



Federal Reserve Bank of Atlanta

Technology, Growth, and the Labor Market

A Discussion of Skill-Biased Technological Change and Wage Inequality

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Wage Inequality and Skill-Biased Technological Change--the Stylized Facts

- Wage Inequality Increased Between and Within Groups defined by schooling and experience (1979-early 1990s) (Levy and Murnane 1992).
- However, the within-group component accounts for two-thirds of the increase in total earnings inequality (*Economic Report of the President 1997*).
- **Skill-Biased Technological Change** is the leading explanation for both the increase in Between and Within-Group earnings inequality.

Wage Inequality and Skill-Biased Technological Change--the Stylized Facts

- In its analysis of inequality and economic rewards, the *Economic Report of the President 1997* summarizes the consensus view among economists:
 - “Evidence shows that skill-biased technological change is probably the main contributor to these demand shifts. . . . Nevertheless, direct evidence of the importance of skill-biased technological change in explaining trends in within-group inequality is difficult to come by. Some studies avoid this difficulty by treating technological change as a residual, attributing rising inequality to this factor when their findings have excluded all likely candidates“(p. 174).

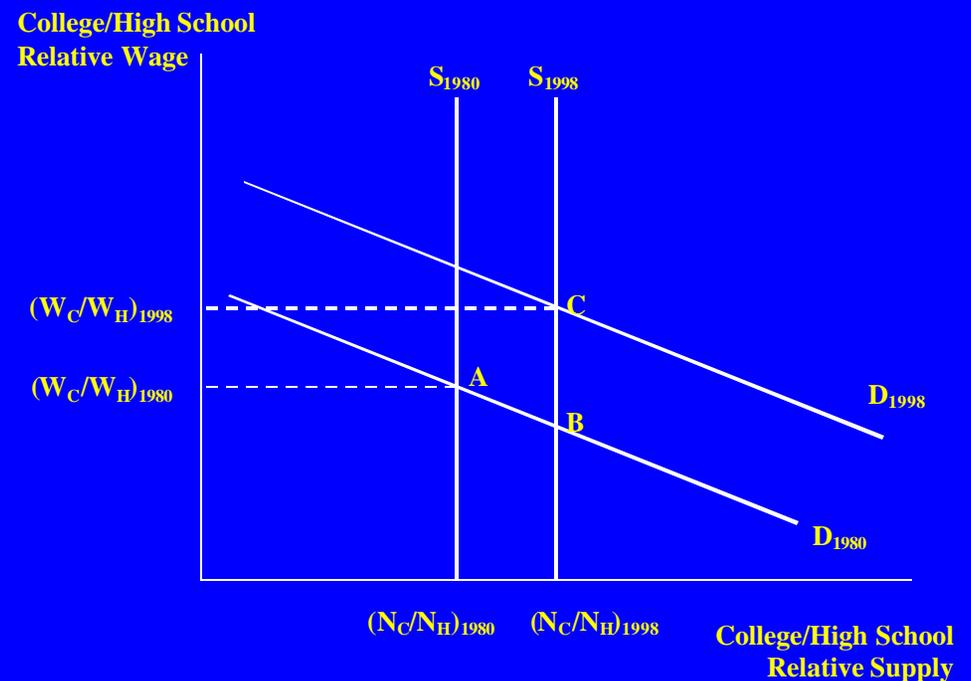
An Overview of this Discussion:

- What is skill-biased technological change (SBTC)?
- Summary of the findings in Card and DiNardo and Autor, Levy, and Murnane
- What have we learned from these studies?
- Where should we go next?

What is Skill-Biased Technological Change?

- Increase in relative demand for groups more likely to use technology (computers)
- Increase in relative demand for highly skilled workers
- A between-group phenomena

Figure 3. Impact of Demand and Supply Shifts on the Relative Earnings of College vs. High School Graduates



Card and DiNardo

- SBTC inconsistent with several aspects of the wage structure.
- Although technology use accelerated in the 1990s, wage inequality stabilized. The timing is off.
- SBTC cannot explain stability of racial wage gap, the narrowing of the gender gap, and the difference in schooling gap by experience.
- “SBTC is not very helpful in understanding the myriad shifts in the structure of wages that have occurred.”

Autor, Levy, and Murnane

- Three conditions required to justify the SBTC hypothesis.
- Most compelling contribution of the paper: The importance of understanding how computers influence work and affect the demand for workers.
- Computers are good at performing routine manual and cognitive tasks.
- Increased computerization has led to an increased demand for non-routine cognitive tasks, e.g. problem-solving.

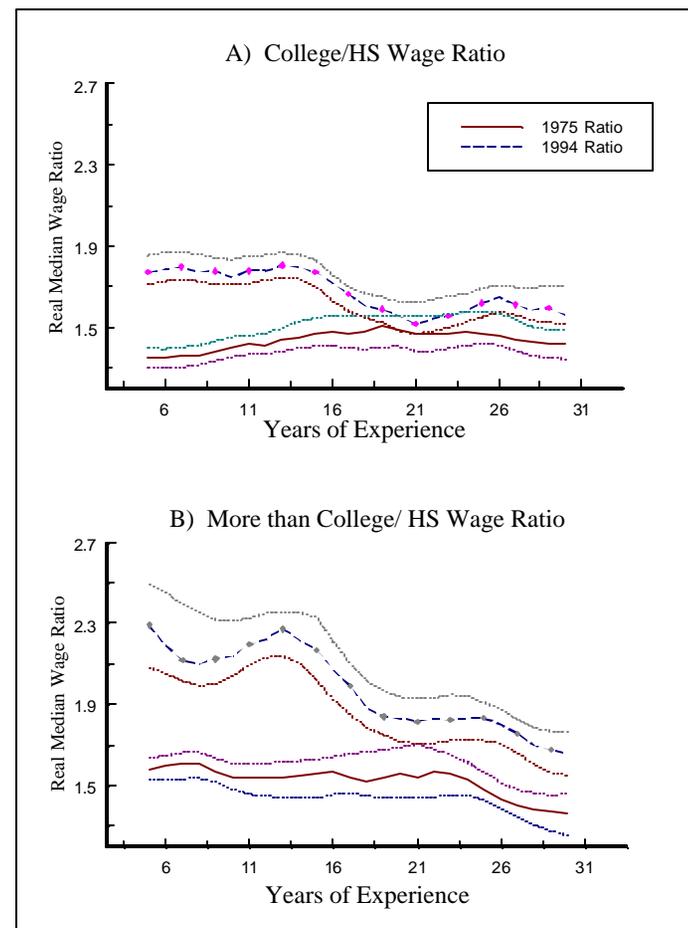
Autor, Levy, and Murnane

- Task-based measures of the labor force show increased share of employment is devoted to non-routine cognitive tasks.
- Industries that computerized reflect these trends.
- “Computerization (SBTC) *did* augment inequality.”

How do we explain these contradictory findings?

- There's more to the data than meets the eye.
- Let's consider the college wage premium.

Changes in the Schooling Premium
Conditional on Experience



How do we explain these contradictory findings?

- College wage premium is being driven by:
 - lower HS wages
 - stagnant college wages
 - and increased wages for more than college

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

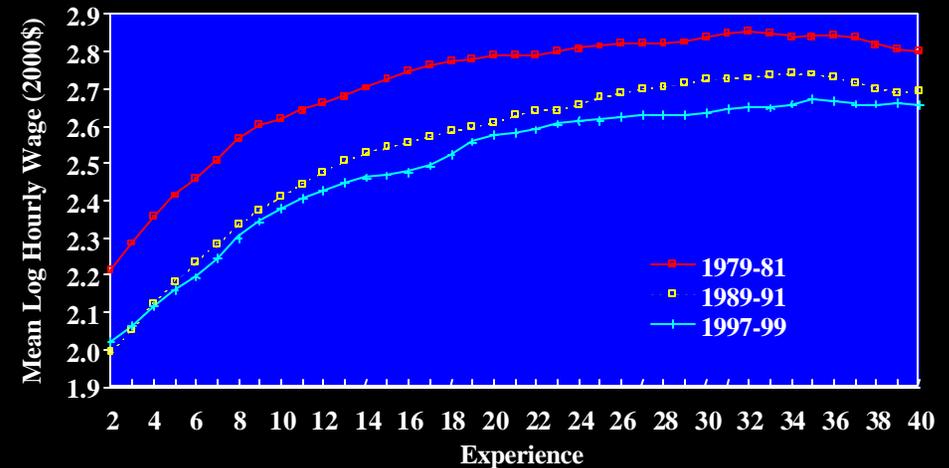
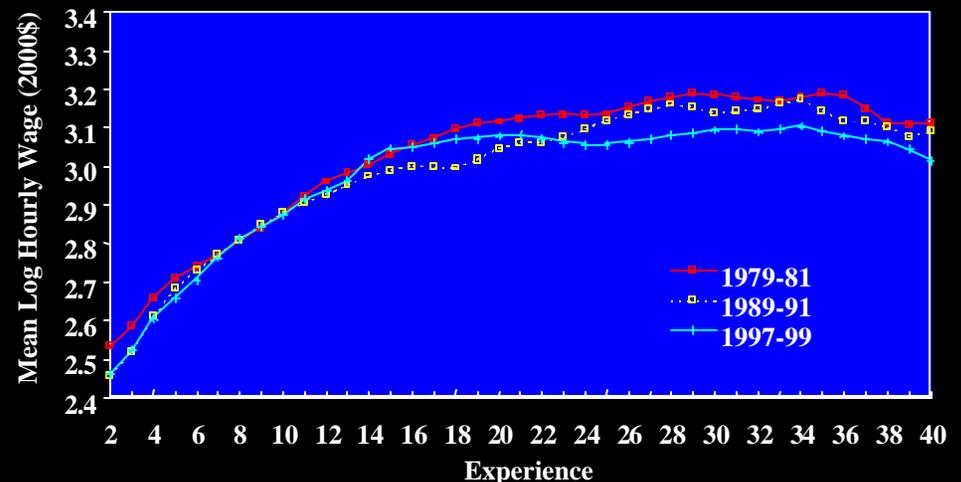


Figure 15: Wage Profiles for Men With 16 Years of Education



What more can we ask of Card and DiNardo?

- Card and DiNardo are persuasive when they argue that SBTC alone cannot explain the myriad changes in the wage structure.
- Their many counter-examples lead me to question the efficacy of a macro-model approach to inequality research.
- If not SBTC, what explains the acceleration in inequality in the 1980s? The puzzles presented remain largely unresolved.

What more can we ask of Autor, Levy and Murnane?

- The genius of the paper is that it provides a mechanism for how computers and IT lead to SBTC.
- However, ALM need to address the fact that computerization increased in the late 90s and inequality did not.
- What about the relationship between computerization and within-group inequality?

In Summary

- SBTC is probably one of many factors that contributed to the increase in earnings inequality in the 1980s. However, evidence suggests that it may not be the main contributor.
- I would encourage the authors to take a more disaggregated approach to the data.
- The more-difficult problem of within-group inequality needs to be addressed.