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Abstract: Recent work examines the market structure/racial earnings relationship for union and nonunion workers and finds that standardized union earnings protect black workers from market structure–driven earnings discrimination. This study examines the market structure/racial earnings relationship for low and mid-level managers in high- and low-union density industries. Our findings indicate that there is less market structure–driven discrimination of managers in highly unionized industries. We suggest that there is a spillover effect of reduced market structure–driven discrimination of managers in highly unionized industries that stems from standardized, more racially equitable wages of union workers.

Key words: discrimination, managers, market structure.

Economists have a revived interest in agency problems and the ability of managers to engage in discretionary behavior (Williamson, 1963). Particularly, investigating the notion that profit in noncompetitive industries gives managers the latitude for increased discretionary spending—resulting in excessive expenditure on workplace amenities
(Edwards, 1977), excessive wages for workers, and racial wage discrimination (Becker, 1971). The theory implies that noncompetitive market structure provides managers the latitude to engage in preference-based, market structure–driven earnings discrimination.

The theory premises on the notion that principals—business owners—have incomplete information, allowing agents—managers—to expend resources to indulge in wage discrimination. As a result, managers' ability to engage in market structure–driven earnings discrimination of workers has been carefully scrutinized in the literature (Agesa and Monaco, 2006; Coleman, 2004; Fujii and Trapani, 1978; Heywood, 1987; Johnson, 1978; Peoples, 1994). However, the market structure/discrimination literature loosely uses the term *managers* to refer to all levels of management as agents of discrimination. In reality, although the duties of low- and mid-level managers include hiring, firing, and determining the wages of workers, they are also subordinates to chief executives. Thus low- and mid-level black managers can also be victims of employer-based, market structure–driven discrimination, just as black workers can be victims.

This study examines the effect of market structure on earnings discrimination of lower- and mid-level black managers. A thorough examination of market structure–driven discrimination of this group is warranted. Indeed, Becker (1971) postulates that employers' tastes for discrimination might depend considerably on their contact with employees. Because subordinate managers work in close proximity to employers (presumably, closer proximity relative to workers), it is conceivable that they may be likely victims of preference-based, market structure–driven discrimination.

An understanding of market structure–driven discrimination of subordinate managers may also provide insights regarding scenarios in which they may be protected from it. Recent evidence finds that standardized union earnings protect black workers from market structure–driven earnings discrimination (Peoples, 1994). Thus if wage standardization from collective bargaining shields black workers in less-competitive industries from market structure–driven discrimination, then this study seeks to answer the question, is there a spillover effect of wage standardization and, therefore, less market structure–induced discrimination of black managers in highly unionized industries (relative to managers in less-unionized industries)? Such spillover effects are conceivable if internal labor markets are operable. Indeed, if internally promoted black managers experience standardized, less-discriminatory wages as union workers, then salaries free of market structure–driven discrimination would be necessary to entice them into management. As a result, we would expect less market structure–driven discrimination of black managers in highly unionized industries relative to less-unionized industries.

Background

The theory of market structure–driven discrimination

Becker (1971) provides a theory of labor market discrimination that explains discrimination as a result of managers' increased latitude for discretionary spending in noncompetitive markets. Specifically, intense pressure to reduce costs in fiercely competitive industries limits employers' latitude to engage in market structure–induced discrimination, whereas the lack of product market competition in noncompetitive industries provides the latitude for market structure–driven discrimination to thrive.

Many empirical exercises test this notion using either a single-industry or a multiple-industry approach. The single-industry approach has been used to examine the effect of deregulation on racial earnings in the motor carrier, airlines, rail, and telecommunications industries. See Heywood (1998) for a review of this literature. With the exception of the airline industry, single-industry studies find convincing evidence that enhanced competition reduces racial earnings discrimination; however, multiple- industry analyses of the relationship have met with mixed success.

Johnson (1978) provides a multi-industry test of the relationship and finds that market concentration insignificantly influences the racial earnings gap in communications, utilities, and transportation industries. In that same year, Fujii and Trapani (1978) find no evidence that market concentration significantly influences earnings discrimination in manufacturing industries. A shortcoming of both of these studies is that industry categories are designated with broad, two-digit Standard Indus- trial Classification (SIC), which may conceal the variance from more precisely defined industries that otherwise could yield significant results. Heywood (1987) provides an analysis of the relationship performed after 1980, when new industry definitions were created to allow more narrow industry classification by three-digit SIC, and finds strong evidence to support the relationship.

Peoples (1994) uses the Current Population Survey (CPS) to examine the relationship— emphasizing differences in the relationship for union and nonunion members—and finds no

significant effect of market structure on the racial wage gap for union workers and a modest but consistently significant effect for nonunion workers. His findings support the contention that unions standardize earnings (Freeman, 1980). Particularly, Freeman (ibid.) contends that union solidarity is difficult to maintain if some workers are paid markedly more than others. Further, although union and nonunion enterprises employ similar formal wage-setting practices within each job category, the options for individual wage differentials are generally larger in the nonunion sector—suggesting that unionization leads to wage standardization. Moreover, Peoples's (1994) findings provide evidence that unions' standardized earnings protect black workers from market structure–driven discrimination.

In the current analysis, findings that managers in high-union density industries experience wage standardization by race, gender, and education level would suggest that managers experience a spillover effect of wage homogeneity from union workers—evidence that is consistent with the notion of less market structure–induced discrimination of managers in highly unionized industries relative to less-unionized industries.

A recent test of the relationship that allows a different wage structure for union and nonunion workers (separate wage equations) finds support for our hypothesis (Agesa and Monaco, 2006). Yet findings of recent studies that restrict the impact of market structure on racial wages to be the same for union and nonunion workers find less convincing evidence (Agesa and Hamilton, 2004; Coleman, 2004); for instance, Agesa and Hamilton's (2004) test of the relationship utilizes the Public Use Micro Samples (PUMS), which provide no control for union membership. To compensate for the lack of union controls, they proxy union status with union density in one specification of their estimation of racial wage disparity. Notwithstanding, this method and each of their specifications, restrict the wage-determining process to be the same for workers in high- and low-union density industries.

The specification used by Coleman (2004) consists of a single equation for union and nonunion members with a union status control. Moreover, given the different structure of earnings for union and nonunion workers, the ability of Coleman's (ibid.) or Agesa and Hamilton's (2004) single-equation approach to accurately gauge market structure's differential impact for union and nonunion workers is problematic. In the current examination of market structure–driven discrimination of managers, we allow separate wage equations for managers in high- and low-union density industries. Such a procedure allows a different wage structure for managers in the two union density groups, thereby allowing a unique impact of market structure on racial wages for each group.

Managers and market structure–driven discrimination

Analyses of market structure–driven discrimination of workers provide some evidence that noncompetitive market structure allows firms more latitude to discriminate relative to firms in competitive industries. However, Becker (1971) suggests that employers' taste for discrimination might depend considerably on their contact with employees. Thus, the close proximity of low- and mid-level managers to employers indicates a need to examine market structure–driven discrimination of this group.

It might be useful to examine a scenario in which market structure–induced discrimination of workers may extend beyond wage-earning employees to salaried, low- and mid-level managers. Internal labor markets are labor markets such that workers are hired into entry level jobs and higher levels are filled from within. Workers enter or leave a firm through ports of entry and exit, with incumbents having priority with regard to internal promotion (Doeringer and Piore, 1971). Lazear and Oyer (2004) suggest that when internal labor markets are operable, wages are also determined internally, and may be free of market pressure. Moreover, theories of discretionary power suggest that the lack of product market competition in noncompetitive industries gives firms the latitude to pay above-market wages and the latitude to engage in market structure–driven discrimination (Heywood, 1987; Peoples, 1994). Thus, rents in noncompetitive industries may provide a particularly fruitful arena for supra-competitive wages generated in internal labor markets—at the same time providing the means for market structure–driven discrimination.

Lazear and Oyer (2004) propose a scenario of internal promotion in which workers are perfect substitutes for one another and workers rise within organizations based on seniority, nepotism, influence, and discrimination. In such a scenario, wages need not move very closely with market wages. Conceivably, internally promoted managers in less- competitive industries may be indoctrinated into a system where wages are not market driven and whites disproportionately benefit from the rents from less-competitive market structure. In such a scenario, market structure–driven discrimination could transcend up the job ladder to low- and mid-level black managers.

In external labor markets, workers move somewhat fluidly between firms and wages are determined by a market process, where firms do not have significant discretion over wage setting (ibid.). Such market- determined wage setting is consistent with wage determination in highly competitive markets, where fierce competition mandates that employers be more efficient in the distribution of wage payments. Moreover, recent evidence suggests that intense product market competition serves another purpose—reducing market structure–driven discrimination (Heywood, 1987; Peoples, 1994). Conceivably, externally hired managers in competitive industries may be indoctrinated into a system where fierce competition mandates that employers be more efficient and racially equitable in the distribution of wage payments. In such a scenario, racially equitable wages may transcend up the job ladder to low- and mid-level black managers in competitive industries.

Although, low- and mid-level managers are not usually covered by collective bargaining agreements, it is conceivable that wage standardization in highly unionized, less-competitive industries protects black managers from market structure–driven earnings discrimination. We utilize the hypothetical case of black union workers who are internally promoted to management. In union shops, workers are indoctrinated into a system where standardized, racially equitable wages are the norm. Conceivably, wages free of market structure–driven discrimination would be necessary to attract internally promoted black union workers to management, and the practice of paying less discriminatory wages would transcend up the job ladder to low- and mid-level black managers.

Although there are many theories to explain internal labor markets, empirical exercises have produced few indisputable conclusions (Baker and Holmstrom, 1995). Most internal labor market

studies utilize personnel data to investigate the allocation of workers and their wages. See Lin (2005) for a comprehensive review of this literature. The current study does not examine the correlation between the occurrence of internal labor markets and market structure–driven discrimination. We simply point out that less-competitive market structure provides an ideal scenario for each of these inefficient labor market processes to flourish. This study examines the effect of market structure on earnings discrimination of lower- and mid-level black managers. Further, given recent evidence that standardized earnings of collective bargaining protect black workers from market structure–driven discrimination, we seek to determine if there is less market structure–driven discrimination for managers in highly unionized industries relative to less-unionized industries. We suggest that the lack of market structure–driven discrimination in highly unionized industries stems from the standardized and more racially equitable wage-determining process of unionized workers.

Data

To test the above hypothesis, we use data taken from the CPS Outgoing Rotation Groups (ORGs) 1995–2000 of white and black male managers, age 16 and over, employed in manufacturing industries (National Bureau of Economic Research [NBER], 2005). [1] As managers are observed twice in CPS ORGs files, we omit their second observation. Because our analysis is of wages of low- and mid-level managers, 588 managers with top-coded wages are also removed from the data set.

We match individual manager's three-digit Census Industry Code (CIC) with industry-level data on four-firm market concentration, the capital–labor ratio, and plant size taken from the 1997 *Census of Manufacturers* (U.S. Census Bureau, 1997). We convert industry characteristics from five-digit North American Industry Classification System (NAICS) to three-digit CIC by weighing industry value of shipments. The capital-to-labor ratio (*K/L)* is calculated as expenditure on capital divided by industry employment. Plant size (*plant size*) is industry employment divided by number of establishments. Four-firm industry concentration ratios serve as our measure of product market competition; however, with some limitations. First, because the *Census* consolidates only four-firm concentration ratios for manufacturing industries into a readily accessible format, we limit our analysis to managers in manufacturing industries. However, because the manufacturing sector constitutes a small portion of the U.S. workforce (currently about 15 percent), this analysis does not provide a complete picture of the effects of market concentration on racial earnings for all workers in the labor market. Also, because industry concentration is a national statistic, it does not capture local or regional competitiveness (Agesa and Hamilton, 2004). Notwithstanding these limitations, four-firm concentration is the typical measure of firm concentration used in analyses of industry market concentration and labor market outcomes.

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[1] Ideally, we would have liked to use the annual March CPS files (NBER, 2005) for this analysis because they provide data on managers' annual salaries, a more accurate earnings measure for this group. However, because of the limited sample size of the March files, there were too few observations in each race, union density, and market structure cell to permit the measurement of differences in racial earnings for each subgroup.

Table 1 presents a breakdown of the wages of managers in our sample and their real hourly earnings (in 2000 dollars) by manager type and race. In many manager categories, blacks are paid less than their white counterparts. The exceptions are financial managers, personnel training managers, and purchasing agents. However, the number of black managers in each of these categories is small enough such that outliers may extremely bias average earnings.

Table 1
Wages of low- and mid-level managers in manufacturing industries: CPS ORGs, 1995–2000

	Average real hourly wage*	
Type of manager	Blacks	Whites
Financial managers	30.72	29.77
	(6)	(390)
Personnel and labor relations managers	16.09	27.24
	(12)	(248)
Purchasing managers	11.97	25.85
	(4)	(210)
Advertising and public relations managers	22.73	32.48
	(33)	(1,066)
Managers and administrators	23.70	31.76
	(196)	(7,015)
Management analysts	26.15	41.62
	(12)	(258)
Personnel training manager	23.38	21.78
	(32)	(348)
Purchasing agents	21.17	18.40
	(24)	(700)
Management-related occupations	19.65	25.47
	(9)	(319)
Total number	328	10,554

Notes: *Real hourly wages are in 2000 dollars. Occupations are by three-digit occupation code. The number of individuals in the category of managers is indicated by the number in parentheses. Top-coded earners are eliminated.

Table 2 presents a summary of black representation and average hourly earnings of managers by market structure, union density, and wage levels. Blacks are underrepresented in management but especially in higher wage management positions. Particularly, black representation is 3 percent and 2.4 percent in high- and low-density industries, respectively, and the average wage of blacks is $23.12 and $22.08, respectively. Yet blacks represent roughly 5 percent in each union density group in the lowest earnings quartile and only 0.5 percent in the highest quartile. Moreover, the findings of fairly equal black representation in high- and low-density industries suggest little spillover effects of worker unionization in reducing market structure–initiated employment discrimination of managers. [2]

Methodology

A switching regression technique is used to bifurcate managers into high-concentration, less-

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[2]Table 2 also indicates that black representation is highest in high-wage, less competitive industries (average wage $24.81, 3.8 percent black) relative to low-wage, less-competitive industries (average wage $22.74, 2.5 percent black)—indicating that without controls for union density, there is no evidence of market structure–driven employment discrimination.

Table 2
Percent black and average hourly wage of managers in manufacturing, 1995–2000

	Less competitive		Competitive	
	Percent black	Average hourly wage	Percent black	Average hourly wage
All managers	3.78	24.81	2.54	22.74
	High-union density		Low-union density	
	Percent black	Average hourly wage	Percent black	Average hourly wage
All managers	3.01	23.12	2.45	22.08
0–25th quintile	5.01	18.07	4.39	17.94
25th–50th quintile	2.61	21.57	1.63	21.64
50th–75th quintile	2.79	25.55	2.00	25.40
75th–100th quintile	0.47	29.83	0.45	29.51

Source: CPS ORG 1995–2000 (NBER 2005) with top-coded earners eliminated.

competitive industries and low-concentration, competitive industries. The critical concentration is 50 percent.[3] As a result, industries with four-firm concentration ratios equal to or exceeding 50 percent are classified as "less-competitive," whereas those lower than this threshold are designated as "competitive."

To estimate the relationship between market structure and racial wages for managers in the period 1996 to 2000, we utilize ordinary least squares (OLS). Specifically,

$$\ln(wage_i) = a + bX + cY + dZ + f(black) + g(less\text{-}competitive)$$
$$+ h(black*less\text{-}competitive) + u_i, \quad (1)$$

where $\ln(wage_i)$ is the log of hourly wages of managers in 2000 dollars, X is a matrix of managers' attributes, Y is a matrix of industry characteristics, and Z is a matrix of year and quarter time controls. Manager attributes include dummies for marital status (married and separated, divorced, or widowed, with single managers as the omitted group), region (northeast, north central, south, with west as the omitted group), an urban dummy (*cmsa*), education dummies (high school diploma, some college, college degree, graduate degree, with managers with less than a high school diploma as the omitted group), and veteran status as well as age and its square. Dummy variables for the type of manager are included (administrators and finance managers, managers and administrators, advertising and public relation managers, purchasing agents and personnel training managers, with other managers as the omitted group). The broad categories of managers reveal a shortcoming of using the CPS ORG for this analysis. The CPS utilizes three-digit occupational coding—sometimes producing large, heterogeneous

[3]A critical concentration of 50 percent is substantially lower than the critical concentration of 65 percent found in previous studies that utilize the *Census of Manufacturers* for 1982, 1987, and 1992 (Heywood, 1987; Peoples, 1994). The lower critical concentration found in the switching procedure used in this analysis is the result of fewer high-concentration manufacturing industries in the United States.

categories under a single occupational code. In our analysis, "managers and administrators" are a particularly large category of low- and mid-level managers in manufacturing industries. Indeed, the category "managers and administrators" consists of 7,211 observations and roughly 66 percent of all managers in our sample (see Table 1). Further, recent evidence suggests that this group of managers has particularly heterogeneous wages (Helwege, 1992). Thus, the use of broad dummy variable occupational categories to control for manager types in wage regressions could distort our findings of the market structure/discrimination relationship.

Industry-level variables in our regression (matrix Y) include plant size and the capital–labor ratio. The matrix of time controls includes a dummy variable for each year and quarter combination from 1995 to 2000 to account for yearly and quarterly changes in macroeconomic conditions (with the first quarter of 1995 as the omitted group).

The variables of particular interest to this study are the dummy variables for black racial status (*black*), less-competitive market structure (*less-competitive*), and the interaction of the two (*black*less-competitive*). The coefficient on the variable *black*, f, captures the black/white wage differential for managers in competitive industries. If this coefficient is negative, it provides evidence of earnings discrimination of managers in competitive industries. The coefficient on *less-competitive*, g, captures the change in earnings for white managers as a result of employment in less-competitive industries. If white managers are the beneficiaries of a portion of the rents in less-competitive industries, then we would expect this coefficient to be positive.

The interaction term, *black*less-competitive*, captures the differential effect of market structure on the racial wage differential of managers. If less-competitive market structure allows more latitude for wage discrimination against subordinate managers, then we would expect the coefficient to be negative. Moreover, the sum of coefficients f and g provides the measurement of the black/white wage differential for subordinate managers in less-competitive industries. It is important to note that our earnings specification assumes that there is no racial sorting into unionized industries. Thus, our measure of labor market discrimination is limited to gauging wage discrimination.

We next separate managers in manufacturing into two groups by the union density of the workers in the managers' three-digit CIC industry.[4] Specifically, managers in industries with union density at or above the median union density for each year are designated in high-union density industries, with managers in industries with density below the median are designated in low-density industries.[5] We then estimate Equation (1) separately for managers in high- and low-union density industries—allowing a different impact of market structure on racial earnings for managers in the two union density groups.

Wage equations estimated by OLS reveal how market structure affects the black/white wage gap of the average manager, providing no information regarding market structure's effect on the wage gap along the distribution of earnings. We utilize quantile regressions, as they provide

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[4] Data on union density by three-digit CIC are taken from Hirsch and Macpherson (2003).

[5] The median industry union densities are 17.6, 16.9, 15.7, 16.2, 16.3, and 15.5 for 1995, 1996, 1997, 1998, 1999, and 2000, respectively.

a less restrictive estimation procedure that allows the measurement of marginal effects of covariates on the earnings of managers at different points along the distribution of managers' earnings (Koenker and Bassett, 1978). The quantile regression procedure estimates the θth quantile of the log of hourly earnings of managers (y) conditional on covariates (ibid.). We perform quantile regressions separately for managers in high- and low-union density industries. We use these results to test whether market structure's effect on the earnings gap differs for managers at different earnings levels in high- and low-union density industries. Standard errors that are robust against arbitrary forms of heteroskedasticity of the error distribution are obtained by bootstrapping (Buchinsky, 1994).

Results

The racial wage gap of managers in competitive and less-competitive industries

Table 3 presents the racial wage gap in competitive and less-competitive industries and the difference in the racial wage gap under the two market structures for the subgroups of all managers and managers in high- and low-union density industries, respectively. The racial wage gap in competitive industries is derived from the coefficient on *black* in Equation (1), where significance is determined by a *t*-test of the coefficient for each subgroup. The interaction term measures the differential wage gap in competitive and less-competitive industries and is indicated by the added differential column in Table 3 for each subgroup. Moreover, the added differential directly tests Becker's (1971) theory for each group of managers, as it captures the added racial wage gap in less-competitive industries relative to the gap in competitive industries. Specifically, if less-competitive market structure promotes increased racial wage gaps, then Becker's assertion is true for that subgroup. The racial wage gap in less-competitive industries is derived from the sum of the coefficients on *black* and *black*less-competitive* in Equation (1) and significance is determined by an *F*-test of joint significance for each subgroup. The complete OLS results for each subgroup are available from the authors on request.

  The top portion of Table 3 indicates that black managers in competitive industries earn 16.6, 14.2, and 17.7 percentage points less than their white counterparts overall and in high- and low-union density industries, respectively.[6] These findings reveal a smaller racial wage gap in competitive industries in highly unionized industries relative to low-union density industries—findings consistent with wage standardization by race in highly unionized industries. The added wage differential in less- competitive industries is insignificant for all managers and those in high- and low-union density industries, respectively, indicating that the racial wage gap is insignificantly larger in less-competitive industries relative to competitive industries for all managers and managers in high- and low-union density industries.

  Adding the racial wage gap in competitive industries (the coefficient on *black*) and the added differential for each subgroup (the coefficient on the interaction) yields the black/white wage gap for managers in less-competitive industries for that subgroup. We utilize an *F*-test of the

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[6] The marginal impact of a characteristic on the wage of the group in question is found by taking the exponential of the estimated coefficient minus one and multiplying by 100.

Table 3
A summary of the black/white wage gap for managers in manufacturing industries, 1995–2000

	Competitive	Added differential	Less competitive
All managers	0.1655***	0.0010	0.1665

	High-union density			Low-union density		
	Competitive	Added differential	Less competitive	Competitive	Added differential	Less competitive
All	0.1420***	0.0246	0.1666	0.1767***	0.1951	0.3718**
25th quantile	0.0761*	0.1960**	0.2721**	0.2233***	0.3701***	0.5934***
50th quantile	0.1187***	0.0138	0.1325	0.1602***	0.0640	0.2242*
75th quantile	0.1488***	0.0163	0.1651	0.1538***	0.1771**	0.3309**
90th quantile	0.1563**	0.1127	0.2690	0.1778***	0.2697**	0.4475**

Notes: The racial wage gap in competitive industries is derived from the coefficient on *black* in Equation (1), where significance is determined by a *t*-test of the coefficient. The racial wage gap in less-competitive industries is derived from the sum of the coefficients on *black* and *black*less-competitive* in Equation (1) and significance is determined by an *F*-test of joint significance. For both *F*- and *t*-tests ***, **, * indicate significance at the 1, 5, and 10 percent levels, respectively.

joint significance of these variables and find a significant racial wage gap of 37.2 percentage points for managers in low-union density, less-competitive industries. Because the added wage gap in less-competitive industries relative to competitive industries is insignificant in each specification, our OLS results find no support for Becker's hypothesis. However, an examination of the differences in the magnitude of the wage gap in less-competitive industries in high- and low-union density industries (0.1666 and 0.3718, respectively) foreshadows differences in market structure–driven discrimination of black managers that will be exposed utilizing quantile regression.

Quantile estimates in high-union density industries

The lower portion of Table 3 provides a summary of quantile regression estimates of the racial wage gap in competitive and less-competitive industries and the added racial wage differential between the two market structures. Results for managers in high-union density industries are presented on the left. The black/white wage gap in high-union density, competitive industries is 7.6, 11.9, 14.9, and 15.6 percentage points at the twenty-fifth, fiftieth, seventy-fifth, and ninetieth quantiles, respectively. The added differential in less-competitive industries is significant for managers in the twenty-fifth quantile—indicating that less-competitive market structure increases the racial wage gap of low-salary managers in highly unionized industries by 19.6 percentage points relative to the gap in competitive, highly unionized industries. An *F*-test for the joint significance of *black* and *black*less-competitive* reveals a significant racial wage gap of 27.2 percentage points of managers in highly unionized, less-competitive industries at the twenty-fifth quantile. However, the added differentials are small and insignificant for managers in the median through ninetieth quantile—suggesting there is no substantial difference in the racial wage gaps for medium and high salary managers in competitive and less-competitive industries. These findings provide little support for Becker's hypothesis for managers in highly unionized industries.

Quantile estimates in low-union density industries

The lower right portion of Table 3 provides a summary of quantile regression estimates of the racial wage gap in low-union density industries in competitive and less-competitive industries. The racial wage gap in competitive, low-union density industries is 22.3, 16.0, 15.4, and 17.8 percentage points for managers at the twenty-fifth, fiftieth, seventy-fifth, and ninetieth quantiles, respectively. It is interesting to note that at each level of the earnings distribution, the racial wage gap in competitive industries is consistently higher in low-union density industries relative to high-union density industries (comparing columns 2 and 5 of Table 3).

The consistently smaller racial wage gap for managers in competitive, highly unionized industries relative to the gap for their counterparts in competitive, low-union density industries provides support for the notion that standardized union wages that reduce earnings disparity of union workers (Freeman, 1980) have an additional effect of reducing earnings disparity of managers in highly unionized industries.

The added racial wage differential in less-competitive industries tests Becker's hypothesis at each quantile for managers in low-union density industries (column 6). We find a significant difference in the racial wage gap in competitive and less-competitive industries of 37.0, 17.7, and 27.0 percentage points for managers at the twenty-fifth, seventy-fifth, and ninetieth quantiles. These findings provide support for the notion that in low-union density industries, less-competitive market structure provides increased latitude for racial earnings discrimination against black managers. [7] Moreover, quantile estimates of the black/white wage gap for managers in low-union density, less-competitive industries are presented in column 7. We find a significant racial wage gap of 59.3, 22.4, 33.1, and 44.7 percentage points for managers at the twenty-fifth, fiftieth, seventy-fifth, and ninetieth quantiles, respectively.

It is worthy of mention that market structure–driven discrimination of managers in low-union density industries displays no distinguish- able pattern by earnings level. For instance, the differential impact of market structure on the racial earnings gap is smallest at the median quantile, then it increases for higher wage managers; yet, the impact is largest for workers at the twenty-fifth quantile. The erratic pattern of market structure–driven discrimination by wage levels for low-union density industry managers is in contrast to recent work that reveals a systemic pattern for nonunion workers (Agesa and Monaco, 2006). [8]
The contrasting finding by wage level for workers and managers may stem from this study's inability to distinguish managers by the actual unionization of workers in their shop utilizing CPS data. Thus, we employ a feasible second-best alternative—separating managers into two groups by the union density of workers in the managers' three-digit CIC industry classification. Moreover, our approach lacks precision in connecting managers to the union status of their workers and, therefore, may not completely capture the pattern of market structure discrimination by wage level.

Notwithstanding, our analysis provides convincing evidence of less market structure–induced discrimination of black managers in highly unionized industries relative to managers in less-unionized industries. We suggest that internal labor markets in low-union density, less-competitive industries may promote preference-based, market structure–driven earnings discrimination, whereas market-dictated efficiency in competitive industries is consistent with external promotion.

The returns to education of managers in high- and low-union density industries

The returns to education, as indicated by the coefficients on the education categories in

[7] In separate analyses not shown (but available on request), OLS and quantile wage regressions were run for black and white female managers in high- and low-union density manufacturing industries. The goal was to test for market structure–driven racial earnings discrimination for female managers at different wage levels. Thus, the exact specifications that are outlined in our methodology section were run for female, black, and white managers. We find little evidence of market structure racial earnings discrimination for females. Further, dividing the data into high- and low-union density industries and using quantile regression to examine racial wages by earnings level produced little evidence of reduced market structure–driven racial earnings discrimination of females in highly unionized industries.

[8] Specifically, Agesa and Monaco (2006) find substantial evidence of market structure–driven discrimination of nonunion workers and that high-wage black nonunion workers experience less market structure–driven discrimination relative to their low-wage counterparts.

Table 4
A summary of the returns to education for managers in manufacturing industries, 1995–2000

	Education levels				
	High school diploma	Some college	Associate degree	College degree	Graduate
Managers					
All	0.2296***	0.3364***	0.3700***	0.6718***	0.8176***
High-union density	0.1821***	0.3045***	0.3235***	0.6279***	0.7350***
Low-union density	0.2724***	0.3708***	0.4145***	0.7143***	0.8795***
High-union density by quantile					
25th	0.2108***	0.2995***	0.3554***	0.7039***	0.9523***
50th	0.1020	0.2137***	0.2761***	0.5743***	0.6869***
75th	0.1909***	0.3148***	0.2964***	0.6901***	0.7905***
90th	0.1327	0.2198*	0.2057	0.5439***	0.6339***
Low-union density by quantile					
25th	0.2639***	0.3593***	0.3971***	0.7386***	01.0029***
50th	0.3019***	0.3545***	0.4114***	0.6691***	0.9925***
75th	0.3098***	0.4144***	0.4404***	0.8139***	0.9784***
90th	0.5708***	0.6552***	0.7165***	1.0993***	1.2065***

Notes: The return to each level of education for a group is derived from the coefficient on the education category variable in Equation (1), where significance is determined by a *t*-test of the coefficient. ***, **, * indicate significance at the 1, 5, and 10 percent levels, respectively.

Equation (1), are presented to test if wages are more standardized by education level for managers in highly unionized industries relative to less-unionized industries. Table 4 provides a summary of the returns to education as indicated by the coefficients on the education categories in Equation (1). The top portion of Table 4 provides a summary of the returns to education categories and their significance for all managers (first row) and managers in high- and low-union density industries (second and third row, respectively). It is interesting to note that the coefficients on the education dummies are consistently higher for managers in low-union density industries relative to managers in high-union density industries. For instance, the returns to a high school diploma are 18.2 and 27.2 percentage points more relative to managers with less than a high school diploma for managers in high- and low-union density industries, respectively. These findings are consistent with the assertion of wage standardization in highly unionized industries.

If we compare the quantile estimates of the returns to education for managers in high- and low-union density industries (Table 4, rows 4–6 and 7–10, respectively), the returns to education is consistently higher for managers in low-union density industries relative to managers in high-union density industries at each quantile. These findings are consistent with our findings in the OLS model and provide additional support for the contention of wage standardization in highly unionized industries. [9]

We test the robustness of our results. Specifically, a previously mentioned shortcoming of our regression specification is the inclusion of broad occupational dummies for each category of managers. Particularly, the category "managers and administrators" constituted a very large and heterogeneous group of subordinate managers. The heterogeneity of this group may have distorted our findings in either direction—suggesting that there is a relationship between market structure and discrimination for managers when, in essence, there is not, or diluting the estimated relationship. To test this, we reestimate quantile regressions (at the twenty-fifth, fiftieth, seventy-fifth, and ninetieth quantiles) separately by union density (high- and low-union density) and manager category (managers and administrators and all other managers). Our findings for each of the two groups reveal a similar pattern as our quantile estimates of the entire sample—small and insignificant coefficients for the *black*less-competitive* interaction term for managers at most quantiles in high-union density industries, and large estimates on that coefficient in low-union density industries—albeit, the significance of coefficients dramatically declines as a result of the drastic reduction in sample size. Moreover, these findings, taken in conjunction with previous analyses of market structure–driven discrimination of union and nonunion workers (Peoples, 1994), provide support for the notion that standardized union work rules and wages offer black workers and managers a sanctuary from market structure–driven discrimination.

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[9] In separate analyses not shown (but available on request), OLS and quantile wage regressions, separate for managers in high- and low-union density industries, were run which included both male and female managers. The specifications included a gender dummy, as well as the controls in Equation (1). A comparison of the coefficients on the gender dummy for managers in high- and low-union density industries allows the test of wage standardization by gender in highly unionized industries. We find evidence of smaller gender earnings gaps in highly unionized industries—indicating wage standardization by gender in highly unionized industries.

Conclusion

The literature on market structure and earnings discrimination of union and nonunion workers provides evidence that unionization protects black workers from market structure–driven earnings discrimination (ibid.). This study extends prior research on the role of unionization in altering the market structure/racial earnings relationship by examining the relationship for low- and mid-level managers. Given that managers routinely are not covered by collective bargaining agreements, a formidable way to examine unionization's role in altering the relationship for this group is to estimate the relationship separating managers into those in high- and low-union density industries. Moreover, this study seeks to determine if wage standardization in highly unionized industries protects black managers from market structure–driven discrimination similarly to the way that unionization protects black workers. Further, this study utilizes quantile regression, which provides a complete analysis of the market structure/racial earnings relationship for managers along the spectrum of earnings levels.

We find little evidence of market structure–driven discrimination for black managers at various earnings levels in highly unionized industries. In fact, only managers at the twenty-fifth quantile have a larger earnings gap in less-competitive industries relative to the gap at this quantile in competitive industries. Regressions of earnings of managers in low-union density industries that utilize measures of central tendency find no evidence of market structure–driven discrimination for this group—for in- stance, regressions around the median quantile and OLS evaluated for the average manager in low-union density industries each find an insignificant influence of less-competitive market structure on earnings discrimination. However, quantile regressions evaluated at most other quantiles find evidence of market structure–induced discrimination of black managers in less-unionized industries. These findings provide evidence of market structure–driven discrimination for black managers in low-union density industries, and weak evidence (only at the twenty-fifth quantile) for their counterparts in highly unionized industries. We also find evidence of wage standardization by race, gender, and education in highly unionized industries—findings consistent with the contention of less market structure–driven discrimination in highly unionized industries.

Caution is warranted in the interpretation of our results. Specifically, our analysis is limited to manufacturing industries and, therefore, our findings are not necessarily indicative of patterns of market structure–driven earnings discrimination for the entire labor market. Further, we do not account for racial sorting into union employment. Notwithstanding, this study provides evidence that the environment of increased racial earnings equality that is created by standardized wages and work rules of unionization transcends workers directly protected by collective bargaining agreements—in this case, reducing market structure–driven discrimination of black managers at most earnings levels in highly unionized industries.

There are policy implications of our results. Our findings indicate that workers' unionization protects black managers from market structure– induced discrimination; however, unionization has declined dramatically in the past three decades (Farber and Western, 2001). Thus, our results, taken in conjunction with previous findings that unionization also protects black workers from market structure–driven discrimination (Peoples, 1994), indicate that black managers and workers are quickly losing a refuge from market structure–driven

discrimination. Accordingly, increased antidiscriminatory policies may be necessary to combat black workers' and managers' potentially increased exposure to preference-based, market structure–driven discrimination as a result of declining unionization.

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