

# Lec8: The Economics of Discrimination

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- Why we always observe that there is a huge wage differences among workers in the market?
  1. Different qualities of the workers(human capital)
  2. Different jobs workers hold
  3. Same qualities of workers and same jobs
  4. Mobility barriers

# Discrimination

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- Discrimination is the situation where people who are presumed to be **equally productive** or **have equally productive capacity**, **get treated differently** by the market.
- Because of **their gender, their religion, their ethnics, sexual orientation, the colour of their skin, age, and so on**, whatever even though these characteristics are irrelevant for the purpose being considered.
- In labour market context we are normally interested in discrimination in wages and employment.

- Two of the most prominent
  - Becker's theory of prejudice
  - Statistical discrimination
- Prejudice v.s Discrimination v.s. Segregation
  - Prejudice refers to dislike, distaste or misperception a group of people based on innate characteristics.
  - Discrimination consists of actions against a group of people based on innate characteristics.
  - Segregation is the separation of people based on their races.

# Becker's Theory of Prejudice

- Sometimes called a "tastes" theory, because the discrimination comes from people's prejudice.
- The idea is that some people are prejudiced so will be prepared to pay a price to avoid certain groups.
- To affect earnings, tastes must influence actions.
- Act as if there were a non-pecuniary cost of associating with particular group.
- This then affects the demand for labour of those groups.

# Becker's Theory of Prejudice

- Employer Discrimination
  - Employer acts as if the price of labor is more than the actual costs.
- Employee Discrimination
  - Employee perceives her take-home pay to be less than it actually is.
- Customer Discrimination
  - Customer acts as if the price of the good is more than the marked price.

# The Discrimination Coefficient

- Gary Becker (1957): The Economics of Discrimination
- A competitive employer faces constant prices for male and female workers:  $W_M, W_F$ .
- If the employer prejudice against women, the employer gets **disutility** from hiring female workers.
- Even the market wage for women is  $W_F$ , the prejudiced employer will act as if it costs  $W_F(1 + d)$ .
- $d > 0$  is the **discrimination coefficient**.
- Some employers might have a different type of prejudice: they prefer to hire women.
- we call **nepotism**, implies that an employer's utility-adjusted cost of hiring a favored worker equals  $W_F(1 - n)$ . dollars



# Statistical Discrimination

- In a world of imperfect information, employers will base decisions on observable characteristics (like race and gender) that do not directly affect productivity
- Because they are correlated with unobserved characteristics that do affect productivity.

# The nature of discrimination

- Efficiency
- Equity
- How to wipe off discriminations?
  - It still an open question.
  - Until now human being did not find a perfect way to deal with it.
  - **Discrimination is an inevitable part of human nature.**

- The practice in US
  1. Equal Pay Act of 1963  
Man and Women equal pay
  2. Civil Right Act of 1964, Title VII(民权法)  
the centerpiece of U.S. antidiscrimination policy.

## Civil Right Act of 1964, Title VII

- The act made it illegal for any employer "to refuse to hire or to discharge any individual, or otherwise to discriminate against any individual with respect to his compensation, terms, conditions, or privileges or employment, because of such individual's race, color, religion, sex or national origin."

- Equal Employment Opportunity Commission
- Executive orders and Federal Contracts Affirmative-action program

- Experiment or Audit studies
- Simple Regression
- Decomposition gap based on regression

- These are experimental studies
- These have a long history in academic research.
- Basic idea is to get two people to apply for jobs with identical (fake) CVs but who differ in race/gender.
- One then observes what happens to them.

# Audit Studies

- Send out resumes that are identical in all respects except sex
  - Use "male" and "female" first names
- Send auditors to companies to interview
  - Select and train auditors who match on as many characteristics as possible
  - The auditors are paired across gender and sent to a sample of companies
  - Data are collected on the probability of getting an interview and the probability of getting a job offer.



## Problems with audit studies

- Most studies of this type have very small samples because it is expensive.
- Difficulty in obtaining auditors who are truly the same in every way relevant to productivity
- There are concerns that the participants may be knowingly participating in the experiments producing the desired results.

## Goldin and Rouse (1996)

- In the 1970s and 1980s: blind auditioning of musicians
  - In a set of 9 orchestras, the proportion female increased from about 0.10 in 1970 to about 0.20 in 1990.
  - The proportion of female among new hires increased even more dramatically
- Two possible reasons:
  - The adoption of the blind auditions
  - A reflection of the general increase in women's labor force participation.

- Instead of sending out people they sent out cv's.
- This enabled them to:
  - more tightly control the information available to employers
  - to dramatically increase the sample size—they have about 5000 job applications.
- Use black-sounding names to pick up discrimination
- Treatment is correlated with being black but not perfectly

- Counterfactual Exercises(*sort of causal*)  
The typical question is "What if..."
- 1. In Mean
  1. Oaxaca-Blinder
  2. Brown
- 2. In Distribution
  1. JMP
  2. DFL
  3. Quantile-MM

# A Classical Case: Gender Gap

- Men and Women in Labor Market
  - Wage difference
  - Occupational/industrial difference
  - Labor participation difference
  - More unobservable characteristics
  - In a counterfactual world's terminology, we would like to know "what the pay would be if women had the same characteristics as men?"

## A naive way to identification

- Use a dummy variable in wage equation

$$\ln w = \alpha + \beta D + X' \gamma + \varepsilon$$

Where  $D=1$  denote the gender is male and  $D=0$  is female. So the significance of  $\hat{\beta}$  is evidence if there is the wage differential between male and female.

- but the result only makes sense when we want to know if there is a wage gap between men and women.

## Oaxaca-Blinder(1974)

- The Oaxaca-Blinder decomposition is a tool for separating the influences of quantities and prices on an observed mean difference.
- we write down the wage equations of males and females as followed

$$\ln y_{mi} = X'_{mi}\beta_m + \varepsilon_{mi}$$

$$\ln y_{wi} = X'_{wi}\beta_w + \varepsilon_{wi}$$

- So the mean wage gap

$$E(\ln y_m) - E(\ln y_w) = E[X'_m]\beta_m - E[X'_w]\beta_w$$

# Oaxaca-Blinder(1974)

- A small trick

$$E[\ln y_m - \ln y_w] = E[X_m]' \beta_m - E[X_m]' \beta_w + E[X_m]' \beta_w - E[X_w]' \beta_w$$

- Then decomposition is

$$E[\ln y_m - \ln y_w] = E[X_m]' (\beta_m - \beta_w) + (E[X_m] - E[X_w])' \beta_w$$

- The first term is the differential from the returns, so we call it "price effect" of the wage gap.
- The second term is the differentials from the characteristics, so we call it "endowment effect"



**Table 7.** Results of decomposition of gender difference of earnings in urban China

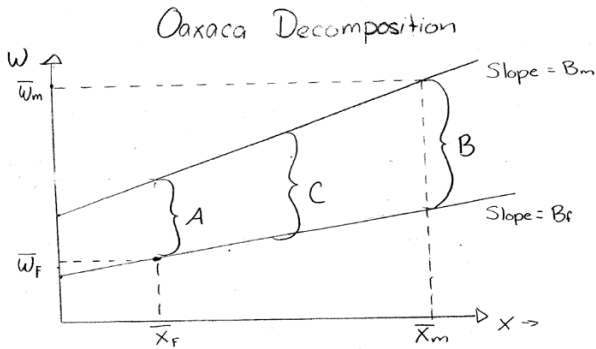
	$\beta_m X_m - \beta_f X_f$	Percent of total	$\beta_m X_f - \beta_f X_f$	Percent of total
<b>1988</b>				
Intercept	0	0	0.3628	203.12
Age group	0.0340	19.02	0.0110	6.14
Minority status	0.00005	0.03	0.0011	0.59
Party membership	0.0124	6.92	-0.0057	-3.19
Education	0.0056	3.14	0.0059	3.33
Ownership	0.0184	10.32	-0.0354	-19.83
Occupation	0.0122	6.85	-0.1476	-82.64
Economic sector	-0.0003	-0.16	-0.1240	-69.41
Type of job	0.0039	2.17	0.0067	3.76
Province	-0.0014	-0.78	0.0190	10.62
Total	0.0849	47.51	0.0937	52.49
<b>1995</b>				
Intercept	0	0	0.0462	19.87
Age group	0.0169	7.28	0.0645	27.74
Minority status	0.0001	0.02	0.0014	0.59
Party membership	0.0142	6.12	-0.0037	-1.60
Education	0.0172	7.40	0.0001	0.02
Ownership	0.0208	8.96	-0.0163	-7.03
Occupation	0.0114	4.92	-0.0199	-8.58
Economic sector	0.0003	0.14	0.0087	3.76
Type of job	0.0026	1.12	0.0060	2.59
Province	0.0020	0.84	0.0601	25.86
Total	0.0855	36.80	0.1469	63.20

Source: Urban household income surveys 1989 and 1996.

## Limitations of Oaxaca-Blinder

- Decompose the gap only on the mean
- The result depends on the choice of counterfactual fact

# Limitations of Oaxaca-Blinder



What is the true 'gender gap'?

- A -  $\bar{x}_f (\beta_m - \beta_f)$
- B -  $\bar{x}_m (\beta_m - \beta_f)$
- C -  $(\bar{x}_m - \bar{x}_f) \frac{1}{2} (\beta_m - \beta_f)$

## Problems with the Decomposition

- If discrimination is affecting the human capital investment and personal choices or job choice, then the "unexplained gap" will **understate** discrimination
  - Some of the control variables themselves reflect the impact of discrimination.
- If there are **omitted variables** that relate to human capital and personal tastes of the individual, then the "unexplained gap" will **overstate** the impact of discrimination.

# Does the Oaxaca Decomposition Really Measure Discrimination?

- Pre-market skill differential itself may be an outcome of discrimination.
  - schooling, experience and training
- Occupational segregation may be a form of discrimination.

## Brown et al(1980)

- Take the industryoccupational wage differentials into the Oaxaca-Blinder method.
- The average wage of malefemale is a summation of product of probability which malefemale enters a industry and average wage of the industry.
- The average gap

$$\begin{aligned}\bar{w}_m - \bar{w}_w &= \sum_j (p_j^m \bar{w}_j^m - p_j^w \bar{w}_j^w) \\ &= \sum_j \bar{w}_j^m (p_j^m - p_j^w) + p_j^w (\bar{w}_j^m - \bar{w}_j^w)\end{aligned}$$

- The first term

$$\sum_j \bar{w}_j^m (p_j^m - p_j^w) = \sum_j \bar{w}_j^m (p_j^m - \tilde{p}_j^w) + \bar{w}_j^m (\tilde{p}_j^w - p_j^w)$$

here  $\tilde{p}_j^w$  is the female's probability of working in some industries if they were treated as males.

- In a Multinomial Logit equation,

$$\tilde{p}_j^w = \exp(\gamma_j^m z_w) / \sum_j \exp(\gamma_j^m z_w)$$

- the second term

$$\begin{aligned}\sum_j p_j^w (\bar{w}_j^m - \bar{w}_j^{w'}) &= \sum_j p_j^w (\bar{x}_j^m \beta_j^m - \bar{x}_j^w \beta_j^w) \\ &= \sum_j p_j^w (\bar{x}_j^m - \bar{x}_j^w) \beta_j^m + \sum_j p_j^w (\beta_j^m - \beta_j^w) \bar{x}_j^w\end{aligned}$$

X is the average characteristics of males or females in industry j.



- Total gap can be decomposed into four parts

$$\begin{aligned}\bar{w}_m - \bar{w}_w &= \sum_j p_j^w (\bar{x}_j^m - \bar{x}_j^w) \beta_j^m + \sum_j p_j^w (\beta_j^m - \beta_j^w) \bar{x}_j^w \\ &\quad + \sum_j \bar{w}_j^m (p_j^m - \tilde{p}_j^w) + \bar{w}_j^m (\tilde{p}_j^w - p_j^w)\end{aligned}$$

- The first term- "can be explained within industry"
- The second term- "can NOT be explained within industry"
- The third one- "can be explained across industry"
- The last one- "can NOT be explained across industry"

# 王美艳 (2005)

表 8 男女工资收入差异分解结果

	小时工资自然对数	百分比	百分比	百分比
总工资差异	0.2400	100.00		
行业内	0.2234	93.10	100.00	
可解释部分	0.0149	6.19	6.65	
不可解释部分	0.2086	86.91	93.35	
行业间	0.0165	6.90		100.00
可解释部分	0.0018	0.76		11.01
不可解释部分	0.0147	6.14		88.99
可解释部分合计	0.0167	6.95		
不可解释部分合计	0.2233	93.05		