Principles of Applied Microeconomics

Ross Summer Connection (2022)
Elird Haxhiu

Gender Wage Gap

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Tools so far

- Marginal analysis + supply/demand model

- Causal inference: understand how selection bias due to non-random treatment assignment can prevent us from learning the validity of truth claims based on simple comparisons

$$\overline{Y}_1 - \overline{Y}_0 = ATT + SB = ATE$$

Last equality only holds under **independence**

Gender Wage Gap

- We have studied the gap $\boldsymbol{\Delta_M}$ in income between rich-country and poor-country workers around the world
- Or gain in world income from eliminating restrictions on labor mobility

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- Apartheid (largely) explains Δ_M, but what is behind Δ_G? This week…
  1. Tools: computing gaps + welfare theorems
  2. Research: **Cortes & Pan (2017)**

Empirical facts in US from 1970-2000

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2. Women entered "traditionally male" occupations Ω_G

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- Blau & Kahn, 2000: understand how these two patterns are linked!

- Outline
  1. Descriptive analysis: trends in Δ_G and Ω_G over time
  2. Explaining trends in terms of human capital and discrimination
  3. Accounting for education + discrimination, what explains the rest? (Kids!)

Trends in earnings ratio $\Delta_G = \frac{Y_W}{Y_M}$

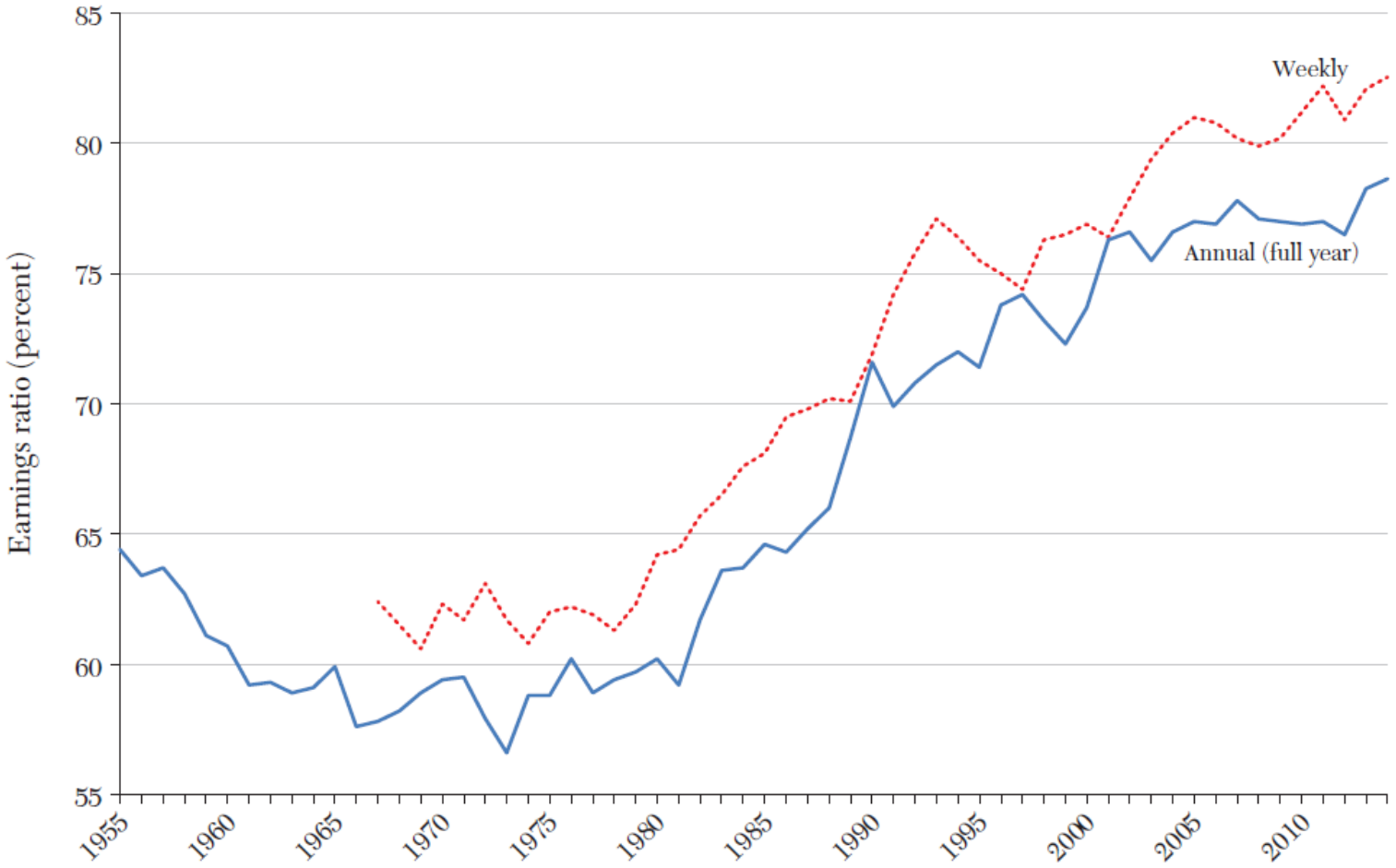

Figure 1. Female-to-Male Earnings Ratios of Full-Time Workers 1955–2014

Explaining Trends in $\Delta_G = \frac{Y_W}{Y_M}$

1. Younger/more recent cohorts of women are better prepared and/or less discriminated against than older cohorts

2. Within every cohort over time, women are becoming better prepared and/or facing less discrimination

3. Both!

Table 1

Female/Male Hourly Wage Ratios of Full-Time Workers by Age, 1978–98

Wage Ratios	*1978*	*1988*	*1998*
18–24	0.824	0.930	0.942
25–34	0.703	0.828	0.850
35–44	0.589	0.687	0.761
45–54	0.582	0.647	0.716
55–64	0.623	0.610	0.693

Trends in occupational sorting Ω_G

- Before the 1970s…
  - Female employment concentrated in low-paying, “female-dominated” jobs
  - EX: administrative support, professional jobs (teacher, nurse, librarian)
  - Low female share in “blue-collar” jobs, and few in manager positions

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- After the 1970s…
  - Mass (occupational) migration of women into “male-dominated” occupations
  - EX: female college grads going on to be teachers (50% in ‘60, 10% in ‘90)
  - Declines in various “occupational segregation” measures over time

Explaining these trends

- Differences in (A) labor market treatment versus (B) qualifications by gender, as explanations for Δ_G (and Ω_G)

A. Differential labor market treatment by gender
   - Discrimination, econ version: “taste based” versus “statistical”
   - Historically, extremely relevant for Δ_G but increasingly less so today
   - Discrimination as a driver of overcrowding in female dominant jobs, and hence depressed wages in those occupations…

Explaining these trends

- Differences in (A) labor market treatment versus (B) qualifications by gender, as explanations for Δ_G (and Ω_G)

B. Differential labor market qualifications by gender
  - Human capital model: people chose investments that will increase their productivity during their future life (aka wage…) at some current cost
  - Predictions of reduced female investments in education early on, given "traditional division of labor by gender in the family…" (Becker, 1985)
  - Implications for jobs with OJT (on-the-job training), and hence Ω_G

Gender wage gap composed of

A. Part explained by HC: education + experience + location etc.
B. Residual/what's left over: discrimination + kids + unmeasured HC

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- $Y_{if} = \beta_f X_{if} + \varepsilon_{if}$ female (log) wages, where ε_{if} is mean zero
- X_{if} female human capital
- β_f market returns to human capital for women

- Same for men ⇒ $Y_{im} = \beta_m X_{im} + \varepsilon_{im}$

Decomposing Δ_G into A vs B

$$\overline{Y}_m = \hat{\beta}_m \overline{X}_m$$

$$\underbrace{\overline{Y}_m - \overline{Y}_f}_{\Delta_G} = \hat{\beta}_m \overline{X}_m - \hat{\beta}_f \overline{X}_f$$

$$= \hat{\beta}_m \overline{X}_m - \hat{\beta}_f \overline{X}_f + \hat{\beta}_m \overline{X}_f - \hat{\beta}_m \overline{X}_f$$

$$= \hat{\beta}_m \left(\overline{X}_m - \overline{X}_f\right) + \overline{X}_f (\hat{\beta}_m - \hat{\beta}_f)$$

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$$= \hat{\beta}_m \left(\overline{X}_m - \overline{X}_f\right) + \overline{X}_f \left(\hat{\beta}_m - \hat{\beta}_f\right)$$

$$\Rightarrow \Delta_G^{HC} := \underbrace{\overline{Y}_m - \overline{Y}_f}_{\Delta_G} - \hat{\beta}_m \left(\overline{X}_m - \overline{X}_f\right)$$

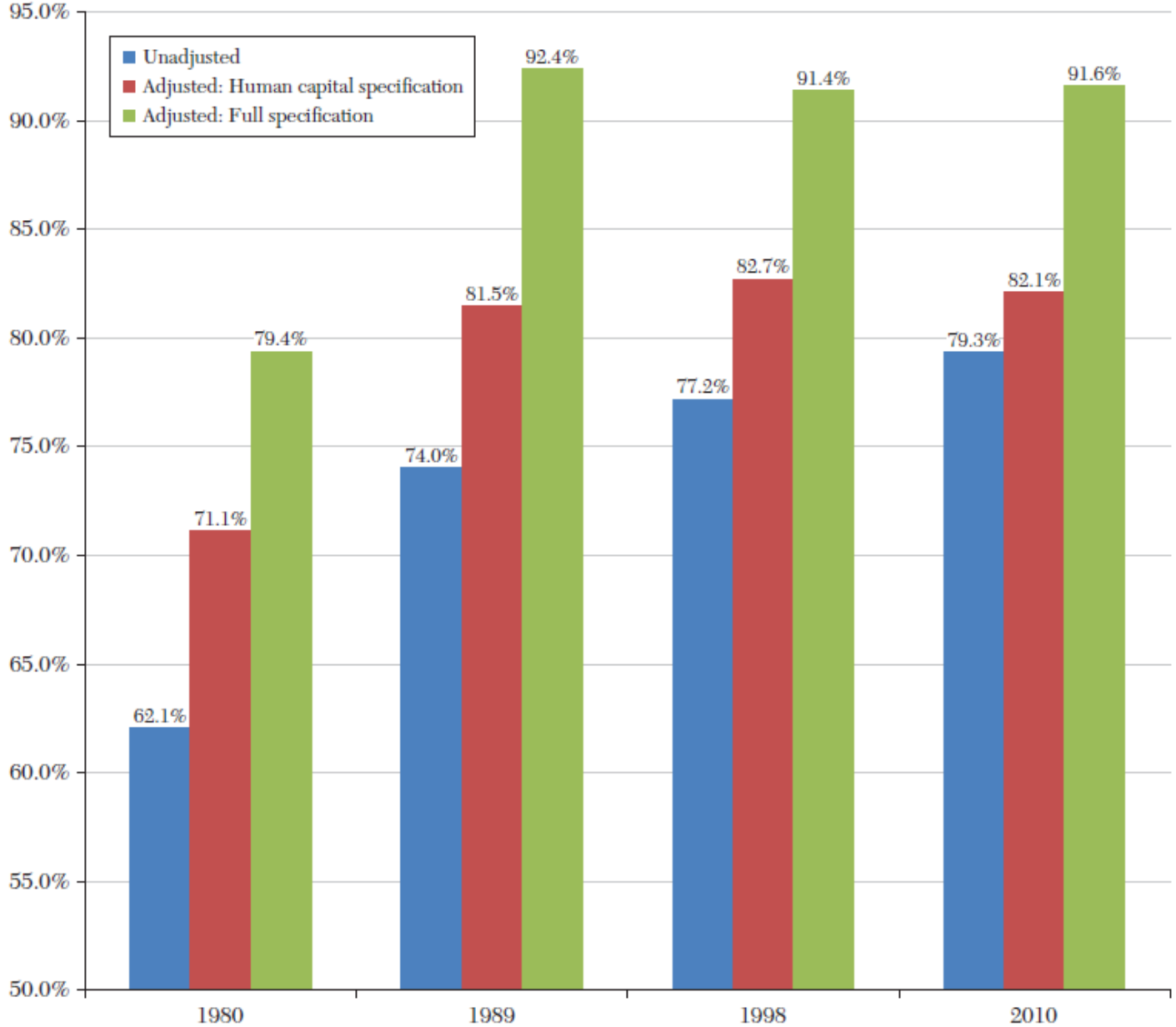

Figure 2. Female to Male log Wage Ratio, Unadjusted and Adjusted for Covariates (PSID)

Decomposition results

- Nationally representative data, PSID at Michigan! Blau & Kahn (1997)
- After controlling for HC $\Delta_G = 0.72$ changes to $\Delta_G^{HC} = 0.80$

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- Note: some people suggest we should control for occupation when computing the gap. This will bias your estimates… why?
  - "If women face barriers to entry into certain occupations, they may have higher unmeasured productivity than men in the same jobs. This would also suggest an underestimate of discrimination if we controlled for occupation"

- But it doesn't matter since this gives $\Delta_G^{HC+} = 0.88$

Decomposition results

- The residual contains discrimination + children/family information
- It also contains omitted human capital variables we forgot about or didn’t have access to when estimating the adjusted gap…

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- These types of decomposition results are only as credible as their measures of human capital. What if you leave variable X out?
  - Many other research designs to deal with this issue!
  - Wood et al. (1993) Michigan law school study! Try to compare similar men and women to deal with potentially omitted HC variables
  - Audit designs (Neumark, 1996) and actual court cases!

Interpreting trends

- Wage structure: prices for skills and employment in particular sectors of the economy set by labor market

- Some trends to keep in mind re: wage structure in US
  1. Technological change favored white-collar jobs which women were going into since the 1970s (recall descriptive evidence…)
  2. Declining unionism in the United States since forever disproportionally affects blue-collar workers (and hence men more than women)
  3. Increasingly computerized production means “physical advantages” for men are less salient in determining economic outcomes

Conclusion

- Discrimination still exists, but (empirically) seems to be shrinking
- At least some of the remaining gap must be due to **children/parenting**!
- Currently: women still have primary responsibility for housework and childcare around the world. Implies various penalties: direct + indirect

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- But this trend too is changing
  1. Families responding to market incentives imply women are working more.
  2. Policies that "facilitate the integration of work and family responsibilities, both voluntary and government-mandated, have become increasingly prevalent"
- Long term trend: easier for women to combine work/family + greater share of household production done by men implies $\Delta_G \to 1$

Next time

- READ: Cortes & Pan (2017) with a critical eye

- EC1 available and due tomorrow at 11:59pm
  - Not a women's issue, but a family issue
  - Small fraction of Δ_G due to direct discrimination, which is illegal. Indirect forms of discrimination?
  - Main contributor to gap: children! Non-child examples?
  - Three times as many single moms as single dads in the US
  - Examples of progress in the world: Rwanda and Iceland
  - HRC point: what the workplace favors, favors men…

- HW1 due at 11:59pm tonight as one .pdf file upload with your answers