To the graduate council:

I am submitting herewith a thesis written by Andrew Lee Hochstetler entitled "Labor Surplus and Punishment: testing for a direct effect of unemployment on imprisonment." I have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts, with a major in Sociology.

Neal Shover

Neal Shover, Major Professor

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Labor Surplus and Punishment: Testing for a direct effect of unemployment on imprisonment

A Thesis

Presented for the

Master of Arts

Degree

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Andrew Lee Hochstetler

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For Beth

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succesfully. Of course, I bear sole responsibility for any remaining weaknesses.

ABSTRACT

The relationships between labor surplus, crime and punishment of criminal offenders have generated considerable controversy and research. Conflict theorists contend that punishment varies directly with economic conditions, particularly the size of the labor surplus. The effect of labor surplus on punishment is, however, often attributed to variation in crime rates. The primary objective of this study is to determine the effect of change in labor surplus, as measured by unemployment, on change in imprisonment while controlling for crime and other theoretically relevant variables. Residual-change regression is applied to data from a sample of 269 U.S. counties. The analysis supports the independent contribution of labor surplus to imprisonment. Supplementary analyses using cross-sectional equations for each year 1980 to 1990 and a regression of static imprisonment on lagged imprisonment and static independent variables, find no support for a direct relationship of labor surplus and imprisonment. The strength of the relationship between labor surplus and imprisonment is contingent on the technique used to examine it.

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CHAPTER I

PERSPECTIVE AND PROBLEM

This study is an examination of social structural predictors of variation in state-imposed punishment of criminal offenders in the U.S. Its point of departure is the well documented temporal and geographic variation in punishment. The prison population in the U.S. increased by 166 percent between 1980 and 1992. In 1992, South Carolina held 514 people in its prisons for every 100,000 in the population. Minnesota's 1992 incarceration rate was 85 per 100,000 and North Dakota's rate was 75 (Bureau of Justice Statistics, 1992). Variation in punishment is commonly attributed to the volume of crime; when crime increases the use of imprisonment presumably increases also.

Crime, however, is not the only cause of variation in punishment of criminal offenders. Characteristics of the larger social world also contribute to its distribution. A comprehensive analysis of variation in the use of punishment must examine the effects of social and economic context. To understand punishment adequately, we must look beyond its internal dynamics.

Conflict theorists contribute to understanding punishment in a broad context. Conflict theories are the dominant perspective for organizing macroresearch on

deviance and crime control since the 1960s (Liska, 1992:17). Conflict theorists use the existence of a hierarchial class order to clarify frequently neglected sources of variation in the forms and quantity of punishment. The use of imprisonment, for example, is seen not as merely a responsive mechanism of crime control, but also as a tool for managing populations believed to be threatening by elites. The prominence of conflict theories of punishment in recent macro-level research is due to their ability to explain the theoretical link between economic and structural conditions and the use of social control. The bulk of attention has been focused labor surplus and other economic variables as predictors of state-imposed punishment.

Conflict theories can be used to explain epochal as well as more immediate variation in punishment. Classical conflict theorists explain long-term shifts in punishment as derivative of historical changes in the production of material goods. In these historical accounts, variation in the type and harshness of punishment is associated with the economic conditions of a particular era (Adamson, 1984; Rusche and Kirchheimer, 1939). In contemporary studies, variation in the use of incarceration is explained by geographic variation or short-term shifts in the economy. Most conflict theories explaining the relationship between

economic variation and variation in the amount or type of social control are derived from the writings of Karl Marx.

Marxist scholars contend that material and economic conditions are the foundation on which society and its institutions are constructed. Although Marx opposed a purely materialistic view of society (Althuser, 1969; Beirne, 1974; Reiman and Headlee, 1981), he maintained that economic relationships and the mechanisms of production contribute greatly to the shaping of society and its institutions. Marx (1970:21) summarized his view of man and his institutions in the famous passage from the 1859 A Contribution to the Critique of Political Economy:

> The general conclusion at which I arrived and which, once reached, became the guiding principle of my studies can be summarized as follows. In the social production of their existence men inevitably enter into definite relations, which are independent of their will, namely relations of productions. . .The mode of production of material life conditions the general process of social, political, and intellectual life. . .At a certain stage of development, the material productive forces of society [i.e., technological capacity] come into conflict with the existing relations of production [i.e., property relations]. . .The changes in the economic foundation lead sooner or later to the transformation of the whole immense superstructure [i.e., the institutions of social, political, and intellectual life].

Marxists view the economy as the central nexus of power in modern societies. Marxists contend that society's institutions disproportionately reflect the interest of the

dominant class (Garland, 1990:85). The interests of economically powerful members of society shape all state institutions including the justice system.[1] The ability to control institutions is an important asset in the ongoing struggle between those who own the means of production and those who must market their labor power.

All capitalist systems have owners and laborers whose interests are diametrically opposed, leading to societal conflicts and contradictions. Labor is a commodity. Workers sell their labor to capitalists, who extract surplus value and sell the combined product of workers' efforts for a profit. In order to maximize surplus value (the source of profit), labor costs (wages) must be kept low. Marx believed that this goal is accomplished in capitalism by maintaining a pool of unemployed workers. Marx termed this pool the "industrial reserve army". This marginal body of workers functions to keep wages low by increasing the supply of labor in the market. If there are enough people willing to work for less, then a worker has no choice but to sell his labor at diminished rates.

An inevitable contradiction in capitalist societies is that the industrial reserve army serves the needs of

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[1]For an account of the wide variation in Marxist theories of the state see Critical Theories of the State (Barrow, 1993).

capital, but creates a population of workers who are discontented with the prevailing economic organization. The capitalist must manage the reserve labor force so that it does not appear that the system of economic organization breeds poverty and joblessness. Maintaining a reserve army of labor at non-threatening levels is made difficult by economic transformations or crisis.

One function of governing institutions is the maintenance of capitalism in times when its contradictions and problems become most apparent. If labor surplus is intolerably high, the state and its institutions must adjust to changes in the economy so that the existence and legitimacy of the status-quo system are maintained. The state makes whatever minimum of organizational or policy adjustments it can to prevent the downfall of the system on which it depends (Gold 1975; Block, 1977, 1981).

Neo-Marxists have refined analyses of the mechanisms that capitalists use to maintain economic power and the conditions that determine the degree of autonomy of state institutions in serving the capitalist elite. These scholars examine the functions of specific institutions in maintaining the class interests of people benefitting from the existing economy. Institutions can serve the needs of capital in several ways. Conciliatory institutions of

social control legitimize the division of wealth by conceding material goods to the lower classes. Welfare is a good example (Griffin, 1983; Piven and Cloward, 1972). Institutions can serve capitalist interests by establishing a rational system of social order and hierarchy within the discourse of reform and popular consent. Punishment can serve this function (Pashukanis, 1924; Ignatief, 1978; Rusche and Kirchheimer, 1939:108). Another use of punishment is as a direct means of controlling the numbers and behaviors of those who are a danger to the system. All three of these means prevent the downfall of capitalism by ensuring that disgruntled laborers are unable to act on their dissatisfaction with the system. The Marxist study of institutions shares a generic social threat proposition; this proposition is that social control is a direct function of the presence of a class whose interest is threatening to capitalism and must be subverted (Inverarity, 1992; Liska, 1992).

George Rusche and Otto Kirchheimer's Punishment and Social Structure (1939) is one of the earliest and most influential applications of Marxist theory to the analysis of state imposed punishment. It proposes that the mode of production and the economic requisites of capital in any historical period determine the penal practices in the

corresponding society. This proposal is a specific application of Marx's insight that the mode of production of material life conditions the social institutions of society.

In traditional Marxist approaches, crime intervenes in the relationship between labor surplus and punishment as in Engel's statement that "want leaves the workingman the choice between starving slowly, killing himself speedily, or taking what he needs where he finds it"(Engels, 1973:173).[2] Rusche and Kirchheimer argued that penal sanctions are directly determined by the mode of production and the economy. This hypothesis has recently been termed the principle of independent significance (Garland, 1990:91). Figure I illustrates both the traditional conception and the direct relationship of labor surplus and punishment.

While crime does intervene in the relationship of labor surplus and punishment, there are other paths through which labor surplus might affect punishment more directly (Figure I). Rusche and Kirchheimer identified one of these alternate linkages. The central idea is that, although punishment is aimed at deterring crime, it is also an institutional response to the requisites of capital. Rusche

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[2]For a more thorough discussion of Marx and Engel's original writings on crime and punishment see Paul Q. Hirst's "Marx and Engel's on Law, Crime, and Morality" in Ian Taylor et. al. (Eds.) Critical Criminology (1974).

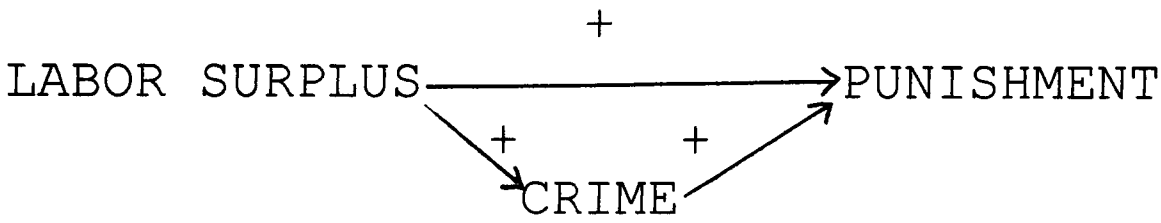

Figure I. Theoretical relationships of labor surplus, crime and punishment.

and Kirchheimer see state initiated punishment as the outcome of a set of determinants outside the official goals of the criminal justice system. They state this view in a passage from Punishment and Social Structure (1939):

> The bond transparent or not, which is supposed to exist between crime and punishment prevents any insight into the significance of the history of penal systems. It must be broken. Punishment is neither a simple consequence of crime, nor the reverse side of crime, nor a mere means which is determined by the end to be achieved. Punishment must be understood as a social phenomenon freed from both its jurisditic concept and its social ends. We do not deny that punishment has specific ends, but we do deny that it can be understood from these ends alone (Rusche and Kirchheimer, 1939:3).

The institutions of punishment are determined by economic and structural conditions, as are all other institutions. The structural conditions of market relations, and the struggle of rich against poor are

reflected in the operations of factories, workhouses, and poorhouses as well as prisons and jails. Rusche and Kirchheimer contend that the harshness of punishment is explained by the desires and needs of the dominant class in capitalist society. The labor market determines the shape of social institutions by changing the needs of capitalists in their relationship to wage laborers and the marginal surplus army of workers. The type, severity, and frequency of punishment in any society are the result of the degree of stability in the prevailing economic organization. When the economy is slow or in crisis, punishment will increase. This is especially true in capitalist society where poor economic conditions lead to an increase in class consciousness, class struggle, and class divisions creating a potential danger to the existing system. Rusche and Kirchheimer use historical evidence to explain long term variation in punishment practices. They attribute this variation to the economic needs of the dominant class. Rusche and Kirchheimer propose that economic conditions directly affect punishment. This is an empirical hypothesis that has stimulated both theoretical and empirical research interest.

CONTEMPORARY CONTRIBUTIONS

A renewed interest in Marxist accounts of punishment, in the 1970's, led both to refinement of theoretical explanations and to empirical investigations of the relationship between labor surplus and imprisonment. Neo-Marxists scholars examine the dialectic of capitalism that demands the maintenance of a reserve pool of laborers, and creates a body of surplus workers who remain consistently unattached to the world of work. The existence of these surplus laborers is dangerous to the survival of the system and results in increased usage of social control (Adamson, 1984; Colvin, 1985; Quinney, 1977; Spitzer, 1975; Wallace, 1980).

The criminal justice system has an interest in maintaining the status-quo economic organization. It accomplishes this task by 'siphoning off' the most dangerous element in society, the members of the laboring class for whom there is no work (Spitzer, 1975). The direct effect of labor surplus' on punishment can be attributed to the role of the criminal justice system in managing the unemployed who are a danger to the economic order.

There are several theoretical constructions of variables that may explain capitalist control of the justice system and the institutions of punishment (Horwitz, 1977;

Spitzer, 1977). These formulations all share the themes of economically determined classes, a generic social threat proposition, and the role of punishment in class struggle. They differ in the degree of autonomy ascribed to the state and to criminal justice bureaucracies and functionaries. Chiricos and Delone's (1990) review of the labor surplus and imprisonment literature identifies three principal explanations of the justice system's allegiance to the interests of capital. These three positions are not mutually exclusive. They are used here to identify principal points of theoretical contention and to demonstrate the importance of examining economic conditions at the local (county) level where criminal justice processing occurs.

One camp adopts an instrumentalist view of the state. In this view, intensified punishment is consciously used as a tool to prevent the lower classes from turning to crime in hard economic times and to assure that workers are forced to participate in the work force (Chiricos and Delone, 1992). State agents adopt the philosophy which Rusche and Kirchheimer called the principle of "less eligibility" (1939:18). "Less eligibility" is the philosophy held by capitalists and state agents which advocates that punishment should be harsher than the life of the underclass on the

street and should deter the choice of a criminal involvement. In times of high labor surplus, street life is difficult, and the lower classes are more likely to face harsh punishment. Jankovic (1977:20) states this position, "the policy of deterrence dictates an intensification of punishment in order to combat the increased temptation to commit crime." Increased imprisonment is a response to a presumed criminal threat. Research in this area specifies types of economies and conditions that determine the extent to which surplus labor is perceived as threatening (Colvin, 1990).

Other instrummentalists contend that the criminal justice system serves the capitalist as a means of managing the dangerous population in times of labor surplus. Agents of the criminal justice system serve to control and manage the potentially hostile unemployed population by removing them from the streets, and from the public eye (Quinney, 1977; Spitzer, 1975). Imprisonment is increased in response to the political threat caused by the presence of dangerous populations, not just as a rational means of crime control. The judicial system serves capital by protecting the status-quo political system from the threats to its legitimacy posed by surplus labor. In this view, the justice system's goal is more than crime control. It is an instrument for

managing the size of an entire class. Recent research has refined the characteristics of the dangerous population and examined how the presence of those classes that Spitzer termed 'social dynamite' affect punishment (Mellosi, 1989:317; Myers and Sabol, 1987).

The last explanation of state servitude to the needs of capital is known as the judicial agency and ideology approach (Chiricos and Delone, 1990). The position is based on the Marxist proposal that individuals can be influenced by the social structure without knowing their role or what is at stake (Spitzer, 1977:65). Theorists adopting this approach explain that labor surplus may differentially affect punishment because it stimulates anxiety and intolerance in the criminal justice community (Adamson, 1984; Box, 1987; Box and Hale, 1982; Greenberg, 1977; Hale, 1989; Mellosi, 1985, 1989). The natural conservatism among the various agents of the criminal justice system and the pervasive belief that unemployment causes crime explain the relationship of labor surplus to punishment (Box and Hale, 1982). Criminal justice officials believe that the idle population is criminal, that unemployment causes crime, and that punishment should serve as deterrence and retribution for crime. These beliefs cause increasing punitiveness in times of economic decline and explain the theoretical link

between labor surplus and punishment (Mellosi, 1985:183). If criminal justice functionaries perceive a crisis of unemployment, they endorse harsher punishment to protect society from an increase in crime.

Criminals are subjected to a processing that embodies the human agency and ideology of police officers, lawyers, and judges with whom they make contact at every level of the criminal justice system. In this view, the justice system is not intentionally serving the capitalist system as a means of managing surplus labor. Increased imprisonment is caused by the "everyday micro-processes of interaction between the accused and the accusers and the perceptions of judicial decision makers"(Box and Hale, 1982:21). A large degree of autonomy is ascribed to the criminal justice system, but when criminal justice functionaries are irritated by a poor economy decisions are intolerant.

The effects of economic conditions on judicial decision making are used to explain the empirical link between unemployment and imprisonment. This perspective adds an important theoretical link missing from earlier formulations of the relationship of labor surplus and imprisonment (Greenberg, 1977; Mellosi, 1985: 183). If labor surplus and fluctuations in severity of punishment are linked causally, then presumably this reflects qualitative changes in case-

by-case decision making. Judicial agency and ideology theorists are most successful in illustrating the mechanism of unemployment's effect on imprisonment. They removed conflict theorizing from the realm of conspiratorial theories in which the judicial system is seen as the manager of entire classes. The labor market influences punishment because of the economic anxiety of individuals involved in criminal processing not because of a top-down initiative for managing the population or its behavior.

Many macro-level empirical investigations examine how labor market conditions directly affect the severity of punishment. The limitations of available data require the exclusion of many important intervening variables from empirical tests. These variables play the crucial role of explaining the means through which unemployment affects imprisonment. Theoretical intervening variables like community intolerance, economic anxiety, and presumed criminal motivation generally are not measured in macro-empirical analysis and are not included in this study.

Omission of these variables from statistical models does not prevent testing whether the relationship of labor surplus and imprisonment is mediated by crime. While this research will not elaborate on many of the micro-processes linking unemployment and imprisonment, it does test to see

if the relationship is explained entirely by crime. An extensive body of work exists which attempts to model this relationship under a variety of conditions.

CHAPTER II

PREVIOUS RESEARCH

The relationship between labor surplus and imprisonment has been examined in over 50 empirical studies (Chiricos and Delone, 1992). The results of these studies are inconsistent and theoretically puzzling. Some investigators either report no significant relationship between unemployment and imprisonment, or that unemployment has the opposite effect on imprisonment than that predicted by the predominant conflict theory (Galster and Scaturo, 1985; Parker and Horwitz, 1986). Others, however, have identified a direct relationship between labor surplus and imprisonment (Box and Hale, 1982; Hale, 1989; Inverarity and McCarthy, 1988; Jankovic, 1977; Laffargue and Goddefroy, 1989; Lynch, 1988; McCarthy, 1990). The majority of research does support a labor surplus and imprisonment relationship even when crime is controlled. Evidence suggests that findings in this area are often contingent on estimation technique, variable selection, and level of aggregation (Chiricos and Delone, 1992; Inverarity and Grattet, 1989; Inverarity and McCarthy, 1988; Inverarity and Myers, 1992; Wallace, 1980).

RESEARCH DECISIONS

One recurring debate in this literature surrounds the

selection of a longitudinal or cross-sectional research design. Critics of time-series analysis point out that findings may be biased by trend effects, while time-series advocates contend that cross-sectional research fails to incorporate a sampling frame that can show causality, test for theoretically important dynamic changes, or capture economic fluctuations. Longitudinal and cross-sectional data provide consistently different conclusions. Time-series studies tend to find more positive and significant results than cross-sectional research in this area (Chiricos and Delone, 1992; Inverarity and Tedrow, 1987).

Another recurring debate involves the appropriate level of aggregation to be used as the unit of analysis in macro-level research of unemployment and imprisonment. Chiricos and Delone (1992) conclude that the evidence of a relationship is strong at every level. National level data often show a direct relationship between labor surplus and imprisonment (Box and Hale, 1989; Laffargue and Goddefroy, 1989). However, national level data present problems with aggregation effect because larger aggregates are usually less homogenous than smaller ones (Blalock, 1982). Aggregation of dissimilar units confounds the effects of the variables of interest in macro-level studies. Standard methodological procedure calls for disaggregating variables

as far as possible (Inverarity and McCarthy, 1988).

States are often assumed to be the smallest practicable unit of aggregation in macro-level studies of labor markets and punishment (Allan and Steffensmeir, 1989). Using the state as the unit of analysis has been justified by the fact that laws and corrections policies are made at the state level (Parker and Horwitz, 1986). There is, however, great intra-state variation in economic, demographic, crime, and punishment variables. State-level data have the potential of aggregating economically and demographically dissimilar areas on the grounds of geographic proximity just as national data does.

Theoretical constructions of the relationship between labor surplus and punishment have developed beyond instrumentalist, capitalist-state conspiracy models. Theorists have begun to recognize the complexity of criminal justice processing. The economy's effect on decisions of players in the criminal justice system contributes to the relationship of the economy and imprisonment. The relationship of labor surplus and imprisonment is the result of a complex network of relationships between offenders, police, prosecutors, victims and courts.

The effect of environmental factors on judicial decision making occurs at the local level. Discretion in

the processing of offenders is not the result of dictates handed down from outside the community. The decisions of criminal justice functionaries are influenced by the immediate economy in which their daily transactions occur. Certainly, theoretical guidelines suggest that punishment is affected by the social-structural and labor market variables in the immediate social surrounding. Counties, not nations or states, are the most appropriate unit of analysis for investigating the relationship of labor surplus and punishment.

Some studies use counties or SMSAs as the units of analysis (Colvin, 1990; McCarthy, 1990). Although based on too few estimates, results suggest the desirability of aggregation below that of the state (Chiricos and Delone, 1992:432). Previous findings indicate that the relationship of labor surplus to imprisonment is a local phenomenon.

Studies using county or SMSA labor market variables as predictors of variation in imprisonment are generally cross-sectional analysis of a single year or longitudinal case-studies. This is due to data limitations. The variables needed for a theoretically complex analysis are often unavailable or difficult to acquire annually for sub-state units of analysis.

The limitations of cross-sectional research and large

aggregations have prevented researchers from studying the dynamic effects of labor surplus and imprisonment at the local level. Theoretical concern with explaining temporal variation in the use of punishment is neglected.

In addition to cross-sectional analysis, the dynamic effect of unemployment on imprisonment needs to be tested. County level data are the most appropriate aggregation for investigating this relationship. A large sample of counties and a technique that accommodates the effect of change in unemployment on change in rates of imprisonment offers a promising addition to existing research.

CHAPTER III

DATA AND METHODS

Panel analysis consists of multiple observations on each individual case. In panel analysis, each case is observed in at least two points. Analysis of panel data permits examination of dynamic effects that cannot be achieved in cross-sectional analysis or in trend studies. One example would be a study of consumer behavior in which shoppers were interviewed during an advertising campaign and asked their product preference. Such a study would make it possible to analyze overall trends in product preference, and would show precise patterns of persistence and change. The effect of a consumer's preference in time 1 on time 2 preference could be determined and controlled. This would prevent the attribution of stable product preferences to the advertising campaign. Repeated observations on the same units of analysis controls extraneous patterns unique to a particular customer. Controlling ongoing extraneous patterns clarifies the effects of the variables of interest.

Panel data give the researcher the ability to evaluate changes in multiple cases. This type of data has great promise for examining unemployment and imprisonment where findings are often determined by the choice of a cross-sectional analysis of multiple cases or a longitudinal

design examining a single geographic location. Panel analysis can account for both temporal and geographic variation.

Pooling all of the years into a single model is one possible technique for evaluating the relationship of unemployment and imprisonment in panel designs. In the simplest pooling design, observations from multiple time periods are stacked as if they were a single cross-section. Inverarity and Tedrow (1990) used this technique, as well as more complex pooling methods, to examine state-level data for 1974-1986. They found unemployment to be significant in the expected direction for most equations. Pooling procedures are rejected in this study for several reasons.

The foremost reason for rejecting pooling methods is that non-estimated data are available for only 1980 and 1990, and interpolations would bias a pooled analysis. In addition, pooling is appropriate only if the structure of the relationships remains constant over time (Hannan and Young, 1977). There is no theoretical justification for the assumption that the structures of the relationships examined here remain constant over the eleven year time period. Pooled analyses are also incapable of accounting for change, since combining multiple years eliminates the possibility of examining change between years.

The task at hand is to determine the effect of changes in economic and socio-structural variables on changes in the use of imprisonment. Pooling data is not theoretically or statistically appropriate here. Rejecting pooling methods does not rule out the application of a panel design to these data.

ANALYZING CHANGE

Panel data are appropriate for examining relationships between changes in the variables of interest. Residual-change scores are used to estimate the changes in the level of the variables in a panel of data from 1980 and 1990. The effect of change in unemployment on change in imprisonment can be determined using residual-change scores. To derive a residual-change score, the level of a variable in 1990 is regressed on its level in 1980. The equation is then used to predict the level of each variable in 1990. This predicted value is subtracted from the observed level in 1990, resulting in a measure of residual change (Bohrnstedt, 1969; Bursik and Webb, 1982; Chamlin, 1990; Elliot and Voss, 1974).[3]

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[3]Bohrnstedt (1969) has shown that residual-change scores are independent of initial levels of variability. Examples of residual-change analyses in delinquency and criminology include Bursik and Webb (1982), Chamlin (1990) and Elliot and Voss (1974).

Analysis of residual-change scores is the most appropriate technique for application to these data. This technique emphasizes the dynamics of change in imprisonment levels, allowing a test of the theoretical proposition that socio-economic change affects change in imprisonment. Residual-change scores are statistically independent of initial levels of the variables; they represent the change that is not expected on the basis of the initial level of the variables alone. Controlling initial levels of variability removes the effects of increases or decreases in imprisonment related to initial imprisonment rates and does the same for the independent variables. This control permits an investigation to examine the effect of changes in the levels of independent variables on changes in imprisonment.

Residual-change regression also adjusts for the changes that other counties have undergone. All counties are used to predict the level of the variables in 1990. Thus, residual-change scores control the effects of trends occurring across counties to determine those attributable to the variables of interest in a particular county. Ongoing processes of change common to all counties are controlled, a county's unique change remains. Theoretically, changes in the independent variables should manifest themselves with

changes in imprisonment. Change is here examined using the two waves of data from 1980 and 1990 to determine the contribution of changes in socio-economic variables to changes in imprisonment.

In addition to residual-change analysis, a lagged endogenous variable is used to evaluate the presence of dynamic relationships among these variables. Static measures of imprisonment in 1990 are regressed on static predictor variables in 1980 and a lagged measure of imprisonment for 1980. This technique enables us to determine the importance of controlling for initial levels of variables. The lagged measure of imprisonment removes from the error the pattern of imprisonment in each county. The resultant equation shows how static levels of the independent variables affect change in imprisonment.

SAMPLE AND DATA

Counties are the units of analysis in this study. Counties were selected using a multi-staged cluster sampling application. Ten states were chosen on the grounds of data availability. The states are a geographically diverse representation of the United States. From these states a sampling frame containing all populous counties was created. Included in the sampling frame are all counties in a

designated Metropolitan Statistical Area or with a population of over 25,000 in 1980. The sample is not random, but will provide a representation of U.S. counties with large work forces and urban populations. The data are from 269 counties for the years 1980 to 1990.

The dependent variable is the annual county rate of new commitments to prison (IMPRISONMENT). The imprisonment rate is the number of commitments per 100,000 population. Imprisonment data were collected through correspondence with each state's department of corrections and represent the total number of new prisoners committed to prison in each selected year. Generally, no data are available on the number of prisoners serving from each county. This eliminates the possibility of examining the effects of independent variables on the total prison population. The effects of conditions in the county on prison releases also remains unknown. New commitments are the best available indicator of local imprisonment. The rate of new county prison commitments is an indication of punishment decisions at every level of criminal justice processing.

The independent variable of primary concern is unemployment (UNEMPLOYMENT). Unemployment rates are annual averages from monthly unemployment statistics gathered through correspondence with each state's Department of

Employment Security. Unemployment is not a perfect proxy for labor surplus. Official levels of unemployment may not capture the hidden unemployed, but they are the best available indicator of joblessness in each county. Using labor force participation has been suggested as a better indication of the strength of labor markets, since many members of the underclass have given up on actively seeking employment and are not included in the unemployment rate (Wallace, 1980). Labor force participation rates overestimate the number of unemployed potential members of the labor force by counting the elderly, students, homemakers and other groups who have no intention of actively seeking employment (Galster and Scaturo, 1985:179; Inverarity and Grattet, 1987:360). The inclusion of these populations in labor force participation rates causes them to inadequately represent the dangerous unemployed classes which are theoretically important in this study. Unemployment is used here as a proxy for labor surplus and is hypothesized to be directly and positively related to county commitments to prison in all equations.

Crime rates for both violent crime (VIOLENT CRIME) and property crime (PROPERTY CRIME) are used as controls in this study, because they have been shown to be differentially affected by unemployment (Chiricos, 1987:187) and to

differentially affect imprisonment (Carol and Doublet, 1983; Galster and Scaturo, 1985:170; Myers and Inverarity, 1992; Bridges et. al., 1987). Crime rates are official rates of crimes reported to police from Uniform Crime Reports and are composed of only the index offenses.[4] Violent crimes are murder and manslaughter, forcible rape, robbery, and aggravated assault. Property crime is operationalized as the rate of burglary, larceny, and motor vehicle theft.

Several other socio-demographic variables may contributers to the rate of prison commitments. They must be included and controlled in macro-sociological studies of crime and imprisonment so that the relationships among the variables of interest can be determined. The proportion of young adult males in a population affects both crime and imprisonment (Blumstein et. al., 1980; Cohen and Land, 1987; Inverarity and McCarthy, 1988). Street crimes peak in the late teen years while imprisonment peaks in the early twenties. Age structure also may influence imprisonment directly. Theory dictates that the population that is perceived as dangerous by economic elites is composed of young males who are denied access to the labor market. Age

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[4]Crime rates are from the Inter-university Consortium for Political and Social Research's County Level Arrest and Offenses Data. This publication aggregates original FBI agency level data to the county level and includes a discussion of the methodology used to accomplish this task.

data are from the Census Bureau's Modified Age, Race, and Sex data for 1980 and 1990 and from Estimates of County Population Characteristics for intercensal years.[5] These data are used to control for the rate of the male population composed of ages 20-34 (MALES20-34). The processing of juveniles is not reflected in imprisonment statistics, so we do not control for the under 20 population.

The non-white population is often construed theoretically as a politically subordinate group or as a criminal threat (Arvanites, 1992:22; Swigert and Farrell, 1976). The sanction of imprisonment may be a means of bringing non-white populations under the state's control. The presence of non-whites is viewed by criminal justice officials as an indicator of a crime problem (Liska et. al. 1981), and non-white populations have been found to positively correlate with imprisonment (Joubert et. al., 1981; Greenberg et. al. 1985). We use annual estimates of percent non-white from Modified Age, Race and Sex and Estimates of County Population Characteristics to control for the effect of the non-white (NONWHITE) population on

[5]Intercensal estimates are based on interpolations and revisions anchored on the Modified Age, Race and Sex statistics. These data are modified to correct for reporting problems and boundary changes in U.S. counties. Intercensal estimates are not suitable for dynamic analysis, and as will be see, presented considerable problems in static equations.

county commitments to prison.[6]

To control for the possibility that an underemployed population contributes to imprisonment, data were gathered from the state Department of Employment Security for the years 1980-1990. Poverty rates (POVERTY) are the best indicator for the presence of an underclass and efficiently capture inequality of wealth in a community (Arvanites, 1992:25).[7] In addition to poverty rates, the county's average personal income (INCOME) in 1980 dollars is included as a measure of the economic health and underemployment in the area.[8]

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[6]There is evidence that high non-white percentages may decrease crime control aimed at non-whites (Liska and Chamlin, 1984). Including higher-order terms for (NONWHITE) identified no curvilinear effect in any of the equations.

[7]Poverty rates are not available for intercensal years, and are therefore not used in the cross-sectional analysis for 1981-1989. Where poverty rates are used they are the rate for the year prior to the census: 1979 and 1989.

[8]The average income in 1980 dollars was calculated by multiplying the reported average income for each year by the change in the Consumer Price Index since 1980. Average incomes are from Regional Economic Information System (Bureau of Economic Analysis, 1994). Index figures are from the Consumer Price Index (U.S. Bureau of Labor Statistics, 1980; 1981; 1982; 1983; 1984; 1985; 1986; 1987; 1988; 1989; 1990). For information on the methodology used to arrive at the index see The CPI: Questions and Answers (U.S. Department of Labor Statistics, 1992).

ANALYTIC STRATEGY

The primary objective of this research is to test for a direct effect of unemployment on imprisonment while controlling for the level of crime and other variables. We hypothesize that the variation in the rate of unemployment directly contributes to the rate of prison commitments. Several equations are developed to test this hypothesis. The first step of the analysis uses residual-change scores in a regression equation taking the form:

$$\text{Imprisonment}_{res:t,t-10} = f\ (\text{unemployment}_{res:t,t-10},\ \text{violent crime}_{res:t,t-10},\ \text{property crime}_{res:t,t-10},\ \text{percent non-white}_{res:t,t-10},\ \text{age}_{res:t,t-10},\ \text{income}_{res:t,t-10},\ \text{poverty}_{res:t,t-10}).$$

Imprisonment:t,t-10 is the residual-change score of prison commitments during the 10 year period, and the other variables are defined similarly.

A lagged endogenous measure of imprisonment is also used to examine change in imprisonment rates and to determine the importance of dynamic analysis. This technique controls for a lagged measure of the dependent variable, so that static levels of the independent variables effects on change in imprisonment can be determined. The

equation is formulated as:

Imprisonmentt= *f* (imprisonmentt-10, unemploymentt-10, violent crimet-10, property crimet-10, percent non-whitet-10, aget-10, incomet-10, povertyt-10).

A hypothesized direct relationship between unemployment and imprisonment is included in all of the equations.[9] Any positive non-random contribution of unemployment to county prison commitments supports the conflict position's contention that unemployment has a direct influence of on imprisonment.

The presence of positive and significant contributions

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[9]In addition to the above equations, cross-sectional effects were examined contemporaneously (see appendix, Table A-1 on page 61) and with a one year lag (see Table A-2 on page 62). The equations took the form: Imprisonment= *f* (unemployment, violent crime, property crime, percent non-white, age, income) and Imprisonmentt= *f* (unemploymentt-1, violent crimet-1, property crimet-1, percent non-whitet-1, aget-1, incomet-1). Poverty rates were included for census years. Unemployment was consistently significant in the opposite of the hypothesized direction for all years in both the lagged and contemporaneous cross-sections. However, collinearity diagnostics identified serious linear dependencies for most years, rendering cross-sectional equations uninterpretable. Multicollinearity was reduced by dropping the income variable, but the reduced model did not change results for unemployment or control for underemployment. Due to the limitations of using estimates for intercensal years and the gravity of sacrifices necessary to eliminate collinearity, detailed cross-sectional findings are not reported.

to variation in imprisonment among the economic and demographic control variables may reaffirm the necessity of a broader definition of dangerous populations in Marxist interpretations of imprisonment. The presence of significant effects for crime in the absence of a significance for unemployment will not corroborate the hypothesis of an independent effect of unemployment on imprisonment.

CHAPTER IV

FINDINGS

The first phase of data analysis was an examination of the effects of change in unemployment, crime, and the other control variables on change in prison admissions between 1980 and 1990. We then considered the effects of static levels of the independent variables on change in imprisonment over the decade. All independent variables are expected to vary positively with imprisonment with the exception of income which is hypothesized to vary inversely.

If change in unemployment directly affects change in imprisonment, then unemployment will be both positive and significant in the residual-change regression. The results reported in Table I illustrate that change in unemployment rates (UNEMPLOYMENT), violent crime rates (VIOLENT CRIME), and the rate of males age 20 to 34 (MALES20-34) are related positively and significantly to change in imprisonment rates (IMPRISONMENT). The independent variables combine to explain 13.88 percent of the variation in change in imprisonment.[10] As hypothesized, change in unemployment is an independently significant predictor of change in

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[10]See Appendix, Table A-3 on page 63 for the zero-order correlation matrix which contains all of the variables used in the residual-change analysis.

Table I.

Summary table for regression of changes in imprisonment on changes in independent variables 1980 to 1990.

Variable	*B*	*SE*	*Beta*	*F*
Unemployment	.001	.004	.169	7.209**
Violent Crime	.054	.024	.147	5.148*
Property Crime	-.003	.005	-.035	.284
Males20-34	.013	.003	.267	19.963***
Non-white	.002	.003	.051	.669
Poverty	-.004	.003	-.102	2.033
Income	-.000	.000	.034	.248
R^2 .1388***			Constant .084	

*p < .05
**p < .01
***p < .005

imprisonment. Change in property crimes (PROPERTY CRIME), percent non-white (NONWHITE), poverty rates (POVERTY), and average income (INCOME) do not influence change in imprisonment.

Some high zero-order correlations between predictor variables were identified. The correlations between violent and property crime (r=.45) and poverty and income (r=.49) were of particular concern. These correlations do not necessarily indicate the presence of collinearity, but they did warrant investigation. Collinearity diagnostics yielded high Eigen values and low condition numbers indicating that multicollinearity is not a concern in this equation.[11]

SUPPLEMENTARY ANALYSIS

Residual-change scores suggest a positive and significant effect for unemployment on imprisonment. It is possible that other techniques of measuring the dependent and predictor variables, for temporal analyses, might yield different results. In an effort to address this issue, we reanalyzed the data using static predictor variables and a

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[11]See Ronald H. Myers' Classical and Modern Regression with Applications for a complete explanation of collinearity diagnostics using Eigen values and condition numbers.

lagged measure of imprisonment to predict 1990 imprisonment. If static levels of unemployment explain change in imprisonment, then a positive and significant effect for unemployment is expected in the equation regressing 1990 static measures of imprisonment on 1980 static levels of the predictor variables and a 1980 lagged measure of imprisonment. This equation allows us to examine the effect of the actual levels of the variables in 1980 on change in imprisonment. Evaluation of this equation's results will clarify the importance of change in unemployment, relative to actual levels of unemployment, for explaining shifts in the rate of imprisonment.

The results, reported in Table II, indicate that static levels of unemployment are not significantly related to change in imprisonment. As expected, the lagged measure of imprisonment is the most significant predictor in this equation. The high strength of significance for lagged imprisonment indicates that levels of imprisonment in 1990 are largely determined by initial 1980 levels of imprisonment.

The 1980 levels of imprisonment account for most of the explained variance in 1990 imprisonment. The lagged measure

Table II. Summary table for regression of 1990 imprisonment on 1980 independent variables and lagged 1980 imprisonment.

Variable	*B*	*SE*	*Beta*	*F*
$Imprisonment_{80}$	1.269	.0677	.732	351.***
Unemployment	.002	.0026	.026	.397
Violent Crime	.074	.0204	.198	13.018***
Property Crime	-.012	.0043	-.14	7.723**
Males20-34	.004	.0041	.07	4.149**
Non-white	.001	.0006	.099	3.419
Poverty	.002	.0015	.064	1.761
R^2 .7295***			Constant .147	

*p < .05
**p < .01
***p < .005

of imprisonment's zero-order correlation with 1990 imprisonment is extremely strong (.67).[12] The lagged imprisonment variable accounts for most of the high explained variance for this equation, reflected in the R^2 of 73 percent.[13] Static Measures of violent crime rates (VIOLENT CRIME), property crime rates (PROPERTY CRIME), and the rate of males age 20-34 (MALES20-34) were also found to be significant predictors of imprisonment.

DISCUSSION OF RESULTS

The most apparent conclusion suggested by the foregoing results is that the relationship of unemployment to imprisonment is largely contingent upon the choice of research technique and the specific research question. Unemployment is not significant in the expected direction for cross-sectional equations, confirming the null

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[12]The zero-order correlation matrix for this equation is appendixed in Table A-4 on page 64. Collinearity diagnostics identified problems with multicollinearity when the income variable is included. Exclusion of this variable yields interpretable results for the reduced equation, despite other high zero-order correlations.

[13]The pronounced strength of 1980 rates of imprisonment in predicting 1990 rates, lowers the R^2 value in the residual-change analysis. After controlling for initial levels of imprisonment, the amount of unexplained variation in the dependent variable is greatly reduced.

hypothesis. The relationship of static levels of unemployment and changes in imprisonment is also insignificant. The residual-change regression model offers the most promising support for the hypothesized relationship of unemployment and imprisonment.

The examination of the effect of changes in the independent variables on changes in imprisonment, using residual-change scores, confirms the independent significance of the unemployment variable. Residual-change results demonstrate that change in unemployment significantly contributes to variation in changes in imprisonment from 1980 to 1990. This holds true even when controlling for crime rates and other important changes expected to be associated with imprisonment.

Results also indicate significant effects for static levels of the proportion of males age 20 to 34 (MALES20-34). This variable achieved significance in both the dynamic residual-change analysis and as a static predictor of imprisonment change. The significance of this variable is not attributable to its effect on crime, since crime rates were included in these models.

Change in violent crime rates (TABLE I) and static rates of violent crime (TABLE II) are significant

contributors to change in imprisonment. The actual rate of property crime is a significant predictor of change in imprisonment (TABLE II), but change in property crime does not effect change in imprisonment (TABLE I). These findings suggest that disaggregating crime rates improves understanding of the unemployment-crime-imprisonment relationship. Change in violent crime rates contributes significantly to increases in imprisonment. No significant effects are found for changes in property crime rates on imprisonment.

CHAPTER V

CONCLUSIONS

The data and analysis employed in this research are distinct improvements over previous studies of the relationship between labor surplus and imprisonment. County level data are an improvement over the state and national aggregations employed in previous research. County level data reduce the potential for aggregating dissimilar cases. They are also the most appropriate type of data for testing the theoretical construction of the relationship of socio-economic conditions to imprisonment. This relationship transpires in the community where the discretionary processing of offenders takes place.

The second improvement is the use of panel techniques to examine dynamic relationships among the variables. The predominant conflict explanations of a direct effect of labor surplus on imprisonment are dynamic and require some form of longitudinal analysis. Panel analyses, particularly residual-change scores, provide some advantages for investigating the relationship between labor surplus and punishment changes. Analysis of residual-change emphasizes temporal relationships while controlling for initial levels of variability and trends common to all counties.

In brief, findings from residual-change scores support the hypothesis that unemployment contributes to use of imprisonment independent of its effect on crime. Change in the rates of labor surplus, crime and young males all contribute to change in state-imposed punishment in U.S. counties. These findings lend support to the notion that the criminal justice system is increasingly punitive in times of high labor surplus. As county labor surplus increases so does the rate of new commitments to prison.

The relationship of a young male population to imprisonment has received some attention, but our findings suggest that change in the rate of young males is, at least, an essential control variable in efforts to explain changes in imprisonment. An increase in the percentage of the population composed of young males may determine the degree to which the criminal justice system perceives a threat from the dangerous class, causing a subsequent increase in imprisonment. Changes in the percentage of young males are more important predictors of changes in imprisonment than changes in the percentage of non-whites. This finding is relevant to theoretical understanding and measurement of the composition of the dangerous class. A young male population may seem more threatening in times of labor surplus than

non-whites. This would explain its stronger effect on imprisonment. Measures of a young male population might be better indicators of the presence of a dangerous class than measures of minority populations.

Despite the finding that changes in unemployment are independently related to changes in imprisonment, supplementary analyses suggest that static levels of unemployment are not positively related to imprisonment. Unemployment did not effect imprisonment in the hypothesized direction cross-sectionally. Static levels of unemployment did not affect change in imprisonment either. The latter finding is not surprising. The assumption that the actual levels of independent variables in a single year would explain changes in the dependent variable over a decade has little theoretical justification. The weak effect of unemployment in the cross-sectional equations reinforces national and state-level research.

Neither cross-sectional equations or the use of static variables and a lagged endogenous dependent variable control for the ongoing patterns in the amount of punishment which are characteristic of the community. Community values, traditions, cultures and institutional inertia all have an impact on both types and amounts of administered

punishment. Residual-change scores remove the effect of extraneous ongoing patterns unique to a community that would otherwise be a source of error. Residual-change scores also control for changes that other counties have undergone in the same period, so that common trends occurring across counties are removed.

The strength of the relationship between labor surplus and punishment is dependent on the research design used to examine it. Evidence for a positive significant effect of unemployment on imprisonment is limited to the analysis of residual-change scores. Findings suggest that increased unemployment is positively related to increased imprisonment within counties. Differences in unemployment between counties, in a particular year, are not related to variation in the use of imprisonment. The relationship of unemployment to imprisonment is dynamic. This finding complements research using state and national level data, where the support for a cross-sectional unemployment and imprisonment relationship is more limited than time-series evidence.

SHORTCOMINGS

Many theoretically important variables, easily acquired

at the state level, are unavailable for counties. This makes it difficult to test the conditions under which unemployment affects imprisonment. The absence of data on prison releases into the county and total number of prisoners serving from each county also limits the possibility of controlling for these population's potentially significant effects.

Other important macro-level variables are excluded due to unavailable data. For example, evidence suggests that the relationship of unemployment to imprisonment is strongly influenced by the economic organization of localities into primary or secondary labor markets (Colvin, 1990). The absence of continuous measures of indicators of economic organization eliminates the possibility of a dynamic examination of their effects.

The use of macro-level research, although theoretically important, eliminates examination of potentially important intervening variables in the relationship of unemployment to imprisonment. Specific characteristics of offenders before the courts, judges hearing the cases, and the effect of the economy on public opinion are neglected. These variables, and many others important for our research problem, are not available at the county level.

Another limitation of this analysis is the short time-span examined. The goal of empirical research, in this area, is to derive testable hypothesis from a historical tradition. Rusche and Kirchheimer (1939) were largely interested in epochal shifts in the labor market and their effects on both type and degree of punishment. Contemporary scholars have investigated the effect of more modest fluctuations in the labor market on the rate of incarceration. Much of the historical nature and theoretical complexity of the relationship of labor surplus to imprisonment is necessarily sacrificed in the application of modern statistical techniques. For example, the results of our dynamic equations are for a single decade, and are constructed from data for only two years. It is entirely possible that the results of this research are unique to this short time period. Future research should concentrate on increasing the number of years used to examine changes at the county level. Of course, accurate longitudinal records for sub-state units are a recent development for most states. Therefore, the possibility of acquiring the necessary data for longitudinal research incorporating a lengthy time-span and a diverse sample of counties is limited.

IMPLICATIONS

There are at least three important implications of this research. One is that more scholarship should be devoted to understanding the variable nature of punishment. Too often, the discourse surrounding contemporary penal measures is confined to discussions of crime or to individual levels of analysis. This research is an attempt to understand the effects of the economic and social contexts in which the criminal justice system operates on variation and change in the use of imprisonment.

The second implication is that the application of an empirically grounded critical perspective is useful for expanding the analysis of punishment. This paper encourages criminologists to continue utilizing Marxist theoretical constructs to explain variation in social control. This will increase our understanding of variation in punishment and provide alternatives to conventional interpretations of the justice system.

We contend that mainstream statistical techniques should serve to improve critical theories of punishment. Empirical investigation serves the twofold purpose of testing and improving conflict theories of punishment. Future investigations should specify the levels of

aggregation and empirical conditions to which theoretical precepts apply. For example, county-level data support the body of evidence indicating that only dynamic analysis yield evidence for a direct relationship of unemployment and imprisonment. If this finding holds true, conflict theories of unemployment need to be reformulated to emphasize the dynamic nature of the relationship between labor surplus and imprisonment.

A related implication is that better predictors of static levels of imprisonment are needed. Imprisonment rates within a county were strongly dependent on previous rates. Imprisonment in 1980 was a strong predictor of 1990 imprisonment. This consistency suggests that some ongoing characteristics of the county may explain the level of imprisonment. Improving static explanations of imprisonment would require the identification of the county characteristics which cause temporal correlation in prison commitments.

Conflict theories of punishment, grounded in empirical investigation, stimulate innovative explanation and criticism of the contemporary institutions of punishment. Understanding the effect of structural changes on changes in imprisonment is useful in evaluating current trends and

functions of the application of social control. Understanding of the use of imprisonment should not be limited to examinations of only the crime control functions of state-imposed punishment. Alternative explanations of the rapid increases in our nations imprisoned population must be examined. When conflict theories are used to study punishment, we should subject them to the same standards of empirical proof expected of other theoretical approaches. Conflict theories of punishment should go beyond non-empirical suppositions and should be modified according to the evidence derived from mainstream investigatory techniques.

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APPENDIX

Table A-1

Summary table of parameter estimates and F Statistics for cross-sectional regression on imprisonment 1980-1990.

Variables	80	81	82	83	84	85	86	87	88	89	90
UNEMP	-0.005	-0.009	-0.004	-0.004	-0.004	-0.008	-0.008	-0.011	-0.01	-0.012	-0.01
	12.33***	25.42***	6.86**	9.06**	7.89***	20.39***	14.49***	25.86***	16.12***	15.45***	7.04**
VCRM	0.036	0.030	-0.002	0.013	0.000	0.006	0.018	0.038	0.046	0.019	0.077
	2.647	1.440	0.003	0.278	0.000	0.039	0.454	2.880	2.710	0.379	1.39**
PCRM	-0.004	.001	.001	0.001	-0.001	0.005	-.000	-0.001	.000	0.005	-0.009
	1.12	.033	.019	0.025	0.033	1.134	.000	.060	.000	0.694	1.63
M20-34	-0.003	-0.005	-0.001	-0.004	-0.003	-0.004	-0.003	-0.003	-0.005	-0.005	.000
	2.05	4.62*	4.19**	2.22	1.84	2.83	.925	1.77	2.85	2.46	.000
NWHT	0.003	0.003	-0.004	0.003	0.003	0.003	0.003	0.003	0.004	0.005	0.005
	30.64***	33.57***	60.40***	50.62***	61.35***	11.60***	40.11***	50.62***	46.36***	63.55***	36.25***
INCM	-.000	-.000	-.000	-.000	-.000	-.000	-.000	-.000	-.000	-.000	-.000
	26.36***	44.33***	28.52***	29.41***	32.70***	42.47***	35.64***	49.21***	28.89***	35.41***	20.30***
PVTY	-.001										-.000
	0.33										0.033
R-square	0.45	0.43	0.42	0.38	0.41	0.40	0.38	0.43	0.40	0.45	0.41

*p < .05
**p < .01
***p < .005

Table A-2

Summary table or parameter estimates and F statistics for cross-sectional regression on imprisonment with (t-1) lagged independent variables 1981 to 1990.

Variables	81	82	83	84	85	86	87	88	89	90
UNEMP	-0.008	-0.008	-0.004	-0.004	-0.005	-0.009	-0.009	-0.002	-0.01	-0.015
	19.54***	18.74***	7.25**	6.49**	8.23**	11.49***	16.90***	25.01***	19.67***	19.71***
VCRM	0.028	0.030	0.038	0.017	0.004	0.007	0.023	0.043	0.042	0.071
	1.100	1.630	2.070	0.519	0.017	0.052	0.794	3.040	1.700	4.110
PCRM	-.000	-.000	-0.001	-0.002	0.002	0.005	0.001	0.001	0.002	-0.002
	.000	.000	0.023	0.293	0.13	0.706	0.022	0.056	0.116	0.098
M20-34	-0.006	-0.004	-0.005	-0.004	-0.003	-0.003	-0.003	-0.006	-0.006	-0.008
	4.970*	6.100**	3.920	3.010	1.210	1.020	1.490	4.77*	3.45	5.43*
NWHT	0.003	0.01	0.003	0.003	0.003	0.003	0.003	0.004	0.005	0.005
	51.04***	53.06***	37.14***	64.46***	47.07***	35.46***	51.81***	50.67***	63.47***	47.96***
INCM	-.000	-.000	-.000	-.000	-.000	-.000	-.000	-.000	-.000	-.000
	36.00***	41.10***	31.59***	30.60***	31.45***	35.80***	42.33***	38.02***	34.22***	34.60***
R-square	0.45	0.42	0.39	0.42	0.36	0.38	0.43	0.43	0.46	0.43

*p < .05
**p < .01
***p < .005

Table A-3

Zero-order correlations for residual-change scores.

	IMPR	UNEMP	VCRM	PCRM	NWHT	M20-34	INCM
PVTY	-0.0220	0.3501	0.0147	-0.0705	0.2222	-0.0429	-0.4927
INCM	-0.0151	-0.2301	-0.0255	0.0515	0.0626	0.0359	
M20-34	0.3101	0.1620	0.0802	0.1302	0.1137		
NWHT	0.0767	-0.1725	-0.0591	-0.1725			
PCRM	0.0619	-0.0033	0.4505				
VCRM	0.1404	-0.0500					
UNEMP	0.1839						

Table A-4

Zero-order correlations for 1990 imprisonment, 1980 imprisonment and other independent variables.

	IMPR	UNEMP	VCRM	PCRM	NWHT	M20-34	INCM	PVTY
IMP80	0.8223	-0.2110	0.2245	0.1449	0.5167	-0.0015	-0.2744	0.3225
PVTY	0.4046	0.3794	0.3703	0.2734	0.5710	0.4299	-0.5581	
INCM	-0.2744	-0.3268	0.1019	0.2226	-0.0736	0.0631		
M20-34	0.0785	-0.1606	0.2031	0.2999	0.1283			
NWHT	0.5716	-0.1316	0.5823	0.4510				
PCRM	0.1976	-0.0237	0.7528					
VCRM	0.3543	0.0647						
UNEMP	-0.1120							

VITA

Andrew Lee Hochstetler, the son of Max and Mary Hochstetler, was born March 22, 1970 in Clarksville, Tennessee. He graduated from Clarksville High School in June 1988. In the fall of 1988 he entered the University of Tennessee, Knoxville to study history. He received his B.A. in 1991. In 1992, he entered the graduate school in sociology to pursue a Master's degree and an interest in criminology. He has been employed as a research intern for the Municipal Technical Advisory Service, where his work resulted in the publication of the 1994 Municipal Utility Rates Survey. He has also been employed as a teaching assistant for the department of sociology. The author was admitted to candidacy in the spring of 1995 and completed requirements for the M.A. degree the following summer.

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