Prejudice and the Economics of Discrimination

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Abstract

This paper re-examines the role of prejudice in labor market discrimination against racial minorities. We review Becker's (1957) model of employer discrimination, outlining its main implications. We argue that the widely accepted theoretical result from Becker that competition ultimately forces prejudiced employers to shut down can be reversed with two reasonable assumptions. First, following Becker, we characterize an employer as being the residual-claimant owner of the firm's capital. However, we also emphasize that a manager who makes hiring, firing and wage-setting decisions is himself a labor input. Second, we argue that a prejudiced employer's tastes would be taken with him to any other role he might occupy in the labor market – a prejudiced employer who shuts down and takes a new job would be a prejudiced worker at that job. We show that whether prejudiced employers shut down in the long-run depends on the expected racial composition of their co-workers at other firms. Discrimination can therefore survive if something prevents firms from segregating sufficiently by race. We argue that Becker's *employee* discrimination model should be viewed as a general model of discrimination, with the roles of employers and employees determined endogenously.

The second part of the paper presents empirical evidence on racial prejudice and its relationship to black-white wage gaps across regions of the U.S, something not previously done in the large discrimination literature. We discuss trends and cross-sectional patterns in racial prejudice using data from the General Social Survey. We then show that as predicted by our characterization of Becker's model, the self-employed are more prejudiced than the average worker. Since most self-employed have no employees, we take this result to be evidence of market-induced segregation. Next, using data from the Current Population Survey from 1973 to 2002, we show that the black-white wage gap is greatest in the most prejudiced regions of the U.S. Finally, we show that, as predicted by Becker (1957), black-white wage gaps are more closely related to the prejudice of the "marginal discriminator" than to the average prejudice in an area.

1.   Introduction

Becker's (1957) "The Economics of Discrimination" launched the formal analysis of labor market discrimination among economists, and provided a framework that has profoundly influenced all subsequent work on the subject. Becker's analysis focused on the relationship between racial prejudice among whites and discrimination against racial minorities in a competitive model. In contrast to much of the contemporaneous literature, Becker formalized the definition of racial preferences, depicting them as an aversion to cross-racial interaction.   In a series of models, he analyzed the effect of the possession of such preferences among customers, co-workers and employers.

In the short-run version of the employer discrimination model, racial prejudice causes some employers to regard black workers as more expensive than they truly are.   Despite being equally productive, the model shows that blacks might nonetheless receive lower wages in equilibrium. In the long run, however, as new, unprejudiced employers enter the market, the resulting competitive pressure forces erstwhile discriminating employers to shut down and leave the market. The notion that employer, taste-based discrimination cannot survive in the long run was further fleshed out by Arrow (1972), who memorably remarked that the employer discrimination model "predicts the absence of the phenomenon it was designed to explain."[1]   Faced with this apparent limitation of taste-based models of employer discrimination, most recent theoretical work on discrimination has tended to ignore the role of prejudicial tastes among employers entirely as a source of racial wage gaps, emphasizing instead considerations like imperfect information in statistical discrimination models (Aigner and Cain (1977), Altonji and Pierret (2001)), imperfect competition in dual labor market and local monopsony models (Doeringer and Piore (1971), Black (1995)), and racial difference in productivity (Neal and Johnson (1996)).[2]

But is the widely-held view that discrimination based on employer racial distaste cannot survive in the long run warranted? And, is the corresponding research focus on alternative explanations

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[1] Arrow (1972), p. 192.
[2] Some recent empirical work offers tantalizing evidence that racial prejudice might matter for racial wage determination. For example, in an interesting and widely-known paper, Bertrand and Mullanaithan (2004) find that resumes with black sounding names sent to potential employers received fewer call backs than did other resumes. Although statistical discrimination might account for these results as suggested by later results on naming conventions studied by Fryer and Levitt (2004) the fact that so many personal traits of likely interest to employers are explicitly controlled for on the false resumes leaves open the possibility that some other force, possibly racial prejudice, might be at work.

to the virtual exclusion of analyses of racial prejudice justified? Casual empiricism suggests that prejudicial feelings of the most odious sort were a feature of the American landscape for many scores of years, and logic dictates that these views have had *something* to do with racial discrimination against minorities.   Given this, plus the profound influence of Becker's conceptualization of prejudice, this paper re-examines the possible role of employer racial prejudice as a source of racial discrimination. We conclude that the commonly accepted idea that prejudice-based discrimination cannot survive in competitive markets is not theoretically true under a reasonable modification of the assumption about how prejudice likely operates. Further, we present substantial empirical evidence showing that racial prejudice appears to matter empirically for racial wage gaps, contrary to the null under which most economists now operate.

Our analysis is broken into two parts. The first re-examines prejudicial tastes in a model of competitive equilibrium.   This theoretical part of our analysis differs from Becker's original model and the analyses that followed in three simple but subtle ways. First, we clarify that the term employer refers both to the owner of the firm's capital—as Becker's analysis emphasizes—and to the manager residual-claimant who makes hiring, firing and wage setting decisions and who is a labor input himself. Next, we treat the terms "employer" and "co-worker" as referring less to distinct market actors than to particular *roles* played in the labor market. In other words, we endogenize the choice of whether to be an employer, or manager. Finally, we acknowledge explicitly that the prejudiced employer who shuts down his firm in the face of competition carries any racial animus he possesses into any other labor market role he plays: his prejudice is *role-independent*, or *portable*. That is, a prejudiced employer who shuts down becomes, in our framework, a *prejudiced* worker, concerned both about the wages he receives and the race of his new co-workers.

We show that the very reasonable assumption that an individual's racial prejudices are independent of the particular role he plays in the labor market dramatically changes the conclusions about when or whether prejudiced employers shut down their firms in the face of long-run competition.   We show, in particular, that a prejudice-based model yields a long-run equilibrium in which discrimination is *not* necessarily driven out of the market. Because a prejudiced employer must consider the counterfactual racial composition of his co-workers when deciding whether to shut down his firm, the persistence of racial wage differences due to discrimination depends on the market's ability to segregate workers by race. Any hindrance to segregation may lead to long-run differences in wages attributable to prejudice. Put differently,

of the two market forces Becker emphasized for their role in reducing market discrimination—competition and segregation—we believe segregation should receive more attention than it has from economists. Finally, since our analysis endogenizes an individual's decision to be a worker or an employer, it makes clear that employer and employee discrimination which have hitherto been analyzed in two separate models can, and should, be treated in a single framework.

Having re-established a potential important theoretical role for racial prejudice in a standard competitive model of wage determination, the second part of our paper turns to an exercise never before conducted in the large literature on discrimination – formally assessing the empirical relationship between prejudice among whites and the racial wage gap. To measure prejudice, we use the rich information on racial sentiments available in multiple waves of data from the General Social Survey (GSS). We summarize racial prejudice among whites as a whole, and among white employers and high-skilled workers separately. After showing broad patterns of racial prejudice across regions, and summarizing how they have changed over time, we test one important implication Becker's theory: that more prejudiced workers should seek to segregate themselves from blacks in equilibrium. Consistent with this prediction, we show that the self-employed, who tend to have no employees or coworkers, are more prejudiced than the average worker. By contrast, consistent with our argument about the labor market roles being endogenously determined, we find those in supervisory occupations are equally prejudiced to non-supervisors, conditional on measures of skills.

We next formally assess the association between these prejudicial feelings and the wages of blacks and whites across different regions in the U.S. To conduct this part of our analysis, we merge data from the GSS with individual level data from the Current Population Survey (CPS). We perform a series of regressions relating state-level racial wage gaps to various measures of prejudice among whites. Generally, we find that the racial wage gap tends to be largest in states where average prejudice among whites is highest. These relationships are found whether average prejudice in the state is measured among all whites overall, or among high-skilled white workers. The standard prejudice discrimination model suggests that it is not the prejudice among all whites or among all white employers which determines the racial wage gap, but rather the prejudice of the employer who is indifferent between hiring a black and a white worker in equilibrium. We use a simple theoretically-based argument, combined with information about the incidence of blacks in the division, to identify the (prejudice of) the marginal discriminator in the data. The results are quite striking and surprisingly robust, given the obvious measurement error inherent in

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identifying the marginal discriminator. Just as the model would predict, we show that the overall wage penalty experienced by blacks is largest where this marginal employer is more racially prejudiced. Despite the strong correlation between the various community prejudice measures studied, we show that in a "horse-race" of the various measures, most of the associations above load onto the marginal discriminator term rather than the average prejudice measures.

The absence of an instrument for prejudice in the regression analysis prevents us from arguing that the various associations we document are causal. However, the rich set of covariates for which we are able to control using the CPS data means that we are able to exclude some of the most obvious alternative explanations for the patterns we document – such as the notion that the most racist places in the country are also places were black are less skilled, at least along the dimension of years of completed schooling. And, the "horse-race" specifications show that black relative wages are lower in labor markets where the marginal discriminator is more prejudiced, even controlling for measures of average prejudice in the state. Finally, our results are robust to a range of robustness tests and extensions, including specifications in which we control for test score and school quality differences across states.

On the whole, the results are broadly suggestive of an important role for racial prejudice among whites in explaining racial wage differences. The combination of these empirical results with the theoretical results from the first part of the paper showing that employer prejudice can theoretically lead to long run wage differences for blacks argues strongly for a reconsideration of the notion that racial prejudice has little to do with explaining observed wage and income differences by race.

The remainder of the paper proceeds as follows. The next section briefly reviews Becker's employer racial distaste model, and presents our alternative formulation. Section 3 summarizes the data used in the paper. Section 4 presents the paper's main empirical results. Section 5 discusses various extensions and Section 6 concludes.

2. Theoretical Overview

Setup

We briefly review Becker's original (1957) analysis of employer prejudice discrimination, and Arrow's (1971, 1972) subsequent re-evaluation of this work. To focus attention on the demand-

side considerations that are the center of their analyses, white (a) and black (b) workers are assumed to be perfect substitutes in a production process that is constant returns to scale. Employers are assumed to be white. Becker represents prejudice as a distaste, or aversion, that a person holds for cross-racial contact.

An employer's utility, V_i, depends both on his profit and on the number of blacks he employs, with each black worker the he hires bringing him disutility of $d_i \geq 0$. In the short run, an employer chooses white and black labor (L_a and L_b) to maximize his utility

$$V_i = \pi_i - d_i L_b, \tag{1}$$

where $\pi_i = f(L_a + L_b) - w_a L_a - w_b L_b$ is the firm's profit, w_a and w_b denote white and black wages, respectively; and $f(\cdot)$ is the constant returns to scale production function. (We drop the i subscripts on the firm's choice of labor for convenience.)

The utility maximizing choices, L_a^* and L_b^* for this problem satisfy the conditions:

$$f'(L_b^* + L_a^*) - w_a \leq 0, \qquad \text{with equality if } L_a^* > 0$$

$$\tag{2}$$

$$f'(L_b^* + L_a^*) - w_b - d_i \leq 0, \quad \text{with equality if } L_b^* > 0$$

Condition (2) is the familiar result that if an employer hires a particular type of labor at all, he does so up to the point where its marginal product equals its marginal cost, as assessed by the employer. For white labor this marginal cost is simply the wage w_a; for black labor it is the wage of blacks, plus the employer's prejudice, or $w_b + d_i$. This result captures the essence of Becker's insight: prejudiced employers behave *as if* black workers' monetary wages are higher than they actually are. Since the two types of labor are perfect substitutes, (2) implies that employers hire only white workers if and only if their prejudice is such that $w_a < w_b + d_i$, and hire only black workers otherwise. Employers for whom $w_a = w_b + d_i$ are indifferent between hiring white and black workers.

Conventional Equilibrium Analysis: Short and Long Run

Equilibrium in the short-run requires that the markets for white and black workers clear, at equilibrium wages w_a^* and w_b^*. Assuming a sufficiently smooth distribution of prejudice, some employer will be the "marginal discriminator", in that he is just indifferent between hiring black and white workers. This marginal discriminator's prejudice, d_i^*, is, in fact, equal to the equilibrium racial wage gap, since in equilibrium

$$w_a^* = w_b^* + d_i^*, \tag{3}$$

where the asterisks indicate equilibrium values. Employers more prejudiced than the marginal discriminator hire only whites; those less prejudiced than d_i^* hire only blacks, and the markets for both black and white workers clear in equilibrium. Note that if the marginal discriminator is unprejudiced, there is no racial wage gap in equilibrium. If instead, market clearance requires that some blacks be hired by prejudiced employers, then black wages will be lower than white wages to induce these more prejudiced employers to hire blacks.

This discussion shows that the market acts, in equilibrium, to sort prejudiced persons away from the object of their prejudice. Thus, blacks are hired by the least prejudiced employers in the market, while whites are hired by the most prejudiced. Reinforcing this sorting effect is that firm size will tend to differ by the employer's level of prejudice. Since the last worker hired by an employer has marginal product equal to his wage, and since more prejudiced employers hire more costly white workers, the marginal product of labor in these firms exceeds the marginal product of labor in the less prejudiced firms that hire only blacks.[3] Declining marginal product of labor ensures that the latter firms are larger in equilibrium than their more prejudiced counterparts.

The fact that blacks are not hired randomly among all employers but tend instead to be hired by the least prejudiced employers leads to the important implication that the racial wage gap is not determined by the prejudice of the *average* employer in the market, but rather by that of the most prejudiced employer with whom blacks interact in equilibrium. Of course, the prejudice of this marginal employer is likely to be larger the higher is the average level of prejudice among employers, but it is more generally a function of the number of blacks in the labor market and the distribution of prejudice among all employers. As the number of blacks in the market increases,

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[3] As stated above, prejudiced employers only hire white labor if it is less costly to do so, net of their personal prejudice, than it would be to hire black labor. However, a positive wage gap implies that white labor is more costly to those who hire whites than black labor is to unprejudiced employers.

the marginal employer will be ever more prejudiced and the racial wage gap correspondingly higher. Because blacks are a small minority in the U.S., the marginal employer in every labor market is likely someone whose level of prejudice is below the median (or average) prejudice among all employers. The sorting mechanism described above combined with blacks' small share of the overall population means that blacks will not, in equilibrium, interact with employers more prejudiced than the median or average among employers.

In summary, Becker's model implies that, for observed racial wage gaps, average employer prejudice should matter less than a measure of the prejudice of the most prejudiced employer with whom blacks interact, given black representation in the population and the hiring rules outlined above. If firms are of uniform size, and p is the fraction of blacks in the workforce, the marginal employer will have prejudice given by the pth percentile of the employer prejudice. If relatively unprejudiced employers tend to be larger as discussed above, the marginal employer's prejudice will be something less than the pth percentile.

We have thus far been speaking of a short-run version of the basic model, in which capital is fixed. Many authors, beginning with Becker but most famously articulated by Arrow, have suggested that the equilibrium and predictions discussed above cannot hold in the long run. Central to their argument is the fact that in the short-run equilibrium discussed above, the firms less prejudiced than the marginal discriminator earn higher profits than their more prejudiced counterparts who choose to employ more expensive white labor. Both Becker and Arrow, and subsequent writers like Altonji and Blank (1999) make this point verbally but it is straightforward to illustrate formally.

Let $\Pi\left(w_a^*, w_b^* \mid d_i\right)$ be the profit received by an employer with prejudice d_i at the equilibrium wages w_a^* and w_b^*. If there is a racial wage gap, unprejudiced employers receive profit of

$$\Pi\left(w_a^*, w_b^* \mid d_i = 0\right) = f\left(L_b^*\right) - w_b^* L_b^* \tag{4}$$

while employers more prejudiced than the marginal discriminator receive profit of

$$\Pi\left(w_a^*, w_b^* \mid d_i > d_i^*\right) = f\left(L_a^*\right) - w_a^* L_a^* \tag{5}$$

At first blush it would appear that we cannot say whether (4) exceeds (5), since the two optimal

workforces chosen by the two types of firms, L_b^* and L_a^*, are not of the same size. However,

since a totally unprejudiced employer is indifferent about the race of his workforce he hires, and

since such an employer could have hired the workforce L_a^* at the equilibrium wage w_a^*, but

chose to hire the L_b^* at the wage w_b^* instead, it *must* be true that firms more prejudiced than the

marginal discriminator earn less profit in the short run than unprejudiced employers. That is

$$\Delta = \Pi\left(w_a^*, w_b^* \mid d_i = 0\right) - \Pi\left(w_a^*, w_b^* \mid d_i > d_i^*\right) > 0 \tag{6}$$

Stressing that unprejudiced firms earn larger profits, previous authors, including Arrow and

Becker, argue quite reasonably that capital adjustment in the long run guarantees that

unprejudiced firms expand at the expense of their more prejudiced counterparts. Competition

ensures that prejudiced firms are driven out of the market in the long run, so that any racial wage

gap against black workers disappears and the sharp predictions outlined above vanish.

An Alternative Formulation

The key mechanism previous authors have in mind for the long run adjustment is the fact that

capital flows in the long run tend to favor less prejudiced firms. We represent the conventional

verbal argument with a simple formulation. We argue that the prediction that any wage gaps

attributable to employer prejudice are necessarily driven to zero in the long run depends on a

peculiar, implicit assumption in previous treatments. When this assumption is relaxed, we argue,

the conventional argument about what happens in the long-run need not hold.

To see the logic of the conventional argument, and where we differ with it, notice that Becker and

Arrow's arguments imply that the return to capital must be the same across all firms, regardless

of the firm's prejudicial tastes or racial composition. Any capital owner who does not earn this

competitive return can sell his capital to an unprejudiced person and both parties benefit.[4]

Suppose therefore that all employers rent capital at a price P_k . We suppose as well that persons

with the skills necessary to be employers have the option to sell their labor as workers in the labor

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[4] One reading of Becker (1957) and Arrow (1971) is that they take employers to be the owners of the firm's
capital. One reason prejudiced capital owners leave the market is that their outside option does not involve
market interaction with blacks. In contrast, we take the term "employer" to combine two roles: a capital
owner or renter and a supervisor who makes hiring, firing, and wage decisions and who is himself a labor
input.

force, and receive a wage W_h, which is set competitively. We use the suffix h to reflect the fact that the persons most likely to be employers are probably of high skill. If there is a racial wage gap an unprejudiced employer receives a payoff from being an employer given by

$$\Pi\left(w_a^*, w_b^* \mid d_i = 0\right) = f\left(L_b^*\right) - w_b^* L_b^* - P_k . \tag{7}$$

Since any other high skilled, unprejudiced worker could replace this unprejudiced employer if the payoff from being an employer were higher than the wage the worker would earn, it must be the case that:

$$W_h = f\left(L_b^*\right) - w_b^* L_b^* - P_k^* \tag{8}$$

where P_k^* is the long run equilibrium price of capital. Given (8), an employer who is more prejudiced than the short run marginal discriminator receives a monetary payoff in the long run from being an employer given by

$$f\left(L_a^*\right) - w_a^* L_a^* - P_k^* = W_h - \Delta \tag{9}$$

Since this prejudiced employer could sell his labor on the competitive market for W_h, he would receive a monetary loss equal to Δ by operating as an employer rather than being a worker.

Although they do not present the preceding analysis formally, it is clear that this is the essence of the conventional argument, going back to Becker and Arrow. What this argument misses is that agents do *not* make decisions on the basis of their monetary payoff, but rather on the basis of their utility. Thus, in deciding whether to stop being an employer in the long run, a prejudiced employer with an all white workforce compares (9) not to his alternative wage, but rather to the utility he would get as a worker. That is, he shuts down in the long run if

$$W_h - \Delta \leq W_h - \kappa_i \tilde{l}_b , \tag{10}$$

where $\tilde{l}_b$ is the number of blacks with whom he would work as a fellow worker, and κ_i is the disutility he gets from cross racial contact with fellow employees who are black. The left hand side of (10) is the utility a prejudiced employer receives by continuing to operate as an employer in the long run. It is the residual dollar profits from his firm after he has paid the competitive rate for capital. Since he chooses not to hire any black workers, he suffers no disutility from interacting with them as an employer. The right hand side is the same person's utility if he were to become a worker: it equals his wage *minus* his disutility from interacting with any black co-workers were he to shut down and become an employee at another firm.

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Clearly, the conventional long run argument implicitly assumes that $\kappa_i = 0$ – that is, that despite the fact that a person who so dislikes interacting with blacks as an employer that he avoids hiring them altogether somehow has no aversion against interacting with them as a fellow employee. We regard this assumption as highly unrealistic. That is, we expect that $Cov(d_i, \kappa_i) > 0$, so that racial prejudice is *portable* across the roles of employer and co-worker. The most simple form of portability, of course, is when $d_i = \kappa_i$. If this holds then, contrary to the conventional argument, a prejudiced person will definitely shut down and become a worker in the long run if the profit he forgoes by staffing his workforce with more expensive white workers is greater than his disutility from interacting with black fellow employees at any new job he might take, or

$$\Delta \geq d_i \tilde{l}_b. \tag{11}$$

So long as racial prejudice is portable across roles, we can be assured that (11) holds in the long run only if the market can be segregated enough by race so that all prejudiced workers are able to work in firms with no blacks. Any impediment to segregation in the real world, including mandated racial quotas in firms, costs of searching, or imperfect substitutability of high and low skilled workers in production, means that the employer shutting down his firm may expect to encounter some fellow black workers at his new job $\left(\tilde{l}_b > 0\right)$. The conventional notion that employers engaging in discriminatory hiring are driven out of the market by competition in the long run need not hold.[5]

Our formulation highlights an important benefit of being an employer: the ability to control who is employed at that firm. By contrast, workers must simply accept the hiring choices of other people. The ability to determine the racial makeup of one's co-workers is very valuable to persons whose prejudice is such that they find interacting with blacks especially negative. In the long run, some of these persons will be willing to sacrifice monetary payoffs if the alternative is to interact with blacks as co-workers.

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[5] The point can perhaps be seen most clearly if we consider the possibility that because of constant returns to scale, a single alternative employer, presumably with no prejudice, expanded enough to account for all production but that done by a single prejudiced employer. In that case, the prejudiced employer's alternative option were he to shut down would be to *definitely* work with black co-workers. If his prejudice is portable, he would derive disutility from this option and should be willing to incur some dollar profit loss to prevent it.

If we think of the number of black co-workers as a workplace dis-amenity, which prejudiced persons wish to avoid, individuals should sort across firms according to the number of black co-workers they will encounter there and the associated dis-utility from cross-racial contact they will experience. If it is possible for all prejudiced individuals to find jobs in firms without black co-workers, then the marginal discriminator is unprejudiced and the wage gap is zero. If, however, such segregation is not possible there must be a racial wage gap. So whereas competition undoubtedly drives some employers out of the market, if there are impediments to segregation such that all prejudiced workers cannot be separated from blacks, allowing for portable preferences leads to predictions about the relationship between the racial wage gap and the distribution of prejudice among employers that are essentially the same as the results from Becker's original short-run treatment.

Before turning to the empirical results in the next section, three additional implications of our alternative long-run formulation should be noted. In our formulation individuals with the requisite skill *choose* whether to be employers or workers. Given the endogeneity of the roles of employer and worker, racial wage gaps are determined in the long run not by the distribution of prejudice among the set of people who happen to be employers at a point in time, but rather by the distribution of prejudice among *all* whites. A second implication of the endogenous nature of people's labor market roles is that since their skills permit them to play either labor market role, persons with a given level of prejudice and of a given skill level should in equilibrium be indifferent (or possibly weakly prefer) the one they are observed to play. That is, given the racial distribution of firms in the economy, there should be no difference in prejudice between workers and employers, holding skill constant. This last point is most obvious for prejudiced employers and workers at the same firm. Despite their different roles, both are exposed to the same number of blacks within the firm, and both therefore face the same disutility from cross-racial interaction. Only if their prejudice were the same would they both work at the same firm. Notably, this conclusion is different from Becker and Arrow's long run argument, which makes the opposite prediction that supervisors who survive the pressures of competition should be the least prejudiced among all qualified workers.

Finally, the idea that racial prejudices are portable highlights the incentive for the most prejudiced individuals to seek working environments with fewer black co-workers, holding monetary returns constant. In our formulation, the only option of a supervisor who shuts down is to become a worker in another firm. In the real world, another option for these persons might be to drop out

of the labor market entirely, and subsist on home production. Presumably this home production option is costly, as it involves sacrificing all of the productivity gains associated with working with others. However, the person choosing this option is assured of not having to interact with people he does not like.[6] The reasoning presented here suggests that the people most likely to choose this option should be those with the highest levels of prejudice, so the main predictions about the wage gap and the prejudice of employers are unchanged. However, allowing for the possibility of home production (self-employment) does lead to another prediction that can be tested in the data. Specifically, if a mechanism like the one we have outlined operates in the labor market, self employed whites should be *more* racially prejudiced than white workers or employers.

3   Data Summary

Curiously, despite the historical importance of prejudice in models of discrimination, we have been unable to find any previous work in economics in which authors have examined the empirical relationship between prejudice and observed wages.[7] In the work to follow we summarize racial prejudice across different regions in the U.S., across different population subgroups, and across different types of labor market actors such as workers and supervisors. We also describe the evolution of racial prejudice over the past thirty years. In a series of analyses, we assess whether the relationship between reported racially prejudiced feelings among whites and observed racial wage gaps is consistent with the predictions of the foregoing theoretical discussion about the effect of taste-based discrimination.

Overview of Prejudice Data

The General Social Survey (GSS) is our source of data on racial prejudice. We use data from multiple waves (1972-2004) of the GSS. In many survey years, this nationally representative data set elicited responses from survey questions about matters that are clearly strongly related to racially prejudiced sentiments. "Prejudice" is a nebulous construct, so it is useful that the various

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[6] Previous research (see Fairlie and Meyer (1996)) finds that the overwhelming majority of self-employed person have no employee besides the owner. See also various years Census Bureau's *Characteristics of Business Owners*.

[7] Although there has been very little work in economics studying racial prejudice directly, two exceptions are Cutler, Glaeser and Vigdor (1999) and Card, Mas, and Rothstein (2006). Both of these papers study the relationship between prejudice and residential racial segregation, but do not examine the wage relationships that are our focus.

questions posed in the survey over the years touch on the different dimensions along which racist sentiments might manifest themselves. Among other things, respondents were asked over the years such questions as their feelings about interracial marriage, their sense of whether racially restrictive housing covenants were appropriate, their views about children being racially segregated in schools, and their view on whether the government should be obligated to help blacks.

Over the approximately 30 years of GSS data used in the paper, respondents answered some twenty-six different questions relating to some aspect of racial prejudice. A different subset of the full questions was asked each year, with no particular question asked in each year of the survey, and with much variation in the total number of times a given question appears. For some of our analysis, for reasons made clear below, we need to focus on a consistent set of prejudice questions from one year to the next. When necessary, we therefore focus on the six questions which *jointly* appear most frequently in the survey. Appendix Table 1 lists the GSS variable abbreviation and a summary for each of the full set of 26 racial prejudice questions asked in the survey. The shaded rows in the table indicate the six questions which jointly appear most frequently in our data. Throughout, we use responses from whites aged 18 and older, and recode responses so that higher values correspond to more prejudiced answers.[8]

Much of our analysis involves comparing levels of prejudice across individuals and across geographic areas. To render these comparisons feasible it is obviously necessary that we somehow combine the disparate prejudice responses into a uni-dimensional prejudice index. We do this in two simple steps. First, we normalize the various prejudice responses using the 1977 report. Formally, let d_{it}^k denotes respondent $i's$ response in year t to the particular prejudice question k. For each dimension of prejudice k and for each individual i we create a normalized individual response in year t given by

$$\tilde{d}_{it}^k = \frac{d_{it}^k - E\left[d_{i,77}^k\right]}{\sqrt{Var\left(d_{i,t_k}^k\right)}} \tag{12}$$

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[8] In most cases, this recoding is straightforward (e.g. those who would not vote for an otherwise qualified black person for president are more prejudiced than those who would). In some cases the ordering of responses is less clear (e.g. those who think the federal government is spending too much improving the conditions of blacks may not be prejudiced; they may think the federal government is spending too much on everything). However, in each case we think it is clear which response was *meant* to denote greater prejudice.

where t_k^* is the first year in which the prejudice question k was asked in the GSS. The normalized measure thus subtracts off from individual responses to each question the mean of the response to that question in 1977, and divides by the standard deviation of answers measured in the first year the question was asked.[9] [10] These normalized responses, which are all measured on the same scale, are then aggregated into a one dimensional aggregate prejudice index for individual i in year t using by taking their average in the year, or

$$D_{it} = \sum_k \tilde{d}_{it}^k \bigg/ K_t \qquad (13)$$

where K_t is the number of prejudice questions asked in year t. For comparisons of prejudice across different geographic regions, we use two measures of the prejudice among whites in a community. The first measure is denoted "average" prejudice. It is simply the mean across all years of the variable D_{it} for whites in a particular geographic area. The second measure -- the marginal -- is meant capture the prejudice of the person whose racial views determine the equilibrium black wage gap. Given the preceding theoretical discussion, if p percent of the workforce in a given labor market is black and all firms are of equal size,[11] a natural measure for the prejudice of the marginal discriminator is the pth percentile of the distribution of the aggregate prejudice index D_{it} among white employers in that area.[12] We have argued that because of the endogeneity of the role of employer, the relevant distribution of prejudice is that among the set of persons from which employers are drawn. We therefore compute and use in the analyses the average and marginal for both all whites in an area, and among high-skilled (college-graduate) whites – the set of people most likely to be employers.

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[9] We normalize by the standard deviation in the first year the question was asked rather than, say, the overall standard deviation, because we want to avoid a mechanical relationship between trends in responses and the weight the question receives in the overall aggregate.

[10] Two prejudice questions (HELPBLK and RACOPEN in the table) were not asked in 1977, but were asked in both prior and subsequent years. A linearly interpolated mean is subtracted for these variables instead of the 1977 mean.

[11] Our estimates of the marginal discriminator's prejudice are based on the pth percentile of the distribution of the aggregated index D_{it} which is constructed from the 6 consistent questions asked in the GSS. We do not use the full 26 questions when creating the marginal because the aggregate measure in that case is an average over responses to different numbers of questions in different years. The variance of the aggregate index based on the full 26 questions will tend mechanically to be higher in years in which a smaller number of questions happened to be asked. Statistics based on the tails of the distribution would disproportionately measure prejudice in those years in which a relatively small number of questions were asked.

[12] We conduct robustness tests later in which we account for the possibility that because relatively unprejudiced firms are likely to be of larger size, the marginal may be less than the pth percentile. The results are essentially unaffected with this alternative formulation.

Summarizing Patterns and trends in prejudice in the GSS

Table 1 presents a series of regressions showing how key demographic traits are related to an individual's level of prejudice in the GSS. The table shows results for four outcomes: the individual aggregate prejudice index, and un-normalized average responses to three of the specific prejudice questions from which the uni-dimensional aggregate index is constructed. Respondents gave binary responses to each of these questions, and the questions were asked in a large number of years. The regressions are estimated on a pooled GSS sample across all years, and each regression controls for fixed year and Census division effects. The standard errors presented in the table are clustered at the level of the Census division.

The regression for the aggregate prejudice index shows that prejudice exhibits a sharp age gradient, in that older whites are significantly more likely to report prejudiced sentiments. The regression also shows that higher educated persons and females are significantly less prejudiced. When all of variables are jointly controlled for, women and the more highly educated are both found to be significantly less prejudiced, and the strong age gradient remains strongly significant.

These results for the specific prejudice measures are generally very similar to those for the aggregate index, with only two exceptions. Interestingly, it appears that with respect to support for a laws prohibiting interracial marriage, white women are somewhat more prejudiced than white men. This is the only prejudice measure for which men exhibit less prejudice than women. Equally interesting are the results regarding opposition to busing for school integration. Whereas for the aggregate index, and for virtually all of the individual measures, more educated persons report lower levels of prejudice, the more educated are either slightly more likely to oppose busing than their less educated counterparts, or else exhibit the same levels of prejudice. In summary, results for the different prejudice questions are very similar to the patterns depicted in the top uppermost left panel for the aggregate prejudice index.

We turn next to a summary of the patterns of prejudice across regions of the U.S. The first three columns of Table 2 list alternative indices of prejudice, each based on a single question from GSS, the same three questions reported in Table 1. As described above, higher values indicate greater racial prejudice. The table shows that the specific prejudice measures are very highly

correlated. By each of the measures, racial prejudice is most severe in the southeastern portion of the country and least severe in New England and in the West. Prejudice is greatest in the East South Central division (Alabama, Kentucky, Mississippi, Tennessee), and next greatest in the South Atlantic (Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia), and West South Central (Arkansas, Louisiana, Oklahoma, Texas) divisions. Prejudice is least severe in New England (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont), and in the Pacific (Alaska, California, Hawaii, Oregon, Washington) and Mountain (Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming) divisions. We suspect these patterns match many readers' priors.

The middle panel of the table shows patterns for the two main variables in the later analysis – average and marginal prejudice – in each Census division.[13] Not surprisingly, the geographic variation in these measures is identical to that for the specific prejudice questions, with prejudice highest in the southern part of the country and lowest in New England. The difference in average prejudice across the various divisions is substantial. For example, the difference in average prejudice between the East South Central and New England Census divisions is on the order of 0.8 of an *individual-level* standard deviation. To put this difference in perspective, the median East South Central respondent has the same aggregate prejudice as the 82nd percentile respondent from New England. The median-prejudiced New England respondent would be at the 22nd percentile of the East South Central prejudice distribution. A graphical description of the cdf of prejudice across the various divisions is presented in Appendix Fig 1.

An interesting feature of the regional indices in the middle panel is that while the average and marginal across regions are strongly correlated, the ordinal ranking of Census divisions by the two different indices is not the same. For example, as measured by average prejudice, the Middle Atlantic division is the sixth most prejudiced region in the country, ranking as just less prejudiced than the East and West North Central. However, according to the marginal, it is the fourth most prejudiced division. These patterns show that, as discussed before, the average levels of prejudice among whites in an area do not indicate the prejudice of the likely marginal person with whom blacks would interact in that market because of differences in the number of blacks across regions.

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[13] The values for the mean and the marginal are generally negative. This is because these measures are based on normalized measures described above, and all measures of prejudice have been declining since 1977.

Table 2 shows that blacks live disproportionately in regions of the country where racial prejudice is most severe. This pattern may indicate that prejudice is caused in part by cross-racial contact and by competition for economic resources. Another concern is that regional differences in answers to the GSS questions indicate differences in candor about true racial feelings rather than differences in actual prejudice. Notice that if this is true, there should be no systematic relationship between stated prejudice and wage differences. A more serious concern for our purposes is that the indices are correlated with unobserved regional differences in productivity between black and white workers. We address this concern directly in the analysis below.

The last two rows of the table show that the correlation between the Census-division black-white wage gap and the aggregate prejudice indices is not caused by the equal weights across specific prejudice measures used in our aggregation method. While the pair-wise correlations with the Census division black-white wage gap differ in magnitude for the different specific prejudice questions, each specific question is negatively correlated with the wage gap, as is the aggregate index. This is reassuring, as it shows that each of the specific GSS questions is related to the underlying notion of prejudice. Because our aggregation method treats all prejudice responses equally, the measures used in the paper do not make ad hoc judgments about which specific prejudice questions better reflect true underlying racial prejudice. In effect, our use of equal weights takes a "hands-off" approach to the available data.

Figure 1 shows trends in responses to the twelve most commonly asked GSS prejudice questions, averaged across the entire sample of whites. The figure reveals a general downward trend in reported racial prejudice. As described above, each question is normalized so that the mean response in 1977 is zero, and the standard deviation in the first year it was asked is 1. The average response among whites to each question has declined steadily over the past 30 years. Declines range from close to zero for questions concerning government treatment of and spending for blacks, to more than a half a standard deviation for questions concerning laws about school and residential integration. In the midrange of declines, at about a quarter to a third of a standard deviation, are questions about the respondent's willingness to vote for an otherwise qualified black presidential candidate, support for laws concerning interracial marriage, and the desired racial composition of schools.

Figure 2 shows trends over time in the uni-dimensional aggregate prejudice measure, plotted separately for each census division. Three key things should be noted about the figure. First, the decline in measured prejudice has been widespread. Between 1977 and 1996, measured prejudice declined in each of the nine census divisions. Second, the relative ranking of average levels of prejudice across regions has been constant over time. New England, and the Pacific and Mountain divisions were the least prejudiced regions throughout the period under study, while the East South Central and South Atlantic divisions were consistently the most prejudiced, according to our index. Third, there has been remarkably little convergence across census divisions in the level of measured prejudice. Importantly, this figure shows that virtually all of the variation in prejudice in our data is across areas and not within areas over time. These time series patterns show that there is not enough of the requisite variation to conduct within region (or state) analyses over time.

How cross-region differences in racially prejudicial tastes are translated into wage gaps is the subject of the analyses we perform in the next section. All of our later analyses are performed at the level of the state. However, an initial answer to the question can be seen in the correlation of wages with average prejudice at the Census division level. Table 2 shows that black wages are lowest relative to whites in precisely the census divisions where measured prejudice is greatest. Figure 3 shows the relationship between residual racial wage gaps and average prejudice clearly.[14] With only 9 observations, the point estimate of -0.161 is statistically significant (-$t = 2.47$) and the univariate regression has an R^2 of 0.465.

4   Base Empirical Results

The prejudice of supervisors and the self-employed

Before turning to a formal analysis of the empirical relationship between labor market prejudice and the racial wage gap, we examine a pair of implications of the model described above. We have emphasized Becker's insight that the market pressures prejudiced workers to seek jobs in firms with few blacks. It is their ability to do so—the market's ability to segregate—that determines whether racial wage gaps persist. This insight gives rise to a testable implication of

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[14] Residual wage gaps control for education, a quadratic in experience, and race-specific year effects.

the model: more prejudiced workers should work in firms with fewer blacks. Ideally, we would conduct this test using firm-level data with measures both of prejudice and racial composition. In the absence of these data, we investigate whether more prejudiced workers are more likely to become self-employed. As mentioned earlier, previous research shows that the vast majority of self-employed have no employees. Self-employment is therefore an effective way to avoid working with blacks.

The first two columns of Table 3 show the results of linear probability regressions in which the outcome is whether a white worker is self-employed. The key regressor is the respondent's aggregate prejudice index. The first regression is a simple pair-wise regression. The results indicate that, unconditionally, self-employed whites are significantly *more* prejudiced than their non-self-employed counterparts. Strikingly, the second column shows that when various controls including year, state, age, and education effects are added to the regression this relationship remains strongly positive and significant. This pattern is precisely as expected if Becker's notion that the prejudiced should attempt to separate themselves from blacks in employment is correct.

We contrast this result with a comparison of the average prejudice of supervisors and non-supervisors.[15] We argued earlier that because "supervisor" is an endogenously chosen labor-market role, we should expect supervisors to have the same tastes on average as non-supervisors with the skills necessary to be supervisors. This differs from the traditional interpretation of Becker, which says that among people who could be employers, competitive pressure will ensure that only the least prejudiced will actually work as employers in the long run. By this argument, supervisors should therefore be significantly less prejudiced than comparable persons operating as workers. The comparisons in column 3 show that supervisors are, on average, less prejudiced than other workers. At first blush, this would seem to confirm the standard notion about the effect of competitive pressure. However, these mean differences do not account for differences in demographic traits. When we control for age, education, year, and state effects in column 4, so that the comparison is between supervisors and those with other workers with their same level of skill, this difference in average prejudice disappears. This suggests that contrary to the standard

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[15] Of course, there is no classification "employer" in most data sources. We argue that whether someone is a "supervisor" probably closely approximates the "employer" in discrimination models who has some control over the hiring and staffing of the firm.

view, persons working as supervisors exhibit no smaller prejudice than persons just like them who (because of competitive pressure) operate as workers in the labor market.

Labor Market Prejudice and the Black-White Wage Gap

To estimate the relationship between relative black wages and region-level measures of prejudice we merge the prejudice indices described above with CPS data. We combine the May monthly supplement from 1977 and 1978 with the Merged Outgoing Rotation Group (MORG) files from 1979 to 2002.[16][17] The sample includes full-time black and white males aged 16 to 64.[18] Our basic specification could be estimated in two alternative ways. One option would be to estimate an OLS regression of log wages on education, a quadratic in potential experience, race-specific year dummies, a black dummy, the average prejudice for the state, and the interaction between average prejudice and a black indicator variable. The coefficient of interest would be the estimated effect on the interaction term, and a negative value would tell us how much lower black wages are relative to whites in states with higher measured prejudice. The concern with this method is that because the index of prejudice only varies at the state level, this procedure might underestimate standard errors, even if we were to cluster at the level of the state.

An alternative method, which deals with this potential standard error concern, is executed in two steps. First, we estimate the residual black-white wage gap in each state. Specifically, we estimate by OLS the log wage regression described above, but leave out the prejudice index and include a separate black dummy variable for each state. The estimated effects on each of these black dummy variables become the dependent variable in the second step, in which one or more of the labor market prejudice indices are the independent variables of interest. The second step regression has approximately 50 observations and therefore produces conservative standard error estimates. The results are substantively almost identical to those from the one-step procedure described above.

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[16] See e.g. Lemieux (2006) or Autor, Katz and Kearney (2005) for a discussion of the merits of the May and MORG files for measuring wages. We follow Autor et. al.'s sample restrictions, dropping those with real hourly wages below the real value of the 1982 minimum wage or with nominal wages above top code levels. Top-coded responses are replaced with 1.5 times the top-code value. We thank David Autor for sharing his programs with us.

[17] The analysis below requires state-level wage gaps. State is not consistently reported in the CPS until 1977. For the earlier analysis at the census division level, we also use data from the 1973-1976 May CPS.

[18] Results are similar using a sample of all black and white males aged 16 to 64 with positive earnings.

Table 4 presents the results. The table is broken into two panels. In the upper panel, the labor market prejudice indices are calculated for all whites in the labor market. Column 1 in the upper panel shows the relationship between the black-white wage gap in a state and the average prejudice among whites in that state. These state-level results are consistent with the patterns across Census divisions shown in Figure 3: racial wage gaps are significantly larger in states with more prejudiced whites. The standard deviation of the average prejudice across states is 0.21. The estimated effect therefore implies that a one-standard deviation increase in average prejudice is associated with relative black wages that are 0.015 log points lower – about a 10% effect relative to the mean wage gap across states. The result is estimated precisely enough to reject a zero correlation at any reasonable significance level.

Column 2 of the upper panel reports the estimated relationship between a state's racial wage gap and the prejudice of the "marginal" white in the labor market. As described above, the marginal prejudice index is the pth-percentile of the individual-level prejudice distribution, where p is the percent black in the census division. Consistent with Becker's insight, the regression shows that states in which the marginal white is more prejudiced have substantially larger racial wage gaps. Although suggestive, these first two results do not necessarily confirm Becker's model in the data. Recall, the model points out that because the market tends to sort discriminatory whites away from blacks, a negative racial wage gap between blacks and whites should be determined by the marginal level of prejudice, all else equal. Earlier, in Table 2, we showed that average and marginal prejudice are strongly positively correlated across regions. Thus, the fact that the estimated effect of the marginal in column 2 is negative could simply reflect the effect of an omitted variable: average prejudice is not included in the regression, so an independent negative effect of average prejudice on the racial wage gap could account for the negative estimated effect on the marginal. A pattern of this sort would mean that the main prediction of Becker's model would be violated in the data.

The specification in column 3 is therefore a much sharper test of what the model predicts, and is our preferred base specification. The results show that, holding the average level of prejudice constant, the estimated effect of marginal prejudice among whites is negative, strongly statistically significant, and larger in absolute value than the pairwise estimate in column 2. This result is precisely as Becker's prejudice model would imply. That the estimated effect of the marginal is larger (in absolute value) in column 3 than in column 2 suggests that higher average prejudice among whites is associated with *higher* relative black wages. These results show that

the partial, negative effect of the marginal on the racial wage gap is so strong that when the marginal is excluded from the regression, the positive correlation between it and the average leads to a negative estimated effect of the average, as in column 1.

Variation in the marginal level of prejudice among whites across states comes from two sources: differences in the number of blacks across the states, and differences in the distribution of prejudice across states. Which of these dimensions is a more important source of variation in the data for the results we find? The regressions presented in columns 4-6 attempt to sort through this question. In column 4 we control jointly for the average level of prejudice and the fraction of the labor market that is black. The results show that that racial wage gaps are much larger, in a strongly statistically significant manner, in places where blacks are a higher fraction of all workers. Because the average level of prejudice in a community is held constant in this regression, this result suggests that the negative relationship of percent black operates through the marginal. The estimated effect of the average is also negative and strongly significant in column 4. Although this result suggests an important role for community prejudice independent of the number of blacks in the community, it does not measure the effect of prejudice differences in the portion of the distribution where the marginal discriminator is likely to be.

In column 5 we control for the marginal level of prejudice and for the percent black in the state. Again we estimate a strongly negative effect of the percent black, as implied by the model. How do we interpret the estimated effect of the marginal in this regression? Since the fraction black is being held constant, variation in the marginal comes from differences in prejudice across states with roughly the same racial makeup. Were there no variation in prejudice among across such states, there would be no variation in the marginal and its effect could not be estimated. The results are striking. Even controlling for the percent black, we find a negative (and weakly significant) effect of the marginal on the racial wage gap.   The negative estimated effect of the marginal is substantially reduced relative to the estimates in columns 2 and 3, suggesting that while differences in prejudice in the lower tail of the prejudice distribution generates variation in the marginal that matters for racial wage gaps, differences in the marginal that arise from differences in the number of blacks is a more important source of variation in the data.

The regression in column 6 adds the average, the marginal, and the percent of labor force that is black. There are two noteworthy things about these results. First, adding average prejudice to the regression leaves the point estimates of the marginal and the percent black essentially unchanged.

It is true that the marginal is no longer statistically significant, but this is clearly because of the increase in the standard error of the estimate – an unsurprising result because of the relatively limited variation left to exploit when all of these variables are jointly controlled for. This result suggests that the relatively large point estimates we find for the marginal and the fraction black in the state are not the result of correlation between these variables and unknown factors that vary with how racially prejudiced whites in a state are on average. The second noteworthy result is that the very small estimated effect of the average. As predicted by Becker's model, lower relative wages appear to reflect differences in marginal rather than average prejudice among whites.

We have argued that because of the endogeneity of the roles that people play in the labor market, and because the market's ability to segregate will depend on the distribution of prejudice among all whites, assessing the degree to which matters for wages should be conducted on the prejudice distribution in the entire white population. The results in the top panel of the Table are thus our main results, and all of the results we present in subsequent sections focus on prejudice among all whites. Nonetheless, we present in the bottom panel of Table 4 an identical set of regressions to those in the panel above, except for the fact that the three labor market measures are now not computed among all whites, but rather only for high-skilled (college educated) whites – the whites from whom the set of people who choose to become employers is likely drawn.[19] It is important to remember when reading these results that the marginal and average prejudice in states are estimated on samples of about one-fifth the size of the full samples in the upper panel. For the most part, the results in the lower panel mirror those above. Again, we find a large and very strongly significant effect for average and marginal prejudice when they are the only measures of labor market prejudice. Again, in a "horse-race" specification between the marginal and average, it is the effect of the marginal that is more closely associated with lower relative black wages. And, when the percent of a state that is black is added to a regression, its estimated effect is large and strongly significant, and the estimated effect of the two prejudice measures are substantially reduced. This leads to the same conclusion that most of the variation in the marginal comes from differences across states in the number of black workers, although there does appear to be a role for prejudice among employers. The only difference between the estimates in the two panels is in the last set of results in which we control for all three variables.

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[19] We have also estimated these models with labor market prejudiced measured among whites who are "supervisors". The results are qualitatively very similar to those with labor market prejudice measured among high-skilled whites.

Curiously, the estimated effect of the prejudice of the marginal high skilled person is positive. As will be seen below, of the many models we estimate this is the only case where this result holds. We suspect that the fact that marginal and average are computed in such small samples in this case may explain this pattern.

On the whole, we argue that the results in Table 4 are strongly supportive of the main prediction of Becker's prejudice model. But can a causal interpretation be given to these results? The obvious concern here is that regions with more severe measured prejudice or higher numbers of blacks also have other unobserved characteristics that negatively affect black wages more than white wages. Though we control for a rich set of fixed effects, and the most obvious suspects, such as differences in education levels, there are always other possibilities. One example is that school quality (not quantity) may be relatively worse for blacks in places with more prejudice.[20] In fact, this may be a direct result of prejudice as in the case of segregated schools. If this were the case, we could see the negative relationships observed in the data even if there were no direct effect of prejudice on wages in the labor market.

We explore this issue of possible school quality differences at greater length below, but for the time being it bears repeating that the specifications in Table 4 in which average prejudice is included along with either the marginal or with the percent black in the labor force partly address this concern. Becker argues that average prejudice levels should not directly affect the racial wage gap. However, average prejudice is likely correlated with various unobservable determinants of black wages. For instance, in places with historically high levels of prejudice the median voter is probably more likely to support lower quality schools for blacks or racially exclusionary practices in the labor market. It is thus reassuring that black relative wages are related to the prejudice of Becker's marginal discriminator, *even conditional on average prejudice levels in the region*.

5.   Extensions and Robustness Tests

In this section, we estimate various alternative versions of the main results presented in Table 4. These extensions are of two types. The first set tries to gauge the sensitivity of our results to various specification issues. The second set of extensions focuses directly on the role that un-

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[20] Notice that it would not cause a bias if school quality were relatively lower for both blacks and whites since we include state effects, unless the effect of school quality on wages differed by race.

measured skill differences might play in explaining the patterns we find – the most troubling alternative explanation for our results. We discuss the results in turn.

One potentially important specification issue concerns our estimate of state-specific black-white wage gaps. The problem here is that because the number of blacks in states varies widely, these wage gaps are estimated with differential precision across the various states. Intuitively, we should discount measured wage gaps in places where there are few blacks, and attach greater credence to wage gaps in states where there is a large enough number of blacks to make the estimates very precise. We do this by estimating a weighted least squares version of the second step regression described above, where the weight is the inverse of the variance of the estimated racial wage gap from the first stage. We present the results of this weighting exercise in the top panel of Table 5.

A second specification concern has to do with the fact the preceding analysis ignores the fact that employment rates differ dramatically by race. Since whites work at higher rates than do blacks, we observe market wages for a larger portion of the white workforce, and the distribution over which wages are observed obviously differs by race as well. Given these employment differences, it is not clear that differences in observed wages reflect true differences in the market wages commanded by black and white workers. This problem appears in other analyses of racial wage gaps, and we account for this problem using a remedy previously employed by Neal and Johnson (1996). Specifically, in the first step of our estimation procedure, we estimate a state's racial wage gap by median regression rather than OLS. In estimating these regressions we set log wages to 0 for those who are not employed and for part time workers. These results are presented in the second panel of Table 5.

The final specification issue concerns our measure of the marginal prejudice in a state. Recall that we measure the marginal as the pth percentile of the relevant white prejudice distribution, where p is the fraction of the labor force that is black. Following Becker, we argue that this formulation is appropriate under the assumption that the market sorts as the theoretical discussion suggests, and under the assumption that firms are of equal size. But theory suggests that, in fact, relatively unprejudiced firms will tend to be larger than their more prejudice counterparts. Since blacks are more likely to be hired by these unprejudiced firms, the marginal discriminator blacks

likely encounter should be less prejudiced than the pth percentile. To assess the importance of this issue, we estimate the marginal using the $0.8 \times p$ percentile of the prejudice distribution.[21][22]

Despite some differences, the three panels of Table 5 show that, for the most part, and for each of three specification checks, the results are qualitatively very similar to the baseline results shown in Table 4. In particular, we consistently find that both average and marginal prejudice among whites are individually associated with lower black relative wages. We also find consistently that in specifications that control for the average and marginal, marginal prejudice is nearly always more closely related to the racial wage gap than is average prejudice. In some of these specifications, not only is the estimated effect of the marginal negative, but the effect of the average gets driven to zero. Finally, in the specifications which assess the source of the variation in the marginal that matters in the sample – the nature of prejudice or the fraction of blacks in the state – we consistently find that the fraction of the state that is black is the more important variable. These results, and those shown in Table 4, would seem to suggest that the lower tails of the prejudice distribution are very similar across states, so that the marginal white with whom blacks interact in equilibrium is determined by how many blacks there are in the state. Examination of the cumulative density of reported prejudice across Census divisions shows that this is indeed the case.

Even though the basic results survive alternative specifications, there remains the concern that prejudice may be correlated with some unmeasured skill difference across states that is the real source of racial wage gaps. It bears repeating that we control for the CPS completed schooling measures in our regressions, but it is almost certainly true that there are differences in skill by race that completed schooling differences do not capture. Nor is possible correlation between unmeasured skill and prejudice the only potential problem for our results. Given the central importance of the marginal to our analysis, and given our results showing its importance in driving variation in the marginal, we must also be concerned about the fact that the fraction of a population that is black may related to some unobserved determinant of wages. There is also a concern that, as shown earlier in the paper, much of the variation in prejudice across states comes from differences between the South and the rest of the country. If there is something peculiar

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[21] We derive this alternative percentile using the observed racial wage gap and an estimate of the elasticity of substitution between high and low skilled workers on 1.5 (see e.g. Katz and Murphy, 1992).
[22] One additional reason for thinking that the marginal white person with whom blacks interact is likely to be someone less prejudiced than the pth percentile of the white prejudice distribution is that some blacks will be likely to work either by themselves or with other blacks.

about labor market institutions or skill levels in the South, this too would lower confidence in claims about the apparent importance of racial prejudice.

The various analyses presented in Table 6 deal with these concerns. In the first panel of the table, we re-estimate the regressions on the full sample using the fraction of the state's black population in 1920 and the distribution of prejudice from the GSS sample period to compute the marginal. These historical population shares are obviously correlated with the number of blacks currently living in a state, but it is harder to argue that they are directly correlated with some current determinants of wages. In particular, these specifications address the possibility that migration of blacks across states was endogenous to wage gaps or levels of prejudice. The table shows that the results using this measure for the marginal yields results that are strikingly similar to the baseline results. We stress that we cannot reject the possibility that a state's historical racial makeup is correlated in *some* way with factors that determine wages nearly a century later but the results raise confidence that the results we are estimating really reflect the effect of the marginal discriminator being drawn from a higher point in the distribution of prejudice rather than some correlation between unmeasured productivity and current racial composition.

The last two panels of the table control for possible racial skill differences directly. In the middle panel of the table, we re-estimate the base results adding as controls to the usual specification the state-level racial difference in mean National Assessment of Educational Progress–Long Term Trend (NAEP-LTT) math and reading scores.[23] Somewhat surprisingly, we find that adding these controls for the full set of states in the sample leave the main qualitative results virtually unchanged.

In the final panel, we use another possible indicator of latent skill differences by race. In their paper on relative school quality, Card and Krueger (1992) collect information on the student/teacher ratios for various cohorts of students in 18 southern states. We use these reported

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[23] The NAEP-LTT is a standardized test administered to U.S. students and is designed to measure trends and cross-sectional patterns in educational performance. It is sometimes referred to as "The Nation's Report Card". Since 1971, students of age 9, 13, and 17 have been randomly selected and tested in mathematics and reading. Each subject is tested approximately every four years. The content tested by the NAEP-LTT has remained unchanged so that comparisons over time can be made. We use a restricted-use version of the NAEP-LTT that has state identifiers and individual data. For each student, we transform math and reading scores into a z-score (mean zero, standard deviation of one) and then compute state-level differences in average z-scores by race, computed over the full sample of years (1971-2004 for reading, 1978-2004 for mathematics). The NAEP-LTT was also administered in mathematics in 1973, but we do not have state identifiers for those data.

ratios for the cohort born between 1940 and 1949 as a measure of possible racial skill differences.[24] Importantly, this analysis is restricted to Southern states. The results are quite striking.   We continue to find that the marginal is in general more strongly negatively related to relative black wages. The magnitude of the effect is reduced somewhat after controlling for school quality in these states, but the basic pattern is clear. It is noteworthy that these regressions are performed on a sample of Southern states. One alternative explanation for the paper's main results is that most of the variation used to estimate the effects of interest comes from South/non-South comparisons. If the South happens to have both higher levels of prejudice and larger unobserved skill differences, our conclusion that observed racial gaps derive from prejudice difference might be wrong. Since these estimates in Table 6 are restricted to a sample of Southern states, they are free of this concern. Moreover, the positive point estimate on the average prejudice in the regressions implies that more prejudiced places within the South have *smaller* racial wage gaps, contrary to the alternative explanation. In summary, we believe that these results taken together strongly support the main results presented in the previous section, and suggest that the relationship between labor market prejudice and racial wage gaps is as suggested by Becker's model of prejudice.

Before concluding, we present one set of results in which we assess the appropriateness of the prejudice measure we construct. Recall that in constructing our measure of prejudice we made no value judgment about which particular questions better captured people's racial sentiments.   As argued earlier, we consider our "hands-off" approach strictly superior to one in which we picked particular prejudice questions on which to conduct our analysis. One might nonetheless argue that some of the questions from which our aggregate prejudice index is constructed may reflect general political sentiment in addition to racial feelings. For example, someone dubious that the state should not spend more to help blacks may have this opinion simply because of his aversion to liberal spending policies in general, and not because he has an aversion to interacting with blacks.   Given this reasonable concern, in our final table we re-estimate our main specifications dropping the five questions that have anything to do with the government. The results in Table 7 show that the basic relative pattern of results we find is almost totally unaffected by the exclusion of these specific prejudice questions. The most notable difference between the results in Table 7 and those in Table 4 is that the effect of the marginal is even greater once the government

[24] Card and Krueger (1992) report black and white pupils per teacher for each of four cohorts. The results are virtually unchanged if the relative pupils per teacher for the 1910-1919, 1920-29 or 1930-39 are instead used as controls.

questions are dropped. The index of marginal prejudice continues to be strongly significant both unconditionally and conditional on average prejudice. Furthermore, the effect of the marginal is significant conditional on the fraction black in the state, suggesting that wage gaps are related both to variation in the number of blacks in a labor market and to variation in the distribution prejudice among those most likely to be the marginal discriminator.

6.   Conclusion

Our goal in this paper has been to argue that the null under which economists have recently operated, that employer prejudice is not an important part of the explanation for observed racial wage gaps, might be incorrect. Two lines of argument have been adduced in support of our claim that racial prejudice of the sort first formalized by Becker (1957) in his seminal analysis of labor market discrimination may indeed matter for observed minority wages.

The first part of our analysis re-evaluated the theoretical underpinning of the null mentioned above. We show that under the reasonable assumption that racial prejudice is portable across roles – that a prejudiced employer in one firm would likely be a prejudiced employee at another – it is not necessarily the case that prejudiced employers will be driven out of the market in the long-run. Instead, we show that if it is costly to separate the market by race, a prejudiced employer can very well remain in business.

The second part of our analysis is an empirical examination of racial prejudice and of the connection between prejudice and wage gaps. Strangely, in the large previous literature on discrimination in economics, we have been unable to find any previous work directly studying reported racial prejudice. Using rich data on prejudice from multiple years of data from the General Social Survey, we summarize both the cross sectional variation and trends over time in racial prejudice among whites. We document significant variation in prejudice across different regions of the country. We also show that while reported prejudice has declined significantly everywhere over the past thirty years, the magnitude of that decline has varied widely across regions.

We present several pieces of empirical evidence about reported prejudice which suggest that, consistent with our theoretical argument, prejudice might indeed be an important source of racial

wage differences. We first show that self-employed whites are more prejudiced on average than other whites. We take this to be evidence in support of the idea that the market pressures prejudiced workers to seek jobs at firms with little or no exposure to blacks. We contrast this result with the fact that conditional on various human capital controls supervisors are just as prejudiced as the average worker. This result is inconsistent with the prediction that prejudiced employers should be driven from the market.

Next, using individual-level data from the Current Population Survey, we directly examine the relationship between the racial wage gap and the level of prejudice in a community. We show that the racial wage gap is larger the higher the level of overall prejudice in a community. We find the same basic patterns for alternative measures of community racial prejudice, but the strongest effects are for results in which we measure community prejudice using our estimate of the prejudice of the marginal discriminator. This result is striking because the marginal discriminator's prejudice is shown to be so strongly related to the relative wage gap even in regressions which control for the average level of prejudice among employers overall. More importantly, that the marginal discriminator's prejudice seems so important for wages is precisely what Becker's original analysis as well as our treatment with portable preferences predict.

In our view, the paper's various results, both theoretical and empirical, point to a larger role for racial prejudice in wage determination for minorities than has been acknowledged in the recent discrimination literature. Clearly, much more work, both on the theoretical front and with respect to empirical analysis, needs to be done in order to for us to have a better sense of the ways in which prejudice operates and the effect it has on wages. For example, we have analyzed a particularly simple form of racial animus: an aversion to cross-racial contact. In this we follow Becker, who assumes that this is the form that racial prejudice takes. However, racial animus can take other forms that might be relevant for wage determination. Explicit theoretical analysis of alternative formulations of prejudice is an obvious next step for future work. Similarly, while the empirical evidence we have presented is strongly suggestive of an important role for racial prejudice, we have been careful to stress that absent quasi-experimental evidence, causal interpretations cannot necessarily be given to these estimates. Future work, in which scholars find suitable instruments for individual or community prejudice is an obvious next step on the empirical front.

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Table 1: Demographic Traits and Individual Level Prejudice

	Aggregate Index of Individual Prejudice				Not vote for a Black for President			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Age/10	0.073			0.058	0.032			0.023
	(0.002)			(0.002)	(0.003)			(0.002)
Education		-0.045		-0.037		-0.022		-0.019
		(0.004)		(0.003)		(0.003)		(0.003)
Female			-0.047	-0.071			-0.012	-0.023
			(0.009)	(0.007)			(0.006)	(0.004)
Observations	38191	38215	38306	38111	17700	17724	17753	17674
R-squared	0.12	0.13	0.08	0.16	0.07	0.08	0.05	0.09

	Support a law against interracial marriage				Oppose busing to integrate schools			
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Age/10	0.071			0.054	0.024			0.027
	(0.004)			(0.002)	(0.002)			(0.002)
Education		-0.045		-0.037		0.001		0.005
		(0.004)		(0.004)		(0.002)		(0.002)
Female			0.030	0.008			-0.022	-0.024
			(0.008)	(0.005)			(0.008)	(0.007)
Observations	24671	24683	24739	24621	19391	19417	19453	19357
R-squared	0.18	0.20	0.10	0.24	0.05	0.04	0.04	0.05

Note: Table reports coefficient estimates from individual level OLS regressions of measures of prejudice on demographic traits. Four regressions are reported for each dependent variable, denoted above the results. In addition to the regressors listed in the table, regressions control for census division and year effects. Standard errors are corrected for clustering at the census division level.

Table 2: Prejudice and Wages across Census Divisions

	Support Law Against Interracial Marriage	Would not vote for Black for President	Oppose busing to integrate schools	Prejudice Indices				% Black	$\log w_B - \log w_w$
				All Whites		High-Skiiled Whites			
				Average	Marginal	Average	Marginal		
E. Sou. Central	0.504	0.330	0.829	0.141	-0.995	-0.054	-0.728	14.2	-0.281
South Atlantic	0.377	0.236	0.837	0.004	-1.041	-0.284	-1.045	16.9	-0.249
W. Sou. Central	0.306	0.210	0.822	-0.052	-1.084	-0.219	-1.084	9.7	-0.212
E. Nor. Central	0.245	0.146	0.810	-0.142	-1.216	-0.407	-1.216	6.9	-0.143
W. Nor. Central	0.243	0.152	0.762	-0.181	-1.385	-0.423	-1.385	2.2	-0.117
Middle Atlantic	0.203	0.133	0.765	-0.196	-1.159	-0.427	-1.216	8.6	-0.202
Mountain	0.159	0.104	0.733	-0.3	-1.385	-0.436	-1.385	1.7	-0.149
Pacific	0.132	0.098	0.764	-0.319	-1.348	-0.48	-1.385	4.5	-0.109
New England	0.149	0.085	0.717	-0.363	-1.385	-0.555	-1.385	2.4	-0.172
Total	0.230	0.147	0.740	-0.156	-1.222	-0.365	-1.203	7.7	-0.214

Dep. Var.: B-W Wage Gap,
Bivariate OLS Coefficients (std. err.):

	Support Law Against Interracial Marriage	Would not vote for Black for President	Oppose busing to integrate schools	Average	Marginal	Average	Marginal		
	-0.404	-0.617	-0.855	-0.286	-0.328	-0.305	-0.237		
	(0.102)	(0.158)	(0.397)	(0.081)	(0.065)	(0.089)	(0.044)		
Observations	9	9	9	9	9	9	9		
R-squared	0.691	0.686	0.398	0.64	0.78	0.63	0.80		

Notes: Table shows means of selected variables by census division. The first three columns show the fraction answering the particular questions as indicated in the column heading. The panel below reports coefficients (standard errors) from a bivariate regression of the census division level black-white wage gap on the fraction answering each question as indicated. The middle set of columns report various prejudice indices by census division. Percent black is the fraction of black and white 16-64 year-olds who are black, as estimated from the 1973-2002 May and ORG CPS. The rightmost column reports the unconditional difference between black and white log wages by census division measured in the 1973-2002 May and ORG CPS.

Table 3. Racial Prejudice of the Self-Employed and of Supervisors, Relative to other White Workers

	Dependent Variable:			
	Self-employed?		Supervisor?	
Dep. Var.:	0.125		0.112	
	(1)	(2)	(3)	(4)
Index of individual prejudice	0.013	0.011	-0.010	0.002
	(0.005)	(0.002)	(0.002)	(0.003)
Controls:	N	Y	N	Y
R^2	35950	34575	38306	36767
No. Obs.	0.00	0.03	0.00	0.04

Note: The top row of the table reports the fraction of whites who are self-employed and supervisors in the GSS. The bottom panel of the table reports coefficients from individual-level OLS regressions of an indicator for either being self-employed or a supervisor on the index of individual prejudice. Sample includes whites only. Data come from the GSS. The supervisor indicator is defined based on occupation codes. Columns (1) and (3) report results from unconditional univariate regressions. Columns (2) and (4) report results from regressions that add year, age, years of education, and state dummies.

Table 4. Estimated Relationship Between Racial Prejudice of Whites in a Labor Market and Black-White Relative Wages

| | Dependent Variable: Residual Black-White Wage Gap in Market | | | | | |
| | *(Mean (s.d) of Black White Wage Gap Across States: -0.108(0.053))* | | | | | |

Measure of Prejudice Among **All** Whites	(1)	(2)	(3)	(4)	(5)	(6)
Average	-0.072		0.080	-0.053		-0.008
	(0.037)		(0.046)	(0.029)		(0.057)
Marginal		-0.094	-0.133		-0.049	-0.043
		(0.020)	(0.030)		(0.024)	(0.048)
Fraction Black in State				-0.323	-0.237	-0.246
				(0.063)	(0.079)	(0.105)
Observations	45	45	45	45	45	45
R-squared	0.08	0.33	0.38	0.44	0.45	0.45

Measure of Prejudice Among **High-Skilled** Whites	(7)	(8)	(9)	(10)	(11)	(12)
Average	-0.092		0.012	-0.069		-0.121
	(0.040)		(0.051)	(0.032)		(0.055)
Marginal		-0.098	-0.103		-0.031	0.059
		(0.025)	(0.035)		(0.031)	(0.050)
Fraction Black in State				-0.319	-0.279	-0.417
				(0.062)	(0.086)	(0.104)
Observations	45	45	45	45	45	45
R-squared	0.11	0.26	0.26	0.45	0.41	0.47

Note: Table reports coefficients (standard errors) from OLS regressions of residual state-level black-white wage gaps on various measures of prejudice. Residual black-white wage gaps are estimated using 1977-2002 May/ORG CPS data and control for education, a quadratic in experience, race-specific year effects and race-specific state effect. Data from 1973-1976 are dropped because CPS reports states in groups in those years. States are dropped if they are not sampled in the GSS in the years necessary to measure the marginal index of prejudice. The "marginal" is the pth percentile of the prejudice distribution of the relevant population of whites,

Table 5. Relationship Between Racial Prejudice of All Whites a Labor Market and Black-White Wages, Under Alternative Regression Specifications.

Robustness Test: Accounting for Differential Precision of Estimate of State Wage Gap

Regressions Weighted by Inverse of Variance for Estimated State Wage Gap

Measure of Prejudice Among All Whites	Mean (Std. Dev.) black-white wage gap across states: -0.123 (0.044)					
	(1)	(2)	(3)	(4)	(5)	(6)
Average	-0.028		0.112	-0.037		0.007
	(0.031)		(0.035)	(0.022)		(0.048)
Marginal		-0.076	-0.133		-0.035	-0.040
		(0.018)	(0.024)		(0.017)	(0.039)
Fraction Black in State				-0.299	-0.241	-0.233
				(0.046)	(0.052)	(0.079)
Observations	45	45	45	45	45	45
R-squared	0.02	0.28	0.42	0.51	0.53	0.53

Robustness Test: Accounting For Differential Racial Labor Force Participation Rates

State-level black-white wage gaps estimated by median regression, imputing log wages equal to zero for those not employed.

Measure of Prejudice Among All Whites	Mean (Std. Dev.) black-white wage gap across states: -0.113 (0.058)					
	(7)	(8)	(9)	(10)	(11)	(12)
Average	-0.131		-0.003	-0.103		-0.267
	(0.089)		(0.133)	(0.085)		(0.165)
Marginal		-0.113	-0.112		-0.032	0.158
		(0.057)	(0.086)		(0.071)	(0.137)
Fraction Black in State				-0.463	-0.425	-0.742
				(0.181)	(0.234)	(0.301)
Observations	45	45	45	45	45	45
R-squared	0.05	0.08	0.08	0.18	0.15	0.20

Robustness Test: Accounting For Possibility that Unprejudiced Firms Larger Because of Lower Labor Costs

Marginal Caluculated Using 0.8 x the Fraction Black in the state, rather than the Fraction Black in the state.

Measure of Prejudice Among All Whites	Mean (Std. Dev.) black-white wage gap across states: -0.108 (0.053)					
	(13)	(14)	(15)	(16)	(17)	(18)
Average	-0.072		0.060	-0.053		-0.035
	(0.037)		(0.046)	(0.029)		(0.054)
Marginal		-0.101	-0.133		-0.047	-0.020
		(0.023)	(0.034)		(0.027)	(0.050)
Fraction Black in State				-0.323	-0.251	-0.292
				(0.063)	(0.080)	(0.102)
Observations	45	45	45	45	45	45
R-squared	0.08	0.30	0.33	0.44	0.43	0.44

Note: All regression in table are of the same form as regression in Table 5, apart from the specific modification noted. See text for further details.

Table 6. Relationship Between Prejudice of Whites in State and Black-White Wages, Accounting for Possiblity that Racial Unmeasured Skill Difference Correlated with Prejudice or Fraction of State that is Black.

A: Regressions Using 1920 percent black to compute the marginal

Mean (Std. Dev.) black-white wage gap across states: -0.108 (0.053)

Measure of Prejudice Among

All Whites	(1)	(2)	(3)	(4)	(5)	(6)
Average	-0.072		0.082	-0.053		-0.038
	(0.037)		(0.055)	(0.029)		(0.061)
Marginal		-0.050	-0.076		-0.023	-0.008
		(0.013)	(0.021)		(0.014)	(0.028)
Fraction Black in State				-0.323	-0.270	-0.304
				(0.063)	(0.074)	(0.093)
Observations	45	45	45	45	45	45
R-squared	0.08	0.25	0.29	0.44	0.43	0.44

B: Controlling for Test-Score Differences by State

Mean (Std. Dev.) black-white wage gap across states: -0.112 (0.048)

Measure of Prejudice Among

All Whites	(7)	(8)	(9)	(10)	(11)	(12)
Average	-0.083		0.082	-0.052		-0.007
	(0.033)		(0.048)	(0.026)		(0.057)
Marginal		-0.082	-0.124		-0.044	-0.039
		(0.017)	(0.030)		(0.020)	(0.044)
Fraction Black in State				-0.280	-0.213	-0.220
				(0.055)	(0.068)	(0.088)
White-black difference in NAEP Math	-0.057	-0.045	-0.042	-0.055	-0.050	-0.051
	(0.029)	(0.025)	(0.025)	(0.023)	(0.023)	(0.023)
White-black difference in NAEP Reading	-0.100	-0.062	-0.026	-0.033	-0.022	-0.024
	(0.036)	(0.028)	(0.035)	(0.031)	(0.028)	(0.033)
Observations	39	39	39	39	39	39
R-squared	0.34	0.53	0.57	0.63	0.63	0.63

Note: NAEP scores standardized to have a mean of zero and a standard deviation of

C: Controlling for Relative School Quality in Southern States

Mean (Std. Dev.) black-white wage gap across states: -0.136 (0.041)

Measure of Prejudice Among

All Whites	(13)	(14)	(15)	(16)	(17)	(18)
(mean) d_s	0.022		0.104	0.060		0.102
	(0.043)		(0.035)	(0.037)		(0.035)
(mean) dm_s		-0.082	-0.129		-0.052	-0.102
		(0.030)	(0.029)		(0.041)	(0.038)
White--to-black ratio of pupils/teacher for 1940's birth cohort from Card-Krueger (1992)				0.303	0.139	0.120
				(0.098)	(0.130)	(0.106)
States	18	18	18	18	18	18
R-squared	0.02	0.32	0.57	0.40	0.36	0.61

Note: Table reports coefficients from specifications similar to those in table 5, only for the 17 Southern states (plus Missouri) for which Card & Krueger (1992) collected measures of relative school quality. Columns 1-3 report results for this subsample of states. Columns 4-6 also add controls for the ratio of white to black pupils/teacher in the state, as was in place for the cohort born between 1940-1949. Standard errors are in parentheses.

Table 7. Estimated Relationship Between Racial Prejudice of Whites in a Labor Market and Black-White Relative Wages Using Alternative Prejudice Index

	Dependent Variable: Residual Black-White Wage Gap in Market					
Measure of Prejudice Among **All** *Whites*	(1)	(2)	(3)	(4)	(5)	(6)
Average	-0.062		0.065	-0.034		0.021
	(0.034)		(0.042)	(0.028)		(0.042)
Marginal		-0.348	-0.471		-0.184	-0.233
		(0.079)	(0.111)		(0.086)	(0.132)
Fraction Black in State				-0.322	-0.247	-0.232
				(0.065)	(0.074)	(0.081)
Observations	45	45	45	45	45	45
R-squared	0.07	0.31	0.35	0.42	0.45	0.46

Note: Index does not include the following questions from the GSS which are related to government spending or actions: BUSING, HELPBLK, NATRACE, AFFRMACT, RACSUBGV.
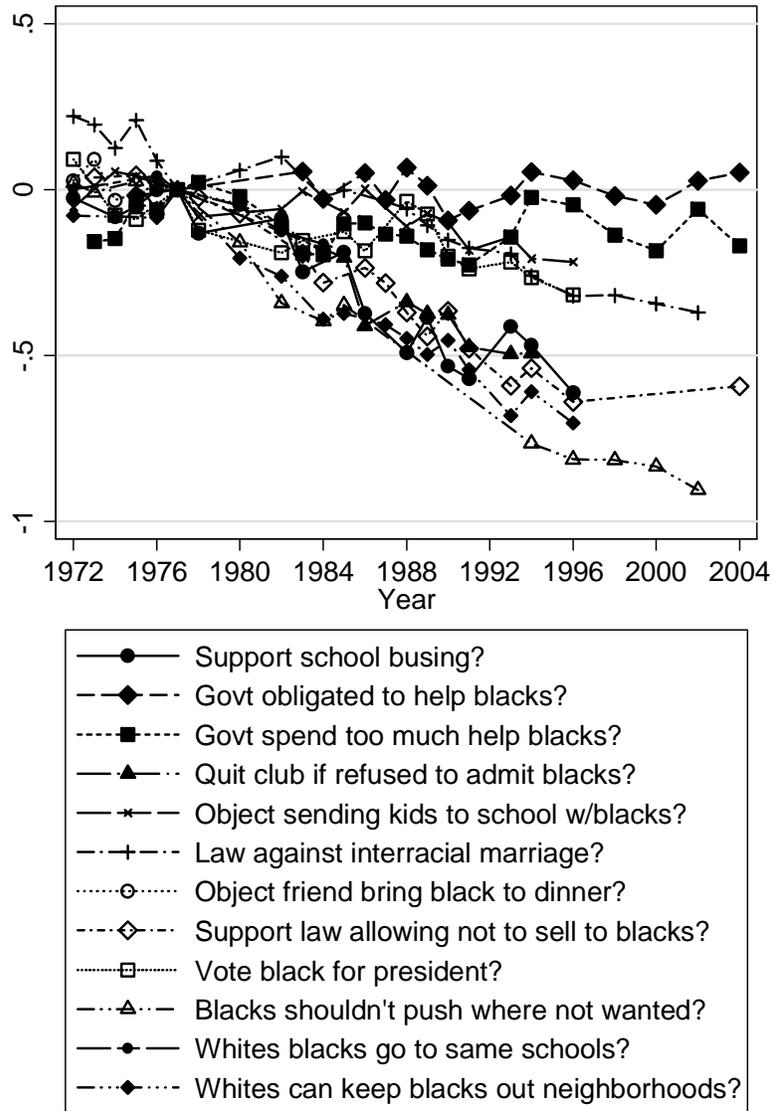
Figure 1:
Trends in responses to GSS prejudice questions

Note: Full descriptions of questions are listed in appendix table 1.
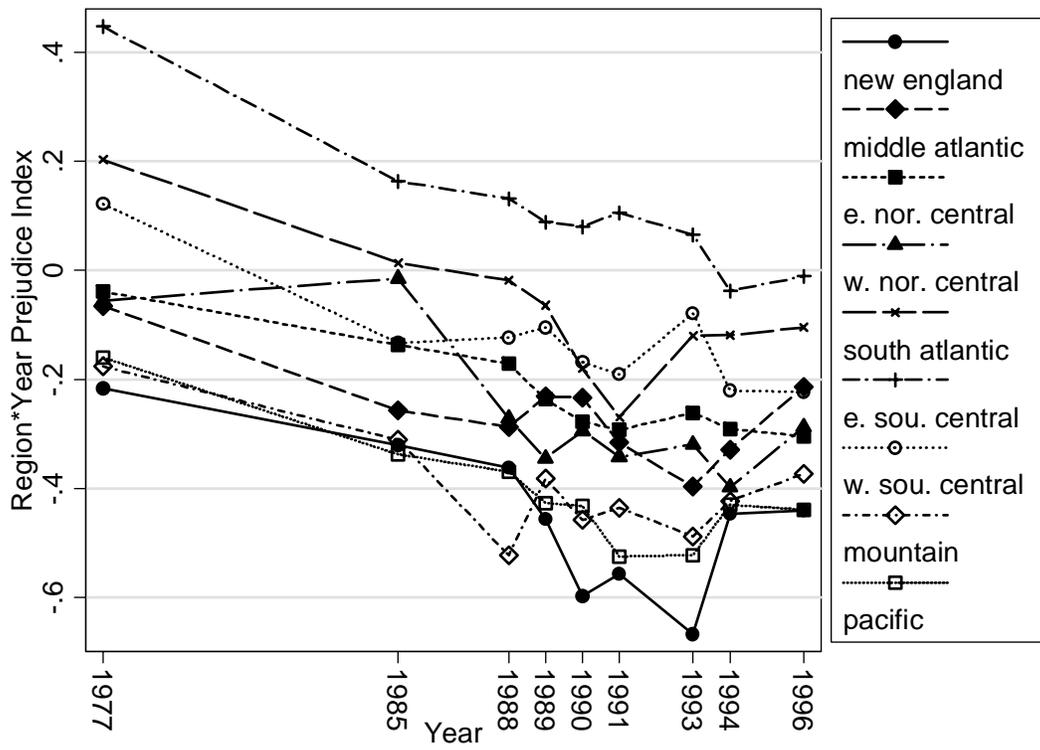
Figure 2: Trends in prejudice by census division

Note: Figure plots $\overline{d}_{rt}$ over time by census division for each of the years for which it is available.
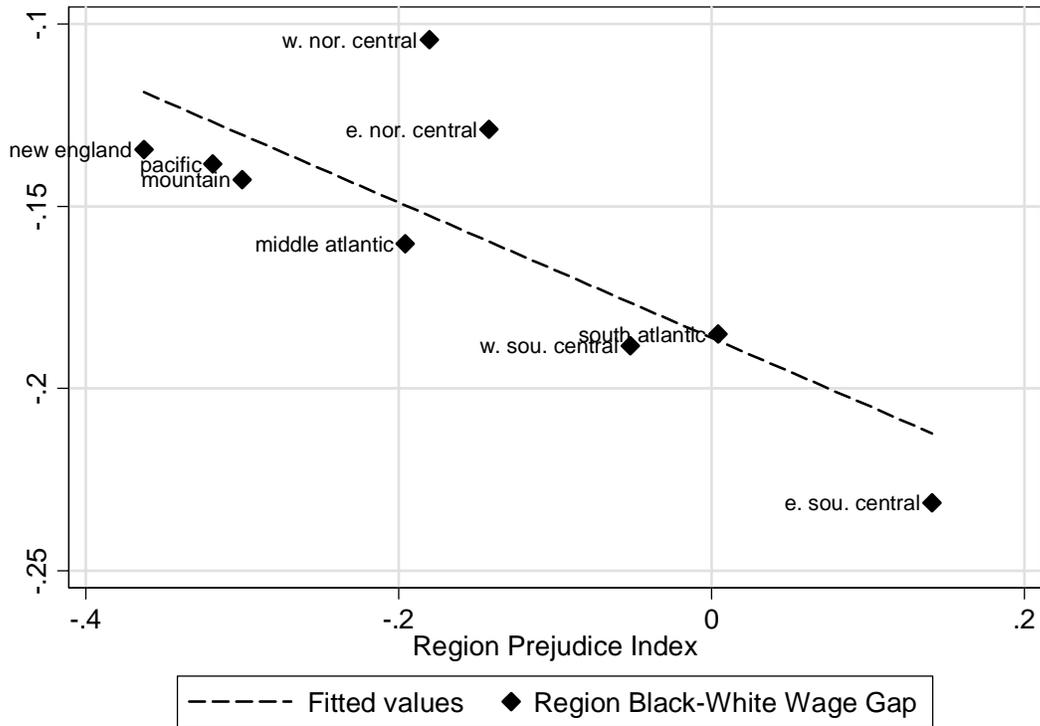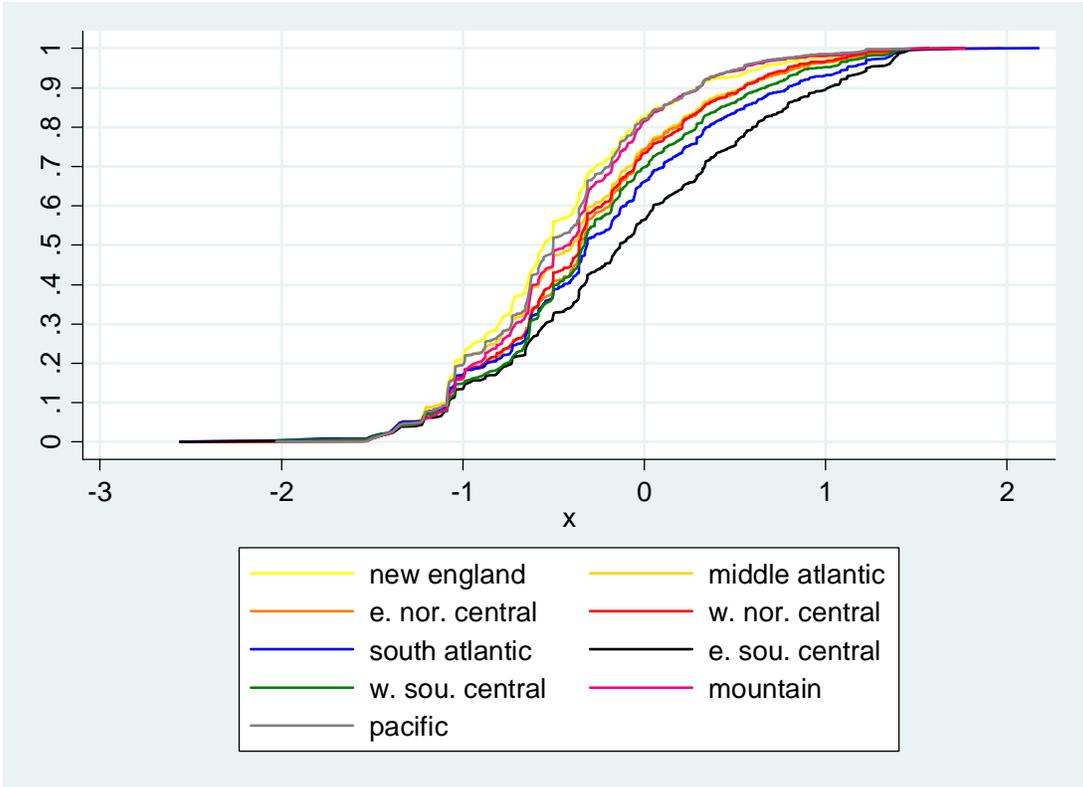
Figure 3:

Plot of the regional black-white wage gap against an index of regional prejudice ($\bar{d}_r$)

Note: The estimated slope is -0.161 (standard error, 0.065). $R^2 = 0.465, n = 9$.

Appendix Figure 1

Appendix Table 1: GSS questions used to measure prejudice

AFFRMACT	Do you oppose a preference in hiring and promotion?
BUSING	In general do you favor the busing of black and white children from one school district to another?
CLOSEBLK	In general, how close do you feel to blacks?
FEELBLKS	In general, how warm or cool do you feel towards blacks?
HELPBLK	Agree? The government is obligated to help blacks.
NATRACE	Agree? We are spending too much money improving the condition of blacks.
RACAVOID	If you were driving through neighborhoods in a city, would you go out of your way to avoid going through a black section?
RACCHNG	If you and your friends belonged to a social club that would not let blacks join, would you try to change the rules?
RACDIN	How strongly would you object if a family member brought a black friend home for dinner?
RACJOB	Do you think blacks should have as good a chance as anyone to get any kind of job, or do you think white people should have the first chance at any kind of job?
RACMAR	Do you think there should be laws against marriages between blacks and whites?
RACMAREL	How would it make you feel if a close relative of yours were planning to marry a black?
RACMARPR	Agree? You can expect special problems with marriages between blacks and whites.
RACOBJCT	If a black with the same income and education as you have, moved into your block, would it make any difference to you?
RACOPEN	Would you vote for a law that says a homeowner can refuse to sell to blacks, or one that says homeowners cannot refuse to sell based on skin color?
RACPEERS	Aggregation of three questions about whether you would object to sending your kids to a school that had few/half/most black students.
RACPRES	If your party nominated a black for President, would you vote for him if he were qualified for the job?
RACPUSH	Agree? Blacks shouldn't push themselves where they're not wanted.
RACQUIT	If yes to RACCHNG: If you could not get the rules changed, do you think you would resign from the club, even if your friends didn't?
RACSCHOL	Do you think white students and black students should go to the same schools or separate schools?
RACSEG	Agree? White people have the right to keep black people out of their neighborhoods and blacks should respect that right.
RACSUBGV	Do you think the city government in white suburbs should encourage black people to buy homes in the suburbs, discourage them, or leave it to private efforts?
RACSUBS	Do you oppose voluntary (religious/private business) efforts to integrate white suburbs?
RACSUPS	Agree? You can expect special problems with black supervisors getting along with workers that are mostly white.
RACTEACH	Agree? A school board should not hire a person to teach if that person belongs to an organization that opposes school integration.
WRKWAYUP	Agree? Italians, Jews and other minorities overcame prejudice and worked their way up. Blacks should do the same without special favors.

Note: Table lists each of the 26 questions from the GSS used to measure prejudice. The 6 questions shaded in gray were asked in the 1977, 1985, 1988, 1989, 1990, 1991, 1993, 1994 and 1996 waves of the GSS. We use these six questions to construct the prejudice indices that vary within region over time, as well as the indices of the marginal discriminator's prejudice. In all but one case, the variable name is the same as the one listed in the GSS codebook. RACPEERS is based on three variables (RACFEW, RACHAF, RACMOST), which ask "Would you yourself have any objection to sending your children to a school where [a few/half/most] of the children are blacks?" Some of the descriptions are the verbatim questions asked in the survey, while others are paraphrased to save space. Questions were asked in various years of the GSS.