# Before lecture: Reflect for a moment…

- What is the ratio of female undergraduate economics majors today? How has this changed since 1990s?

- What is the gender wage ratio today? In 1960?

- What is the most important observed factor explaining changes over the last 50 years?
  - Education, experience, occupation/industry choice

- Where does the US stand in terms of the gender wage gap? Lower or higher in 2010 than Japan, Sweden, France?

About Me: Current Projects

- Research interests: Labor, economic history, demography

- 1. Quantifying the long-run effects of local War on Poverty programs using SSA data linked to 2000-14 Census-ACS
  - Food Stamps (SNAP), Head Start, Community Health Centers, etc.
- 2. LIFE-M: Longitudinal Intergenerational Family Electronic Micro-Database
  - Links millions of individuals from birth to death across four generations of families
  - Outcomes: economic (links to 1940 census), demographic, health (now only longevity)
  - New descriptive work on assortative matching, intergenerational mobility, long-run statistics on racial disparities

Lecture 1:
The Gender Gap, 1960-2010

July 19, 2016

Martha J. Bailey
University of Michigan
NBER
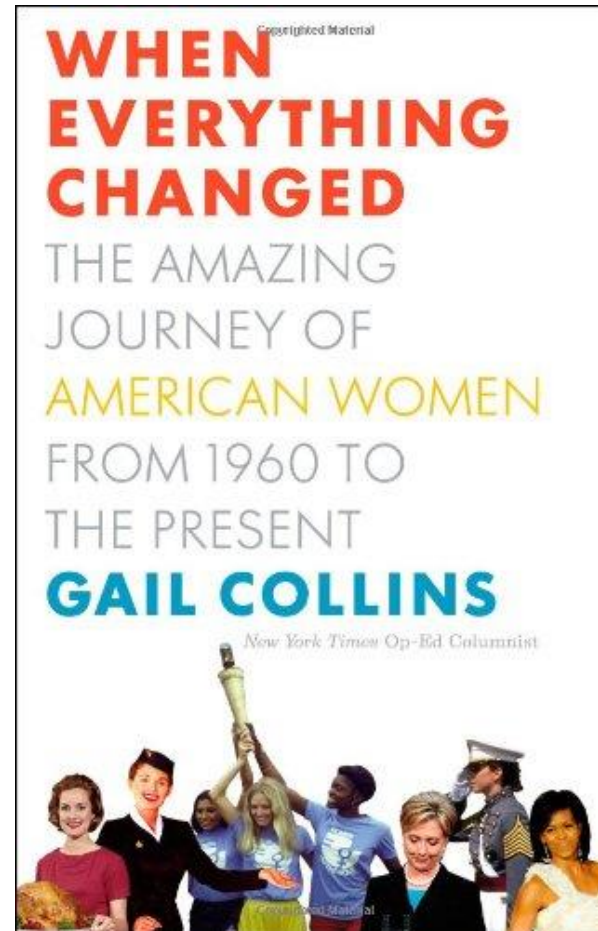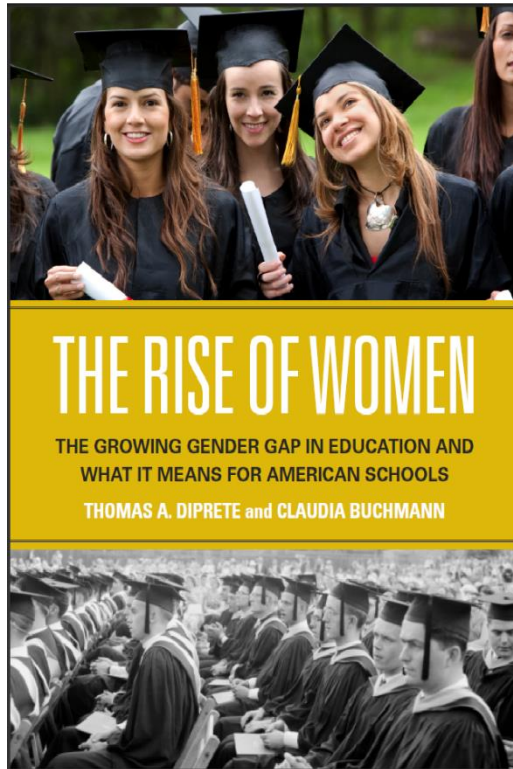
"The Grand Gender Convergence"
-Claudia Goldin's Ely Lecture

"…Of the many advances in society and the economy in the last century, the converging roles of men and women are among the grandest. A narrowing has occurred between men and women in labor force participation, paid hours of work, hours of work at home, life-time labor force experience, occupations, college majors, and education, where there has been an overtaking by females."

~Claudia Goldin (2014)

Greater Equality in Work and Family

- In 1950, women comprised less than 33 percent of US employees; today this number is almost 50 percent (Tossi 2002; BLS 2014)

- In 1960, women earned around 60 percent of what men did; today this number is around 80 percent (Blau and Kahn 2014)

- In 1960, men earned the majority of all college degrees; today women do (Goldin et al. 2006; DiPrete and Buchman 2013)

- Today the typical American mother works and the typical American dad spends twice as much time on childcare as he did in 1965 (Bailey and DiPrete 2015)

Greater Equality in Work and Family

- 2007 Nancy Pelosi became the first female Speaker of the U.S. House of Representatives

- 2015: Janet Yellen becomes the first chairwoman of the Federal Reserve Board of Governors

- 2016: Two female presidential candidates: Carly Fiorina and Hilary Clinton

Less Progress in Other Dimensions

- American women's longevity has stopped increasing at the rate of women in other developed countries (Crimmins, Preston, and Cohen 2011)

- American women report being less happy today than they were 50 years ago, and the gender gap (which favors women) has shrunk (Stevenson and Wolfers 2009; Hout 2016)

Less Progress in Other Dimensions

- Gender pay gaps at the top remain large (Bertrand and Hallock 2001; Bertrand et al. 2010; Guvenen, Kaplan and Song 2014)

- Women make up less than 10% of corporate boards and less than 2% of CEOs (Matsa and Miller 2011)

- Odds that a woman earns a physical science, engineering, or economics major have barely changed in 20 years (Mann and DiPrete 2013; Goldin 2015)

Economics is not a "STEM", but…

- Three men for everyone one woman economics major in the US
  - 2:1 at elite institutions
  - 2.6:1 at top liberal arts colleges

- Economics has grown as a popular major for men and women, but the male to female ratio of econ majors has stayed nearly constant as a share of BAs for the past 20 years
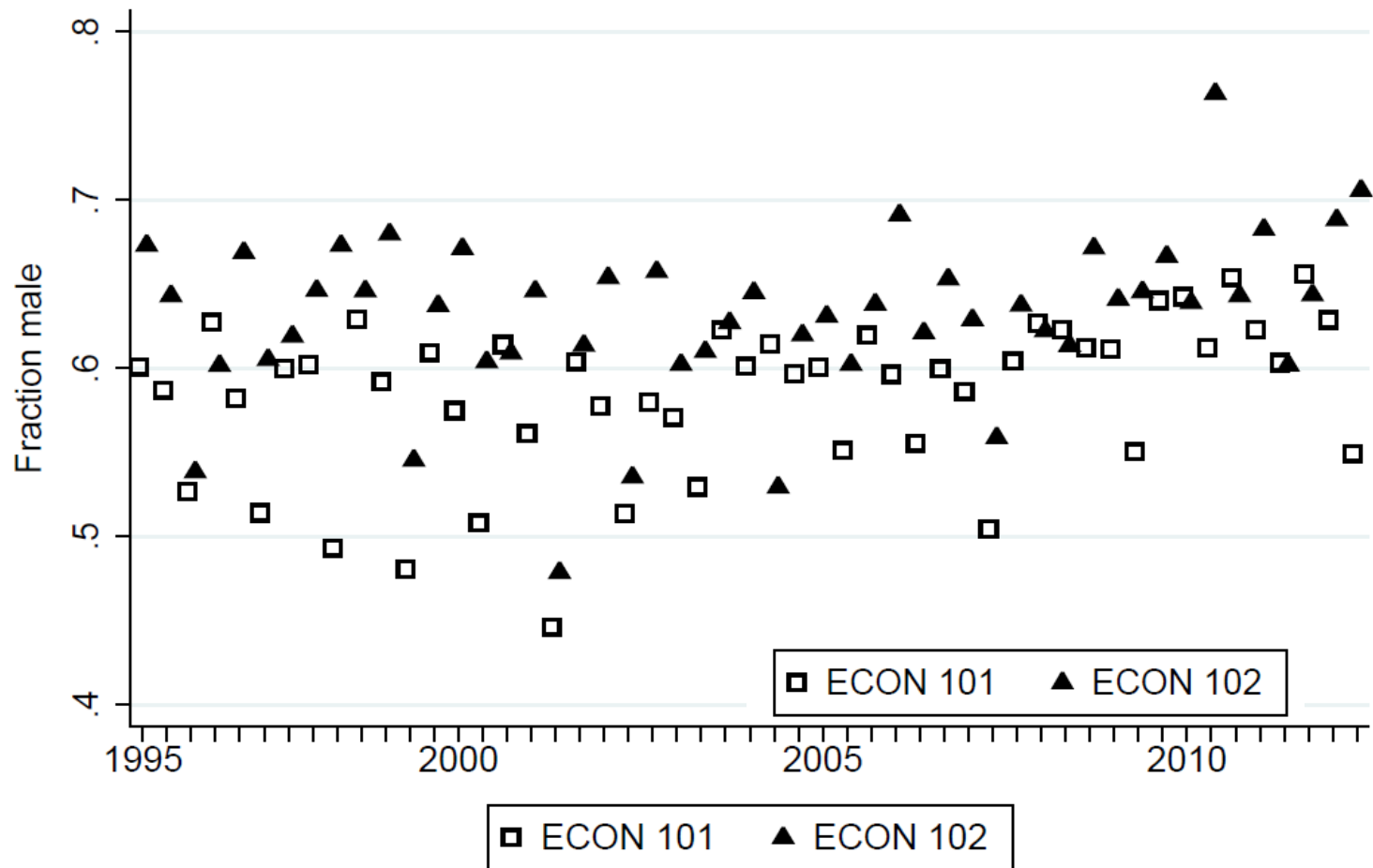
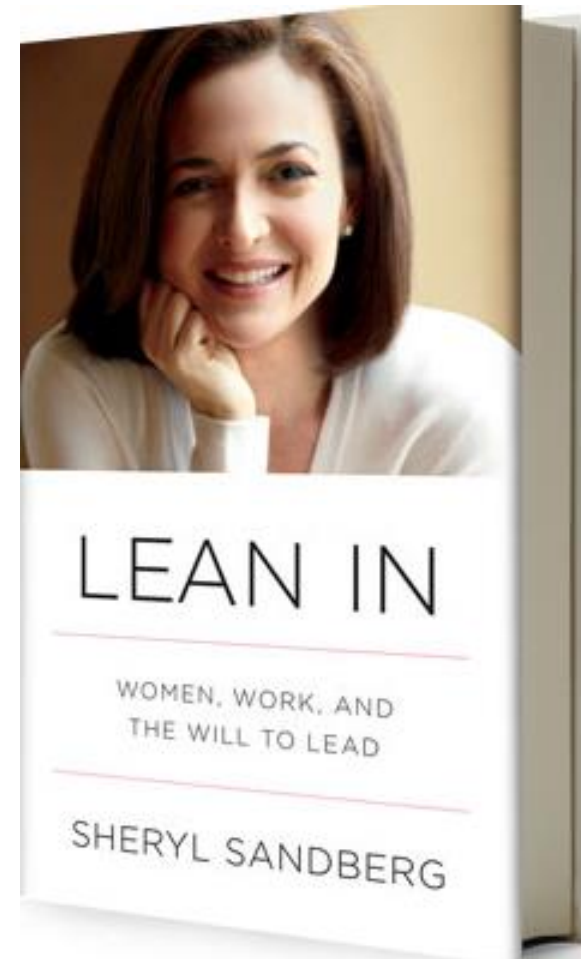# MALE/FEMALE ECON MAJORS, AS A FRACTION OF BAS
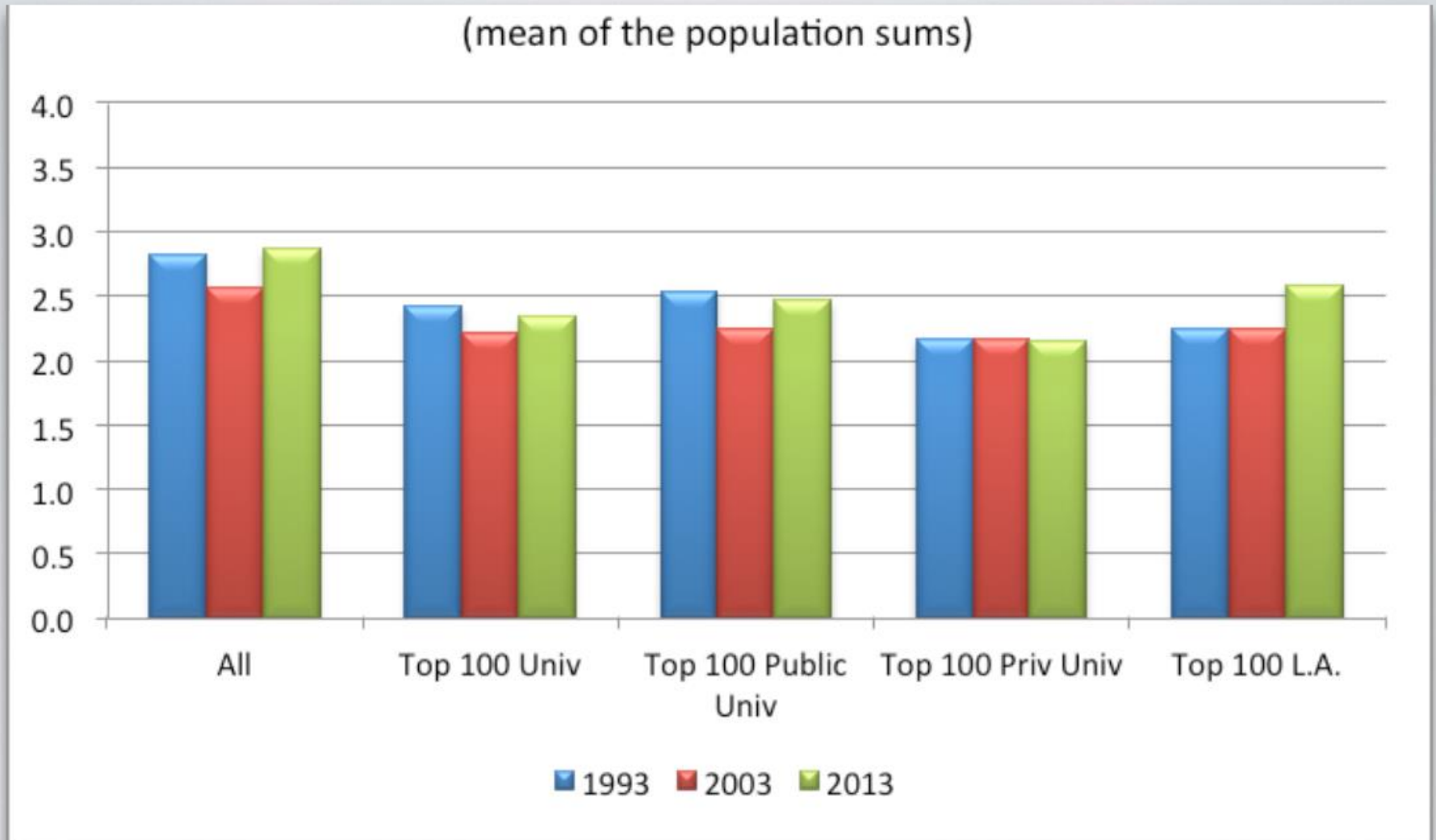
Source: Goldin (2015)

Fraction of Male among ECON 101/102 Enrollees by Term at UM, 1995-2014

# Many Rationales and Recommended Remedies

Goals of Two Lectures

- Lecture 1: Provide an overview of gender inequality in U.S.
  - Long-run trends in key labor-market indicators

- Lecture 2: Discuss potential explanations for convergence
  - The very old nature-nurture debate
  - The role of maternal gestation and childbearing
  - The impact of different policies

- Citations for background reading and the sources of figures and analyses are cited on the reading list
  (cannot review all work, so many omissions)

Gender Gap in Wage Earnings

- Ideally measure "compensation" per fixed unit effort
- Surveys typically measure "annual" earnings and retrospective accounts of weeks or usual hours
  - Unit is set to be weeks or annual
  - Compensation measured by dividing by weeks/hours

- Sample: Full-time, civilian workers who have completed their educations, have not retired (i.e., ages 25-64), and are not self-employed.
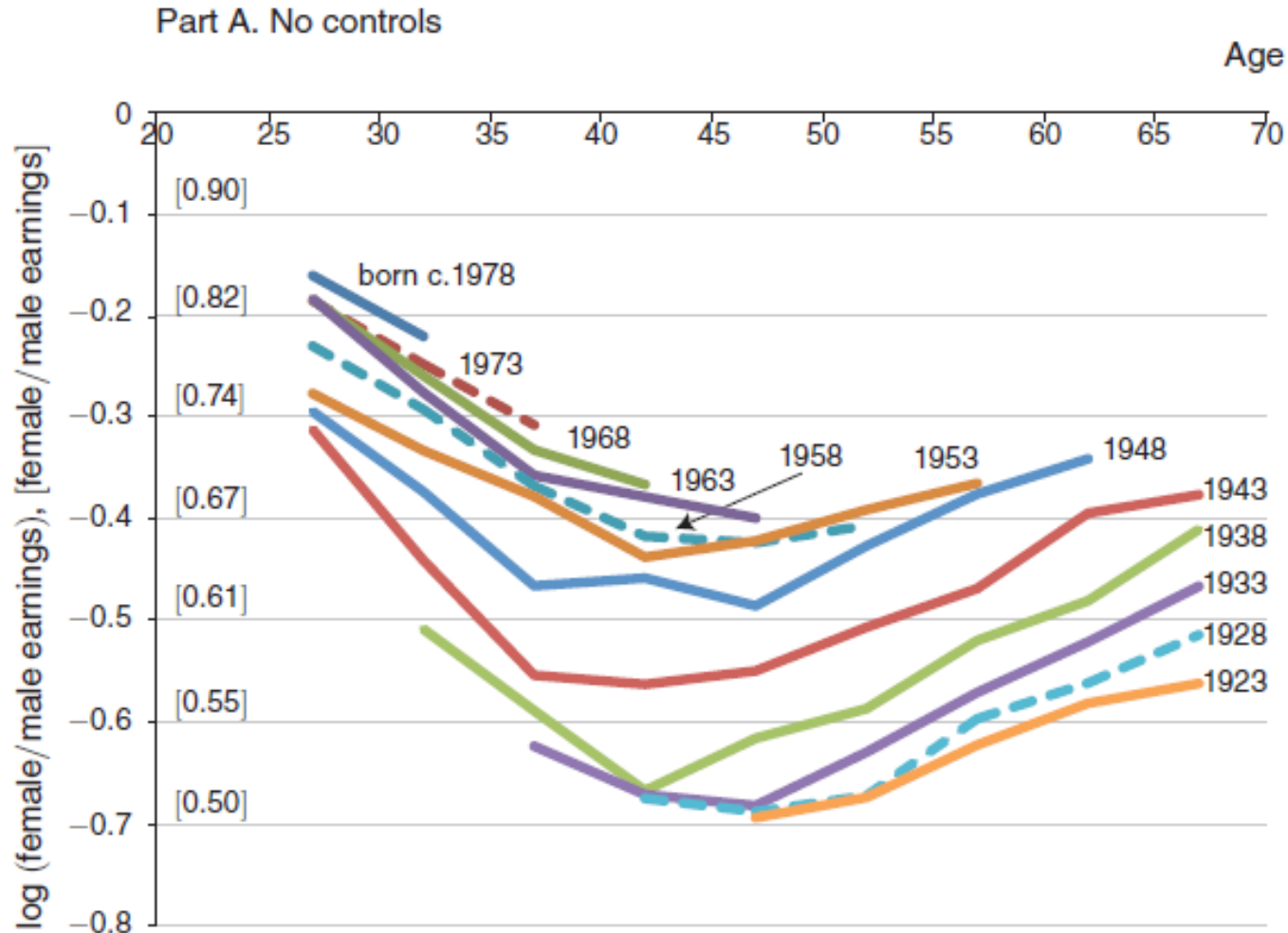
Gender Earnings Ratios for Full-Time Workers, 1955-2014
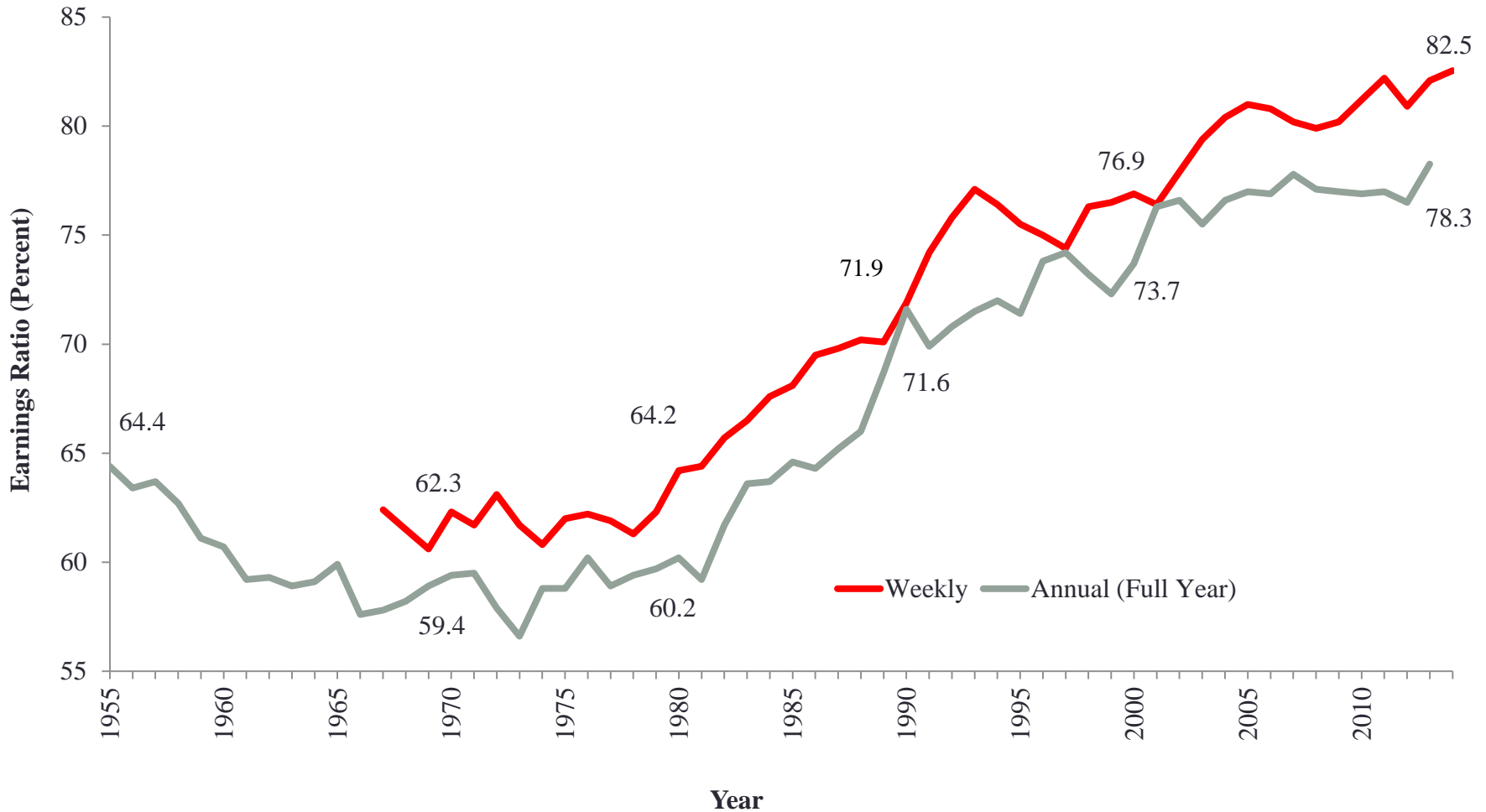
Key Points

- Continuous progress, with ratio increasing from around 60 percent in 1960s to 80 percent today

- 1980s are the fastest decade of convergence

- Convergence has slowed since 1990

Gender Gap by Cohort and Age

Part A. No controls

Source: Goldin (2014)

Key Points

- Continuous progress, with ratio increasing from around 60 percent in 1960s to 80 percent today

- 1980s are the fastest decade of convergence

- Convergence has slowed since 1990

- Earnings gaps have narrowed for each successive cohort

- Earnings gaps grow during the first two decades of work (even within occupations where training identical)

2009 Gender Pay Ratio

Employment and median usual weekly earnings of women, by industry, 2009
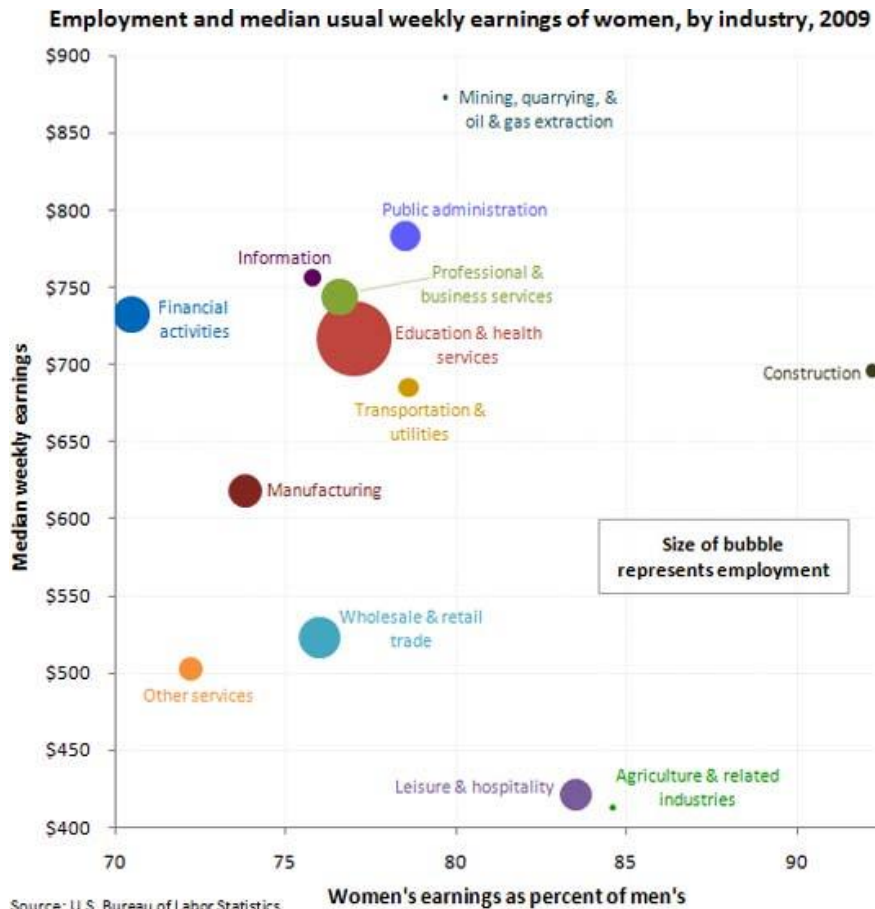
Source: U.S. Bureau of Labor Statistics

Each dot represents an industry

Dot size shows how many people the industry employs

Dots further to the right indicate smaller gaps (greater parity)

Construction: Gender ratio is 92%

Dots higher up indicate higher paying industries for women

Mining etc: Median earnings of women is $873/Gender ratio is 79%

2009 Gender Pay Gap

- By State:

http://economix.blogs.nytimes.com/2010/07/13/the-gender-pay-gap-by-state/

- By Industry:

http://economix.blogs.nytimes.com/2011/02/17/the-gender-pay-gap-by-industry/

Gender Gap
Cross-Country Comparison, 2010

Source: Barbara Beck, "Closing the Gap," *The Economist*, 2011.

Convergence by Skill Group

Table 1: Unadjusted Female/Male Log Hourly Wage Ratios, Full Time Workers

Year	Mean	10th Percentile	50th Percentile	90th Percentile
Panel Study of Income Dynamic (PSID)				
1980	62.1%	64.8%	60.1%	62.4%
1989	74.0%	76.3%	72.4%	74.6%
1998	77.2%	80.3%	79.8%	73.8%
2010	79.3%	81.5%	82.4%	73.9%
March Current Populations Survey (CPS)				
1980	63.5%	68.7%	61.9%	64.3%
1989	72.4%	78.1%	72.2%	71.4%
1998	77.1%	81.3%	76.2%	76.1%
2010	82.3%	87.6%	82.2%	76.6%

Notes: Sample includes nonfarm wage and salary workers age 25-64 with at least 26 weeks of employment. Entries are exp(D), where D is the female mean log wage, 10th, 50th or 90th percentile log wage minus the corresponding male log wage.

Source: Blau and Kahn (2015)

Key points:
1. 1980: gender ratio similar at different points in the distribution
2. Gender ratio at the top has not changed as much as gender ratio at the bottom
3. Gender ratio at the top has changed very little since since 1990

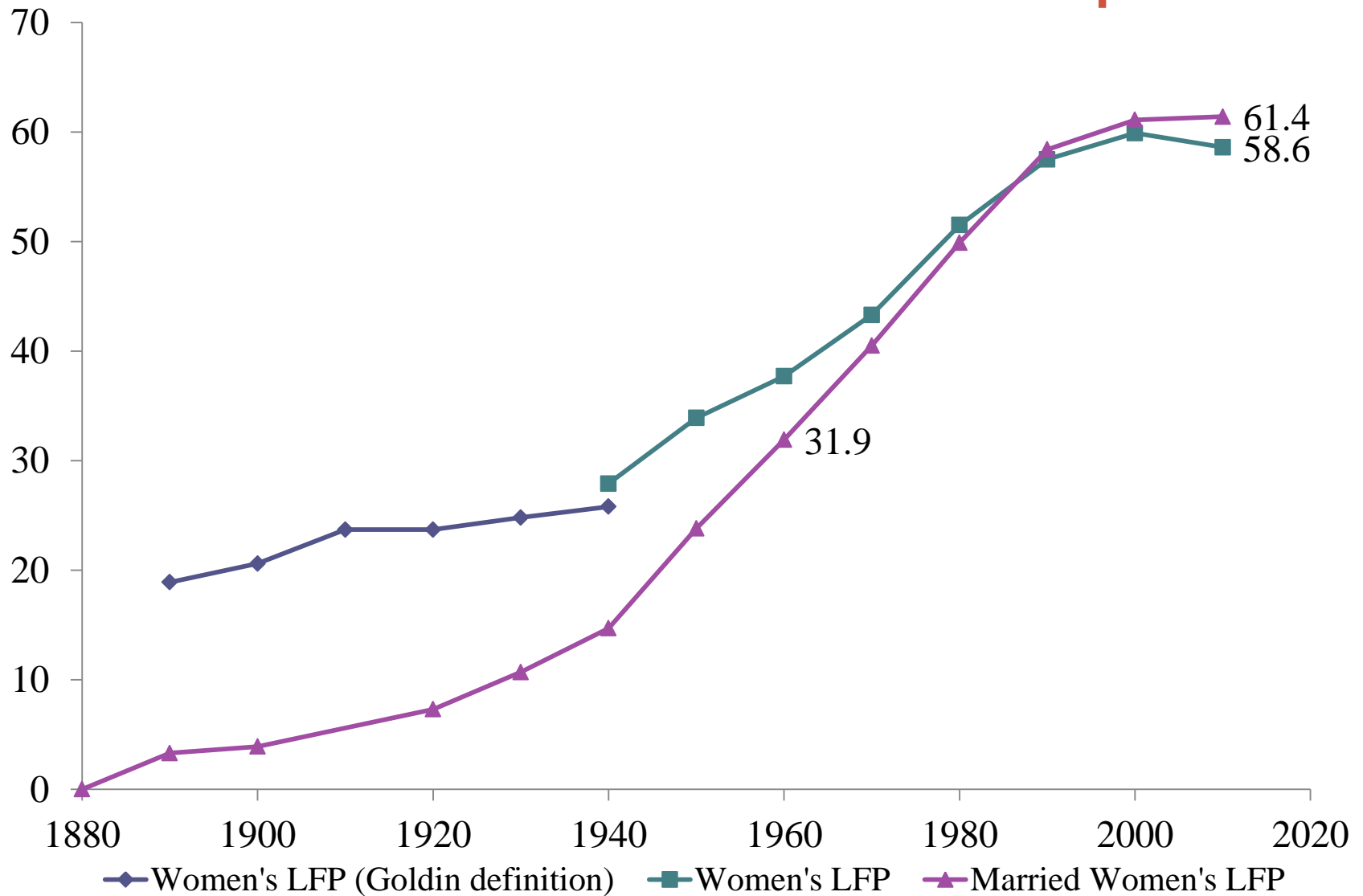# Proximate Determinants of Convergence

Changes tending to increase convergence

- 1. Labor-force participation and experience
- 2. Occupational integration
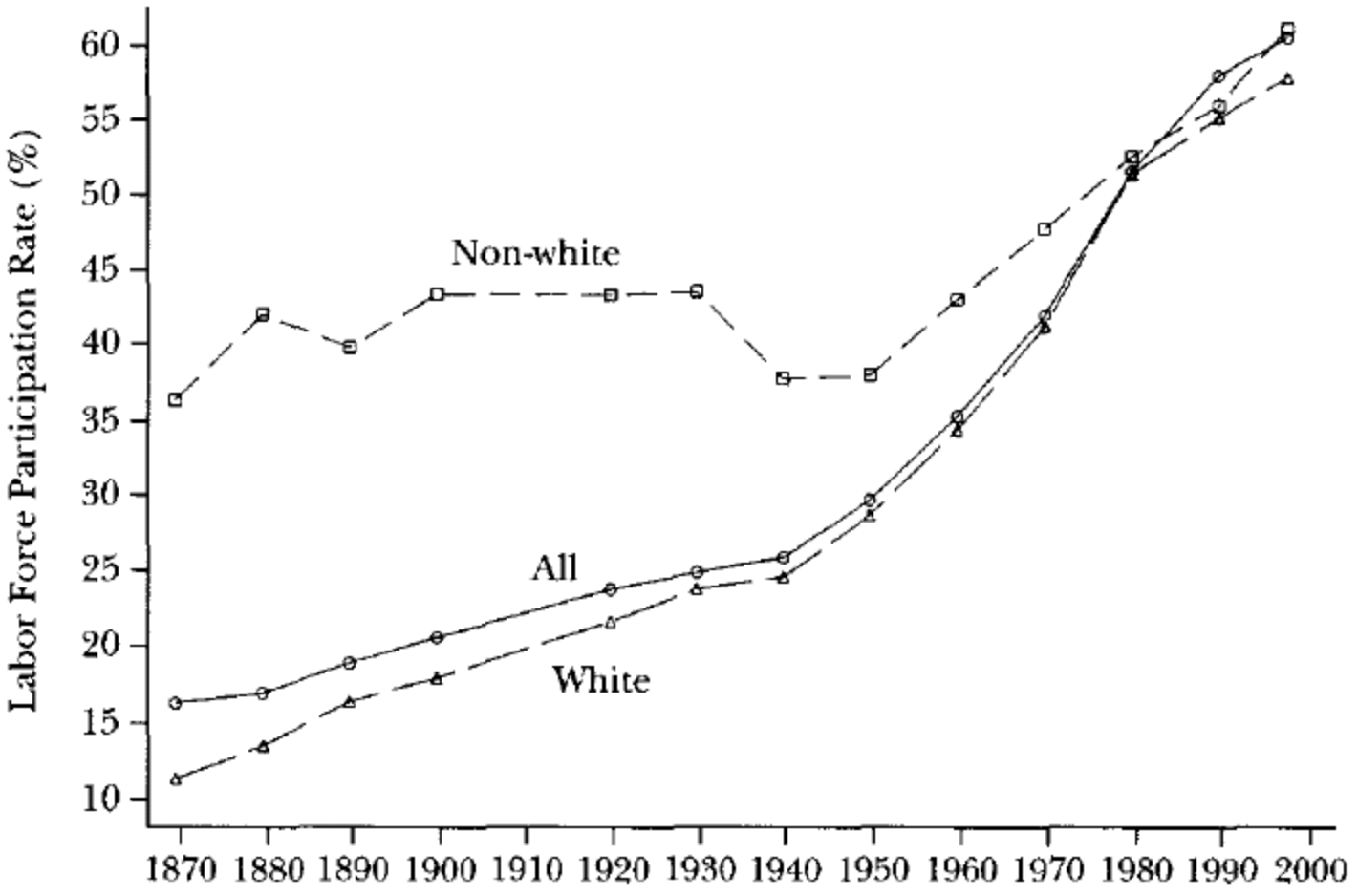- 3. Education
- 4. Selection

Changes tending to limit convergence

- 5. Wage structure

Women's Labor-Force Participation

Women's Labor-Force Participation,
by Race

Source: Costa (2000)

Labor-Force Participation

Legend:
- Women's LFP (Goldin definition)
- Women's LFP
- Women's Share of LF
- Men's LFP (right y-axis)

Data labels: 71.2, 58.6, 46.7, 33.4
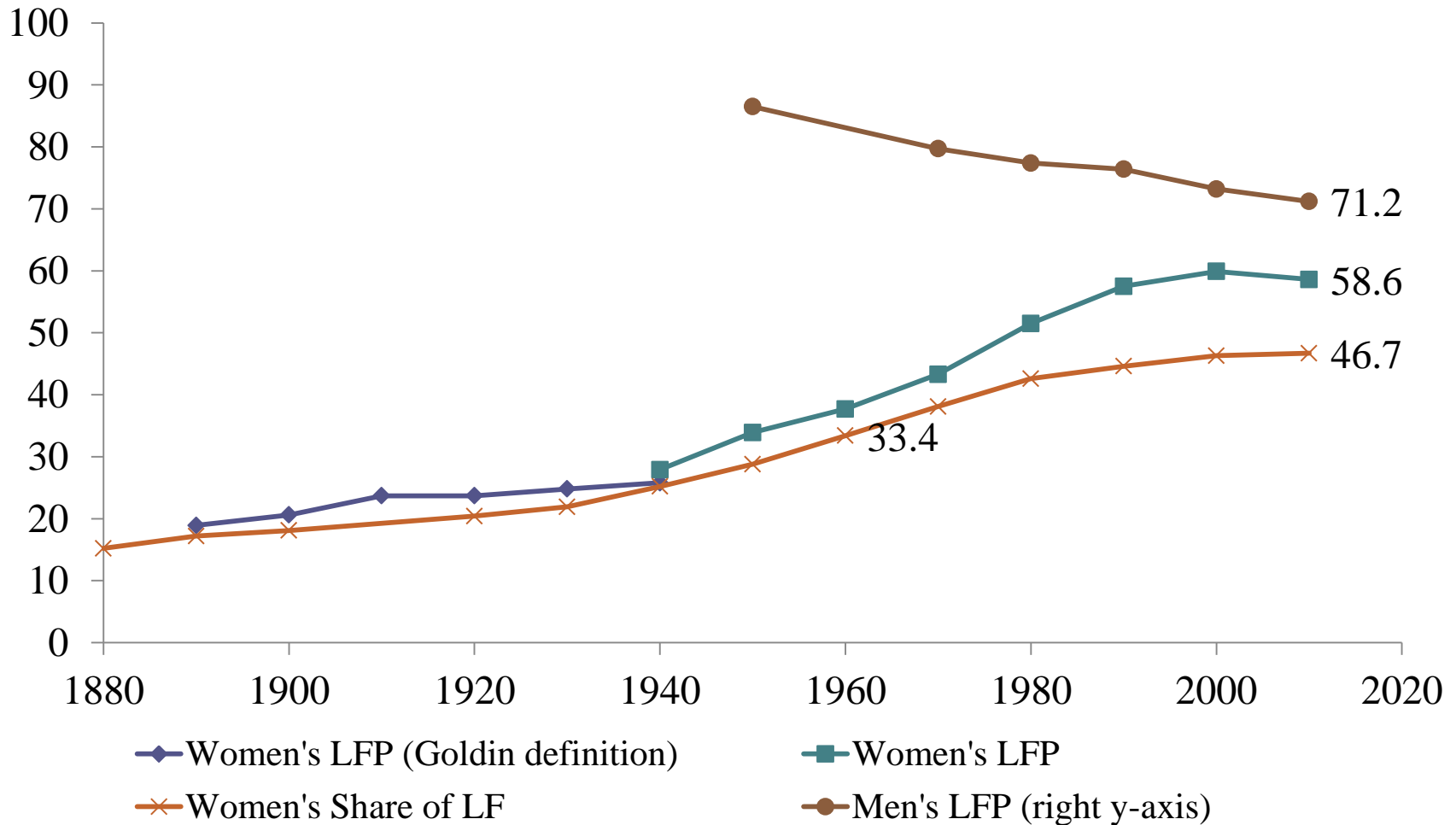
Labor-Force Participation
Cross-Country Comparison, 1960-2000
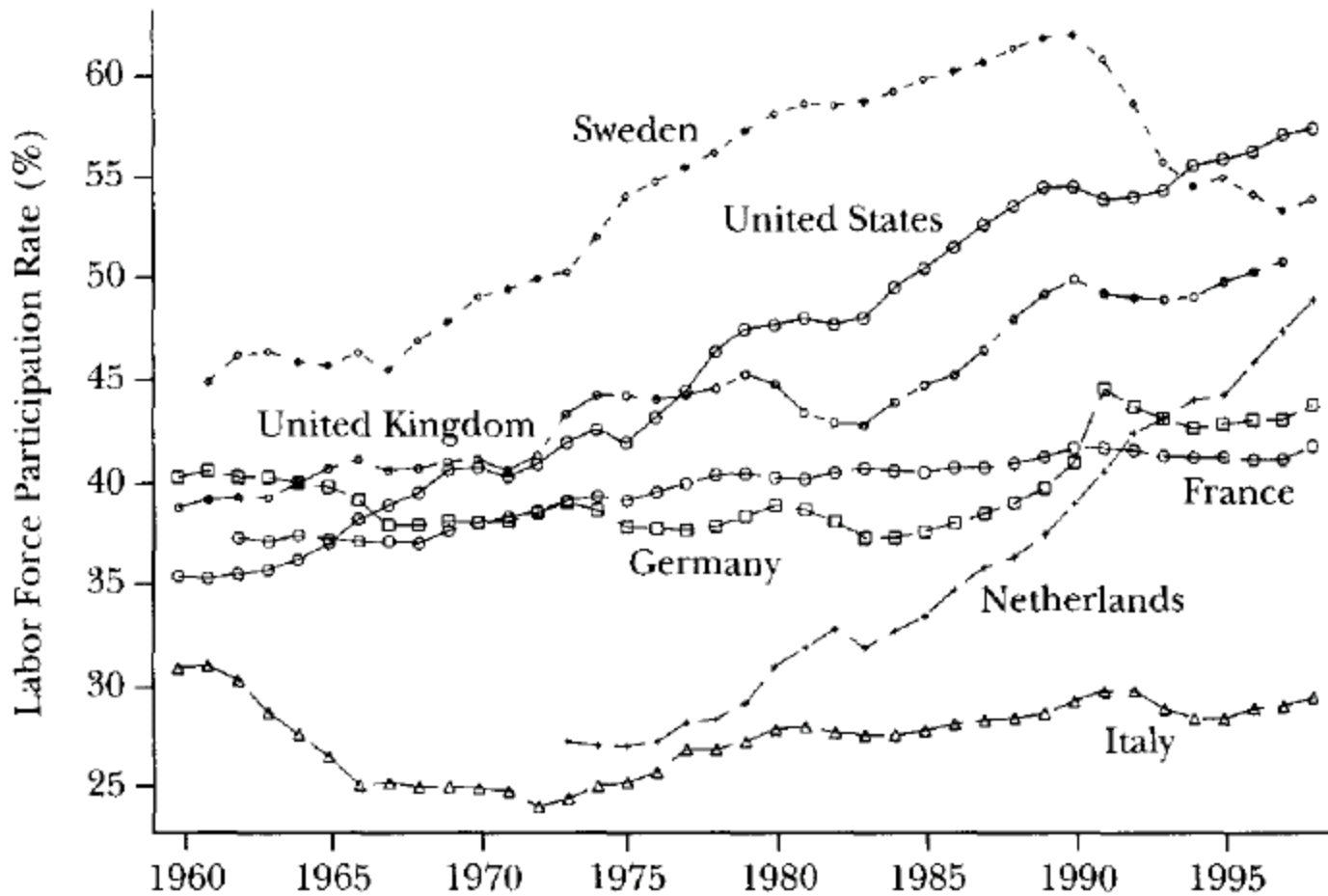
Source: Costa (2000)

Labour-force participation rate, 2010, %
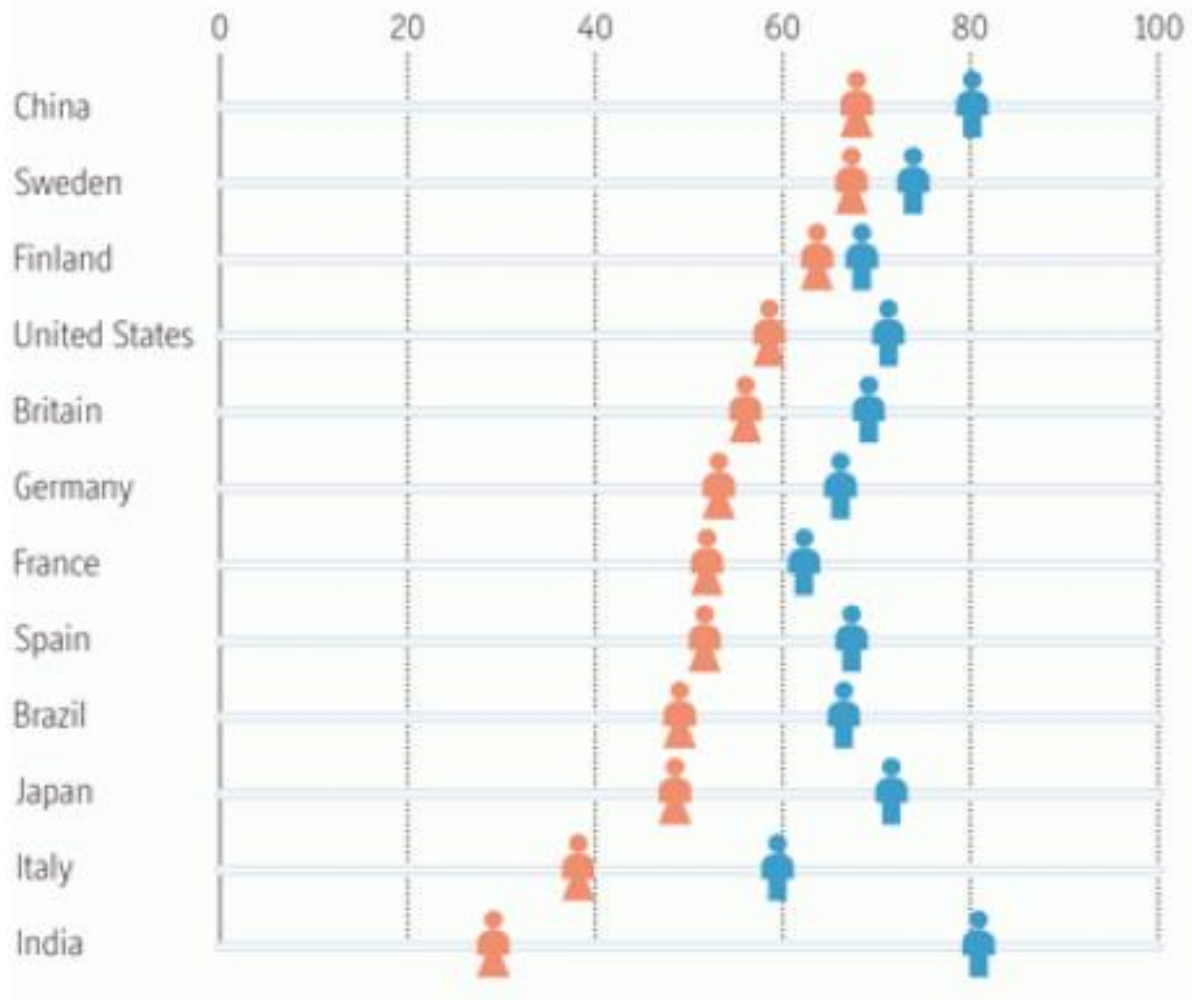
Source: Barbara Beck, "Closing the Gap," *The Economist*, 2011.

Women's labor force participation,
by birth cohort and age
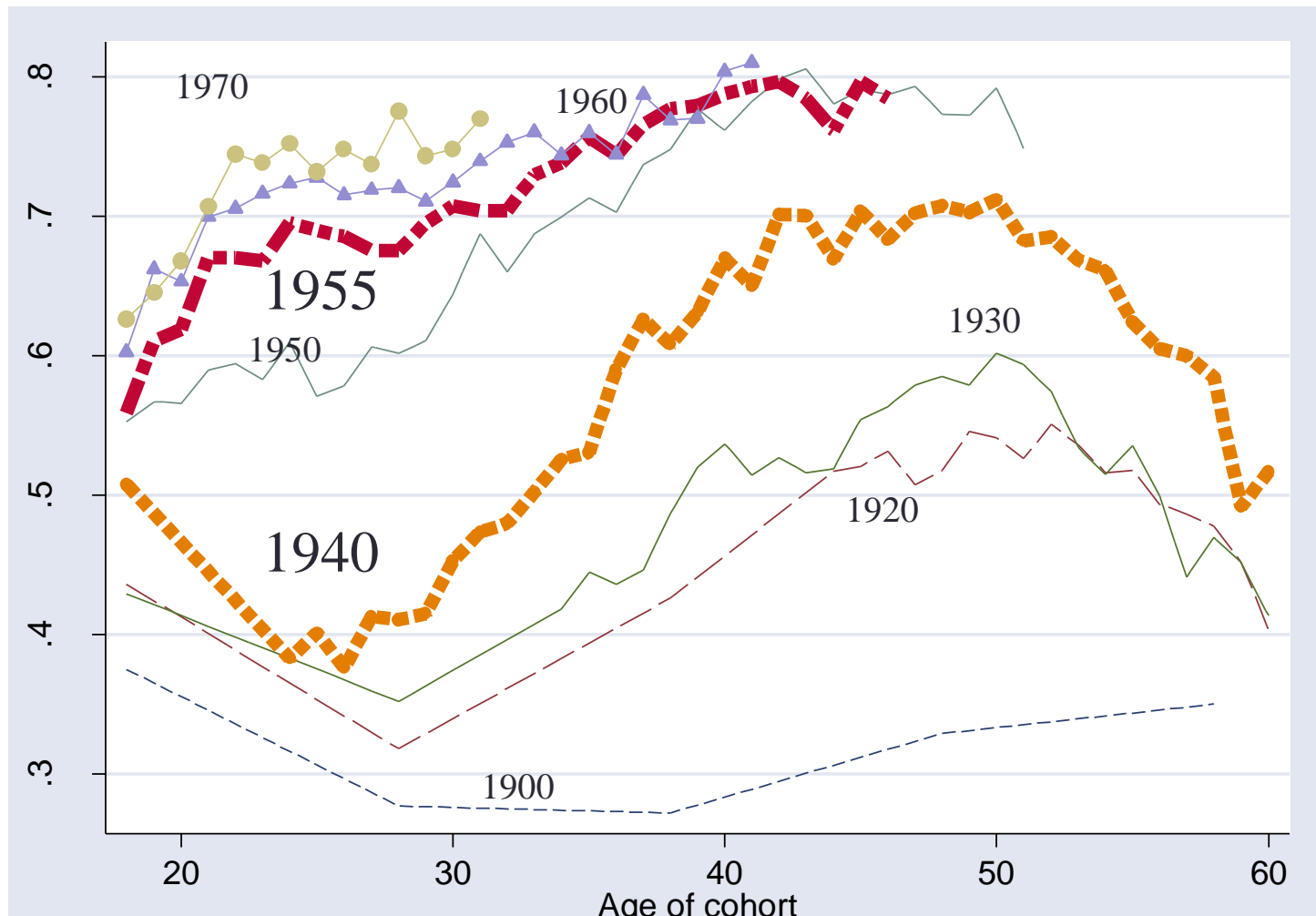
Source: Bailey (2006)

Actual Experience

Actual Full-time Work Experience, PSID

Year	Men	Women	Men-Women
Years of Full Time Experience			
1981	20.3	13.5	6.8
1990	19.2	14.7	4.5
1999	19.8	15.9	3.8
2011	17.8	16.4	1.4

Source: Blau and Kahn (2015)

Summary thus far

- In an accounting sense:
- Experience gap explained around 25% of wage differences in 1980 and 15% in 2010

- Where does this figure come from?

SIDEBAR ON DECOMPOSITIONS

Here: Short review of Oaxaca-Blinder

See fantastic review in Firpo, Fortin and Lemieux (2011). "[Decomposition Methods in Economics](#)" (with Sergio Firpo and Nicole Fortin), in D. Card and O. Ashenfelter, eds., Handbook of Labor Economics, 4th Edition: pp. 1-102.

Partial Equilibrium/ Accounting Question

- How much of the earnings gap is "explained by" differences in experience that men and women have?

- How much of the earnings gap is left over (i.e., <u>cannot</u> be "explained" by differences in experience)?
    - Different rates of return (payoff)
    - Why different payoffs?
    - Discrimination?
    - Something else? (maybe worker preferences, compensating differentials, etc)

Oaxaca-Blinder Decomposition

- The estimated gender gap in wages at the mean is

$$\widehat{\Delta}_O^{\mu} = \overline{Y}_B - \overline{Y}_A$$

Average wages of women   Average wages of men

Oaxaca-Blinder Decomposition

- Write wages as a linear function of "observed" characteristics for two groups (A & B), A=men and B=women

$$Y_{gi} = \beta_{g0} + \sum_{k=1}^{K} X_{ik}\beta_{gk} + \upsilon_{gi}, \quad g = A, B$$

- The estimated gender gap in wages at the mean is

$$\widehat{\Delta}_O^{\mu} = \overline{Y}_B - \overline{Y}_A$$

$$= \underbrace{(\widehat{\beta}_{B0} - \widehat{\beta}_{A0}) + \sum_{k=1}^{K} \overline{X}_{Bk}\left(\widehat{\beta}_{Bk} - \widehat{\beta}_{Ak}\right)}_{\widehat{\Delta}_S^{\mu} \text{ (Unexplained)}} + \underbrace{\sum_{k=1}^{K} \left(\overline{X}_{Bk} - \overline{X}_{Ak}\right)\widehat{\beta}_{Ak}}_{\widehat{\Delta}_X^{\mu} \text{ (Explained)}}$$

Oaxaca-Blinder Decomposition

Wage Earnings

- Simple example with 1 characteristic, X ="experience"
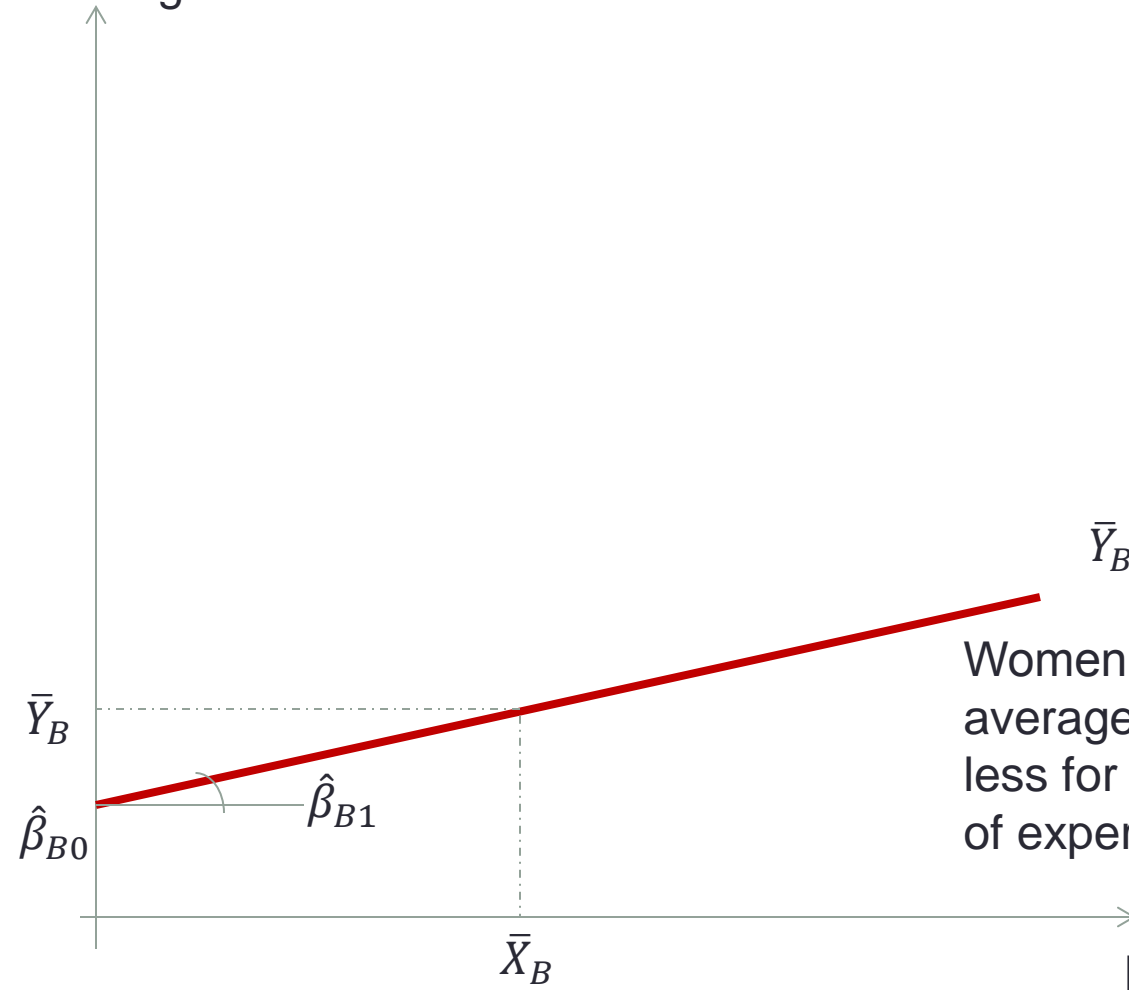
$$\bar{Y}_B = \hat{\beta}_{B0} + \hat{\beta}_{B1}\bar{X}_B$$

Women's wages lower on average and increase by less for every additional year of experience

$\bar{Y}_B$

$\hat{\beta}_{B1}$

$\hat{\beta}_{B0}$

$\bar{X}_B$

Experience

Oaxaca-Blinder Decomposition

Wage Earnings

$$\bar{Y}_A = \hat{\beta}_{A0} + \hat{\beta}_{A1}\bar{X}_A$$

Men's wages higher on average and increase by more for every additional year of experience

$\bar{Y}_A$

$\hat{\beta}_{A1} > \hat{\beta}_{B1}$

$\hat{\beta}_{A0}$

$\bar{Y}_B$

$\hat{\beta}_{B0}$

$$\bar{Y}_B = \hat{\beta}_{B0} + \hat{\beta}_{B1}\bar{X}_B$$

$\hat{\beta}_{B1}$

Women's wages lower on average and increase by less for every additional year of experience
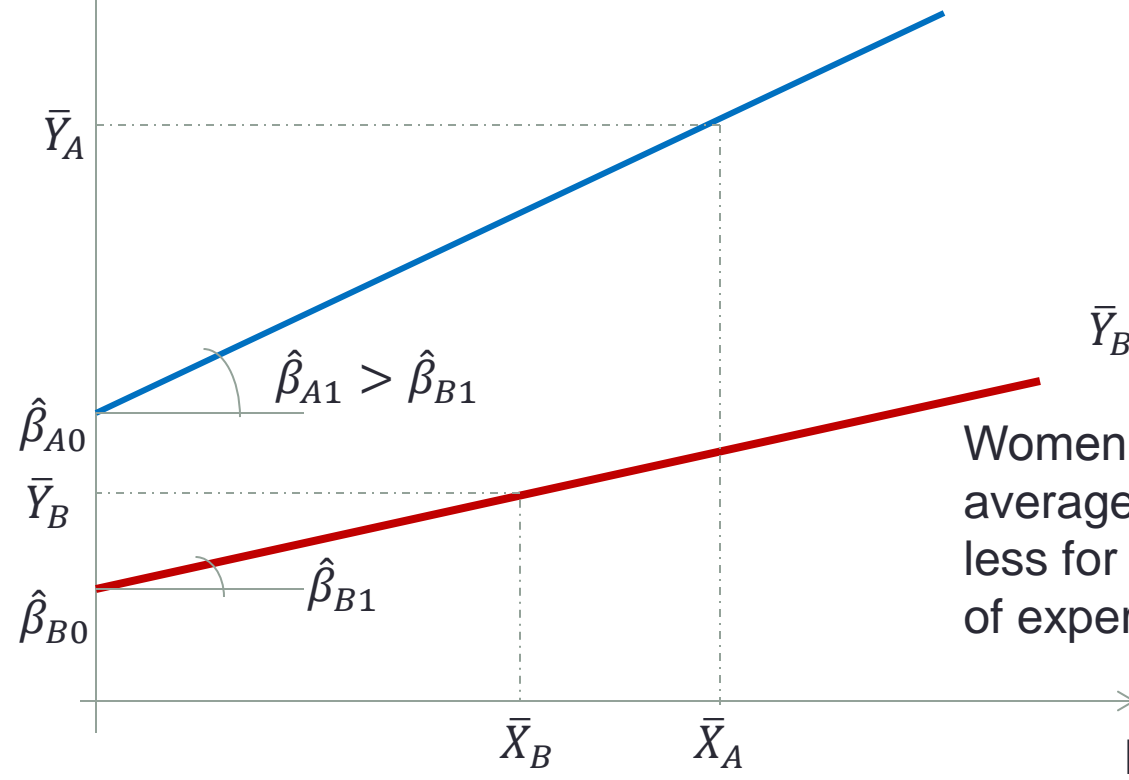
$\bar{X}_B$ $\bar{X}_A$

Experience

- Simple example with 1 characteristic, *X* ="experience"

Oaxaca-Blinder Decomposition

- Wage regressions for men and women:

$$\text{Men: } \bar{Y}_A = \hat{\beta}_{A0} + \hat{\beta}_{A1}\bar{X}_A$$

$$\text{Women: } \bar{Y}_B = \hat{\beta}_{B0} + \hat{\beta}_{B1}\bar{X}_B$$

- This implies that the gender gap can be written:

$$\Delta_o = \bar{Y}_B - \bar{Y}_A = \hat{\beta}_{B0} + \hat{\beta}_{B1}\bar{X}_B - \hat{\beta}_{A0} - \hat{\beta}_{A1}\bar{X}_A$$

Oaxaca-Blinder Decomposition

- This implies that the gender gap can be written:

$$\Delta_o = \bar{Y}_B - \bar{Y}_A = \beta_{B0} + \beta_{B1}\bar{X}_B - \beta_{A0} - \beta_{A1}\bar{X}_A$$
$$+ \beta_{B1}\bar{X}_A - \beta_{B1}\bar{X}_A$$

- Collect terms:

$$\Delta_o = \bar{Y}_B - \bar{Y}_A = (\beta_{B0} - \beta_{A0}) + \bar{X}_A(\beta_{B1} - \beta_{A1})$$

Differences in the betas: "unexplained" differences

$$+ \beta_{B1}(\bar{X}_B - \bar{X}_A)$$

Differences in the Xs: "explained" differences

Oaxaca-Blinder Decomposition

Wage Earnings

Total gender gap:
$$\Delta_o = (\beta_{B0} - \beta_{A0}) + \bar{X}_A(\beta_{B1} - \beta_{A1}) + \beta_{B1}(\bar{X}_B - \bar{X}_A)$$

$\bar{Y}_A = \beta_{A0} + \beta_{A1}\bar{X}_A$

$\bar{Y}_A$

Unexplained gap:
$(\beta_{B0} - \beta_{A0}) + \bar{X}_A(\beta_{B1} - \beta_{A1})$

β_{A1}

$\bar{Y}_B = \beta_{B0} + \beta_{B1}\bar{X}_B$

β_{A0}

$\bar{Y}_B$

Explained gap:
$\beta_{B1}(\bar{X}_B - \bar{X}_A)$

β_{B0}

β_{B1}

$\bar{X}_B$ $\bar{X}_A$

Experience

Oaxaca-Blinder Decomposition v.2

- This implies that the gender gap can be written:

$$\Delta_o = \bar{Y}_B - \bar{Y}_A$$

$$= \beta_{B0} + \beta_{B1}\bar{X}_B - \beta_{A0} - \beta_{A1}\bar{X}_A$$

- BUT, add and subtract $\beta_{A1}\bar{X}_B$ instead (this gives an alternate weighting):

$$\Delta_o = \bar{Y}_B - \bar{Y}_A = \beta_{B0} + \beta_{B1}\bar{X}_B - \beta_{A0} - \beta_{A1}\bar{X}_A$$

$$+ \beta_{A1}\bar{X}_B - \beta_{A1}\bar{X}_B$$

Oaxaca-Blinder Decomposition v. 2

- Collect terms:

$$\Delta_o = \bar{Y}_B - \bar{Y}_A = (\beta_{B0} - \beta_{A0}) + \bar{X}_B(\beta_{B1} - \beta_{A1})$$

Differences in the betas: "unexplained" differences

$$+\beta_{A1}(\bar{X}_B - \bar{X}_A)$$
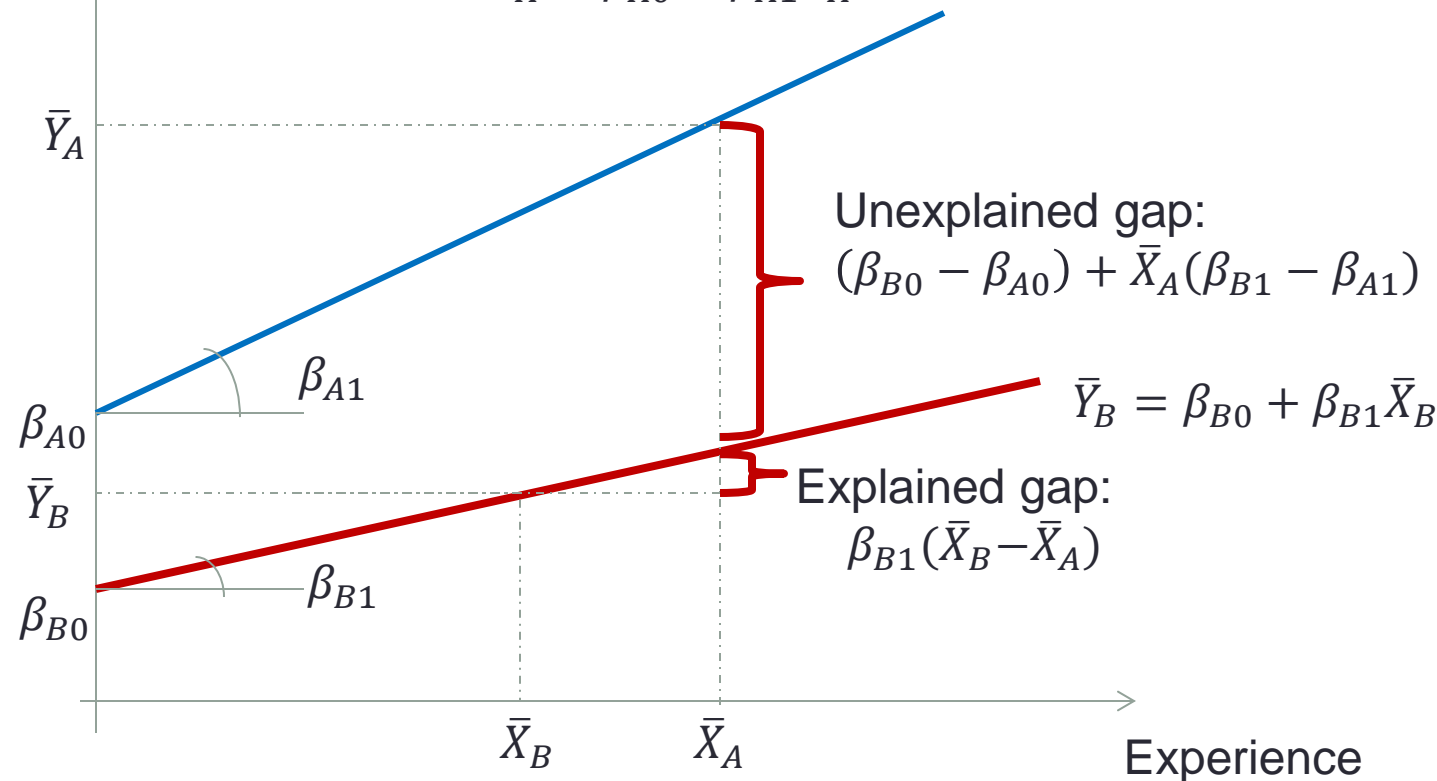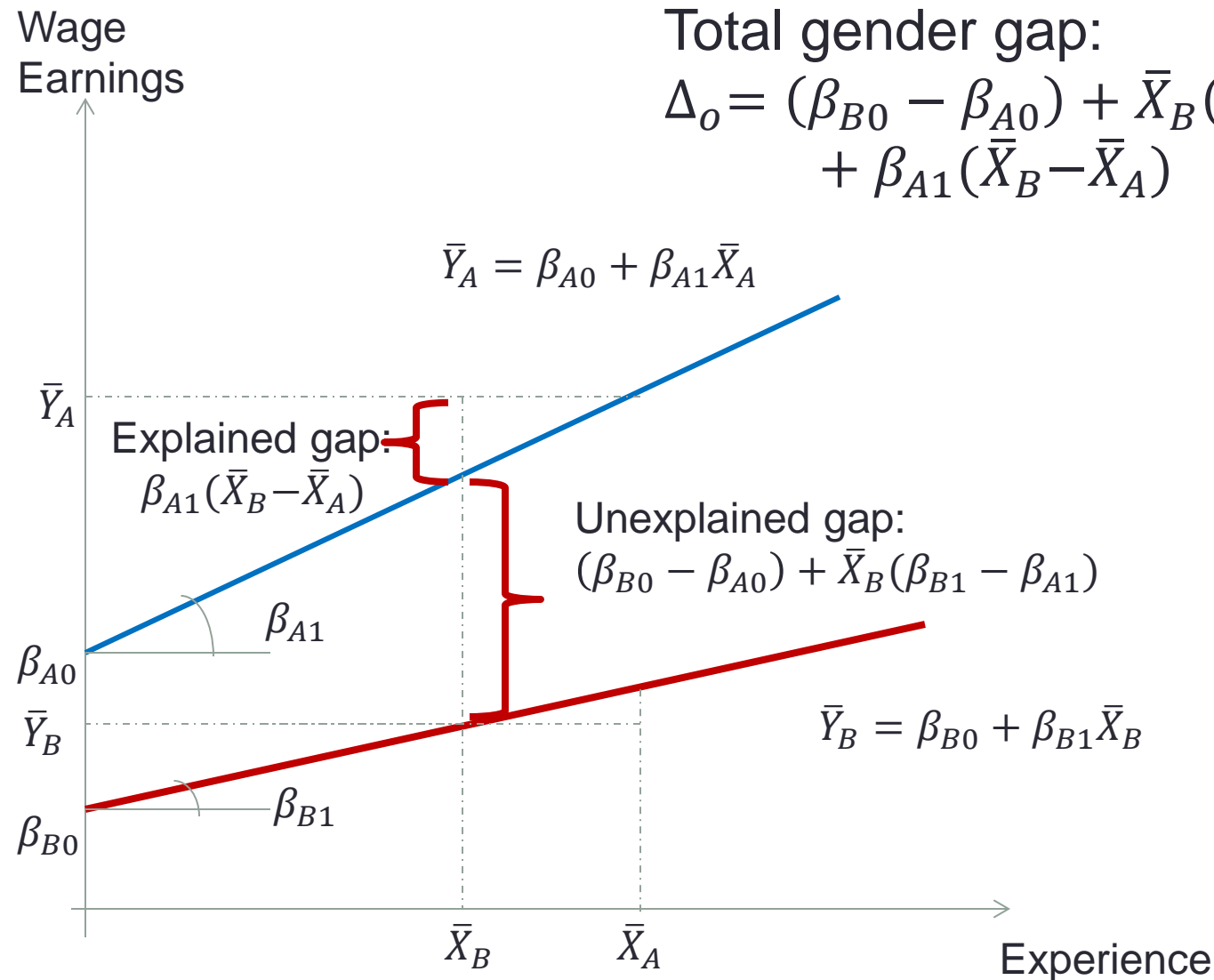
Differences in the Xs: "explained" differences

Oaxaca-Blinder Decomposition v.2

Wage Earnings

Total gender gap:
$$\Delta_o = (\beta_{B0} - \beta_{A0}) + \bar{X}_B(\beta_{B1} - \beta_{A1}) + \beta_{A1}(\bar{X}_B - \bar{X}_A)$$

$$\bar{Y}_A = \beta_{A0} + \beta_{A1}\bar{X}_A$$

$\bar{Y}_A$

Explained gap:
$$\beta_{A1}(\bar{X}_B - \bar{X}_A)$$

Unexplained gap:
$$(\beta_{B0} - \beta_{A0}) + \bar{X}_B(\beta_{B1} - \beta_{A1})$$

β_{A1}

β_{A0}

$\bar{Y}_B$

$$\bar{Y}_B = \beta_{B0} + \beta_{B1}\bar{X}_B$$

β_{B1}

β_{B0}

$\bar{X}_B$ $\quad$ $\bar{X}_A$

Experience

How Much of the Gender Gap can Experience Explain?

There is not one clear answer because there are

1. Alternate weightings
2. Different variables in different studies
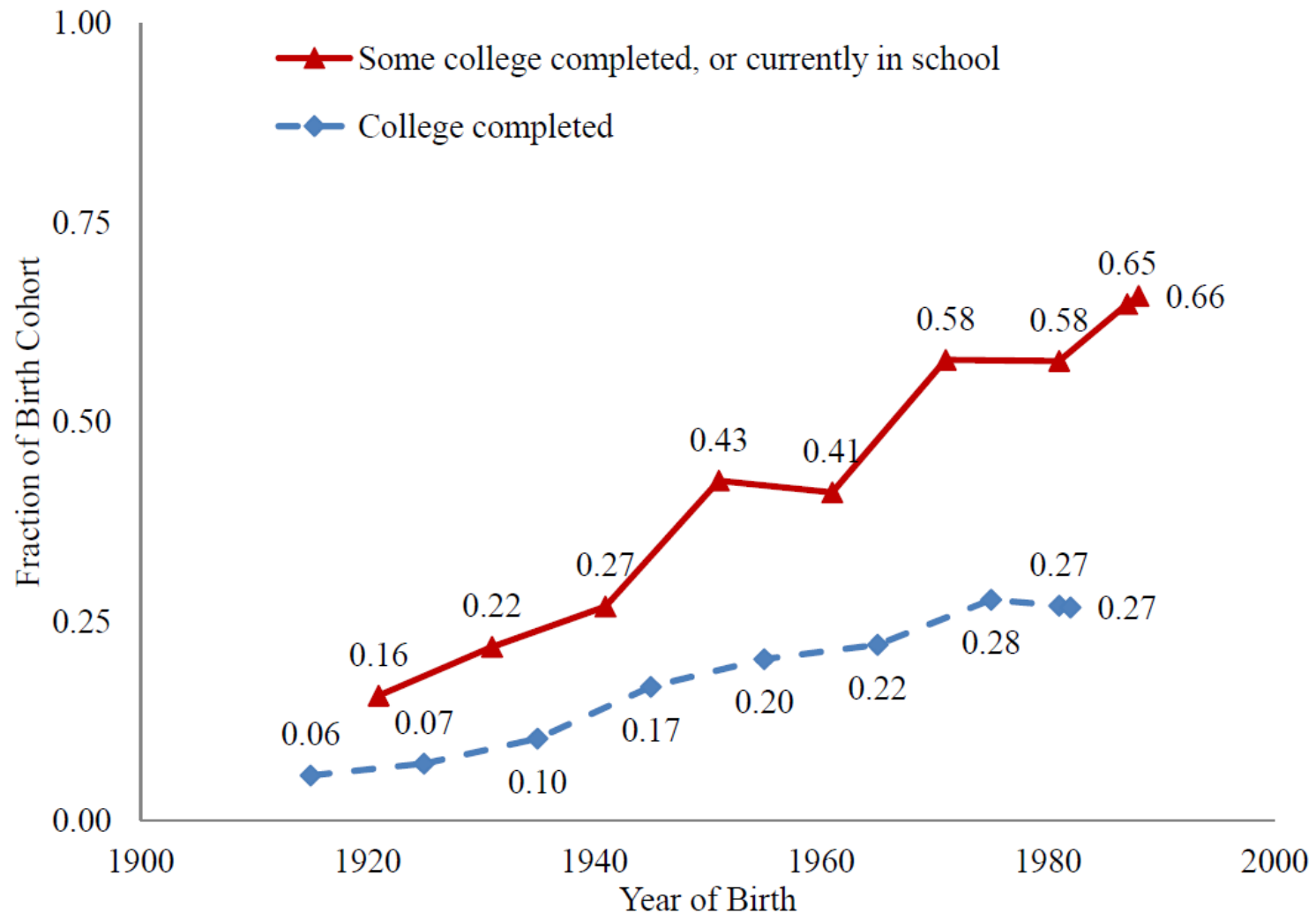3. Different decomposition methods

Blau and Kahn (2015) find that the experience gap explains around 25% of wage differences in 1980 and 15% in 2010

What about other factors?

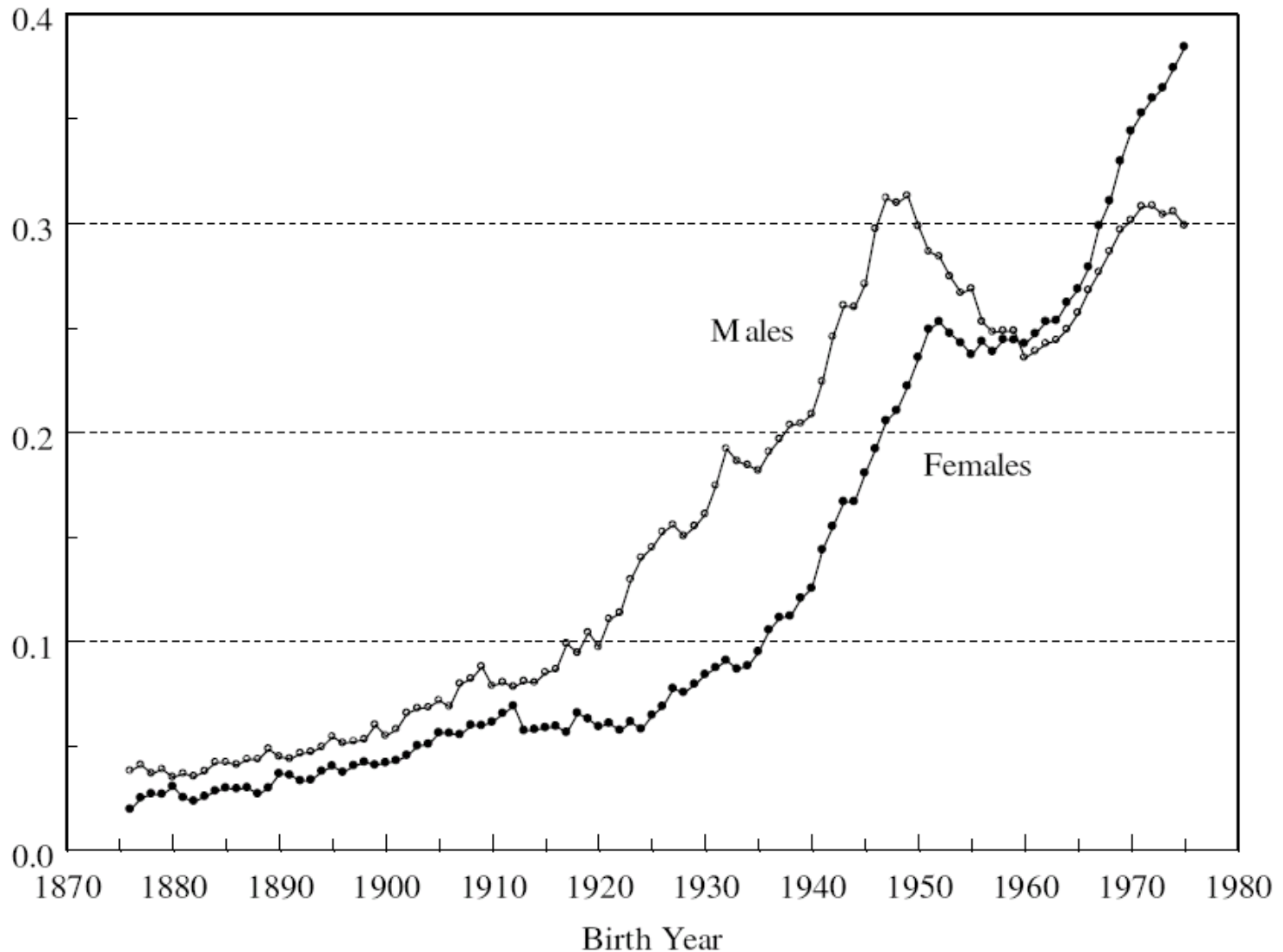# PRE-MARKET FACTORS

Preparation for careers in terms of education and occupational training

College Entry and Completion

Source: Bailey and Dynarski (2012)
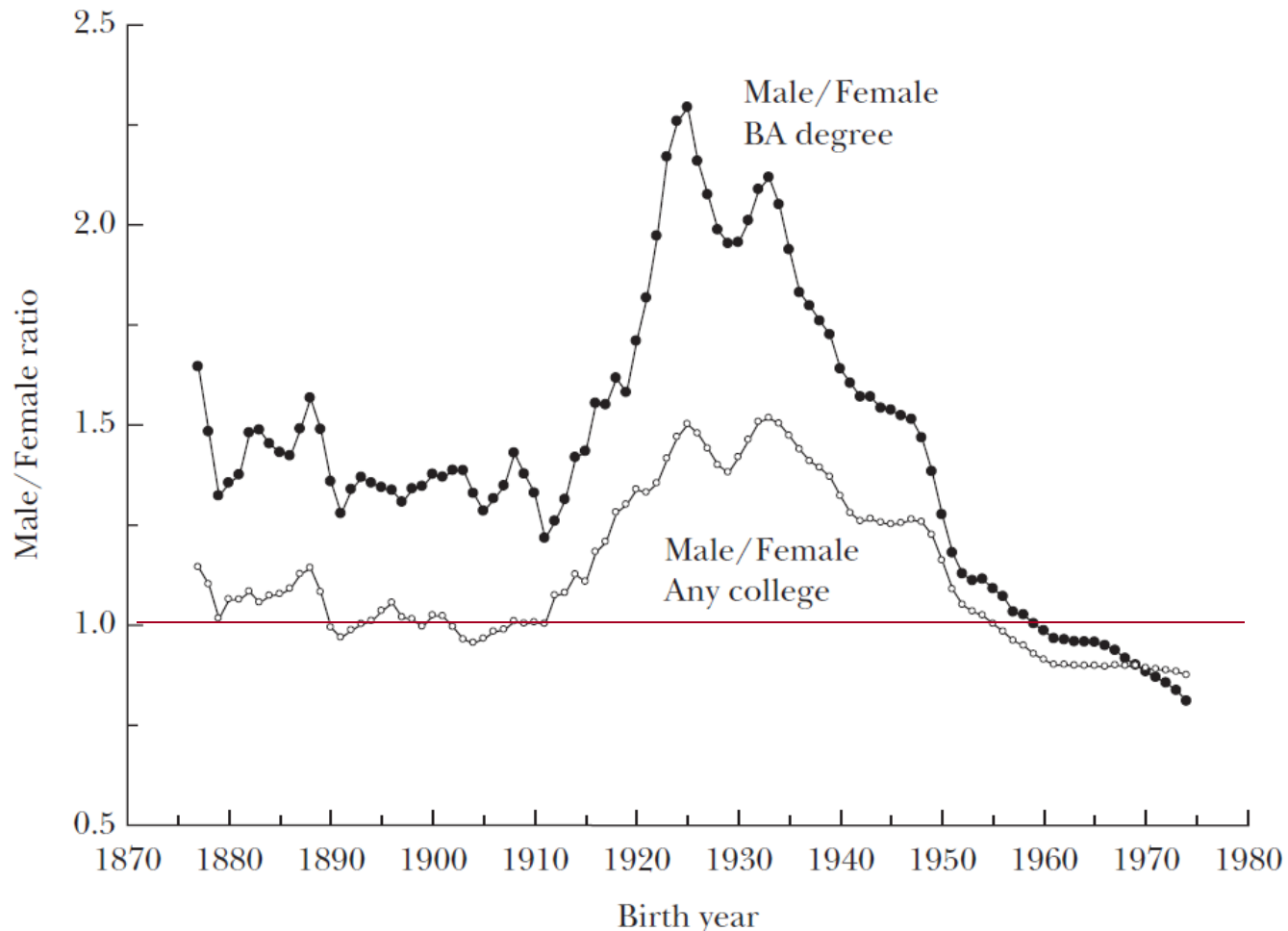
College Graduation Rates, by Age 35

Source: Goldin, Katz, Kuziemko (JEP 2007)

Gender Gap in College Completion

Ratio of Male-to-Female College Rates: Birth Cohorts from 1876 to 1975
(*three-year centered moving averages measured at 35 years of age*)

Source: Goldin, Katz, Kuziemko (JEP 2007)

OECD Gender Gap in College Completion

http://www.oecd.org

17 OECD countries with tertiary schooling data for 1985-2002

1985: 4 had male-to-female ratio of undergraduates less than 1.

2002: 15 had male-to-female ratio of undergraduates less than 1.
Only Turkey and Switzerland remained exceptions

Summary thus far

- In an accounting sense:
- Experience gap explained around 25% of wage differences in 1980 and 15% in 2010
- Education gap explained around 3% of wage differences in 1980 and -8% in 2010

OCCUPATIONAL GAINS

Share of Degrees Awarded to Women, 1969 to 2010
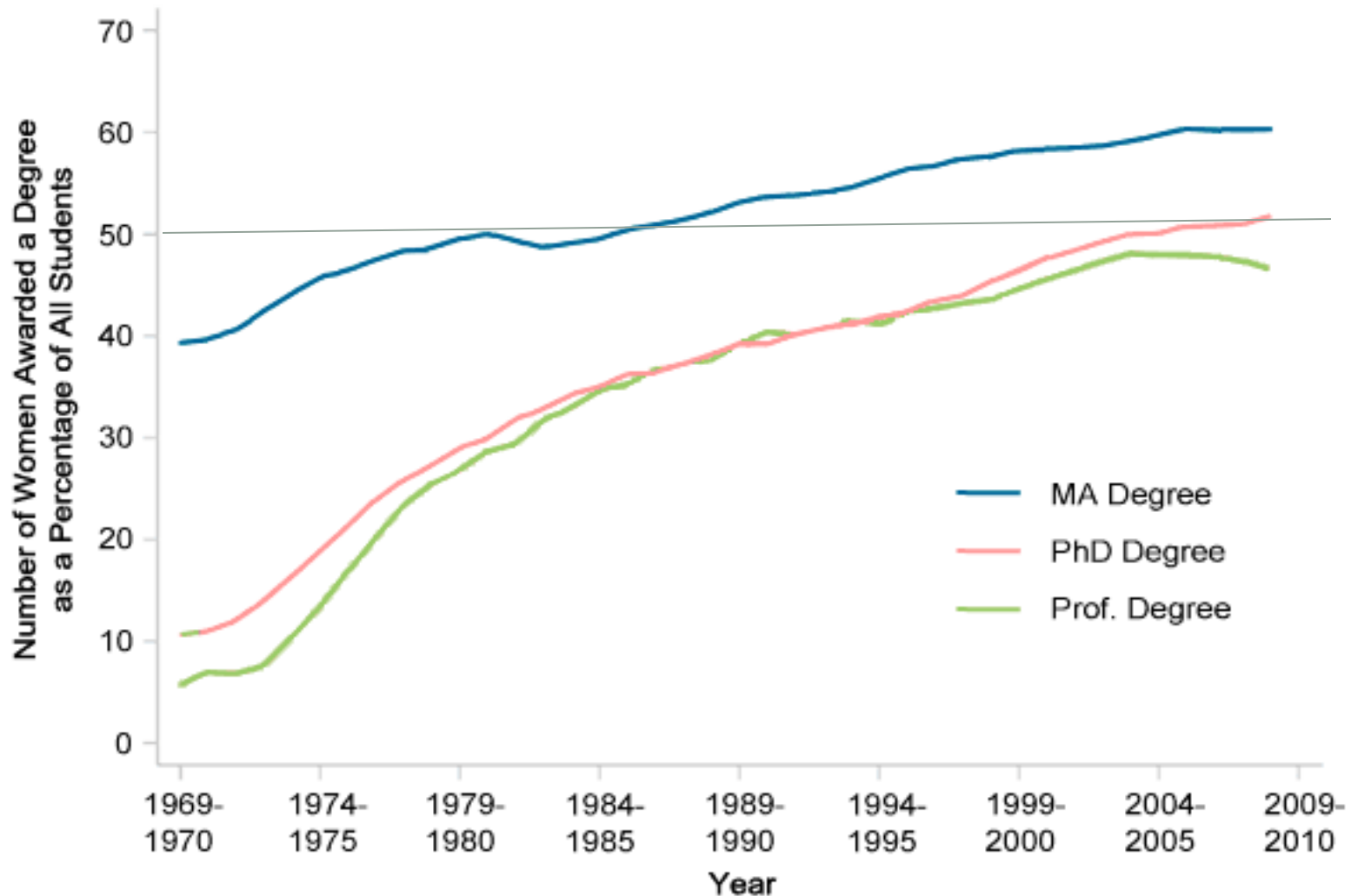
Source: DiPrete and Buchman (2013)

Advanced Degrees Awarded to Women, 1969 to 2006

Source: DiPrete and Buchman (2013)
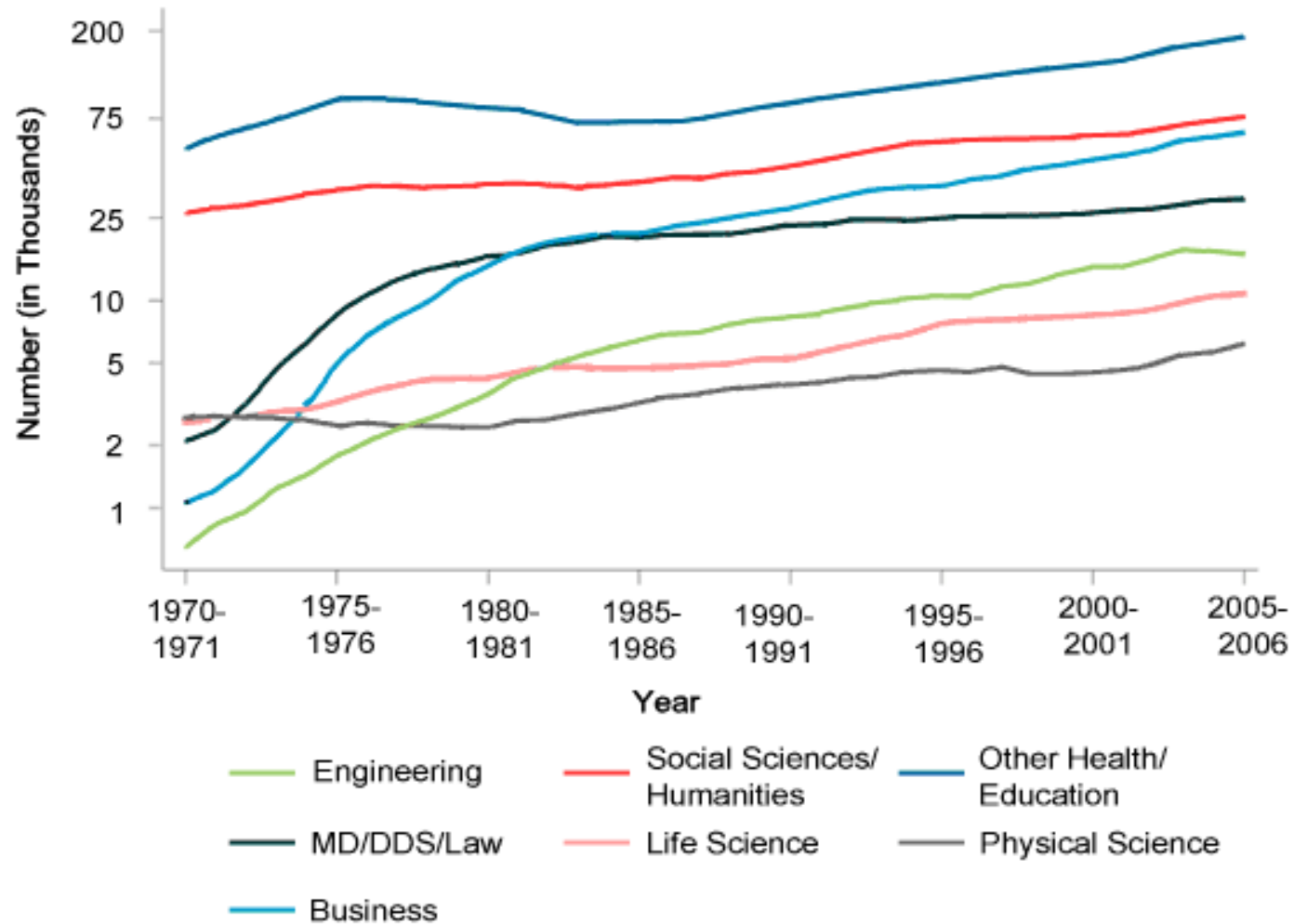
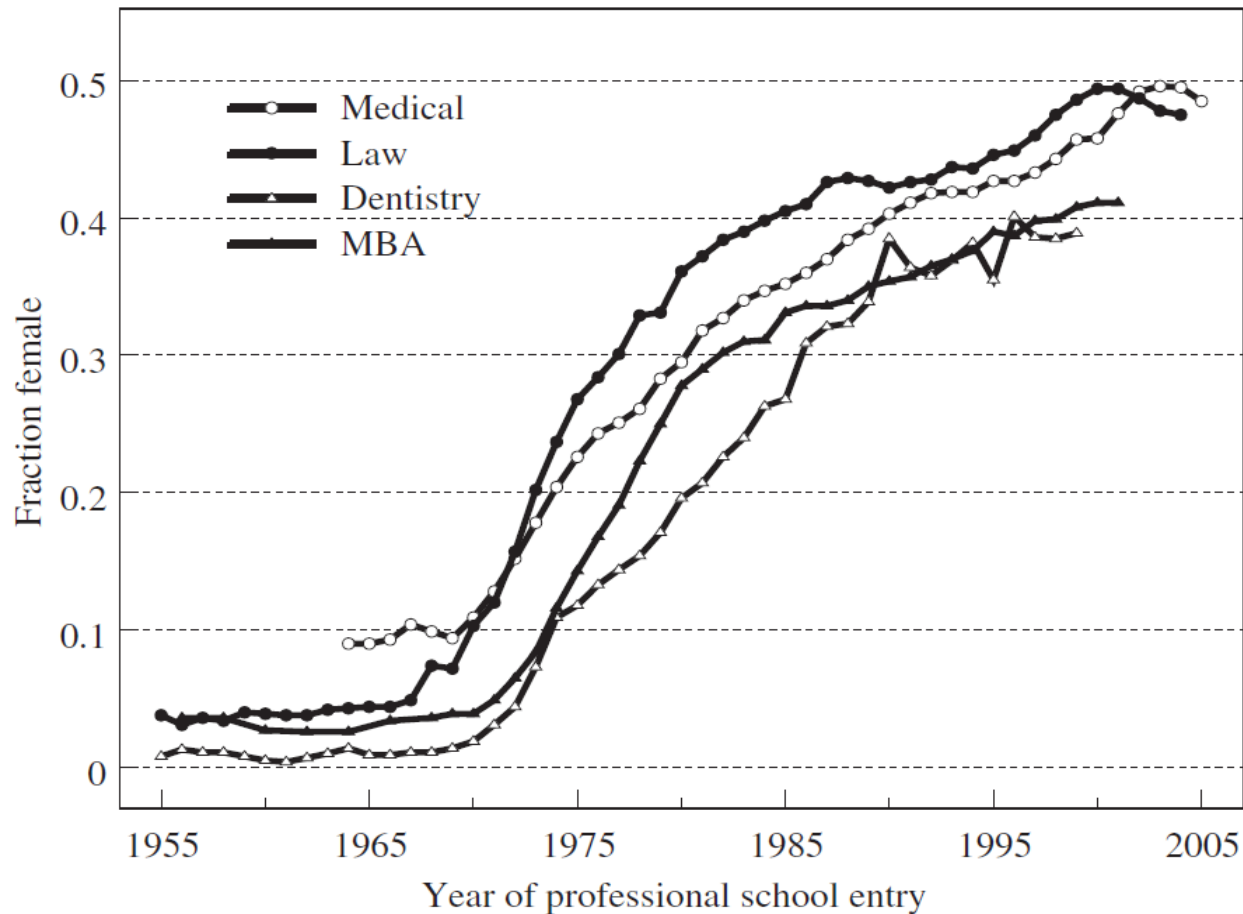# Students in Professional Programs

FIGURE 5. FRACTION FEMALE AMONG FIRST-YEAR
STUDENTS IN PROFESSIONAL PROGRAMS: 1955 TO 2005

Source: Goldin (2006).

Occupational Integration for Women
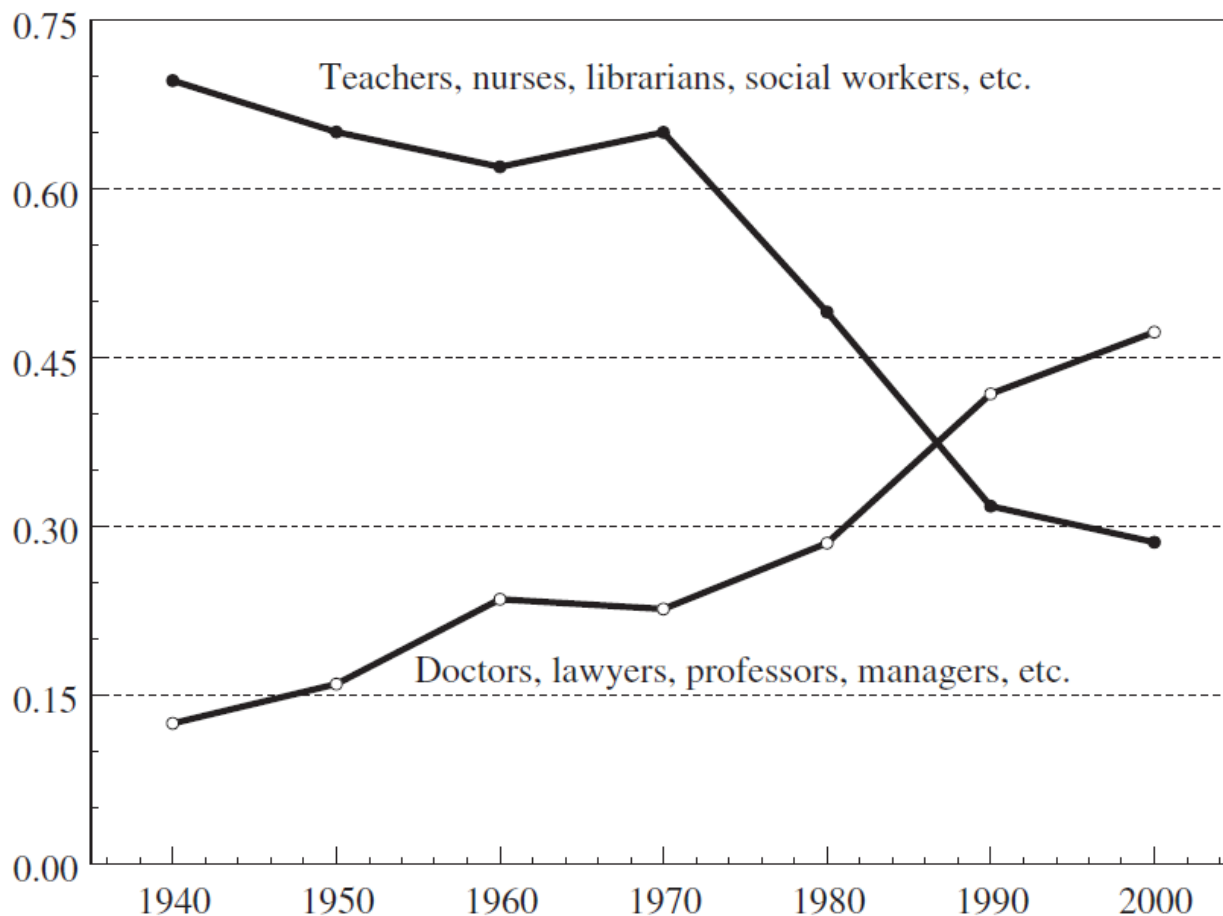
FIGURE 8. OCCUPATIONS OF COLLEGE GRADUATE WOMEN, 30 TO 34 YEARS OLD: 1940 TO 2000

Source: Goldin (2006).

Measuring Occupational Segregation

- Duncan Index of Dissimilarity:

$$D = 100 * \sum_{i=1}^{N} \left| \frac{X_i}{X} - \frac{Y_i}{Y} \right| \Big/ 2$$

i indexes occupation; total of N occupations; X_i, Y_i: number of persons of a group (X or Y) in occupation *i*; X, Y: total number of persons of the group (X or Y)

- Convenient Interpretation: Proportion of one group who would have to change occupations for men and women to have identical occupational distributions (complete segregation=100)

- Challenge in measurement is developing a uniform set of occupational codes (census revises as the economy changes)

- Caveat in interpretation: Note that the index can change as the economy changes (composition) or as within-occupational segregation changes

Occupational Segregation, 1900-2000
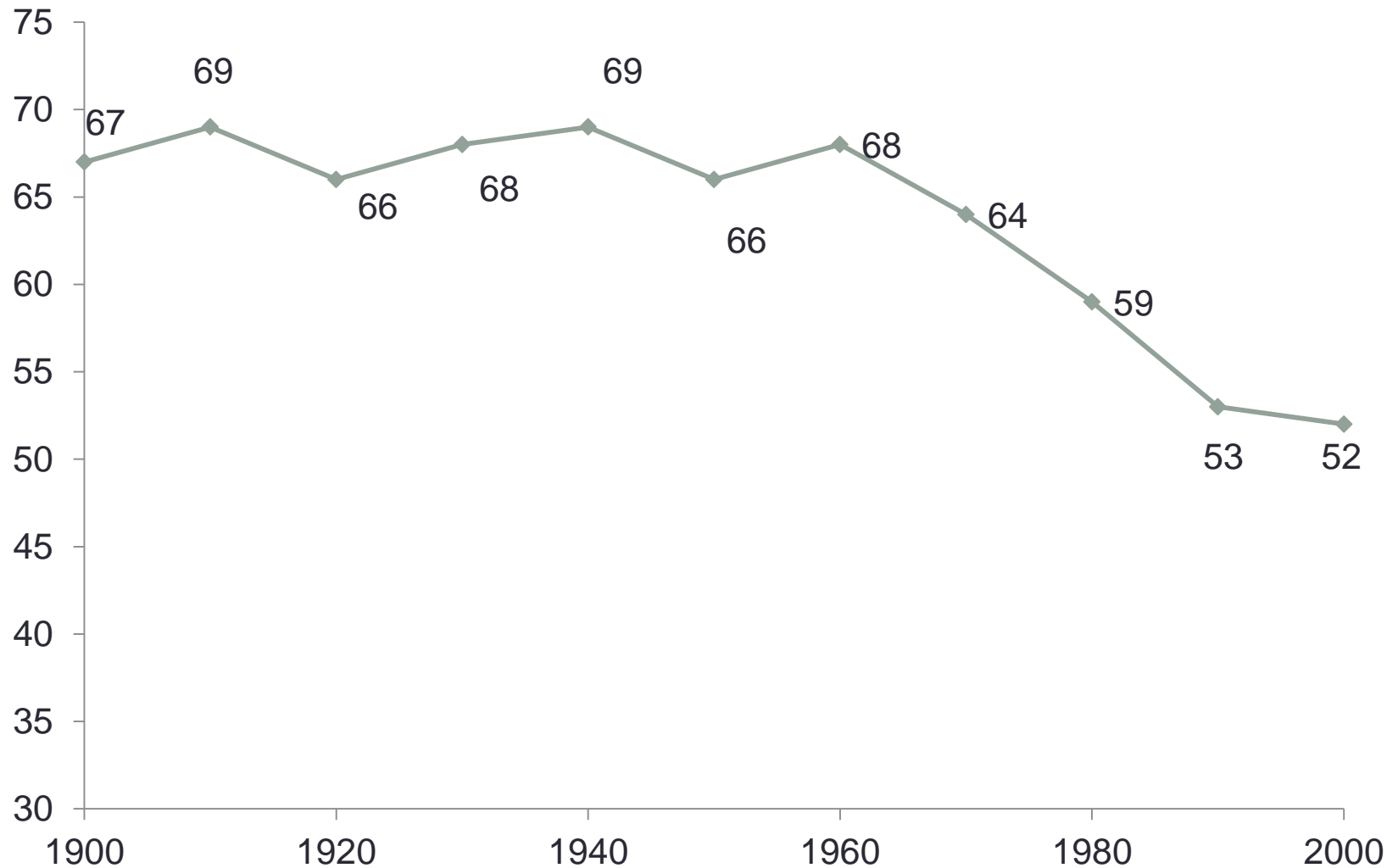
Occupational Segregation, 1970-2009
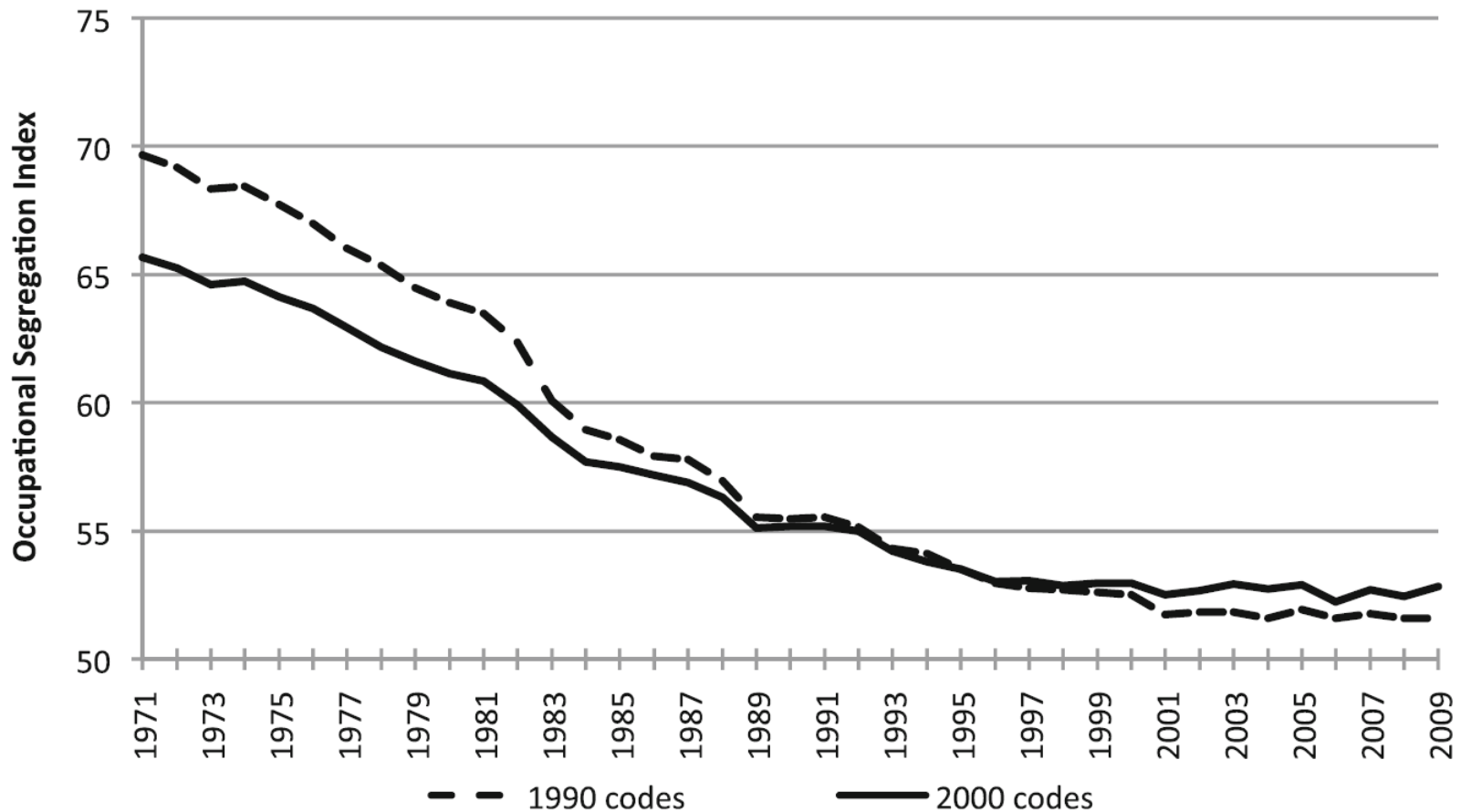
Fig. 1 Trends in occupational segregation using gender-specific CPS crosswalk (March CPS data). Estimates for the years 2000–2002 use actual (noncrosswalked) data from the BLS dual-coded data set

Source: Blau et al. (2012).

Key points

- Occupational segregation begins to change around 1960

- Progress was rapid from 1960 to 1990 but slows dramatically after the 1990s

- Occupational segregation has changed very little in the sciences (especially STEM + economics)

Summary thus far

- In an accounting sense:
- Experience gap explained around 25% of wage differences in 1980 and 15% in 2010
- Education gap explained around 3% of wage differences in 1980 and -8% in 2010
- Occupation/industry gap explained around 10% of wage differences in 1980 <u>and over 50% in 2010</u>

CHANGES IN WAGE STRUCTURE

Wage Structure Changes

- Blau and Kahn (1997, 2006):
  - Decreasing inequality: women increased their skills and the share of the gender gap that was unexplained fell
  - Increasing inequality: changes in the wage structure favored men over women (fall in the minimum wage, rise in returns to experience and in occupations & industries where more men worked)
  - Swimming upstream: Estimate that the convergence in the gender gap would have been 5 to 6 percentage points larger if the overall distribution of wages had remained stable
- Other papers:
  - Reduction in manufacturing hurt demand for men's work more (Berman, Bound and Griliches 1994)
  - Increased computing helped women relative to men (Krueger 1993; Weinberg 2000; Autor et al 2003; Beaudry and Lewis 2014)
  - Increasing importance of interpersonal skills helped women relative to men (Weinberg 2014).

SELECTION

(unmeasured skills)

Jury is Still Out on Role of Selection

- Measures of selection ideally based on wage offers rather than observed wages (the latter correlated with participation decisions)
  - If the wage sample reflects higher/lower wage offers relative to the mean offer, then the sample will be positively/negatively selected

- Different answers using different methods to quantify unmeasured "wage offers"
  - Blau and Kahn (2006): selection changed from very positive to less positive between the 1980s and 1990s
  - Mulligan and Rubinstein (2008): almost all of the convergence in the gender gap between late 1970 and 1990 driven by selection
  - Jacobsen, Khamis, and Yuksel (2014): after accounting for selection, gender gap narrowed in the 1980s but then stopped

Motherhood Penalty
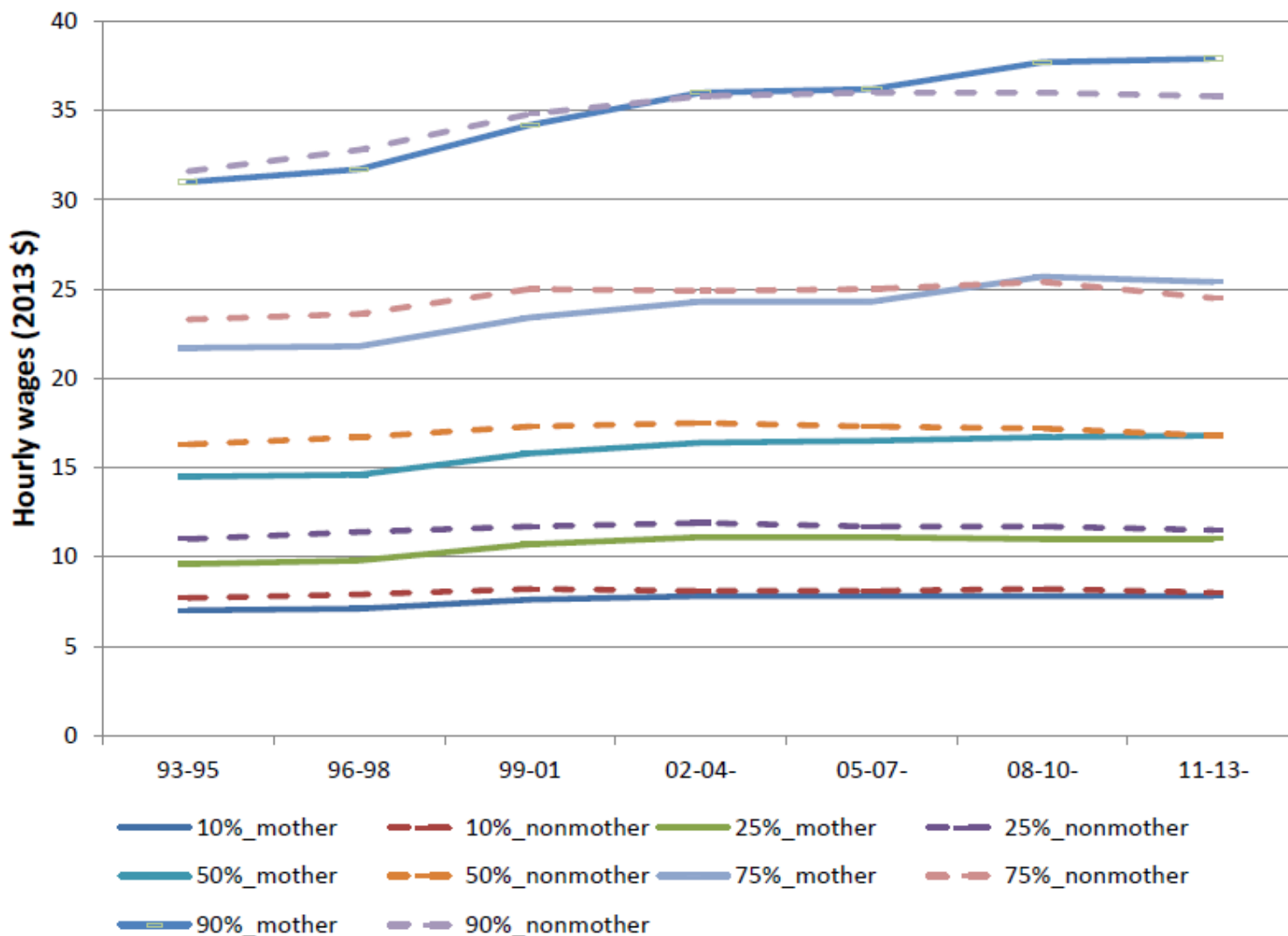
Source: Pal and Waldfogel (forthcoming)

DECOMPOSING THE WAGE GAP

Some Accounting

- Decomposition at the mean (Oaxaca-Blinder)

- Decomposition at different points in the distribution
  - Chernozhukov, Fernandez-Val and Melly (2013) decomposes intergroup male-female gaps at given percentiles into components due to characteristics and a portion due to differing returns to those characteristics

- Blau and Kahn use both for the PSID in 1980 and 2010

Figure 2: Female to Male Log Wage Ratio, Unadjusted and Adjusted for Covariates (PSID)

Adjustments obtained by "treating women as if they were men"

- Unadjusted
- Adjusted: Human Capital Specification
- Adjusted: Full Specification

HC includes educ., exp., race, geo. variables

Full includes HC + ind, occ & union variables

Source: Blau and Kahn (2015)

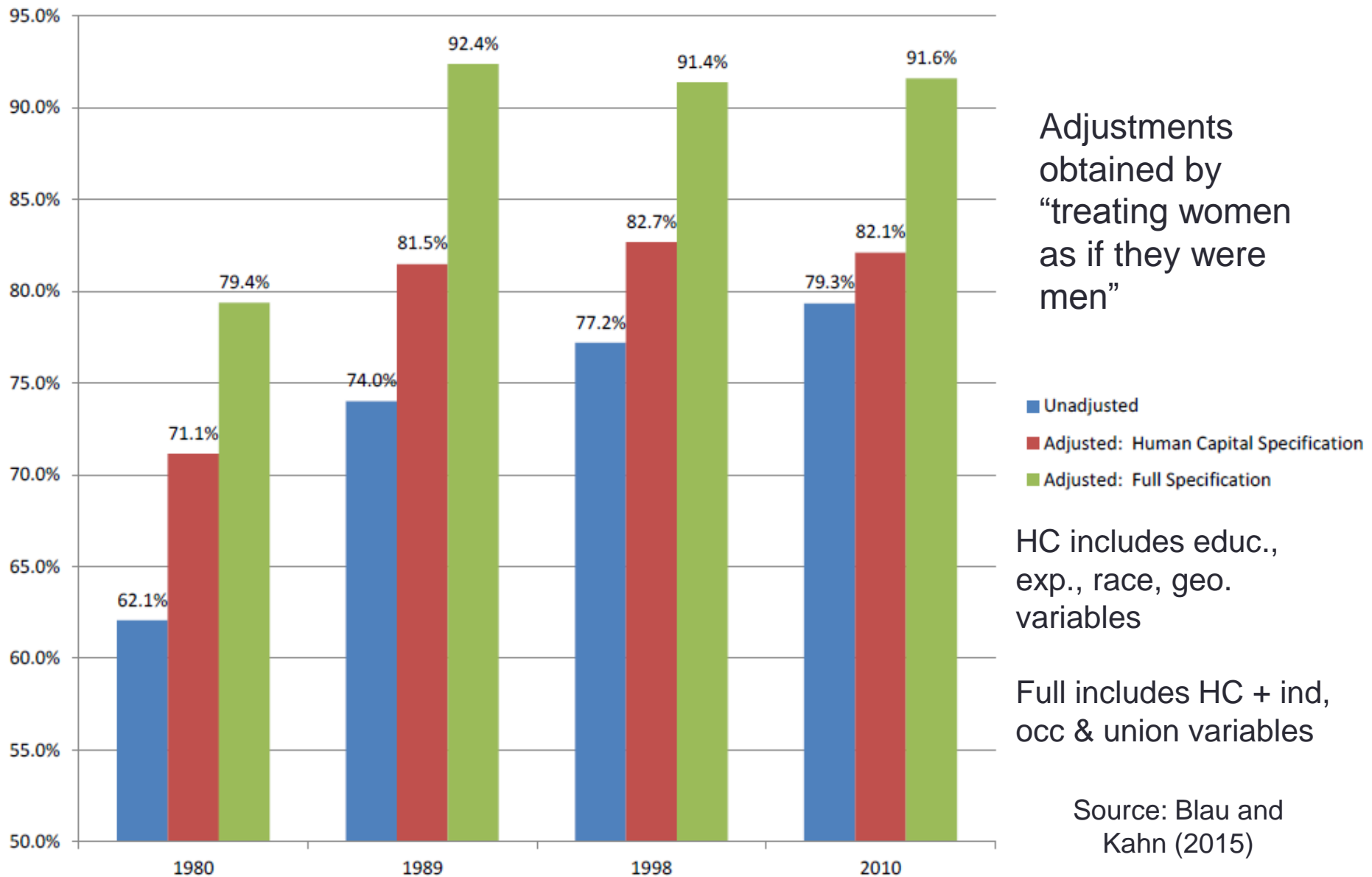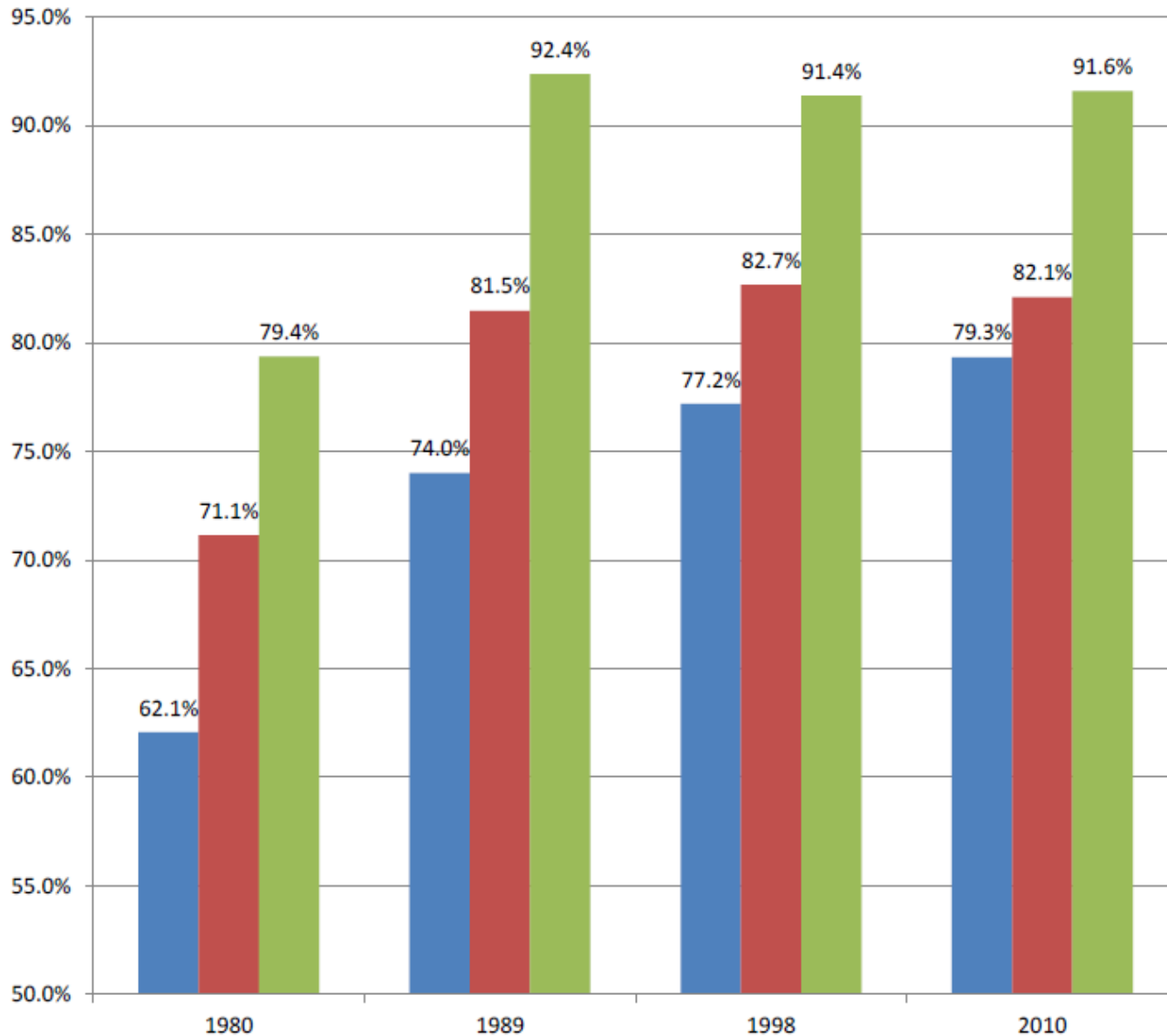**Figure 2: Female to Male Log Wage Ratio, Unadjusted and Adjusted for Covariates (PSID)**
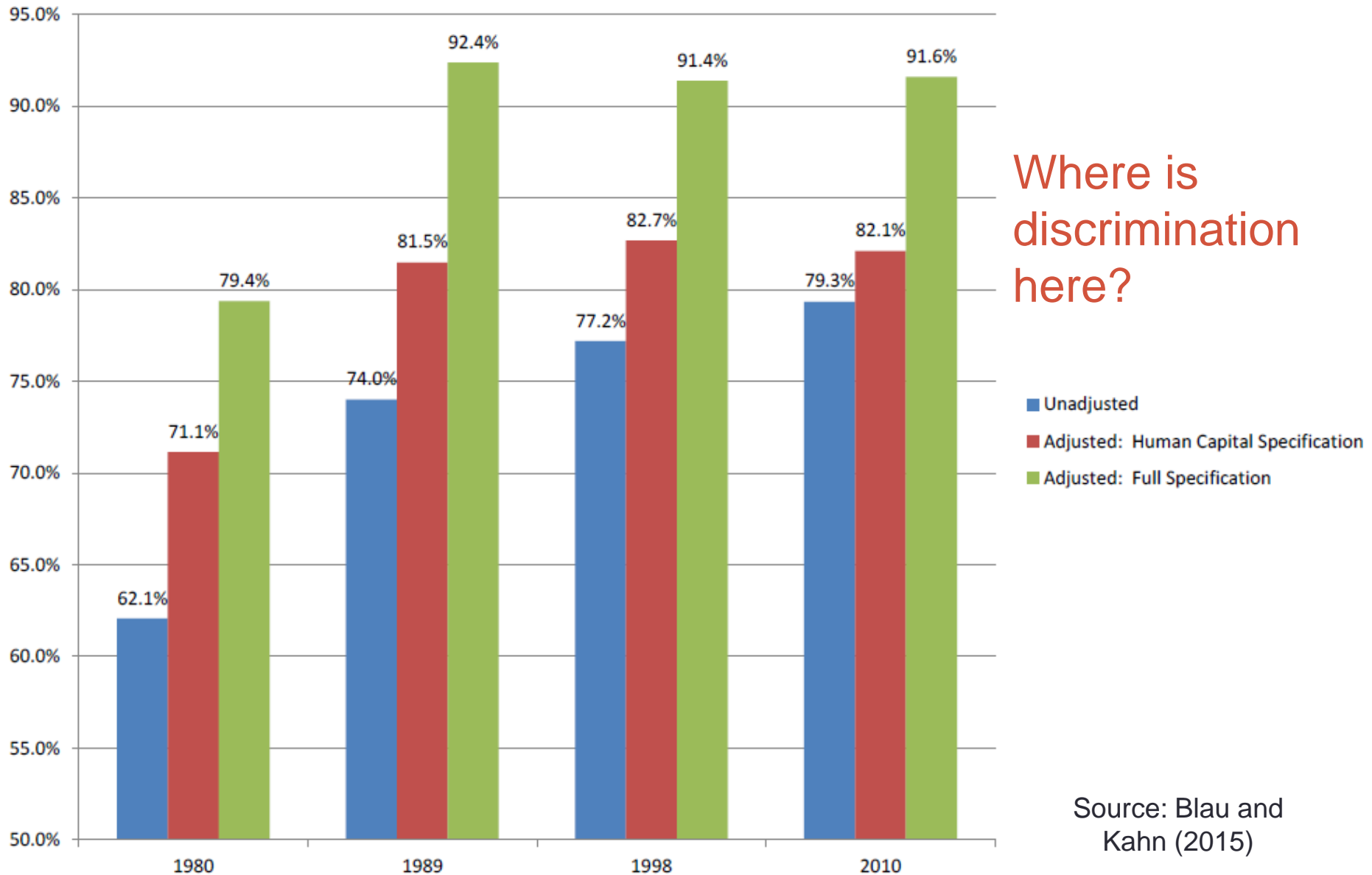
Key Points
1. Large increase in the wage ratios
2. Unadjusted series, bulk of gains in the 1980s
3. For adjusted series, all gains in the 1980s

Source: Blau and Kahn (2015)

Figure 2: Female to Male Log Wage Ratio, Unadjusted and Adjusted for Covariates (PSID)

Where is discrimination here?

Source: Blau and Kahn (2015)

TABLE 1—RESIDUAL GENDER DIFFERENCES IN EARNINGS AND THE ROLE OF OCCUPATION

Sample	Variables included	Coefficient on female	Standard error	R^2
Full-time	Basic	−0.248	0.00101	0.112
Full-time	Basic, time	−0.193	0.00100	0.163
Full-time	Basic, time, education	−0.247	0.000905	0.339
Full-time	Basic, time, education, occupation	−0.192	0.00104	0.453
All	Basic	−0.320		
All	Basic, time	−0.196		
All	Basic, time, education	−0.245		
All	Basic, time, education, occupation	−0.191		
Full-time, BA	Basic	−0.285		
Full-time, BA	Basic, time	−0.230		
Full-time, BA	Basic, time, education	−0.233		
Full-time, BA	Basic, time, education, occupation	−0.163		
All, BA	Basic	−0.384	0.00173	0.119
All, BA	Basic, time	−0.227	0.00151	0.380
All, BA	Basic, time, education	−0.229	0.00148	0.407
All, BA	Basic, time, education, occupation	−0.163	0.00151	0.525

Adding dummies for 469 occupations reduces the coefficient toward equality, but not all the way

Notes: "Basic" regression is the log of annual earnings regressed on the female dummy, age as a quartic, race, and year. "Time" adds log hours per week and log weeks. "Education" adds dummies for education categories (and those above a BA for the college graduate sample). "Occupation" adds three-digit occupation dummies. "Full-time" is 35 and above hours per week and 40 and above weeks per year. "All" includes workers 25 to 64 years old with positive earnings and positive hours worked during the past year. The "full-time" sample consists of full-time, full-year individuals 25 to 64 years old excluding those in the military using trimmed annual earnings data (exceeding 1,400 hours × 0.5 × 2009 minimum wage). The "BA" sample includes workers with at least a college or university bachelor's degree. The number of observations is 2,603,968 for full-time, 3,291,168 for all, 964,705 for full-time BA or more, and 1,162,638 for all BA or more.

Source: American Community Survey 2009 to 2011.

At the Mean

Variables	1980 Effect of Gender Gap in Explanatory Variables		2010 Effect of Gender Gap in Explanatory Variables	
	Log Points	Percent of Gender Gap Explained	Log Points	Percent of Gender Gap Explained
A. Human Capital Specification				
Education Variables	0.0129	2.7%	-0.0185	-7.9%
Experience Variables	0.1141	23.9%	0.0370	15.9%
Region Variables	0.0019	0.4%	0.0003	0.1%
Race Variables	0.0076	1.6%	0.0153	6.6%
Total Explained	0.1365	28.6%	0.0342	14.8%
Total Unexplained Gap	0.3405	71.4%	0.1972	85.2%
Total Pay Gap	0.4770	100.0%	0.2314	100.0%
B. Full Specification				
Education Variables	0.0123	2.6%	-0.0137	-5.9%
Experience Variables	0.1005	21.1%	0.0325	14.1%
Region Variables	0.0001	0.0%	0.0008	0.3%
Race Variables	0.0067	1.4%	0.0099	4.3%
Unionization	0.0298	6.2%	-0.0030	-1.3%
Industry Variables	0.0457	9.6%	0.0407	17.6%
Occupation Variables	0.0509	10.7%	0.0762	32.9%
Total Explained	0.2459	51.5%	0.1434	62.0%
Total Unexplained Gap	0.2312	48.5%	0.0880	38.0%
Total Pay Gap	0.4770	100.0%	0.2314	100.0%

Source: Blau and Kahn (2015)

Distribution

Percentile	1980 Specification		2010 Specification	
	Human Capital	Full	Human Capital	Full
A. Effect of Covariates				
10th percentile	0.1767	0.2729	0.0721	0.1648
	(0.0234)	(0.0374)	(0.0249)	(0.0453)
50th percentile	0.1215	0.2381	0.0237	0.1274
	(0.0167)	(0.0279)	(0.0151)	(0.0235)
90th percentile	0.1139	0.2281	0.0265	0.1246
	(0.0188)	(0.0260)	(0.0203)	(0.0329)
B. Effect of Wage Coefficients				
10th percentile	0.2958	0.1886	0.1134	0.0319
	(0.0429)	(0.0487)	(0.0359)	(0.0511)
50th percentile	0.3876	0.2598	0.1836	0.0835
	(0.0220)	(0.0275)	(0.0231)	(0.0255)
90th percentile	0.3316	0.2336	0.2749	0.1790
	(0.0269)	(0.0285)	(0.0341)	(0.0357)
C. Sum of Covariate and Wage Coefficient Effects				
10th percentile	0.4725	0.4615	0.1855	0.1967
	(0.0367)	(0.0353)	(0.0266)	(0.0314)
50th percentile	0.5091	0.4979	0.2073	0.2109
	(0.0226)	(0.0232)	(0.0236)	(0.0211)
90th percentile	0.4455	0.4617	0.3014	0.3036
	(0.0314)	(0.0311)	(0.0346)	(0.0342)

Notes: Standard errors are in parentheses. Source: Blau and Kahn (2015)

Summary thus far

- Biggest part of gender gap today are differences in occupations/industries

- Women have surpassed men in educational achievement at almost every level and experience gaps have grown increasingly smaller

- Unexplained part of the gender gap cannot be labeled discrimination (it captures a lot of unobserved characteristics as well)

- Next lecture: how/why did convergence take place?

You should know the answers now…

- What is the ratio of female undergraduate economics majors today? How has this changed since 1990s?

- What is the gender wage ratio today? In 1960?

- What is the most important observed factor explaining changes in the US over the last 50 years?
  - Education, experience, occupation/industry choice

- Where does the US stand in terms of the gender wage gap? Lower or higher in 2010 than Japan, Sweden, France?