

Did Falling Wages and Employment Increase U.S. Imprisonment?

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Abstract

This paper studies the effects of wages and employment on men's prison admission rates in the United States from 1983 to 2001. Research on the effects of the labor market on incarceration usually examines national- or state-level data, but our analysis studies prison admission among black and white men in specific age-education groups. We find a significant increase in educational inequality in incarceration; nearly all the growth in the risk of imprisonment was confined to non-college men. Regression analysis of prison admission rates shows the negative effects of wages and employment on black men's incarceration, and the negative effects of wages on white men's imprisonment. If 1980s' wage and employment levels had persisted through the late 1990s, the estimates suggest that prison admission rates would be 15 to 25 percent lower for all non-college men.

Two major social trends reduced the living standards of young low-education American men over the past 30 years. Earnings and employment among those with just a high school education were eroded by the tide of rising income inequality. While the labor market faltered, growth in the American penal system turned prison time into a common life event for low-skill and minority men. The growth in U.S. economic inequality and the prison boom both date from the mid-1970s, and both trends continued through the 1990s. Have falling wages and employment among young, low-skill, men contributed to the growth in American imprisonment?

Labor market trends might influence the scale of imprisonment in two main ways. Falling wages and employment may increase crime at the bottom of the economic ladder, generating more arrests, convictions and prison admissions. In one account, young black men turned to drug dealing and other crime in response declining job opportunities through the 1980s and 1990s (Freeman 1996; Duster 1997). Against this view, sociologists of punishment see the criminal justice system not just as an instrument for crime control; it also operates to contain marginal populations that elites and voters perceive as threatening. The direct link between contemporary economic inequality and punishment was forcefully claimed by Wacquant (2000) who argues that the criminal justice system has thoroughly penetrated poor inner-city neighborhoods, giving rise to a novel form of racial domination.

We examine the impact of the labor market on men's prison admission between 1983 and 2001. Earlier research associated aggregate labor market indicators with aggregate incarceration rates, either in samples of U.S. states or national time series (e.g., Jacobs and Helms 1996, 2001; Greenberg and West 2001). While the analysis of aggregate incarceration

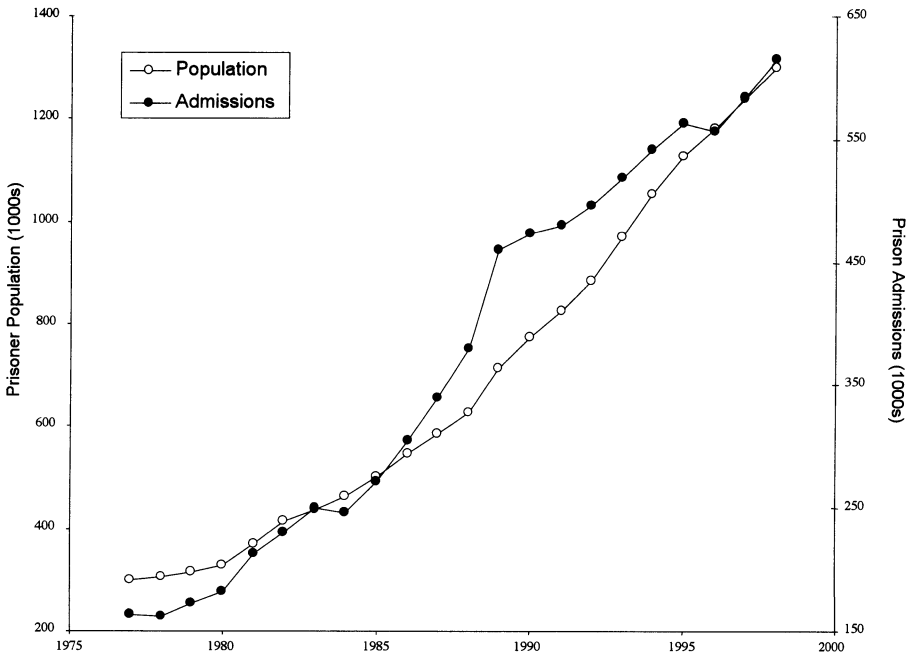
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rates has produced valuable estimates of political and cultural effects, it misses a central implication of labor market theories of punishment: that carceral efforts target economic losers. For the labor market theory of punishment, increasing economic disadvantage doesn't just raise the general level of incarceration; it also increases inequality in incarceration. We revisit the labor market theory of punishment with a novel approach that calculates the risk of imprisonment for white and black men at different ages and levels of education. We then relate these disaggregated risks to disaggregated measures of wages and employment. In contrast to previous aggregate-level research, our design produces a tighter link between the economic status of the disadvantaged and their involvement in the criminal justice system.

The Prison Boom

About two-thirds of the American correctional population is housed in state or federal prisons serving sentences for felony convictions of a year or longer. Between 1920 and 1970, the imprisonment rate averaged about 100 per 100,000 of the U.S. population. The 1970 imprisonment rate, at 96 per 100,000, stood near its historic average. By 2001, there were 470 prisoners per 100,000. Growth in the prison population was driven by an increase in the numbers admitted to prisons and an increase in the time served by those admitted. Figure 1 shows that between 1977 and 1998 the state and federal prison population grew more than fourfold to include about 1.3 million inmates by the end of the 1990s. Annual prison admissions expanded by a similar margin. Around 650,000 people are now annually sentenced to a year or more in state or federal custody.

Figure 1: Prison Admissions and Populations, 1977-1998



Our analysis examines the prison admission rate because it is likely to be most directly related to labor market conditions. A rising gap between rich and poor may affect admissions by increasing crime rates among low-income men or by increasing the rates of arrest and court commitment to prison. Time served in prison, on the other hand, is only observed when a prisoner is released. In this case, the effects of the economy will only be seen with a long and indeterminate lag. We might also follow other research by analyzing incarceration rates (e.g., Jacobs and Helms 1996; Greenberg and West 2001), but this bundles together the immediate effect of the labor market on admissions and the lagged effect on time served.

Aggregate figures on imprisonment conceal large educational and racial disparities. According to the 1997 Survey of Inmates of State Prisons, prisoners average less than 11 years of schooling compared to more than 13 years of schooling among men under age 40 in the non-institutional population (Western and Pettit 2005). Censuses of correctional facilities find that the imprisonment rate of African Americans is about seven times higher than that of whites. Disaggregated prison admission rates that capture these inequalities can be calculated using data from the National Corrections Reporting Program (NCRP). The NCRP data provide an annual census of all prison admissions and releases in 38 reporting states, covering 80 to 90 percent of the total prison population. The NCRP data record a prisoner's age, race and ethnicity, education and offense. Combining the NCRP data with aggregate figures on total prison admissions yields estimates of the numbers annually entering prison for white and black men at different ages and levels of education.

Table 1: Percentage of Non-institutional Men, Ages 20-39, Annually Entering Prison, by Education and Race

	1983-1988	1989-1994	1995-2001
Whites			
Less than High School	1.55	2.45	3.37
High School or GED	.32	.39	.56
Some College	.06	.06	.06
Blacks			
Less than High School	7.09	14.59	16.33
High School or GED	1.42	2.43	2.87
Some College	.49	.72	.54

Source: Figures are calculated with data from the National Correctional Reporting Program (1983-2001), and the Outgoing Rotation Group files of the Current Population Survey (1983-2001).

Table 1 reports prison admission rates for young black and white men from 1983 and 2001.¹ Unlike most studies of imprisonment, we distinguish admission rates for those without high school diplomas or GEDs, high school graduates and those with at least some college. For blacks and whites, high school dropouts are about five times more likely to go to prison in a given year than men who have completed high school. The prison admission rate rose sharply for low-education men but little among the college-educated. Racial disparities are also pronounced. In line with aggregate statistics on incarceration rates, the NCRP data indicate that rates of prison admission for African Americans are five to 10 times higher than for whites. The combination of racial and educational inequality strikingly affects young black male dropouts. We estimate that one in six black male dropouts went to prison every year in the late 1990s. The protective effects of college education are also shown; fewer than 1 percent of college-educated black men were admitted to prison in 2001. These patterns are similar to the lifetime risks of incarceration calculated by Pettit and Western (2004), whose estimates are based on different data sources.

Disaggregated prison admission rates show that race and class disparities are extremely large, far larger for example than inter-state variation in incarceration rates. Whereas Louisiana's incarceration rate of 801 per 100,000 exceeds Maine's (149) by a factor of five (Maguire and Pastore 2005, Table 6.23), the relative risk of imprisonment of a black male dropout is more than 250 times higher than for a college-educated white man (16.33 compared to .06 percent). Understanding the vast race and class disparities in imprisonment thus seems central to explaining the prison boom. High rates of imprisonment among disadvantaged men are usually attributed to their high rates of offending and to the social control efforts of authorities. We next review theories of race and class inequalities in crime and social control, and then propose an empirical test. This test isolates the mounting risk of imprisonment among young disadvantaged men that is independent criminal behavior, but linked to economic status.

The Labor Market and Crime

Are high rates of prison admission among low-education men due to their high rates of crime? Merton's (1968, 223) social strain theory provides the seminal justification, "The moral mandate to achieve success... exerts pressure to succeed by fair means if possible and by foul means if necessary." Frustration at blocked opportunities might drive the poor to crime so they might access the material success enjoyed legally by the middle class. In these cases, the crime-involved poor may have "withdrawn their attribution of legitimacy" to norms of law-abiding behavior (Cloward and Olin 1960, 19). Blau and Blau (1982) go further, arguing that ascriptive inequality (such as racial inequality), more than inequality based on achievement, appears particularly illegitimate. High levels of racial inequality, rather than economic disadvantage, may fan the frustrations that trigger crime.

Theories of informal social control likewise anticipate more crime among the economically disadvantaged. The routines of steady employment, independent of its economic attractions, reduce opportunities for offending. Researchers also find that men in primary sector jobs – where work is consistent, routinized and monitored – commit less crime than men in the secondary labor market where employment is irregular (Sullivan 1989; Crutchfield and Pitchford 1997). Low wages and unemployment may also foster crime indirectly by undermining the bonds of family and neighborhood. Stable two-parent families can monitor children's activities and divert them from the peer networks that provide a familiar context for delinquency (Sampson 1987). Poor families, which are more likely to be headed by a single parent, have fewer resources to restrain delinquency (Hagan 1993). Consequently, poor neighborhoods with many single-parent families have been found to have high levels of violence (Morenoff et al. 2001).

The class-crime connection is unevenly supported by empirical studies. The relationship is weakest in research on self-reported offending (Tittle et al. 1978). Still, official records from police and courts consistently show that lower class men and male youth are more involved in crime and delinquency than the middle class. Individuals in poor and minority neighborhoods are also likely to self-report crime at relatively high rates, regardless of their own social class (Braithwaite 1980).

Ecological time series and panel studies of states and counties offer stronger support for labor market effects on crime. (Chiricos 1987 and Freeman 1995 provide reviews.) Ecological studies often distinguished the effects of absolute deprivation (measured by unemployment rates or income levels) and relative deprivation (measured by inequality statistics). LaFree and Drass (1996), for example, find that race-specific arrest rates increased during periods of rising intra-racial income inequality, but an absolute measure of economic well-being was not consistently associated with arrest rates. Broad trends, however, are difficult to reconcile – crime rates escalated in the decade from 1965 while economic inequality declined. Land, McCall and Cohen (1990) are skeptical that the effects of absolute and relative deprivation can be convincingly

separated. Their analysis of city- and state-level data from three census years estimates the effects of an omnibus measure of economic deprivation that includes a weighted sum of the poverty rate, a Gini index of family income inequality and median family income. The estimated effect of economic deprivation on homicide rates increases at the city and state levels between 1950 and 1980. (Liska and Bellair 1995 report similar results.) Ecological studies reporting a connection between crime and the labor market capitalize on the sharp increase in crime rates between the mid-1960s and mid-1970s.

Our interest focuses on the link between economic conditions and crime after 1980 when the labor market situation of low-skill men significantly deteriorated. Freeman (1996) reflects on these later decades arguing that "the depressed labor market for less skilled men in the 1980s and 1990s has contributed to the rise in criminal activity by less skilled men." Despite Freeman's claim, quantitative studies provide little evidence of a consistent relationship between labor market conditions and crime rates from 1980 through 1999. Fowles and Merva (1996) analyze 28 metropolitan areas between 1975 and 1990 and find a stable association between household income inequality for several categories of violent crime. However, Doyle and her colleagues (1999) could not reproduce this result in their study of crime rates in 48 states from 1984 to 1993. Trends in a national series of youth homicide arrests, 1967-1998, were also weakly related to income inequality and reliably related only to unemployment rates among whites but not blacks (Messner, Raffalovich and McMillan 2001). These ecological studies suggest that analyses of states and national time series have not consistently linked levels of offending to either incomes or employment in the period when low-skilled men's economic opportunities deteriorated most – the 1980s and 1990s.

The ecological regressions are limited by their inference of crime among the poor from aggregate crime rates for the whole population. Ethnographic research helps fill the gap by studying crime in poor urban neighborhoods. Ethnographers have identified entrepreneurial gangs as a key source of economic opportunity for young men in urban communities characterized by chronically high rates of joblessness. Bourgois' (1996) research on Hispanic drug gangs views the sale and distribution of crack cocaine as a response to depleted economic opportunities in inner cities. Venkatesh and Levitt (2000) find that drug gangs have become important economic organizations in poor urban areas. Their research on Chicago's "outlaw capitalism" shows that drug gangs have a well-defined organizational hierarchy in which incomes are steeply graduated from the street sellers at the bottom to the managers at the top. Other researchers more generally claim that drug dealing in inner cities proliferated as legitimate, low-skill, employment opportunities diminished in the 1980s and 1990s (Duster 1997; Tonry 1995; Anderson 1999).

In sum, theories of social strain and informal social control lead us to expect that the declining economic situation of low-skilled men increased their criminal activity in the 1980s and 1990s. This hypothesis receives uneven support from quantitative studies that are hamstrung by a highly aggregated research design. Contextual and disaggregated ethnographic observation directly observes crime among the poor. This work provides clearer evidence that drug dealing and other crime became more common among disadvantaged young men in response to the collapse of low-skill urban labor markets in the 1980s. Increasing crime in poor urban neighborhoods thus provides one explanation of rising incarceration rates among young minority men with little schooling.

The Labor Market and Social Control

In the sociology of punishment, criminal behavior in the population is only weakly related to the scale of imprisonment (Garland 1991). Instead, for one theoretical approach, criminal punishment expresses authorities' reaction to the perceived menace of marginal populations.

Inspiration for this argument is often traced to Georg Rusche (1978 [1933]; Rusche and Kirchheimer 2003 [1939]) who viewed historic variation in forms of punishment – fines, torture, imprisonment – as products of the economic situation of the dispossessed. The unemployed, representing the most desperate and crime-prone workers, occupy a special place in this theory. Elites would stem the threat of rising crime by intensifying punishment as the surplus population expanded. Punishment would then become less wasteful of labor, less intense, under conditions of labor scarcity.

For the contemporary descendants of Rusche, the criminal justice system embodies a social conflict between authorities and marginal populations. While Rusche viewed punishment chiefly as means to deter crime, modern proponents see punishment as controlling a broad array of threats to social order posed by troublesome populations. The level of punishment is expected to vary with the size of the troublesome group. Empirical studies defined threatening populations in terms of their employment status, (e.g., Box and Hale 1982), race and ethnicity (Hall 1978), or some combination of the two (Melossi 1989; Spohn and Holleran 2000). If not through crime, how do marginal populations endanger social order? Some claim that troublesome populations are viewed by authorities as jeopardizing not just public safety, but the economic order in general (Quinney 1974; Spitzer 1975). In addition to stealing from the rich, the able-bodied poor may refuse to work, reject the dominant values of hard work and achievement, and advocate revolutionary change (Spitzer 1975). The destabilizing potential of low-income young men at the bottom of the social structure is well captured by Spitzer's (1975, 645) term, "social dynamite," evoking volatility more than durable disadvantage. In this analysis, threats to public safety and social order become identified with marginal groups that become the focus of social control efforts. Wacquant (2000) placed the sociological analysis of criminal punishment in the modern context of the jobless ghetto. Like Freeman and others, Wacquant (2000) sees growth in the penal system as closely connected to the decline of urban labor markets in the later postwar period. While Freeman emphasizes the intervening role of crime, Wacquant's analysis describes a "prisonization of the ghetto" that represents the latest form of institutionalized white supremacy – a political response to the demise of the ghetto as an economically viable, yet controlling, institution in the lives of African Americans. From this perspective, the growth in imprisonment is rooted not in rising urban crime, but the failure of the ghetto as a form of institutionalized social control over young black men.

In the abstract, social threat accounts of punishment sound conspiratorial. By what concrete process do dominant groups actively use the state's legitimate violence against those who are relatively powerless? Socio-economic disadvantage is linked to criminal justice supervision in three main ways. First, legislators perceiving poor and marginal populations as dangerous or unruly may write criminal law to contain the threat. The legislative offensive against the disadvantaged has been claimed most forcefully in the area of drug policy. Over the past three decades, Congress and state legislatures widely adopted mandatory prison sentences for drug possession or trafficking (Bureau of Justice Assistance 1998, 7). Consequently, the risks of imprisonment given a drug arrest and the proportion of drug offenders in state prison increased sharply from 1980 and 1996 (Blumstein and Beck 1999). In the course of the prison boom, the passage of tough sentences for drug sentencing was thus associated with intensified criminalization of poor urban minorities (Tonry 1995; Dubber 2001).

Second, police may surveil and arrest the poor more frequently than the affluent. Police partly focus their efforts in poor urban communities because more of daily life and illegal activity transpire in public space. Ethnographers suggest that in urban areas, the purchase and consumption of drugs, drunkenness and domestic disturbances are more likely to take place in public. In the suburbs, drug use, drunkenness, and domestic disturbances

are more likely to take place in private homes. Consequently, poor urban residents are more exposed to police scrutiny and risk arrest more than their suburban counterparts. (e.g., Duneier 1999; Anderson 1999; Bourgois 1996). Police also tend to view poor minorities as more involved in crime, treating them with greater suspicion (Wilson 1968, ch. 2; Chambliss 2000).

Third, judges may treat poor defendants harshly in court. Judges can view poor defendants as more culpable with less potential for rehabilitation (Kluegel 1990; Steffensmeier, Ulmer and Kramer 1998, 770; Greenberg 1977; Albonetti 1991). Thus, controlling for offense characteristics and criminal history, sentencing research finds the highest probability of incarceration among low-status unemployed defendants – either minorities or those living in high unemployment areas (Spohn and Holleran 2000; D'Alessio and Stolzenberg 2002).

Social threat accounts of punishment suggest that rising inequality may increase incarceration among the disadvantaged. Most research on the economic determinants of incarceration follow Rusche and Kirchheimer by studying the effects of unemployment and other measures of surplus population. Chiricos and Delone (1992) report that national time series analyses consistently show a positive effect of unemployment on prison admissions. However, this pattern does not hold in the 1990s when historically low unemployment rates were associated with high levels of incarceration (Michalowski and Carlson 1999). Indeed, recent studies by David Jacobs and his colleagues find no evidence for the effects of unemployment on incarceration in a time series (1950-1990) or a panel study of 50 states in 1970, 1980 and 1990 (Jacobs and Helms 1996; Jacobs and Carmichael 2001).

Although economic analysis of criminal punishment focuses on unemployment effects, several studies examine the impact of incomes. Strongest results are reported by Jacobs and Helms (1996, 2001) who find several positive and significant effects of income inequality on imprisonment rates (1953-1998) and prison admission rates (1950-1990). Income inequality effects are much weaker in samples of states or counties where cross-sectional variation predominates. Panel studies of states show that Gini indexes on family incomes are only weakly related to prison incarceration rates, after controlling for crime rates and the racial composition of the population (Greenberg and West 2001). Jacobs and Carmichael (2001) fit a fixed-effect model to panel data, showing that states with the largest increases in inequality did not experience the largest increases in incarceration rates.

Previous research unevenly indicates the effects of the labor market on the scale of incarceration, but aggregated measurement and inefficient research designs may have prevented strong findings. Theory suggests that unemployment and falling wages increases incarceration among the disadvantaged. Still, most studies of labor market effects analyze aggregate crime and incarceration rates. These rates have been defined on the whole U.S. population, or for states or metropolitan areas. A few studies separate the involvement of blacks and whites in the criminal justice system (LaFree and Drass 1996; Bridges and Crutchfield 1988). Even here race is used as a proxy for economic status and the possibility that affluent blacks are treated differently from poor blacks is obscured by the aggregated research design. A strong test of the effects of labor market conditions on incarceration requires a more disaggregated analysis where incarceration risks are observed for those who are most economically marginal.

Incarceration research on economic effects also applies inefficient designs that use relatively little information in statistical analysis. Time series studies, which offer the strongest support for inequality effects on incarceration, rely on data sets of 30 or 40 time points (e.g., Jacobs and Helms 1996). In these analyses there are often large numbers of plausible models and long lists of correlated covariates. Results are thus highly sensitive to the choice of model.

Panel studies of states use more information, but time series tend to be sparse consisting of just two or three time points (Jacobs and Carmichael 2001; Greenberg and West 2001; Beckett and Western 2001). Growth in economic inequality has been uneven, accelerating in the early 1980s and flattening out at a high level through the 1990s. This variation is missed in panel studies. A stronger design examines annual variations in a cross-section of the population, capturing the ebb and flow of the gap between rich and poor households.

A Disaggregated Analysis of Imprisonment

To address the limits of previous research we develop a disaggregated approach to estimating the effects of labor market conditions on incarceration. Using annual data for 1983 to 2001, men's probability of going to prison is calculated for age-race-education groups by combining data from the NCRP and data on the non-institutional population. These admission rates are estimated for four age groups, (1) 20-24, (2) 25-29, (3) 30-34, (4) 35-39; three levels of schooling, (1) high school dropouts, (2) those with high school diplomas or equivalency but no college, and (3) those with at least some college; and two race groups, (1) non-Hispanic whites, and (2) non-Hispanic blacks. The dependent variable thus gives the prison admission rate in a given year for black dropouts ages 20 to 24, 25 to 29, 30 to 34, and 35 to 39. Admission rates are then recorded for black high school graduates in these four age groups and again for black men with some college. Admission rates are then calculated for whites in all these age-education categories. This coding scheme provides a 4 x 3 x 2 table for each of 19 years, yielding a sample of 456 admission rates for analysis. Admission rates calculated from the NCRP are largely consistent with those from other data sources (see Appendix), and the large samples of the NCRP allow sharp estimates of admission rates for specific subgroups.

Our key predictors are disaggregated measures of employment and weekly earnings calculated from the merged outgoing rotation group files of the Current Population Survey. Like the prison admission rates, weekly earnings and employment figures are calculated for men's age-race-education subgroups. So, for example, weekly earnings are calculated for black male dropouts ages 20 through 24, 25 through 29, and so on. Median weekly earnings data indicate a clear race gap that has persisted among young men throughout the 1980s and 1990s (Table 2). From 1983 through 2001, the weekly earnings of young white men exceeded those of young blacks at the same level of education by 25 to 30 percent. The table also indicates increasing earnings inequality by education among white men that is well documented in other research (e.g., Bernhardt et al. 2002). In the 1980s, young white men with at least some college education earned 47 percent more than young white male dropouts. By the late 1990s, this earnings gap had grown to 62 percent. Inequality did not grow among black men due to the large decline in weekly earnings for blacks who had attended college. The earnings of black male high school dropouts were also more robust than the earnings of their white counterparts.

Table 3 reports trends in employment by education for young black and white men. Employment is measured by the percentage of the non-institutional population who are in full-time or part-time work. Employment rates for whites at different levels of education remained stable throughout the 1980s and 1990s. About three-quarters of young white dropouts were employed in comparison to about 90 percent of young whites with at least a high school education. In contrast, employment declined among black dropouts, from 58.6 to 51.1 percent but grew slightly among the college-educated. In short, earnings inequality grew among young white men in the 1980s and 1990s, but employment inequality grew among young black men.

Table 2: Median Weekly Earnings (1999 dollars) of Male Workers, Ages 20-39, by Education, Race and Ethnicity

	Less Than High School	High School or Equivalency	Some College	College Dropout Earnings Ratio
Whites				
1983-1988	491.24	589.74	722.46	1.47
1995-2001	437.79	539.61	707.59	1.62
Blacks				
1983-1988	368.33	463.13	590.38	1.61
1995-2001	338.46	419.29	535.12	1.58

Note: Figures are calculated from the Outgoing Rotation Group files of the Current Population Survey (1983-2001).

Table 3: Average Percentage of Men Employed, Ages 20-39, by Education, Race and Ethnicity

	Less Than High School	High School or Equivalency	Some College	College Dropout Earnings Ratio
Whites				
1983-1988	76.6	90.1	86.0	1.12
1995-2001	76.6	89.6	87.3	1.14
Blacks				
1983-1988	58.6	78.9	79.2	1.35
1995-2001	51.5	76.2	82.2	1.60

Note: Figures are calculated from the Outgoing Rotation Group files of the Current Population Survey (1983-2001).

To study the effects of earnings and employment on imprisonment we write a regression for the prison admission rate ρ_{tijk} , the proportion of the non-institutional population going to prison in year $t = 1983, \dots, 2001$, for men in race i ($i = \text{black or white}$) at education level j ($j = < \text{HS, HS/GED, or } > \text{HS}$), in age-group k ($k = 20-24, 25-29, 30-34$ or $35-39$). The effects of earnings and employment on the risk of prison admission can be written with the regression equation:

$$\log(\rho_{tijk}) = \beta_0 + \beta_1 W_{tijk} + \beta_2 E_{tijk} + X'_{tijk}\gamma + \epsilon_{tijk}$$

where W_{tijk} is the median weekly earnings for a specific race-age-education group in year t ; E_{tijk} is the subgroup employment rate; X_{tijk} is a vector of other covariates like crime rates or dummy variables for demographic characteristics; and ϵ_{tijk} is an error term. With this regression, the labor market effects describe how wages and employment are associated with rates of prison admission across the categories of age, race and education.

This analysis focuses just on the labor market determinants of incarceration and neglects many of the institutional and political variables that are often studied in research on state-level incarceration rates. An alternative approach could calculate disaggregated age-race-education prison admission rates for each state. Such an approach would take advantage of the state-level variation in the NCRP and the demographic disaggregation used here. A state-level analysis could also introduce the political and institutional variables that were found to be important studies of incarceration in the states (e.g., Jacobs and Carmichael 2001; Greenberg and West 2001). Unfortunately, such an approach is infeasible because some groups are too

small to accurately describe at the state level. For example, in 1999 black male dropouts, ages 20 to 24, constituted just 1 percent of the male population under 40. With groups this small, admission rates, employment rates, wages and crime rates can be estimated at the national level with the large samples of the CPS and the NCVS, but not at the level of individual states.

Although the disaggregated imprisonment rates provide more detailed measurement, estimates of wage and employment effects with this design are subject to two offsetting biases. First, by taking many low-skilled, crime-involved men out the workforce, imprisonment will tend to raise observed levels of employment and earnings. Imprisonment effectively truncates the lower tail of the earnings and employment distribution (Western and Pettit 2005). The positive effect of imprisonment on employment and earnings will tend to bias the expected negative effects of employment and earnings on prison admissions towards zero. On the other hand, large numbers of entering prisoners accompany large numbers of prison releases. The re-entry of ex-prisoners into the labor market will tend to lower employment rates and lower wages. This negatively biases the estimated effects of earnings and employment on admission. Under the prison boom, prison admissions have slightly exceeded prison releases so the net bias, at least in the short-term, will tend to be small.

Bias may also result from the strong upward trend in prison admission rates. A non-stationary time series, in which the mean of the series depends on time, can bias least squares estimates. However, tests of unit autocorrelations – unit root tests – and other diagnostics show little evidence of non-stationarity in prison admission rates after adjusting for year fixed effects and covariates. There is evidence of serial correlation in the analyses for white men (with autoregression coefficients of .4 to .6) although adjusting for time dependence yields results similar to those reported below.

Distinguishing the Effects of Crime and Punishment

The labor market may affect prison admissions through the criminal behavior of the disadvantaged or the social control efforts directed at them by the authorities. Studies of national time series or panels of states have tried to identify the social control effect by statistically adjusting for crime rates (Jacobs and Helms 1996; Chiricos and Delone 1992). We extend this approach in several ways.

First, national time series and state-level analyses use aggregated measurements of crime. In our analysis, we control for criminal behavior using disaggregated data for age-race-education groups. Because violent crime usually involves victims and perpetrators with similar social status, we tap crime among blacks and whites at different levels of age and education with victimization data from the National Crime Victimization Survey (NCVS). The NCVS annually asks respondents about their exposure to violence over the past year. The data can be used to construct violent victimization rates – the number of victims of violence divided by the population – for different offenses and for different subgroups. As we would hope, the victimization rates, like criminal offending, are strongly patterned by age, race and education. The variation can be described by regressing the annual rate of violent victimizations per 1000, V , on dummies for education (HS for high school graduates and SC for those with some college), race (B for blacks), and age (A_1 for 25-29 year olds, A_2 for 30-34 year olds, and A_3 for 35-39 year olds):

$$E(V) = 51.75 - .45HS - .40SC + .15B - .41A_1 - .64A_2 - .60A_3$$

$$(.06) \quad (.05) \quad (.05) \quad (.04) \quad (.06) \quad (.06) \quad (.06)$$

$$R^2 = .35, N = 456$$

where OLS standard errors are in parentheses. These descriptive results show the relatively high risks of violent victimization among young, poorly educated, black men. Although disaggregated victimization rates provide an indicator of crime for specific age-race-education groups, they obviously do not directly measure crime by perpetrators or homicide victimization. Direct measures of crime that include homicide are usually taken from the aggregate crime statistics compiled from police reports in Uniform Crime Reports (UCR). We also analyzed prison admission, controlling for UCR age-race specific homicide rates and obtained results substantively identical to those below.

Second, research on the deterrent and incapacitation effects of imprisonment indicate that increased imprisonment reduces crime rates (Levitt 1996; Rosenfeld 2000). The dependence of crime rates on imprisonment may be a significant source of bias in the 1990s as crime fell while incarceration rates increased. Past analyses of crime rates used instrumental variables to identify exogenous variation in imprisonment that does not depend on the level of crime (Levitt 1996). Instead of trying to identify exogenous variation in crime that might drive imprisonment, we fit fixed effects that capture unmeasured variables that place people at risk of criminal behavior or incarceration. In the most detailed specifications below, we introduce fixed effects for every race-age-year cell in our tabular data. Variation in criminal offending by race, age and year is well-established in studies of official statistics and victimization data (e.g., Hindelang 1978, 1981; Gottfredson and Hirschi 1990; Land, McCall and Cohen 1990). Fixed effects – estimated with dummy variables for all race-age-year subgroups – account for all variables that vary by race, age or year and the interactions among them. For example, the effects of UCR homicide rates which are available annually for blacks and whites above and below age 24 are accounted for by the fixed effects model. We can also think of the fixed effects as tapping the criminal propensity of the population that is not fully reflected in observed crime rates. Involvement in drug and property crime, which are unmeasured here, may also be correlated with age and race and to that extent will be captured by the fixed effects. In the early 1990s, imprisonment rates increased but crime rates held steady leading some to argue that the population's propensity to commit crime had increased (Freeman 1996). We can treat this propensity as an unobserved variable absorbed by the fixed effects.

Although the current modeling strategy tries to distinguish the effects of crime from social control, there are certainly limitations. Treating fixed effects as capturing only the propensity to commit crime neglects social control processes that mostly affect certain race-age groups, particularly young black men. If drug-war policing and criminal sentencing largely affected young black men across the educational distribution, the social control effect will be captured by the fixed effects. Criminal sentencing also became more punitive in the 1980s and 1990s and this trend will be captured by yearly fixed effects. Similarly, variation over time in presidential partisanship or urbanization will also be captured by the fixed effects. In this way, the large number of determinants of imprisonment, besides labor market conditions and levels of crime, can be absorbed by the fixed effects and bracketed from the analysis. On the other hand, if there are processes that operate differently across levels of education or at different points in time, such effects will be confounded with the wage, employment, and crime variables.

Despite these limitations, the current analysis introduces far more detailed information about the risks of incarceration than earlier research. The robustness of estimated earnings and employment effects can be examined by introducing age-race fixed effects and victimization rates which are known to be correlated with criminal offending.

Results

Before examining the effects of employment and wages, we use a regression analysis to describe educational inequality in prison admission. Education is measured by dummy

variables for high school graduates or equivalents, and those with at least some college. Controlling for race, the level of violent crime, age and the upward linear trend in imprisonment rates, the risk of imprisonment among the college educated is only 4 percent ($e^{-3.33} \approx .04$) as high as the imprisonment risk among high school dropouts (Table 4, column 1). High school education is also associated with a reduced risk of incarceration. High school graduates are only 20 percent ($e^{-1.63} \approx .20$) as likely to be sent to prison as dropouts.

Table 4: Results from Regression of Men's Log Annual Prison Admission Rates, by Age, Race and Education

	All Men		Whites	Blacks
	(1)	(2)	(3)	(4)
Intercept	-.13 (1.67)	-.11 (.69)	-.39 (2.76)	1.47 (8.64)
High School	-1.63 (47.11)	-1.55 (21.39)	-1.43 (20.14)	-1.58 (14.71)
College	-3.33 (75.95)	-2.88 (33.63)	-3.11 (34.53)	-2.58 (19.62)
Violent Crime × 10	.19 (5.60)	.11 (1.15)	.38 (3.61)	.08 (.83)
Black	1.81 (59.80)	1.72 (26.31)	—	—
Year	.04 (14.11)	.04 (3.01)	.08 (7.86)	.06 (4.34)
Year × High School	—	-.01 (1.51)	-.02 (3.30)	-.01 (.65)
Year × College	—	-.05 (6.85)	-.06 (6.72)	-.05 (4.61)
Year × Violent Crime	—	.01 (.82)	-.02 (2.16)	.01 (1.18)
Year × Black	—	.01 (1.84)	—	—
R ²	.97	.97	.98	.96

Notes: Statistics for 1983-2001. High school indicates high school graduation or equivalency, college indicates at least some college. Sample size for all men is 456; sample sizes for whites and blacks is 228. Regressions also control for the effect of age. All standard errors are calculated using a sandwich estimator to account for non-constant error variance (Wu 1986). Absolute t statistics are in parentheses.

The remaining models in Table 4 examine whether education and racial inequality in imprisonment changed over time. Changes in the race and education effects are modeled with interactions with the linear time trend (Year). The interaction effect indicates that educational inequality in incarceration steadily increased. In 1983, prison admission rates among the college educated were only 4 percent as high as those for high school dropouts. By 2001, this relative risk had shrunk to just 2.2 percent. In contrast to the increase in educational inequality in imprisonment, there is no evidence of deepening racial inequality. The race-year interaction

effect is negligibly small, showing that blacks' relative risk of incarceration remained about 6 times higher than whites' ($e^{1.81} \approx 6.1$) throughout the 1980s and 1990s.

The final two columns of Table 4 report results separately for black and white men. The large intercept for black men indicates they are at much greater risk of imprisonment than whites (1.47 compared to -.39). The smaller education coefficients suggest that the risk of imprisonment is less class-stratified among blacks; increasing education reduces imprisonment more for whites than blacks. Still, blacks and whites both experienced increasing educational inequality in imprisonment (Table 4, columns 3 and 4). Among whites, the effects of high school and college became more negative with time, indicating that the growth in white imprisonment was concentrated among high school dropouts. Among black men, only the college-by-year interaction is significant, showing that the growing likelihood of imprisonment was broadly experienced by all those with just a high school education. Only college-educated black men were spared the increasing risk of incarceration. Although racial disparities in imprisonment have not increased in the past 20 years, prison time has become more widely distributed across the population of young black men without college education.

Table 5 reports estimates of the effects of earnings and employment on prison admission among young black and white men. Only variation in admission rates across levels of education contributes to the estimates, after violent crime and year-race-age fixed effects are controlled (Table 5, column 1). In this model, a \$100 increase in median weekly earnings—roughly the earnings gap between dropouts and high school graduates—is estimated to halve the risk of prison admission ($e^{-.73} \approx .48$). A 10 percent gap in employment rates—roughly equal to the dropout-graduate employment gap among whites—is associated with a 20 percent reduction in the risk of imprisonment.

Table 5: Results from Regression of Men's Log Annual Prison Admission Rates on Earnings, Employment and Violent Crime

	All Men		Whites	Blacks
	(1)	(2)	(3)	(4)
Intercept	2.96 (2.26)	3.13 (6.97)	1.87 (2.35)	4.04 (12.03)
Earnings (\$100s)	-.73 (16.07)	-.38 (7.44)	-.53 (8.34)	-.30 (4.25)
Employment (10% <i>s</i>)	-.34 (5.09)	-.11 (1.86)	.16 (1.66)	-.17 (2.52)
Violent Crime	.87 (5.16)	.01 (.19)	-.06 (1.00)	.03 (.58)
Fixed Effects				
Year × Race × Age	Yes	No	No	No
Education × Race × Age	No	Yes	No	No
Education × Age	No	No	Yes	Yes
Within-group R ²	.70	.16	.26	.14
Parameters	155	27	15	15

Notes: Statistics for 1983–2001. Absolute t statistics are in parentheses. All standard errors are calculated using a sandwich estimator to account for non-constant error variance (Wu 1986).

An alternative model fits fixed effects to every education-race-age cell (Table 5, column 2). This specification is similar to fixed effects models for panel data (Hsiao 1985, ch. 3) in which only longitudinal variation contributes to the analysis. In this model, the earnings and employment effects are again significant, but they have declined by half to two-thirds. The estimates indicate that a \$100 increase in weekly earnings is associated with a 32 percent reduction in the risk of imprisonment. A 10 percent fall in the employment rate is associated with an 11 percent increase in the risk of imprisonment.

The regression analysis can be extended by studying how the effects of employment and earnings on imprisonment differ for blacks and whites (Table 5, columns 3 and 4). A test for racial heterogeneity is motivated by claims that the economic decline of young black men with little schooling had severe effects on their risks of incarceration (Tonry 1995; Duster 1997; Wacquant 2000). Regression analysis for whites indicates that the risk of imprisonment is linked only to earnings, not employment. Because employment among young white men is not steeply stratified by education, nearly all the variation in prison admissions is accounted for by variation in weekly earnings. Real weekly earnings among white high school dropouts fell by about \$60 between the early 1980s and the late 1990s, associated with a 37 percent increase in the risk of prison admission. Imprisonment among blacks, however, is sensitive to both employment and earnings. This suggests that the growth in incarceration is tied as closely to declining employment among non-college black men throughout the 1980s and 1990s as it is to the growth in income inequality. This result is consistent with other research suggesting that the idleness of low-skilled black men in poor urban neighborhoods exposes them to greater scrutiny from police and heightens perceptions of dangerousness in the courts (Chambliss 2000; Steffensmeier et al. 1998). The estimated employment effect for black men suggests that the 7 percentage point fall in employment among black dropouts between 1983 and 2001 was associated with a 13 percent increase in the risk of imprisonment. The same risk was associated with a drop of \$44 in earnings among black high school graduates over the same period.

How might trends in prison admission be changed if inequality in earnings and employment had not increased? We address this question by comparing predicted levels of prison admissions for the period 1995 to 2001 under two scenarios. In the first, we predict admissions using the observed levels of employment and earnings. In the second, we fix employment and earnings at the average level for the 1983 to 1987 period. To predict prison admissions under our two scenarios we use estimates from the fixed effects models (3) and (4) for whites and blacks (Table 5). Because earnings and employment inequality increased from the 1980s to the 1990s and earnings and employment deteriorated for low-skilled men, we expect that imprisonment rates would be significantly lower if 1980s labor market conditions persisted through the 1990s.

The observed levels of employment and earnings reproduce the observed patterns of educational and racial inequality in imprisonment. Among blacks and whites, high school dropouts are more than 10 times as likely to go to prison than men with some college education. Black men are five to eight times more likely to go to prison than white men. If earnings and employment were fixed at their 1980s' level, the estimates indicate that prison admission rates would be between 7 and 25 percent lower by the late 1990s. The estimated reduction in admission rates is largest among poorly educated whites. These results are driven largely by the decline in real earnings among white men without a college education. If weekly earnings among young white high school dropouts had remained at 1980s levels, estimates indicate that prison admission rates by the end of the 1990s would be 25 percent lower than they were. The effects of wage and employment trends are estimated to be smaller for black men without a college education. If earnings and employment levels for young black dropouts remained at 1980s levels through the 1990s, estimates indicate that

Table 6: Predicted Average Prison Admission Rates for Men, Ages 20-39

	Employment and Earnings		
	Observed (1)	1983-87 (2)	Ratio (S.E.) (1)/(2)
<i>Whites</i>			
Less than H.S.	2.60	1.96	.75 (.05)
High School or GED	.46	.34	.74 (.05)
Some College	.06	.06	.93 (.01)
<i>Blacks</i>			
Less than H.S.	12.79	10.77	.84 (.06)
High School or GED	2.26	1.90	.84 (.05)
Some College	.59	.52	.88 (.09)

Notes: Findings based on observed and 1983-1987 levels of earnings and employment, 1995-2001. All predictions are based on model (3) and (4) from Table 5. Standard errors for the ratio of differences are calculated with simulation from the posterior predictive distribution.

prison admission rates would be 10.8, not 13 percent. The proportionate change in admission rates is nearly identical for black high school graduates. The decline in earnings and employment among blacks who finished high school is estimated to increase prison admission rates by one-sixth, from 1.9 to 2.3 percent.

Discussion

A large research literature claims that a slack labor market intensifies criminal punishment. In some accounts, rising poverty lifts crime rates and, ultimately, the scale of imprisonment. Alternatively, economic dislocations may produce anxieties among the rich about threats to social order posed by the poor. These anxieties produce a punitive trend in criminal justice policy that draws those on the margins of the labor market into the penal system. Despite these claims, empirical research unevenly supports a link between labor market conditions and imprisonment. Weak empirical support for the labor market theory of punishment results from weaknesses in research design. Although theory expects rising economic disadvantage among poorly educated men to increase imprisonment rates, previous research focused on the association between aggregate unemployment and income statistics and incarceration rates.

We presented a disaggregated analysis in which the earnings and employment of men at different ages, races and levels of education were linked to their risk of imprisonment. These detailed admission rates showed that incarceration had become common at the end of the 1990s among men with little schooling. About 16 percent of black male dropouts, ages 20 to

39, were estimated to enter prison each year by 2001. Regression analysis of detailed admission rates found that imprisonment risks shifted across levels of education, not across age or race groups. Most of the growth in the risks of incarceration were concentrated among men, particularly black men, with just a high school education. Despite the economic expansion of the 1990s, these men suffered the largest losses in earnings and employment and experienced the largest growth in imprisonment rates. We thus found that weekly earnings and employment rates were strongly related to prison admission for young black men. The empirical analysis suggests that if levels of economic inequality that were observed in the mid-1980s prevailed through the 1990s, prison admission rates among black and white men without college education would be reduced by 16 to 25 percent.

Was the growth in incarceration due chiefly to changes in the criminal justice regime or to increasing crime among low-education men? Supporting the social control account of imprisonment, these results were robust to a detailed specification of fixed effects and victimization rates to control for criminality among black and white men in different age groups at different levels of education. Of course, crime rates may vary across levels of education in ways not captured by our models. Still, the race and year effects also tap social control processes that are correlated with earnings and employment. Social control efforts fluctuate with cyclical shifts in unemployment (Chiricos and Delone 1992); and criminal sentencing increasingly resorted to imprisonment as real wages fell through the 1980s and 1990s. African Americans are at relatively high risk of incarceration even controlling for criminal offending (Blumstein 1993). Over-estimates of the social-control component of economic effects are balanced in part by biases in the model for crime in the population. Given these offsetting biases, intensified punishment – not increasing crime – seems the likely mechanism for the economic effects.

Controlling for crime across levels of education, also helps counter the concern that these results reflect the changing effects of selection as educational attainment increases. With increased levels of schooling in the population, dropouts in the late 1990s may be more crime prone than dropouts in early 1980s. If changes in selectivity contribute to educational inequality in imprisonment we would also expect to observe increasing imprisonment rates among the college-educated who accounted for a larger proportion of the population in the late 1990s than the early 1980s. There is no evidence for this effect, however. Indeed a striking feature of the prison admission trends is the stability of imprisonment rates among the college-educated.

Finally, this analysis has shown that rising economic inequality is not only associated with higher rates of imprisonment, it is also associated with increasing inequality in imprisonment. The growth in economic inequality was accompanied by the emergence of two kinds of collective experience: one among college-educated whites who were largely unaffected by the prison boom, the other among non-college educated blacks, for whom imprisonment became a common life event. Because the official criminality conveyed by a prison record affects a variety of life chances and citizenship rights, and imprisonment is increasingly concentrated at the margins of economic life, the prison boom reinforces lines of social disadvantage. More than just a social control institution, the prison contributes to the formation of poorly educated black men as a discrete social group with a distinctive life experience that differs from the mainstream. From this perspective, the progressive normalization of incarceration among poor black men represents an expansion, rather than just a by-product, of the new American inequality.

Note

1. Hispanics are not included in the analysis because they are not recorded in a consistent way across states in the NCRP data.

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Appendix

Constructing the Data

Prison Admission Rates

The prison admission rate is defined as the number of people annually entering the custody of state or federal prisons as a percentage of the non-institutional civilian and military population. Annual age-race-education cell proportions were calculated from the NCRP (Bureau of Justice Statistics 2002). These cell proportions were then multiplied by aggregate counts of male admissions obtained from the National Prisoner Statistics Series (NPS-1) of the Bureau of Justice Statistics. The NCRP data yield similar age-race distributions to the Survey of Inmates of State and Federal Correctional Facilities. However, levels of schooling in the NCRP tended to be lower than in the inmate survey. The denominator of the admission rate – the population at risk of going to prison – was calculated from the Outgoing Rotation Groups files of the CPS (Feenberg and Roth 2002), and counts of military personnel obtained from the Department of Defense.

Earnings

Earnings are measured annually by the median weekly earnings of each age-race-education cell for all male workers, deflated by the CPI-U. Earnings are earnings-weighted figures from the Outgoing Rotation Group files of the CPS. Additional analysis examined earnings for full-time full-year workers and measures of earnings relative to different percentiles of the earnings distribution, but these alternative specifications yield results identical to those reported in the paper.

Employment

Employment is measured by the employment to population ratio of each age-race-education cell for the male non-institutional and civilian and military population. Employment rates are calculated from survey-weighted data in the Outgoing Rotation Group files of the CPS and counts of military personnel from the Department of Defense.

Violent Crime

Violent crime is measured by the total number of personal crimes suffered as a proportion of the civilian non-institutional population. The number of criminal victimizations is given by the incident-based files of National Crime Victimization Survey, 1983-2001 (Bureau of Justice Statistics 1997, 2004, 2005). Victimization are calculated separately for blacks and whites, ages 20-50, at different levels of education. Denominators for the victimization rates were taken from the Outgoing Rotation Groups files of the CPS.