

## Comments on “Wage inequality and the new economy in the United States: Does IT-led growth lead to wage inequality?” by Larry Mishel and Jared Bernstein

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This is the nub of Mishel and Bernstein’s argument: i) rises in earnings inequality in the United States are commonly attributed to a sustained period of technological innovation that has tended to demand higher average skill levels - usually assumed to be acquired through a college education or through experience; but, ii) inconsistencies between the theory and the details of the time pattern of increases in earnings inequality, as well as the fact that more of the increase in earnings has been within skill levels - say, levels of education - than between them, suggest that this interpretation is largely incorrect.

I think that they are right, which does raise the question: What on earth am I going to say about their paper? In fact, I want to make two kinds of comments. First, while accepting their conclusion I want to express some *quibbles* with respect to aspects of their argument. I do so on the grounds that, even if their position on this issue seems to me to be by far the most convincing, in the social sciences a certain modesty with respect to conclusions is always in order. Second, I identify what I think are a couple of interesting implications of their work.

### Quibbles

1. The increases in earnings inequality within skill groups are sometimes attributed to *unobservable* skills. But, Mishel and Bernstein argue, this can be described as nothing more than labelling a residual. They do not regard this as a methodologically defensible procedure. This, I think, is true. *However*, I do want to emphasise that there is good reason to believe that there is very considerable skill or competence heterogeneity within groups.

It is simply not true that a university education is a university education is a university education. Institutions differ in their selectivity. Within institutions programs differ in their selectivity. And within programs, those of us in the university trenches (so to speak) tend to think that the ability of students varies quite considerably. At the secondary school level, Murnane and Levy (1996: 34-35) have reported that about half of 17 year olds in the United States have lower than ninth grade mathematics and reading skills. Most of them will receive a high school diploma. This suggests that the category of high school graduates includes a wide range of abilities, extending down to the barely literate.

So while I accept the general critical point made by Mishel and Bernstein I do think that there is sufficient evidence of within-group ability dispersal to warrant further exploration of possible effects of it on the earnings distribution, effects that *may* be precipitated by technological change.

2. One way to explore this issue is to look at studies that have better measures of technology, skill, and/or wages. Such studies exist and some of them do suggest a within-category effect of technological innovation on both skills and wages. Examples of this are Siegel

(1999) and Baldwin et al. (1995a, 1995b, 1997). (I should acknowledge that there are also case studies that suggest a deskilling effect of new technology - e.g. Agnew et al., 1997).

3. It is common to analyze earnings distributions for men and women separately. This is the approach used by Mishel and Bernstein. Now, in 1997 the *Monthly Labor Review* published a dispute between Bernstein and Mishel on the one hand, and Lerman on the other. The conclusion of the dispute is not what concerns me here. Rather, what interests me is a methodological point made by Lerman.

There is a range of potential explanations for rising earnings inequality - technological innovation, trade, immigration - that assume that the change is produced through market processes. That further assumes that, within a given institutional framework, employers play a substantial role in determining who gets hired and how much they get paid. But (again, net of institutions) employers have no interest in limiting their hiring to one or another gender; their interests are best served if they hire the best person irrespective of gender. Indeed, Lerman argues, they also have an interest in hiring people in whatever weekly durations are most efficient. The rise in the share of part-time in total employment reflects this. So, he reasons, the appropriate unit of analysis is the hour of work rather than the person (or, to put it another way, persons weighted by the number of hours they worked).

I find this reasoning persuasive. I think that, at the very least, the appropriate way to test theories about the effects of technological change will usually involve combining men and women in the same sample. This is important because doing so modifies the pattern of change in earnings inequality uncovered. It tends to produce smaller increases in earnings inequality (and sometimes decreases). This is because the earnings of women, which have tended to be located in the lower part of the distribution, have improved relative to men's, moving them towards the middle of the distribution (see, for example, Wolfson and Murphy, 1998).

All this is to say that I think that Mishel and Bernstein probably *ought* to have combined men and women in their analyses. I doubt, however, that doing so would have changed their findings and conclusions.

4. My final quibble is related to the context of the paper. Mishel and Bernstein are, in part, concerned to refute the technological innovation account of rising earnings inequality in order to more convincingly assert other accounts. They think that the real explanation rests with factors like trade, immigration, the decline in union representation, and the decline in the real value of the minimum wage during the 1980s.

At least with respect to the effects of trade and immigration, there has been some effort to measure effects. The results are, at best, mixed. I suspect that were Mishel and Bernstein to exert as much of their considerable critical acumen in the examination of the effects of those two factors as they have in the examination of the effects of technology, they could find just as many flaws in those accounts!

## **Two implications**

1. *Details matter!* The critical leverage of Mishel and Bernstein comes from breaking down shifts in earnings inequality. In particular, they force the reader to pay attention to the importance of growth in within-category earnings inequality, and to the periodicity of the changes in it that have taken place. In contrast, phrases like “the rate of return to a college education” trip lightly off the tongue or, in a different technological context, have flowed easily from the pen. Quite a lot of academic careers have been constructed or advanced by estimating and interpreting rates of return to a college education. But the analyses involved are usually pitched at a very aggregate level indeed. The work of Mishel and Bernstein reminds us of just how productive careful consideration of detail can be. I want to underline this with three examples of details that ought to lead to a reconsideration of what has so far been the standard interpretation of the growth in earnings inequality in the United States.

i) Consider the seminal article by Krueger (1993) that showed that people using computers got paid more than those who did not use them, a difference that he interpreted as the effect of new technology on the demand for skill. Krueger not only reported pay premiums associated with the use of computers; he also reported premiums associated with *kinds* of use. It turns out that the largest premiums were not associated with using spread sheets or conducting data base analyses. The largest premiums were associated with e-mail use! My impression, however, is that pretty much any idiot can use e-mail, and many do. This is not a form of computer use that requires a skill that can be said to be in short supply. The next ‘detail’ provides us with a more plausible interpretation of this result.

ii) While cross-sectional studies uniformly (as far as I know) reproduce Krueger’s result, panel studies suggest a quite different interpretation of it. The pay of employees who have been provided with computer equipment seems not to increase relative to their peers. (e.g., Chennels and Van Reenan, 1997; Doms, Dunne, and Troschke, 1997; Entorf and Kramarz, 1997, 1998). What seems to happen is that new equipment is assigned to more skilled employees. Those whose pay is already higher than would be expected tend to get new equipment. This is a detail that is consistent with the interpretation of Mishel and Bernstein but not with the view that skills increase with new technology.

iii) Then there is the question of precisely *which* more educated employees get pay increases. Pryor and Schaffer (1999: 151-161) have examined in detail shifts in earnings by occupation. Focussing on the 25% of occupations that have the highest educational demands, they show that between 1970/71 and 1993/94 in only a few did average real hourly wages increase. Those in which there was an increase were physicians (spectacularly), dentists (almost as spectacularly), lawyers (impressively), and pharmacists and chemical engineers (modestly). One could conceivably construct a story that explained these shifts through the effects of technology. Perhaps, for example, lawyers can properly be regarded as the spearhead leading the advance into the white heat of the technological revolution. One is endlessly impressed by the ingenuity with which explanations can be constructed to account for any given set of inconvenient facts! Still, the case is not self-evident. In general, the details of the shift in earnings by occupation raise some major problems for the skill complementarity account.

2. Finally, there are the implications for Canada of Mishel and Bernstein’s analysis. There is an interpretation that starts out with the premise that, while the skill complementarity

account is correct, its effects on earnings inequality are not as evident as they are in the United States because the supply of university-educated labour has increased rapidly in Canada. But, we can find evidence of its effects in shifts in the occupational structure - in particular in the more rapid growth of so-called 'knowledge-based occupations'. There have been a significant number of publications developing this argument (e.g. Lavoie and Roy, 1998). If Mishel and Bernstein are correct about the United States - and it should be clear that I think they are - is it likely that this parallel interpretation of Canada is correct? I very much doubt it!

## References

- Agnew, Andrew, Paul Forrester, John Hassard, and Stephen Procter (1997), "Deskilling and reskilling within the labour process: The case of computer integrated manufacturing." *International Journal of Production Engineering* 52: 317-324.
- Baldwin, John R., Brent Diverty, and David Sabourin (1995a), "Technology use and industrial transformation: Empirical perspective." *Analytical Studies Branch-Research Papers* No.75. Statistics Canada.
- Baldwin, John R., Tara Gray, and Joanne Johnson (1995b), "Technology use, training, and plant-specific knowledge in manufacturing establishments." *Analytical Studies Branch-Research Papers* No.86. Statistics Canada.
- Baldwin, John R., Tara Gray, and Joanne Johnson (1997), "Technology-induced wage premia in Canadian manufacturing plants during the 1980s." *Analytical Studies Branch-Research Papers* No.92. Statistics Canada.
- Bernstein, Jared, and Lawrence Mishel (1997), "Has wage inequality stopped growing?" *Monthly Labor Review* (December): 3-16.
- Doms, Mark, Timothy Dunne, and Ken Troske (1997), "Workers, wages, and technology," *Quarterly Journal of Economics* 112: 253-290.
- Chennells, Lucy, and John Van Reenan (1997), "Technical change and earnings in British establishments," *Economica* 64: 587-604.
- Entorf, Horst, and Francis Kramarz (1997), "Does unmeasured ability explain the higher wages of new technology workers?" *European Economic Review* 41: 1489-1509.
- Entorf, Horst, and Francis Kramarz (1998), "The impact of new technologies on wages: Lessons from matching panels on employees and on their firms," *Economics of Innovation and New Technology* 5: 165-197.
- Krueger, Alan B. (1993), "How computers have changed the wage structure: Evidence from microdata, 1984-1989." *Quarterly Journal of Economics* 108: 33-60.
- Lavoie, Marie, and Richard Roy (1998), *Employment in the Knowledge-Based Economy: A Growth Accounting Exercise for Canada*. Applied Research Branch, Human Resources Development Canada, R-98-8E.
- Lerman, Robert I. (1997), "Reassessing trends in U.S. earnings inequality." *Monthly Labor Review* (December): 17-25.
- Murnane, Richard J., and Frank Levy (1996), *Teaching the New Basic Skills: Principles for Educating Children to Thrive in a Changing Economy*. New York: The Free Press.

Pryor, Frederic L., and David L. Schaffer

1999 *Who's Not Working and Why: Employment, Cognitive Skills, Wages, and the Changing U.S. Labor Market*. Cambridge: Cambridge University Press.

Siegel, Donald S. (1999), *Skill-Biased Technological Change: Evidence from a Firm-Level Survey*. Kalamazoo, Michigan: W.E. Upjohn Institute.

Wolfson, Michael C., and Brian B. Murphy (1998), "New views on inequality and trends in Canada and the United States." *Monthly Labor Review* (April): 3-23.