

Howell, David R.

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Institutional failure and the American worker: The collapse of low-skill wages

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Public Policy Brief

**Institutional Failure and
the American Worker**

The Collapse of Low-Skill Wages

David R. Howell

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Preface

On the face of it, it would appear that U.S. workers have it made: the economy continues to grow at a slow but steady pace, unemployment is down to 5.3 percent, employment is up, real family income has increased modestly, and the poverty rate has declined for two consecutive years. Despite these favorable circumstances, a persistent sense of general unease—brought on by corporate downsizing, the restructuring of the workplace, and rapid technological change—hovers over workers' economic landscape. Adding to this sense of unease is the growing disparity in wages between those at the top of the earnings distribution and those at the bottom.

In order to enact policies that can address the disparity, we first must decide on the factors that led to it. Economists have tended to use traditional demand and supply arguments to explain it and to point to differences in skill and educational levels as the underlying culprit. These differences are exacerbated in times such as today, when the pace of technological change is rapid and growing and employers are willing to pay a premium to workers who have the level of skill made necessary by such change. Moreover, the restructuring of the workplace to emphasize generalized tasks and team-oriented jobs rather than narrow tasks and departmentalized jobs has resulted in the need for workers with not only a higher level of skills, but a variety of skills. Those without such skills are left to vie for an increasingly smaller pool of jobs that do not require high skills levels. According to this explanation, then, the wage gap is due not just to differences among workers in educational and skill level, but to a mismatch between the skills workers have and the jobs available.

David R. Howell offers an alternative explanation, arguing that although traditional demand and supply explanations of the wage gap are theoretically attractive, they are not statistically sound. He contends that changes in institutional factors—such as the increasing decentralization of the labor market, the decline in union power brought on by changes in regulations governing collective bargaining, and the growth of “low-road” management strategies—have caused the growing wage gap.

Neither skill mismatch nor institutional transformation fully explains the collapse in wages at the bottom of the earnings spectrum. More likely, both factors contributed to wage stagnation, and other factors, such as foreign economic development, technological advances in transportation and communications, and government deregulation, intensified competition in the product market and thereby contributed to the wage collapse. Further, the increasingly important role of huge pension and mutual funds (beginning in the late 1970s) made it critical for managers to maximize short-run performance. All of these factors, none of which are mutually exclusive, provide credible explanation for the growing incidence of low pay and the widening of the wage gap.

Why is it important to know what underlies the wage gap? The source of the problem clearly will determine what public policies can be effective in resolving it. If skill mismatch is only one piece of the puzzle and other factors are at work in creating the growing wage gap, then policies aimed only at raising workers' skill levels would only partially address the problem; policies aimed at other factors, for example, stimulating demand and therefore additional high-paying jobs, would also be needed to address the growing wage gap. Thus it is critical to explore the nature of the wage gap. Howell's research findings are a valuable contribution to the existing knowledge of this problem and provide another perspective in the ongoing public policy discussion on this issue.

Dimitri B. Papadimitriou
Executive Director
February 1997

The Collapse of Low-Skill Wages

No recent development in the U.S. labor market has been more dramatic and more troubling than the collapse in the buying power of workers' paychecks. After rising for almost three decades, average real weekly earnings among production and nonsupervisory workers fell by 7.5 percent between 1973 and 1979 and by another 12.6 percent between 1979 and 1990. This translates into a decline in weekly pay from \$303 in 1979 to \$277 in 1982 and further to \$265 in 1990 (in 1982 dollars).¹ According to Lynn Karoly's (1994) calculations, the 25th percentile of all male wage and salary workers saw their average weekly earnings fall from \$259 in 1973 to \$242 in 1979 to \$209 by 1984, before rebounding slightly to \$218 in 1989 (in 1986 dollars).

This drop in the value of wages coincided with a sharp increase in earnings inequality.² Perhaps the most highly publicized characteristic of recent earnings trends has been the widening gap between highly educated and poorly educated workers. Two wage trends stand out in the 1980s (see Table 1). First, the real earnings of college-educated female workers grew rapidly (about 14 percent), and second, the earnings of poorly educated men declined substantially (about 20 percent for those with less than a high school degree and 11 percent for those with just a high school degree). Although real earnings among low-skill men, as measured by educational attainment, also fell in the 1970s, the percentage declines were three to four times larger in the 1980s, a decade in which the average earnings of college-educated male workers increased modestly.³

These data indicate that the growth in male earnings inequality across education groups in the 1980s was due mainly to the sharp drop in the

Table 1 Changes in Real Earnings by Demographic Group, 1973-1989
(Full-time, Year-round Workers)

Years of Schooling	1973-1979	1979-1989	1973-1989
Men			
0-11	-5.1	-19.6	-24.7
12	-4.1	-11.3	-15.5
13-15	-4.4	-2.8	-7.1
16 or more	-7.3	4.9	-2.4
Women			
0-11	4.1	-5.9	-1.8
12	2.8	1.5	4.2
13-15	0.5	7.1	7.6
16 or more	-1.9	14.1	12.2

Source: Maury Gittleman, "Earnings in the 1980s: An Occupational Perspective," *Monthly Labor Review* 17, no. 7 (July 1994), Table 1.

earnings of low-skill men. More importantly, over the course of the decade there was a huge decline in the share of low-skill workers able to rely on wage earnings to keep a family out of poverty. Acs and Danziger (1993) report that between 1979 and 1989 the incidence of low earnings, defined as earnings less than the poverty line for a family of four, rose from 8 to 15 percent for employed, male high school graduates and increased from 13 to 30 percent for men with less than a high school degree. The problem of low earnings was substantially worse for black and Hispanic men: 25 percent of all employed black men and 41 percent of all employed Hispanic men with less than a high school degree earned poverty-level incomes in 1989, far higher percentages than in 1979 (Acs and Danziger 1993).

Although supply-side changes appear to provide a reasonable explanation for the modest wage growth experienced in the 1980s by the men with the most education,⁴ the collapse at the bottom of the earnings ladder is almost universally attributed to downward shifts in the demand for low-skill workers. According to this view, it was the growing mismatch between the skills demanded by firms and those supplied by the workforce that was mainly responsible for the reduction of wages among low-skill workers. In a statement reflecting this skill mismatch thesis, Secretary of Labor Robert Reich (1993) recently attributed rising shares of

poverty-wage workers and growing wage inequality to the "mismatch between the skills Americans have and the skills the economy requires.... The long-term crisis in advanced industrial nations reflects in part a shift in relative labor demand against less-educated workers and those doing routine tasks and toward workers with problem-solving skills."

The most widely accepted explanation among economists for the presumed skill mismatch is technological change in the workplace.⁵ Although controversial, it has also been argued that another factor contributing to the shift in the demand for skills is growing import competition from low-wage developing countries, which has reduced the demand for low-skill workers, particularly in trade-sensitive industries. At least part of the popularity of the technology-trade explanation can be found in its apparent consistency with empirical evidence of skill upgrading resulting from computer-based workplace technologies and the growth in the import share of GDP in the 1980s.

But the technology-trade explanation is also attractive because of its consistency with the simple neoclassical (demand and supply) model of the labor market.⁶ Assuming no major changes in the supply of low-skill workers, a decline in the relative wage is just what economists would expect if new production technologies and growing imports were to drive down demand for low-skill labor. Without a change in labor supply, a decline in demand for low-skill workers should lower both their wages and employment. The obvious implications of this view are that public policies should attempt to raise the skills of the low-skill workforce.

Unlike the simple neoclassical model of the labor market, which provides the intellectual framework for the skill mismatch thesis, the institutionalist tradition is one in which wages are set not only by the forces of demand and supply, but also by bargaining power in the context of wage-setting institutions and social norms. From this perspective, an alternative explanation emerges, one that puts at center stage a new, more confrontational approach of employers and a fundamental shift toward *laissez-faire* public policies that developed in the late 1970s in the midst of nationwide slowing productivity, high inflation, and growing trade competition. But this shift in emphasis from social well-being and public choices to individual well-being and market outcomes reflected more than just changing business conditions. Since

other developed nations faced similar economic challenges without resorting to a dismantling of public and private institutions designed to protect the living standards of low-skill workers, the distinguishing feature of the wage collapse in the United States must be sought in the political, ideological, and financial realms.

In a political environment in which government policies were far more favorable to employers (and hostile to workers) than in previous decades (Phillips 1991) and spurred by the success of confrontational labor practices by some highly visible large firms in trade-sensitive industries, employers abandoned long-accepted practices designed to shield workers from the full force of labor market competition. "Effective" management became synonymous with such "low-road" wage and employment policies and practices as challenging the legitimacy of labor unions and collective bargaining, demanding wage and benefits concessions, relocating plants to low-wage sites, outsourcing to low-wage firms, and relying more and more on low-wage part-time and temporary workers. These low-road strategies reflect, in part, increasing pressure from the financial sector on management to maximize short-run profits. Government policy also greatly facilitated the low road by emphasizing fighting inflation rather than unemployment, deregulating key industries, weakening the enforcement of labor and antitrust laws, and allowing the minimum wage to decline sharply in value, thereby undermining the wage floor, which had propped up the lower end of the wage structure.

Empirical Evidence of a Skill Mismatch

Computerization and Shifts in the Demand for Skills

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. . . . Whether because of computerization or other causes, the pace of relative demand shifts favoring more-skilled workers *accelerated* within sectors. (Freeman and Katz 1994)

There has been an across-the-board increase in the ratio of skilled to unskilled workers employed within each industry, in spite of the rise in relative wages of the skilled. (Krugman 1994)

As these passages suggest, it is widely accepted among economists that a large and accelerating shift in demand away from low-skill workers characterized the decade of 1980s. Undoubtedly, part of the attractiveness of the skill-shift explanation is the seeming plausibility of skill-biased technological change as the source of the demand shifts. The rapid diffusion of computer-based production technologies and an increasingly competitive environment beginning in the early 1980s have made popular the view that the old production system, made up of large, integrated, capital-intensive plants relying on low-skill manual labor, is being transformed into a new regime of small, flexible, technologically advanced firms dependent on a cadre of highly educated workers. Unlike the workplace of the traditional "Taylor model," the new "high-performance" workplace requires workers with the cognitive and diagnostic skills necessary to perform a broad range of frequently changing tasks. Workers with obsolete or insufficient skills get paid less and ultimately lose their jobs, leaving in place a more skilled workforce.

But there are some problems with this story. Harrison (1994) has convincingly argued that small firms tend to be the least technologically advanced and to employ workers at the lowest wages. Recent research has consistently shown that high-performance workplaces tend to occur in large establishments. However, in 1993 the U.S. Department of Labor gathered information on the presence in firms of six possible "alternative work practices" commonly cited as the hallmarks of a high-performance workplace and found that in only about 20 percent of large establishments (defined as having more than 50 employees) was there evidence of two of these practices, and only 6 percent reported having implemented as many as four (Gittleman, Horrigan, and Joyce 1995). These findings suggest that even by the early 1990s only a small share of establishments had been transformed into high-performance and, presumably, high-skill workplaces.

Yet, it is widely accepted that skill-biased technological change produced a collapse in the demand for low-skill workers. Two studies are often cited to provide empirical support for this "fact": Berman, Bound,

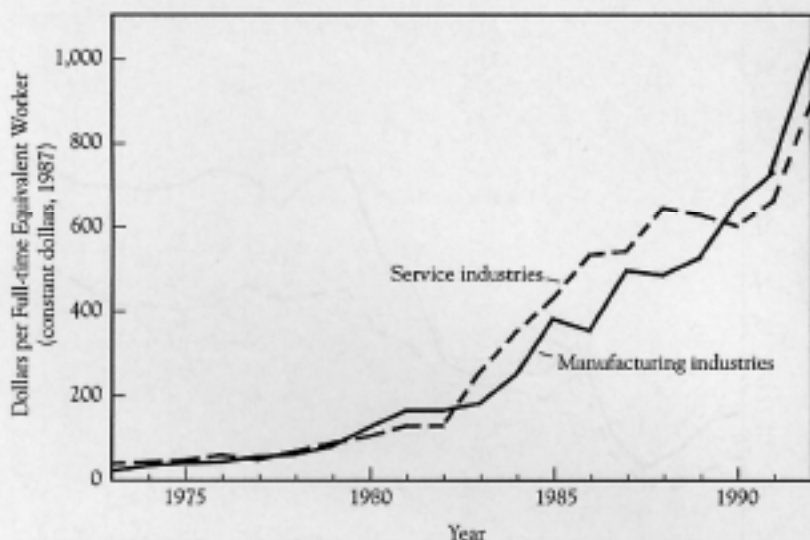
and Griliches (1994) and Katz and Murphy (1992). A common feature of both studies is a focus on changes between business cycle peaks (1979 and 1989) rather than on annual trends. While this methodology is appropriate for detecting long-run trends and for analyzing data with movements that are extremely sensitive to the cycle, focusing on endpoints can submerge important information about overall trends.

Examining manufacturing industries and defining the skill mix of employment as the share of nonproduction employees in total employment, Berman, Bound, and Griliches (1994) point out that there was a large increase in the nonproduction share of manufacturing employment in the United States between 1979 and 1989; production employment dropped by a dramatic 15 percent (from 14.5 to 12.3 million), while nonproduction employment rose 3 percent (from 6.5 to 6.7 million). Berman, Bound, and Griliches 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."

Since the diffusion and effective use of computer-based technologies were rapidly increasing, a technology-based explanation for skill restructuring implies that the decline in demand for low-skill jobs should have become progressively greater throughout the decade. Indeed, Berman, Bound, and Griliches (1994) report a rapid increase in the rate of growth of computer investment as a share of total investment in manufacturing, rising from 2.79 percent in 1977 to 3.92 percent in 1982 to 7.49 percent in 1987. Figure 1 shows that the real investment in office, computing, and accounting machinery per full-time equivalent worker took off after 1983 in both manufacturing and service industries, increasing from less than \$200 per full-time worker in 1982 to \$600 to \$700 per worker in 1989. By 1992 such spending ranged from \$900 per worker in services to over \$1,000 in manufacturing.

Yet, the employment trends presented by Berman, Bound, and Griliches show that virtually all of their observed skill upgrading took place in 1980, 1981, and 1982—well before computer spending started soaring.⁷ Indeed, their data indicate that the nonproduction share of employment in 1989 was identical to the share six years earlier. It is worth noting that real production worker wages fell continuously from 1979 to 1993 (Mishel and Bernstein 1994a).

Figure 1 Investment in Office, Computing, and Accounting Machinery, 1973–1992

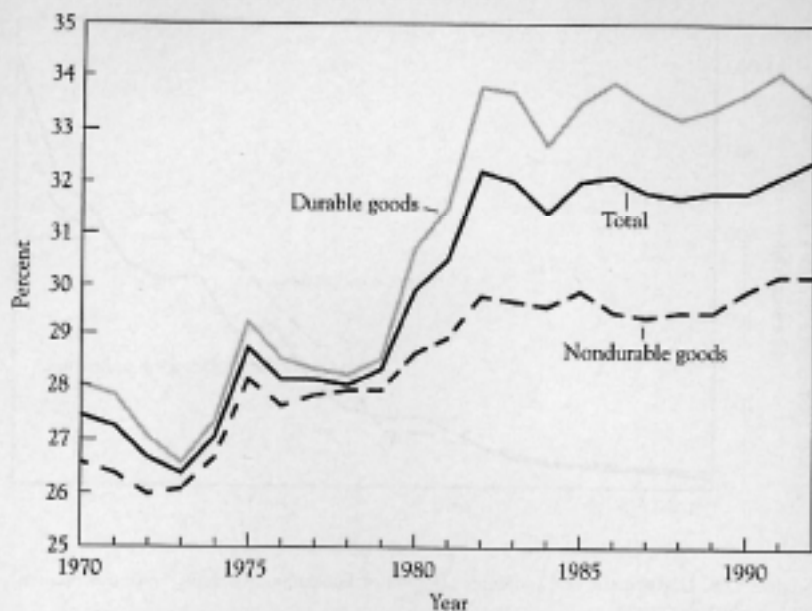


Source: U.S. Department of Commerce, Bureau of Economic Analysis; National Income and Product Accounts.

Figure 2 provides data on the nonproduction employment share in durable goods, nondurable goods, and total manufacturing between 1970 and 1992. The graph shows that the change in this measure of the skill mix in total manufacturing can be traced largely to developments in the more trade-sensitive sector—durable goods manufacturing—between 1980 and 1982. The share of nonproduction workers in this sector increased sharply, from 28.6 percent in 1979 to 33.8 percent in 1982, and then fluctuated between 33.2 and 34.1 percent over the next 10 years. Although Berman, Bound, and Griliches note that employers use recessions to restructure, there is no evidence that there was a substantial shift in skill mix in the 1990–1991 downturn. If biased technological change explains skill shifts, why would the use of new workplace technologies cause a sharp skill restructuring between 1980 and 1982 but not between 1983 and 1992, when the latter period was characterized by a far higher rate of investment in computer-based equipment?²⁸

Table 2 provides additional evidence on the stability of the skill mix in manufacturing after the recessions of 1980 and 1982. Between 1983 and 1988 the ratios of craft to semiskilled workers, technical to clerical

Figure 2 Nonproduction Share of Manufacturing Employment, 1970-1992



Source: U.S. Department of Labor, Bureau of Labor Statistics, "Handbook of Labor Statistics," Bulletin 2340, August 1989, Table 72; "Employment, Hours, and Earnings: United States, 1981-83," Bulletin 2429, August 1993.

workers, and professional to managerial workers remained virtually unchanged. But as the first row shows, the ratio of craft workers to laborers declined steadily from about 4 in 1983 to 3.4 in 1987 (it then rose slightly to 3.5 in 1988). These figures do not suggest a technological transformation of the workplace nor the magnitude of skill restructuring that would be necessary to explain the enormous earnings declines suffered by low-skill workers over this period.

To provide a more detailed portrait of shifts in skill composition, high-skill and low-skill occupations can be distinguished within white-collar and blue-collar occupations in both the manufacturing and service sectors. High-skill white-collar occupations can be defined as managerial, professional, and technical occupations, while low-skill white-collar occupations are administrative support occupations.⁹ High-skill blue-collar occupations include mechanical and repair occupations, construction and extractive occupations, and precision production occupations,

Table 2 Occupational Employment Shares in Manufacturing, 1983–1988

Occupational Group Ratio	1983	1984	1985	1986	1987	1988
Craft to laborer	3.97	3.75	3.82	3.64	3.38	3.54
Craft to semiskilled	0.59	0.60	0.61	0.61	0.60	0.60
Technical to clerical	0.29	0.29	0.30	0.31	0.28	0.29
Professional to managerial	0.76	0.71	0.72	0.74	0.73	0.72

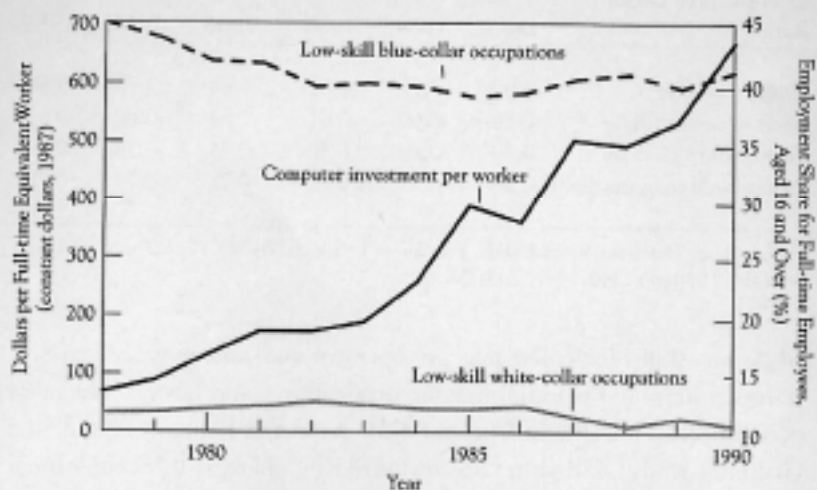
Source: U.S. Department of Labor, Bureau of Labor Statistics, "Handbook of Labor Statistics," Bulletin 2340, 1989, Table 20.

while low-skill blue-collar jobs are operator and assembly occupations, transportation and material-moving occupations, and laborer and guard occupations (Howell and Wieler 1996). As in the Berman, Bound, and Griliches study, skill shifts are measured by changes in occupational employment. Although skill upgrading may be taking place within occupations, if the mismatch theory is right, a large movement away from low-skill occupations, reflecting the rapid increase in computer intensity after 1982, should be observed throughout the decade.

Figures 3 and 4 show changes in the low-skill share of total employment per low-skill worker in both blue-collar and white-collar occupations and the real value of investment in office, computing, and accounting machinery (primarily computers) per worker for manufacturing and service industries between 1978 and 1990. Although sharp increases in computer spending per worker can be observed after 1982, the share of low-skill blue-collar employment remained stable and the share of low-skill white-collar employment experienced only modest declines. In manufacturing the low-skill blue-collar share fell sharply between 1978 and 1982 (from 45.1 percent to 39.7 percent) and remained stable for the rest of the decade, while the low-skill white-collar share declined fairly steadily between 1982 and 1990 (from 12.6 percent to 10.6 percent). Consistent with the growth in computer intensity, almost all of the change in the clerical share of employment occurred after 1986.

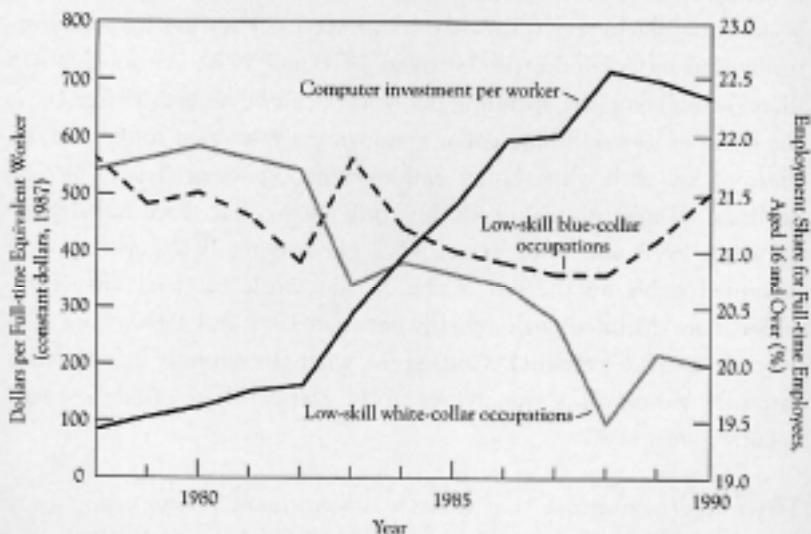
These figures indicate that there was significant restructuring away from low-skill blue-collar jobs between 1978 and the early 1980s and away from low-skill white-collar jobs at the end of the 1980s in both

Figure 3 Investment in Office, Computing, and Accounting Machinery and Low-Skill Employment Share in Manufacturing Industries, 1978–1990



Source: U.S. Department of Commerce, Bureau of Economic Analysis; National Income and Product Accounts; Bureau of the Census, Current Population Survey, March 1979–1991.

Figure 4 Investment in Office, Computing, and Accounting Machinery and Low-Skill Employment Share in Service Industries, 1978–1990



Source: U.S. Department of Commerce, Bureau of Economic Analysis; National Income and Product Accounts; Bureau of the Census, Current Population Survey, March 1979–1991.

services and manufacturing. These employment trends do not suggest that computerization had a strong effect on low-skill male employment shares. This is the case even in so-called high-tech manufacturing industries (such as machinery, electrical machinery, instruments, and transportation equipment), which show similar patterns to those cited above (Howell and Wieler 1996).

In Katz and Murphy's study (1992)—the other frequently cited source of evidence for the collapse in the demand for low-skill workers—the authors conclude that "rapid secular growth in the relative demand for 'more-skilled' workers is a key component of any consistent explanation for rising inequality and changes in the wage structure over the last 25 years." But again, the employment data indicate that the skill mix of jobs has been remarkably stable since 1983. The real question for our purposes is somewhat different: Do demand and supply shifts alone offer a convincing explanation for the collapse in real earnings among less-skilled workers?

Table 3 presents estimates by Katz and Murphy of changes in wages, labor supply, and labor demand for low-skill men in the 1970s and 1980s.¹⁰ Their estimates indicate that although there was a downward

Table 3 Estimates of Changes in Wages, Supply, and Demand for Low-Skill Men in the 1970s and 1980s

	1971-1979	1979-1987
Workers with less than a high school diploma		
Percent change in wage ^a	1.5	-15.8
Percent change in supply ^a	1.5	-53.3
Percent change in demand ^b	-7.2	-8.9
High school graduates		
Percent change in wage ^a	0.8	-19.8
Percent change in supply ^a	18.7	-40.9
Percent change in demand ^b	-4.6	-5.3

^a For workers with one to five years of experience.

^b For workers at all experience levels.

Source: Lawrence F. Katz and Kevin M. Murphy, "Changes in Relative Wages, 1963-1987: Supply and Demand Factor," *Quarterly Journal of Economics* 107, no. 1 (February 1992): 35-78, Table I (Wage Changes), Table II (Supply Shifts), and Table VI (Demand Shifts).

shift in demand for low-skill workers in the 1980s, it was modest and similar in size to the shift in the 1970s. If technological change indeed caused downward shifts in demand, the Katz-Murphy evidence indicates that these shifts were no larger than the demand shifts in the 1970s, before computerization could have played any important role.

Supply, on the other hand, shows a huge decline (-40.9 percent for high school graduates and -53.3 percent for those with less than a high school degree) after increasing in the 1970s (18.7 and 1.5 percent, respectively). But despite far larger declines in supply than demand, wages fell sharply in the 1980s (-19.8 percent for high school graduates, -15.8 percent for high school dropouts). Within a simple demand and supply framework, it is hard to reconcile the wage collapse in the 1980s with these demand and supply numbers: the large decline in supply relative to the decline in demand should have raised low-skill wages in the 1980s relative to the 1970s. In sum, the evidence does not provide strong support for the mismatch view that shifts in labor demand explain the wage collapse.

Joblessness and Low-Wage Employment Trends

If the 1980s were characterized by a strong "twist" in labor demand—a sharp downward shift in demand for low-skill workers and an upward shift in demand for high-skill workers—for a given workforce, the simple demand and supply model predicts that we should observe growing joblessness among low-skill workers and a declining share of employed low-skill workers in total employment.¹¹ Moreover, if the pool of low-skill jobs declines relative to total jobs, the share of workers employed in them and paid lower wages should be smaller. This section examines the evidence for these two predictions—rising joblessness and declining shares of workers employed at low wages.

Skill Mismatch and Joblessness

The skill mismatch explanation predicts an increase in joblessness as demand for low-skill work declines. In other words, there would be a growing mismatch between the number of low-skill jobs and the number of low-skill workers. Indeed, high unemployment and nonparticipation rates have been frequently cited as evidence of a decline in demand for

low-skill workers. Chinhui Juhn (1992), for example, infers from declining real wage and labor force participation trends that "job market opportunities have . . . deteriorated significantly for less-skilled workers." Similarly, Juhn, Murphy, and Pierce (1993) observe that the "fall in wages for the least skilled is symptomatic of a fall in demand for low-wage workers" and conclude that "there are simply too few low-wage jobs."

But were joblessness rates in fact higher in the 1980s than in earlier decades, and did they rise over the course of the decade? Robert Topel (1993) has shown that joblessness increased between the late 1960s and late 1980s. According to the skill-biased technological change explanation, the relevant time period was the 1980s and specifically the post-1982 period. However, Topel's data show a clear upward trend in joblessness only through the recession years of 1980 and 1982.

Changes in the employment-to-population ratio do not suggest that there was a sharp contraction in job opportunities during the 1980s for those with the lowest cognitive skills. For nonwhite workers the employment rate rose from 55.2 to 58.2 percent between 1979 and 1989. For youth aged 16 to 19 the employment rate dropped during the decade by only 1 percentage point (U.S. Department of Labor 1994). For black males aged 20 to 24 years—a demographic group as likely as any to be negatively affected by a declining demand for low-skill workers—the employed share of the population fell sharply from 72.6 percent in 1973 to 53.9 percent in 1982, but then rose steadily to 63.9 percent in 1988. Thus, the employment rate for young black men at the end of the 1980s was about what it was in 1979. The data for other male groups show similar trends (U.S. Department of Labor 1989).

For all workers aged 25 to 34 the unemployment rate was 5.2 percent in both 1979 and 1989. The unemployment rate for high school graduates was about the same in these two years. The rates for teenagers and black workers, however, both were lower in 1989 than in 1979. Only those with less than four years of high school (about 15 percent of the workforce in the mid 1980s) show a higher unemployment rate in 1989 than in 1979 (U.S. Department of Labor 1994).

It can be argued that joblessness among the low-skilled was too high in the 1980s and that this surplus pool of workers was a necessary condition

for the success of the confrontational strategy adopted by employers to reduce costs and raise profits in this decade. But the data do not show higher levels of joblessness in the 1980s than in the 1970s, and there is no evidence of rising rates over the course of the decade. We can ask, then, if the problem was that there were simply not enough jobs due to the increasing skill requirements of new workplace technologies (and perhaps also due to trade patterns) in the 1980s, why did joblessness and unemployment increase sharply in the 1970s, but show little or no increase between 1979 and 1989?

Skill Mismatch and Low-Wage Employment

The simple labor market model assumes a close, if not perfect, correspondence between skill and wage distributions: workers with higher levels of skills are paid higher wages.¹² If it is true that technological change and trade resulted in reduced low-skill job opportunities, as the skill mismatch story claims, fewer workers should have been paid low wages (as joblessness increased).¹³

To examine this prediction, I calculated the share of young (aged 16 to 39) low-wage workers (with earnings equal to 1.5 times the poverty line) and the share with low educational attainment (having a high school degree or less).¹⁴ The results show that the share of employed young workers with low educational attainment declined throughout the 15-year period, from 62.8 percent in 1975 to 55.5 percent in 1990, a decline that is consistent with the figures presented by Katz and Murphy (1992). Although the technological change explanation would suggest that the greatest rate of decline should have occurred during the second half of the 1980s, when the demand for skills presumably accelerated and those without adequate skills dropped out of the labor market, the data indicate that the most rapid decline actually took place in the early 1980s. In contrast, the low-wage share of the young workforce increased from 50.6 percent in 1975 to 55.8 percent in 1990, with the largest jump again occurring in the early 1980s. These findings are consistent with those of Acs and Danziger (1993) on the growing incidence of low-wage employment.

Although it might be argued that these shifts simply reflect changes in the composition of employment, the same trends appear at the industry level, particularly for goods-producing industries. For example, between 1975 and 1990 restructuring in the stone, clay, glass, and primary metals

industry (which includes steel) resulted in a decline in the share of low-skill employment from 77 percent to 70 percent (representing a 9 percent decline in the share), but a rise in the share paid low hourly wages from 23 percent to 40 percent (representing a 76 percent increase). The communications industry saw its low-skill share decline by 33 percent (from 58 percent to 39 percent) and its low-wage share increase by 33 percent (from 22 to 29 percent). Even more dramatic, the automobile industry's low-skill employment share declined by 6 percent (from 76 percent to 71 percent), but its low-wage share grew by 142 percent (from 17 percent to 40 percent).¹⁵ Goods-producing industries with a high-wage, low-skill workforce appear to have restructured in the 1980s by radically lowering wages and gradually raising skill requirements—in short, by moving in the direction of the typical service sector workplace.

In sum, these data do not provide strong support for the skill shift story. The mismatch assumption of strong declines in labor demand should have led to sharp declines in low-skill (and low-wage) employment, an effect that is compounded if the supply of low-skill workers also declines, as the data suggest happened. Similarly, the upward shift in demand for high-skill workers should have led to an increase in high-skill (and high-wage) employment. If both shifts occurred simultaneously, as the skill shift explanation contends, we should observe declining low-skill (and low-wage) shares of the workforce and accelerating joblessness among the least skilled. But what we actually observe is stability in the skill distribution after 1982, strong increases in the low-wage share of employment throughout the decade, and little evidence of deterioration in unemployment, employment rates, or joblessness between 1979 and 1989.

Increasing Supply and Crowding in Secondary Labor Markets

A necessary condition for effective low-road management strategies is a large pool of willing (or desperate) and able low-skill workers. A variation on the skill mismatch explanation posits that such a pool of workers is competing for low-skill jobs at the bottom of the wage scale. However, traditional measures of labor supply—the number of workers in particular age, gender, and education groups—suggest that there was no significant increase in the low-skill labor supply in the 1980s (Katz and Murphy 1992). Nonetheless, part of the decline in bargaining power that contributed to the wage collapse may be traceable to "unmeasured" increases in the supply of workers willing (or required) to compete for low-wage jobs.

As the middle of the earnings structure narrowed, low-skill workers crowded into a pool of "secondary" jobs that remained a fairly constant share of total jobs throughout the 1980s (Gittleman and Howell 1995), tending to lower the wages of what were already the worst jobs in the labor market. According to a U.S. Department of Labor study reported on by Herz (1991), more than 4.3 million workers were displaced during the boom years of 1985 to 1989.¹⁶ Only 72 percent had been reemployed by January 1990 and of these, about 10 percent worked part-time. Among those reemployed full-time, about 40 percent earned less in current dollars on their new job than on their previous job. Not surprisingly, those least successful in the labor market after displacement were high-wage blue-collar men. According to Herz, "6 of every 10 displaced workers in this industry [transportation equipment] earned less on their new job than on their old one, and more than half of this group suffered declines of 20 percent or more."

The downward effect of displaced high-wage, low-skill workers on the wages at the bottom of the earnings distribution can also be inferred from research by Topel (1993). He finds that between 1979 and 1988 "nearly one-third of the unemployed had predisplacement wages above the 60th percentile, and only 14 percent are from the bottom decile. . . . Among displaced workers with prior earnings from the upper four deciles, current wages are about half of their predisplacement level." Defining the unskilled as those with low wages, Topel interprets his results as showing that "many of the 'unskilled' who are unemployed or out of the labor force appear to have been high-wage workers whose specialized skills have become obsolete."¹⁷

Despite the rising average premium for a college degree relative to a high school degree in the 1980s, a weak job market forced many lower-level white-collar workers with college degrees to compete for relatively low-skill jobs. This became particularly pronounced at the end of the decade, in the "white-collar recession" of 1990-1991. Like the displacement of high-wage blue-collar workers earlier in the decade, this weakening in the middle of the earnings distribution added to the supply of workers competing in the low-skill job market.¹⁸ There is some evidence that computer-based technologies and corporate restructuring made large numbers of middle-level managers redundant. Howell and Wolff (1992)

found that the use of new technologies had a downward effect on the share of both managers and clerical workers between 1970 and 1985. Consistent with this finding is Kuster's finding in his case study of the commercial banking industry (1993) that between 1987 and 1990 there was a 13 percent decline (from 45,000 to 39,000) in general managers, a decline from 2.9 percent to 2.5 percent of total industry employment.

In support of this twist in the skill mismatch story, data from the Panel Study of Income Dynamics (PSID) show that in the late 1970s about 40 percent of the sample reported themselves to be "overeducated" for their job (Sicherman 1989). According to recent reports by U.S. Labor Department economists, throughout the 1980s about 20 percent of college graduates were working at jobs that don't normally require a degree, and this number is expected to increase to 30 percent by the end the 1990s (Hecker 1992, Shelley 1992). Declining opportunities in the middle of the job ladder might be expected to have the greatest negative impact on minority workers. In fact, the share of black and Hispanic college graduates with poverty-level wages rose dramatically in the 1980s, from about 9 percent to just under 15 percent. If the unemployed and those who had stopped looking for work are included, the incidence of low earnings among college graduates rose from 14.6 percent to 21.4 percent for black men and from 11.0 percent to 19.4 percent for Hispanic men (Acs and Danziger 1993). It seems reasonable to assume that one consequence of declining opportunities for moderately skilled white-collar jobs was to force those with training for white-collar jobs to compete for jobs with low cognitive skill requirements, thereby creating a downward pressure on the wages for those jobs.

Immigration patterns compounded the downward effect that displaced high-wage workers had on the wage rates of low-cognitive-skill jobs. As Vernon Briggs (1993) has documented, there was an unprecedented increase in the flow, both legal and illegal, of low-skill foreign workers into the United States in the 1980s. The foreign-born share of the workforce increased from 6.4 percent in 1980 to 9.7 percent in 1994 (Borjas, Freeman, and Katz 1996). Significantly, this wave of immigrants was far less skilled, at least in terms of educational attainment, than earlier waves of immigrants in the postwar period. Friedberg and Hunt (1995) report that 43 percent of new immigrants did not possess the equivalent

of a high school degree. According to a study by Jaeger (1995), employed male immigrants were about 16 percent of the civilian workforce with less than a high school degree in the nation's 50 largest metropolitan areas in 1980; by 1990 this figure was over 30 percent. For women this growth in low-skill immigrant share was almost as spectacular, rising from 17 percent to almost 28 percent.

Although the econometric evidence on the effects of immigrants is mixed and controversial, Borjas, Freeman, and Katz (1996) conclude that "immigrants contributed more to the decline in the relative earnings of high-school dropouts than trade, while both modestly reduced the earnings of high-school workers relative to college workers." Indeed, it is hard to imagine how a large influx of low-skill workers during a period in which demand for them was stagnant or declining would not have a downward effect on workers' wages, since these workers compete in the most unsheltered parts of the labor market. Not surprisingly, therefore, case study evidence supports this commonsense view. In his study of the Los Angeles restaurant and hotel industry, Waldinger (1992) concludes that "the story of black displacement in restaurants and hotels can be traced not to skill upgrading, but rather to competition with a rapidly growing immigrant population." Similarly, a General Accounting Office study cited by Jack Miles (1992) found that "Janitorial firms serving downtown Los Angeles have almost entirely replaced their unionized black workforce with non-unionized immigrants." Again, it appears to have been the drive to lower labor costs that explains this result.

Computerization and Earnings

Workers in the United States, particularly those with low education, experienced a collapse in wages in the 1980s, but there is little evidence of skill shifts, rising joblessness, or declining shares of workers paid low wages. Is there evidence suggesting a direct link between skill-biased technological change and earnings? What has been established is a statistical link between earnings and the use of computers on the job. In an extremely influential paper, Krueger (1993) concludes that "the expansion of computer use in the 1980s can account for one-third to one-half

of the increase in the rate of return to education." Although it is hard to argue with the statistical analysis, it seems fair—and appropriate—to challenge the substantive meaning of the statistical association that is found between computer use and wages. Indeed, in a new study that tests this relationship with U.S. and German data, DiNardo and Pischke (undated) come to the striking conclusion that, while Krueger's results are replicated, there are "similar wage differentials for the use of pencils at work as for computers." They interpret their results to imply that the payoff to computer use does not reflect "an actual productivity differential. Instead, the results taken together seem to suggest that computer users possess unobserved skills that are rewarded in the labor market or that computers were first introduced in higher paying occupations or jobs. We argue that all the results in Krueger (1993) can be interpreted in this light." It is worth noting that the low-skill jobs showing the largest declines in real earnings include truck drivers and construction laborers, who do not use computers, as well as cashiers and retail sales clerks, who do.

Further doubts over a substantial role for technology in the wage collapse for low-skill workers are raised by two additional studies. According to Steven Allen (1993), the main effect of technological change (measured by a proxy for R&D activity) is on the earnings growth of the most highly skilled workers. As he puts it, "rising R&D activity is associated with higher wages for college graduates, but is completely unrelated to wages of other educational groups. This implies that the correlation between R&D and returns to schooling . . . reflects greater wage growth for college graduates in R&D-intensive industries, rather than a negative demand shock for high school graduates employed in those industries."

Mishel and Bernstein (1994b) find that technology (measured by investment in equipment and computers and the share of scientists and engineers in employment) had no greater, and perhaps a lesser, effect on wage inequality in the 1980s than it did in the 1970s. Indeed, as the example of the use of scanning devices by cashiers suggests, there is evidence that the use of computer technologies in production can reduce the skill requirements of many jobs and increase job opportunities for the least skilled.

Just as there is no evidence showing an exceptionally large shift in the demand for skills in the 1980s, a convincing causal link between computers and changes in the wage structure has yet to be established. We need to turn elsewhere for a convincing explanation of the wage collapse.

An Alternative Explanation: The Political Economy of the Wage Collapse

An Institutionalist Framework

Our findings call into question the standard model of the labor market that has dominated economists' thinking for the past half century. (Card and Krueger 1995)

There is no simple way to accommodate the evidence presented in this paper within a conventional demand and supply framework, in which the distribution of wages reflects the distribution of skills. As the Card and Krueger passage quoted above demonstrates, there is an increasing willingness to challenge the framework. Indeed, there is a long tradition among labor economists and labor relations specialists of rejecting the simple competitive model of the labor market in favor of an institutionalist framework. In this view, the forces of demand and supply set only the boundaries within which wages are set; within these boundaries, wage ranges are set for each job and individual pay is set within each job. Wages are not a determinate outcome of the current state of demand and supply, but an indeterminate outcome that reflects a complex process of explicit or implicit collective and individual bargaining between workers and management. As the prominent "neoinstitutionalist" Clark Kerr (1988) puts it, "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." Demand and supply matter, but so do management strategies, worker militance and organization, and perceptions of fairness and community values.

This alternative perspective builds on the work completed during the early postwar period by neoinstitutionalists such as Dunlop, Slichter, Kerr, and Lester (see Kaufman 1988).¹⁹ Within a certain range employers may, for strategic reasons, choose high or low starting wages and a particular wage-tenure profile. There are a variety of reasons to suppose that the institutionalist framework's assumption of employer choice and collective bargaining agreements within a particular wage-setting environment better captures the reality of how wages are determined than the conventional demand and supply model's set of unique wage-employment equilibria. The availability of information about worker performance, the extent of idiosyncratic and firm-specific skills, the role of teamwork in production, the degree of price-making behavior in product markets, and the share of labor in total costs vary widely across workplaces. Where the marginal product of a particular worker is unknown, where variation in effort has a substantial impact on marginal productivity, and where the product or labor market does not closely resemble the competitive prototype, fairness and morale will be important for the overall productivity of the workplace and wage setting will reflect social norms of fairness (Akerlof 1992, Bewley 1995). If this diversity accurately describes the environment within which wages are set, substantial differences in wages can be predicted for a given level of skills across establishments, firms, and locations.

Research has consistently lent strong support to the view that there are wide variations in wages for workers with similar skills and the variations show no tendency to narrow over time. John Dunlop (1957), for example, found that the hourly wages of male truck drivers organized by the same union in Boston ranged from \$1.20 for wholesale laundry to \$2.25 for magazines. About three decades later, Katz and Summers (1989) calculated for a number of industries the wage differentials that remained after controlling for all the individual characteristics that might affect a worker's productivity. The results showed extremely large differences, ranging from a 21.1 percent premium for transportation equipment workers to a 15.3 percent penalty for apparel workers. In an earlier paper, Krueger and Summers (1988) conclude that "the inter-industry wage structure cannot possibly be interpreted as a competitive outcome.

Fundamental Changes in Traditional Employment and Wage-Setting Practices

In an institutionalist framework, changes in ideology, politics, notions of fairness, and labor market institutions join the "economic" forces of demand and supply to determine wage and employment outcomes; as a result, changes in the wage distribution can take place independently of changes in the skill distribution. Although we sacrifice the elegant simplicity of the neoclassical skill mismatch story, a "political economy" explanation that is founded on institutionalist perspectives is necessary to explain the collapse in the economic well-being of low-skill workers since the late 1970s.

There is considerable evidence of a fundamental shift toward confrontation in wage-setting norms and institutions in the late 1970s. Not surprisingly, labor union leaders and industrial relations experts were among the first to recognize the shift. In 1978 the president of the United Automobile Workers (UAW), Douglas Fraser, wrote:

The leaders of industry, commerce and finance in the United States have broken and discarded the fragile, unwritten compact previously existing during a past period of growth and progress. . . . today, I am convinced there has been a shift on the part of the business community toward confrontation, rather than cooperation. . . . I believe leaders in the business community, with few exceptions, have chosen to wage a one-sided class war on this country. . . . (Quoted in Gordon 1996)

Academic research in the early 1980s lends support to Fraser's view that a profound shift by employers toward confrontation over wages was underway. According to Daniel B. Mitchell, a new balance of power had developed.

The 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)

Other industrial relations experts have confirmed that management's approach to the workforce shifted dramatically in the early 1980s. Kochan, Katz, and McKersie (1994) write that "now more than ever, the U.S. labor market is a place where anything and everything goes." While some firms adopted high-road employment policies and maintained or increased real wage levels, most appear to have taken the low road, adopting employment policies aimed at reducing short-run labor costs. As the authors put it, this new management approach reflects a "managerial autocracy common to the early twentieth century." Similarly, according to former labor secretary Ray Marshall (1992), rather than invest in the technology and training necessary to create "high-performance" workplaces, "U.S. companies have been competing mainly through reducing domestic wages and by shifting productive facilities to low-wage countries."

What caused this shift to the low road by employers? Recent economic research on earnings inequality has focused on a variety of possible culprits: technology, unionization, trade, immigration, and the minimum wage. However, it is difficult to generate a coherent story since most of this research is structured to deal with the impact of one or another of these factors on wage differentials. Regression studies that attempt to "do it all" run into the problem of inadequate and interdependent measures.²⁰

The effects of globalization on wage setting are reflected in two key developments: economic growth among less-developed countries with the convergence of all nations toward U.S. standards of living (Baumol, Blackman, and Wolff 1989) and technological advances in communications and transportation, which have facilitated international information and trade flows. While both developments characterize the entire post-World War II period, it was in the 1970s that European and Japanese competitors caught up to the United States and a major upward shift in the technical ability and incentive to move production to developing countries took place. Faced with a growing threat from imports at the same time that opportunities to realize lower labor costs through outsourcing and plant relocation were increasing, many U.S. firms responded by making wage and benefits cuts their top priority. Although other developed nations have faced these same pressures and opportunities, only in the United States did the outcome of adjustment to globalization generate collapsing real wages for low- and moderate-skill workers.

The distinguishing feature of the U.S. experience has been the massive political and ideological shift in public opinion, management beliefs, and government policy, which facilitated and actively encouraged an assault by employers on the wages of those with the least bargaining power—the low-skilled. It is widely recognized that throughout this century there has been a “public-private cycle” (Schlesinger 1986): the 1920s, 1950s, and 1980s stand out as periods in which public ideology and government policy shifted strongly away from government toward market solutions. There are, as Hirschman (1982) puts it, “oscillations between periods of intense preoccupation with public issues and of almost total concentration on individual improvement and private welfare goals.” Reflecting such a change in national preferences, policies initiated during the Carter administration set the stage for the Reagan years and what Kevin Phillips (1991) has called “one of America’s ‘capitalist blowouts.’” Phillips points to the ideological underpinnings of the radical redirection of government policy and the predictable consequences for the distribution of income.

In each of the three great U.S. capitalist eras . . . genuine (*laissez-faire*) philosophic and cultural conviction expanded, elevated, and prolonged the wave of capitalist expansion. . . . the resemblance between the policy framework of the 1980s, the Coolidge era and the Gilded Age was not a coincidence. Striking similarities existed in fiscal, monetary, deregulatory, and reduced-government approaches—and led to similar inequalities of wealth and income distribution. The new economics of the 1980s had gained momentum, to be sure, because of a *preexisting*, broader national conservative trend and coalition, reinforced in the late 1970s by a larger wave of inflation and popular frustration with big government. Yet it was absolutely critical that reemergent capitalism also enjoyed something more: a missionary spirit—and dedicated missionaries. (Phillips 1991)

The political swing from public action to private interest has been manifested in government policies that actively promote or facilitate market solutions and employer interests. Deregulation has contributed to greater competition in product markets, particularly in trucking, airlines, bus trans-

portation, and telecommunications—all formerly high-wage industries. The decline in antitrust enforcement encouraged the mergers and acquisitions that led to the restructuring of many firms, often at the expense of well-paid workers. President Reagan's highly publicized attack on the air traffic controllers in 1981 set the stage for changes that weakened labor law and its enforcement and allowed a 30 percent decline in the value of the legal minimum wage. A radical change in the composition and leadership of the National Labor Relations Board also had profound effects on the balance of power between management and workers.²¹

Equally important, pressure from the financial sector on firms to adopt short-run profit-maximizing strategies increased dramatically in the 1970s and 1980s.²² A good example is provided by Albert Dunlap, the former CEO of Scott Paper, who, in an article in *Harper's* by Clara and Noer (1996), is quoted as saying that "the responsibility of the CEO is to deliver shareholder value. Period. It's the shareholders who own the corporation. They take all the risk. And how does the CEO maximize value? He does that by focusing on profit. . . . sometimes you have to get rid of people." Dunlap was successful. According to Clara and Noer, during Dunlap's two years at Scott Paper "he increased the company's stock price by 225 percent, laid off 11,000 workers, and arranged for the company to be purchased by Kimberly-Clark, one of its biggest competitors." The exclusive concern with maximizing shareholder value in the short-run was a new development in the 1980s; it was a concern that would have been socially unacceptable to articulate, much less put into practice, in earlier decades.

Taking the Low Road

Employers responded to competitive pressures and opportunities with labor practices that reflected the prevailing laissez-faire thinking. The new business-friendly political environment encouraged the use of low-road management strategies by employers. By the end of the decade there had been a fundamental shift in the human resource policies of firms and the legal rules governing employment practices. As Wachter and Carter (1989) explain,

Until the late 1970s or 1980s, firms rarely made use of their

rights under *Mackay Radio* to hire permanent replacements. Instead, firms used managers to replace striking workers temporarily. When replacement workers were hired, they were seldom offered permanent jobs. When strikes occur today, replacement workers are more likely to be offered permanent jobs. . . . The rules governing plant closings and relocation are based on newer decisions. . . . In simple terms, the rules mean that management decisions to implement partial plant closing, work relocation, asset sales, and even some types of subcontracting are not mandatory topics [for bargaining].

Concession bargaining became widespread by the mid 1980s. Mitchell (1985) shows that the proportion of workers subject to major private union settlements whose wages were frozen or cut ranged from 0 percent to 5 percent from 1964 to 1980, rose to 8 percent in 1981, and jumped to 44 percent in 1982. The rate then fell to 37 percent in 1983, 23 percent in 1984, and 26 percent in 1985. Just 2 percent of settlements had no first-year wage increase in 1981, but this figure rose to 12 percent in 1982 and ranged from 25 to 37 percent between 1983 and 1988 (Mitchell 1989). These data clearly indicate a strong shift toward confrontation by employers in the early 1980s.

The relocation of operations to low-wage sites also had a downward effect on the relative earnings of many low-skill workers. Although statistical evidence is hard to come by, the anecdotal evidence is overwhelming. For example, according to spokespersons of Pratt and Whitney, the firm's decision to relocate as many as 9,000 high-paying production jobs from a high-skill state (Connecticut) to lower-skill states (Maine and Georgia) was expressly designed to reduce labor costs (Judson 1993). Employers such as Pratt and Whitney evidently did not relocate as a result of shifts in their demand for skills and the introduction of new workplace technologies, but because of a preference for paying much lower wages to workers with the same level of skill and for similar tasks.²³

Another tactic used to reduce labor costs was to substitute part-time workers and temporary workers for permanent, full-time workers. The temporary help industry grew eight times faster than employment in all nonagricultural industries between 1978 and 1985 and increased from

620,500 workers in 1984 to 1,031,500 workers in 1989 (Carré 1992). Citing Katharine Abraham's estimate from an employer survey that there were 1.5 million temporary help workers, short-term hires, and on-call workers in 1986, Carré estimates that there were over 2 million "contingent" workers by 1989. Relying largely on the work of Osterman (1988) and Golden and Appelbaum (1990), Carré concludes that "changes in firm demand for labor rather than changes in workers' preferences have driven the rapid growth of contingent labor in the 1980s." She also points out that not only do contingent workers offer lower labor costs, but they add flexibility—management gains greater control over work schedules and the way tasks are performed.

Government social policy has also contributed to the undermining of traditional wage-setting norms in the private sector. The United States continues to rely heavily on employers to provide health insurance, pensions, child care, and other fundamental benefits—benefits that represent labor costs to employers. These costs are assumed by the public sector in most other developed countries. As the costs of benefits rise, our "privatized" benefits system encourages employers to substitute part-time and temporary low-wage jobs, increasing both the share of low-wage earners and wage inequality.

Such fundamental alterations in traditional employment and wage-setting practices within the firm require various institutional changes. Blackburn, Bloom, and Freeman (1990) show that changes in union density and the value of the minimum wage both help explain the decline in the relative wages of low-skill men. DiNardo, Fortin, and Lemieux (1994) present striking evidence on the central role played by the declining value of the minimum wage in the collapse of wages at the bottom of the wage distribution, concluding that "labor market institutions are at least as important as supply and demand considerations in explaining changes in the U.S. distribution of wages from 1973 to 1992."

The undermining of traditional wage-setting institutions may also help to explain the increase in wage inequality within industry, gender, education, and experience groups. Wage norms appear to have broken down within firms (as internal labor markets opened up to external competition), within industries (as increasing competition caused differences among firms to become a more critical factor in wage outcomes), and among communities

(as transportation and telecommunications facilitated the relocation of some, but not all, firms to lower-wage areas). In short, the "law of one price" may have been undermined, not promoted, by the wage restructuring. Take, for example, the airline industry. With deregulation "employees at smaller carriers like Republic actually saw their pay go up when bigger airlines, like Northwest, took them over and brought in higher wage scales. But many have felt the pain as the competition set off by deregulation put relentless pressures on costs. . . ." (Bryant 1993)

The consequence of low-road employment policies—the war on labor unions, demands for wage concessions, plant relocation, outsourcing, and an increased reliance on contingent workers—has been declining real wages for those with the least skills and, as Harrison (1994) has described it, a job structure that is being transformed from one with a diamond shape (lots of good, relatively low-skilled jobs) to one with an hourglass shape (only the best and worst jobs are expanding). Similarly, Levy and Murnane (1992) conclude that "the male earnings distribution has 'hollowed out,' leaving larger percentages of workers at the top and bottom of the distribution, and a smaller percentage in the middle."

The difficulties posed by the measurement and the interdependence of the key determinants make this institutionalist explanation easier to diagram than to test statistically. But the importance of changes in trade patterns, unionization rates, and the value of the minimum wage on relative wages in recent empirical studies supports this approach, as does the anecdotal evidence on wage concessions, outsourcing, plant relocation, and the use of contingent and part-time workers. For purposes of both coherence and policymaking regarding the wage collapse, it is crucial that these proximate determinants be understood in the larger context of a new, more competitive business environment in which political and ideological shifts have lifted the constraints on the adoption of the low-road management strategies.

Policy Implications

The policy implications of these alternative explanations are profoundly different. If the rising incidence of low wages and the growth of earnings inequality over the last two decades can be attributed to declining job

opportunities for low-skill workers due to technological change, a sensible policy would be to reduce the share of workers with low skills. The solution to the wage collapse would be more and better education and training and perhaps a tougher approach to legal and illegal immigration. In sharp contrast, the institutionalist explanation suggests reversing the trend of declining real (and relative) wages of low-skill workers through public policies that address not just worker characteristics, but the way wage-setting institutions work, both inside and outside the firm.

Can we solve the earnings problem through skill upgrading? Even assuming the political feasibility of what would be an expensive program, there are a number of difficulties with a massive program of skill upgrading for the least skilled if the problem it seeks to address was caused largely by a decline in bargaining power due to changes in labor market institutions and shifts in social norms. First, the payoff to investments in "hard" skills, such as literacy, takes time. It is hard to imagine much impact on the wage structure in less than one generation. Second, many of the skills employers demand are "soft" skills—work habits and attitudes. These are traits that are developed in childhood in families, schools, and communities. Upgrading the soft skills of adults through government programs is likely to be even more challenging than improving their hard skills.

Third, labor market forces will tend to undermine the objectives of skill upgrading. Close to two-thirds of all jobs currently require only a high school degree or less. Successful skill upgrading for the workers now filling these jobs is only part of the task. We would also need to supply jobs that require higher skills and pay higher wages. Without such job creation, a larger supply of moderately skilled workers will tend to bid down the wages of moderately skilled jobs. And who would then do all the unskilled jobs? Without tougher immigration enforcement policies, a skill upgrading program runs the risk of increasing the incentive for illegal immigration. A program that succeeded in substantially increasing the skills of large numbers of workers who are currently paid low wages might result in a more highly skilled native-born workforce that experiences declining real wages at the same time that the number and share of low-skill foreign-born workers increases—a replay of our experience in the 1980s.

Finally, if we optimistically suppose that high-end estimates of the mar-

ginal return to investment in education and training for individuals (say 10 percent) can be applied to the entire low-skill workforce, the cost to the public sector of providing the kind of education and training necessary to counteract recent earnings trends would be enormous. Heckman (1994) shows that a 10 percent return on investment in human capital would require an investment of \$214 billion (1989 dollars) to restore the earnings of male high school dropouts to their 1979 real level. A further \$212 billion would be required to restore the earnings of all high school graduates to their real 1979 level. To restore the ratio of earnings of college graduates to earnings of less-educated workers to its 1979 level would cost more than \$1.66 trillion.

Few would, or should, oppose public sector efforts to raise the skill level of the workforce, but the ability of workers to perform the functions required in technologically advanced workplaces had little to do with the startling growth in poverty-wage jobs, the drop in real earnings, and the growth of earnings inequality in the 1980s. We need to improve our education and training system, but making workers "smarter" will not, by itself, have much effect on the distribution of earnings and certainly not within the next decade. Besides, most jobs will continue to require less than a college degree, and a labor market that increasingly offers poverty-wage jobs to workers with that level of educational attainment provides workers with little incentive to invest in education and training, no matter how well such programs are designed and implemented.

An alternative policy to raise the after-tax incomes of low-wage workers is the earned income tax credit (EITC), which offers a reduced tax bill or a rebate check based on a family's level of earnings and number of children. The EITC has been an effective means of modestly raising the take-home income of some low-wage families, but in an era of heightened concern over the budget deficit and strong resistance to redistribution through the tax code, it seems unlikely that the EITC can be greatly expanded. The wage collapse has simply been too massive for a redistributive tax program of this sort to offset more than a small part of the losses experienced by those with less than a college degree. Furthermore, heavy reliance on the EITC has the perverse effect of ratifying, and even encouraging, the very practices by employers that produced the need for the credit in the first place, namely, low-road competitive strategies that reduce costs by targeting the wages and benefits of those with the least bargaining power.

An effective public policy response must address the roots of the earnings problem. We have come to rely too heavily on competition in labor markets to set wages and employment conditions. The wage-setting institutions that sheltered low-skill workers from the worst excesses of labor market competition and encouraged management-labor cooperation need to be reestablished and new institutions that can more effectively serve these purposes should be explored. While the details of such a policy require careful debate, the direction to take is clear. Strengthening the ability of workers to bargain collectively and reversing the 35 percent decline in value of the minimum wage since the 1960s would be a good place to start.

Other nations have chosen to operate under different labor market rules. As Freeman (1994b) points out, "the United States represents the decentralized extreme in wage setting." Still, since the late 1970s, political choices have been made to move further in this decentralized direction, and wage-setting institutions that once provided some protection for workers from labor market competition have been undermined or dismantled. It was no coincidence that among developed countries, only Great Britain—also relatively decentralized—experienced a comparable increase in inequality. But the U.K. experience was unlike the U.S. experience in one crucial respect: real earnings among the least-skilled increased. The collapse of wages for those with low educational attainment was a uniquely American experience. While collective bargaining agreements set wage and employment conditions for 18 percent of American workers, they cover more than 80 percent of workers in Sweden, Germany, Belgium, France, and Austria (Freeman 1995). The minimum wage in France is set at 60 percent of the average wage, almost twice as high as that in the United States.²⁴

Indeed, strong labor market institutions currently prevail in varying forms in all of the United States's developed country competitors. These nations faced the same competitive pressures from the same global marketplace, but, unlike the United States, in the 1980s they did not allow their labor unions to be crushed, the legal minimum wage to plummet in value, the balance of trade in durable goods to collapse, and the public social safety net to be dismantled. The United States should take the advice of Richard Freeman (1994c), who, on the basis of lessons learned

from a major study of labor markets from around the developed world, concluded that "the declining position of American workers relative to those in other advanced countries shows clearly that it is appropriate to reconsider our labor institutions in light of experiences elsewhere."

Notes

1. Average weekly earnings are deflated by the CPI-U index (Council of Economic Advisers 1991, Tables B-44 and B-58).
2. "Overall, the gap in weekly wages between men at the 10th and men at the 90th percentile has grown about 35 percent since 1967. In the period since 1979, this growing gap is the result of substantial declines in real wages at the bottom of the distribution and more modest gains at the top" (Karoly 1994, p. 56).
3. The increase in earnings among workers near the top of the earnings ladder appears to be due exclusively to the increased earnings of those with post-graduate schooling (Mishel and Bernstein 1995). From another perspective, the growth in pay at the top appears not to be a function of whether or not one has a college degree, but to be related to an increase in earnings among the top 1 percent of earners (Gramlich, Kasten, and Sammartino 1994).
4. Citing the work of Blackburn, Bloom, and Freeman (1990) and Koster (1991b), Burtless (1991) states that "the supply of highly skilled workers more than kept pace with demand through the 1970s, when the wage premium for schooling shrank slightly. But the anemic growth of a highly skilled labor supply in the 1980s led to a sharp rise in the premium for education and skill."
5. In an influential paper, Bound and Johnson (1992) assert that 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." Similarly, Acs and Danziger (1993) conclude that since most of the decline in earnings is found within industries among workers having the same education and experience levels, standard measures used in earnings studies cannot account for the decline; therefore, "changes in technology, whether autonomous or in response to foreign competition, provide the most plausible explanation for the fall in mean earnings."
6. Davis and Haltiwanger (1991) are quite explicit about the reasons for labor economists' recent attention to computerization: "Skill-biased technical change will play a major role in any satisfactory neoclassical explanation for recent changes in the wage structure" (emphasis added).
7. Although they do not seem to think that the timing of restructuring matters for their story, Berman, Bound, and Griliches (1994) do recognize that employment shifts were concentrated in the 1980 to 1982 period. "Roughly 70 percent of the within-industry and over 80 percent of the between-industry shifts . . . that occurred between 1979 and 1987 did so between 1979 and 1982."

8. The timing of these employment and investment trends is also relevant to the interpretation of the regression results presented in the Berman, Bound, and Griliches study. They regress the 1979 to 1987 change in the nonproduction share of employment across industries on the level of and change in the share of computers in total investment. Their estimated coefficients are positive. 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" (Berman, Bound, and Griliches 1994). Is it plausible that investment in computers, which took place almost entirely after 1982, can explain up to half of the shift away from production labor, which occurred entirely before 1983? Interestingly, they note that their 1977 to 1987 computer variables and their 1974 measure of R&D are also powerful predictors of nonproduction employment trends for 1959 to 1973, a period with virtually no computer investment.
9. Because sales jobs range from low- to high-skill (from cashiers to insurance agents), those jobs are considered as a separate category. Private household and farm occupations are omitted from the analysis.
10. These figures are taken from three different tables. The wage and supply estimates are for workers with one to five years of experience, while the demand estimates are for workers at all experience levels. My interpretation of these results requires an assumption that the change in demand for all low-skill workers is not dramatically different from the change in demand for those with one to five years of experience.
11. Since the simple demand and supply model assumes that the wage distribution mirrors the skill distribution, changes in the wage distribution should reflect changes in the skill distribution. In this case, we should observe a decline in the share of those employed at low wages. While a surplus pool of low-skill workers will push the wage down, the mismatch (skill twist) story posits declining low-skill job opportunities so that the pool of jobs for which these low-skill workers are competing is shrinking.
12. This assumption is made explicitly and relied upon in many empirical studies. For example, Topel (1993) writes, "I will define relative marketable 'skills' in terms of a person's position in the overall distribution of wages."
13. Those with low skills lucky enough to get the increasingly scarce jobs might have seen their wages bid down, but there should have been fewer workers employed in this low-skill job pool and more jobless workers. On the other hand, the presence of too many low-skill workers should not have directly affected the wages for high-skill jobs since low-skill workers are not, presumably, easily substitutable for high-skill workers.
14. For details on the method, see Howell (1996).
15. These estimates are conservative since temporary workers, whose share of employment greatly expanded in the 1980s, are defined as service sector workers and are not included in the data.
16. The study defines displacement as "job loss due to plant closings or moves, slack work, or the abolishment of their positions or shifts."
17. High-wage blue-collar workers were certainly hard hit by the 1980s, but there is no evidence that these were workers with specialized skills or that their skills became obsolete at a rate that was substantially greater than in earlier decades.

18. This does not necessarily conflict with the evidence that the return to college education rose sharply in the 1980s. While growth in the "redundant" portion of the college-educated labor supply will tend to reduce the absolute value of this return, increasing earnings by the unaffected (higher-skill) part of the college-educated pool could more than offset this effect. Furthermore, the increasing competition for lower-skill jobs by the redundant college-educated workforce will also tend to lower the wage of those with low educational attainment. A large part of the growth in the wage gap between college and high school degree holders was due to the decline in the earnings of the latter (see Table 1).
19. Kaufman (1988) writes that "as DKLR [Dunlop, Kerr, Lester, and Reynolds] intuited, and Walter Oi (1962) and Gary Becker (1964) later showed more rigorously, firm-specific training creates its own area of indeterminacy in wage rates—competition places upper and lower limits to the wage bargain, but within these limits the wage is indeterminate until explicitly set by unilateral management decision, individual bargaining, or collective bargaining."
20. For a survey of the literature on the effects of trade, see Burtless (1995). For the effects of unions and the minimum wage, see Blackburn, Bloom, and Freeman (1990); Freeman (1994a); and DiNardo, Fortin, and Lemieux (1994). Focusing on the effects of unions and the minimum wage on relative wages, DiNardo, Fortin, and Lemieux find that "labor market institutions are at least as important as supply and demand considerations in explaining changes in the U.S. distribution of wages from 1973 to 1992." For a comprehensive treatment of the effects of the minimum wage on employment and relative wages, see Card and Krueger (1995).
21. Summarizing research by Ferguson and Rogers, David Gordon (1996) writes that "In 1975–76, an average of 84 percent of unfair labor practice complaints against corporations were sustained in whole or substantial part, favoring the union side of the complaint. By 1984–85, that average had dropped to 52 percent. In 1975–76, similarly, 65 percent of "representation" cases . . . were decided in favor of the union position. By 1984–85 that percentage had declined to 35 percent."
22. Summarizing research by Michael Porter, Bennett Harrison (1992) writes that "real capital formation in the U.S. since the 1960s has been distorted by rules, procedures, and customs governing private sector allocation of capital. . . . In 1960, big institutional stockholders in the U.S.—the pension and mutual funds—held on to a share on average for seven years. By the 1980s, the average period had fallen to only about two years."
23. Similarly, as reported in *The New York Times* (McQuiston 1994), Grumman's manufacturing operations were transferred from Long Island to Florida and Louisiana to reduce labor costs. Another recent *New York Times* report (Shenon 1993) documents the substantial demand for extremely low-skill labor in the 1980s in Saipan and other U.S.-owned islands in the South Pacific, where some 20,000 workers, recruited primarily from mainland China, typically put in six days a week for half the minimum wage making American brand-name clothes. As the demand for low-skill workers willing to accept poverty-level wages expanded in these offshore U.S. territories in the 1980s, low-skill but living-wage garment jobs decreased in the continental United States.
24. It is often claimed that the high unemployment currently experienced by some European nations indicates that a high price would be paid for

maintaining traditional shelters from wage competition for low-wage workers. I am unaware of any serious research that has made a compelling case that wage inflexibility accounts for the recent increases in unemployment in these countries, but there is a recent study that challenges that idea. Card, Kramarz, and Lemieux (1995) write that "taking the evidence for the United States, Canada, and France as a whole, we conclude that it is very difficult to maintain the hypothesis that the 'wage inflexibility' in Canada and France translated into greater relative employment losses for less-skilled workers in these countries."

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About the Author

David R. Howell is a research associate at The Jerome Levy Economics Institute and an associate professor of economics and chair of the Urban Policy Analysis and Management Program at the Robert J. Milano Graduate School of Management at the New School for Social Research. His research on earnings and employment outcomes in national labor markets focuses on long-run trends in skill requirements, the links between technological change and the skill mix of employment and earnings, and the impact of immigrant workers on employment and earnings differentials in urban areas. Howell received a B.A. from New York University and a Ph.D. from the New School for Social Research.