

Apologies

- This is not “Why should we care.”
- This is “one reason we shouldn’t”:

- It doesn’t help explain the facts.

SBTC: Some “Puzzles” and “Problems”

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The Problem:

- The relative wage of the highly educated has risen over the last 30 years and hence inequality has risen.
- The relative fraction of the work force with college education has risen over the last 30 years.
- This increase in supply, should have led the relative wage of the highly educated to fall.

But relative wages rose.

- How did this happen?? A rising supply of college educated workers should have led to a decrease in their relative wage.
- Virtual consensus that “technology” is far and away the most important explanation for rising inequality over the last 30 years.

The Consensus

- No other development “big enough” to explain this increase -- hence technology (such as the personal computer or the internet) must have led to an increase in the demand for the highly educated.

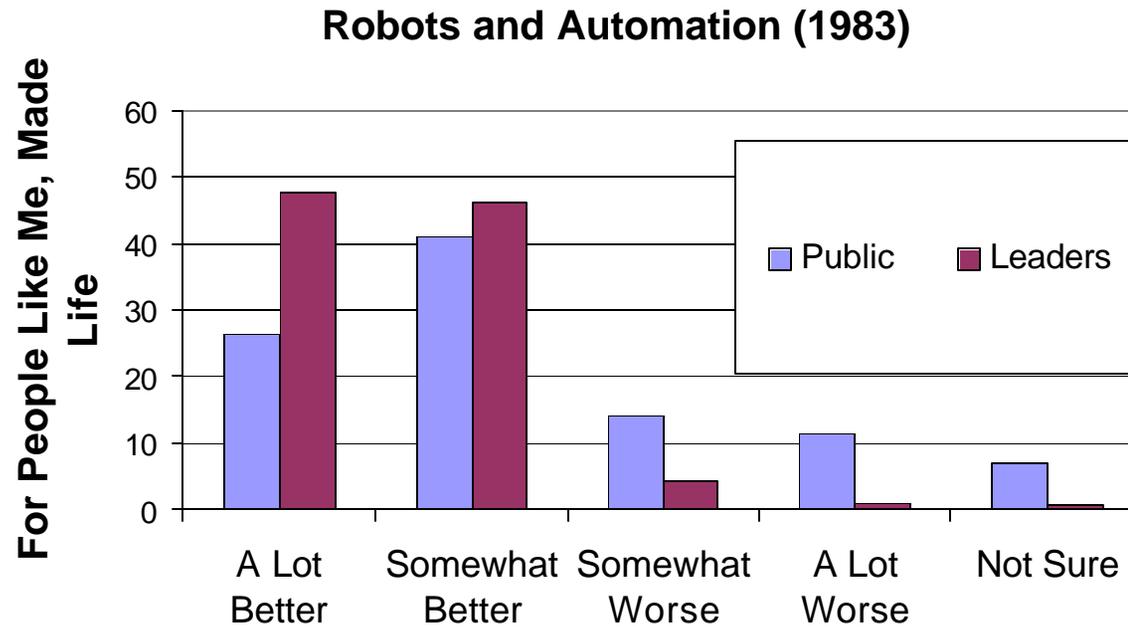
Why was SBTC an attractive theory?

- Technological Change was skill-biased. Hence Skill Biased Technological Change.
- In the late 1970s concern was that “too many” people were going to college given the value (in terms of higher wages) of a college degree.
- Freeman (1976) “The Over-educated American”

Two Big Developments of the 1980s

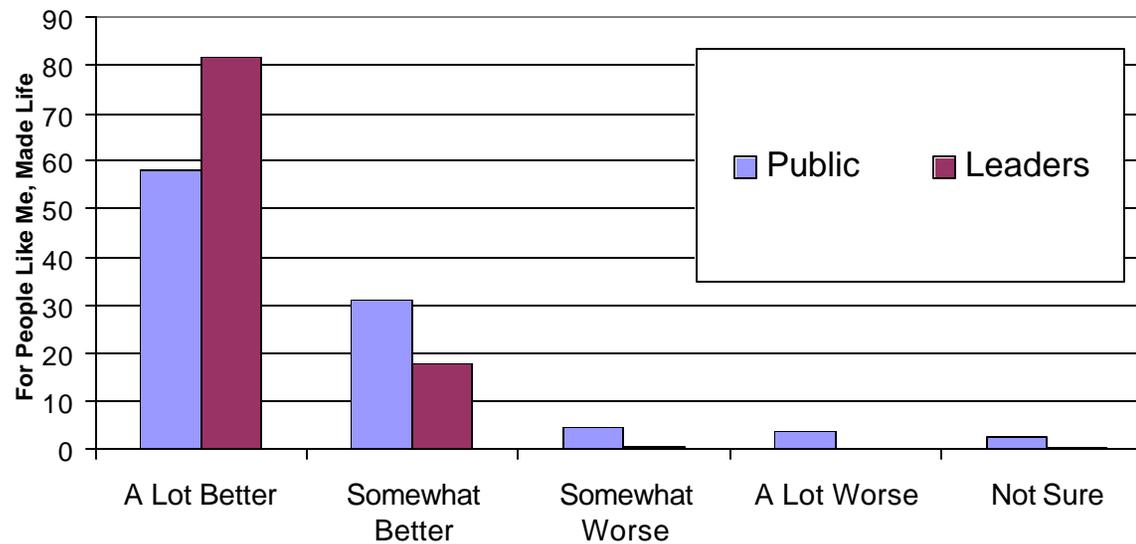
- Inequality rose rapidly in the 1980s.
- The introduction of the Personal Computer.
- Given the tremendous excitement among the educated about the potential for the PC, it was natural to assume the two were related.

Public vs. “Leaders” - 1983



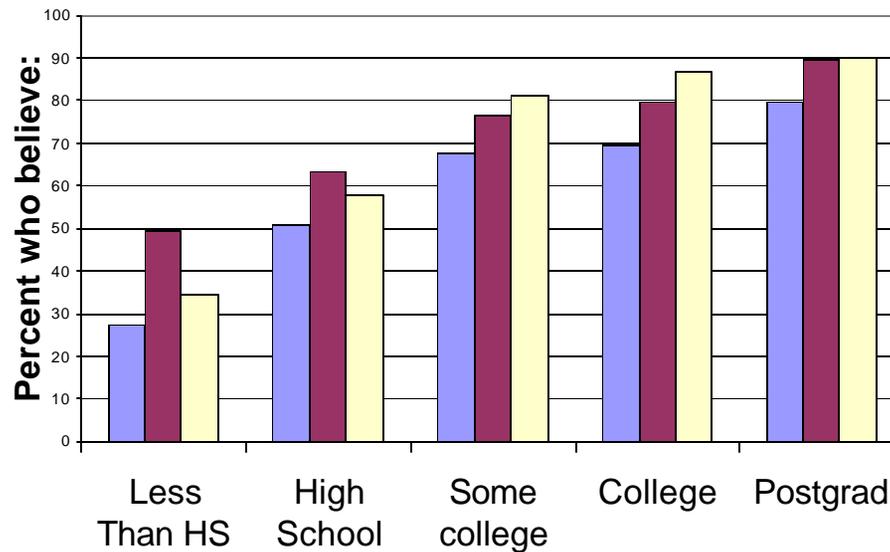
Public vs. "Leaders" - 1983

Computers



Views About Computers, January 2000

CBS MarketWatch, Jan 2000

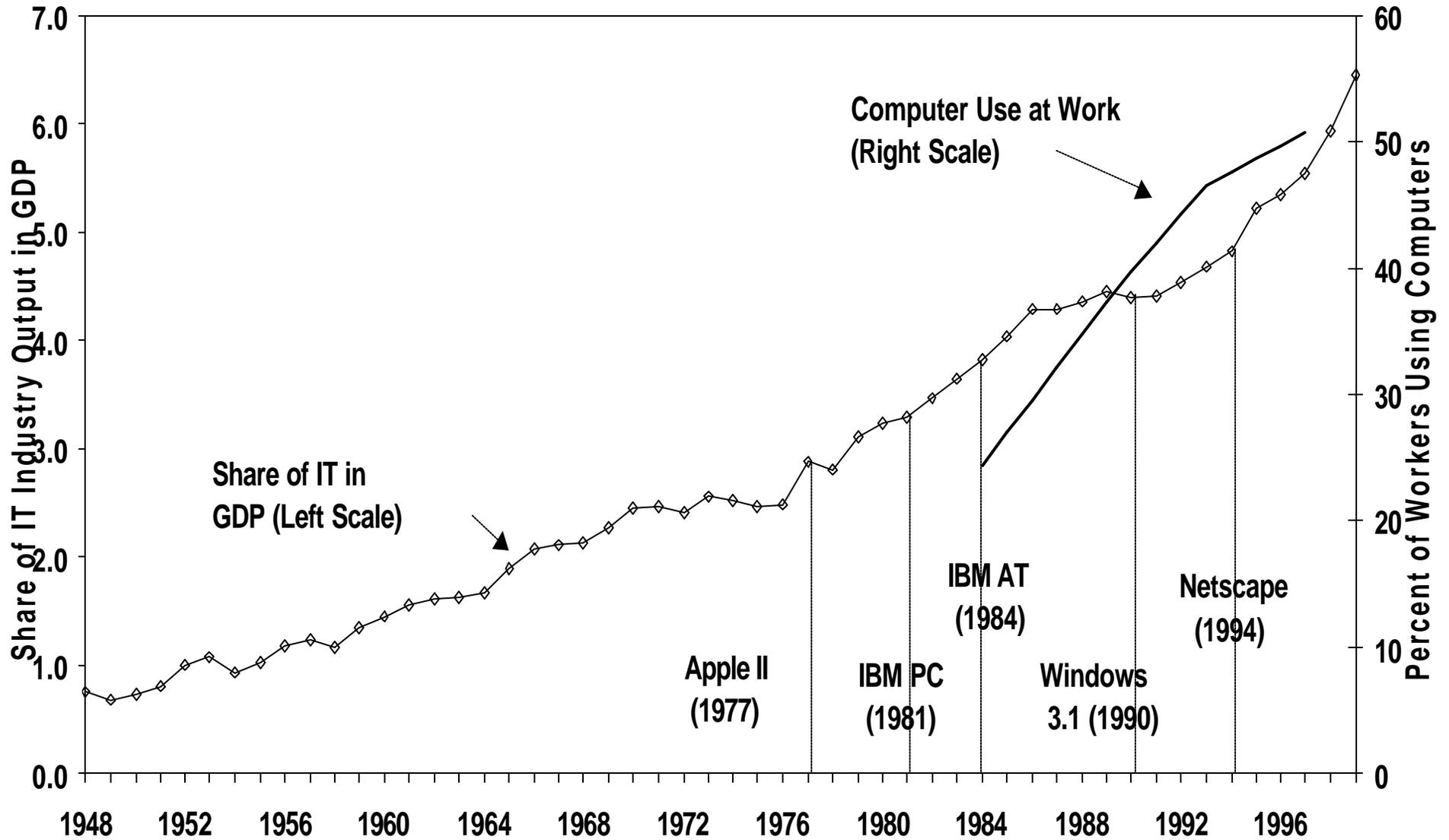


1. The internet solves more problems than it creates.

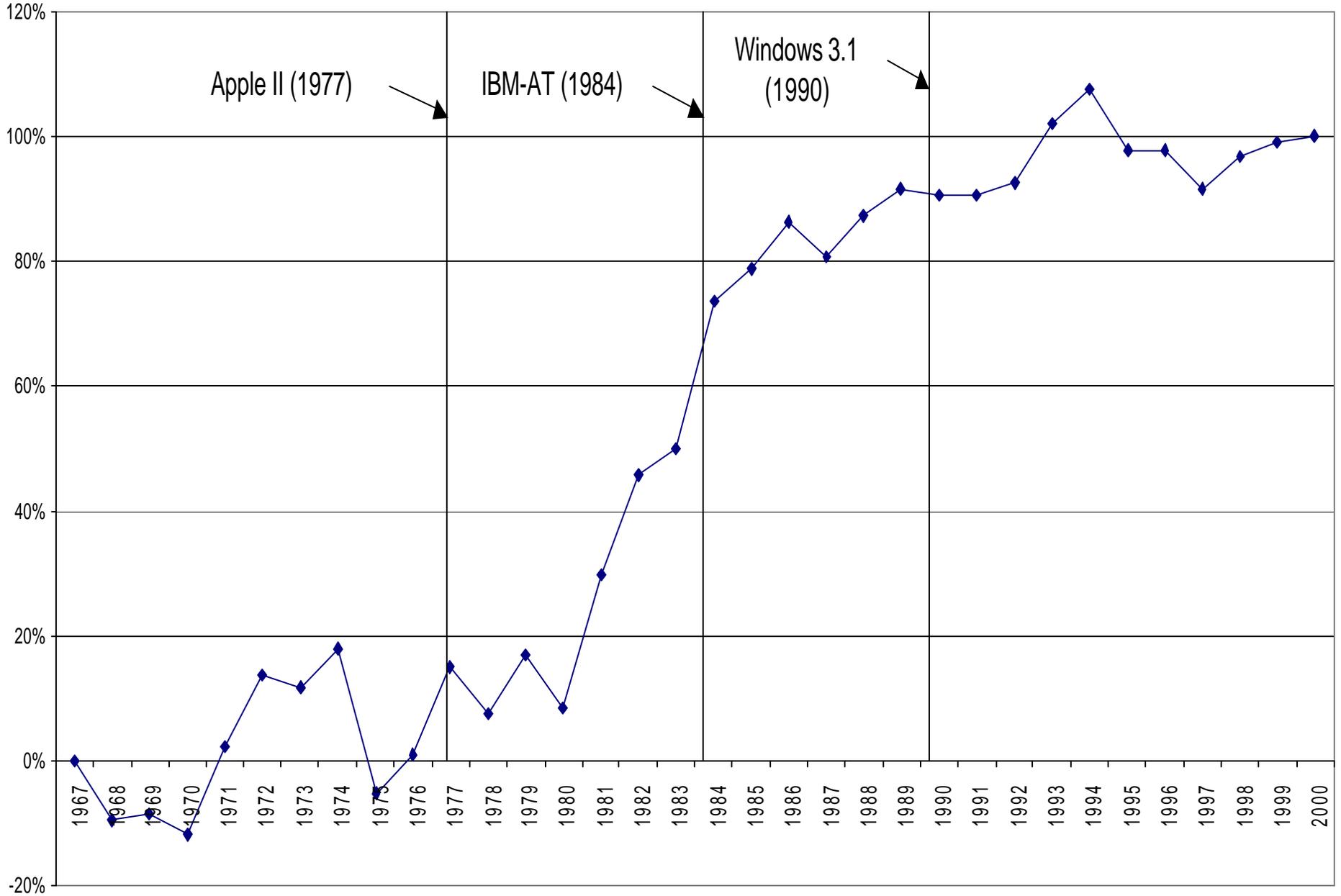
2. Computers solve more problems than they create.

3. Have access to a computer at home or at work.

What Technology and When?



Percent of 1967-2000 Increase in Std. Dev. Of FTFY Men Annual Earnings



A Problem: All the Rise in Inequality is from 1981 to 1986!

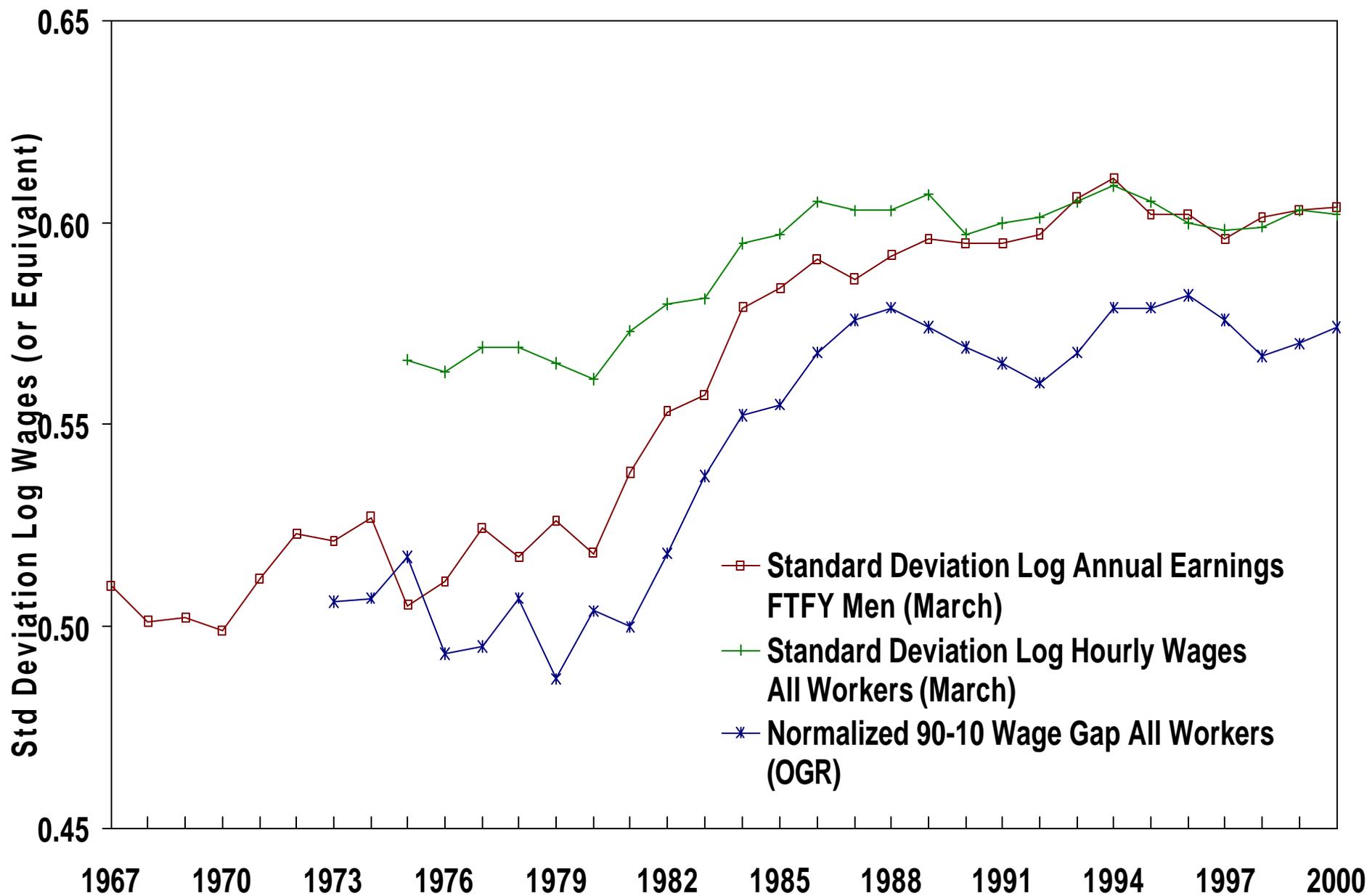
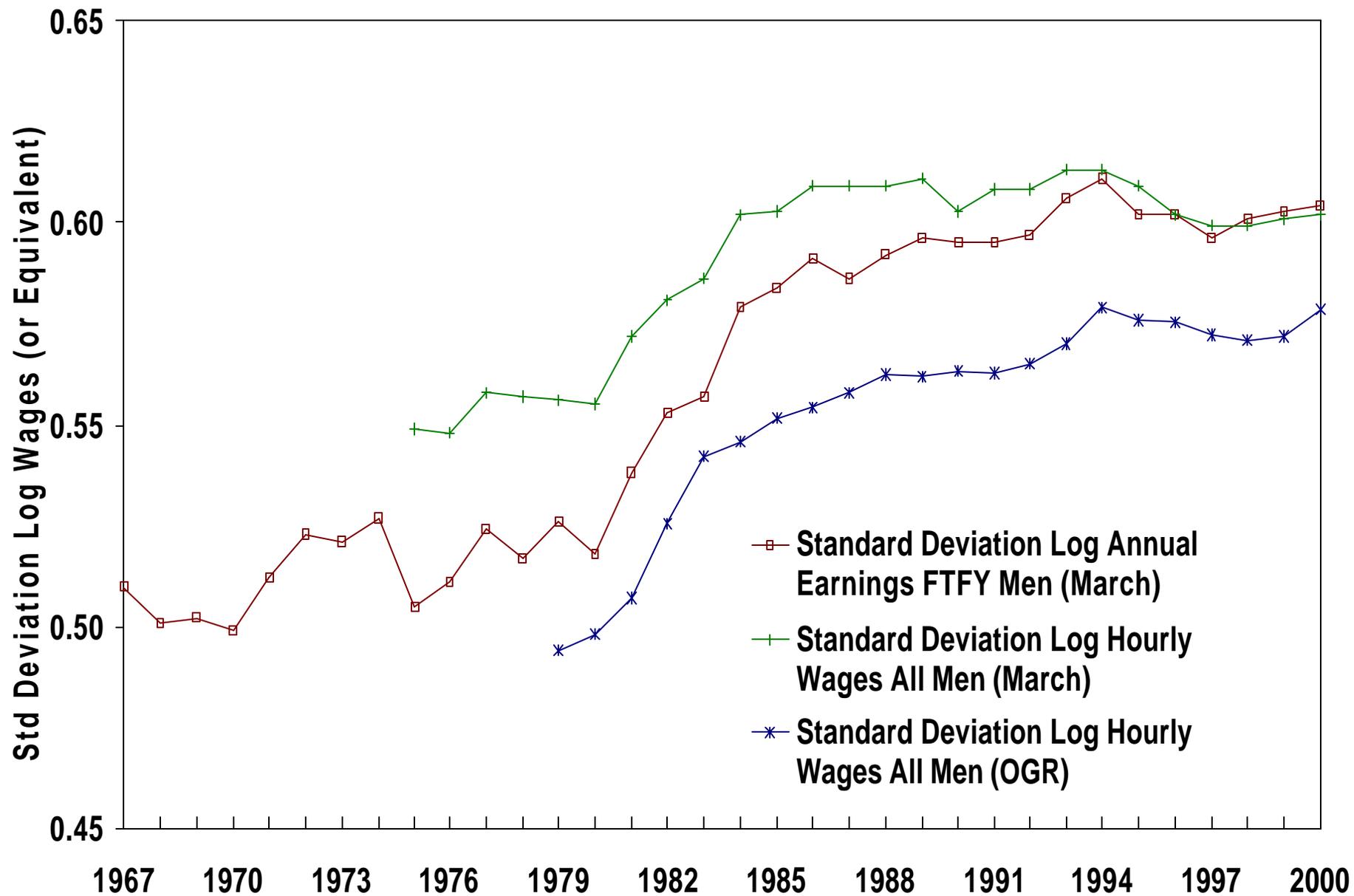
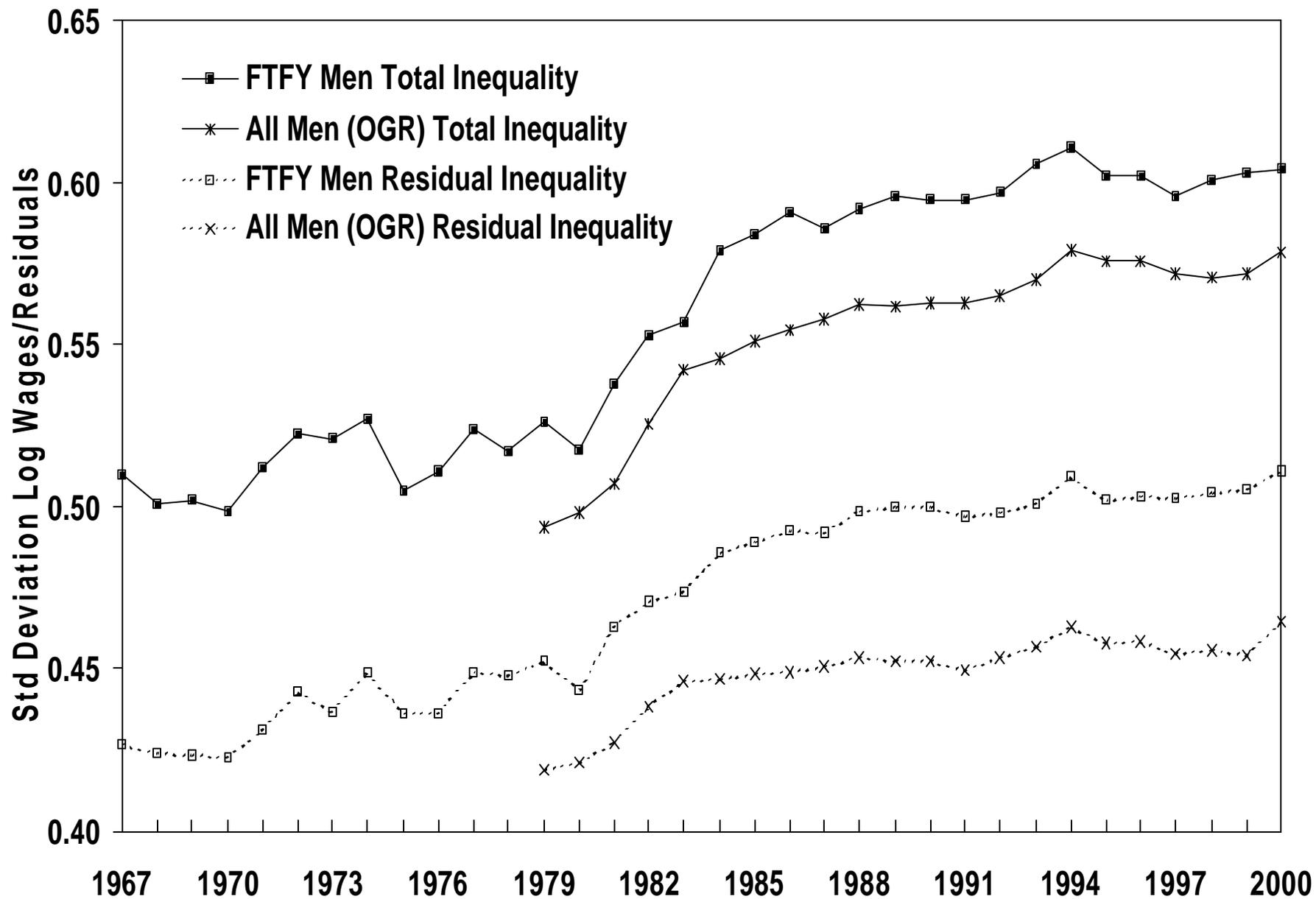


Figure 3: Alternative Measures of Wage Inequality for Male Workers



- Moreover, the same is true for the very modest increase in “residual” inequality -- the inequality that can’t be explained by changes in supply and demand.

Figure 18: Overall and Residual Wage Inequality for Male Workers



Another Problem:

- The relative wages of those with the most computer skills fell at the same time inequality was rising!

Figure 10: First Year Salaries Relative to Humanities/Social Sciences

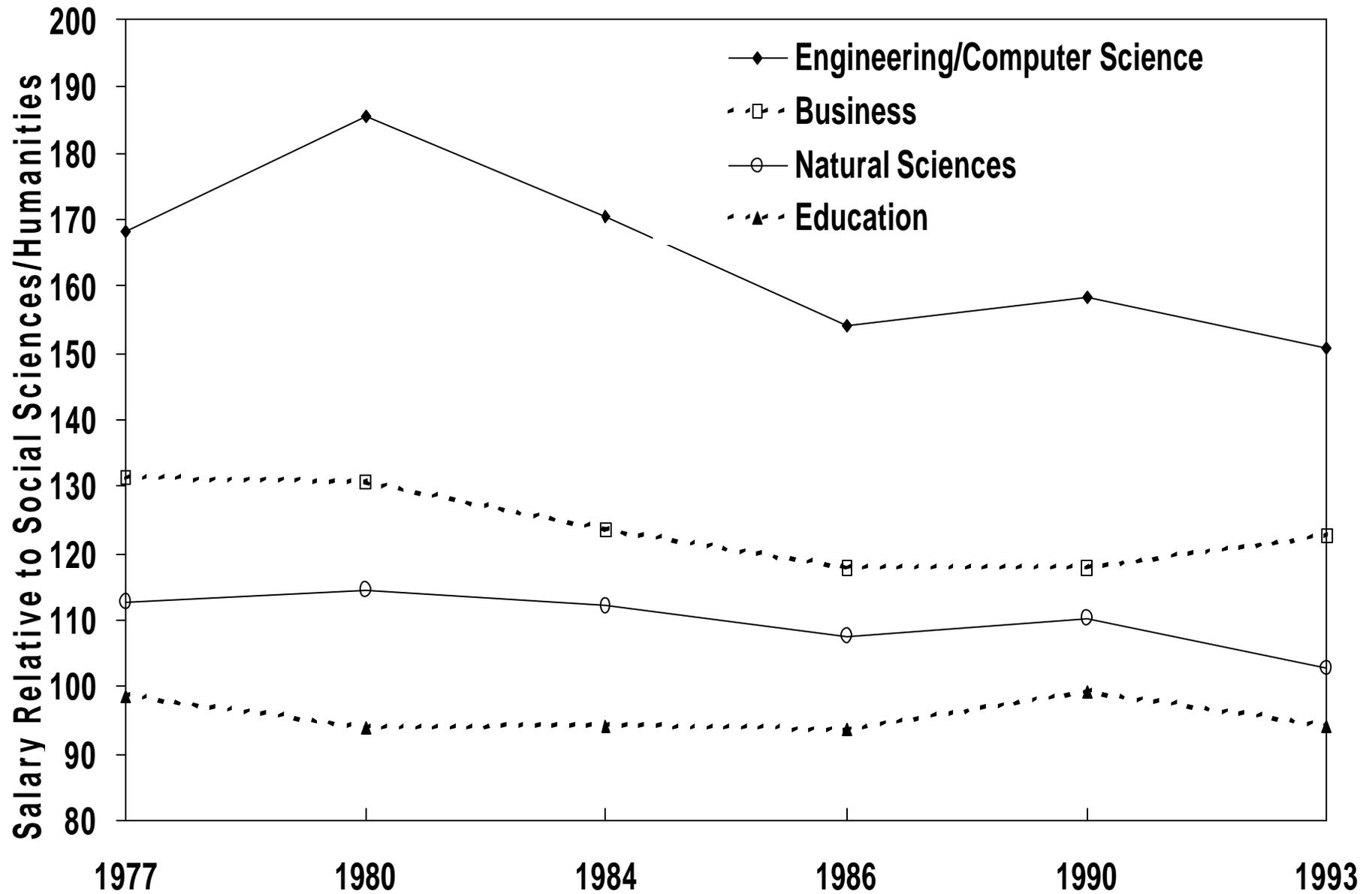
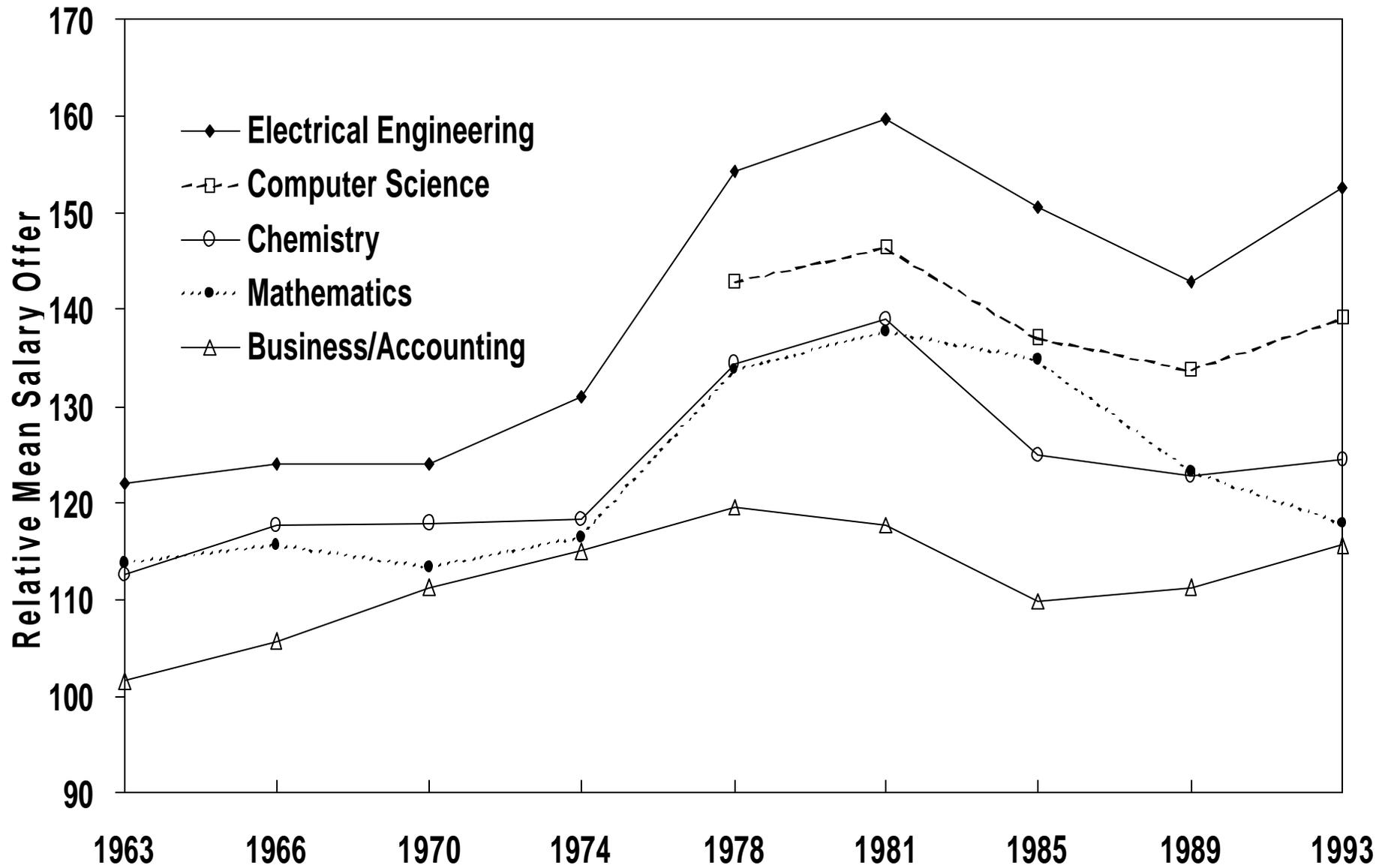


Figure 9: Mean Salary Offer Relative to Humanities/Social Sciences



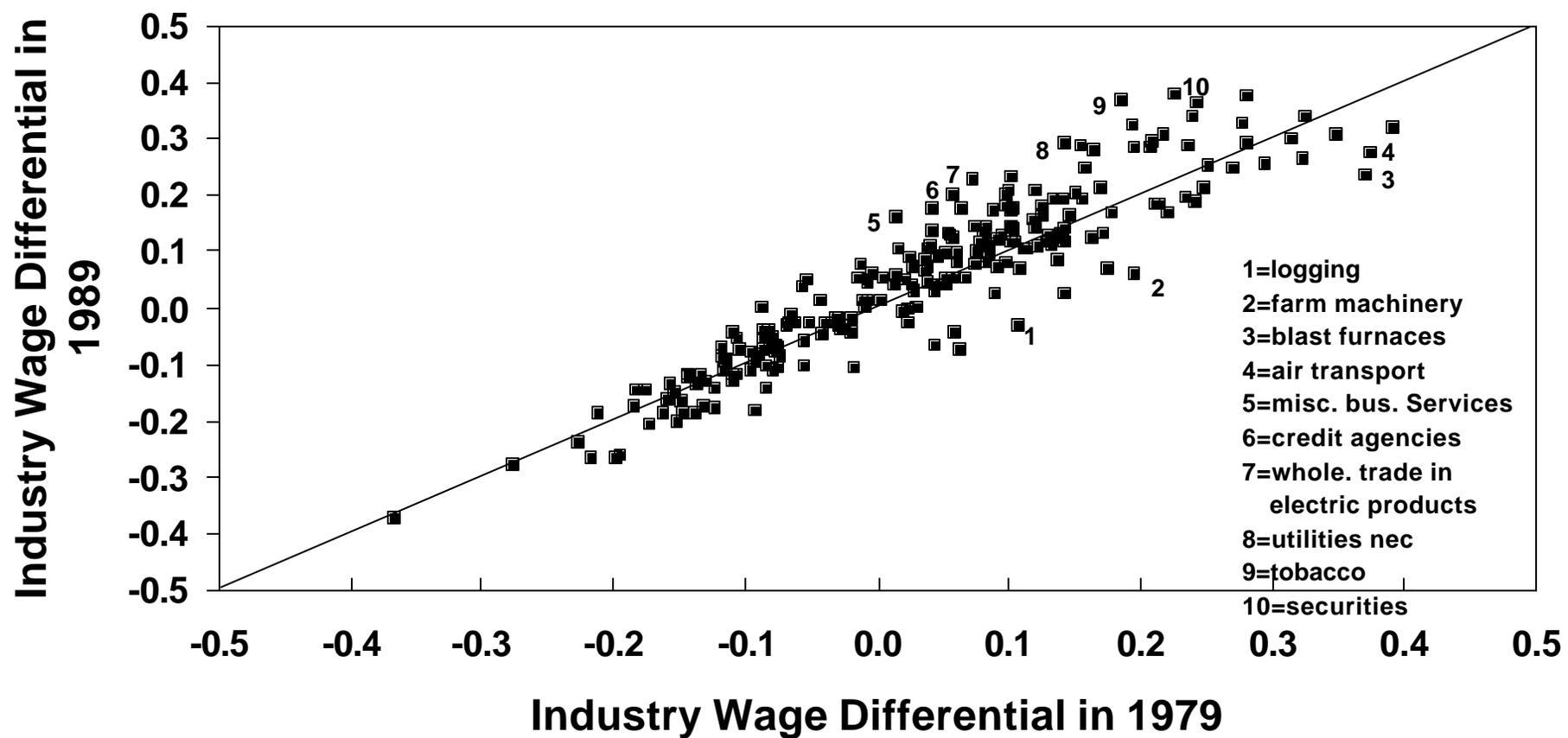
Other Technology Explanations?

It isn't computers. Moreover, all wage differentials did not increase:

- Male-female wage gap fell (despite gender computer gap for high-ed).
- Black-white differential hardly moved.
- Adding “supply” *heightens* the puzzles.
- No *general* rise in the returns to schooling or experience.

Suppose industry wage diffs reflect unobserved ability?

Figure 20: Industry Wage Differentials in 1989 Versus 1979



Is there really a puzzle?

- Is it really mysterious why wage inequality rose so dramatically from 1981-1986?
- Unless you believe that technology left the marginal value product of the modal woman in 1979 at \$2.90 an hour, there is a more mundane explanation.

Figure 22: Real Minimum Wage, 1973-2000

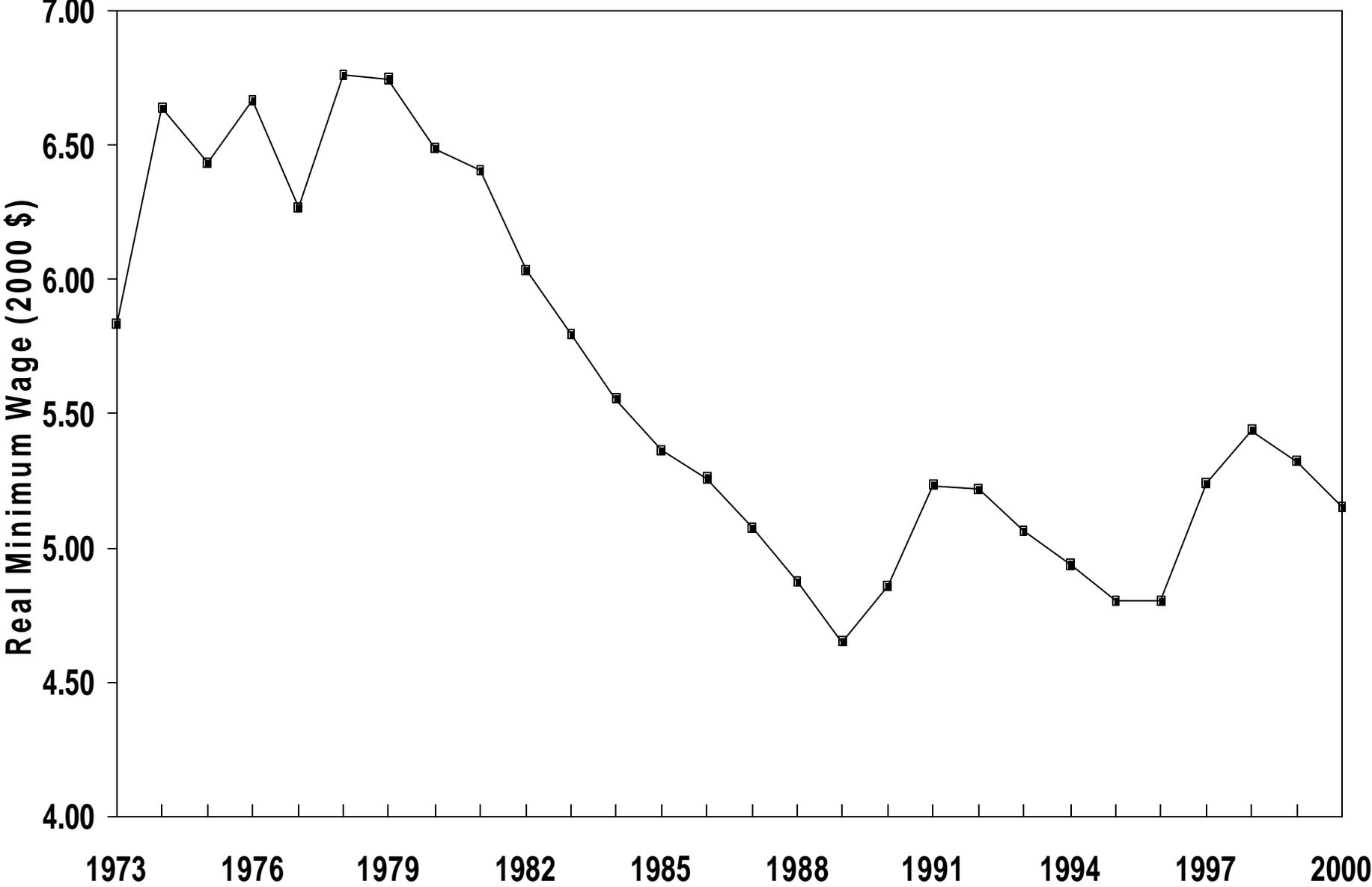


Figure 23: Wage Inequality and the Minimum Wage

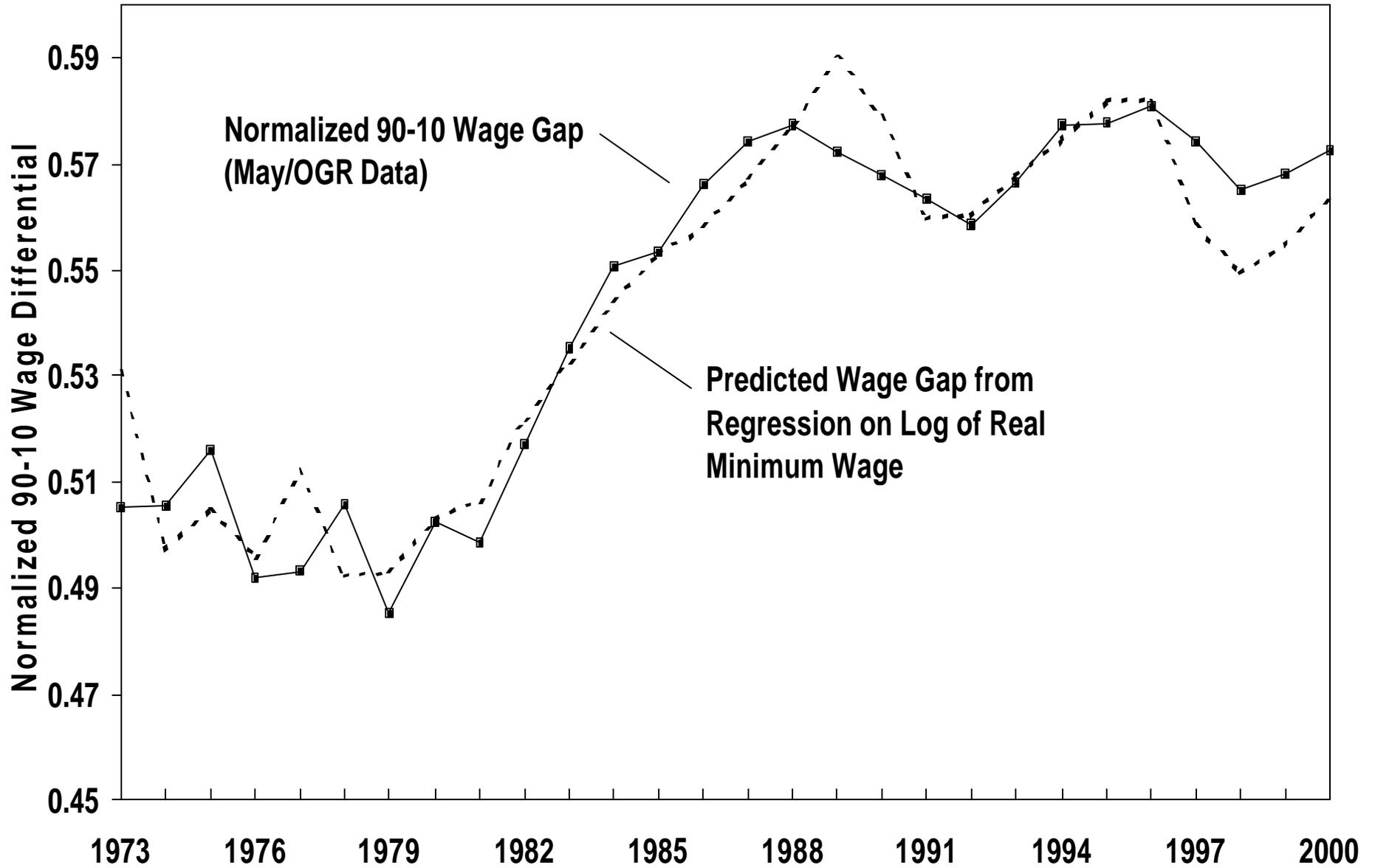
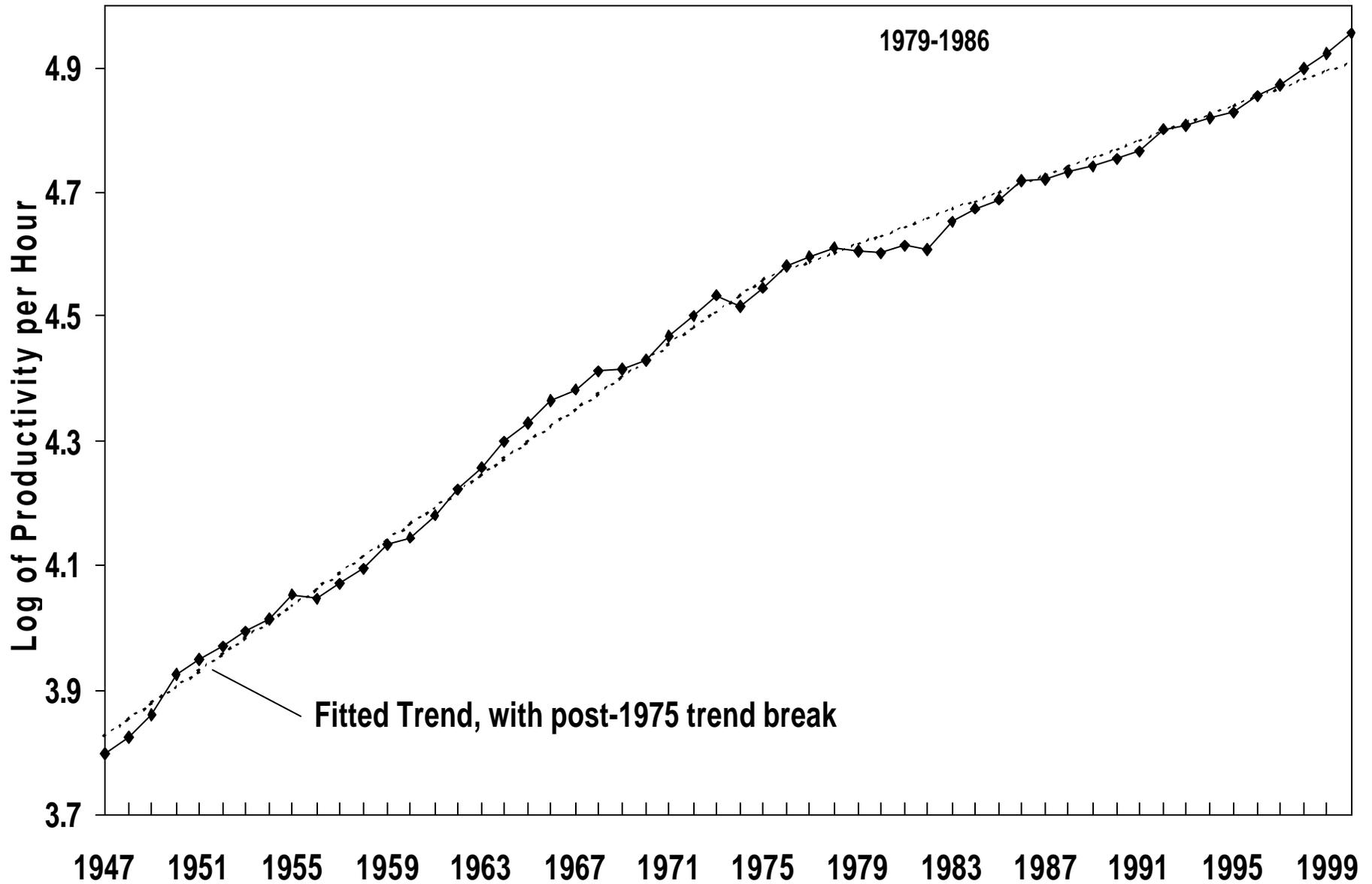


Figure 21: Trends in Productivity Per Hour (Nonfarm Business Sector)



The Peculiar Hypothesis

- Unlike many proposed explanations, there is no sensible “counterfactual” (No causation without manipulation?) Not so for Minimum wage, unions, trade, immigration.
- Only explanation that requires you believe a “theory” Residuals aren’t “non-parametrically identified.”

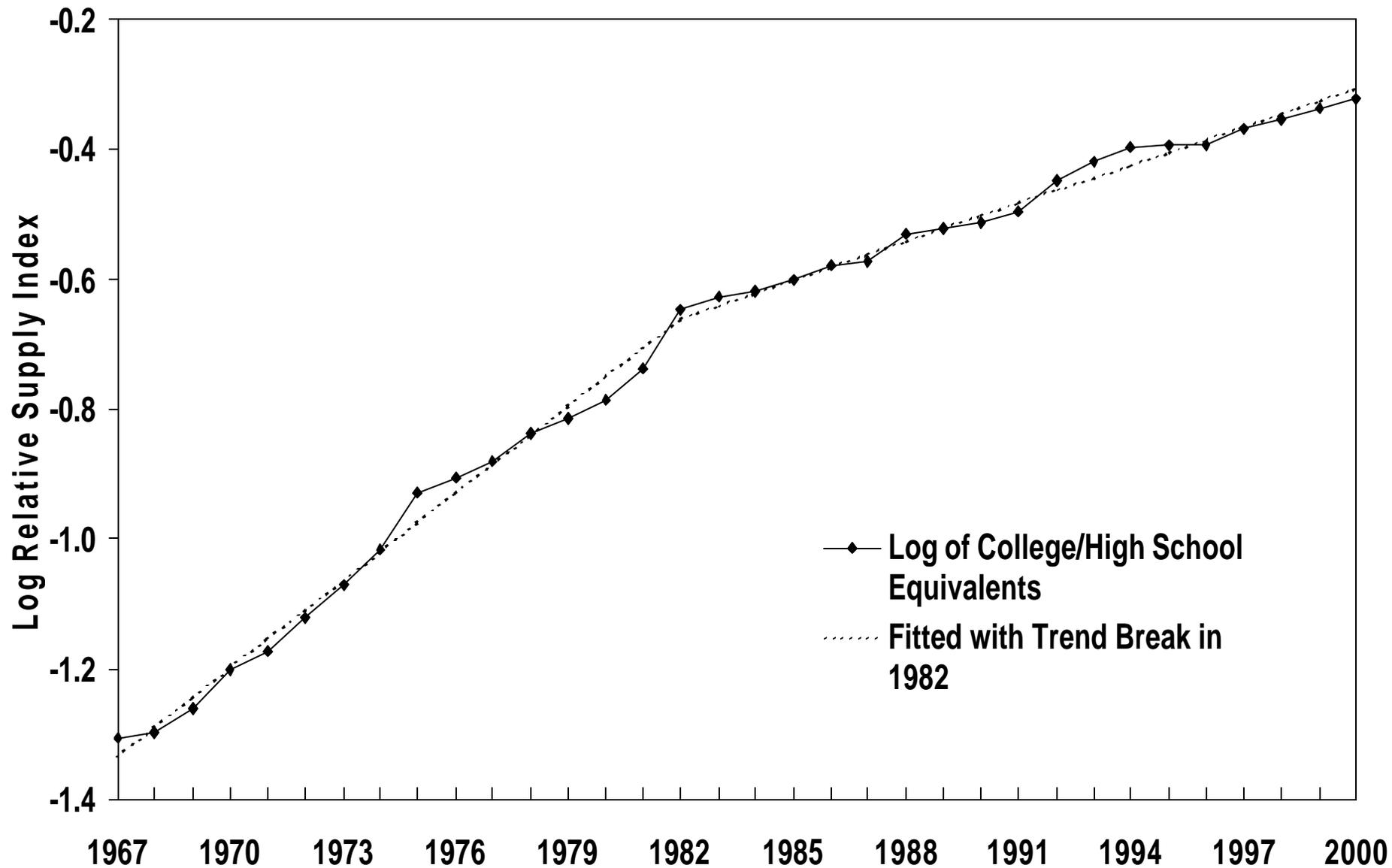
Conclusions:

- Technology doesn't explain what happened well (or easily!)
- Doesn't point you in the right direction
- Our hope is to “open up the field of unexplained variance to all players.”

Skill Biased Technical Change (SBTC)

- Technology must have been skill-biased.
- Two versions of the theory:
 - Rising skill price. $\text{Wage} = \text{price} * \text{skill}$
 - Computer-skill complementarity.
- As many “theories” of technology as commentators. SBTC is one of the few with potentially significant empirical content.

Figure 6: Relative Supply of College Educated Labor



"Feature"	Universe	Computer	Skill Price	Outcome
By Decade	1970s	?	?	Little Change
	1980s	Increase	Increase	Large Increase
	1990s	Increase	Increase	Little Change
FTFY-Men	1980-2000	?	Larger for All	Larger for FTFY
College/HS	1980s	Increase	Increase	Large Increase
(All Workers)	1990s	Increase	Increase	Little Increase
College/HS by Age				
Younger Workers	1980s onward	Increase	Increase	Increase
Older Workers	1980s onward	Increase	Increase	Little Increase
Science v. Human.	1980s	Increase	Increase	Decrease
Male/Female	All	Decrease	Increase	Decrease
	High Educ	Increase	Increase	Decrease
	Low Educ	Decrease	Increase	Decrease
White/Nonwhite	All	Increase	Increase	Little Change
High/Low Exp	Men	Small Decrease	Increase	Low Ed - No Change
				High Ed - Decrease
	Women	Little Change	Increase	Increase
Inter-industry	1990 vs 1980	?	Expand	Little Change

Figure 5: High School-College Wage Ratio by Gender, 1975-99

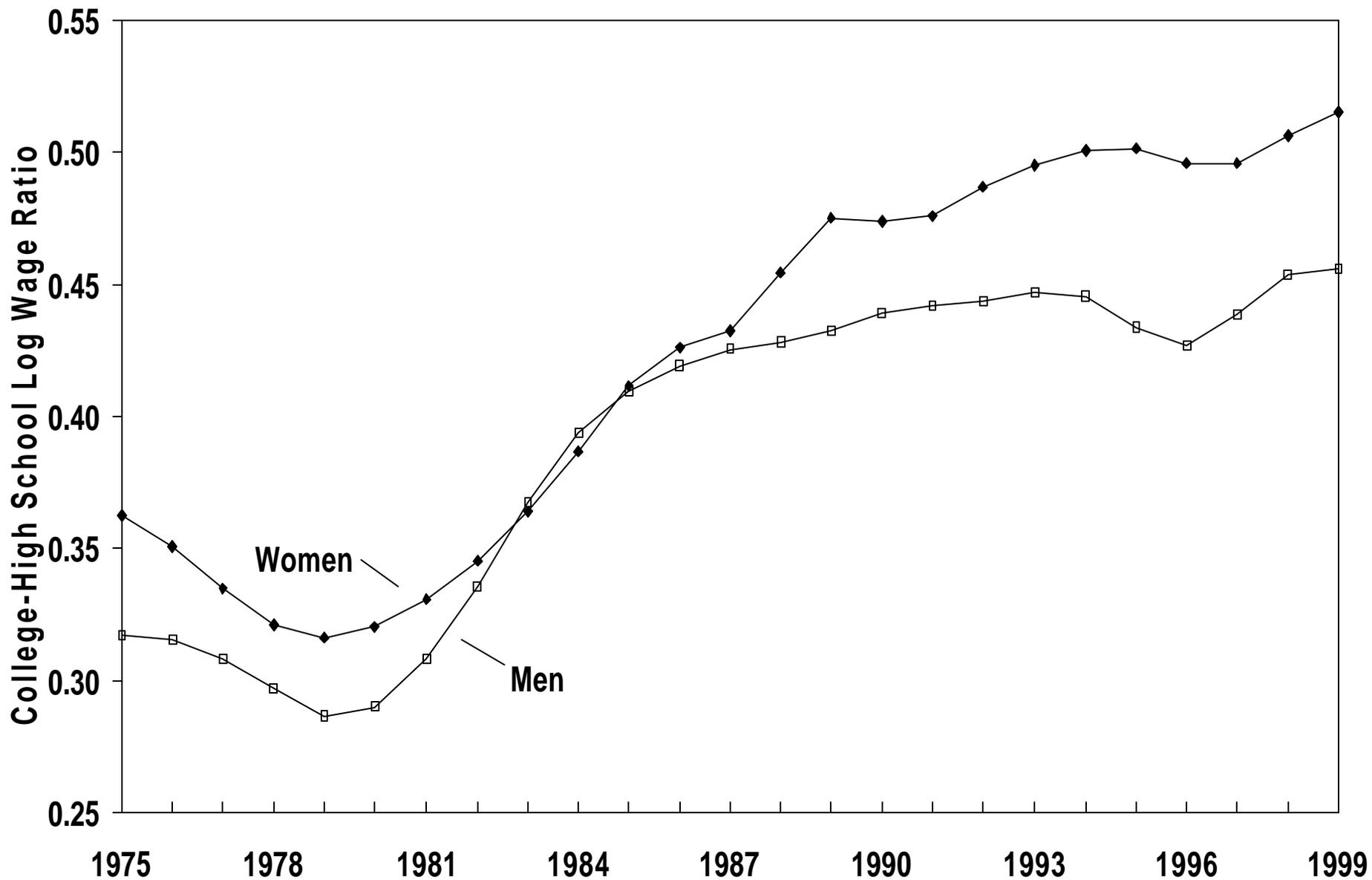


Figure 4: Alternative Measures of Wage Inequality for Female Workers

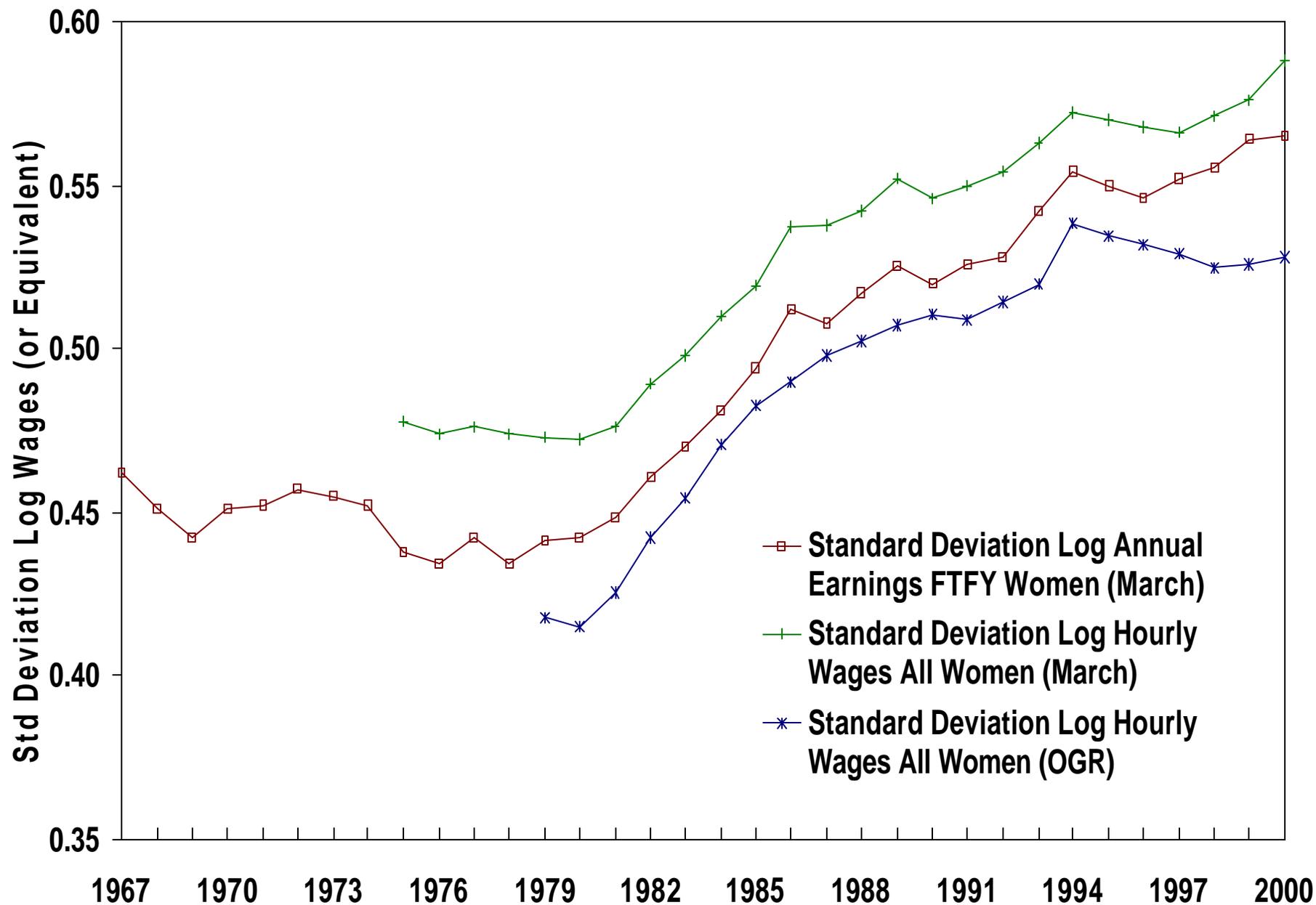


Figure 7a: College-High School Wage Ratio for Men by Age Group

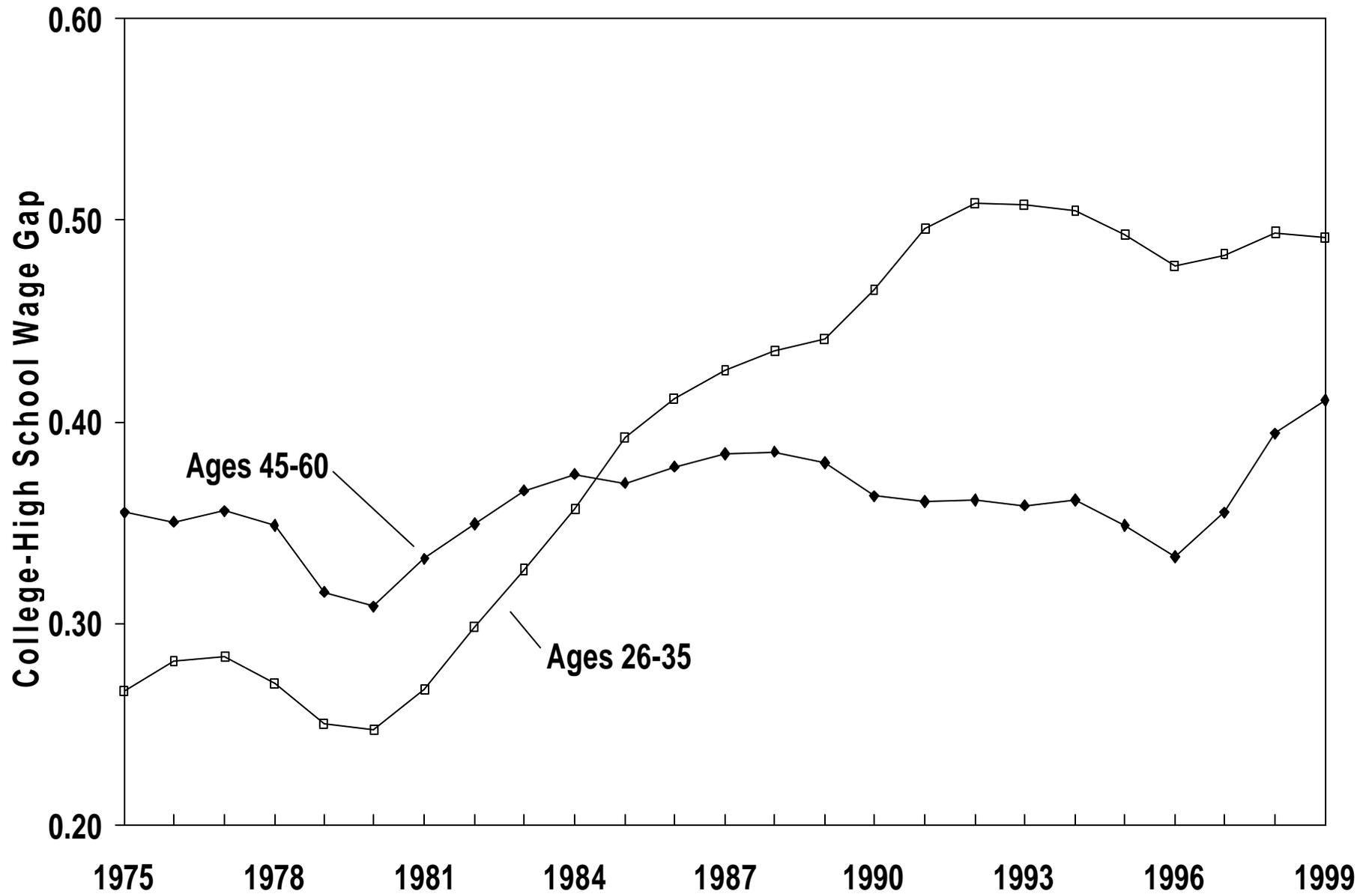


Figure 7b: College-High School Wage Ratio of Women by Age Group

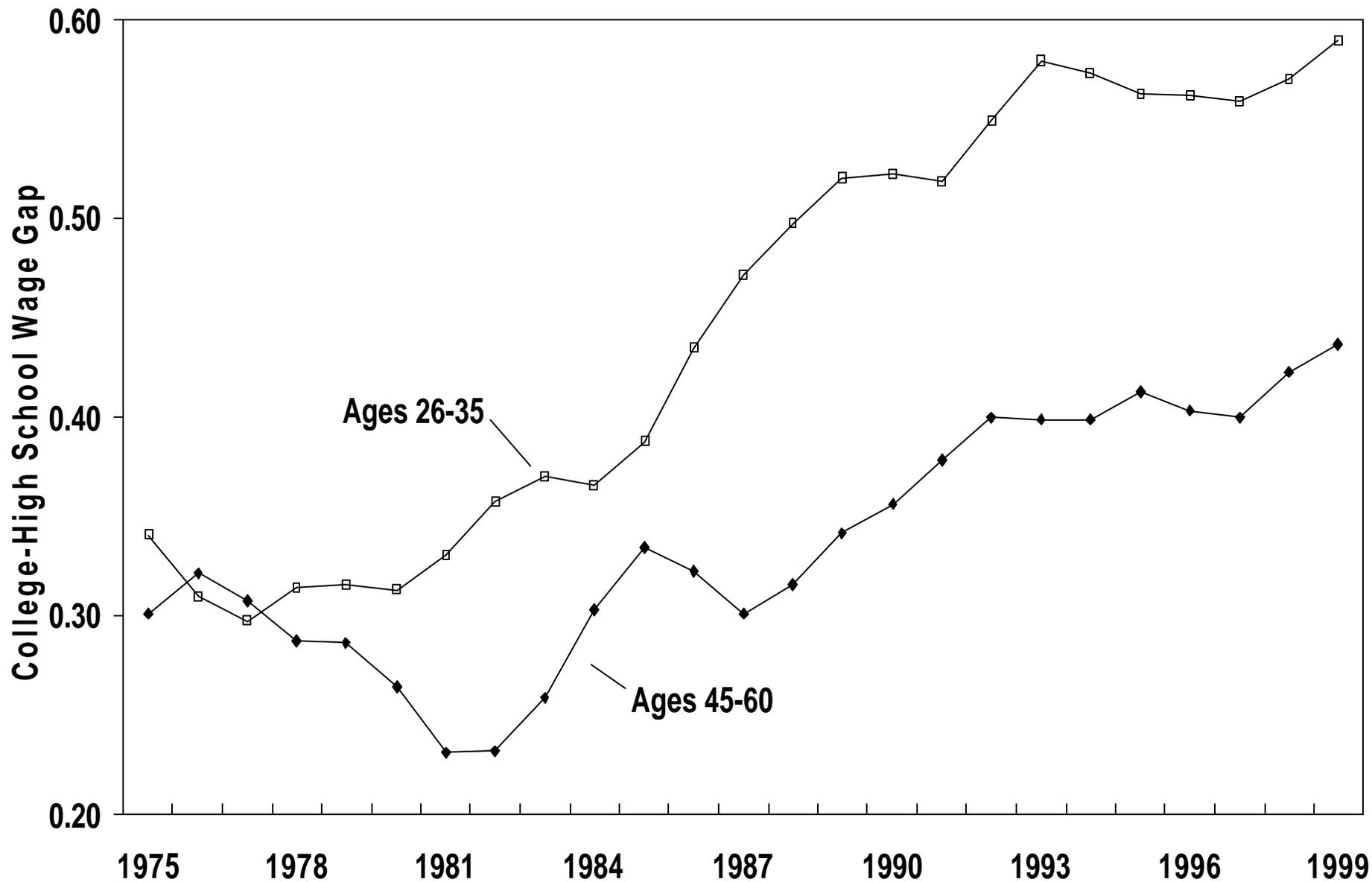


Figure 8: Changing Age Structure of the College-High School Wage Gap

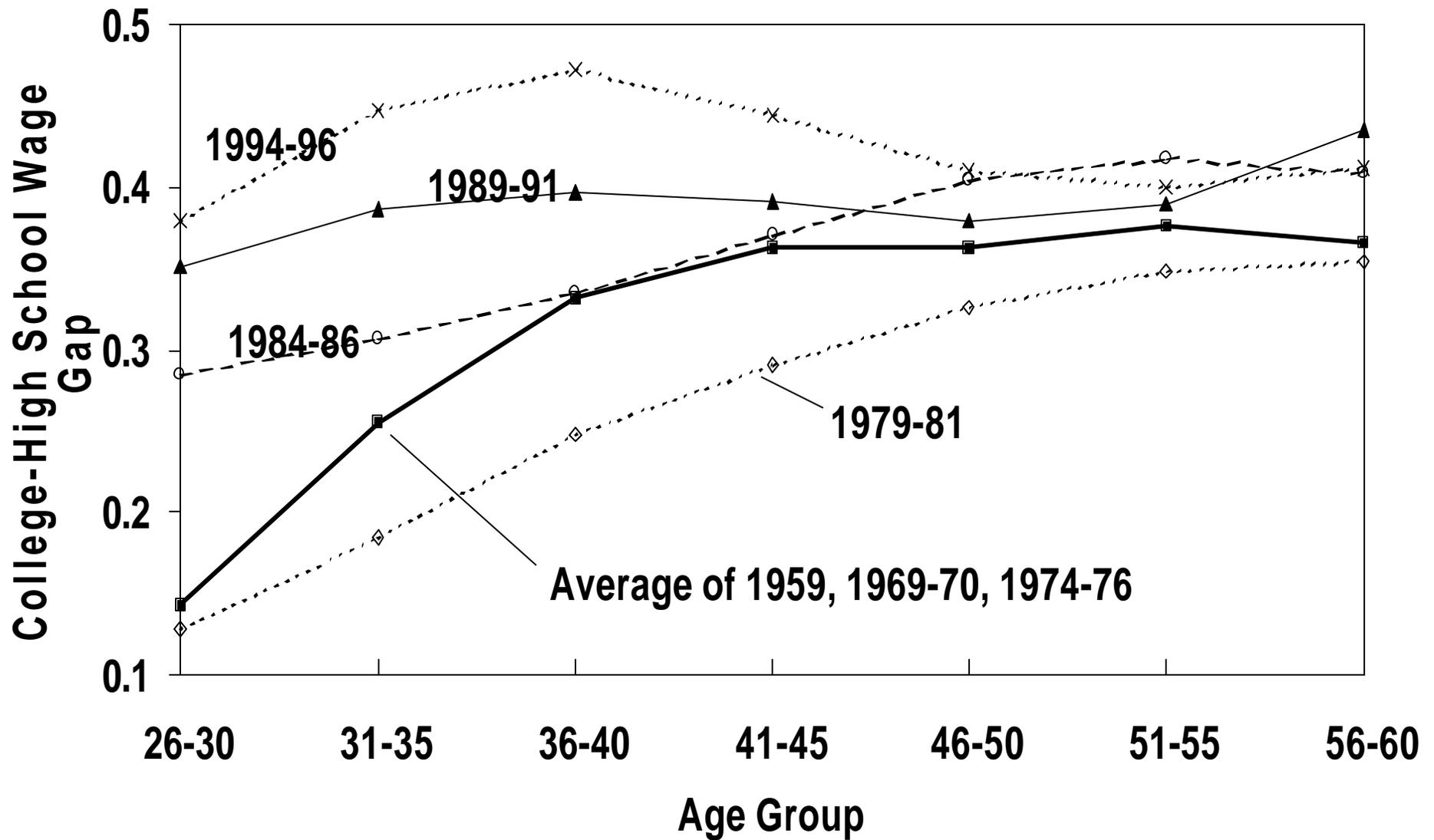


Figure 11: Male - Female Wage Gaps

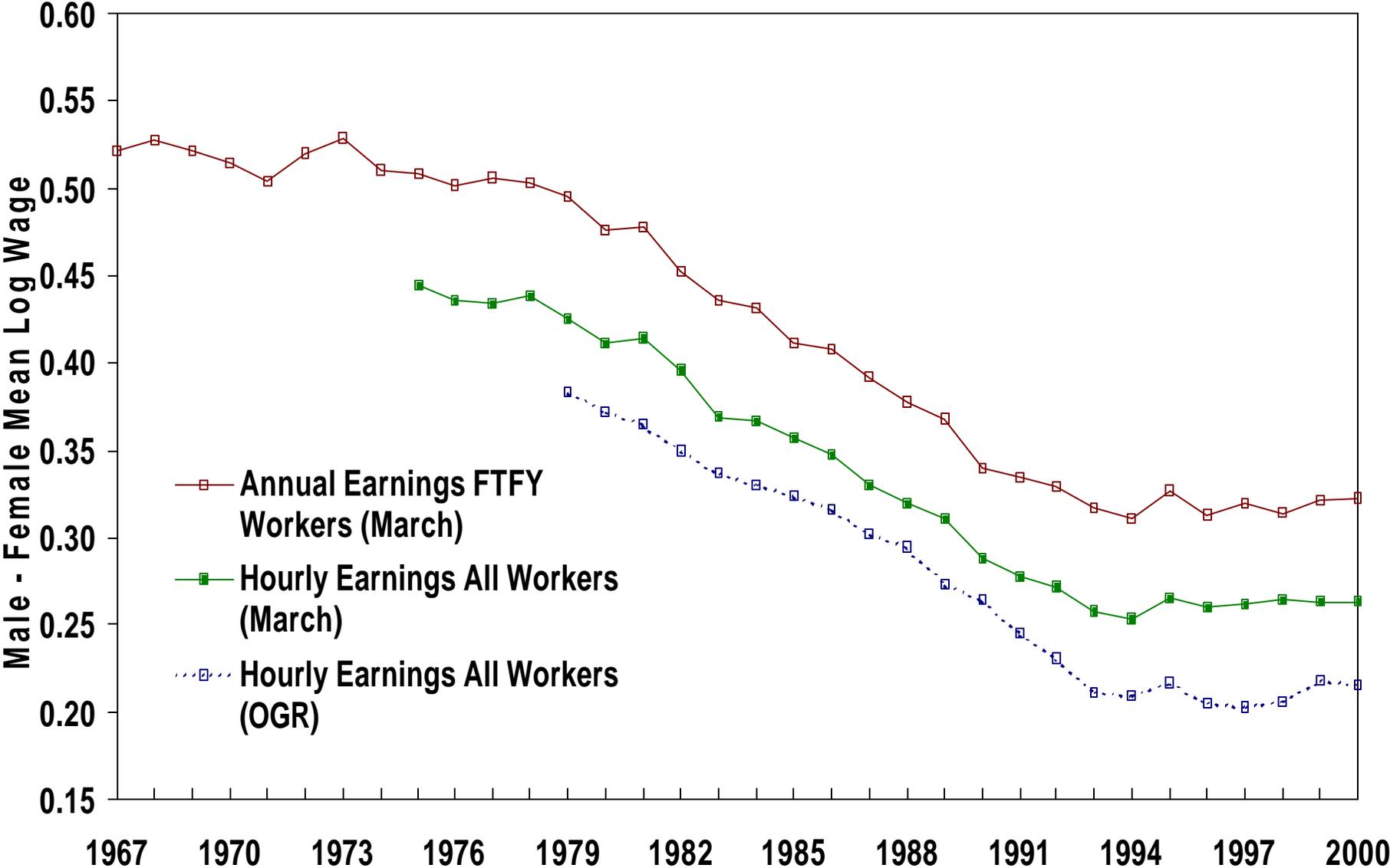


Figure 12: Male-Female Wage Gaps by Age and Education

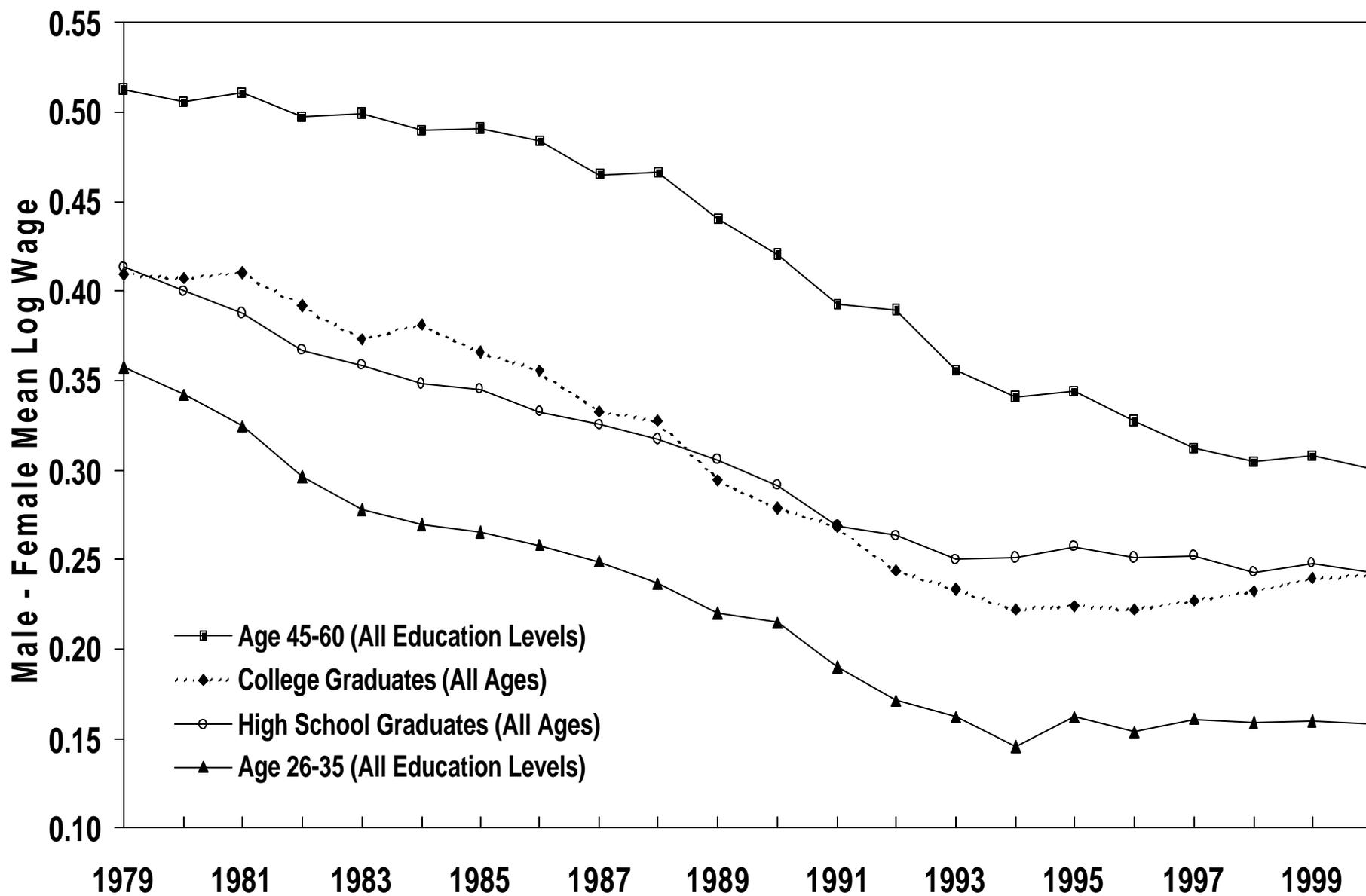


Figure 13: White-Black Wage Gaps

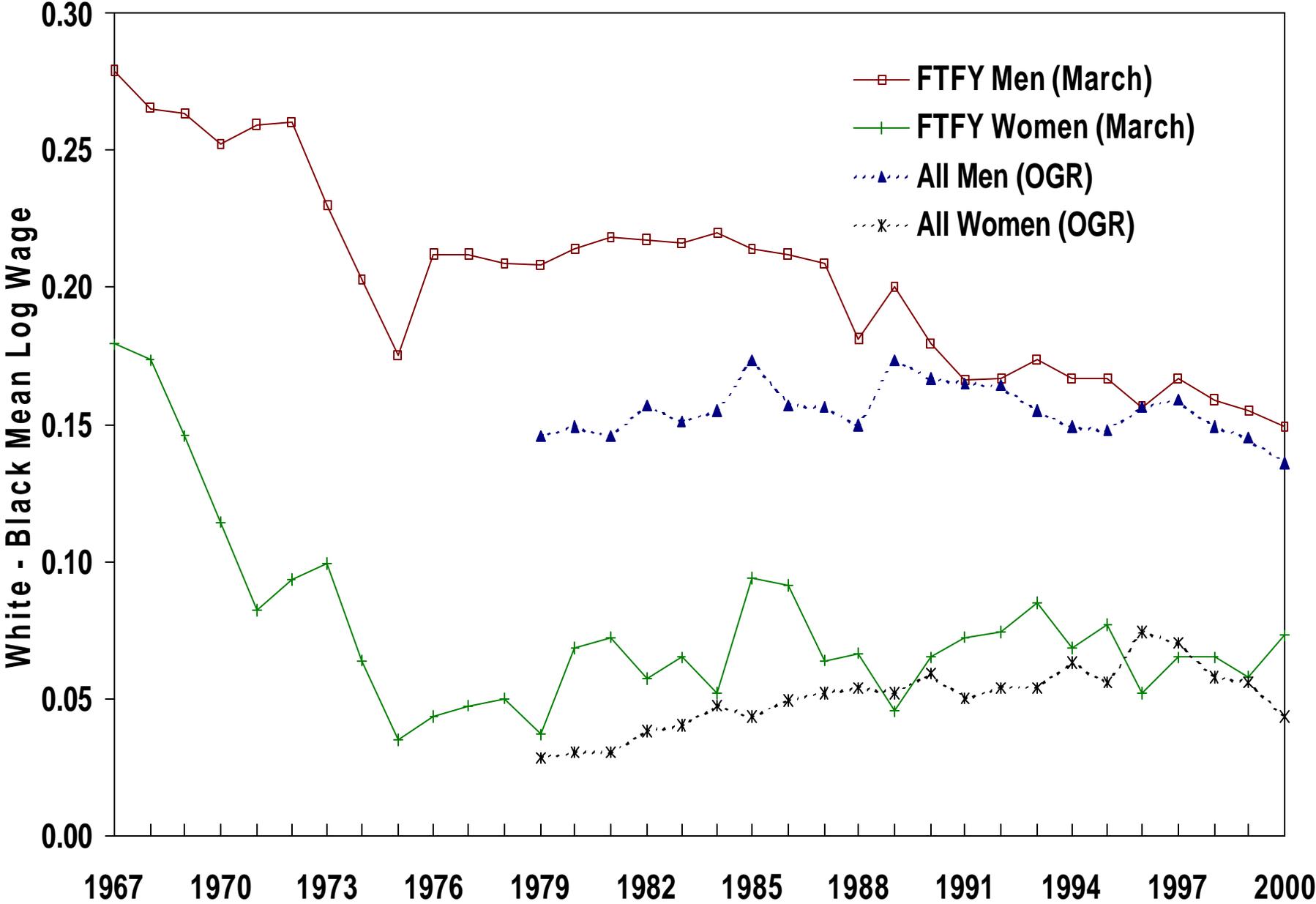


Figure 14: Wage Profiles for Men With 12 Years of Education

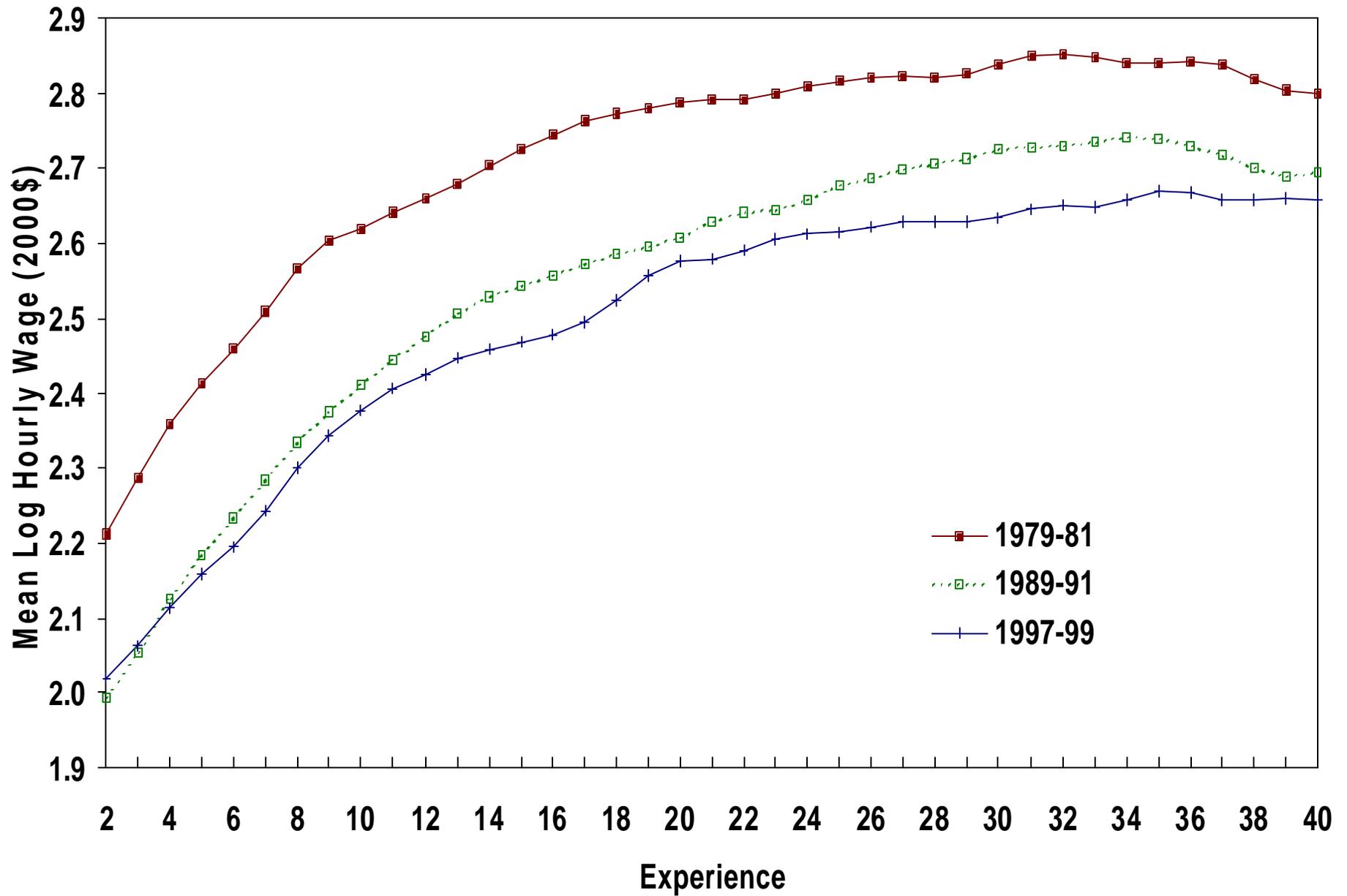


Figure 15: Wage Profiles for Men With 16 Years of Education

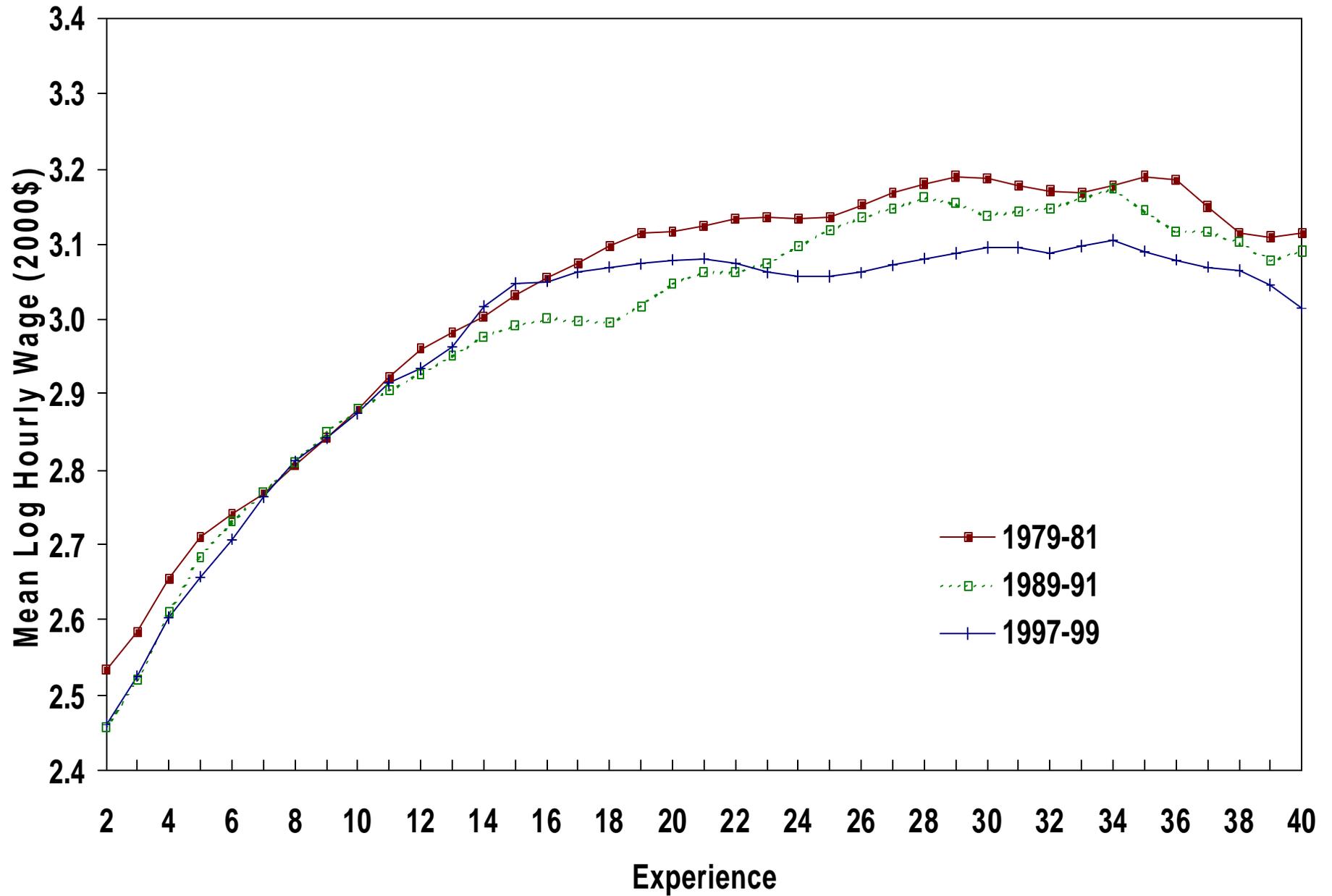


Figure 16: Wage Profiles for Women With 12 Years of Education

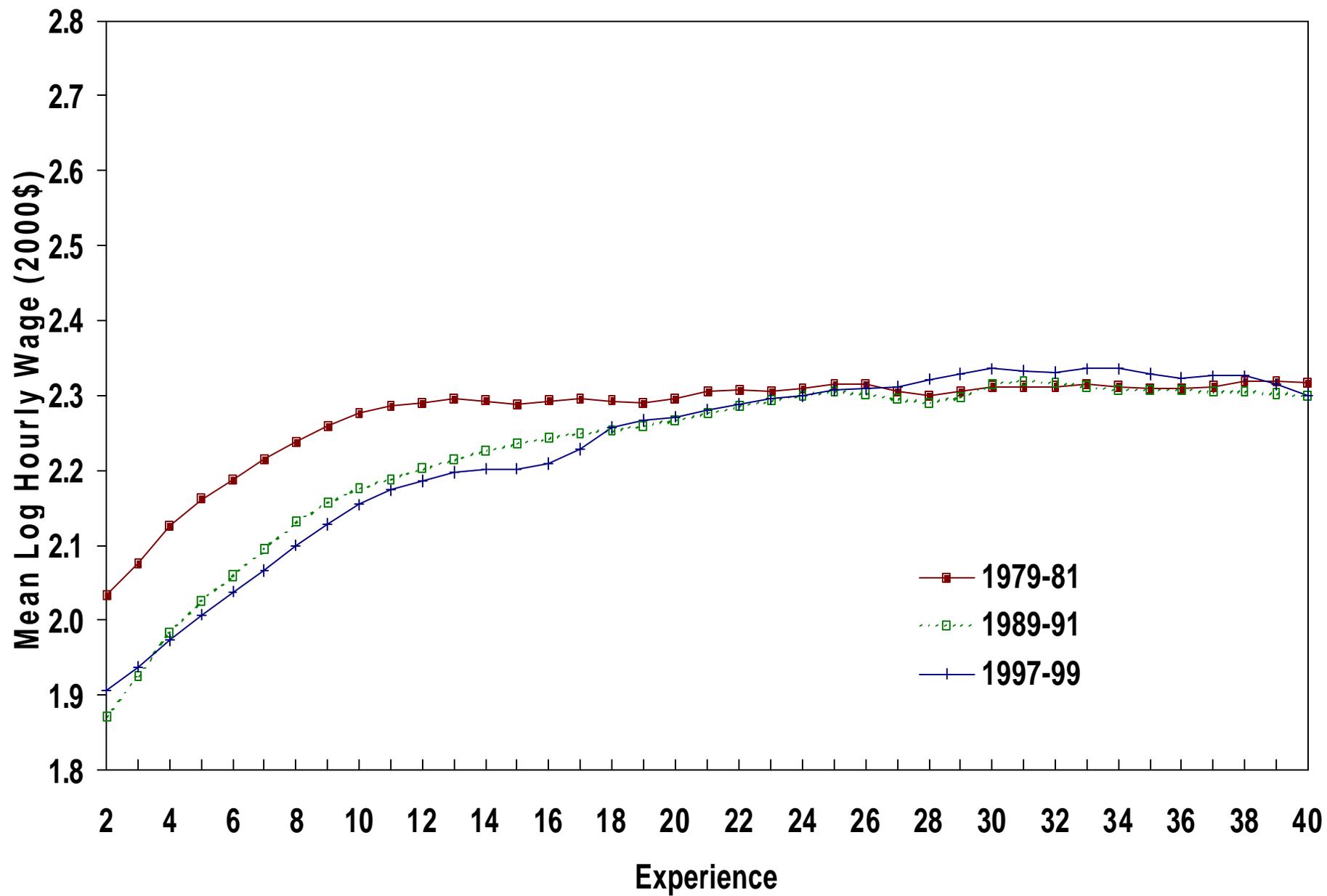


Figure 17: Wage Profiles for Women With 16 Years of Education

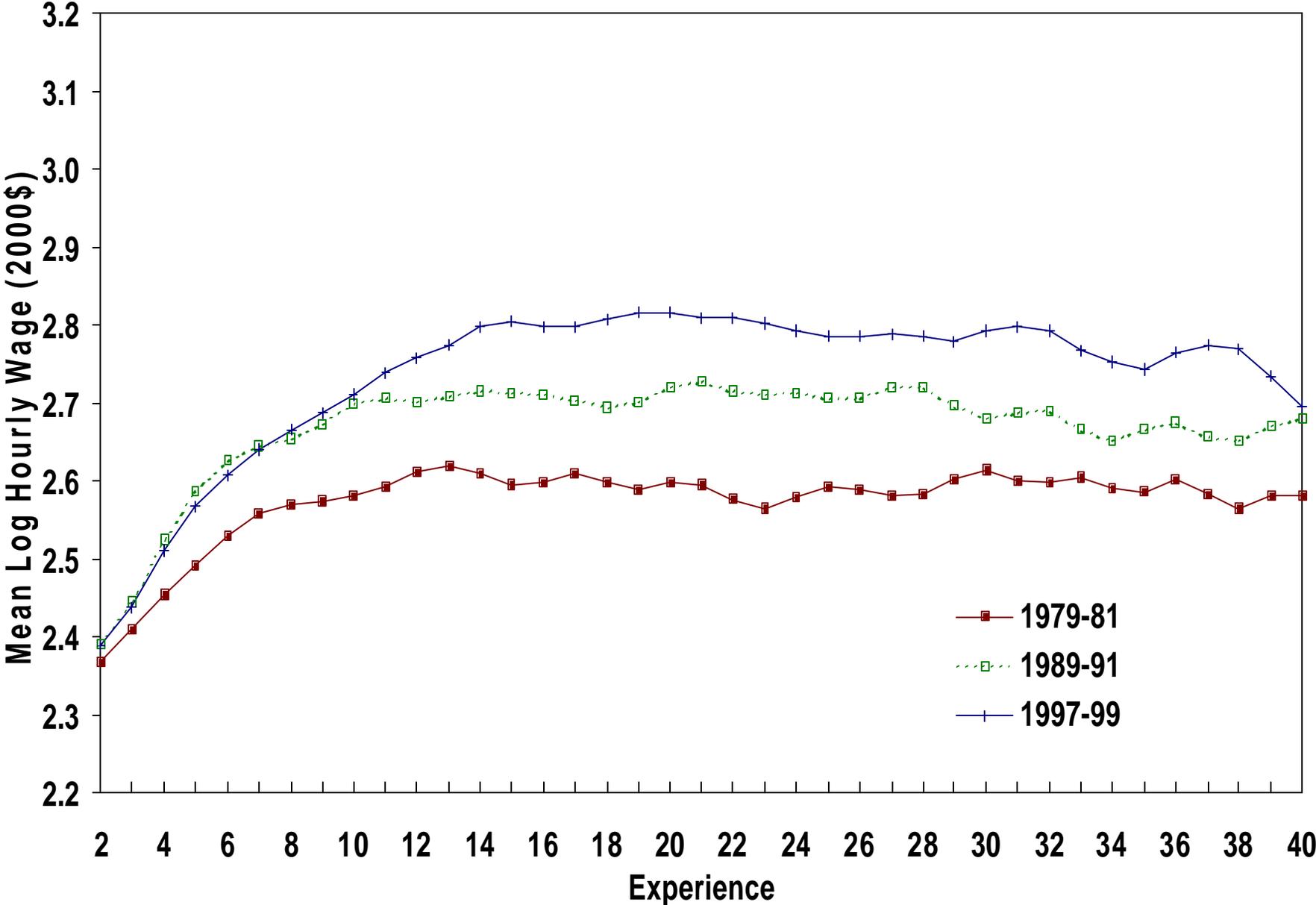
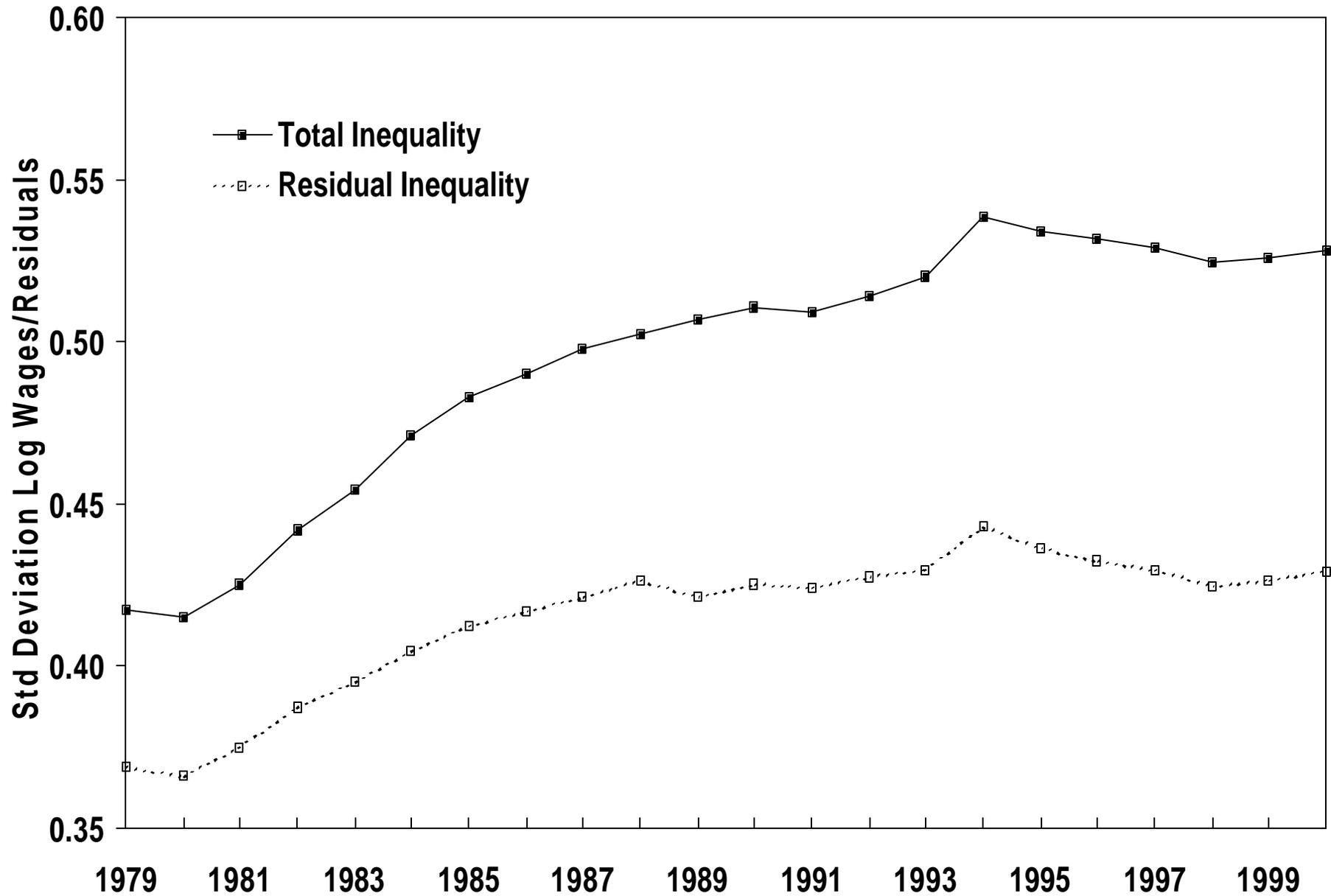
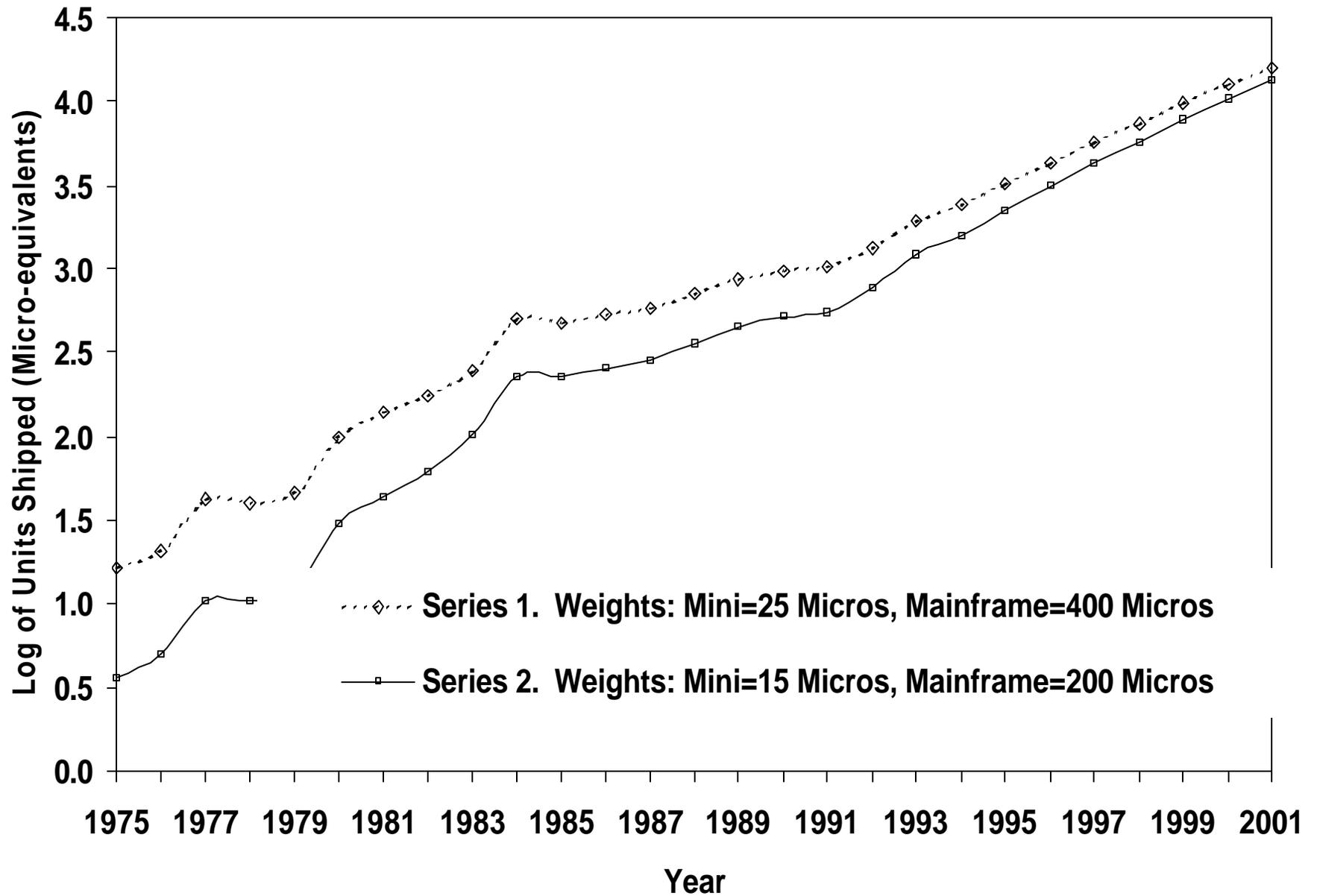


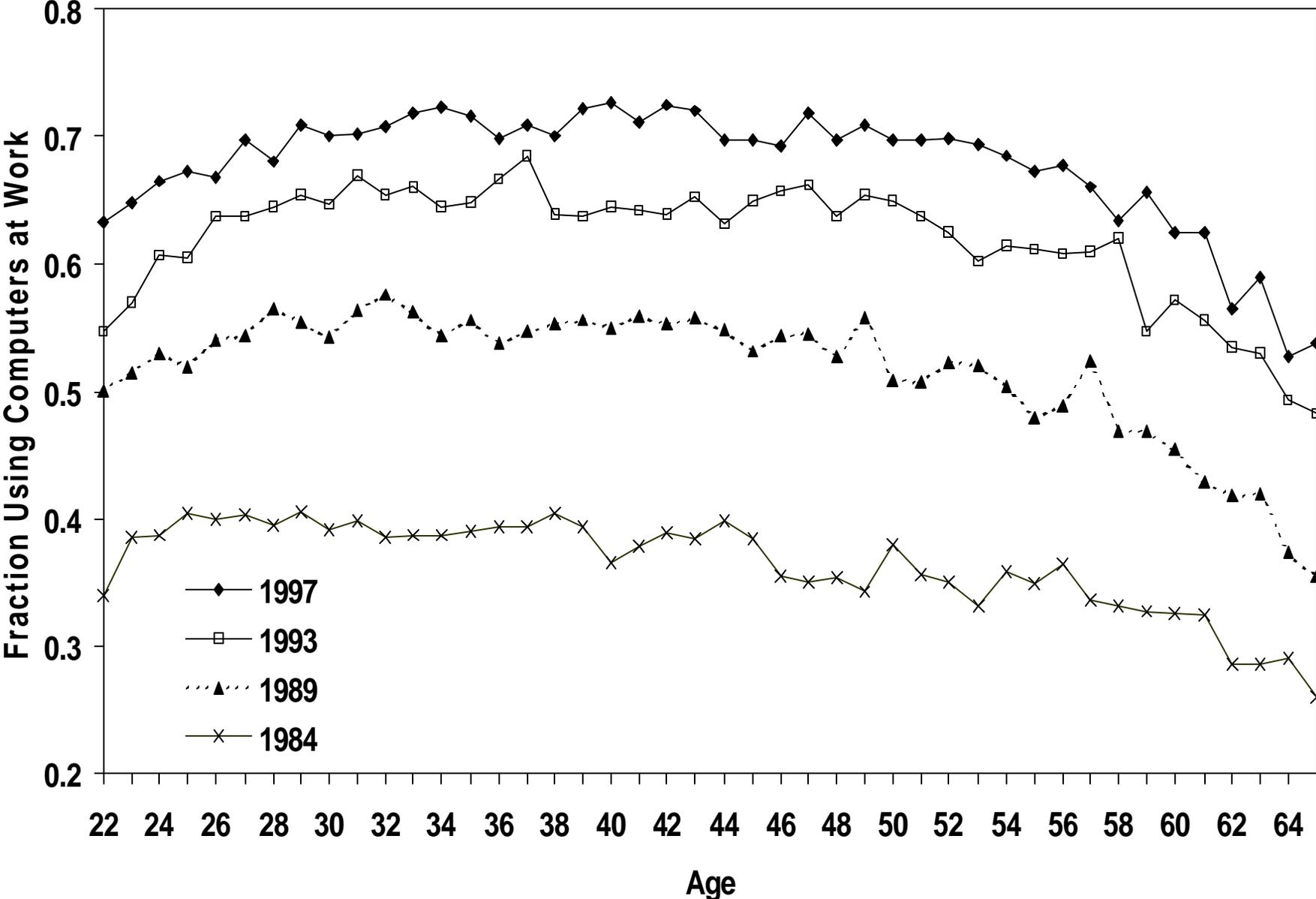
Figure 19: Overall and Residual Wage Inequality for Female Workers



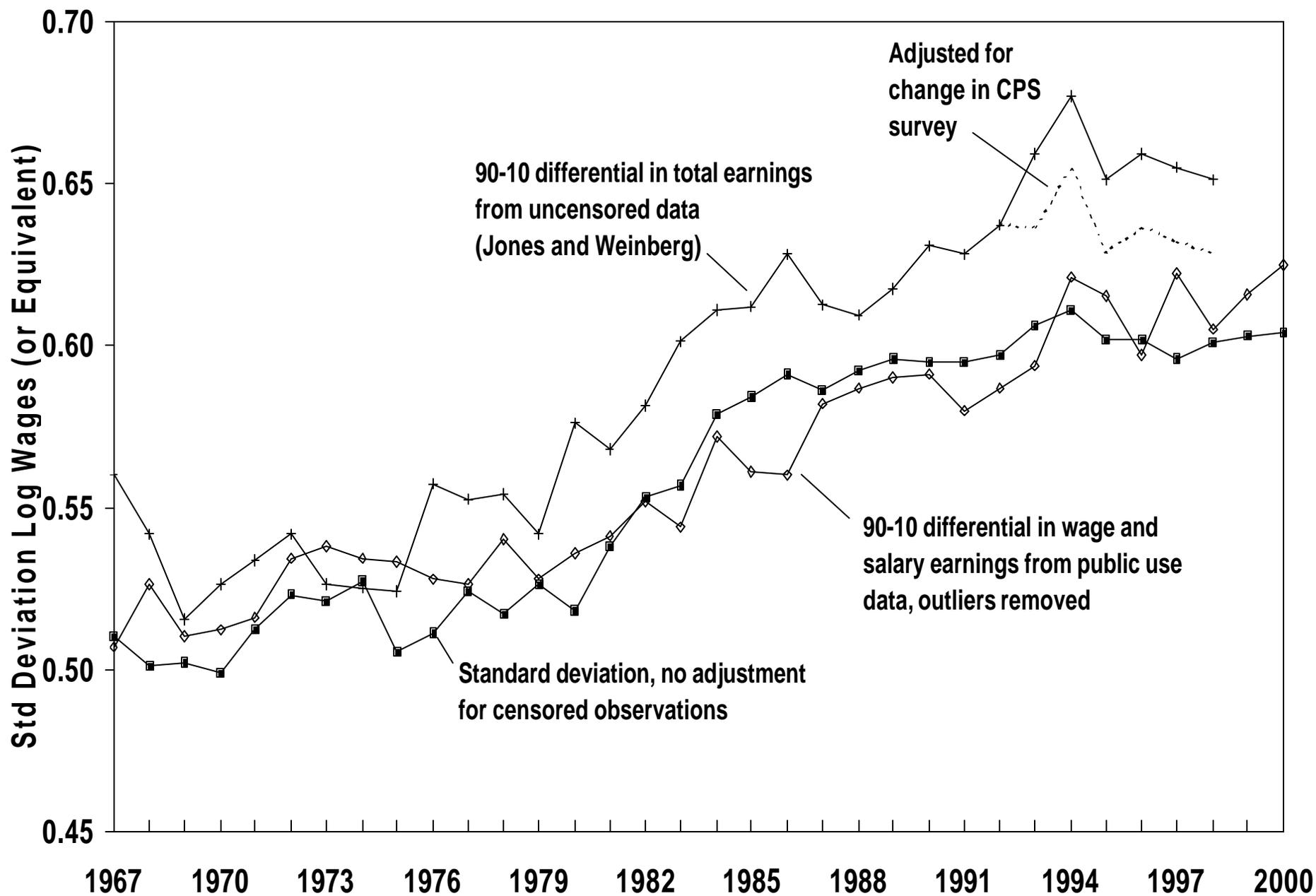
Appendix Figure 1: Annual Shipments of Computers



Appendix Figure 2: Age Profiles of Computer Use on the Job



Appendix Figure 3: Alternative Measures of Wage Inequality for FTFY Men



Appendix Figure 4: Black-White Wage Gaps by Gender and Education

