{dt^2} \leq 0.
\]

Based on the assumption that the disutility of \( p \) is independent of \( g_1 \) and \( g_2 \), the expected total utility \( z \) is given as
\[
z = u(g_1(t_1) + g_2(t_2)) - (r^* + r(t_2)) - v(p^* + p(t_2)),
\]
where \( u(g_1(t_1) + g_2(t_2)) \) represents the "ordinal" utility from the gains, and \( v(p^* + p(t_2)) \) represents the "ordinal" utility from \( p \). His choice of initial values of the indicator is arbitrary since indicators, according to his sources, are unique up to a linear transformation.

Assuming the marginal utility of money to be positive and either constant or decreasing, the implication is that the individual is either risk neutral or risk averse respectively, or
\[
\frac{du(g_1 + g_2)}{d(g_1 + g_2)} > 0, \quad \text{and} \quad \frac{d^2 u(g_1 + g_2)}{d(g_1 + g_2)^2} \leq 0.
\]
Sjoquist also assumes that
\[
\frac{du(p)}{dp} > 0, \quad \text{and} \quad \frac{d^2 v(p)}{dp^2} \leq 0.
\]

The Utility Function:

If \( z \) represents a constant level of utility in this model, then \( z \) would represent an indifference curve between \( t_1 \) and \( t_2 \), the
constraining force being \( t_0 = t_1 + t_2 \). It was noted previously that \( s \) is a separable utility function.\(^70\) The type of utility function generally considered in the literature is of the form \( \Psi = f(x) + g(y) \) which is maximized subject to the constraint \( Y = \tau_1 x + \tau_2 y \), where \( Y \) is income and \( \tau_1 \) and \( \tau_2 \) are respective prices. The utility index employed here is of the form \( \psi = u(t_1, t_2) - v(t_2) \) and subject to the constraint \( t_0 = t_1 + t_2 \). But it can also be expressed in the form \( \psi = F(g_1 + g_2) - G(p) \), maximized subject to the constraint on \( (g_1 + g_2) \) and \( p \), and ultimately on \( t_1 \) and \( t_2 \) since \( (g_1 + g_2) \) and \( p \) are functions of \( t_1 \) and \( t_2 \).\(^71\)

As \( (g_1 + g_2) \) increases, then by assumption there should be no change in the utility of \( p \). In this sense \( (g_1 + g_2) \) and \( p \) should be considered independent and the indifference relation between them subject to the Samuelson limitations.\(^72\) An alteration in the character of both \( (g_1 + g_2) \) and \( p \) occurs, however, with an increase in \( t_2 \). Thus if the constraint changes are known as \( t_0 \) changes, the whole set of indifference curves can be determined.\(^73\)

If the relationship between \( (g_1 + g_2) \) and \( p \) is directly incorporated into the utility function rather than the constraint, the indifference set is subject to the limitation of an additive utility function and subject to the functional relationship of \( (g_1 + g_2) \) and \( p \) to time.\(^74\) If the total differential is set to equal zero,

\[
\frac{dg}{dt_1} = \frac{\partial u(g_1 + g_2)}{\partial t_1} + \left[ \frac{\partial u(g_1 + g_2)}{\partial t_2} - \frac{\partial (r.v(p))}{\partial t_2} \right] dt_2 \tag{75}
\]

Therefore

\[
\frac{dt_2}{dt_1} = \frac{\frac{\partial u(g_1 + g_2)}{\partial t_1}}{\frac{\partial u(g_1 + g_2)}{\partial t_2} - \frac{\partial (r.v(p))}{\partial t_2}} \tag{76}
\]
Sjoquist has shown all of the partial derivatives to be positive, therefore the slope of the indifference curve will be negative if and only if,
\[
\frac{\partial u(g_1 + g_2)}{\partial t_2} > \frac{\partial (r.v(p))}{\partial t_2},
\]
or the marginal utility from the gains associated with illegal activity must be greater than the marginal expected loss of utility from arrest, conviction, and punishment.

As we differentiate \( \frac{dt_2}{dt_1} \) with respect to \( t_1 \) we have
\[
\frac{\partial}{\partial t_1} \left( \frac{dt_2}{dt_1} \right) =
\]
\[
\frac{\partial^2 u(g_1 + g_2)}{\partial t_1^2} \left[ \frac{\partial u(g_1 + g_2)}{\partial t_2} - \frac{\partial (r.v(p))}{\partial t_2} \right] - \frac{\partial u(g_1 + g_2)}{\partial t_2} \cdot \frac{\partial (r.v(p))}{\partial t_2} \cdot \frac{\partial^2 u(g_1 + g_2)}{\partial t_1 \partial t_2}
\]
and \( \frac{\partial^2 (r.v(p))}{\partial t_2 \partial t_1} = 0 \)

So \( \frac{\partial u(g_1 + g_2)}{\partial t_1} \left[ \frac{\partial u(g_1 + g_2)}{\partial t_2} - \frac{\partial (r.v(p))}{\partial t_2} \right] - \frac{\partial u(g_1 + g_2)}{\partial t_2} \cdot \frac{\partial (r.v(p))}{\partial t_2} \cdot \frac{\partial^2 u(g_1 + g_2)}{\partial t_1 \partial t_2} \]
\[
= \frac{\partial^2 u}{\partial g_1^2} \cdot \frac{\partial g_2}{\partial t_1} \left[ \frac{\partial g_1}{\partial t_1} - \frac{\partial g_2}{\partial t_2} \right] + \frac{\partial u(g_1 + g_2)}{\partial t_1} \cdot \frac{\partial^2 g_1}{\partial t_2^2} \left[ \frac{\partial u(g_1 + g_2)}{\partial t_2} - \frac{\partial (r.v(p))}{\partial t_2} \right].
\]
Therefore
\[
\frac{\partial \frac{d t_2}{d t_1}}{\partial t_2} > 0 \text{ if } \frac{\partial u(g_1+g_2)}{\partial t_2} > \frac{\partial (r.v(p))}{\partial t_2},
\]
and \(\frac{\partial g_1}{\partial t_1} > \frac{\partial g_2}{\partial t_2}\).

Thus Sjoquist can infer that the indifference curves are convex. There is one discontinuity at the point \(t_2=0\) due to the quasi-fixed risk and cost.

The constraining line has a slope of \(-1\), therefore, if the conditions for convexity hold, the individual will maximize his utility at the tangential point of the indifference curve and budget line (refer to Figure 10). At this point
\[
\frac{\partial u(g_1+g_2)}{\partial t_1} = \frac{\partial u(g_1+g_2)}{\partial t_2} - \frac{\partial (r.v(p))}{\partial t_2} \quad \text{and} \quad t_0 = t_1 + t_2.
\]

The indifference curve consists of line \(A\) and point \(A\), being discontinuous at \(t_2=0\). Maximization of expected utility occurs at
point a. There are two possible situations in which the equilibrium point would occur at $t_1 = t_0$. In the first, if the slope of the indifference curve were less than -1 at all points, then because no internal tangencies would exist, equilibrium would occur at $t_1 = t_0$. In the second case, even with the existence of internal tangencies with A, the point $t_1 = t_0$ will be chosen if point A lies to the left of $t_1 = t_0$ (see Figure 11). Then there exists an indifference set representing greater utility than point A, to the left of point A, at $t_1 = t_0$.

The Effect of Risk Alterations:

In a situation of increased police activity, the value of $r$ would be increased for every value of $t_2$. By observing the change in the slope of the indifference curve, we can determine how this will affect the amount of time an individual would spend in illegal activity. Point a of Figure 10 is the equilibrium point in discussion. If a new indifference curve had a slope which was absolutely greater at point a than the indifference curve of Figure 10, the implication is that $t_2$ must decrease with the new $r$ (see Figure 12).
If the slope of the new indifference curve is absolutely less, then \( t_2 \) will increase (see Figure 13).

Point a is not affected in either case because it is found by setting \( t_2 = 0 \), and hence \( r(t_2) = 0 \). The new \( r \) will be represented by \( \overline{R} \), then

\[
\overline{a} = u(g_1 + g_2) - \overline{R} v(p)
\]

and

\[
\frac{\partial t_2}{\partial t_1} = \frac{\delta u(g_1 + g_2)}{\delta t_1} - \frac{\delta u(g_1 + g_2)}{\delta t_2} - \frac{\delta (\overline{R} v(p))}{\delta t_2}.
\]

Because \( t_1 \) and \( t_2 \) are measured at point a in both cases,

\[
\frac{\delta u(g_1 + g_2)}{\delta t_1} \quad \text{and} \quad \frac{\delta u(g_1 + g_2)}{\delta t_2}
\]

are the same in both instances.

If, as Sjoquist suggests, we assume

\[
\frac{\partial \overline{R} v(p)}{\partial t_2} > \frac{\partial r v(p)}{\partial t_2}
\]

the implication is

\[
\frac{\partial \overline{R}}{\partial t_2} > \frac{\partial r}{\partial t_2},
\]

and the slope of the new indifference curve will be greater than the slope of the original indifference curve. In comparison of

\[
\frac{\delta u(g_1 + g_2)}{\delta t_1} \quad \text{to} \quad \frac{\delta u(g_1 + g_2)}{\delta t_1}
\]

The finding is that

\[
\frac{\delta u(g_1 + g_2)}{\delta t_1} \quad \text{to} \quad \frac{\delta u(g_1 + g_2)}{\delta t_1}
\]

\[
\frac{\delta u(g_1 + g_2)}{\delta t_2} \quad \text{to} \quad \frac{\delta u(g_1 + g_2)}{\delta t_2}
\]

\[
\frac{\delta (\overline{R} v(p))}{\delta t_2} \quad \text{to} \quad \frac{\delta (R v(p))}{\delta t_2}
\]

\[
\frac{\delta (\overline{R} v(p))}{\delta t_2} \quad \text{to} \quad \frac{\delta (R v(p))}{\delta t_2}
\]
or that the absolute values share the same relationship. We can see, then, that an individual would reduce the amount of time spent in illegal activity as \( r \) increases. If illegal activities were not engaged in prior to the increase in \( r \), they would not afterwards either. If \( p \), the cost of illegal activity were increased, the same result would hold as for an increase in \( r \), and the same would be true for an increase in \( g_1 \) or a decrease in \( g_2 \).

**Randomness in the Cost of Illegal Activity:**

Let's consider now a variation on the model in which probabilities of arrest, conviction, and punishment are treated separately. In such a case, 

\[
z = u(g_1 + g_2) - r_a v(P_a + P_a(t_2)) - r_c v(P_a + P_a(t_2)) + (P_c + P_c(t_2)) - r_p (p^* + p(t_2))
\]

in which \( r_a \) is the probability of arrest only, \( r_c \) arrest and conviction only, \( r_p \) arrest, conviction, and punishment only, \( P_a^* \) the quasi-fixed cost associated with arrest, \( P_c^* \) the quasi-fixed cost associated with conviction, and \( p^* + p(t_2) \) is as earlier defined. Therefore, 

\[
1 - (r_a + r_c + r_p) \text{ is the probability of not being arrested.}
\]

By assumption, Sjoquist says that 

\[
r(p^* + p(t_2)) = r_a P_a + r_c (P_a + P_c) + r_p (p^* + p(t_2))
\]

and that we can show that the individual will lose less utility from 

\[
r_a P_a + r_c (P_a + P_c) + r_p (p^* + p(t_2))
\]

than from \( r(p^* + p(t_2)) \), assuming he is risk averse.

According to the above equation we can obtain 

\[
p^* + p(t_2) = \frac{r_a P_a + r_c (P_a + P_c) + r_p (p^* + p(t_2))}{r}
\]

where 

\[
0 < \frac{r_a}{r}, \frac{r_c}{r}, \frac{r_p}{r} < 1 \text{ since } r > r_a, r_c, r_p.
\]

According to Friedman and Savage, if an individual is risk averse, he
will prefer an income with certainty against an income with uncertainty, if expected values and gains are the same for both incomes. It follows then

\[ v(p\ast+p(t_2)) \geq \frac{r_a}{r} v(p_a) + \frac{r_c}{r} v(p_a + p_c) + \frac{r_p}{r} v(p\ast+p(t_2)) \]

and if we multiply by \( r \), a positive number,

\[ rv(p\ast+p(t_2)) \geq r_a v(p_a) + r_c v(p_a + p_c) + r_p v(p\ast+p(t_2)). \]

Therefore \( r.v(p\ast+p(t_2)) \) would generate greater disutility than

\[ r_a v(p_a) + r_c v(p_a + p_c) + r_p v(p\ast+p(t_2)). \]

The result of this analysis shows that it is possible to show that we can make a differentiation, in terms of effects on an individual's decision to participate in illegal activity, between the probabilities of arrest, conviction, and punishment.

Randomness in the Gain from Illegal Activity:

There is also a probability associated with the gains associated with illegal activities, and is assumed to depend on the amount of time spent in such activity - the greater the possibility of a larger gain. In like manner, the more planning done, the greater the probability of a gain.

As Sjoquist suggests, we let \( TG \) represent the set of all possible total gains from illegal activities, and \( TG_1 \) is an element of \( TG \). \( p_1 \) represents the probability of attaining \( TG_1 \), where \( p_1 = p(t_2, TG_1) \), and \( p_1 = 1 \) if \( t_2 = TG = 0 \).

The value of the expected gain from illegal activity will be

\[ \int_{TG_1} \frac{p(t_2, TG_1)}{dTG_1} \]
and the expected utility

\[ (a.) \int G u(TG_1) \cdot \rho(t_2, TG_1) dTG_1. \]

If we combine (a.) with the gains associated with legal activity,

\[ \int G u(G_1 + g_1) \cdot \rho(t_2, TG_1) dTG_1. \]

We can see, then, that the new formulation does not change the basic results derived earlier.

Assuming that

\[ g_1(t_1) + g_2(t_2) = \left[ \int G TG_1 \cdot P(T_2, TG_1) dTG_1 + g_1(t_1) \right] \]

or that the actual values are the same, then, if the individual is risk averse, the certain gain will be preferred to the uncertain one. Therefore it appears less likely that an individual would participate in illegal activities.

If the individual's marginal utility of money is increasing, he is an individual who prefers risk, and the results of analysis would differ. The conditions for the slope of his indifference curve would not change

\[ \frac{\partial u(g_1 + g_2)}{\partial t_2} > \frac{\partial r_v(p)}{\partial t_2} \]

that is, the slope would be negative.

But we can't really tell if that curve is concave or convex.

In differentiating \( \frac{dt_2}{dt_1} \)

\[
\frac{\partial}{\partial t_1} \left( \frac{dt_2}{dt_1} \right) = \frac{\partial^2 u(g_1 + g_2)}{\partial t_1^2} \left[ \frac{\partial u(g_1 + g_2)}{\partial t_2} - \frac{\partial r_v(p)}{\partial t_2} \right] - \frac{\partial u(g_1 + g_2)}{\partial t_1} \frac{\partial^2 u(g_1 + g_2)}{\partial t_1 \partial t_2} \]

\[ \left[ \frac{\partial u(g_1 + g_2)}{\partial t_2} - \frac{\partial r_v(p)}{\partial t_2} \right]^2 \]
and (b. ) \( \frac{\partial^2 u(g_1 + g_2)}{\partial t_1^2} = \frac{\partial^2 u(g_1 + g_2)}{\partial g_1^2} \left( \frac{\partial g_1}{\partial t_1} \right)^2 + \frac{\partial u(g_1 + g_2)}{\partial g_1} \cdot \frac{\partial^2 g_1}{\partial t_1^2} \). 

Because of the risk preference in this case, \( \frac{\partial^2 u_2}{\partial g_1^2} > 0 \).

Therefore the first term on the right of (b.) is positive, the second is negative, and the sign of \( \frac{\partial^2 u(g_1 + g_2)}{\partial t_1^2} \) cannot be determined.

In Figure 14, the indifference curve is concave and represents the situation in which an individual will specialize in crime. If \( r \) increases, the indifference curve slope becomes larger negatively (smaller absolutely), but there will be no effect on the individual unless \( r \) increases enough to cause the indifference curve slope to fall significantly causing the individual to shift from the corner where \( t_2 = t_0 \), to the corner where \( t_1 = t_0 \) (as shown in Figure 15).

Therefore, even when the indifference curve is concave, increases in \( r, p, g_1 \), or a decrease in \( g_2 \) will cause the individual to spend less time in illegal activity, providing parameter changes are large enough.

Sjoquist's model, as presented, is an attempt to demonstrate that
the theoretical framework used to explain particular forms of legal behavior can just as aptly be applied to the realm of illegal behavior. His theoretical model of criminal behavior is based on the assumption that, in an economic sense, criminal behavior is a rational undertaking. His model states that the amount of crime is inversely related to the probability of arrest, conviction, and punishment, the amount of punishment and the gain from legal activity, and is also directly related to the gain from illegal activity.

Sjoquist tested his model empirically, using a cross-sectional sample of smaller communities and running a number of regressions using major property crimes as a measure of crime. From the evidence presented by this massive data collection, he was able to prove that the empirical results supported the original hypothesis.

An interesting implication of this analysis is that in addition to providing evidence for the model, the empirical results could be used as an input of a cost-benefit study of the criminal justice system. To determine the relative effectiveness of the police in preventing crimes, it would be necessary to know the relationship between the number of arrests and the amount of police, and the relationship between the amount of crime and the number of arrests. The latter half has been provided by Sjoquist.
IV. SUMMARY AND CONCLUSIONS

Until a better understanding is reached of the total realm of criminal economic behavior, appropriate measures of prevention and control may not effectively be initiated. To insure that this understanding is forthcoming on a policy making level, support should be given to studies of individual cases of crime with a definite view to deciding on the best disposition of funds on state as well as federal levels.

The great range of our ignorance and the enormous potential for research and development in this field confront us with a problem of priorities which is not easily solvable. For this reason, one of the most important contributions of the President's Crime Commission was its recognition of the fact that the techniques of systems analysis can be applied to the crime problem. One of the prime advantages of such analysis (which has already been successfully applied to such complex systems as national economies and air traffic systems) is that it provides a means for determining which of a number of alternative courses of action will provide the maximum amount of effectiveness for a given cost, and this mathematical analysis can as easily be applied to illegal as well as legal behavior systems.

The essence of this technique is to construct a mathematical description or model of the given system in the light of which it is possible to conduct simulated experiments which may indicate how the real life system may be better organized and operated. For the area of criminal behavior this sort of experimentation through the manipulation of models is particularly appropriate for any sort of
intervention in actual operations is often difficult as well as impractical and costly.

At the present time this realm of analysis has only briefly been touched as economists begin to realize its innate potential in the area of crime. Unfortunately much of the necessary data for comprehensive analysis is not yet available, but once obtained, modern technological methods will make it possible to estimate possible consequences and benefits of any proposed changes. There are, however, a variety of social costs and obviously nonquantifiable considerations, such as justice, individual liberty, and personal reactions which arise in such a discussion which logically cannot be treated in this manner. What systems analysis does is enable us to see clearly those aspects of a problem which can be quantifiably measured and makes apparent avenues of operation which take them into account.

Science and technology must therefore begin to deal with the problem through systems analysis studies. Only on the basis of such studies can national decisions be made on specific areas which are most critically in need of comprehensive research and which possible lines of development open are likely to point the way to most effective courses of action in controlling crime.

Nevertheless, we need not await results of such all-inclusive studies before research of a scientific nature is appropriately applied to a realm once considered purely sociological in nature. In the meantime, through experimentation within the present system, immediate operational improvements may become apparent. Evaluative research into ongoing systems and controlled experiments with new
methods and techniques must therefore be an integral feature in any attempt to analyze the problems revolving around criminal behavior.
FOOTNOTES


5 McLennan, p. xiii.


7 Morris, p. 31.

8 Morris, p. 31.

9 Morris, p. 32.


11 Lewin, p. 22.

12 Morris, p. 33.
13 Morris, p. 33.
14 Morris, p. 34.
15 Morris, p. 37.
16 UCR-1971, p. 60.
17 CHALLENGE OF CRIME, p. 3.
18 CHALLENGE OF CRIME, p. 4.
19 CHALLENGE OF CRIME, p. 5.
20 CHALLENGE OF CRIME, p. 6.
21 CHALLENGE OF CRIME, p. 6.
22 CHALLENGE OF CRIME, p. 6.
23 CHALLENGE OF CRIME, p. 7.
25 "Why Streets are not safe," p. 18.
27 Morris p. 236.
29 McLennan, p. 138.
30 McLennan, p. 138.
31 McLennan, p. 138
32 Rottenberg, p. 43.
34 McLennan p. 140.
35 McLennan p. 140.
36 CHALLENGE OF CRIME, p. 16.
38 REPORT ON THE COST OF CRIME, p. 11.
39 CHALLENGE OF CRIME, p. 17.
40 CHALLENGE OF CRIME, p. 16.
41 Rottenberg, p. 49.
42 Rottenberg, p. 49.
43 Rottenberg, p. 49.
44 Rottenberg, p. 49.
45 Rottenberg, p. 50.
46 REPORT ON THE COST OF CRIME, p. 435.


58Becker, p. 176.

59Sjoquist, p. 8.

60CHALLENGE OF CRIME, p. 4.


Sjoquist, p. 17.

Sjoquist, p. 17.

Sjoquist, p. 18.

Sjoquist, p. 18.

Sjoquist, p. 18.

Sjoquist, p. 18.

Sjoquist, p. 19.

See von Neuman-Morgenstern model for specific detail, chapter 2.

Sjoquist, p. 19.

For discussion of basis for this index see Sjoquist, p. 20.

Sjoquist, p. 20.


Sameulson, p. 174.

Sjoquist, p. 21.

Sjoquist, p. 21.

Sjoquist, p. 22.

Sjoquist, p. 22.
80 Sjoquist, p. 24.
83 Sjoquist, p. 28.
84 Sjoquist, p. 28.
85 Sjoquist, p. 27.
86 Sjoquist, p. 29.
87 Sjoquist, p. 31.
88 Sjoquist, p. 31.
89 Sjoquist, p. 32.
90 Friedman and Savage, p. 290.
91 Sjoquist, p. 32.
92 Sjoquist, p. 33.
93 Sjoquist, p. 33.
94 Sjoquist, p. 34.
95 Sjoquist, p. 36.
96 Sjoquist, p. 36.
the results of this test of the original model can be seen in detail in the original work, pages 37-111.

Morris, p. 240.
A SELECTED BIBLIOGRAPHY


Cooper, Courtney. HERE'S TO CRIME. Boston: Little Brown and Co., 1937.


Millsapau, Arthur. CRIME CONTROL AND THE NATIONAL GOVERNMENT.


Special Analyses, Budget of the United States Government. FEDERAL PROGRAMS FOR THE REDUCTION OF CRIME. Reproduced by the Library

U.S. Congress, Senate Committee on the Judiciary Subcommittee on
Criminal Laws and Procedures. CONTROLLING CRIME THROUGH MORE
EFFECTIVE LAW ENFORCEMENT, HEARINGS. Washington, D.C.: U.S.

United States Department of Justice, Federal Bureau of Investigation.

United States Department of Justice, Federal Bureau of Investigation.

U.S. President's Committee on Law Enforcement and Administration of
Justice. THE CHALLENGE OF CRIME IN A FREE SOCIETY. Washington,

Votey, Harold. ECONOMIC CRIMES: THEIR GENERATION, DETERRENCE, AND
CONTROL. Springfield, Va.: National Technical Information
Center, 1969.
