



# A search model with endogenous job destruction and discrimination: Why equal wage policies may not eliminate wage disparity



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## HIGHLIGHTS

- I introduce equal wage jobs into a search model with discrimination.
- I model endogenous job destruction, creating competitive pressure on prejudiced jobs.
- Discrimination and wage gaps persist despite pressure from policy and competition.
- Equal-wage policies can increase the wage gap when there are few disfavored workers.
- The efficacy of equal pay in combating race- and gender-discrimination may differ.

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## ABSTRACT

This paper extends the search with discrimination framework by introducing jobs that are constrained by equal wage policies, and endogenous job destruction that creates Becker-like competitive pressure on prejudiced firms. The model predicts a number of stylized facts observed in the U.S. labor market, including persistent aggregate wage inequality, prevalent within-firm wage equality, overlapping wage distributions for different worker types, and some, but imperfect, job sorting/segregation. Numeric simulations are offered to illustrate some of the model's predictions. These include a counterintuitive relationship between wage inequality and equal wage policies that can arise in special cases: under specific assumptions equal wage policies can actually increase the steady-state level of market discrimination. I discuss this result's implication that different policies may be optimal to combat discrimination based on race versus discrimination based on gender, though this finding may be of limited practical importance.

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## 1. Introduction

In his seminal work on discrimination, [Becker \(1957\)](#) described a set of models that translated various types of prejudice into differential

labor market outcomes. The persistence of unexplained gender- and race-based wage differentials is often seen as something of a puzzle for these “taste-based” models, as they imply that, without extreme segregation or some market failure, discriminatory wage differentials should be eliminated via competition and information. More recent work has sought to explain persistent discrimination with models that incorporate a number of different labor market frictions including, and most notably for this paper, in search processes. These models are able to predict persistent wage gaps, aligning them more closely with empirical findings. However, these models yield other predictions that are equally difficult to reconcile with general patterns observed in labor markets, such as near-perfect segregation/sorting of workers (e.g. [Lang et al., 2005](#) or “universal” wage inequality, where all firms pay type-dependent wages (e.g. [Black, 1995](#); [Flabbi, 2010](#)). Additionally, few of these models have incorporated dynamic or consistent competitive

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pressure on firms engaging in inefficient discrimination. That is, non-optimizing prejudice firms face little ongoing competitive pressure to abandon discriminatory practices.

In this paper, I develop a model with discrimination that extends the equilibrium search with discrimination literature in two important ways. First, I introduce non-discriminating jobs that not only hire workers of any type, but also pay a single wage for the job regardless of worker type (this is in addition to the firms that refuse to hire disfavored workers and the firms that exploit different labor market opportunities present in Black's model). The addition of the equal wage firms is empirically useful, as it allows for a great deal of within-firm wage equality, which is consistent with findings from labor markets. Additionally, it is consistent with discrimination in regulated markets, as race or gender-based wage gaps within a firm are often illegal and easy to identify. Next, I incorporate endogenous job destruction, as in [Mortensen and Pissarides \(1994\)](#). This introduces more consistent, and perhaps more realistic competitive pressure on non-optimizing jobs than does endogenous job creation. Endogenous job destruction also allows for more volatile and abrupt dynamics in the composition of jobs in the market over time. This extends the analysis to generate steady-state predictions for the levels of prejudiced and non-discriminating jobs, labor market disparity, the prevalence of within-firm wage equality, and the effectiveness of equal wage policies toward reducing wage gaps.

As might be expected, the model predicts that the equilibrium wage gap will diminish as more jobs adhere to equal wage policies (for a fixed proportion of job and worker types). Since equal wage jobs must offer wages that can appeal to both favored and disfavored workers, the presence of the jobs increases the expected wages of disfavored workers, and/or reduces the expected wages of favored workers. Despite this, the model also predicts that a steady-state wage gap will persist in the presence of any hiring bias. This holds true even if all unprejudiced firms adopt equal wage policies. This is because equal wage firms can only mitigate the exploitation of disfavored workers' depressed reservation wages, and do not eliminate the prejudiced jobs that are the root cause of the depressed reservation wages. Due to the persistence of a wage gap and the presence of equal wage jobs, the model can account for the imperfect by-job segregation, high levels of within-job wage equality, and aggregate wage gap observed in most empirical studies.

The inclusion of endogenous job destruction reduces, but does not eliminate, the proportion of prejudiced firms in the market in the steady-state. Endogenous job destruction also yields an additional and surprising result: under specific conditions, equal wage policies can actually increase the steady-state wage gap. This follows because non-discriminating firms sacrifice some of their profit advantage in order to pay equal wages, thereby reducing the relative competitive pressures faced by prejudiced firms. As equal wage jobs are more likely to be destroyed in response to a negative productivity shock (due to their lower profit levels compared to discriminating firms), replacing them creates a wider avenue by which prejudiced jobs can enter the market. Whether equal wage jobs increase steady-state levels of discrimination depends directly on the proportion of disfavored workers in the labor market; as the proportion of disfavored workers decreases, equal wage policies are more likely to increase steady-state levels of prejudice (*ceteris paribus*). This is because the proportion of disfavored workers is inversely related to how much rent non-discriminating jobs must forgo to pay equal wages. While the practical importance of this prediction may be limited, under certain market conditions, this finding could imply different optimal anti-discrimination policy targets for combating race- versus gender-based discrimination.

The remainder of the paper proceeds as follows: [Section 2](#) provides some relevant background; [Section 3](#) presents the basic model and develops general equilibrium results; [Section 4](#) introduces endogenous job destruction and develops the steady-state composition of jobs; [Section 5](#) illustrates some key findings with a numeric exercise; [Section 6](#) discusses a number of policy implications; [Section 7](#) details

some potentially useful extensions to the model; and [Section 8](#) provides a summary and discussion and concludes.

## 2. Background

The model I develop is most similar to the model in [Black \(1995\)](#). Black's model is an equilibrium search setup with two types of firms (discriminatory and non-discriminatory), two types of workers, and equilibrium wages that depend on a worker's expected search value. "Prejudiced" firms hire only favored workers, while "unprejudiced" firms hire workers of any type, but strategically vary their wage offers based on a worker's type. The existence of prejudiced firms implies that disfavored workers face fewer potential matches in the labor market, and hence their value of searching (and resulting reservation wages) is lower. In equilibrium, unprejudiced firms offer a lower wage to disfavored workers, effectively exploiting the poorer labor market conditions facing these workers. Since favored workers face more potential matches, all firms must offer higher wages to favored workers in order to ensure a match. The result is a persistent wage gap with (potentially) little segregation (as all unprejudiced firms can be integrated), but with wages that vary within a firm by worker type. In order to account for the competitive pressures facing high-wage prejudiced firms, Black closes his model with a discussion of firm entry. He finds that if owners have different entrepreneurial abilities, prejudiced firms with highly skilled owners will be able to enter the market despite the competitive disadvantages they face in the labor market.<sup>2</sup>

One of the most important changes I make to Black's model is that I add an additional type of job that is willing to hire either type of worker, and pays a type-independent wage for the job. This is similar to the setup used in [Lang et al. \(2005\)](#), but without the wages being posted publicly (which avoids the targeted application and resulting high levels of segregation predicted by their model). The inclusion of the additional, equal wage firm type requires some justification. In a standard search framework profit maximization dictates that "unprejudiced" firms should pay a type-contingent wage. That is, optimizing firms should exploit the different opportunities facing searchers by offering lower wages to disfavored types. However, it is easy to imagine unprejudiced firms being constrained to an equal hiring policy, and offering a single wage regardless of the worker's type.

There are many factors that could contribute to the existence of equal-wage jobs. The first case is compliance with external policies. For example, the United States law prohibits discrimination based on race, color, religion, sex, national origin, age, or disability. Firms may therefore avoid systematically paying unequal wages for equal work not because of any internal preference or policy, but in order to avoid the costly penalties for non-compliance with government policy. [Black \(1995\)](#) himself notes that policies that offer different wages based on an applicant's race or gender are illegal, and firms would likely only adopt such regimes in cases where they can segregate by job or occupation ([Black, 1995, p. 317–8](#)). [Lang et al. \(2005\)](#) go a step further, explicitly stating that "race-contingent posted wage offers would be an egregious and public violation of civil rights legislation...[and] we should not expect to see race-contingent wage offers, even in the absence of civil rights legislation" ([Lang et al., 2005, p. 1327–8](#)).

A second source of wage-equality jobs is labor unions; when unions negotiate wages for a particular job, a specific worker's race should not impact that wage (unless the union itself is indulging in discriminatory behavior). While private-sector union rates in the U.S. are relatively low and declining, many industrialized countries still have substantial union coverage. Additionally, even if a particular firm is not covered by unions, the threat effect of unionization might be sufficient to ensure equitable treatment within a particular firm and job. Another potential source of

<sup>2</sup> The survival of these competitively-disadvantaged matches results from the fact that matches are assumed to be infinitely-lived in Black's model.

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