

# Counteractive Affirmative Action

COMBATING STATISTICAL DISCRIMINATION IN THE LABOR MARKET

## Table 1 – 2016 US Unemployment Rates by Race and Educational Attainment

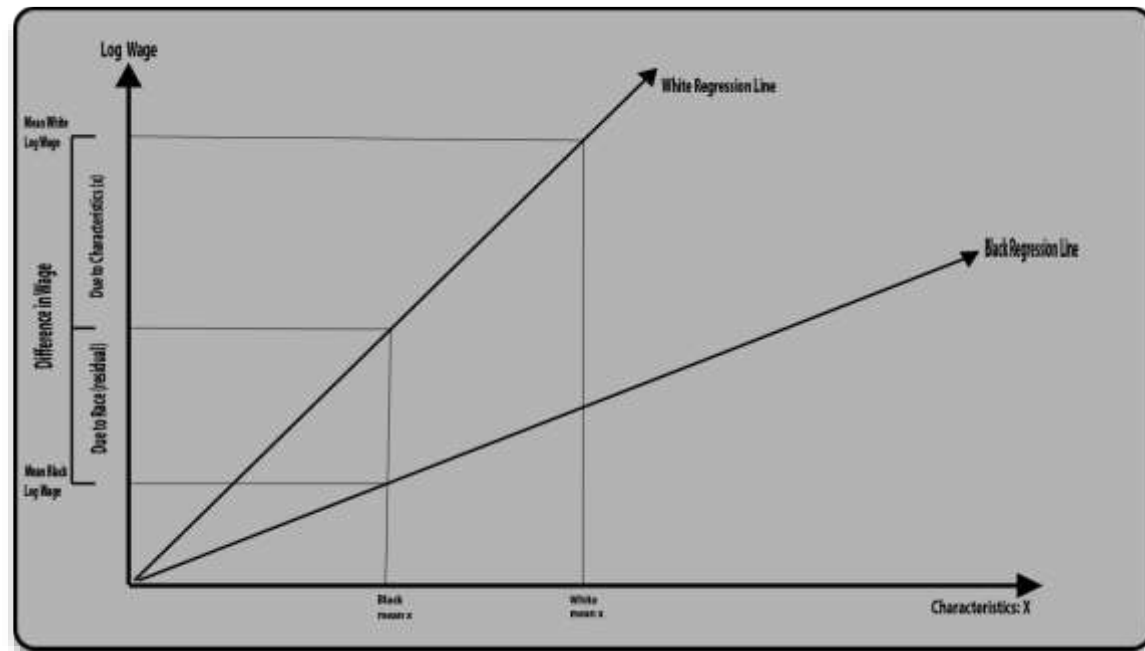
Source: US Census Bureau (2017)  
"Labor Force Statistics from the Current Population Survey"  
<<https://www.bls.gov/cps/cpsaat07.htm>>

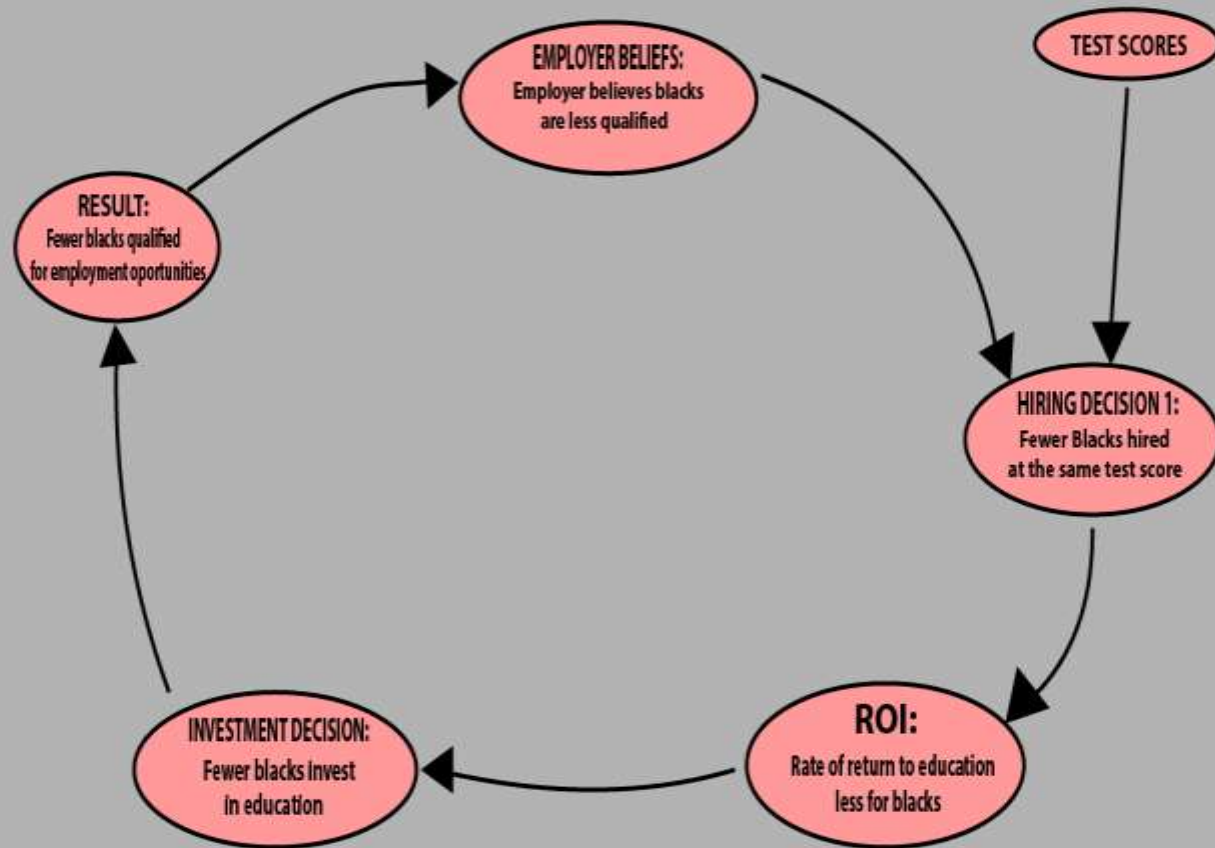
	Total	Less than HS Diploma	High School Diploma	Some College	Bachelors Degree or More
White	3.6%	6.5%	4.5%	3.6%	2.3%
Black	6.8%	14.1%	8.6%	6.1%	3.7%
Hispanic	4.8%	5.9%	5.1%	4.3%	3.1%

- Elvira and Town (2002)
- Hunter and Schmidt (1998)

# Altonji and Blank (1999)

- Blinder-Oaxaca regression on wages
- Controlled for education, occupation type, age, experience, region, etc.
- Found a 21 log point wage difference, 13 of which were due to race





# Statistical Discrimination

# Analysis – Profit Conditions

- ▶ Hypothetical risk neutral employer
  - ▶ Will make \$1500 for every qualified candidate he hires
  - ▶ Will lose \$1000 for every unqualified candidate
  - ▶ Belief that candidate is qualified ( $\Pr(q) = x$ )
  - ▶ Will hire any candidate he believes has a 40% chance of being qualified
- ▶  $\$1500(x) + (-\$1000)(1 - x) = \$0$
  - ▶  $\Pr(q) = x = .4$

# Analysis – Prior Beliefs

- ▶ Believes 50% of white candidates are qualified to do the job
- ▶ Believes 25% of black candidates are qualified
- ▶  $\Pr(q \mid \text{white}) = .5$
- ▶  $\Pr(q \mid \text{black}) = .25$

# Analysis – Test

- ▶ Employer gives all candidates a qualification test
  - ▶ Grades of A, B, or C
  - ▶ Grade distributions for qualified and unqualified candidates
- ▶  $\Pr(q \mid \text{white}) = .5$
  - ▶  $\Pr(q \mid \text{black}) = .25$

<b>Qualified</b>	<b>Candidates</b>	<b>Unqualified</b>	<b>Candidates</b>
Grade	Probability	Grade	Probability
A	50%	A	25%
B	50%	B	37.5%
C	0%	C	37.5%

# Analysis – Bayes Theorem

$$\blacktriangleright \Pr(q \mid \text{grade}, \text{race}) = \frac{\Pr(\text{grade} \mid q)}{((\Pr(\text{grade} \mid q) * \Prp(q \mid \text{race})) + (\Pr(\text{grade} \mid \text{unq}) * (1 - \Prp(q \mid \text{race})))}$$



# Analysis – Hiring Decisions

## Whites

- ▶  $\Pr(q|A, \text{white}) = 0.666666 = \mathbf{66.667\%}$
  - ▶  $\Pr(q|B, \text{white}) = 0.571428 = \mathbf{57.143\%}$
  - ▶  $\Pr(q|C, \text{white}) = 0 = 0\%$
- ▶ Employer will hire whites who got A's or B's

## Blacks

- ▶  $\Pr(q|A, \text{black}) = 0.4 = \mathbf{40\%}$
  - ▶  $\Pr(q|B, \text{black}) = 0.307692 = \mathbf{30.769\%}$
  - ▶  $\Pr(q|C, \text{black}) = 0 = 0\%$
- ▶ Employer will hire blacks who got A's but not B's

# Analysis – Optimal Tax

- ▶ We could change the employers profit conditions through tax policy
- ▶ To offset statistical discrimination (get blacks with B's hired), we would need to tax this employer \$333.33 for every black with a B he did not hire

- ▶  $\$1500 (0.30769) + (-\$1000 + Z) (1 - 0.30769) = \$0$

- ▶  $Z = \$333.33$

# Counteractive Affirmative Action

REPLICATING OPTIMAL  
TAXATION IN THE REAL  
WORLD

# Counteractive Affirmative Action

- ▶ Based off of affirmative action programs
- ▶ Fully adjustable, and incentive based
- ▶ Goals of identifying and quantifying discriminant hiring practices, and offsetting this behavior through corporate income taxation
- ▶ Seven step process

# CAA – Step 1

- ▶ Set the initial corporate income tax
- ▶ This rate is exogenous to the model

## CAA – Step 2

- ▶ Determine the Maximum surplus tax
- ▶ This is the maximum amount any firm will have to pay for discriminant hiring practices
- ▶ In addition to the initial corporate income tax

# CAA – Step 3

- ▶ Determine the racial composition of each firm
- ▶ This data would be collected by the IRA
- ▶ % demographics of workforce

# CAA – Step 4

- ▶ Determine if a firm is discriminatory in its hiring practices
- ▶ To do this, look for demographic imbalances
- ▶ Demographic imbalance: a significant difference between a firm's racial composition and its expected racial composition
- ▶ Firms Actual Workforce Composition = Expected workforce composition



# CAA – Step 4

- ▶ Population Proportion model
- ▶ A firms demographics should roughly match the demographics of its surrounding community
- ▶ If any racial category falls outside of a 10% margin of error, this is labeled a demographic imbalance
- ▶ Based off of census tract data

# CAA – Step 4

- ▶ Demographics by Occupation model
- ▶ Here the expected demographic balances by race are national averages by type of industry
- ▶ If a firm falls outside of the 10% margin of error when compared to national averages of similar firms, then there is a demographic imbalance

# CAA – Step 5

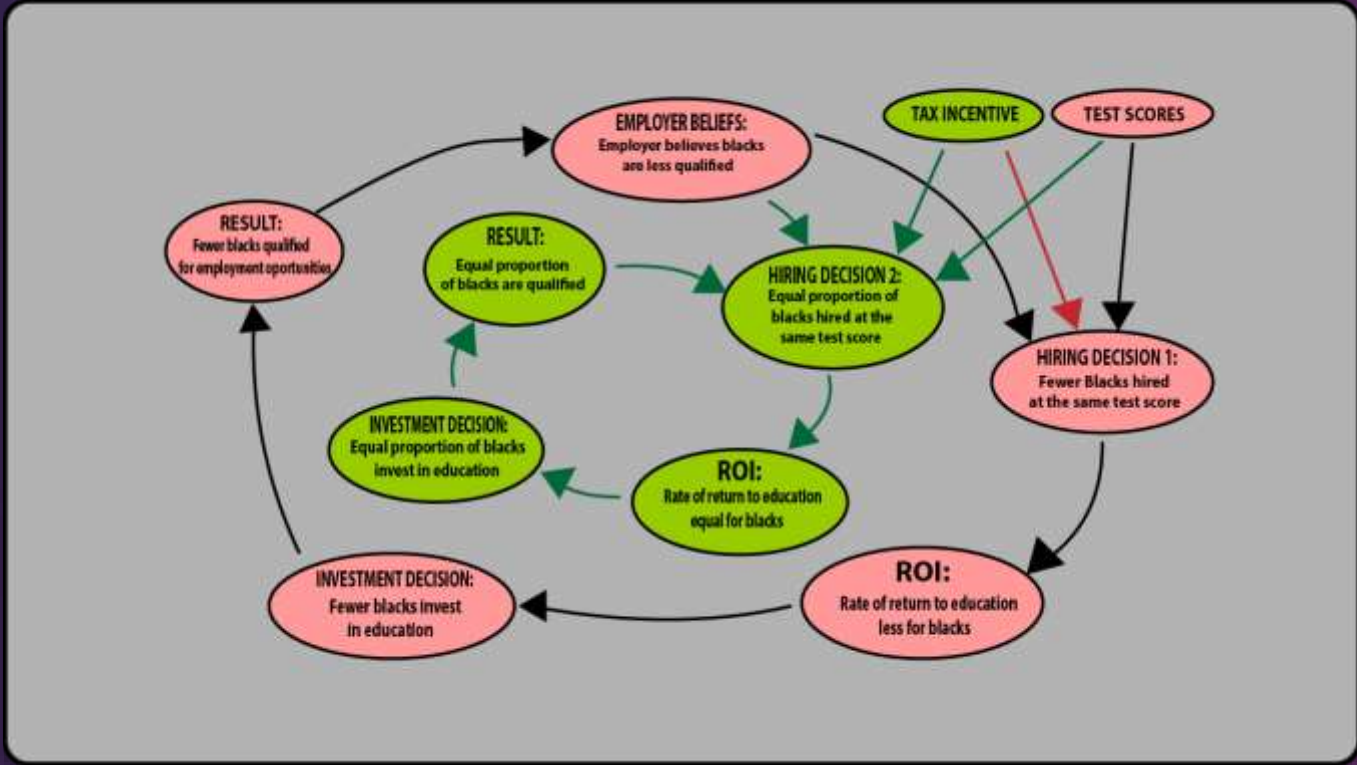
- ▶ Quantify the firms demographic imbalances
- ▶ For every identified demographic imbalance, take the observed difference between the actual and expected racial proportions
- ▶ Sum these quantities for the firms total demographic imbalance score

# CAA – Step 6

- ▶ Calculate the firm's Effective Surplus Tax
- ▶ This is the amount of the maximum surplus tax that a firm will have to pay
- ▶  $(\text{Firm's total demographic imbalance score}/100) * \text{Maximum surplus tax rate}$

# CAA – Step 7

- ▶ Initial corporate income tax + effective surplus tax = Firm's total tax burden (before deductions)



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