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CRIME AND THE JOB MARKET

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CRIME AND THE JOB MARKET

ABSTRACT

This paper presents evidence on the relation among incarceration, crime, and the economic incentives to crime, ranging from unemployment to income inequality. It makes three points:

1) The U.S. has incarcerated an extraordinarily high proportion of men of working age overall, and among blacks. In 1993 the number incarcerated was 1.9 percent of the male work force; among blacks, the number incarcerated was 8.8 percent of the work force.

2) The rising trend in incarceration should have reduced the rate of crime, through the incapacitation of criminals and through the deterrent effect of potential arrest and imprisonment. But administrative records show no such drop in crime and the victims survey shows a fall far below what could be expected on the basis of incapacitation by itself.

3) The implication is that there was an increased propensity to commit crime among the non-institutional population.

The paper focuses attention on the possibility that the continued high rate of crime in the U.S., despite massive imprisonment of criminals may be one of the costs of the rising inequality in the country, and in particular of the falling real earnings of the less educated. While we lack a "smoking gun" for such a relation, the preponderance of evidence suggests that economic incentives have played a role in the increased propensity to commit crime.

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The question that has traditionally motivated analyses of crime and the job market has been the effect of unemployment on crime. Many people believe that joblessness is the key determinant of crime, and have sought to establish a significant crime-unemployment trade-off. Studies through the mid 1980s found that higher unemployment was associated with greater occurrence of crime, though the unemployment-crime link was statistically looser than the link between measures of deterrence (such as the severity of criminal sentences or chances of being caught) and crime, and was more closely aligned to property crimes than to violent crimes.¹ Most important, although the rate of unemployment drifted upwards from the 1950s to the 1990s, even the largest estimated effects of unemployment on crime suggest that it contributed little to the rising trend in crime.

Developments in the 1980s-1990s raise a broader set of issues regarding the link between the job market and crime.² The high rate of crime in the 1980s despite increased incarceration directs attention at potential increases in economic incentives to commit crime. Perhaps the widely heralded increase in earnings inequality and the fall in the real earnings of the less skilled men who commit most crimes gave young men a job market "push" into

¹ See Freeman, 1983; Chirico, 1987.

² Economics does not support the traditional focus on unemployment as the key labor market variable affecting crime. Rather, it posits that the decision to commit crime depends on the present value of economic returns to criminal activity compared to the present value of economic returns to legal activity. The returns to crime depend on: the chance of success, the money (utility) obtained from crime, less the value of the time spent at crime, the chance of being caught and convicted, the length of sentence and resultant earnings lost due to imprisonment. The crime decision should also depend on the effects of crime on future earnings opportunities, and because crime is risky, on attitudes toward the risks involved in crime, which range from risk of injury and death and arrest, conviction, and incarceration.

crime. Perhaps the growth of the illegal drug business raised the returns to crime compared to those from work. At the minimum, the massive incarceration of criminals in the 1980s has brought the issue of crime from the periphery to the center of discussions of poverty and the underclass.

In this chapter I examine evidence and studies regarding the effect of labor market incentives on crime, the reverse effect of criminal activity on labor market outcomes, and the financial payoff to crime. There are two bottom-line questions: 1) What part, if any, of the high rate of criminal activity among young men results from the deteriorating job market for less skilled workers? and 2) How does crime affect the long run economic position of those who commit crimes? Before turning to these questions, I review the basic facts on the criminal participation of young men and incarceration that makes crime important to understanding the economics of the American "underclass".

The Facts

In 1993 the number of men incarcerated in the U.S. was 1.9 percent the number in the labor force. The number of men on probation or parole relative to the male labor force was approximately 4.7 percent,³ so that the number of men "under supervision of the criminal justice system" was 6.6 percent of the male work force -- one man incarcerated, probated, or paroled for every twelve men in the work force. This was nearly as many men as were unemployed in that year. At extant growth rates, the number under supervision will exceed the number unemployed in 1994-95.

³ These figures are approximate because we do not have data for parole and probation for 1993, but must extrapolate 1990 figures.

No. I have not made an error. These figures do not refer to young men or to minority men. They refer to all men. For men aged 18-34, the ratio of those incarcerated to the labor force was 3.1 percent; the number under supervision of the criminal justice system was 11 percent of the work force in 1993. For all black men, the ratios to the work force are 8.8 percent incarcerated, and 25.3 percent under supervision relative to the work force. For black men aged 18-34, the ratios to the work force are 12.7 percent incarcerated and 36.7 percent under supervision.⁴ Since a disproportionate number of prisoners are high school dropouts, the proportion of less educated men, especially young men, who were incarcerated, probated, or paroled, was even greater (Freeman, 1992).

High though these figures are, they understate the extent to which American men are involved in criminal activity. Not everyone who commits crimes is caught by the police, and convicted of crime. The magnitude of involvement in crime is such that analysts who once dismissed criminal behavior as a peripheral issue to employment or poverty can do so no longer. No other advanced society has as large a proportion of its potentially productive workforce involved in illegitimate activities, nor as large a proportion incarcerated.

trends

The most striking trend in crime statistics in the 1980s was the growth of the prison and jail population. From 1980 to 1991 the number of persons incarcerated rose at an exponential rate, with no sign of deceleration (figure 1). The average annual increase in the jail and prison population was 8.5 percent. Had nothing else changed, the imprisonment

⁴ These figures are larger than figures giving percentages of the various populations incarcerated or under supervision since not all adult men are in the work force. I report figures relative to the work force because my focus is on the links between crime and the labor market.

trend should have greatly reduced the crime rate. It removed men with a high propensity to commit crime from society; and increased the risk to potential criminals that they would end up in jail or prison.

The standard administrative measure of crime, the Justice Department's Crime Index, obtained from police departments around the country, does not show the expected drop in crime. The Uniform Crime Rate (UCR), defined as the number of 'index' crimes per 100,000 persons,⁵ at best stabilised in the 1980s (figure 2). It fell from 1980 to 1984, then increased through 1991 to approach its 1980 peak level before dropping modestly in 1992. By contrast, the rate of criminal victimisations, defined as the number of times people report they or their family were victims of crime on the annual victimisation survey, dropped over the same period (figure 3), creating a problem of data inconsistency.

The victimisation figures differ markedly from the UCR in level as well as trend.⁶ Because individuals do not report all crimes to the police, reported victimisations range from 2.4 to 4.1 times the police data on crimes. In 1973 32 percent of victimisations were reported to the police. In 1991 38 percent of victimisations were reported to the police. A large proportion of the difference in volume of crime between the administrative data and victimisation survey is for crimes that are difficult to measure or report, such as rapes or larceny.

⁵ The Uniform Crime Reporting Index is based on statistics that local law enforcement agencies report to the FBI as part of the Uniform Crime Reporting Program. The crime index is based on seven crime categories: murder and nonnegligent manslaughter, forcible rape, robbery, aggravated assault, burglary, larceny-theft, and motor vehicle theft, and arson.

⁶ Much of the discussion here is taken from Boggess and Bound.

Several factors explain the difference in trends between the two sets of data. Some of the trend in the UCR is due to an increase in the proportion of crimes that individuals report to the police. Boggess and Bound estimate that increased reporting accounts for about one quarter of the difference in trend. Perhaps another quarter of the difference in trend is the increase in victimless drug crimes, which individuals do not report. This still leaves a sizeable difference in trend. Should one put greater weight on the administrative UCR data or on the survey data on victimisation in assessing the trend in crime? One way to judge which data might be more accurate is to examine changes in crimes that are well-measured, such as murder or automobile thefts. Murder rates roughly stabilised in the 1980s, rising for teenagers while falling for adults. Auto thefts rose in the period. The change in these crimes suggests that the stability in the UCR may give a better fix on what is happening to crime levels than the falling rate in the victimisation survey.

increased propensity for crime

As noted earlier, the rough doubling in the prison and jail population in the 1980s should, all else the same, have greatly reduced crime because of the incapacitation of criminals. It produced, in addition, an upward trend in the proportion of crimes that resulted in prison sentences (following a decline from the mid-1960s to the late 1970s) (Langan) that should have further reduced crime through the deterrent effect. The different trends in the UCR and victimisation rates notwithstanding, the 1980s levels of both statistics differ so much from the levels that massive incarceration should have produced to tell the same story about criminal behavior: namely that the **propensity for crime among non-institutionalised men increased immensely in the 1980s.**

Figure 4 demonstrates the increased propensity for crime in the UCR data. It plots the annual relation between the proportion of the adult male population confined to prison or jail and index crimes per man in the non-institutional population⁷. If the propensity for crime in the noninstitutional male population were constant, the increased confinement would reduce crime through incapacitation or deterrence, producing downward-sloping confinement-crime (CC) curves. The greater the rate of criminal activity of those sent to jail or prison and the greater the deterrent effect of jail or prison on future crimes, the more steeply sloped will be the CC curve.

The curve joining the percent confined and crimes per man in the figure is not, however, downward-sloping. It is a straight line, because the increased confinement of the population in the 1980s was accompanied by a roughly constant number of crimes per adult male. The three hypothetical CC curves in the figure show what "should" have happened to crimes per adult male rate as a result of increased incapacitation of criminals. These curves take 1978 as a starting year and calculate hypothetical crime rates by subtracting from the number of crimes in each succeeding year different estimates of the change in crime resulting from the growth of the prison and jail population since 1978. The changes in crime are obtained from conservative estimates of the number of crimes each additional confinee would have committed had they been free;⁸ and ignore deterrent effects that should have begun

⁷ I relate crimes to the male population, because the vast bulk of arrestees, prisoners, and persons who self-report crime are men.

⁸ The numbers I use are much smaller than those in Zimring and Hawkins, p 95-96 or in Wilson and Abrahamse, table 3.

operating in the mid/late 1980s and the changing age structure of the male population,⁹ both of which would further add to the expected drop in crime. By construction, the hypothetical CC curves slope downward. The gap between the actual and the hypothetical CC curves measures the increased propensity for crime among the non-institutional male population from the base 1978 year.

Figure 5 shows actual CC curves for reported victimizations committed per adult male and hypothetical curves calculated in a similar manner to those in figure 4. The actual CC has a negative slope, reflecting the drop in victimisations. In calculating hypothetical CCs in this figure, I assume a greater number of crimes per person confined than I did in figure 4 because the volume of victimisations exceeds the volume of index crimes, though my estimates are still moderate ones. The hypothetical CC curves show a much more pronounced negative slope than the actual CC curve. The gap between the curves shows an increased propensity for crime comparable to that in figure 4.

The bottom line is that the propensity of the noninstitutional population to commit crime rose sharply in the 1980s.

How might we explain this increase? The economist is naturally drawn to a job market explanation. Given the well-documented growth of earnings inequality and fall in the job opportunities for less skilled young men in this period, and the increased criminal opportunities due to the growth of demand for drugs, the economist finds appealing the notion that the increased propensity for crime is a rational response to increased job market

⁹ In 1970 the proportion of the population that consisted of 15-34 year old men was 14.7%. In 1980, the proportion had risen to 17.6%. But in 1990, it had fallen to 16.3%.

incentives to commit crime. What is appealing, however, need not be true or, if true, may be difficult to prove. To see how much weight we might reasonably give to an earnings explanation of the rising crime propensity, I turn next to extant studies of the effect of economic incentives on crime.

Labor Market Incentives and Crime: Statistical Studies

Social science analyses of the effect of the labor market on crime take several forms: time series studies that compare the crime rate to labor market variables over time; cross-area studies that compare crime and economic characteristics across cities or states; and individual studies that compare crime and economic characteristics across people. In addition, there are longitudinal studies that follow the same area or individual over time, as economic opportunities change, and studies based on social experiments, in which the experimenter manipulates opportunities.

Studies of crime and the job market through the mid 1980s, which focused largely on unemployment, have been reviewed and summarised in detail in Freeman (1983) and Chiricos (1987). Building on those reviews for the earlier period, I concentrate here on ensuing work, and the "trend" in research results. Rather than updating the scorecard of findings, I direct attention to specific studies that are either particularly innovative or convincing.

time series studies

Time series data allow us to examine the effect of the business cycle on crime and to answer the question of what might happen to crime levels if overall job prospects improved or worsened on a short term basis. For this reason, analysts often use time series data to

examine the effect of unemployment on crime. But time series analyses suffer from a myriad of problems that make many social scientists leary of their results. Variables tend to move together over time, providing little independent variation from which to infer relations, and often suffer from a tendency for the unexplained part of the dependent variable to be correlated from one year to the next. All too often, addition of further observations, of another explanatory variable, or choice of statistical technique, substantively changes results.

Time series studies through the mid-1980s showed that the overall crime rate and the rates of particular crimes, such as burglary, were positively related to unemployment. But the estimated effect of unemployment was moderate and, as noted, incapable of explaining much of the upward trend in crime. Figure 6 shows a modest positive relation between the number of index crimes per adult male and unemployment in each year from 1948 to 1992, dominated by the upward trend in crime, so that any given unemployment rate is associated with very different crime rates over time. A linear regression of the crime rate per 100,000 in the population on a trend and the rate of unemployment gives a positive coefficient on the unemployment rate with a moderate standard error. But the same regression with the crime rate per 100,000 adult men as in the figure (rather than per the entire population) gives a statistically insignificant positive coefficient on the unemployment rate.

Higher-tech statistical models - in which the change in a crime rate is regressed on the change in unemployment and the change in unemployment one year earlier - tell a more complex story about the relation between crime and unemployment. Calculations for the U.K. show that changes in the unemployment rate are associated with changes in crime in the same direction, consistent with the notion that unemployment raises crime; while

changes in unemployment a year earlier have essentially no effect on crime (Hale and Sabbagh). But calculations for the U.S. show that changes in unemployment this year are associated with changes in crime in the opposite direction -- an increase in unemployment reduces crime! -- while the past years' change in the unemployment rate has the more plausible effect of changing crime in the same direction (Cantor, Land and Russell).

Analysts have interpreted the negative relation between changes in current unemployment and crime as reflecting a reduction in criminal opportunities in a sluggish economy (when unemployment is high, there may be less to burgle and more people home watching their property) while interpreting the positive effect between changes in last years' unemployment and crime as reflecting the increase in criminal motivation due to joblessness. The net of the two effects varies by crime, is close to zero in several calculations, but shows that higher unemployment is associated with reductions in motor vehicle thefts.

The time series results are, however, sensitive to the model and time period covered. Using a model with several explanatory variables over the period 1933-1985 Cappel and Sykes report a positive effect of contemporaneous unemployment rates on crime rates for the U.S. As a check on the robustness of the time series relations, I regressed changes in burglary rates on changes in unemployment rates and changes in unemployment rates in the previous year from 1948 to 1993. I obtained a negative coefficient on the contemporaneous change in unemployment and a positive coefficient on the previous years' change, mimicking Cantor, Land, and Russell. However, the coefficient on the contemporaneous change in unemployment was insignificant, while the coefficient on the lagged change in unemployment was large and significant, implying that higher rates of unemployment are positively

associated with crime.

All in all, I would not weigh heavily the time series evidence. The same problems that plague time series analyses of wages, interest rates, and unemployment plague time series analyses of crime. Differences in years covered or in the model chosen or in the particular measures used affect results substantively. The safest conclusion is that the time series are not a robust way to determine the job market/crime link. For more reliable results of how economic incentives may affect crime, I turn to evidence across areas and individuals.

cross-section area studies

Studies of crime and the job market that use cross-section area data compare crime rates in areas with greater or lesser jobless problems or where the earnings of crime-prone groups or income inequality are particularly low or high. These studies are free from collinearity or serial correlation. But they suffer from their own set of inference problems. Areas may differ in labor market conditions and crime for reasons having to do with the features of the population that are not measured, producing spurious correlations or hiding true ones. In some 1960s cross-section studies, for instance, crime was inversely related to the percentage of nonwhites in the area. At face value, this would imply that nonwhites are less likely to be criminals than whites, or that areas of black concentration are subject to less crime than areas of white concentration -- both of which fly in the face of individual data on who commits crime, who are the victims of crime, and on the locus of crime among neighborhoods in a city. Rapid changes in the characteristics of areas, for instance a sudden boom or bust or change in demographic mix, may also give misleading inferences if crime

(other dependent variables) changes more gradually.

Still, cross-area studies are a natural way to examine the effects on crime on economic variables such as income inequality or rates of poverty, that are likely to characterise the area for extended periods. At the minimum, these data can answer such questions as: is crime higher in areas with higher levels of income inequality or in areas with higher rates of poverty?

The majority of cross-area studies show a link between labor market factors and crime. In my 1983 review, I classified 4 of 15 cross-area studies as giving significant effects for unemployment and an additional 7 as giving positive but "weak" results. Summarising 42 studies, including several for Canada or the U.K., Chiricos reports coefficients on unemployment that were positive insignificant in 51% of the cases and positive significant in 14% of cases in pre-1970s data and that were positive insignificant in 44% and positive significant in 48% of the cases in 1970s data (Chiricos, table 3, results for all crimes). Some of the cited studies use similar data (though processing it with different models), so that the results are not truly "independent". Some studies have larger samples and more precise estimates than others, so that simple counts of signs and significance of coefficients is also not ideal. Still, even absent a definite mega-statistical analysis of these results, it is clear that the cross area data support a positive unemployment-crime link.

Not all the work since those reviews has yielded statistically significant coefficients on unemployment, but nothing has arisen to overturn their conclusion.¹⁰ As an exemplar study

¹⁰ The one contrary analysis that I have found is Trumbell's study of unemployment and crime across North Carolina counties, where he obtained a negative coefficient on the unemployment rate. But this does not mean that county data are inconsistent with more

that extends the analysis to the 1980s, consider Lee's study of crime in 58 SMSAs from 1976 to 1989. He estimated the effect of economic variables on a set of crime rates using three statistical models: a cross section model that compares economic incentives and crime among cities; a fixed effects model where city dummy variables eliminate unmeasured city effects; and a model that allows for last periods' unemployment to affect this years' crime rate. All three models gave a positive crime-unemployment link. In the cross-section analysis the overall crime and most specific crimes were positively associated with unemployment. In the fixed effects model the total crime rate, property crime rate, burglary, and motor vehicle theft rates were positively related to unemployment, while murder, rape, and some other crime rates were not positively related to unemployment. The models which explored different time patterns of unemployment-crime effects confirmed the positive link between the variables. The magnitude of the link is, however, modest: Lee estimates that a 1 point increase in the unemployment rate raises property crimes by 1.1 to 1.4 percent. This contrasts with a coefficient of variation in property crimes across SMSAs of roughly 30 percent.

Results with respect to other labor market variables are also supportive of the notion that economic incentives affect crime rates. Some studies use the income of the population in an area and the percentage of families in poverty to measure the potential gain and opportunity cost of crime. Others include a Gini coefficient or other measure of inequality to capture both the gain and opportunity costs in a single term. The reviews by Freeman

aggregate state or SMSA data: in an analysis of 120 counties in Kentucky, Howsen and Jarrell obtain positive coefficients on percentage unemployed or not in the work force.

(1983) or Chiricos show that variables measuring inequality/poverty across areas are associated with differing crime rates across cities. Land, McCall and Cohen find that even homicide rates tend to be higher in cities with greater inequality. In his analysis of 127 Standard Metropolitan Statistical Areas in 1979 and 1969, Lee obtained a significant positive relation between crime and inequality measured as the difference between the household income of the 90th decile and the 10th decile divided by the median household income, calculated from the Census of Populations for 1970 and 1980. His model included numerous other controls, such as the percentage of an SMSA that was black, population density, and region of the country. Figure 7 gives the scatter plot between property crimes and inequality that underlies his work for 1979.

To what extent, if at all, can these cross-section findings explain the rising crime participation among adult men? From 1979 to 1990 the ratio of the difference between the 90th decile and 10th decile of household incomes divided by the median in the U.S. rose by about 12 percentage points.¹¹ Given the magnitude of Lee's estimated relation between crime and inequality, this change would have induced a 10 percent increase in the crime rate. This goes part of the way to explaining why the UCR index did not fall, despite rising incarcerations.

But two aspects of Lee's analysis raise doubts about this inference. First, Lee finds that most of the inequality effect operated through a link between crime and income at the 90th decile: crime was more responsive to the income of the upper parts of the distribution

¹¹ Calculated from U.S. Department of Commerce, 1991, Current Population Reports, Consumer Income, Series P-60, no 174, table B-2.

than to income in the lower part of the distribution. This is troublesome because the rise of inequality took the form largely of falling real income in the lower part of the distribution. Second, he reports that changes in crime rates across the SMSAs from 1969 to 1979 were unrelated to changes in income inequality. Perhaps the cross section pattern shown in figure 7 is due to omitted area characteristics, and thus disappears when the analysis treats changes in variables. Alternatively, perhaps measures of changes in inequality among cities are subject to such huge measurement error that we should discount the change over time results.

In sum, cross section evidence continues to support a positive link between unemployment and crime and suggest that inequality may be an important contributor to crime. But there is enough statistical frailty in extant estimates to leave an door open to doubt about how helpful the cross section inequality results will be in explaining the rising propensity to crime that characterised the 1980s.

individual comparisons

Studies that compare the economic circumstances of individuals who commit crimes with those who do not commit crimes, or the criminal behavior of the same person in different economic circumstances, potentially offer the best way to assess how the job market affects crime. The main reason for this is that these studies focus on the people who are in fact making the crime decision and their particular circumstances. Some studies use records on arrests or on prisoners. Arrest or prisoner data accurately measure the characteristics of arrestees or prisoners, but do not provide information on criminals who have not been caught nor on the characteristics of non-criminals. Other studies use self-reported criminal activity on household surveys. Survey data in which people self-report crime cover all criminal

activity, whether the crime was solved or not, and includes people who did not commit crime. But people may incorrectly self-report crime: black youths, in particular, understate their criminal involvement (Hindelang, et. al)

The strongest evidence that economic incentives are important in determining the crime rate comes from studies of individuals. At a descriptive level, these studies find that criminals are disproportionately from the groups whose incomes and employment opportunities have been low and falling: young less educated men, often with low scores on the Armed Forces Qualifying test or other standard tests. The evidence also shows that those who end up in jail or are arrested were more likely to be jobless or to have low incomes than other groups. Two studies of the Philadelphia birth cohort of 1945 (Wolfgang, Figlio, and Sellin, 1972) found positive relations between unemployment and crime: Tauchen, Witte, and Griesinger report that youths who were employed for a larger percentage of a year were less likely to be arrested than those employed for a smaller percentage of a year; Thornberry and Christenson report a substantial contemporaneous positive relation of unemployment and crime. In the 1980 National Bureau of Economic Research survey of inner city black youth 30 percent of those who committed a crime held a job at the time of the survey compared to 46 percent of those who had not committed a crime (Freeman, 1987).

While this evidence makes it clear that the population of criminals overlaps with the population at the bottom of the U.S.'s increasingly unequal income distribution, it does not establish a causal link from the labor market to crime. The data may, after all, simply reflect the fact that the criminal population consists of people who are unable to succeed in society because of "personal characteristics". That is, the cause of both the poor labor

market record and criminal activity may be a third variable having to do with the specific attributes of the individuals. If this were the case, improved labor market conditions would have little or no effect on the criminal's life of crime, although we would always find poor work records among criminals. Moreover, though it is hard to argue that wages have fallen among low skilled workers because they engage in more crime than in the past, criminals may have higher joblessness than non-criminals because they rejected jobs in favor of unemployment -- a status that enabled them to engage more readily in crime.

There are three ways in which researchers use information on individuals to surmount these problems and make plausible inferences about causality. One is to look at the same person in different periods. Farrington, et al compared the timing of criminal activity among young men in the United Kingdom. The question is whether these men were more likely to commit a crime when they were unemployed or when they held a job. Consider, for example, someone who is unemployed for six months and employed for six months in a year and who commits four crimes. If the person commits all the crimes while unemployed, it is reasonable to conclude that unemployment is associated with crime, not with some unobserved personal characteristic of the individual. By contrast, if the person commits the crimes as frequently when employed as when unemployed, we would reject the notion that his unemployment caused the crime. Farrington et al finds that crime rates are higher during periods of unemployment than during periods of employment. This does not "prove" that the unemployment caused the crimes, but points in that direction.

A second way to link crime to economic incentives with data on individuals is to examine the relation of the individual's criminal behavior to characteristics of the area in

which they live. The rate of unemployment or level of income in that area is presumably independent of the characteristics of the individual, and thus a good indicator of outside labor market incentives that might induce illegal activity. Analysis of the link between criminal behavior and characteristics of the county in which a youth resides in the National Longitudinal Survey of Youth shows no relation between crime and unemployment and a positive relation between crime and the income level in the county (Lee). Good, Pirog-Good and Sickles find an insignificant negative relation between the monthly area unemployment rate and crime in a sample of 300 youths enrolled in a Youth Service Center in Philadelphia. Trumbull finds a negative coefficient on area unemployment in a sample of 2200 ex-offenders from North Carolina. These findings conflict with the results from the area studies, which find a positive relation between area crime and area unemployment. No one has explored the reason for this divergence in results.

The third way to use individual data to infer causal links between economic factors and crime is to estimate labor supply relations between criminal participation and actual or predicted wages and criminal wages or perceptions of the attractiveness of crime. This form of analysis is infrequent because most data sets do not contain information on criminal behavior or perceptions of returns or risks. An exception is the 1980 National Bureau of Economic Research Inner City Youth Survey that included a special crime module designed to allow researchers to probe the economic model of criminal behavior (Freeman and Holzer). Viscusi used these data to estimate the effects of personal objective factors and of perceptions of the return to crime on participation. He found that youths who believed that they "make more on the street than on a legitimate job" were far more likely to engage in

crime than others and that estimated difference in income from crime and from legitimate work also significantly affected crime behavior. His study does not "prove" that these economic factors motivated crime. Perhaps those who commit crime feel it necessary to justify such by reporting that crime was lucrative. Still, this evidence support that interpretation.

In a similar vein, Grogger (1994b) estimated the effect of "potential" wages on criminal participation in the National Longitudinal Survey of Youth. He obtained a significant negative relation that implied that, roughly, a 10 percent decrease in the real wages of youths would increase their crime rate by nearly 10 percent. Applying this estimate to the observed drop in the real wages of young men, he predicts a 23 percent increase in crime due to falling wages from the mid 1970s through the 1985-88, which he notes is roughly equal to the 18 percent increase in the index arrest rate for young males over that period. Grogger's estimates are imbedded in a highly structured economic model and may very well be sensitive to alternative specifications, so I would not take them as "truth", but rather as another piece of imperfect individual level evidence on the role of economic factors in crime behavior.

The Effect of Labor Market Incentives on Crime: Ethnographic Studies

Ethnographic studies of crime provide qualitative information on the way individuals view the opportunities and constraints in their local community and their perceptions of the factors that underlie the choice of crime or work, or both. By viewing events through the eyes of participants, ethnographic research can bring the decision to engage in crime "up close and personal" and help us interpret statistical evidence.

The findings of recent ethnographic studies on youth gangs and crime provide strong support for a job market interpretation of the decision of young men to engage in crime. Jeff Fagan, who directed a major multi-site ethnographic study of youth gangs reports that "Gangs in South Central Los Angeles, Chicago, and Detroit changed in recent years from ethnic enterprises organized around turf, ethnicity, conflict, and natural group processes to business organisations with monetary and material goals. Money became the driving force and organizational principal for these groups ... (This) almost ideological emphasis on money (by gangs) ... (is) a dramatic shift from the gangs of 10 and 25 years ago" (Fagan, 1992a, pp 23, 25-26).

Below I summarise some of the conclusions from specific ethnographic studies that back up Fagan's conclusion about the economic factors in gang and crime activity:

"All ... agreed money was the primary focal point within their gangs. Virtually all criminal activities are oriented toward this end." (Vigil, J. and S. Yun, on Vietnamese gangs, p 156). "A dominant ... is their intense desire to obtain money for themselves." (Vigil, J.D., S. Yun, and J.S. Long, p 49).

"The 'gang as a business' albeit its illegal status, is a fact of life for many inner-city youths throughout America today. More and more young men are turning to the gang to make a living" (Padilla, F., Puerto Rican gangs in Chicago)

"Gangs moved beyond the scavenger stage ... (to become) corporate gangs." (Taylor, on black gangs in Detroit, Taylor, C.S. p 112)

"kids ... are drawn to the underground economy because of the opportunities that exist there. They know the work is hard and dangerous; there is no such thing as a quick dollar" (Williams, T. p 132)

"making money is their main motive" (Chin, K.L. on Chinese gangs in N.Y., p 137)

"Those who had joined a gang most often gave as their reason the belief that it would provide them with an environment that would increase their chances of securing money." (Jankowski, A. p 60).

The conclusion that gangs survive and grow because of the financial rewards they gain for their members suggests that the resurgence of gangs is due largely to their potential to cash in on new illicit opportunities.¹² Ethnographers also report that many crime-prone youths disdain the types of low wage work available to them: "simply wanting to work may not be enough, it is the type of work and wage they are willing to accept" (Quicker, et al p 4, 19), which is consistent with the economists' reservation wage/job mismatch story of inner city joblessness (Holzer).

Taken together, the statistical and ethnographic evidence present a consistent story that supports the notion that crime responds to economic incentives.

The Effect of Crime on Labor Market Outcomes

As the number of men incarcerated or involved in crime has risen, attention has shifted from the effect of the labor market on crime to the reverse link -- the effect of crime on labor market outcomes. How does crime affect current employment and earnings? How does it affect future employment and earnings?

Data on work and crime activity by individuals in the same period provides a way to answer the first question. As summarised earlier, the general finding in studies of individuals is that crime and joblessness go together. It is easy, however, to exaggerate the strength of the relation. Many people commit crimes while employed. In the NLSY the difference in the employment rate of young men who admit to committing crimes (but were

¹² While most ethnographies conclude that monetary incentives underly gang activity, there is a general concensus that Chicano gangs are more turf-motivated (Moore; Jankowski; Vigil) and Jankowski also reports that Irish gangs in Boston are also more turf than crime business oriented, due in part because of connections with adults in the world of work that are missing in other communities.

not arrested or convicted or sent to jail) and those who did not so admit is rather low. In 1979-80, 59 percent of those who were out of school and unemployed said they committed a crime, compared to 53 percent of those out of school and employed.¹³ Tabulating the data the other way, of those who admitted committing crimes, 72 percent had a job compared to 76 percent of out of school young men who did not have a job. Many young men hold jobs for short spells, and may move back and forth between legitimate and illegitimate earnings activities, as well as making money from crime and legitimate work at the same time. The big difference in employment rates between those who commit crimes and those who do not is found for young men who later go to jail for their crimes.

To determine which way the relation between crime and employment actually runs, Thornberry and Christenson estimated structural path models in which they sought to identify both the crime --> unemployment and the unemployment --> crime links. They found evidence for both. While this is a plausible finding, I am leary of reading much into it. Absent knowledge of what in fact influenced the individual's decision, which the data do not provide, any division of the relation between the variables is likely to depend critically on the particular structural model used to make the estimates.

Interpreting the causal link between criminal activity in one year and future labor market outcomes is much easier. Since the criminal activity precedes the outcomes, it is difficult to argue that this reflects the influence of job market opportunities on crime. It is easy, by contrast, to interpret any relation as reflecting the effect of crime today on future

¹³ The crime question is on the 1980 survey and refers to past crimes. We do not know the exact timing of the crime. I compare it to the employment status in 1979, but results are similar if I assume the crime was committed in 1980.

employment or earnings performance. Many employers eschew hiring persons with a criminal record (Finn and Fontaine). Some jobs legally exclude ex-offenders (Dale). On the supply side, individuals engaged in crime today are likely to build up criminal skills at the expense of legitimate skills, so that today's crime will alter the relative rewards from legal and illegal activity in the future.

In any case, studies of the effect of criminal activity on future job market outcomes in longitudinal survey data give clear results. Persons whose criminal behavior leads them into prison have markedly lower employment rates in the future than those who do not commit crimes or those whose offenses are more modest (Freeman, 1992, Hagan and Palloni, Sampson and Laub, Ferguson). My estimates show that a prison record has a substantial quantitative adverse effect on future employment: in the National Longitudinal Survey of Youth a young man incarcerated in 1979 worked about 25 percent less in the ensuing eight years than a young man who had not gone to prison. In 1987, for example, respondents averaged 44 weeks of work over the year, whereas those who had been incarcerated in 1979 averaged 32 weeks of work. Part of this is due to the greater likelihood these youths were in jail during some of the ensuing years. Sampson and Laub estimate a model that indicates that the effect of jail on job stability underlies much of recidivism. In the 1980 National Bureau of Economic Research survey I found that the monthly employment record of an individual deteriorates relative to that of others after a spell of prison.

By contrast, other involvement with the criminal justice system has much less, if any, longterm deleterious effect on employment. Grogger (1994a) reports only short term effects of arrests on future employment using data for California. In the NLSY and two other data

sets I found that anything short of probation has no discernible effects on future employment of youths (Freeman 1992). Sampson and Laub interpret the strong effect of incarceration but not of committing crimes per se on future employment as supporting a developmental model of criminal activity. They suggest that a labelling theory in which individual behavior is affected by their social label may help explain this result.

The effect of imprisonment on future employment can be decomposed into two separable effects. The first is recidivism: persons who are incarcerated have a high recidivist rate and thus will be absent from the job market in many future years. The Department of Justice's 1983 follow-up of prisoners released in 1983 found that 63 percent were arrested within three years of their release and that 41 percent were reincarcerated. In a longitudinal sample that follows Georgia prison releasees for 17 years, Needels finds that 61 percent were reincarcerated, and that the releasees averaged 15 percent of ensuing years in prison and nearly 30 percent of ensuing years under supervision of the criminal justice system. The second effect is that when they are out of prison, ex-offenders work much less than "otherwise comparable" men.

Earnings from Crime

The reader will undoubtedly have noticed one missing element in my review of the statistical studies of the effect of economic factors on crime. Conceptually, the crime decision depends on how the earnings to crime (adjusted for the various risks of crime) compare to the earnings from legal activity. But most studies report estimates criminal behavior of unemployment, earnings inequality, or predicted earnings rather than on the earnings from crime. Hamlet without the Prince, as it were.

The main reason is that few surveys ask about criminal earnings and those that do may not obtain accurate estimates. Criminals are generally "self-employed" -- a group for whom it is difficult to obtain good data on earnings for legal activities. One must distinguish between gross and net earnings; and must determine the time the self-employed actually work to obtain an average wage rate comparable to wage rates in the job market. In contrast to workers paid a fixed wage per hour (or month) the self-employed are likely to have their hourly pay vary with the amount of time they work. Commit one burglary when you see a good chance and you do well per hour. Commit lots of burglaries and you are likely to move down the marginal returns curve, reducing average earnings.

To the extent that criminal earnings and legitimate earnings are positively correlated, the lack of a good measure of illegal earnings will bias downward the estimated effects of job market factors on criminal behavior. The reason for this is that measures of legal opportunities will pick up both their posited negative effect on crime and the positive effect of correlated illegal opportunities.

Not surprisingly, given the data problem, there is disagreement over how much men make from crime and thus on the net payoff to criminal activity. In Freeman (1992), I reported estimates of earnings from crime from several surveys. The 1989 Boston Youth Survey showed a sharply falling hourly earnings with numbers of crimes and relatively modest annual earnings of \$3,008 for 16-24 year olds who report crime income. The 1980 National Bureau of Research survey also showed modest annual earnings from crime (Viscusi). A 1990 survey of seven drug runners in Oakland estimated that hourly pay was \$7.92. My conclusion from these scattered figures is that the hourly earnings exceeds the

hourly earnings the youths could make in legitimate work (which is consistent with the youths assessment, as well, on the Boston Youth Survey that asked if they can make more on the street or in legitimate work). At the same time, annual earnings from crime are modest, possibly because the marginal earnings fall sharply.

For adult criminals, my calculations for prisoners in the 1986 Justice Department Inmate Survey who said all of their income came from crime was that they earned \$24,775 per year. Reuter reports that drug dealers earned \$2,000 a month net in his sample for Washington D.C., which he transformed into a \$30.00 hourly rate of pay. Using the Rand Inmate survey on numbers of crimes and various estimates of how much those crimes could garner, Wilson and Abrahamse estimated that criminal earnings for burglary/theft, robbery, swindling are modest, below the earnings these criminals could make at work, and find that only auto theft is potentially profitable. They also report that criminals estimated their take from crime to be much higher than those crimes could plausibly have yielded, raising serious doubts about self-reported incomes from crime.

All told, the quality of data on criminal earnings is too weak for any strong claims about the longterm economic payoff to crime.

Conclusion

As the proportion of American men engaged in crime and incarcerated for criminal activity has risen, it has become increasingly important to understand the causes and consequences of criminal activity in addressing poverty as well as crime problems. While extant research leaves open many important questions, it has shown several important things about the link between the job market and crime:

1) In the 1980s-early 1990s the U.S. developed a large, relatively permanent group of young male offenders and ex-offenders, who for the most part are unlikely to be productive members of the work force in the foreseeable future.

2) There is a general positive relation between joblessness and crime, that appears most strongly in comparisons of unemployment rates and crime rates across areas.

3) Labor market incentives beyond joblessness -- the wages from legitimate work or measures of inequality -- affect crime and potentially contributed to the rising propensity of non-institutionalised men to commit crime in the 1980s.

4) Incarceration reduces an individual's economic outcomes over the long run. This implies that the costs to an individual of crime exceed the opportunity cost of devoting less time to legitimate activity today.

Although research has not yielded sufficiently strong results to predict reliably how much crime might fall if the job market for crime-prone groups improved substantively, the limited estimates we have are consistent with such effects being non-negligible.

BIBLIOGRAPHY

- Blau, Judith R. and Peter Blau (1982)
"The Cost of Inequality: Metropolitan Structure and Violent Crime." American Sociological Review, vol. 47, 114-129.
- Bogges, Scott and John Bound. (1993)
"Did Criminal Activity Increase During the 1980s? Comparisons Across Data Sources," Cambridge, MA: National Bureau of Economic Research Working Paper #4431, August.
- Bondeson, Ulla V. (1989).
Prisoners in Prison Societies. New Brunswick, NJ: Transaction Publishers.
- Cappel, Charles L. and Gresham Sykes. (1991)
"Prison Commitments, Crime, and Unemployment: A Theoretical and Empirical Specification for the United States, 1933-1985," Journal of Quantitative Criminology, 7 no 2: 155-199.
- Carroll, Leo and Pamela Jackson (1983)
"Inequality, opportunity, and Crime Rates in Central Cities." Criminology, vol 21, 178-195.
- Chin, Ko-Lin. (1990)
"Chinese Gangs and Extortion," in C. Ronald Huff, ed. Gangs in America. NY, NY: Russell Sage Publications.
- Chiricos, Theodore G. (1987)
"Rates of Crime and Unemployment: An Analysis of Aggregate Research Evidence." Social Problems, 34 no 2 (April): 187-211.
- Cohen, Lawrence E., Marcus Felson and Kenneth C. Land. (1980)
"Property Crime Rates in the United States: A Macrodynamic Analysis, 1947-1977; with Ex Ante Forecasts for the Mid-1980s" American Journal of Sociology 86 no 1: 90-118.
- Conley, D. and J. Debro. (1992)
"The Ecology of Crime and Drugs in a Southern City: The Ethnographic Study of the English Avenue Community in Atlanta." Presented at the Social Science Research Council Conference on the Urban Underclass, Ann Arbor, Michigan, June 8-10.
- Cook, Philip J. (1975)
"The Correctional Carrot: Better Jobs for Parolees." Policy Analysis 1: 11-54.

- Crowley, Joan E. (1984)
 "Delinquency and Employment: Substitutions or Spurious Associations," Chapter 8 in Michael E. Borus, ed. Youth and the Labor Market: Analyses of the National Longitudinal Survey. Kalamazoo, MI: WE UpJohn Institute for Employment Research.
- Curtis, R. (1992)
 "Highly Structured Crack Markets in the South Side of Williamsburg, Brooklyn." Presented at the Social Science Research Council Conference on the Urban Underclass, Ann Arbor, Michigan, June 8-10.
- Dale, Mitchell W. (1976).
 "Barriers to the Rehabilitation of Ex-Offenders." Crime and Delinquency 22 (July): 322-337.
- Ehrlich, Isaac (1974).
 "Participation in Illegitimate Activities: An Economic Approach" In Becker, Gary and William Landes, ed. Essays in the Economics of Crime and Punishment. New York, NY: National Bureau of Economic Research.
- Elder, Glen H., Jr. (1985).
 "Perspectives on the Life Course." In Glen H. Elder, Jr., ed. Life Course Dynamics. 23-49. Ithaca: Cornell Univ. Press.
- Elder, Glen H Jr., Cynthia Gimbel, and Rachel Ivie. (1991).
 "Turning Points in Life: The Case of Military Service and War." Military Psychology 3: 215-231.
- Fagan, J. (1992a)
 "The Dynamics of Crime and Neighborhood Change." Presented at the Social Science Research Council Conference on the Urban Underclass, Ann Arbor, Michigan, June 8-10.
- Fagan, J. (1992b)
 "Introduction: Crime, Drugs, and Neighborhood Change." Presented at the Social Science Research Council Conference on the Urban Underclass, Ann Arbor, Michigan, June 8-10.
- Farrington, David P., Bernard Gallagher, Lynda Morley, Raymond J. St. Ledger and Donald J. West (1986)
 "Unemployment, School Leaving, and Crime." British Journal of Criminology 26 no 4: 335-356.
- Finn, R.H. and P.A. Fontaine. (1985).
 "The Association Between Selected Characteristics and Perceived Employability of Offenders." Criminal Justice and Behavior 12: 353-365.

- Ferguson, Ronald F. (1994)
 "Tables for Discussion of Young Black Males and Work at U.S. Department of Labor". July 20.
- Finn, R. H., and Patricia A. Fontaine. (1985)
 "The Association Between Selected Characteristics and Perceived Employability of Offenders," Criminal Justice and Behavior 12 no 3 (September): 353-365.
- Freeman, Richard B. (1992)
 "Crime and the Employment of Disadvantaged Youth," in George Peterson and Wayne Vroman, eds. Urban labor Markets and Job Opportunity. Washington, DC: Urban Institute Press.
- Freeman, Richard B. (1983)
 "Crime and Unemployment," Chapter 6 in James Q. Wilson, ed. Crime and Public Policy. San Francisco, CA: ICS Press.
- Freeman, Richard B. (1987)
 "The Relation of Criminal Activity to Black Youth Employment" The Review of Black Political Economy 16 Nos 1-2 (Summer/Fall): 99-107.
- Freeman, Richard B. and Harry J. Holzer, eds.. (1986)
The Black Youth Employment Crisis. Chicago, IL: U Chicago Press for National Bureau of Economic Research.
- Glaser, Daniel. (1969).
The Effectiveness of a Prison and Parole System. Abridged Edition. Indianapolis: Bobbs-Merrill Co.
- Good, David H., Maureen A. Pirog-Good, and Robin C. Sickles. (1986)
 "An Analysis of Youth Crime and Unemployment Patterns," Journal of Quantitative Criminology 2 no 3: 219-236.
- Gottfredson, D. (1985).
 "Youth Employment, Crime and Schooling," Developmental Psychology 21, 419-432.
- Grogger, Jeffrey. (1994)
 "Criminal Opportunities, Youth Crime, and Young Men's Labor Supply." Mimeo, Department of Economics, University of California, Santa Barbara. February.
- Grogger, Jeffrey. (1994)
 "The Effect of Arrests on the Employment and Earnings of Young Men," Quarterly Journal of Economics, forthcoming.

- Greenberg, David F. (1975)
 "The Incapacitative Effect of Imprisonment: Some Estimates," Law & Society
 Summer: 541-580.
- Hagan, John. (1993).
 "The Social Embeddedness of Crime and Unemployment." Criminology 31 no 4: 465-491.
- Hagan, John and Alberto Palloni. (1988)
 "Crimes as Social Events in the Life Course: Reconceiving a Criminological Controversy," Criminology 26 no1: 87100.
- Hale, Chris and Dima Sabbagh. (1991)
 "Testing the Realationship Between Unemployment and Crime: A Methodological Comment and Empirical Analysis Using Time Series Data from England and Wales," Journal of Research in Crime and Delinquency, vol 28:4, November, pp 400-429.
- Hamid, A. (1992)
 "Flatbush: A Freelance Nickels Market." Presented at the Social Science Research Council Conference on the Urban Underclass, Ann Arbor, Michigan, June 8-10.
- Hindelang, Michael, Travis Hirschi, and Joseph G. Weis. 1981 Measuring Delinquency Beverley Hills, Calif.: Sage
- Holzer, Harry "Black Youth Nonemployment: Duration and Job Search", chapter 2 in Freeman and Holzer
- Howsen, Roy M. and Stephen B. Jarrell (1987)
 "Some Determinants of Property Crime: Economic Factors Influence Criminal Behavior but Cannot Completely Explain the Syndrome." American Journal of Economics and Sociology 46 no 4: 445-457.
- Jankowski, M. (1991)
Islands in the Street: Gangs and the American Urban Society. CA: University of California.
- Land, Kenneth C., David Cantor, and Stephen T. Russell. (1994)
 "Unemployment and Crime Rate Fluctuations in the Post-World War II United States: Statistical Time Series Properties and Alternative Models," in John Hagan and Ruth D. Peterson, eds. Crime and Inequality. Stanford, CA: Stanford University Press, forthcoming.

- Land, Kenneth C., Patricia L. McCall, and Lawrence E. Cohen. (1990)
 "Structural Covariates of Homicide Rates: Are There Any Invariances across Time and Social Space?" American Journal of Sociology 95 no 4 (January): 922-963.
- Langan, Parick. (1991)
 "America's Soaring Prison Population" Science. vp; 251. pp 1568-1573 March 29.
- Lee, David Sang-Yoon. (1993).
 "An Empirical Investigation of the Economic Incentives for Criminal Behavior," Harvard University BA Thesis, March.
- Long, S.K. and A. Witte. (1981).
 Current Ec Trends: Implications for Crime and Criminal Justice. In Wright, KN (ed.), Crime and Criminal Justice in a Declining Economy. Oelgeschlager, Gun, and Hain Publishers, Inc. , Cambridge, MA. p.69-143.
- Messner, Steven F. (1982).
 "Poverty, Inequality, and the Urban Homicide Rate." Criminology, vol. 20, 103-114.
- Messner, Steven F. (1983).
 "Regional and Racial Effects on the Urban Homicide Rate: the Subculture of Violence Revisited." American Journal of Sociology 88 no 5: 997-1007.
- Moore, J. (1992)
 "Institutionalized Youth Gangs: Why White Fence and El Hoyo Maravilla Change so Slowly." Presented at the Social Science Research Council Conference on the Urban Underclass, Ann Arbor, Michigan, June 8-10.
- Nagin, Daniel and Raymond Paternoster. (1993).
 "Enduring Individual Differences and Rational Choice Theories of Crime." Law and Society Review 27: 201-230.
- Needels, Karen. (1993)
 "Go Directly to Jail and Do Not Collect?: A Long-Term Study of Recidivism and Employment Patterns Among Prison Releasees." Mimeo, Department of Economics, Princeton University. November.
- Paternoster, Raymond and Leeann Iovanni. (1989).
 "The Labelling Perspective and Delinquency: An Elaboration of the Theory and an Assessment of the Evidence." Justice Quarterly 6: 359-394.

- Padilla, F. (1992)
 "Getting into the Business." Presented at the Social Science Research Council Conference on the Urban Underclass, Ann Arbor, Michigan, June 8-10.
- Quicker, J., Y. Galesi, and A. Batani-Khalfani. (1992)
 "Bootstrap or Noose: Drugs in South Central Los Angeles." Presented at the Social Science Research Council Conference on the Urban Underclass, Ann Arbor, Michigan, June 8-10.
- Reuter, Peter, Robert MacCoun and Patrick Murphy 1990 Money from Crime Santa Monica: Ca: Rand Drug Policy Research Center
- Sampson, Robert J. and John H. Laub. 1994)
 "A Life-course Theory of Cumulative Disadvantage and the Stability of Delinquency," in Terence P. Thornberry, ed. Developmental Theories of Crime and Delinquency: Advances in Criminological Theory (vol 6). New Brunswick, NJ: Transaction Publishers, forthcoming.
- Sherman, Lawrence. (1993).
 "Defiance, Deterrence, and Irrelevance: A Theory of Criminal Sanction." Journal of Research in Crime and Delinquency 30: 445-473.
- Sjoquist, David L. (1973)
 "Property Crime and Economic Behavior: Some Empirical Results," American Economic Review, vol. 63, 439-446.
- Tauchen, Helen, Ann Dryden Witte and Harriet Griesinger. (1993)
 "Criminal Deterrence: Revisiting the Issue with a Birth Cohort," National Bureau of Economic Research Working Paper # 4277. (February).
- Taylor, C. (1990)
 "Gang Imperialism," in C.Ronald Huff, ed. Gangs in America NY, NY: Russell Sage Publications.
- Thornberry, Terence P., and R.L. Christenson. (1984).
 "Unemployment and Criminal Involvement: An Investigation of Reciprocal Causal Structures," American Sociological Review 49: 398-411.
- Title, Charles. (1988)
 "Two Empirical Regularities (maybe) in Search of an Explanation: Commentary on the Age-Crime Debate," Criminology 26: 75-86.
- Trumbull, William N. (1989)
 "Estimations of the Economic Model of Crime Using Aggregate and Individual Level Data," Southern Economic Journal 94: 423-439.

- U.S. Department of Commerce. (1991)
Current Population Reports, Money Income of Households, Families, and Persons in the United States: 1990. Series P-60, no. 174.
- U.S. Department of Justice. (1989)
Recidivism of Prisoners Released in 1983. Bureau of Justice Statistics Special Report, prepared by Allen J. Beck and Bernard E. Shipley. April, NCJ-116261
- U.S. Department of Justice, Bureau of Justice Statistics. (1992)
Sourcebook of Criminal Justice Statistics 1991.
- U.S. Department of Justice, Bureau of Justice Statistics. (1993)
Criminal Victimization 1992. October, NCJ-144776.
- U.S. Department of Justice, Bureau of Justice Statistics. (1994)
Prisoners in 1993. Bulletin prepared by Darrell K. Gilliard and Allen J. Beck. June, NCJ-147036.
- U.S. Department of Justice, Bureau of Justice Statistics. (1994)
 Current Statistics cited by telephone.
- U.S. Department of Justice, Federal Bureau of Investigation. (various years)
Crime in the United States.
- U.S. General Accounting Office (1993)
The Job Training Partnership Act: Potential for Program Improvements But National Job Training Strategy Needed. Testimony: GAO/T-HRD-93-18, April 29.
- U.S. Government Printing Office (1993)
Economic Report of the President. February.
- Vigil, J. (1990)
 "Cholos and Gangs: Culture Change and Street Youth in Los Angeles", in C.Ronald Huff, ed. Gangs in America NY, NY: Russell Sage Publications.
- Vigil, J. and S. Yun. (1990)
 "Vietnamese Youth Gangs in Southern California," in C.Ronald Huff, ed. Gangs in America NY, NY: Russell Sage Publications.
- Vigil, J.D., S. Yun, and J.S. Long. (1992)
 "Youth Crime, Gangs, and the Vietnamese in Orange Country." Presented at the Social Science Research Council Conference on the urban underclass, Ann Arbor, Michigan, June 8-10.

- Viscusi, W. Kip (1986)
"Market Incentives for Criminal Behavior" In Freeman, R.B. and Harry Holzer, eds.
The Black Youth Employment Crisis. Chicago, IL: U Chicago Press for National
Bureau of Economic Research.
- Williams, Kirk R. (1984)
"Economic Sources of Homicide: Reestimating the Effects of Poverty and Inequality."
American Sociological Review 49: 283-289.
- Williams, T. (1989)
The Cocaine Kids. Reading, MA: Addison Wesley.
- Wilson, James Q. and Allan Abrahamse. (1992)
"Does Crime Pay?" Justice Quarterly 9 no 3 (September): 359-377.
- Wilson, James Q. and Richard Herrnstein (1985)
Crime and Human Nature. NY, NY: Simon and Schuster.
- Witte, Ann D. (1980)
"Estimating the Economic Model of Crime with Individual Data." Quarterly Journal of
Economics 94: 57-84.
- Wolfgang, Marvin E., Robert M. Figlio and Thorsten Sellin. (1972)
Delinquency in a Birth Cohort Chicago: University of Chicago Press.
- Zimring, Franklin E. and Gordon Hawkins. (1991)
The Scale of Imprisonment. Chicago, IL: U of Chicago Press.

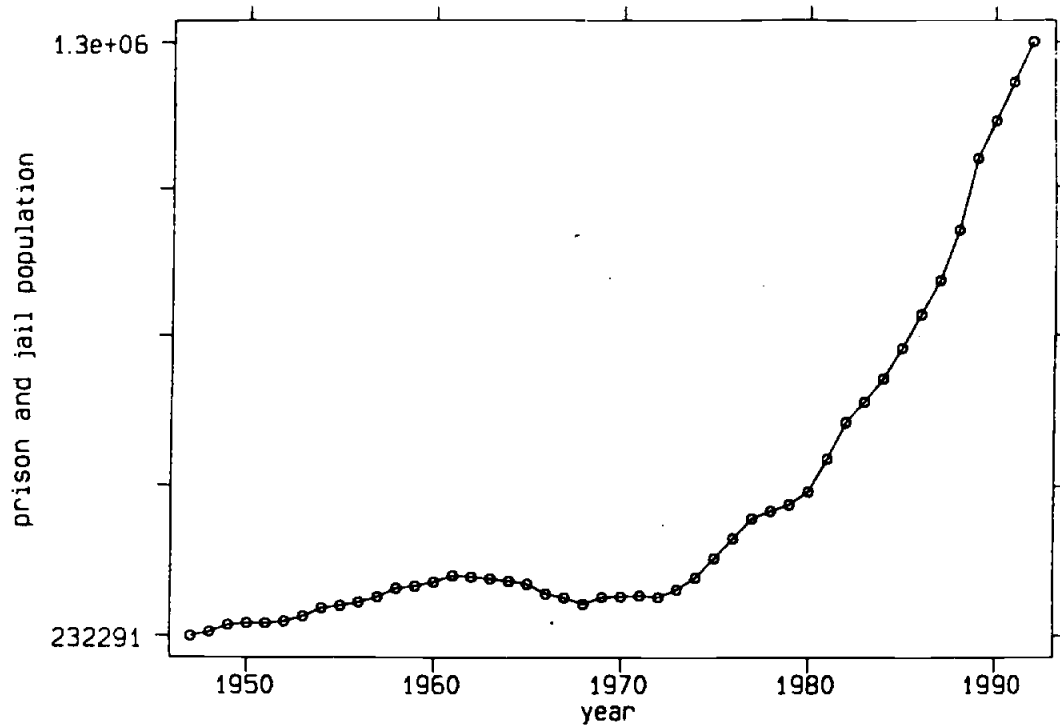


FIGURE 1: PRISON AND JAIL POPULATION IN THE U.S.
1947-1992

SOURCES:

US Dept. of Justice, Bureau of Justice Statistics. 1992. Sourcebook of Criminal Justice Statistics 1991. p. 611, 636.

US Dept. of Justice, Bureau of Justice Statistics Bulletin by Darrell K. Gilliard and Allen J. Beck. 1994. Prisoners in 1993. June, NCJ-147036.

Estimates of jail population before 1983 based on prison population.

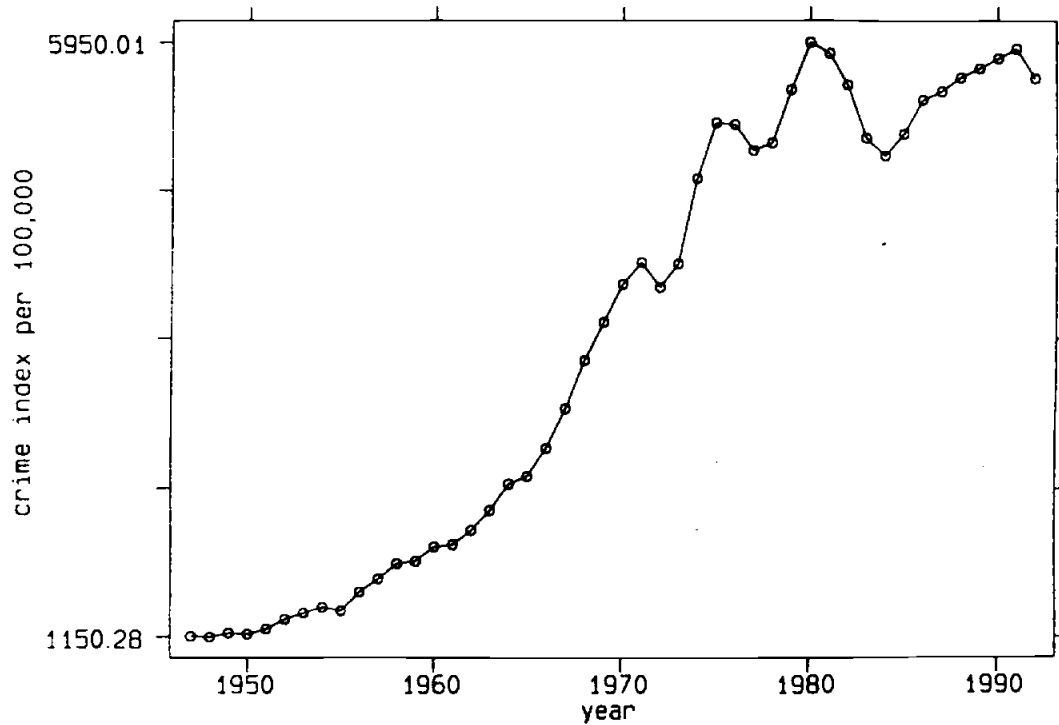


FIGURE 2: UNIFORM CRIME REPORTING INDEX PER 100,000
1947-1992

SOURCES:

US Dept. of Justice, Federal Bureau of Investigation. Crime in the United States, various years.

US Dept. of Justice, Bureau of Justice Statistics. 1992. Sourcebook of Criminal Justice Statistics 1991. p. 372.

Current statistics from the US Dept of Justice, Bureau of Justice Statistics.

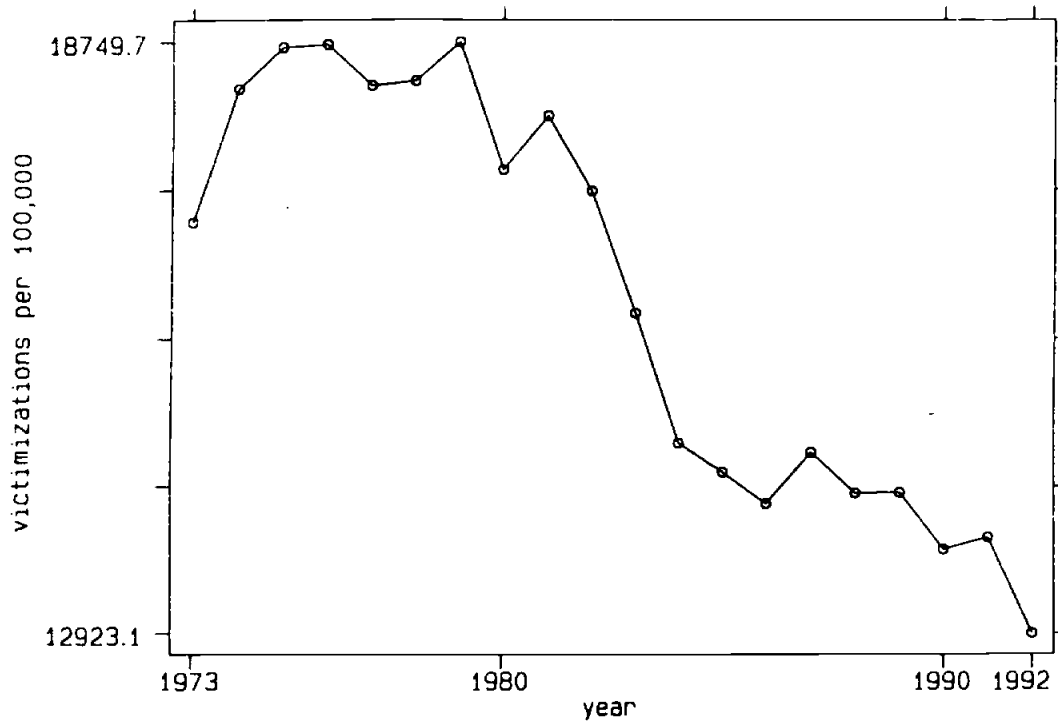


FIGURE 3: VICTIMIZATIONS PER 100,000
1973-1992

SOURCE:

US Dept. of Justice, Bureau of Justice Statistics. 1993. Criminal Victimization 1992. October, NCJ-144776.

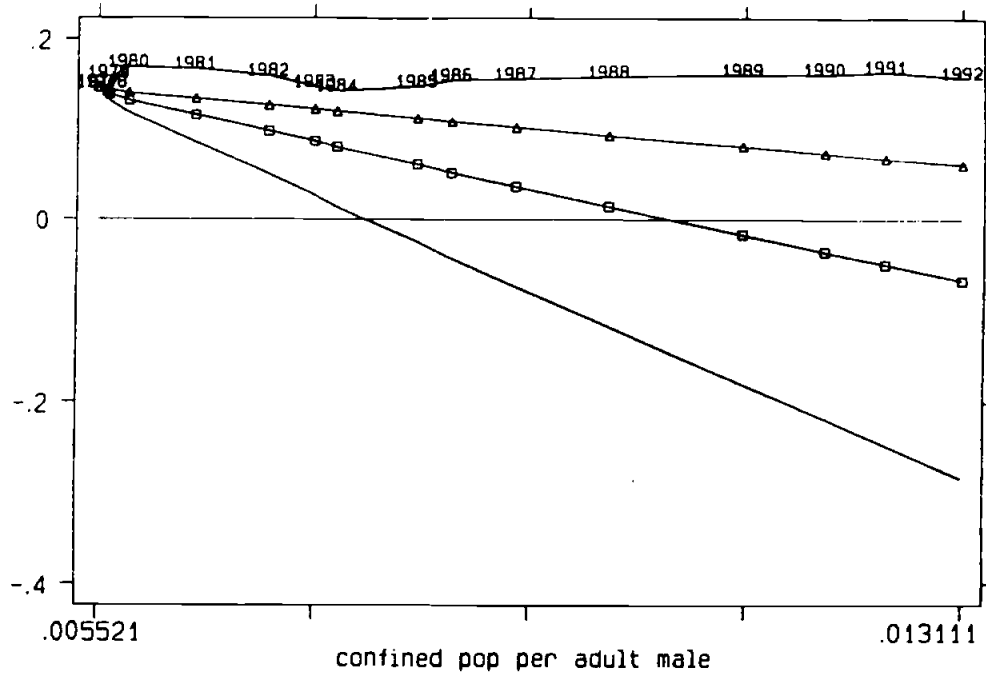


FIGURE 4: CRIMES & CONFINED POP. PER ADULT MALE
1977-1992

NOTES:

- Actual crimes per adult male
- △— Hypothetical crimes per adult male, assuming 10 crimes per confined individual.
- Hypothetical crimes per adult male, assuming 25 crimes per confined individual.
- — Hypothetical crimes per adult male, assuming 50 crimes per confined individual.

SOURCES:

US Dept. of Justice, Federal Bureau of Investigation. Crime in the United States, various years.

US Dept. of Justice, Bureau of Justice Statistics. 1992. Sourcebook of Criminal Justice Statistics 1991. p. 372, 611, 636.

Current statistics from the US Dept of Justice, Bureau of Justice Statistics.

US Dept. of Justice, Bureau of Justice Statistics Bulletin by Darrell K. Gilliard and Allen J. Beck. 1994. Prisoners in 1993. June, NCJ-147036.

Estimates of jail population before 1983 based on prison population.

Population figures from Economic Report of the President, 1993.

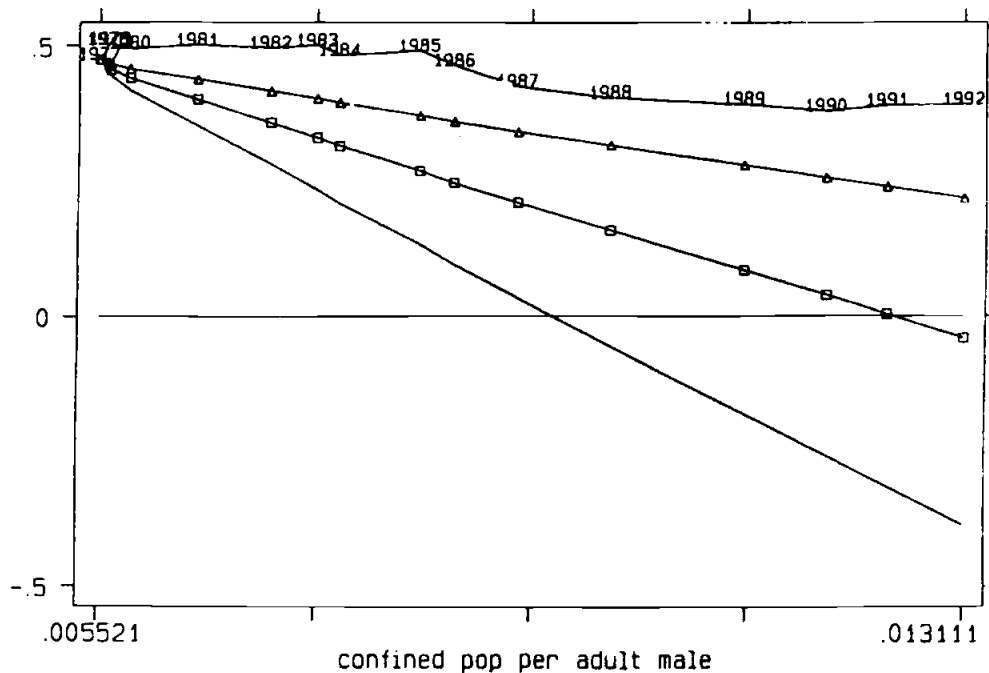


FIG. 5: VICTIMIZATIONS & CONFINED POP/ADULT MALE
1977-1992

NOTES:

- YEAR— Actual victimizations per adult male
- Δ— Hypothetical victimizations per adult male, assuming 30 victimizations per confined individual.
- Hypothetical victimizations per adult male, assuming 60 victimizations per confined individual.
- Hypothetical victimizations per adult male, assuming 100 victimizations per confined individual.

SOURCES:

US Dept. of Justice, Bureau of Justice Statistics. 1993. Criminal Victimization 1992. October, NCJ-144776.

US Dept. of Justice, Bureau of Justice Statistics. 1992. Sourcebook of Criminal Justice Statistics 1991. p. 611, 636.

US Dept. of Justice, Bureau of Justice Statistics Bulletin by Darrell K. Gilliard and Allen J. Beck. 1994. Prisoners in 1993. June, NCJ-147036.

Estimates of jail population before 1983 based on prison population.

Population figures from Economic Report of the President, 1993.

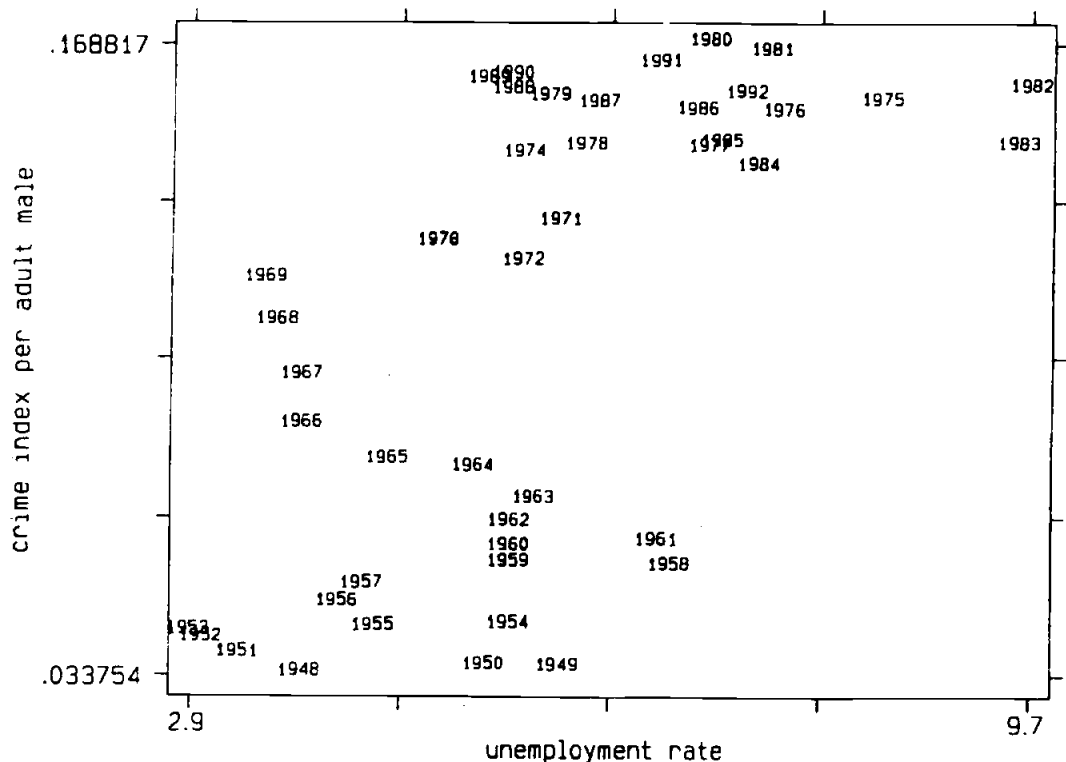


FIGURE 6: CRIMES PER ADULT MALE AND UNEMPLOYMENT 1948-1992

SOURCES:

US Dept. of Justice, Federal Bureau of Investigation. Crime in the United States, various years.
 US Dept. of Justice, Bureau of Justice Statistics. 1992. Sourcebook of Criminal Justice Statistics 1991. p. 372.
 Current statistics from the US Dept of Justice, Bureau of Justice Statistics. Population and unemployment figures from Economic Report of the President, 1993.

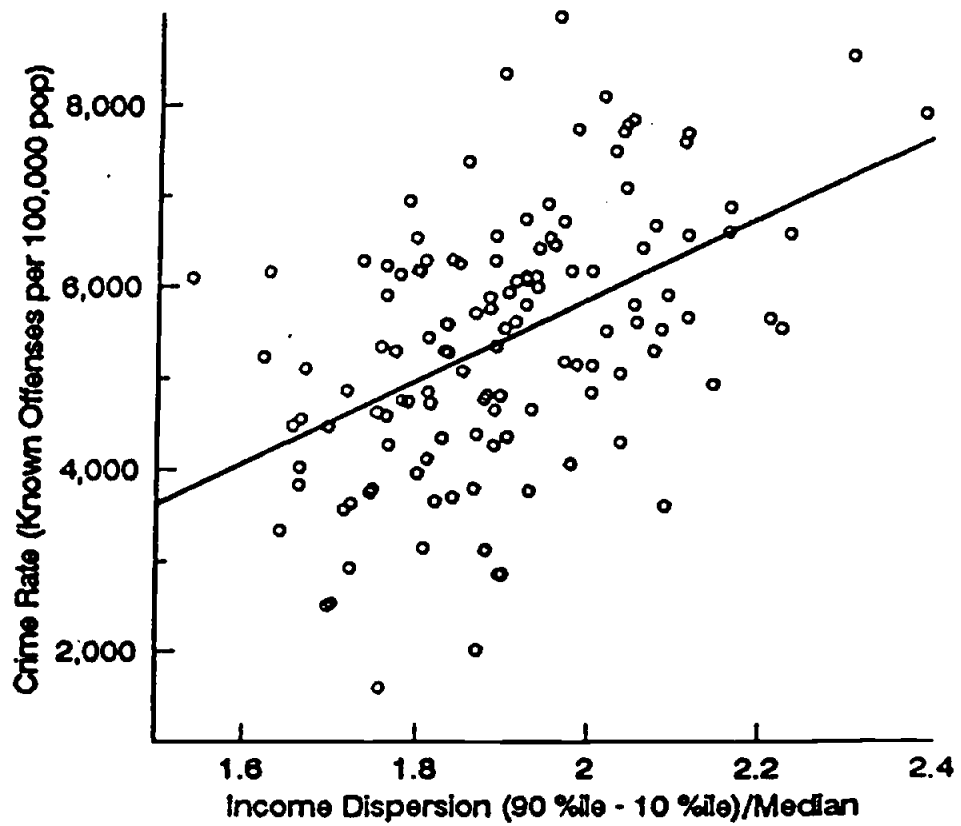


FIGURE 7: PROPERTY CRIME VS. INCOME INEQUALITY
127 METROPOLITAN AREAS IN THE U.S., 1979

SOURCE:

Lee, David Sang-Yoon. 1993. "An Empirical Investigation of the Economic Incentives for Criminal Behavior". Harvard University BA Thesis in Economics, March.