

# The Distribution of Income in Industrialized Countries

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*A.B. Atkinson*

## **Introduction and summary**

This paper is about recent developments in the distribution of income in industrialized, and particularly, the G-7 countries. Limiting the geographical focus in this way ignores the important changes taking place in transition economies and in the developing world, but I have chosen to focus on the countries I know best, which is why a small, offshore European island receives disproportionate attention.

*The paper makes four main points.*

- (1) There is considerable diversity of national experience with regard to the distributions of income and earnings; it is misleading to talk of a general “trend” toward increased dispersion.
- (2) Differences in income distribution can have a sizable impact on the assessment of living standards across countries, and on the measured rate of growth of living standards.
- (3) The evolution of income distribution cannot be explained solely in terms of earnings; there has been a significant turnaround in capital incomes; there have been changes in the extent of fiscal redistribution.

- (4) The links between macroeconomic variables and the distribution of personal income are complex; this is an important area for further study.

### *Qualifications*

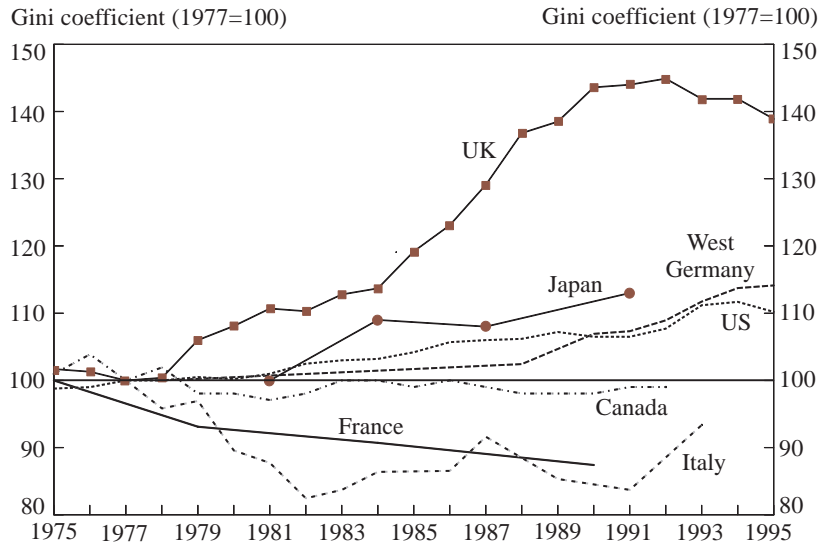
Any account of the empirical evidence must be prefaced with warnings about the shortcomings of the underlying data and about the many conceptual issues, which need to be addressed. These issues are discussed at length in a study for the Organization for Economic Cooperation and Development (OECD) by Atkinson, Rainwater, and Smeeding (1995). I should emphasize in particular that the evidence presented is a “snapshot” of the income distribution. Creating individual life histories at a national level is a challenging task on the research agenda, and I have seen no satisfactory cross-country studies.

### **Diversity of national experience**

The United States, the United Kingdom, and a number of other OECD countries, have experienced rising income dispersion since the 1970s. Chart 1, based on national studies of the distribution of equivalent disposable household income, shows that this has been especially marked in the United Kingdom, where the Gini coefficient (a summary measure of income differences) rose by nearly half—a very large increase by historical standards. The rise in the United Kingdom seems to have been particularly sharp in the second half of the 1980s, coming to an end after 1990, when the Gini coefficient appears to have levelled off or turned down.

In the United States, Japan, and West Germany, increases in dispersion are more modest. Between 1979 and the 1990s, the Gini coefficient in the United States rose from 40 percent to 44 percent (that is, from an index of 100 to 110). But an increase of one-tenth is still significant for a statistic of which Henry Aaron once remarked that “following these data was like watching the grass grow” (1978, p. 17). That may have been true in the 1970s (see Chart 1), but ceased to be true in the 1980s.

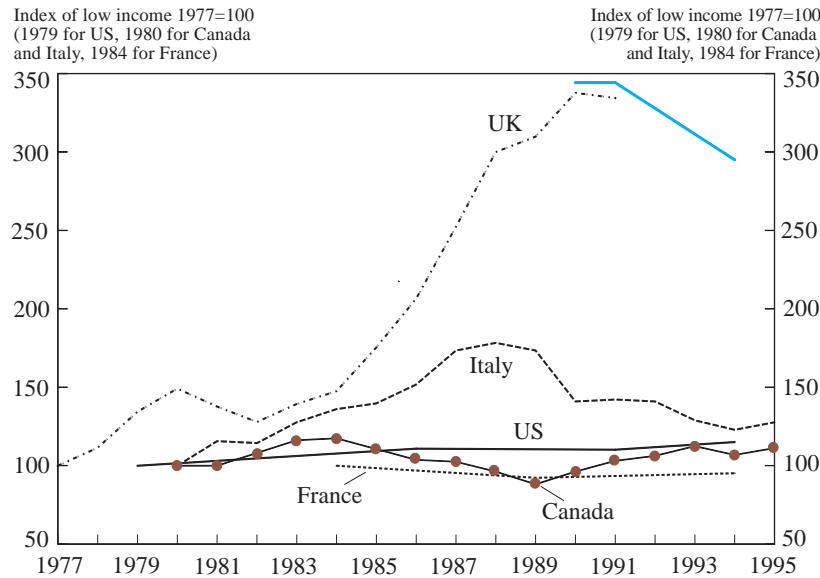
**Chart 1**  
**Changes in Income Dispersion**  
**Relative to 1977**



Sources: Canada, Gottschalk and Smeeding, 1997, Appendix Table B; France (1975 = 100), Atkinson, 1997, Table FR2, Synthèses series; (West) Germany (1978 = 100), Becker, 1996, Table 1, and Hauser, 1996, Table 1, linked at 1993 using Becker, 1998, Table 4; Italy, Atkinson, 1997, Table IT2, Bank of Italy series; Japan (1981 = 100), Gottschalk and Smeeding, 1997, Appendix Table B; United Kingdom, Atkinson, 1997, Table UK3, series constructed by Goodman and Webb; United States, U.S. Department of Commerce, 1993, Table B-3, p. B-6.

Yet dispersion increased neither at the same rate nor universally. Over the period shown, there was no increase in Canada, France, nor (over the period as a whole) in Italy. There are contrasting national experiences, even within the G-7. The same applies if attention is focused on the bottom of the distribution. Taking the European Commission definition of financial poverty as living below half the national average, we find that the United Kingdom stands out for its sharp rise in poverty over the 1980s, whereas other countries have seen either a more modest increase or no overall trend. See Chart 2. The rate for the United States (which is not the official poverty rate,

**Chart 2**  
**Changes in Low Income Since 1977**

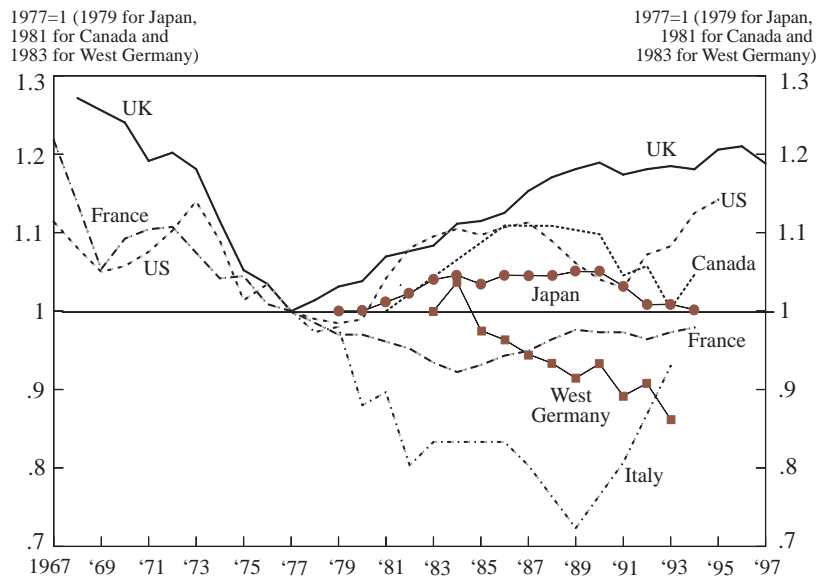


Sources: Canada, Statistics Canada, 1996, pp. 25-6; France (1975 = 100), Atkinson, 1997, Table FR3, Synthèses series; Italy, Atkinson, 1997, Table IT4, Commissione series; United Kingdom, Atkinson, 1997, Table UK4, series constructed by Goodman and Webb, and Households Below Average Income series; United States, Smeeding, 1997, Table A-4, percentage below 50 percent of median.

but the percentage below half the median) went up by a few percentage points between the mid-1970s and the mid-1990s.

The picture of diversity applies when we look at the distribution of individual earnings in Chart 3, which shows the changes since 1977 in the decile ratio. The decile ratio is the ratio of earnings at the top decile (the person 10 percent from the top) to those at the bottom decile (the person 10 percent from the bottom). The United Kingdom again shows the largest change: a rise of one-fifth in the decile ratio. But it stands out less sharply. As is well known, the ratio increased in the United States. For the other countries, the pattern is more mixed, with a rise and then a fall in Canada, and a fall and then a rise in Italy.

**Chart 3**  
**Changes in Earnings Dispersion Relative to 1977**



Sources: France, Bayet and Julhès, 1996, p. 48; Canada (1981 = 100), OECD, 1996, Table 3.1; (West) Germany (1983 = 100), OECD, 1996, Table 3.1; Italy, Brandolini and Sestito, 1996, Table 8; Japan (1981 = 100), OECD, 1996, Table 3.1; United Kingdom, Atkinson and Micklewright, 1992, Table BE1, linked at 1990 to Department of Employment, 1997, Table A30.2; United States, Karoly, 1994, Table 2B.2, weekly (consistent) wage and salary income, linked at 1979 and 1987, linked in 1989 to OECD, 1996, Table 3.1, which refers to male earnings.

Nor are there signs that the United States and the United Kingdom were leading indicators, with Europe catching up behind. As the OECD has observed,

“No clear tendency emerges of a generalized increase in earnings inequality over the first half of the 1990s. Of the 16 countries ... dispersion increased in half of them, and was either broadly unchanged or declined somewhat in the rest” (1996, p. 63).

It is misleading, therefore, to talk of a general “trend” toward

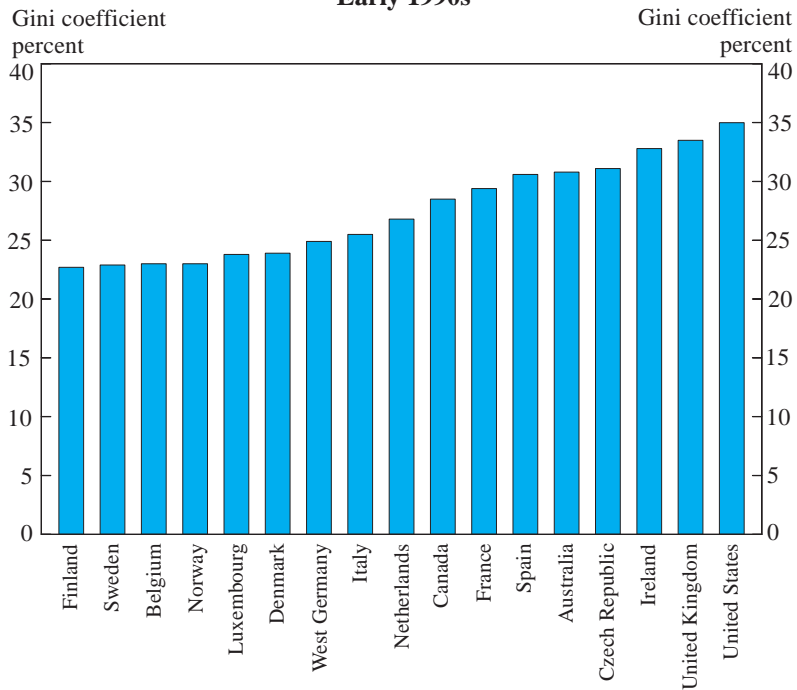
increased dispersion, and even in countries where dispersion has increased, the historical record is better described as consisting of “episodes” of widening income differences rather than as following an inexorable trend.

### **Distributional differences matter**

A recent study by three World Bank economists concluded that income dispersion varies significantly across countries, but that within most countries, there is little significant variation over time (Li, Squire, and Zou, 1998). I agree with the first conclusion but not with the second.

Chart 4 shows the Gini coefficients for disposable household incomes in different OECD countries relating mostly to the early 1990s (although 1984 for France and West Germany). There is a clear geographic pattern, with Scandinavia and Benelux having the lowest coefficients, followed by the large mainland European countries, southern Europe, and then the Anglo-Saxon countries. The range is from 23 percent in Finland to 35 percent in the United States. As has been pointed out by Richard Freeman, the differences between the United States and Europe in the distribution of *earnings* mean that the low paid in the United States fall far behind many of their European counterparts. According to his estimates, the hourly compensation in purchasing power of the American man at the bottom decile is half that of the comparable Italian (1994, p. 13). How far is the same true of household disposable incomes? National Disposable Income per head adjusted using purchasing power parities was 39 percent higher in the United States in 1990 than in the European Community (the then 12 members). The share of the bottom fifth in the United States was 5.7 percent. This means that, even allowing for a difference in real mean income of 39 percent, the bottom fifth in the United States would be worse off than an “average European” living in a country where the share of the bottom fifth was greater than 8 percent. If we take the concrete case of Germany, where the share of the bottom fifth was 9.8 percent, and real income only 18 percent lower than in the United States, then this group as a whole is 40 percent better off than their counterparts in the United

**Chart 4**  
**Gini Coefficients in OECD Countries**  
**Early 1990s**



Sources: Gottschalk and Smeeding, forthcoming, Chart 2. Figures relate to 1987 (Ireland), 1989 (France), 1990 (Spain), 1991 (Finland, Netherlands, Italy), 1992 (Belgium, Denmark, Sweden), 1994 (Germany, Luxembourg, United States), 1995 (Norway, United Kingdom). The estimates relate to household disposable income per equivalent adult using an equivalence scale of the square root of household size and using individual weights.

States. Such a calculation is, of course, open to objections. There are differences across countries between National Disposable Income per head and mean household equivalent income. The purchasing power adjustment can be debated. But the difference is so large that it is unlikely to be affected by the choice of a different basis for conversion. The differences in income distribution have a sizable impact on the assessment of living standards across countries.

As we have seen in Chart 1, some G-7 countries have seen a substantial rise in income dispersion over the 1980s. This can make a significant difference to the measured growth performance. Suppose that national income were to be distributionally adjusted by multiplying by  $(1 - \text{Gini coefficient})$ , as proposed by Sen (1976), then we would get a different perspective of growth rates. For example, taking the periods 1973-1979 and 1979-1989 (as used by the OECD in its *Historical Statistics*), the United Kingdom performance was considerably better in the 1980s than the 1970s on an unadjusted basis, but this improvement disappears when the distributional adjustment is made. The measured growth rate is effectively halved. Put differently, those at the bottom did not share in rising prosperity.

This evidence suggests that the distribution of income can change within countries in a way that is economically significant.

### **Behind the income dispersion**

So far I have simply looked at a single summary statistic of dispersion, whereas in order to understand the changes, we need to look at the distribution as a whole. Chart 5 shows the profile of earnings in four of the G-7 countries and how it has changed since the late 1970s. The charts are similar to the famous “parade” of incomes described by the Dutch economist, Jan Pen, in which he envisaged everyone marching past in an hour, with their height corresponding to their earnings. After six minutes, we come to the tenth percentile, the first point in Chart 5, where people are about three feet tall; in the 54th minute, we enter the top 10 percent, where people are only about 12 feet tall; but then heights shoot up, reaching 500 feet or more. (These are not shown.)

In a paper to this symposium four years ago, Paul Krugman (1994) drew a diagram in which the earnings profile rotated, arguing that this explains both the widening wage dispersion in the United States and the increased unemployment in Europe. The latter arose because the European welfare state, and minimum wage provisions, put a floor on wages. However, if rotation of the wage/skill nexus were the full explanation, then we would expect to find the rise at the top in



Europe, even if there were no change at the bottom. From Chart 5, it can be seen that there is little evidence of this happening. Even on this microscopic (logarithmic) scale, the United States and the United Kingdom stand out for the extent of the change at the top as well as at the bottom.

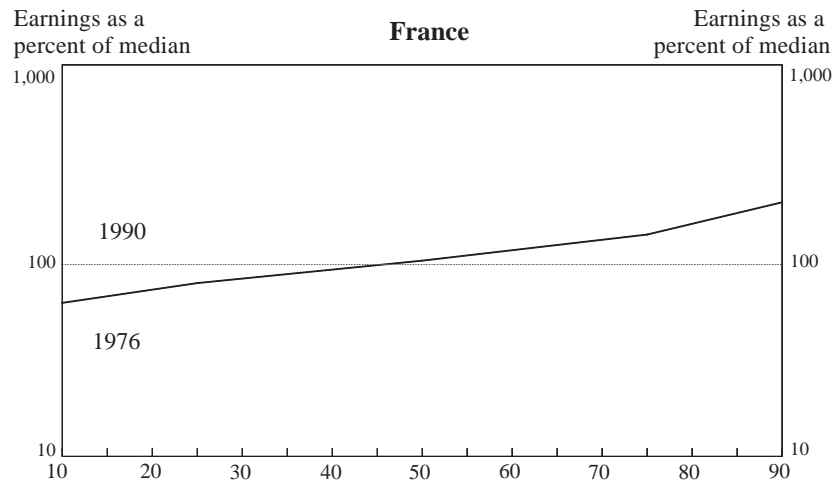
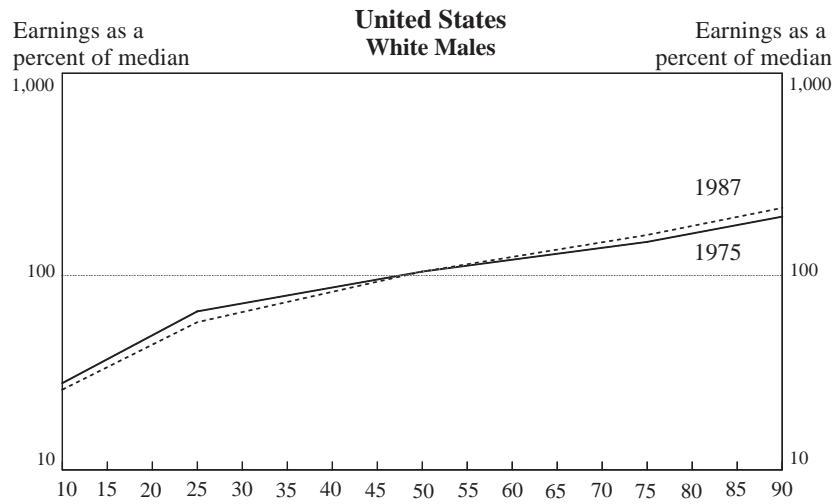
A further important feature of the changes in the earnings distribution is what Krugman has called its “fractal” quality: One continues to find an increase in dispersion even if one considers narrowly defined groups. Katz and Murphy have documented in the United States the “striking increase in wage inequality within groups” classified by sex, education, and work experience (1992). In the United Kingdom, there has been increased dispersion even within narrowly defined occupation groups (Atkinson, 1997a).

It is possible to attribute all of this to unobserved differences in skill, but other explanations seem worth exploring. There are reasons to suppose that there has been a shift from company pay policies to individual negotiation, and for conventional pay norms to break down. This process may acquire a dynamic of its own: As more people are remunerated outside the conventional norms, so adherence to these norms becomes weaker, and the socially acceptable range of remuneration widens.

Alan Blinder once said, “If you want to understand the rise in *income* inequality in the 1980s, the place to start is with the rise in *wage* inequality” (1993, p. 308).

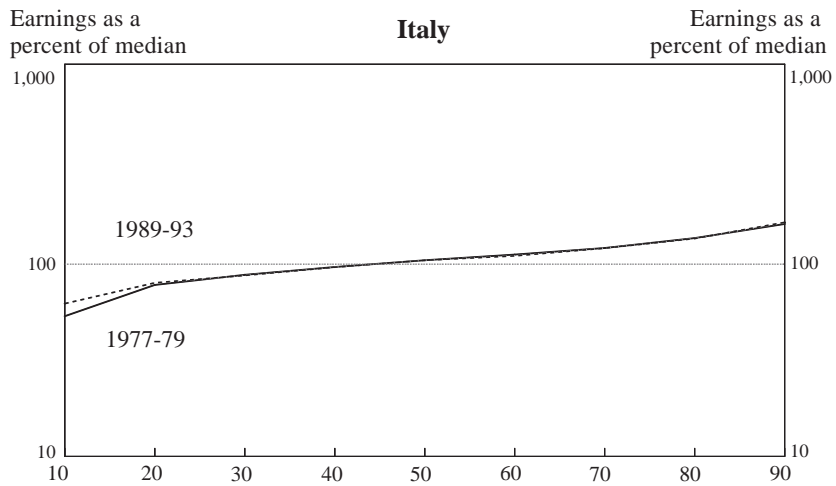
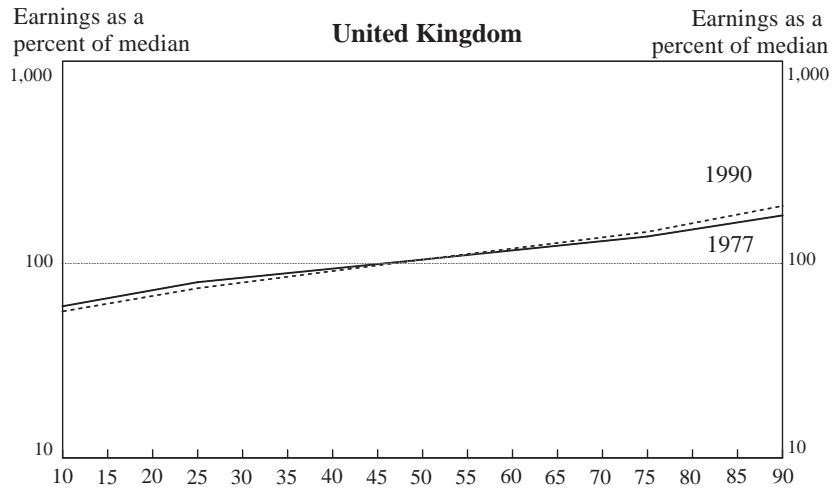
I agree, but one should not stop there. One has to remember that there are several steps in going from individual earnings to household incomes. (See the Box 1.) Where more than one person is employed, we have to add together their earnings. We have to consider wealth, which generates capital income in the form of rent, dividends, and interest, or indirectly in the form of pensions, payments from life assurance, and so forth. Real rates of interest have risen, and this is one potential cause of widening dispersion, which has tended to be overlooked. In a simple human capital model, higher costs of borrowing lead to wider compensating differentials.

**Chart 5**  
**Earnings Profile**  
**(Logarithmic scale)**



Sources: France, Bayet and Julhès, 1996, p. 48; Italy, Brandolini and Sestito, 1996, Table 11; United Kingdom, Atkinson and Micklewright, 1992, Table BE1; United States, Karoly, 1994, Table 2.6.

**Chart 5 - continued**  
**Earnings Profile**  
**(Logarithmic scale)**



Sources: France, Bayet and Julhès, 1996, p. 48; Italy, Brandolini and Sestito, 1996, Table 11; United Kingdom, Atkinson and Micklewright, 1992, Table BE1; United States, Karoly, 1994, Table 2.6.

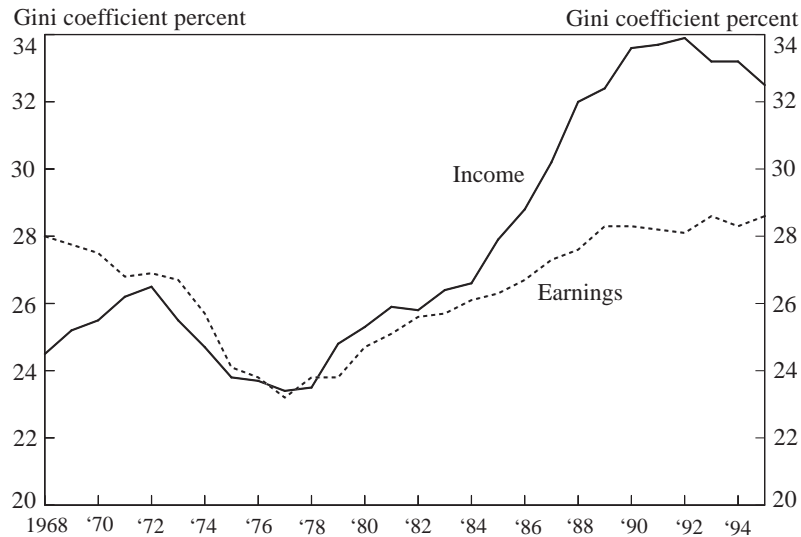
**Box 1**  
**From Individual**  
**Earnings to Household**  
**Disposable Income**

$$\begin{array}{r}
 \text{Earnings of Person 1} \\
 + \\
 \text{Earnings of Person 2} \\
 + \\
 \text{Income from capital} \\
 + \\
 \text{Private transfers} \\
 + \\
 \text{State transfers} \\
 - \\
 \text{Direct taxes} \\
 = \\
 \text{Disposable income} \\
 / \\
 \text{Number of equivalent adults} \\
 = \\
 \text{Equivalent Disposable Income}
 \end{array}$$

As well as capital income and private transfers, we have to add transfers paid by the state, and deduct the amounts paid in income tax and social insurance contributions, in order to arrive at *disposable income*. There is, therefore, no reason to expect dispersion of disposable household income to follow slavishly dispersion in individual pre-tax earnings. As Chart 6 shows for the United Kingdom, in that country the two series moved closely together from 1975 to 1984, but then income dispersion rose more rapidly.

One proximate reason for the divergence in the United Kingdom is the shift in redistributive fiscal policy after the mid-1980s. This is illustrated in Chart 7, which shows the dispersion of market income (“Pre”) and income after tax and benefits (“Post”). The Gini coefficient for market income has varied cyclically, but the predominant impression is of a long-run rise since the mid-1960s. In the 20 years from 1965 to 1984, the coefficient increased from 40 percent to 50 percent. What is even more striking is that the coefficient for post-government income showed scarcely any rise over this period. The redistributive impact of cash transfers and taxation increased by enough to offset the more unequal market incomes. After 1984, the story is quite different. The line for market income continued to rise, but between 1984 (marked by an arrow) and 1990, the Gini coefficient for post-government income increased much more sharply. Measured in terms of the difference between the two coefficients, the redistributive contribution of transfers and taxes fell from 19 percentage points (the difference between the two Gini coefficients in

**Chart 6**  
**Dispersion of Individual Earnings and Disposable Household Income in UK**



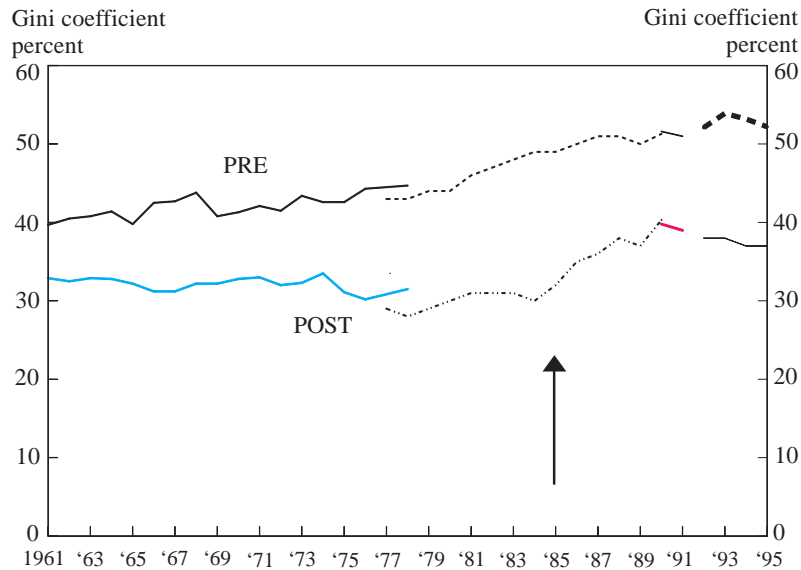
Sources: Income from Goodman and Webb, 1994, p. A2; earnings from Atkinson and Micklewright, 1992, Table BE1, extended using data from *New Earnings Survey* (for example, Department of Employment, 1997).

1984) to 11 percentage points. The interpretation of these calculations raises a number of major issues, such as the incidence of taxation, the separation of life cycle from other redistribution, and the valuation of public spending on goods and services. But, taken at face value, they suggest that the state budget has ceased to offset the rising dispersion of market incomes, and that the steeper rise in the Gini coefficient from 1984 to 1990 was associated with reduced redistributive ambitions of the government.

### **Links between macro variables and the personal distribution of income**

What is the relationship between the distributional evidence summarized above and the macroeconomy? On the one hand, there are

**Chart 7**  
**Income Before and After Government Budget in UK**



Sources: First series (from 1961) distribution (not equivalized) among households of original income and final income: 1961-1975, from Royal Commission on the Distribution of Income and Wealth, 1977, pp. 247 and 251; 1976, from Central Statistical Office, *Economic Trends*, January 1982, p. 105 (for 1976) and December 1982, p. 112 (for 1978).

Second series (from 1977) distribution among households of equivalized original income and post-tax income: *Economic Trends*, April 1998, p. 58 (for 1977, 1979, 1981, 1983, 1985, 1987, 1989, 1991, 1993-94 to 1996-97), December 1994, p. 65 (for 1978, 1980, 1982, 1984, 1986, 1988, 1992), and January 1993, p. 159 (for 1990).

expectations that an economic downturn slowed the growth of high incomes in the United States:

"The slowing growth of household income inequality was no doubt related to the winding down of the economic expansion of the 1980s and the ensuing recession in the early 1990s" (Ryscavage, 1995, p. 54).

On the other hand, at least up to the 1980s, a 1 percent rise in the U.S. unemployment rate was associated with a 1 percent increase in the official poverty rate (Blinder and Blank, 1986).

The relationship is, however, a complex one. If we follow through the steps in Box 1, then even if unemployment leads to complete loss of a person's wage income, the impact on the income distribution depends on whether there are other earners in the household. The implications of a change in the individual unemployment rate depend on the distribution of that unemployment among households. Moreover, the effect is moderated by the existence of unemployment insurance, or income-related benefits, and by reduced tax payments. It is not, therefore, surprising if the link between unemployment and poverty—illustrated in Chart 8 for four G-7 countries—is not always 1 to 1. In the United States, the relationship appears to have weakened in the 1980s (Blank, 1993). In 1989, poverty (now measured according to the official criterion) was, after seven years of expansion, at a higher level than the peak in 1975. In the United Kingdom, poverty rose as unemployment fell in the second half of the 1980s. In Italy, poverty in 1995 was little higher than in 1980, despite unemployment's being half again higher.

In the macroeconomic literature, "income distribution" is often equated with the shares in national income of labor and nonlabor incomes, or "factor shares." The main information that students appear to be given on factor shares is that they are constant over time. According to Mankiw, "Labor income has remained about 0.7 of total income over a long period of time" (1994, p. 75). In their European textbook, Burda and Wyplosz cite Kaldor's stylized facts about the growth of advanced economies and say that, "Remarkably, despite the secular growth of wages and the constancy of the real rate of interest, the distribution of income between capital and labor has been relatively stable. The shares of capital and labor incomes in national product ... fluctuate about a horizontal trend" (1997, p. 117).

Chart 9 shows the evolution over time of the share of nonlabor income in the G-7 countries. In the United States and the United Kingdom, there does appear to be broad constancy, although even the five-year average figures show some fluctuations. Poterba (1997) concludes that there has been a small increase in the United States: The share is 2 percentage points higher in the 1990s than in the 1980s. In Japan, the share falls and then rises; in Canada, the

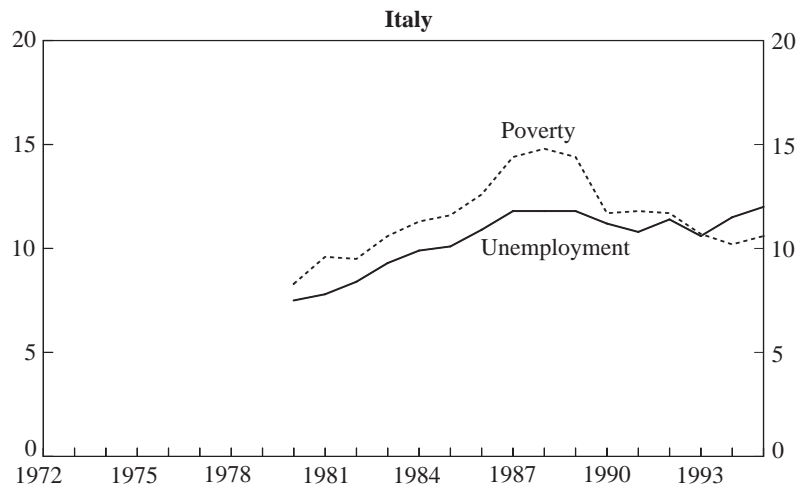
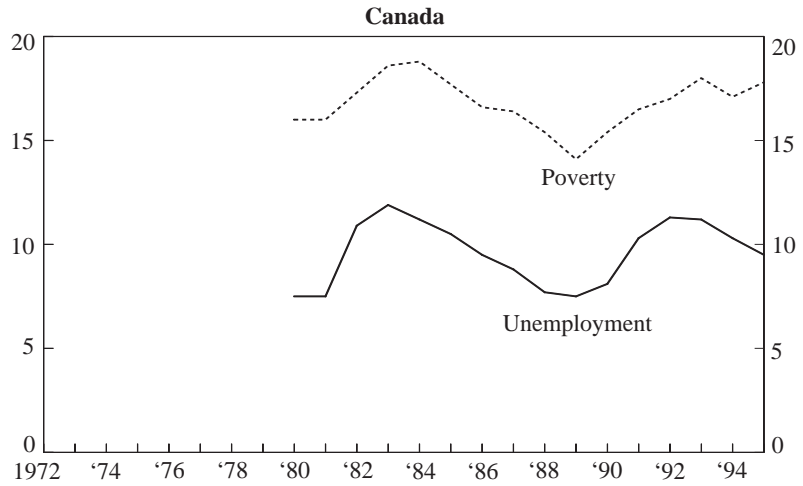
**Chart 8**  
**Percent in Poverty and Unemployment**



Sources: See Chart 2 for poverty figures; unemployment figures from OECD, 1997 (diskette version), Table 2.15.



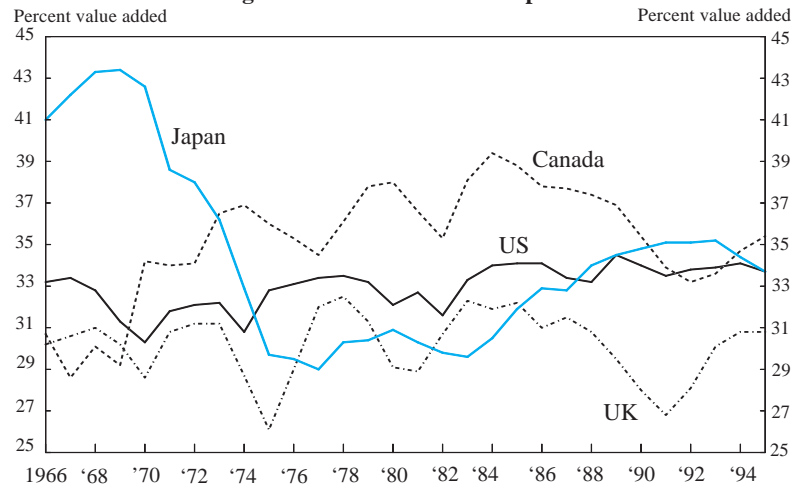
**Chart 8 - continued**  
**Percent in Poverty and Unemployment**



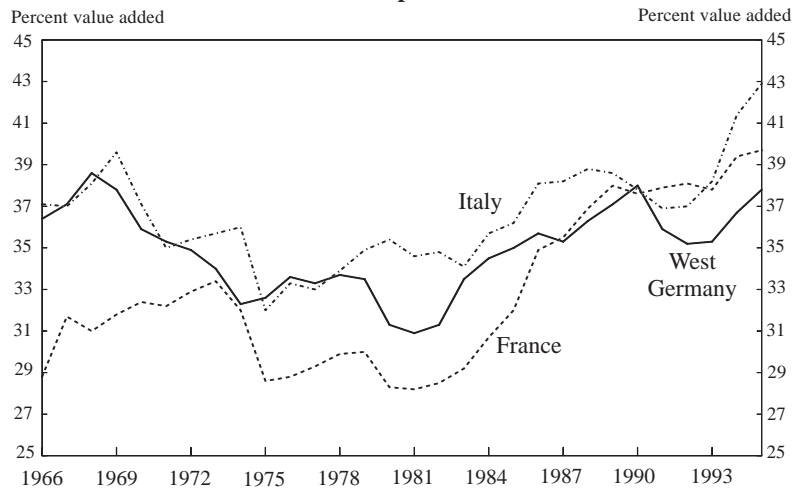
Sources: See Chart 2 for poverty figures; unemployment figures from OECD, 1997 (diskette version), Table 2.15.

### Chart 9 Non-Labor Share

#### Anglo-Saxon Countries and Japan



#### Europe



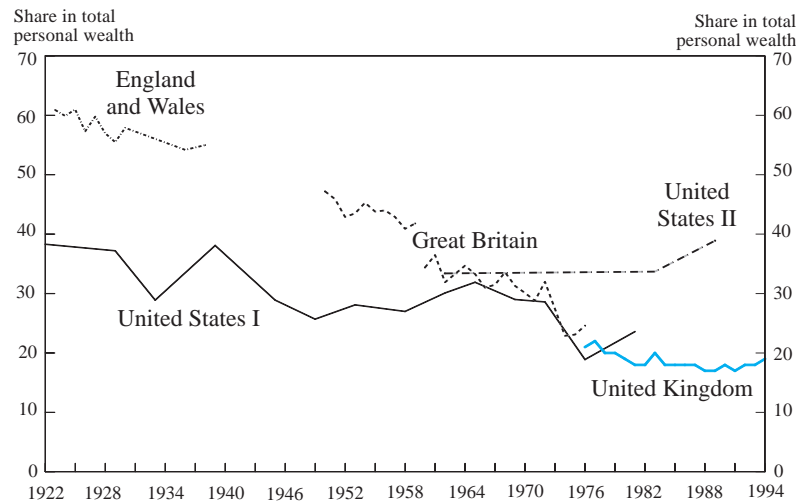
Source: Poterba, 1997, Table 8 (five-year moving averages of shares).

reverse is true. The behavior of factor shares in continental Europe is rather different. In Italy and West Germany, the share fell then rose, so that it is now back to its level in the 1960s. In France, the rise since 1980 is much more marked. There is a variety of experience, but in the majority of the G-7 countries (five of seven), the evidence suggests that there has been a shift toward nonlabor income since 1980. This shift has been 5 percentage points or more in Italy, Japan, and West Germany, and 10 percentage points in France. The macroeconomic distribution of income is not an unchanging constant.

What is the relation with the distribution among households? One link is through asset prices. If, as suggested by Burda and Wyplosz (1997), there is a positive relationship between the nonlabor share and stock market valuations, then this may feed directly into the distribution of wealth. Over time, there has been a long-run downward trend in wealth concentration in the United States and the United Kingdom, as shown in Chart 10, with the spread of popular wealth. Part of the gain from an increased nonlabor share accrues to pension funds and other institutions, which tends to raise the wealth of the majority of the population. But Atkinson and Harrison (1978) also found a strong positive association between the level of share prices and the share of top wealth groups. It is, in part, for this reason that the share of the top 1 percent in the United Kingdom has ceased to decline over the 1980s, despite Conservative measures such as privatization and the sales of local government-owned housing.

The building of bridges between macroeconomic variables and distributional outcomes is an urgent research task.

**Chart 10**  
**Share of Top 1 Percent in Total Personal Wealth**  
**in United States and United Kingdom**



Sources: UK: 1923-1972 from Atkinson and Harrison, 1978, Table 6.5. (Note that there are breaks in the series between 1938 and 1950 and 1959 and 1960, and that the estimates before 1950 relate to England and Wales; those after relate to Great Britain. These estimates are continued to 1982 from Atkinson, Gordon, and Harrison, 1989, Table 1. The estimates from 1976 are produced on a different basis by the Inland Revenue, and relate to the United Kingdom. Sources: *Inland Revenue Statistics*, 1972, Table 11.5 and 1997, Table 13.5. US: 1922-1981 from Wolff, 1992, Table 1; 1962-1989 from Wolff, 1994, Table 4.

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