Topic 2 discrimination

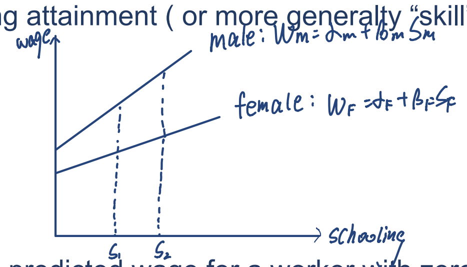
I. How can we measure discrimination?

1. definition: labor market discrimination arise when two different individuals with the same level of skill or productivity are paid differently because of race, gender, sexual, orientation, age, national origin etc…
2. difficult to measure
   a. we cannot observe all of the ways in which two people different
      i. productivity differences?
      Unobservable productivity or differences?

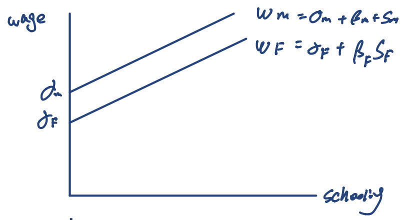
II. a frame work for measuring discrimination

1. definition:
   a. average wage by group
      i. $\overline{W}_F$ average wage for female worker
      ii. $\overline{W}_M$ average wages for male worker
   b. Wages also depend on schooling, experience etc…
      i. $W_F = \alpha_F + \beta_F S_F$
      ii. $W_M = \alpha_m + \beta_M S_M$

   Where SF+SM : schooling attainment (or more generalty "skill") for a female and male worker respectively.
2. Graphically:
   If $\beta_F < \beta_M$



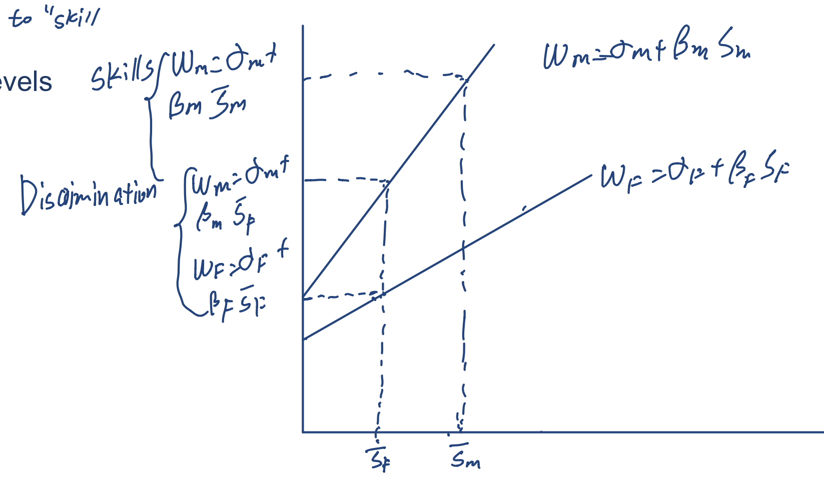
   α ----- is the intercept; predicted wage for a worker with zero schooling
   β------- is the slope; the change in predicted wages for a worker given an additional year of school.
3. Special case: constant effect of gender at every S ($\beta_F = \beta_M = \beta$)



4. Decomposing the effect
   We can re-express average earnings as:
   $\overline{W}_F = \alpha_F + \beta_F \overline{S}_F$
   $\overline{W}_M = \alpha_m + \beta_M \overline{S}_M$
   $\overline{S}_M$ and $\overline{S}_F$ are average schooling levels "skills: of female + male workers
   a. The difference between wages
      $\Delta\overline{W} = \overline{W}_F - \overline{W}_M = (\alpha_F + \beta_F\overline{S}_F) - (\alpha_m + \beta_M\overline{S}_M) = (\alpha_F - \alpha_m) + (\beta_F\overline{S}_F - \beta_M\overline{S}_M)$
   b. The Oaxaca decomposition

$$\Delta W = (\alpha_F - \alpha_m) + (\beta_F\overline{S}_F - \beta_M\overline{S}_M) + (\beta_M\overline{S}_F - \beta_M\overline{S}_F)$$
$$= (\alpha_F - \alpha_m) + (\beta_F\overline{S}_F - \beta_M\overline{S}_F) + (\beta_M\overline{S}_F - \beta_M\overline{S}_M)$$
$$= \underbrace{(\alpha_F - \alpha_m) + (\beta_F - \beta_M)\overline{S}_F}_{\text{different in wage due to discrimination}} + \underbrace{\beta_M(\overline{S}_F - \overline{S}_M)}_{\text{diff. in wages due to "skill}}$$

$\alpha_F - \alpha_m$: difference in average regardless of schooling levels
$\beta_F - \beta_M$: difference in returns to schooling
$\overline{S}_F - \overline{S}_M$: difference in average levels of schooling



Discrimination: $\Delta = (\alpha_F - \alpha_m) + (\beta_F - \beta_M)\overline{S}_F$
Skills: $\Delta = \beta_M(\overline{S}_F - \overline{S}_M)$
Note: can compose across groups use S = "skill"
So, experience

- Key problems of interpreting average cannot "control for" all things that impact productivity unobservable ability motivation effort

5. Types of discrimination
   a. Pre-market discrimination ---- before entry into job market

Exurban V.S suburban school.
Varying school quality

b. Market discrimination
   i. In employment: segregating occupations by not being hired in certain occupation
   ii. In wage: paying individual with the same skills who do same job different wages

6. Effects of discrimination
   a. Knowledge of discrimination → invest in less S (know the pay off is not as high as it should be)
      Less S → lower wages
   b. Lower wages → next generation cannot afford as much education
7. Consequences
   a. S_F - S_M partially explained by discrimination
   b. Oaxaca decomposition might understate discrimination on $W_F = W_M$ - b/c doesn't include feedback effect.
8. Becker. Employer discrimination theory
   a. Assumption
      i. Two groups with different market
         Wage rates
      ------ women (w), men (m)
      ------ maker wages, W_w, W_m
      ii. Competitive function
         $q = f(E_w, E_m)$

         Employment, E_w, E_m; Let $E = E_w + E_m$
         Marginal product

$$MP_w = \frac{df(E_w,E_m)}{dE_w}$$

$$MP_m = \frac{df(E_w,E_m)}{dE_m}$$

         If $q = f(E_w, E_m) = f(E) \rightarrow MP_w = MP_m = M_P$

   Hiring an additional worker, regardless of gender, has the same impact on firm's output.

9. Prejudice → "taste" for discrimination
   a. Employers act as if it costs more than the market wage to hire a woman
      $W'_w = W_w(1 + d)$; Where "d" is the discrimination coefficient
   b. Interpretation
   - d = 0: no discrimination
   - d > 0: discrimination
   - d < 0: nepotism (favoritism)
10. employer discrimination theory:
   a. equilibrium: firm choose employment to maximize profit

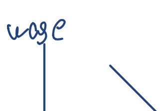
$$\pi = \underbrace{Pq}_{\text{Total revenue}} - \underbrace{(W_wE_w + W_mE_m)}_{\text{Total cost}}$$

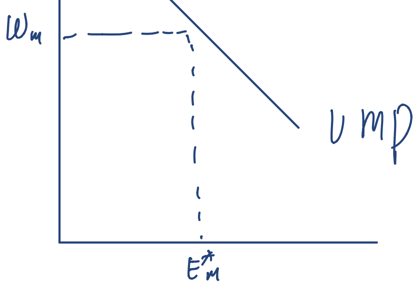
   - profit maximizing

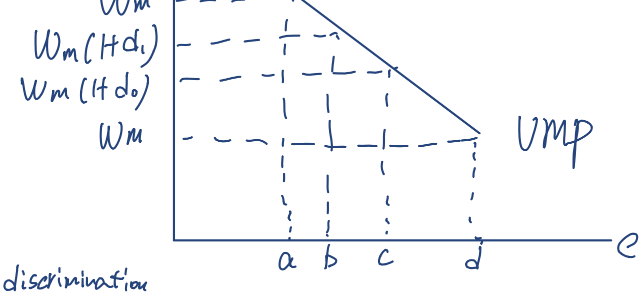
$$\pi = pf(E_w,E_m) - (W_wE_w + W_mE_m)$$

     conditions – workers are paid their marginal product
     ---- for E^*_w : $VMP_w = W_w$
     VMPw = value of marginal product = P^*MP_w
     ---- for E^*_m : $VMP_m = W_m$
   - when two group of workers are perfect substitutes:
     ---- if $W_w < W_m$, most profitable for firm to hire only women:
     choose $E^* = E_w^*$ to satisfy $VMP = W_w$
     ---- if Ww > Wm, most profitable for firm to hire only men:
     choose $E^* = E_m^*$ to satisfy $VMP = W_m$

   b. special case
      two groups are perfect substitutes
   - no teste for discrimination:
     --- hire only women (since $W_w < W_m$)
   - with taste for discrimination:
     --- hire only woman if "d" is small: $Ww(1 + d) < W_m$
     --- hire only men if "d" is big: $W_w(1 + d) > W_m$
   - indifferent between hiring woman or men if $W_w(1 + d) = W_m$







male firm

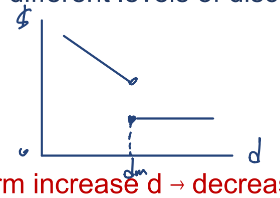
c: with do discrimination

d: no discrimination

female firm

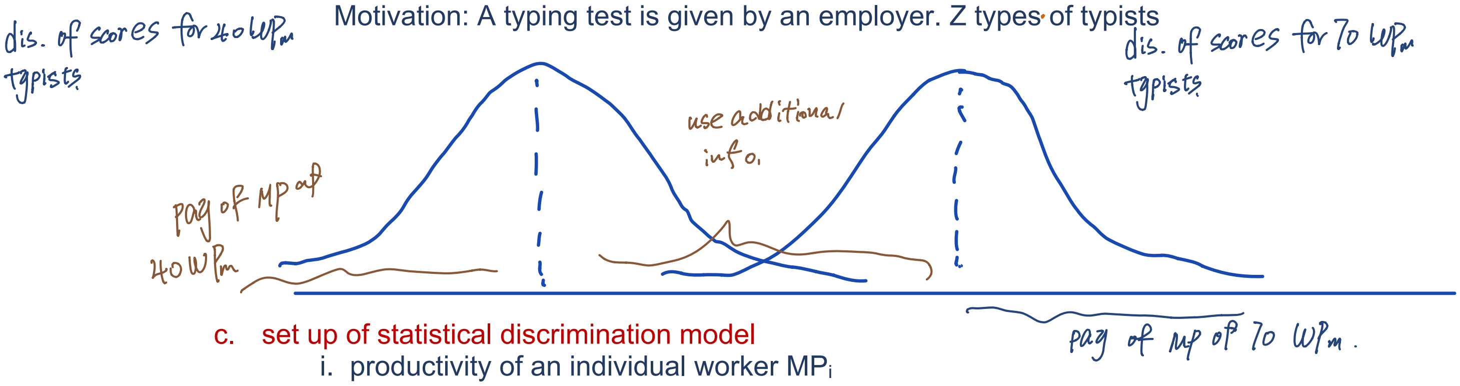
* A taste for discrimination will drive firms out of the market, because the most profitable are firms that do not discrimination
  - d = 0: highest profit possible
  - d > 0: but hire all women hire too few workers Ew too small
  - d < 0: but hire all men hire too few workers pay workers too much

  two different levels of discrimination $W_w < W_m$



Female firm increase d → decrease Ew, but all workers paid at Ww $/hr
Male firm increase d → no change Em, all workers compensated at Wm $/hr
At d_m $W_w(1 + d_m) = W_m$, indifference having an all-male or all female firm.
In long run, least profitable firms will be driven from market.

11. Other types of Becker --- style discrimination
    a. Employee discrimination
       i. If men do not like working alongside women, the $W_f = W_f'$ where $W_f' = W_f(1 - d)$. male workers act as if there are receiving a lower wage
       ii. The greater the d, the more they must be compensated for working alongside women. → segregated workforce, no wage differential → does not effect firm profitability → dose not erode through competitive forces
    b. Customer discrimination
       i. Customer act as if the price of a good sold is more expensive than it actually is. $P' = P(1 + d)$
          → lower prices must be offered
          →wage offers fall to accommodate this price reduction
12. Statistical discrimination
    Arrow(1973), Aigner and Cain(1927), Lund berg and Gtartz(1983)
    a. Assumption
       i. Employers have imperfect information about a worker's productivity
       ii. Firms use group membership (race, gender, etc.) in addition to individual qualification to set wages.
       iii. No "distaste" needed
    b. Consequences
       i. Differences in average wages across groups arise from fact that qualifications / test scores do not perfectly predict individual productivity
       ii. Even with not "distaste" difference in average wage across groups can arise
       Note: perfect competition does not rid the labor markets of discrimination
       Motivation: A typing test is given by an employer. Z types of typists



    c. set up of statistical discrimination model
       i. productivity of an individual worker MP_i
       ii. qualifications indexed by test scores T_i
          - Test score is am imperfect predictor of true productivity:
            $T_i = MP_i + \varepsilon i$

Where εi represents the measurement error (having a good / bad day)

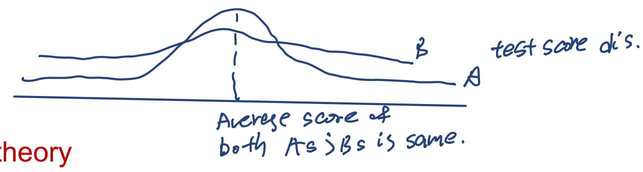
- Test scores might measure productivity better for some groups than others

Suppose that:

$T_i^B = MP_i^B + \varepsilon_i^B$

$T_i^A = MP_i^A + \varepsilon_i^A$

Where $var(\varepsilon_i^B) > var(\varepsilon_i^A)$



d. Predictions of the statistical discrimination theory

i. Wage setting

Firms offer an individual a wage equal to expected productivity given test score and group membership

$W_i^B = (1-\alpha)\bar{T}^B + \alpha T_i^B$

Where $\bar{T}$ is the average test score for group β (same as MPs); and α is a constant between 0 and 1)

---- if α = 0 → $W_i^B = \bar{T}^B$

Individual secore has no weight in wage determination

---- if α = 1 → $W_i^B = T_i^B$

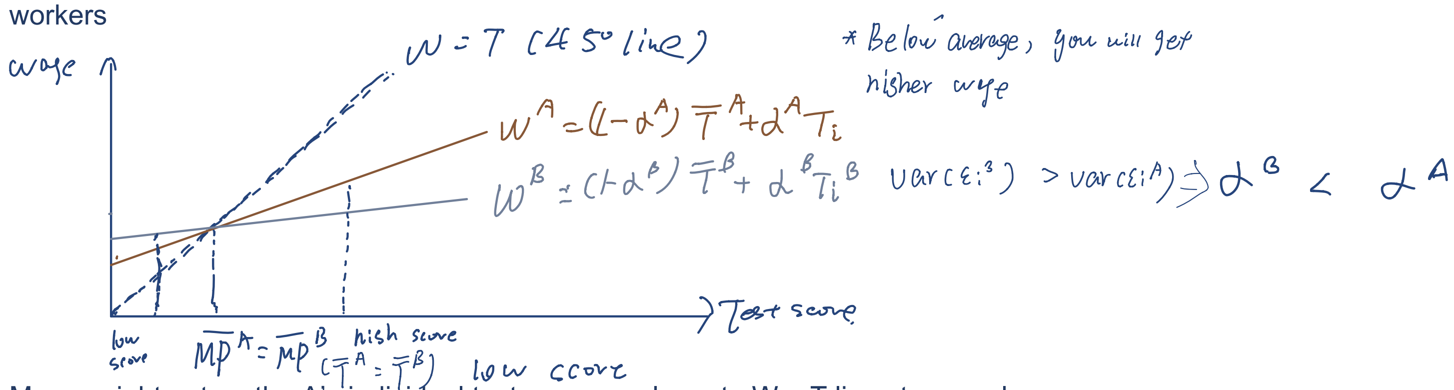
Group average productivity is given no weight in wage determination

** the lower the var(ε_i), the larger the α

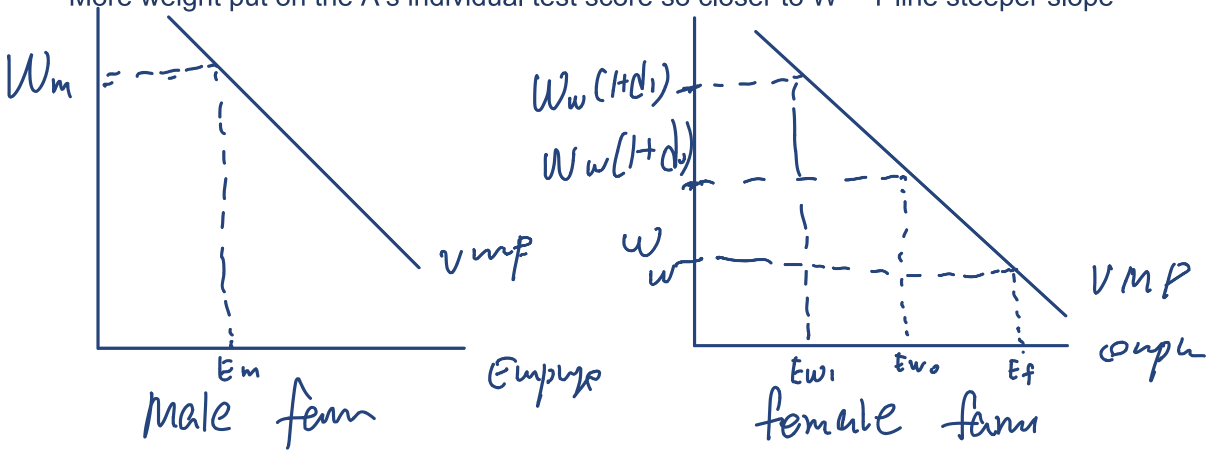
ii. Special case:

$\bar{T}^B = \bar{T}^A$ (or $\overline{MP}^B = \overline{MP}^A$), but $var(\varepsilon_i^B) > var(\varepsilon_i^A)$

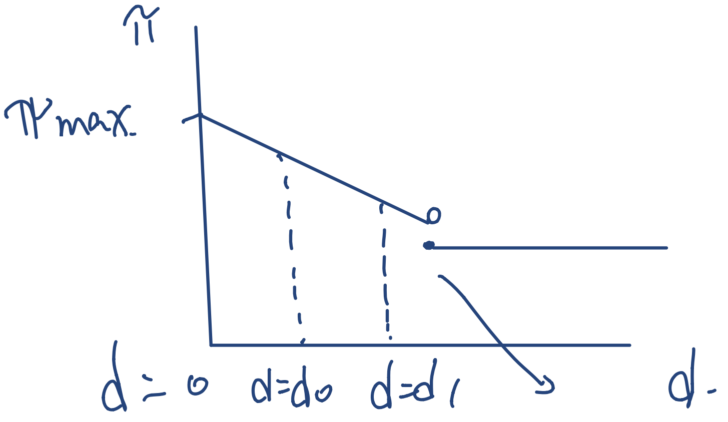
Both are equally productive, but scores are a greater predictor of productivity for α workers than they are for β workers



More weight put on the A's individual test score so closer to W = T line steeper slope



W_w → Wage without see gender.



d is sush that $W_w(1+d_m) = W_m$