

Distribution and growth in Europe – the empirical picture: a long-run view of the distribution of income

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1. Methodological introduction

The literature on income distribution over the past half century has been dominated by the Presidential Address given in 1955 to the American Economic Association by Simon Kuznets. This dominance is both surprising and unsurprising. It is *surprising* since the element for which the Address is best known – the “Kuznets curve” – has proved to have limited empirical relevance. According to the Kuznets curve, as an economy goes through a structural transformation, income inequality follows an inverse U-shape, inequality first rising and then falling as labour is transferred from low-productivity agriculture into high-productivity industry. In fact, as is well known, a period of falling income inequality has been succeeded in recent decades in most industrialised countries by rising income inequality. If there was an inverse U, the pattern has now become a U.

The influence of Kuznets (1955) is *unsurprising* because he seized on a central question concerning the development of the modern capitalist economy – does it lead to rising inequality? The long-run evolution of the distribution of income is a highly salient indicator, and one with which individual citizens and political leaders are much concerned. It is important to understand the past history in order to form a view about where we are headed and about the implications for policy. Is there – in the advanced economies of the twenty-first century - a natural tendency for income differences to increase? `Are the rich securing a disproportionate share of the fruits of growth? Were previous periods of equalisation achieved only by government intervention?

In 1955, the distributional data available to Kuznets were very limited. His inverse-U was based on observations for just three countries (United States, United Kingdom, and Germany); for the United States he only compares 1929 and the “years after World War II (average for 1944, 1946, 1947 and 1950). The longest series is that for the United Kingdom, where he refers to evidence for 1880, 1910, 1913, 1929, 1938 and 1947. The *first aim* of this paper is to describe the long-run evolution of the income distribution using the much richer data now available. The data are richer because we can draw on fifty more years, with differing macro-economic experience.

How for instance did inequality evolve during the “Golden Age” of the 1950s and early 1960s? The data are also richer because recent research has provided new evidence concerning the period about which Kuznets was writing. The paper summarises what we know about income inequality over the twentieth century, covering a selection of OECD and EU countries.

The *second aim* of the paper is to bring together different elements in the explanation of income inequality. Much of the recent literature has concentrated on individual earnings, and the rise in wage dispersion, but this is only one ingredient. The account given by Kuznets went much wider than employment in different sectors. He described a variety of mechanisms affecting the distribution of income, including the concentration of capital incomes and the impact of the political and social system. In what follows, I seek to link the explanation of the distribution of income to the mainstream of economics. If the Kuznets curve was an application of a dual economy model of development, then we need to make similar links to growth theory, macro-economics, modern labour economics, and political economy.

Review of empirical evidence

There are three distinctive features of this review of the evidence in sections 2 and 3: emphasis on high-frequency (annual) data, explicit recognition that data quality varies, and use of different sources. Examination of a full run of years is important in understanding the *kind* of explanation that we should be seeking. Not only has the Kuznets curve been confounded by more recent events, but it has become clear that it is misleading to talk of “trends” when describing the evolution of income inequality. As argued in Atkinson (1997), it is better to think in terms of “episodes” when inequality rose or fell. To distinguish such episodes, we need data covering more than a few years. Indeed, there are considerable dangers in relying on a small number of isolated observations. For example, stability has been regarded as a long-standing feature of the British earnings distribution: “thus in a period [1886 to 1966] when the level of earnings of adult male manual workers increased by a factor of nearly 16, it appears that their dispersion (measured in percentage terms) changed very little” (Thatcher, 1968, page 163). But this was based on simply five observations, separated in all cases except the last by more than 20 years. Here, I attach a high priority to covering as many years as possible and to extending the coverage back in time.

In seeking to extend the data coverage, the second consideration becomes important: adopting a graded approach to data quality. Economists tend to swing between two extreme positions with regard to data quality. They either use any data that can be downloaded, without any consideration of their quality, or they reject any data that depart in any respect from their ideal. In my view, we need to adopt an intermediate position, classifying data according to their suitability for the purpose in hand, in the present case the measurement of changes over time in the distribution of income. As a first step in this direction, I have applied a three-fold classification, parallel to that used in some areas of the national accounts: A denotes data that are most appropriate, B denotes acceptable, if not ideal, data that may be applied *faute de mieux*, and C denotes data that should not be used. In effect, this divides the useable

data into two classes, not perhaps a radical step, but one that serves to extend the period covered, while not losing sight of the data quality issue.

The adoption of this grading reflects the third distinctive feature of the approach followed here: the use of a variety of sources. Over the past 30 years, there has been an explosion of research in economics based on household surveys. The exploitation of household micro-data has been very fruitful, but we should not lose sight of other data sources. In what follows, I make particular use of data from income tax records in section 3 on top incomes, of data from employer surveys in section 4, and wealth and estate tax data in section 5.

Theoretical framework

My central concern is with the distribution of family or household income, after transfers and direct taxes (i.e. disposable income), taking account of differences in family or household size and structure (i.e. adjusted by an equivalence scale). In seeking to explain this distribution, we have to consider several ingredients. Total household income depends on the earnings of individual members, which are the subject of section 4; indeed these are the single most important element for most households. But the distributional consequences of earnings depend on household composition: the number of earners in the household, and the correlation of their earnings. Household incomes have been affected by the increased labour force participation of married women, and by the reduced participation of younger workers, quite independently of any changes on the dispersion of individual earnings. Conversely, an increase in the skilled earnings differential may lead to greater household income inequality, but it may be moderated where skilled workers are married to unskilled. Educated workers may have seen an increased premium, but their children may be those who are remaining longer in education rather than entering the labour force. We cannot therefore read directly from the distribution of individual earnings to the distribution of household incomes.

To earned incomes are added incomes from capital, examined in section 5. In classical analyses of distribution, the factor incomes were also functional incomes, with workers receiving wages, capitalists receiving profits, and landlords receiving rents. But while such a strict class division may have been appropriate in nineteenth century England, it has clearly ceased to be a realistic assumption. As developed, by Meade (1964), we need a theory of individual income distribution, where individuals both work and receive capital income, in differing proportions. The distribution of income depends on the correlation between the two sources. The class model assumed a correlation of minus 1. At the opposite extreme is a situation where all saving stems from earned income, as in a life-cycle savings model, and the distribution of wealth simply mirrors the distribution of earnings. At this point, I should note that the life-cycle perspective also draws our attention to the fact that the distribution of annual income may be influenced by changes in the time profile of accumulation or in demographic structure. Increased dispersion of incomes may reflect the presence of more elderly persons, with reduced incomes, and should not be regarded as an increase in inequality. In the case of inheritances, another important source of wealth, the timing of transmission will also affect the annual distribution.

Where parents pass on wealth before death, there may be an apparent reduction in the concentration of wealth.

The impact of earnings and of wealth depends on the relative magnitudes of earned and capital incomes. This brings us to the factor shares considered in section 6. There is however a crucial difference between the shares that feature in the national accounts (the returns to factors of production) and the shares recorded in the personal distribution of income. To begin with, the aggregate share of employee remuneration (wages and salaries, plus employer contributions to social security and private welfare) is more extensive than the total wages and salaries that typically appears in the personal distribution. Employer contributions and welfare payments are usually not recorded, and their significance has been growing over time, particularly in the US. Profits and property income involve key intervening institutions, notably the company sector, pension funds, and the state. Moreover, the state creates classes of personal income – transfer payments and interest on the national debt – that have no counterpart in national income. These mean that the share of wages differ, since they are expressed as a proportion of a different total. As considered further in section 6, we need to track the relationship between the components of total personal income and the macro-economic aggregates.

Transfer payments and the national debt remind us that on seeking to explain the distribution of income we need to consider issues of political economy. The recent emphasis on global trade and new technology as causes of higher earnings dispersion has tended to create the impression that rising inequality is outside the control of governments, at least of national governments. But such external forces can be moderated or offset through the use of tax and transfer policy. The state can affect market returns through its macro-economic policy, and through its role as an employer and purchaser. Government intervention may shift the distribution of rewards.

As should be clear from this account, there are a number of branches of economics that are highly relevant to the explanation of the distribution of earnings, and we need to build bridges in several directions. Earnings remain the single most important determinant of incomes, and we need to draw on labour economics. But we need also to relate the evolution of capital to theories of economic growth and to take account of recent developments in political economy.

2. The evolution of the overall distribution

The empirical evidence is summarised in this section in terms of the Gini coefficient. A single summary measure is clearly inadequate and may miss the differing experience of different income groups, but in the next section I look specifically at the top of the distribution. In assembling the data, I have tried to make them as comparable as possible, but this has not always been possible. Breaks in continuity are signalled, and differences are noted where this affects the examination of changes over time, but I have not commented on the comparability across countries. The reader should not therefore use the graphs to draw conclusions about the relative degrees of inequality on different countries. The fact that the Gini

coefficient for country X lies below that for country Y may reflect a systematic difference in the data source or in the definition of either income or income unit.

I begin with the experience of the three Nordic countries shown in Figure 1. I start with this group because they illustrate very clearly the U-shape that has come to be the conventional wisdom. Cornia and Court have described how “the Golden Age, a period of stable global economic growth between the 1950s and early-mid 1970s, witnessed declines in income inequality in a number of countries (with some exceptions). This trend was reversed over the last two decades as country after country has experienced an upsurge in income inequality” (2001, page 7). In Finland and Sweden, the Gini coefficient for disposable income fell by more than 10 percentage points between the mid-1960s and 1980. To attach some significance to this change, suppose that the tax and transfer system were approximately linear, as with a uniform tax credit and a constant tax rate. Then, if government spending on goods and services absorbs 20 percent of tax revenue, a redistributive tax of 16 percentage points would reduce a market Gini of 50 percent by 10 percentage points.¹ Raising the tax rate from 20 percent to 36 percent would be a major political shift. After a period when the Gini remained more or less stable, inequality began to rise in the 1990s. The increase was some 6 percentage points on all three countries, more than half reversing the previous fall. (It should be noted that there have been breaks in the series for Norway and Sweden, as definitions were changed, which have to be taken into account.)

The Nordics appear therefore to provide evidence for a “great U-turn”, as it was described by Harrison and Bluestone (1988). But a note of caution should be sounded. As far as the downward arm is concerned, there is no clear evidence for Norway,² and in the case of Sweden a lot rests on the observation for 1967. Gustafsson and Uusitalo say that “because of some differences between the two data sets the comparability is less satisfactory” (1990, page 84), and the official Statistics Sweden series only starts in 1975. Gustafsson and Johansson (1999) exclude the 1967 observation from their analysis of changes in inequality over time; here I have adopted the alternative procedure of grading it B, and for this reason the section from 1967 to 1975 is shown by a dashed line. From 1975 to 1981 the fall was less than 2 percentage points. In the case of the upward arm, it is not clear that there is a continuing trend; in the cases of Finland and Sweden, the rise seems to have been concentrated in the 1990s.

The U-turn is more usually associated with the Anglo-Saxon countries. Figure 2 shows the Gini coefficients for the United States and the United Kingdom. Here the series go back further – before the Second World War – but the data are even more of a patchwork rather than a single series, reflecting in this case differences in the underlying data sources as well as different definitions. It should also be noted that the US estimates relate to income before direct taxation. The US Gini fell by more

¹ A gross income of Y becomes a net income of $(1-t)Y+A$, where A is the value of the tax credit. Since A is the same for everyone (with appropriate equalisation), the Gini is $(1-t)$ times the value for gross income divided by the mean net income relative to the mean gross income, which is assumed to be 0.8.

² Those commenting on the Norwegian experience have reached different conclusions. According to Bojer, the period 1970-1984 in Norway showed “great stability in the distribution of personal income” (1987, page 257). According to Ringen, the distribution from 1970-1986 “has not been stable” with first a rise and then a fall in inequality (1991, pages 6 and 7).

than 10 percentage points between 1929 and 1944, was broadly level until the late 1970s, and then rose by some 6 percentage points (taking half of the increase in 1993 as being a genuine increase – see Weinberg, 1996, footnote 3). Again, we should note that the period of the large decline is covered only by a small number of data points.

For the earlier years in the UK, we have a synthetic series, based on income tax and other data, which suggests a fall in the Gini coefficient up to the end of the 1940s parallel to that in the US. The pattern later departs from that in the US in that there appears in the UK to have been a fall of some 5 percentage points between the mid-1960s and the mid-1970s. This fall was more than reversed in the 1980s: between 1980 and 1992 the Gini coefficient in the UK rose by 10 percentage points. If, in terms of percentage points of the Gini, the story of the Nordic countries and the US was -10, followed by +6, that in the UK was -10, followed by -5, followed by +10. Moreover, in contrast to the US, the Gini coefficient for the UK has levelled off in the past 15 years: the figure for 2005 is below that for 1990. Any theory must explain why the evolution of income inequality in the UK was twice as severely affected as the US, and the episodic nature of the rise. A clue is provided by the difference between the two UK series for the latter part of the period, which distinguish between disposable income (bottom line) and market income (top line). The difference between them is, in arithmetic terms, the impact of transfers and direct taxes. Inequality in market income began to rise steadily in the UK in the 1970s, reflecting the decline in employment rates and the ageing of the population. Taxes and transfers held this in check until the mid-1980s: the Gini for net income in 1986 was effectively no higher than 10 years previously. But the mid-1980s saw major changes in tax and transfer policy, and the Gini for net incomes rose by 7 percentage points in four years. Public policy must be part of the explanation.

In Continental Europe (Figures 3 and 4), we find a marked decline from 1959 to 1977 in the Netherlands: “the CBS [Central Bureau of Statistics] figures show quite a marked fall in inequality from 1962 onwards, a fall which continues into the first half of the seventies. About ten years of stability followed, after which a slight increase in inequality can be registered, starting in 1983. ... Thus the long-term fall in income inequality which had run through the 20th century seems to have come to an end half way through the 1980s” (van Zanden, 1998, page 177). The rise from 1983 to 1990 was 3 percentage points, but the 1990s indicate no continuation of the rise: the Gini coefficients for 1991 and 1999 are identical. As in the UK, there was an episode of rising inequality in the 1980s, not continued into the 1990s. In West Germany, the earlier period is surrounded by uncertainty. Both the budget survey (EVS) based estimates and the DIW synthetic estimates show falls in the Gini coefficient of more than 3 percentage points, but the timing is quite different. The EVS estimates show a fall from 1962 to 1973, but this is not mirrored in the DIW synthetic estimates, which show a rise. The preference today is to use household survey data, but it is not evident that we should simply believe one series and not the other. The EVS is based on a quota sample, and a lot of weight attaches to the first observation in reaching the conclusion that inequality fell significantly. The DIW estimates incorporate information from other sources, notably the tax returns. In the more recent period, the EVS and the Panel survey show a similar upward trend, but the overall rise from 1988 to 2001 is less than 3 percentage points. The U is less than clearcut.

The graphs for France and Italy (Figure 4) show declines in the 1960s and 1970s. (It should be noted that the Italian estimates are compiled from different series, with different income definitions, reflecting changes in the underlying survey.) The 1970s saw changes: in France, the Gini fell by 5 percentage points between 1970 and 1984; in Italy, there was a fall of more than 10 percentage points between 1973 and 1982. Subsequently, the pattern in Italy was variable. As summarised by Brandolini, “from the early 1970s until 1982 ... the inequality of household incomes fell dramatically. In the mid-1980s, it showed some tendency to grow; a further decline in 1989-91 was soon reversed, and in 1995 the Gini coefficient was back to the value of 1980” (1999, page 222). The Gini remained fairly flat from 1993 to 2000.

The final graph (Figure 5) shows the changes in income inequality in three Eastern European countries that joined the European Union in 2004. There is again a U-shape, but the underlying causes are likely to be different. It was under a Communist government that the Gini coefficients in Czechoslovakia and Hungary fell by some 5 percentage points from the 1950s to 1980. The upward arm of the U was associated with the transition to a market economy. The reader may note that only one of the series is graded as B: the early part of the series for Poland, which is down-graded because it is limited to worker households. The quality of the data for Eastern Europe is examined at length by Atkinson and Micklewright (1992), where we conclude that the data for the three countries shown (although not the Soviet Union) were of comparable quality with those for the United Kingdom. The Eastern European sources had significant deficiencies, and there were undoubtedly aspects not adequately covered such as private incomes that were of increasing magnitude over time, but there were also respects in which they were superior. As was noted by Večerník, the Communist governments commissioned large surveys and response rates were high, and the “income surveys were highly reliable – at least with regard to the formal economy” (2001, page 193).

Conclusion

The popular view of a U-turn in income inequality finds some foundation in the evidence for 12 OECD countries presented above. But it has to be qualified. The recent upturn is evident in the Nordic and Anglo-Saxon countries, but less evident or smaller in Continental Europe. In the case of the UK, the Netherlands, Italy and possibly the Nordic countries, the increase in the Gini looks more like an episode than a continuing upward trend. In the Eastern European countries, the increase was associated with the transition to a market economy. Moreover, the timing of the downward arm of the U differed across countries, and in some cases was based on one or two influential observations.

3. Top incomes over the long-run: Evidence from income tax data

The review of evidence about overall income inequality in the previous section has shown the importance of viewing recent changes in historical perspective; it has also shown how our view of earlier decades is based in some cases on a small number of isolated observations. In this section, I consider how we can flesh out the

picture, and go back further in time, using data from income tax records that cover the upper part of the distribution. The fact that they cover, particularly in the early years of the last century, only a small fraction of the population (here I focus on the top 1%), limits their usefulness. The UK super-tax provides an extreme example. When the tax was introduced, super-tax payers were a small minority of the population: 11,328 tax units, or broadly the top 0.05 % of the total. But, although small as a percentage of the total population, this group typically receives a significant fraction of total income – between 5 and 20 per cent – and this can materially affect the overall Gini coefficient. As an approximation, a difference of 10 per cent in the share of the top 1 per cent adds $(1-G)10$ to the Gini coefficient, where G is the Gini coefficient among the remaining 99 per cent of the population. So that where G is, say, 30 per cent, the difference in the Gini is 7 percentage points.

The use of income tax data is often regarded with considerable disbelief. The index to Morgenstern's book *On the Accuracy of Economic Observations* (1963) contains the entry "income tax, as reason for lying", and this summarizes well his general – if not very specific - skepticism. Richard Titmuss wrote a book-length critique of the income tax-based statistics on distribution, concluding, "we are expecting too much from the crumbs that fall from the conventional tables" (1962, page 191). These doubts are well justified for at least two reasons. The first is that income tax data are collected as part of an administrative process, which is not tailored to our needs, so that the definition of income, of income unit, etc are not necessarily those that we would have chosen. This causes particular difficulties for comparisons across countries, but also for time-series analysis where there have been substantial changes in the tax system, such as the move from joint taxation of couples to individual taxation in the UK in 1990. Secondly, it is obvious that those paying tax have a financial incentive to present their affairs in such a way that reduces tax liabilities. There is tax avoidance and tax evasion. But these do not mean that the data are worthless. Like all economic data they measure with error the "true" variable in which we are interested. Moreover, we can compensate for some of the shortcomings of the income tax data. In particular, we can set the tax data in context by making use of independent estimates of the total population and the total income. These control totals are typically based on Censuses of Population and on national accounts estimates of the total income of persons. The control totals require a number of adjustments and are surrounded by a margin of error, but the important point is that when I refer to the top 1% having $x\%$ of income, this means the top 1% of the total population (aged 15 and over) and $x\%$ of the total income of all these individuals, whether or not they are taxpayers. It is *not* the top 1% of taxpayers.

The attraction of income tax evidence is that it is available for long runs of years, typically on an annual basis, *and* that it is available for wide variety of countries. For example, Banerjee and Piketty (2005) have made use of Indian income tax data from the days when the British King was Emperor of India. It is however with OECD countries that these top income studies started. In 1914, Bowley used the British super-tax data to publish estimates in the *Quarterly Journal of Economics*. Kuznets pioneered the use of control totals in his 1953 study for the US, *Shares of Upper Income Groups in Income and Savings*. The recent revival of interest in income tax data is due to Piketty (2001) when he published a 800 page study for France, covering the period since 1915. When I saw his results, I immediately set to work to make use of the super-tax data for the UK that I had been collecting, and produced

estimates starting in 1908 (published in Atkinson, 2005). Piketty and Saez (2003) then developed the analysis for the US, starting in 1913. The interest in making cross country comparisons led to a project to cover a wide range of countries (Atkinson and Piketty, 2007).³

English-speaking and Continental European countries compared

The evolution of the share of the top 1 per cent in five English-speaking and five Continental European countries is demonstrated in Figures 6 and 7. The data allow us to go back in all cases before the Second World War and, in 8 cases, to the the First World War or earlier. The graphs show the share of the top 1% in total gross income: i.e. income before tax but including taxable transfers.

Starting with the English-speaking countries, we may note the high initial values: approaching 20% in the UK and the US, and being above 15% in Canada. Even in the more egalitarian Australia, the share in 1921 was around 10%, so that this top group of 1% received ten times their proportionate share of total gross income. This was to change. Over the next 50 years, from 1920 to the late 1970s, top income shares fell sharply in all five English-speaking countries. They differ in the timing of the fall. In the case of the US, the annual income tax data allow us to learn much more about the timing of the pre-war fall (1936 – the year in Figure 2 – does indeed appear to be out of line). Between a peak in 1928 and 1940, the share of the top 1% fell from around 20 per cent to around 15 per cent. But there was no comparable fall in Canada or Australia (although there was in New Zealand). In the US, from 1940 to 1945 there was a further fall of 4 percentage points, and there were falls during the Second World War on Canada and the UK, but not in Australia and New Zealand, which also saw a post-war spike associated with the Korean War boom in wool prices. In Canada and the US, there was limited change in the period 1955 to 1975, whereas Australia, New Zealand, and the UK all exhibited significant peacetime falls in the share of the top 1%. At the end of the 1970s, in North America, the share of the top 1% was around 8%, whereas in the other countries it was some 5-6%. But all of the countries saw a reversal of this decline in the 1980s and 1990s. Here we have a very clear U-turn. Between 1980 and 2000, the share of the top 1% doubled in the US and the UK, and rose by between a half and three-quarters in the other countries. In all cases, we ended up broadly in the position immediately after the Second World War – and in some cases similar to the position at the end of the 1930s.

Figure 7 shows, in contrast, the shares of the top 1% for the five Continental European countries. We may note first the high initial values: the shares are around 20% for France or higher for the Netherlands and Sweden. (The vertical scale is smaller than in the previous Figure.) As Piketty has noted in the case of France, this is surprising. Some 125 years after the French Revolution, France had much the same inequality at the top as the UK that had no such overthrow of the aristocracy. The shares then fell, as in Anglo-Saxon countries. But the time paths are different. In France, the falls were largely concentrated in the war periods and the depression. In the Netherlands and Sweden, there were falls of some 6-7 percentage points between

³ At this point I should like to acknowledge how much I am drawing on the work of the team. The figures used here in Figures 6 and 7 is based on the research of Thomas Piketty, Emmanuel Saez, Michael Veall, Fabien Dell, Andrew Leigh, Wiemer Salverda, Jesper Roine and Daniel Waldenström.

1945 and 1980, whereas in Germany the share in 1980 was within 1 percentage point of that in 1950. For four of the five countries, there has not been a U-shaped pattern over the twentieth century. The shares in France and Germany are virtually the same at the end of the period as in 1980, and those in the Netherlands and Switzerland are lower. In Sweden, the share of the top 1 per cent has risen – from around 3½ per cent to 6 per cent – but the rise appears more as a jump in 1991. The series shown for Sweden in Figure 7, like those for other countries, does not include capital gains. Roine and Waldenström show that there is a clearer upward trend over time in the data including capital gains, Sweden resembling more closely the Anglo-Saxon countries

Conclusion

The income tax data provide only a restricted view of the distribution of income, but they allow the changes over time, at least at the top, to be tracked more closely. These reveal a broad commonality over the first three-quarters of the twentieth century, although differences in timing that reflect national specificities; they show a marked difference in recent decades between the Anglo-Saxon countries and Continental Europe, with Sweden closer to the former.

4. Earnings: Episodes of change?

I turn now to the components of total income. At the top of the distribution, capital income plays an important role, but for the mass of the population earned income is the single most important component. As observed in *Employment in Europe 2005*, “earnings inequalities are one of the most tangible subjects ... with real implications for each and every individual” (European Commission, 2005, page 164). It is also a subject about which there are many myths. It has been suggested, for example, that the recent rise in dispersion is noteworthy because it comes after a long period of “remarkable stability” in the earnings distribution. On this basis, the downward arm of the U was due, not to earnings equalization in the fashion of Kuznets, but to the reduction in the inequality of capital income and the growth of the welfare state financed by progressive taxation. In the US, Jones and Weinberg noted that “the earnings distribution for men remained stable, with a few exceptions, between 1967 and 1980” (2000, page 3). Writing about the U.K., Machin says “after showing relative stability for many decades (and a small compression in the 1970s) there has been [since the late 1970s] an inexorable upward trend in the gap between the highest and lowest earners in the labour market.” (Machin, 1996, page 62). Writing about the US, Morris and Western in their survey article for the *Annual Review of Sociology* state that “the postwar years of prosperity were marked by ... relative stability in earnings inequality. The benefits of economic growth were large and widely distributed” (Morris and Western, 1999, page 625). This characterization in terms of “relative stability” is in fact a long-standing one, at least in the U.K. Commenting on the data for 1886 and 1978, Phelps Brown notes how “the average wage in money ... has been multiplied by a factor of 64. Differentials between occupations and grades and regions have changed – mostly they have contracted. The distribution of manpower between different jobs and different places has altered radically. Trade unionism has greatly extended its power. ... Yet, after 91 years of

these changes ... the dispersion of individual earnings remains very closely the same” (1979, p. 4).

The “stability” view has been challenged by other researchers, particularly in the US have emphasized the degree of change in earnings dispersion. “Great Compression” is the term used by Goldin and Margo to describe the narrowing in the US wage structure in the 1940s: “when the United States emerged from war and depression, it had not only a considerably lower rate of unemployment, it also had a wage structure more egalitarian than at any time since. Further, the new wage structure remained somewhat intact for several decades” (1992, page 2). On this basis, there was an episode of equalization in the 1940s followed by a period of stability in the 1950s and 1960s, before a widening of the earnings distribution starting in the 1970s. Lydall, after recording “the substantial fall in dispersion of employee earnings in the United States from 1939 to 1949” (1968, page 177), went on to note that “when we turn to the period 1949 to 1959 we find a quite different picture. The general picture is one of stability, with a slight tendency to widening dispersion” (1968, page 178).

Evidence about the changes in the distribution of earnings in the US since 1939 is brought together in Figure 8. In each of Figures 8 to 11, the solid symbols denote the upper percentiles, shown on the left hand axis, and the hollow symbols show the lower percentiles, shown on the right hand axis. The symbols get larger as one moves away from the median, so that the top decile is larger than the upper quartile. Where the data are graded B in terms of quality, rather than A, they are shown by dashed lines. In the case of Germany, for example, I have classified the wage tax series prior to 1939 as B, on the grounds that the median has to be obtained from another source.

The Great Compression and the Golden Age

The points marked “Goldin and Margo” in Figure 8 show their results from the Census of Population, which began collecting earnings information for 1939. The top decile fell from 195 per cent of the median in 1939 to 166 per cent in 1949. This compression was however in part reversed from 1949 to 1959, when the top decile rose to 176 per cent of the median. In fact, from the annual data provided by the CPS tabulations, we can see the time path more clearly. The top decile began to rise immediately in 1952 and the rise continued unchecked until 1964. The path initiated by the great compression in the United States was not a flat-bottomed U but a V. This puts a different complexion on the 1950s and early 1960s, often regarded as a “Golden Age”. At the same time, these findings for the distribution of earnings in the Golden Age need to be reconciled with the observed changes in the distribution of the total income of households shown in Figure 2 earlier. For more recent years, Gottschalk and Danziger found that the distribution of hourly wages of men and the distribution of adjusted family incomes for the period 1975 to 2002 “follow remarkably similar patterns” (2005, page 232). But this need not happen. In his 1972 study, Henle (1972) addressed the divergent movement of the distributions of individual earnings and of total income by families. He concluded that these different trends could largely be accounted for by changes in other sources of income, notably

increased transfer payments, and by the increasing proportion of families with two or more earners.

Was a similar pattern found in Europe? In France, the period 1946-1975 was described by Fourastié (1979) as *Les Trentes Glorieuses*, thirty years of growth and redistribution. Figure 9 shows that the upper percentiles were indeed increasing. The top decile rose from 186 per cent of the median in 1950 to 205 per cent in 1962. In the UK (Figure 10), we see both a rise in the top decile and a fall in the lower percentiles from 1954 to the mid-1960s. In the UK case, the data are drawn from different sources. The employer survey (the New Earnings Survey) began in 1968; for earlier years the data are based on income tax records, which differ in relating to annual incomes and including part-year workers, which is why the bottom decile is lower. With the annual observations provided by these two sources, we can see that “stability” is a poor description of the UK earnings distribution before 1979. Between 1954 and 1965, the top decile rose from 171 per cent of the median to 185 per cent. Between 1968 and 197, the bottom decile rose from 48 per cent of the median to 58 per cent, a rise more than twice as large as the subsequent fall up to 1989. The German data in Figure 11 draw on wage tax, employer survey and household survey data. (They also cover the period when the Nazi party came to power.) The different sources differ in level and (on occasion) in direction of change - see the series marked by arrows. They are however agreed in *not* showing a widening of earnings dispersion during the Golden Age. Germany appears to have followed a different path.

Is there evidence for other countries? For Australia, Lydall, using income tax data, had found that the “dispersion [of earnings] of both males and females was growing steadily from 1952-3 to 1962-3” (1968, page 190). In the case of Ireland, there was a fall in the top decile from the 1930s that was reversed in the latter part of the 1950s; although, there is no corresponding fall in the bottom decile. For New Zealand, there is evidence that the top decile rose relative to the median between 1958 and 1973.

1968 and the 1970s

Moving on in time, we can see from the graphs that Germany also appears to have differed from France and the UK in the later 1960s and 1970s. The evolution of earnings dispersion in France up to the late 1980s was summarized by CERC in terms of three phases: “from 1950 to 1966 one sees, despite certain irregularities, a tendency for dispersion to increase. [The period 1966-1985] saw, on the contrary, a significant and regular reduction in inequality, at a stronger rate than the previous rise. Finally, since 1985, one sees a return to widening” (1990, page 1, my translation). The jump in the bottom decile in 1969 stands out in Figure 9. According to Piketty, “the rupture ... arises from the “events” of May 1968 and the resulting social measures” (2001, page 165, my translation). He goes on to say that this break was “the result of breaks in the wages policy of the state, and notably in policy towards the minimum wage” (2001, page 165, my translation). The bottom decile fell back after 1969 but after 1972 continued an upward climb that was reinforced by the Mitterrand election in 1981.

The May 1968 effect was not limited to France. According to Erickson and Ichino, “during the 1970s, Italy experienced an impressive compression of wage differentials” (1995, page 265). This is borne out by the evidence in Figure 13 from the Bank of Italy household survey for the upper quartile and top decile (data for Italy are shown by squares). The top decile fell from 177 per cent of the median in 1973 to 143 per cent in 1981, a fall of a fifth. A major element in this compression was the *Scala Mobile (SM)*, a negotiated wage indexation “escalator”, notably following the agreement between workers and employers in 1975. According to Manacorda, “the SM had a considerable equalizing effect and that it was largely responsible for the fall in inequality between the late 1970s and the mid-1980s” (2004, page 609). From the UK series in Figure 10 we can see that between 1970 and 1977, the bottom decile rose by 18 per cent, reflecting, among other elements, the impact of redistributive incomes policies and of Equal Pay legislation. The top decile fell over that period by 5 per cent.

The same was true in Nordic countries. The data assembled for Sweden by Gustavsson (2004) show the quintile ratio for men as falling from 1.86 in 1968 to 1.7 in 1976. As he notes, the period coincided with the heyday of the “solidarity wage policy” followed by the major trade union confederation, Landsorganisationen (LO). In their study of the earnings distribution, Eriksson and Jäntti describe how in Finland “earnings inequality dropped dramatically between 1971 and 1975, and continued to decrease until 1985 (Eriksson and, 1997, page 1763).

Fanning out post-1980

The rise in earnings dispersion in recent decades has been widely documented. As has been increasingly recognized (Atkinson, 1999), this has been particularly associated with the upper part of the distribution. Indeed a feature exhibited in the graphs – apart from France - is the “fanning out” of the upper part of the earnings distribution. The top vintile (P95) has increased more than the top decile and the top decile in turn has increased more than the upper quartile. This is shown clearly for the United States in Figure 8, and rather less clearly for Germany in Figure 11. In the case of the UK, the deciles have been increasing progressively more, the higher up the distribution one looks. Between 1977 and 2001, the lower quartile rose by 8 per cent, the top decile by 17 per cent, and P95 by 33 per cent.

This feature is illustrated for a range of countries in Figure 12. These include, in addition to the three just discussed, Australia, Italy, Switzerland and Portugal, and two Eastern European countries: Hungary and Poland.

Conclusions

If one is seeking a single-letter summary of the changes in the earnings distribution over the period examined here, then a “W” seems more appropriate than a “U”. The 1930s and 1940s experienced a reduction in wage differentials – called the Great Compression in the US. This was reversed in the 1950s and early 1960s: with the exception of Germany, this “Golden Age” saw a rise in earnings dispersion. The later 1960s, following the events of May 1968, in France and other countries

governments and unions achieved a narrowing of the earnings distribution. The rise in dispersion in recent decades has to be seen in this context.

These observations raise immediate questions for the possible explanatory hypotheses. If rising earnings dispersion started in 1950, rather than 1980, then we may have to consider other explanations than those currently in favour, which emphasise the advent of Information and Communication Technologies and the impact of globalization. The reversal in the late 1960s and 1970s means that we have to reconsider the role of government intervention including incomes policies.

5. Wealth: A return of the rich?

The second part of the decomposition is that for capital income, where I examine the underlying distribution of wealth. As is well known, wealth is more concentrated than income. In Figure 13, I have drawn on data from a study by Ohlsson, Roine and Waldenström (2006), covering the France, the UK and US, and the Nordic countries. The graph shows the share of the top 1 per cent in total personal wealth. Interestingly, this shows, at the beginning of the last century, higher wealth concentration in all the “old” countries than in the US. The share of the top 1 per cent in the US before the First World War was under 40 per cent, whereas it was above 50 per cent in France and Sweden (and almost certainly in the UK). But in considering this, we need to bear in mind that the share of the top 1% depends on what is happening both to the distribution *between rich and poor* and to the distribution *among the rich*. The share of the top 1% may be lower because the bottom 99%, in the richer US, had acquired more wealth by that time. In the UK the historian Richard Tawney once remarked of the soldiers of the First World War that most of them went off to war with their possessions on their back. Fewer than 1 person in 5 owned their homes. The share of the top 10% in total recorded wealth in 1923 was 89%. Since then, we have seen a great expansion in “popular wealth”: housing, consumer durables, cars, and small savings. In a time series analysis of the share of the top 1%, a popular wealth variable is highly significant (Atkinson and Harrison, 1978). In the US, the average wealth of the bottom 99 per cent rose by a factor of some 2½ between 1916 and 1982, whereas the average wealth of the top 1 per cent was little higher in 1982 than in 1916 (Kopczuk and Saez, 2004, Figure 3).

Declining concentration

Rising “popular” wealth may be one of the causes of the fall in the share of the top 1 per cent over the first three-quarters of the twentieth century shown in Figure 13. In broad terms, shares that had been 40 per cent to 50+ per cent fell to 15 to 20 per cent. Reduction to around a third of their initial value still left the top 1 per cent with a disproportionate share. With the approximate formula used earlier, and assuming a Gini of 40 per cent for the rest of the population, a fall of 25 percentage points in the share of the top 1 per cent would reduce the overall Gini coefficient for wealth by 15 percentage points. The fall appears to have been common across countries, but the timing differs. The fall in the US was sharper following the Great

Crash in 1929 and during the 1930s; in France and Denmark the decline is marked during the World Wars. In the UK, the decline continues during the 1950s.

The expansion of popular wealth reduced the relative share of the top 1 per cent, but does not explain reductions in real wealth levels. In the case of France, Piketty shows that the average estate left by the top 0.01 per cent in 1992 was in real terms only a quarter of that left by the top 0.01 per cent before the First World War. He argues that the wealthy incurred severe shocks to their capital during the period 1914-1945: two World Wars, inflation, and destruction of physical capital. These shocks had a permanent effect because progressive taxation prevented wealth-holders from restoring their capital. To quote Piketty, “the introduction of high income and estate tax progressivity [between 1914 and 1945] made it impossible for top capital holders to fully recover” (2007, page 10). The division of estates is also a factor. In the accumulation model described by Meade (1964), where there is equal division of an estate between the children, individual wealth accumulation depends on whether the internal rate of return exceeds the rate of demographic increase. The internal rate of return is governed by the saving rate and by the rate of return net of tax. The cumulative effect of high progressive rates of taxation could account for the continuing fall in top wealth shares in Denmark, Sweden and the UK: between 1945 and 1979 the share was halved in the latter two countries.

Recent changes

The recent reductions in top tax rates could have led to a reversal of this process. Inspection of Figure 13 shows that there was an increase, of 7 percentage points, in Norway, but that in the other countries the increase was less than 2 percentage points. This finding has caused some surprise in the US, given that the top income shares have risen, and the widely-held perception that there are more wealthy people (as indicated by the *Forbes* List of Billionaires and other journalist studies). This has led to some questioning as to whether the estate method fully captures recent increases in wealth holding (although, as stressed by Kopczuk and Saez, 2003, the estate-based estimates are not in this respect out of line with the Survey of Consumer Finances). It is possible that the increased top income shares arising from remuneration have not yet fed through into corresponding increases in wealth. But we have also to allow for the overall increase in wealth. As Kopczuk and Saez show, the average wealth of both the top 1 per cent and the bottom 99 per cent have risen by some two-thirds in real terms between 1982 and 2000. Over the same period, the average real income per tax unit rose by 28 per cent (Piketty and Saez, 2007, Table 5A.0).

The wealth income ratio has risen. In view of this, we can perhaps square the popular perceptions with the wealth distribution data by defining the “rich” as those who have wealth in excess of a threshold defined as *a multiple of mean income* per person (or per tax unit). (There is an evident analogy with the definition of a relative poverty line.) In Atkinson (2007a), I treated as rich those individuals whose wealth exceeds 30 times mean income. In the year 2000, in the US, on which I concentrate here, the mean income per tax unit was \$42,500. In what follows, I apply a simple adjustment of 1.5 to convert tax units to adult population, which implies a cut-off for the US in 2000 of some \$850,000 per person. The choice of a multiplier of 30 is based

on the fact that at a real yield of $3\frac{1}{3}$ per annum this level of wealth generates an amount equal to mean income per person. A person with W^* could live off the interest at an average standard of living. An assumed return of $3\frac{1}{3}\%$ does not seem unreasonable as a measure of the long-run real return. A higher rate of 4% is used by some institutions as a measure of the long-run sustainable expenditure while maintaining the real value of their endowment (US charitable foundations are required to take the still higher rate of 5%), but I have applied a lower figure to take account of the importance of owner-occupied housing and its incomplete representation in personal income. The cut-off is not dissimilar to the Cap Gemini definition of High Net Worth Individuals, which in 2006 is \$1 million excluding home real estate (website of Capgemini, 21 February 2006).⁴

In Figure 14 is shown the estimated number of rich people, on this definition, as well as the “super-rich”, defined as having wealth in excess of $30 \times 30 \times$ mean income, or some \$25 million in 2000. The scale for the proportion of super-rich is 100 times that for the rich, and the position of the graphs indicates that the super-rich were about 1 in 200 of the rich. If all wealth holdings are increasing faster than income, then the shares may remain constant, while the proportion of rich, and super-rich, is increasing. As may be seen from the graph, this is what appears to be happening. In 1982, some 1.25% of US adults are classified as rich according to the criterion adopted here; by 2000, this had risen to close to 1.75%. At the beginning of the 1980s, the super-rich were 1 in 25,000; at the end of the century, they were 1 in 11,000.

Judged in relation to the aggregate economy, top wealth holdings have been becoming more dominant in the US. Moreover, as noted by Kopczuk and Saez (2004), among the rich wealth is becoming more concentrated. Figure 14 shows on the right hand axis the percentage of the wealth of the rich owned by the top quarter. This began around 60%, and rose from 1950 up to the mid-1960s; there was then a fall in concentration, reversed from 1982 (although with a pause in the 1990s). The Gini coefficient among the rich shows a similar pattern. In 1965, the Gini was 48.6%; it fell to 40.4% in 1976, and then rose, reaching 46.9% in 2000.

Conclusion

Over the first three-quarters of the twentieth century, the reduction in wealth concentration followed a similar path to that of overall income inequality, and specifically the top income shares. The fall in concentration reflected the positive force of the acquisition of popular wealth by the bottom 99 per cent, and the negative incidence of progressive income and estate taxation. In recent decades in Anglo-Saxon countries there has been a rise in the proportion of rich, but that has taken place against a background of a general rise in the wealth-income ratio, so that the impact on wealth shares is less marked.

⁴ On the other hand, it is considerably higher than the level taken for the US by Danziger, Gottschalk and Smolensky (1989) to define “rich” in their article “How the Rich Have Fared, 1973-87”, where the cut-off was 9 times the poverty line, or \$95,000 for a family of four in 1987 dollars (my definition would have yielded a figure around \$475,000).

6. Factor shares and the macro-economy

Does the rise in the wealth-income ratio correspond to a rise in the capital-labour ratio? Or does it simply reflect a revaluation of unchanged income streams? In considering the link with the macro-economy, as recorded in the national accounts, we have to bear in mind several crucial measurement issues.

The income from capital recorded in the distributional statistics used in earlier sections of this paper suffers from two major shortcomings. The first is that, with a few exceptions, capital gains and losses are not covered. If we adopt a Haig-Simons comprehensive definition of income, then accrued gains and losses should enter total income. In practice, gains are measured only when realised and in most distributions they are omitted altogether.⁵ Of course, capital gains do not appear in the national accounts, but for the personal sector they are the counterpart of retained earnings not distributed by the company sector. At the same time, the Haig-Simons definition only points to the inclusion of *real* capital gains; we would not want to include the purely inflationary element. This brings me to the second shortcoming. As recorded in distributional statistics, capital income is *money* income, not adjusted for inflation. To this extent, capital income has been overstated in an inflationary age; and this overstatement applies to all capital incomes, including fixed price assets such as savings bank accounts. To my mind, insufficient attention has been paid to the implications for the measurement of income inequality of the fall in inflation (and in expected inflation). It could well be that income from capital was over-stated in the 1970s, when inflation was high and real gains smaller, and is under-stated today when inflation is low and real gains, averaged over recent years, are substantial. If this is the case, then the role of capital income in the growth of inequality, and indeed the growth of inequality itself, may be under-stated.

The complement of capital income is the remuneration of workers. Here too the picture is incomplete. The standard distributional analysis is based on total wages and salaries but does not include employer contributions to social security or to private welfare. As has been emphasised by Burtless (2007), in the United States in recent years money wages have increased less rapidly than total compensation. Between 2000 and 2005, total compensation per worker rose by 5.6 per cent, but only 29 per cent of the increase in took the form of higher money wages. Increased payments into employer health insurance (35 per cent), increased pension contributions (24 per cent), and social insurance (10 per cent) accounted for almost all of the rest. Over the long-run there has been a general tendency for total compensation to rise faster. In the estimates of Feinstein (1972) for the UK, in 1920 wages plus salaries plus Forces' pay accounted for 98 per cent of the total remuneration; by 1965 this had fallen to 92 per cent.

If, therefore, we wish to relate the shares of personal income, as recorded in the income distribution statistics, to factor shares in national income, we need to decompose the changes:

Share of Earnings in Total personal income

⁵ A number of studies of top incomes show series with and without capital gains: see the chapters on the US, Canada and Germany in Atkinson and Piketty (2007).

$$= \text{Earnings /Total compensation} \times \text{National income /Total personal income}$$

$$\times \text{Total compensation/National income}$$

The different versions of the wage share are shown for the UK in Figure 15. The left hand side (personal income share) is shown by the hollow diamonds; the factor share is shown by the larger squares. The century, leaving aside the world wars, may be divided into three periods: before the Second World War, 1945 to 1980, and after 1980. In the first period, both shares rose. At the outbreak of the Second World War, the labour share was some 10 percentage points higher than at the outbreak of the First World War. From 1945 to 1980 there was a further 10 percentage point increase in the factor share, but there was no corresponding rise in the share of earnings in total personal income. The rise was in employer contributions: wages fell as a percentage of total compensation (see the solid line). Indeed, the ratio of wages to national income was broadly stable in this period (see the line marked by crosses). In the final period, from 1980 to the present, there was a fall in the share of total compensation of some 10 percentage points. By 2006 the share had fallen back to its 1950 level. Self-employment income has risen as a percentage, but even the allocation of the greater part of self employment income to labour would not make more than a couple of percentage points difference to the downward movement. There is a contrast in this respect with the situation in the US, where Dew-Becker and Gordon conclude that “there were substantial fluctuations in labor’s share prior to 1984 but little movement since then” (2005, page 7).

The UK experience shows that the share of earnings in total household income may move together with the share of labour in national income (as since 1980) or may move differently (as in the period from 1945 to 1980). We cannot read directly across from one wage share to another. In the case of the US, the estimates of Piketty and Saez show the stability of the factor shares (in the corporate sector) noted above, but that the share of earnings in total personal income fell between 1979 and 1989 by some 5 percentage points, and that about half of that gain had been lost by 2003 (2007, Figure 5.6). In the case of France, Piketty (2007, Figure 3.4) shows that the labour share in corporate value added rose in the 1970s but then fell in the 1980s. Over the same period, the earnings share in household income fell steadily by some 7 percentage points.

Conclusion

The macro-economic theory of distribution has been little discussed in recent years, but should be revived. At the same time, one cannot read across directly from factor shares to the personal distribution. The experience of the UK, US and France suggests that the relation is one of some complexity.

7. Conclusions

In this paper, I have shown evidence about the evolution of the distribution of income in a selection of countries, focusing on the comparison of time paths, not on comparisons across countries. The evidence has highlighted the *variety* of these historical experiences. Indeed the first conclusion is that to any conclusion (including this one) there is always at least one exception.

- There has indeed been a U-turn in overall income inequality, which is evident in Anglo-Saxon countries and Finland and Sweden, but it is less evident in Continental Europe and not apparent in France.
- In a number of cases, the recent increase in inequality looks more like a limited episode rather than a continuing upward trend.
- Top income shares show a marked U over the twentieth century as a whole in Anglo-Saxon countries and Sweden, but there has not so far been an upturn in Continental Europe.
- For individual earnings, if one is seeking a single-letter summary of the changes in the earnings distribution over the period examined here, then a “W” seems more appropriate than a “U”.
- The 1930s and 1940s experienced a reduction in wage differentials – called the Great Compression in the US. This was reversed in the 1950s and early 1960s: with the exception of Germany, this “Golden Age” saw a rise in earnings dispersion. The later 1960s, following the events of May 1968, saw governments and unions achieving a narrowing of the earnings distribution. The rise in dispersion in recent decades has to be seen in this context.
- Over the first three-quarters of the twentieth century, the reduction in wealth concentration followed a similar path to that of overall income inequality, and specifically the top income shares. The fall in concentration reflected the positive force of the acquisition of popular wealth by the bottom 99 per cent, and the negative incidence of progressive income and estate taxation.
- In recent decades in Anglo-Saxon countries there has been a rise in the proportion of rich, but that has taken place against a background of a general rise in the wealth-income ratio, so that the impact on wealth shares is less marked.
- The macro-economic theory of distribution has been little discussed in recent years, but should be revived. At the same time, one cannot read across directly from factor shares to the personal distribution. The experience of the UK, US and France suggests that the relation is one of some complexity.

The variety of experience points to the need for a variety of explanations. The distribution of personal income is a subtle combination of different mechanisms, each subject to exogenous and endogenous forces.

Data Sources:

Note: where no other reference is made, the series refer to the total disposable income of the household (or tax unit) adjusted by an equivalence scale and cover the entire population.

Figure 1:

- SWE 1967 and SWE3 Gustafsson and Uusitalo, 1990, page 85.
SWE 1 and 2 Statistics Sweden website, 21 August 2007, "The distribution of income 1975-2005".
FI Uusitalo, 2001, page 4; 1987 onwards from Statistics Finland website: <http://tilastokeskus.fi/tk/el/tulo/gini.html>.
NO 1 Bojer, 1987, page 251; 1973, 1976 and 1979 from Bye and Høyland, 1981, not equivalised.
NO 2 WIID database (website of UN-WIDER), supplied by Statistics Norway
NO 3 and 4 Statistics Norway website, 22 August 2007

Figure 2:

- US BEA Brandolini, 2002, Table A1, col 1A.
US CPS U.S. Census Bureau, 2007, Table A-3.
UK Blue Book Atkinson and Micklewright, 1992, Table BI.1.
UK Economic Trends 1979-2005 from Jones, 2007, Table 27; 1977 and 1978 from Brandolini, 2002, Table A.3, col (3c), linked at 1977 to IFS series, from same source, col (4).

Figure 3:

- NL1 Brandolini, 2002, Table A9, col 1.
NL2 Trimp, 1996, page 32.
NL3 Income Panel Survey (IPO), see Atkinson and Salverda, 2005.
DE DIW 1950-1968 from DIW, 1973, page 224; 1970-3 from DIW, 1974, page 312; 1975 onwards from Guger, 1989, Chart 1.
DE survey Hauser and Becker, 2001, page 89, and Hauser and Becker, 2004, page 112.
DE panel SOEP results supplied by G Wagner (see Becker et al, 2003), and Hauser and Becker, 2004, page 112.

Figure 4:

- FR 1 Brandolini, 2002, Table A11, col 1.
FR 2 Hourriez and Roux, 2001, page 281.
FR 3 LIS Key Statistics, downloaded 13 August 2007, EBF results.
IT 1 Brandolini, 2002, Table A1, col 7a.
IT 2 Brandolini, 2002, Table A1, col 7b.
IT 3 supplied by Bank of Italy.

Figure 5:

- CZ per capita 1 Atkinson and Micklewright, 1992, Table CS11.
CZ per capita 2 Večerník, 2001, page 199.

- HU per capita Atkinson and Micklewright, 1992, Table HI1
 HU Tarki Tóth (2004, page 77).
 PL per capita WORKER Atkinson and Micklewright, 1992, Table PI4
 PL per capita Atkinson and Micklewright, 1992, Table PI1
 PL LIS LIS Key Statistics, downloaded 13 August 2007.
- Figure 6: Atkinson and Piketty, 2007, Tables 13.2, 13.3, 13.4, 13.5 and 13.6.
- Figure 7: Atkinson and Piketty, 2007, Tables 13.1, 13.7, 13.8, and 13.9, and Roine and Waldenström, 2006.
- Figures 8-11: See Atkinson, 2007.
- Figure 12: See Atkinson, 2008.
- Figure 13: Ohlsson, Roine and Waldenström, D, 2006.
- Figure 14: Atkinson, 2007a, Figure 6.
- Figure 15: Personal income series from Atkinson, 2007, Table 4B.1.
 Other series from national accounts: 1908 to 1965 from Feinstein, 1972, Tables 1 and 21, 1966 from *National Income and Expenditure* (NIE) 1969, pages 3 and 24, 1967-1971 from NIE 1978, pages 3 and 32, 1972-3 from NIE 1983, pages 3 and 25, 1974-78 from NIE 1985, pages 3 and 37, 1979-85 from NIE 1990, pages 13 and 37, 1986-96 from NIE 1997, pages 27 and 76, 1997-2000 from NIE 2001, pages 33 and 221, 2001-2006 from NIE 2007, pages x and 191.

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Figure 1 Three Nordic countries

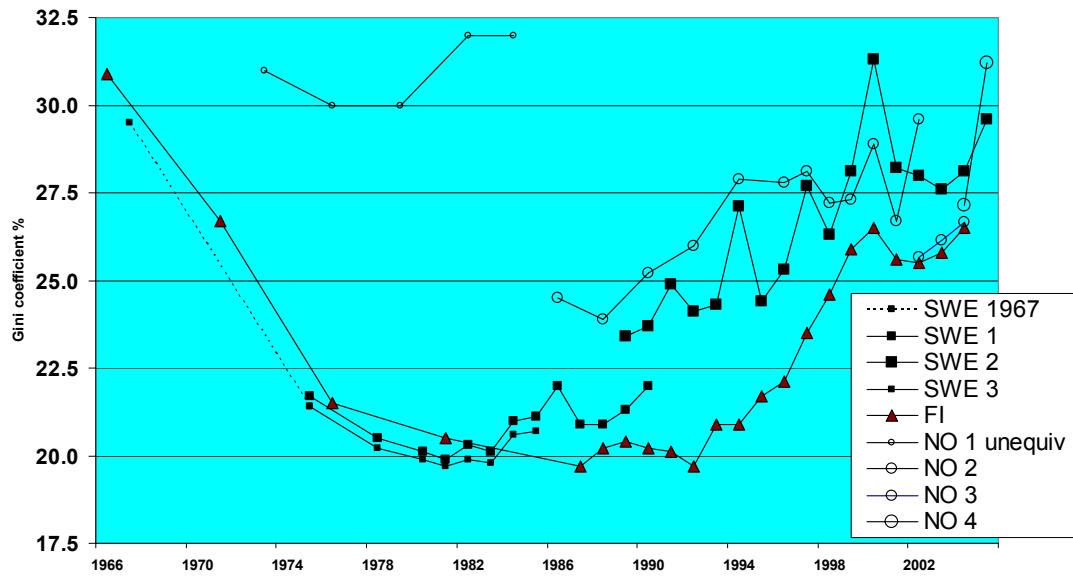


Figure 2 Income inequality in UK and US 1929-2005

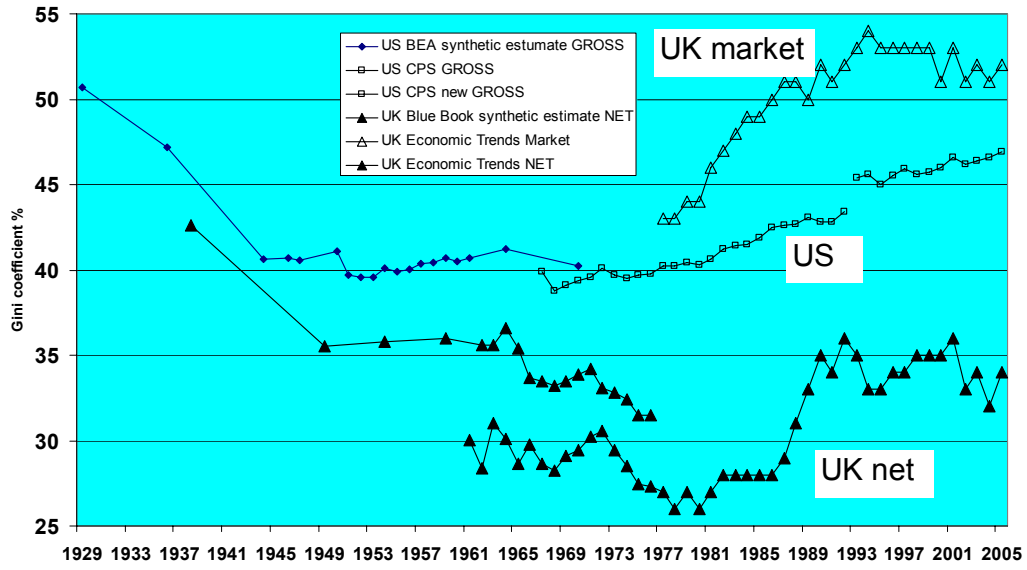


Figure 3 (West) Germany and Netherlands

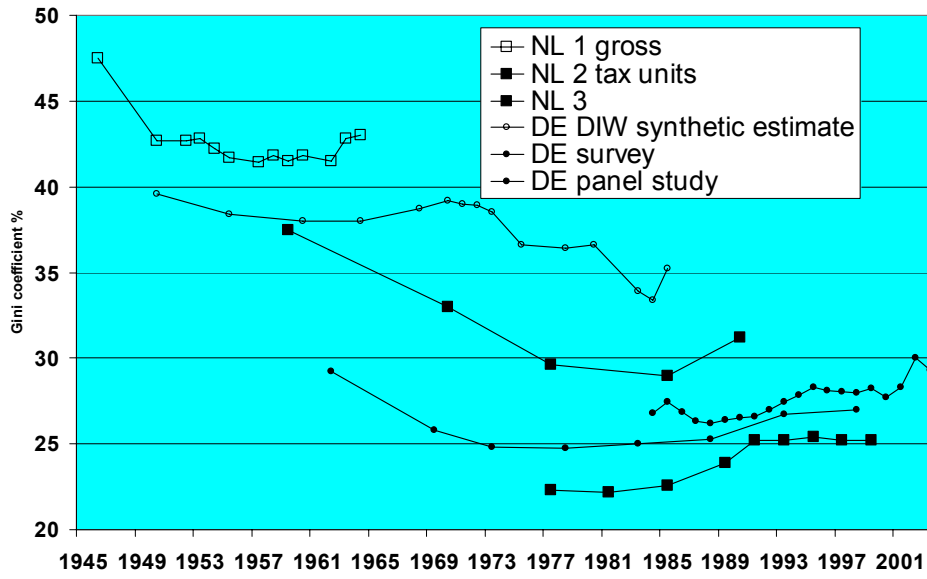


Figure 4 France and Italy

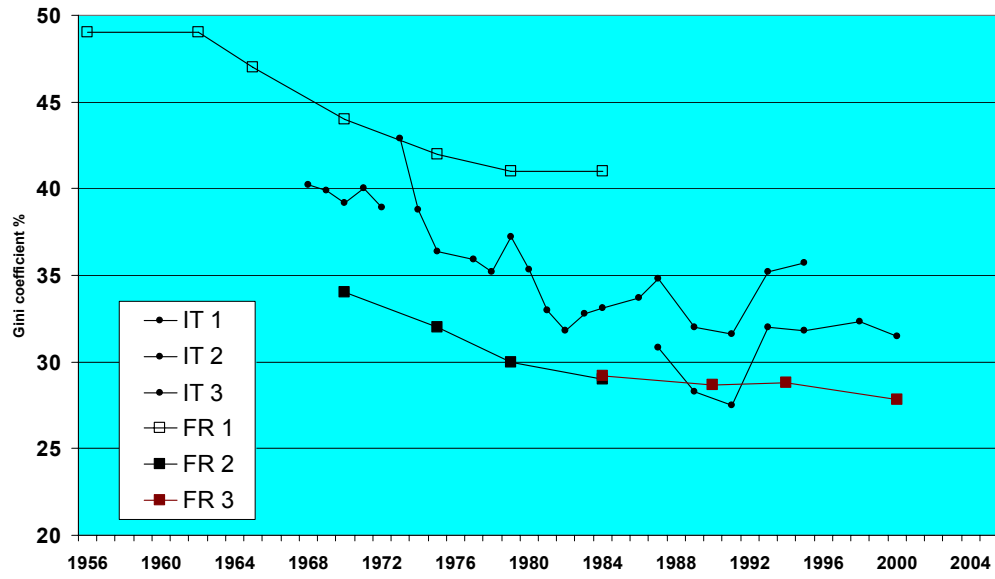


Figure 5 Czech Republic (Czechoslovakia), Hungary and Poland

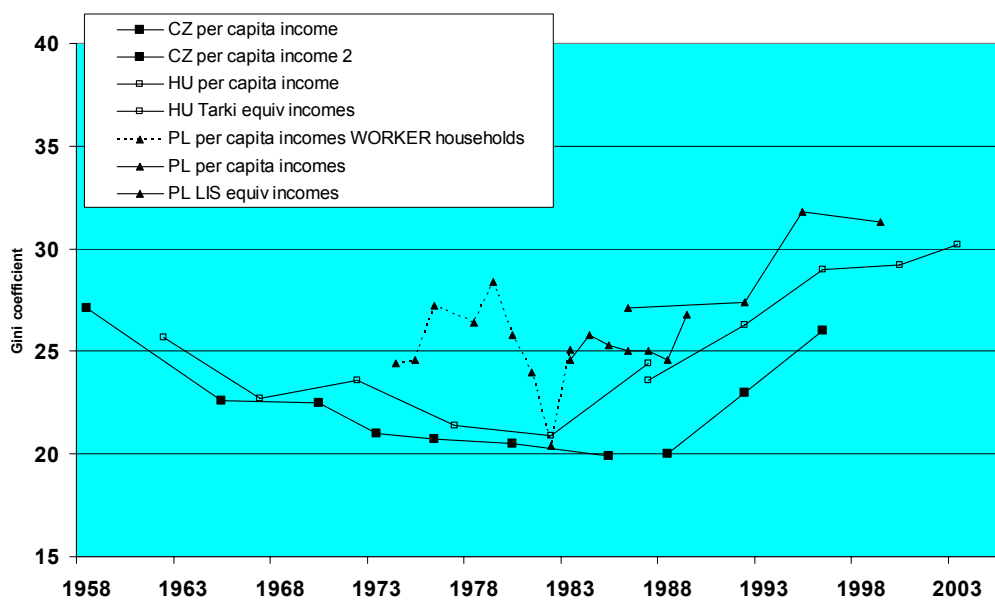


Figure 6 Share of top 1% in English-Speaking countries

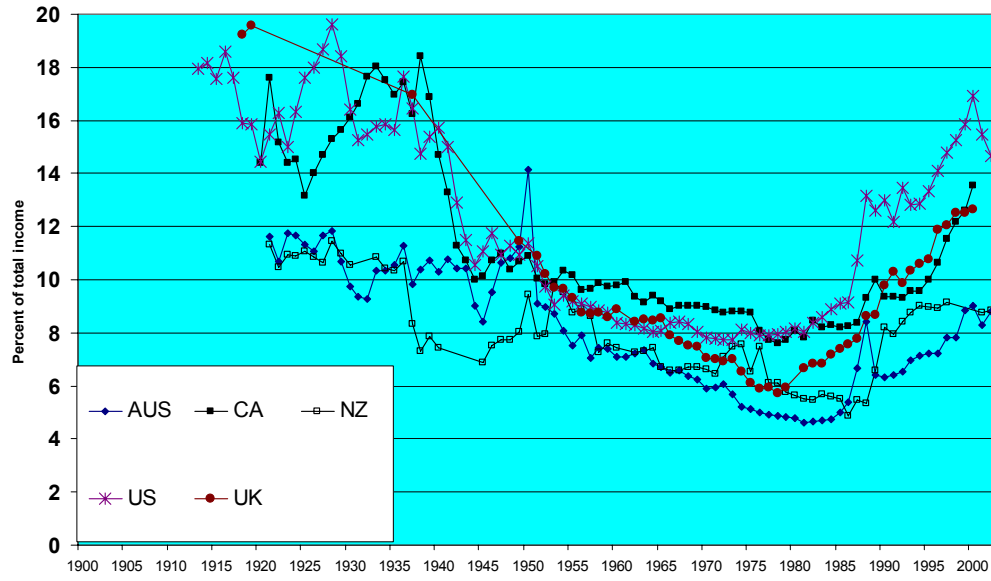


Figure 7 Share of top 1% in Continental Europe

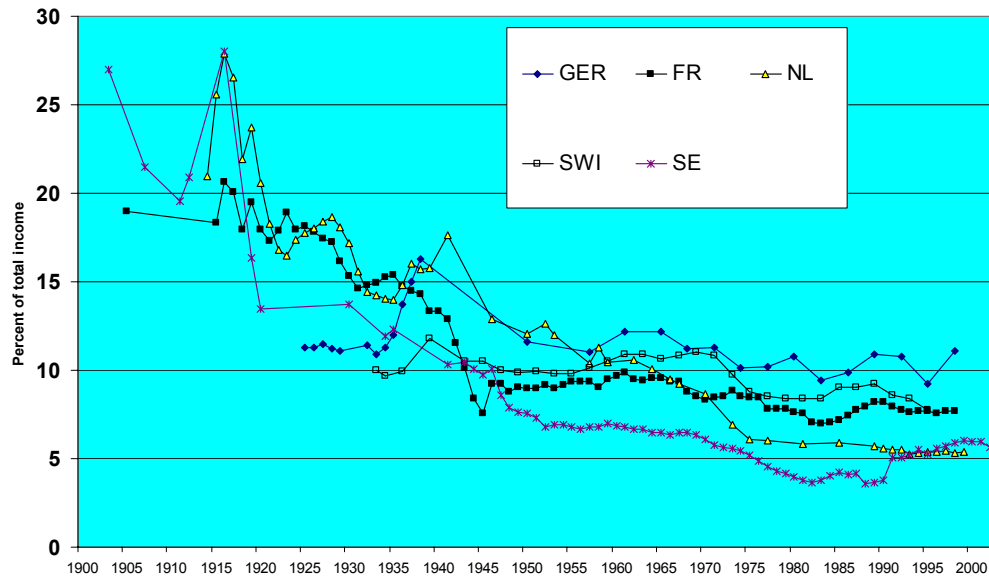


Figure 8 Long run development of earnings distribution in United States 1939-2005

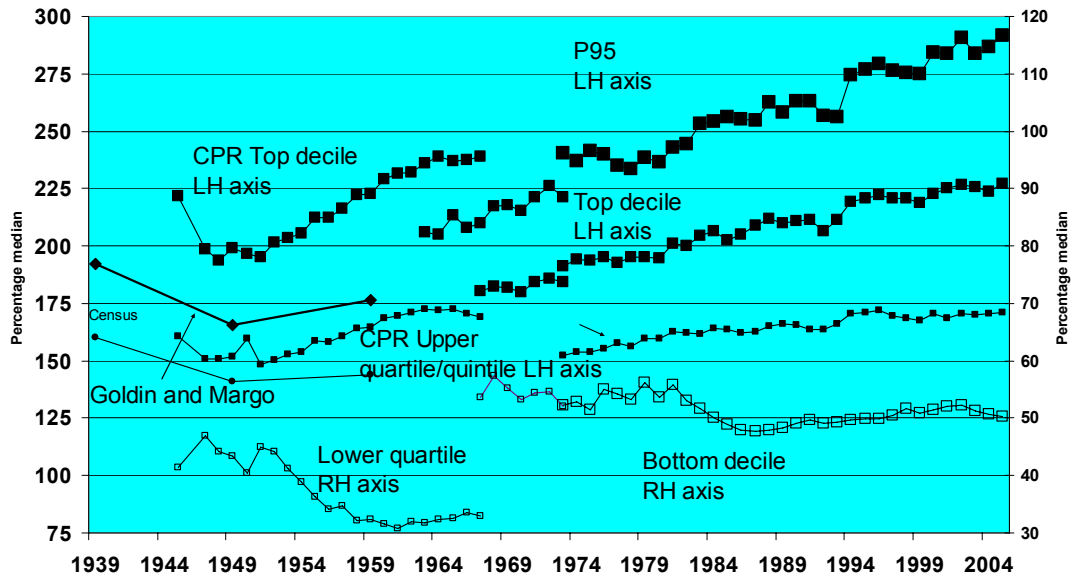


Figure 9 Long run development of earnings dispersion in France 1919-2004

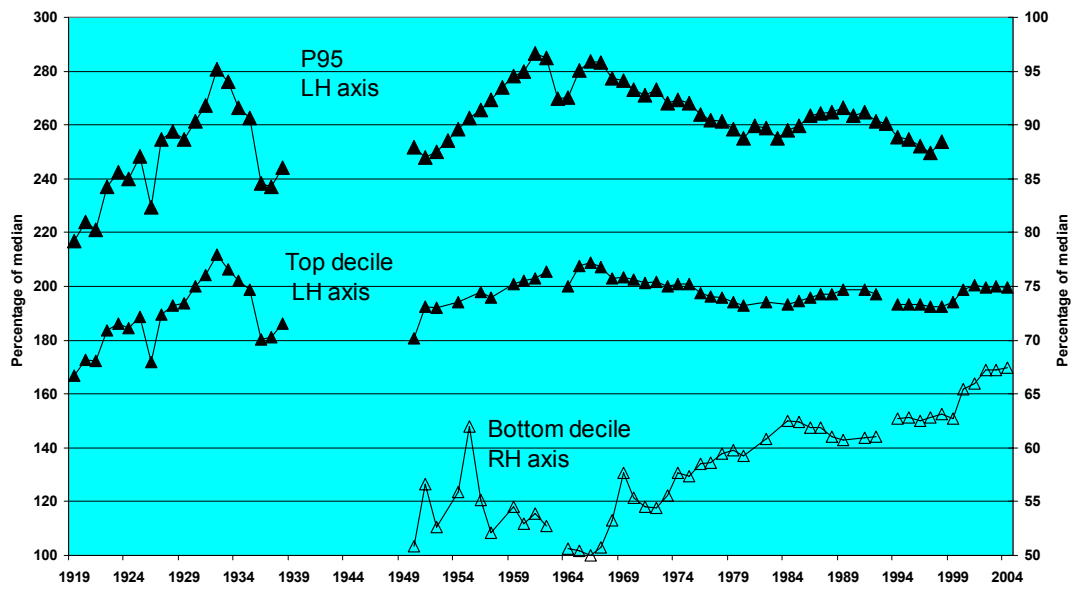


Figure 10 Long run development of earnings dispersion in United Kingdom 1954-2006

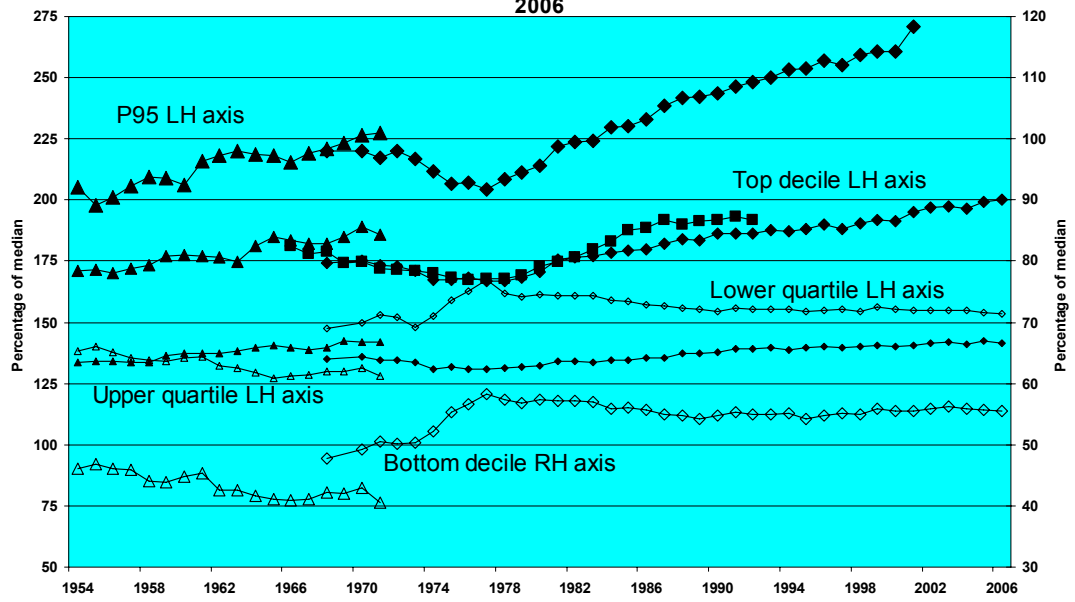


Figure 11 Long run development of earnings dispersion in West Germany 1929-2002

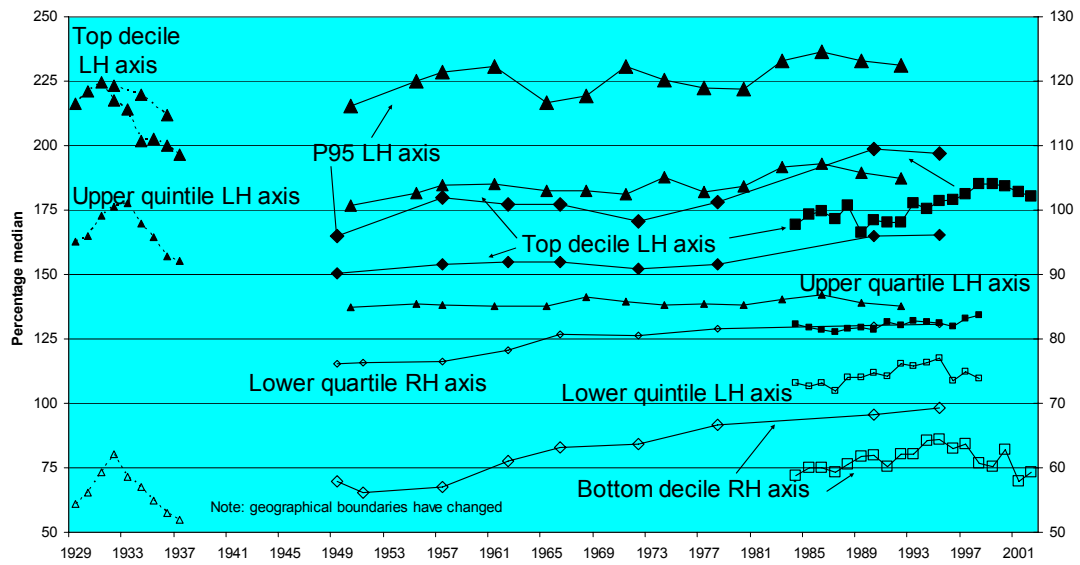


Figure 12 Fanning out in the upper part of the distribution

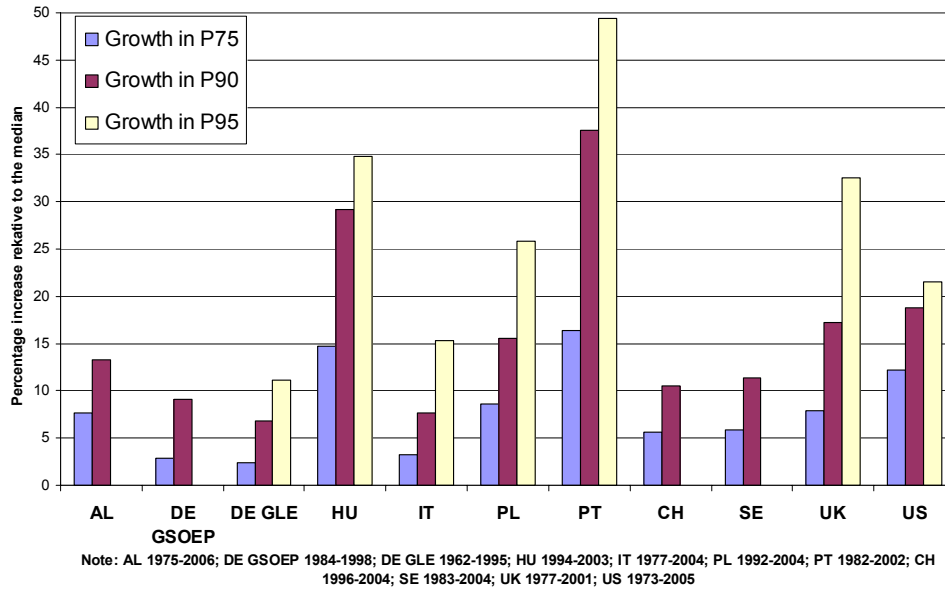


Figure 13 Top 1% of wealth distribution in six countries

from Ohlsson, Roine and Waldenstrom (2006)

UK data adjusted for break in 1960

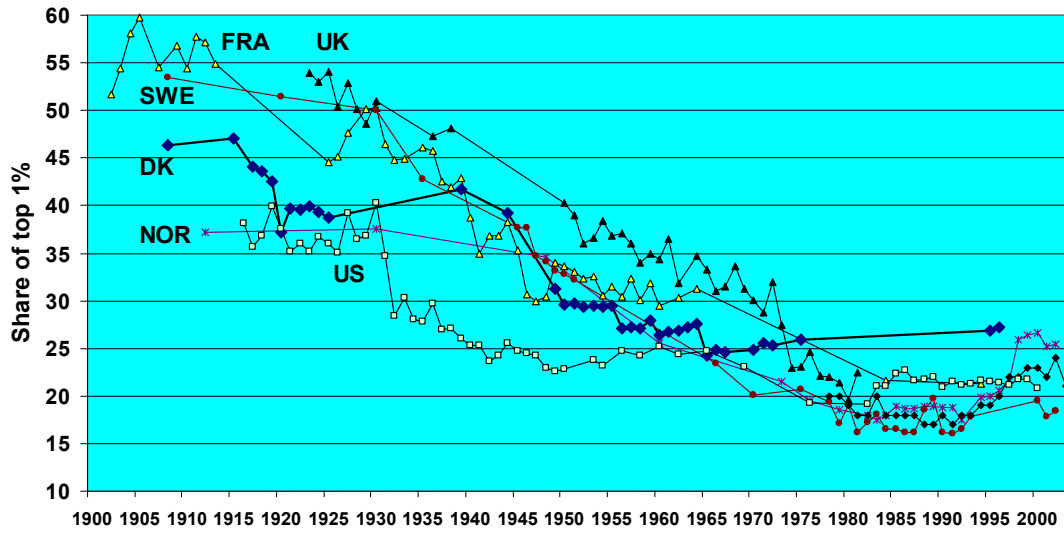


Figure 14 Wealth concentration in the US 1946-2000

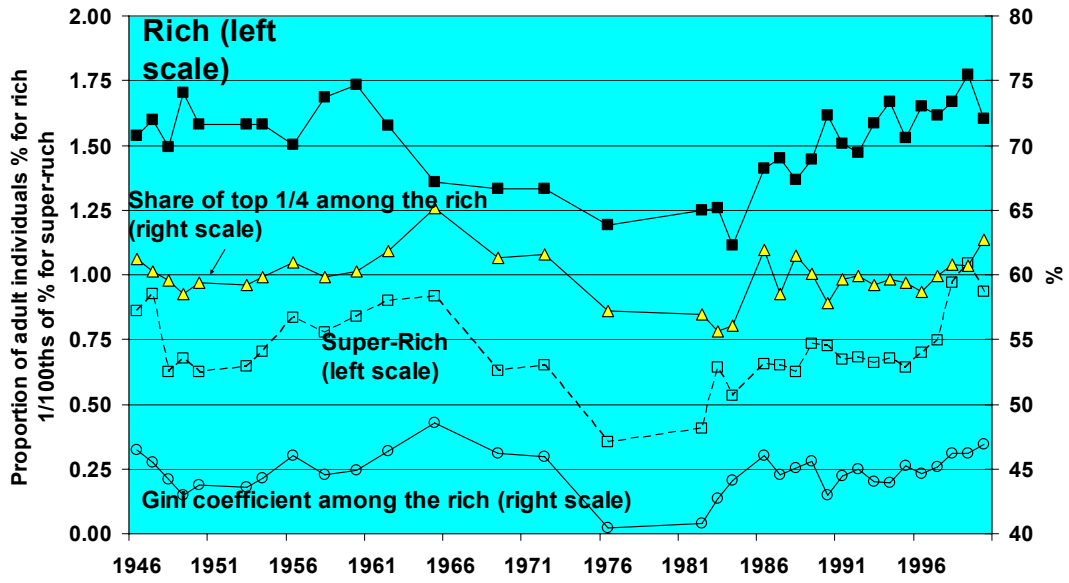


Figure 15 Wage shares in the UK 1908-2006

