

Part VA: Discrimination Theories

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Motivation

- Certain demographic groups receive different average wages.
- In USA:
 - Black/Hispanic wages are lower than White/Asian wages
 - Female wages are lower than male wages
- Important policy issue: What causes this, and what should we do about it?
- Think historically: minorities/women represent massive untapped “talent pool” in labor market.
 - Entry of women into workforce one of the major drivers of 20th century growth in US.
- Today: Things have improved by most measures, but still a major issue.

Labor Market Discrimination

- Labor Market Discrimination:
 - Two individuals who are alike in every relevant characteristic (schooling, intelligence, experience, etc.) but are paid a different wage due to a factor which does not affect productivity (e.g., race/gender).
- Race/gender: Holding other characteristics constant, differences in race/gender should have no effect on productivity.

- Pre-Labor Market differences in relevant characteristics are not labor market discrimination.
- “Pre-Labor Market differences”
 - Education quality (e.g., Jim Crow laws)
 - Education level
 - Preferences for labor/leisure, risky labor, job search
- These all affect wages, but are determined outside of the labor market
- Pre-Labor Market differences can often arise from some form of discrimination, but not labor market discrimination!

Motivation

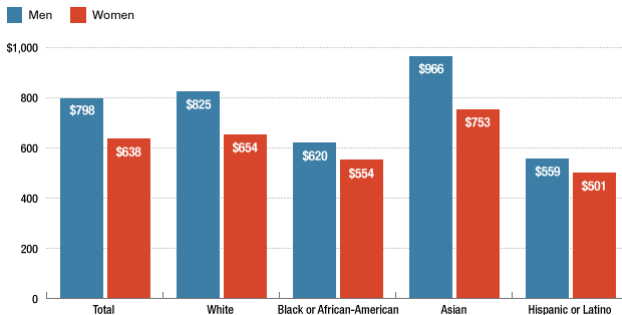


Figure: 2008 US Median Weekly Earnings by Race & Gender (NPR)

Racial Wage Gaps

- Black-white wage gap diminished significantly from ~ 1960 - ~ 2000 .
- Limited progress in past 15 years.

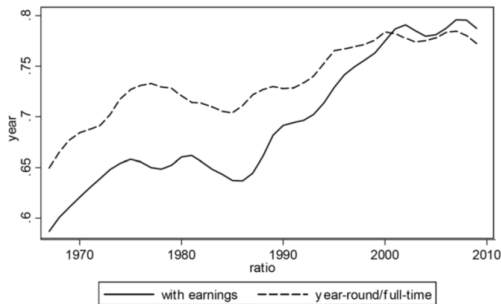


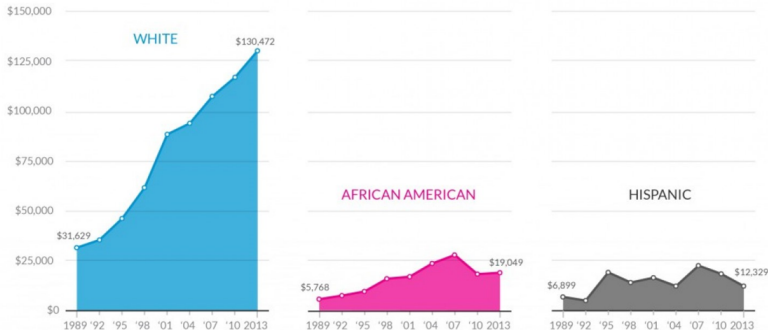
Figure 1: Ratio of Median Earnings: Black Men/White Men, 1967-2009

Figure: Source: Lang & Lehmann (2011)

Racial Wage Gaps

- Earnings disparities (generally in the range of 25% for black vs. white men) are dwarfed by wealth disparities.

Average Family Liquid Retirement Savings, 1989–2013



Source: Urban Institute calculations from Survey of Consumer Finances 1989–2013.

Notes: 2013 dollars. Liquid retirement savings include dollars in accounts such as 401(k), 403(b), and IRAs. Median liquid retirement savings for African American and Hispanic families were zero from 1989 to 2013. Median liquid retirement savings for whites was zero through the mid-1990s, about \$1,500 in 1998, and \$5,000 in 2013.

Racial Wage Gaps

- What generates the racial wage gap?
- Big topic of study. Reasonable possibilities:
 - Labor market discrimination
 - Lack of access to high quality schooling
 - Dynamic/long-run effects of prior discriminatory policies
 - Peer effects (i.e., extent to which outcomes are results of peers' outcomes)
- More on this later

Gender Wage Gaps

- Male-female wage gap has slowly diminished post-WWII.
- But, limited progress in past decade.

Annual median earnings, by sex (2008-adjusted dollars)

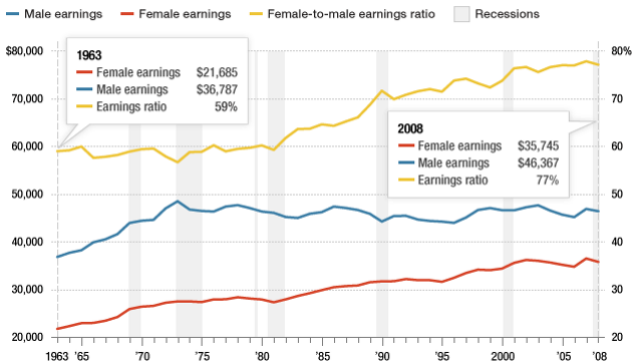


Figure: Source: NPR

Gender Wage Gaps

- US gender wage gap is around average for developed nations.

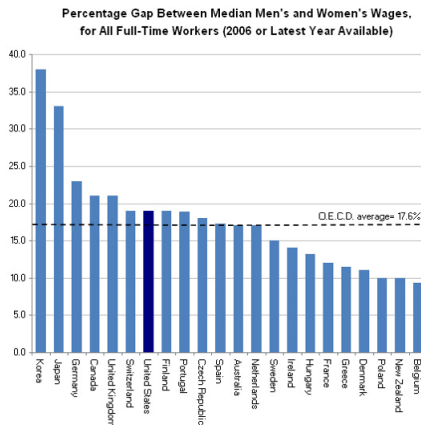
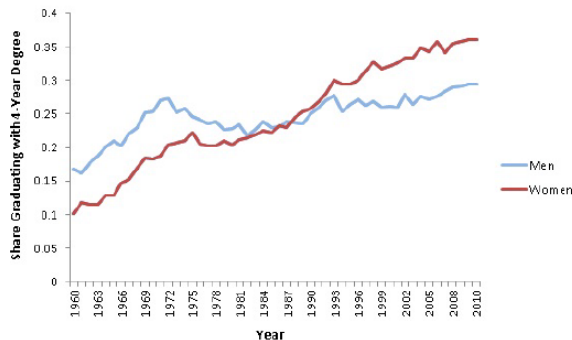


Figure: Source: NYT

Gender Wage Gaps

Figure 1: Share of Men and Women Graduating with 4-Year Degree, 1960-2010



Notes: Sample includes individuals ages 24-30. Graduation year is the year individuals were 22 years of age. Graduation rates after 2008 are constructed using NCES data. Sources: CPS (1962-2012), NCES (2012).

Figure: Source: Bronson (2014)

Gender Wage Gaps

Figure 2: Share of Bachelor's Degrees Awarded to Women By Major, 1970-2010

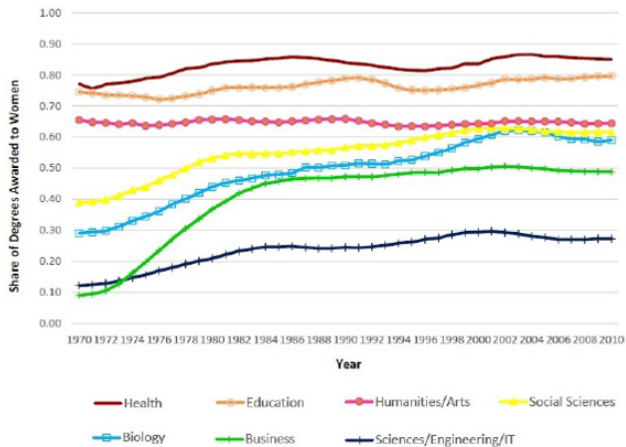


Figure: Source: Bronson (2014)

Gender Wage Gaps

Figure 6: Share of Men and Women Choosing “Sciences or Business” vs. Other Major, 1970-2012

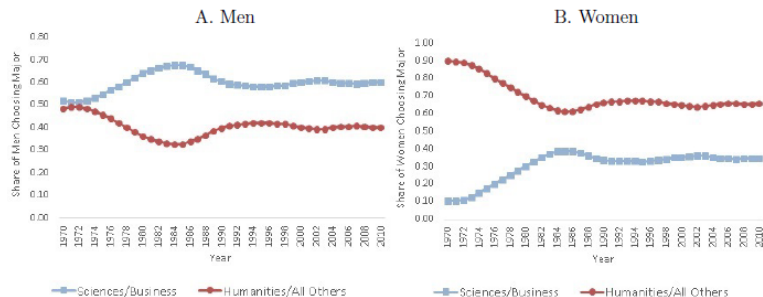


Figure: Source: Bronson (2014)

Gender Wage Gaps

Figure 10: Weekly Hours Worked in Labor Market, Data and Model

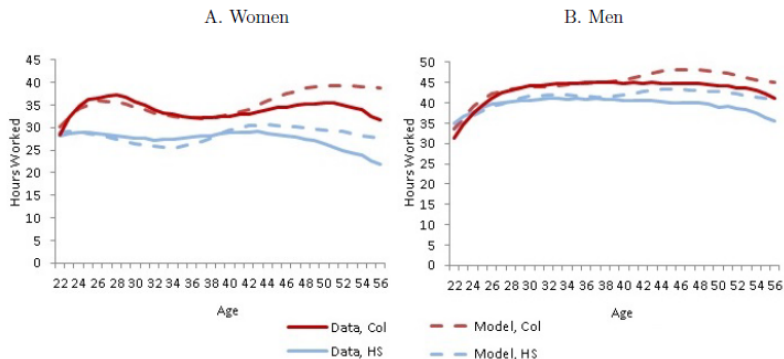


Figure: Source: Bronson (2014)

Gender Wage Gaps

- What generates the gender wage gap?
- Another big topic. Pay gap is on the scale of about $\sim 20\%$
- Differences in other factors may drive some of the wage gap
 - Education levels: Young women on average have more years of education than young men, but men disproportionately choose high-paying fields.
 - Industry choice: Female-dominated industries tend to be lower-paying industries.
 - Children: Much recent evidence indicates that gender wage gaps are far greater for women with children.
 - Wages grow slowly for women with children during important years (ages 25-35).
- Controlling for relevant differences decreases estimates of labor market discrimination, but it still plays a significant role.
- Again, more on this later

Readings

- Borjas 9.1

Motivation

- Data indicates that certain demographic groups earn less than others.
- Some proportion of the wage gap is unexplained by differences in observable factors (e.g., schooling, occupation, etc.).
- Why do we see this?
- How can we better understand this phenomenon using economic models of discriminatory behavior?

Theories of Labor Market Discrimination

- ① Taste-based: Some people (firms, employees, customers) simply don't like other "types" of people or have a preference towards a certain "type." For example,
 - an employer has a prejudice towards black workers
 - other employees do not like working with women
 - customers do not like being served by a minority
- ② Statistical: Firms use race/gender as a way to estimate worker productivity when they have other limited information. We will get to this later.

Taste-Based Discrimination

- Cover three different avenues of taste-based discrimination to see how well each phenomenon might explain the persistence of discriminatory wage gaps.
 - ① Employer-based: Employers have a distaste for hiring workers from certain demographic groups.
 - ② Employee-based: Employees have a distaste for having co-workers from certain demographic groups.
 - ③ Customer-based: Customers have a distaste for shopping in stores owned/operated by people from certain demographic groups.
- We'll generally describe these using the most studied wage gaps (white/black, male/female), but they can be applied more generally.

Employer Discrimination

- Consider two types of workers in a competitive labor market, type A and type B
- Prices of labor: w_A and w_B
- Disutility from hiring type B : Employer acts as if cost of hiring type B is $w_B(1 + d)$, where $d > 0$
- d is the “discrimination coefficient”
- Going the other way: Nepotism - preference for hiring type B workers
 - Utility-adjusted cost of hiring: $w_B(1 - n)$, where $n > 0$
 - n is the “nepotism” coefficient

Employer Discrimination

- Example: Black-white wage gap
- Basic structure: Firms hire both white and black workers to produce output.
- Market populated by two types of firms:
 - Type 1: Non-discriminatory: Goal is to maximize profits.
 - Type 2: Discriminatory: Cares about maximizing profits, but also has a distaste for hiring black workers.
- Key: Both worker types are equally productive.

Employer Discrimination

- Assumption: Black and white workers are perfect substitutes in production \Rightarrow both types have the same marginal productivity
- Output is a function of total workers employed (no capital for simplicity)

$$q = f(E_B, E_W) = f(E_B + E_W)$$

- Output only depends on total number of workers - composition of workers does not matter

Employer Discrimination

- Let's look at the hiring decisions of non-discriminatory firms
- As always, chooses inputs (E_B, E_W) to maximize profits

$$\Pi = TR - TC = p \cdot f(E_B, E_W) - w_B \cdot E_B - w_W \cdot E_W$$

where w_B and w_W are the market wages earned by black and white workers, respectively

Employer Discrimination

- Which type of worker is more productive per-dollar spent?
- Whichever is cheaper!
- Hiring decision for non-discriminatory firm:
 - $w_W < w_B \Rightarrow$ hire only white workers
 - $w_W > w_B \Rightarrow$ hire only black workers
 - $w_W = w_B \Rightarrow$ hire both types of workers
- Employment decision: As always, hire labor up to where $w = VMP_E$

Employer Discrimination

- Now let's turn to the behavior of firms that discriminate against black workers, assuming that $w_B < w_W$
- Firm acts as if black wage is $w_B(1 + d)$, where $d > 0$
- Discriminatory firms compare *perceived costs*, w_W versus $w_B(1 + d)$
- Hiring decision:
 - $w_W < w_B(1 + d) \Rightarrow$ hire only white workers
 - $w_W > w_B(1 + d) \Rightarrow$ hire only black workers
 - $w_W = w_B(1 + d) \Rightarrow$ hire both types of workers
- Thus, discriminatory firms are willing to pay a premium to hire an equally productive white worker and will only hire black workers if they can be hired at a significant discount

Employer Discrimination

- For any firm where $w_B(1 + d) > w_W$, hires only white labor, sees strictly lower profits than ND firm
- Even for discriminatory firms where $w_B(1 + d) < w_W$ so that they hire only black labor, discriminatory firms hire less black workers than non-discriminatory firms and realize lower profits
- In a market with free entry, profits for the most efficient firms are driven to zero in the long-run. Inefficient firms earn negative profits, and are pushed out of the market.

Employer Discrimination

- Discriminatory firms represent inefficient firms; they are not producing output in the cheapest possible manner.
- If $\Pi_{ND} > 0$, more ND firms enter the market and continue to enter until $\Pi_{ND} = 0$
- If $\Pi_{ND} = 0$, then $\Pi_D < 0 \Rightarrow$ Discriminatory firms exit the market.
- In the long-run, only ND firms prevail

Employer Discrimination

- Recall the purpose of our theory here is to understand how different types of prejudice in the labor market can lead to wage gaps.
- Employer-based discrimination can explain the existence of short-run wage gaps between black/white, male/female, etc.
- But, it can't explain the persistence of long-run wage gaps between black/white, male/female, etc.
- Could other types of prejudice explain long-run wage gaps?

Employee Discrimination

- Second possibility: Employees are discriminatory.
- For example, suppose male employees have a distaste for working with women. Women are indifferent about the composition of workers.
- Males receiving a wage w_M will act as if their wage is only $w_M(1 - d)$. Women's actual and perceived wages are w_F .

Employee Discrimination

- Implication: Male workers require a wage premium to work alongside female employees.
- Does a firm have incentives to reward male workers for such preferences?
- Hence, employee-based discrimination is largely a non-credible means of explaining wage gaps.

Customer Discrimination

- Third possibility: Discriminatory customers do not like interacting with certain types of producers.
- Example: Suppose some people have a distaste for shopping at a minority-owned store. These people have a lower willingness-to-pay for same product if its sold at minority-owned store.
- Purchasing decision is not based on the actual price of the good p , but on the utility-adjusted price $p(1 + d)$

Customer Discrimination

- If people, on average, have lower willingness-to-pay for product sold at minority-owned store, those stores will sell identical product for a lower price: $p_M < p_W$, where w denotes white-owned and m denotes minority-owned.
- In equilibrium, in a competitive market:
 - $w_W = VMP_W = p_W \cdot MP_W$
 - $w_M = VMP_M = p_M \cdot MP_M$
- Perfect substitutes: $MP_W = MP_M$
- Result: $w_W > w_M$

Customer Discrimination

- If this behavior is prevalent, this can explain why we might observe wage gaps. But, how important is the magnitude of this effect?
- Tough to say.
- Many occupations don't require direct customer interaction, so this can't explain wage gaps in that many industries.
- Effect of this type of discrimination need not solely appear in wages: Holzer and Ihlanfeldt (1998)

Summary

- Can taste-based theories explain why we observe discriminatory wage gaps? Sometimes they can, sometimes they can't:
 - Employer-Based: Explains short-run gaps, but not long-run gaps
 - Employee-Based: Does not explain gaps.
 - Customer-Based: Can explain wage gaps, but only in settings where customers interact with producers.
- Many economists have argued that the role of taste-based theories in recent years is overstated. Next, we'll move on to a different theory of discrimination.

Readings

- Borjas 9.2 - 9.5

Statistical Discrimination

- Criticism of taste-based models of discrimination:
- Why does this behavior persist in equilibrium?
- We can show that if firms are discriminatory, then there may be a wage gap.

Statistical Discrimination

- But, why are firms discriminatory in the first place?
- Shouldn't discriminatory firms be weeded out of the market, as they effectively have higher operating costs?
- For taste-based discrimination to drive wage gaps, we would need a very large measure of discriminatory firms/customers/employees.

Statistical Discrimination

- Taste-based theories have significant shortcomings, but why does this matter from a policy standpoint? Consider:
- Equal pay laws: Mandate that individuals from different demographic groups who have equal productivity levels receive equal pay.
 - For the sake of argument, assume these are enforceable (it's tough in reality)
- Under taste-based discrimination, these should act to close wage gaps.
- If wage gaps are driven by deeper structural issues (e.g., school quality) such laws might not have any effect on wages

Statistical Discrimination

- Consider the following situation:
- Male and female who are identical outside of gender apply for a particular job
- Both give the exact same answers in an interview
- Why might a firm who is solely interested in maximizing profits have preferences for one over the other?

Statistical Discrimination

- Statistical Discrimination: Example
 - Both candidates observationally equivalent outside of gender.
(Suppose in truth, both have the same long-term plans.)
- Firms do not observe long-term plans.
- Firm estimates likelihood of employees staying at this job from statistical averages of male/female job quits.
- With perfect information, firm is indifferent between the candidates.
- Incomplete information \Rightarrow estimate the information they don't know by looking at statistical averages. Choose male candidate due to risk of losing female worker to child-rearing.

Statistical Discrimination

- More common example: Car insurance pricing
 - 16 year old male and 16 year old female both apply for insurance
 - Observationally equivalent, both have clean records, both are equally skilled drivers.
 - 16 year old male pays significantly higher premium
- Why?
 - Insurer knows that on average, the 16-year old male has a higher expected cost to insure than 16 year old female.
 - This particular 16-year old male may be a great driver, but the insurer has imperfect information. So they estimate his probability of getting in a wreck from the past records of other 16-year old males.

Statistical Discrimination

- Firms:
 - Operate in perfectly competitive market Pay wages equal to expected value of workers' marginal product
 - Wages paid based on all available information
- Workers:
 - Have productivity level determined before entering labor market (e.g. worker enters labor market having completed schooling, etc.)
 - Characterized by membership in one of two groups (black/white, male/female, etc.)

Statistical Discrimination

- Firms get job applications from a sample of applicants.
- Applicant has productivity level denoted Y
- Firms do not observe Y . Instead, they use available information (interview, resume, etc.) and assign a score to each applicant, denoted T .
- T contains some information about applicant's productivity.
- How will profit-maximizing firm determine wages?

Statistical Discrimination

- What is the firm's best estimate, \hat{Y} , based on their observed information?
- Assuming a linear relationship, the firm's best estimate is

$$\hat{Y} = \mathbb{E}[Y|T] = \alpha T + (1 - \alpha) \bar{T}$$

where $0 \leq \alpha \leq 1$ and \bar{T} denotes the average score of the demographic group

Statistical Discrimination

- In our model, α is the weight the firm puts on the test score.
- If $\alpha = 0$, firm places no weight on test score, all of weight on group averages.
- If $\alpha = 1$, firm places full weight on test score, no weight on group averages.

Statistical Discrimination

- How does this lead to wage gaps?
- If test scores are identical between groups, average wages are the same. But differences in the wage distribution can still arise:
- Suppose men, women have same average test score.
- However, suppose firms are more confident in their ability to evaluate male candidates (hence, the test conveys more information).
- Implications?

Statistical Discrimination

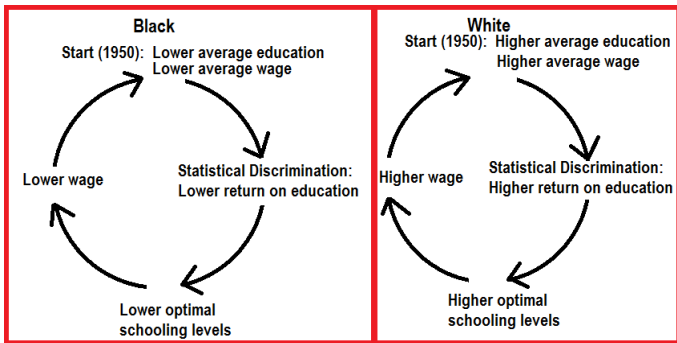
- Women are paid better in low-skill jobs
- Men are paid better in high-skill jobs
- But, doesn't explain why average wages are different.
- How can we explain the long-run persistence of wage gaps?

Statistical Discrimination

- Prior example assumes both groups start at the same level.
- What if one group starts at a lower level?
- Example: US differences in school quality by race.
- Suppose white schooling quality is higher on average than black schooling quality.
- Initial outcome is: $\bar{T}_B < \bar{T}_W$, $\bar{w}_B < \bar{w}_W$ What happens to wage gaps in the long-run?

Statistical Discrimination

- Statistical discrimination as a self-fulfilling prophecy



Statistical Discrimination

- This is a better story to explain long-run wage gaps.
- One group starts at “bad equilibrium,” continues with “bad equilibrium”
- One group starts at “good equilibrium,” continues with “good equilibrium”

Statistical Discrimination

- Bad policies from >50 years ago can still have a large effect on today's racial wage gaps, even in absence of taste-based discrimination.
- Equal pay laws do not close wage gaps here. Policy aimed at closing educational gaps is more effective if statistical discrimination rather than taste-based drives wage gaps.
- Labor market discrimination can influence skills gaps. If discrimination decreases return on education for black workers, human capital theory would suggest this leads to lower chosen schooling levels.

Readings

- Borjas 9.6