Theory-Driven Facts and the Growth in Earnings Inequality

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ABSTRACT: It is widely accepted that the rise in U.S. wage inequality can be explained by skill-biased technological change: workplace computerization produced demand shifts that worked with a simply supply and demand "vision" of the labor market than with direct statistical evidence, which is remarkably limited. Indeed, the dominance of this elementary textbook vision has led, I argue, to a conflation between statistical facts and "theory-driven" facts—those statements about reality that are selected, interpreted, or simply created to confirm a vision of the way things work. The paper concludes by outlining an alternative explanation of the growth in wage inequality based on a sharply different, Gordonian, vision of the labor market.

Among the biggest troubles facing modern economics is "deciding what's a fact" (McCloskey 1997: 24). Part of the problem has to do with the proper interpretation of regression results, a longstanding concern of McCloskey's. But at a more profound level, the problem is the role played by the underlying "vision" of the economic process in empirical work. As Schumpeter put it, "Analytic work begins with material provided by our vision of things, and this vision is ideological almost by definition.... the way in which we see things can hardly be distinguished from the way we wish to see them" (quoted by Heilbroner and Milberg 1995: 16). Made coherent by theory and operationalized in empirical models, our vision of things conditions what comes to be accepted as "fact."

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If this is true "almost by definition," good empirical economics requires a healthy dose of skepticism about the adequacy of the models, the theoretical framework, and to the extent possible, the underlying vision that defines the conventional wisdom in professional circles. Without some measure of persistent disbelief, the research agenda becomes an exercise in confirmation, a search for evidence and interpretations that lend support to the prevailing wisdom—the theory and "vision of things" we began with. The alternative, more scientific method, is to challenge the orthodoxy by confronting the conventional wisdom with anomalous facts and alternative interpretations of the evidence (Blaug 199; Kuhn 1970).

In this paper, I suggest that one of the biggest troubles facing the accepted wisdom on the sharp rise in U.S. earnings inequality has to do with what has been accepted as the essential facts. A key source of the problem is the failure to confront the limits of the simple textbook supply/demand model of the labor market. For all its technical sophistication, and despite increasing theoretical development and evidence for efficiency wage, insider-outsider, and monopoly/monopsony models of the labor market, the recent empirical work on earnings inequality has been framed by a remarkably simple supply and demand "vision of reality." This has produced an explanation of the current rise in earnings inequality that, while commanding wide support in professional and policy circles, on close inspection rests on remarkably flimsy statistical evidence. Indeed, the dominance of this elementary textbook vision has led, I argue, to a confusion between statistical facts and what might be termed "theory-driven" facts—those statements about reality that are selected, interpreted, or simply created to lend support to the orthodox "vision of things."

In this symposium in honor of the late David Gordon, it should be underlined that Gordon's approach, although surely influenced in a major way by his own vision of things, nevertheless stands in sharp contrast. Gordon's approach to quantitative research was comparative; it was designed to test alternative models embodying quite different visions of the economic process. In the first section, I contrast David Gordon's vision and empirical method with that of the "mainstream" of the profession. Gordon's example highlights a longstanding complaint by leading neoclassical economists themselves about the practice of economics: increasingly, empirical tests in the professional literature appear designed to confirm, rather than confront, the simple textbook vision.

The second section presents some uncontroversial statistical facts about the recent rise in earnings inequality in the United States and then summarizes the widely accepted view that skill-biased demand shifts explain this widening inequality. The heart of the paper appears in the third section, which considers the
manner in which empirical evidence has been employed in support of the supply/demand vision of things—the skill-biased demand-shift story.

The fourth section turns to a brief discussion of an alternative explanation based on a sharply different vision of the labor market, one in which a variety of forces unrelated to the change in the mix of skills required by employers substantially undermined the bargaining power of the least skilled. This alternative story highlights the principal sources of the decline in the bargaining power of those with the least, namely hourly wage employees. I suggest that underlying this decline was the poor macroeconomic performance of the 1970s; the globalization of production, labor supply, and finance (spurred by advances in information, communications, and transportation technologies); and the massive national ideological shift away from social concerns and public sector solutions toward private interests and market solutions that began under President Carter and reached its peak in the 1980s under President Reagan. These three critical developments generated a pronounced intensification of wage competition through a variety of mechanisms: the outsourcing and relocation of operations (or its threat) to lower-wage areas, intensified trade competition, rising supplies of low-skill immigrant labor, and de-institutionalized labor markets (declining protections afforded by unions, the minimum wage, and internal labor market structures and norms). Concluding remarks appear in the last section.

CONFRONTING THEORY WITH EMPIRICAL REALITY

David Gordon put forward an economics in which power, institutions, and ideology were integral to the economic process. While demand and supply certainly mattered, these forces alone could not explain the most important features of real-world labor markets. As a self-described Marxist, his vision was one of classes and interest groups contending for political and economic power. But he was also heavily influenced by the thinking of the American labor relations school, from John Commons to Clark Kerr and his teacher at Harvard, John Dunlop. One of his favorite classroom references was the three volume, encyclopedic work by Millis and Montgomery (1938). Indeed, if there was a methodological trademark of David’s work, it was the nearly compulsive desire to contrast and empirically test alternative models. This was the approach taken in Theories of Poverty and Underemployment (Gordon 1972), and was central to his empirical work with Weisskopf and Bowles on productivity
growth (Weisskopf et. al, 1983), his macro model (Gordon 1994a), and his project on supervision, efficiency wages, and labor discipline (Gordon 1990).

Closely linked to Gordon’s professional work was his effort to advance progressive public policies, which often required challenging the prevailing wisdom among economists. In one of his last published papers, Gordon confronted what he described as a “rupture between heterogeneous scholarly practice in economics and monolithic mainstream economic policy discourse.” According to Gordon (1994b: 2–3):

On a wide variety of economic policy issues, neoclassical economists tend to support a narrow policy orientation that insists on elevating considerations of “efficiency” over those of “equity,” that leans consistently toward reliance on the “free market,” that favors enticements rewarding capital income and promoting capital formation instead of supporting workers and their earnings.

Although a strong case can be made that laissez-faire economic policy benefits politically powerful interest groups at the expense of the overwhelming majority of citizens, Gordon contended that part of the explanation for the “narrow policy orientation could be found in how U.S. economists are trained, hired, and promoted. The prevailing vision of how the economy does and should function is one that is learned and can be self-perpetuating. Thus, while Solow (1993: 7) cautions that “elementary textbooks are meant to teach simple cases to beginning students,” Gordon (1994b: 17) points out that “if elementary text presentations on economic policy problems themselves tend toward a homogeneously pro-market world view, such a world view will inevitably acquire a kind of currency and legitimacy which is not easily countered.” The consequence is a “monolithic” policy orientation in favor of market explanations and solutions that is maintained in the face of mixed or even contrary evidence. Few leading economists, for example, dare to publicly support minimum wage or rent regulations. Yet, some of the best mainstream empirical literature of the last decade has found little or no negative effects of modest wage or rent regulations (Card and Krueger 1995; Arnott 1996).

Gordon would have heartily agreed with Mark Blaug (1992) that too many economists (of all ideological stripes) fail to submit their theory to serious critical empirical tests. As Blaug puts it, “Modern economists all too frequently are satisfied to demonstrate that the real world conforms to their predictions” (241). And he quotes Solow to the same effect: “They (economists) don’t ask themselves—and I think this is the worst sin of them all—whether
there doesn’t exist a different model that would fit the data equally well, and what does that tell me?” (Blaug: 242). Similarly, Benjamin Ward has pointed out that “the desire systematically to confront the theory with fact has not been a notable feature of the discipline” (Blaug: 239).

This failure to seriously confront the Econ101 model with empirical reality suggests that Gordon’s insight—that the policy recommendations of economists frequently ignore real world complexity in favor of simple stories that follow directly from the competitive model—can be taken a step further. Empirical research is designed and the results interpreted as if there is only one theory, one lens through which to view economic activity. Rather than confronting alternative theories with the facts, the job of economists becomes fashioning economic reality in the image of the textbook model—not a likely procedure for either advancing our understanding or developing effective public policy. The inequality literature offers a case in point.

**RISING EARNINGS INEQUALITY AND THE CONVENTIONAL WISDOM**

It is useful to begin with a few uncontroversial “statistical” facts about the rise in wage inequality. In the United States, much of the decline in the relative economic well-being of the least skilled has taken the form of collapsing real wages. Peter Gottschalk (1997) presents a stark picture of which income groups gained and lost over the 1973–94 period. He shows that the entire bottom 78 percent of male workers in 1994 earned less than their counterparts in 1973. Equally striking, Gottschalk shows that the typical worker in the 15th percentile in 1994 earned 24 percent less than his counterpart in the same percentile in 1973. Indeed, the evidence indicates that the explosion in inequality since the late 1970s was driven in large part by this decline in real earnings of workers with the least education: “Between 1979 and 1994, the real weekly earnings of college graduates increased by 5 percent, and the earnings of high school graduates declined by 20 percent, which is what caused the college premium to more than double” (p. 30).

Robert Topel (1997) offers another angle from which to view recent earnings inequality trends in the United States. He shows that, indexed to 1969, real wages at the 90th percentile (high wage workers) rose slightly, fell substantially at the 50th percentile, and collapsed at the bottom of the distribution—the 10th percentile. In Topel’s words,
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As a measure of inequality, then, the “90–10” wage differential among American men expanded by a startling 49 percent (40 log points) in 26 years, with over two thirds of this gap attributable to a decline in real wages among those in the 10th percentile. In a nutshell, this is the problem of rising wage inequality in the United States (57).

Since these findings are consistent with many others and have not been contested, we can with some confidence list three key “statistical facts” about recent trends in U.S. inequality:

1. The trend in overall earnings inequality increased sharply for both men and women after 1981.

2. Male workers in the bottom 78 percentiles in 1994 had lower real earnings than their counterparts in 1973. Workers in about the bottom 50 percentiles experienced greater than 10 percent declines.

3. The increase in “returns to education,” defined as the percent difference between college and high school graduates, was driven primarily by the declining real earnings of the latter. While college graduates increased their real earnings on average by 5 percent, high school graduates experienced a mean decline of 20 percent.

There is a mainstream consensus that this explosion in wage inequality in the 1980s can be explained by relative demand-shifts: skill-biased technological change, driven mainly by computerization, led to a collapse in the demand for low-skill workers and an increase in demand for those with strong cognitive skills. This is a plausible story, and it has the great advantage that it can be told with the elementary textbook model of the labor market. As Kevin Murphy, the recent winner of the John Bates Clark award, has put it, “Much of the explanation for growing wage inequality comes right out of Econ 101” (Passell 1997).

Skill-biased technological change lies at the heart of the conventional wisdom on the growth of earnings inequality. Particularly striking, in light of the paucity of supporting empirical evidence (outlined in the next section), is the assurance with which leading economists have accepted this version of the demand-shift story. For example:

The major cause (of relative wage changes in the 1980s) was a shift in the skill structure of labor demand brought about by biased technological change (John Bound and George Johnson 1992).
The growth of earnings inequality—and quite possibly therefore much of the rise in structural unemployment in Europe—has been the result of technological changes that just happen to work against unskilled workers (Paul Krugman 1994).

A critical factor raising demand for more skilled workers relative to less skilled workers is technological change that favors higher skills. In the 1980s, the increased use of microcomputers and computer-based technologies shifted demand toward more educated workers (Richard Freeman and Lawrence Katz 1994).

The fact that the skill intensity increased at the same time as the skill premium increased presents a prima facie case for the importance of demand shifts in explaining changes in the earnings distribution in the United States (Peter Gottschalk and Timothy Smeeding 1997).

In these passages, skill-biased technological change is identified as the “major cause” of growing wage inequality, but this is accomplished without actually employing a measure of technology; the rise in structural unemployment in Europe is explained by technological change that “just happens to work against unskilled workers,” without evidence that the rise in overall unemployment was exclusively or even mainly due to increasing rates of low-skill unemployment; a technology-driven growth in the “relative employment of more skilled labor” in the 1980s is central to the story, but nowhere is this actually established with the data—indeed, a variety of measures show that the rate of increase in skill mix slowed just as computerization and wage inequality took off. The next section considers in more detail the way empirical evidence has been used to support the conventional wisdom on the rise in earnings inequality.

THE CONVENTIONAL WISDOM
AND THE FACTS

The skill-biased demand shift story rests on a variety of “facts.” There are, of course, well-established statistical facts (the substantial growth in the “skill premium”). But in addition, central to the story are theory-driven interpretations of the evidence that reflect more the conventional supply-demand “vision” of the labor market than empirical reality: mixed evidence
is simplified and presented as supportive; contrary evidence is ignored. The story also rests on the theory-driven creation of facts, in which quantitative estimates of demand shifts drawn from the simple textbook supply and demand model are presented in the text on a par with what are clearly "statistical facts." To paraphrase Mark Blaug (1976), the remainder of this section presents a "slightly jaundiced" survey of the use of empirical evidence in this literature.

Vision and the Interpretation of Evidence

Demand Shifts and Wage Dispersion Across Countries. If technology-driven skill-biased demand shifts explain the massive increase in inequality in the United States, similar shifts ought to be observed in other advanced economies. As Johnson (1997: 49) writes, "Profound changes in production techniques would spill across national boundaries fairly quickly...." As a result, we should observe rapid changes in skill intensity in other economically advanced countries. In their recent literature review of earnings trends across developed countries, Gottschalk and Smeeding (1997) list four "stylized facts" (italics added, p. 636):

1. Almost all industrial economies experienced some increase in wage inequality among prime aged males during the 1980s (Germany and Italy are the exceptions).

2. But large differences in trends also exist across countries, with earnings inequality increasing most in the United States and the United Kingdom and least in Nordic countries.

3. The increasing demand for more skilled workers, coupled with differences across countries in the growth in supply of skilled workers, explains a large part of differences in trends in returns to education and experience.

4. Institutional constraints on wages also seem to matter. The rise in the relative unemployment rates of the least skilled in some, but not all, countries with centralized wage-setting institutions suggests that constraints were at least partially responsible for limiting the rise in inequality.

These "stylized facts" tell us that, while supply shifts vary across developed countries, there has been a pervasive skill-biased demand shift (stylized fact #3) which has produced a strong
tendency towards growing inequality (fact #4), which has, in turn, resulted in at least some increase in male wage inequality in "almost all industrial economies" (fact #1). Actually, there is little direct evidence of any substantial demand shift in the 1980s, much less one that afflicts all developed countries. Nor is it clear that the rise in inequality was as pervasive as implied, or that even where it did not rise (due to "constraints"), that there were demand side pressures for it to do so. How do we know, for instance, that the reverse is not the case—that the main determinants of the recent course of relative earnings were differences in management strategies, social norms, and institutions that affect the relative bargaining power of the least skilled across countries, with supply and demand conditions having only marginal effects (say over the business cycle)?

Have "almost all" industrialized economies experienced at least some rise in earnings inequality? Answering yes or no is much like saying the glass is half full rather than half empty. Does any increase in inequality count, even if so small that it may reflect just measurement error, and are we restricted to the 1980s? The data seem to provide much less support for any meaningful long-term (15–20 year) trend toward rising earnings inequality across the developed countries than Gottschalk and Smeeding suggest.

The authors document stylized fact #1 by generalizing from evidence on 11 nations. Apart from Germany and Italy, which show no increase in inequality, another four nations exhibit "positive but quite small" increases in inequality (652). The United States, the United Kingdom, and Canada experienced large increases in the 1980s. Gottschalk and Smeeding place the remaining country, Australia, in the "moderate inequality growth" category. But according to OECD data, the D9/D5 ratio (the earner in the 90th percentile relative to the 50th percentile worker) was unchanged over the 1980s, and the D5/D1 ratio increased from 1.62 to just 1.67 between 1979 and 1989 (OECD 1996: table 3.1). To get some perspective on the magnitude of this latter change, over the same period in the United States, the D5/D1 ratio increased from 1.73 to 2.05. In sum, adopting a more skeptical position than Gottschalk and Smeeding, we could just as easily conclude the reverse: only three developed nations experienced substantial increases in wage inequality in the 1980s, a reflection of political and institutional features and not skill-biased technological change.

But why consider just the 1980s? There are data sources that take us well into the 1990s. Since the underlying story is one

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1 I will not include Israel, a small country not usually included in such comparisons.
in which demand shifts overwhelm supply shifts, due mainly to (computer-based) technological change, and since the shift to this technological has presumably not abated, we should expect to observe the inequality trends continuing well into the 1990s. Indeed, there is reason to expect acceleration, if computerization is the source of the rise in inequality. Increases in the overall dispersion (D9/D1) in both Canada and France disappear in the 1990s. According to a summary paper by OECD staff (OECD 1996: 63), “The United Kingdom and the United States stand out as the only countries where there has been a continuation of a pronounced rise in earnings inequality.” Similarly, Anthony Atkinson (1998) concludes, “It is misleading therefore to talk of a general ‘trend’ towards increased dispersion, and even in countries where dispersion has increased the historical record is better described as consisting of “episodes” of widening income differences rather than as following an inexorable trend.”

In sum, the Gottschalk/Smeeding conclusion that almost all industrial countries have experienced growing earnings inequality may not be wrong, but it is certainly open to question, particularly when the 1990s are considered. A “stylized fact” about the growth in earnings inequality across countries is presented that is perfectly consistent with the conventional demand-shift story, but the statistical facts could just as easily—perhaps more easily—have been employed to challenge the conventional wisdom.

The Coincidence of Rising Wage Premia and Rising Skill Intensity. As Gottschalk and Smeeding (1997) point out, the case for stylized fact #3—the primacy of demand shifts—rests in large part on the coincidence of rising skill intensity and rising wage premia (see the passage quoted above). What is left unsaid is that this logic rests solidly on a textbook demand/supply vision of the labor market, with little or no role for power, institutions, and norms in wage-setting.

To see that there is an alternative way to look at this, assume an economy with two zones: the north, where low-skill workers are paid well, and the south, where subsistence wages are paid. Assume also that in the first period national law and social norms prevent significant plant mobility and outsourcing from the north to the south. Finally, let us say that over two periods skill intensity (the skill mix required in the workplace) increases in line with its long-run trajectory, but the economic context undergoes fundamental changes in the second period which are independent of any changes in skill requirements. This change in economic context includes poor macroeconomic performance, a rise in low-skill immigrants, and an ideological shift in favor of market solutions (see the fourth section for more detail). Product and labor markets are deregulated, the minimum wage declines sharply in real terms, union power erodes, and social norms shift
in favor of wage-setting in a competitive marketplace. These new conditions not only allow, but may require, cuts in labor costs through the adoption of such strategies as wage concessions, the use of low-cost temporary labor, and the relocation and/or outsourcing to low labor cost regions (Harrison 1997: chapter 9).

Under this scenario, in which a continuation of a long-run upward trend in cognitive skill requirements that happens to coincide with the economic restructuring and sharp deregulation (marketization) of the labor market just outlined, the official statistics will show increases in both skill intensity and the skill premium in the absence of any special (or accelerated) technology-driven shift in demand against low-skill workers. The prima facie case for the primacy of demand-shifts exists only within the confines of the simple two-dimensional demand/supply model.

Has the U.S. Workplace been Distinguished by a Sharp Rise in Skill Intensity? Is it a “fact” that skill intensity increased over this period, and if so, did this increase amount to a “shift in demand” whose magnitude could plausibly have caused the growth in wage inequality? More specifically, is there direct evidence of a collapse in demand for the least skilled that could have produced the 20 percent decline in real earnings noted above? We would need to show that the workplace-related skill requirements have risen substantially relative to earlier decades (when inequality was not growing).

The most commonly used measure of skill intensity in the workplace in this literature is the ratio of nonproduction to production workers in the manufacturing sector. Although crude, this measure may capture some of the change in the mix of occupations that should take place as profound shifts in production techniques occur. Johnson (48) contends that the demand shift driving the increase in wage inequality “primarily reflects extensive skill-biased technological change,” which he defined as “skilled workers becoming more efficient in jobs that were formerly done by unskilled workers.” Under extensive technological change, for example, the demand for engineers increases at the same time that the demand for ditch diggers declines: the ratio of nonproduction to production workers increases.

In one of the most widely cited papers on the growth in skill intensity, Berman, Bound, and Griliches (1994) report that the

\[ \text{2 Even if we can empirically show an unusually strong skill-biased demand shift in this period, it would be important to distinguish the downward wage effects of this shift from those that result from any deregulation of the labor market that occurs independently of the demand shift. In fact, the empirical evidence suggests that the long-run shift toward a more skilled workforce slowed in the United States after 1983 (Howell and Wolff 1991).} \]
nonproduction to production worker ratio increased from 30.9 percent in 1979 to 35.4 percent in 1987. As they put it, “Peak-to-peak, the ratio shows a clear upward trend.” The authors interpret these trends as evidence that the manufacturing sector experienced substantial skill upgrading over this decade, and conclude that “biased technological change is an important part of the explanation.”

However, the annual data show that the entire increase took place between 1980 and 1982; between 1983 and the early 1990s the ratio remained essentially unchanged (Howell 1997). With a similar measure for the entire private, nonfarm economy, a pronounced long-term upward trend is evident from 1948 through 1982, after which the nonproduction share actually begins to decline. The timing of these changes in “skill composition” would seem to pose a major problem for the technology story since computerization does not begin to take off until just about the same time that the stability (or decline) in the skill measure sets in in the mid-1980s. At the same time, much of the decline in the wages of those at the bottom of the wage distribution between the late 1960s and the mid-1990s occurs between 1979 and 1983—again, before computerization could have produced the wholesale restructuring of the workplace that is presumed by the skill-biased technology explanation.

In another measure of economy-wide change in skill composition, Glyn (1997) groups employment into educational quartiles, and compares the employment rate of the top quartile with the bottom quartile for those ages 25–64. He finds that this ratio shifts in favor of skilled workers only through 1981: “The employment position of low-ed Americans deteriorated sharply over the period 1973–81, when wage dispersion grew modestly, but barely declined any further after 1981 when wage dispersion rocketed” (9). Again, the conventional computerization story would predict a very different trend—the impact on skill composition should increase with the diffusion, power, and effective use of computers in the workplace.

*International Evidence on Skill-Intensity.* In recent years, appeal has been made to international evidence—if skill-biased demand shifts explain the massive increase in inequality in the United States, similar shifts ought to be observed in other advanced economies. As Johnson (1997: 49) points out, major changes in production technology will “spill across national boundaries fairly quickly....,” and as a result, we should observe rapid changes in skill intensity in other economically advanced countries. His reading of the evidence is that this is confirmed for a “variety of old industrialized (OECD) countries.” One of the two papers he cites in this regard, by Machin, Ryan, and Van Reenan (1996), employs the same nonproduction to production
measure of skill just discussed. Machin et. al. contrast two countries with deregulated labor markets and large increases in inequality (the United States and the United Kingdom) with two others that are characterized by strong welfare states, much more regulated labor markets, and stable wage structures (Denmark and Sweden). Like the United States, both the United Kingdom and Sweden show large increases in "skill intensity" through 1982, but the nonproduction employment share remains essentially unchanged between 1982 and 1989 (Machin et al. 1996: figure 4). Only Denmark shows an increase after 1982 that comes close to matching the increase in the earlier decade.

Similarly, Berman, Bound, and Machin (1997) conclude that there is "pervasive" skill-biased technological change on the grounds that the nonproduction-production worker ratio has increased in a number of OECD nations. Yet, they also note that there has been a deceleration in the upward trend in skill composition in the 1980s in most countries: "It is also revealing to observe that while the proportion of nonproduction workers in manufacturing accelerated in the US, this experience was shared by only Denmark and Finland..." (7). Like the stylized fact that rising earnings inequality has been experienced by almost all developed countries, the evidence for the widespread view that the 1980s were marked by a pervasive upward shift in the skill mix of employment across countries is not strongly supported by the available data.

**Skill Intensity and Computerization.** Here we return to the claim that skill-biased technological change is at the root of the presumed shifts in skill mix. The timing of these employment and investment trends is relevant to the interpretation of the regression results presented in the literature in support of this demand shift. Berman, Bound, and Griliches (1994) regress the change in the nonproduction share of employment across industries on the level and change in the share of computers in total investment. The coefficients are positive, and they conclude that this measure of technological change accounts for "one-quarter to one-half of the within-industry move away from production labor that occurred over the 1980s."³ Even if these simple (one and two variable) regressions are adequately specified, and the direction of causation is right (the authors admit that it may be that industries with high nonproduction shares tend to invest more in computers—more office workers require more desktops), a skeptic might ask whether it is plausible that

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³ There are surely other determinants of changes in the nonproduction share than the computerization of the workplace. Gordon (1996), for example, has shown that this share varies dramatically across highly developed nations despite investing similarly (presumably) in computer-based technologies.
investments in computers, the bulk of which took place after the early 1980s,\textsuperscript{4} can explain up to half of the shift away from production labor, which occurred entirely between 1979 and 1982.

Both Berman, Bound, and Machin (1997) and Autor, Katz, and Krueger (1997) extend this approach to the link between computers and skill mix. While the authors of both studies interpret their findings as broadly supportive of the skill-biased technological change account, the evidence is far from overwhelming. For example, Berman, Bound, and Machin regress the change in occupation employment shares between 1980 and 1990 on the 1984–89 change in computer use in the workplace. Just two of the five female occupations, and none of the six male occupations, show any effect from computerization. According to the authors, “Increased use of personal computers in the US is correlated with the decline of female clerks and the rise of female professionals” (1994: 24). This seems quite plausible, but it is a slim reed on which to rest a skill-biased technological change explanation for the collapse in low-skill wages, which was particularly severe for blue-collar men.

Autor, Katz and Krueger (1997) consistently find that while the level of computer investment (or in some cases computer use) at the beginning of a given period produces a strong positive coefficient in their skill composition change tests, the change in the computerization measure does not (tables 7 and 8). The authors interpret their results as generally supportive of the skill-biased technological change explanation, but their conclusion is quite cautious: “Although these conditional correlations of computer measures and the growth in the utilization of college workers and nonproduction workers may not reflect causal relationships, it is clear that whatever is driving increases in the rate of growth of demand for skilled labor over the past twenty-five years is concentrated in the most computer-intensive sectors of the U.S. economy” (33). Two researchers (Mishel and Bernstein, 1998) who do not frame their research and interpret their results through a demand-supply lens have provided what I consider (reflecting perhaps my own prior beliefs) the most comprehensive and convincing test of the skill-biased technological change hypothesis. Their conclusion is unequivocal: “We do not find any increased association of technological change with increased utilization of the most educated or best-paid workers, and without

\footnote{\textsuperscript{4} According to Autor, Katz, and Krueger (1997: table 4), just 25 percent of all workers and 7 percent of blue-collar workers used a computer at work in October 1984. Oliner and Wascher (1995: table 3) find that computers and peripheral equipment as a share of total nonresidential equipment and structures were .8 percent in 1970, .8 percent in 1980, and 1.9 percent in 1990.}
such an acceleration technological change cannot be seen as the source of growing wage inequality in the 1980s or 1990s” (54).

The mixed results for the effects of the level and change in computerization on skill intensity and relative wages appear to be consistent with the findings of another study that makes use of plant level data for the 1977–92 period. Doms, Dunne, and Troske (1995) conclude that, while high-tech plants tend to require higher skilled workers, “our time-series results show little correlation between changes in the plant-level skill mix of workers and technology adoption. Plants which adopt a large number of new technologies do not appear to shift toward the use of more skilled workers relative to plants which adopt a small number of new technologies.”

A study of the wage effects of computers at the individual level (rather than across industries) by Alan Krueger (1993) has been widely cited as direct evidence that computerization is the main culprit behind the growth in earnings inequality. Indeed, Krueger argues that the use of computers alone can explain some 40 percent of the increase in the returns to schooling (the growth in the college/high school differential) between 1984 and 1989. To this skeptic, this seemingly implausible conclusion by a pre-eminent researcher and its widespread acceptance among economists must reflect the prior belief that skill-biased technological change has to be the source of the earnings inequality problem.

Krueger’s interpretation of his results has now been strongly challenged by at least two recent studies. DiNardo and Pischke (1997) test this relationship with German data and find “similar wage differentials for the use of pencils at work as for computers.” Their results suggest that the payoff to computer use does not reflect, as they put it, “an actual productivity differential.” In another study that uses U.S. data, Michael Handel (1997: 2) finds that Krueger’s measured returns to computer use are strongly biased upward, and concludes, “When the contribution of computer use to all components of the variance of wages is taken into account, computers seem to have had a net equalizing impact in the period Krueger studied. This casts significant doubt on this technology-based explanation of the growth of wage inequality.”

The Use and Misuse of Case Studies. Prior to the problem of the effect “our vision of things” has on our “interpretation” of the facts is the selection of the facts in the first place. A good example of the use and misuse of the “facts” can be found in the way case
study evidence has been selectively employed to support the skill-biased technological change hypothesis.\textsuperscript{5}

Take, again, the Berman, Bound, and Griliches (1994) paper. They write, "More qualitative information supports the notion that production-labor-saving technological change has played an important role in explaining the decline in production workers' share in wages.... It is striking how often the BLS case studies written over the past decade mention the introduction of technologies that reduce unit labor requirements for production jobs." It is hardly surprising that new technologies would tend to produce lower unit labor costs. The point must be, as Mishel and Bernstein (1998) emphasize, that to explain the growth in wage inequality with the conventional story, we would need to show that there was an acceleration in either the use or the skill effects of new technology, and that this change in the demand for skills accounts for most of the change in the structure of earnings. But the BLS studies cited by these authors cover the decade prior to the early 1980s, before the "take-off" of computers in the workplace and prior to much of the growth of earnings inequality. Earlier studies in the same BLS series also offer examples of technology-related skill upgrading, but low-skill wages did not collapse in the 1960s and 1970s. There is, in fact, no evidence in these case studies that directly supports the skill-biased technology explanation of the "decline in production workers' share of wages" in the 1980s.

Gottschalk and Smeeding (1997: 649) also cite case studies in support of a skill-biased technological change account of the rise in earnings inequality: "...there are now a variety of studies of specific technological changes that have increased the demand for the more skilled." They refer specifically to a study of the textile industry by Bailey (1988), a BLS study of the steel industry (\textit{U.S. Bureau of Labor Statistics} 1994) and a study using data from a large compensation consulting firm by Cappelli (1993). Again, the question is not whether new technologies tend to raise skill levels, but whether the skill-twist of new technologies can provide a plausible account of the explosion in earnings inequality in the 1980s.

On the narrower question of skill effects, this use of case study findings suggests that technological change is always (since they cite no contrary evidence) or at least usually strongly biased in favor of the use of high skills. In fact, neither the Bailey nor the Cappelli findings support such a conclusion. Bailey (1988) finds that increases in skill requirements are associated more with moves toward workplace flexibility than with computerization per

\textsuperscript{5} For some of the material in this section I make use of a fine survey of the technology-skill case study literature by Fleta Knaus, a graduate student at the New School.

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se. Cappelli (1993: 528) reports significant skill upgrading for most production occupations between 1978 and 1986, but finds that the source of this upgrading does not appear to be computerization: "Changes in production jobs seem much more driven by developments in traditional employee relations arenas. Particularly influential have been new management views concerning how jobs should be redesigned." On the other hand, in his study of machine shops in the U.S., Jeffrey Keefe (1991: 515–16) found that "the diffusion of NC (numerical controls) has had no significant impact on overall machine shop skill levels." Among clerical jobs, Cappelli (524) finds that half "experienced significant upskilling, and the other half had significant deskilling," and concludes that "new office technologies appear to be the cause of the deskilling."

A more balanced reading of this literature would indicate that the evidence is mixed. Skill requirements can decline with the introduction of new information technologies (e.g., scanners at the checkout counter). Computerization may also have various impacts on the requirements for a variety of different kinds of skills, ranging from cognitive skills to interpersonal and motor skills (Howell and Wolff, 1991, 1992), from demands for task flexibility of team production to the narrow cognitive skill depth required of certain types of computer programming. Even in cases where new technologies tend to require higher cognitive skills, changes in the mix of skills often have as much to do with management strategy as any skill requirements inherent to new technology. Thus, Cappelli and Rogovsky (1994) point out,

Systems of work organization are in effect choice variables for employers. Research shows that the same technology, for example, can be applied in very different ways, with different effects on skill requirements and job design. Firms may vary considerably in the ways they solve the same problem of obtaining workers with adequate skills: some "deskill" or make jobs simpler, some "upskill" and introduce high performance work systems....

Case study evidence can be extremely valuable and is under-employed in the earnings inequality literature. Since few readers can be expected to be familiar with the cited case studies, selecting only those offering support for the maintained hypothesis, or even worse, representing a particular study as providing more evidentiary support than it actually does, misrepresents the literature and amounts to the creation of facts.
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Creating Facts: Computing the Demand-Shift

There can be no doubt that the conventional preoccupation with supply and demand has a strong laissez faire bias. Thus the empirical conventional methodology...of examining what part of earnings changes can be ascribed to changes in labor supplies and then attributing the rest to changes in labor demands—is certainly not harmless from a policy perspective (Dennis Snower 1998: 46).

The empirical case for the importance of demand shifts rests on a conclusion drawn from statistical trends (the concurrent rise in skill intensity and the skill premium) that holds only in a simple textbook labor market. But one of the trends—a marked growth in skill-intensity (skill mismatch due to the collapse in job opportunities for the least skilled)—is open to serious question, as argued above. There is, in fact, little direct evidence for the demand shift story.

How, then, do we know that the relative demand shift was actually larger than the supply shift? The answer is that, with “a tractable and commonly used set of assumptions,” we can calculate it from the simple textbook model (Johnson 1996: 43). This is a common procedure in the literature. For example, Johnson writes, “This rise in the wage premium for skill labor is typically understood with a conventional supply and demand model as the result in a large rightward shift in the demand function.” With a demand and supply graph, he shows that the relative (high skill to low skill) demand shift had to be larger than the relative supply shift to get the result we observe in the real world—a rise in the wage premium. If this is all there is to wage-setting, we can simply calculate the magnitude of the demand shift.

What are the assumptions? Following Johnson (1997: 43), they include full employment (at least “most of the time,” in Johnson’s words), wage flexibility (which, according to the author, is “a condition that is apparently not satisfied in much of western Europe in recent years”), and exogeneity of relative supply (that is, a decline or increase in the relative wages of low-skill workers will not affect the supply of their labor-time relative to those with high skills). Under these conditions, the requisite demand shift can be calculated from the supply shift, the change in relative wages, and an assumed elasticity of substitution. We learn that this calculation produces a demand shift of “about 60 percent” (45).

To put it another way, relative supply would also have to have grown by 60 percent for the college/high school relative wage to have remained fixed from 1979 to 1989.
Since relative supply only increased by 31 percent, the college/high school relative wage—and earnings inequality generally—rose sharply during the 1980s.

But the “60 percent” demand shift is derived from, among other things, the “31 percent” supply shift in a textbook labor market. This is a “theory-driven fact”—the magnitude of the demand-shift necessary to confirm the conventional demand-shift story in a simple textbook world with supply shifts and relative wage changes that mimic the real world. Yet it is easy to take this demand-shift figure as a real “statistical fact,” both because of the language in the text and because the deduced demand shift figures appear in Johnson’s table 2 next to the “real” wage and supply figures. This is as close as we get to a quantitative confirmation that the rise in earnings inequality can be explained by “a large rightward shift in the demand function.” Since “demand” is a residual category here (everything not captured by supply shifts), we could just as easily attribute the “60 percent” to, say, institutional shifts.

**Is There Still a Coherent Demand-Shift Story?**

It seems to be increasingly apparent to the leading researchers in the inequality area that the evidence for the skill-biased demand shift story is not as convincing as once thought. This can be illustrated by both the Johnson (1997) and Gottschalk and Smeeding (1997) papers. Thus, Johnson acknowledges that the calculated (inferred) shifts in demand “are quite large in each of the periods after the 1940s” (45). Although we are told at the beginning of the paper that the literature “reaches virtually unanimous agreement” that an increase in relative demand “caused” the increase in the relative wages of higher skilled workers to increase (41), we learn in the middle of the paper that this shift in demand towards high skill workers “may be interpreted as a slight acceleration of a long-term trend rather than as something entirely new” (45). Johnson then ends the discussion with a paragraph in which he notes that swings in the supply of college graduates have influenced relative wages since the 1960s.

This seems to suggest that in each decade since the 1940s there were similarly large rightward shifts in the demand function, and that what distinguished the 1980s was a “swing” in the supply of college graduates. This sounds like a “supply-shift” story. Yet Johnson begins the very next section of his paper by telling the reader that he will review “the two major sets of explanations for why the relative demand for skilled workers in the United States increased so rapidly during the 1980s” (emphasis added, p. 46).
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This apparent shift from a demand-shift to a supply-shift story while still maintaining that skill-biased technological change lies at the heart of the problem is not unique to Johnson’s account. In their survey of this literature, Gottschalk and Smeeding (1997: 650) respond to critiques of the skill-biased technological change explanation for the presumed distinctive shift in demand by agreeing that there was “non-accelerating growth in demand” in the 1980s.

While it may be sloppy language to attribute the rise in the wage premium to demand side factors, there is nothing inherent in the (technological change) argument that requires an acceleration in the shift in demand. Deceleration in supply will do. What is required of any (neoclassical) explanation for the increase in inequality is that the shift in demand be greater than the shift in supply.

Autor, Katz, and Krueger’s recent research confirms that it was supply shifts that distinguish the 1980s from the 1970s. But does the deceleration in the supply of college graduates do the trick? As Gottschalk (1997: 30) points out in his Journal of Economic Perspectives paper, the relative price of college workers rose, but “it is important to remember that increases in the college premium are being driven more by the decline in real earnings of high school graduates than by the increase in earnings of college workers.” That is, we need to explain our statistical fact #3: the 20 percent decline in real earnings for high school graduates in the 1980s—a decline that can hardly be accounted for by a slowdown in the relative growth of college graduates.

Despite a recognition that the decade of the 1980s was not distinguished by exceptional shifts in demand in favor of high skilled workers, both the Johnson (1997) and Gottschalk and Smeeding (1997) papers maintain that one possible source of demand shifts in the 1980s—skill-biased technological change—“must be” at the crux of the inequality explosion. The model requires it. Indeed, as Johnson (1997: 47) puts it, “Within a conventional supply-demand model, the only plausible candidate that could have done this is skill-biased technological change.”

When the evidence conflicts with the model, the message seems to be that one should stay with the model. But there appears to be some widening cracks in the orthodoxy. Dennis Snower (1998), for example, suggests that in the context of the “organizational revolution” he contends is underway, efficiency

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6 Autor et al. Conclude that “differences in relative wage behavior between the 1980s and 1970s appear to be more affected by the differences in relative supply growth than differences in relative demand growth” (1997: 12).

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wage and insider-outsider models can be usefully employed to help explain the rise in earnings inequality. It is not clear, however, why this "revolution" has produced increasing efficiency-wage and insider-outsider effects and consequently spectacular increases in earnings inequality in the United States and the United Kingdom, but little observable increases elsewhere in the developed world. The next section suggests that a confluence of structural, institutional and ideological factors can help account for the rise in wage inequality in the United States.

AN ALTERNATIVE STORY OF THE WAGE COLLAPSE

How might a "vision" of the way developed capitalist economies function, that places power and institutions at center stage (with the market forces of demand and supply), explain the collapse of real wages for the least skilled and the growth in earnings inequality in the United States?

A number of recent papers have contributed to making it increasingly necessary to acknowledge a central role for labor market institutions in any serious discussion of the wage problem in the United States (DiNardo, Fortin, and Lemieux 1996; Freeman 1996; Fortin and Lemieux 1997). Written in full recognition of the dominance of the simple textbook model in professional circles, these papers have adopted a cautious approach to moving the story beyond simple, measurable, demand and supply shifts. For example, Fortin and Lemieux (1997: 77) expressly limit their focus to "quantifiable measures of institutional forces and exclude factors such as cultural or social norms that may play an important role in wage determination, but are difficult to quantify." They conclude that about one-third of the growth in inequality in the 1980s can be attributed to changes in three such forces: the real value of the minimum wage, the unionization rate, and economic deregulation.

The conventional view is that these institutional changes are endogenous, reflecting the underlying forces of demand and supply. Although there is surely some truth to this point, particularly for the precipitous decline in unionization in the early 1980s, we are convinced by Fortin and Lemieux's defense of the view that there was a sizable independent effect of changes in these three institutional forces on relative wages in this period. Indeed, my critique comes from the other side—that these institutional changes, although essential to a convincing explanation of wage restructuring, reflect only the most easily quantifiable manifestations of the more fundamental sources of the wage collapse, which are at once ideological and structural. In this
section, some thoughts are offered about the directions a more heterodox explanation might take.

To begin thinking about such an alternative, we turn to the work of the early postwar labor relations specialists like Clark Kerr, Sumner Slichter, Arthur Ross and John Dunlop, and Richard Lester, and to the more recent research on efficiency wages (Akerlof and Yellen 1986), industry rents (Katz and Summers 1989; Blanchflower and Sanfery 1996) and minimum wages (Card and Krueger 1995). This long tradition of looking beyond the intersection of conventionally conceived demand and supply schedules to account for real world labor market outcomes can be summed up by Card and Krueger’s conclusion regarding the implications of their research on the employment effects of the minimum wage: “Our findings call into question the standard model of the labor market that has dominated economists’ thinking for the past half century.”

In brief, outside the standard model, employers may offer a range of starting wages and one of many wage-tenure profiles. Within a range set by demand and supply forces, by social norms, and by legal constraints, relative wages reflect the outcomes of bargaining between workers and employers. In this view, imperfect information about worker performance, the importance of teamwork in production, the degree of price-making behavior in product markets, the share of labor in total costs, the collective power of workers, managerial preferences over competitive strategy, and government regulations will influence wage-setting and contribute to different wage outcomes for similarly skilled workers in similarly attractive jobs across establishments. Equally important, where changes in worker effort have a substantial impact on productivity and where adherence to community norms matters for competitive success, the perception of fair treatment may be critical for maximizing workplace productivity and wage-setting will consequently reflect social norms of fairness (Akerlof 1982; Bewley 1995; Bowles and Gintis 1998). Changes in any of these factors may alter the wage structure independently of the skill structure. More specifically, under these circumstances substantial differences in wages—and their change over time—can be expected for a given level of skills across establishments, firms and locations. Lester (1952) referred to this kind of approach as a “range” theory of wages.

7 The indeterminacy of wage-setting can be established even within a neoclassical framework with specific skills. As Rodrik (1996: 25) explains, “Even without unions and in the absence of other labor-market imperfections, the accumulation of job-specific skills creates a situation of bilateral monopoly between workers and employers ex post. In other words, job specific skills are a form of rent, the distribution of which must be determined via bargaining within the enterprise.”
With this vision of the labor market, we turn to some conjectures on the story of the wage collapse. We begin with the poor economic performance of the 1970s, a decade characterized by slow growth, low rates of productivity growth and high inflation, culminating in the back-to-back recessions of 1980–82. Additionally, with the sharp rise in the value of the dollar at about this time, imports of manufactured goods increased dramatically (Galbraith 1998: 9). Despite levels of unemployment not seen since the depression, this decade was also marked by a rapid increase in the flow of low-skill immigrants, which has continued into the 1990s (Borjas 1994; Howell and Mueller 1998). A sizable inflow of workers into slack labor markets could only undermine the bargaining power of workers least sheltered from wage competition—the least skilled.

But crucially, with the late 1970s the United States began experiencing a marked ideological shift towards a preference for competitive market outcomes and solutions, much like earlier laissez-faire, anti-government episodes in the 1920s and 1950s (Hirschman 1982; Schlesinger 1986; Phillips 1991). As President Reagan’s intervention in the PATCO strike of 1981 illustrated, this ideological shift had direct effects on bargaining in the workplace. According to Daniel B. Mitchell a new balance of power had developed:

[T]he longevity of the (wage) concession movement and its spread to less-than-dire situations suggest that the initial concessions have encouraged other employers to try their luck in demanding similar settlements.... Management, cheered by what is perceived as a shift in the balance of power, has changed its bargaining goals.... The political and legal climate change has been reflected in a greater willingness of management to take actions in labor disputes that might not have been publicly or politically acceptable in the past.... Even firms with a long history of unionization are using nonunion labor (Mitchell 1985: 589–90).

Partly spurred by this ideological shift in the United States and other countries (most notably in the United Kingdom), but also by rapid technological advances in communications and transportation, there was an acceleration in the pace of globalization and, consequently, in product market price competition. In this new economic environment, labor markets were deregulated, trade barriers dismantled, the minimum wage allowed to decline sharply in real terms, and financial and industrial capital freed to search the world for the highest return (and lowest wage costs). It
cannot be surprising that in this setting union membership and power would erode.

A critical consequence of these ideological and structural changes was that the "effective" supply of low-skill labor quickly expanded. Increasing trade and capital flows between the United States and low-wage and high-wage nations alike made low-skill workers throughout the world far more easily substitutable with one another, which means that the demand for U.S. labor became more elastic—more responsive to changes in its costs—which in turn would tend to reduce worker bargaining power (Rodrik 1996: 27).

In sum, it seems reasonable to expect that slack low-skill labor markets, rising supplies of low reservation wage workers, and increases in trade and capital flows would threaten the future of low-skill, but moderate-wage domestic (U.S.) operations in the context of de-institutionalized labor markets. The resulting wage collapse was not directly related to changes in the demand for skills, but given the long-run trajectory of skill requirements, it also seems reasonable that the skill intensity of the workplace increased over the period. But in contrast to the conventional skill-biased demand-shift account, this story requires no change in overall skill requirements. It is not that low-skill labor is any less necessary; it is simply now more highly concentrated in foreign low-wage regions and paid more poorly in the domestic (formerly) high-wage region. With little or no change in the skill structure (relative to its long run trajectory, at any rate), wage inequality rises, reflecting the decline in the equalizing effects of social norms and labor market institutions that shelter workers from intense wage competition.

Figure 1 illustrates an expanding range of wage rates for similarly skilled workers (e.g., manual laborers) at the firm level in a hypothetical industry. With the wage on the vertical axis and low-skill employment per unit of output on the horizontal axis, a hypothetical set of wage-employment/output points for firms in this industry is plotted for the initial period (say 1973).8 "High-

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8 Alternatively, this Lester-like range approach to wage setting can be depicted with bands of possible points, rather than the traditional curves. For example, recent work by Robert Solow and Frank Hahn assumes that "the representation of the 'supply' of labor is no longer an upward-sloping curve connecting the volume of employment and the real wage, but is rather a 'thick' two-dimensional area showing that labor-market supply conditions can be satisfied by a range of levels of employment corresponding to a given real wage, and therefore by a range of real wage rates corresponding to a given level of employment" (Solow 1994: 262). This interpretation is supported by recent research. According to Freeman (1988), "An important aspect of the finding that most workers work in internal markets is that this implies that the bulk of the labor force is effectively 'inframarginal,' and thus unlikely to respond to outside economic incentives in the sample manner represented in the neoclassical labor supply schedule."
Figure 1
Low-Skill Wages for Firms in a Hypothetical Industry with Unchanging Skill Requirements

Under Conditions of Weak Aggregate Demand, a Surplus Pool of Workers, Globalization of Trade, Production and Finance, and Labor Market Deregulation:
**mean wage declines, wage dispersion rises**
road” firms use more advanced technologies, a higher ratio of skilled to unskilled workers, require fewer manual laborers per unit of output, but pay them relatively well. On the other hand, “low-road” firms choose a low wage strategy, one that economizes on the costs of both new technology and more highly skilled workers. This strategy takes advantage of a plentiful pool of low-wage labor by employing more manual laborers per unit of output, but pays them less than the high-road firms.9

Now assume that over the course of time (say the 1980s) there is both a substantial increase in the globalization of product and labor markets (which increases the effective supply of workers with low reservation wages) and a substantial decline in the sheltering effects of key labor market institutions (the threat of unionization, the value of the legal minimum wage). As wage competition increases in this industry and the bargaining power of manual laborers collapses, it becomes increasingly attractive to lower labor costs by slashing wages and benefits. The result is that, while some high-road firms may survive, most will be forced to adopt a low-wage competitive strategy. The lower threshold of the wage range declines as the real value of the legal minimum drops (as it did, from $5.99 in 1979 to $4.13 in 1989 in 1995 dollars). As the low-road becomes the norm, the average real wage for manual laborers drops and the dispersion of mean firm wages increases.10

Is this a plausible tale? While not easily put to a definitive statistical test, there is some supporting evidence. Based on his analysis of proprietary data for the manufacturing plants of 3,000 firms with fewer than 500 employees, Luria (1996: 15) concludes,

Clearly, in most industries, firms can now adopt recipes with very different mixes of wages, skill, technology, training, and basic management discipline. They incur no penalty in low profits or slower growth if they choose the low-road or the lean commodity route. Therefore, the markets are not offering meaningful incentives for “good” manufacturing behavior. Yet the low frequency of

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9 For those skeptical of this characterization, we refer to Luria’s (1996: 13) analysis of proprietary data for 3,000 small manufacturing plants in the United States: “Lest one be tempted to believe that there is one, best way to make a proverbial widget, consider the sheer range of performance within smaller shops and within industries. Metal-formers making the same products for the same customers have value added per employee anywhere between $40,000 and $140,000. Indeed, in every industry the productivity level achieved by the most productive 10 percent of shops is at least 160 percent of the industry median.”

10 The growth in within-firm and within-establishment wage dispersion might be thought of in the same way. With no change in the overall mix of skills required, under a regime of greater wage competition, jobs least sheltered form downward pressures (those least difficult to outsource, that require no idiosyncratic skills, etc.) experience declining relative (and real) earnings.

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such behavior in the small-shop economy is costly, resulting in lower wages, lower productivity, less technical change, and a composition of output that has too few products that command price premiums in global trade.

Luria's account suggests that the problem is, perhaps, less an acceleration of skill-biased technological change than the reverse: ideological shifts, labor market deregulation, and global competition have increased the incentive employers have to cut labor costs by reducing wages and benefits rather than through investment in advanced technologies and a high-skill workforce.

To the extent that this scenario captures essential dimensions of wage-setting in recent decades, both between- and within-group (age, education, gender) inequality would be expected to grow independently of the changing skill composition of the workplace. Such an "institutional" story admittedly rests largely on conjecture but these conjectures are at least consistent with the aggregate and case study evidence. The purpose in this section has been simply to illustrate a plausible institutional explanation of collapsing wages and growing inequality under conditions of a relatively stable skill intensity.

CONCLUDING REMARKS

It is increasingly recognized that changes in wage-setting institutions and social norms played a role in the growth in U.S. earnings inequality. Indeed, after a brief review of the research on the impacts of changes in wage-setting institutions, Gottschalk and Smeeding (647) conclude that "it is clear that changes in these two institutional factors (the decline in minimum wages and unionization) had a substantial combined effect on the rise in earnings inequality." Incidentally, the authors also devote a long footnote in this section to Gordon's (1996) book, Fat and Mean. Yet, the conventional explanation remains one based on skill-biased demand shifts generated principally by computerization. As George Johnson has noted, the economics literature "reaches virtually unanimous agreement" that the explanation for the explosion in earnings inequality can be found in the shift in demand toward high-skill workers. The conclusive evidence is the simultaneous increase in the skill premium and skill intensity.11

11 It remains unclear how the power of the simultaneous increase in the skill premium and skill intensity argument can be maintained in the presence of a "substantial combined effect" of institutional forces on the rise in earnings inequality, since the logic of this argument is compelling only in a simple demand and supply world in which institutional factors play little or no role.
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But this unanimity does not seem founded on the strength of the empirical evidence. Estimates of the demand shift are derived from estimates of changes in relative wages and supply, a calculation that is only meaningful under the conditions specified by the assumptions—a simple textbook labor market. And while there is no good economy- or sector-wide measure of skill intensity, those we have do not show higher rates of growth in the skill mix of employment in the 1980s than in previous decades. Indeed, the most popular measure, the ratio of nonproduction to production workers, shows stability between 1983 and the mid-1990s (Howell and Wieler 1998). Nor do we have evidence that the impact of technology on the utilization or relative earnings of workers has risen over the past few decades. While it is increasingly recognized that large demand shifts did not in fact distinguish the 1980s, skill-biased demand shifts remain the conventional wisdom. The unanimity in the mainstream literature can only be explained, it seems, by a prior commitment to a demand and supply vision of the labor market: without a substantial increase in the supply of the least skilled, how else explain the (real and relative) wage collapse they have experienced? The model all but requires a skill-biased technological change story.

This conventional model presumes both that there is a clearly specified supply function and that employers know the marginal product of each worker and offer wages accordingly. In response, Clark Kerr (1988) has written, "Economists, or at least labor economists, should be less concerned with studying solutions exactly determined (and thus subject to being known in advance) and more concerned with ranges of possible solutions, as Edgeworth and Pigou and Lester (1952) have argued...." Institutionalist and labor relations specialists have argued for many decades now that the forces of supply and demand set only the boundaries of the space within which wages are set; within this space, wages reflect the outcome of bargaining within the context of wage-setting institutions and social norms. Changes in ideology, politics, and labor market institutions join the "economic" forces of supply and demand to determine wage and employment outcomes; as a result, changes in the wage distribution can take place independently of changes in skill distribution.

If this is so, the policy options for dealing with the wage collapse extend far beyond education and training programs and the earned income tax credit. This is particularly so if European unemployment cannot be explained primarily by the rigidity and costs imposed by social policy and labor market institutions (Howell, Duncan, and Harrison 1998; Nickell 1997; Krueger and Pischke 1997).
David Gordon tirelessly promoted this alternative vision. He called for understanding earnings inequality—and, more generally, the labor market—in an appropriate social and political context. In contrast to what he called “the mainstream policy agenda,” one that relies almost always on market solutions, called for an activist public agenda. I can think of no better professional epitaph than his own words:

When we discuss a policy problem like inequality, neoclassical discourse is likely to point toward “natural” and nearly inevitable tendencies, such as the ineluctable trade-off between equality and efficiency, rather than contingent social and political determinations and variations in the range of policy causes and effects. The less “natural” we regard the outcomes of capitalist economies, the wider the range of modifications of those outcomes we might be willing to countenance and consider (1994: 24).

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