

14.662 Recitation 9

Tweaking Becker (1957): Models of Taste-Based Discrimination

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Taste-Based Discrimination

- The Becker (1957) model is a natural starting point for thinking about the (sizable) wage gaps observed across demographic groups
 - Prejudiced firms act as if minorities/women are more expensive to hire
- ...but also raises (at least) two big puzzles:
 - Why aren't prejudiced firms, who sacrifice some profit for their taste, driven out of the market? (Arrow, 1972)
 - Why is there a wage gap if (hopefully) prejudice is rare? (Cain, 1986)
- The models of Goldberg (1982) and Black (1995) address these two points, respectively, in a tractable way
 - Reformulate prejudiced firms as receiving positive utility from hiring whites, rather than disutility from hiring minorities (Goldberg, 1982)
 - Embed taste-based discrimination in a search model (Black, 1995)
- Intellectual history of discrimination is *fascinating* (and fairly young)
 - Taste-based discrimination only part of the story
 - A lot still to do (especially in testing across theories)

Review of Taste-Based Discrimination

- Two groups, both alike in production (w and b ; perfect substitutes)
- Suppose a unit mass of firms; prejudiced firms have utility:

$$\begin{aligned} U &= \pi - d_b W_b L_b \\ &= Q(L_w + L_b) - W_w L_w - (1 + d_b) W_b L_b \end{aligned}$$

where other firms (with $d_b = 0$) just care about profits, π .

- Assume $W_b < W_w$; w workers hired until $W_w = Q'(L_w)$; firms for which $W_m > W_b(1 + d_b)$ hire $L_b = Q'^{-1}(W_b(1 + d_b))$ workers
- Profits/utility of all firms with $d_b > (W_m - W_b)/W_b$ fixed at

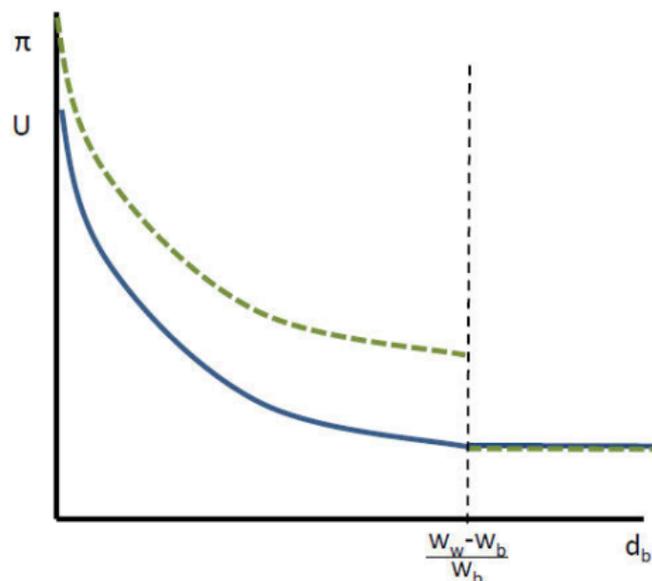
$$\pi = U = Q(Q'^{-1}(W_w)) - W_w Q'^{-1}(W_w)$$

while less discriminating firms have profits and utility of

$$\pi = Q(Q'^{-1}(W_b(1 + d_b))) - W_b Q'^{-1}(W_b(1 + d_b))$$

$$U = Q(Q'^{-1}(W_b(1 + d_b))) - (W_b(1 + d_b))Q'^{-1}(W_b(1 + d_b))$$

Taste-Based Discrimination Plotted



- “Sellout price” (utility) monotonically decreasing (when Q concave)
- Firms with lower d_b should be able to buy out those with higher d_b ; only least-discriminatory (i.e. least-cost) firms should survive

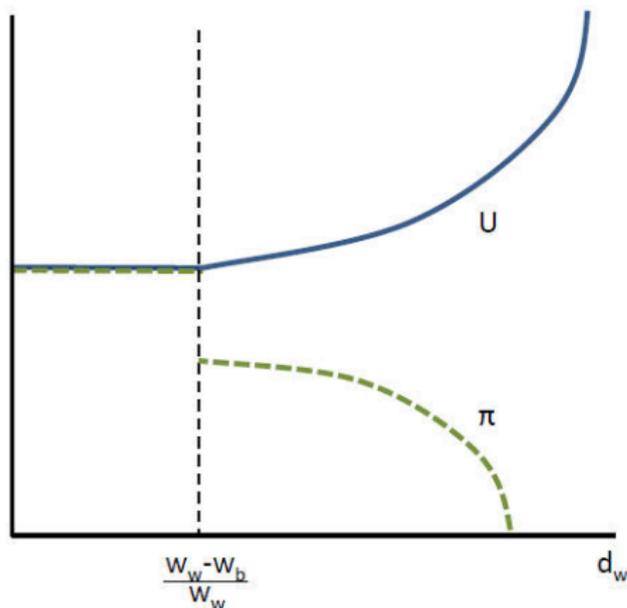
From Discrimination to “Nepotism”

- In Goldberg (1982), firms receive positive utility from employing w workers, rather than disutility from hiring b workers
 - “Nepotistic” firms willing to pay from profits for non-pecuniary gain of indulging their preferences (recall “harassment” model)
 - Key (implicit) assumption: no cheaper way for employers to indulge preferences outside the labor market (e.g. prostitution in the harassment model)
- Utility now $U = Q(L_w + L_b) - (1 - d_w)W_w L_w - W_b L_b$
- Again assume $W_b < W_w$; firms with $d_w < \frac{W_w - W_b}{W_w}$ only hire b workers; profits and utility now:

$$\pi = Q(Q'^{-1}(W_w(1 - d_w))) - W_w Q'^{-1}(W_w(1 - d_w))$$

$$U = Q(Q'^{-1}(W_w(1 - d_w))) - (W_w(1 - d_w))Q'^{-1}(W_w(1 - d_w))$$

Nepotism Plotted



- Profits must be decreasing in d_w ; nepotistic firms distort input choices, hiring expensive w workers rather than cheaper b workers
- However, these losses in profit are more than made up for by gains in utility (since increases in d_w increase L_w)

Nepotism Intuition and Takeaways

- In both Becker (1957) and Goldberg (1982), preferences *per se* are not arbitrated by the market
 - In Becker (1957), firms that are disadvantaged in profitability are also hurt in terms of utility
 - In Goldberg (1982), firms are more than compensated for inefficiency
- A key assumption that makes Goldberg (1982) work is that firms can't "purchase" nepotism except by hiring workers
 - Equilibrium will involve DWL; breaking work-nepotism linkage can restore efficiency (like on the problem set)
- Charles and Guryan (2008) show another way around the Arrow crit.
 - Prejudiced employers who sell their business have to find new work, potentially among minority group members
 - Psychic cost of being a racist working with blacks may be enough to compensate for lost profits/utility from not hiring cheaper black labor

Taste-Based Discrimination and Search

- So far we've been assuming $W_b < W_w$ and analyzing an equilibrium consistent with a prevailing wage gap
- But this is not automatic, even in Becker's original formulation
 - Recall compensating differentials intuition: the *marginal* firm and worker set the "white wage premium"
 - If prejudice relatively rare, the marginal firm will be unprejudiced; competition among unprejudiced firms that hire both groups will ensure $W_b = W_w$
- What explains persistent wage gaps with falling prejudice?
 - Lundberg and Startz (1983): statistical discrimination and endogenous human capital investment (see also Milgrom and Oester (1987))
 - Borjas and Bronars (1989) and Black (1995): search
- Black (1995) intuition: discriminating firms reduce gains to search for b workers, which unprejudiced firms take advantage of
 - Even if unprejudiced firms hire b workers, $W_b < W_w$ whenever any prejudiced firms remain in the market

The Model

- Two firm types (frac. θ prejudiced); two worker types (γ type- b)
 - Workers have marginal product V and outside option U_h
 - Prejudiced firms hire w and pay W_p^w , others pay (W_u^w, W_u^b)
 - Workers have job satisfaction $\alpha \sim F$, with $\frac{1-F(a)}{f(a)}$ strictly decreasing
- Paying κ for each job draw, can show w workers value search by

$$\begin{aligned}
 U^w &= \theta E[\max\{W_p^w + a, U^w\}] + (1 - \theta)E[\max\{W_u^w + \alpha, U^w\}] - \kappa \\
 &= \frac{\theta \int_{\alpha_p^w}^{\infty} (W_p^w + \alpha) f(\alpha) d\alpha + (1 - \theta) \int_{\alpha_u^w}^{\infty} (W_u^w + \alpha) f(\alpha) d\alpha - \kappa}{1 - \theta F(\alpha_p^w) - (1 - \theta) F(\alpha_u^w)}
 \end{aligned}$$

where $\alpha_j^w \equiv u_r^w - W_j^w$ for reservation utility u_r^w

- Reservation utility such that workers are indifferent between accepting a job at the res. utility level and continuing search: $u_r^w = U^w$

w-Worker Search (cont.)

- Can show with some algebra u_r^w satisfies (if $u_r^w > U_h$)

$$\kappa = \theta \int_{\alpha_p^w}^{\infty} (W_p^w + \alpha - u_r^w) f(\alpha) d\alpha + (1 - \theta) \int_{\alpha_u^w}^{\infty} (W_u^w + \alpha - u_r^w) f(\alpha) d\alpha$$

That is, the cost of search equals the expected gains

- Standard comparative statics:

$$\frac{\partial u_r^w}{\partial W_p^w}, \frac{\partial u_r^w}{\partial W_u^w} \in (0, 1)$$

$$\frac{\partial u_r^w}{\partial \theta} \geq 0 \text{ as } W_p^w \geq W_u^w$$

- Expected number of searchers:

$$v^w = (\theta(1 - F(u_r^w - W_p^w)) + (1 - \theta)(1 - F(u_r^w - W_u^w)))^{-1}$$

b-Worker Search

- *b* workers only hired by prejudiced firms. Value of search:

$$\begin{aligned}
 U^b &= \theta U^b + (1 - \theta)E[\max\{W_u^b + \alpha, U^b\}] - \kappa \\
 &= \frac{(1 - \theta) \int_{\alpha^b}^{\infty} (W_u^b + \alpha) f(\alpha) d\alpha - \kappa}{(1 - \theta)(1 - F(\alpha^b))}
 \end{aligned}$$

- Reservation utility satisfies

$$\frac{\kappa}{1 - \theta} = \int_{\alpha^b}^{\infty} (W_u^b + \alpha - u_r^b) f(\alpha) d\alpha$$

$\frac{\kappa}{1 - \theta}$: expected search cost of locating unprejudiced firm

- Now have $\frac{\partial u_r^b}{\partial W_u^b} = 1$, $\frac{\partial u_r^b}{\partial \theta} < 0$, and expected searches

$$v^b = ((1 - \theta)(1 - F(u_r^b - W_u^b)))^{-1}$$

Firm Behavior

- Linear production; firms maximize expected per-applicant profit

$$\pi_j^i = \underbrace{(1 - F(u_r^i - W_j^i))}_{\text{prob. of acceptance}} \underbrace{(V - W_j^i)}_{\text{value}}$$

Where p firms only hire w workers. FOC:

$$V - W_u^i = \frac{1 - F(u_r^i - W_u^i)}{f(u_r^i - W_u^i)}$$

- Implies $W_p^w = W_u^w \equiv W^w$; both firms treat w workers the same. Thus (from before) $\frac{\partial u_r^w}{\partial \theta} = 0$. However, profit maximization implies

$$\frac{\partial W_u^b}{\partial u_r^b} \in (0, 1)$$

Thus $\frac{\partial W^b}{\partial \theta} = \frac{\partial W^b}{\partial u_r^b} \frac{\partial u_r^b}{\partial \theta} < 0$, and $\omega^b < \omega^a$ whenever $\theta > 0$

Black (1995) Intuition

- Unprejudiced firms are not racist, but they are profit-maximizing
 - Differential search costs give firms a degree of monopsonistic power
 - Since firms know b workers face higher costs, they will exploit this power to offer them a lower wage
 - Even though no prejudiced firm hires b workers, they have an indirect effect on wages through search
 - In a sense, the whole *market* is prejudiced if any firms are
- Black (1995) closes the model with entry; as in Becker (1957) competition limits entry of prejudiced firms, but as in Goldberg (1982) those that enter trade off profits for discrimination
 - W /fraction ρ of *potential* prejudiced firms shows $\frac{\partial W^b}{\partial \rho} = \frac{\partial W^b}{\partial \theta} \frac{\partial \theta}{\partial \rho} < 0$
 - Also shows $\frac{\partial \alpha^b}{\partial \rho} < 0$, so “match quality” (both expected and realized) of b workers declines in potential discrimination
 - Wage differentials understate utility loss from discrimination, because b workers both receive lower wages and are worse-matched to firms

Takeaways

- Taste-based discrimination a natural start for modeling $W^b < W^w$
 - Models often very tractable (statistical discrimination models usually involve more parametrizations)
 - Original Becker intuition essentially compensating differentials
 - Arrow (1972) and Cain (1986) critique can be patched while keeping the model transparent
- Policy prescriptions (besides mandating $W^b = W^w$) can be different across models
 - Goldberg (1982): break nepotism-production link
 - Black (1995): “flag” discriminatory firms for b workers to direct-search
- Empirically distinguishing discrimination models notoriously difficult
 - Even harder when we throw statistical discrimination in the mix...

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