

OXFORD

TOP
INCOMES
OVER THE
20TH
CENTURY

*A Contrast Between Continental European
and English-Speaking Countries*

Edited by A. B. ATKINSON & T. PIKETTY

4

The Distribution of Top Incomes in the United Kingdom 1908–2000¹

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4.1 INTRODUCTION

In 1909 the United Kingdom Government introduced ‘super-tax’, which was an additional income tax levied on top incomes. This event was important not only for its fiscal consequences, and the constitutional crisis generated by the initial rejection of the Budget by the House of Lords, but also because it provided information on total incomes that had not previously been available on a regular basis. Under the ordinary progressive income tax, with deduction at source and different schedules covering different sources of income, the authorities did not know the total income of individuals, which could be the subject of several separate assessments. (The first British income tax, Pitt’s Act of 1799, did require an assessment of total income, but it was replaced in 1803 by a schedular system.) Super-tax, which was renamed ‘surtax’ in 1927, remained in existence until 1972, by which time another income tax source, the Survey of Personal Incomes, was in place. The tax information has shortcomings, but it provides a source of evidence about the distribution of top incomes covering virtually the whole of the twentieth century. In this respect, it is unique in the UK. No other source allows us to track the effect of the Depression; no other source allows a full comparison of the distributions before and after the World Wars. The super-tax/surtax statistics were studied by Bowley (1914), Stamp (1914 and 1936), Clark (1932), Champenowne (1936), among others, but they have not been used in recent years and their potential has not been fully exploited.

The aim of this chapter is to examine what can be said from the tax statistics about the evolution of top incomes in the United Kingdom over the twentieth

¹ I am most grateful to Thomas Piketty, whose work for France (1998, 2001, 2003, and Chapter 3 in this volume) stimulated me to put together the material I had been collecting for the UK for a number of years. I have benefited from valuable comments on earlier drafts by Fabien Dell, Chelly Halsey, Thomas Piketty, Emmanuel Saez, and Holly Sutherland. I have learned a lot from collaboration with Wiemer Salverda and Andrew Leigh. An account of the UK estimates, with a more detailed discussion of interpolation methods, appears as Atkinson (2005).

century.² Evidence for a century helps us put in perspective recent developments in income inequality. Attention has tended to focus on the rise in inequality in the 1980s (Atkinson 1993; Goodman and Webb 1994), but how far was this a reversal of the post-war equalization? How much equalization took place in the twentieth century as a whole? Did the equalization of incomes only begin after the First World War?

The nature of the income data in the UK is described on Section 4.2. As with all data from tax sources, they present the researcher with a number of problems, and these are considered in Section 4.3. The main features of the results are shown in Section 4.4, and a variety of alternative presentations set out in Section 4.5. The composition of top incomes, shown to be of great significance in France in the previous chapter, is investigated in Section 4.6. The final Section 4.7 summarizes the main conclusions.

4.2 THE INCOME TAX DATA

The published statistics give a classification of incomes by range of total before tax income, by the number of 'persons' and 'total income assessed'. This applies to both the super-tax/surtax data and the Survey of Personal Incomes (SPI) based on the income tax returns. To take an example, the Ninety-Eighth Annual Report of the Commissioners of Her Majesty's Inland Revenue shows that the total number of persons assessed to surtax in 1953–54 was 258,999 and the total assessed income was £1062 million. The published tables contain 17 ranges, the lowest being £2000–£2500 and the highest being £100,000 and upwards. (At that time, mean income was less than £450 a year.) The average assessed income of surtax payers was £4100 a year and 37 people had reported incomes in excess of £100,000 a year. The tables show the division by 'earned' and 'investment income'; earned income accounted for 62% of the total, but only 35% of total income in the range from £20,000 a year upwards.

The sources of the tabulated income data are listed in Appendix 4A. The income tax data relate to tax years, starting in April (currently on 6 April). The year is either identified in full (1953–54) or, where there is no risk of ambiguity, by the year in which the tax year started (1953). The income recorded in the surtax (and income tax) statistics are to a degree based on income at earlier dates, with the lag depending on the date, the kind of income, and the (varying) income tax treatment. In this study, to make some allowance for the lags, the data for the financial year (for example, 1953–54) are related to the population in the calendar year (in this case, 1953). According to Bowley and Stamp, the income reviewed

² In separate research, I consider the evidence for the nineteenth century, including the distribution for 1801, which is the only year in that century for which total income information is available, and re-examine the evidence about top earnings. For discussion of the evidence about the distribution of income in the nineteenth century—see Williamson (1985) and Feinstein (1988).

for the fiscal year commencing in April of year t may be treated as ‘virtually identical’ with income for the calendar year t : ‘it would be identical for Schedules A and B, and is closely similar for Schedules C and E’ (1927: 16). This procedure brings the dating closer to the income actually covered, but the reader should bear in mind the timing issue in any investigation of the relation between top incomes and economic variables such as inflation or unemployment.

Nature of the Data

The data come from income tax records and suffer from potentially serious problems. There is a tendency to under-report certain types of income in order to evade tax; and avoidance has been possible through the use of close companies and trusts. The definitions of income and unit follow the tax law, and may not therefore correspond to those needed to study income distribution. There is little or no contextual data to help understand the determinants of the distribution, and in this respect the tax records compare unfavourably with micro-data from household surveys. At the same time, alternative sources such as household surveys are not immune from the problems just identified. Household surveys suffer from item non-reporting or under-reporting, and from differential complete non-response, which reduces the representativeness of the observed sample, and is especially likely to generate problems at the top end of the distribution. There are shortcomings that arise on account of failure to tailor questions asked to the chosen definitions, particularly when making use of surveys conducted for other purposes. Users of survey data may be constrained by its design: for example to using a household unit which does not throw light on the distribution among more narrowly defined units, such as the inner family (single person or couple, with or without dependant children).

The tax data for top incomes have to be used with caution, and are limited in their content, but they have a role to play, particularly when no other sources exist for the years in question.

Previous Studies of the Twentieth Century

As soon as distributional data from the super-tax returns became available, they were used by Stamp (1914 and 1916) and Bowley (1914). From the data for 1911–12 (the third year of operation), Stamp concluded that a Pareto distribution (see Box 2.1, Chapter 2 in this volume) with an exponent of 1.685 fitted well except at the top and bottom of the super-tax ranges, where the number of incomes was less than predicted. Using the same data, Bowley (1914) concluded that a Pareto exponent of 1.5 provided a good fit from £5000 to £55,000. The Pareto diagram for numbers plots the logarithm of the total number with incomes y or higher against the logarithm of income. The downward slope of the fitted line is the Pareto exponent, denoted here by α . To interpret the meaning of the Pareto

exponent, we may note that a steeper Pareto curve, with a larger α , has less income above any particular level, y , the mean income above y being $\alpha/(\alpha - 1)$ times y . In this sense, there is less inequality as α increases, assuming that the rest of the distribution is adjusted to hold constant the mean.

The super-tax statistics were a natural tool to use in comparing inequality at the top before and after the First World War. In his study of the economic consequences of the First World War, Bowley noted, 'the only definite statistics existing in connection with the distribution of income [before and after the war] are those of incomes assessed for super-tax' (1930: 136). He compared the numbers with *net* incomes, applying the prevailing tax rates, above £3000, £10,000 and £50,000 per year, adjusted for inflation. He found that in each case a substantial reduction: for example the number in excess of £10,000 had fallen from 4000 in 1913–14 to 1300 in 1924–25. He concluded, 'there had been a very marked redistribution... the very rich have less than half their pre-war income' (1930: 160). The number with *gross* incomes in excess of £10,000 had fallen from 5000 in 1913–14 to 3500 in 1924–25.

The most extensive use of the super-tax data was by Stamp (1936) and by Champernowne (1936). Stamp took the super-tax data from 1911–12 to 1934–35, interpolating in each year to identify the gross income of the 10,000th person and the 25,000th person. He then examined the correlation between these income levels and indices of price levels. Champernowne in his Cambridge Prize Fellowship thesis (1936, published in 1973) employed both the Pareto diagram for numbers and a corresponding diagram for total income received by persons with incomes y or higher, referred to here as the Pareto diagram for amounts. Champernowne, using the super-tax data from 1912 to 1933, concluded, 'for each portion of the curve, steepness has been increasing fairly steadily since 1920 (except for the *very* rich), thus indicating increasing equality, whereas before 1920 this was not the case' (1973: 84). When his thesis was published in 1973, Champernowne added an appendix covering the period from 1913–14 to 1966–67, taking centred 3-year averages. This is the fullest run of years in any study using the super-tax/surtax data.³ Described by the author as showing 'a very considerable reduction of the inequality', the Pareto exponents rose particularly between 1939–40 and 1951–52. These results are again based on absolute numbers: for example, the most extensive cover the range from the 200th richest person to the 51,200th richest. The Pareto exponent for this group, estimated using numbers, increased from 1.75 in 1927–28 to 1.82 in 1939–40, then jumped to 2.34 in 1951–52 and was 2.345 in 1963–64 (Champernowne 1973: 88). The findings are affected by the fact that the Pareto distribution is at best an approximation. The exponents estimated using the Pareto diagram for amounts are 1.64, 1.745, 2.28, and 2.34. Whereas the last of these values is virtually identical to that obtained from the distribution by numbers,

³ After the Second World War, there were a number of studies of income levelling between 1938 and 1949, including Seers (1949 and 1956), Allen (1957), Lydall (1959) and Brittain (1960), but none of these used the surtax returns even where, like Allen, they were specifically concerned with higher incomes. An exception is Rhodes (1949 and 1951*a*), to whom reference is made below.

the values for earlier years are lower and tell a different story, indicating a continuing movement towards reduced inequality in the 1950s.

This review of previous uses of the super-tax/surtax data demonstrates the potential of the source, but also suggests that further exploration would be of value. A re-analysis is necessary to clarify what happened in the years that have been studied previously. The surtax data for more recent years have not been used. We can now use the data from the general income tax contained in the Survey of Personal Incomes. The analysis needs to be taken further by relating the absolute numbers and amounts of income to the total population and total income. This would allow us to calculate the income shares of top income recipients, providing an alternative to the Pareto exponent as a summary measure of inequality.

The Survey of Personal Incomes (SPI)

The schedular system of income taxation meant that only in the case of super-tax/surtax did the authorities assess the total income of individuals. However, the Inland Revenue has from time to time carried out special statistical exercises to combine the schedular income tax information to arrive at a distribution of income among taxpayers. In the days before computers, this was a substantial undertaking. One taxpayer may have been assessed under several different schedules, and may have appeared more than once under a particular schedule. These special statistical enquiries now take the form of the annual Survey of Personal Incomes, and I refer to earlier inquiries by the same title, abbreviated to SPI. The SPI figures are also published in the form of tabulations, but micro-data are available for recent years, and have been used from 1995–96 to 2000–01. The micro-data avoid the need for interpolation (see below), but the procedure for anonymizing the public use tapes involves the construction of composite records for people with high incomes (for this reason, we do not make estimates for the very top group—the top 0.01%).

Such a special investigation was first conducted for incomes assessed for the income tax year 1918–19, at the request of the Royal Commission on the Income Tax, repeated for 1919–20 and 1937–38. As described above, these surveys are taken here to refer to incomes in the calendar years 1918, 1919, and 1937, respectively, although this timing is only approximate.⁴ The immediate post First World War SPI figures have tended to be dismissed. Lydall (1959) referred to the data for 1919–20 but discarded this year as ‘abnormal’. Bowley said of the SPI data ‘its utility was never great’, since it related to a time of very rapid changes in income (1942: 113). In this regard, the availability of super-tax estimates on an annual basis helps us put the immediate post-war years in perspective. In contrast to the 1918 and 1919 surveys, the 1937 survey has been extensively used by scholars (such as Barna 1945).

⁴ The timing is complicated by the fact that different types of income are assessed at different dates. Income returned for the tax year 1937–38 in part relates to income accruing in that year (for example, the income of weekly wage-earners assessed half-yearly) and in part to income in the year 1936–37 (see the Inland Revenue Annual Report for the year 1939–40: 29 and Barna 1945: 254).

It provided for the first time tabulations of income by ranges of income after income tax and surtax.

The SPI as such officially began in 1949–50, when the Inland Revenue initiated a series of quinquennial inquiries (subsequently carried out for 1954–55, 1959–60, 1964–65, and 1969–79) based on the information contained in the income tax records for a sample of taxpayers. From 1963–64 this was supplemented by smaller annual surveys with a sample size of around 125,000, and the annual surveys are now the sole source. The Central Statistical Office combined the SPI distribution with information from other sources to produce the distribution of income series published for many years annually in the national accounts Blue Book (hence referred to as the ‘Blue Book’ series). Data from the Family Expenditure Survey were used to add in non-taxable income not covered by the SPI and to augment the SPI sample for those tax units that are not included in the tax records. The Blue Book series was last published for 1984/85.

In that the SPI data cover a larger fraction of the population, they may be regarded as a superior source to the super-tax/surtax data for those years where we have both. Moreover, for those covered by both sources, the Inland Revenue expected the SPI figures to give more complete coverage, reflecting ‘the deficiency [in the super-tax statistics] attributable to the leakage which is inherent in a system of direct assessment as opposed to a system of collection of duty at the source’ (Inland Revenue (1920) *Annual Report*, p. 69; see also Stamp’s discussion of Allen (1920: 122)). Operating in the opposite direction is the fact that the super-tax/surtax figures used here are, in general, based on the final assessment, whereas the SPI do not incorporate all adjustments (see below). In reality, the SPI and super-tax/surtax figures are close in almost all cases. Where there is an overlap (for 1918–19 and 1919–20, 1937–38, 1949–50, 1954–55, 1959–60 and from 1962–63 to 1972–73), I use the SPI figures, apart from the share of the top 0.01%, which is based on the super-tax/surtax data from 1959–60 to 1972–73 (since there is greater detail at the top).

4.3 PROBLEMS IN USE OF UK INCOME TAX DATA

There are several ways in which the income tax data depart from what would be desirable in measuring the annual distribution of income. There are several problems that have to be borne in mind when interpreting the findings.

Timing

In addition to the general issue of timing raised earlier, it should be noted that super-tax was initially assessed in tax year t on the income computed for income tax purposes in year $(t-1)$, which itself was in part based on income of the preceding year $(t-2)$ or of an average of the preceding years. Until 1926–27,

Schedule D assessments for income tax were based on a three year average of profits, so that ‘the profits of the years 1, 2 and 3 were averaged to make the [income tax] assessment for year 4, and this became the basis of the super-tax for the year 5’ (Stamp 1936: 642). This meant, ‘super-tax figures lag a long way behind the real profits’ (Royal Commission on the Income Tax 1920: 124). The treatment changed in the Finance Act 1927, when the name changed to surtax, and the surtax levied in year t was based on income assessed to income tax in that year. To avoid confusion, the super-tax years have here been renumbered to refer to the income tax year, so that the year 1909–10, for example, is labelled 1908–09 (this is the reverse of the procedure used by Stamp (1936), who post-dated the surtax years).

In addition, the tax assessment could be levied up to six years after the date at which the income was received, the Inland Revenue having the power to assess, or adjust assessments, over that period. The Inland Revenue annual reports contain initial and revised figures. Clark studied the reports for a number of years and applied correcting factors (1937: 74): for example, for data four years before complete assessment due, he increases the number of taxpayers by 3.1%. Rhodes similarly compares the assessments for 1941–42 made four years apart and concludes that the distribution had ‘changed materially’ (1949: 54). In view of this, I use wherever possible the final figures, but in a few cases during the Second World War, and at the beginning of the 1960s, these were not published. No adjustment is made in these cases. (For 1961/62 we only have assessments up to 30 June 1964, and the figures were apparently substantially adjusted after that date. The final number of assessments is some 15,000 higher—see Inland Revenue, 110th Annual Report, page 110. I have not used the data for this year.)

Part-Year Incomes

The underlying tax records refer to units receiving income at any point in the tax year in question. This includes people dying during the course of the year and people entering the relevant population, such as school-leavers. In the case of women marrying, becoming widowed, or divorced, they appear twice (once as single and once as part of the couple)—see Stark (1978: 53). The Royal Commission on the Distribution of Income and Wealth investigated the implications of ‘part-year units’ (1979: 36). Adjustments to the distribution of *before tax* income indicated that in 1975–76 the exclusion of such units reduced the Gini coefficient from 37.3% to 34.7%, but had a much smaller impact on the upper income groups, reducing the share of the top 10% by 0.3 percentage points. For our purpose, the key element is therefore the total of tax units, and this is designed to exclude part-year units (see below).

Definition of income

The tax base does not correspond to a comprehensive definition of income. Among the omissions are (most) capital gains and losses, and certain remuneration

The Distribution of Top Incomes

89

in kind. It cannot be assumed that these departures from a comprehensive definition have a constant effect over time. Incentives for tax avoidance were much less when the top tax rate was under 10% than when it was over 90%. Legislation has in some cases extended the tax base (for instance, surtax directions for close companies) and in others narrowed the base (for example, cessation of the taxation of imputed rents on owner-occupied houses). In the 1960s, the temporary rise in the income shares in 1965 is believed to be due to the payment of unusually large dividends in 1965–66 in anticipation of the introduction of Corporation Tax (*Inland Revenue Statistics* 1970: 61).

The definition of income appearing in the statistics has also changed. For instance, from 1985 employees' superannuation contributions (these are contributions to private pensions) were added back to earned income and this change may have contributed to an upward movement in the top income shares. From 1975–76, the figures relate to 'total income', but prior to the SPI 1976–76, the distribution relates to total net income, which differs from total income in that it deducts retirement annuity premiums, alimony and maintenance payments, and allowable interest payments such as those for house purchase. The Central Statistical Office (1978: tables D and E) analysed the distributional consequences of the change in definition in the overlap year 1975–76 showing that it particularly affected the highest percentile, which increased by 5.6%. The effect on top shares was, however, relatively modest: the share of the top 1% in before tax income was shown as rising from 5.6 to 5.7%. These changes need to be borne in mind when interpreting the findings. In the case of the US, Piketty and Saez (2003) apply adjustment factors to the threshold levels and mean incomes for the years 1913–43 (see Piketty and Saez 2001: 40). As they note, strictly the distribution needs to be re-ranked, but they conclude from examination of the micro-data for 1966–95 that this re-ranking has small effects.

Until 1937, the distributions relate only to ranges of income by income *before* tax, and do not show the distribution by ranges of income *after* tax, limiting what can be said about the distribution of disposable income. Although it would be possible to calculate for earlier years the distribution of *after tax* income by ranges of *before tax* income, this would not take account of the re-ranking of tax units as a result of taxation, and the interval ranges would be inapplicable, limiting the interpolation methods that can be applied. The re-ranking in this case can be significant, and attention is limited here to distributions ranked according to the variable under study.

Control Totals for Population

A key limitation of the earlier super-tax studies is the absence of a link to the aggregate population and aggregate total income. Here, I make estimates of the total population and total income (given in Table 4B.1), building on the foundation provided by the Blue Book distributional estimates constructed by the Central Statistical Office for a number of years from 1938 to 1984/85. This and the next sub-section describe the methods employed.

The unit to which the income tax data relate (up to 1989–90) is the married couple, or single adult, or single minor with income in his or her own right. We need, for a control total, the total number of such units in the whole population, whether tax-paying or not; this is referred to below as the total tax units (which should not be confused with the total number of actual taxpayers). Official estimates of the control total exist for most of the post-war period. For the earlier period, new estimates have been made for this study. Simplifying by ignoring minors aged under 15 with income, the method involves taking the total population of all males and females, aged 15 or over, less the number of married females. Such a breakdown of the population is available for Census years and from the National Register of September 1939. The procedure used, described in Appendix 4B, together with details of the underlying sources, is to express the constructed figures for tax units as a percentage of the total population and interpolate the percentage linearly. Appendix 4B compares the derived totals of tax units with evidence about total tax units for the pre-war period. Taken together, different ways of looking at the estimates do not suggest that our control totals for the population are obviously wrong in a particular direction.

From 1990, the tax unit became the individual and I have taken the total of all individuals aged 15 and over.

Control Totals for Income

As described in Chapter 2, the control total for income can be defined in two different ways. One can start from the national accounts figures for total personal income and work towards a definition closer to taxable income, or one can start from the income tax statistics and add the income of those tax units not covered. Here I adopt the latter approach. The starting point is the total ‘actual’ income assessed by the Inland Revenue for income tax purposes. The total refers to gross income assessed, from which I subtract the income of charities, colleges and other non-profit institutions, dividends paid to non-residents, allowances for depreciation, and that part of profits not distributed by companies. To the resulting figure are added, for the years up to 1944 (a) wages not assessed; (b) salaries below the exemption level; (c) self-employment income below the exemption level; (d) dividends and other capital income below the exemption level; and (e) contributory National Insurance retirement and widows’ pensions. The sources are set out in Appendix 4C. For the years from 1945, when the income tax coverage had become much more extensive, the only allowance under (a) and (b) is for occupational pensions. The totals for wages and salaries for 1949–50, 1954–55 and 1959–60 suggest that the SPI figure is within 5% of the national accounts figure for wages and salaries, and the majority of that difference is likely to be attributable to under-recording of those covered. In the same way, in view of the lower exemption level post 1945, no adjustment is made under (c) and (d), but a sizeable addition is made under (e).

It should be emphasized that the resulting totals, both before and after 1945, have a significant error margin. Some periods are better covered than others by the necessary ingredient series and by contemporary estimates providing points of reference. The war periods and the years immediately following the First World War are particularly subject to error. Feinstein (1972) gives a grading of B ('good') to many of the underlying national accounts series, indicating a margin of error of $\pm(5\%–15\%)$. For the war years and 1918–20 the upper end of this possible range seems appropriate; for recent years $\pm 5\%$ may be a reasonable guide.

Interpolation

For the SPI years prior to 1995 and for all the super-tax/surtax information, the basic data are in the form of grouped distributions, showing the number of tax units, and the total amount of income, in each of a number of income ranges. An interpolation has to be made. It should be noted that I am referring here to closed intervals, with known upper and lower limits to the range. In no case in this chapter is any interpolation applied to the upper open interval.

As explained in Chapter 2, the standard interpolation method, adopted by Feenberg and Poterba (1993 and 2000) and Piketty (2001 and 2003), assumes that the distribution is Pareto in form. However, this method has the problem that, as was seen with the earlier UK studies by Champernowne and others, the information described above allows us to obtain more than one value for the exponent of the Pareto distribution, and hence different interpolated values. An alternative approach is based on placing upper and lower bounds. Gross upper and lower bounds on the Lorenz curve can be obtained by joining the observed points linearly or by forming the envelope of lines drawn through the observed points with slopes equal to the interval endpoints divided by the mean (see Cowell 1995: 114). Where there are detailed ranges, the results for the lower bound (linearized Lorenz curve) are normally very close to the upper bound, but in other cases the differences can be more marked, depending on where the ranges fall in relation to the shares in which we are interested. We have seen in Chapter 2 that for a top open interval the bounds could be particularly wide, since the upper bound on the top share is given by the line with slope equal to the starting point of the range (divided by the mean) all the way to the vertical axis. As noted above, no interpolation is applied here to an open upper interval. If there are more than x percent of the population in the upper open interval, then no figure is given for the share of the top X percent.

In Table 4.1 below, in order to give a single estimate, I have used the *mean-split histogram*. The rationale is as follows. Assuming, as seems reasonable in the case of top incomes, that the frequency distribution is non-decreasing, then tighter, restricted bounds can be calculated (Gastwirth 1972). These bounds are limiting forms of the split histogram, with one of the two densities tending to zero or infinity—see Atkinson (2005). Guaranteed to lie between these is the histogram split at the interval mean with sections of positive density on either side. In the tables, we show by shading the (very small) number of cases where the mean for

the relevant range exceeded the midpoint, thus contradicting the non-increasing density assumption. In those cases, the gross lower bound is given. Percentiles are calculated using the bounds described in Atkinson (2005).

Conclusion

All of these problems in the use of the income tax data point to the need for careful interpretation of the results. Where possible, we give an indication of the possible sensitivity of the findings.

4.4 TOP INCOMES OVER THE TWENTIETH CENTURY

Table 4.1 summarizes the results obtained from the super-tax/surtax and SPI sources for the United Kingdom (figures for 1920 and earlier include what is now the Republic of Ireland). Together, these sources cover virtually the whole of the twentieth century. Figures 4.1 and 4.2 show graphically the shares in total gross income of a number of top percentile groups. Where there are missing years, the lines have been linearly interpolated. The break shown in the series in 1990 corresponds to the switch to independent taxation of husbands and wives. The switch from a net of deductions definition in 1975 is marked by a line in Table 4.1 but no break is shown in Figure 4.1 and 4.2. It should be noted that all the results in this section relate to the distribution of income before tax; evidence from 1937 concerning the after tax distribution is presented in Section 4.

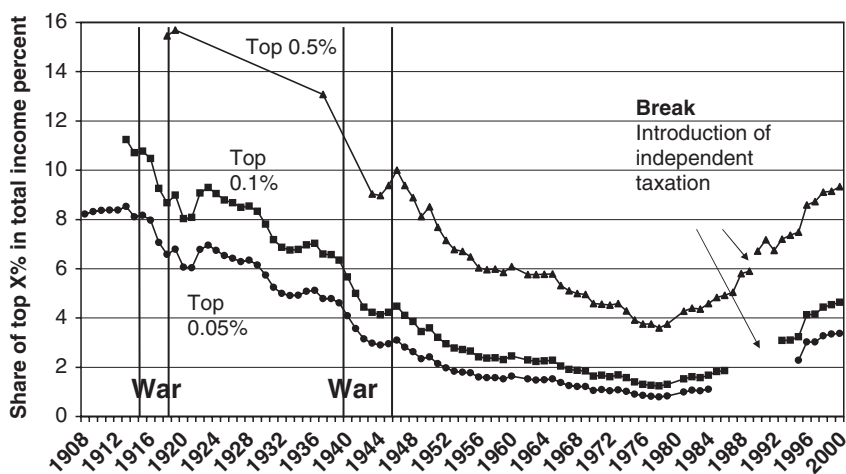


Figure 4.1 Share of total gross income of the top 0.05%, 0.1%, and 0.5% in the UK, 1908–2000

Source: See Table 4.1, this volume.

The Distribution of Top Incomes

93

Table 4.1 Shares in total before tax income, UK 1908–2000

	Top 10%	Top 5%	Top 1%	Top 0.5%	Top 0.1%	Top 0.05%	Top 0.01%
1908						8.22	4.04
1909						8.31	4.12
1910						8.37	4.18
1911						8.38	4.19
1912						8.38	4.15
1913					11.24	8.53	4.25
1914					10.71	8.11	4.04
1915					10.77	8.17	4.07
1916					10.47	7.97	4.00
1917					9.26	7.06	3.52
1918	37.03	30.35	19.24	15.46	8.68	6.58	3.21
1919	38.73	31.48	19.59	15.69	8.98	6.79	3.32
1920					8.03	6.06	2.94
1921					8.08	6.04	2.90
1922					9.07	6.78	3.23
1923					9.29	6.95	3.34
1924					9.05	6.74	3.23
1925					8.79	6.53	3.13
1926					8.67	6.42	3.07
1927					8.49	6.28	3.01
1928					8.54	6.34	3.04
1929					8.33	6.15	2.93
1930					7.81	5.74	2.71
1931					7.17	5.24	2.44
1932					6.87	5.00	2.32
1933					6.75	4.91	2.24
1934					6.78	4.92	2.23
1935					6.96	5.08	2.35
1936					7.03	5.12	2.35
1937	38.37	29.75	16.98	13.07	6.59	4.78	2.18
1938					6.57	4.79	2.21
1939					6.35	4.61	2.13
1940					5.67	4.09	1.84
1941					5.00	3.57	1.57
1942					4.44	3.15	1.37
1943				9.04	4.23	2.98	1.28
1944				8.97	4.13	2.90	1.22
1945				9.38	4.23	2.95	1.23
1946				10.00	4.48	3.10	1.27
1947				9.38	4.10	2.81	1.14
1948				8.88	3.86	2.63	1.05
1949	32.25	23.39	11.47	8.12	3.45	2.34	0.94
1950				8.51	3.59	2.42	0.96
1951			10.89	7.69	3.21	2.15	0.85
1952			10.20	7.15	2.95	1.97	0.77
1953			9.72	6.78	2.77	1.84	0.70
1954	30.63	21.22	9.67	6.71	2.72	1.80	0.67
1955			9.30	6.48	2.65	1.77	0.68
1956			8.75	6.03	2.42	1.60	0.61
1957			8.70	5.96	2.37	1.57	0.59

(contd.)

Table 4.1 (Contd.)

	Top 10%	Top 5%	Top 1%	Top 0.5%	Top 0.1%	Top 0.05%	Top 0.01%
1958			8.76	5.98	2.38	1.57	0.60
1959	29.96	20.26	8.60	5.85	2.30	1.52	0.60
1960			8.87	6.08	2.45	1.63	0.63
1961							
1962	29.37	19.72	8.43	5.76	2.29	1.52	0.58
1963	29.94	20.10	8.49	5.76	2.23	1.47	0.57
1964	29.91	20.07	8.48	5.77	2.26	1.49	0.58
1965	29.88	20.10	8.55	5.79	2.28	1.52	0.62
1966	28.94	19.22	7.92	5.32	2.04	1.37	0.52
1967	28.78	18.99	7.69	5.11	1.91	1.25	0.51
1968	28.55	18.76	7.54	5.00	1.87	1.21	0.47
1969	28.72	18.86	7.46	4.96	1.85	1.22	0.47
1970	28.82	18.65	7.05	4.59	1.64	1.05	0.42
1971	29.29	18.81	7.02	4.56	1.67	1.09	0.40
1972	28.90	18.48	6.94	4.52	1.61	1.04	0.37
1973	28.31	18.18	6.99	4.59	1.68	1.08	0.40
1974	28.10	17.77	6.54	4.29	1.58	1.02	0.37
1975	27.82	17.40	6.10	3.92	1.40	0.91	0.31
1976	27.89	17.33	5.89	3.75	1.30	0.86	0.30
1977	27.96	17.33	5.93	3.75	1.27	0.82	0.28
1978	27.78	17.11	5.72	3.60	1.24	0.79	0.28
1979	28.37	17.57	5.93	3.76	1.30	0.83	0.31
1980							
1981	31.03	19.45	6.67	4.27	1.53	0.99	
1982	31.23	19.65	6.85	4.40	1.61	1.07	
1983	31.76	19.98	6.83	4.36	1.58	1.04	
1984	32.52	20.67	7.16	4.59	1.67	1.10	
1985	32.65	20.75	7.40	4.83	1.82		
1986	32.94	21.04	7.55	4.92	1.86		
1987	33.27	21.38	7.78	5.04			
1988	34.21	22.37	8.63	5.80			
1989	34.15	22.51	8.67	5.90			
1990	36.90	24.43	9.80	6.72			
1991	37.65	25.13	10.32	7.18			
1992	37.64	24.89	9.86	6.74			
1993	38.34	25.51	10.36	7.20	3.09		
1994	38.33	25.62	10.60	7.36	3.10		
1995	38.51	25.80	10.75	7.49	3.24	2.28	
1996	39.30	26.85	11.90	8.59	4.13	3.03	
1997	38.94	26.78	12.07	8.72	4.15	3.02	
1998	39.47	27.42	12.53	9.11	4.44	3.27	
1999	38.97	27.18	12.51	9.15	4.54	3.35	
2000	38.43	27.04	12.67	9.33	4.64	3.37	

Note: denotes non-decreasing density assumption not satisfied; gross lower bound used.

The Distribution of Top Incomes

95

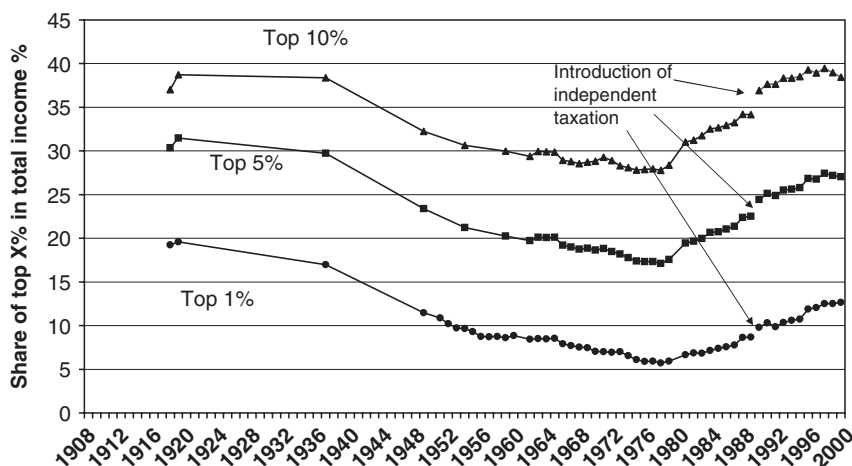


Figure 4.2 Share of total gross income of the top 1%, 5%, and 10% in the UK, 1908–2000

Source: Table 4.1, this volume.

Before and After the First World War

When super-tax began, those subject to tax coincided in size, if not in composition, with the ‘Upper Ten Thousand’. This term originated in the United States, but has British resonance: for example the number of landowners listed as owning more than 1000 acres in 1880 was some 10,000 (Cannadine 1990: 9). There were many outside this class who were comfortably well off: for example, in August 1914 there were estimated to be 151,000 private motor cars in use (Bowley 1919: 22n). But the super-tax payers were more than comfortably off. The share of the top 0.05% was more than 8%, or 160 times their proportionate share. The share of the top 0.01%, an even smaller group (shown in the final column of Table 4.1), was 4%, or 400 times their proportionate share. Super-tax was only payable on incomes in excess of £5000 a year, which is estimated here to be some 70 times the average income of tax units, equivalent today to some £1.5 million a year. To give some idea of the position of those on the margin of being super-tax payers, we may note that Bonar Law, the businessman who became leader of the Conservative Party in the House of Commons in 1911, had an income of around £6000 a year, of which £4500 came from investments and the remainder from directorships (Blake 1955: 37). In 1913, the salary of High Court judges (Routh 1980: 64) was £5000 (their salaries remained at £5000 until 1954; in April 2001 they were £132,603, or some 7 times the average income). On the same salary in 1913 was the Chancellor of the Exchequer (Routh 1980: 73). The Chancellor and judges were however soon to become liable to super-tax, as in the first war Budget of 1914 the threshold was lowered to £3000 and in 1918 to £2500, when ‘a spirit of sacrifice was in the air’ (Sabine 1966: 154). The lowering of the threshold more than doubled the number of super-tax payers and allows us to calculate the share of

the top 0.1%. Initially this share was some 11% of total income, and the top thousandth began at some 40 times mean income. This addition to the series allows us to distinguish between the top 0.05% and the 'next 0.05%', a distinction that is of interest since at times their shares in total income have moved differently.

Before 1914 there is no apparent trend in the shares of the top 0.05% or the top 0.01%. The share of the top 0.01% in 1914 was identical to that in 1908. But by the end of the First World War, marked by the first set of vertical lines in Figure 4.1, there had been a significant fall in their share. The share of the top 0.05% fell from more than 8% in 1914 to 6% in 1920. The top 0.1 percentile fell in the same way from 40 times the mean to 30 times the mean. These are large changes. How far was the fall in the First World War temporary and how far a reflection of secular decline? The subsequent interwar period has been strangely neglected. In his historical study of UK income inequality, Soltow (1968) did not use any data for the interwar period, going direct from 1913 to 1962. Williamson's analysis (1985) stops in 1913; Lindert (2000) goes direct from 1911 to 1938. Table 4.1 and Figure 4.1 show that there was some recovery in the share of top incomes in the early 1920s as prices fell sharply, reflecting the fact that a significant source of income (rents) tended to remain unchanged in money terms. The lags in the income tax data may be important here, with the recovery partly reflecting the delayed entry of profits made during the war (a matter of considerable public concern at the time). War profits were subject to Excess Profits Duty, which further complicates the interpretation, since repayments of Duty were made where profits fell, and these repayments counted as income in the super-tax statistics (see the discussion of Allen 1920 by Bowley and Stamp).

Over the interwar period as a whole, top shares fell. The share of the top 0.05% went from 6% in 1920 to around 4.5% in 1939. The share of the top 0.01% fell from around 3% to around 2%. The decline was not, however, a steady one. There was broad stability over the 1920s: the shares in 1929 were essentially the same as those in 1920. The years 1929–32 then saw a rapid decline. The share of the top 0.05% fell from 6.2% in 1929 to 5.0% in 1932, a fall of a fifth in three years. The share was then broadly maintained until 1938. We have therefore a sequence of falls and plateaux. Second, the next 0.05 percent saw little overall change over the interwar period: their share in 1937 was the same as that in 1917. The income required to be in the top 0.1 percent was still some 30 times the mean at the end of the 1930s. This highlights the 'localised nature of redistribution', as was found by Brittain (1960) for a later period (1938–49), to which we now turn.

The Second World War and the Golden Age pre-1973

1938 is the first year for which there are official statistics for the income distribution as a whole. The official 'Blue Book' estimates show the share of the top 1% in before tax income as being sharply reduced from 16.6% in 1938 to 11.2% in 1949 (Royal Commission on the Distribution of Income and Wealth 1979:

The Distribution of Top Incomes

97

Table 2.4), with an even more dramatic change in after tax income. Our estimates show a similar picture for those higher up the scale. The share of the top 0.05% fell from 4.5% in 1939 to under 3% in 1945, and the decrease was not confined to this group: the share of the next 0.05% also fell. The 0.1 percentile fell from 30 times mean income to 20 times. The differences were still large: in 1944 the Duke of Wellington is reported to have had a gross income of £40,000 a year (Cannadine 1990: 630), or 135 times the mean income. At the same time, tax rates were then highly progressive: the Duke stated that he paid all but £4000 in tax (leaving him with some 16 times the mean disposable income).

This was not purely a step change. Figures 4.1 and 4.2 show that, post-war, the shares of the top groups fell steadily from 1948 for the next ten years. The share of the top 0.05% fell from 2.6% to 1.5% in 1959, another fall of over a third. The share of the top 0.5% fell from nearly 9% to under 6%. It should be noted that these figures all relate to before tax income; we discuss the after-tax distribution below.

From the later-1950s to 1965 there was a further plateau, as is shown most clearly by the share of the top 1%. It should be borne in mind that there were several changes in surtax in this period, which affected the lower ranges. The 1957 Budget allowed for 1956–57 and subsequent years the deduction against taxable income of the amount by which certain personal allowances exceeded the single allowance (Sabine 1966: 231 and Inland Revenue, 104th Annual Report, p. 89). (The Inland Revenue tables refer to ‘total income’ and ‘assessed income’, where the latter is equal to the former minus the deductible allowances. The statistics here are based on total income.) This excluded from the statistics people whose total income exceeded £2000 but who, because of allowances, were not liable to surtax. The numbers were estimated at 45,000 for 1956–57 with £95 million income (Inland Revenue, 101st Annual Report, p. 93). Since in this year the top 1% includes some people in this range, these numbers have been added back. In 1961–62 earned income relief was extended to surtax. For a person with only earned income, the surtax threshold was in effect doubled to £4000 for a single person. £4000 was more than 5 times the mean income, and about 0.6% had incomes in excess of this amount. The Inland Revenue estimated that the number excluded had risen by 1962–63 to 425,000 (Inland Revenue, 107th Annual Report, p. 98). The recorded share of the top 1% may therefore have been negatively affected. Allowance for these fiscal changes strengthens the conclusion of broad stability in this period.

Moving on to the mid-1960s, we may note the temporary rise in the income shares in 1965. This is believed to be due to the payment of unusually large dividends in 1965–66 in anticipation of the introduction of Corporation Tax (*Inland Revenue Statistics* 1970: 61). From 1966 to 1974 there was a further significant fall in the share of top incomes. By 1975, the share of the top 1% was 6%. The share of the top 0.1% was under 1.5%, or a third of its value immediately after the Second World War. To be in the top 0.1% in 1978, an income of 8 times the mean would suffice.

The Final Quarter of the Twentieth Century

The year 1979, when Mrs Thatcher was elected, proved to be a turning point for the top income shares. In the next two decades, the shares of top income groups in the UK recovered the ground lost since the Second World War. In interpreting the rise shown in Figures 4.1 and 4.2, we need to bear in mind the introduction of independent taxation for husbands and wives. Until 1990, the incomes of husband and wife were aggregated in the SPI data (this applied even where they had elected for separate taxation). The data from 1990 relate to individuals, and the control total has been correspondingly adjusted. As may be seen from Figure 4.2, there was a distinct hiatus in 1990. But the upward trend continued at much the same rate. Between 1978 and 1989 the share of the top 1% rose by three percentage points; between 1990 and 2000 the share of the share of the top 1% rose by a further three percentage points. Even allowing for the break in 1990, the share of the top 1% has more than doubled since 1978. The share of the top 0.5% has increased by proportionately more. The share of the top 0.05%, the group with which we began in 1908, is 3.5% in 2000, or 70 times their proportionate share.

Taking into account the break in the series, it seems safe to conclude that the shares of top incomes are now broadly back where they were at the end of the Second World War. The last quarter of the twentieth century saw an almost complete reversal of the decline in observed inequality at the top that had taken place in the preceding 25 years.

Conclusions

We are considering here groups much smaller than those typically treated in distributional analyses. These are of particular interest since income change for the rich can be quite different from that evidenced by the rest of the distribution. Moreover, the groups may be small in size but they receive significant fractions of total income. The super-tax evidence shows that the top tenth of 1% had more than 10% of total income before the First World War. Since then, income shares at the very top fell dramatically for the first three-quarters of the century, but since 1979, they have recovered the ground lost since the Second World War. At the top of the distribution, we do appear to have a distinct U-shape of falling and then rising concentration of incomes.

4.5 ALTERNATIVE PRESENTATIONS

In seeking to understand the evolution of top income shares, we have first to ask how robust are the conclusions, in the light of the qualifications outlined in Section 4.3. In presenting the empirical evidence, I have emphasized changes over time. To this extent, the conclusions are robust to errors that are constant over time. If top incomes are consistently understated in the income tax data,

the direction of movement is still correctly measured. But there may be good reasons to expect the errors to have changed in importance over time.

Robustness of the Conclusions

The results indicate that the shares of top income units in the UK have returned to broadly the level of 50 years ago, but that the degree of concentration is considerably reduced when compared with that before the First World War. At that time, a tenth of total income was received by the top 0.1% of tax units; in 2000 the group of recipients of the top tenth of income was at least some 5 times bigger (the top 0.5%).

How sensitive are the findings to the methods employed? It is evident that the estimated shares can be affected by the control totals. Our total income for 2000, for example, shows a rise of 11% over 1999. This rise is consistent with the recorded income of taxpayers, but is twice the growth of GDP. If the control total had only risen by the same amount as GDP, then the estimated share of the top 1% would have been 13.4%, rather than 12.7%, indicating a sharper upturn in 2000. The choice of control totals may therefore affect our view of the year-to-year changes. However, it seems unlikely that the conclusions about broad trends, or the U-turn, would be over-turned by variations in the control totals for total tax units or total income. The totals for the second half of the century are relatively well established. A variation of 20% or even 30% in the income shares in 1914 would not change the comparison of 1914 and 2000.

Where the conclusions about the century-long change, or the U-shape, may be most at risk is from an increasing departure of taxable income from total income. With the advent of high marginal tax rates, the decline in observed income shares may be in part a reflection of increasing conversion of income into forms that do not appear in the income tax statistics. In 1957, the *Economist* noted the small number of surtax payers and the low surtax yield, which ‘offend the evidence of one’s eyes’ (9 February 1957: 490). Kaldor commented at the time that ‘for a period of more than a decade not more than a few dozen taxpayers in the whole country had a taxed net income of more than £6,000, whilst the scale of living of the ‘upper ten’ has remained appreciably higher than this’ (1955: 228). Titmuss argued that the income tax data are misleading in his book *Income Distribution and Social Change* (1962).

Retained Company Profits and Capital Gains

The conclusions regarding trends over time are particularly at risk on account of the retention of company profits. The retention of profits in private companies was a continuing matter of concern to the Inland Revenue, as in the celebrated William Morris surtax cases in 1926 and 1929 (Andrews and Brunner 1959: chap. IX). Investment in companies that paid low dividends but generated high capital

growth allowed return to be converted into tax-free capital gains. In the 1940s and 1950s a number of studies examined the effect of imputing to persons the undistributed profits of businesses. Barna (1945: Table 17) in his estimates for 1937 adds 22.6% to the incomes of those with £8000 a year or more (broadly the top 0.05%), and 5.9% to total income. This would imply adjusting the share of the top 0.05% upwards by a factor of 1.158, raising it from 4.78% to 5.54%.

Of particular potential importance is the increase in retained profits after the Second World War: they rose from 25% of corporate income in 1938 to 44% in 1950 (Feinstein 1972: Table 11).⁵ Seers (1949) examined the impact of allocating to individuals the undistributed profits of companies in his study of the levelling of incomes since before the Second World War. The effect on those with incomes above £2000 (broadly the top 0.5%) of his estimated allocations (1949: tables I and II) would be to raise the share by a factor of 1.24 in 1938 and 1.56 in 1947. As his results show, on this basis, the pre-tax share of the top income groups would be little different pre- and post-war. On the other hand, this calculation assumes that the top group retained the same share of equity as in 1937, whereas, as argued by Lydall (1959), the share of the top 1% in total equity had declined, in which case there would remain a fall in the income share compared with the pre-war level. An alternative approach is that adopted by Kaldor (1955), who compares the investment income recorded in the surtax returns with the wealth of top wealth-holders, assuming that these two groups can be equated. This approach was developed by Stark (1972) who made estimates of the accrued capital gains on all asset classes for 1954, 1959, and 1964. He concluded that 'if we compare the [distributions] before and after the inclusion of capital gains . . . there is little doubt that the shape of the distributions is changed substantially' (1972: 77). The Gini coefficient was estimated to be some 4–5% points higher in 1954 and 1959. These were years in which capital appreciation was large, but the size of the difference serves as a warning.

In order to test the robustness of our conclusion reached regarding the downward trend in top income shares from 1937, we can make an approximate adjustment for the impact on the share of the top 1% of the increase in retained earnings from 1937 to 1965, taking account of the changing pattern of share ownership. For certain benchmark years, information exists about the proportion of shares that are personally held (the sources used here are Barna (1945: 72–3) and Atkinson (1972: 42)). The fraction of personally held shares owned by the top 1% is approximated using information for 1937 (Barna 1945: table 77) and *Inland Revenue Statistics 1973* (table 94). Retained earnings are from Feinstein (1972: table 11). Table 4.1 shows the share of the top 1% as virtually halving over the 20 years from 1937 to 1957; the adjusted share, shown in Figure 4.3, attributing to the top 1% their estimated share of retained earnings, falls from 20.7% to 13.9%, a fall of a third. The decline in the share is reduced but is still very substantial.

⁵ See Chapter 3 for discussion of this phenomenon in France.

The Distribution of Top Incomes

101

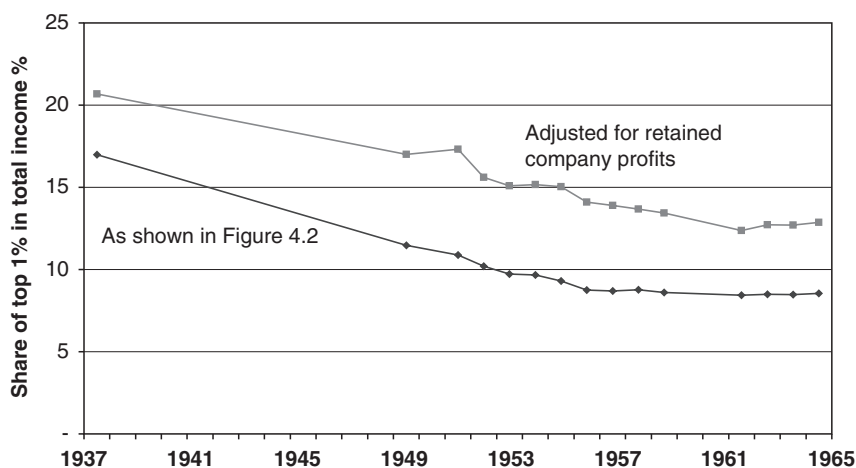


Figure 4.3 Effect on share of top 1% of adjustment for retained earnings, UK 1937–65

Recent Tax Cuts and their Effect on Reported Incomes

More recently, top tax rates have fallen. The top rate on investment income in the UK was reduced from 98 to 75% in 1979, from 75 to 60% in 1984, and from 60 to 40% in 1988. Tax cuts may have reversed the previous tendency for top income shares to be under-recorded in the tax statistics. In the United States, a large increase in the top shares was observed after the Tax Reform Act of 1986. Feenberg and Poterba note that ‘it might in part have been the result of high-income taxpayers responding to lower marginal tax rates by reporting more of their “true” income as taxable income... for example, through a decline in non-taxable employer-provided benefits or through a reduction in tax evasion’ (2000: 267). Gordon and Slemrod argue, ‘the jump in the observed income of the high-income individuals during the 1980s could in part reflect the effects of a reduction in income shifting [between corporate and personal tax bases] and an increased use of wage compensation in response to the drop in personal tax rates relative to corporate rates’ (2000: 245). In their analysis of top income shares in the US, Piketty and Saez (2003, and Chapter 5 in this volume) note the surge that happened after 1986, but point out that the average increase from 1985 to 1994 is not significantly higher than the increase from 1978 to 1984 or from 1994 to 1998.

The same factors may have operated in the UK, although there are other reasons to expect the shares to be increasingly *understated*, including the replacement of earned income by stock options. From Table 4.1, there appears to have been something of a jump in the UK in 1988, when the top rate was cut to 40%, but this jump is modest in relation to the overall upward movement from 1979 to the end of the century. Income re-arrangement may have played a role, but it does not seem likely that it provides a full explanation.

Shares within Shares

The estimated shares of top income groups depend on the control totals for the total tax units and for total income. As noted earlier, the broad conclusions are not likely to be affected by errors in the control totals. At the same time, the more detailed year-on-year changes may be sensitive, as may comparisons across countries at a point in time. It is therefore interesting to consider the distribution *within* the top groups, since this relative distribution does not depend on the control total for income (it does depend on the control total for tax units).

Figure 4.4 shows the share of the top 1% within the top 10%, and the share of the top 0.1% within the top 1%. (The break with the introduction of independent taxation is not marked.) This demonstrates the concentration of income *within* the top groups: in 1937, for example, the top tenth of the top 1% had over a third of the total income of that select group. The time paths for the two groups are remarkably similar, and mirror those for the top income shares in Figure 4.1. Concentration within the top groups fell sharply over the first three-quarters of the century and then reversed.

As explained in Chapter 2, the behaviour of the shares within shares may be expressed in terms of the Pareto-Lorenz coefficient, or the Pareto coefficient derived from the Lorenz curve. Comparing distributions relative to the mean, a higher Pareto coefficient corresponds to less concentration. The Pareto-Lorenz coefficients calculated from two sets of relative income shares are shown in Figure 4.5. Before the First World War, the coefficient was stable over time, with values similar to that found by Stamp (1914). It rose, slowly, after 1918, and by 1934 it had reached a value close to 2. From 1939 to 1954, there was a sharper rise, followed by a period of broad constancy until the 1970s, when it increased again,

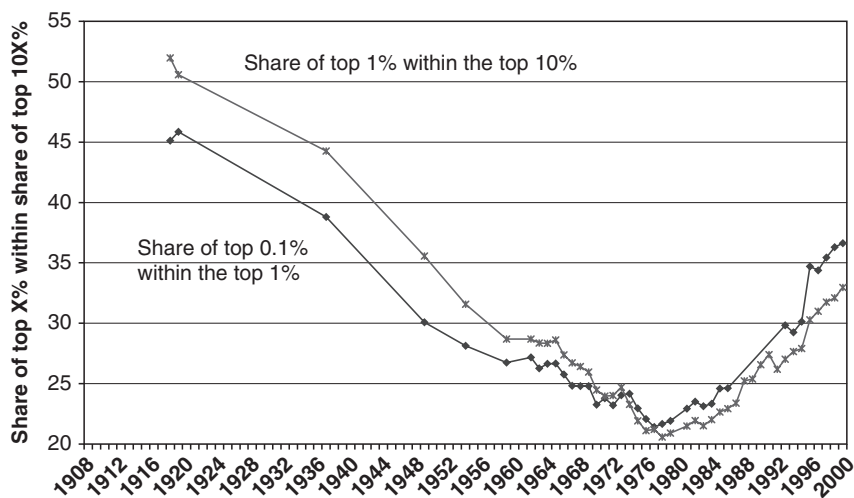


Figure 4.4 Shares within shares, UK 1918–2000

Source: Table 4.1, this volume.

The Distribution of Top Incomes

103

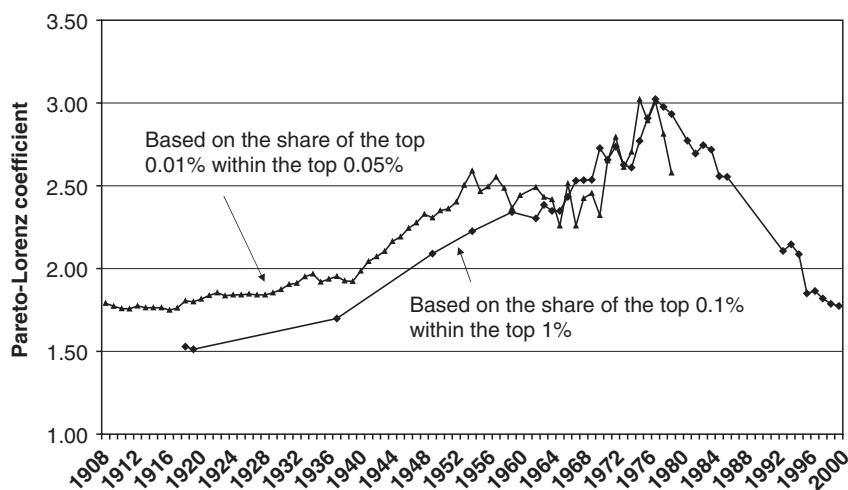


Figure 4.5 Pareto-Lorenz coefficients, UK 1908–2000

Source: Table 4.1, this volume.

reaching a value of 3. The coefficient then turned sharply down. By the end of the 1990s, it was around 1.8, not far from the values found at the beginning of the century. As far as the shape of the upper part of the income distribution is concerned, we appear to have come full circle.

Incomes after Tax

The evidence to this juncture refers to incomes before deduction of tax. While the data for 1918 show the amount of tax collected, they are classified by incomes before tax. Only from 1937 are there data classified by range of income after tax. The resulting estimates are given in Table 4.2 and graphed in Figures 4.6 and 4.7. The rise in after tax inequality is even more marked. Even subtracting 1 percentage point for the break in 1990, the share of the top 1% has risen from 4.2% in 1978 to 9.4% in 2000. The increase has continued after the election of the Blair Government in 1997, and if the trend continues the share will soon reach that observed in 1937. Indeed, in the case of the top 0.1%, we have precisely returned to the situation pre-Second World War.

The impact of income taxation on the top income shares is illustrated in Figure 4.8, which shows the percentage reduction in after tax shares compared with before tax shares. (These are not necessarily the same people.) The share of the top 0.1% in before tax income in 1937 was for example 6.59%, whereas the share in after tax income was 3.65%. This is shown in Figure 4.8 as a reduction by 45%. The reduction in the relative share of the top 10%, on the other hand, was less than 10%. The latter figure increased up to the early 1950s and then remained broadly constant. For the top 1% and 0.1%, in contrast, the arithmetic impact of

Table 4.2 Shares in total after tax income, UK 1937–2000

	Top 10%	Top 5%	Top 1%	Top 0.5%	Top 0.1%	Top 0.05%
1937	35.64	26.10	12.57	9.01	3.65	2.37
1938						
1939						
1940						
1941						
1942						
1943						
1944						
1945						
1946						
1947						
1948						
1949	28.75	18.75	6.76	4.17	1.23	0.68
1950						
1951						
1952						
1953						
1954	26.56	16.61	5.68	3.40	0.97	0.53
1955						
1956						
1957						
1958						
1959	25.91	16.21	5.51	3.33	0.95	0.54
1960						
1961						
1962	25.73	16.47	5.75	3.61	1.06	
1963	26.47	16.92	5.72	3.60	1.02	
1964	26.11	16.32	5.73	3.53	1.02	0.57
1965	25.75	15.95	5.47	3.32	0.93	0.54
1966	25.27	15.59	5.30	3.21	0.89	0.52
1967	25.19	15.55	5.23	3.16	0.87	0.50
1968	24.94	15.37	5.10	3.07	0.83	0.49
1969	25.07	15.38	5.03	2.99	0.81	0.44
1970	25.27	15.33	4.83	2.82	0.73	0.39
1971	26.16	15.89	5.00	2.94	0.80	0.45
1972	25.68	15.47	4.86	2.88	0.80	0.46
1973	25.28	15.32	4.89	2.91	0.81	0.46
1974	24.78	14.71	4.35	2.53	0.69	0.39
1975	24.81	14.64	4.23	2.45	0.66	0.37
1976	24.96	14.68	4.17	2.39	0.65	0.37
1977	25.15	14.77	4.24	2.45	0.66	0.38
1978	25.22	14.80	4.21	2.44	0.69	0.40
1979	26.18	15.61	4.71	2.82	0.86	0.53
1980						
1981	28.49	17.17	5.19	3.13	0.99	0.62
1982	28.52	17.27	5.32	3.20	1.02	0.64
1983	29.04	17.64	5.37	3.24	1.04	0.65
1984	29.64	18.20	5.63	3.43	1.10	0.67
1985	29.94	18.25	5.79	3.54	1.18	0.74
1986	30.03	18.40	5.80	3.56	1.21	0.77

The Distribution of Top Incomes

105

1987	30.29	18.64	5.90	3.63	1.20	0.76
1988	31.54	19.84	7.05	4.65	1.83	
1989	31.29	19.92	7.14	4.66	1.81	
1990	33.92	21.73	8.02	5.41	2.21	
1991	34.52	22.20	8.35	5.67	2.35	
1992	34.47	21.96	8.01	5.37	2.13	
1993	34.94	22.48	8.45	5.75	2.37	1.61
1994	34.78	22.36	8.56	5.78	2.35	1.60
1995	34.88	22.52	8.66	5.89	2.46	1.72
1996	35.48	23.33	9.53	6.73	3.13	2.28
1997	35.24	23.33	9.75	6.92	3.25	2.38
1998	35.52	23.66	9.97	7.10	3.36	2.45
1999	34.95	23.38	9.96	7.13	3.44	2.53
2000	34.31	23.09	10.03	7.24	3.50	2.53

taxation increased during the Second World War and then declined in the post-war period. (I refer to ‘arithmetic’ impact, as I am not here considering the incidence of the tax.) The decline could be expected, even without any change in the tax schedule, as a result of the decline in top income shares. Equally, we would expect, other things equal, the pattern in Figure 4.8 to be reversed after 1979 as a result of the rise in the gross income shares. But other things were not equal, since the government cut income taxes. The impact of taxation on the top 0.1% fell from 44% in 1978 to 34% in 1979 as a result of the reduction in tax progressivity. There was a further fall, shown for the top 1%, in 1988, and this has been sustained. The convergence of the percentage reductions towards the right of Figure 4.8 illustrates the diminution of tax progression in the UK over the last two decades of the century.

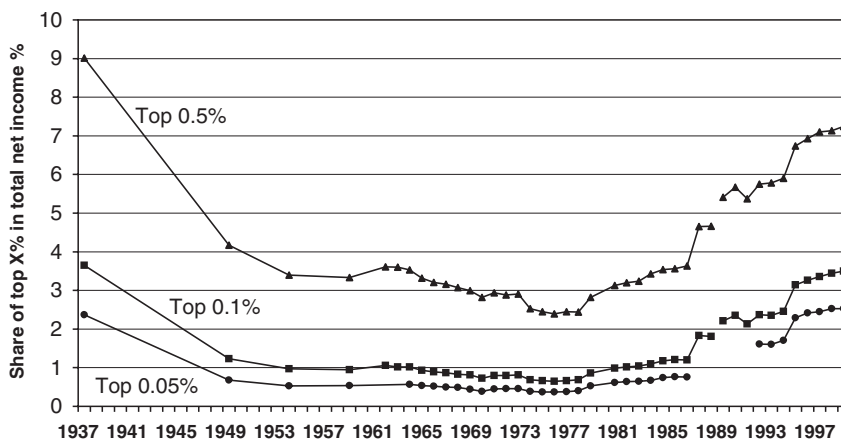


Figure 4.6 Share of total personal after tax income of the top 0.05%, 0.1%, and 0.5%, UK 1937–2000

Source: Table 4.2, this volume.

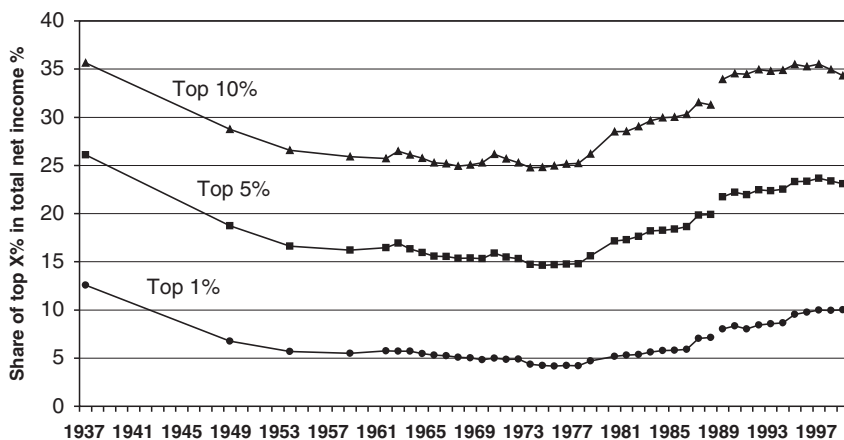


Figure 4.7 Share of total personal after tax income of the top 1%, 5%, and 10%, UK 1937–2000

Source: Table 4.2, this volume.

Conclusion

When presenting new evidence, it is clearly desirable to look at the findings from different directions, to help understand their significance. The evidence adduced in this section suggests:

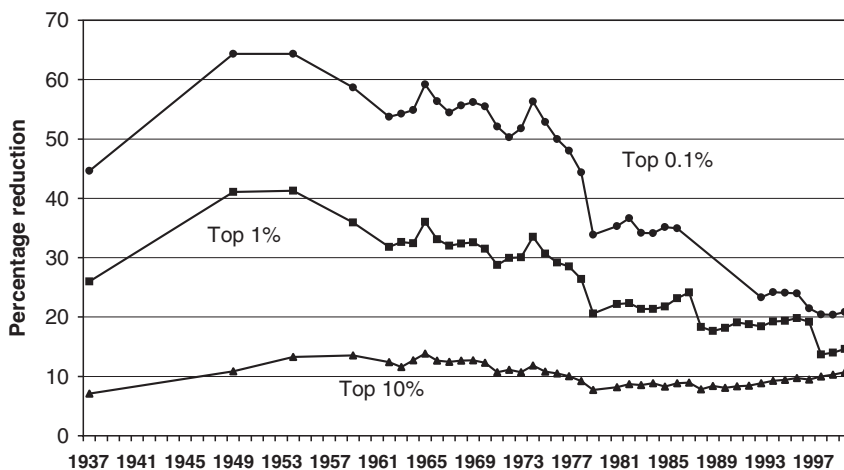


Figure 4.8 Percentage reduction in after tax shares compared with before tax shares, UK 1937–2000

Source: Tables 4.1 and 4.2, this volume.

- That the growth of retained profits did indeed reflect the conversion of income into capital gains, missing from the top income shares, but while income re-arrangement played a role, it cannot explain all the observed changes.
- That the distribution within top income groups exhibited a similar pattern of reduced concentration after 1914 and then increased concentration post-1978, with the implied Pareto coefficient rising and then falling over the century.
- Income after income tax shows the same U-pattern for top shares, and the reduction in tax progressivity post-1978 is most evident for the very top income groups.

4.6 COMPOSITION OF TOP INCOMES

When Crosland described the fall in personal income inequality in the UK over the first half of the twentieth century, he attributed it to a decline in capital income: ‘the change has been almost entirely at the expense of property-incomes’ (1964: 31). In Chapter 3, we have seen the importance of capital income in explaining the evolution of top income shares in France.

Composition of Total Household Income

The composition of income has indeed been long of interest in the United Kingdom. The Colwyn Committee (1927: appendix XV) asked the Inland Revenue to carry out a special analysis of the proportions of earned income and investment income in incomes in excess of £10,000 assessed for super-tax for the years 1913–14 and 1922–23, taken here to represent income in 1912 and 1921 respectively. These only covered a very small percentage of the population: 0.04% in 1921. It was only with the SPI of 1937 that we began to have regular information on income composition covering larger groups of the population. Study of income composition in the UK is, however, bedevilled by definitional problems. It may appear at first sight straightforward to identify the component of total income received by virtue of employment as a wage or salary earner. But the income tax statistics present a number of obstacles to such a calculation.

The first is that some of the distributional figures, such as those for 1937, relate to income net of deductions. I assume that we do not want to subtract deductions when considering the composition of income: we would like to know the salary received, not the salary net of interest paid for house purchase. In what follows, I take the gross income where this is available, and express the components as percentages of total gross income.

The second problem is that ‘earned income’ is a broad category. The variable available in the surtax statistics from 1946 (used by Rhodes 1951, 1952 and 1956) includes profits and professional earnings, pensions (occupational and National Insurance), and family allowances, in addition to employment income. This has long been recognized as a limitation. In 1916, Stamp noted,

the official 'earned income' is swollen by the inclusion of so much profit as may be assigned to trade capital in ordinary business, where the capital belongs to the proprietor. The whole of the 'profits' of a draper are 'earned income', although he may have £2,000 invested in his business (1916: 314)

Stamp goes on to comment 'these considerations severely limit the value of the figures for economic purposes' (1916: 315). In 1912 for example incomes assessed to super-tax were 27.7% 'earned income', but only 4.3% were 'employment, directors' fees, etc.' We can therefore only make limited use of the surtax data. The SPI, on the other hand, is more detailed, providing information about employment income, wife's earned income, self-employment income, pensions (occupational and state, separately), family allowances, and rent, dividends, and interest. Even the SPI is not without problems. The figures for salaries and wages continue to include occupational pensions until 1959–60 (for men and single women; for wives they were included in that year with wife's earnings). Moreover, prior to 1972 the wife's self-employment income is included with her employment income.

In Figure 4.9 is shown the composition of total household income from 1949 to 2000. This covers the income of all households, including those not included in the tax statistics. The income is that reported in the SPI plus the pension income added as described in Appendix 4C. In considering the changes over time, we need to bear in mind the definitional changes noted above. Occupational pensions, for example, appear in employment income until 1959. The broad picture until 1979 is of stability in the share of employment income, and a decline in investment and self-employment income (both 10% in 1949) offset by a rise in transfers. If we add investment income and occupational pensions (to a significant degree funded), then, interestingly, the total in 1979 was close to that in

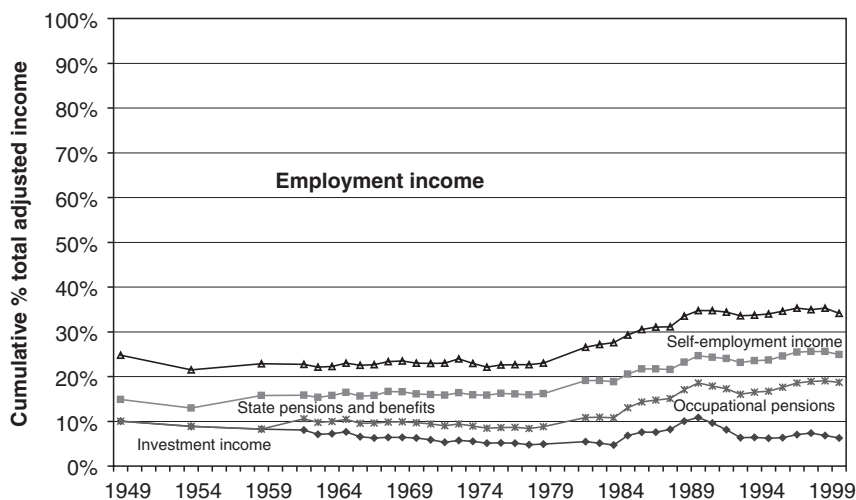


Figure 4.9 Composition of adjusted total income, UK 1949–2000

Source: Based on SPI data from sources listed in Table 4A.2 and pension income given in Table 4C.1.

The Distribution of Top Incomes

109

1949. After 1979, the picture changes. The share of employment income (measured down from the top in Figure 4.9) fell by some 10 percentage points. There was an increase in investment and self-employment income and a large increase in transfer income. If we add investment income and occupational pensions, then they account for approaching a fifth of total income in 2000.

Composition of Top Incomes

How far are these changes mirrored in top incomes? Of course, the composition varies with income. In 1911, for example, investment income made up 72.3% of the income of those assessed to super-tax; and in 1921 the figure was virtually identical (71.3%). In Figures 4.10 and 4.11 are shown the estimated proportions from the SPI of gross income consisting of investment income (rent, dividends, and interest) and of earned income (including pensions before 1959, wife's self-employment income up to 1971). Both are net of deductions in 1937. The estimate is made as follows. For each range, the total earned (investment) income in all ranges above that level is expressed as a percentage of the total income above that level. A simple linear interpolation of the resulting percentages is then used to give the figure corresponding to the shares of particular percentile groups. So that the figure of X% for the top 1% in the graphs means that X% of the income of the top 1% consists of earnings (investment).

Figure 4.10 shows the proportion of gross income made up by employment income (dashed lines) and investment income (solid lines) in different top groups in a selection of years. In 1937, for example, investment income made up less than 40% of total income for the top 10%, but 70% of total income for the top

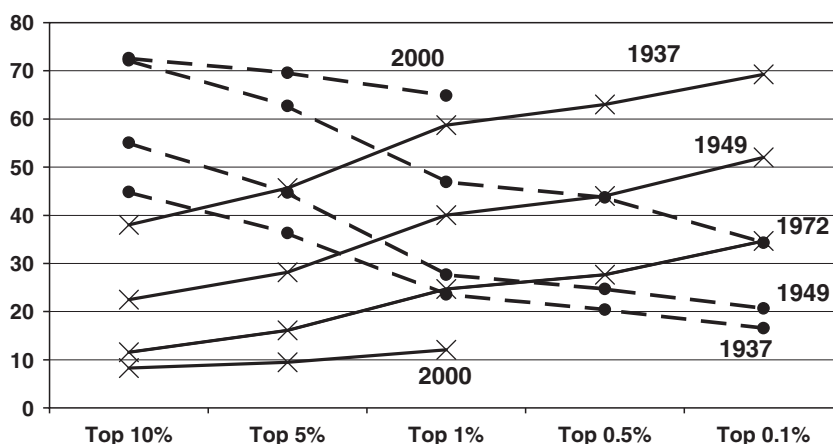


Figure 4.10 Composition of income for different groups, UK 1937-98

Notes: Investment income solid lines; employment income dashed lines.

Source: Based on SPI data from sources listed in Table 4A.2.

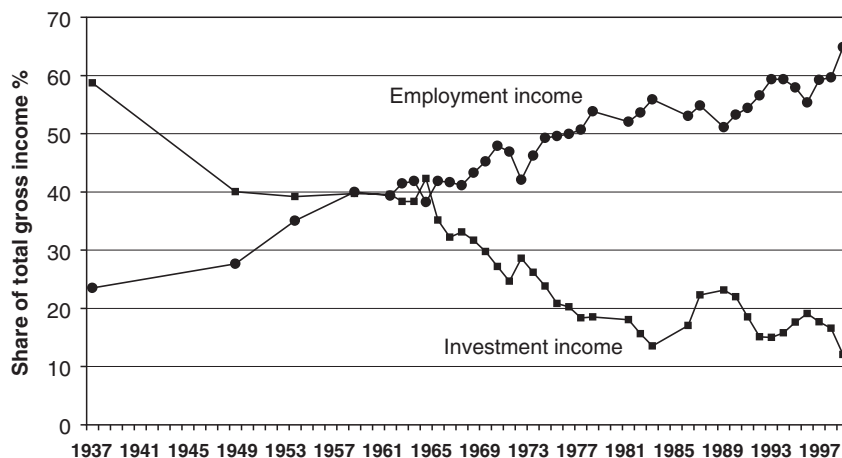


Figure 4.11 Composition of income of top 1%, UK 1937–2000

Source: Based on SPI data from sources listed in Table 4A.2.

0.1%—virtually the same figure as that found for super-tax payers in 1912 and 1921. The last observation suggests little change in composition over the interwar period, but since 1937 the investment income lines have shifted down consistently over time, and the employment lines have shifted upwards. By 1998, employment income accounted for nearly 60% of the income of the top 0.5%, whereas in 1937 the proportion had been only 20% and in 1949 only a quarter. As Piketty and Saez (Chapter 5 in this volume) note in the US, the income composition pattern has changed drastically at the top of the income distribution. The variation over time is shown for the top 1% in Figure 4.11. The proportion of investment income fell from 60% in 1937 to 40% in 1949, levelled off, and then fell sharply from 1965 to 1979. The 1980s and 1990s then saw cyclical variation but a less evident trend in the proportion of investment income. To the extent that employment income continued to increase its share, it was not at the expense of investment income.

The same information is presented another way in Figure 4.12, which shows the contribution of different components to the overall share of the top 1%. (The method of interpolation is linear, which means that the numbers shown in Figure 4.12 differ slightly from those in Table 4.1.) Over the first part of the post-war period, the contribution of investment income fell, as did that of the other components: self-employment income contributed 2 percentage points to the fall between 1949 and 1959 in the overall share. The further fall in the overall share between 1965 and 1979 was associated with a substantial fall in the contribution of investment income (some 2.5 percentage points), but there was also a modest contribution (around 0.75 percentage point reduction) from employment income. From 1979, however, the contribution of employment income to the overall share increased sharply and steadily over time. By the end of the century, employment income was

The Distribution of Top Incomes

111

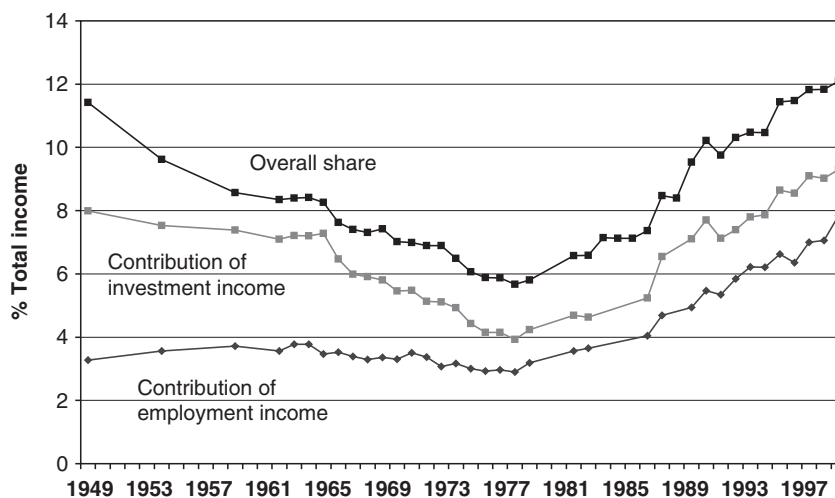


Figure 4.12 Contributions to share of top 1%, UK 1949–2000

Source: Based on SPI data from sources listed in Table 4A.2.

contributing nearly 8 percentage points to an overall share of 12%. Earnings appear to have become the dominant influence. At the same time, the fall in the contribution of investment income had come to an end, and there was a modest increase from the low point of 1979. The changing role of investment income may be summarized by saying that in 1979, if the top 1% had only investment income, then they would have their proportionate share of total income. Thirty years earlier, investment income alone would have given them 5 times their proportionate share; 20 years later, it would have given them twice their proportionate share.

Distribution of Top Earnings and Wealth

The contribution to top shares of employment, or other sources of income, depends on how that income is distributed and on the extent to which the top groups in overall income are also at the top for individual components (referred to as the ‘alignment coefficients’ in Chapter 2). Evidence about the former is provided by Figure 4.13, which shows the distribution of earnings among the employed and the distribution of wealth among individuals.

The earnings data from 1954 to 1979 are from the series on individual annual *principal source Schedule E income* published in the IR Annual Reports; the definition of earnings includes occupational pensions (but not National Insurance pensions) in addition to employment income. The earnings data from 1968 are from the New Earnings Survey, a survey of employers that provides information on earnings in the current pay period. The sample used excludes those whose pay was affected by absence during the survey period. The estimates from 1975 onwards are derived from micro-data. Further information is provided in Atkinson and

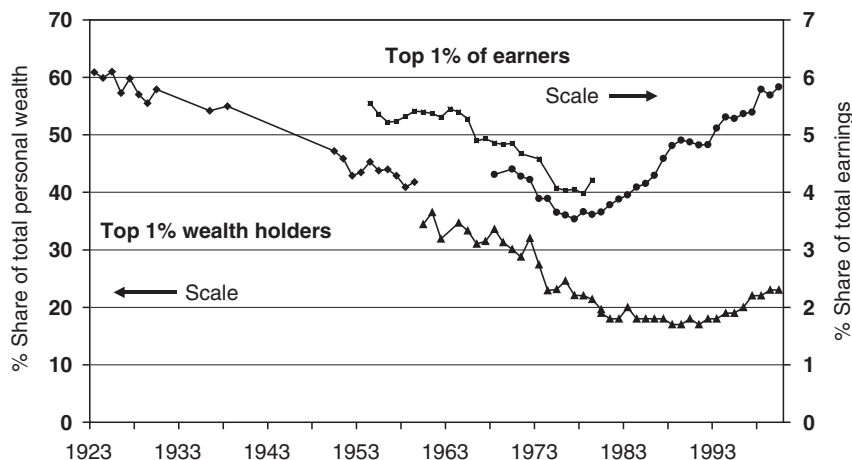


Figure 4.13 Shares of top earners and top wealth holders in UK, 1923–2000

Voitchovsky (2003). It is interesting to note that the share of top 1% of individual earners in Figure 4.13 exhibits broad stability from 1954 to 1965, in line with the contribution of earned income shown in Figure 4.12, and then a significant (1 percentage point) decline from 1965 to 1978. There is a U-shape for top earnings shares. The right hand arm of the U-shape (the rise of 2 percentage points in the share of the top 1%) is well known; the fact that there was a left hand arm, even if a little shorter, is less widely appreciated.

The wealth data are from the estate records, multiplied up by age and social class multipliers to give estimates of the wealth among the living population. The sources up to 1980 are Atkinson et al. (1989: table 1), from 1980 to 1985 from *Inland Revenue Statistics 1997*, Table 13.5, and from 1986 onwards from IR website (<http://www.hmrc.gov.uk>) Personal Wealth T13.5, 29 July 2003 (data for 1999 and 2000 provisional). There are potentially three breaks in the wealth series. The first is in 1938. The estimates up to 1938 relate to England and Wales; those from 1938 relate to Great Britain. The estimates for the year of overlap (1938) are identical, and the series have therefore been shown as continuous. The second break is in 1960, when the coverage of the underlying estate data was extended and more accurate estimates became possible of the wealth of the excluded population. The estimates of Atkinson and Harrison (1978: 166), suggest that the share of the top 1% was reduced by some 7 percentage points. The third break is in 1980, when the series switches to the official Inland Revenue estimates. The overlap for that year suggests little apparent difference. Even allowing for these breaks, it is clear that there was a long-run decline in the top wealth share from 1923 that continued until around 1979. The decline then stopped and, if anything, the shares increased in the 1990s. This is coherent with the evidence about the contribution of investment income to the share of the top 1%, and allows us to take the story back before 1949.

Conclusion

The major themes of the evolution of top shares over the twentieth century in the UK have been (1) the decline in the concentration of capital income over the first three-quarters of the century and (2) the rise in top earnings in the last 2 decades. Any explanation must be able to account for these striking developments. It is on these major themes that attention has focused. But there are also two accompanying minor themes that must not be forgotten. A contribution was made to the fall in the share of the top 1% by the reduction of the top earnings share between 1965 and 1978. Any theory of top earnings has to account for the U-shape for top earnings shares. Post-1979 there was some restoration of the contribution of investment income. The role of capital income was much more modest in the upswing of top income shares but it cannot be ignored.

4.7 CONCLUSIONS

The UK income tax statistics, neglected in recent years, can be used to generate new evidence about top incomes, providing for the first time a series that spans virtually the whole of the twentieth century. The new data paint a picture that, if blurred in places, allows us to draw broad conclusions about long run developments. Before the First World War, income in the UK was highly concentrated, with the top 0.1% having more than 10% of total gross income. There was no evident trend prior to 1914, but the position then changed. Top income shares fell markedly in both World Wars, but this was not the only factor at work. While there was some immediate post-war recovery, peace-time saw several periods of significant equalization. The magnitude of the change may be need to be qualified in the light of fiscal re-arrangement, but there have been distinct periods of equalisation, notably the period from 1923 to 1933 including the Great Crash, from 1946 to 1956, and from 1965 to 1978 (with a pause in the early 1970s).

Taking the period from 1908 to 1978 as a whole, we have seen that the top income shares in the UK fell dramatically. The share of the top 0.1% decreased from over 10% to 1.25%. Moreover, concentration within the top income group showed a similar decline. The year 1979 was however a turning point for the top income shares in the UK. In the next two decades, the shares of top income groups recovered the ground lost since the Second World War, and have continued to do so since 1997. The UK has not yet returned to the extent of inequality found before the Second World War, but if the trend of the 1990s continued for a further decade it would bring us close to the distribution of 1937. The same is true of the concentration within the top groups. Indeed, as far as the shape of the upper part of the income distribution is concerned, we are back to pre-war conditions.

Examination of the time series picture, and comparisons with other countries, suggest that explanations of the observed changes in the distribution of top

incomes are likely to be complex and manifold. There is no steady trend. There have been episodes of equalisation, followed by plateaux. At the same time, certain elements stand out. Major themes have been the decline in the concentration of capital income over the first three-quarters of the century and the rise in top earnings, coupled with the reduction in tax progressivity, in the last two decades. Any explanation must be able to account for these striking developments. But there are also accompanying elements, including the reduction in the top earnings share prior to 1979 and the partial recovery of investment income after 1979.

APPENDIX 4A: SOURCES OF TABULATED INCOME DATA FOR THE UK

The super-tax/surtax are taken from published tabulations, mostly from the *Annual Reports of the Commissioners of Her Majesty's Inland Revenue*, referred to as *AR*, or in the more recent years from *Inland Revenue Statistics*, referred to as *IRS* (see Table 4A.1).

The SPI data are taken from *AR* or *IRS* or the special reports on the SPI, referred to as *SPI*, or one-off sources such as the report of the Colwyn Committee (1927) (see Table 4A.2).

APPENDIX 4B: CONSTRUCTION OF UK CONTROL TOTALS FOR POPULATION

This Appendix and the next one describe the sources of the control totals that are essential for the results. One of the major sources used in both are the national accounts, published in the 'Blue Book', known for much of the period as *National Income and Expenditure*, and referred to here as *NIE*. A second main source is the *Annual Abstract of Statistics*, referred to here as *AAS*. Unless otherwise stated, the figures relate to the United Kingdom, which up to 1920 included what is now the Republic of Ireland.

Total Population aged 15+ 1990–2000

Following the introduction of independent taxation for husbands and wives in 1990, the total used is that for all *individuals* aged 15 and over. The sources are *Population Trends (PT)*, Autumn 2004: 49 for 2000; Winter 2002: 47, for 1986, 1991, 1996–99; *PT*, Spring 2002: 59 for 1995; *PT*, Spring 2001: 59, for 1993 and 1994. The figures for 1990 and 1992 are linearly interpolated using the figures for 1986 and 1991, and 1991 and 1993, respectively. The figures are shown in Table 4B.1.

The Distribution of Top Incomes

115

Table 4A.1 Sources for UK super-tax and surtax data, 1908–72

Income year	Super-tax/surtax year (where different)	Source
1908–09	1909–10	Royal Commission on the Income Tax, 1920a, 26
1909–10	1910–11	Royal Commission on the Income Tax, 1920a, 26
1910–11	1911–12	AR 1914–15: 134
1911–12	1912–13	AR 1914–15: 134
1912–13	1913–14	AR 1915–16: 49; Colwyn Committee (1927), Appendix XV contains information on composition of income
1913–14	1914–15	AR 1917–18: 19
1914–15	1915–16	AR 1918–19: 19
1915–16	1916–17	AR 1919–20: 85
1916–17	1917–18	AR 1920–21: 136
1917–18	1918–19	AR 1921–22: 145
1918–19	1919–20	AR 1922–23: 98
1919–20	1920–21	AR 1923–24: 110
1920–21	1921–22	Stamp 1936: 658
1921–22	1922–23	Stamp 1936: 658; Colwyn Committee (1927), Appendix XV contains information on composition of income
1922–23	1923–24	Stamp 1936: 658
1923–24	1924–25	Stamp 1936: 658
1924–25	1925–26	Stamp 1936: 659
1925–26	1926–27	Stamp 1936: 659
1926–27	1927–28	Stamp 1936: 659
1927–28	1928–29	Stamp 1936: 659
1928–29		Stamp 1936: 659
1929–30		AR 1934–35: 80
1930–31		AR 1935–36: 67
1931–32		AR 1936–37: 67
1932–33		AR 1937–38: 65
1933–34		AR 1938–39: 71
1934–35		AR 1939–40: 44
1935–36		AR 1940–41: 35
1936–37		AR 1941–42: 36
1937–38		AR 1942–43: 29
1938–39		AR 1942–43: 29
1939–40		AR 1942–43: 29
1940–41		AR 1943–44: 27
1941–42		AR 1946–47: 83
1942–43		AR 1947–48: 44
1943–44		AR 1948–49: 98
1944–45		AR 1949–50: 57
1945–46		AR 1950–51: 136
1946–47		AR 1951–52: 154
1947–48		AR 1953–54: 81
1948–49		AR 1954–55: 78
1949–50		AR 1955–56: 105
1950–51		AR 1956–57: 144

(contd.)

Table 4A.1 (Contd.)

Income year	Super-tax/surtax year (where different)	Source
1951–52		AR 1957–58: 96
1952–53		AR 1957–58: 96
1953–54		AR 1958–59: 82
1954–55		AR 1959–60: 84
1955–56		AR 1959–60: 84
1956–57		AR 1960–61: 92
1957–58		AR 1961–62: 207
1958–59		AR 1962–63: 99
1959–60		AR 1963–64: 101
1960–61		AR 1963–64: 101
1961–62		Not available
1962–63		AR 1964–65: 100
1963–64		AR 1965–66: 86
1964–65		AR 1966–67: 111
1965–66		AR 1967–68: 86
1966–67		IRS 1970: 48
1967–68		IRS 1971: 53
1968–69		IRS 1972: 53
1969–70		IRS 1973: 56
1970–71		IRS 1974: 24
1971–72		IRS 1975: 22
1972–73		IRS 1975: 22

Total Tax Units 1908–89

For the period 1908–89 we need to construct control totals for the total number of *tax units* in the population (taxpayers and non-taxpayers). The Blue Book (*NIE*) totals for the number of tax units are used where these exist: 1949, 1952–78, 1981 and 1984.⁶ The source is Atkinson and Micklewright (1992: table BI1) except for 1952 from *NIE*, 1953: table 16; 1953 from *NIE* 1954: table 18; 1955 from *NIE* 1959: 26; 1956 and 1957 from *NIE* 1960: 20; 1958 from *NIE* 1961: 20; 1960 and 1961 from *NIE* 1962: 26. I have interpolated linearly to give figures for the years not covered between 1949 and 1984: i.e., 1950, 1951, 1979, 1980, 1982, and 1983.

For the years not covered in this way by Blue Book totals (1908–48 and 1985–89), we construct tax unit totals based on the total number of males aged 15 and over, plus the total number of females aged 15 and over, less married females. These constructed totals can be calculated directly for 1901, 1911, 1921, 1931, 1939, 1951, 1961, 1971, 1981, and 1991. The sources are:

⁶ A figure for the total number of tax units in 1938 appears in the Report No 7 of the Royal Commission on the Distribution of Income and Wealth (1979: 23), but this is simply assumed to be equal to that in 1949 (see paragraph 2.26). For some years in the 1950s and early 1960s, the CSO extrapolated the distributional data from the most recent Survey of Personal Incomes. While the distributional data are open to question (Stark 1972: 19), the total numbers of tax units and total income (allocated and unallocated) contain independent information, and have been used here.

The Distribution of Top Incomes

117

Table 4A.2 Sources of UK SPI data, 1918–2000

Income tax assessment year	Nature of survey	Lower limit £ year (% mean tax unit income)	Source (s)	Composition data (changes marked by italics)
1918–19	Special exercise	130 (85%)	AR 1919–20: 70	—
1919–20	Special exercise	130 (82%)	Colwyn Committee 1927: appendix XIV	—
1937–38	Special exercise	200 (117%)	AR 1939–40: 30; income after tax from AR 1948–49: 83.	AR 1939–40: table 21, income net of deductions, earnings includes pensions.
1949–50	Quinquennial	135 (40%)	AR 1950–51: 97 before adjustment for wives' earnings deficiency; income after tax from AR 1950–51: 117, after adjustment for wives' earnings deficiency.	AR 1950–51: 97, income <i>gross of deductions</i> , earned income consists of wages and salaries, including pensions, not family allowances.
1954–55	Quinquennial	155 (34%)	AR 1955–56: 67 before adjustment for wives' earnings deficiency; income after tax from AR 1955–56: 94, after adjustment for wives' earnings deficiency.	AR 1955–56: 67 income gross of deductions, earned income consists of wages and salaries, including pensions, and wife's earnings, not family allowances.
1959–60	Quinquennial	180 (30%)	AR 1961–62: 93 before adjustment for wives' earnings deficiency; income after tax from AR 1962–63: 93, before adjustment for wives' earnings deficiency.	AR 1961–62: table 76 for earned income, consisting of wages and salaries, and wife's earnings, <i>not pensions</i> or family allowances; table 78 for total investment income (before deductions); table 79 for deductions to be added to net income to give gross income.
1962–63	Annual	180 (25%)	AR 1963–64: 83 before adjustment for wives' earnings deficiency and p. 88; income after tax from p. 83 after adjustment for wives' earnings deficiency.	AR 1963–64: table 73 for earned income, consisting of employment income and wife's earnings, not pensions or family allowances; table 74 for total investment income (before deductions); table 75 for total deductions.
1963–64	Annual	275 (37%)	AR 1964–65: 82 before adjustment for wives' earnings deficiency and p. 87; income	AR 1964–65: table 61 for earned income, consisting of employment income and

(contd.)

Table 4A.2 (Contd.)

Income tax assessment year	Nature of survey	Lower limit £ year (% mean tax unit income)	Source (s)	Composition data (changes marked by italics)
			after tax from p. 82 after adjustment for wives' earnings deficiency.	wife's earnings, not pensions or family allowances; table 62 for total investment income (before deductions); table 63 for total deductions.
1964–65	Quinquennial	275 (34%)	AR 1965–66: 120 before adjustment for wives' earnings deficiency; income after tax from pp. 97, 135, and 137 and from IRS 1971: 71.	AR 1965–66: table 71 for earned income, consisting of employment income and wife's earnings, not pensions or family allowances; table 72 for total investment income (before deductions); table 73 for total deductions.
1965–66	Annual	275 (31%)	AR 1966–67: 174 before adjustment for wives' earnings deficiency; income after tax from p. 174.	AR 1966–67: table 103 for earned income, consisting of employment income and wife's earnings, not pensions or family allowances; table 104 for total investment income (before deductions); table 112 for total gross income.
1966–67	Annual	275 (30%)	No correction made for investment income deficiency in SPI from 1966–67 AR 1967–68: 96 before adjustment for wives' earnings deficiency; income after tax from p. 73.	AR 1967–68: table 66 for earned income, consisting of employment income and wife's earnings, not pensions or family allowances; table 67 for total investment income (before deductions); table 75 for total gross income.
1967–68	Annual	275 (29%)	IRS 1971: 73; income after tax from p. 73.	IRS 1970: table 52 for earned income, consisting of employment income and wife's earnings, not pensions or family

The Distribution of Top Incomes

119

1968–69	Annual	275 (27%)	IRS 1971: 73; income after tax from p. 73.	allowances; table 53 for total investment income (before deductions); table 61 for total gross income. IRS 1971: table 59 for earned income, consisting of employment income and wife's earnings, not pensions or family allowances; table 60 for total investment income (before deductions); table 68 for total gross income.
1969–70	Quinquennial	330 (30%)	SPI 1969–70: 11; income after tax from p. 11.	SPI 1969–70: table 9 for earned income, consisting of employment income and wife's earnings, not pensions or family allowances; table 16 for total investment income (before deductions); table 2 for gross income.
1970–71	Annual	420 (34%)	IRS 1973: 81; income after tax from p. 81.	IRS 1973: table 64 for earned income, consisting of employment income and wife's earnings, not pensions or family allowances; table 65 for total investment income (before deductions); table 67 for gross income.
1971–72	Annual	420 (32%)	IRS 1974: 42; income after tax from p. 42.	IRS 1974: table 44 for earned income, consisting of employment income, not pensions or family allowances; table 49 for total investment income (before deductions); table 35 for gross income.
1972–73	Annual	595 (40%)	IRS 1975: 43; income after tax from p. 43.	IRS 1975: table 41 for earned income, consisting of employment income of husband and wife (<i>i.e. excluding her self-employment income</i>), not pensions or family allowances; table 47 for total

(contd.)

Table 4A.2 (Contd.)

Income tax assessment year	Nature of survey	Lower limit £ year (% mean tax unit income)	Source (s)	Composition data (changes marked by italics)
1973–74	Annual	595 (34%)	IRS 1976: 36; income after tax from p. 36.	investment income (before deductions); table 39 for gross income. IRS 1976: table 38 for earned income, consisting of employment income of husband and wife (i.e. excluding her self-employment income), not pensions or family allowances; table 44 for total investment income (before deductions); table 39 for gross income.
1974–75	Annual	625 (29%)	IRS 1977: 43; income after tax from p. 43.	IRS 1977: table 43 for earned income, consisting of employment income of husband and wife (i.e. excluding her self-employment income), not pensions or family allowances; table 49 for total investment income (before deductions); table 37 for gross income.
			Data from now on relate to total income before deduction of allowable expenses such as mortgage interest.	
1975–76	Annual	675 (25%)	SPI 1975–76 and 1976–77: 16; income after tax from p. 16.	SPI 1975–76 and 1976–77: table 18 for earned income, consisting of employment income of husband and wife (i.e. excluding her self-employment income), not pensions or family allowances; table 24 for total investment income.

The Distribution of Top Incomes

121

1976–77	Annual	735 (24%)	SPI 1975–76 and 1976–77: 86; income after tax from p. 86.	SPI 1975–76 and 1976–77: table 85 for earned income, consisting of employment income of husband and wife (i.e. excluding her self-employment income), not pensions or family allowances; table 91 for total investment income.
1977–78	Annual	810 (24%)	SPI 1977–78: 16; income after tax from p. 16.	SPI 1977–78: table 21 for earned income, consisting of employment income of husband and wife (i.e. excluding her self-employment income), not pensions; table 27 for total investment income.
1978–79	Annual	1000 (27%)	SPI 1978–79: 16; income after tax from p. 16.	SPI 1978–79: table 21 for earned income, consisting of employment income of husband and wife (i.e. excluding her self-employment income), not pensions; table 27 for total investment income.
1979–80	Annual	1000 (23%)	SPI 1979–80: 20; income after tax from p. 20.	SPI 1979–80: table 18 for earned income, consisting of employment income of husband and wife (i.e. excluding her self-employment income), not pensions; table 24 for total investment income.
1980–81	Annual	1350 (27%)	SPI 1982–83, frequencies by ranges from p. 8, p. 9 for after tax income, but no information available on amounts.	—
1981–82	Annual	1350 (25%)	SPI 1982–83, frequencies by ranges from p. 8, p. 9 for after tax income, and information on amounts by ranges supplied by Inland Revenue.	—

(contd.)

Table 4A.2 (Contd.)

Income tax assessment year	Nature of survey	Lower limit £ year (% mean tax unit income)	Source (s)	Composition data (changes marked by italics)
1982–83	Annual	1550 (27%)	SPI 1982–83: 10; income after tax from p. 10.	SPI 1982–83: table 14 for earned income, consisting of employment income of husband and wife (i.e. excluding her self-employment income), not pensions; table 4 for total investment income.
1983–84	Annual	1750 (29%)	SPI 1983–84: 10; income after tax from p. 10.	SPI 1983–84: table 14 for earned income, consisting of employment income of husband and wife (i.e. excluding her self-employment income), not pensions; table 4 for total investment income.
1984–85	Annual	2000 (31%)	SPI 1984–85: 10; income after tax from p. 10.	SPI 1984–85: table 14 for earned income, consisting of employment income of husband and wife (i.e. excluding her self-employment income), not pensions; table 4 for total investment income.
1985–86	Annual	2200 (30%)	IRS 1988: 23; income after tax from p. 23.	IRS 1988: table 2.4 for earned income, consisting of employment income of husband and wife (i.e. excluding her self-employment income), not pensions; table 2.3 for total investment income.
1986–87	Annual	2330 (29%)	IRS 1989: 24; income after tax from p. 24.	IRS 1989: table 2.4 for earned income, consisting of employment income of husband and wife (i.e. excluding her self-employment income), not pensions; table 2.3 for total investment income.

The Distribution of Top Incomes

123

1987–88	Annual	2420 (28%)	IRS 1990: 28; income after tax from p. 28.	IRS 1990: table 2.5 for earned income, consisting of employment income of husband and wife (i.e. excluding her self-employment income), not pensions; table 2.4 for total investment income.
1988–89	Annual	2605 (27%)	IRS 1991: 25; income after tax from p. 25.	IRS 1991: table 2.5 for earned income, consisting of employment income of husband and wife (i.e. excluding her self-employment income), not pensions; table 2.4 for total investment income.
1989–90	Annual	2785 (26%)	IRS 1992: 29; income after tax from p. 29.	IRS 1992: table 2.9 for earned income, consisting of employment income of husband and wife (i.e. excluding her self-employment income), not pensions; table 2.8 for total investment income.
1990–91	Annual	3005 (35%)	Independent taxation introduced; data now relate to individuals. IRS 1993: 34; income after tax from p. 34.	IRS 1993: table 3.4 for earned income, consisting of employment income of husband and wife (i.e. excluding her self-employment income), not pensions; table 3.3 for total investment income.
1991–92	Annual	3295 (37%)	IRS 1994: 36; income after tax from p. 36.	IRS 1994: table 3.5 for earned income, consisting of employment income of husband and wife (i.e. excluding her self-employment income), not pensions; table 3.4 for total investment income.

(contd.)

Table 4A.2 (Contd.)

Income tax assessment year	Nature of survey	Lower limit £ year (% mean tax unit income)	Source (s)	Composition data (changes marked by italics)
1992–93	Annual	3445 (39%)	IRS 1994: 36; income after tax from p. 36.	IRS 1994: table 3.5 for earned income, consisting of employment income of husband and wife (i.e. excluding her self-employment income), not pensions; table 3.4 for total investment income.
1993–94	Annual	3445 (39%)	IRS 1995: 34; income after tax from p. 34.	IRS 1995: table 3.6 for earned income, consisting of employment income of husband and wife (i.e. excluding her self-employment income), not pensions; table 3.5 for total investment income.
1994–95	Annual	3445 (38%)	IRS 1996: 35; income after tax from p. 35.	IRS 1996: table 3.6 for earned income, consisting of employment income of husband and wife (i.e. excluding her self-employment income), not pensions; table 3.5 for total investment income.
1995–96	Annual	3525 (37%)	IRS 1997: 34; income after tax from p. 34.	IRS 1997: table 3.6 for earned income, consisting of employment income of husband and wife (i.e. excluding her self-employment income), not pensions; table 3.5 for total investment income.
1996–97	Annual	3765 (37%)	IRS 1998: 34; income after tax from p. 34.	IRS 1998: table 3.6 for earned income, consisting of employment income of husband and wife (i.e. excluding her self-employment income), not pensions; table 3.5 for total investment income.

The Distribution of Top Incomes

125

1997–98	Annual	4045 (37%)	IRS 1999: 36 for gross income (with top range from p. 32); income after tax from p. 32.	IRS 1999: table 3.6 for earned income, consisting of employment income of husband and wife (i.e. excluding her self-employment income), not pensions; table 3.5 for total investment income.
1998–99	Annual	4195 (36%)	IRS 2000: 41 for gross income (with top range from p. 37); income after tax from p. 37.	IRS 2000: table 3.6 for earned income, consisting of employment income of husband and wife (i.e. excluding her self-employment income), not pensions; table 3.5 for total investment income.
1999–2000	Annual	4335 (36%)	IR website: table 3.3.	IR website: table 3.6 for employment income, consisting of employment income of husband and wife (i.e. excluding her self-employment income), not pensions; table 3.5 for total investment income.
2000–01	Annual	4385 (32%)	IR website: table 3.3.	IR website: table 3.6 for employment income, consisting of employment income of husband and wife (i.e. excluding her self-employment income), not pensions; table 3.5 for total investment income.

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- 1901: Mitchell (1988), *Population and Vital Statistics*, Table 4 for population by age, and Table 5 for proportion of females married for England and Wales and for Scotland; number of married females in Ireland from Census of Ireland 1901, General Report, p. 20.
 - 1911: Mitchell (1988), *Population and Vital Statistics*, Table 4 for population by age, and Table 5 for proportion of females married for England and Wales and for Scotland; number of married females in Ireland from Census of Ireland 1911, General Report, p. 6.
 - 1921: Mitchell (1988), *Population and Vital Statistics* Table 4 for population by age for England and Wales and for Scotland, and Table 5 for proportion of females married; figures adjusted to allow for Northern Ireland (NI) by

Table 4B.1 UK control totals for tax units (individuals) and income, 1908–2000

	Total tax units million	Total adult individuals million	Total Income £ million current prices	Tax deducted to give total net of tax income £ million current prices	Mean income per tax unit £ per year current prices	Mean income per individual £ per year current prices	Consumer price index 2000 = 100
1908	22.128		1,682		76		1.40
1909	22.361		1,689		76		1.41
1910	22.595		1,747		77		1.43
1911	22.805		1,817		80		1.43
1912	22.924		1,899		83		1.47
1913	23.063		1,966		85		1.46
1914	23.299		1,990		85		1.46
1915	23.480		2,164		92		1.64
1916	23.601		2,483		105		1.94
1917	23.686		2,982		126		2.43
1918	23.705		3,646		154		2.96
1919	23.714		3,773		159		3.26
1920	23.896		4,343		182		3.77
1921	22.525		3,770		167		3.44
1922	22.778		3,474		152		2.96
1923	22.997		3,434		149		2.78
1924	23.262		3,553		153		2.77
1925	23.436		3,635		155		2.77
1926	23.626		3,628		154		2.75
1927	23.812		3,761		158		2.68
1928	24.014		3,846		160		2.68
1929	24.164		3,896		161		2.65
1930	24.373		3,833		157		2.58
1931	24.583		3,694		150		2.47
1932	24.670		3,594		146		2.41
1933	24.710		3,584		145		2.35
1934	24.733		3,731		151		2.35
1935	24.782		3,780		153		2.37
1936	24.836		3,984		160		2.38
1937	24.889		4,243	306.5	170		2.47
1938	24.937		4,320		173		2.50
1939	25.141		4,436		176		2.58
1940	25.223		4,849		192		3.01
1941	25.174		5,382		214		3.33
1942	25.224		6,038		239		3.57
1943	25.383		6,384		252		3.69
1944	25.458		6,579		258		3.80
1945	25.497		6,502		255		3.90
1946	25.473		6,916		272		4.02
1947	25.583		7,674		300		4.30
1948	25.791		8,276		321		4.63
1949	25.900		8,730	1,098	337		4.76
1950	25.767		8,839		343		4.91
1951	25.633		9,844		384		5.36
1952	25.500		10,437		409		5.85
1953	25.300		11,090		438		6.03

The Distribution of Top Incomes

127

1954	26.250	11,805	1,295	450	6.15
1955	26.200	12,874		491	6.42
1956	26.150	13,954		534	6.74
1957	26.100	14,495		555	6.98
1958	26.250	14,978		571	7.20
1959	26.500	16,019	1,735	604	7.23
1960	26.700	17,010		637	7.31
1961	26.900	18,894		702	7.56
1962	27.200	19,736	2,327	726	7.89
1963	27.400	20,446	2,314	746	8.04
1964	27.500	22,171	2,723	806	8.31
1965	27.600	24,225	3,352	878	8.69
1966	27.700	25,251	3,488	912	9.04
1967	27.800	26,568	3,796	956	9.27
1968	28.091	28,599	4,370	1,018	9.71
1969	28.161	30,898	5,146	1,097	10.23
1970	28.206	34,740	6,158	1,232	10.88
1971	28.240	37,400	6,356	1,324	11.91
1972	28.351	42,055	6,572	1,483	12.76
1973	28.123	48,655	8,045	1,730	13.92
1974	28.274	60,608	11,846	2,144	16.15
1975	28.341	75,798	16,000	2,675	20.07
1976	28.549	86,839	18,300	3,042	23.38
1977	28.892	95,588	18,200	3,308	27.09
1978	29.076	109,615	20,200	3,770	29.34
1979	29.390	129,022	22,300	4,390	33.27
1980	29.704	148,087		4,985	39.25
1981	30.018	159,543	30,300	5,315	43.91
1982	30.484	175,341	32,400	5,752	47.69
1983	30.950	188,572	35,300	6,093	49.88
1984	31.416	203,538	37,300	6,479	52.37
1985	31.743	232,962	38,800	7,339	55.55
1986	31.998	257,496	42,800	8,047	57.44
1987	32.249	280,949	45,300	8,712	59.84
1988	32.507	314,118	46,500	9,663	62.77
1989	32.788	356,688	53,400	10,879	67.65
1990	46.347	395,224	60,400	8,527	74.05
1991	46.455	413,204	63,500	8,895	78.40
1992	46.675	416,912	60,700	8,932	81.33
1993	46.894	417,668	65,100	8,907	82.63
1994	47.043	431,302	69,400	9,168	84.62
1995	47.249	452,844	74,434	9,584	87.56
1996	46.802	476,479	75,757	10,181	89.67
1997	46.919	514,729	79,512	10,971	92.48
1998	47.071	552,598	87,890	11,740	95.65
1999	47.347	601,932	93,200	12,713	97.13
2000	47.652	667,854	105,572	14,015	100.00

multiplying by the ratio of the total NI population in 1922 to that for England and Wales and Scotland in 1921 from Mitchell (1988) Population and Vital Statistics, Table 3.

- 1931: AAS 1935–46, Table 9, Great Britain figures adjusted proportionately to UK using Northern Ireland totals (Table 6).
- 1939: *National Register 1939*, Table M, Great Britain figures adjusted proportionately to UK using Northern Ireland totals, p. ix.
- 1951: AAS 1981, table 2.8.
- 1961: AAS 1992, table 2.6.
- 1971, 1981 and 1991: AAS 2000, table 5.4.

The number of calculated units for these years is expressed as a percentage of total population (see below for the sources), and the percentages interpolated linearly for intermediate years, the results being multiplied again by total population to give figures for all years. Applying the resulting interpolated percentage to the total population gives a figure for 1984 that essentially coincides with the Blue Book figure; for 1949 the Blue Book figure is 97.7% of the constructed figure. We therefore apply an adjustment factor of 0.977 to the estimated totals for 1948 and earlier.

The sources for total population are:

- 1900–65: Feinstein 1972: Table 55, column 1, mid-year home population of Great Britain and Ireland (up to 1920) and Great Britain and Northern Ireland (from 1921), except years 1915–20 and 1939–45 when total population including those serving overseas;
- 1966–89: mid-year residential population from AAS 1997: table 2.1.

Control Total Units: Summary

To summarize, the final series is obtained as follows:

1. For 1908–48, constructed tax units adjusted proportionately in line with the 1949 Blue Book figure (i.e., multiplied by 0.977);
2. For 1949–84, Blue Book figures (interpolated linearly for 1950, 1951, 1979, 1980, 1982, and 1983);
3. For 1985–89, constructed tax units.

The resulting tax unit totals used in this chapter are shown in Table 4B.1.

Assessment

How do the derived totals of tax units compare with other evidence about total tax units for the pre-war period? For 1938 the figure of 24.9 million is rather higher (by some 4%) than the estimate of 24 million of Lydall (1959: 6), since he takes the population aged 18 or over (rather than 15 or over). Seers (1949: 254) arrived at the still lower figure for 1938 of 23.5 million by a different route.

He started with 10 million units above income tax exemption level from tax records, and added 11.5 million employees, excluding wives, earning below exemption level, 0.5 million self-employed below exemption limit, and 1.5 million rentiers, excluding wives, below exemption limit. The last of these numbers seems rather low for the total of units who are retired or unoccupied and below the exemption level (in 1939 there were aged 65 and over in Great Britain 1.845 million males and 1.572 million non-married females (National Register, September 1939, table M)). In contrast, the calculations given in the Beveridge Report show for Great Britain in 1939 a total of persons aged 15 and over, minus 'housewives', of 27.6 million (Beveridge 1942: 123), which is higher than our estimate. Our estimate is therefore bracketed by these earlier figures.

What about the earlier part of the period? In the 1920s and first half of the 1930s, there was considerable interest in deriving numbers for the total occupied population, as a basis for estimating national income. Clark (1934), for instance, describes the way in which he moves from numbers of taxpayers to the size of the occupied population. Here we are interested in what can be learned about the reverse process: working back from the occupied population to the number of tax units. For the 1920s, Clark (1932: 76) gives the number of incomes in the UK for 1924 as 19.065 million and for 1928 as 20.145 million. Our figures for tax units are 23.3 million and 24.0 million, but the Census of Population 1921 indicates an adjustment for the non-occupied of 4.4 million, so that there is close agreement. For the pre-First World War period, Bowley (1919: 11) gives a total of 20.15 million for the total number occupied in 1911 (this includes Southern Ireland). This is closely in line with our total of 22.8 million for all tax units in 1911, since calculations from the 1911 Census of Population suggests that the number of units exceeded the number occupied by 2.4 million.

APPENDIX 4C: CONSTRUCTION OF UK CONTROL TOTALS FOR INCOME

As described in the text, control totals for income can be defined in two different ways. One can start from the national accounts figures for total personal income and work towards a definition closer to taxable income, or one can start from the income tax statistics and add the income of those tax units not covered. Here I adopt the latter approach. As a result, the construction of the total personal income (before tax) series differs from that in Atkinson (2002), although it uses many of the same sources, notably Feinstein (1972) and the national accounts (NIE). In contrast, the estimates in Atkinson (2002) correspond to a more extensive definition; based on the estimates of 'allocated total income' made by the Central Statistical Office (CSO), which includes non-taxable income in kind and non-taxable social security benefits, of which the most important in the 1970s were social assistance, sickness/industrial injury benefits, NI disability

pensions, invalidity pension and NI unemployment benefit (Ramprakash 1975: 82). (At that time, family allowances were taxable; child benefit, introduced in 1978, is tax-free.) In 1972–73, the total income covered by the *Survey of Personal Incomes (SPI)* was £40,778 million, to which the CSO estimated £2538 million should be added for the taxable income of non-filers and £2448 million for non-taxable income (Ramprakash 1972: 92). Here we make in principle the first, but not the second, of these additions in arriving at the control totals summarized in the final two columns of Table 4B.1. The control totals relate to tax years.

The detailed derivation of the control totals is shown in Table 4C.1 for the period from 1945 and Table 4C.2 for the period prior to 1945. The methods are described below. For the years 1969–75 we may compare them with the CSO estimates of added income. In four of the seven cases, the estimates made here are below those of the CSO, and in three above. The mean of the CSO estimates is 3.6% higher. Given that we were limited to materials available over throughout the 50-year period, this degree of agreement seems reassuring.

Adjustments from 1945

The starting point is (column 1) the total income reported in the SPI, which is ‘total net income’ until 1974 and then ‘total income’, with the sources given in Table 4A.2. The 1999 and 2000 totals relate only to taxpayers and have been increased by the ratio for all tax units in 1998 (an increase of 1.8%). The 1980 figure is interpolated logarithmically using personal sector gross income in 1979 and 1981. Where the SPI totals are not available, we take (column 2) the ‘actual income’ reported by the Inland Revenue less estimated undistributed profits. The sources are: 1945–51 from AR 1952–53: 46; 1952–60 from AR 1961–62: 43; 1961–62 from AR 1965–66: 50. Undistributed profits are taken as the average of those in year t and year $(t-1)$ from Feinstein (1972: T30) (except years 1944 and 1945—see below).

To this must be added the adjustment for non-filers. The CSO estimates for 1972 show a total of £100 million adjustment for the under-coverage of earned income. This is less than a quarter of the difference between the SPI total and the national accounts figure for wages, salaries and pay of HM Forces, and is only 0.3% of the latter figure. It might be thought that the adjustment should be higher in the earlier post-war years, but the totals for 1949–50, 1954–55 and 1959–60 suggest that the SPI figure is within 5% of the national accounts figure, and the majority of that difference is likely to be attributable to under-recording of those covered. In view of this, we make no adjustment for earned incomes post-1945.

The elements allowed for in Table 4C.1 are therefore (a) NI retirement and widows’ pensions and (b) occupational pensions, which together accounted for 94% of the adjustment for under-coverage in 1972/73. The two items are treated separately for all years where the SPI totals distinguish them: 1962–98, except 1980 and 1981. The adjustments are obtained by subtracting the totals recorded in the SPI from control totals. The sources of the control totals are:

The Distribution of Top Incomes

131

- *National Insurance retirement pensions and widows' pensions:* 1945 from Minister of Reconstruction (1944: 52); 1946 and 1947 from *NIE* 1946–49: 43; 1948–57 from *NIE* 1958: 43; 1958–63 from *NIE* 1964: 43; 1964–68 from *NIE* 1969: 49; 1969–77 from *NIE* 1967–77: 59; 1978–85 from *NIE* 1987: 54; 1986–94 from *NIE* 1997: 102; 1995–2001 from *NIE* 2004: 201. The figures were converted to a tax year basis by taking 0.75 of the figure for year t and 0.25 of the figure for year $(t+1)$.
- *Occupational pensions:* Direct estimates of the total paid in occupational pensions are only available for a number of years. The *NIE* total refers to 'pensions and other benefits from life assurance and superannuation schemes', which includes items such as lump-sum payments on retirement or death, and refunds of contributions, which are not treated as part of taxable income. This total cannot therefore be used unadjusted. For the 1970s the CSO made estimates of the amounts of occupational pensions. The sources are (for tax years): 1972–73 from *NIE* 1975: 109; 1973–74 from *NIE* 1976: 111; 1974–75 from *NIE* 1977: 115; 1975–76 from *NIE* 1978: 119; 1976–77 from *NIE* 1979: 115; 1977–78 from *NIE* 1980: 110. The new system of national accounts SNA 1993 allows the total pensions in payment to be distinguished: sources (calendar years) 1990 and 1991 from *NIE* 1999: 209, 1995–2001 from *NIE* 2004: 223. The calendar year figures were converted to a tax year basis by taking 0.75 of the figure for year t and 0.25 of the figure for year $(t+1)$. Inspection of these figures showed that pensions in payment were around 55% of the national accounts total in the 1970s but had risen to around 70% in 1990, as would have been expected as pension schemes matured. A proportion of 55% was taken prior to 1978 and interpolated linearly between 55 and 70% between 1978 and 1990. The actual CSO figures were used for 1990–2000.
- *Remaining Years:* The *SPI* years 1949, 1954 and 1959 have totals for all pensions, and these were used with the sum of the control totals described above. The figures for 1945–48 were extrapolated backwards from 1949 using the total for NI retirement and widows' pensions. The adjustments in the *SPI* years were expressed as a percentage of the total NI and occupational pensions, and the percentages interpolated to give figures for 1950 to 1953, 1955 to 1958, and 1960 and 1961. The figures for 1980 and 1981, and for 1999, were interpolated using the total for NI retirement and widows' pensions.

It is interesting to compare the resulting totals with total personal sector gross income (final column in Table 4C.1). The adjusted total shows a distinct decline, from a figure in excess of 80% at the start of the 1950s to below 75% in the second half of the 1990s. The series is graphed in Figure 2.4 in Chapter 2.

Adjustments Prior to 1945

The estimates for the period prior to 1945 are set out in Table 4C.2. Figures for 1920 and earlier include what is now the Republic of Ireland. The starting point is

Table 4C.1 Derivation of control totals (£ million) for income in UK, 1945/46–2000/01

Tax year starting in April	1	2	3	4	5	6	7	8	9
	SPI income	Returned income (= IR actual income - undistributed profits)	Non-filers' NI retirement and widows' pensions	Non-filers' occupational pensions	All pensions (cols 3 and 4 combined)	Total added (col 3 + col 4) or col 5	CSO estimate of added income	ADJUSTED Total income (col 1 or 2 + col 6)	ADJUSTED Total as % Personal sector gross income
1945		6,379			123	123		6,502	74.5
1946		6,767			149	149		6,916	78.2
1947		7,367			307	307		7,674	81.3
1948		7,917			359	359		8,276	82.9
1949	8,359	8,280			371	371		8,730	82.7
1950		8,469			370	370		8,839	80.0
1951		9,468			377	377		9,844	82.2
1952		10,043			394	394		10,437	81.6
1953		10,693			397	397		11,090	81.7
1954	11,410	11,507			395	395		11,805	82.3
1955		12,432			442	442		12,874	82.8
1956		13,482			472	472		13,954	83.6
1957		13,983			512	512		14,495	82.4
1958		14,381			597	597		14,978	80.6
1959	15,391	15,014			628	628		16,019	81.4
1960		16,354			656	656		17,010	80.2
1961		18,178			716	716		18,894	82.4
1962	18,978	18,862	598	160	758	758		19,736	81.7
1963	19,601		682	163	845	845		20,446	79.9
1964	21,206		773	192	965	965		22,171	80.2
1965	23,166		851	208	1,059	1,059		24,225	80.6
1966	24,070		919	262	1,181	1,181		25,251	78.4
1967	25,272		971	325	1,296	1,296		26,568	78.5
1968	27,200		1,053	346	1,399	1,399		28,599	78.4
1969	29,344		1,115	439	1,554	1,554	1,328	30,898	78.7

The Distribution of Top Incomes

133

1970	33,005	1,264	471		1,735	1,757	34,740	80.0
1971	35,600	1,330	471		1,800	2,094	37,400	78.2
1972	39,764	1,731	560		2,291	2,448	42,055	77.2
1973	45,907	2,024	725		2,748	2,531	48,655	76.6
1974	57,339	2,489	780		3,269	3,149	60,608	79.5
1975	72,196	2,944	658		3,602	4,310	75,798	78.4
1976	83,139	3,139	561		3,700		86,839	77.6
1977	91,198	3,896	494		4,390		95,588	76.8
1978	104,580	4,417	619		5,035		109,615	76.4
1979	123,252	4,867	904		5,770		129,022	76.0
1980	141,242			6,845	6,845		148,087	73.7
1981	151,633			7,910	7,910		159,543	71.6
1982	165,860	6,780	2,701		9,481		175,341	72.5
1983	178,045	7,316	3,211		10,527		188,572	72.3
1984	191,560	8,021	3,957		11,978		203,538	72.1
1985	218,910	8,569	5,483		14,052		232,962	75.9
1986	240,573	10,112	6,811		16,923		257,496	77.3
1987	261,336	10,443	9,170		19,613		280,949	78.2
1988	294,000	10,808	9,310		20,118		314,118	78.4
1989	332,250	11,346	13,092		24,438		356,688	80.8
1990	369,330	11,965	13,928		25,894		395,224	81.3
1991	384,470	13,078	15,655		28,734		413,204	79.9
1992	382,540	15,518	18,854		34,372		416,912	76.0
1993	382,200	16,275	19,194		35,468		417,668	72.9
1994	394,940	16,022	20,352		36,374		431,314	72.0
1995	414,980	15,662	22,202	37,864	37,864		452,844	71.2
1996	434,820	16,537	25,142	41,678	41,678		476,498	70.9
1997	469,700	17,100	27,929	45,029	45,029		514,729	72.7
1998	507,100	16,006	29,492	45,498	45,498		552,598	74.3
1999	542,594	21,883	37,455	59,338	59,338		601,932	76.8
2000	605,405	21,311	41,139	62,449	62,449		667,854	

the total 'actual' income assessed by the Inland Revenue for income tax purposes. It should be noted that, although the UK income tax administrative data at this time provided no distributional information, the totals can be used. The total in column 1 refers to gross income assessed less (a) the incomes of those below the exemption limit included in the assessments; (b) the income of charities, colleges, and other non-profit institutions; (c) dividends paid to non-residents; and (d) allowances for depreciation. From this we subtract that part of profits not distributed by companies (column 3) and add:

- wages not assessed (column 4-column 2)
- salaries below the exemption level (column 5)
- self-employment income below the exemption level (column 6)
- dividends and other capital income below the exemption level (column 7)
- contributory NI retirement and widows' pensions.

The sources for the different columns are described below.

1. *Column 1.* The sources are (years refer to income tax years commencing in April) 1908 from AR 1913–14: 100; 1909–18 from AR 1919–20: 62; 1919–23 from AR 1927–28: 73; 1924–28 from AR 1933–34: 63; 1929–35 from AR 1938–39: 56; 1936–42 from AR 1945–46: 52; 1945 from AR 1946–47: 65; 1943 and 1944 linearly interpolated.
2. *Column 2.* The wages included in the tax assessments are shown for most years in the sources given for column 1. (It should be noted that a distinction is drawn between 'wages' and 'salaries'.) 1943–45 calculated as same % of column 1 as 1942. Wages assessed prior to 1918 interpolated using the 1911 figure from Feinstein (1972: 173), and information on the exemption limit. Where the exemption limit was reduced by a factor $(1 + x)$, the amount of wages assessed is assumed to rise according to the formula $(1 + x)^4$.
3. *Column 3.* Post-1927 figure for year $(t-1)$, previously average of years $(t-1)$ and year $(t-2)$. 1920–38 from Feinstein 1972: T30; 1912 from Colwyn Committee 1927: 18; other years prior to 1920 interpolated using gross trading profits of companies and income from self-employment (undivided total) from Feinstein 1972: T5; 1939–44 taken as equal to the 1938 figure.
4. *Column 4.* Total wages from Feinstein 1972: T55. The figures are reduced by 5% to allow for the fact that some wage income would have escaped the attention of the Inland Revenue. The percentage deducted is a matter of judgment, but seems reasonable in the light of the post-1944 figures after the introduction of PAYE (collection at source).
5. *Columns 5–7.* The pre-1918 figures for salaries and self-employment income are based on the estimates for 1911 given by Bowley (1937: 81). The total of £264 million for salaries and self-employment earnings is close to the figure of £285 million given by Cannan et al. (1910: 64). They are extrapolated backwards to 1907 and forwards to 1917 using the series for salaries from Feinstein (1972: T55) and self-employment income from Feinstein (1972: T5

The Distribution of Top Incomes

Table 4C.2 Derivation of control totals (£ million) for income in UK, 1908/09–1944/45

Tax year starting in April	1	2	3	4	5	6	7	8	9	10
	Assessed wages	Wages assessed	Undistributed profits	Wages	Salaries below exemption level	Self employment income below exemption level	Dividends below exemption level	NI retirement pensions and widows'	ADJUSTED total income	ADJUSTED Total as % Personal sector gross income
1908	824	8	88	715	73	152	50		1,682	94.0
1909	822	8	89	721	74	154	50		1,688	92.6
1910	838	8	87	753	77	162	50		1,747	92.0
1911	866	8	86	781	80	174	50		1,817	91.9
1912	907	8	84	811	84	180	50		1,899	91.8
1913	951	8	90	835	89	180	50		1,966	91.6
1914	985	8	95	830	95	176	50		1,991	89.3
1915	1,050	23	103	910	99	227	50		2,164	80.9
1916	1,373	34	113	1,040	61	158	50		2,483	75.5
1917	1,631	58	137	1,310	70	181	50		2,982	75.0
1918	2,072	145	170	1,640	83	198	50		3,646	77.8
1919	2,547	826	200	1,970	110	221	50		3,773	73.2
1920	2,661	674	223	2,475	96	82	50		4,343	82.1
1921	2,462	490	240	1,933	85	67	50		3,770	82.1
1922	2,318	357	188	1,585	78	68	50		3,474	84.3
1923	2,303	301	195	1,510	76	66	50		3,434	85.6
1924	2,401	343	178	1,554	78	68	50		3,552	85.9
1925	2,337	243	226	1,579	101	89	77		3,635	85.7
1926	2,337	196	215	1,481	106	101	80	8	3,628	86.5
1927	2,416	285	209	1,624	104	101	80	11	3,761	86.2
1928	2,494	285	201	1,607	107	101	80	23	3,846	87.2
1929	2,531	290	217	1,638	106	103	80	26	3,896	87.0
1930	2,497	269	219	1,579	106	103	80	34	3,833	86.6
1931	2,826	620	167	1,495	49	66	80	39	3,694	86.8
1932	2,667	600	100	1,470	54	66	70	40	3,594	86.1

(contd.)

Table 4C.2 (Contd.)

Tax year starting in April	1	2	3	4	5	6	7	8	9	10
Assessed income inc wages	Wages assessed	Wages assessed	Undistributed profits	Wages	Salaries below exemption level	Self employment income below exemption level	Dividends below exemption level	NI retirement and widows' pensions	ADJUSTED total income	ADJUSTED Total as % Personal sector gross income
1933	2,621	620	83	1,497	66	66	70	42	3,584	84.9
1934	2,747	650	103	1,568	68	66	70	43	3,730	86.4
1935	2,839	680	178	1,624	72	70	70	44	3,780	84.1
1936	3,015	725	216	1,724	76	74	79	44	3,984	84.2
1937	3,231	785	232	1,842	79	70	85	45	4,243	86.4
1938	3,341	804	291	1,888	81	68	84	46	4,319	85.6
1939	3,425	908	290	2,010	86	77	84	53	4,436	85.1
1940	4,056	1,382	290	2,270	82	83	84	60	4,849	82.5
1941	4,846	1,911	290	2,560	71	82	84	67	5,382	75.7
1942	5,625	2,286	290	2,810	74	88	84	74	6,038	76.9
1943	5,912	2,365	290	2,940	79	90	84	81	6,384	76.0
1944	6,198	2,479	290	2,950	84	91	84	88	6,579	76.3

The Distribution of Top Incomes

137

and T6), reduced when the exemption limit changed using exponent of 3 for salaries and 1.5 for self-employment income, allowing a one year lag when the exemption limit was lowered from £160 a year to £130 in 1915–16. The figure of £50 million for ‘Dividends and other capital income’ below the tax threshold is taken from Bowley (1937: 81). It is identical to the figure given by Cannan et al (1910: 64) for 1911, and it is assumed to apply to all pre-First World War years.

8. *Column 8.* The figures relate to the contributory pensions first introduced in 1926. Figures up to 1934 from Clark (1937: 141); 1935–38 from *Hansard*, 14 December 1939: column 1316; 1939–44 interpolated from the figure of £95 million in Minister of Reconstruction (1944: 52).

Again, it is interesting to compare the resulting totals with total personal sector gross income (final columns in Table 4C.2). As a percentage of total personal gross income (with or without transfers), the adjusted total used here shows a sharp drop during the First and Second World Wars. (See Figure 2.4 in Chapter 2.) This means that use of a control total based on a constant percentage of the national accounts total would have shown an even larger fall of the top income shares during the First and Second World Wars, and a bigger subsequent recovery.

Net of Tax Incomes

From the totals for gross income are subtracted the figures for total income tax recorded in the sources listed in Appendix 4A.

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The Distribution of Top Incomes

139

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