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Introduction and Summary

Richard B. Freeman and Lawrence F. Katz

Earnings inequality increased substantially in the United States in the 1980s, and the real earnings of many groups of workers, primarily men, fell from the early 1970s through the early 1990s. In 1993, about 16 percent of the nation's year-round, full-time workers were labeled as low-wage workers by the U.S. Department of Commerce, earning less than the poverty level for a family of four (\$13,483 per year in 1993 dollars)—an increase of approximately 33 percent over the 12 percent who had low earnings in 1979. Less educated young men suffered unprecedented losses in real earnings. Despite their costing employers less, however, these men were less likely to work at any point in time than in the past. In short, in the 1980s, if not earlier, the U.S. labor market experienced a massive twist against the less skilled and lower paid that reduced their living standards.

Was the twist in the job market against less educated workers unique to the United States, or was it part of a general pattern of decline in the well-being of the less skilled in advanced countries? Does it mark a new era in modern economic development—a reversal of the broad finding that income inequality tends to fall with modern economic growth? Have other countries avoided or ameliorated the rise in wage inequality that characterized the United States?

Motivated by these and related questions concerning the rise in inequality in the United States, the National Bureau of Economic Research (NBER) undertook the research project the results of which are presented in this volume. We asked U.S. and European economists to examine wage patterns and

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changes in various countries for the purpose of enlightening the U.S. discussion about the increase in inequality in our country. Much of the research reports on the results obtained from computerized files on the earnings and employment of tens of thousands of workers in other countries. While the foreign surveys are not identical to the U.S. Current Population Survey (CPS), which most U.S. studies use to document changes in our wage structure and income distribution, the data from other countries are sufficiently similar to permit valid comparisons of changes in inequality across countries and, in most cases, of differences in wage patterns and inequality as well.

There are two basic ways to analyze economic patterns across countries. One approach is to examine developments in a single foreign country that the researcher implicitly or explicitly compares to his or her own. The other approach is to contrast the situation in a number of countries in a single study. Each approach has its advantages and disadvantages. By concentrating on a single country, the researcher can explore country-specific developments and data sets in depth but faces the danger that generalizations based on such analyses may not hold up in a broader setting. By examining a set of countries, the researcher gains a wider perspective on patterns of change, but at the cost of learning less about any single data set or mode of wage setting in any single country.

The NBER project sought to exploit the benefits of both methodologies by combining country-specific studies with broader cross-country studies. Some of the papers in this volume focus on the situation in specific countries, with the research undertaken by national experts with detailed knowledge of relevant data sets and of that country's institutional and market realities. One study, for instance, explores the pattern of wage inequality in Italy, a country that used a particular form of changing wages, the *scala mobile*, to reduce inequality greatly (Erickson and Ichino, chap. 8). Two studies focus on Sweden, one largely empirical (Edin and Holmlund, chap. 9), the other largely theoretical (Freeman and Gibbons, chap. 10). One of the big surprises to emerge from these studies was the similarity in patterns of wage change and in wage-setting institutions between these two countries, which are not normally classified as "kissing cousins" in terms of labor market practices. Another study (Abraham and Houseman, chap. 11) examines inequality in Germany, while yet another (Kreuger and Pischke, chap. 12) explores the effects of German unification on the wage structure in the former East Germany. Finally, one study examines wage patterns in the rapidly growing economy of South Korea (Kim and Topel, chap. 7).

Because the United States has shared a historical tradition with other English-speaking countries, our project paid particular attention to the experiences of Australia (Gregory and Vella, chap. 6) and the United Kingdom (Schmitt, chap. 5; Katz, Loveman, and Blanchflower, chap. 1). Australia has traditionally had a wage-setting system that is based on industrial tribunals and that differs substantially from that of the United States, while the United

Kingdom's labor market relies on a more decentralized approach to wage determination. While the evidence is a bit mixed for Australia, these studies found increases in inequality in both countries, with the rise in the United Kingdom during the 1980s being both quantitatively and qualitatively similar to that in the United States. We excluded Canada from this analysis because comparisons of the United States and Canada are contained in a separate volume (see Card and Freeman 1993).

Four of the papers examine patterns of inequality and pay differentials across several countries. Abowd and Bognanno (chap. 2) treat managerial compensation, an issue that continually raises controversy in the United States owing to newspaper stories claiming that U.S. executives are "overpaid" compared to their counterparts overseas. Blau and Kahn (chap. 3) examine the relative pay of women across countries in the context of the broader level of wage inequality within a country. Blanchflower and Oswald (chap. 4) explore the striking degree of similarity in the extent to which the level of pay negatively varies with regional (or industry) unemployment in each of ten nations, including the United States. Finally, Katz, Loveman, and Blanchflower (chap. 1) examine the evolution of earnings differentials in the United States, Britain, France, and Japan and assess potential explanations for the differences and commonalities in the patterns of changes in the wage and employment structures of these four nations.

With studies focused on individual countries as well as cross-country studies, we have greater confidence in the findings presented in the volume than we would have had were the analyses limited either to individual country studies or to cross-country comparisons that could not examine the patterns in a single country in depth.

Finally, the reader will notice that this research project pays considerable attention to labor market institutions as well as to the supply-and-demand forces that affect wages. The countries covered in this volume have similar advanced market economies (Korea and East Germany are the exceptions). They face much the same shifts in technology, demand, and, with some exceptions, supplies of labor. It is thus natural to look at differences in wage-setting and other institutions to account for some of the country differences in wage structures and changes in inequality.

The Main Findings

In capsule form, the research in this volume goes a long way toward answering the question of whether the substantial rise in earnings inequality in the United States since the late 1970s is universal among advanced capitalist economies or something more idiosyncratic. The findings also cast important light on the likely causes of the evolution of the wage structure and the growth of inequality in the United States.

With respect to the pattern of change in inequality across countries, the re-

search shows that, during the 1980s, the United States and the United Kingdom—countries with decentralized labor markets and systems of wage setting—had exceptional increases in earnings inequality and in wage differentials by skill category. Only in the United States, however, was the rise in inequality associated with quite large declines in real wages for low-wage workers (even those in year-round, full-time employment). The huge decline in the real earnings of low-paid workers in the United States has been associated with sharp increases in family income inequality and growing rates of poverty among working families. Most other developed countries had moderate increases or in some cases effectively no rise in wage inequality, and real wages increased in Britain even for low-paid workers. Thus, the rise in inequality was especially harmful to low-paid workers in the United States. Nevertheless, most other advanced nations with less increase in wage inequality and faster increases in real wages than the United States suffered from much slower employment growth and sharper increases in unemployment/nonemployment among less educated and young workers (OECD 1994b).

The key forces behind the rise in inequality appear to be changes in the supply of and demand for skills: a secular shift in relative labor demand favoring more educated workers and workers with problem-solving skills compared to a slowdown in the rate of growth of the supply of highly educated workers relative to less educated workers. The shift in labor demand appears to be driven in part by skill-biased technological change partially associated with the “computer revolution” and by the growing internationalization of advanced industrial economies manifested in expanding trade with newly industrialized and less developed countries, large trade deficits in durable goods in some nations, and increased immigration pressure. Different analysts put different weights on the role of technology and trade forces as well as other factors (e.g., Borjas 1994; Borjas, Freeman, and Katz 1992; Bound and Johnson 1992; Lawrence and Slaughter 1993), but no one can gainsay that demand has been moving toward the more educated and more skilled. Shifts in demand are, however, fairly similar across countries, with the result that demand forces do little to explain country differences in the rise of inequality.

Hence, we also attribute a substantial role in the rise in inequality and the divergence between the United States and other countries to supply factors—in particular to the slowdown in the growth of the supply of highly educated workers between the 1970s and the 1980s in the United States. In the 1970s, rapid growth in the relative supply of highly educated workers (associated with the labor market entry of baby-boom cohorts and the rapid expansion of higher education systems) led to declining college or university wage premiums throughout the OECD, despite increased demand for these workers. In the 1980s, a more sluggish growth of the relative supply of highly educated workers (partly associated with the labor market entry of baby-bust cohorts and increases in immigration by less educated workers) permitted skill differentials to rise and accounts for some of the greater growth of inequality in the United

States. In striking contrast, the pattern of continued rapid educational upgrading in Korea was associated with a large drop in educational wage differentials (Kim and Topel, chap. 7).

The research also finds that labor market institutions contribute to the rise in inequality in two ways. First, differences in wage-setting institutions and in training and education systems explain some of the differential growth of inequality. Countries where labor market institutions—unions, employer federations, government agencies—play a greater role in wage setting and that provide better training or education for less skilled workers had smaller rises in inequality in response to demand/supply shifts similar to those affecting the United States (Abraham and Houseman, chap. 11; Erickson and Ichino, chap. 8; Edin and Holmlund, chap. 9; and Katz, Loveman, and Blanchflower, chap. 1). Second, changes in labor market institutions contributed to changing wage inequality. The decline of unionization contributed to rising wage inequality in the United States and the United Kingdom. Centralized wage-setting institutions weakened in some countries, including Sweden and Italy, lessening the forces that reduced inequality.

Generalizing from these findings, we offer a *supply-demand-institution* (SDI) explanation of relative wage determination to explain the rise of wage inequality in the United States compared to that in other countries. This explanation attributes differential changes in relative wages and employment among countries to long-term shifts in the supply of and demand for more and less skilled workers that work themselves out under different *and* changing labor market institutions.

There are three parts to this explanation. The first is that shifts in the supply of and demand for labor skills substantially alter wage and employment outcomes. This requires that shifts affect the wages and employment of different groups of workers in the manner predicted by the economists' supply-and-demand, market-clearing model. This in turn means that different demographic, education, and skill groups must be imperfect substitutes in production.¹ Further, we argue that shifts have their largest effect on young or less experienced workers on the active job market as opposed to experienced workers with substantial job tenure (Freeman 1976). The studies in this volume show in different ways that changes in relative supply and demand do in fact alter relative wages in the expected directions.

Since developed economies operate in the same world markets with similar technology, however, changes in demand move in broadly similar ways across countries. Supply changes will diverge more because different countries expanded their higher education systems at different times, but, even so, the proportion of the workforce that is highly educated has risen in all advanced countries. Differences in the pattern of change in supply and demand are thus

1. In technical jargon, the elasticities of complementarity (Hicks's term for the effect of changes in relative quantities on relative factor prices) must be noticeably greater than zero but less than infinite.

unlikely by themselves to explain cross-country variation in changes in wage inequality fully.

The second part of our explanation identifies country differences in wage-setting and other labor market institutions (described in detail in the various chapters in this volume and in other volumes in the NBER Comparative Labor Markets series) as an additional determinant of differing patterns of change in inequality. The more centralized a wage-setting system, and the stronger the role of institutions in wage determination, the smaller will be the effect of shifts in supply and demand on relative wages, and, as a consequence, the greater will be their effect on relative employment. In addition, education and training market institutions, which determine the level of workplace skills for the less educated and the degree to which more and less educated workers can be substituted for one another in production, will also mediate the effect of market forces on wages and employment (Lynch 1994). A more egalitarian distribution of skills should dampen the effects of market shifts on wages and employment. Finally, social insurance and income maintenance institutions also affect wage setting by influencing supply and demand behavior (Blank 1994). For instance, generous income maintenance or unemployment benefits programs that allow workers to remain jobless for a long period can reduce their willingness to take low wages to obtain work and thus reduce supply-side pressures that generate greater earnings differentials.

For the third part of our explanation, we turn to how institutional changes such as product market deregulation and changes in unionization alter the wage-setting calculus. In part, forces outside the labor market, such as political developments, will change labor institutions, but these institutions also respond to shifts in supply and demand. The important institutional changes in the 1980s were the decline in trade union power, which was exceptional in the United States, and the decentralization of collective bargaining that characterized diverse European countries. Both these developments are likely to produce greater earnings differentials.

We summarize next the dramatic changes in the American wage structure that motivated this study and then place these changes in the perspective of the developments in other advanced countries.

The Changes in the United States

As a starting point for examining what happened in other countries, we summarize the facts about changes in the U.S. wage and employment structure in the 1980s. Many researchers using several data sources—including household survey data from the CPS, other household surveys, and establishment surveys—have documented that wage inequality and skill differentials in earnings and employment increased sharply in the United States (Bound and Johnson 1992; Davis and Haltiwanger 1991; Gottschalk and Moffitt 1992; Katz and Murphy 1992; Levy and Murnane 1992; Murphy and Welch 1992). The finding

that inequality increased is not sensitive to the choice of data set, sample, or wage measure. The following four “facts” summarize the changes in the American wage and employment structure that give us a benchmark for assessing the labor market performance of other countries:

Fact 1. From the late 1970s to the early 1990s, wage dispersion increased dramatically for both men and women, reaching levels of wage inequality for men that are probably greater than at any time since 1940. The hourly earnings of a full-time worker in the ninetieth percentile of the U.S. earnings distribution relative to a worker in the tenth percentile grew by approximately 20 percent for men and 25 percent for women from 1979 to 1989. The gap increased further in the early 1990s. This pattern of rising wage inequality was not offset by changes in fringe benefits favoring the less skilled² or by improvements in their chances of holding a job relative to those of more educated workers.³ It marks a worsening in the economic well-being of lower-paid workers.

Fact 2. Pay differentials by education and age increased. The college/high school wage premium doubled for young workers as the weekly wages of young male college graduates increased by some 30 percent relative to those of young males with twelve or fewer years of schooling. In addition, among workers without college degrees, the average wages of older workers increased relative to those of younger workers. Only the gender differential declined. The earnings of women increased by 10 percent or more relative to men in all education and age groups in the 1980s.

Fact 3. Wage dispersion increased within demographic and skill groups. The wages of individuals of the same age, education, and sex, working in the same industry and occupation, were more unequal at the end of the 1980s than twenty years earlier. Much of this increase took the form of greater wage differentials for “similar” workers across establishments in the same industry.

Fact 4. Since these changes were coterminous with sluggish overall real wage growth, the real earnings of the less educated and lower paid fell compared to the earnings of analogous individuals a decade earlier. Most striking, the real

2. To the contrary, the same less skilled men who suffered losses in real earnings experienced losses in the likelihood that they would have an employer- or union-provided pension (Even and MacPherson 1994) and would be covered by an employer health insurance plan (Acs and Steuerle 1993).

3. Despite the decline in the relative wages of less skilled men, the proportion employed fell relative to the proportion employed of more skilled men. This occurred by education and by deciles of the earnings distribution (Blackburn, Bloom, and Freeman 1990; Topel 1993). But note that, during the early 1990s, white-collar workers suffered more from unemployment than in the past. The unemployment rate of executives in January 1993 was 3.9 percent, the highest it had been since 1983 (4.4 percent). By contrast, the unemployment rate of operators, fabricators, and laborers was 11.9 percent in January 1993, compared to 20.6 percent in 1983.

hourly wages of young men with twelve or fewer years of schooling dropped by some 20 percent from 1979 to 1989 and continued declining in the early 1990s. In fact, the real hourly earnings of the median male worker appear to have declined since the end of the 1970s.⁴

Like most research on the widening distribution of earnings, this list of facts presents the evidence in terms of statistical measures of earnings distributions. But the same data can be organized in another way, one that some find more appealing: as changes in the share of jobs that provide “middle-class” earnings. For instance, rather than reporting the ratio of the wages for the ninetieth and tenth percentile workers, one can report the proportion of workers with incomes that fall in a fixed “middle-class” income band around the mean. Since the “jobs” measure of the change in the labor market is based on the same data as income distribution measures, it is likely to tell the same story.⁵ When the distribution of earnings widens, there should be a decline in the share of middle-class jobs in the total; conversely, when there is a decline in the proportion of middle-class jobs, the earnings distribution should widen. Gregory and Vella’s study (chap. 6) focuses largely on the jobs measure of inequality, which they find has worsened in Australia as in the United States, consistent with measures showing a widening earnings distribution.

Did the changes that took place in the 1980s break with the past or continue earlier trends? Figure 1 graphs the relative hourly wages for full-time workers from the March CPS from 1967 to 1989 to answer this question. The figure shows that the 1980s changes are largely a break with the past. The college wage premium plotted in panel A did not trend upward for decades. It increased modestly from 1967 to 1971, then fell through 1979, before jumping sharply in the 1980s, especially for the youngest workers.

Returns to experience graphed in panel B increased greatly for less educated men in the 1980s but not in previous years. The rise in the experience differential is, however, limited to the less educated; the earnings of male college graduates show no marked shift in favor of older or more experienced workers.

The reduction in the gender gap was also a 1980s development. Differentials in pay between women and men changed little in the 1960s and 1970s, then narrowed substantially from 1979 to 1990 (panel C).

The one change that began prior to the 1980s was the rise in within-group wage inequality for men. Panel D shows that, even after controlling for education and experience, the differential in earnings between men in the ninetieth

4. Information on U.S. wage trends through 1993 can be found in Mishel and Bernstein (1994).

5. Because earnings distributions can be altered in various ways, there is no one-to-one correspondence between all measures of change in the distribution and the change in the share of jobs in specified earnings categories. For instance, it is possible that the proportion of workers earning middle-class incomes remained unchanged while the very poor got poorer (reducing the earnings of the tenth percentile) and the very rich richer (raising the earnings of the ninetieth percentile). But observed changes in the distribution have not followed such a pattern.

percentile and those in the tenth percentile began to increase in the early 1970s. We note, however, that an analysis of usual hourly earnings in the CPS does not show this trend beginning until the 1980s (Card and Lemieux 1994; Mishel and Bernstein 1994).

Changes in Other Advanced OECD Countries

Did earnings differentials and overall wage inequality rise in other advanced countries as they did in the United States, or is rising inequality unique to the United States?

To answer this question, we summarize the analyses in this volume and elsewhere that gathered comparable data for many countries. The data come from diverse country sources, ranging from CPS-style household surveys, to establishment surveys, to surveys comparable to the U.S. Survey of Consumer Finances. While most of the analyses use micro-data files, in some cases these data were unavailable (Japan does not make public its basic data files), and the figures are limited to published data. Virtually all the data sets measure earnings before taxes.

There are, of course, numerous noncomparabilities among data sets for various countries (as there also often are for different data sets for the same country). Definitions of education and occupation groups differ depending on education and training systems and data-gathering procedures. Sample survey coverage and measures of earnings differ. The meaning of earnings also differs across countries. In the United States, living standards depend largely on personal earnings, whereas many European countries provide elements of compensation to all citizens or workers, such as health insurance, that Americans must buy with their take-home pay or through nonwage workplace compensation. Most other countries also have child allowances, among other benefits. If everyone in a foreign country has benefits that Americans buy through pay, measures of inequality based on wages will overstate inequality in that country compared to the United States. Differences in the progressivity of tax-transfer systems also vary across countries and affect the way in which differences in before-tax earnings translate into economic well-being and the use of nonearnings compensation. For instance, firms are more likely to give in-kind payments to workers, such as company cars, subsidies on transportation, lunch, and so on, in countries with high marginal rates. Abowd and Bognanno (chap. 2) explain part of the seemingly high compensation of executives in the United States as a result of relatively low marginal taxes, which favor direct compensation as opposed to unmeasured perquisites.

Differences in data and modes of pay make cross-country comparisons difficult. But they do not make such comparisons impossible or meaningless. In many cases, researchers know how reporting practices or definitions vary and can adjust results for these differences or, if that is not possible, specify the direction of bias in measures of inequality relative to the United States. More

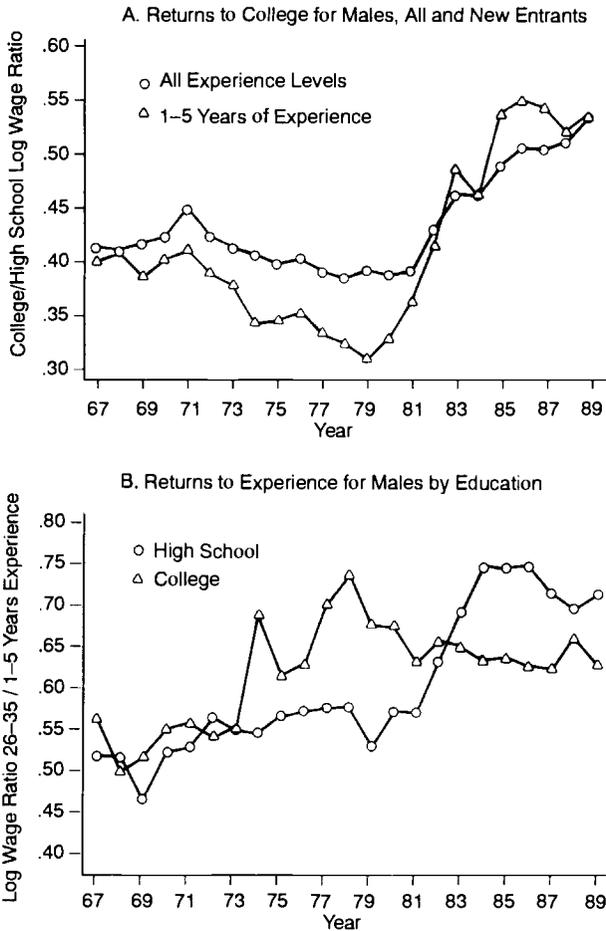


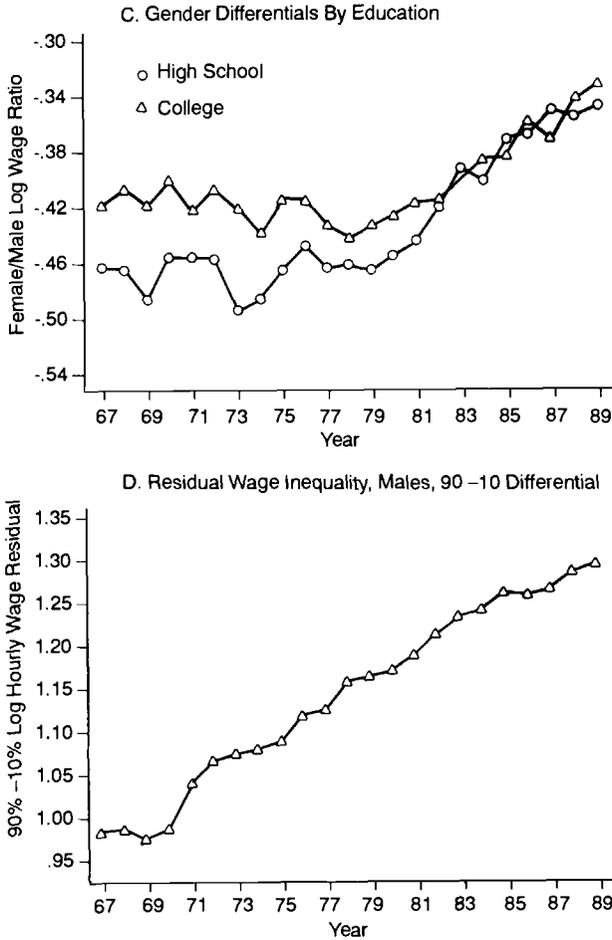
Fig. 1 Relative hourly wages for full-time workers, March CPS, 1967-89

Source: Katz, Loveman, and Blanchflower (chap. 1 in this volume).

important, in terms of changes over time, differences in definitions and reporting procedures that are constant over time are unlikely to distort trends in inequality.

Table 1 categorizes countries by the way their educational or occupational wage differentials changed in the 1970s and 1980s. From the late 1960s to the late 1970s, all the countries shared a common pattern of narrowing educational and occupational wage differentials. In addition, all saw the trend toward reduced educational wage differentials and a more compressed wage structure end by the early to mid-1980s.

In the 1980s, however, educational differentials moved differently among countries. In several countries, the differentials rose, but at more modest rates than in the United States (Katz, Loveman, and Blanchflower, chap. 1 in this



volume; Edin and Holmlund, chap. 9 in this volume; Freeman and Needels 1993; Abraham and Houseman, chap. 11 in this volume; Erickson and Ichino, chap. 8 in this volume; Gregory and Vella, chap. 6 in this volume; and OECD 1993). The one country with a pattern of widening wage differentials quantitatively similar to that of the United States is Great Britain. Canada, Australia, Japan, and Sweden had small increases in educational differentials beginning in the early 1980s, and the Canadian rise appears to have at least partially reversed itself in the late 1980s (Bar-Or et al. 1992; MacPhail 1993). Wage differentials continued to narrow in Italy and France through the mid-1980s, with some hint of expanding differentials in the late 1980s. There is no evidence of rising educational differentials during the 1980s in West Germany and the Netherlands and only slight evidence of an increase in Australia. The only country where educational/occupational differentials widened by an amount similar to that in the United States was Great Britain.

Table 1 Changes in Educational/Occupational Wage Differentials in Selected Countries

Countries That Experienced:	1970s	1980s
Large fall in differentials	Australia Canada France Germany Italy Japan Netherlands Spain Sweden United Kingdom United States	South Korea
Modest changes in differentials:		
Modest fall in differentials		Netherlands
No noticeable change in differentials		France Germany Italy
Modest rise in differentials		Australia Canada Japan Spain Sweden
A large rise in differentials		United Kingdom United States

Table 2 measures changes in inequality in terms of the log of the ratio of the earnings of the top decile to those of the bottom decile from 1979 to 1990 (or the latest year available). The data show that the United States and the United Kingdom had by far the biggest increases in inequality. But there is a difference between the pattern of change in wages in the United Kingdom and that in the United States. In the United Kingdom, real earnings for all workers rose noticeably, with the result that, despite greater inequality, the real earnings for those at the bottom of the distribution grew (Katz, Loveman, and Blanchflower, chap. 1; Schmitt, chap. 5). By contrast, in the United States, real earnings at the bottom of the earnings distribution fell sharply. From 1979 to 1989, the real earnings of lower-decile American males *dropped* by 11–17 percent (depending on the survey used) compared to an *increase* in the real earnings of lower-decile British males of 12 percent.

That low-wage workers need not suffer losses in economic well-being even when inequality rises is also shown in the pattern of change in Japan. Inequality rose somewhat in Japan in the 1980s, but economic growth was so rapid that the living standards of the low-paid workers improved immensely. From 1979 to 1989, the real earnings of the tenth percentile Japanese male employee increased by more than 40 percent—an increase that exceeded that of the nine-

Table 2

Wage Inequality for Full-Time Workers, Selected OECD Countries, 1979-90 (log of ratio of wage of ninetieth percentile earner to tenth percentile earner)^a

Country	1979 ^b	1984 ^c	1987 ^d	1990 ^e	Change from 1979 to Latest Year
Men:					
United Kingdom	.88	1.04	1.10	1.16	.28
United States	1.23	1.36	1.38	1.40	.17
Japan	.95	1.02	1.01	1.04	.09
France	1.19	1.18	1.22	1.23 ^f	.04
Italy	.74	.69	.73	...	-.01
Netherlands	1.01	...	...	1.01	.00
Germany I	.78	.80	...	...	} -.06 ^g
Germany II	...	.96	.91	.88	
Australia	.69	.76	.77	.80	.11
Austria	.97	...	1.00	1.01	.04
Canada	1.25	1.39	1.34	1.38	.13
Sweden	.77	.72	.72	.77	.00
Women:					
United Kingdom	.84	.98	1.02	1.11	.27
United States	.96	1.16	1.23	1.27	.31
Japan	.79	.79	.84	.85	.06
France	.96	.93	1.00	1.02 ^f	.06
Italy	.87	.69	.69	...	-.18
Australia	.56	.64	.66	.67	.11
Austria	1.21	...	1.24	1.26	.05
Canada	1.32	1.46	...	1.38	.06
Sweden	.53	.57	.56	.60	.07
Men and women:					
Sweden, all	...	.66	...	.73	.06
Sweden, blue collar	.30	.30	.31	.35	.05
Denmark	.76	.77	.79	.77	.01
Norway	.72	...	.77	.68	-.04

Sources: The data for the United States, the United Kingdom, France, and Japan are from Blanchflower, Katz, and Loveman (chap. 1 in this volume); the data for Germany are from Abraham and Houseman (chap. 11 in this volume); the data for Sweden are from Edin and Holmlund (chap. 9 in this volume); the data for Italy are from Erickson and Ichino (chap. 8 in this volume); and the data for the Netherlands are from Hartog, Oosterbeek, and Teulings (1992). The data for the other countries are from OECD (1993, table 5.2, p. 159).

^aThe samples consist of full-time workers, with the exception of Japan. The wage inequality measures for Japan refer to regular workers. Wages are measured by hourly earnings for the United States, the United Kingdom, France, the Netherlands, Norway, and Sweden; weekly earnings for full-year, full-time workers covered by the social security system for Germany I; and gross average monthly earnings plus holiday allowances based on data from the German socioeconomic panel for Germany II. The data for Canada and Italy are for annual earnings of year-round, full-time workers. The data for Australia cover weekly earnings and for Austria monthly earnings.

^bCategory I is 1979, except in the following cases, where we recorded 1980 data for Austria (men; women), Denmark (men and women), and Norway (men and women) and 1981 data for Canada (men; women) and Sweden (men; women).

(continued)

Table 2 (continued)

^cCategory II is 1984, except in the following cases, where we recorded 1983 data for Germany I (men), 1985 data for Australia (men; women), Sweden (men; women), and Denmark (men and women), and 1986 data for Canada (men; women).

^dCategory III is 1987, except in the following cases, where we recorded 1988 data for Canada (men) and Sweden (men; women).

^eCategory IV is 1990, except in the following cases, where we recorded 1988 data for Germany (men), 1989 data for Austria (men; women), and 1991 data for Sweden (men; women) and Norway (men and women).

^fFrench data for 1990 are provisional updates from the OECD.

^gThis change is the sum of Germany I from the period 1979–83 and Germany II from the period 1984–88.

tieth percentile American male worker. Japan accomplished widely shared, rapid real wage growth while maintaining relatively low unemployment throughout the 1980s—although this pattern has been somewhat disturbed by the deep Japanese recession of the early 1990s.

We conclude that less educated and lower-paid American workers suffered the largest real wage decline among advanced OECD countries. The erosion in their economic well-being, in turn, produced the highest level of inequality of earnings among advanced countries and the seemingly anomalous situation in which low-paid Americans made less in purchasing power parity units than low-paid workers in other major countries, despite the United States having higher living standards on average (Freeman 1994).

What about workers at the top of the earnings distribution? Chief executive officers (CEOs) in America are paid more than CEOs in other countries, even after adjusting for differences in modes of pay, such as the use of various fringe benefits, according to Abowd and Bognanno (chap. 2). The advantage of CEOs over manufacturing operatives rose in the 1980s. But the American pay advantage appears limited to CEOs. Differences in pay between high-level managers and operatives do not differ noticeably between the United States and other major OECD countries.

Did the relative earnings of women improve in other countries as they did in the United States? Figure 2 shows that the gap between men's earnings and women's earnings declined in most countries in the period under investigation. Given the widening of the overall earnings distribution and the historical concentration of women in the bottom part of the distribution, the reduction in the male-female wage gap in the United States in particular was a significant achievement.

Why the United States and Other Countries Did Differently

Can international differences in changes in relative wages in the 1980s be explained by differences in supply, demand, and institutions? Why did inequal-

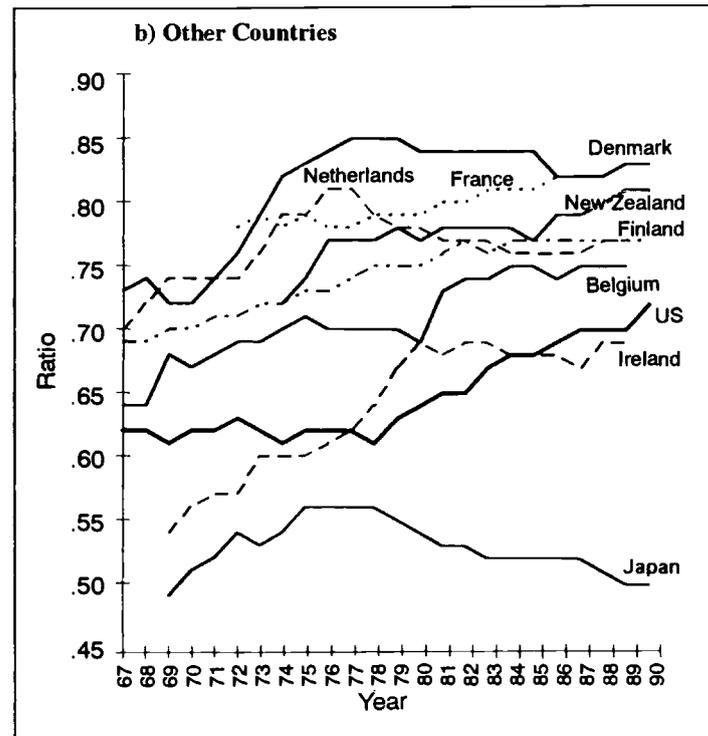
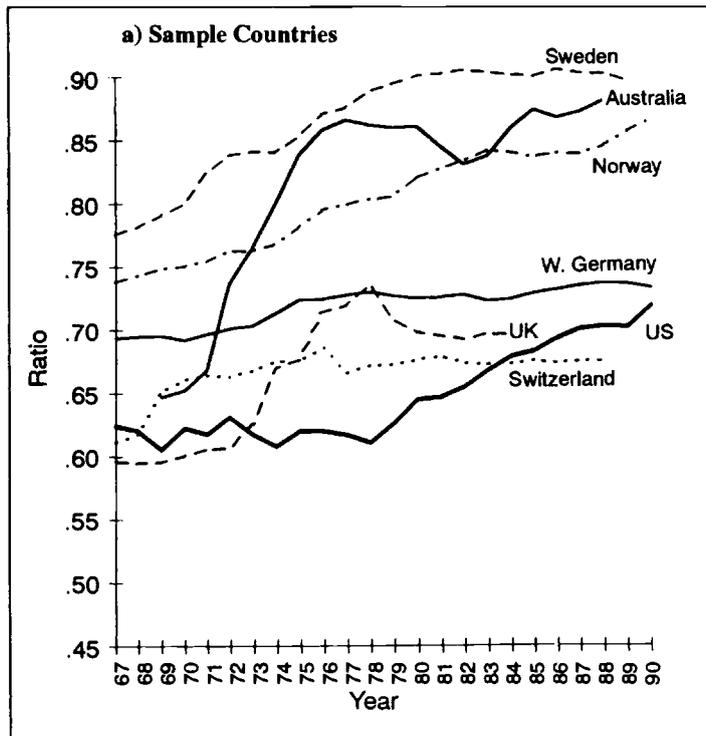


Fig. 2 Female-to-male hourly earnings ratios

Source: Blau and Kahn (chap. 3 in this volume).

ity increase more in the United States (and the United Kingdom) than in most other advanced countries?

Labor demand factors do not explain much of the differential growth of wage inequality or educational earnings differentials among countries in the 1980s. All advanced countries experienced large, steady shifts in the industrial and occupational structure of employment toward sectors and job categories that use a greater proportion of more educated workers (Katz 1994; OECD 1994b). The share of employment in manufacturing declined everywhere except Japan. In the United States, the manufacturing share of employment dropped by 4.2 percentage points from 1979 to 1989; in OECD-Europe, it fell by 4.1 percentage points. Only Japan's massive export success enabled it to maintain a near constant manufacturing share of employment. Still, even in Japan, changes in technology and the internationalization of economic competition shifted labor demand in favor of more educated workers and against non-college-educated workers.

Differential growth in the supply of workers by level of education, by contrast, contributed to the greater rise in educational wage differentials in the United States than in other countries in the 1980s. In the 1970s, despite shifts in labor demand favoring more educated workers, educational differentials narrowed in all advanced countries at least partially because expansion of higher education systems and high returns to education produced large increases in the supply of highly educated workers. In the 1980s, by contrast, while the educational qualifications of workers trended upward in all countries, the growth of the college-educated workforce decelerated in the United States. Among young American men, the college graduate share of the workforce actually fell over several years.

For differences in the growth of the relative supply of the educated to affect earnings differentials in this manner, it is necessary that changes in their relative supply affect relative wages within countries. The limited time-series evidence available for the United States (Katz and Murphy 1992; Blackburn, Bloom, and Freeman 1990), Canada (Freeman and Needels 1993), Sweden (Edin and Holmlund, chap. 9 in this volume), the Netherlands (Teulings 1992), Britain (Schmitt, chap. 5 in this volume), and South Korea (Kim and Topel, chap. 7 in this volume) shows such a relation. In fact, holding fixed proxies for the growth of demand, the estimates show that a 10 percent increase in the relative supply of educated workers lowers relative pay by 3–7 percent in various countries—as similar a magnitude as one might expect from studies that use various types of data, covering different time periods, and from countries with different wage-setting institutions.

The cross-country pattern of changes in educational wage differentials appears fairly consistent with this interpretation. Countries with at least modest increases in skill differentials by the end of the decade—the United States, the United Kingdom, Sweden, Australia, and Japan—experienced some decline in the rate of growth of the supply of college graduates. Countries whose edu-

cational differentials did not expand in the 1980s—France, Germany, and the Netherlands—essentially maintained their 1970s rate of growth of supply of more educated workers into the 1980s (Katz, Loveman, and Blanchflower, chap. 1 in this volume; Abraham and Houseman, chap. 11 in this volume; Teulings 1992; Hartog, Oosterbeek, and Teulings 1992; OECD 1993). Additionally, the continued rapid expansion in Canada helps explain the much more modest increase in educational differentials there than in the United States (Freeman and Needels 1993).

Finally, South Korea provides a striking example of the effect of relative supply changes in determining educational differentials (Kim and Topel, chap. 7). In the 1980s, South Korea saw a huge drop in the advantage of college graduates over less educated workers. Why? A major reason was that South Korea experienced an exceptionally fast growth in the college share of the workforce. Unlike any other developing country or most developed countries, South Korea has moved rapidly toward levels of college education among its young people approaching those found in the United States and Japan.

In sum, the supply-and-demand forces affected educational earnings differentials within countries. Given comparable changes in demand across countries, differences in the growth of relative supply help account for country differences in the growth of skill differentials. Still, they cannot explain the bulk of country differences in levels or changes in inequality. Differences in labor market institutions among countries and changes in those institutions in the 1980s also influenced the pattern of wage inequality.

Wage-Setting Institutions and Changes in Institutions

There are many ways to categorize wage-setting institutions. Most analysts concentrate on the degree of centralization of wage setting, differentiating between countries like the United States, with its highly decentralized labor market, where hundreds of thousands of firms bargain with employees or unions over pay and working conditions with little government intervention, and the more centralized wage-setting systems of Western Europe. But European wage-setting systems differ greatly among themselves. Until recently, for instance, peak-level union confederations and employer federations in Austria and Sweden have historically bargained over national wage settlements that cover much of the workforce but that allow local parties to increase wages above national settlements through “wage drift” (Freeman and Gibbons, chap. 10). In Germany, industry or regional collective bargaining determines basic wages for an area, and the Ministry of Labor often extends those settlements to all workers and firms, including those who did not participate in the bargaining. In France, the minimum wage is important in determining the overall level of wages, and the French Ministry of Labor also extends contracts. In Italy, the *scala mobile*, a form of negotiated wage increase that is designed to compensate for inflation and that is applied effectively to all Italians, increased

the pay of low-paid workers faster than that of high-paid workers throughout much of the 1980s (Erickson and Ichino, chap. 8).

Ranking these institutions in terms of the degree to which they centralize wage setting is difficult. Some experts place Germany high on a centralization scale (Bruno and Sachs 1985), others lower (Calmfors and Driffil 1988). Although few view Italy as having highly centralized wage-setting institutions, Italy's *scala mobile* resembles Sweden's peak-level bargaining system. Countries that change wage-setting practices—as Australia did in 1983, when its unions agreed to an accord with the government to limit wage increases so that employment would grow, and as Sweden did when it stepped back from national bargaining in the 1980s—create further classification problems. However, these problems notwithstanding, one thing is clear about international differences in labor institutions: the position of the United States.

No matter which factors one stresses in categorizing countries, the United States ranks low in the role played by institutions in wage setting and high in the role played by market forces. In contrast to European countries or even Canada, whose unions remain strong, the United States has few institutions to augment or alter market wage setting. Unionization is low. Employer federations are weak. The government rarely intervenes to set wages. Since institutional forces tend to dampen inequality, wage inequality ought to be higher in the United States than in most other countries, as it is. By allowing the full brunt of shifts in supply and demand to fall on wages in the 1980s, when those shifts operated against the low skilled and lower paid, the United States could be expected to have especially large drops in the relative earnings of less educated workers, as it did. In Western European countries, by contrast, explicit government and union policies dampened pressures for increased wage differentials in the 1980s.

Finally, there were important changes in wage-setting institutions in OECD countries in the 1980s that affected wage differentials. After growing in the 1970s in many countries (but not in the United States), unionization fell in many countries in the 1980s (OECD 1991). The union share of the workforce dropped precipitously in the United Kingdom, the United States, the Netherlands, and France but held steady in Canada and Germany. Because union membership does not have the same meaning in different labor relations settings, however, even similar declines in density have different effects on the labor market. In the United States and the United Kingdom, reduced union density meant a decreased role for collective bargaining and institutional forces in wage setting. But, in France, falling unionization did not diminish the importance of the national minimum wage in wage setting, and it was accompanied by an increasing number of plant-level collective contracts. Sweden and Austria make another striking contrast. In Sweden, union density has been exceptionally high, whereas density has fallen sharply in Austria. Yet Swedish employers withdrew from peak-level bargaining in 1983, moving to end Sweden's centralized bargaining system, whereas Austria has maintained central-

ized wage setting throughout the decade. Estimates by the OECD show that the percentage of the workforce covered by collective bargaining contracts, which is presumably the route by which unions affect wages, changed differently than the percentage unionized in many European countries (OECD 1994a).

Weakened unionism and reduced centralization of wage setting contributed to the cross-country pattern of change in wage inequality in the 1980s. In the United Kingdom, the fall in union density accounts for about one-quarter of the growth of wage inequality among males (Schmitt, chap. 5 in this volume)—comparable to the estimated effect of declining density in the United States (Card 1992; Freeman 1993). At the other end of the spectrum, the continued strength of unions in Canada partly explains the smaller increase in inequality in Canada than in the United States. Approximately 40 percent of the difference in wage inequality between the United States and Canada appears to be due to differences in union density (Lemieux 1993). The decentralization of collective bargaining in Sweden helps explain the rise in inequality in that country in the 1980s, although levels of inequality are quite modest indeed by U.S. standards. The unification of East and West Germany moved the East German wage structure toward that of the West (Krueger and Pischke, chap. 12).

This discussion has treated institutional changes as exogenous to the labor market. But institutions are not immune to market forces. Economic forces that raise relative wages are likely to lead to less centralized collective bargaining or a reduction in union influence on wage setting (Freeman and Gibbons, chap. 10). Institutions that go strongly against market forces face a difficult task. That Italy dropped its *scala mobile*, Sweden abandoned peak-level bargaining, and other countries moved toward more plant- or firm-level arrangements in an era when the market moved toward greater differentials is presumably no accident. There is space for institutions to affect outcomes, but that space is limited. The European countries that had small rises in inequality in the 1980s may see greater rises as their institutions either adapt to market forces or are altered by those forces. Still, we expect few if any of these countries, save the United Kingdom, to approach U.S. levels of inequality, as long as they continue to give greater sway to institutional forces in wage setting than does the United States.

Conclusion: Leaning against the Wind

Market incentives for increased investments in education appear to be playing some role in helping ameliorate the huge rise in inequality in the United States. The sharp expansion of the college wage premium in the 1980s has been associated with a large increase in college enrollment rates from 49 percent of new high school graduates in 1980 to over 60 percent in the early 1990s, despite rapidly rising tuition costs (U.S. Department of Education

1994). This change promises accelerated growth of the relative supply of college graduates in the future, which will, in turn, act to offset somewhat continued demand increases favoring the more educated.⁶

Will an increase in the rate of growth of the relative supply of more educated workers be enough to prevent further increases in educational wage differentials and help restore an economic future to less educated American workers? Given continued technological and trade changes favoring the more educated, we doubt that increasing the supply of college graduates and reducing that of less educated workers will by itself undo the rise in inequality of the 1980s. But the experiences of other advanced nations suggest additional ways to lean against the wind of increased inequality and improve the economic well-being of the lower paid.

Two broad strategies were associated with little increase in skill differentials and in overall wage inequality in the 1980s. The first was the European model of greater institutional influence in wage setting through increases in minimum wages and extensions of the terms of collective bargaining agreements to firms not directly involved in such agreements. Strategies of this type succeeded in preventing the wage structures from widening (at least through the mid-1980s) in Italy and France. But by themselves these policies do not deal directly with the changing demand for skills, and they can run into economic difficulties in the long run. Policies that limit market wage adjustments without addressing changed labor market conditions can prevent wage inequality, but they risk stagnant employment growth, persistent unemployment for young workers (as in France), and/or a shift of resources to an underground economy to avoid wage regulations (as in Italy).

The second type of national strategy combines institutional wage setting with education and training systems that invest heavily in non-college-educated workers. Germany and Japan are typically viewed as the exemplar countries here. German and Japanese firms treat college- and non-college-educated workers as much closer substitutes in production than do U.S. or British firms. Technology and trade shocks do not generate as much pressure for wage structure changes in these countries since workers are not sharply differentiated by skill. Germany and Japan appeared fairly successful through much of the 1980s in maintaining the earnings and employment of non-college-educated workers. German institutions constrain wage setting, but they also offer apprenticeships and further training opportunities that try to make supply consistent with wage policies. The Japanese have succeeded with solid

6. The small size of cohorts entering the U.S. labor market in recent years has meant that large increases in college enrollment rates have not been associated with a very large acceleration in the rate of growth of the relative supply of more skilled workers. Bound and Johnson (1994) estimate that the relative supply of college-equivalent workers increased only from a 2.9 percent annual growth rate over the period 1979–88 to a 3.2 percent rate over the period 1988–92. In contrast, the annual growth rate was 4.2 percent during the period 1973–79, one of a declining college wage premium.

basic education and much informal firm-based training. Nevertheless, both these economies have run into some (at least transitory) problems during the early 1990s as personified by sluggish employment growth and rising unemployment.

Thus, no nation appears to have found an approach that allows it fully to escape increased labor market difficulties for less skilled workers. But international differences in recent labor market experiences strongly suggest that policies to buffer the earnings of the less educated by institutional wage setting work best when accompanied by institutions that augment those workers' skills as well.

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