ECONOMIC DISADVANTAGES OF BLACKS
IN HIGH BLACK PROPORTION CITIES

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This paper proposes wage premiums for jobs in high black proportion cities as a source of the continuing economic disadvantages for poor blacks. The estimated hedonic model of individual wages confirms the presence of such wage premiums which result in high labor costs and economic stagnation in a black-concentrated region, while the regional black ratio regression indicates a significant statistical correlation between a region's black ratio and its disamenities. From the empirical results emerge the following conclusions: First, the equality of the estimated wage premiums for high black ratio between blacks and whites precludes direct prejudice-based discrimination. A caveat, however, is that the full wage premiums are conferred upon workers moving freely across regions in search of better wages and amenities, not applying to the mobility-restricted or the non-employed. Second, the wage premiums for high black ratio, causing economic stagnation of a black-concentrated region, constitute a statistical discrimination against blacks. This is because, given the pre-existing poverty among inner city blacks, the victims of the regional economic decline are mainly those unskilled, poor blacks who suffer non-employment due to inadequate resources for job search and mobility.

Keywords: Wage Premium, Black-concentrated Region, Statistical Discrimination
JEL classification: J7, J3

1.   INTRODUCTION

Black Americans have long endured institutionalized discrimination, which has permeated their economic life. Since the seminal work of Becker (1957), numerous studies have shown how prejudice and discrimination hurt blacks economically by wage-employment discrimination and in other ways such as residential segregation (Rose-Ackerman (1975) and Yinger (1976, 1986)). Title VII of the Civil Rights Act of 1964 prohibits discrimination on the basis of race, gender or national origin in wages, hiring, layoffs and promotion. The affirmative action program followed civil rights policy to further hiring and promotion of minorities, especially blacks. Nevertheless, the economic disadvantages of blacks continue today, as shown by the persistent white-

black gaps in wages and employment access. Aided by the civil rights policy, the black-white wage gap narrowed rapidly in 1960s and early 1970s, but the convergence has stagnated since then. (Leonard (1996), O'Neill (1990), Altonji and Blank (1999)). True, the affirmative action program has helped the black middle class, but the living standards of poor blacks have worsened relative to whites and to other blacks and even in absolute terms.[1] Especially bleak is the poverty of blacks in the inner city afflicted with a dysfunctional educational infrastructure and lack of personal safety.

As a key factor in the slowdown of black-white wage convergence, Juhn, Murphy, and Pierce (1991) suggest unobservable school quality differences between blacks and whites, while O'Neill (1990), Maxwell (1994) and Neal and Johnson (1996) point out racial discrepancies in basic skills due to differences in education and family background. According to Juhn (1992) and Bound and Freeman (1992) the exit rate from non-employment and the employment rate of blacks, particularly less educated poor blacks, declined in relation to whites over the 1970s and 1980s. O'Regan and Quigley (1996) report that the employment decline of minorities is due to their isolation from whites and non-poor households. These researches identify the immediate contributing factors of inner city black poverty, namely isolation and low-quality education, but pay less attention to why these factors persist over time. They correctly point to blacks' inaccessibility to jobs or residences in high-employment areas located outside black enclaves, but fail to explain the mechanism which prevents the black enclaves from attracting employers. Hence, the reason why the economic distress of the inner city blacks persists despite anti-discrimination laws and waning prejudice against blacks remains not fully answered.[2]

This paper is an attempt to help explain the dynamics of the perpetual economic plight of inner-city blacks despite eroding bigotry. We propose the presence of wage premiums for jobs in high black proportion cities as a source of the continuing economic disadvantages of poor blacks, constituting a statistical discrimination against them. Suppose workers require wage premiums to reside in areas of high black population, expecting that such a locale tends to offer poor regional amenities. The wage premiums worsen labor costs and profitability for the firms located in the region. This results in the shrinking job opportunities and economic decline of the region,[3] which put into motion the equilibrating process to generate out-migration and a further increase in the wage premiums in order to compensate for the region's aggravating amenities due to its economic decline. When the equilibrium is achieved, the residents, who could have left the region but chose to stay and receive the region's wage premiums, are no worse off. Given pre-existing black poverty, it is predominantly blacks who suffer, and in

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[1] Kuran (1955, p. 144), Jaynes and Williams (1989, p. 275).

[2] Already by 1972, 96% of whites endorsed equal employment opportunity for blacks, up from 42% in 1944. See Kuran (1994, p. 138).

[3] This explains how a region's economic stagnation can coexist with high wages, a seeming paradox.

particular poor inner city blacks. Lacking the financial resources to search or move for jobs elsewhere, they tend to be non-employed, not realizing the compensating wage premiums for the region's deteriorated amenities such as worse school quality. Consequently, isolation and low-quality education/skills of the poor inner-city blacks continue, perpetuating their low employment and poverty.

To validate our proposition, we estimate a hedonic model of individual wages, an innovation of which is to incorporate the proportion of blacks in a metropolitan area as a main explanatory variable that characterizes workers' residential region. The estimated results show a statistically significant and positive coefficient for this variable, supporting the presence of wage premiums for jobs in regions with high proportions of blacks. What are the sources of these wage premiums? One possible source would be whites' prejudice or taste against blacks, leading whites to view black population in an area as a disamenity, generating a compensating wage premium to persuade whites to locate there. Our empirical results, however, reveal that not only whites but also blacks earn this premium and that the black-white difference in the premium is statistically insignificant. This suggests statistical discrimination, rather than direct prejudice-based discrimination, as a source of the premium. That is, given the imperfect information on regional amenities, a high black ratio in a metropolitan area works as a signal for the region's inferior amenities if easily observable black population ratio is statistically negatively associated with costly-to-observe regional amenities. Our estimated regional black ratio equation confirms the negative statistical association between black ratio and regional amenities. Consequently, the observed wage premium for a region with a high black proportion is a statistical discrimination against the region and therefore against its less mobile black residents, which helps perpetuate their poverty.

The paper is organized as follows: Section 2 estimates a hedonic model of individual wages and confirms the presence of wage premiums for jobs in high black proportion cities. Examining the source of such wage premiums, Section 3 demonstrates that they constitute statistical discrimination against blacks. Section 4 concludes the paper.

2. PRESENCE OF WAGE PREMIUMS FOR JOBS
IN HIGH BLACK PROPORTION CITIES

Observed wages reflect equilibrating processes not just for the productivity of the labor but also for various amenities whose levels differ across cities. When workers choose a residential location, they consider simultaneously the combination of wages and amenities offered by each city. If the offered compensating wage premium for the disamenities (lack of amenities) in a city is too small, the resident would choose to live elsewhere, which would raise the premium, and vice versa. The supply of and demand for labor determines the compensating wages for disamenities for each city. A hedonic wage model relates the observed equilibrium wage to the amenities of the residential location as well as the worker's productivity traits.

2.1. A Hedonic Model of Individual Wages

Consider identical workers with the same tastes and productivity who move freely across regions that offer different wages, rents, and amenities, searching for regions with higher utility. At equilibrium, when the workers have exhausted the opportunities for utility-augmenting moves, utility levels are equalized among these workers, because otherwise they would move to a new location offering a higher utility. The relationships at this equilibrium among wages, rents and disamenities provide the workers' wage acceptance function, an upward sloping wage-disamenity indifference curve. That is, the workers require wage premiums to compensate for disamenities, i.e., disagreeable regional characteristics.

Holding the rental rate constant, wage-disamenity indifference (wage acceptance) curves differ among workers with identical productivity but different tastes. Now, enter the demand side of the labor market: a firm situated in a city is constrained by fixed levels of the region's disamenities and chooses the lowest cost worker given the constraint. At equilibrium, the observed combinations of wage and disamenity provide the wage opportunity (wage-disamenity) locus, which is the lower envelope of the wage-acceptance curves of different taste workers. From upward sloping wage acceptance curves, it follows that the wage also slopes upward with respect to disamenities along the wage opportunity locus for workers at a fixed level of productivity.[4] Based on the wage opportunity locus, a hedonic model of individual wages relates the observed equilibrium wages to the regional levels of disamenities as well as the worker's personal traits affecting their productivity.

Our hedonic model of earnings specifies the logarithm of wages $(\ln W)$ as follows:

$$\ln W = \beta' X + \gamma' Z + \varepsilon , \tag{1}$$

where β and γ denote coefficient vectors and ε a disturbance term; X lists workers' personal characteristics such as demographic variables and human capital traits, which affect their productivity. Z is a vector of the characteristics - including local disamenities - of the regions where the workers reside. The region's black proportion is a key variable in Z.

For data on wages and personal characteristics, X, we use the annual demographic file of the Current Population Survey (CPS), March 1994. Our estimation of the earnings function is confined to full-time workers earning above the minimum wage (149 dollars

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[4] The wage opportunity locus does not provide the shape of any individual wage-amenity tradeoff. Rather, it presents equilibrium marginal wage differentials for any disamenity, given a fixed level of worker productivity. When the fixed productivity assumption is dropped, the wage opportunity locus still slopes upward with respect to the disamenity unless productivity is negatively related to disamenity. See Henderson (1982).

per week) who worked for at least 40 weeks during 1993 and who were between 16 and 66 years old, excluding the self-employed.[5] These individual data are matched with regional data at the level of the metropolitan statistical area (MSA).[6] Besides amenities and black population ratio, the regional variables Z include the composite cost of living index for each MSA. The index is expected to affect the dependent variable, log of nominal wages, at least as a regional wage deflator.[7] Definitions and summary statistics of the variables used in this study are listed in Appendix A and B.

2.2.   Estimation Results

Table 1 provides the estimates of the earnings model (1) for the full sample.[8] Our coefficient estimates for personal characteristics are consistent with human capital theory, and not very different from those reported in the earnings literature.[9] The coefficient estimates of Female and Black show that women earn 26.3% less than men and blacks earn 9.9% less than non-blacks, both results being comparable to the race and gender gap estimates of the previous studies.[10]

Among the regional variables, first, Temperature shows a negative association with wages: colder winter weather, a disamenity, increases wages at a rate of 0.3 percent per 1 degree fall in mean January temperature. Second, air pollution and crime rate show positive coefficients, suggesting the presence of compensating wage premiums for these disamenities but the coefficients are statistically insignificant. Third, population size is associated with higher wages at a rate of 1.17 percent wage increase per 1 million increase in the population of the MSA.[11] To the extent that a large population is accompanied by congestion and pollution, population size is an indirect measure of disamenities, which are to be compensated by the estimated wage premiums.[12]

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[5] By full time workers we mean the workers who worked more than 35 hours a week at the time of the survey. $149 was calculated by 1 week x $4.25 (minimum wage in 1993) x 35 hours.

[6] Our regional data sources are U.S. Bureau of Census (1990), *Census of Population: CP-2-1B*; U.S. Bureau of Census (1991), *State and Metropolitan Area Data: 1990*; U.S. Bureau of Census (1992), *City and Data Book: 1990*; U.S. Environmental Protection Agency (1992*), National Air Quality and Emissions Trends Report: 1991*; U.S. Department of Commerce, *Statistical Abstract of the United States: 1994.*

[7] We also used the housing cost index in place of the composite cost of living index. The estimated results were essentially the same, giving slightly worse statistical fit.

[8] Here and below, only statistically significant coefficients will be discussed unless noted otherwise.

[9] Our estimated rate of return to schooling is 7.3 percent. Experience increases wages at a decreasing rate so that workers are paid highest around 32 years of experience. Married persons earn 8.3 percent more than unmarried persons.

[10] See Altonji and Blank (1999) among others.

[11] This is derived from $\partial \ln W / \partial \text{Population}$ evaluated at the sample mean population of 3.1552 millions.

[12] According to our estimate of the quadratic earnings profile with respect to the urban population size, a

Table 1.   Wage Equation Estimated for the Entire Sample
Dependent Variable : Log of Annual Earnings, $\ln W$ [1]

	Variable	Coefficient	t-value
	Intercept	8.569231	165.140[*]
	Log of Living Cost Index	0.237363	3.338[*]
	Black Ratio[2]	0.280792	3.591[*]
	Population[3]	0.018688	3.257[*]
	Population Squared	-0.001108	-3.043[*]
	Population Growth[4] (%)	0.001842	3.734[*]
	Unemployment Rate (%)	0.000793	0.198
	Temperature (F°)	-0.00303	-3.958[*]
	Air Pollution (mg/m^3)	0.000131	0.687
	Crime Rate	4.518×10^{-6}	1.180
	Experience	0.036404	24.308[*]
	Experience Squared	-0.000575	-17.010[*]
	Schooling	0.072871	35.785[*]
	Married	0.082978	8.085[*]
	Children	-0.010468	-1.026
	Infants	0.045346	3.718[*]
	Government Job	-0.072429	-4.872[*]
	Veteran	0.004237	0.305
	Union	0.104878	4.432[*]
	Move	-0.02786	-1.486
	Female	-0.262881	-25.070[*]
	Black	-0.099016	-6.6570[*]
Region	North-East	-0.015991	-0.796
	South	-0.037161	-2.063[*]
	West	-0.014378	-0.657
Industry	Agriculture	-0.29256	-4.671[*]
	Mining	0.267365	3.875[*]
	Construction	-0.138857	-4.452[*]
	Durable	-0.00252	-0.094
	Non-Durable	-0.02686	-0.956
	Communication	0.056666	2.173[*]
	Wholesale	-0.10248	-3.249[*]
	Retail	-0.337744	-12.752[*]

city with 8.4 million population is the worst (with the highest compensating differential) for residents. This contrasts with Clark, Kahn, and Ofek (1988) who used 1980 PUMS data to report that a 4.9 million city is the worst.

Table 1.   (Continued)

	Variable	Coefficient	*t*-value
	Finance	-0.087331	-3.216*
	Business Service	-0.256669	-8.865*
	Personal Service	-0.32991	-9.346*
	Entertainment	-0.347592	-7.862*
	Professional Service	-0.195176	-8.760*
Occupation	Managerial	0.552887	19.621*
	Professional	0.530272	17.894*
	Technical	0.440763	13.038*
	Sales	0.41635	14.371*
	Clerical	0.241481	8.653*
	Private Household	-0.240145	-3.109*
	Protective	0.374253	8.971*
	Other Service	0.03768	1.262
	Farming	0.002672	0.044
	Craft	0.291215	10.490*
	Machine Operator	0.107537	3.453*
	Transportation	0.218663	6.579
Adjusted R-square		0.4341	
Sample Size		13791	

Notes: [1] Excluded dummies for region, industry, and occupation are Midwest, Public Administration, and Handlers. [2] The black ratio variable is not in percent but proportion, the number of blacks over the population in the MSA. [3] If an MSA belongs to a conglomerate metropolitan area (CMSA), the CMSA population is used. [4] The growth rate of population for 10 years (1980-1990). *(**) indicates significance at 5% (10%) level.

Among other regional characteristics, population growth rate is positively associated with wages at a rate of 0.18 percent increase in wages for each percent of population increase in the preceding 10-year (1980-1990) period, supporting the hypothesis that people move from regions with low-earnings to high-earnings. The coefficient estimate for the region's unemployment rate is highly insignificant, which reflects two opposing effects canceling each other: unemployment is a disamenity which adds compensating premiums to wages, while it is also an indicator of excess labor supply which decreases wages.[13]

[13] Some empirical results show that the positive disamenity effect overwhelms the negative excess labor supply effect, which means that local wages are higher in a high unemployment region. Other studies show that the latter effect is predominant or the net effect is unclear. See Izraeli (1977), Roback (1988), Rosen (1979), and Smith (1983).

The composite cost of living index in logarithm is expected to have a coefficient of 1.0, if the index works solely as a deflator for purchasing power. But, its estimated coefficient shows that a 1 percent increase in the cost of living is associated with only a 0.24 percent nominal wage increase, implying that a higher cost of living may reflect better amenities the region offers and hence the shortfall of 0.76 percent can be explained also as a compensating wage differential. Region dummies show that wages in the South are lower than in the other three regions of the U.S. The South could be interpreted as an amenity, relating to the movement of population from the snowbelt to the sunbelt during recent decades. Occupations and industries were controlled by their corresponding dummy variables.

Our main interest lies in the effect of a region's proportion of blacks (Black Ratio) on wages. According to Table 1, a one percentage point increase in the local Black Ratio is estimated to raise local wages by 0.28 percent, confirming the presence of wage premiums for jobs in high black proportion cities. Since job seekers consider job locations as well as wages, the estimate implies that they are unwilling to accept job offers in a high black ratio region unless they are paid higher wages. This positive slope of wage opportunity loci for the local black ratio suggests that workers may view high black proportion and disamenities alike, assuming that the racial composition of the local population does not affect local productivity. Hence, the estimated regional wage premium for large black ratio is a compensating wage differential as for disamenities.

3.   WAGE PREMIUMS IN CITIES WITH HIGH BLACK PROPORTION AS STATISTICAL DISCRIMINATION

Given that individuals collect a wage premium for working in cities with a high proportion of blacks, what are the sources of the premium? We consider two competing postulates. The first emphasizes prejudice-based discrimination as the source in that whites consider black population in a community as a disamenity, requiring compensating wage premiums. Following this view, the higher the black proportion in a region, the more whites earn and the less blacks earn, as expounded by many sociologists.[14]

The alternative postulate we propose is statistical discrimination: black population proportion is positively correlated with regional disamenities which may result from inadequate public services due to a narrow local tax base, an inefficient allocation of state and federal funds, etc. Whites may not regard black population as a disamenity, but they can use an easily observable high black proportion of a metropolitan area as a convenient signal for the region's various disamenities, accurate information on which may be costly to obtain. Then, the avoidance of disamenities by whites translates into

[14] See Glenn (1963), Blalock (1967), Tienda and Lii (1987), and Cassirer (1996).

their avoidance of a high black proportion region unless paid compensating wage premiums, which economically damage the region and its poor black residents.

3.1. Wage Premium for a High Black Ratio Region as a Prejudice-Based Discrimination?

The postulate that the compensatory payments for a region's high black ratio originate in whites' direct, prejudice-based discrimination against blacks can be tested by checking how blacks are compensated for the ratio. Clearly, it is not plausible that blacks discriminate against themselves. To examine the black-white differences in compensating wage premiums for an area's high black ratio, we modify the specification for the earnings model. The new specification controls the sex effects by focusing on the white and black male sample and introduces interaction terms of the race dummy variable (Black) with the black population ratio (Black Ratio) as well as with other explanatory variables.

According to the estimated results of the new specification given in Table 2, almost all the explanatory variables with statistically significant coefficient estimates in the previous specification continue to have statistical significance of their coefficients with signs unchanged. An exception is 'Black', the coefficient estimate of which is insignificant. But the significant coefficients of 'Black x Experience' and 'Black x Experience Squared' reaffirm the black-white wage gap: the blacks' return to experience is much lower than that of the whites for the entire work life and especially in the beginning of the career at 2.15 percent versus the whites' 4.28 percent wage increase per extra year of experience. The estimated low return to experience among blacks reveals, though indirectly, the black-white gap in education quality, being consistent with findings of other studies.[15]

The coefficient estimates of 'Black x Air Pollution', 'Black x Population' and 'Black x Population Squared' among other black-interaction terms shows that, unlike white wages, black wages decrease with air pollution and population. A negative effect of pollution on wages can occur if the required anti-pollution regulation increases production costs or if high pollution is associated with a region's dependence on old, smokestack industries and hence with lagging wages. The negative wage effect of population size seems to reveal that a city with a larger population, a disamenity for whites, tends to offer better public transportation network, an amenity for poor inner city blacks who may not own cars. Both effects indicate that blacks, lacking resources for mobility or for a job search elsewhere, do not equally share the compensating wage premiums whites realize in return for the region's disamenities.

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[15] See Juhn, Murphy, and Pierce (1991b), O'Neill (1990), Maxwell (1994), and Neal and Johnson (1996).

Table 2.   Wage Equation with Black-Interaction Terms Estimated
for the White and Black Male Sample
Dependent Variable : $\ln W$

	Variable	Coefficient	t-value
	Intercept	8.396908	121.807[*]
	Log of Living Cost Index	0.174332	1.767[**]
	Black Ratio	0.507668	4.612[*]
	Population	0.015485	1.936[**]
	Population Squared	-0.00112	-2.198[*]
	Population Growth (%)	0.001591	2.321[*]
	Unemployment Rate (%)	0.00096	0.174
	Temperature (F^o)	-0.002322	-2.190[*]
	Air Pollution (mg/m^3)	0.000144	0.537
	Crime Rate	4.587×10^{-6}	0.869
	Experience	0.042753	19.535[*]
	Experience Squared	-0.000665	-13.686[*]
	Schooling	0.073414	27.143[*]
	Married	0.134363	8.320[*]
	Children	-0.003272	-0.225
	Infants	0.070754	4.209[*]
	Government Job	-0.070617	-3.056[*]
	Veteran	-0.033739	-2.122[*]
	Union	0.158543	4.958[*]
	Move	-0.040258	-1.551
	Black	0.062692	0.328
Black-Interaction Terms:	Black x Black Ratio	-0.154158	-0.567
	Black x Population	-0.043259	-2.107[*]
	Black x Population Squared	0.003432	2.193[*]
	Black x Population Growth	0.001238	0.555
	Black x Unemployment Rate	0.025974	1.319
	Black x Temperature	-0.003574	-1.042
	Black x Air Pollution	-0.001452	-1.858[**]
	Black x Crime Rate	6.199×10^{-6}	0.355
	Black x Experience	-0.021269	-2.925[*]
	Black x Experience Squared	0.000395	2.530[*]
	Black x Schooling	0.010069	1.098
	Black x Married	0.027233	0.548
	Black x Children	0.101997	2.098[*]
	Black x Infants	-0.107679	-1.759[**]
	Black x Government Job	0.055783	1.149
	Black x Veteran	0.019689	0.407

Table 2.   (Continued)

	Variable	Coefficient	*t*-value
	Black x Union	-0.060954	-0.696
	Black x Move	0.00626	0.072
Region	North-East	-0.017553	-0.659
	South	-0.067527	-2.809*
	West	-0.006619	-0.223
Industry	Agriculture	-0.23574	-3.168*
	Mining	0.348317	4.013*
	Construction	-0.106295	-2.694*
	Durable	0.023895	0.659
	Non-Durable	0.024561	0.636
	Communication	0.073171	2.060*
	Wholesale	-0.074306	-1.748**
	Retail	-0.271073	-7.262*
	Finance	-0.019077	-0.463
	Business Service	-0.241335	-6.153*
	Personal Service	-0.253536	-4.927*
	Entertainment	-0.247624	-4.158*
	Professional Service	-0.186099	-5.742*
Occupation	Managerial	0.563395	17.228*
	Professional	0.505991	14.427*
	Technical	0.406366	9.751*
	Sales	0.455871	13.504*
	Clerical	0.210286	5.956*
	Private Household	-1.170378	-2.324*
	Protective	0.353168	7.508*
	Other Service	0.00359	0.097
	Farming	-0.027292	-0.416
	Craft	0.281199	9.258*
	Machine Operator	0.146203	4.078*
	Transportation	0.216851	6.044*
Adjusted R-square		0.4493	
Sample Size		7442	

Note: *(**) indicates significance at 5% (10%) level.

Finally, the statistically significant estimate of the coefficient for 'Black Ratio' shows that a one percentage point increase in the local Black Ratio is associated with a 0.51 percent increase in local wages at least among whites. On the other hand, the coefficient estimate for 'Black x Black Ratio' interaction term is not statistically significant, supporting the hypothesis that the compensating wage premium of blacks in

a high black ratio of the region does not differ from that of whites. That is, the empirical evidence invalidates the postulate that the wage premium for a high regional black ratio represents prejudice or taste-based discrimination of whites against blacks or that whites regard a high black ratio as a direct disamenity.

3.2.   High-Black Ratio Wage Premium as Statistical Discrimination against Blacks

Not being a prejudice-based discrimination, the estimated wage premium in higher black-ratio regions will constitute a statistical discrimination, if black ratio is used as a collective signal of a region's quality of life. Hence, we need to examine whether the ratio is positively correlated with regional disamenities such as high pollution, high crime rate, or inadequate schools, leading to the need for compensatory wages for the resident workers.[16] In Table 3 we provide the results of an estimation where the black ratio in metropolitan areas is regressed on mean values of personal variables and regional characteristics, noting that the regression represents the statistical association or correlation between black ratio and its regressors, not causation. The results demonstrate overall positive correlation between black population ratio and regional disamenities.

First, the level of air pollution is positively associated with the black ratio at a rate of 0.03 percentage point increase in black ratio for each 1 mg/m^3 increase in air pollution for the entire sample and 0.04 percentage point increase for the male sample. Second, the crime rate is positively associated with the black ratio at a rate of 0.001 percentage point increase in black ratio for each additional offense per population of 100,000. Third, the positive sign of the coefficient estimates of Temperature and Population, an indirect measure of disamenity to whites as discussed earlier, is also consistent with the positive black ratio-disamenities relationship, although the estimates are statistically not significant.

Fourth, black ratio is inversely associated with regional population growth: a 10 percent increase in city population during the preceding decade (1980-1990) is associated with a 1.5 percentage point decrease in the local black ratio for the entire sample and with a 1.7 percentage point decrease for the male sample. In other words, population growth - a sign of economic growth and prosperity - over the previous decade was mainly experienced in low black ratio regions rather than in high ones. The wage premiums for a high black ratio region, hurting the local economy by production cost increase, offers an explanation for the observed low (high) growth of a high (low) black ratio region. In the sense that high population growth is also a sign of desirability in living and superior amenities of a region, the inverse association between regional black ratio and population growth reinforces our observation that black population ratio in a region is associated positively with overall disamenities including quality of education, which is not included in our regression due to difficulty of acquiring data.

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[16] For the neighborhood effects in hedonic housing studies see Bartik and Smith (1987), among others.

Table 3. Regional Black Ratio Equation
Dependent Variable: Black Ratio of MSA

Variable			Entire Sample		Male Sample	
			Coefficient	t-value	Coefficient	t-value
Intercept			-0.981494	-2.178*	-0.926209	-2.447*
MSA Characteristics		Population	0.007385	1.101	0.01247	1.905**
		Population Squared	-0.000167	-0.450	-0.000518	-1.332
		Population Growth (%)	-0.001455	-1.957**	-0.001731	-2.425*
		Unemployment Rate (%)	0.000263	0.076	0.001943	0.541
		Temperature (F^o)	0.000934	0.945	0.000622	0.651
		Air Pollution (mg/m^3)	0.000322	1.645**	0.000433	2.157*
		Crime Rate	1.191×10^{-5}	2.529*	1.104×10^{-5}	2.295*
	Region	North-East	-0.016913	-0.626	0.002133	0.079
		South	0.084446	3.175*	0.09406	3.713*
		West	-0.071407	-2.463*	-0.073568	-2.517*
MSA Means of Personal Characteristics		Experience	0.008716	0.630	-0.002309	-0.166
		Experience Squared	-0.000119	-0.364	-1.691×10^{-5}	-0.056
		Schooling	0.081637	3.750*	0.055423	3.4*
		Children	-0.134014	-1.403	-0.093157	-0.962
		Infants	0.04159	0.311	-0.083792	-0.774
		Veteran	0.08553	0.607	0.056216	0.647
		Married	-0.009145	-0.108	0.059547	0.608
		Move	0.01662	0.101	0.05093	0.369
		Government Job	0.109759	0.915	0.107452	1.030
		Union	-0.066514	-0.368	-0.062889	-0.427
	Industry	Agriculture	-0.399087	-0.547	0.110478	0.254
		Mining	-0.259042	-0.368	-0.533835	-1.069
		Construction	-0.103352	-0.374	0.176719	0.726
		Durable	-0.045771	-0.197	0.156659	0.774
		Non-Durable	0.023239	0.094	0.271415	1.281
		Communication	-0.412442	-1.67	-0.090801	-0.446
		Wholesale	0.078699	0.273	0.196853	0.787
		Retail	-0.082037	-0.346	0.161381	0.769
		Finance	0.17127	0.642	0.013178	0.049
		Business Service	0.056195	0.204	0.313789	1.259
		Personal Service	0.113407	0.412	0.174112	0.733
		Entertainment	-0.649795	-1.244	0.250038	0.655
		Professional Service	-0.145349	-0.716	-0.168048	-0.886
	Occupation	Managerial	-0.339083	-1.090	-0.079392	-0.401
		Professional	-0.408497	-1.200	0.049142	0.215
		Technical	0.110548	0.314	0.442427	1.624

Table 3.   (Continued)

Variable			Entire Sample		Male Sample	
			Coefficient	*t*-value	Coefficient	*t*-value
		Sales	-0.618519	-1.835[**]	-0.148372	-0.628
		Clerical	-0.087866	-0.278	0.13379	0.604
		Private Household	1.26913	0.939	16.88225	1.374
		Protective	-0.092255	-0.219	0.12778	0.455
		Other Service	-0.085088	-0.259	0.156242	0.623
		Farming	0.765392	0.990	0.429998	0.972
		Craft	0.009492	0.033	0.077525	0.442
		Machine Operator	-0.129164	-0.409	-0.127375	-0.580
		Transportation	0.272227	0.823	0.52205	2.467[*]
Adjusted R-square			0.5018		0.5042	
Sample Size			156		156	

Note: *(**) indicates significance at 5% (10%) level.

   The positive statistical association between black ratio and regional disamenities makes the wage premiums for a high-black region a statistical discrimination not just against the region but also against its black residents, because the victims of the region's economic decline caused by these wage premiums are mainly its poor black residents. To be specific, the wage premiums for a region's high black ratio worsen the labor costs and profitability of local firms, and lead to loss of jobs and economic decline for the region. This underlies the negative association between black ratio and the region's population growth, which is a sign of economic prosperity, as observed in the black ratio regression. Given pre-existing inner city black poverty, it would be mainly poorly-educated, unskilled blacks without adequate resources for mobility and job search who bear the full weight of regional decline, suffering non-employment.[17] The wealthier residents, consisting of mostly whites and some middle class blacks, leave for another job elsewhere unless paid the full black ratio wage premium. As the wealthy families depart, financial support and leveraged performance monitoring on local schools weaken so that the quality of education worsens. With the local tax base dwindling due to the economic decline of the region and departure of the wealthy, public services deteriorate in personal and property security, pollution control, etc., further encouraging flight of non-poor households, increasing the black ratio, and aggravating the plight of the poor inner city blacks. At the equilibrium, the wealthy residents enjoy wage premiums to sufficiently make up for the poor regional disamenities. But the full wage premiums do not apply to the non-employed blacks trapped in the inner city due to lack of mobility, perpetuating their poverty. Therefore, while the wage premiums for high black ratio

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[17] For the high incidence of black non-employment, see Juhn (1992), and Bound and Freeman (1992).

regions are a statistical discrimination against such regions, they also constitute a statistical discrimination against black residents of these regions.

4.   CONCLUDING REMARKS

Motivated to help explain the persistent economic distress of the inner city blacks, this paper focuses on the wage premiums required for jobs in high black proportion cities. The estimated hedonic model of individual wages confirms the presence of such premiums, while the regional black ratio regression indicates significant statistical association between a region's black ratio and its disamenities. From these results emerge the following conclusions concerning the fate of inner city blacks.

First, the equality of the estimated wage premium for high black ratio between blacks and whites precludes direct prejudice-based discrimination. A caveat, however, is that the full wage premiums are conferred upon workers moving freely across regions in search of better wages and amenities, not applying to the mobility-restricted or the non-employed. Second, the wage premiums for high black ratio, causing the economic stagnation of a black-concentrated region, constitute a statistical discrimination against blacks. While a mobile worker is compensated for the region's high black ratio, the firms are not and as a result their labor costs go up, leading to loss of jobs in the region. Given the pre-existing poverty among inner city blacks, the victims of the regional economic decline are mainly the unskilled, poor blacks who, without adequate resources for job search and mobility, suffer non-employment. Hence the wage premiums for a high black ratio city constitute a statistical discrimination against its black residents, not just against the region.

Our study of wage premiums for high regional black population proportion poses several limitations. First, an MSA, which we use to represent a region, may be non-homogenous, dividing into several sub-regions with differing amenities and racial makeup. Especially in large MSA's with minorities concentrated in some sub-regions, the MSA average characteristics may misrepresent a worker's residential area. Also, commuting workers would suffer less from the local disamenities than residents, affecting the interdependence of disamenities and wages. Neglecting sub-regions and commuter due to unavailability of data may have biased our estimates.[18] Second, the analysis is confined to the black minority versus whites, partly for analytical simplicity and partly on account of the historical gravity of discrimination against blacks in the U.S. Whether similar findings hold among other minorities, especially Hispanic and Asian

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[18] With data on commuting unavailable, we have tried to estimate its influence by including interaction terms of the disamenities/black ratio and the MSA's population size in the wage regression model. But the estimated coefficients of the interaction terms turn out to be statistically insignificant, while the effects of other variables remain essentially unchanged from the model without these terms.

immigrants whose native tongue is not English, would be an interesting subject. Third, we fail to distinguish between blacks who suffer the negative consequences of the regional high black ratio, being unable to realize compensatory wage premiums, and those who do not. Identifying the differential characteristics of the two groups would help offer a practical suggestion to improve the fate of the poor inner city blacks.

These limitations require further research.

APPENDIX   A

Summary Statistics of Variables Used for Wage Regression in Tables 1 and 2

Variable: Definition	Entire Sample		White and Black Males	
	Mean	St. Dev.	Mean	St. Dev.
ln$W$: Log of the Yearly Personal Earnings	10.1132	0.675243	10.24889	0.674358
Log of Composite Cost of Living Index of MSA	0.071097	0.123879	0.066597	0.121518
Black Ratio: proportion of black population in MSA	0.132254	0.082375	0.130956	0.082063
Population[1] (in millions) of the MSA or Conglomerate MSA	3.155172	4.224886	3.056365	4.123421
Population Squared	27.80348	63.89585	26.34168	62.09758
Population Growth[2] (%)	17.43262	13.94209	17.15285	13.97138
Unemployment Rate of MSA in %	6.202835	1.936819	6.20125	1.909672
Temperature: Mean January Temperature of MSA in Fahrenheit[3]	38.51752	13.0691	38.43072	12.96015
Air Pollution (mg/m^3): The Particulate Level of MSA in the Air[4]	99.28968	52.27898	98.26915	51.18696
Crime Rate per 100,000 population in 1989 in MSA	6634.909	1750.402	6625.141	1771.75
Experience: Age – Schooling - 6	18.73443	11.02049	18.90527	10.91554
Experience Squared	472.4212	485.0408	476.5421	486.7634
Schooling	13.6493	2.858395	13.55697	3.011655
Married = 1, if married; (= 0 otherwise)	0.614459	0.486741	0.670384	0.470105
Children = 1, if with kid(s) above age 6 and under age 18	0.320716	0.466769	0.326794	0.469073
Infants = 1, if with kid(s) under age 6	0.189906	0.392241	0.215399	0.411127
Government Job = 1, if government job	0.183961	0.387466	0.1595	0.366166
Veteran = 1, if veteran	0.138859	0.345812	0.240527	0.427432
Union = 1, if a member of Labor Union	0.036401	0.187291	0.041655	0.199814
Move = 1, if moved across counties	0.058516	0.234726	0.060736	0.238862
Female= 1, if female	0.432746	0.495474		
Black = 1, if black	0.107171	0.309342	0.094061	0.291933
Region Dummies: North-East = 1, if resides in North-East	0.10021	0.300291	0.104004	0.305287
South = 1, if resides in the South	0.460083	0.498422	0.460898	0.498502
West = 1, if resides in the West	0.273584	0.445814	0.266192	0.441995
Excluded dummy: Midwest = 1, if resides in the Midwest				

(Continued)

Variable: Definition		Entire Sample		White and Black Males	
		Mean	St. Dev.	Mean	St. Dev.
Industry Dummies:	Agriculture (forestry, & fisheries)	0.010442	0.101653	0.01505	0.121759
	Mining	0.004423	0.066362	0.005241	0.072206
	Construction	0.044087	0.205295	0.070277	0.25563
	Durable (Goods)	0.114785	0.318774	0.156813	0.363649
	Non-Durable (Goods)	0.077007	0.266612	0.085998	0.280381
	Communication (transportation & public utilities)	0.085708	0.279943	0.107364	0.309596
	Wholesale (trade)	0.043652	0.204326	0.053883	0.225803
	Retail (trade)	0.139221	0.34619	0.142704	0.349794
	Finance (insurance & real estate)	0.078602	0.269126	0.051196	0.220412
	Business Service (& repair service)	0.053151	0.224342	0.062886	0.242775
	Personal Service	0.033573	0.180133	0.024053	0.153223
	Entertainment	0.012907	0.112877	0.013572	0.115712
	Professional Service	0.234428	0.423656	0.142838	0.349931
Excluded dummy: Public Administration					
Occupation Dummies:	Managerial	0.16083	0.367387	0.158156	0.364912
	Professional	0.156334	0.363185	0.138001	0.344924
	Technical	0.040171	0.196368	0.037759	0.190625
	Sales	0.107316	0.309526	0.112201	0.315635
	Clerical	0.170183	0.375808	0.07283	0.259875
	Private Household	0.004133	0.064159	0.000134	0.011592
	Protective (service)	0.020013	0.14005	0.030637	0.172344
	Other Service	0.081865	0.274169	0.062214	0.241561
	Farming (forestry & fishing)	0.011602	0.107089	0.018678	0.135393
	Craft	0.11696	0.321385	0.187718	0.390513
	Machine Operators (assemblers & inspectors)	0.060474	0.238372	0.070546	0.256081
	Transportation (& material moving)	0.038213	0.191718	0.063155	0.243258
Excluded dummy: Handlers, equipment cleaners, helpers & laborers					
Sample Size		13791		7442	

Notes: [1] If an MSA belongs to a conglomerate metropolitan area (CMSA), the CMSA population is used. [2] The growth rate of population in MSA or CMSA for 10 years (1980-1990). [3] Normal values over the 30-year period (average daily minimum), 1961-1990. [4] High second maximum 24-hour concentration (applicable NAAQS is 150mg/m^3) in micrograms per cubic meter in 1991.

Data Sources: Black ratio, Population from *Census 1990*; Crime Rate from *State and Metropolitan Area Data 1991*; Temperature from *City Data Book 1992*; Air Pollution from *National Air Quality and Emissions Trends Report 1991*; Unemployment Rate from Bureau of Labor Statistics, *Local Area Unemployment Statistics*; Composite Cost of Living Index from *Statistical Abstract of the United States 1994*; all other variables are from the CPS data.

APPENDIX   B

Summary Statistics for MSA Characteristics and MSA Means of Personal
Characteristics used for the Black Ratio Regressions of Table 3

Variable	Mean		Standard Deviation	
MSA Characteristics:				
Black Ratio	0.1156408		0.0986499	
Population	1.8601057		3.5445973	
Population Squared	15.943624		60.072003	
Population Growth (%)	12.409615		13.785639	
Unemployment Rate (%)	6.7314103		2.781478	
Temperature (F°)	36.392949		12.444282	
Air Pollution (mg/m^3)	84.634615		43.915033	
Crime Rate	6189.7244		1804.9309	
Region: North-East	0.1217949		0.328102	
South	0.410592		0.4918842	
West	0.25		0.4344073	
	Entire Sample[1]		**Male Sample**[2]	
Mean Personal Characteristics:	**Mean**[3]	**St. Dev.**[4]	**Mean**[3]	**St. Dev.**[4]
Experience	19.001805	1.9959067	18.943607	2.4931704
Experience Squared	484.76726	85.694131	477.78476	111.09884
Schooling	13.684851	0.6056033	13.621668	0.7759028
Children	0.3327134	0.0868943	0.3453259	0.103291
Infants	0.1846579	0.0655439	0.2171498	0.0880716
Veteran	0.1458159	0.0598788	0.2476566	0.1055847
Married	0.6328108	0.0998536	0.6956576	0.1068116
Move	0.0552627	0.04432	0.057624	0.0523615
Government Job	0.1997863	0.0870851	0.1805476	0.0997444
Union	0.0461569	0.0400988	0.0525926	0.0511363
Industry: Agriculture	0.0136609	0.0259036	0.0209169	0.0408548
Mining	0.004274	0.0102029	0.005616	0.015159
Construction	0.0461976	0.0348099	0.0710153	0.0508615
Durable	0.1212396	0.0794462	0.1652876	0.1107055
Non-Durable	0.0804873	0.0616083	0.087548	0.0756833
Communication	0.0898757	0.041608	0.1153752	0.0667885
Wholesale	0.0462959	0.03436	0.0593261	0.0481137
Retail	0.1381572	0.0511232	0.1314028	0.0656372
Finance	0.0711585	0.0401107	0.0465169	0.0406018
Business Service	0.0460678	0.0345108	0.0506961	0.0396707
Personal Service	0.0260211	0.0361953	0.0213562	0.0404712
Entertainment	0.0105588	0.014575	0.0115615	0.0211994

(Continued)

Mean Personal Characteristics:		Entire Sample[1]		Male Sample[2]	
		Mean[3]	St. Dev.[4]	Mean[3]	St. Dev.[4]
	Professional Service	0.2371564	0.0722076	0.1387263	0.0663416
Occupation:	Managerial	0.1494081	0.0600576	0.1434791	0.0766018
	Professional	0.1496088	0.0563394	0.133482	0.0696065
	Technical	0.0399133	0.0290576	0.0365906	0.0375449
	Sales	0.1075529	0.0507533	0.1065958	0.059285
	Clerical	0.1704702	0.05964	0.0693074	0.049519
	Private Household	0.0016663	0.0050729	7.603×10^{-5}	0.0006195
	Protective	0.0238798	0.0276502	0.0364606	0.0431451
	Other Service	0.0769674	0.0494975	0.0556802	0.0477806
	Farming	0.0144525	0.0249616	0.0231278	0.0393805
	Craft	0.120984	0.0547201	0.1954512	0.0933992
	Machine Operator	0.0653936	0.0518575	0.0748191	0.0618285
	Transportation	0.0488057	0.0351375	0.0790945	0.0559941
No. of MSA's		156		156	

Notes: [1] The entire CPS sample consisting of 28,113 observations. [2] The male sample, including races other than blacks and whites, consisting of 15,852 observations. [3] Mean over 156 MSAs of the MSA-specific averages for each personal characteristic. [4] Standard Deviation over 156 MSAs of the MSA-specific averages for each personal characteristic.

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