A Simple Model of Subtle Discrimination *

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Abstract

This paper introduces the concept of subtle discrimination. Contrary to the implicit assumption in standard models of employer discrimination, it shows that some forms of discrimination may be difficult to identify *ex post*, even with detailed information on wages and productivity. The paper discusses the circumstances under which this type of labor market discrimination is likely to arise, and assesses how changes in subtle discrimination are likely to affect black well being. Since increases in subtle discrimination are indistinguishable from reductions in *all* discrimination, the paper sheds light on the question of how blacks and other minorities can be presumed to have been affected when measured discrimination against them falls. Implications of the model and possible extensions are also discussed.

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1 Introduction

1.1 Overview

Nearly all competitive[1] models of discrimination by firms against their black[2] workers implicitly presume that discrimination can be detected once it has occurred. This paper relaxes this implicit assumption of perfect knowledge *ex post* and argues that a person armed with information about a worker's marginal product on the one hand, and with information about his labor market outcomes on the other cannot always tell whether the worker has been discriminated against. That is, rather than always being *overt* discrimination can sometimes be *subtle*. This simple fact has interesting theoretical and public policy implications which have not been studied in the economics literature on discrimination.

The degree to which discrimination is subtle is likely to affect prejudiced firms' interactions with the state. Subtle acts of discrimination cannot be readily observed so they are only mildly susceptible to punishment by the government's anti-discriminatory agencies. Because prejudiced firms presumably wish to avoid the punitive arm of the state when they discriminate, they probably care whether their discriminatory acts are subtle or not. In other words, prejudiced firms can be expected to be choose not only whether to discriminate or not, but they are also likely to carefully select how easily their actions may be detected after the fact. Allowing for the possibility of subtlety therefore provides for a richer and more complex discussion of how prejudiced employers act on their prejudice and how these actions may be affected by the actions undertaken by the state.

Subtlety likely affects black workers' well being as well. A point which, oddly, has been ignored in the standard analysis of discrimination is how black workers are

likely to use the perfect information assumed in these models about a firm's previous discriminatory actions against them to take actions which mitigate the ill effects of discrimination in the future. A black worker who knows for certain that his employer has mistreated him in the past is likely to form the reasonable conjecture that the employer would likely discriminate against him again, if given the chance. The worker is therefore likely to take steps to avoid that particular employer in the future. When discrimination is subtle, a black worker's ability to take these steps in his self-defense is impaired.

Finally, in a world where there is some discrimination that is not overt, societal estimates of the amount of discrimination in the economy will be consistently too low. This is because the *absence from view* of discrimination will often be interpreted simply as the *absence* of discrimination.

Recent years have witnessed the addition of terms such as "glass-ceiling" and "institutional racism" into popular speech. These expressions are quite imprecise, but they hint at the existence of exactly the type of discrimination this paper discusses. There is also troubling survey evidence from the 1990's, as well as claims in number of recent, well received books by African-American authors, which suggests that many blacks feel strongly that racism and racial discrimination continue to adversely affect their lives. Interestingly, the number of blacks reporting these sentiments is at odds with the large improvement in American race relations over recent decades. Plus, the ways in which racial discrimination limit black life are rarely pointed to with great specificity. Others have questioned the validity of these claims largely on these two grounds, but there remains the tantalizing question whether the claims are completely devoid of any element of truth.[3] In particular, if there is such a thing as subtle discrimination, we would expect that people who experience it would describe something which they

themselves only feel or suspect and of which an outsider would be hard-pressed to find hard evidence.

Concern about subtle discrimination is particularly salient given the profound changes in U.S. race relations that have occurred over the past several decades. As recently as thirty years ago, dining and lodging establishments in the South posted signs indicating that blacks were not welcome and employers openly mistreated blacks and female workers in the workplace. One would be stunned to observe such blatant conduct today. But, does this mean that discrimination has completely disappeared or merely that some has become subtle? If some discrimination has become subtle, what has been the overall effect on black well being? What has been the effect of the vigorous efforts on the part of the government in recent years to protect the employment rights of racial minorities and of women? In particular, might the government's actions have *produced* a change in the amount of subtle discrimination in the market? This paper does not definitively answer all of these questions, but the model presented below yields very suggestive answers to some of them.

1.2 Basic Idea

The paper presents a model which is a simple variation on the standard model of employer taste-driven discrimination (see Becker (1971)). Whereas prejudice in a conventional taste discrimination model is the amount by which an employer acts *as if* black productivity is less than the true amount because of his distaste for interacting with blacks, prejudice in this paper is the pleasure employers derive from engaging in acts of sabotage which *cause* lower productivity among blacks. The formulation draws a much sharper distinction between actions and feelings than is usually true in taste models of discrimination, and emphasizes that simply paying people less than their true

marginal product is only one of many ways a prejudiced employer can discriminate. Indeed, employers who behave this way might not even be motivated by prejudice at all.[4]

Sabotage refers to any actions a firm might take which lower a worker's productivity, or which make him less productive than he could otherwise be. That such actions are possible is incontrovertible; workers rely on "leads" from their bosses; do tasks assigned to them; are recommended by their employers for job training and, in general, work under a set of rules which are under their employer's control. If particular workers receive treatment which is not conducive to high output, and if they receive this treatment because of their race or gender, then the firm's treatment towards them is discriminatory sabotage.

If production is stochastic, the possible subtlety of some discriminatory acts follows straightforwardly. Consider the industry of auto sales. In this industry the value of a worker's output clearly depends on whether he is a good salesman or not, but also depends on actions that the owner of the worker's firm takes to hinder or help him and on random chance. A prejudiced employer might ask that his black salesman work on Wednesday, or require that he spend an hour on the phone with a particular customer when the employer knows full well that the customer is not really interested in a sale, or that Wednesdays are not good days on which to move cars off the lot. But there are also strange Wednesdays, just as there are those days when even the most inveterate "looker" decides that today is the day he will buy. If it is known that because of these random factors alone, a black worker of a given ability sells somewhere between eight and ten cars in a month irrespective of what days he is made to work or the type of customer whose calls he is made to return first, one cannot easily tell whether an employer attempted to sabotage the worker's productivity but was foiled by a good

random draw if the worker happens to sell somewhere between eight and ten cars in a month.

Apart from the usual questions[5] about how discriminatory firms can survive in the long run in a competitive economy, an important criticism about the taste discrimination model in this paper is the following: If firms, because of prejudice, sabotage their workers' work effort, why do they not simply refuse to hire blacks in the first place? This is fundamentally a question about the prejudicial tastes which racists are assumed to hold. In traditional taste models, the "taste" is an aversion held by the prejudiced against interacting with blacks. The tastes in this model are different in that they emphasize that sometimes, in order to satisfy a discriminatory impulse, racists *must* interact with blacks.

No fair reading of the history of U.S. race or gender relations allows one to gainsay that some racists and sexists appeared to derive a perverse sense of satisfaction from interacting with blacks, women and other minorities - so long as they (the prejudiced persons) were in superior positions. Racists routinely interacted with their black gardeners, cooks, and janitors. Similarly, sexist managers who would likely be quite uncomfortable about interacting with a woman as a manager apparently were a great deal less bothered by their interaction with their female secretaries. Moreover, interacting with minorities or women from a position of superiority must give some prejudiced persons particular pleasure if their actions are the *cause* of others' economically and socially inferior status. The tastes in this paper represent this type of prejudice.

The next section presents the model. The equilibrium is solved for in section 3, and black welfare is analyzed in section 4. Section 5 discusses implications and the final section concludes.

2 Model

Consider a dynamic economy with sorting at the end of every period which is initiated by workers. That is, at the start of every period, workers either continue working at the employer for whom they worked in the previous period, or else work at a new firm chosen at random from among other employers. Workers are either black (B) or white (A). All have the same level of skill V, live for T periods, and move freely among firms. Output is revealed at the end of each period and before the worker decides to quit or move to a new job. Call the value of a worker's output at age (period) t, Q_t. In order to loosen the traditionally rigid relationship between wages and discrimination so as to focus on the effect of discrimination on actual productivity, wages are assumed to be simply a share γ of the value of a worker's output in that period, irrespective of the worker's race. Worker per period utility is thus

$$\gamma\, Q_t \tag{1}$$

and workers are assumed to maximize expected lifetime welfare at all periods.

All employers in the model are white. In any period, they can engage in discriminatory acts D against any worker which lowers the value of the worker's output in that period. An employer's utility in any period from his interaction with and treatment of a worker in that period equals the employer's share of the value of the worker's output, $(1-\gamma)$, plus the utility he derives from engaging in discriminatory acts against the worker. In any period, prejudiced employers (p) derive pleasure from discriminating against blacks equal to $R(D)$, where D is the level of sabotage the firm chooses, with $R' > 0$ and $R'' < 0$. Some firms derive no pleasure at all from discrimination against anybody and will henceforth be called un-prejudiced (u).[6]

Worker production is stochastic. Specifically, the value of a worker i's productivity

in period t is

$$Q_{it} = V - D_{it} + \theta_{it}. \tag{2}$$

where D_{it} is the discrimination the person suffers from his employer in period t. θ_{it} is a random productivity parameter distributed Uniform[7] over the interval $[-\Theta,\ \Theta]$, for all i and t. Let θ_{it} be un-correlated both across time and people. Note that the variable Θ is a summary measure of the variability of production.

To formalize the idea that firms' actions towards their workers in any society are mediated by the sensibilities of that broader society, the model assumes a third agent called the "state". Whether the state is conceived of as an actual governmental agency, such as the Office of Equal Employment Opportunity, or whites in the society at large who are not racists, is immaterial. The key point is that the state has the power to levy a fine of C against firms caught in an act of discriminatory sabotage against a black worker. C is a measure of a society's disapproval of discrimination.[8]

The per period payoffs of a type-k firm ($k = u, p$) are

$$\pi_k^j = \begin{cases} (1-\gamma)\ (V + \theta_{it}) & \text{if } k = u \text{ or } k = p, j = A \\ (1-\gamma)\ (V + \theta_{it} - D_{it}) + R\left(D_{it}\right) - C * (1 - S_{it}) & \text{if } k = p, j = B. \end{cases} \tag{3}$$

from its interactions with a type-j worker ($j = A, B$). D_{it} is the discrimination that the firm engages in against the worker in period t. Because the state can only punish discrimination it catches, S_{it} is an indicator variable which equals 1 if the firm engages in discrimination *and* if that discrimination is not detected by the state.

Notice the many similarities between this set-up and a traditional taste discrimination model. As in in latter class of models, discrimination in any period lowers the value of black workers' wages and utility. It is costly to those who engage in it: in traditional taste models because the employer acts as if black wages are higher than they

truly are; here because it makes blacks less productive and thereby lowers the purely economic benefits which discriminators derive from their black employees. This model adds the feature that firms caught discriminating pay the a costly fine. Finally, as in standard models of taste-driven discrimination, discrimination against blacks brings a purely psychic benefit to prejudiced employers, which they must weight against the afore-mentioned costs when choosing their discriminatory actions.

3 Equilibrium

Even though the value of worker output Q_t is observed at the end of every period, the fact that production is stochastic means that it cannot always be established whether discrimination has occurred. For some levels of discrimination, the best output a worker could possibly produce with a prejudiced employer exceeds the worst possible output he could produce with an un-prejudiced one. Because of this overlap in the distribution of output in discriminatory and non-discriminatory environments, an act of discrimination, D_{it}, against a black worker will go undetected with probability

$$S_{ij} = 1 - \frac{D}{2\Theta}. \tag{4}$$

So, the greater the natural variability of production, the greater the chance that the state will miss acts of discrimination; and the more intense a firm's discrimination, the less likely its actions will be subtle. Suppose that for all levels of discrimination, $D < 2\Theta$.

For the time being, assume that firms do not care at all about their future interactions with a given worker. A prejudiced firm interacting with a black worker in any period will therefore maximize its expected payoff from that period, or

$$E\left[(1-\gamma)\ (V + \theta_{it} - D_{it}) + R\left(D_{it}\right) - C * (1 - S_{it})\right] \tag{5}$$

Taking expectations and differentiating, any positive discriminatory sabotage, D_{it}^{*} that a racist chooses to practice against a black worker is given implicitly by the solution to

$$R' = -C\ S'_{it} + (1 - \gamma). \tag{6}$$

where

$$S'_{it} = -\frac{1}{2\Theta}. \tag{7}$$

Condition (6) says simply that when discrimination occurs, it is practiced up to the point where the marginal prejudicial pleasure which it brings the person practicing it equals the marginal cost he sacrifices by such conduct: the reduction in profits that his actions cause, plus the greater chance that he will have to pay a fine because his actions are slightly less likely to be subtle. From (6) discrimination can be shown to be increasing in the share of output which workers are able to keep, γ. As γ gets closer and closer to 1, discrimination costs a prejudiced employer less by way of purely economic profit. Prejudiced firms can also be shown to practice more discriminatory sabotage as the natural variance of output, Θ, gets larger. This is because the greater the natural variability of output, the larger the likelihood that the firm's bad conduct will be subtle and therefore unpunished.

Condition (6) applies to interior solutions. Racists would practice no discrimination if the left hand side of (7) strictly exceeded the right hand side at $D = 0$. The marginal prejudicial utility that racists receive from discriminating matters greatly here. If $R'(0) = \infty$, as would be true if $R = \ln(.)$ or many other popular utility functions assumed in the literature, no monetary fine whatever could prevent true racists from engaging in *some* discrimination. Greater societal disapproval of discrimination

as summarized by the fine C causes firms to engage in less intense acts of discrimination, but it unlikely to make intense racists stop discriminating entirely except in very special cases. According to the model, some discrimination will always probably exist irrespective of how hard the state labors against prejudice. And, *because* of greater societal disapproval, such discrimination as exists is likely to be subtle more often than not.

Of course, the state is not the only party interested in knowing that a particular employer is a racist. Workers have a keen interest in this knowledge as well. How does subtlety affect the welfare of black workers? The next section discusses this issue.

4 Subtle Discrimination and Black Lifetime Welfare

In what follows, suppose that career length T, equals 2.[9] If workers retire at the end of their second period of employment, the only interesting decision that they make occurs at the end of the first period or work, when they must decide whether to remain with their incumbent employer or move and seek new work. A worker's expected utility from getting a new job, chosen at random from among all firms, is M^*, where

$$M^* = (1-\rho)\,\gamma\,E[V+\theta_{i2}] + \gamma\,\rho\,E[V-D^*+\theta_{i2}]. \tag{8}$$

ρ is the fraction of all employers known to hold racial prejudice and D^* is the amount of discrimination that racists practice. Taking expectations and simplifying,

$$M^* = \gamma\,(V-\ \rho\,D^*) \tag{9}$$

is the reservation "stay" utility for blacks who have completed their first period of market work; it is the minimum they must anticipate receiving from an employer for

whom they have worked for one period if they are to remain with him rather than quit and take a new job. Notice that this M^* is simply a black worker's expected wage if he faces no discrimination, minus the loss due to discrimination he expects to receive after a random search for a job.

At the end of the first period of his work life, having observed his output at his incumbent employer, what does a black worker think about his incumbent employer? He can calculate how much discrimination prejudiced employers engage in, given the other parameters of the model, so by the straightforward application of Bayes' Rule, he believes the employer to be a racist with conditional probability

$$\begin{array}{l} Pr\ [\text{firm is u}|Q \leq V\ -\Theta] = 0 \\ Pr\ [\text{firm is u}|V\ -\Theta\ < Q \leq V - D^* + \Theta\ ] = (1-\rho) \\ Pr\ [\text{firm is u}|Q > V - D^* + \Theta\ ] = 1 \end{array} \tag{10}$$

The worker's expected utility from remaining with his incumbent employer is therefore M_s, where

$$M_s = \begin{cases} \gamma\,(V - D^*) & \text{if } O_1 < V - \Theta \\ \gamma\ (1-\rho)\ V + \gamma\,\rho\ (V - D^*) & \text{if } V - \Theta < O_1 \leq V + \Theta - D^* \\ \gamma\,V & \text{if } O_1 \geq V + \Theta - D^* \end{cases} \tag{11}$$

Of the three possible values that M_s could take, only two are either strictly greater than or strictly less that M^* The third is exactly equal to M^* since

$$\gamma\ (1-\rho)\ V + \gamma\,\rho\ (V - D^*) = \gamma\,(V -\ \rho\,D^*). \tag{12}$$

An assumption about worker mobility when the expected utility gains from leaving and finding a new job and those for staying are the same must be made. Under the assumption that workers quit when their expected returns from staying and leaving are the same, black workers will quit their age 1 employers when their output is less than $V - D^* + \Theta$. They would therefore always quit prejudiced employers after working for them for one period, but will also - unwittingly - quit un-prejudiced employers if

their random productivity draw with those employers happens to be low. Instead, the tie-breaking convention whereby workers do not not quit their employers unless they expect to do strictly better with a new job (as would be true if there were positive transition or mobility costs) is adopted here. Black workers will thus quit their age 1 employers when their output at those employers at age 1 is revealed to be lower than $V-\Theta$, which means that they will never quit un-prejudiced firms, but might stay with prejudiced firms if their random productivity draws at those firms happen to be high.[10]

Over the course of his work-life, a black worker can expect to receive utility of γ multiplied by

$$(1-\rho)(2V)+\rho\left[V-D^*+S_{it}^*\left(V-D^*\right)+\left(1-S_{it}^*\right)\left(\rho\left(V-D^*\right)+(1-\rho)V\right)\right] \quad (13)$$

where ρ is the fraction of all employers who are prejudiced, and

$$S_{it}^* = 1-\frac{D^*}{2\Theta} \quad (14)$$

is the equilibrium degree of subtlety of discriminatory acts and D^* is the discrimination that prejudiced employers practice in equilibrium.

The first part of (13) is the probability that the worker meets an un-prejudiced employer when he starts working, multiplied by $2V$, his expected compensation at that employer over two periods. The expression in the squared bracket is the worker's lifetime utility if he happens to encounter a prejudiced employer when he begins working. This occurs with probability ρ. In the first period of work with this employer, the worker's utility equals $V-D^*$. What happens at age 2 depends on whether or not he discovers that the employer is prejudiced, given that the discrimination might be subtle. He fails to discover that the employer is prejudiced with probability S_{it}^* , and determines the firm's true type with complementary probability. When he does not discover the employer's prejudice, he stays with him in the second period and receives

second period utility of $V - D^*$. Otherwise, he quits and finds a new job. He is then discriminated against with probability $(1 - \rho)$ and avoids age 2 discrimination altogether otherwise. Substituting for S_{it}^* and simplifying, black lifetime utility could also be written

$$\gamma \left\{ 2V - D^* \, \rho \left(\frac{D^*}{2\Theta} \right) (1 - \rho) - 2D^* \, \rho \left(1 - \frac{D^*}{2\Theta} \right) \right\}. \tag{15}$$

Blacks can expect to receive over the course of their lifetimes twice the value of their qualification minus an expected loss due to discrimination. The expected loss from discrimination is either D^* which requires that blacks start out working for a racist, detect the discrimination against them, leave for new employment and are lucky enough to end up with someone who harbors no prejudice; or $2D^*$, which requires that blacks start out working for a prejudiced employer and his discrimination against them proves to be subtle. Because white workers are never discriminated against, their expected lifetime utility equals to $2V$ and blacks with the same qualification do less well than whites over their lifetimes.

Expression (15) shows that the level of discrimination has two distinct effects on black lifetime welfare. Its first and most obvious effect is to increase the loss which blacks suffer when they experience discrimination. Its second effect is to change the likelihood that discrimination is subtle. As a result, the level of discrimination affects the probability that blacks experience multiple episodes of discrimination from the same employer. Ignoring the effect of γ henceforth, it follows from (15) that the effect of a marginal increase in the intensity of discriminatory actions on black lifetime welfare is

$$\frac{D^*}{\Theta} \rho \, (1 - \rho) - 2\rho, \tag{16}$$

so that increases in the level of discrimination can actually increase black lifetime

welfare if

$$D^* > \frac{2\Theta}{1-\rho}. \tag{17}$$

This result is initially quite counterintuitive. How could blacks possibly be worse off if discrimination falls? The answer follows straightforwardly from the model. More intense discrimination is discrimination which is more likely to be overt. Thus, increases in the level of discrimination yield the benefit of exposing an employer's racial animus to black workers, making it less likely that workers will remain with that employer to suffer multiple bouts of negative treatment. Result (17) says that sometimes black workers would be willing to pay for information about employers' types at the cost of more intense discrimination when they meet prejudiced employers.

The circumstances under which blacks may be willing to pay this cost are revealed in (17). Consider first the importance of the prevalence of prejudiced employers in a population, ρ. As ρ gets larger it is less likely that blacks will ever benefit from increases in the intensity of discrimination in the market. The intuition for this hinges on the usefulness of the information about a particular employer's prejudice: what blacks may expect to gain by quitting a racist employer to seek work elsewhere. Getting a new job means choosing at random from among completely unknown employers. But if a large majority of all employers are prejudiced, selecting a job at random means that a black person will more likely than not end up working for another prejudiced employer anyway. There is therefore little or no gain to be derived from learning that a *particular* employer is a racist, and increases in the level of D^* will only produce a negative, direct effect on black well being.

The second implication of (17) is that greater inherent variability of production, as measured by Θ, makes it more likely that reductions in discrimination will improve black welfare. The intuition for this result is also straightforward. With very high

levels of Θ, nearly all levels of discrimination will prove to be subtle. Production simply bounces around too much for anything informative to be gleaned about sabotage from the *ex post* inspection of output. Thus, whereas greater discrimination in this case leads to the direct welfare loss, there is no offsetting informational gain for blacks. A lessening of discrimination in the of large Θ will therefore probably be positive for black well being.

The results raise troubling questions about the degree to which the visible lessening of racial discrimination in recent decades can be presumed to have affected black welfare. No employer today engages in the very harmful acts of discrimination prevalent thirty or forty years ago. Changes over time in beliefs about blacks, and the establishment of vigorous anti-discrimination agencies are two obvious reasons why these acts may have disappeared. But, unless one is willing to assume that all prejudicial sentiment has vanished, even among people who a few decades ago derived such obvious delight from engaging in the most odious forms of discrimination, it seems likely that less intense acts of discrimination may remain a feature of modern life. But the very harshness of some of discriminatory actions of the past makes they were likely overt. Modern discrimination may have decreased in intensity, but according to the model, it should have also increased in subtlety, with the possible consequences described above. Blacks may now be less able to tell prejudiced employers apart from un-prejudiced ones, even after interacting with them, and even after they have actually been discriminated against by them.

Because the utility cost associated with an increase in subtle discrimination is a reduction in the ability to judge an employer's type for increases in subtle discrimination for *future* individual action, if a rise in subtle discrimination hurts any type of black worker, it is more likely to hurt those who are young, because only they are interested

in information for use in future labor activity.

A black worker's age and subtle discrimination may interact in another interesting way. In a more sadistic version of the model, prejudiced firms would seek to maximize the length of time they are able to discriminate against an individual black worker. After all, if racist sentiments can cause someone to *ever* derive pleasure from harming someone because of his race, how unreasonable is it that such persons would like to cause injury as much as possible?

Consider a modified version of the basic model in which prejudiced firms consider their expected future gain from interacting with a given worker when interacting with that worker at any point in time.[11] Since it has no chance of interacting in the future with a worker who is older and about to retire, the firm's only concern about the information conveyed by its choice of discrimination against such a worker is how the information will be used by the state to punish the firm. When interacting with a young worker, the firm is concerned not only about whether the state might discover its prejudice, but also that the young worker would discover its prejudice and quit, thereby stripping the firm of the chance to mistreat the worker in the future. In other words, a greater desire that discrimination be subtle when a worker is young should cause the intensity of discrimination to rise over workers' careers.

As noted above, this result assumes a particularly malicious type of discriminatory motive on the part of prejudiced firms. Nonetheless, this modification of the basic model yields a prediction which is not forthcoming from any other models of taste-driven discrimination in the literature.[12] The challenge posed by a model of subtle discrimination is in deriving implications which have a chance of being identified in the data.

5 Possible Implications

By definition, subtle discrimination is difficult to detect for the person experiencing it, agencies charged with punishing it, or econometricians studying it. The econometrician is likely to be the least well informed of the three and the victim the best informed about the existence of this type of discrimination, so it is possible that analysts can draw inferences about subtle discrimination by observing the actions of black workers. When blacks suspect that they are being subtly discriminated against, they are likely to quit their employers. Quit behavior which cannot be explained by observables seem a very promising source of information about black sentiment about subtle discrimination. Under the assumption that black suspicion about subtle discrimination is strongly correlated with the extent to which the phenomenon actually exists, tests of the various implications of the model presented here might attempt to relate unexplained racial differences in quit probability to market conditions which the model predicts ought to make subtle discrimination more likely.

For example, the model suggests that subtle discrimination should be more likely when production is highly variable. One interesting test would be to see whether the unexplained racial difference in quit probability is higher in industries where the variance of wages is higher. Similarly, unexplained racial differences in quit probability should be higher in industries or firms where little economic profit is lost through discrimination, as in industries or firms where workers keep a large share of their marginal product. Another interesting time series study would be to assess how changes in government anti-discrimination efforts are related to racial differences in quit probability.

An increase in subtle discrimination is predicted by the model to affect blacks differently in different places. For example, it may reasonably be supposed that ρ differed markedly between the North and South at mid-century. A lessening of discrimination

in both regions caused by more vigilant federal anti-discrimination enforcement would be predicted by the model to markedly improve black lifetime welfare in the South and (possibly) lower it in the North. Thus, the change in explained quit probability should have changed differentially between the North and South over the time period spanning the Civil Rights era.

The version of the model which assumes that firms maximize their interaction with workers they seek to sabotage suggests that subtle discrimination should be greater against older black workers. This means that unexplained racial differences in quit probability should rise with age. There should be an interaction effect here as well, for the model suggests that subtle discrimination against younger blacks should depend more on the inherent variability of production, Θ than is true for older black workers.

Any results from tests such as these would be merely suggestive about subtle discrimination, because of the fundamental problem that it is hard to measure. It should also be emphasized that some types of discrimination may be hard to measure simply because of where one happens to be looking. The emphasis in empirical economics on different types of labor market *compensation* such as wages and promotion may divert attention away from other dimensions along which employers can mistreat their black workers. In an interesting study Foote et. al (1999) find that whereas black and white foundry workers in Detroit manufacturing plants earned identical wages, blacks tended to be concentrated in the most dirty and physically disagreeable jobs within firms. Discriminatory sabotage has been described in this paper as actions which lower a worker's productivity. A broader interpretation would be actions by a firm against black workers which lower on-the-job happiness - such as assigning them to jobs which are unappealing.

6 Conclusion

In this paper I have presented a taste-driven model of discrimination in which prejudiced firms take actions which lower the productive capacity of their black workers. In many respects, the results are similar to those in traditional taste discrimination models, but there are also some salient differences. The main one, which derives from the stochastic nature of production, is that discrimination may be difficult to identify after the fact. The model argues that prejudiced employers may care not only about the prejudicial utility that they derive from engaging in discrimination, but may also care about the subtlety of any acts they engage in, to the extent that subtle acts are less likely to be punished by a disapproving society. As the potential subtlety of a discriminatory act rises as the intensity of the act falls, prejudiced firms essentially trade off intense discriminatory conduct against great subtlety.

The marginal return from making this tradeoff is small when racist preferences are high, so discrimination is less likely to be subtle in such places. The need to make this tradeoff is small when production is highly variable, so discrimination is more likely to be subtle when production is naturally highly variable. Finally, because it is wise to make the tradeoff when societal disapproval is high, the severe punishment of discrimination makes it both less intense and more likely to be subtle. In other words, the visible lessening of discrimination is not necessarily the result of a reduction in *all* discrimination; the same thing would occur if discrimination became more subtle.

Reductions in the intensity of discrimination are shown to have two separate effects on black welfare. On the one hand, the lessening of intensity means that blacks are less mistreated when they are discriminated against. On the other hand, because of increases in subtlety, blacks are more likely to unwittingly associate with prejudiced employers when discrimination is less intense. Whether blacks are made better by the

visible lessening in the intensity of prejudice is shown to be a theoretically ambiguous matter, depending crucially on the prevalence of employers with prejudicial sentiments in the economy overall and, again, on the degree of uncertainty about production.

The results about black lifetime welfare in the paper hinge on the assumption that more overt discrimination is associated with more intense discriminatory treatment. It should be noted that this result holds up even in the absence of this assumption. Suppose, for example, that there were two totally different types of discrimination - one subtle and one overt - with no particular relationship between the type engaged in and the injury caused to blacks. Then, so long as racist employers practiced *any* overt discrimination, blacks should be able to learn about employers' types once they worked for them. Greater anti-discrimination efforts would have to be directed towards overt discrimination. To the degree that racist employers stopped discriminating altogether, then blacks would obviously gain. But if they switched over to the other, subtle type, then the arguments laid out in the paper still apply.

The paper discusses welfare gains and losses in monetary terms, but two non-pecuniary costs of subtle discrimination on blacks are worth mentioning. The first is a type of psychological tax incurred by blacks in environments in which subtle discrimination is rampant. They are likely to be wracked by questions like: Is my employer racist? Is the fact that I have received this particular assignment, or that my output seems a little low the result of my firm's prejudice? Over time, this type of inquiry probably damages the psyche. The second cost stems from the predictable and natural national sense of satisfaction which likely accompanies the disappearance of discrimination. A nation in such a mood is unlikely to be receptive to arguments that discrimination may not have, in fact, disappeared as much as it may have become more subtle. Unwilling to have a sense of satisfaction disturbed, hearing such arguments may

dampen national enthusiasm for additional anti-discrimination efforts.

The paper does not consider the possible effects of reputation. In the model, a firm's treatment of an individual black worker does not affect what other black workers learn about the firm. The consequence of this assumption is that firms only concern themselves with maximizing per person utility when dealing with a given black worker. In reality, discrimination which is overt is probably observable by many workers besides the particular one affected, so firms would have to incorporate these reputation considerations into their decision-making. The assumption in the model is surely unrealistic, but it should be noted that a reputation for being a discriminator in a richer model would likely be very sensitive to the amount of times one has been *observed* discriminating. To the extent that subtle discrimination reduces the number of pieces of information that an interested party can use to form a conjecture about an employer's type, most of the arguments presented in the paper should apply. Similarly, it is easy to see how heterogeneity among prejudiced firms could be treated in an extension, with no changes in the main results.

Finally, given some of the results in the paper about the effect of changes in observed discrimination on black well being, it must be emphasized that the paper is *not* romanticizing or arguing for a return to the racial landscape of the pre-Civil Rights era. Nor is it decrying the efforts if anti-discrimination agencies in recent decades. The point the paper seeks to make is that some acts of discrimination may be difficult to detect and to punish, and that when such action are punished, racists will rationally engage in less of it. Information about the identity of racists will therefore be less readily available. More than anything, the paper seeks to emphasize that the national sense of satisfaction which likely accompanies the disappearance from view of many forms of discrimination should sometimes be tempered by the recognition that this

disappearance is not necessarily synonymous with the disappearance of all discrimination, only of overt discrimination. Subtle discrimination may persist with some of the unfortunate consequences described in this paper that have been ignored in the previous literature.

Appendix

If firms care about their future interaction with black workers, the only modification to the model presented in the paper is prejudiced firms' objective functions. When the worker is aged 2, irrespective of whether he worked for the firm previously or not, a racist firm maximizes

$$E\left[(1-\gamma)\left(V+\theta_{i2}-D_{i2}\right)+R\left(D_{i1}\right)-\frac{D_{i2}}{2\Theta}C\right] \tag{18}$$

where the subscript on the discrimination term denotes discrimination against older workers. The equilibrium level of discriminatory sabotage, D_2^*, is the solution to

$$R'\left(D_{i2}\right)=\frac{C}{2\Theta}+(1-\gamma). \tag{19}$$

With an age 1 worker, a prejudiced firm maximizes

$$E\left[(1-\gamma)\left(V+\theta_{i1}-D_{i1}\right)+R\left(D_{i1}\right)-\frac{D_{i1}}{2\Theta}C+\left(\,1-p_q(D_1)\right)\pi_p^B(D_2^*)\right]. \tag{20}$$

D_1 denotes the level of discrimination practiced against age 1 blacks; $\pi_p^B(D_2^*)$ is the utility gain the firm receives from interacting with an age 2 black worker and engaging in discrimination D_2^* that worker. $p_q(D_1)$ is the probability that the black quits after working for one year, given that the employer engages in discrimination D_1 at age 1. From the discussion in the text

$$p_q(D_1)=\frac{D_1}{2\Theta} \tag{21}$$

Age 1 discrimination is therefore given by

$$R'\left(D_{i1}\right)=\frac{C+\pi_p^B(D_2^*)}{2\Theta}+(1-\gamma). \tag{22}$$

Since R'', $D_1^* < D_2^*$.

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Endnotes

1. Despite my emphasis on blacks, the arguments presented in this paper apply equally well to other types of minorities and to women.

2. Altonji and Blank (1998) is a recent comprehensive review of research on discrimination. Altonji and Blank separate theories of discrimination into "non-competitive" models (for example, Bergmann (1974)), and three sets of competitive models. These three are "personal prejudice" models, such as that of Becker (1971); "statistical discrimination" models of the sort written by Phelps (1972), Arrow (1973), Aigner and Cain (1973) and Ludsberg and Startz (1983); and search models with imperfect information such as those of Black (1995) and Borjas and Bronars (1989). The structure of these models nearly always implies that a person discriminated against will know about it after the fact. For example, in Black's model, prejudiced employers never hire blacks at any positive price so once a black worker has met such a person, even if he did not know about his prejudice before, he certainly knows about it after their interaction. In the statistical information models, where employers are imperfectly informed about individual black productivity and pay blacks wages which depend on the average, lower output of their group, blacks are not typically uncertain about their own productivity and should always be able to identify discrimination once it has occurred.

3. Some interesting surveys include, "An American Dilemma (Part II), *Public Perspectives* 7, (Feb-Mar) 1996, 22 by Harry Hugick ; *Highlights from an Anti-Defamation League Survey of Racial Attitides in America* New York: A.D.L. 1993; and "Thirty Years Beyond I have a Dream," *Gallup Poll Monthly*, October 1993. See also Ellis Cose in *Rage of A Privileged Class* (New York: HarperCollins, 1993), who presents several vignettes of apparently successful blacks who describe frustrations with prejudice they might be experiencing at their places of work. *Makes Me Wanna Holler*, (New York: Random House, 1994) by Nathan McCall in makes several similar points. Stephen and Abigail Thernstrom in *America in Black and White*, New York: Simon and Schuster, 1997, have argued that some of these results may reflect the disgruntled griping of people less successful than they believe they ought to be, or the elevation of "psycho-facts" to the level of facts.

4. For example, a monopsonist with no racial animus might act this way. See Ehrenberg and Smith (1996) for examples of how monopsony power works in a labor market.

5. The main criticism of taste models of discrimination is that because firms which discriminate because of their racial prejudices sacrifice economic profit, they should not survive in the long run. The seriousness with which one takes this criticism depends on one's willingness to assume free entry, perfect information, innumerable competitors, and all of the other things that characterize the textbook notion of a competitive economy. Also, since the textbook treatment of the long-run is vague as to an exact lenght of calendar time, it is not at all clear that the 40 years or so (less than one generation) that the U.S. has seriously focused on ridding itself of racism in any way approximates the long run.

6. A formulation which is quite similar to the one pursued here is the following. Assume that firms can take actions A which *help* workers. These helpful actions are

the obverse of the D in the text. Helpful actions require face to face interaction with the worker and require some expenditure of effort or some other cost on the employer's part. Because of prejudice, some employers dislike interacting with their black workers. Costs of interaction differ depending on the worker's and firm's type, and are convex in the intensity of the action. Finally, let an agency reward firms which treat their black workers well. Firms' maximands would be the sum of the worker productivity, which are positively affected by actions, net of costs of actions, and the formulation would be formally identical to that in the paper.

7. The Uniform distribution is not essential but it greatly simplifies exposition.

8. The form of the punishment that could be imposed under these two different conceptions of "state" would probably quite different in actuality. An anti-discrimination arm of the government can initiate legal proceedings against a racist, and can mandate that he may some monetary penalty. Private citizens are only able to use mechanisms such as social ostracism. Note as well that some societies may not disapprove of discrimination at all. Indeed, the state could give succor to the actions of the prejudiced, so that C is negative - that is, a discriminating employer could receive a kind of bonus. The model does not consider that possibility.

9. All of the basic results go through with arbitrary career length, but are less simply expressed.

10. All of the results in the model work out just the same whichever assumption is maintained regarding mobility when the expected payoffs from leaving and staying are the same. Under either assumption, there is a chance that black workers will do something they would rather not - either leave someone who is not prejudiced or remain with someone who is.

11. This modification is described in the Appendix.

12. I suspect that a version of this result could be derived from a model of labor market search with imperfect information such as that by Black (1995). The reason that the impact of age on discrimination is not developed in these search models is because the authors follow the standard dynamic programming literature and assume that workers are infinitely lived, so that their treatment at any given age is not important.