Siddharth Chandra and Angela Williams Foster

The "Revolution of Rising Expectations," Relative Deprivation, and the Urban Social Disorders of the 1960s

Evidence from State-Level Data

This essay analyzes the economic conditions associated with urban social disturbances in the United States in the 1960s. Using state-level data on the social disturbances in conjunction with census data from the Integrated Public Use Microdata Series, the analysis tests the relationship between measures of wage inequality and measures of social disorder. In conjunction with accounts of the unrest, the findings support the rising expectations hypothesis, an aspect of the relative deprivation view of racial violence. In particular, overall wage inequality is a significant factor in the disturbances. Also, although the residual or discrimination component of wage inequality and the human capital component are related to the disturbances in the same way, this relationship is stronger for the human capital component of inequality.

Background

Sociopolitical disturbances have long been associated with economic factors, from economic upheaval to economic inequity. Since the urban unrest in the 1960s in America, researchers have studied this association in great depth. From the important work of Seymour Spilerman (1970a, 1971, 1972, 1976) to more recent work (Olzak and Nagel 1986; Myers 1997), sociologists have advanced a variety of explanations for the unrest, from racial economic competition to diffusion to deprivation. Interestingly, but somewhat counterintuitively, deprivation has been dismissed as a possible driver of the unrest, even though it occupies a central place in theories of ethnic and racial unrest.

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Some theories of deprivation, including Mancur Olson's (1963), emphasize levels and changes in the absolute condition of populations. Others, such as Leonard Berkowitz (1968), Ted Gurr (1970), and James Davies (1979), stress the importance of the condition of some groups relative to others as being an important factor. The concept of *relative deprivation* captures the connection between specific forms of perceived inequality and sociopolitical unrest and violence. Relative deprivation is the perceived difference between the material and social condition that individuals think they should achieve, also called *value expectation*, and the condition people believe they will achieve, called *value capability*. The greater the difference between value expectation and value capability, the greater the level of discontent that individuals feel at their station in life. When there are systematic patterns of discontent at the racial or ethnic-group level, disturbances involving different racial and/or ethnic groups are likely to occur.

Value expectation is based both on comparisons individuals make between their condition and that of other individuals and on their experience of change in their own condition over time (Runciman 1966; Gurr 1970; Davies 1979; Midlarsky 1988). As a product of this literature, the ongoing *Minorities at Risk* project has attempted to create an early warning model of risk factors for identity-based conflict (Gurr 1993). A notable feature of that project and related studies is their use of cross-national data, necessitating the use of a variety of implicit and explicit controls for country-specific context.

After the social disturbances of the 1960s, political scientists and sociologists devoted much attention to the causes and conditions of racial violence in the United States. Some studies, including Jiobu 1971 and Morgan and Clark 1973, showed that socioeconomic conditions specific to cities seemed to contribute little to explaining violent events. Scholars of the time interpreted this as an emphasis on national forces as the prime driver of the disturbances. Joel Lieske (1978), in contrast, found evidence challenging the national view, suggesting instead that local conditions were crucial to an understanding of the phenomena. That study presented a developmental interpretation of the riots and noted a nonmonotonic curvilinear relationship between the social condition of blacks and the disorder propensity of cities. Using data for a cross section of U.S. cities, Lieske (ibid.) found that violence was most likely to occur in those cities in which there was a mix of open and closed characteristics, representing a mix of opportunity for and discrimination against black populations.[1] Using cross-national data, Edward Muller (1985) found

a similar curvilinear relationship between regime repressiveness and political violence, and Gregg Carter (1986) found one between inequality and riot activity in urban America in the 1960s. Following the empirical approach of Lieske and Carter, this essay analyzes the relationship between inequality, relative deprivation, and social disturbances using a curvilinear or nonmonotonic specification.

An early study by William Ford and John Moore (1970; cited in Lieske 1978) showed that the incidence of rioting was highest in cities in which socioeconomic conditions of blacks had shown the greatest improvement.[2] As will be shown, this observation is consistent with the "revolution of rising expectations" explanation highlighted in the Kerner Commission Report, a key document on the disturbances (National Advisory Commission on Civil Disorders 1968: 106–7). The 11-member commission, headed by Otto Kerner, then-governor of Illinois, was established on July 28, 1967, by President Lyndon B. Johnson to investigate the racial disorders and their causes and propose steps to prevent the recurrence of such incidents. The 425-page report concluded that American society was "moving toward two societies, one black, one white—separate and unequal" (ibid.: 1). It recommended sweeping national action in the areas of employment, education, the welfare system, and housing to halt this trend. The Kerner Commission Report attributed the disorders to rising expectations among black urban populations and these rising expectations, in turn, in part to the legal success of the National Association for the Advancement of Colored People on such issues as the abolition of school segregation. More recent studies that take this approach include Carter 1986 and Dittmer 1995. The analysis in this essay is founded explicitly on the key role that rising expectations played in the disturbances. Finally, related literatures in political science and sociology have analyzed the consequences of inequality for policy (Dye 1969), of policy for inequality (Brown 1984; McCrone and Hardy 1978; Fosu 1997), and of social activism for location decisions of blacks (Stahura 1986) and changes in attitudes toward protest (Secret and Welch 1982).

The analysis of upheaval based on socioeconomic inequality has recently received the attention of economists. The work in this literature focuses on cost-benefit models of the individual rioter's behavior. Drawing on Tullock 1971, Denise DiPasquale and Edward Glaeser (1998: 60) emphasize the difference between "straightforward individual effects [and] . . . community effects." In that study, they operationalize the "community effects" interpre-

tation of upheaval as a "legitimate alternative hypothesis" to the individual approach (ibid). As discussed earlier, this interpretation has many precedents in both the sociology and the political science literatures, specifically in the literature on social disturbances that are the subject of this article. The relative deprivation model used in this essay adopts the community-effects approach to the analysis of upheaval.

Although there is a large literature on the subject of relative deprivation, both theoretical and empirical, this literature has not drawn on methods of analysis of inequality that are central to economics in general and to labor economics in particular. These methods include the decomposition of inequality into two components, one that can be explained by factors that logically should affect economic status and one that cannot. The latter factor is often interpreted as discrimination, though there is substantial debate about what this residual factor actually means (Rees 1991). Frustration and unrest may be closely associated with differences that cannot be explained by observable characteristics (the residual or discrimination component of the economic differential), such as education and experience, that justifiably might be expected to generate differences in economic status, and by differences that cannot be explained by such variables. Any significant divergence between expectations of well-being and the ground reality should also lead to disturbances.

This essay tests the above notion of relative deprivation in the context of the racial disturbances in urban America in the 1960s.[3] It makes four contributions to the literature on relative deprivation and urban unrest in America. First, it provides a model of relative deprivation that incorporates the revolution of rising expectations phenomenon with which the disturbances were associated. Second, the analysis explicitly tests for the separate roles of components of wage differentials between black and white wage earners that can or cannot be attributed to observable differences in their characteristics. Third, by using data from two time periods, corresponding to the first and second halves of the decade, the essay moves beyond the traditional cross-sectional method employed in most quantitative analyses of the subject (Lieske 1978; Carter 1986). And fourth, unlike the vast majority of past studies on relative deprivation, the essay analyzes data that are nation specific, thereby dispensing with the need to control for cross-national political, social, and cultural variables that can confound cross-national analyses of the issue.[4]

The organization of this essay is as follows. The second section discusses a model of relative deprivation in which economic differences are tied explicitly to relative deprivation using the concepts of value expectation and value capability. The third section describes the data used in the essay. The fourth section presents the empirical methodology and results. The final section presents conclusions drawn from the analysis.

A Model of Rising Expectations and Relative Deprivation

At the individual level, researchers define relative deprivation as the difference between the value expectation and the value capability of the individual (see Runciman 1966; Gurr 1970). The larger the difference between these two values, the greater the resulting discontent and the likelihood that this discontent, if felt by a large number of individuals, will be manifested as upheaval. The early literature on the subject emphasizes that relative deprivation—while essentially an individual phenomenon—can have important social implications if it operates systematically at the racial or ethnic-group level (Gurr 1970).[5] In this section, we present a formal model of relative deprivation that captures these features.

For the following discussion, consider the terms *white wage* and *black wage* as referring to the respective wages paid to white and black workers.[6] *Value expectation* is the value an individual expects he or she should reap from his or her work. Based on the literature on the riots of the 1960s and on wage inequality in the United States, we make the following observations about value expectation. First, the effective value expectation of urban black populations increased rapidly in the initial stages of increase in the black wage. There was "a shift from faintly held aspirations for equality to an intensely held belief that equality is deserved now" (ibid.: 51). Gurr supports this assertion with evidence from a comparison of demands made in the 1940s with those made in the 1960s. In both cases, equality seems to have been the goal. This dynamic is distinct from a rise in the *actual amount* of value demanded, which is the emphasis of this essay. In the context of Gurr's assertion, a consistent interpretation of the results of this essay is that, while the rhetoric of the 1940s and the 1960s embodied the ideal of equality, the effective expectation (or what blacks realistically could expect) was substantially lower in the 1940s than it was in the 1960s, by which time some progress had been made

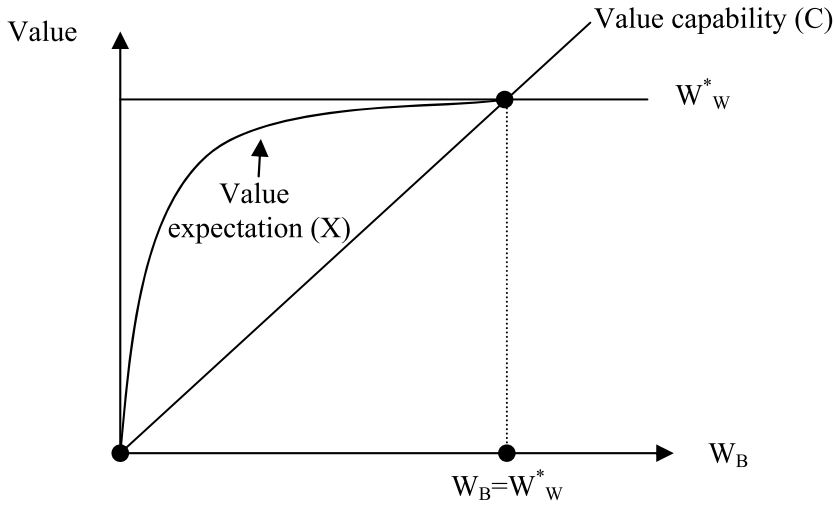

Figure 1 Rising expectations, value expectation, and value capability

in the direction of economic equality. This is consistent with findings of the National Advisory Commission on Civil Disorders (1968: 106, for example) and John Dittmer (1995).

Second, any realistic upper limit for the effective value expectation of a black worker could not have exceeded the wage of a white worker. In other words, the white wage represented the maximum wage to which the black worker could aspire given the conditions at the time. Third, in those situations in which the black wage was close to the white wage, the rate at which the value expectation rose would have been small or zero, the black wage already having approached its effective upper limit. As will be demonstrated in the empirical section, geographic variations in the wage differential and its components were substantial, and in only a few cases was the wage differential small, let alone zero.

Figure 1 presents a stylized version of the above phenomena in terms of the wages of blacks and whites. A few simplifying assumptions are made for the purpose of exposition. For example, the white wage is assumed to be constant. The curved line is the effective value expectation of blacks.[7] The horizontal line at the top of figure 1 represents the higher white wage, which is the upper limit of the value expectation of blacks. Value capability is the value an individual realistically can earn from his or her work. Figure 1

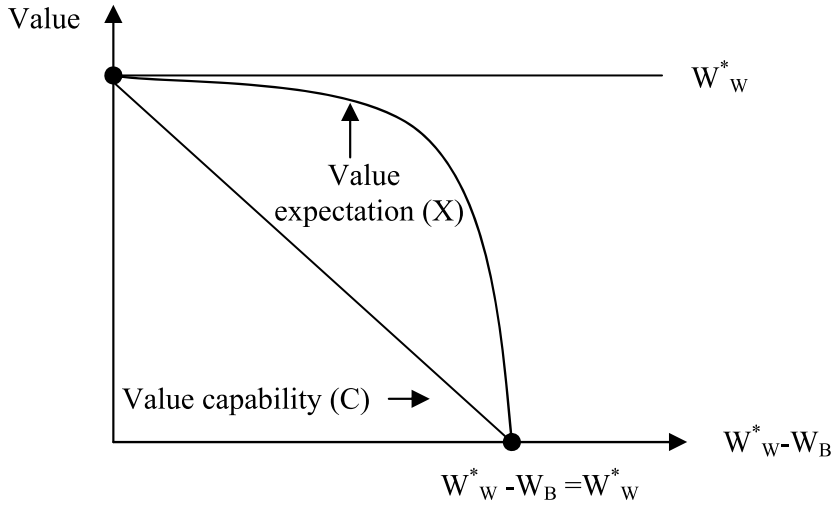

Figure 2 Value expectation, value capability, and the white-black wage differential

shows the black wage, which reflects the value capability of blacks (hence the 45° line from the origin, because the black wage is plotted against itself).[8] Figure 2 shows the relationship, derived from figure 1, between value expectation, value capability, and the white-black wage differential for a fixed level of the white wage. Relative deprivation is the difference between value expectation and value capability. Figure 3 is a plot of relative deprivation, derived from figure 2, against the white-black wage differential. Figures 1–3 show the relationship between the key variables of the model holding the white wage fixed. We will examine the realistic case, borne out by empirical evidence, that a rise in the black wage is accompanied by a narrowing of the wage gap, but not a drop in the white wage. In the context of income and wages, James Smith and Finis Welch (1989) and John Donohue and James Heckman (1991) discuss this phenomenon. A parallel set of findings for mortgage and housing markets is presented in Massey and Denton 1993 and Collins and Margo 2003a.

The relationship between relative deprivation and the black wage is slightly more complex than the relationship between the wage differential and the black wage. Because the value expectation of blacks rises rapidly in the initial stages of their wage increase, for low black wages, relative deprivation increases with a rise in the black wage.[9] Further, since the white-black

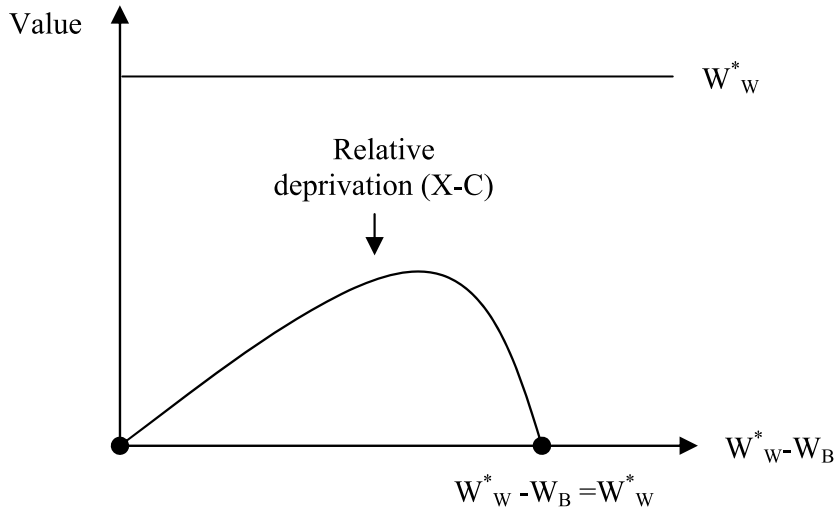

Figure 3 Rising expectations, relative deprivation, and the white-black wage differential

differential decreases with the rise in the black wage, relative deprivation increases with a fall in the differential when the black wage is low. This can be seen in figure 3.

The above model of relative deprivation yields a curvilinear or nonmonotonic relationship between the black-white wage differential and relative deprivation. To the extent that relative deprivation was at the root of the social disturbances of the 1960s, a nonmonotonic relationship between wage differentials and measures of riot propensity would be consistent with the relative deprivation hypothesis. While this is similar to Lieske's (1978) finding of a nonmonotonic relationship between black social class and riot propensity, it directly addresses a fundamental variable underpinning the black civil rights movement—the economic gap between blacks and whites. In the following section, we test for a relationship between wage differentials and measures of race-based upheaval in the 1960s.

Data and Variables

Data Sources

This study employs two primary data sources: the 1960 and 1970 Integrated Public Use Microdata Sample (IPUMS) (Ruggles and Sobek 1997) and the

Governmental Units Analysis Data (GUAD) (Spilerman 1970b). The IPUMS provides race-specific wage rates and other individual-level demographic characteristics. In this analysis, we use the IPUMS to compute wage differentials and occupational segregation indices for black individuals compared to whites.

For all individuals in the respective samples, the 1960 and 1970 IPUMS contain information about the census region (i.e., Midwest, Northeast, South, or West), census division, state, metropolitan area status (i.e., center city or outside center city), and urban or rural status. The 1960 IPUMS data, however, do not contain information about the specific city to which a census respondent belonged. For this reason, we are unable to estimate wage differentials at the city level for 1960. For consistency in the unit of analysis, therefore, we use the metro status variables in the 1960 and 1970 IPUMS to select observations and then aggregate wage differentials for these metro-level observations to the state level. The aggregation of the data up to the state level resulted in the elimination from the sample of those states that did not have metro areas or for which the metro status variable of all census respondents was listed as "not available" for confidentiality reasons. States eliminated were Alaska, Arizona, Colorado, Connecticut, Delaware, Hawaii, Idaho, Maine, Mississippi, Montana, Nevada, New Hampshire, New Mexico, Rhode Island, South Dakota, Utah, and Wyoming.

Indicators of civil rights protests or violence come from the GUAD. The data set covers the years 1961 through 1968 and consists of civil disorders data from that period for cities with 25,000 or more residents. Social disorders recorded in the data set had at least 30 participants, were not related to institutional conflict (e.g., protests on college campuses), and involved some violence or property destruction. The GUAD contains riot information for 676 cities. Of these, 501 had at least one riot occurrence between 1961 and 1968. For consistency in the unit of analysis, we also aggregate the riot-level data to the state level. Two secondary data sources, the *Uniform Crime Reports* for 1961 and 1970 (U.S. Federal Bureau of Investigation 1962, 1971) and *The Municipal Year Book* (International City Managment Association 1960, 1968), provide estimates of other important social and institutional variables, including police presence, crime rates, and governmental structure, which we also aggregate from the city or metropolitan statistical area (MSA) level, depending on the specific variable, to the state level. We combine the state-level variables created from the IPUMS, GUAD, and secondary data

and perform analyses at the state level. The analyses explore the relationship between wage inequality and racial social disorders between 1960 and 1970, controlling for institutional and social variables. In particular, we investigate whether relative wage deprivation accounts for differences in racial disorders, controlling for a variety of urban characteristics in the state.

Dependent Variables: Measures of Social Disorder

The analyses use a measure of social disorders between 1961 and 1968 derived from data available through the GUAD, namely, *total social disorders*. The GUAD also contains disorder data for two subperiods, 1961–64 and 1965–68. We compute the variables defined in the following discussion for both time periods. In the models to be estimated, we pair the observations for 1961–64 with the explanatory variables for the first part of the decade (1960–61) and the observations for 1965–68 with the explanatory variables for the later part of the decade (1968–70).[10] Hence, for each state, there were two observations, one representing the early part of the decade, the other representing the later part of the decade.

Total social disorders is the total number of social disorders across cities within the state.[11] According to the GUAD, 36 states (74 percent of the sample) in the analysis experienced at least one racial disorder during the entire time period. We computed the analogous measure for disorders resulting from incidents that allegedly were instigated by African American individuals, *black aggression*.[12] The figures for *black aggression* and total social disorders are nearly perfectly linearly correlated ($\hat{\varrho} = 0.98$). The maximum number of black aggression social disorders during 1961 and 1968 was 22, and the corresponding number of social disorders was 23. On average, the number of black aggression social disorders across states was more than five (table 1). Three states—California, Ohio, and New York—had at least 20 incidents of black aggression during that period. Although the majority of states (42) experienced 10 or fewer such incidents, a considerable number of these (10) experienced 5 or more incidents during the 1960s. The summary statistics and riot distribution (table 1) show considerable variation in state-level incidents of black aggression between 1961 and 1968. They also show the skewed nature of the distribution, a point to which we will return in the methodology section.

Table 1 Distributional characteristics of social disorders variables

	Total social disorders	Black aggression
Mean	5.88	5.27
Standard deviation	6.94	6.49
Maximum	26	23
Median	4	3
Minimum	0	0
Mode	0	0
Range	26	23
Interquartile range	8	7
Normality test statistic (Shapiro-Wilk)	0.80***	0.77***

N (number of states) = 49
*** $p < 0.01$

Explanatory Factors

The exploratory analysis of social disorders demonstrates considerable state variation in the number of social disorders. For example, only seven states, namely California, New York, Ohio, Pennsylvania, Florida, Illinois, and Michigan, account for nearly half of all social disorders and slightly over half of all incidents of black aggression. These descriptive statistics suggest that factors associated with individual states may help to explain state-level variations in the social disorder indicators. This essay addresses two classifications of explanatory factors: (1) relative deprivation (proxied by the race-specific wage differential and its components) and (2) social and demographic features (racial composition; racial, residential, and occupational segregation; combined size of urban populations; and crime rates) and institutional variables (measured by government structure). A description of these variables follows.

Wage Differentials. We prefer to analyze wage inequality rather than income inequality because income data are subject to reporting inaccuracies to which wage data are not. In addition, wage data, obtained from the IPUMS discussed above, are directly attributable to the work that individuals do, whereas income is an aggregate of both work-related and non–work-related

earnings. This leaves some ambiguity in terms of sources to which income is attributable and, indirectly, the interpretation of differentials as being due to human capital or discrimination. The wages are computed as weekly wages using data for the number of weeks worked and the annual wage income. Because numbers of weeks worked are reported as intervals (i.e., 1–13 weeks, 14–26 weeks), the midpoints of these intervals are used in the weekly wage computation. Although the use of these midpoints is a potential source of error in the wage data, on balance, we feel that the use of the individual-level wage data is justified over the use of the household-level income data. We decompose the urban wage differential between blacks and whites separately for each state using the following standard procedure. The wage for whites is

$$\ln W_W = \beta_W \chi_W + e_W,$$

where W_W is the white wage, χ_W is a vector of characteristics of the white worker, β_W is a vector of the returns to those characteristics, and e_W is a random error term. Similarly, the wage for blacks is

$$\ln W_B = \beta_B \chi_B + e_B,$$

where W_B is the black wage, χ_B is a vector of characteristics of the black worker, β_B is a vector of the returns to those characteristics, and e_B is a random error term. Under this formulation, the wage differential between whites and blacks is

$$D = \ln W_W - \ln W_B = \beta_W \chi_W - \beta_B \chi_B + e_W - e_B.$$

Adding and subtracting $\beta_W \chi_B$ from the above gives

$$\begin{aligned} D &= \beta_W \chi_W - \beta_W \chi_B + \beta_W \chi_B - \beta_B \chi_B + e_W - e_B \\ &= \beta_W (\chi_W - \chi_B) + \chi_B (\beta_W - \beta_B) + e_W - e_B. \end{aligned}$$

We can, therefore, decompose the wage differential into a component capturing differences in levels of human capital, evaluated using the white rate of return as a benchmark; a second component capturing differences in the rate of return to human capital, evaluated using black levels of human capital as the benchmark (this is the discrimination component of the differential); and a random error term. The specific human capital variables used were education and experience. Because the education variable is measured in years, it masks differences in the quality of education across individuals (Juhn et al. 1991; Rees 1991).

Table 2 Univariate characteristics of and correlations between human capital and discrimination components of white-black wage gap

Statistic	Component of wage gap, 1960*		Component of wage gap, 1970**	
	Human capital	Discrimination	Human capital	Discrimination
Mean	0.151	0.393	0.142	0.251
Minimum	0.055	0.160	0.021	0.105
Maximum	0.338	0.581	0.299	0.434
Standard deviation	0.079	0.129	0.071	0.093
Pearson correlation	0.635		0.600	
p-value for H_0:C = 0	0.0001		0.0001	
Spearman correlation	0.622		0.493	
p-value for H_0:C = 0	0.0001		0.0026	
Kendall Tau-b	0.473		0.318	
p-value for H_0:C = 0	0.0001		0.0073	

*$N = 33$
**$N = 35$

The decomposition analysis was conducted for all states in the sample. Along the lines of Juhn et al. (1991: 414), we included individuals between ages 18 and 65 who did not live in group quarters, worked for at least 14 weeks during the year, had a positive number of years of potential work experience, earned at least $67 per week in 1987 dollars, and were not self-employed. In addition, given the focus of this study, we selected only those individuals who lived in a metro area. We assumed individuals earning the top-coded value of the wage to earn 1.33 times that value (ibid.). This assumption adjusts for the censored nature of the wage data. Clearly, individuals earning the highest reportable value of the wage likely were earning more than that value. The vector of variables included in the wage regressions also includes a binary marital status variable (1 if married and living together, 0 otherwise) and sex, education, and potential work experience in linear and quadratic form.

Table 2 shows the univariate characteristics of the human capital and discrimination components of the wage differential. To test whether states with high human capital components also had high discrimination components, we calculated three correlation measures: a straight Pearson numerical correlation and the Spearman and Kendall rank correlation coefficients. Table 2 also contains the results of a hypothesis test on the correlation parameters

(null hypothesis of zero correlation). Some interesting observations include the following:

1. The magnitude of the wage differential differs across components (human capital or discrimination) and time. The discrimination component is on average higher than the human capital component and less so for 1970. This suggests that a significant component of the black-white wage differential cannot be explained by differences in educational or experiential characteristics and that this inexplicable component of the differential decreased as the 1960s ended.
2. The minimum values across states for the components of the differentials are lower for 1970 than for 1960. The minimum and average values suggest that although a few states may have been close to achieving racial equality on one or the other of the components (i.e., human capital or discrimination) of the wage differential, on average the black-white differential was substantial. Over the decade, the gap between blacks and whites narrowed as evidenced in the minimum, maximum, and averages between 1960 and 1970. In other words, it appears that the entire distribution of wage differentials shifted in the direction of lower inequality. These findings are in line with those of other studies, which also have found declining wage differentials between 1960 and 1970. Because prior research has included both urban and nonurban areas, and usually has focused on national-level phenomena, these findings should be viewed as complementing and confirming those findings at the urban and local level.
3. The mean discrimination component of the urban differential decreased substantially between 1960 and 1970. The mean human capital component of the differential also fell, but only slightly. This is of particular interest because the human capital component of a wage differential is economically justifiable, whereas the residual (or discrimination) component has no straightforward explanation, suggesting that the progress of the 1960s had a very specific effect on wage inequality—it narrowed the discrimination or residual gap without having much of an impact on human capital differences between black and white workers.
4. The two components of the wage differential have similarities and differences. In particular, the numerical correlation between the two components is positive, moderately large, and significantly different from 0, indicating some but not extremely high correlation. In other words,

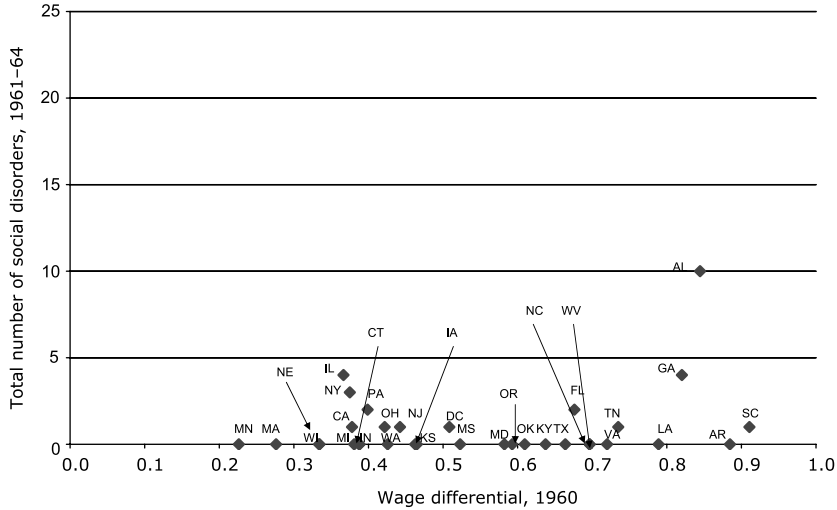

Figure 4 Total social disorders, 1961–64, versus wage differential

while one sees some comovement in both components (i.e., a state with a higher human capital component tends to show a higher residual component), this comovement is far from perfect in the statistical sense.

5. Both sets of rank correlation coefficients (Spearman and Kendall) between the two components are also positive. The *p*-values for the null hypothesis of zero correlation indicate significance. Rank correlations indicate whether states that rank high for one component of the differential also rank high for the other component.

Figures 4 and 5 are scatter plots of total social disorders against total wage inequality for the two parts of the decade. The leftward shift of the observations in figure 5 (lower inequality in 1970) compared to figure 4 (higher inequality in 1960) clearly reveals the point made in (3) above. This shift is also seen for the residual component of inequality (the figures for which are not included) though it is imperceptible for the human capital component. These two figures also suggest a nonlinear relationship between wage inequality and social disorders consistent with a variant of the formal relative deprivation model presented earlier. It is impossible, however, to make any robust conclusions about such a relationship based on two-dimensional visual data. Social and institutional features not accounted for in the figures could be driving such a pattern.

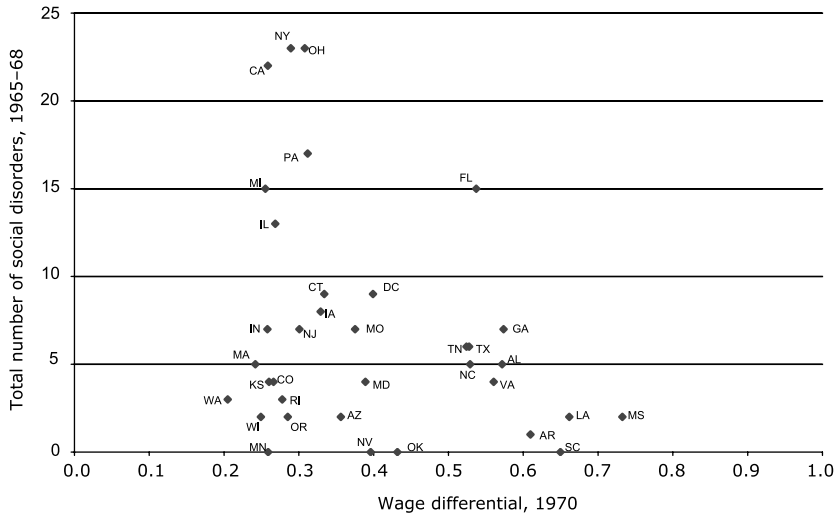

Figure 5 Total social disorders, 1965–68, versus wage differential

Social, Demographic, and Institutional Features. We use the proportion of blacks as a measure of the urban racial composition for the state. We compute racial composition using the 1960 and 1970 IPUMS data. In addition, we control for urban population size using a variable that is the total urban population in a state. This is related to the city-size variable used in some studies of urban violence. To control for time-specific effects not captured by the other regressors, we also include a dummy variable for the second half of the period being analyzed, namely 1965–68.

We use the dissimilarity index, a measure of dispersion, to estimate the degree of racial occupational segregation and racial residential segregation across metropolitan areas in a state (Duncan and Duncan 1955). The dissimilarity index is the proportion of black (or white) individuals in an area that would have to change occupation or move in order to make the occupational or residential distributions for both races identical. The dissimilarity index equals 1 in the case of complete segregation and 0 when the distributions of blacks and whites are identical. We compute the state-level occupational dissimilarity index by comparing the race-specific occupational distributions in metro areas within a state using the 1960 and 1970 IPUMS. Historical dissimilarity indices are available through the segregation data set created by David Cutler, Edward Glaeser, and Jacob Vigdor (1999). (For a study of seg-

regation over the period 1960–70, see Van Valey et al. 1977.) The analyses in this essay use the weighted average of the MSA-level segregation measure for MSAs within a state.

To test the relative deprivation model, we also control for social and institutional factors related to crime, police presence, and governmental form. Geographic limitations in the data affect these variables. Although some measures are available at the city level, others are available at the larger metropolitan level. Each measure, aggregated to the state level, represents the level of social or institutional factors across metro areas within the state.

We expect police presence (i.e., higher average police densities) to be associated with the level of social disorders. This relationship can be positive or negative. On the one hand, greater police presence may signify greater regulatory control and therefore fewer disorders. In this situation, persons may find other means of expressing dissatisfaction with their current situation. On the other hand, greater police presence also may signify a need for control in an area that has a much greater propensity for social disorders. Law enforcement may be enhanced in these areas in an attempt to address anticipated social disorders. Ideally, if more data were available, we could model explicitly the potential two-way causal relationship between police presence and social disorders. The lack of sufficient data to explore this relationship is a limitation of this study. Analyses presented here, however, are consistent in form with prior studies such as Lieske 1978.

Police presence is computed as the weighted average of police density across cities within the state. The original source of these data is the *Uniform Crime Reports*. The weights are city populations. This variable is computed for two years, 1961 and 1970, representing the first and second parts of the decade. We used data for 1970 because we were unable to access data for 1968 from the *Uniform Crime Reports*. For the same reason, we used 1970 data to compute the crime variables below. Table 3 reveals the state-level variation in police presence (for example, the standard deviation in 1961 was 480 police per 100,000 population). Police density increased substantially over the study period (35 percent) from an average of 332 police per 100,000 persons in the population to an average of 449 police per 100,000 persons.

Discussions of social disorders in metro areas also must address the issue of the level of crime, because, according to Lieske (1978), crime is an indicator of social disorganization at the community level. Under this criminality thesis of rioting (ibid.: 1329), we expect that levels of crime are associated

Table 3 Descriptive statistics for social and institutional variables used in the analysis

Variable description	Variable name	Year	*N*	Mean	Standard deviation
		Police presence			
Average police	AvgPol	1961	49	332	480
		1968	49	449	781
		Crime rates			
Total robberies	TotRob	1961	44	2,038	4,560
		1970	43	7,199	14,152
Total auto thefts	TotAuto	1961	44	6,795	12,985
		1970	43	17,603	27,210
		Governmental form			
Government form 1	GovForm1	1960	46	0.45	0.38
		1968	46	0.48	0.51
Government form 2	GovForm2	1960	49	0.45	0.39
		1968	49	0.51	0.51

with levels of social disorders and thus explain some of the state variation in social disorders between 1961 and 1968. Statistics for crime rates for 1961 and 1970, measured for auto theft and robberies, also are presented in table 3. These are computed as weighted averages across MSAs within a state. The original source of these data is the *Uniform Crime Reports*. The weights are MSA populations. The table shows considerable variation across states in these measures. The correlation between crime and police density is stronger for 1970 than for 1961.[13]

A final institutional variable included in the analysis is the form of government (council-manager or not). Governmental form can affect the number of social disorders during the period through the delivery of services and the provision of a channel for addressing the grievances of minorities. Prior research suggests that council-manager governments are "less responsive and accountable to racial minorities" (ibid.: 1329). We include two state-level measures of governmental form. The first is a binary variable that equals 1 if the majority of metropolitan areas in a state have a council-manager form of government and 0 otherwise. This can be thought of as a prevalence variable, because it depends on how prevalent a particular governmental form is across the cities in a state. The second is a weighted average of the city-level binary

governmental form variable. We weight the city-level binary value (0 or 1) by the city population and then average the weighted variables across all cities within a state. This can be thought of as an intensity variable, because it depends on the proportion of the urban state population living in areas with different government structures. *The Municipal Year Book* for 1960 and 1968 provide data for both measures.

Consistent with Lieske (1978) and others, we hypothesize a negative relationship between state-level governmental form and the number of social disorders. According to the descriptive statistics presented in table 3, a council-manager form of government does not characterize the vast majority of states. The standard deviations of the governmental form variables indicate that there is considerable variation across states, suggesting that the governmental form may help explain state-level variation in racial social disorders.

Methodology and Results

We operationalized the hypothesis test of a relationship between measures of aggression and wage differentials in two steps. In the first, discussed above, the analysis decomposes the white-black wage differential into two components: the component due to observable human capital characteristics and the residual or unexplained component, which some economists term "discrimination." Next, tests for a relationship between wage inequality and its components and social disorders are conducted. In the first analysis, to test separately for the effects of wage inequality and its two components on relative deprivation and aggression, models estimate aggression by incorporating these variables in nonlinear form. These models include regression equations explaining riot occurrence and the numbers of riots. There is statistical evidence that wage inequality and its two components played a role, as predicted by the relative deprivation model presented above.

Details of the Models

The analysis estimated two different types of models of aggression to test the relative deprivation hypothesis. The choice of model type depended on the interpretation of the dependent variable used in the analyses. In the first instance, ordered probit models estimate the likelihood of observing different numbers of riots. In the second instance, negative binomial regression

models estimate the number of riots observed. In both instances, two separate sets of models were estimated. In the first set, total wage inequality was the hypothesized driver of the disturbances. In the second set, the two components of wage inequality were included as hypothesized drivers. To allow for maximum flexibility of functional form, separate models that included wage inequality in quadratic and cubic forms were estimated.

Ordered Probit Models

The first type of model estimated the relationship between an ordered discrete variable for the number of riots in urban areas in a state and the components of the wage differential and other controls (Greene 2003: 736–39). This type of model is built on the relationship

$$y^* = \mathbf{x}'\boldsymbol{\beta} + \varepsilon,$$

where y^* is a latent or unobserved variable, which depends on a number of underlying observable variables $\mathbf{x}$, a vector of parameters $\boldsymbol{\beta}$ that will be estimated in the following analysis, and a random component ε. The model for observed data for riots is

$$\begin{aligned}
&y = 0 \text{ if } y^* \le \mu_1,\\
&y = 1 \text{ if } \mu_1 < y^* \le \mu_2,\\
&y = 2 \text{ if } \mu_2 < y^* \le \mu_3,\\
&\quad\vdots\\
&y = \mathcal{J} \text{ if } \mu_{\mathcal{J}} \le y^*.
\end{aligned}$$

In other words, we observe the number of riots y, a discrete variable, based on the value of the unobserved variable y^*, which depends on the underlying observed variables $\mathbf{x}$. Under the assumption that ε is normally distributed, we rewrite the model to yield the conditional probabilities

$$\begin{aligned}
\Pr(y = 0 \mid \mathbf{x}) &= \Phi(-\mathbf{x}'\boldsymbol{\beta})\\
\Pr(y = 1 \mid \mathbf{x}) &= \Phi(\mu_1 - \mathbf{x}'\boldsymbol{\beta}) - \Phi(-\mathbf{x}'\boldsymbol{\beta})\\
\Pr(y = 2 \mid \mathbf{x}) &= \Phi(\mu_2 - \mathbf{x}'\boldsymbol{\beta}) - \Phi(\mu_1 - \mathbf{x}'\boldsymbol{\beta})\\
&\vdots\\
\Pr(y = \mathcal{J} \mid \mathbf{x}) &= 1 - \Phi(\mu_{\mathcal{J}-1} - \mathbf{x}'\boldsymbol{\beta}),
\end{aligned}$$

where Φ is the cumulative distribution function for the normal distribution. Tables 4 and 5 contain coefficient estimates for the ordered probit regressions for the quadratic and cubic models using total wage inequality (table 4,

columns 3–6) and the components of wage inequality (table 5, columns 3–6). The dependent variable was total social disorders.[14] Following Greene 2003, tables 4 and 5 report two sets of estimates for each regression. The first is the set of coefficient estimates for the ordered probit model (columns 3 and 5, labeled "coefficient" in both tables). The second is the marginal contribution of each regressor to the probability of the 0-riot occurrence (columns 4 and 6, labeled "slope" in both tables). A negative slope indicates that an increase in the value of the variable is associated with a decrease in the likelihood of observing no disorders and, as a corollary, with an increase in the likelihood of observing riots.

The ordered probit regressions in tables 4 and 5 reveal some interesting associations between the independent variables and the occurrence of disorders. In the quadratic models, the terms representing total wage inequality and its two components are individually and jointly statistically significant in all four models. They suggest a value expectation curve with a slope that increased as wage inequality fell. At the level of the model, this finding is broadly consistent with the rising expectations hypothesis—as the black wage rose, so too did expectations, but at a more rapid rate, increasing relative deprivation and therefore disturbances.

Although the above finding bodes well for the relative deprivation hypothesis, it also has two potential inconsistencies with the model. The first is that, extrapolated to the point at which wage inequality is 0, it suggests that riot activity should be extremely high. This result could be due to the fact that there are no states for which the total wage differential is less than 0.15 and that the aforementioned extrapolation occurs outside the range of observed data. At any rate, it also can be resolved by making the functional form for wage inequality in the model more flexible. Indeed, if the dominant dynamic in the model is for expectations to rise at a more rapid rate than the black wage, then a possible decline in relative deprivation as the wage differential nears 0 may be obliterated by this dynamic. This motivates the inclusion of the cubic functional form in the analysis. As the results show, the cubic models are consistent with rapidly rising expectations and a reduction in relative deprivation as wage differentials approach 0. In this second set of models, however, the residual component of wage inequality is no longer statistically significant, suggesting that the human capital component of wage inequality is the more important of the two components of wage inequality in explaining disturbances. Total wage inequality remains significant regardless of model specification.

Table 4 Models with total wage inequality for the entire adult urban population

	Dependent variable: Total riots							
	Ordered probit models				Negative binomial models			
	Quadratic model		Cubic model		Quadratic model		Cubic model	
Variables	Coefficient	Slope	Coefficient	Slope	Coefficient	Slope	Coefficient	Slope
Wage gap								
Wage inequality	−23.781***	6.537**	17.662	−4.894	−15.936***	−28.597***	20.700	35.852
	(8.310)	(3.020)	(23.700)	(6.678)	(4.466)	(7.674)	(17.175)	(29.680)
Square of wage inequality	23.794***	−6.541**	−62.308	17.265	15.791***	28.337***	−59.257*	−102.634*
	(6.988)	(2.719)	(46.764)	(13.765)	(4.596)	(7.725)	(34.307)	(59.177)
Cube of wage inequality	—	—	53.306*	−14.771*	—	—	45.839**	79.393**
			(28.679)	(8.914)			(20.638)	(35.473)
Joint χ^2 statistic	13.75***	—	17.23***	—	12.75***	—	22.36***	—
Segregation variables								
Occupational segregation	7.551*	−2.076	9.172*	−2.541*	1.761	3.161	2.444	4.234
	(4.575)	(1.351)	(4.712)	(1.459)	(3.154)	(5.784)	(2.980)	(5.314)
Residential segregation	−0.700	0.192	−1.106	0.306	1.555	2.790	0.578	1.001
	(2.640)	(0.723)	(2.662)	(0.739)	(1.764)	(3.066)	(1.688)	(2.902)
Governmental form variables								
Form 1 (GovForm1)	2.150**	−0.591*	2.523**	−0.700**	1.368**	2.455**	1.462**	2.532**
	(1.084)	(0.322)	(1.113)	(0.342)	(0.679)	(1.224)	(0.664)	(1.165)
Form 2 (GovForm2)	−1.976***	0.501***	−2.103***	0.532***	−1.130**	−2.200**	−1.094**	−2.046**
	(0.672)	(0.164)	(0.674)	(0.164)	(0.459)	(1.006)	(0.448)	(0.947)

Crime variables								
Robberies (TotRob)	$1.0 \times 10^{-4**}$	$-2.8 \times 10^{-5**}$	$9.5 \times 10^{-5**}$	$-2.6 \times 10^{-5**}$	$2.3 \times 10^{-5*}$	$4.1 \times 10^{-5*}$	$2.8 \times 10^{-5**}$	$4.8 \times 10^{-5**}$
	(4.7×10^{-5})	(1.0×10^{-5})	(4.1×10^{-5})	(1.0×10^{-5})	(1.2×10^{-5})	(2.0×10^{-5})	(1.2×10^{-5})	(2.0×10^{-5})
Auto thefts (TotAuto)	-3.4×10^{-5}	9.4×10^{-6}	-2.6×10^{-5}	7.2×10^{-6}	$-2.3 \times 10^{-5**}$	$-4.1 \times 10^{-5*}$	$-1.9 \times 10^{-5*}$	$-3.2 \times 10^{-5**}$
	(2.3×10^{-5})	(1.0×10^{-5})	(2.3×10^{-5})	(1.0×10^{-5})	(9.6×10^{-6})	(2.0×10^{-5})	(9.6×10^{-6})	(2.0×10^{-5})
Police presence variable								
Police presence (AvgPol)	-5.6×10^{-4}	1.5×10^{-4}	$-8.5 \times 10^{-4*}$	2.3×10^{-4}	-1.7×10^{-5}	-2.8×10^{-4}	-4.0×10^{-4}	-6.9×10^{-4}
	(4.3×10^{-4})	(1.3×10^{-4})	(4.6×10^{-4})	(1.5×10^{-4})	(2.4×10^{-4})	(4.5×10^{-4})	(2.6×10^{-4})	(4.6×10^{-4})
Racial composition								
Percent black	8.129	−2.235	11.347**	−3.144*	3.090	5.544	5.861*	10.152*
	(5.403)	(1.644)	(5.672)	(1.837)	(3.162)	(5.866)	(3.278)	(5.864)
Population								
Sum of population in MSAs	$3.1 \times 10^{-7***}$	$-8.5 \times 10^{-8**}$	$2.8 \times 10^{-7**}$	$-7.8 \times 10^{-8**}$	$2.4 \times 10^{-7***}$	$4.3 \times 10^{-7***}$	$2.0 \times 10^{-7***}$	$3.5 \times 10^{-7***}$
	(1.1×10^{-7})	(0.000)	(1.1×10^{-7})	(0.000)	(6.4×10^{-8})	(0.000)	(6.4×10^{-8})	0.000
Decade effect								
Dummy variable: 0 if 1960,	3.616***	−0.816***	3.706***	−0.830***	2.677***	6.519***	2.575***	5.927***
1 if 1970	(0.724)	(0.120)	(0.722)	(0.114)	(0.509)	(1.464)	(0.460)	(1.271)
Constant	−2.986	—	−10.224*	—	−0.259	—	−5.769*	—
	(3.381)		(5.204)		(2.321)		(3.359)	
Regression diagnostics								
Log likelihood	−86.531		−84.773		−103.024		−100.620	
Likelihood ratio χ^2	92.25***		95.77***		87.34***		92.15***	
Pseudo R^2	0.348		0.361		0.298		0.314	
Number of observations	59		59		59		59	

Note: Standard errors in parentheses.
***significant at the 1% level ($p < 0.01$); **significant at the 5% level ($p < 0.05$); *significant at the 10% level ($p < 0.10$).

Table 5 Models with components of wage inequality for the entire adult urban population

	Dependent variable: Total riots							
	Ordered probit models				Negative binomial models			
	Quadratic model		Cubic model		Quadratic model		Cubic model	
Variables	Coefficient	Slope	Coefficient	Slope	Coefficient	Slope	Coefficient	Slope
Wage gap components								
Residual (discrimination)	−23.667**	6.358**	−12.029	2.998	−12.857***	−23.746***	7.229	12.716
	(9.384)	(3.155)	(29.934)	(7.339)	(4.357)	(8.122)	(17.725)	(30.968)
Square of residual	29.773**	−7.998**	−4.890	1.218	15.932**	29.424**	−43.837	−77.113
(discrimination)	(12.146)	(4.022)	(98.363)	(24.591)	(7.572)	(13.952)	(60.187)	(107.74)
Cube of residual	—	—	31.112	−7.753	—	—	30.908	92.482
(discrimination)			(95.896)	(24.509)			(59.761)	(103.94)
Joint χ^2 statistic	6.43**	—	5.47	—	11.13***	—	5.38	—
Human capital	−22.887**	6.148*	40.631	−10.125	−15.406*	−28.453*	30.908	54.370
	(11.627)	(3.535)	(29.984)	(7.763)	(8.354)	(14.823)	(21.422)	(38.052)
Square of human capital	84.123***	−22.598**	−344.549*	85.859*	56.810**	104.921**	−249.594*	−439.060*
	(31.480)	(10.384)	(189.981)	(51.011)	(24.084)	(42.190)	(132.466)	(234.29)
Cube of human capital	—	—	798.845**	−199.067**	—	—	565.565**	994.882**
			(350.876)	(99.106)			(239.397)	(420.66)
Joint χ^2 statistic	9.97***	—	14.81***	—	6.64**	—	16.85***	—
Segregation variables								
Occupational segregation	7.272	−1.954	10.750**	2.679*	1.315	2.429	3.194	5.618
	(4.620)	(1.320)	(4.929)	(1.425)	(3.124)	(5.857)	(3.041)	(5.548)
Residential segregation	−0.328	0.088	−0.954	0.238	1.374	−2.538	0.582	1.024
	(2.726)	(0.731)	(2.725)	(0.679)	(1.752)	(3.161)	(1.664)	(2.903)
Governmental form variables								
Form 1 (GovForm1)	2.779**	−0.746**	2.799**	−0.698**	1.825**	3.371**	1.460**	2.569**
	(1.155)	(0.355)	(1.148)	(0.337)	(0.723)	(1.323)	(0.704)	(1.248)
Form 2 (GovForm2)	−2.111***	0.522***	−1.946***	0.458***	−1.337***	−2.749**	−1.028**	−1.940*
	(0.726)	(0.173)	(0.722)	(0.172)	(0.503)	(1.178)	(0.476)	(0.992)

Crime variables								
Robberies (TotRob)	$9.5 \times 10^{-5**}$	$-2.6 \times 10^{-5**}$	$8.6 \times 10^{-5**}$	$-2.1 \times 10^{-5**}$	$2.3 \times 10^{-5*}$	$4.2 \times 10^{-5*}$	$2.5 \times 10^{-5**}$	$4.4 \times 10^{-5*}$
	(4.3×10^{-5})	(1.0×10^{-5})	(3.9×10^{-5})	(1.0×10^{-5})	(1.3×10^{-5})	(2.0×10^{-5})	(1.3×10^{-5})	(2.0×10^{-5})
Auto thefts (TotAuto)	-3.1×10^{-5}	8.2×10^{-6}	-2.4×10^{-5}	5.9×10^{-6}	$-1.9 \times 10^{-5**}$	$-3.5 \times 10^{-5**}$	$-1.8 \times 10^{-5*}$	$-3.1 \times 10^{-5*}$
	(2.3×10^{-5})	(1.0×10^{-5})	(2.3×10^{-5})	(1.0×10^{-5})	(9.7×10^{-6})	(2.0×10^{-5})	(9.7×10^{-6})	(2.0×10^{-5})
Police presence variable								
Police presence (AvgPol)	-5.6×10^{-4}	1.5×10^{-4}	$-8.0 \times 10^{-4*}$	2.0×10^{-4}	-8.8×10^{-5}	-1.6×10^{-4}	-3.5×10^{-4}	-6.2×10^{-4}
	(4.3×10^{-4})	(1.2×10^{-4})	(4.7×10^{-4})	(1.4×10^{-4})	(2.4×10^{-4})	(4.5×10^{-4})	(2.8×10^{-4})	(5.0×10^{-4})
Racial composition								
Percent black	8.115	−2.180	11.688**	−2.913*	2.215	4.090	5.307	9.336
	(5.367)	(1.589)	(5.634)	(1.699)	(3.168)	(5.958)	(3.477)	(6.221)
Population								
Sum of population in MSAs	$3.1 \times 10^{-7***}$	$-8.4 \times 10^{-8**}$	$2.7 \times 10^{-7**}$	$-6.7 \times 10^{-8*}$	$2.2 \times 10^{-7***}$	$4.0 \times 10^{-7***}$	$1.9 \times 10^{-7***}$	$3.3 \times 10^{-7***}$
	(1.1×10^{-7})	(0.000)	(1.1×10^{-7})	(0.000)	(6.3×10^{-8})	(1.0×10^{-7})	(6.4×10^{-8})	(0.000)
Decade effect								
Dummy variable: 0 if 1960,	3.215***	−0.749***	3.581***	−0.783***	2.327***	5.442***	2.444***	5.567***
1 if 1970	(0.759)	(0.145)	(0.789)	(0.135)	(0.531)	(1.512)	(0.506)	(1.461)
Constant[a]	−2.989	—	−9.243	—	−0.181	—	−5.249*	—
	(3.393)		(5.125)		(2.325)		(3.120)	
Regression diagnostics								
Log likelihood	−85.522		−82.855		−102.706		−99.723	
Likelihood ratio χ^2	94.27***		99.61***		87.98***		93.94***	
Pseudo R^2	0.355		0.375		0.300		0.320	
Number of observations	59		59		59		59	

Note: Standard errors in parentheses. The slopes in this model represent the change in the likelihood of the no-riot outcome associated with a unit change in the independent variable under consideration. For this reason, the signs of these slopes should be the opposite of those in the corresponding negative binomial models in table 4, which model the change in the number of disturbances associated with changes in the independent variables.

[a]For the ordered probit model, this corresponds to μ_1 in the discussion in the text.

***significant at the 1% level ($p < 0.01$); **significant at the 5% level ($p < 0.05$); *significant at the 10% level ($p < 0.10$).

The second potential inconsistency between the estimates and the relative deprivation model is the finding that, above a certain level of wage inequality, riot activity should begin to rise again. This occurs within the range of observed data and covers approximately one-quarter of the observations, primarily from the early 1960s. Again, this could be the result of the dominant dynamic of rapidly rising expectations discussed above. An alternative explanation is the possibility that, above a certain level of inequality, it is not the discrepancy between value expectation and value capability that drives social unrest as much as a broader sense of injustice that is based only on, and is increasing in, the level of inequality. In other words, when inequality is extremely high, expectations cease to play a role. This is consistent with the particular context, given that the observations to which this issue relates occur in the early 1960s, when expectations had only just begun to rise.

Among the other variables, lower levels of crime (in particular, robberies) and smaller urban populations are associated with a higher likelihood of no riots. For reasons discussed above, these findings are not surprising. The prevalence of the council-manager form of government across cities in a state is associated with a lower likelihood of no riots, also as expected. Interestingly, the population-weighted variant of this measure is associated with a greater likelihood of no riots. While it could be the result of the inclusion of related variables such as the other governmental form variable, this finding merits further investigation. Notably, of the two governmental form variables, the prevalence variable has the larger slope. Interestingly, occupational and residential segregation are not significant correlates of riots.[15]

Taken together, these findings support the relative deprivation model presented earlier. They go a step further, however, in identifying relative deprivation as operating through both components of the wage gap but more strongly through the human capital or ability component. In addition, they confirm what one might expect in terms of the relationship between some of the additional variables that might be thought of as having associations with the disturbances.[16]

Negative Binomial Models

In the case at hand, the distribution of numbers of riots is highly skewed, with a large number of state-level observations showing no riots, smaller numbers

showing a few riots, even smaller numbers showing a moderate number of riots, and so on (see table 1). The Poisson regression, a special case of the negative binomial, is a commonly used method of analysis for skewed count data. This method makes strong assumptions about the distribution of the data. The negative binomial regression class of models, to which the Poisson regression model belongs, enables the researcher to test the appropriateness of the Poisson regression and use a modified non-Poisson model with weaker distributional assumptions if the Poisson model is not appropriate.

The second set of models directly estimates the number of riots using the standard negative binomial approach to modeling count data. An advantage of this method over Lieske's method is that it did not require modifying the number of riots variable by taking the logarithm of 1 plus the number of riots observed (see Lieske 1978 for use of this transform). Although the rationale for taking the logarithm, namely reducing the skewed nature of the distribution of observations on the number of riots (with a large number of observations showing no riots, a smaller number showing a few riots, even smaller numbers showing a moderate number, etc.), may or may not be justified, the addition of 1 to this number to prevent the logarithm of the 0-riot observations from taking a value of negative infinity is arbitrary (Greene 2003: 744–45). Tests of the riot data indicated the problem of overdispersion in the Poisson model, suggesting that the broader negative binomial specification was more suitable than the Poisson specification.

The estimates of the negative binomial models, presented in tables 4 and 5 (columns 7–10), confirm most of the important findings of the probit models. First, they identify total wage inequality and both of its components as being nonmonotonically related to riots in the way identified in the ordered probit models. Second, levels of robberies are associated with higher numbers of riots. Third, larger urban populations are associated with more riots. And fourth, the prevalence version of the governmental form variable (i.e., a higher proportion of cities in a state has the council-manager form of government) is associated with higher numbers of riots, while the population-weighted version of the governmental form variable (i.e., a higher proportion of people living in cities in a state that has the council-manager form of government) is associated with lower numbers of riots. The associations in the negative binomial models appear to be slightly weaker than those in the ordered probit models. As with the ordered probit models, negative binomial models using the components of the wage gap for young males were esti-

mated as an alternative to the models containing the wage gap for the entire adult population. The findings (not shown) were broadly similar to those in the models for the entire adult population.

Both ordered probit and negative binomial models also were estimated using controls for states in the South and those not in the South. The rationale is the need for an indicator in the above specifications that police in southern states may have been perceived as being more aggressive than police in northern states in responding to riots, causing some degree of deterrence in southern states relative to northern states. South/non-South classifications based on Spilerman 1970a (see Mazur 1973 and Myers 1997) were used. These classifications took the form of a dummy variable. A nonmonotonic relationship very similar to the ones presented in tables 4 and 5 was observed, showing that the findings are robust to inclusion of this traditional control variable.

Conclusions and Implications

This essay analyzed the economic conditions associated with urban race riots in the United States in the 1960s. We constructed a model of relative deprivation based on the "revolution of rising expectations" character of the disturbances. Second, using data collected by the Lemberg Center for the Study of Violence over the period 1961–68 in conjunction with census data from the Integrated Public Use Microdata Series, we tested the relationship between measures of decomposed wage inequality and measures of social disturbances, based on the model of relative deprivation. The findings lend support to the rising expectations hypothesis, an aspect of the relative deprivation view of violence. The analysis finds that total wage inequality and both of its components, namely the human capital and the residual or discrimination components, are significant factors in this rising expectations dynamic. The role of the human capital component is more robust than the residual component across model specifications.

These results have a number of implications for the literature on relative deprivation. First, they suggest the need for a more sophisticated view of inequality than has been taken to date. In particular, they argue for a focus on the discrepancy between value expectation and value capability rather than the more naive notion of inequality as a simple difference between two individuals or groups. Second, they revive the notion of the importance of

inequality in the disorders of the 1960s. Early studies such as Lieske 1978 found no association between inequality and disorder propensity, perhaps because they used functional forms that were inconsistent with the "revolution of rising expectations" view of the disorders. Third, by using a panel data set, this study has incorporated a time dimension into the analysis, which has been absent in most of the previous cross-sectional work on the disturbances.

The results suggest that levels of inequality are not linearly or even monotonically associated, either positively or negatively, with levels of sociopolitical upheaval. In a dynamic model in which expectations rise rapidly with the early signs of reductions in inequality, this is to be expected. High levels of relative deprivation will occur precisely when such improvements are occurring. In time, as inequality is gradually eliminated, value expectation and value capability should again converge, eliminating the relative deprivation that leads to sociopolitical upheaval.

Notes

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1 Lieske found that the inclusion of a regional variable (i.e., South versus non-South cities) rendered insignificant a number of correlates of disorder propensity. He interpreted this as an indication that the atheoretical regional variable actually captured information about a number of variables that formed an explicit part of his theory. Two important limitations of that study are the use of cross-sectional data rather than panel data, thereby eliminating the time (and therefore change) dimension from the analysis, and the absence of a multivariate model that explicitly includes all the hypothesized correlates of disorder propensity. The current study overcomes both these limitations.

2 Interestingly, and in contrast to the conclusion of Lieske 1978, the main conclusion of a related study, Spilerman 1970a, is the unimportance of other community characteristics (including the degree of relative deprivation) in a model in which the effects of the number of blacks in a city and the region in which a city lies (i.e., North or South) have been controlled for. This conclusion, however, hinges on the very strong assumption that the number-of-blacks and region variables are the only two variables that are logically prior to the other individual variables in the model. We reject this assumption and the methodology that implements it on the grounds that it is selective—in other words, it is tantamount to the analysis of models with only three

independent variables. In parallel results that do not presuppose this hierarchy of variables (i.e., zero-order correlations), Spilerman (1970a: 642, table 5, column 1) finds that key relative deprivation variables (including black-white income ratios) are indeed significant and the correlations have the expected sign. The results in this essay can be interpreted as being complementary to these simple correlations. The partial correlations that Spilerman interprets as negating the effect of community variables can be interpreted as three-variable multivariate models in which the problem of omitted variable bias is a distinct possibility. Like the Lieske study, the Spilerman study is a cross-sectional analysis and does not capture changes over time in the economic status of blacks.

3 For the purposes of this study, a "disturbance" refers to a racial disorder, defined by the Lemberg Center as a "race-related incident involving crowd behavior, characterized by either damage to persons or property and/or defiance of civil authority" (Lemberg Center for the Study of Violence 1968: 2, as cited in Lieske 1978: 1325).

4 Chandra 2002 is one of only a few within-country empirical studies of relative deprivation for contexts outside the United States in the 1960s. In that study, inequality and racial disturbances between the indigenous and Chinese populations of the Netherlands Indies between 1910 and 1917 are found to be positively correlated.

5 For alternative views of race and violence, see, for example, Isaac et al. 1980 and Mason 1984. The latter approach is also favored in the economic literature on protest.

6 In the empirical analysis that follows, a standard decomposition method will be used that separates the effect of differences in observable characteristics of workers, such as education and experience, on wage differentials from the effects of unobservable phenomena. Following this, the two components of the wage differential will be analyzed separately.

7 For simplicity, this line is drawn with a decreasing slope. There is no reason that the slope of the line should not increase over a portion of the range of wages. Indeed, the empirical results presented below are consistent with a line whose slope increases over a portion of the range of wages.

8 A parallel interpretation is the temporal nature of the change in the black wage. This interpretation is context specific, however, and the model makes no inherent assumptions about time.

9 This rapid rise can be concave and/or convex, depending on the nature of the evolution of expectations.

10 Data limitations preclude an exact temporal match between all the disorder variables and the explanatory variables.

11 As a test of the sensitivity of the analysis to alternate conceptualizations of the degree to which a state was affected by the disturbances, we also weighted the total number of social disorders within an MSA by the MSA population to create the *weighted total social disorders* variable:

$$\text{Weighted Total Social Disorders}_j = \frac{\sum_i \text{Social Disorders}_{ij} \times \text{Population}_{ij}}{\sum_i \text{Population}},$$

for MSA i in state j.

Results from the weighted analysis are broadly consistent with the unweighted results and, for the sake of brevity, are not presented here.

12 The term *black aggression* was applied to the original data set. We use it solely for this reason. Of the states that experienced at least one social disorder between 1961 and 1968, all but one, South Carolina, also experienced a black aggression riot. No riot data are reported for North Dakota. A weighted version of this variable also was computed and analyzed.

13 The Pearson correlation coefficients are statistically significant, with one exception—auto thefts in 1961. The correlation between police density and robberies in 1961 is significant at the 0.025 level. Correlations for 1968 are significant at the 0.01 level.

14 Models using black aggression as the dependent variable also were estimated. These models were weaker, but displayed broadly similar results.

15 For discussion of the consequences of residential segregation in late-twentieth-century America, see Collins and Margo 2003b.

16 Because of the heavy participation of young males in a number of disturbances, similar models also were estimated by inserting the wage-gap components for young males (defined as males under 30 years of age) into the above models in place of the wage-gap components for the entire population (not shown). The models were in general weaker than the models using the wage gap for the entire population in terms of fit. In addition, a smaller number of the nonwage variables consistently displayed the expected associations that were seen in the model for the entire population (though the few associations that were visible confirmed the phenomena in tables 4 and 5). A larger number of these variables were marginally significant in some of the models.

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