

Request that you should not refuse

- PLEASE SWITCH OFF AND PUT AWAY YOUR CELL PHONES
- LAPTOPS OK IF WORK IS ACADEMIC
- REMOVE BAGS AND OTHER MATERIALS THAT CAN CAUSE DISTRACTION
- STOP HAVING SIDE CONVERSATIONS
- PARTICIPATE IN CLASS

Class 13

Returns to Education, Inequality, Discrimination
PS 2 Questions - Posted – Turn it in on Wed May 24

- Read for Wednesday's Class (Class 14)

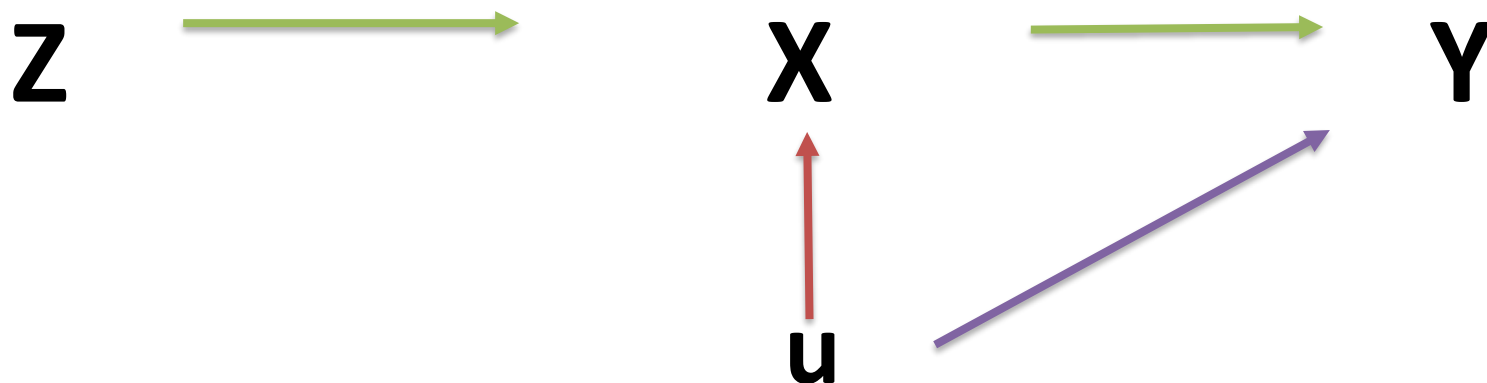
Work on selecting a Literature for final project

Returns to Education and Inequality Paper

For upcoming Weekend

Bertrand and Mullianathan Paper , Domestic Violence
Paper

Visual Demonstration of the Solution: IV/Natural Experiment (DiD)/RD/:



IV : Strong / Weak

$$\text{cov}(z_i, x_i) \neq 0$$

IV : Valid / Invalid

$$\text{cov}(z_i, u_i) = 0$$

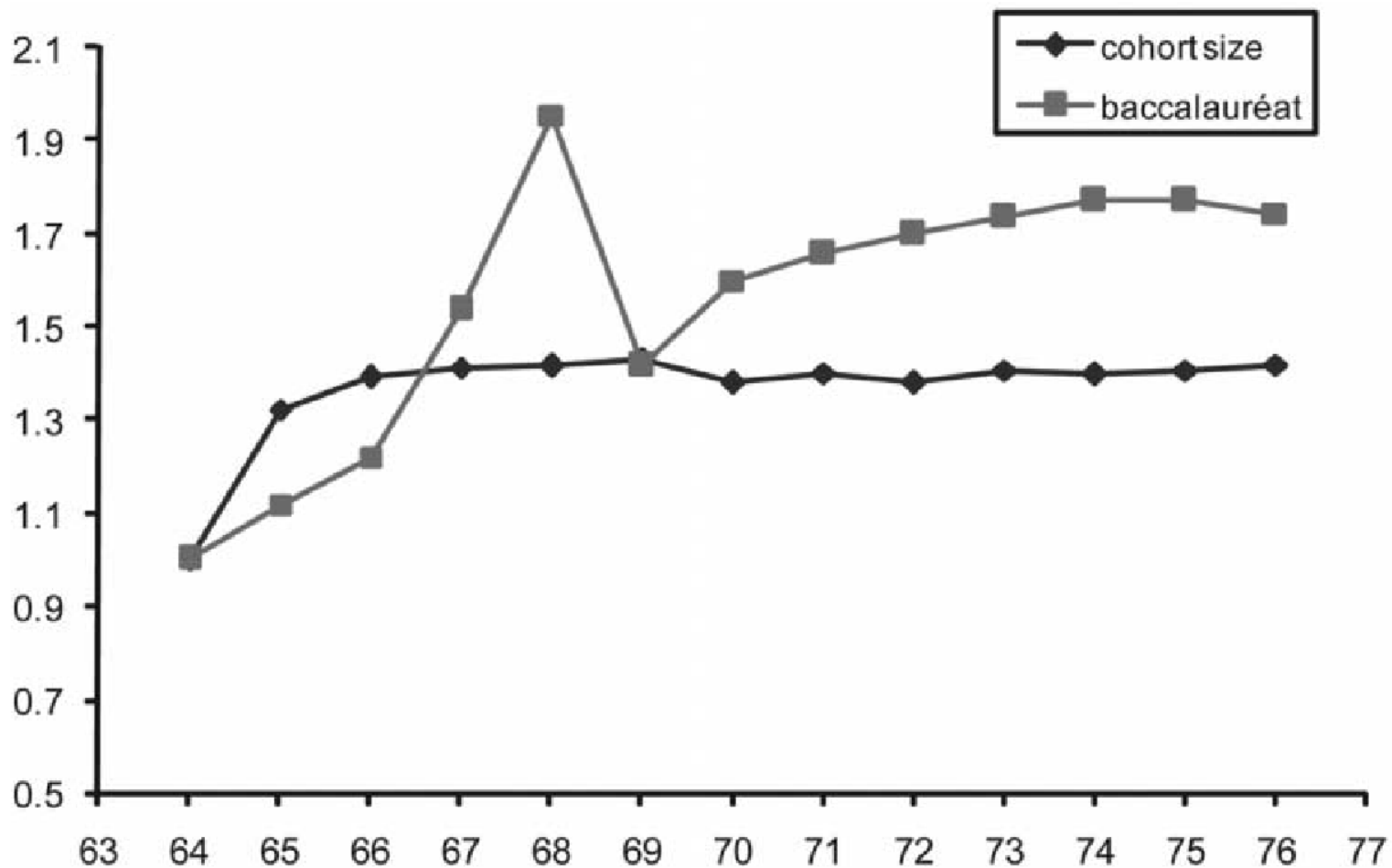


FIG. 1.—Trends in the number of *bacheliers* and in cohort size. The size of the cohort for year t corresponds to the number of persons born at $t - 19$ (19 is the median age of candidates). The two series are normalized to one in 1945. Source: French Ministry of Education (number of *bacheliers*) and the French Statistical Office (cohort size).

Table 2

Distribution of Education across Male Workers, by Year of Birth (%)

	<i>Baccalauréat</i> Only (1)	Greater than <i>Baccalauréat</i>		
		All (2)	Diploma (<i>Bac</i> + 2) (3)	Degree+ (> <i>Bac</i> + 2) (4)
1946	9.9 (.4)	17.4 (.6)	6.3 (.3)	11.0 (.5)
1947	9.0 (.4)	18.8 (.6)	7.1 (.4)	11.8 (.5)
1948	9.1 (.4)	19.0 (.6)	6.9 (.4)	12.1 (.5)
1949	9.8 (.4)	20.3 (.6)	8.6 (.4)	11.6 (.5)
1950	9.8 (.4)	18.4 (.6)	8.0 (.4)	10.4 (.5)
1951	9.8 (.4)	17.9 (.6)	7.5 (.4)	10.4 (.5)
1952	9.8 (.4)	17.8 (.6)	7.3 (.4)	10.4 (.5)

SOURCE.—Labor Force Survey 1990, 1993, 1996, and 1999.

NOTE.—Sample is male wage earners. Standard deviation is in parentheses.

Equations/ Empirical Strategy

We write the labor market outcomes (w_i) of worker i from cohort c_i at age a_i as follows:

$$w_i = \alpha n_i + \beta a_i + \gamma c_i + u_i, \quad (1)$$

where n_i represents years of education and u_i represents unobserved determinants of wages (such as ability). In what follows, w_i will represent either the wage earned or occupational status of i .

$$n_i = d_{47}C_{i47} + d_{48}C_{i48} + d_{49}C_{i49} + d_{50}C_{i50} + d_{51}C_{51} + \theta c_i + v_i, \quad (2)$$

$$w_i = \alpha n_i + \beta a_i + d_{c_i} + e_{f_i} + u_i, \quad (3)$$

Table 4
Impact of Birth Cohort on the Education and Labor Market Outcomes of Male Workers

	<i>Baccalauréat</i> Only (1)	At Least University Diploma (<i>Bac</i> + 2 or More) (2)	At Least University Degree (<i>Bac</i> + 3) (3)	Years of Higher Education (4)	Log Wage (5)	<i>Cadre</i> (Up- per-White- Collar Occupation) (6)
1947	−.009 (.006)	.014 (.008)	.008 (.006)	.060 (.050)	.006 (.010)	.001 (.008)
1948	.007 (.006)	.015 (.008)	.012 (.006)	.080 (.050)	.031 (.010)	.008 (.008)
1949	−.001 (.006)	.027 (.008)	.009 (.006)	.150 (.050)	.021 (.010)	.016 (.008)
1950	−.001 (.006)	.008 (.008)	−.002 (.006)	.030 (.050)	.005 (.010)	.000 (.008)
1951	−.005 (.006)	.002 (.008)	−.001 (.006)	.010 (.050)	.003 (.010)	.003 (.008)
Trend	−.000 (.001)	.001 (.008)	−.001 (.001)	.005 (.010)	.010 (.002)	−.005 (.001)
Age	−.000 (.001)	.001 (.008)	.000 (.001)	.004 (.005)	.023 (.001)	.003 (.001)
<i>N</i>	26,370	26,370	26,370	26,370	26,370	26,370

SOURCE.—Labor Force Survey 1990, 1993, 1996, and 1999.

NOTE.—Sample is male wage earners born between 1946 and 1952. Coefficients for the worker's cohort dummy are relative to the comparison cohorts of 1946 and 1952. Standard deviation is in parentheses.

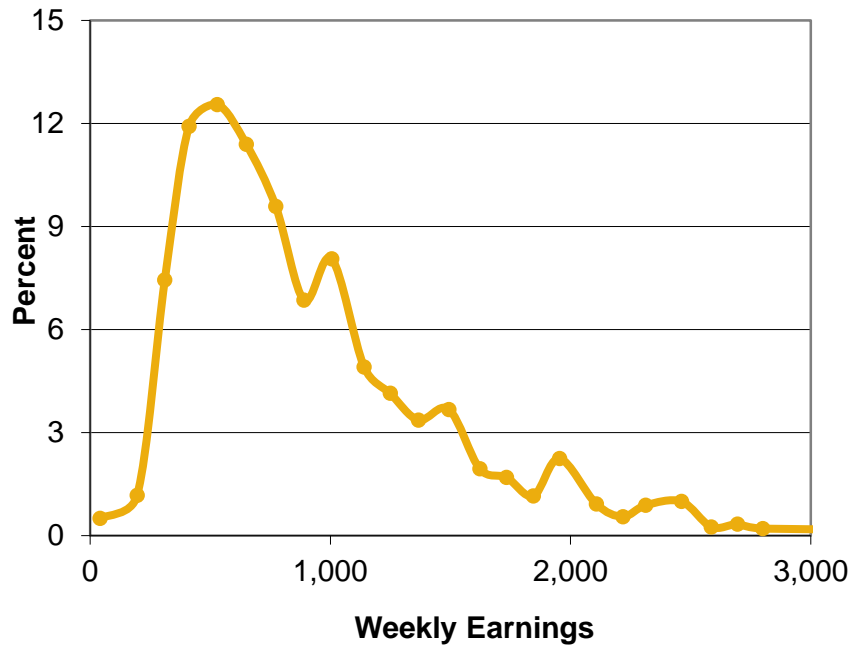
Table 5
Evaluation of the Return to Education Using 1949 as an
Instrumental Variable

	Log Wage		Upper-White-Collar Occupation (<i>Cadre</i>)	
	OLS (1)	IV (2)	OLS (3)	IV (4)
Years of higher education	.0940 (.0020)	.1400 (.0600)	.0970 (.0010)	.1030 (.0410)
Cohort trend	.0100 (.0020)	.0100 (.0200)	−.0056 (.0015)	−.0057 (.0017)
Age	.0230 (.0010)	.0230 (.0020)	.0034 (.0009)	.0033 (.0011)
<i>N</i>	11,171	11,171	11,171	11,171
<i>R</i> ²	.2536	...

SOURCE.—Labor Force Survey 1990, 1993, 1996, and 1999.

NOTE.—OLS = ordinary least squares; IV = instrumental variable. Sample is male wage earners born in 1946, 1949, or 1952. Standard deviation is in parentheses.

The Wage Distribution in the United States, 2012

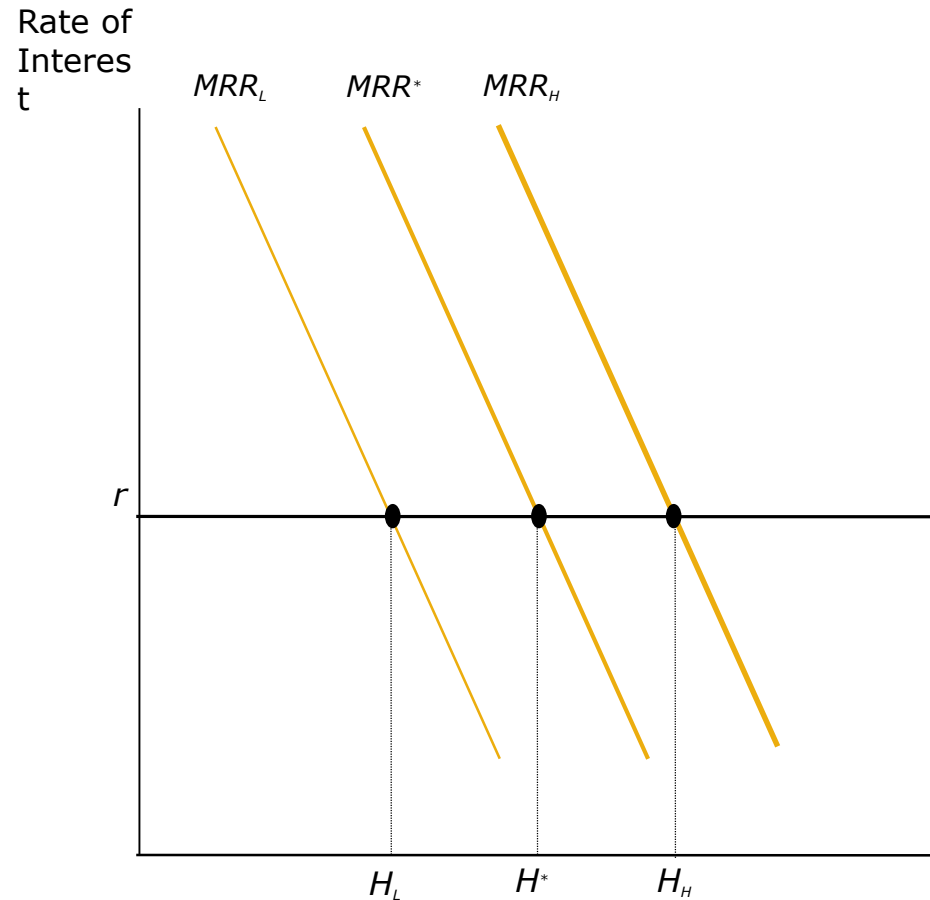


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Country	Share of Total Income Bottom 10%	Share of Total Income Top 10%
Australia	2	25
Austria	3	23
Belgium	3	28
Canada	3	25
Chile	2	42
Dominical Republic	2	38
France	3	25
Germany	3	22
Guatemala	1	43
Hungary	4	24
India	4	31
Israel	2	29
Italy	2	27
Mexico	1	41
Norway	4	23
Sweden	4	22
UK	2	29
USA	2	30

Facts About the Earnings Distribution

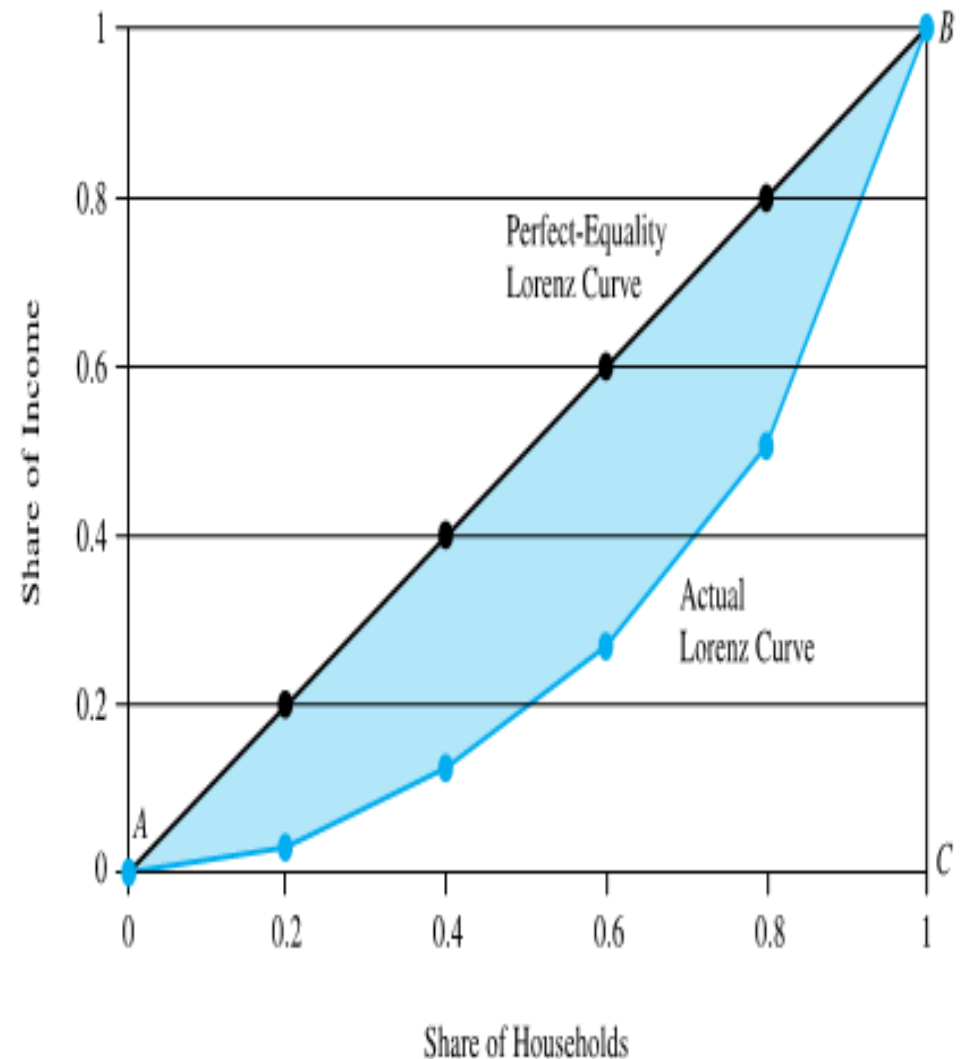
- Wage differentials exist due to:
 - Human capital investments that vary from worker to worker.
 - Age differences. (Young workers are still accumulating human capital, while older workers are collecting returns from earlier investments.)
- There is a positive correlation between ability and human capital investments, which “stretches out” wages in the population.

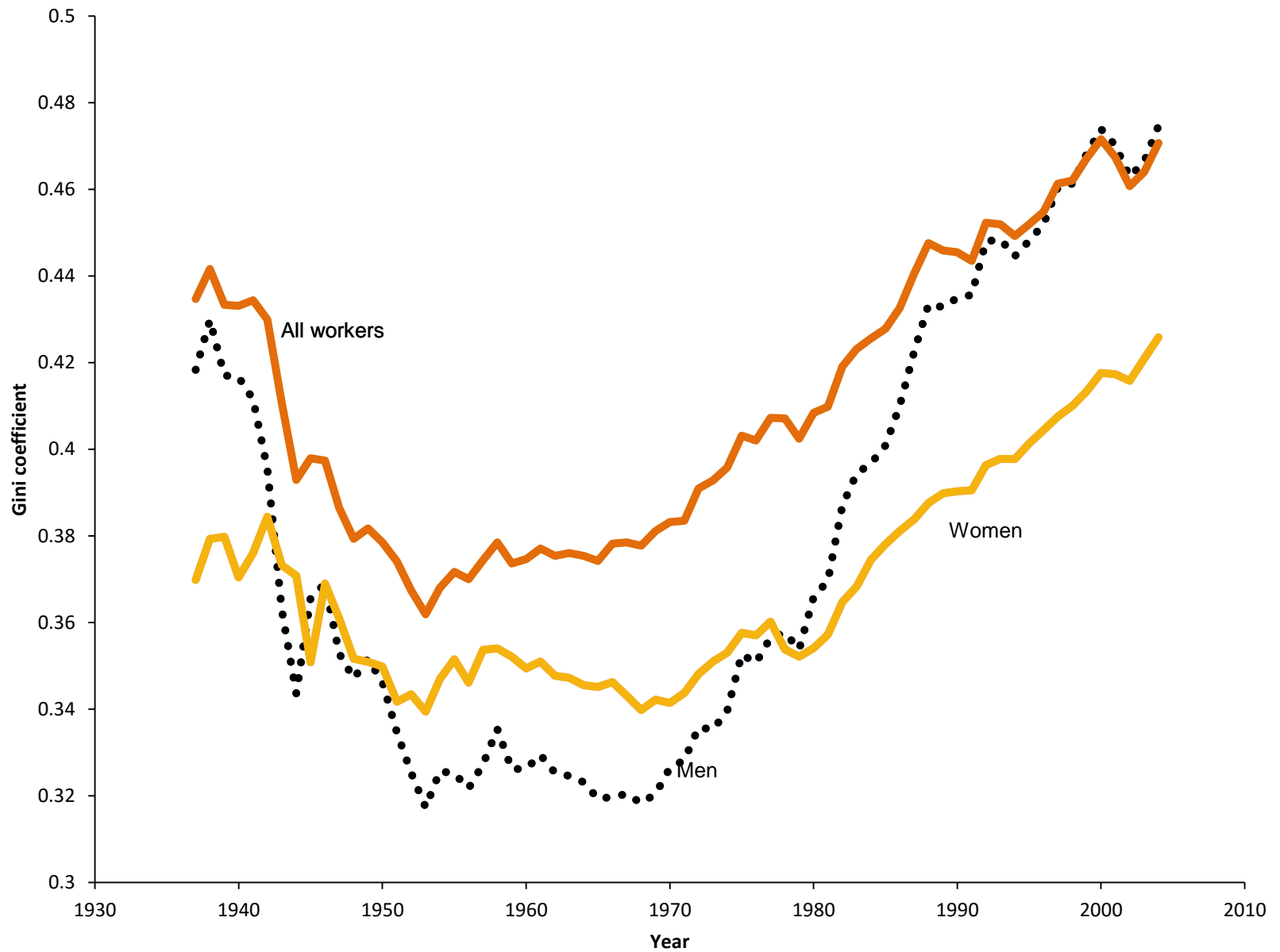


$$Gini = \frac{\text{Shaded Area}}{\text{Area } \triangle ABC}$$

$\text{Shaded Area} \uparrow \Rightarrow Gini \uparrow \Rightarrow \text{Inequality} \uparrow$
 $\text{Shaded Area} \downarrow \Rightarrow Gini \downarrow \Rightarrow \text{Inequality} \downarrow$

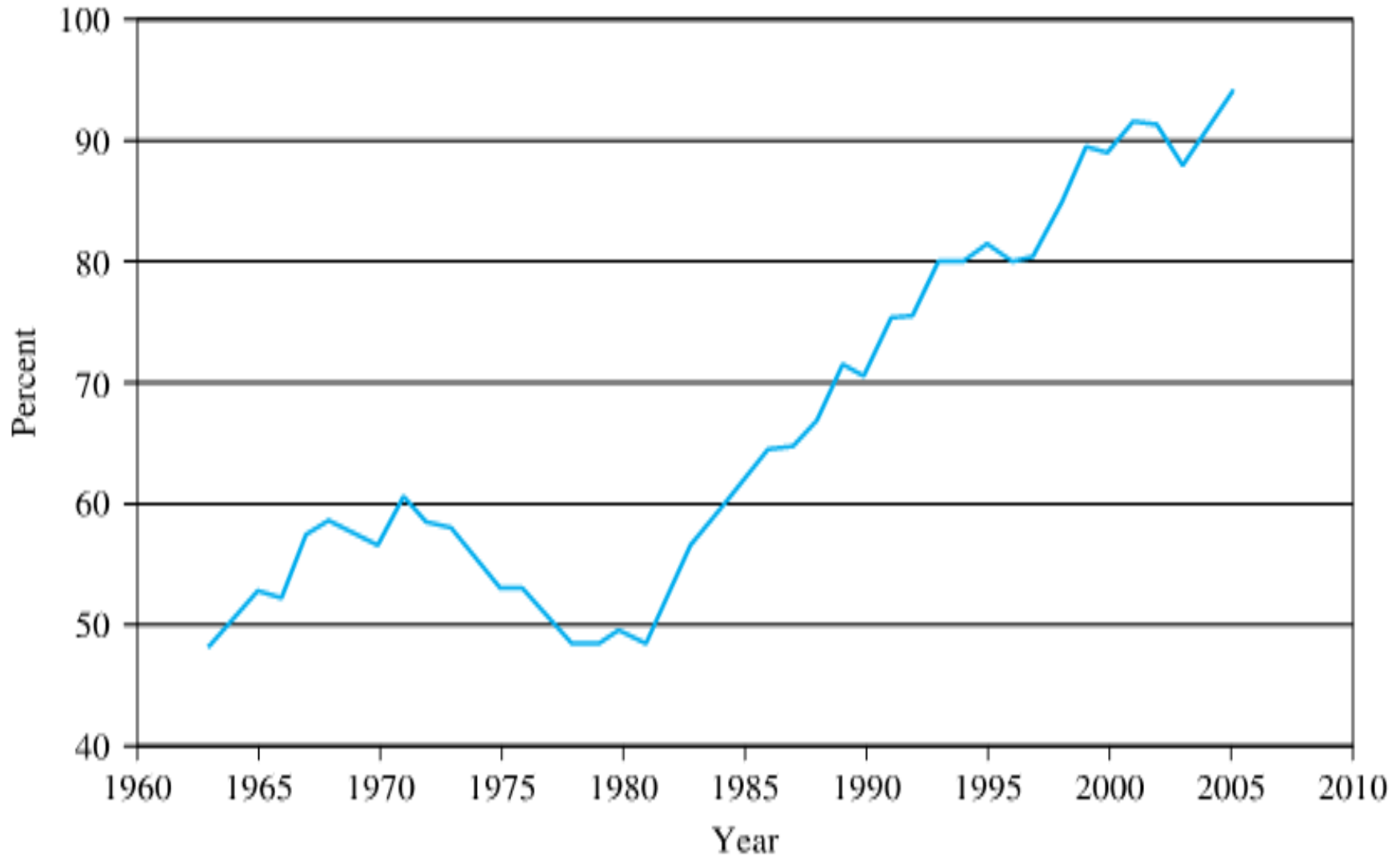
Quintile	Share of Income	Cumulative Share of Income
First	.034	.034
Second	.086	.120 = .034 + .086
Third	.147	.267 = .120 + .147
Fourth	.233	.500
Fifth	.500	1.00





Skill Premium

$$35 \times 52 \times 25 = 45.5K \quad 35 \times 52 \times 50 = 91K$$



Educational Distribution by Race

Group	Less than High	High School	Some College	Associate Degree	Bachelor's Degree	Advanced Degree
All Persons	10.6%	31.1 %	16.8%	9.8%	20.1%	11.6%
Male	11	31.6	16.6	8.8	20.0	12.0
Female	10.2	30.6	17.0	10.8	20.2	11.2
White	6.3	30.6	17.3	10.6	22.3	12.9
Black	12.0	35.9	20.4	9.7	14.2	7.8
Hispanic	31.0	33.2	13.6	7.1	10.7	4.3
Asian	8.7	20.4	9.9	7.2	30.9	23.0

Why Did Wage Inequality Increase? & Super Star Effect

- Supply shifts (more for low skill relative to high skill workers).
- International trade (manufacturing, outsourcing).
- Skill-based technological change. (higher demand for high skill workers)
- Piketty
- Institutional changes in the U.S. labor market.
 - Unions
 - Minimum Wage

Rank	Name	2010 Income
1	Oprah Winfrey	315
2	James Cameron	210
3	U2	130
4	Tyler Perry	125
5	Michael Bay	120
6	AC/DC	114
7	Tiger Woods	105
8	Steven Spielberg	100
8	Jerry Bruckheimer	100
10	George Lucas	95
11	Beyonce Knowles	87
12	Simon Cowell	80
12	Dr. Phil McGraw	80
14	Jonny Depp	75
14	Jerry Seinfeld	75

- You must be super skilled & your skills should have a large market

Inequality Across Generations

- There is a positive correlation between the skills of parents and their children.
- High-income parents typically invest more in the education of their children than do low-income parents.
- There is a tendency for income differences across families to get smaller over time (“regression toward the mean”).
- Rich kids do well in school (relative to poor kids) and are more productive - they earn more. Intergenerational Inequality increases
- Rich parents give their kids richer endowments (relative to what poor parents can give their kids) – even with no schooling (or similar schooling) for either group ; Intergenerational Inequality increases.
- Correlation between kids and parents income between 20% & 40%

Figure 1

The Great Gatsby Curve: More Inequality is Associated with Less Mobility across the Generations

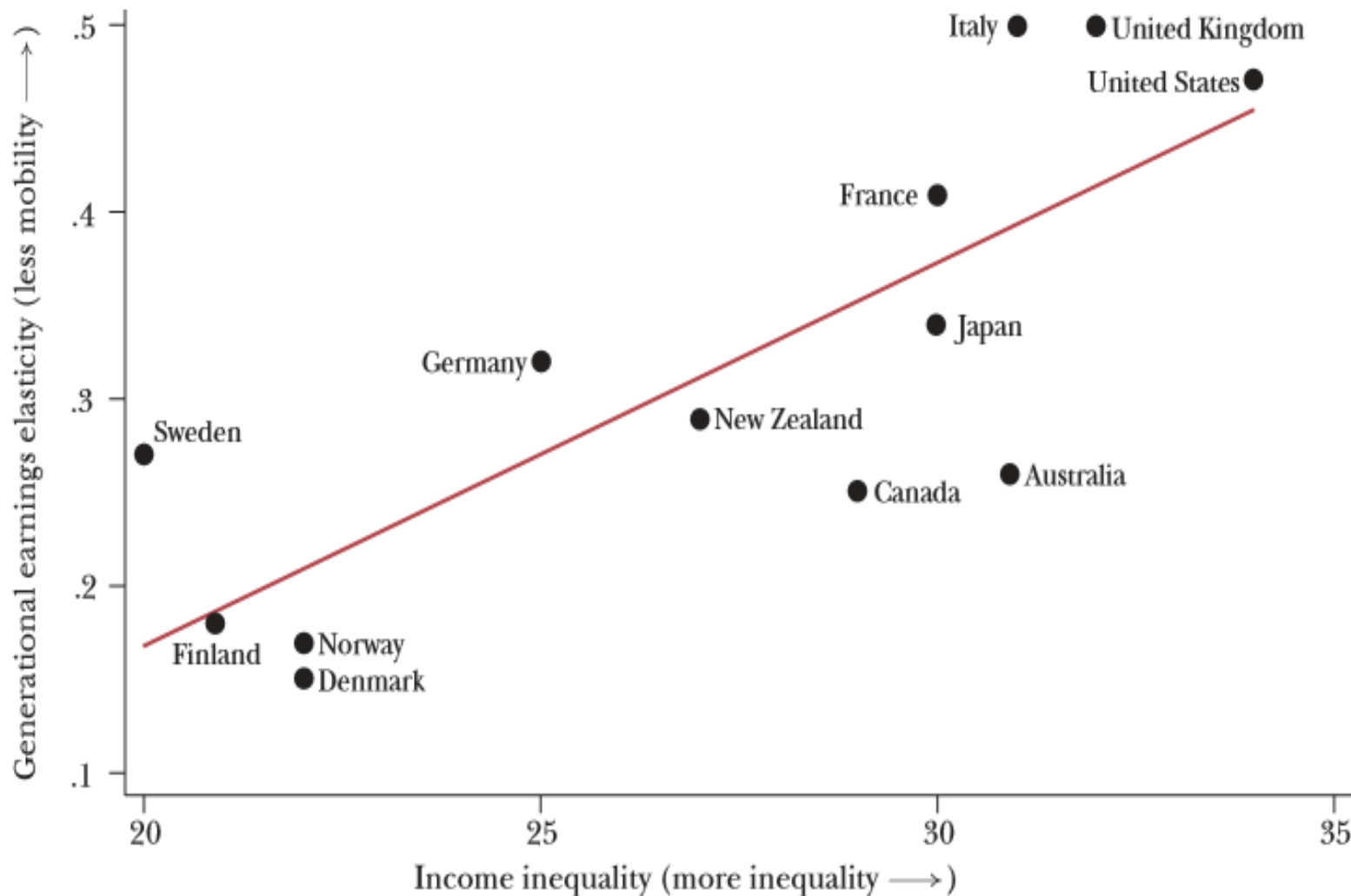
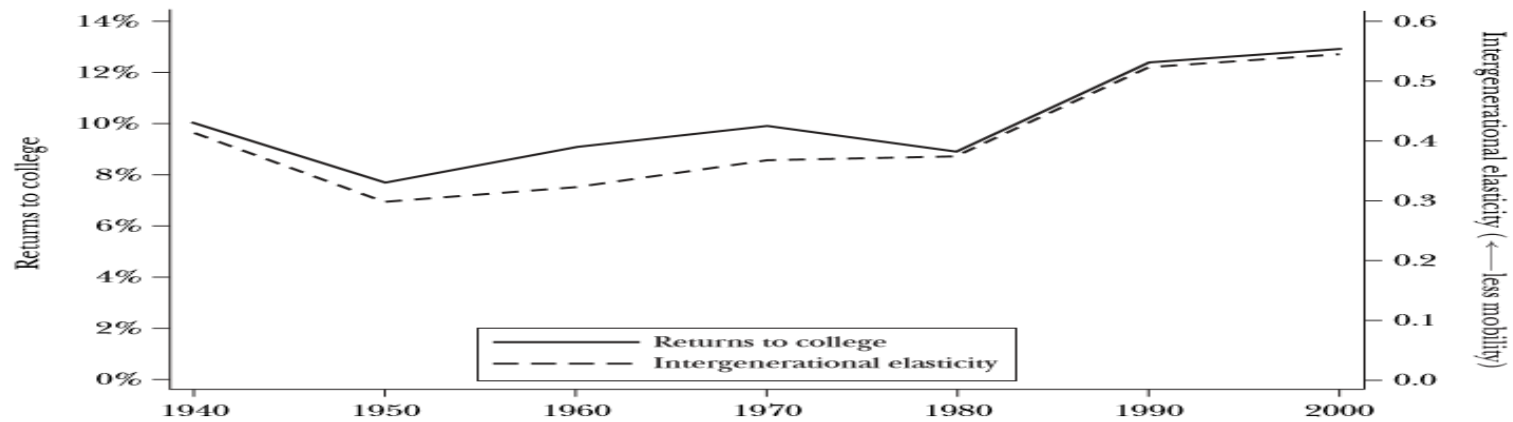


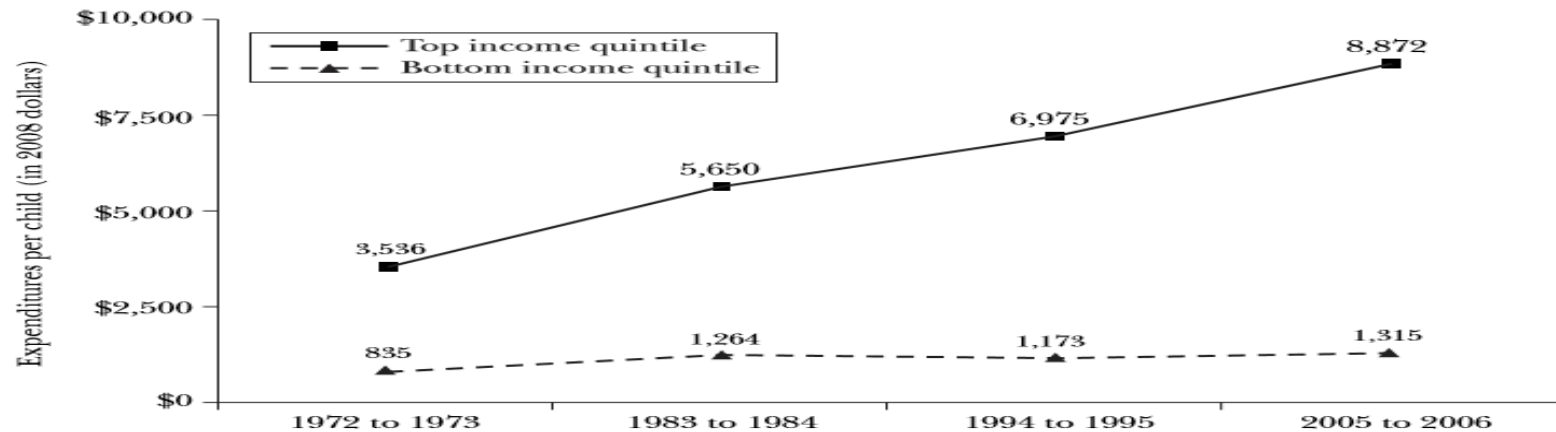
Figure 5
The Higher the Return to College, the Lower the Degree of Intergenerational Mobility: United States, 1940 to 2000



Source: Adapted by the author from Mazumder (2012, Figure 1).

Notes: Information on the returns to college and the intergenerational earnings elasticity were provided to the author by Bhashkar Mazumder. As reported in Mazumder (2012), these are respectively from Goldin and Katz (1999) and Aaronson and Mazumder (2008, table 1 column 2). The 1940 estimate of the elasticity is a projection using Aaronson and Mazumder (2008, table 2 column 2).

Figure 6
Money Matters: Higher-Income Families in the United States Have Higher Enrichment Expenditures on Their Children

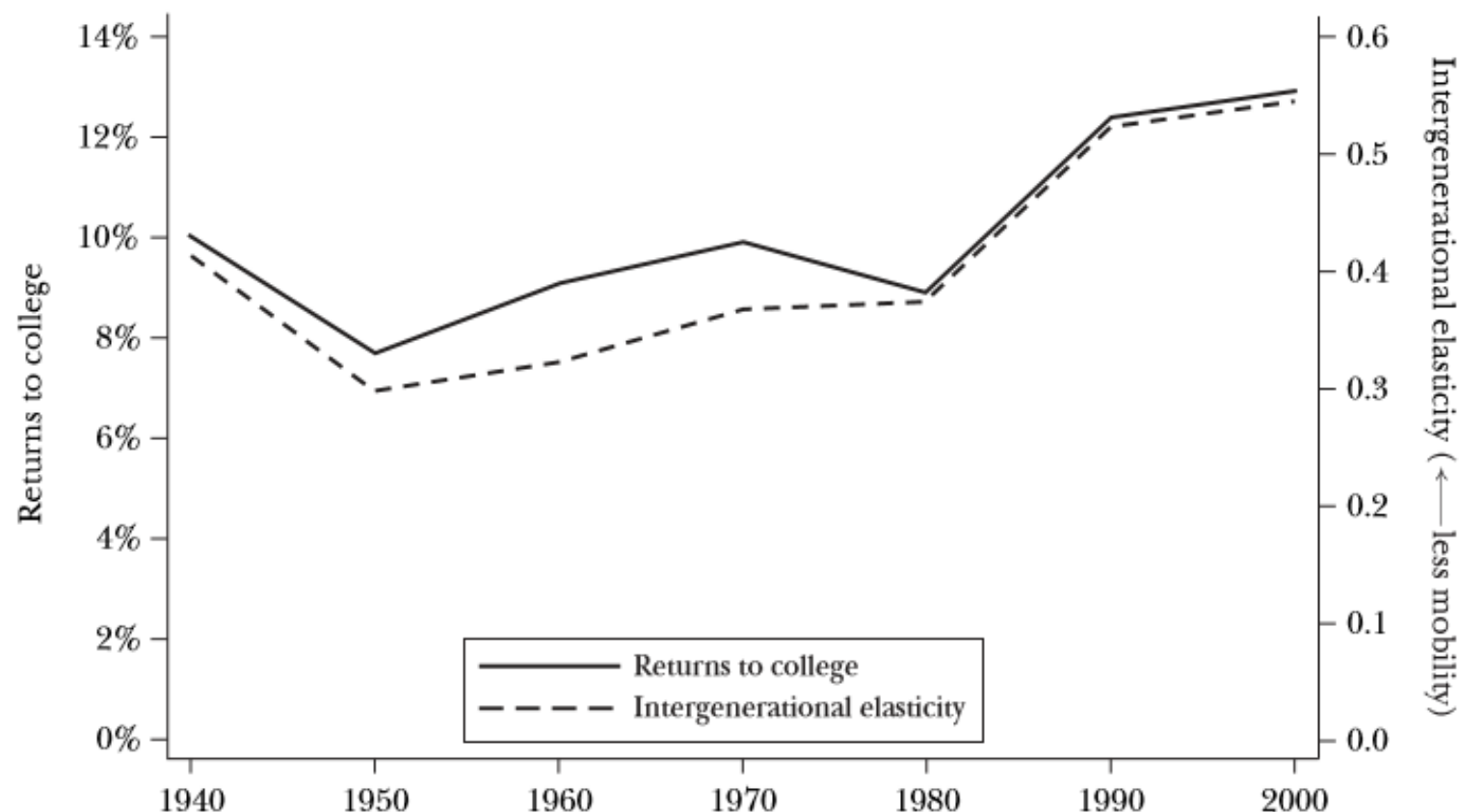


Source: Duncan, Greg J. and Richard J. Murnane. Figure 1.6 “Enrichment Expenditures on Children, 1972–2006.” In *Whither Opportunity*, edited by Greg J. Duncan and Richard J. Murnane, © 2011 Russell Sage Foundation, 112 East 64th Street, New York, NY 10065. Reprinted with permission.

Note: “Enrichment expenditures” refers to the amount of money families spend per child on books, computers, high-quality child care, summer camps, private schooling, and other things that promote the capabilities of their children.

Figure 5

The Higher the Return to College, the Lower the Degree of Intergenerational Mobility: United States, 1940 to 2000

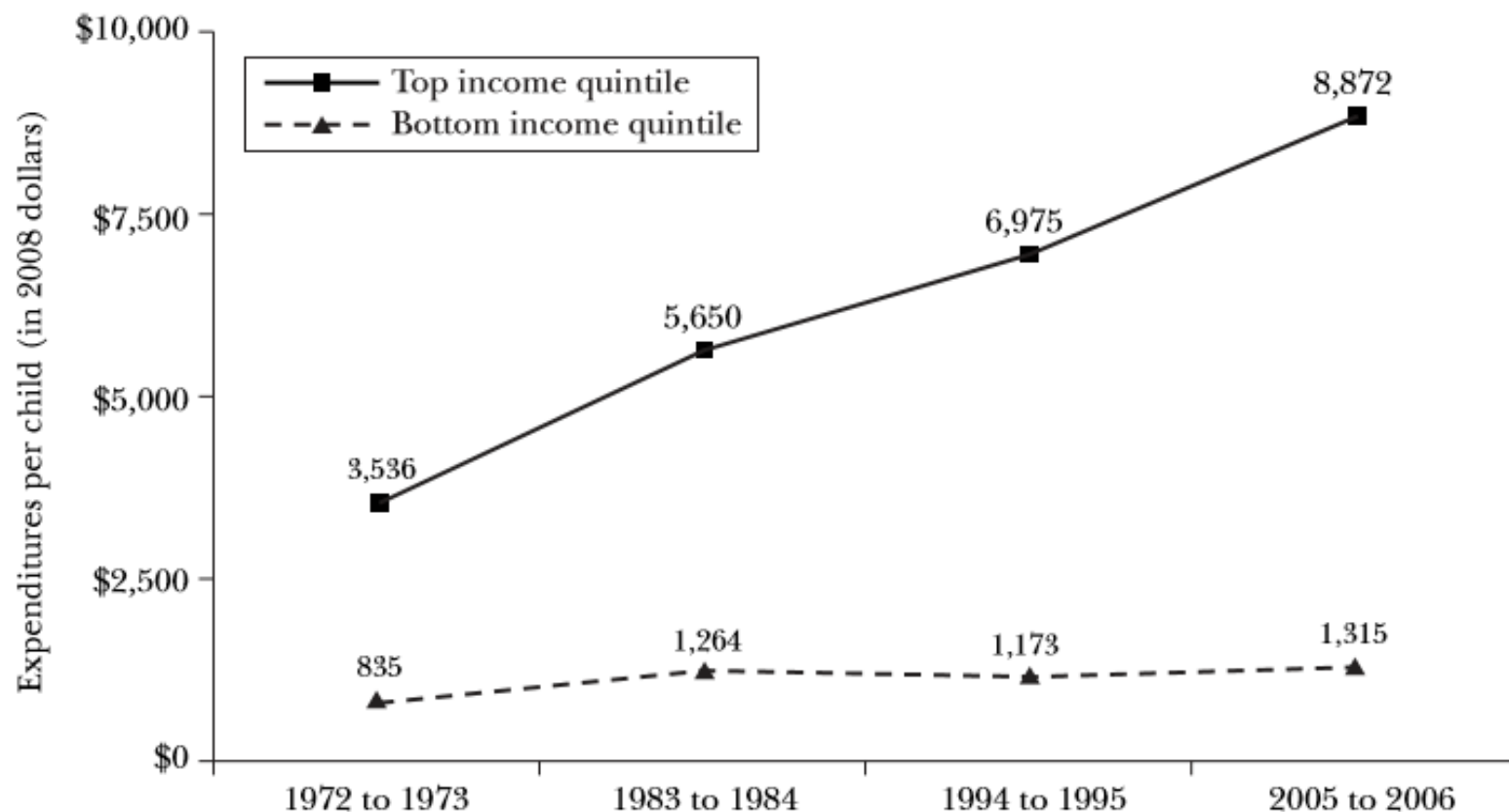


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Figure 6

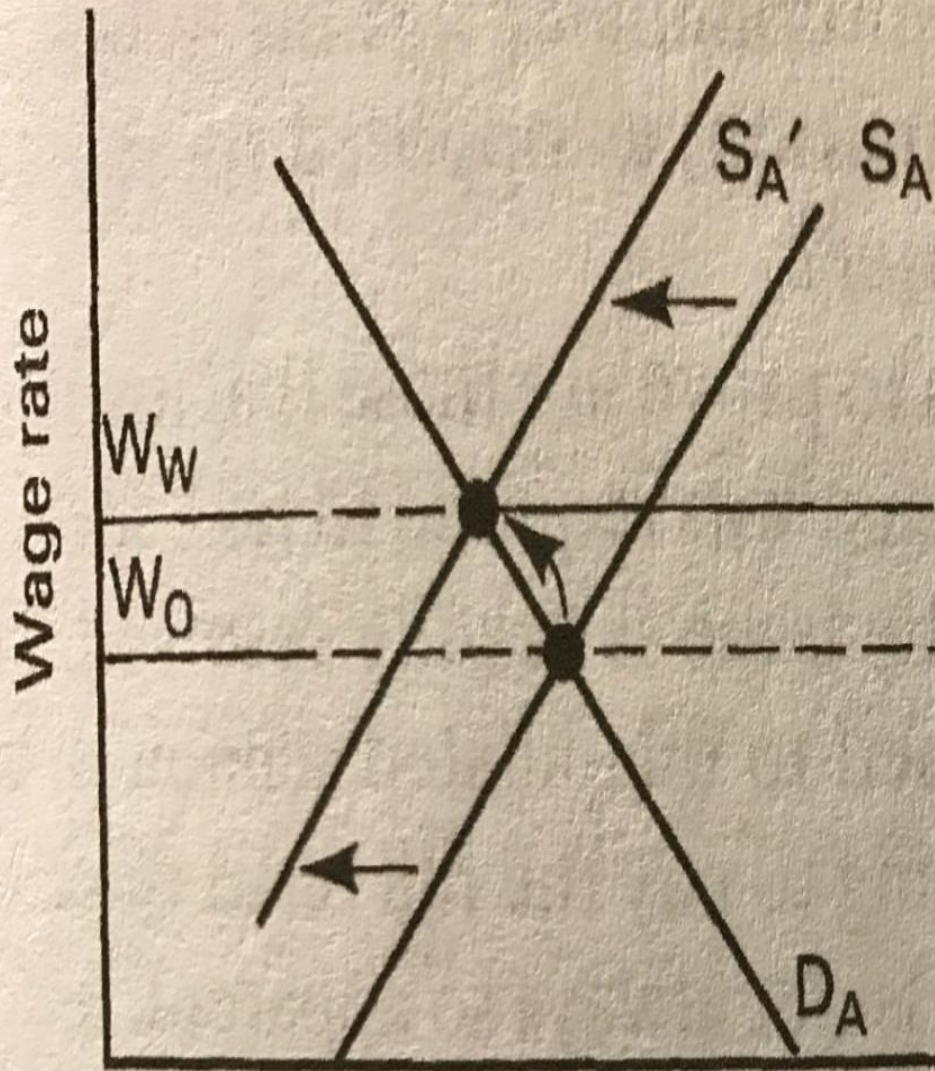
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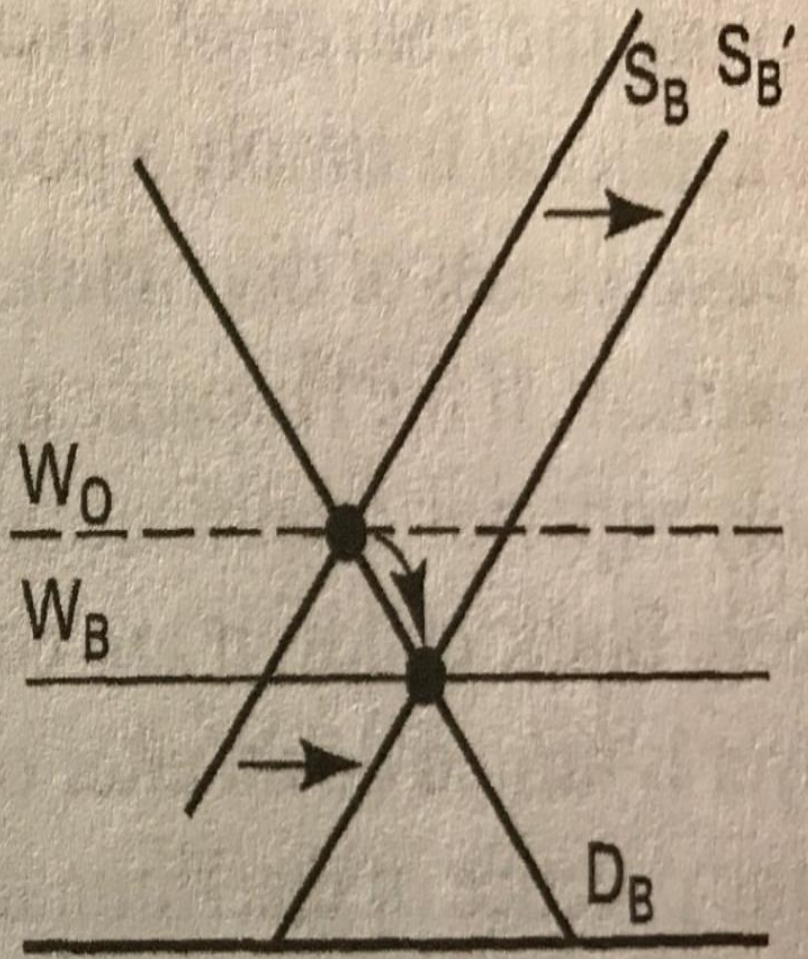
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Market A



Number of workers

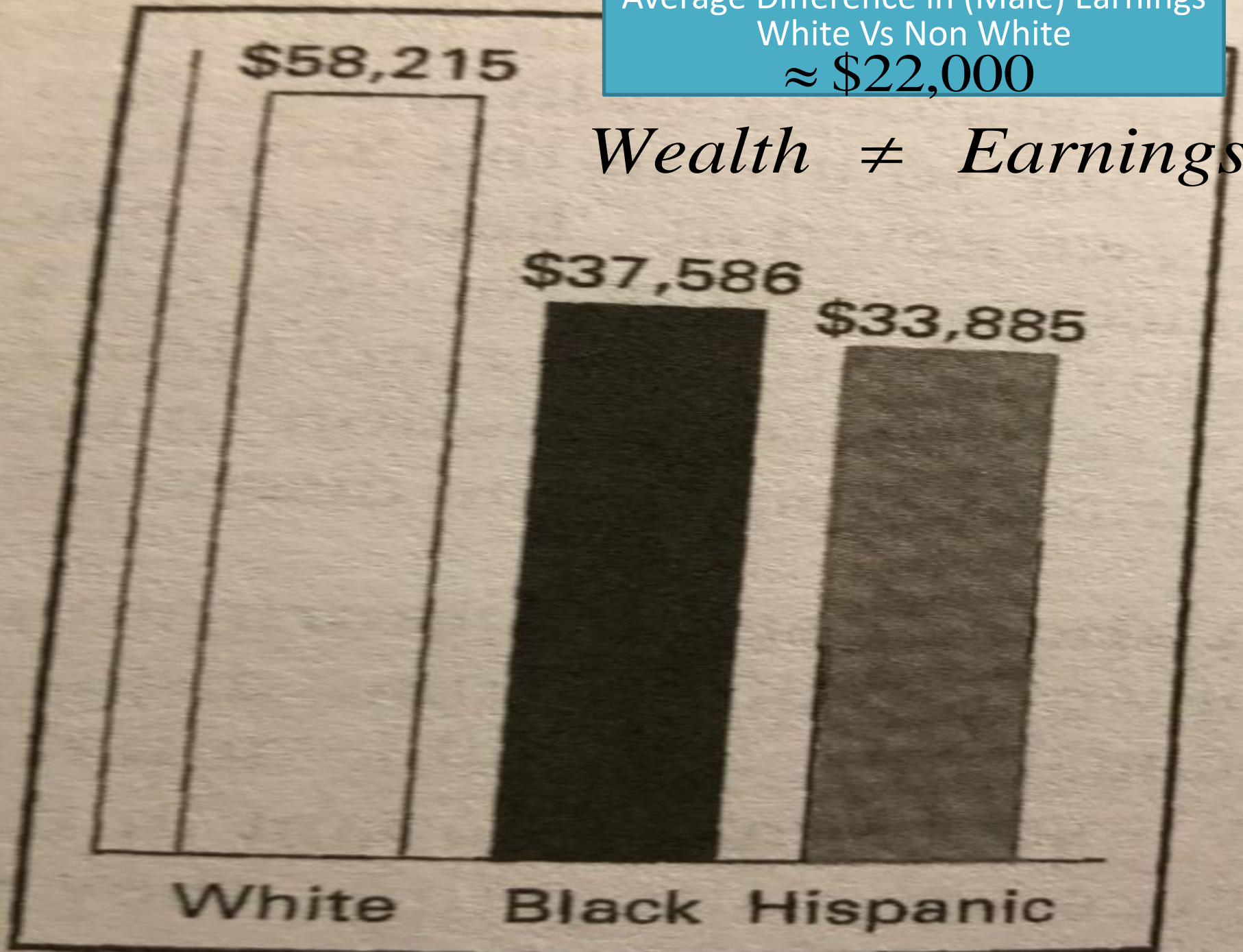
Market B



Number of workers

Average Difference in (Male) Earnings
White Vs Non White
 $\approx \$22,000$

Wealth \neq Earnings



Raw differences are larger than adjusted differences

TABLE 12.1

<i>Education</i>	<i>Average Earnings of White Workers</i>	<i>Earnings as Percent of White Average, for</i>	
		<i>Black Workers</i>	<i>Hispanic Workers</i>
High school dropout	\$31,451	67.5	78.6
High school graduate	\$40,893	73.3	78.4
Some college	\$48,015	76.3	77.0
College graduate	\$73,198	72.5	76.6

Source: U.S. Bureau of the Census (2005 data for males 25 years old and older).

Kenneth Couch

TABLE 12.2 Unemployment of Male Workers, by Race

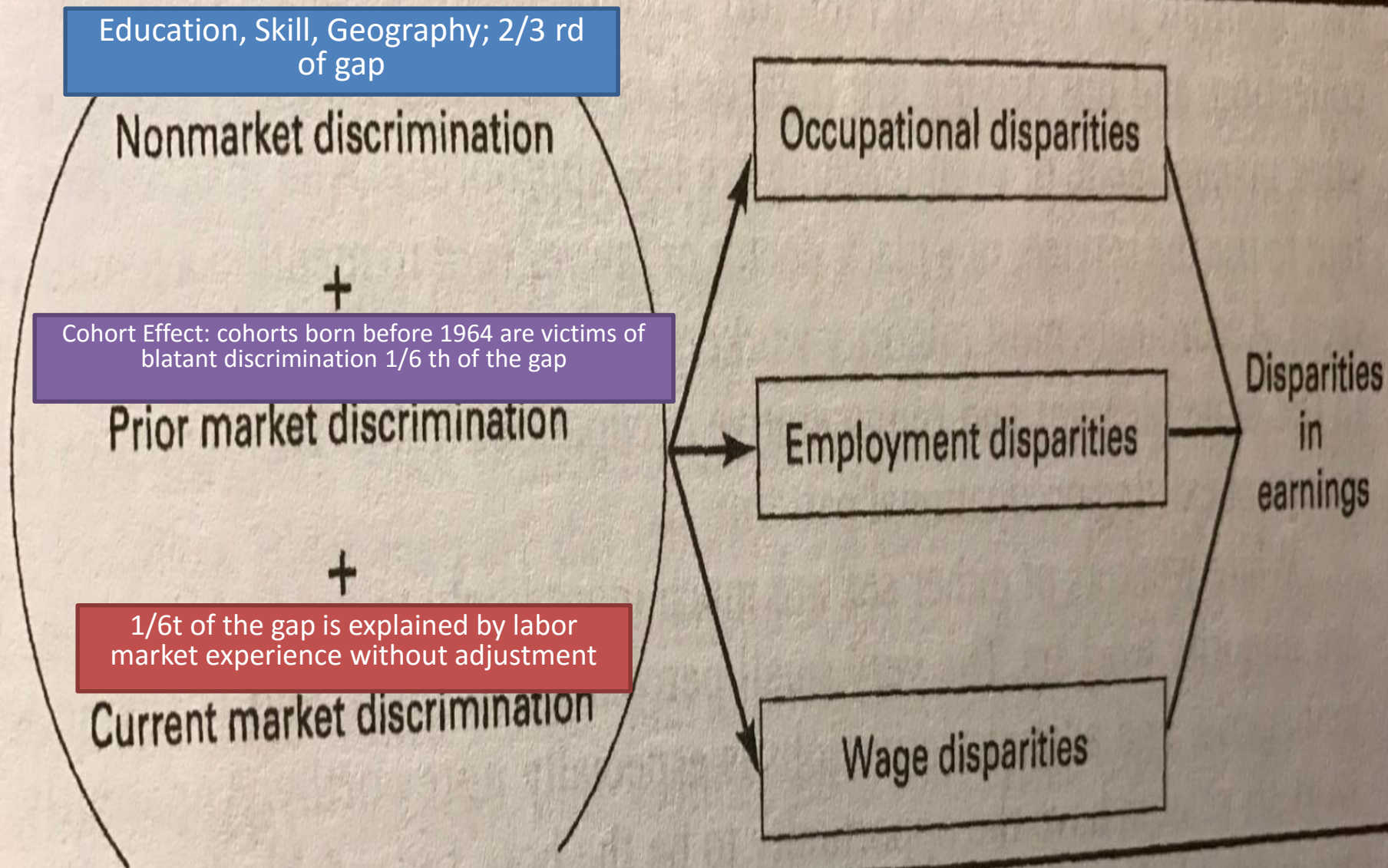
	<i>Whites</i>	<i>Blacks</i>	<i>Hispanics</i>
Unemployment rate (percent)	4.4	10.5	5.4
Average duration of unemployment (weeks)	17.6	22.6	16.0

Source: U.S. Bureau of Labor Statistics (2005 averages).

Non White: Less Educated, Less Experienced , Hired Last, Fired Fast, Unequal Training Opportunities
Often Non Whites in the most menial jobs in an organization – factors other than discrimination responsible for this:
NETWORKING, BARGAINING

FIGURE 12.3 The Sources of Earnings Disparities

Proportions May NOT
be fixed across time



Employer Discrimination

Employee Discrimination

Consumer Discrimination

**Statistical Discrimination: Asymmetric
Information about worker quality**

Measuring Discrimination: Oaxaca Decomposition

- Difference in Average wages = Average Wages of Majority (Male) – Average Wages of Minority (Female)
- Difference in Average wages = Discrimination + Skill Difference

$$\Delta \bar{w} = \bar{w}_M - \bar{w}_F \quad \bar{w}_M = \alpha_M + \beta_M \bar{s}_M \quad \bar{w}_F = \alpha_F + \beta_F \bar{s}_F$$

$$\Delta w = \bar{w}_M - \bar{w}_F = (\alpha_M - \alpha_F) + \beta_M \bar{s}_M - \beta_F \bar{s}_F$$

$$\Delta w = (\alpha_M - \alpha_F) + \beta_M \bar{s}_M - \beta_F \bar{s}_F - \beta_M \bar{s}_F + \beta_M \bar{s}_F$$

$$\Delta w = (\alpha_M - \alpha_F) + (\beta_M - \beta_F) \bar{s}_F + \beta_M (\bar{s}_M - \bar{s}_F)$$

The Oaxaca Decomposition of the Black-White Wage Differential, 1995

	Controls for Differences in Education, Age, Sex, and Region of Residence	Controls for Differences in Education, Age, Sex, Region, and Occupation and Industry
Raw log wage differential	-0.211	-0.211
Due to differences in skills	-0.082	-0.144
Due to discrimination	-0.134	-0.098

Source: Joseph G. Altonji and Rebecca M. Blank, "Race and Gender in the Labor Market," in Orley Ashenfelter and David Card, editors, *Handbook of Labor Economics*, vol. 3C, Amsterdam: Elsevier, 1999, Table 5. The log wage differential between any two groups can be interpreted as being approximately equal to the percentage wage differential between the groups.