HAL
open science

Top Wealth Shares in the UK over more than a Century

Facundo Alvaredo, Anthony Atkinson, Salvatore Morelli

To cite this version:

Facundo Alvaredo, Anthony Atkinson, Salvatore Morelli. Top Wealth Shares in the UK over more than a Century. 2017. halshs-02658784

HAL Id: halshs-02658784

https://shs.hal.science/halshs-02658784

Preprint submitted on 30 May 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

World Inequality Lab Working papers n°2017/2

"Top wealth shares in the UK over more than a century."

Facundo Alvaredo, Anthony B. Atkinson, Salvatore Morelli

Keywords : Inequality; inequality dynamics; top income; wealth share; DINA; Distributional National Accounts; United Kingdom

WID.WORLD
THE SOURCE FOR
GLOBAL INEQUALITY DATA

World Inequality Lab

Top wealth shares in the UK over more than a century*

Facundo Alvaredo
Paris School of Economics, INET at the Oxford Martin School and Conicet

Anthony B Atkinson
Nuffield College, London School of Economics, and INET at the Oxford Martin School

Salvatore Morelli
CSEF – University of Naples "Federico II" and INET at the Oxford Martin School

This version: 19 December 2016

Abstract

Recent research highlighted controversy about the evolution of concentration of personal wealth. In this paper we provide new evidence about the long-run evolution of top wealth shares for the United Kingdom. The new series covers a long period – from 1895 to the present – and has a different point of departure from the previous literature: the distribution of estates left at death. We find that the application to the estate data of mortality multipliers to yield estimates of wealth among the living does not substantially change the degree of concentration over much of the period both, in the UK and US, allowing inferences to be made for years when this method cannot be applied. The results show that wealth concentration in the UK remained relatively constant during the first wave of globalization, but then decreased dramatically in the period from 1914 to 1979. The UK went from being more unequal in terms of wealth than the US to being less unequal. However, the decline in UK wealth concentration came to an end around 1980, and since then there is evidence of an increase in top shares, notably in the distribution of wealth excluding housing in recent years. We investigate the triangulating evidence provided by data on capital income concentration and on reported super fortunes.

JEL Codes: D3, H2, N3
Keywords: *wealth inequality, estates, mortality multipliers, United Kingdom, United States*

---

* Tony sadly passed away on January 1st, 2017, after the completion of this paper, which received clearance from HMRC for public releasing on January 3rd, 2017. The paper entirely reflects our joint views, discussions, and effort. We are and will be deeply indebted to Tony.
We acknowledge financial support, at different stages, from the Institute for New Economic Thinking (F. Alvaredo, A. B. Atkinson and S. Morelli), the European Research Council (F. Alvaredo through ERC Grant 340831), ESRC/DFID (F. Alvaredo through grant ES/I033114/1), and the University of Venice Ca' Foscari "Guido Cazzavillan Fellowship" (S. Morelli). During the final phase of the project, S. Morelli was visiting fellow at the Center for Equitable Growth (University of California Berkeley) and the Employment, Equity, and Growth Programme at INET Oxford. We thank for helpful comments Arthur Kennickell, Brian Nolan, Thomas Piketty, Emmanuel Saez, Tony Shorrocks, Gabriel Zucman, as well as participants at the Conference on household wealth data and public policy (IFS and Bank of England, London, March 2015), the International Inequalities Institute Annual Conference (London, May 2016), the Third Annual Conference of the Society for Economic Measurement (Thessaloniki, July 2016), and the INET at Oxford seminar (November 2016). We are particularly grateful to Edward Zamboni and Andrew Reeves of HMRC, to the HMRC personal wealth statistics team, and to the Datalab staff for providing access to the UK Inheritance Tax microdata. Contact: alvaredo@pse.ens.fr.

1. Introduction: The distribution of personal wealth

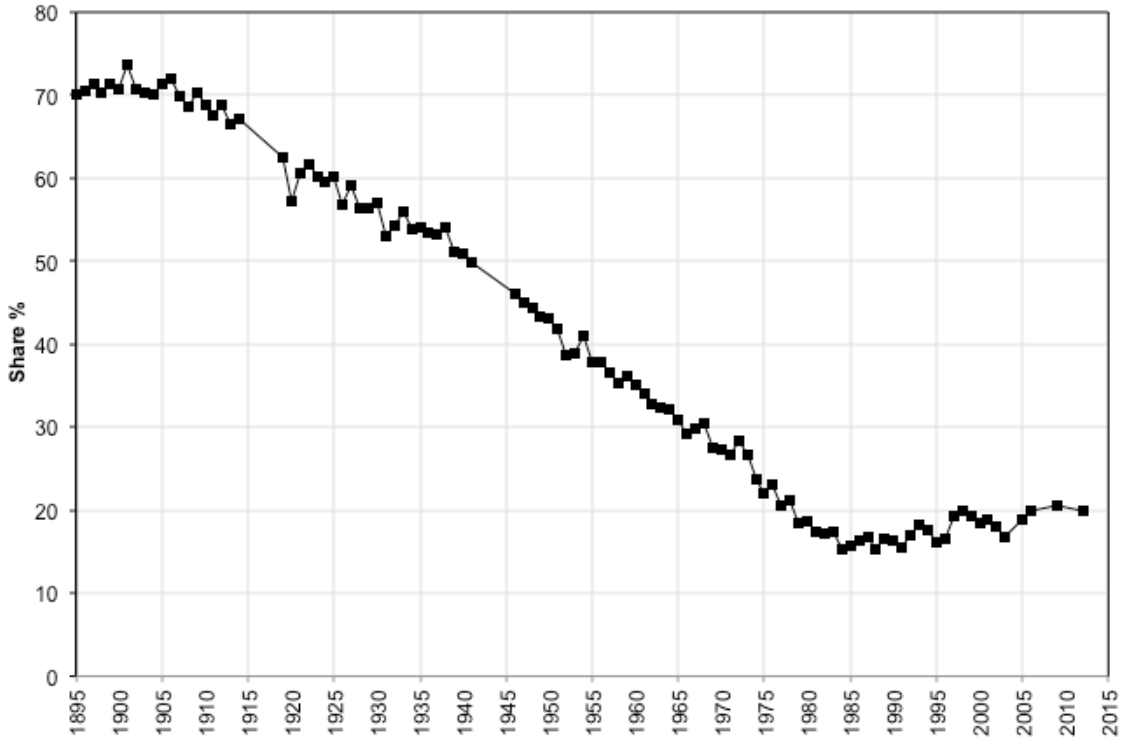
Economists have recently focused on the distribution of personal wealth. There have been two main sources of impetus. One is the recognition of the importance in macro-economics of assets and liabilities, as demonstrated by the investments being made in launching household financial surveys, and by the renewed interest in balance sheets in national accounts. Another impetus has come from Thomas Piketty's *Capital in the Twenty-First Century*, in which he warned that the main driver of inequality – the tendency of returns on capital to exceed the rate of economic growth – today threatens to generate extreme inequalities. The debate generated by this book has turned the spotlight on the empirical evidence concerning the upper tail of the wealth distribution, and the importance of historical time series. As Kopczuk has underlined, "estimates of the top wealth shares are much less settled than those of the top income shares, and there is substantial controversy about how they have evolved in recent years" (2016, page 2).

This paper presents new long-run evidence about top wealth shares – which we believe to be essential in understanding the evolution of the modern economy - for the United Kingdom (UK). It builds on the earlier line of research, summarized in Atkinson and Harrison (1978), and on the work of the official statisticians in Her Majesty's Revenue and Customs (HMRC), but has a different point of departure: the distribution of estates left at death, recorded in the administrative data required for estate taxation and the administration of estates. The evidence covers an extensive period, starting in the "Gilded Age" before the First World War. The long-run results since 1895 highlight the enormous transformation of the distribution of wealth within the UK over more than a century. Figure 1, previewing the main estimates, shows that in the wake of the first modern globalization the share of personal wealth going to the wealthiest 1 per cent of UK individuals remained relatively stable at around 70 per cent. The share began to fall after 1914 and the decline continued until around 1980, when the share had decreased to some 16 per cent. This is still 16 times their proportionate share, but represents a dramatic reduction. The fall, however, came to an end around 1980, and since the mid-1980s the share of the top 1 per cent – representing approximately half a million individuals today – has moved in the opposite direction.

What lies behind the long-run estimates for the UK presented in Figure 1? The paper describes the three main methodological steps. Our investigation begins in Section 2 with the estimation of the distribution of estates from the administrative tax data, which covers the longest period of time under investigation (1895 to 2013). As a second step, in Section 3, we estimate wealth concentration applying the mortality multiplier method to the estate data. In the UK, this involves piecing together data for the different years when sufficient information exists on the demographic structure of estates to implement such method. It also means confronting the discontinuity introduced from 2005 when the HMRC ceased publication of the previous official series and adopted a new methodology. In Section 4, we link the different estimates of wealth concentration over time in order to provide a continuous time series from 1895 to 2013. The results cover, in addition to the evolution of top wealth shares, the shape of the upper tail, which builds a bridge with the theoretical literature on thick tails of the wealth distribution (see Benhabib and Bisin, 2016, for a recent review). We pay

particular attention to the role of housing in understanding the dynamics of wealth concentration. The new estimates represent, we believe, an advance on those available to date, but they should be viewed in the context of a variety of potential sources of error, arising both from the underlying method and from the reliance on tax data. In Section 5, we consider the internal validity of the estimates presented here by addressing the main problems with the methods used in their construction, and in Section 6 we apply checks on their external validity through an examination as to how far they can be triangulated with evidence from other sources.

Figure 1. Wealth share of top 1% in the UK 1895-2013



Source: Table G1.

The new evidence about top wealth shares for the UK is compared in Section 7 with the evidence for top wealth shares in the United States (US). There has long been interest in contrasting wealth distributions in the UK and the US (for example, Lydall and Lansing, 1959, and Lampman, 1962). The juxtaposition of the two countries is of particular relevance given the recent critical reviews of the long-run US evidence (Kopczuk, 2015 and 2016, and Sutch, 2015), and the publication of alternative estimates by Bricker et al, 2016, and Saez and Zucman, 2016, the latter finding a particularly sharp rise in the very top wealth shares. Comparisons made half a century ago found wealth to be more concentrated in England, but today the US is seen as the home of major concentrations. If so, when did the countries change position? There are significant differences in the nature of the estate data – in coverage and in the process of assembly – but the sources are sufficiently similar to make the comparison a meaningful one.

In the final Section 8, we summarize the main findings and discuss the implications for the future measurement of the distribution of wealth (see also Alvaredo, Atkinson and Morelli, 2016).

Measuring the distribution of wealth

The paper is concerned with the distribution of personal wealth, or net worth: the value of the assets owned by individuals, net of their debts. Assets include financial assets, such as cash, bank accounts or bonds or company shares, and real assets, such as houses and farmland, consumer durables, and household business assets.

The total wealth considered here differs in important respects from total national wealth, as measured in the national accounts balance sheets. To begin with, we are concerned only with one sector of the economy: the household sector (sector S14 in the national accounts), where this excludes non-profit institutions serving households (sector S15). Secondly, there are differences in the method of valuation, a subject that is often neglected. The balance sheets are in principle based on values observed in the market, but it is necessary to distinguish between "realization" and "going concern" valuations (Atkinson and Harrison, 1978, page 5). Here the nature of the data on individual wealth-holdings at our disposal means that we focus on the former: what a person could realize by the sale of all assets, net of liabilities. The going concern valuation could well be higher than that recorded in the statistics.[1] In the case of household contents (durables, furniture, etc.), for instance, the price obtained on sale is likely to fall considerably short of the value to a continuing household (or the replacement cost). A less common, but quantitatively important, example is that of business assets, where the realization value is likely to be less than the valuation on "going concern" basis. As these examples illustrate, the move to a going concern basis would add to wealth at different points on the wealth scale. On balance, moving to a going concern basis is likely to reduce top wealth shares (see Atkinson and Harrison, 1978, pages 112-113), and this should be borne in mind in what follows

In adopting a realization basis, we are open to the charge of departing from national accounting practice. However, it should be noted that the official UK statement about the basis for the balance sheet valuation states that

> "market value is an estimate of how much these assets would sell for, if sold on the market" (Office for National Statistics, 2016, Section 2).

This sounds more like a realization basis than a going concern basis. What is more, once we depart from observed market transactions, any estimate of what assets "would sell for" involves a number of speculative assumptions. This applies to a number of classes of assets, but is particularly the case with defined benefit pension rights, both private and

[1] Although this is not invariably the case. In the estate statistics, life assurance policies on the life of the deceased are valued at the sum assured, whereas in the hands of the living their value is less than this amount, whether valued on a going concern or a realization basis. It would be possible to make adjustments to the recorded amounts (see Atkinson and Harrison, 1978, pages 95-99), but this has not been done here. In the same context, no account has been taken of the cash withdrawal/surrender value of defined contribution pensions.

state, where there have been a series of official UK estimates, but these have been subject to substantial revisions (see, for example, *Inland Revenue Statistics 1995,* pages 124-125).

It has also to be remembered that we are concerned about the distribution of wealth not only on account of the potential consumption. Wealth conveys power. The realization basis may be seen as capturing the degree of direct personal control over resources that is one of the major reasons for interest in the concentration of wealth. If, as it has been expressed by Abraham, there is concern that "a growing share of income and wealth is controlled by households in the top 1 percent or top 0.1 percent" (2016, page 313), then it is reasonable to omit assets, such as pension rights, over which the individual has only limited or no control.[2]

There are five main potential sources of evidence about the distribution of personal wealth:

1. Household surveys of personal wealth, such as the UK Wealth and Assets Survey, conducted by the Office for National Statistics, or the Survey of Consumer Finance conducted by the Flow of Funds Unit of the US Federal Reserve, or the Household Finance and Consumption Surveys co-ordinated by the European Central Bank;
2. Administrative data on individual estates at death, multiplied-up to yield estimates of the wealth of the living, as utilised in the UK by Her Majesty's Revenue and Customs (HMRC, previously the Inland Revenue);
3. Administrative data on the wealth of the living derived from annual wealth taxes;
4. Administrative data on investment income, capitalized to yield estimates of the underlying wealth;
5. Lists of large wealth-holders, such as the annual Forbes Richest People in America List, or the Sunday Times "Rich List" for the UK, which has been compiled by Beresford (1990, 1991 and 2006).[3]

For the UK and the US, the third source does not exist: there is no annual wealth tax. Sample surveys are relatively recent: the earliest in the UK and the US were carried out in the 1950s. The Rich Lists are even more recent: the UK Sunday Times list dates from 1989; the US Forbes list started in 1982. This means that long-run historical evidence has to make primary use of sources (2) and (4). The latter, the capitalization of investment income, has recently been revived in the US by Saez and Zucman (2016), and was the subject of research in the UK in the 1970s (Atkinson and Harrison, 1974 and 1978). However, as explained by Alvaredo, Atkinson and Morelli (2016), the data necessary to satisfactorily apply this approach in the UK are unfortunately less readily available than in the US.[4]

The main focus of the paper is therefore on the use of estate data. Estates are not the same as the wealth among the living, but it turns out that the estate distribution provides a valuable point of reference.

---

[2] Our estimates equally exclude "human capital" (the capitalized value of future earnings) and the value of rights to state benefits in kind such as health care, education, etc.

[3] In some particular cases, population census also provide evidence about the distribution of personal wealth.

[4] The application of the capitalization method in the UK, as well as a re-evaluation of its limitations, is part of a related, but separate, project.

2. The distribution of estates

The distribution of estates (the net value of property of a deceased person) has commonly served as a starting point for the estimation of the distribution of wealth among the living via the mortality multiplier method, but has never been under extensive scrutiny in and of itself. There are nonetheless reasons to consider the distribution of estates a good starting point, at least in the UK. First, there are tabulated data on the distribution of estates for almost all years from 1895 to 2013 (the missing years are 1915-1918, 1942-1945, 1995 and 2004). The sources of the estate data are listed in Appendix Table A1.[5] The estimates relate to Great Britain (excluding Ireland) from 1895 to 1973, and the UK (including Northern Ireland) from 1974 onwards. This geographical definition reduces the extent to which the distribution is affected by the division of Ireland in 1921. The estates are taken to refer to adult deaths, where we take adult to mean throughout the period the population aged 18 and over (even though the age of majority changed from 21 to 18 in 1970).[6] The second main reason for beginning with estates is that the underlying concept is relatively straightforward: it is the wealth left at death, and there is inherent interest in the concentration of inheritances. Thirdly, the estate distribution does not involve the multiplying-up process described in Section 3, and where the choice of mortality multipliers has been the subject of intensive debate.

Figure 2 shows the upper tail of the distribution of estates over the period from 1895 to 2013 (the underlying estimates are given in Appendix Table E1; the top shares in total estates are interpolated from the published tabulations classified by ranges of estate size).[7] The changes in top shares may be summarized in terms of the three periods marked by vertical lines in Figure 2. The first of these is the twenty-year period leading up to the First World War. There was a scarcely perceptible decline in the top shares: that for the top 1 per cent went from 69.2 per cent in 1895 to 67.3 per cent in 1914. The groups at the very top saw an actual increase in their share: that of the top 0.1 per cent rose from 31.8 per cent to 33.1 per cent, and that of the top 0.05 per cent from 23.9 to 25.4 per cent. The last of these figures means that the top 0.05 had more than 500 times their proportionate share of total estates. At the other end of the scale, the bottom 90 per cent had very little wealth at death. In short, estates were highly concentrated at the top, and there was overall little sign of change.

The second period covers more than half the twentieth century: from 1914 to 1980. This encompassed two world wars, and much attention has been paid to the loss of capital during the periods 1914 to 1918 and 1939 to 1945. Top shares certainly fell in the UK during the war years, but these only accounted for a part of the large reduction that took place over the period as a whole. The share of the top 1 per cent in total UK

[5] The data are based on a sample, as described in Appendix I.

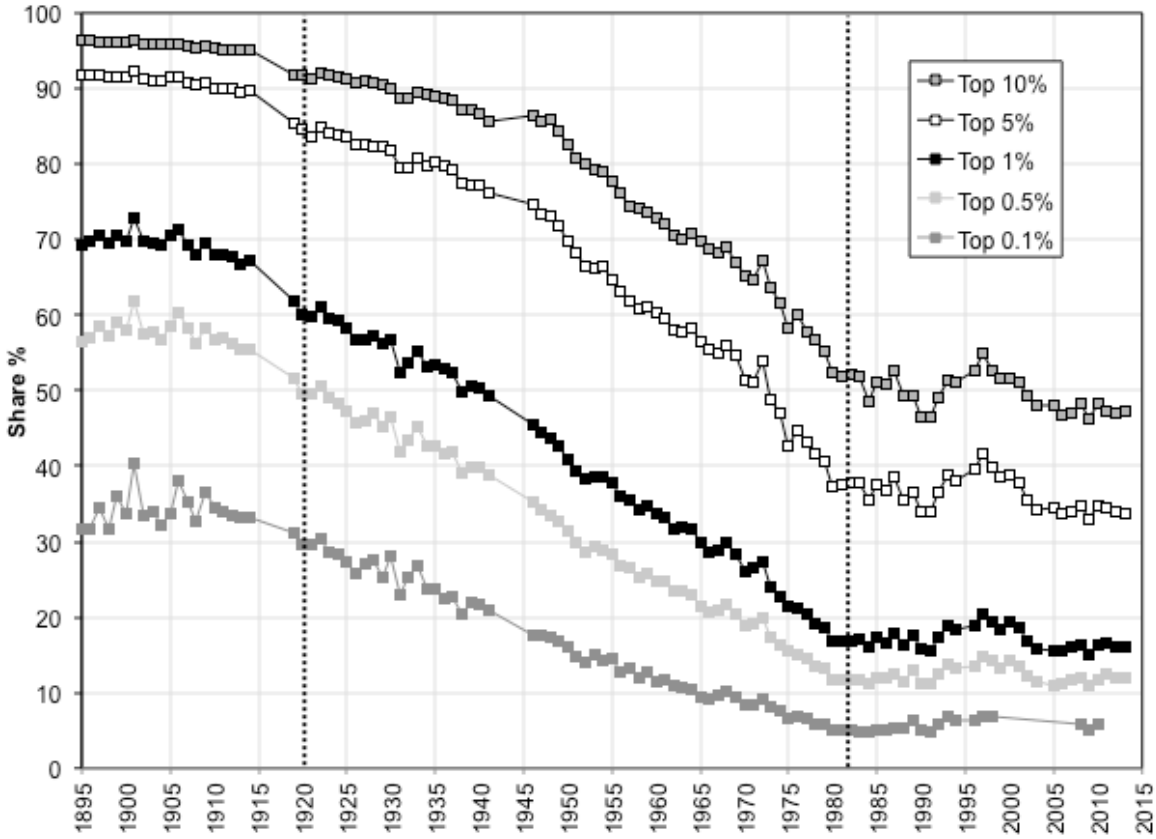
[6] This definition follows that in the official Inland Revenue (IR)/Her Majesty's Revenue and Customs (HMRC) estimates of the distribution of wealth. At one point, the IR defined the adult population as those aged 15 and over (see, for example, *Inland Revenue Statistics* (IRS) 1976, Table 108), but with effect from IRS (1978) this was changed to 18 and over (see IRS 1978, page 79). Earlier studies of the distribution of wealth took those aged 20 and over (Lydall and Tipping, 1961) or even 25 and over (Daniels and Campion, 1936). On the grounds that there had been a downward trend in the age of economic independence, Atkinson and Harrison (1978) took a cut-off that began at 23 in 1923 and then fell by 1/10th of a year until reaching 18 in 1972.

[7] The interpolation makes use of the mean split histogram; see Atkinson (2005).

estates fell by 48.7 percentage points between 1914 and 1979, but the war years only contributed 10.5 percentage points. The share of the top 0.1 per cent fell by 27.2 percentage points, but again only a quarter (6.2 percentage points) took place during the war years. The large decline in top shares was very much a peacetime phenomenon.

The third period is from 1980 to the present. There have been year-to-year variations, but over the thirty years as a whole little change in top estate shares. The share of the top 1 per cent ended in 2013 at virtually the same figure as in 1980. The share of the top 0.5 per cent was higher by 1 percentage point, but that of the top 5 per cent was lower by 1.5 percentage points.

Figure 2. Distribution of estates in the UK 1895-2013



Source: Table E1.

The nature of estate data

The estate data are important both in their own right and because they provide the basis for the estimation, using the mortality multiplier method, of the wealth of the living discussed in the next section. The existence of the data reflects the institution of a single Estate Duty in 1894, substituted in 1975 by the Capital Transfer Tax, which was in turn replaced by the Inheritance Tax (IHT) in 1986, currently in place. The data derive from the legal process of administering the estate of a deceased person, which is a complex business. All claims need to be resolved, and the deceased persons's property

distributed according to the will or according to the legal provisions in the case of the person dying intestate. Before allowing an executor (usually indicated within the will) to administer the estate, a Court has to validate and prove the will (granting probate). This legal process of probate defines the true definitive testament of the deceased person and, in doing so, provides (often professional) assessments of estate valuation.[8] The latter are then used to submit the IHT form in order to work out if any tax needs to be paid. After submitting the form (required within one year from the death), the executor or the administrator of the estate needs to swear an oath stating that the information given is true and accurate. It is after this process that usually the court issues a Grant of Representation (known as confirmation in Scotland and probate in the rest of the UK).[9]

Not every estate needs a Grant of Representation by the Probate Registry. In particular, a grant is not required for assets below the probate limits (currently £5,000), or for assets above the probate limit held jointly and therefore passing automatically to the other joint owner (e.g. a surviving spouse or civil partner). However, assets for which a grant of representation is not required are still recorded in our data to the extent that the estate of the deceased also includes assets for which a grant of representation is needed.

As a result, the estates identified in our data, referred to as the "identified" estates, cover only a fraction of all deaths in a year (see Appendix Figure C1), currently around a half. Therefore, an estimate of the total value of estates including those not covered by the estate returns, referred to here as the "excluded estates", is required to derive top estate shares. The need to estimate the amount of "excluded wealth" is an important limitation of the estate method. At the same time, on the plus side, it is evident from the description given above that the valuation of the identified estates is the result of a much more thorough process than is likely to be carried out when collecting wealth data in other forms.

The derivation of the estate total

The total of estates is taken as the sum of the identified total in the estate returns plus an estimate of the total of excluded estates. The latter is in turn calculated from the estimated total wealth excluded from the wealth estimates described in the next section, by making the assumption that the amount of excluded estates passing in a year is given by the mortality rate of the excluded population (the ratio of deaths among the excluded population to the total number of living persons in that population) times the excluded wealth. In other words, it is assumed that the average wealth of the dying among the excluded population is equal to the average for the living in that population. Such an assumption would not be appropriate if applied to estates as a whole – as we

[8] According to the National Audit Office Report on Inheritance Tax (2004), professionals are engaged in around 70 per cent of cases of probate.

[9] The linkage with the probate system significantly reduces the risk of the non-filing of tax returns in the UK (see National Audit Office, 2004, page 25). On the contrary, probate is obtained before paying the Federal Taxes in the United States.

discuss in the next parts of the paper – but may not be unreasonable as a first approximation when applied to a group whose wealth is by definition limited.[10]

Beyond the estimation of the value of the excluded estates, there are a number of criticalities with the use of the estates statistics, which are discussed in later sections.

3. The distribution of wealth based on the estate multiplier method

The distribution of wealth of the living is conceptually different from that of the decedents. Death does not "sample" randomly the population. Older individuals, as well as males and people from poorer backgrounds, have, other things being equal, higher mortality risk. Differential mortality multipliers can however be used to transform the estate data into estimates of wealth-holding. Under the assumption that death is random within specific cells of observed demographic and social strata, one can view death occurrence as an effective sampling of the living population.

The inverse of the death rate, and hence the mortality multiplier, varies considerably with age: for example, in 1968 the general mortality multiplier for men varied from 3.74 for those aged 85 and over to 1102.18 for those aged under 25. Applying such differentials could be expected to lead to a distribution of wealth that differs a great deal from the distribution of estates. The impact could be expected to be further affected by the use of multipliers that reflect the lower mortality of the wealthy. In the UK, the assumption was initially made that wealth was correlated with social class as defined by occupational categories, and later refined by the introduction of variables such as marital status, home ownership and housing wealth. In what follows, we make use of the official (IR/HMRC) estimates of identified wealth for the period from 1960 and hence accept their choice of multipliers. For much of the period, the official multipliers have been differentiated according to gender, age group, country (England and Wales, and Scotland, in the case of Great Britain), and estate size class. For the period before 1960, we apply the social class mortality multipliers employed in Atkinson and Harrison (1978, Chapter 6) based on occupational classes, where these vary by decade.

The application of the available mortality multipliers to the pre-1960 estates data, and the use of available multiplied tabulations by wealth ranges since 1960, yields estimates of the distribution of *identified wealth* covering 1911 to 2012:

a) for the years 1923 to 1930, 1936, 1938, and 1950 to 1959, tabulations of estates by ranges broken down by age and gender are available, and we apply mortality multipliers and social class adjustment factors to make estimates of identified wealth by ranges (the sources and coverage are listed in Atkinson and Harrison, 1978, Table 6.3); there are in addition tabulations by age and estate size, but not gender, for the years 1911-1914,

[10] A check on the assumption is provided by calculating the implications for the overall ratio for the whole population (included and excluded) of the average wealth of decedents to the average wealth of the living. The values in the early part of the period are around 2, falling to 1.5 in the 1950s. These do not seem unreasonable. Moreover, the fact that, until 1975, the values are considerably above those found by Piketty (2011) in the case of France suggests that the allowance should not be increased (see Appendix Figure C4).

and 1920, and we have also made use of these.[11] Estimates derived for the years 1938-1959 refer to Great Britain whereas the pre-1938 period refers to England and Wales.

b) for the period 1960 to 2005, we rely on the published tabulations (IR/HMRC) of identified wealth-holdings by ranges (see Appendix Table A2 for sources); the IR/HMRC applied social class multipliers, varying by age, sex and country; in the course of the period, the IR/HMRC switched from using statistics for the valuation of the estate on a year-of-account basis (the date at which the estate was administered) to using statistics on the more appropriate year-of-death basis.[12] [13] The data for the period between 1960 and 1973 refer to Great Britain, whereas the data from 1974 refer to the UK. These wealth tabulations were used by the IR/HMRC to derive their first "official" estimates of the distribution of wealth in Great Britain from 1960, later referred to as Series A (not covering the excluded population, and therefore of little utility), and Series B (covering the excluded population but with no allowance for the wealth of the excluded population). These estimates were the subject of detailed examination by the Royal Commission on the Distribution of Income and Wealth (1975 and subsequent reports) and by Atkinson and Harrison (1978). Subsequently, the Inland Revenue introduced a Series C that makes adjustments for the wealth of excluded population. This Series C was revised in 1984 (Inland Revenue Statistics 1984, page 43) and continued to be published on an annual basis for years up to 2005 (see Table K1). In addition, the IR/HMRC Series C corrected for under reporting of the wealth of the included population and made adjustments to its valuation. In the research presented here, we are unable to make these additional adjustments, as the underlying data cannot be made available to us.

c) for the grouped years 2001-03, 2005-07, 2008-10, and 2011-2013, we use the new version of the tabulations of identified personal wealth-holdings published by the HMRC; these differ in that, in addition to the grouping of years, the HMRC uses a revised methodology to capture the negative correlation of mortality with (housing) wealth and to apply lower mortality to smaller estates; the results for 2001-03 provide an overlapping observation that is used to link the series (and, in Section 5, to investigate the implications of the change in methodology).

d) differently from other years, for the three years 2008, 2009 and 2010, we have made use of microdata available from the HMRC Datalab, where the data set has been designed so as to ensure anonymity and protect taxpayer confidentiality.

The derivation of the wealth total

The wealth holdings identified by the multiplier process have to be compared with the control total for the population as a whole. The control totals for wealth (and for total

[11] For years when estates are not broken down by gender, the social class differential is taken as 2/3 of the male plus 1/3 of the female.

[12] The distributions by range of wealth from 1960 onwards were collected for a number of years in the first edition of Inland Revenue Statistics in 1970, the numbers in earlier years being revised from the previous publications. These numbers have been used for the years 1960 to 1968.

[13] The IR continued for a number of years to publish the distribution of estates by age and sex of the deceased (for example, Table 112 in Inland Revenue Statistics 1970), but these contain less detail than was available to the IR in making their estimates, and we have therefore relied on their multiplier process.

population) are given in Table D1. To arrive at the wealth control totals, we employ the national balance sheets, but it should be stressed that the control totals are not necessarily equal to the balance sheet totals for the personal sector. It is not simply a matter of replacing the total by one drawn from the published national accounts. Among the major reasons for the difference is the inclusion in the official UK balance sheets of the value of private pensions, which do not fall within the definition of personal wealth adopted here.[14] A further example is provided by the issue of timing. The balance sheet figures refer to a point in time (31st December); the estate data refer (now) to the date of death. The latter seems appropriate, and there is no reason to make the "end-year adjustment" incorporated in the balance sheets.[15]

As part of the research carried out by the IR/HMRC, they have, beginning with IRS 1980, published tables on the "Reconciliation of estate multiplier and balance sheet estimates". The aim is to explain the relationship between *Total Identified Wealth,* obtained by multiplying up the estate data by mortality multipliers, and the information available from external sources, drawing on the national balance sheets. Such a reconciliation exercise was a major development with regard to estimates of the distribution of wealth since it allows for

i) the wealth of the excluded population;
ii) differences in coverage/valuation (including under-recording) for which we would like to adjust the totals employed when calculating the shares of top wealth groups;
iii) differences in coverage/valuation for which adjustments should be made to the ranges of wealth identified in the estate-based estimates.

In 2005, the last year for which the exercise has been published, the total identified wealth is £3,432 billion, to which is added £908 billion (26 per cent) for the wealth of the excluded population (including in this case omitted wealth held in trusts). A similar amount (£826 billion) is added for under recording, and £161 billion is subtracted to allow for differences in the valuation (such as in life policies). The end result of these adjustments – stages i), ii) and iii) – is total marketable wealth (this is the so called Series C total), which is £5,005 billion, or 46 per cent higher than total identified wealth - see Figure 3. The Series C total is considerably less than the total national balance

[14] A further element is that the balance sheet total for the personal sector includes Non-Profit Institutions Serving Households (NPISH), such as sports clubs, churches, universities, and trade unions. In recent years, they have accounted for some 2 per cent of the balance sheet total (HMRC website 2005, Table 13.4) and this should be deducted. The national accounts definition of total personal net worth does not include consumer durables. It also differs in adding an end-of-year adjustment. In earlier years, the national accounts included the value of non-marketable tenancy rights (intangible assets including housing and agricultural tenancy rights), but from the 2012 edition of the national accounts and to be aligned to the European System of Accounts 1995, "non-marketable tenancy rights" have been excluded, reducing net worth in 2005 by £487 billion.

[15] On the other hand, in earlier years the IR data referred to the date at which the estate was administered ("year of account"). Since the period of administration varied considerably, the deaths in question could have occurred in another calendar year: IRS 1980 says of the 1976 year of account data that "while the figures related in the main to deaths in 1976, also included were details of estates where death occurred earlier than 1976, and in a few cases in the first quarter of 1977" (p. 101). This may make quite a difference where asset prices are changing rapidly, and when linking the series allowance is made for the potential difference. It should also be noted that the lengthy process of administration may lead to the IR/HMRC making revisions to the data. For example, revisions to the identified wealth tables for 2002 published by HMRC in 2010 led to a 2 percentage point rise in the wealth share of the top 10 per cent (although a much smaller change in the shares of the top 1 and 0.1 per cent).

sheet figure for the wealth of the personal sector, including an estimate of the value of funded private pension rights, which in 2005 was (excluding NPISH) £6,292 billion.[16]

Since the adjustments (ii) and (iii) cannot be carried back in time, we have given priority to consistency over the full historical period from 1895 to 2005. This means that the series of control total wealth in our paper adds the estimates of total identified wealth and the estimated wealth of the excluded population.[17] The addition for the excluded population is necessary, since, as explained above, not all assets and possessions come to notice to tax authorities. In the tax year 2005-6, for example, there were 273,043 estates included in the statistics for the UK, compared with a total of 577,113 adult deaths (see Appendix B for sources). When multiplied up to give an estimate for a point in that year, the resulting number of identified wealth-holders fell considerably short of the total adult population: 18.7 million identified wealth-holders compared with an adult population of 47.1 million. Therefore, for 2005-6, it is necessary to make an addition to total wealth for that owned by the excluded 28.4 million.[18]

The starting point for our estimates of the wealth of the excluded population is the set of estimates that were made regularly by the HMRC as part of their reconciliation exercises. These show from 1975 to 2005 (and for 1971) the estimated totals under the headings "small estates" and "joint property" (we do not include omitted property held in trusts). Joint property, typically an owner-occupied house, has always been the larger part of the total wealth of the excluded population, but the ratio of joint property to the remainder has changed from around 2:1 in the 1970s to 10:1 in the 2000s. For earlier years before 1971, we make use of the estimates in Atkinson and Harrison (1978, page 305). As is explained in Appendix C, there are good reasons for supposing that in the period from 1950 to 1970 these earlier estimates are too low. For this reason, we employ the "higher" estimate, rather than the "central" estimate. These earlier estimates are supplemented for the period before 1923 by the series constructed in Atkinson (2013), with the 1895 figure being extrapolated from that for 1896 using the ONS Consumer Price Index. This series did not include jointly owned property, which was then much less important, and the series is increased proportionately by the ratio in 1923. The details of the estimation method are given in Appendix C.

For years beyond 2005, however, this approach cannot be followed, since this was the last year in which the HMRC made an official estimate of excluded wealth. There is therefore an inevitable hiatus in the series. It is true that we have estimates of the total identified wealth from the estate data (which have continued), and the approach closest to that employed up to 2005 would be to add this to a forward extrapolation of the 2005 total for the excluded population. As however is discussed further in Section 5, we have doubts about the identified wealth totals after 2005, and these spill over into any estimate of the excluded wealth total, which depends on both the size and composition of the group that does not appear in the estate statistics. For simplicity, we begin with an alternative approach, using the year-to-year variation of national accounts balance

[16] When NPISH is added, the last item corresponds to the item "Total net worth" (item CGRC) in Table 10.10 of the national accounts.

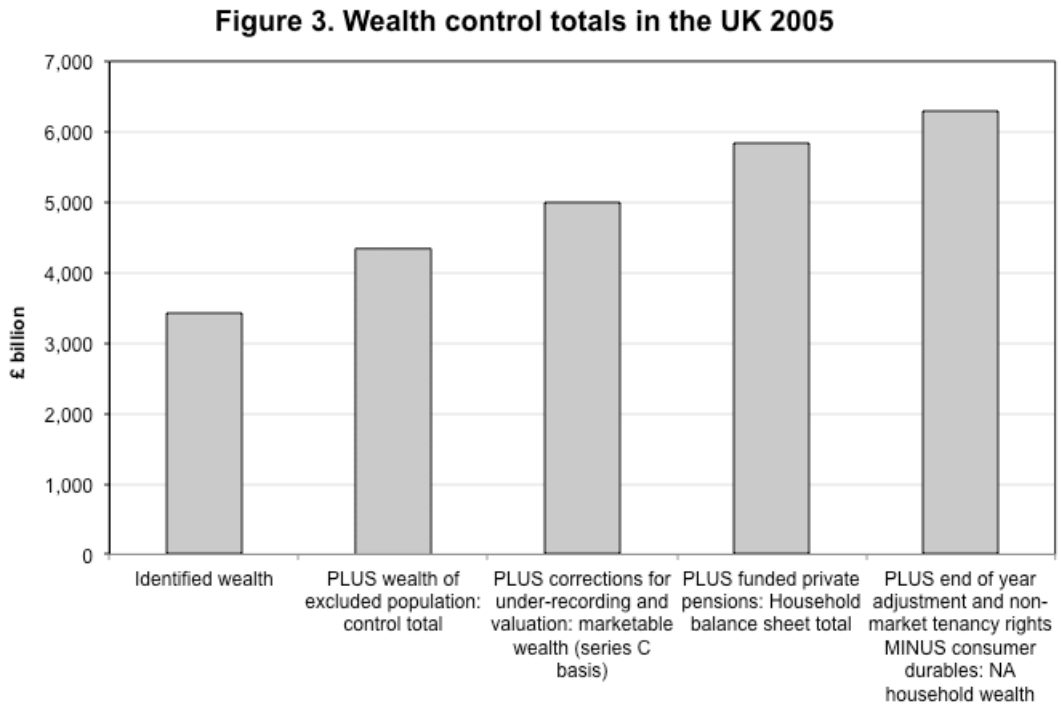
[17] This was the basis adopted by Atkinson and Harrison (1978, Chapter 6), and Atkinson, Gordon and Harrison (1989), in their long-run series on wealth concentration (reproduced in Table D1).

[18] Differently from the case of the US where only approximately 1 per cent of estates are covered by estate statistics, the substantial coverage of the decedent population in the UK allows the derivation of internal measures of total personal wealth.

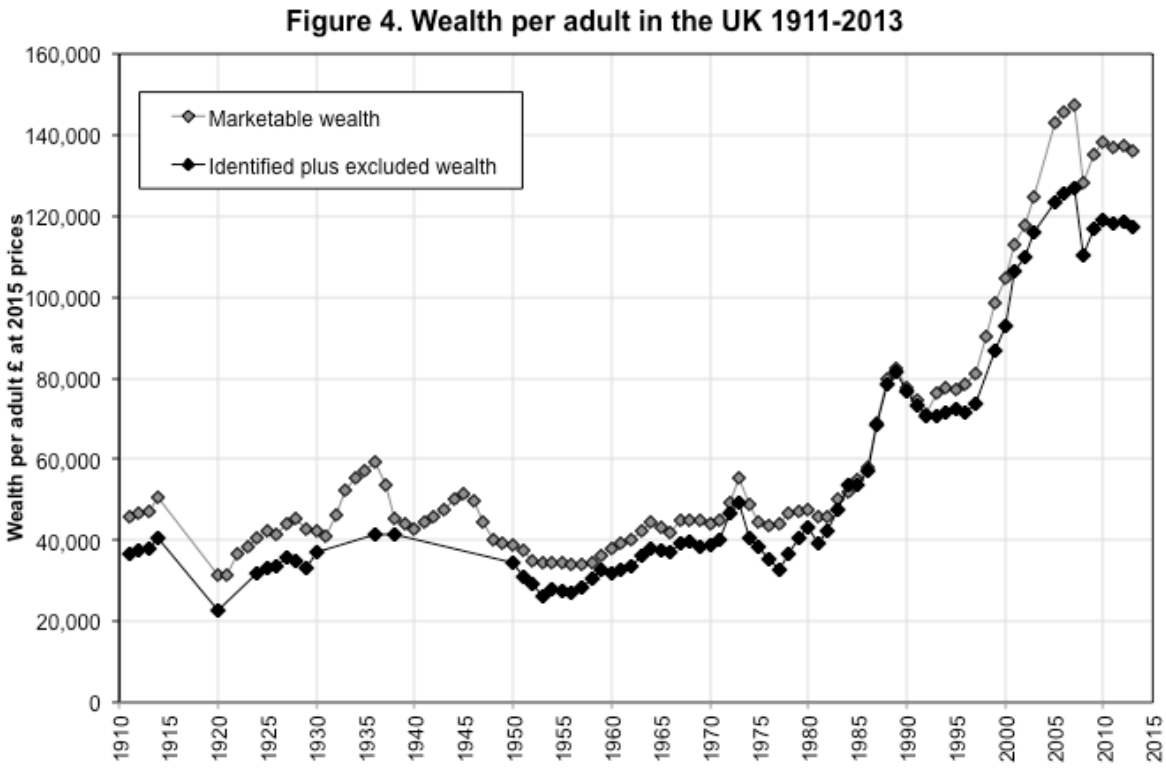
sheet total for the personal sector. This is the basis for the series developed below, with the control total for 2005 being increased by the same proportion as the rise in the national balance sheet total.[19] We are therefore departing from our earlier practice in employing an external control total – but only for the purpose of linking over time. For the reasons given above, this is not ideal; the UK balance sheet totals also include non-profit institutions serving households. In view of this, we revisit the assumption in the sensitivity analysis in Section 5. A second possibility is to use the personal wealth total (excluding private pension wealth) in the Wealth and Assets Surveys (WAS), taking account of the fact that these relate to interviews carried out over a 3-year period. These, however, show rather different patterns of change over time. The WAS totals show a 1 per cent fall between 2006-08 and 2008-10, whereas the national balance sheet shows a fall of 3.3 per cent; the WAS totals show a rise of 8 per cent between 2008-10 and 2010-12, whereas the balance sheet totals show a rise of 13 per cent. In the absence of a reconciliation of the totals provided by different sources, we employ the national accounts balance sheet figures, but, as discussed further in Section 5, the uncertainty surrounding the control totals limits what we can say regarding the changes in top wealth shares since 2005.

The resulting main series for total wealth per adult combining the identified wealth and the estimated wealth of the excluded population are shown in constant consumer price terms in Figure 4. There is year-to-year variation, but the average remained relatively stable for much of the first three-quarters of the twentieth century: average wealth in 1980 was little higher in real terms than in 1920. There followed a marked rise, with the average at the start of the twenty-first century being some 3 times that in 1980. The threefold increase is similar to that recorded by Kopczuk and Saez (2004a, Table A) for the US between 1916 and 2001, but the time path is quite different, since average wealth in the US had doubled between 1916 and 1980. Among the reasons for the difference are the impact in the UK of house price booms and the spread of owner-occupation, and the transfer of wealth to the personal sector from the public sector as a result of the privatization of state enterprises and public housing. We return to the role of housing below. Figure 4 also compares the series used here – the sum of identified wealth and the wealth of the excluded population – with our attempt to construct from 1911 a "marketable wealth" series comparable with the HMRC Series C (the methods are described in Appendix D). As is to be expected, the marketable wealth series lies typically, but not universally (the adjustments may be negative) above our main series, but the time pattern is close.

[19] Blue Book 2014, Balance Sheet S.1HN. LE: B90.



Source: Table D1 and HMRC website.[20]



Source: Table D1.

[20] Table 13.4 in http://webarchive.nationalarchives.gov.uk/20101006170448/http://hmrc.gov.uk/stats/personal_wealth/menu.htm

4. Towards a long-run series for top wealth holdings in the UK

The results of the multiplier process, combined with the control totals, provide estimates of the top shares. As is inevitably the case with such a long time series, its construction involves the linking of estimates on different bases across time. There are seven potential breaks in our estimates:

A) at 1923 which is the first year for which we have estate data broken down by gender, as well as age and estate class;

B) in 1938 when the data begin to cover Great Britain in place of England and Wales;

C) in 1960 when the IR began to use the estate data to make wealth estimates;

D) in 1974 when the data begin to cover the United Kingdom in place of Great Britain;

E) in the 1970s and 1980s when there is a switch from a year of account basis to a year of death basis;

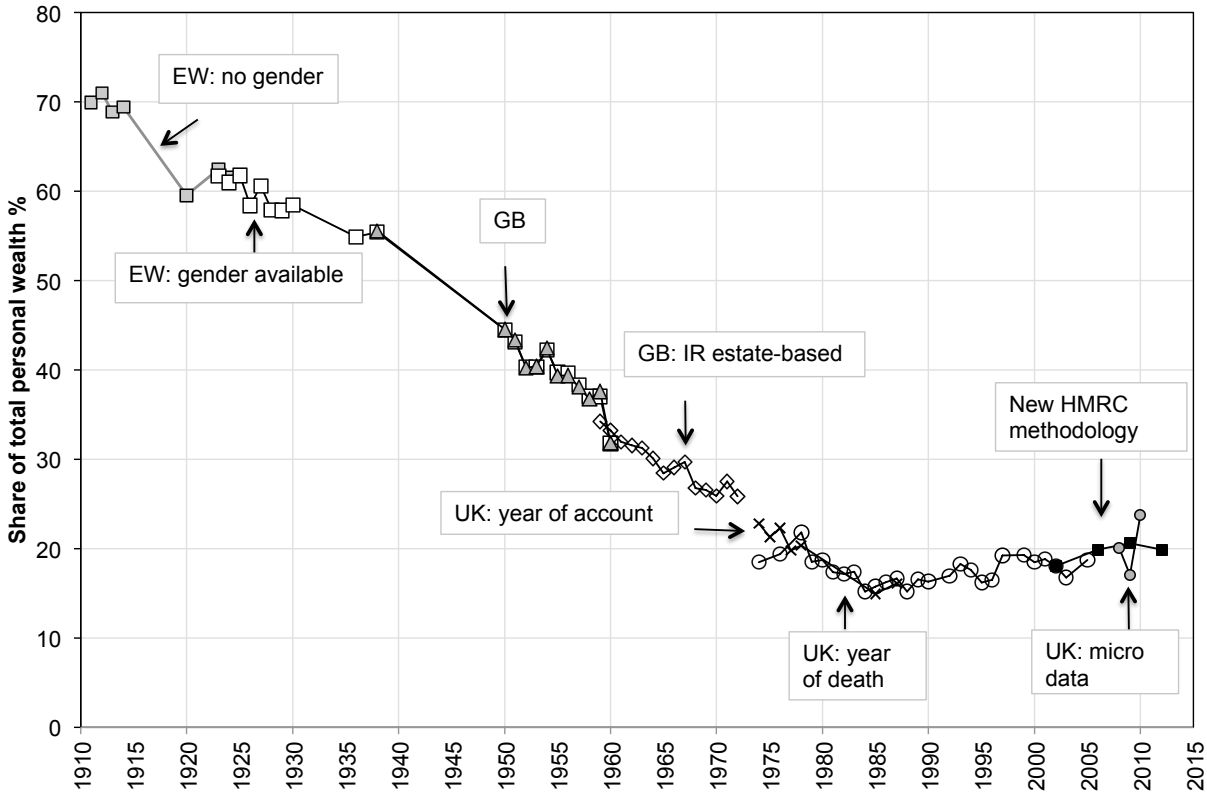
F) after 2002 when HMRC introduced a new methodology for wealth estimation and the "New HMRC Estimates";

G) 2008-2010 when it became possible to use a form of micro data from the HMRC Datalab.

The different elements are summarized in terms of their implications for the share of the top 1 per cent in Figure 5. Of the seven, the element G should not in principle lead to any discontinuity (although we have drawn attention to the fact that the data in fact aggregate estates, which may lead to the results differing from those from the full micro data). In what follows, we consider the different potential breaks A-F, taking the post-2002 series as the point of reference, following the national accounts practice where estimates on earlier bases are revised to bring them into line with the most recent methodology.

First, there is geographic coverage. The earlier series constructed by Atkinson and Harrison (1978) showed a break for geographical coverage between 1938 (England and Wales, EW) and 1950 (Great Britain, GB). The differences are however small, as may be seen by comparing estimates on the two bases for 1938 to 1972 in Figure 5. For the top 1 per cent share, the maximum difference between the EW and GB estimates is 0.6 percentage points and for half the years the difference is 0.2 percentage points or less. We therefore treat the series as continuous at 1938. In the same way, the change to a UK basis in 1974 is assumed not to have materially affected the estimated top shares (the added population, that of Northern Ireland, is 2.9 per cent of the UK total).

Figure 5. Piecing together different series for the UK top 1% wealth share 1911-2012



Source: see Table G3.

The breaks B and D are therefore not further discussed. This leaves four breaks where the series have to be linked. The first of these concerns the use of gender-specific multipliers. Substituting multiplier number and wealth values with their respective weighted average by gender components in 1923 and 1924, yielded differences between the share of top 1 per cent with and without gender tabulation of respectively 0.7 and 0.5 percentage points. This suggests that we should reduce the pre-1923 figures in each case by 0.7 percentage points, on the assumption that the difference is additive.

The next break is that in 1960. The earlier series constructed by Atkinson and Harrison shows a major break in continuity in 1960 (a break that has typically been ignored by users of the data), with the share of the top 1 per cent being lower by some 7 percentage points (1978, Table 6.5). This was based on the a priori grounds that there had been major changes in 1960 in the estate data available to the Inland Revenue: from that date, the data included estates below the tax threshold which nonetheless came to the notice of the Inland Revenue when a grant of representation was obtained. The underlying data became more complete, and it is also possible that the decision to prepare official estimates of wealth-holding from that year may have led to the estate statistics being collected with more care than in the past. The effect in terms of coverage may be seen from the fact that the statistics, when multiplied up, covered 17.9 million taxpayers (48.5 per cent of total adults), compared with 3.1 million with wealth above the threshold (£3,000) who were only 8.4 per cent of adults in 1960. As noted earlier, there are good reasons to suppose that for early part of the post-war period the allowance made by Atkinson and Harrison (1978) for the property of the

excluded population was too low, under-estimating the value of joint property. This has been corrected, which reduces the downward jump in top shares (it is now 5 percentage points). Since there are no years of overlap, with estimates on different bases, there is no direct method of linking the series. However, as we argue in the next section, the data on estates are informative. Between 1959 and 1960, the estimated share of the top 1 per cent in estates fell from 34.72 per cent to 33.67 per cent. We have assumed that the difference of 1.05 percentage points represented the genuine change between the two years in the wealth shares, and linked the earlier wealth series on that basis (with corresponding assumptions for other wealth groups).[21]

For the remaining two breaks, we have estimates for overlapping years, and these form the basis for the linking. We have used the IR estimates on a year of death basis from 1978 onwards, adjusting the earlier year of account estimates by the difference in the estimated wealth shares in 1985 (an overlapping year, and one where the new estimates appear to have settled down). (The sensitivity to the choice of overlapping year is discussed below.)

Finally, there is the break associated with the adoption of a new methodology from 2002. The most important changes are the application of new multipliers and the adoption of a new sampling strategy of the estates population (HMRC, 2012). Since the latter was associated with a smaller sample size, the HMRC moved to producing estimates based on data averaged over three years (2001-2003, 2005-2007, and 2008-2010) in order to reduce sampling variation. We note that the HMRC has stated that "the overlap between the historical data and the new time period would allow users to construct a time series bearing in mind the limitations and changes to the methodology" (HMRC, 2012, page 16). However, in the main series we have adjusted the estimates prior to 2002 additively by the difference between the New HMRC Estimates for 2001-03 and those obtained for 2002 with the old methodology. In Section 5, when discussing the sensitivity of the estimates, we return to the problems surrounding the new methodology and the post-2000 wealth shares, and give an alternative set of estimates for the most recent years.

To sum up, although marginal in magnitude on average, we have made four additive adjustments in the course of linking the series, designed to bring them into line with the reference series for the most recent years.

Comparison of the distributions of estates and of wealth

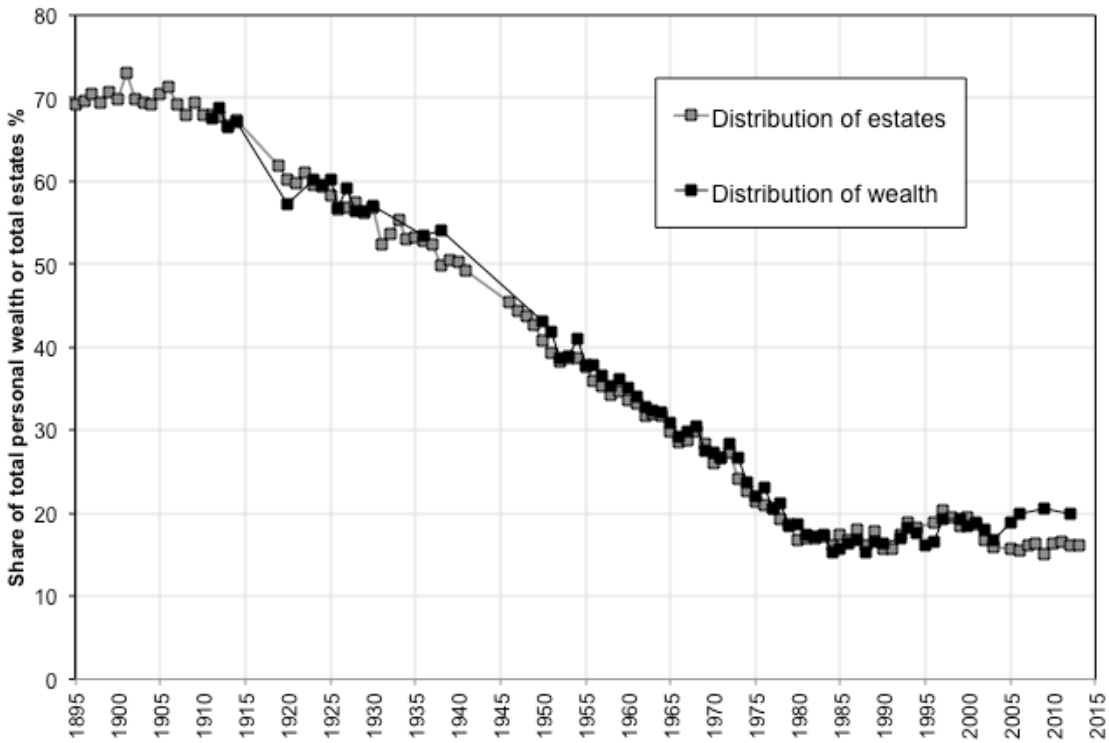
The series for the distribution of wealth is now brought together with that for the distribution of estates described in Section 2. Figure 6 compares the shares of the top 1 per cent for the two series. Theoretically, the application of multipliers embedding differential mortality by age and wealth can increase or decrease wealth shares as well as change the time pattern (relative to estate shares), depending on the evolution of the age-wealth profiles. When the age multiplier method was first employed in the UK, it was seen as overcoming a "fatal" objection to the use of estate data, since "the accumulated wealth of an individual increases with years … and is usually greatest when

[21] The 1959 estimates do not extend down to the top 10 per cent, so that the absolute difference for the top 5 per cent is used in this case.

a man dies" (Mallet, 1908, page 67). Our findings suggest that the objection is in fact less than fatal. In practice, for much of the period the conclusions reached regarding the degree of concentration do not change radically. As shown in section 7, such a result carries through to the US; it also applies to 19th century Paris, (Piketty, Postel-Vinay and Rosenthal, 2006). The similarity of the movement over such long periods in the three cases may be seen as a surprising finding. However, it can be proved that the effect of multipliers on the move from estates to wealth is such that the estimated distribution of wealth exceeds that of estates by a covariance term between the multiplier and the level of estates, where this covariance is likely to be positive. This has the same mathematical form as the impact of rates of return on the move from investment income to wealth.

The exception to the conclusion just described concerns the most recent years, when Figure 6 shows the wealth series as rising relative to the estate series after 2002, the wealth estimate of the share of the top 1 per cent exceeding the corresponding share for estates by an average of 5 percentage points. This departure may be explained by the limitations of the method used to construct a control total for wealth post-2005, but we believe that it also occurs on account of the changes in multipliers, as part of the changes in methodology adopted by the HMRC since 2002. We return to this in Section 5.

Figure 6. Comparison of wealth and estate distributions in the UK: share of top 1% 1895-2013



Source: Table E1 and Table G1.

The close relationship between estate distribution and wealth distribution provides a useful measurement benchmark in order to extend the wealth concentration series back in time to 1895, and to fill in missing years especially in the earlier years of twentieth century. More precisely, we apply the approach to interpolation and extrapolation proposed by Friedman (1962) involving the use of related time series. In the present case, we use the estate series to interpolate the gaps between available observations of top wealth shares. The relationship between top wealth shares and top estate shares, estimated from 1911 to 2005 by ordinary least squares, is shown in Table 1.[22] The predicted values are then used to provide estimates of the top wealth shares for years that are missing from the wealth series from 1895 to 2005. The final series are shown in Figures 7a and 7b, and full results are given in Table G1. Figures for the share of top 1 percent of total wealth are those illustrated in Figure 1 in the introduction. The remaining gaps are those years for which there are no estate data, mostly during the war years.

Table 1 Linear regression of wealth shares on estate shares 1911-2005

	[1] Top 10% share (wealth)	[2] Top 5% share (wealth)	[3] Top 1% share (wealth)	[4] Top 0.5% share (wealth)	[5] Top 0.1% share (wealth)
Top 10% share (estates)	0.937*** (0.010)				
Top 5% share (estates)		0.965*** (0.008)			
Top 1% share (estates)			1.006*** (0.009)		
Top 0.5% share (estates)				1.005*** (0.012)	
Top 0.1% share (estates)					1.066*** (0.023)
Constant	2.608*** (0.699)	0.846 (0.488)	0.337 (0.337)	0.636 (0.328)	0.451 (0.374)
R-squared	0.993	0.995	0.994	0.991	0.974
Observations	58	68	68	68	60

Notes: Table based on linear regressions of top wealth shares series on the respective top estate shares measured in percentage points. The sample used is 1911-2005 (included). Standard errors in parentheses.
* denotes p<0.05.
** denotes p<0.01.
*** denotes p<0.001.

[22] We have examined the sensitivity of the estimates to the use of semi-parametric or local non-parametric regressions. For our semi-parametric exercise, we used Robinson's (1988) double residual estimator and estimated the nonlinear relation between top estates shares and top wealth shares using a Gaussian kernel weighted local polynomial fit. Our non-parametric findings were based on a locally weighted regression of top wealth shares on estate shares (with running-line least-squares smoothing). It turns out that predicted values of top wealth shares on the basis of these different approaches track each other closely and that our estimates appear quite robust.

The distribution of wealth from 1895 to 2013

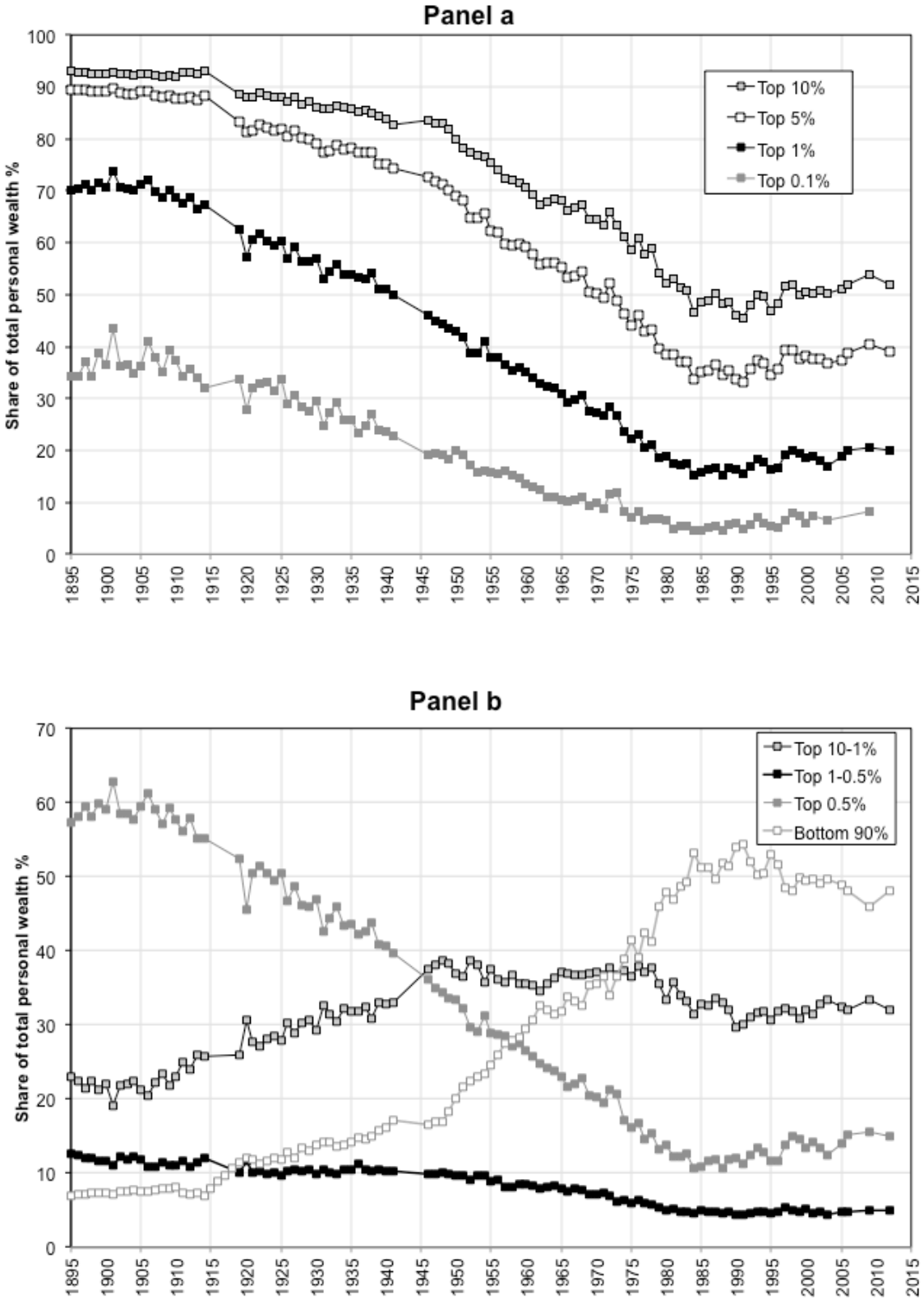
What does the final series show? The estimated top wealth shares before the First World War were very high. The share of the top 0.1 per cent was at least one third, which meant that they had more than 333 times their proportionate share. The share of the top 1 per cent was around 70 per cent, and that of the top 5 per cent around 90 per cent. In particular, it is worth noting that recorded wealth concentration was high despite the lack of correction for settled property; Daniels and Campion (1936, page 39) estimate that 15 to 20 per cent of the settled capital passing at death was excluded from the estate duty returns in 1911-13, compared with a much smaller figure (4 to 7 per cent) in 1924-30. If a substantial amount of settled property was missing from the estate duty statistics for the years 1911 to 1914, then the top shares may be significantly under-stated.[23] After 1914, the top shares then began to fall, with the rate of decline accelerating after the Second World War. By 1979 the share of the top 1 per cent, which had been around three-quarters, was closer to one-fifth. The share of the top 0.1 per cent, which had been a third, was by 1979 around 7 per cent. By any standards, this represents a dramatic reduction in wealth concentration over two-thirds of a century.

Panel b of Figure 7 demonstrates the importance of looking within the top 10 per cent. The share in total wealth of those in the top 10 per cent, but not in the top 1 per cent (i.e. the "next 9 per cent") saw a rise in their share for the first half of the twentieth century, followed by a period of stability until the end of the 1970s. This underlines the changing shape of the upper tail, to which we return below.

Since 1980, the decline in top shares has come to an abrupt stop. The subsequent behaviour of the top shares is not easily summarized: it depends on the period considered and on the part of the upper tail on which one focuses. The reader of the official report *UK Personal Wealth Statistics 2011 to 2013* is told that over the ten year period 2001/03 to 2011/13 "the distribution of wealth held by each decile has been broadly unchanged" (HMRC, 2016, page 4): the conclusion is one of stability. However, this distribution relates only to those identified as wealth-holders, and no account is taken of the existence or wealth of the excluded population. Moreover, grouping in terms of deciles is too crude to capture properly what is happening at the top. The estimates presented in panel a of Figure 7 suggest that the trend in the share of the top 1 per cent of all adults was upward. Moreover, panel b of Figure 7 shows that the experience was not uniform across top wealth groups. The lower half of the top 1 per cent (those between the 99th and the 99.5th percentiles) saw a relative stability in their share of total wealth, whereas the upper half saw an increase. It is not just the share of the wealthy that has changed but also the *shape* of the upper tail, to which we now turn.

[23]This was due to the fact that before 1914 where estate duty had been paid on settled property, duty was not payable a second time the property passed. Daniels and Campion (1936) also show that the settled property reported in 1924 and 1925 rose as a proportion of total property from 7.0 per cent for estates between £100 and £1,000 to 21.7 per cent for estates over £100,000 (Table 14).

Figure 7. Top wealth shares in the UK 1895-2013



Source: Table G1.

The shape of the upper tail

In seeking to understand further the evolution of wealth concentration, it is helpful to consider the share, S_i, of the top i per cent expressed as a multiple of their population share, $1 - F_i$. The extent to which the wealth share exceeds the population share may then be seen as the product of two components:

$$\frac{S_i}{1 - F_i} = \frac{w_i}{\mu} \; m(w_i)$$

where w_i is the i-th percentile from the top, expressed relative to μ, which is the overall mean wealth, and $m(w_i)$ is the mean wealth above w_i expressed as a ratio of w_i. The extent to which the top 1 per cent, say, have more than their proportionate share depends, via the first term, on the wealth required to enter this group (w_i/μ), which we refer to as the "entry price". This may be seen as capturing the degree of skewness to the right. The second component is an indicator of the degree of concentration within the top *i*-th per cent, or of the thickness of the right tail. If all estates in the top *i*-th per cent are equal to the *i*-th percentile, then $m(w_i)$ equals unity.[24] But to the extent that there is inequality within the top i-th per cent, $m(w_i)$ is greater than 1, and the second component increases the top share. In the case of the Pareto distribution, with Pareto coefficient *a*, $m(w_i)$ is a constant not dependent on w_i, equal to *β=a/(a-1)*, often taken as a measure of concentration, and referred to as the inverted Pareto-Lorenz coefficient.[25]

We begin with the entry price. For this element of the analysis, we consider the unlinked series, since the linking factors described earlier do not apply to percentiles, and, since we have not attempted to interpolate the percentiles, the decomposition is made only for years where the full wealth distribution has been estimated. This means that the series start in 1911. Again there is differing experience within the top 10 per cent. The "entry price" for the top 10 per cent and 5 per cent increased up to the end of the 1970s, and then levelled off. At the other end of the scale, the 99.9th percentile fell steadily up to the 1980s and then began to rise (Figure 8). Taking the period as a whole, we see that the top percentile (entry price for the top 1 per cent) has halved since 1914.

This evidence for changing shape is complemented by that for the second element: the degree of concentration within the top groups. The degree of concentration within groups is measured in Figure 9 by the values of β estimated from different "shares within shares": for instance, the share of the top 1 per cent within the top 10 per cent. If the distribution is Pareto in form, then in that case $1/\beta = \log_{10}[S_{10}/S_1]$.[26] The results in Figure 9 for different groups show that there was a modest decline in the extent of concentration before the First World War, affecting the top 10 per cent but not the very top 0.1 per cent. There was then a sharp fall in the degree of concentration at the top in the inter-war period from 1919 to 1939, followed by a continuing fall from 1946 to the

[24] In principle, the external control total for the adult population allows us to define the percentiles in £, and the m function can be calculated (it is unit-free).

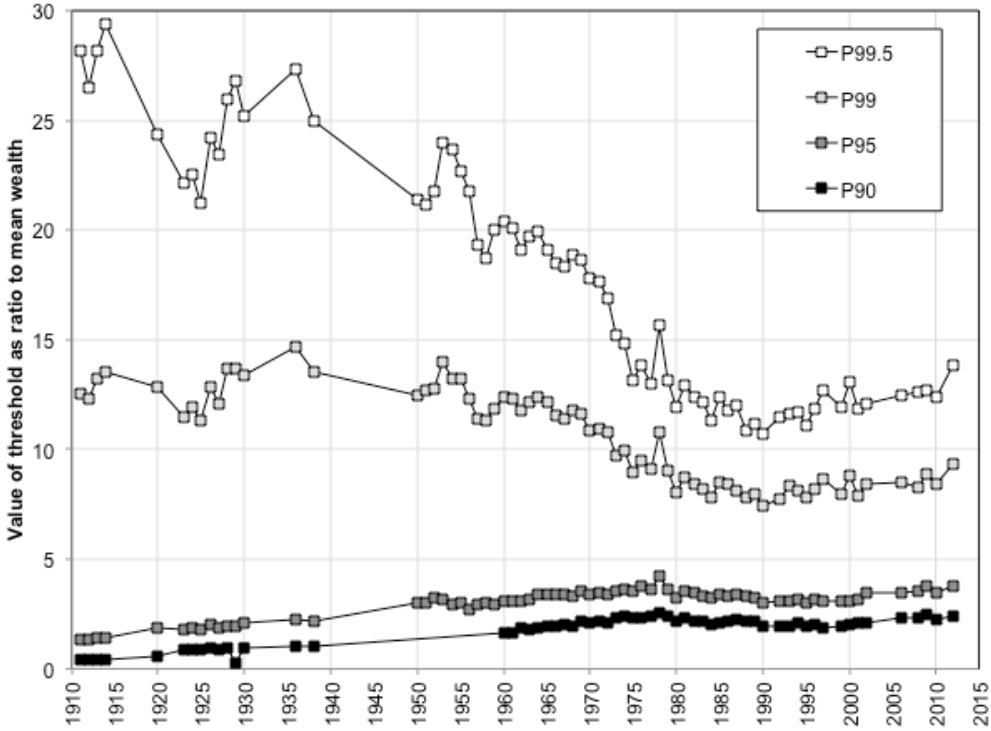
[25] The m function is related to the mean excess function, or mean residual life function, used in actuarial science and risk analysis. The mean excess function is equal to $(m - 1)$ times w_i. For distributions with a finite mean, the mean excess function completely determines the distribution via an inversion formula (Guess and Proschan, 1985).

[26] Here we are using the linked and interpolated data, as given in Table G1.

late 1980s. A value of β, such as 8 in the early years, represents a high degree of concentration. Translated into α, the more common Pareto coefficient, this corresponds to values before the First World War of 1.4 or lower, which does indeed indicate a very high level of concentration. Of the 152 Pareto coefficients collected for income by Clark (1951, pages 533-537), only twenty are below 1.4 (many of which were in pre-independence India). By the 1980s, in contrast, β had fallen to around 2, corresponding to a Pareto coefficient α of around the same value, indicating a degree of concentration closer to that found for gross income. Since 1980 there has been a rise in concentration, but the magnitude is in no way comparable with the earlier decline.

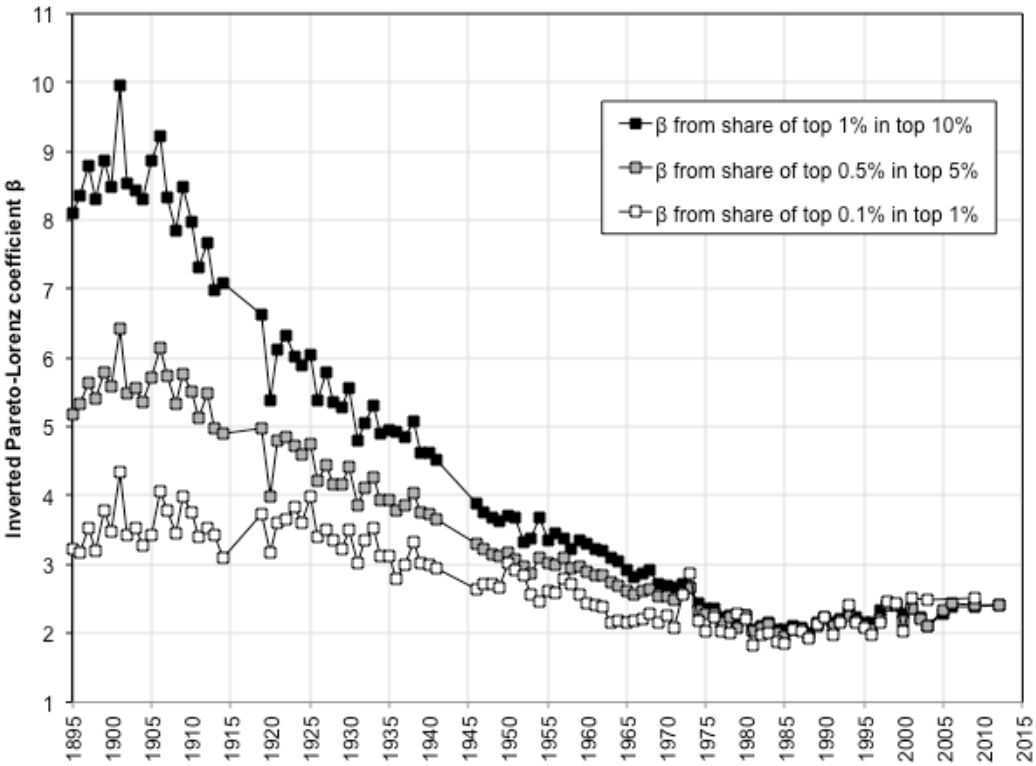
Figure 9 does however cast doubt on the validity of the assumption that the upper tail of the UK wealth distribution has throughout been Pareto in form. As noted above, with the Pareto distribution, the same value of β should apply at all wealth levels. For the latter part of the period, the constancy of β may be a reasonable first approximation, but for the early part this is not the case: the mean difference between the values obtained from S_{10}/S_1 and those with $S_1/S_{0.1}$ is 4.3 in the period 1895 to 1914, and 1.8 in the interwar period. This is a warning that a long-run comparison based on the assumption that the upper tail above the 99th percentile is Pareto in form would miss a potentially important element of the change. The threshold above which the distribution becomes Pareto may be time-varying or, alternatively, the assumption of Pareto-distributed wealth might not be a compelling one altogether.

Figure 8. Entry price to top groups as ratio to mean wealth 1911-2012



Source: Authors' calculations.

Figure 9. Inverted Pareto-Lorenz coefficient β 1895-2013



Source: Authors' calculations from Table G1.

Understanding the dynamics of wealth concentration: the role of housing

In the discussion of average wealth, we identified the role of housing wealth, and this has been the concern of a number of commentators on the rise of capital described by Piketty (2014) – see, for example, Bonnet et al (2014), Turner (2014) and Rognlie (2015). The earlier time series analysis by Atkinson, Gordon and Harrison (1989) had identified one of the key determinants of the dynamics of UK top wealth shares up to the end of the 1970s as "popular wealth", the sum of owner-occupied housing plus consumer durables. In particular, the authors stressed the role of house prices as reducing the share of the top 1 per cent. Since then, there have been major changes in the UK housing market.

The role of housing wealth has to be seen in terms of the tenure changes. The popular wealth variable (leaving aside consumer durables) depended on both house prices and the extent of owner-occupation. It is changes in the latter that drove much of the variation between 1920s and 1970s: the proportion of owner-occupied in England and Wales rose from 23 per cent of households in 1918 to 50 per cent in 1971, and to 58 per cent in 1981 (all of the figures in this paragraph come from Office for National Statistics, 2013, unless otherwise indicated). This coincided with the fall in housing owned by private landlords: from 76 per cent in 1918, to 11 per cent in 1981. Both factors led to a decline in the share of the top 1 per cent, which contained a disproportionate number of landlords. The shift from private-rented to owner-occupied did not in itself change the ratio of housing wealth to the total personal wealth (different people owned the same houses),

but it *was* affected by the growth of social housing, from 1 per cent in 1918 to 31 per cent in 1981.

In the 1980s, the position changed with the sales of public housing. By 1991 the share of social housing had fallen to 23 per cent, with owner-occupation going up to 68 per cent (private renting having then fallen to 9 per cent). More of the housing stock therefore entered personal wealth. The ratio of residential housing wealth to total wealth rose by some ten percentage points in the 1980s. But then, in the 1990s, there was a change with the return of private landlords as a result of "buy to let": their share, having been 9 per cent in 1991, increased to 18 per cent in 2011. The increased share of private landlords came at the expense of a fall in owner-occupation (-4 points) and a fall in social housing (-5 points). Therefore, we have over the period as a whole three main stories: (i) the equalizing switch from 1918 to the end of the 1970s as owner-occupation replaced private landlords and social ownership replaced private ownership, (ii) the sale of council houses and rise in housing as per cent of total wealth in the 1980s, and (iii) in recent decades, the return of the private landlord. Whereas (ii) may have meant that increases in housing wealth were equilising in the past, the return of the private landlord is likely to imply that they have now the opposite effect. In particular, they may have re-inforced the developments post 2003.

All of this suggests that it is interesting to first decompose the assets within the top brackets of the wealth distribution between housing and non-housing assets as shown in Figure 10 for the top 1 percent group. The construction for a series that starts in 1971 is described in Appendix H. Indeed, housing only accounts for a relatively small fraction of total wealth at the top: the share of housing wealth for the top 1 percent is bounded between 10 and 30 percent of total net worth. Second, we may look at the distribution of wealth minus residential housing, net of mortgage liabilities. Figure 11 shows the shares excluding housing wealth for the period since 1971, where it should be noted that these shares are not fully comparable since it has not been possible to re-rank the observations in the tabulated data and the interpolation is linear (see Appendix H). It appears that, as we should expect, the top shares of the distribution of non-housing wealth are higher: the share of the top 1 per cent averages 24.7 per cent over the period 1971 to 1997, compared with 18.2 per cent for the corresponding share for all wealth. Although there is more variability in the shares excluding housing wealth (shares are smoothed to some degree by the housing element), overall there is little difference in their evolution over the twentieth century. Up to 2000, we do not get a very different story if one just takes non-housing wealth, with a decided fall in the top shares until the end of the 1970s, which came to an end and with broad stability until the end of the 1990s.

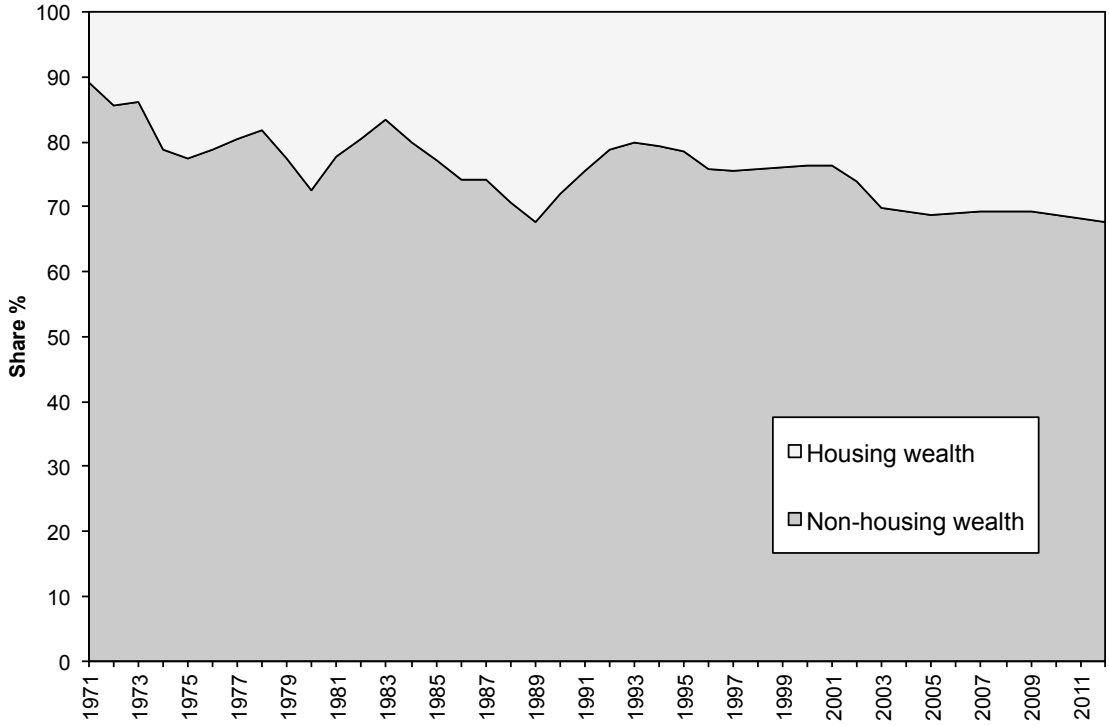
But in the 21st century, there is a distinct difference. Between 2001 and 2011-13, the gap between the share of the top 1 per cent in total wealth excluding housing and the share for all wealth widened. The changes over time in top shares are also different when we look only at wealth excluding housing (see Table H2). It appears that housing wealth has moderated a definite tendency for there to be a rise in recent years in top shares in total wealth apart from housing. When people talk about rising wealth concentration in the UK, then it is probably the latter that they have in mind.

Put differently, changes in housing wealth may have relatively little impact on top wealth shares (although they do of course affect the share of owner-occupiers as a group).

Simple arithmetic calculations allow an estimate to be made of the sensitivity of top wealth shares to an across-the-board increase in house prices (increasing the value but not affecting the mortgages). Again this can be done from 1971. The results show how the impact of a general rise in house prices has changed over the period, being negative at the outset for all groups in the top 10 per cent, but becoming positive for the top 10 per cent in the mid-1970s and positive for the top 5 per cent from the mid-1980s. At the beginning of the period a rise of 25 per cent led to a reduction of some 1 percentage point in the share of the top 1 per cent but the effect became smaller over time. Indeed the effects are modest in size: the impact on the share of the top 10 per cent averaging a gain of less than 1 percentage point and the loss for the top 1 per cent averaging less than half a percentage point.

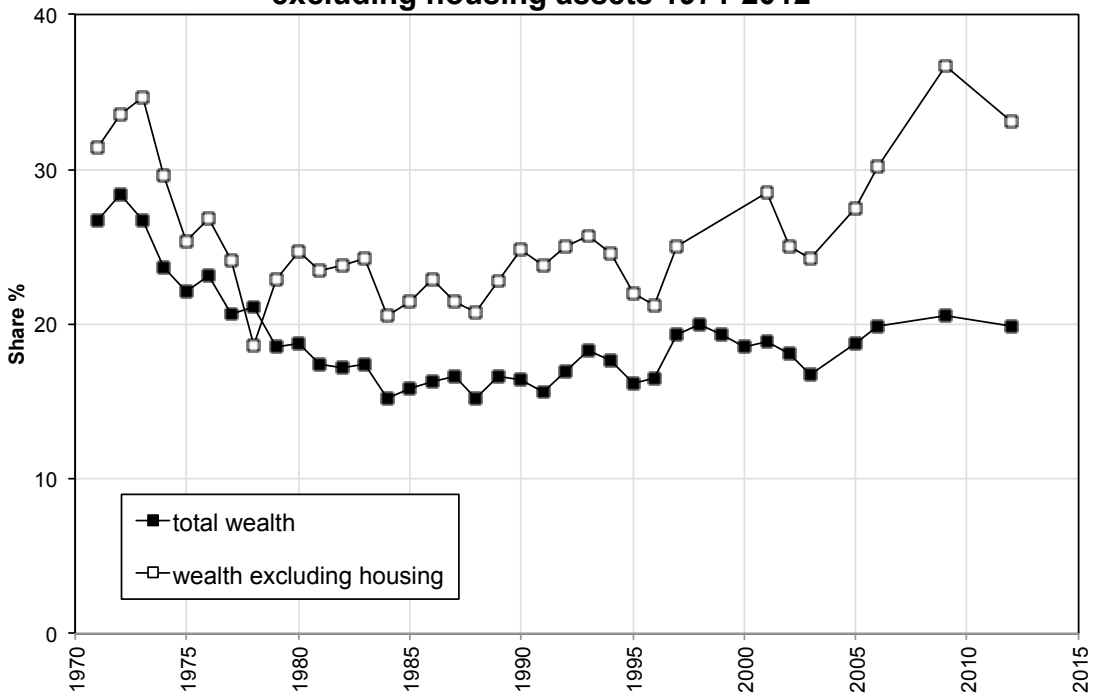
It should be stressed that our analysis refers to top shares: the relative position of owners and non-owner-occupiers in the main part of the distribution has almost certainly been affected by changes in housing wealth. But, if we concentrate on top wealth shares, then, overall, changes in housing wealth do not appear to have played a significant role over the period from 1971 to the end of the twentieth century. On the other hand, in the twenty first century, housing wealth has moderated the tendency for concentration to increase in other forms of wealth. In order to understand the trends in concentration, it is necessary to look at the distribution of non-housing wealth.

Figure 10. Composition of wealth among the top 1% in the UK



Source: Table H3.

Figure 11. Top 1% wealth share: total wealth and wealth excluding housing assets 1971-2012



Source: Table G1 and Table H2. Note: The estimates excluding housing wealth are based on the original ranges, since re-ranking is not possible, and the shares are obtained by linear interpolation. The estimates of total wealth correspond to our preferred series in Table G1. See Appendix H.

5. Internal validity of our estimates

The estimation of top wealth shares series followed a series of building blocks, choices, and assumptions, and it is important to examine how these may affect the reliability of the level of our estimates as well as their trends over time. Such an examination is necessary if our estimates are to be taken seriously by those who reject the estate method and prefer alternative approaches. In this section, we consider five sources of concerns and potential variation: (a) the choice of mortality multipliers, (b) whether the wealth of the decedent population is representative of that of the living, (c) the implications of tax avoidance, (d) the assumptions made concerning the linking of series, and (e) the derivation of the recent wealth control totals and HMRC wealth estimates.

How does the increasing longevity advantage of the rich affect our results?

In order to derive estimates of the wealth distribution of the living, multipliers based on the inverse of the mortality rates are employed, but because more wealthy individuals tend to live longer, higher multipliers have typically been applied to the upper estate ranges. The higher multipliers, referred to here as "differential adjustments" are essential to avoid an underrepresentation of the number of very wealthy individuals as well as their wealth. In practice, in the UK, the differential adjustments have been

based on social class, or occupation, but this is only an intermediate route to the variation of final concern: that with estate size. The UK differentials used for much of the period were calculated from the Registrar-General's Decennial study of mortality by occupation, with adjustments for errors in occupational statements. The resulting differentials varied over time, and at younger ages showed considerable increase: for example, for male aged 45 to 54 they increased from 18 per cent in 1921 to 35 per cent in 1961 (Atkinson and Harrison, 1978, Table 6.4b). Starting in 1977, the Inland Revenue used two different multipliers according to whether an estate was below or above a pre-specified cut-off (which was gradually increased from £10,000 to £25,000). For the estates above the cut-off, the mortality risk was assumed to reflect those of people living in owner-occupied housing (data taken from the ONS Longitudinal Study of social class and occupational mobility). The multiplier applied to estates below the cut-off was assumed to be an average between that of the general population and that for estates above the cut-off. Since 2002, the biennial waves of the English Longitudinal Survey of Ageing (ELSA) are used to link mortality rates to housing wealth levels.[27]

In the US, there has been considerable discussion on the choice of mortality multipliers for those at the top of the distribution. The estate-based estimates of top wealth shares by Kopczuk and Saez (2004) made use of a "corrective term" obtained from external data on mortality rates of college graduates; in contrast to the UK, the same correction factor was applied over a long period. Renewed interest in the topic was stimulated by recent claims that a failure to capture the increasingly lower relative mortality rates of richer classes may substantially bias downward the level of concentration of wealth at the top in recent years (Saez and Zucman, 2016). On the basis of evidence from income tax filers, Saez and Zucman find that "the top 10% live less long than the top 1% who in turn live less long than the top 0.1%."[28] More importantly, the mortality gradient has been sharply increasing since 1980s; the trend is especially pronounced for men. In recent years (2004-2008), the mortality rate for men aged 65-79 in the top 1% is only 60% of the average mortality rates of male tax filers aged 65-79 versus 90% in 1979-83" (2016, page 572). The same figures for the top 10 per cent were 95 per cent in 1979-83 and 77 per cent in 2004-2008. They go on to argue that failure to allow for an increasing wealth differential may have caused the estate-based estimates to under-state the rise in top wealth shares. Additional evidence on the mortality advantage of US richer classes is contained in the work by Chetty et al (2016).

The discussion so far, it has taken for granted that a rise in the wealth differential will significantly increase the top shares. This may indeed be the case, but the effect of changes in multipliers is "less straightforward than is sometimes supposed" (Atkinson and Harrison, 1978, page 60). In the simplest case where there are independent control totals for wealth (and population), there is no impact on mean wealth from any variation of mortality multipliers and/or the wealth-differential, so that the effect on the share of the top x per cent depends only on how a change in the differential affects the mean wealth of that group. Increasing the multiplier implies that there are more people estimated to have wealth in excess of £W, and these extra people will displace some of those with smaller estates who had previously just entered the top x per cent. The mean

[27] The sample of the longitudinal survey refers to England only. Therefore, mortality rates are assumed the same in Scotland and Northern Ireland to derive estimates for the UK.
[28] Tax filers ranked by capital income (excluding capital gains).

wealth of the top x per cent must therefore rise. The direction of the effect is therefore that expected: top shares rise. The magnitude of the effect, however, depends on the underlying estate distribution. If those displaced are not very much less wealthy than the added new people, then the effect of increasing the differential will be small. (Indeed, in the limit, it could be zero, as may be seen from the hypothetical example where all those in the top x per cent have the same wealth, in which case the displaced have the same wealth as the newly added.) In any event, the extent to which higher differentials could explain a failure of the estate-based estimates to show a larger increase in top shares becomes an empirical question.

Suppose, moreover, that, the wealth control total depends on the total of identified wealth. Then an increased multiplier at the top of the estate ranges increases the identified wealth and (for a given total UK population) raises mean wealth (see Atkinson and Harrison, 1974 and 1978, Chapter 3). Discovering a clone to the top billionaire reduces his or her relative share, since the mean has risen. The impact may be seen in terms of the upper part of the Lorenz curve showing the proportionate shares of different percentage groups working downwards. When plotted in terms of data grouped by wealth ranges, the slope for the final range is given by the ratio of mean wealth to the overall mean. Applying a larger differential to the group as a whole, leaves the group mean unaffected, but raises the overall mean, so the slope for the final range is reduced, causing the shares at the very top to be reduced. At the same time, the segment based on the top wealth range is extended downwards (see Atkinson and Harrison, 1975, Figure 2). Where the mean wealth of the next range down is less, there can then be an intersection of the new and old Lorenz curves, and beyond a certain point the top shares are increased. Depending on the precise context, the shares of upper wealth groups may well increase or decrease as a result of applying higher multipliers to the estates of the wealthy.

Ultimately, therefore, the sensitivity of top wealth shares to different mortality-wealth gradients is an empirical matter, and there are two main reasons why we expect such elasticity to be relatively small in magnitude in the UK irrespective of the treatment of the wealth total. First, differently from the US, the wealth-mortality gradient has not been assumed constant over time: the adjustment varies over the years. Secondly, the UK mortality ratios of specific wealth groups with respect to the non-wealth-specific population already appear to indicate a steep wealth gradient. For instance, males aged 65-75 in the top 30, top 20 and top 10 per cent of the distribution of housing wealth in 2008-2010 have a mortality rate of 81, 75, and 69 per cent of the population rate for the same age class.[29] Such longevity advantage are not very distant from those of US males aged 65-79 in the top 10 per cent, top 5 per cent and top 1 per cent of the wealth distribution in 2004-2008 as estimated in Saez and Zucman, 2016 (reproduced in their Appendix Table J1, although the figures are not directly comparable).

What is the effect on our series of further increasing the current adjustment to multipliers for wealthy individuals? Suppose that we increase the multipliers above the 95th, 99th or 99.9th percentiles of the wealth distribution by 20 or 50 per cent, or even 100 per cent. Using the database of the HMRC Datalab, we find (see Appendix Table J2) that this does relatively little to change the levels and trend of our series, even in the

[29] For the source, see Appendix J. The housing wealth thresholds corresponding to the 8th, 9th, and 10th deciles are £300,000, £400,000 and £500,000, respectively.

case of a fixed wealth total. A 20 per cent increase in the multipliers above the top percentile, for example, increased the share of the top 1 per cent with internal wealth totals by 2.4 percentage points when averaged over 2008-2010. A 50 per cent rise increased it by 5.8 percentage points. The potential downward bias of our estimates due to lack of adjustments for "appropriate" wealth differentials appears to be more than marginal but less than is commonly asserted. Indeed, to reach the same level of top 1 per cent wealth share of 1950 or 1960, one would need to adjust wealth differentials by an implausible amount: a cut in relative mortality rate of our richest reference male group aged 65-75 to a level of 40 per cent or 30 per cent, from the benchmark level of 60 per cent. In the light of the earlier theoretical discussion contrasting the use of internal and external control totals, it is interesting to see the results in the last row of Table J2 (the base levels are different on account of the differences in method). The effects are indeed larger with an external total for the 50 percent increase.

Our discussion to this point has focused on the differential multipliers applied at the top of the distribution; we return below to the general level of multipliers applied to all those with wealth.

Are estates representative of the wealth of the living?

The data underlying our analysis reflect the value of the estates for which a grant of probate is required. This implies that any possible inference from this set of data could only be related to the population with "dutiable wealth" (e.g. for which a grant of probate would be required if they were to die"). In other words, the decedent population represented in the estate data may not be representative of the whole wealth-holding living population. Probate is not required for very small estates, and for those estates jointly held passing automatically to a surviving spouse, civil partner or other joint owners. In their recent consultation to cease the publication of Personal Wealth National Statistics, HMRC deems this as a "major issue with the HMRC Personal Wealth National Statistics" as "they do not reliably show the wealth characteristics of all people in the UK" (HMRC, 2015, page 3).

Although relevant to any attempt to measure the distribution as a whole, this concern can be mitigated in the light of our interest in the top tail of the wealth distribution. It is highly unlikely that the assets of wealthy individuals would entirely escape the probate process; whether or not they would be liable to inheritance tax is irrelevant at this stage. Indeed, it is important to recall that probate is still required for every property (above £5,000) not jointly held. To the extent that a high net-worth individual owns at least an asset in her own name (e.g. a bank account with a balance higher than £5,000 would be sufficient), the probate of her estate when she dies would reflect all the properties, individually and jointly held. The estate can still benefit from deductions and reliefs in case one's estate is above the minimum inheritance tax threshold (e.g. spouse reliefs allow to transfer the entire estate to spouses and civil partners tax-free).[30] Moreover, in any given year a portion of all jointly held estates passed in earlier

[30] According to our estimates, the minimum net value of the estates sufficient to belong to the top 5 per cent group in 2011-2013 was around £346,000 (£21,000 above the minimum inheritance tax threshold).

years to a surviving spouse or joint owner would still be recorded when the then-surviving spouse or joint owner dies.

Further issues also suggest that the features of the wealth of decedents, as reported in the estate statistics, may not accurately represent those of the wealth of the living. For instance, decedents are a selected group on health characteristics (e.g. unhealthy people are expected to die earlier) that may affect, among other things, their patterns of consumption, saving, passing on wealth via gifts, risk attitudes, and their health care expenses (a less important consideration in the UK than in the US). This would most likely affect the composition of wealth portfolios as well as the level of wealth accumulation, although it is difficult to define the magnitude of such effects. Similarly, as the data reflect the nature of (changing) tax code, these are inevitably influenced by the expansion as well as the shrinking of the tax base affecting in turn the incentives for estate planning, and for tax evasion. These problems point in the direction of a bias (most likely negative) in the value of wealth represented in the estate data. In turn, this may affect both the level and the trend estimates of top wealth shares. It is, however, the issues of evasion and avoidance of taxes appear to be the most worrisome.

How do tax avoidance and evasion affect our results?

Careful estate tax planning (avoidance) and evasion can substantially reduce the liability of the inheritance tax, but for our purpose of estimating top wealth shares the significance of tax avoidance ought to be measured on its ability to impair (or distort) the estate information that is collected by HMRC, not merely on its ability to reduce tax collection altogether.[31] In order to affect our estimates of top shares, based on a control total largely determined by identified wealth, tax avoidance actions have to be disproportionately represented at the top of the wealth distribution.[32] It has also to be remembered that tax avoidance may reduce, or even eliminate, liability to IHT, but this does not necessarily mean that the wealth is missing from the statistics. Duty may be reduced by claiming, for instance, agricultural relief, but the full value of the property is still reported.

Inheritance tax avoidance can take different forms. Some of them simply affect the reporting arrangement of financial affairs for any given level of wealth and, as such, are less problematic for our work. Indeed, given the large set of reliefs and exemptions available, there are many different ways estates can be structured to reduce their tax liability. For instance, transferring the entire estate (even above the inheritance threshold) to a spouse, a civil partner, or a charity reduces the tax liability to zero without necessarily resorting to under-reporting of estate value.[33] According to the last

[31] In the 2003-2004 fiscal year, according to the National Audit Office (2004), out of 310,000 estates with grant of representation, only 67,500 were above the inheritance tax threshold, of which only 30,000 were actually liable to inheritance tax.

[32] This contrasts with the estate-based evidence for the United States, where the use of a fixed external wealth total from the National Accounts make estimates of top wealth shares more sensitive to tax avoidance irrespectively of whether wealthy individuals are more likely to undertake tax sheltering activities.

[33] Moreover, by leaving at least 10 per cent of net estate value to charity one can reduce the IHT tax rate from 40 per cent to 36 per cent. Similarly, transfers of business assets and agricultural

available report on the inheritance tax by the National Audit Office, "two-thirds of estates which exceed the tax threshold claim reliefs and exemptions to reduce their Inheritance Tax liability, including 10 per cent which are able to eliminate it altogether" (2004, page 9).[34]

Gifts inter-vivos. At the time of the first mortality multiplier estimates in the UK, there was much discussion of the extent to which the figures missed wealth transferred through gifts inter-vivos. It is important however to distinguish between the impact on estimates of the total amount of wealth passed on from one generation to the next (as investigated by Piketty, 2011, in France, and Atkinson, 2013, in the UK), and the impact on the estimated distribution of wealth among those living at a particular date, which is our concern here. Gifts may change *who* owns the wealth, but still appear in the distribution. As was pointed out by Mallet and Strutt, the recipients are subject to the risk of mortality: "the receivers of gifts must stand a certain chance of dying (at first a small one) from the moment of receipt" (1915, page 569). Of course, gifts tend to be given by those with a higher mortality risk to those with a lower risk, but provided that this differential mortality is taken into account, the wealth does appear. Where the problem arises is with unobserved heterogeneity in mortality. If, as seems probable, gifts are more likely to be made by those who have unobserved characteristics that lead them to have higher mortality, and the reverse is the case with the recipients, then there is a risk of under-statement. To the extent that gifts are used for tax optimization, such under-reporting is likely to lead to our under-estimating top wealth shares.[35] This is an example of the more general problem of selection to which we have referred. On the other hand, in the case of gifts inter-vivos there is a specific problem, which may lead to an over-counting of gifts. Since Estate Duty was introduced, there has been an anti-avoidance provision according to which gifts made within a certain period before death are aggregated with the estate. To the extent that some of the recipients die, the wealth is also included in their estate, and there is double-counting. Moreover, the treatment of gifts has changed significantly over the period considered in this paper, and the varying degree of double-counting may affect the comparability of the results over time.[36]

Assets held in trusts. Opportunities of estate tax avoidance are provided by the settlement of assets within trusts. Although inheritance tax is payable (at a reduced rate of 20 per cent) for transfers made to discretionary trusts during life-time since 2006, the

---

properties can be done entirely inheritance tax free under the provisions of Business Relief and Agricultural Relief.

[34] The use of spouse relief appears to be the most significant and used by estates of all sizes. Reliefs can be very effective and the evidence from the NAO (2004) shows that, in 2001-2003, they could offset up to 66 per cent of the estates of the 800 wealthiest individuals exceeding the estate threshold (estates above £2 million). In comparison, only 40 per cent of the estate was offset by reliefs for the estates of value between £300,000 and £400,000.

[35] Under the (realistic) assumption that tax avoidance incentives are higher for richer individuals. Larger estates have proportionately more liquid assets compared to lower value estates (residential property is often the main asset).

[36] The time limit period was 12 months under the Probate duty (1894 Finance Act) and was increased to 3 years in 1909, a limit that remained in force until the Finance Act 1946 when the threshold was further increased to 5 years. With the Finance Act 1968 the time period threshold was raised to 7 years. A significant change was made in 1975 with the introduction of Capital Transfer Tax (CTT) in place of Estate Duty, which extended the tax to all lifetime transfers, but this provision was short-lived and a 10 year period was in effect from 1981 and returned to 7 years when CTT was replaced by the current Inheritance Tax in the Finance Act 1986.

settled properties within discretionary trusts do not generally require probate as trustees legally acquire the ownership of the assets. This makes discretionary trusts an effective tax avoidance scheme. Similarly to gifts, however, if transfers to a discretionary trust were made during the seven years before the death of the "settlor", the estate administrator has to include these transfers within the probate (and an extra tax rate of 20 per cent is due on the assets transferred to match the inheritance tax rate).[37] On the contrary, non-discretionary trusts are dutiable. The official series C constructed by HMRC up to 2005 attempted to cover excluded wealth in trusts within the estimates of top wealth shares; they were relatively small in magnitude implying a marginal effect. Between 1994 and 2005 wealth in trusts accounted less than 1 per cent of the wealth control total. Those estimates were however based on studies for only two years (1976 and 1988), which were dated. A significant investment would no doubt have been required to bring the estimates up to date, but it is unfortunate that such an investment has not been made.

In an attempt to provide more recent evidence, we used HMRC data to capitalize total taxable capital income from trusts and estates making a Self-Assessment return between 2001 and 2012 (excluding income from property and chargeable gains, although capitalizing capital income including chargeable gains did not lead to substantial changes). We then assumed that 80 per cent of the estimated excluded wealth could be attributed to the top 1 per cent (90 per cent of total settled wealth). The remaining additional wealth is attributed to the next top 4 per cent. Applying these adjustments to the wealth distributions for the years from 1994 and 2005, we found that the incorporation of wealth in trusts typically accounted for 2 per cent of total wealth held by the top 1 per cent and increased their relative share by less than 1 percentage point every year.

Off-shore accounts and the foreign wealth of non-domiciled. Tax shielding wealth in unreported off-shore accounts is not a new phenomenon; it impacts both the levels and trends of the current estimates, particularly if the avoidance incentives have increased disproportionately for the top of the distribution.[38] The manipulation of the residence for tax purposes has similar effects, only UK assets being liable to inheritance tax for non-domiciled.[39] The so called "non-dom" status for income tax purposes, however, does not always shield individuals from IHT liability. Indeed, individuals residents in the UK for 17

[37] Some trusts are set up so that the beneficiaries have ownership or a legal right to the income or assets in the trust (a "bare" trust). In this case both income and assets have to be considered part of their estate when they die and reported within the tax inheritance form.

[38] According to Zucman (2013), 4 per cent of US household financial wealth is held off-shore, much of which is unreported. If the same percentage were assumed to correspond to the UK top 1 per cent of wealth holders in 2008-2010, it would increase their share from 20.6 to 22.7 per cent. Doubling the number to 8 per cent would bring the top 1 share up to 24.7 per cent. Such changes are salient but they are not enough to revert the concentration of wealth to pre-1950s levels.

[39] UK residents who are not domiciled in the UK can choose to pay tax on the remittance basis so that any income and gains they hold offshore are only taxable as and when they are brought in to the UK. Since 2008, those who have lived in the UK seven years or more have to pay a charge (up to £90,000), known as the remittance basis charge, for each tax year in which they use the scheme. In 2012–13 110,700 UK taxpayers were registered as non-domiciled, out of whom 46,700 claimed the remittance basis (the rest either had no significant income abroad or paid income tax on it), and 5,100 paid the charge; all others presumably lived in the UK for less than seven years. Residents in the UK for 17 of the previous 20 years are deemed domiciled; the same applies, during the first three years after the moving, to those who establish their home abroad.

of the previous 20 years are automatically "deemed domiciled" and, as such, all their world estate has to be reported in the tax forms. Similarly, all those individuals who had moved their permanent home abroad within three years from their death are deemed domiciled.

Given the variety of ways to effectively avoid inheritance taxation and their relative appeal to wealthy individuals with potential estates above minimum tax threshold, it is likely that our estimates represent a lower bound of the true wealth concentration level. The extent of the bias is, however, difficult to assess and we do not attempt to correct our final figures in the absence of reliable empirical anchors. At the same time, there are factors working in the opposite direction. The UK top inheritance tax rate is today much lower than in the past (now 40 per cent, when it had been as high as 85 per cent in 1970), and the tax authorities have over the years been undertaking steps in order to improve tax compliance, restricting existing schemes of avoidance, and improving on fiscal fraud investigation, although it remains the case that, as the National Audit Office noted in its review of inheritance tax, that HMRC "has no overall measure of the 'tax gap' on Inheritance Tax [which] provides a measure of the level of tax non-compliance" (2004, page 3).

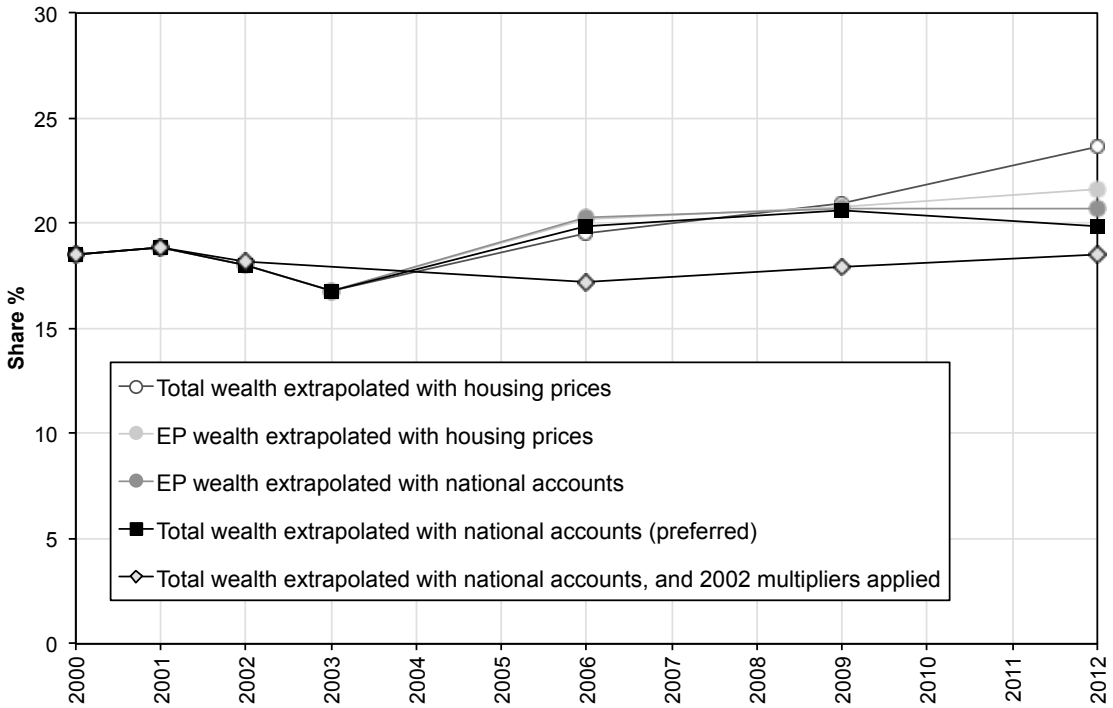
Sensitivity and the estimates for the 21st century

Earlier, we explained that the control totals for wealth could not be taken beyond 2005 in the same way as for earlier years, and that the method adopted in Section 4 departed from that followed in the series up to 2005, in that it used personal sector balance sheet totals as the basis for projecting total wealth. This approach was used *faute de mieux*, since the pre-2005 method could not be applied, but is not fully satisfactory. We now consider the sensitivity of the top share estimates for the 21st century to alternative approaches. This in turn leads us to probe more deeply into the new methodology introduced by HMRC to construct wealth estimates.

The pre-2005 wealth control totals are based on adding HMRC estimates of the wealth of the excluded population to the total wealth identified from the estate data. The barriers to applying that approach after 2005 are that HMRC ceased to make estimates of the wealth of the excluded population (EP), and that we lack the information required to make such estimates, which depend on the size and composition of the EP. All that we can do is to extrapolate forward the average wealth per person in the EP, an extrapolation that does not, for example, allow for any changes in composition. In other words, rather than extrapolating total wealth as in Section 4, we extrapolate the average wealth of the excluded population and add this amount, multiplied by the EP, to the identified wealth to arrive at the control total for wealth. This still leaves open the issue of the variable to be employed when making the extrapolation. Two approaches have been tried: (i) given the importance of housing in joint property passing without need for probate, extrapolation based on the ONS housing price index (ONS website, 2015, Table 24 Housing Price Index, average house prices for all dwellings) and (ii) extrapolation based on average wealth per adult from the personal sector balance sheets. Over the period in question, these two series moved rather differently.

Figure 12 shows the share of the top 1 per cent series preferred in Section 4, together with alternatives. Given the overlap of data, the projections start from 2000: the figures for 2005-07 are shown as 2006, those for 2008-10 as 2009, and 2011-13 as 2012. The main departures come in 2012; until that point the alternative series yield very similar values for the top 1 per cent share. In 2012, the Section 4 estimate was 19.9 per cent. With the wealth of the EP extrapolated using the balance sheet totals, this would rise to 20.7 per cent, and using the house price index it would become 21.7 per cent. The corresponding figures for the top 10 per cent share show a rise from 51.9 per cent to 54.1 per cent and 56.5 per cent, respectively. From this we conclude that our earlier estimates may have under-stated the rise in top shares in the most recent year. This is re-inforced by the fact that a further variant shown in Figure 12 – extrapolating the total, not in line with the personal sector balance sheets, but in line with the housing price index - shows the top 1 per cent share rising to 23.6 per cent. It should be stressed that these conclusions relate only to 2011-13; for earlier years the series move closely together. The main conclusion is that the production of reliable estimates requires a major investment in the reconciliation of different sources of evidence about total personal wealth.

Figure 12. Top 1% wealth share in the 21st century: sensitivity to total wealth and multipliers



Source: Table F1 and Table G1.

Examination of the sensitivity of the findings for recent years, and of the wealth totals, does moreover raise the issue that the total identified wealth in the new HMRC estimates is lower than that obtained using the earlier method. For 2001-03, we can make a direct comparison with the estimates obtained using the previous method. The new HMRC average for 2001-03 shows 15.987 million identified wealth-holders, who are 85.1 per cent of those identified in the earlier HMRC series averaged over the years from 2001 to 2003. For the total identified wealth, the corresponding figures are £2,465.4

billion, compared with £2,648.9 billion, the new HMRC figure being 93.1 per cent of the earlier estimate. In other words, the new HMRC estimates show a reduced number of identified wealth-holders, and hence a larger excluded population, and the reduction is proportionately greater among those in the lower part of the identified wealth population. In the last years of the previous HMRC estimates, the identified wealth-holding population represented some 40 per cent of the adult population; in the more recent years the proportion is closer to 30 per cent.

As far as the changes in the multipliers made by HMRC are concerned, there are two factors at work: a change in the differential variation of multipliers with wealth levels, and a reduction in the overall level of the multipliers. The former comes about on account, not of increasing the multipliers for the rich, as discussed above, but of reducing the multipliers for the smaller estates, as described by HMRC:

> "in the old method, by applying an adjustment part way between those for the larger estates and those for the population as a whole, all estates were assumed to have a lower mortality rate than the population as a whole regardless of how small they are. The new method … captures the possibility that some of the smaller estates would have higher mortality rates due to low levels of wealth. Consequently some of the multipliers can be much lower for the small estate sizes" (HMRC, 2011, page 10).

Secondly, there was a change from use of data on mortality differentials from the ONS Longitudinal Study to differentials based on the relationship between housing wealth and mortality as modelled using the English Longitudinal Survey of Ageing (ELSA). Housing wealth was employed rather than total wealth as there was found to be a stronger relationship between housing wealth and mortality: "an adjustment was calculated for each housing wealth decile, age group, gender and marital status which compared the modelled mortality rate for that housing wealth decile to the overall mortality rate for that age group, gender and marital status. These adjustments were applied to the data for the over 45s, effectively increasing the multipliers applied to the estates with the greater housing wealth and reducing them for the estates with less housing wealth" (HMRC, 2011, page 9). As is recognized, the new approach has limitations. No adjustments are made for those aged under 45. The mortality data relate only to England, excluding Scotland, Wales and Northern Ireland.

The end result is that there is an overall reduction in the general level of multipliers. This may be seen from the "average multiplier" applied: i.e. the ratio of the number of identified wealth-holders to the number of estates. Over the period 1974 to 2005, the mean value of the average population multiplier was 66.1 and there was no evident trend. The corresponding figure for 2011-13 is 53.4. To examine the possible impact of this reduction in the general level of multipliers, we have applied the average multipliers per estate bracket in 2002 (HMRC earlier series) to the averaged estate data for 2005-07, 2008-10 and 2011-13. The results are given in Table G1 as Memorandum items and illustrated for the top 1 per cent share in Figure 12 (the same national balance sheet control totals for wealth are employed as in Section 4). As may be seen, the estimated shares lie below those obtained using the new HMRC multipliers, up to 2011-13 when they are close to the Section 4 series. Such calculations are only approximate, but are the best that can be done without access to the underlying data. The size of the identified population and identified total wealth are increased. The

estimated top wealth shares are more comparable, we believe, with those obtained for earlier years using the old HMRC methodology. Moreover, the estate shares and the wealth shares are closer and move in line.

We have worked in Section 4 with the results derived applying the new HMRC multiplier methodology, but we are of the view that comparability over the long-run is better served by the alternative estimates for years after 2005 shown as Memorandum items.

Sensitivity of the estimates to the use of different linking assumptions

Previous sub-sections have explored how the final estimates may be affected by the change of wealth control totals or the nature of the mortality multipliers. Another important source of variation may come from different procedures for linking at four distinct breaks in the series described earlier. As explained above, we made use of overlapping years where possible and, between 1959 and 1960, of the estate data. The adjustments have been assumed to be additive. They take as a base (i.e. no adjustment) in 2002 the new HMRC series, and involve changes measured in percentage points. The series changes take place at "jump" points, as shown below:

2001: +0.19 on "old HMRC series" (this also applies to 2003 and 2005 old HMRC estimates);

1978: +0.80 when data relate to year of account, rather than year of death;

1959: -2.32 when more limited estate data available;

1923: -0.74 when estate data was not available by gender.

These changes are cumulative in that the total addition in a year is the sum of the previous changes. This means, for instance, that the linked series for 1960 is higher by 0.19+0.80 = 0.99 percentage points.

Here we consider three sets of alternatives: (1a) ruling out all linking assumptions, making use of the unadjusted new series every time it becomes available (see Figure 5); (1b) using the full set of five overlapping years in the 1970s and 1980s (1974, 1976, 1978, 1985, and 1987) in order to account for the switch from a year of account basis to a year of death basis; and (1c) replacing the use of estate data for the 1959 to 1960 by the assumption that there was no change in the shares between the two years (otherwise retaining an additive adjustment for the other breaks).

The magnitudes listed above should make it clear that the effects are small, as is the impact of the alternative assumptions. There is some tendency for the effects to be greater in earlier years. For example, under the assumption used in our series, years before 1960 have a downward adjustment of 1.33 percentage points. If we were make assumption (1c) this would become an upward adjustment of 0.99. Both effects are modest. It is of course possible that they interact with other effects, generating a larger combined effect. Our conclusion is however that the linking assumptions taken on their own have only limited consequences for the estimates.

6. Triangulation

In the previous section, we concentrated on the internal validity of the approach adopted; we now consider whether there is external evidence that is helpful in assessing the reliability of our estimates on the concentration of wealth in the UK. In this section we provide evidence about the concentration of investment income in the UK and on a variety of existing sources on wealth concentration ranging from household surveys, rich lists and estimates relying on hybrid methods. A similar comparison with the US estate-based estimates (Saez and Zucman, 2016) suggested that estate-based estimates may today substantially understate the wealth concentration at the top. Finally, we compare our estimates of top wealth shares to the official series provided by the HMRC and to other estimates available in the research literature.

The distribution of investment income

The capitalization of investment income is, as noted at the beginning of the paper, one route to obtain estimates of the distribution of wealth, but the available data in the UK pose some limitations for a robust application of the method in recent decades, and we do not use this approach here. At the same time, the distribution of investment income is potentially a valuable source of complementary evidence. Of course, given that investment income is the product of the rate of return and the level of wealth, there is no reason to expect the degree of concentration to be the same as for wealth on its own. At the same time, examining the relation between the two distributions can be instructive. Where, for instance, the rate of return is distributed with a positive variance independently of wealth, the distribution of investment income can be expected to be more dispersed than the distribution of wealth (see Appendix VII of Atkinson and Harrison, 1978). In what follows, we examine how far this is the case in the UK, and how the two distributions – of investment income and wealth – have moved over time.

The main source of the distribution of investment income data in the UK is provided by the regular income tax returns through the Survey of Personal Incomes (SPI), and, in earlier years, the surtax returns (the sources for each year are found in Appendix Table A3). The distribution of investment income can be recovered for the top of the capital income distribution in the form of tabulated data from 1948-49 to 1979-80. Investment income consists of rent, dividends and interest, and (until 1963) Schedule A imputed income on owner-occupied property. After 1979 the tabulations were no longer published in the necessary form, but for the years 1985-86 and 1995-96 to 2010-11 we have access to micro-data on investment income.

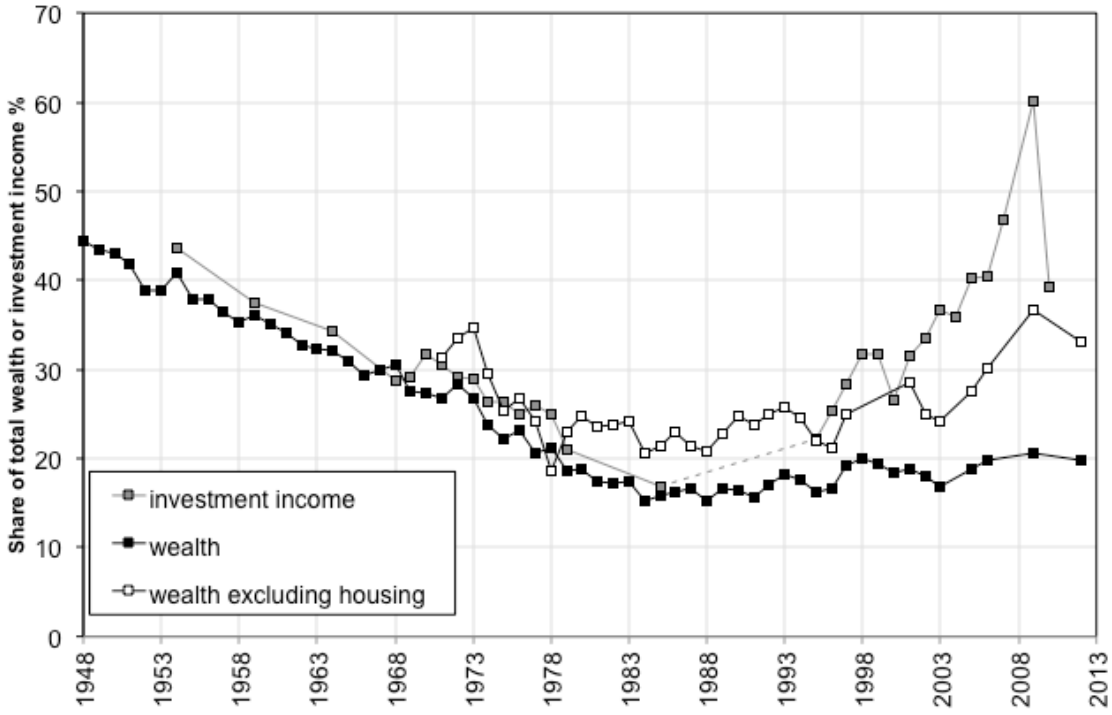
The investment income share of the top 1 per cent is compared with their share of total wealth in Figure 13 for the top 1 per cent. On account of the hiatus in the investment income data, we consider the results in two parts. For the period up to 1979-80, there is year-to-year variation, but shares of investment income and wealth move closely together. Between 1954-55 and 1979-80, the share of the top 1 per cent in investment income halved, as did the share of the top 1 per cent in wealth. For the years from 1995-96, when we are able to access micro-data, the share of the top 1 per cent in investment income is increasingly higher than the share of wealth. There is a strong

upward trend from the year 2000. One potential reason for the difference is the change in the reference population: the distribution of capital income changes from tax units to individuals from 1990-91. This is not however likely to account for the widening gap. To understand this, it is informative to look at the distribution of wealth excluding housing. The investment income figures do not include imputed rent, so that the distribution excluding housing wealth does indeed provide a better basis for comparison. From Figure 13, which shows the share in total wealth excluding housing of the top 1 per cent, it appears that the rising share of the top 1 per cent in investment income supports the view, reached in Section 4, that the UK has seen since 2000 a rise in the top shares of non-housing wealth.

The people in the top 1 per cent of the distribution by investment income not necessarily the same as those in the top 1 per cent of the distribution of wealth excluding housing, but a check on the plausibility of the estimates can be made by comparing their total investment incomes and total wealth. By using our estimates of the distribution of wealth excluding housing assets in Section 4, we can estimate the implied rate of return in money terms. Excluding 2009 (affected by the forestalling of capital income in advance of the rise in the maximum tax rate), the average rate of return over 1995-96 to 2010-11 was 5.5 per cent for the top 1 per cent, and 4.3 per cent for the top 10 per cent group (see Table L4). These rates of return, which do not include capital gains, do not seem unreasonable.

This examination of the UK investment income data adds to our conviction that a better understanding of the capital side of the account is necessary in order to explain the movements of top shares in recent years. Even stopping short of seeking to capitalize investment income, these data provide a valuable alternative perspective, and we hope that the UK statistics in this area can be developed.

Figure 13. Comparison of the top 1% share of the distributions of total wealth, wealth excluding housing assets, and investment income



Sources: Tables G1 and H2 for the distribution of wealth, and Table L1 for the distribution of investment income. Notes: (1) the decline in income shares in 1966-67 was due to the payment of "unusually large dividends in 1965-66 (in anticipation of the introduction of Schedule F)" (IRS 1971, page 69). Similarly, the spike in 2009 is the result of the forestalling of income in advance of the rise in the top income tax rate from 40 to 50 per cent. (2) The distribution of investment income refers to tax units until 1990, and to individuals from that date.

Comparison with the evidence from Rich Lists

Another window through which we can get partial evidence on the concentration of wealth is that of the Rich Lists; they can provide valuable insights into the upper tail of the distribution. For instance, it is likely that the estate method does not appropriately capture structural transformations reflecting younger entrepreneurs with lower mortality risks climbing up the pyramid. The Lists could timelier capture such transitions of the sources of concentration, where self-made fortunes become more salient.

In the UK there are two main lists: the global *Forbes List* of (Dollar) Billionaires, published annually by the business magazine since 1987, and the *Sunday Times Rich List*, which has since 1989 published a list of the wealthiest people or families in Great Britain every year. The Sunday Times Rich List aims to include the 1000 richest wealth holders every year, which allows for the identification of the top 0.001 per cent in Britain.[40] The resulting series is represented in Figure 14, together with our estimate of the share of the top 0.5 per cent. On average, over the period shown, the share of the top 0.5 per cent is some 3.75 times larger, for a group that is 500 times larger. If a Pareto distribution applied, then the inverted Pareto coefficient required to generate such a ratio would have to be as high as 4.7, or well above the levels reported for recent decades in Figure 9. This cautions against assuming that the observations are drawn from the same distribution. On the other hand, we have to distinguish between *level* and *trend over time*. The changes in the Rich List estimates do appear to track quite closely the dynamics of our top 0.5 per cent wealth share. Year to year variations are often aligned, with the exception of the years around the recent financial crises, when the rich list-based shares appear to capture a higher degree of concentration, most likely due to asset market dynamics. This effect seems to operate only at the very top, as illustrated by the line where we subtract the Rich List estimate for the top 0.001 per cent from the estate-based share for the top 0.5 per cent (so we are looking at the top 0.5-0.001 per cent). The 2011-13 estimate is no higher than that at the beginning of the century.

It is not easy to assess the representativeness and reliability of the Rich Lists. The data are often based on journalistic estimates that can be subjected to several types of errors, and the methodology cannot be transparently evaluated. The value of liabilities may be under-estimated and the unit of analysis is not always consistent across observations and time, and it is not comparable to that used in the estate statistics. Whereas the estate-based estimates attributes wealth to individuals, the Lists refer (not always clearly) to individuals, households, or extended families.[41] Figure 14 assumes that every observation in the rich lists refer to a family of two individuals, but that assumption is arbitrary. The geographical scope of the data may also differ. The list includes people who live and work in Britain, but also British citizens abroad, and people who are married to Britons, who have strong links with Britain, who have estates and other assets there, or who have

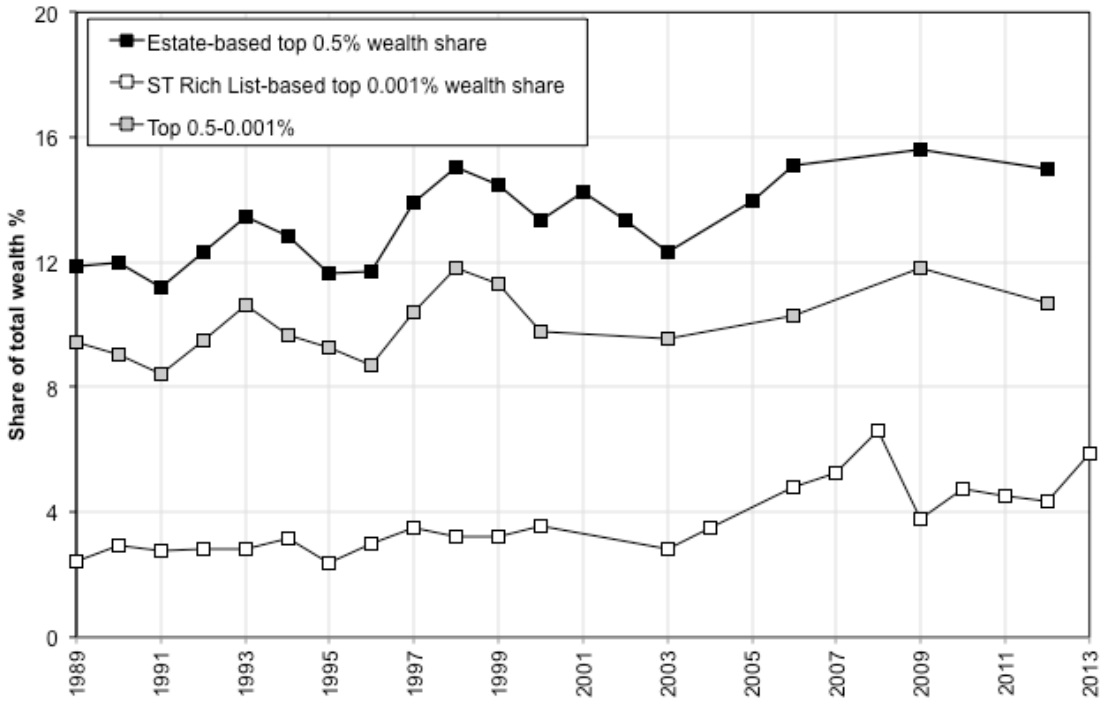
[40] With Forbes we can only identify 0.00003% of the Britain adult population from 2002 (approximately 13 individuals per year, see Appendix M).

[41] In the case of the Rich Lists, the unit may be more extensive than the household. For example, in the 2014 Sunday Times list, the top entry was the Hinduja brothers; third was Lakshmi Mittal and family, which includes his son and daughter; the wealth of number 11 includes that of Galen Weston, his wife and his nephew, George Weston. There are often multiple generations, such as number 19 (Earl Cadogan and his son, Viscount Chelsea).

backed British political parties, British institutions and British charities. The population represented is therefore more extensive than that in the estate-based estimates.

For those millionaires in the Sunday Times List who have passed away, we can compare the wealth given in the list around the year of death with the probate values of their estates. We have identified at least 74 cases, given in Appendix Table N1. General conclusions from this comparison are difficult. Probate values tend to understate the HMRC/IR figures as they are only intended to cover all those assets which an executor must dispose of in accordance with the testator's will (or the intestacy rules), this is, property that the decedent is legally empowered to distribute; this excludes, for instance, the trusts of which the decedent is beneficiary but over which he has no power of disposal. The HMRC/IR valuation covers all assets subject to estate tax, including non-discretionary trusts. At the same time, charitable gifts made during lifetime, which are substantial in many of the shown cases, are not given in the probate. Notwithstanding these facts, the following elements are worth stressing: (i) the relationship between probate values and List values are much higher for people identified as individuals than for extended families; and (ii) it is notable that for the top 4 estates (above £200 million at 2015 prices) the List considerably underestimates wealth; the same applies to 7 out of the top 10 estates (above £100 million).

Figure 14. Rich Lists vs. estate-based top wealth shares in the UK



Source: Table G1 and Table M1.

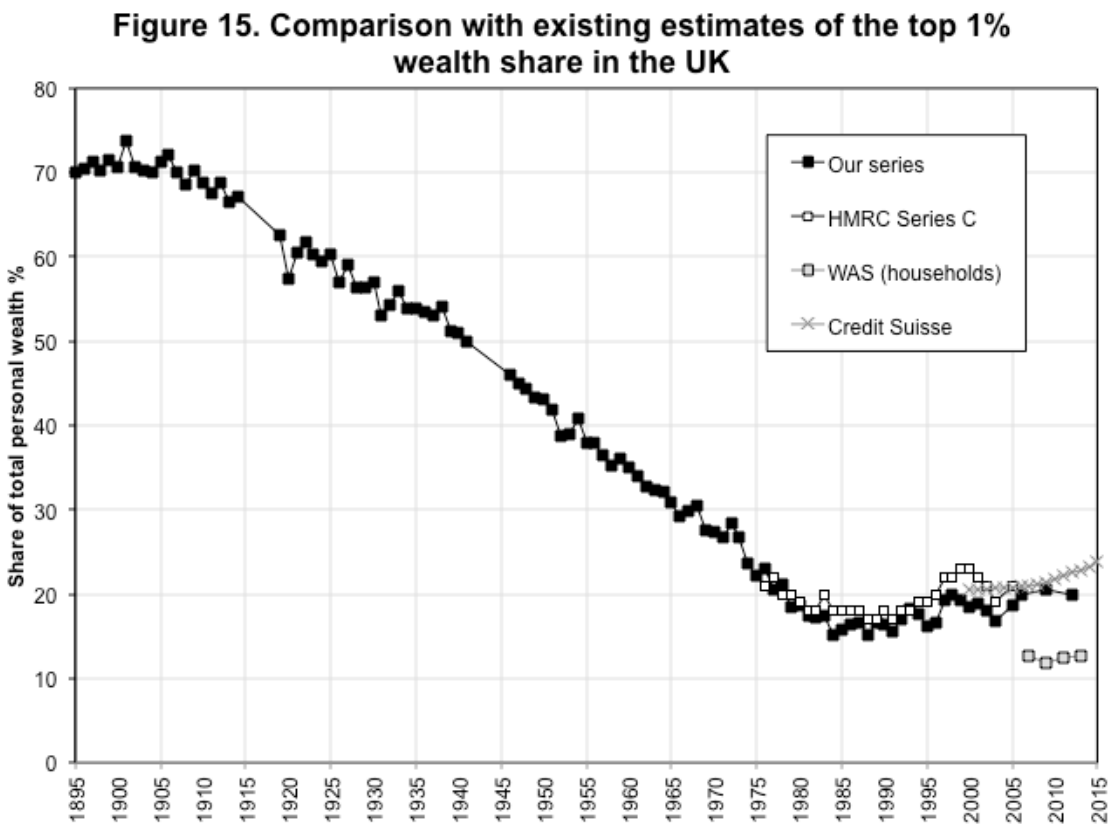
Comparison with existing estimates of the distribution of wealth in the UK

Data on estates at death have long been used for economic research in the UK, ever since Baxter (1869) made estimates of total personal wealth on the basis of the revenue from the Probate Duties (that preceded Estate Duty). Atkinson and Harrison (1978) estimated the first long-run series of wealth concentration starting in 1923 using a methodology similar to that employed here. It is therefore not surprising that available estimates since 1923 are not very distant from our series – see Appendix Table K1. The Inland Revenue (now HMRC) has published its official Series C covering 1966-1976 and its revised version from 1976 to 2005. Series C, in addition to adding, as in our series, estimates of the wealth of the excluded population, also corrected for under reporting of wealth of the included population, for missing wealth held in trusts, and adjusted the valuation of included wealth, but the time path is again similar, as shown in Figure 15. These, averaged over decades, were the basis for the series published by Piketty (2014, Figure 10.3).

More recently, UK evidence on the distribution of wealth has come from household surveys. The triennial Wealth and Assets Household Survey (WAS) was launched in 2006. This source is important as it provides an independent source of information on wealth. The obvious advantage of the evidence based on household surveys is that the data are unaffected by problems of tax avoidance and tax evasion because, in principle, unrelated to the tax administration operations. Moreover, differently from our estate-based definition of wealth, WAS data include information about pension entitlements. The main disadvantages, however, are the exclusion of business assets from wealth, the use of household unit of account, and the very low rates of cooperation of households, and potentially high non-response rates of wealthier households (see Alvaredo, Atkinson and Morelli, 2016 for a more detailed account). The exclusion of business assets and the issues of non-response and under-reporting at the top mean, in our view, that the Wealth and Assets Survey cannot, at this stage, provide a fully satisfactory representation of the upper tail of the UK wealth distribution.[42] The WAS evidence (including pension wealth), shown in Figure 15 from 2006-2008 to 2012-2014, indicates that the share of total national wealth accruing to the richest 1 per cent of British households was stable and around 12 per cent. As argued in Alvaredo, Atkinson, and Morelli (2016), these shares are substantially below that estimated using estate-data, even allocating wealth to individuals and excluding pension wealth to make the two series more comparable.

Other scholars have attempted to correct the evidence available in the WAS using that from the Forbes Rich list. The Credit Suisse Research Institute (Davies and Shorrocks, 2014) combines the WAS distribution of wealth at 2006-2008 and the *number* of Forbes billionaires to obtain annual estimates of top wealth shares from 2000 to 2014. Vermeulen (2014; see also 2014a and 2016, although these do not contain estimates for the UK) combines extreme observations on the *number* of billionaires as well as their *wealth* from the Forbes List with the WAS data, for the year 2009, fitting a Pareto distribution to the data. Such adjustments of household survey data bring the estimated shares of total wealth accruing to the top wealth brackets closer to our own estimates.

[42] The ONS is engaged on updating the methods to oversample wealthier households in order to improve the reliability of the household survey, building on the experience in the US with the Survey of Consumer Finances, conducted by the Federal Reserve Board. It remains to be seen whether this can overcome the problems identified above.



7. The UK and US compared

Since the US Federal Revenue Act of 1916 imposed the estate tax, statistics of tax returns have been collected by the Internal Revenue Service and information began being published in *Statistics of Income* from 1923. Researchers in the US were, however, slow to make estimates of the distribution of wealth along the lines of studies in the UK and other countries (New Zealand, for example, published official estimates of the wealth distribution in the 1920s). The first estate-based study in the US was that by Mendershausen (1956). This was followed by Lampman (1962). A number of studies took up the subject later, but the longest and most complete set of estate-based estimates are those by Kopczuk and Saez (2004), which have subsequently been updated by Saez and Zucman (2016) to cover more recent years.

The methods adopted in the US are in principle similar to those in the UK, and Lampman argued that, with the exception of the treatment of life assurance, "the British data seem to be quite comparable with our own" (1962, page 211). There are however several reasons why the estate data in the US are less satisfactory as a basis for wealth estimates than those we employ for the UK. In terms of process, in the US probate is granted before the payment of the tax, whereas in the UK the two steps are contemporaneous making the inheritance tax forms more reliable as a source of data. In the UK there is a unified system for probate in each country (England and Wales, Northern Ireland, and Scotland), whereas in the US the administration of probates is a matter for each individual state, going through specific or generic state courts. This means that procedures are not necessarily uniform across the US. Finally, the coverage of the estate tax data in the US is much more limited. In 1921, the estate data covered

1 per cent of adult deaths. By 1976 this had risen to 7.6 per cent, but by 2000 it had fallen back to 0.5 per cent. In contrast, in the UK, the data for 1895 covered some 13 per cent of adult deaths; the proportion rose to a third in the inter-war period; and since 1960 the estate data cover around a half of all adult deaths (see Figure C1 in Appendix C).

In his comparison of the US and the UK, Lampman, drawing on the estimates for England and Wales by Langley (1950, 1951 and 1954), concluded that, while the "historical picture of decline in the degree of inequality of wealth distribution is similar in the two countries … for the period 1922-46 … throughout the whole period the inequality has been considerably greater in England and Wales than in the United States" (1962, page 215). In broad terms, the top 1 per cent of adults owned around a half of total wealth in England and Wales in 1946-47, whereas in the US in 1953 they owned less than a quarter. To today's ears, this may sound like a surprising conclusion.

With the aim of seeing whether the same is true half a century later, we follow identical order as with our earlier UK estimates, beginning with the distribution of estates. Not only is this a valuable building block, but also the estate distribution as such has received little attention in the US literature. The US estimates of the distribution of estates shown in Figure 16 are new. As discussed in Section 2, the estimates depend on the assumption made regarding the total of estates not covered by the estate tax returns. For the US, we have estimated the total estates by applying the ratios between the average wealth of the dying and the average wealth of the living given in Alvaredo, Garbinti and Piketty (2015) to the wealth series in Kopczuk and Saez (2004), updated in Saez and Zucman (2016).

The distribution of estates is given in Appendix Table O3 on three different bases, none of which corresponds to our preferred choice (we have to make use of the data as published; we have not had access to microdata). "Taxable estate" refers to its size after deduction of the tax exemption, whereas the "gross estate" is before deduction of debts. This means that the gross estate is likely to overstate the top shares, and the "taxable estate net of debt" will understate the shares. The difference is most marked in the recent period. For the sake of simplicity, Figures 16a (share of the top 1 per cent) and 16b (share of the top 0.1 per cent) focus on the distribution of gross estates.

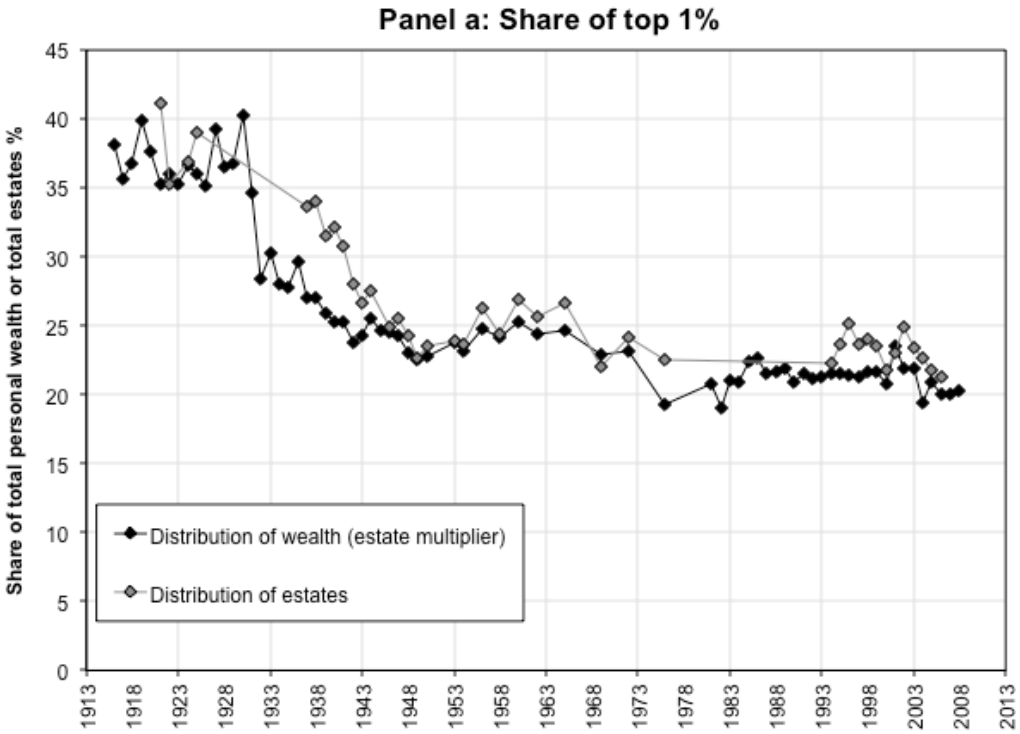
The US estate data are multiplied-up in the wealth estimates of Kopczuk and Saez (2004 and 2004a) and Saez and Zucman (2016), and these are also shown in Figures 16a and 16b, for comparison with the estate distributions. Unlike in the UK, the years covered in the estate and wealth distributions are the same; adopting an estate approach does not extend the coverage. This underlines the greater richness of the UK data. The comparison of estate and wealth distributions does however show the same similarity of time path as in the UK. Again the picture appears to be little affected by the application of the mortality multiplier process. In 1922, the share of the top 1 per cent in gross taxable estates was 35.2 per cent and that of the top 1 percent in total wealth was 36.0 per cent; fifty years later, in 1972, the shares were 24.1 per cent and 23.1 per cent, respectively. Both series show a reduction of a third in the share of the top 1 per cent.

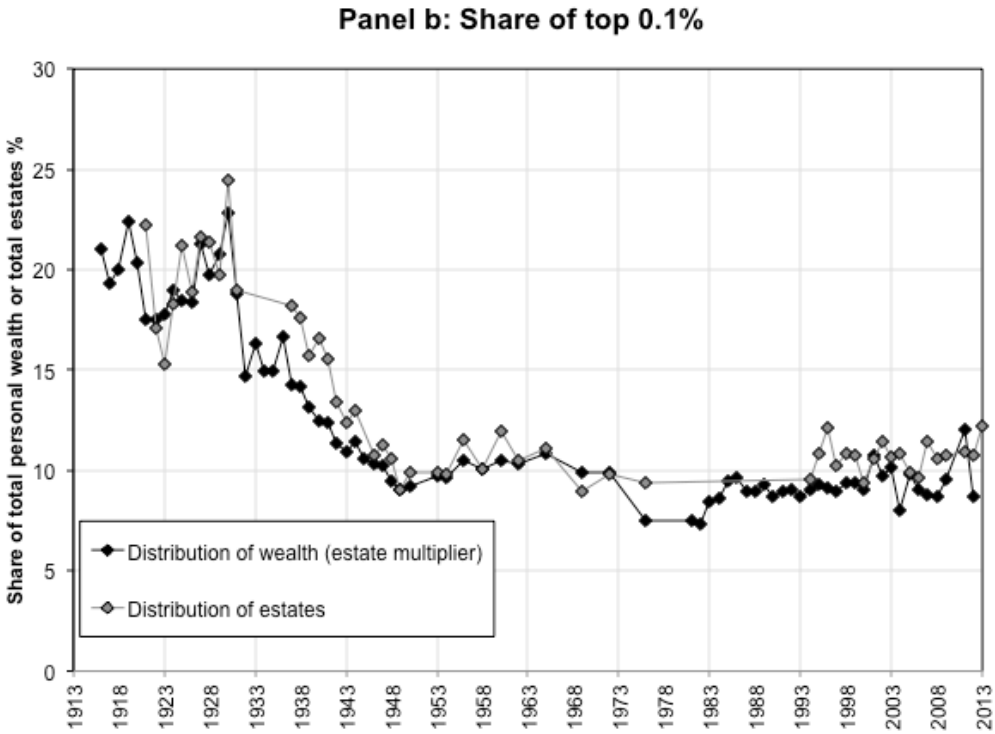
We turn now to the comparison of the US and the UK, shown in Figure 17a for the top 1 per cent and in Figure 17b for the top 0.1 per cent. For the top 1 per cent, there is a

clear point of convergence towards the end of the 1970s. The UK top shares started off above those in the US, and at the end of the period were, if anything, lower. This reflected the protracted period of leveling that took place in the UK after 1914 and lasting up to 1979. In contrast, the leveling in the US was largely confined to the 1930s, according to the estate-based estimates. The top 1 per cent share in 2008 was little different from that in 1948. A similar pattern is shown for the top 0.1 per cent in Figure 17b, and in this case the contemporary UK share is distinctly lower than found in the US using the estate method.

A major issue in the US has been the relation between the estate-based estimates and those using the capitalization of investment income by Saez and Zucman (2016). These estimates differ in a number of respects from those obtained using the estate data. The investment income refers to the tax unit rather than individuals, and the estimates include pension wealth. The income capitalization method does indeed yield higher estimates of the share of the top 1 per cent, as shown in Figures 17a and 17b, but until the 1980s the movements over time were close. The estimated shares of the top 0.1 per cent are "remarkably similar" (Saez and Zucman, 2016, page 570) from 1916 to 1976. In recent decades, however, there has been a major departure, with the capitalization method showing "the comeback of wealth inequality at the top" (Saez and Zucman, 2016, page 551). Between 1989 and 2012, the share of the top 1 per cent rose from 27.8 to 41.8 per cent, an increase of 14 percentage points, a change which is comparable in magnitude to the fall that took place between 1929 and the Second World War. Half of this increase took place between 2000 and 2012. The difference between the estate-based estimates and those obtained by capitalization is discussed by Saez and Zucman, who emphasize the limitations in the former case of the mortality multipliers and the unreported wealth held in trusts. As we have explained earlier, we do not believe that this is the full story. While we recognize the shortcomings of the estate approach (see Section 5), we are of the view that, in the present incomplete state of knowledge about top wealth-holdings, all sources of evidence should be taken into account. In this context, we note that the estimates of Bricker et al, 2016, Figure 5) based on the Survey of Consumer Finances show an increase in the share of the top 1 per cent between 1989 and 2013 which is 6.3 percentage points, or under half that found using the income tax data, and that most of the increase occurred between 1989 and 1995.

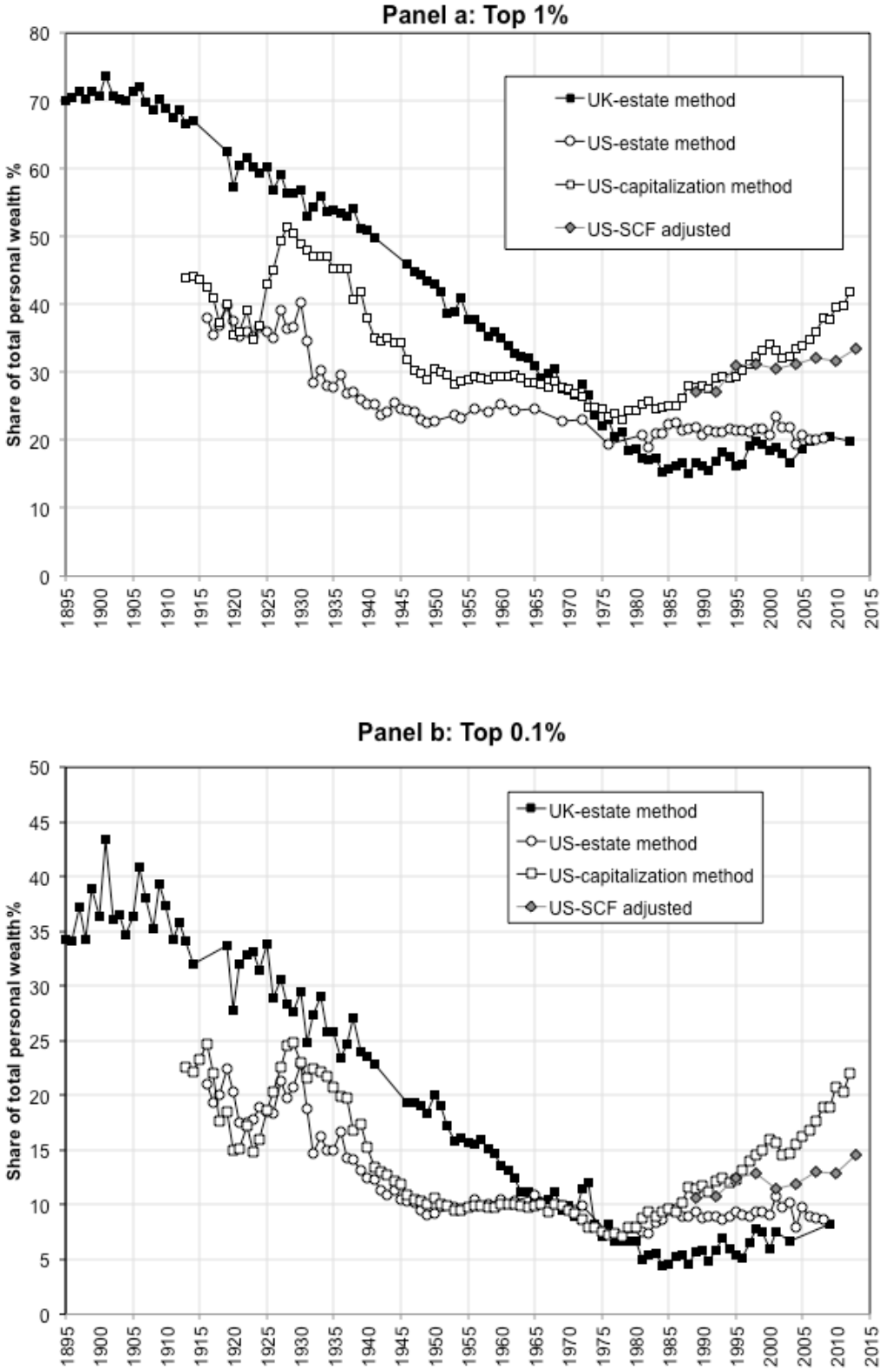
Figure 16. Comparison of wealth and estate distributions in the US





Sources: Distribution of estates: Table O3; distribution of wealth: Kopczuck and Saez, 2004, and Saez and Zucman, 2016. Notes: The distribution of estates refers to gross taxable estates until 1931, and to gross estates from 1932. The distributions of net taxable estates and gross estates (taxable and non-taxable) are given in Appendix Table O3.

Figure 17. Comparison of top 1% share in UK and US



Sources: UK estate method: Table G1; US estate and capitalization methods: Kopczuck and Saez, 2004, and Saez and Zucman, 2016; US SCF adjusted: preferred series in Bricker et al., 2016, based on household distribution.

8. Conclusions

The contribution of the paper is summarized under three headings: (i) *methodological and the provision of a new series* on UK wealth concentration, (ii) *substantive findings* in terms of the evolution over time of top wealth shares in the UK and the comparison between the UK and the US, and (iii) *implications for future research*.

Methodological contribution and new series

This paper has taken a fresh look at the use of administrative data for the UK on the wealth people leave at death: their estates. By exploiting more fully the available data, we have been able to construct a new series of top wealth shares covering virtually the entire period from 1895 to the present day. Time series with more than 100 observations are rare in the fields of wealth and income inequality. Construction of this long series has proved possible because the distribution of individual wealth appears to mirror closely the distribution of estates, and we have employed the latter to amplify the picture that can be obtained about wealth concentration. This means, in the case of the UK, the creation in Section 4 of an "estate-interpolated series of wealth-holding" to complete the historical record, the interpolations covering years for which wealth estimates are not possible, and to give a continuous series (in contrast to the earlier series in Atkinson and Harrison, 1978, where there are distinct, but often ignored breaks in 1938 and 1960).

In order to make sense of the relation between estates and the wealth of the living, we have investigated the process by which the latter is obtained via the application of mortality multipliers. The implications of applying such multipliers are often mis-understood. While we believe that critics of existing estate-based estimates are right to point to the likely steepening of the wealth mortality differential, with higher multipliers now being applicable to top wealth-holders, the impact needs to be assessed in terms of its ultimate consequences for the estimated distribution. We have investigated this impact by comparing the distribution of estates and of multiplied-up wealth, and by examining the impact of alternative multipliers. This indicates that the application of a sharper gradient to the mortality multipliers at the top does not radically change the estimated degree of concentration. We have investigated the new methodology with regard to multipliers introduced in recent years by HMRC. While this is followed in the Section 4 series, it leads to a distinct break, and we have given an alternative set of estimates for the years from 2005 as "Memorandum items".

The new series for the UK presented here is more extensive in its time coverage than any available to date, and will, we hope, provide the basis for future time series analyses of wealth dynamics. At the same time, we have tried to stress its deficiencies. Some of these are of long-standing concern, such as tax avoidance and the incomplete coverage of trusts, notably discretionary trusts. Others are of more recent concern, such as the treatment of wealth held by foreigners and non-domiciled, and the problems of constructing appropriate wealth totals. The user may also choose to reject the estate-based interpolation that generates the full run of years.

Since any source is open to challenge, we have sought to triangulate with respect to other evidence, making use of evidence about the concentration of investment income in the UK and from the Sunday Times Rich Lists. We have compared the top shares with those found in household surveys and in estimates relying on hybrid methods. Whereas in the US it has been argued that the estate-based estimates may today substantially understate the wealth concentration at the top (Saez and Zucman, 2016), for the case of the UK the supporting evidence does not appear inconsistent with our account of wealth concentration and its trend over time.

Substantive findings

The new series for the UK documents the remarkable change that has taken place in the position of top wealth holders in the UK over the past 100 years. Before the First World War, the top 5 per cent of wealth holders owned around 90 per cent of total personal wealth. There were very few owner-occupiers (Keynes never owned a house). A hundred years later, the share was around 40 per cent. The top 1 per cent used to own two-thirds of total wealth; their share is now around one fifth. Half of the wealth of the top 1 per cent used to belong to the top 0.1 per cent; their share is now around 7½ per cent. This is still a highly concentrated distribution: the top 1 per cent have some 20 times their proportionate share. On this basis, wealth is indeed more unequally distributed than gross income. The World Wealth and Income Database shows the top 1 per cent in the UK with 12.7 per cent of total gross income in 2012.

The fall in wealth concentration at the top was slight before the First World War. The UK was not embarked on the downturn of a Kuznetsian process in the nineteenth century: the fall in concentration came after 1914. But the decline in top shares after that date was a continuing process; and cannot be simply attributed to the First or Second World War. Between 1919 and 1939, the share of the top 1 per cent fell by some 7 percentage points; between 1946 and 1979 the share was more than halved. The explanation of UK wealth trends cannot be found solely in terms of war-time disruption.

With the 1980s, the downward trend in top shares came to an end and went into reverse. As we have shown, there are a number of difficulties in reaching firm conclusions about the extent to which top wealth shares are now increasing. The difficulties include the construction of appropriate wealth control totals and the implications of changes in the overall level of mortality multipliers. Our results show the importance of separating out the role of housing wealth and provide evidence of increasing concentration in the distribution of wealth excluding housing, a conclusion that is re-inforced by evidence from the distribution of investment income.

The different periods can usefully be analyzed in terms of two determinants of top shares: the wealth required to enter the top 1 per cent in the UK and the concentration within the top 1 per cent. Both factors contributed to the decline in top shares between 1914 and the end of the 1970s. The wealth required to enter the top 1 per cent in the UK is now some half the level required before the First World War, but it is also the case that wealth became less concentrated within the top 1 per cent. The fall in the degree of concentration can be represented in terms of the implied Pareto coefficient. Before the First World War, this coefficient was some 1.4, indicating a high level of

concentration; by the end of the 1970s, it had risen to around 2, indicating a degree of concentration closer to that found for gross income. At the same time, our analysis showed that for the first half of the twentieth century there are doubts about the adequacy of the Pareto distribution as a description of the upper tail. It may be not just the parameter that has evolved but also the shape of the distribution. A long-run comparison based on the assumption that the upper tail above the 99th percentile is Pareto in form could miss a potentially important element of the change.

Implications for future research

The distribution of wealth is on the policy agenda for a number of reasons – in addition to concerns about the concentration in a few hands of economic power. There are concerns linked to the housing market, and we have investigated the role played by rising house prices and the changing extent of owner-occupation. There are concerns about the impact of the large programmes of long-term bond purchases, being pursued in the US, the UK, and by the European Central Bank. For the 90 per cent who make up the majority of wealth-holders, this impact may be monitored via household wealth surveys, but the wealth of the upper tail cannot be adequately captured by such surveys. There are therefore reasons, apart from concerns about social justice, for investment in better statistical evidence about the evolution of the distribution of wealth. The case acquires greater weight from the fact that, as we have shown, our knowledge is particularly poor when it comes to the period from 2005 onwards.

If we are to understand what is happening in the UK to the top of the wealth distribution, there are, in our view, three priorities. The first is to revive and revivify the official Series C based on re-worked estate records; for this, the data must be made available. The second is to develop and reconcile the balance sheets of the household sector. Such a reconciliation exercise must take fully into account the changing nature of the global capital market, and may be best undertaken as part of an international project. The third is to improve the information available about investment income and the underlying assets, so that the capitalization method can be further explored. We believe that there is considerable value in a multi-source approach to investigating the distribution of wealth. No single method is sufficient on its own, and we need to have as full a picture as possible of the advantages conveyed by large wealth-holdings.

HMRC Datalab Disclaimer:

HM Revenue & Customs (HMRC) agrees that the figures and descriptions of results in the attached document may be published. This does not imply HMRC's acceptance of the validity of the methods used to obtain these figures, or of any analysis of the results.

This work contains statistical data from HMRC which is Crown Copyright. The research datasets used may not exactly reproduce HMRC aggregates. The use of HMRC statistical data in this work does not imply the endorsement of HMRC in relation to the interpretation or analysis of the information.

References

Alvaredo, F, Garbinti, B and Piketty, T, 2015, "On the share of inheritance in aggregate wealth Europe and the United States, 1900-2010", mimeo.

Abraham, K G, 2016, "Comment on Bricker et al (2016)", *Brookings Papers on Economic Activity*, Spring: 313-321.

Alvaredo, F, Atkinson, A B and Morelli, S, 2016, "The challenge of measuring UK wealth inequality in the 2000s", *Fiscal Studies,* vol 13: 13-33.

Atkinson, A B, 2005, "Top Incomes in the UK over the 20th Century", *Journal of the Royal Statistical Society*, series A, vol 168: 325-343.

Atkinson, A B, 2013, "Wealth and inheritance in Britain from 1896 to the present", CASE paper 178, London School of Economics.

Atkinson, A B, Gordon, J P F and Harrison, A J, 1986, "Trends in the distribution of wealth in Britain 1923-1981", Taxation, Incentives and the Distribution of Income ESRC Research Programme, Discussion Paper Number 70, London School of Economics.

Atkinson, A B, Gordon, J P F and Harrison, A J, 1989, "Trends in the shares of top wealth-holders in Britain, 1923-1981", *Oxford Bulletin of Economics and Statistics,* vol 51: 315-332.

Atkinson, A B and Harrison, A J, 1974, "Wealth distribution and investment income in Britain", *Review of Income and Wealth,* series 20: 125-142.

Atkinson, A B and Harrison, A J, 1975, "Mortality multipliers and the estate duty method", *Oxford Bulletin of Economics and Statistics,* vol 37: 13-28.

Atkinson, A B and Harrison, A J, 1978, *The distribution of personal wealth in Britain*, Cambridge University Press, Cambridge.

Baxter, R D, 1869, *The taxation of the United Kingdom,* Macmillan, London.

Benhabib, J and Bisin, A, 2016, "Skewed wealth distributions: Theory and empirics", NBER working paper 21924.

Beresford, P, 1990, *The Sunday Times book of the rich: Britain's 400 richest people*, Weidenfeld and Nicolson, London.

Beresford, P, 1991, *The Sunday Times book of the rich*, Penguin, London.

Beresford, P, 2006, *The 'Sunday Times' rich list 2006-2007: 5,000 of the wealthiest people in the United Kingdom*, A and C Black, London.

Bonnet, O, Bono, P-H, Chapelle, G and Wasmer, E, 2014, "Does housing capital contribute to inequality? A comment on Thomas Piketty's Capital in the 21st Century," Economics Discussion Paper no. 2014-07, Sciences Po, Paris.

Bricker, J, Henriques, J, Krimmel, J and Sabelhaus, J, 2016, "Measuring income and wealth at the top using administrative and survey data", Board of Governors of the Federal Reserve System, *Brookings Papers on Economic Activity*, Spring: 261-312.

Bryant, C G E, 1987, “National and sector balance sheets 1957-1985”, *Economic Trends,* May: 92-119.

Chetty, R, Stepner, M, Abraham, S, Lin, S, Scuderi, B, Turner, N, Bergeron, A and Cutler, D, 2016, “The association between income and life expectancy in the United States 2001-2014”, *Journal of the American Medical Association*, vol 315(16): 1750-1766.

Clark, C, 1951, *The conditions of economic progress*, second edition, Macmillan, London.

Clay, H, 1925, “The distribution of capital in England and Wales”, *Transactions of Manchester Statistical Society,* vol: 53-80.

Daniels, G W and Campion, H, 1936, *The distribution of national capital,* Manchester University Press, Manchester.

Davies, J and Shorrocks, A F, 2014, *Global Wealth Databook 2014*, Credit Suisse Research Institute, London.

Davies, J, Lluberas, R, and Shorrocks, A F, 2015, *Global Wealth Databook 2015*, Credit Suisse Research Institute, London.

Friedman, M, 1962, “The interpolation of time series by related series”, *Journal of the American Statistical Association,* vol 57: 729-757.

Guess, F and Proschan, F, 1985, “Mean residual life: Theory and applications”, FSU Statistical Report M702, Florida State University.

HMRC, 2011, *Personal Wealth Statistics 2001 to 03 and 2005 to 07*, HMRC, London.

HMRC, 2012, *UK Personal Wealth Statistics 2008 to 2010*, HMRC, London.

HMRC, 2016, *UK Personal Wealth Statistics 2011 to 2013*, HMRC, London.

HMRC, 2015, *Statistical consultation: possibility of ceasing publication of HMRC's Personal Wealth National Statistics,* Office for National Statistics, London.

House of Commons Library, 2012, *Inflation: the value of the pound 1750-2011,* Research Paper 12/31, House of Commons Library, London.

Kopczuk, W, 2015, “What do we know about evolution of top wealth shares in the United States?”, *Journal of Economic Perspectives*, vol 29, No 1: 47-66.

Kopczuk, W, 2015a, “Recent evolution of income and wealth inequality: Comments on Piketty’s ‘Capital in the Twenty-First Century’”, *Tax Law Review*, vol 68: 545-562.

Kopczuk, W, 2016, “Comment [on Bricker et al, 2016]”, *Brookings Papers on Economic Activity*, Spring: 321-327.

Kopczuk, W and Saez, E, 2004, "Top wealth shares in the United States, 1916-2000: Evidence from Estate tax returns," *National Tax Journal*, vol: 57 (2, Part 2), 445-488.

Kopczuk, W and Saez, E, 2004a, "Top wealth shares in the United States, 1916-2000: Evidence from Estate Tax returns," NBER Working Paper 10399.

Lampman, R J, 1962, *The share of top wealth-holders in national wealth 1922-56,* Princeton University Press, Princeton.

Langley, K M, 1950, 1951, "The distribution of capital in private hands in 1936-1938 and 1946-1947", *Bulletin of the Oxford University Institute of Statistics*, vol 12: 339-359 and vol 13: 33-54.

Langley, K M, 1954, "The distribution of private capital, 1950-1951", *Bulletin of the Oxford University Institute of Statistics*, vol 16: 1-13.

Lydall, H F and Lansing, J B, 1959, "A comparison of the distribution of personal income and wealth in the United States and Great Britain", *American Economic Review,* vol 49: 43-67.

Lydall, H F and Tipping, D G, 1961, "The distribution of personal wealth in Britain", *Bulletin of Oxford University Institute of Economics and Statistics,* vol 23: 83-104.

Mendershausen, H, 1956, "The pattern of estate tax wealth" in R W Goldsmith, D S Brady and H Mendershausen, editors, *A study of savings in the United States,* volume III, Princeton University Press, Princeton.

National Audit Office, 2004, *Inland Revenue Inheritance Tax*, Report by the Comptroller and Auditor General, House of Commons, HC 17 Session 2004-2005.

Office for National Statistics, 2004, "Consumer price inflation since 1750", *Economic Trends,* March 2004: 38-46.

Office for National Statistics, 2013, "A century of home ownership and renting in England and Wales", 2011 Census Release, ONS, London.

Office for National Statistics, 2015, website, "House Price Index (HPI), Reference tables.

Office for National Statistics, 2016, "The UK national balance sheet: 2016 estimates", ONS, London.

Piketty, T, 2014, *Capital in the twenty-first century,* Harvard University Press, Cambridge, Mass.

Piketty, T, 2011, "On the Long-Run Evolution of Inheritance: France 1820--2050," *Quarterly Journal of Economics*, vol 126(3): 1071-1131.

Piketty, T, Postel-Vinay, G, and Rosenthal, L, 2006, "Wealth concentration in a developing economy: Paris and France 1807-1994", *American Economic Review*, vol 96(1): 236-256.

Robinson, P M, 1988, "Semiparametric econometrics: A survey", *Journal of Applied Econometrics,* vol 3: 35-51.

Rognlie, M, 2015, "Deciphering the fall and rise in the net capital share: Accumulation or scarcity?", *Brookings Papers on Economic Activity*, Spring 2015, 1-54.

Royal Commission on the Distribution of Income and Wealth, 1975, *Initial report on the standing reference,* HMSO, London.

Saez, E and Zucman, G, 2016, “The distribution of US wealth, capital income and returns since 1913”, *Quarterly Journal of Economics,* vol 131: 519-578.

Solomou, S and Weale, M, 1997, “Personal sector wealth in the United Kingdom, 1920-56”, *Review of Income and Wealth,* series 43: 297-318.

Sutch, R, 2015, “The one-percent across two centuries: A replication of Thomas Piketty’s data on the distribution of wealth for the United States”, presentation to the UCR Emeriti/ae Association, 12 December 2015.

Turner, A, 2014, “Wealth, debt, inequality and low interest rates: Four big trends and some implications”, Lecture at Cass Business School, London.

Vermuelen, P, 2014, “How fat is the top tail of the wealth distribution?”, European Central Bank Research Department.

Vermeulen, P, 2014a, “How fat is the top tail of the wealth distribution?”, European Central Bank Working Paper 1692, Frankfurt.

Vermuelen, P, 2016, “Estimating the top tail of the wealth distribution”, *American Economic Review,* vol 106: 646-650.

Zucman, G, 2013. “The Missing Wealth of Nations: Are Europe and the U.S. Net Debtors or Net Creditors?”, *Quarterly Journal of Economics,* vol 128: 1321–1364.

Zucman, G, 2014. “Taxing across Borders: Tracking Personal Wealth and Corporate Profits”, *Journal of Economic Perspectives*, vol 28, Number 4—Fall 2014: 121–148.

Appendices

The paper comes with a long appendix section, including tables. They are available, in pdf and excel format, from the authors' websites.

Index of Appendices

Appendix A. Sources of distributional data

Appendix B. Sources of population, deaths, and mortality mutipliers

Appendix C. Sources for estimates of the wealth of the excluded population

Appendix D. Control totals for adult population, total estates, and total wealth

Appendix E. Distribution of estates

Appendix F. Sensitivity of shares to total wealth and the estimates for the 21st century

Appendix G. New series for top wealth shares in the UK

Appendix H. Estimates of distribution of wealth excluding housing

Appendix I. Estates and wealth sampling procedures

Appendix J. Analysis of sensitivity to choice of multipliers

Appendix K. Earlier estimates of the distribution of wealth in the UK

Appendix L. Distribution of investment income

Appendix M. Top wealth shares based on The Sunday Times Rich Lists

Appendix N. Comparison of probate values and Sunday Times Rich Lists

Appendix O. The distribution of estates in the United States

Appendix A. Sources of distributional data

Table A1 lists the sources of data on the distribution of estates in the UK since 1895. Table A2 lists the sources on data for the IR/HMRC distribution of identified wealth. Table A3 lists the sources of data for the distribution of investment income.

Appendix B. Sources of population, deaths, and mortality mutipliers

The population and deaths data for England and Wales from 1901 to 1992 are from the OPCS, Medical Statistics Division, "Historic Mortality and Population Data, 1901-1992" (interpolated to give 18 plus population), distributed by UK Data Archive, University of Essex, Colchester, May 1994 (2nd Edition); the source for deaths 1895-1900 is SN 5705 - Annual Deaths by Cause, Age and Sex in England and Wales, 1848-1900; the population breakdown by age for 1895 to 1900 is from www.mortality.org.

The population and deaths data for Scotland from 1895 to 2011 are from http://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/mid-year-population-estimates/population-estimates-time-series-data and

http://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/vital-events/deaths/deaths-time-series-data.

The population and deaths data for Great Britain are the sum of those for England and Wales and Scotland. The population data for the UK from 1974 to 1975 are Inland Revenue Statistics (IRS) 1978, Table 4.20, from 1976 to 1983 from IRS 1993, Table 13.5, from 1984 to 1996 from IRS 2000, Table 13.5, from 1997 to 2005 from HMRC website, 2005, Table 13.5, from 2006 to 2010 from ONS website, *Mid-1971 to Mid-2010 Population Estimates: Quinary age groups for Constituent Countries in the United Kingdom* (interpolated), and 2011 from ONS website, *Mid-2011 Population Estimates: United Kingdom; estimated resident population by single year of age and sex*. The deaths data from 1974 are from ONS website Death registrations by single year of age.

Series are provided in Table D1.

The mortality multipliers applied in the period from 1911 up to 1960 (after which we use the IR estimates of identified wealth-holders and wealth) are shown in Table B1. The multipliers are in all cases differentiated by age and from 1923 by gender. Separate multipliers are available for Scotland from 1938. Table B2 gives the adjustment to multipliers applied in 1911-1960 and 2008-2010.

Appendix C. Sources for estimates of the wealth of the excluded population

The series of wealth shares presented in Section 4 are based on the total wealth identified in the IR/HMRC estimates of the wealth distribution plus the estimated wealth of non-filers (the excluded population), measured as far as possible in the same way as the wealth of those covered by the statistics. The resulting total, expressed per adult, is similarly used as the basis for the allowance made for non-filers when estimating the distribution of estates in Section 3. The series may be contrasted with that for total marketable wealth used in the HMRC Series C, which is in addition adjusted for wealth that is missing from the estate statistics, including an allowance for trusts, and for differences in the appropriate valuation for a living person as opposed to the valuation at death (for example pure life policies have a smaller surrender value than the value at maturity). In many years, such as 2005 illustrated in Figure 3, these adjustments lead the marketable wealth total to exceed that used in our series, but there are years, such as 1989, in which the downward adjustment for valuation cancels the additions for missing wealth (see Table D1). The derivation of series C wealth total is explained in Appendix D.

There are two points of departure in estimating the total wealth of the excluded population: (a) the IR/HMRC "reconciliation of estimates of identified personal marketable wealth and personal sector balance sheets", and (b) the estimates of Atkinson and Harrison covering the period 1923 to 1972 (1978, Chapter 6 and Appendix VI). From the former, we take the two elements of "excluded property" that are labeled "joint property" and "small estates" (sources in Table C1).[43] The former includes all property held in common, typically with a spouse, that passes by survivorship. It includes financial assets, such as joint bank accounts, but much the largest element in recent decades has been residential property. With rising housing wealth, the ratio of joint property to the remainder has changed from around 2:1 in the 1970s to 10:1 in the 2000s. In view of the dominance of joint property, the extrapolation beyond 2005 has been based on the ONS UK housing price index (see below).

For earlier years, we make use of Atkinson and Harrison (AH) (1978, page 305), where there are three estimates: a larger (in the book classification, B2), a central (B3) and a smaller (B4) figure. There are reasons to believe that for the post-war period the central figures are too low (1978, pages 301 to 302), and that they under-estimate the value of joint property. For 1971, the one year of overlap with the original AH series, the B3 AH figure is around half the HMRC estimate. In the light of this, we have used here the higher AH series (B2) for the years 1950 to 1970. For 1971, the AH B2 estimate is £9,567m, which is close to the HMRC figure of £10,500m when allowance is made for the fact that the former relates to GB and the latter to the whole UK. The better correspondence of the higher figure is illustrated in Figure F1. The same figure shows that the differences between the two assumptions before 1950 are small, and the higher figure is therefore used throughout.

Examination of Figure C3 shows that the size of the allowance for the wealth of the excluded population varies considerably: from around 10 per cent to around 50 per cent

[43] It should be noted that the total given for Identified wealth in these tables is not always identical to that shown in the IR/HMRC wealth distribution estimates; we have used the total from the latter (see Table D1).

of identified wealth. This is not surprising, since the coverage of the estate data has varied considerably, reflecting the differences in the tax threshold and in the statistical practice (Figure C1 and C2). The fraction excluded fell in the period before the Second World War, but then rose sharply when the threshold was increased from £100 to £2,000 in 1946. The coverage fell substantially when the statistics were extended in 1960 to cover estates below the tax threshold, which nonetheless came to the notice of the Inland Revenue when a grant of representation was obtained. There was some upward drift after 1980 as the proportion excluded rose from 50 per cent to 60 per cent. More important in this period, however, was the rise in house prices and extension of owner-occupation affecting the value of joint property.

Our judgment is that the combination of the IR/HMRC estimates, coupled with the AH higher estimates, provide a reasonable basis for the total wealth of the excluded population. There are, however, the following gaps to be filled:

i) Period before 1923;
ii) Gaps in the period 1931 to 1941;
iii) Period 1946 to 1949;
iv) Gaps in the period 1971 to 2005;
v) Period from 2005.

For the period before 1923, the UK series constructed in Atkinson (2013) is used. This series did not include jointly owned property, which was then much less important, and the series is increased proportionately by the ratio in 1923 (1/0.65). To adjust to EW, it is then reduced by a factor 0.929. The 1895 figure is extrapolated from that for 1896 using the ONS Consumer Price Index (ONS, 2004, Table 1).

The gaps in the period 1931 to 1941 were filled by linear extrapolation.

For the period 1946 to 1949, we took account of the substantial increase in the estate duty threshold in 1946, which led to a larger total for the wealth of the excluded population, and extrapolated the 1950 figure backward on the basis of the ONS Consumer Price Index.

The gaps from 1971 to 2005 are filled by (for 1973 and 1974) the Atkinson, Gordon and Harrison estimates (1986, Table A2), increased by the ratio of the Higher to Central estimate in 1972, and (for 1997 to 2000) interpolated from 1996 using the HMRC Series C total marketable wealth.

For the post-2005 period, the results in Section 4 are based on extrapolation of total personal wealth from 2005, using the national accounts balance sheet totals for the personal sector, but in Section 5 alternative approaches are considered that are based on the calculation of the wealth of the excluded population as described there.

In the case of the distribution of *estates*, the total of estates is taken as the sum of the identified total in the estate returns plus an estimate of the total of excluded estates. The latter is in turn calculated from the estimated total wealth excluded from the wealth estimates described above, by making the assumption that the amount of excluded wealth passing in a year is given by the overall mortality rate of the excluded population (the ratio of deaths among the excluded population to the total number of living persons in that population). In other words, it is assumed that the average wealth of the dying

among the excluded population is equal to the average for the living in that population. Such an assumption would not be appropriate if applied to estates as a whole but, as noted in the main text, may not be unreasonable as a first approximation when applied to a group whose wealth is by definition limited. A calculation for the whole population (included and excluded) of the ratio of the average wealth of decedents to the average wealth of the living shows that values in the early part of the period are around 2, falling to 1.5 in the 1950s (see Figure C4). These do not seem unreasonable when compared with those in France.

Figure C1. Adult decedents covered by the estate statistics in the UK 1895-2013

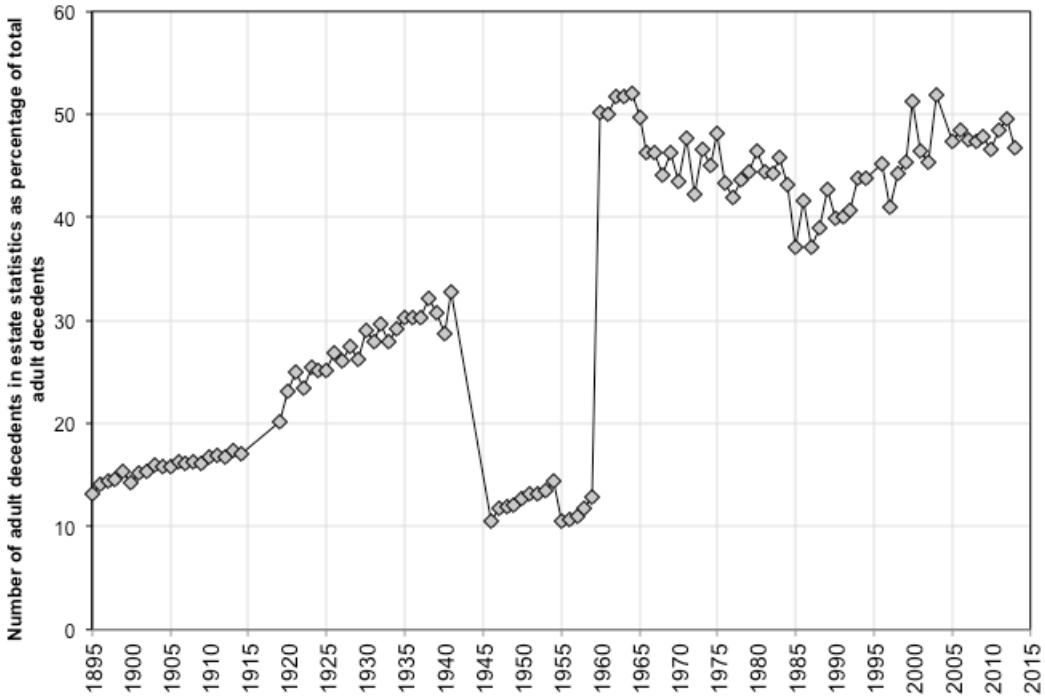


Figure C2. Excluded population as percentage of total adult population

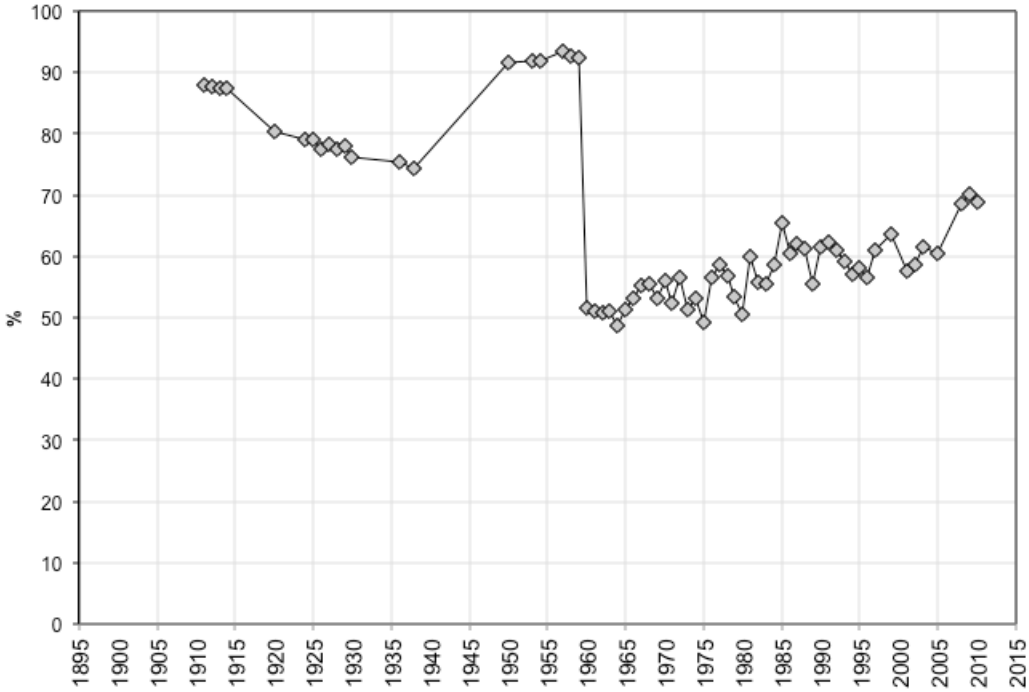
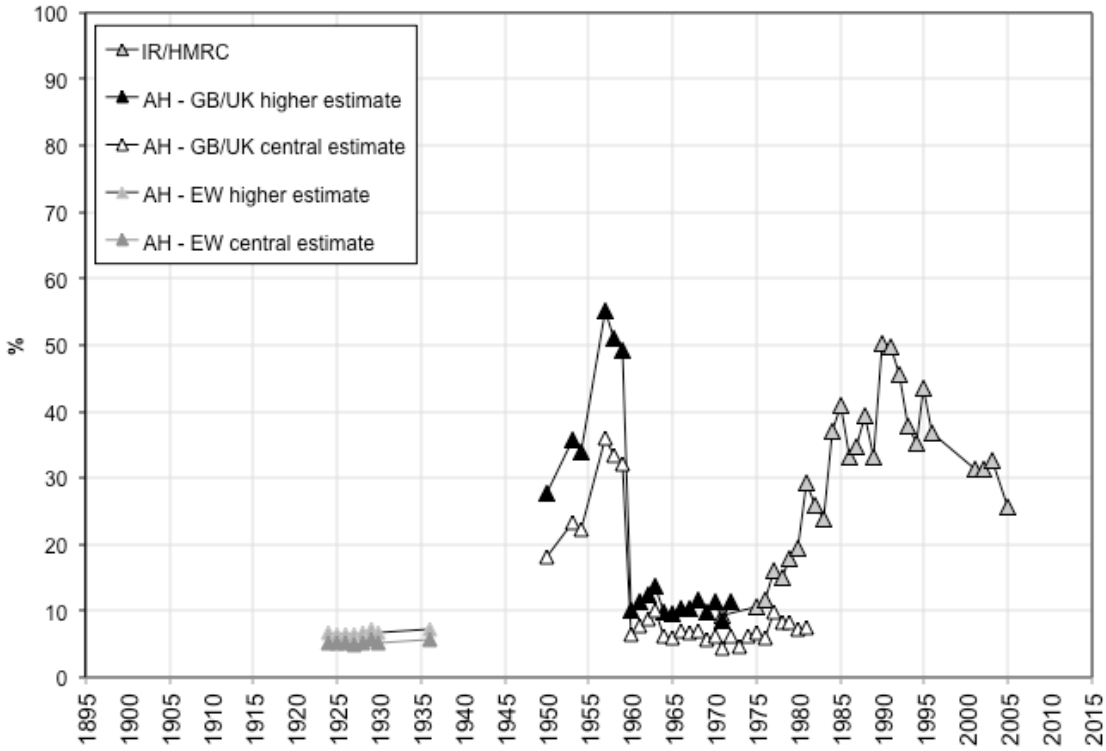
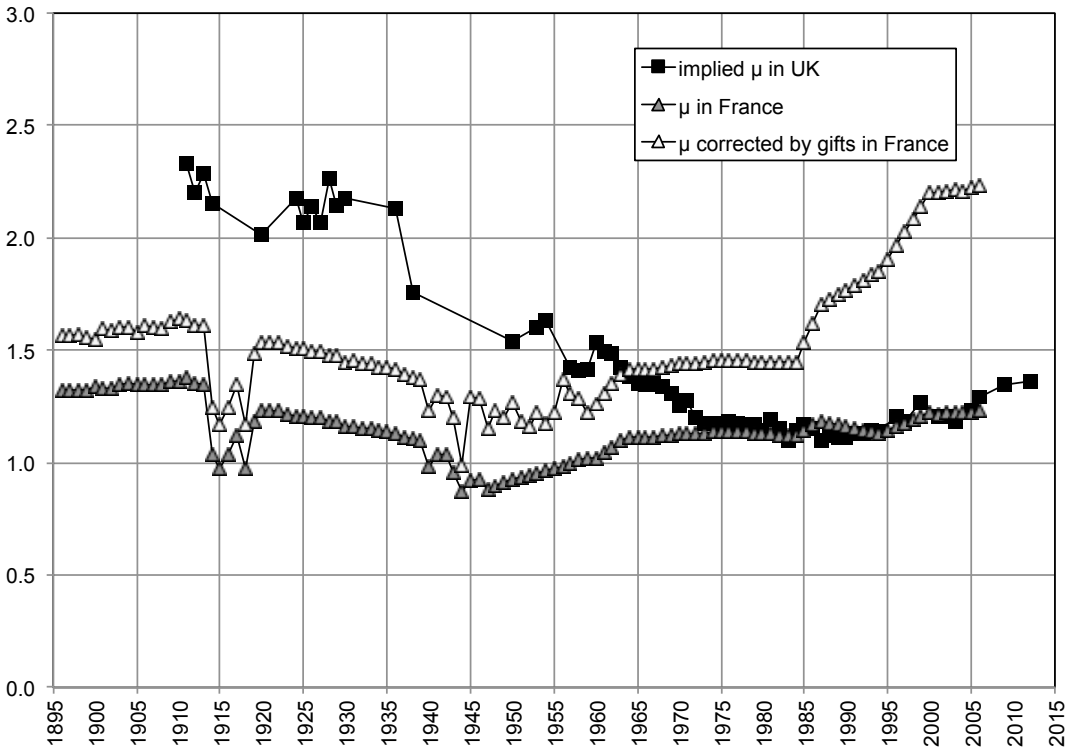


Figure C3. Wealth of the excluded population as percentage of total identifed wealth



Notes: AH is Atkinson and Harrison (1978).

Figure C4. Ratio between the average wealth of the dying and the average wealth of the living



Sources: UK: Calculated as ratio of total estates (including estates of excluded population) per adult decedent, to total wealth per adult (Table D1); France: Piketty (2011, Figure IV). Note: μ denotes the ratio of the average wealth of decedents to the average wealth of the living, so that a ratio of 2 means that the average estate is twice the average wealth of the living.

Appendix D. Control totals for adult population, total estates, and total wealth

Table D1 gives the number of adult deaths, the adult population control total, the estimates for the estates of the identified and the excluded decedents, the control totals used here for wealth, the marketable wealth series, and the price index.

Derivation of Series C total for personal wealth. As reported in the text, our benchmark series of total wealth sums up total identified wealth to the wealth of the excluded population. An alternative series can be constructed, the so called series for total marketable wealth (Series C), that incorporates also the adjustments for coverage and valuation. However, the total marketable wealth series is not always available; past estimates cannot be recast in this form, and recent values cannot be taken from the reconciliation exercise that was discontinued in 2005. We therefore extend the series backwards in time to 1911.

For the total marketable wealth series, our starting point is the official HMRC Series C total that is available for 1966, 1971, and from 1976 to 2005. In order to extrapolate this back to earlier years, we have used the estimates of personal sector net worth by Blake and Orszag (1999), which covers the period 1948 to 1994 (we use the data from 1948 to 1976), Solomou and Weale (1997), which covers the period from 1920 to 1956 (we use the data from 1920 to 1947), and made our own estimates for the period 1911 to 1920. Consumer durables are included. In each case, we have made the link by considering the relationship between the series over a number of years (rather than simply using one overlapping year). For the period 1976 to 1994, the marketable wealth Series C averaged 106 per cent of the Blake/Orszag series; for the years 1948 to 1956, the Blake/Orszag series averaged 92.9 per cent of the Solomou/Weale series. We have therefore taken the Blake/Orszag series multiplied by 1.06 and the Solomou/Weale series multiplied by 1.06 x 0.929.[44] We use for the years 1911 to 1914 the higher of the two estimates made by Campion (1939, Chapter II). He builds up a figure averaged for 1911-13 as follows: estate data multiplied up by social class multipliers (differentiated by age but not by gender) plus estimated wealth of the excluded population plus omitted settled property. The resulting total is in the form of a range from £8,270 million to £9,235 million. The higher figure is taken since a comparison of his estimate for 1926-28 with our balance sheet totals suggests that his figures may be on the low side.

Prior to 1974, the series relates to Great Britain (GB), rather than the United Kingdom, thus excluding Northern Ireland, and prior to 1938 the estimates relate to England and Wales (EW), excluding Scotland.[45] In the case of total wealth, Revell (1967, page 147) found that in 1961 excluding Northern Ireland (NI) reduced the GB total to 98.3 per cent of the UK, and this percentage is applied here for all years. For Scotland, we have made calculations for 1938 and 1950 of the share in total identified wealth and these show

[44] The series may be compared with the earlier work of Revell (1967) and Roe (1971), the latter covering 1957 to 1966, the official balance sheet estimates of Reid (1978), Pettigrew (1980), Bryant (1987), and the series published in Financial Statistics (February 1984, Table S12). The series move very much in line.

[45] Evidence about the distribution of estates exists for the UK as a whole; it is only the age-related breakdown (necessary to apply age-related multipliers) that is limited to EW.

that in both years EW was 91.3 per cent of the GB total. We have taken the EW total to be equal in all years to 0.913 times the GB total.

The marketable wealth series is projected forward from 2005 on the basis of the personal sector balance sheet totals, as described in Section 3.

Appendix E. Distribution of estates

Table E1 gives the distribution of estates since 1895. Table E2 shows the thresholds and average estates for the top groups.

Appendix F. Sensitivity of shares to total wealth and the estimates for the 21st century

Table F1 shows the estimates of top wealth shares under different assumptions in Figure 12.

Appendix G. New series for top wealth shares in the UK

Table G1 gives the shares of top groups of the distribution of wealth since 1895. Table G2 gives the average wealth of those top groups.

Appendix H. Estimates of distribution of wealth excluding housing assets

The method to arrive at the new estimates for the distribution of wealth excluding housing assets (EXHO) is to take the tabulated wealth estimates, subtract net housing wealth from each range; then re-calculate the wealth shares using as a control total the total of all wealth minus the net value of housing, where the latter is the value of residential property minus mortgage liabilities. The net value of housing is the sum of this item for identified wealth-holders and the estimated net housing wealth of the excluded population (see below). The property may be owner-occupied or owned for rent or vacant.

In order to apply the analysis, we need data on ranges of total net wealth giving the composition of wealth in terms of housing assets and liabilities. These tabulations were introduced in IRS 1973 (Table 94), and cover the years from 1971 to 2005.[46] The sources are listed in Table H1. Before 1978 these refer to the year of account; from 1978 they are on a year of death basis.

This method adopted here is described in more detail below; as will be clear there are a number of limitations:

a) The classification by ranges remains the same (i.e ranking by total net wealth), so that the shares in wealth EXHO are under-estimated (re-arrangement to give correct ranking would raise the top shares). This also means that we can only apply the linear interpolation of the Lorenz curve, since the range intervals no longer apply. The results are therefore compared with the tabulated results from linear interpolation. They therefore differ from those reported elsewhere in the paper, and are referred to as estimates including housing wealth (with HO).

b) The net value of housing wealth is calculated from 1980 onwards as the value of UK residential dwellings less mortgages. Net housing wealth is over-stated to the extent that households have other borrowing to finance house purchase: e.g. bank loans. It excludes property owned abroad (which seems correct). The net value of housing wealth before 1980 is calculated as the value of residential buildings (freehold and leasehold) minus "deductions against realty".

c) The estimated net housing wealth of the excluded population is based on the asset composition estimates of IR/HMRC as part of their estimation of the total wealth of the excluded population (see Appendix C). The sources of the data are given in Table H1. Not all years are covered. The data commence in 1975 and give a series up to 2005, when results of the reconciliation exercise ceased to be published. (There are also some gaps in the available data.) In order to provide control totals for the earliest years, 1971 to 1974, and for the recent years not covered we have constructed an index to be applied to the total of personal wealth ex housing. By applying it to the total, we avoid the need to allow for the changing size of the excluded population. The index, which is the product of the proportion of the housing stock in private ownership (source DCLG Table 104) and the ONS index of average house prices (ONS HPI series 22 for the UK), takes account of both the decline in social housing as the stock was privatized and the evolution of house prices.

[46] For years before 1971, there are tabulations of estates by range and asset type, but these are not classified by age/gender, so that it is not possible to apply mortality multipliers.

The distribution of wealth excluding housing obtained in this way is shown in Table H2. The split of wealth between housing and non-housing for different wealth groups is shown in Table H3.

Appendix I. Estates and wealth sampling procedures

This appendix describes the current sampling procedures, with a look back where possible at earlier years. The estate data are based on a stratified sample of the IHT returns for the population of estates passing on death in a financial year in need of a grant for representation. The analysis of the sampling strategy and its potential effect on our estimates is made particularly difficult by the lack of official IR/IHMRC documentation on the sampling methodology. For many years, the sampling rates were given in *Inland Revenue Statistics,* but information on the number of observations by individual strata was not supplied. Only an approximate calculation can be made: for example, for 1976-1977 we derived an implied sample size of approximately 34,000 estates (12 per cent of a total 288,000 estates that were granted probate in 1976), although this is probably an under-estimate.

The HMRC wealth estimates, in contrast, are based on a different sample, based on the same source, but relating to calendar years. The estimates for 2010-2012, for example, use data from estates passing on death in 2010, 2011 and 2012 calendar years. The samples also differ because they are drawn at different dates, depending on the calendar for publication, and the timing may affect the reported information because the IHT returns are subject to revision.

The sample used to produce the HMRC wealth estimates contained, in 2008-10, approximately 57,000 returns. From this sample, a data set has been produced for distribution via the HMRC Datalab. To avoid risks of disclosure and to protect taxpayer confidentiality, the micro data are aggregated so that each row in the Datalab database represents many sampled estates.

Both samples make use of the IHT returns. As we understand it, the Trusts and Estates, Inheritance Tax Office in Nottingham receives a summary of all deaths for which a probate has been granted from the District Probate Registries, and samples monthly all the IHT400 forms. The form IHT400 is the Inheritance Tax account form required if there is Inheritance Tax to pay or if the deceased person's estate does not qualify as an 'excepted estate'. An 'excepted estate' is one with gross value above the probate minimum (£5,000) but below the IHT threshold; in this case, a "short form" (IHT205) is submitted to the Probate Registry.[47] The IHT205 form contains the information required to make the wealth distribution estimates, not being restricted to assets for which probate is sought. HMRC selects the additional sample of the forms IHT205. In 2003, according to a report of the National Audit Office (2004), there were approximately 240,000 excepted estates. Only 3,300 such forms (1.4 per cent) were sampled by the HMRC and no sampling information was given for the remaining 67,500 estates above the IHT threshold. Problems with the sample of "excepted" estates and other "operational" issues with the sampling frame led HMRC to deem the 2004 and 2006 wealth tabulations not "suitable" for publication.

[47] Estates with a gross value of up to £1million can also be classified as "excepted" if no inheritance tax has to be paid due to the spouse, civil partner, or charity exemption. Similarly, an estate is "excepted" if up to twice the value of the inheritance tax threshold and the transfer of unused nil band is claimed. This process is in place since the 2004 Finance Act in order to ease the administrative burden and reduce the compliance costs.

Appendix J. Analysis of sensitivity to choice of multipliers

This section describes the estimates of the sensitivity of top wealth share to different mortality-wealth gradients.

Table J1 provides the actual mortality rate (relative to the mortality of the population) of UK individuals by age and gender for the top three deciles of the household housing wealth in 2008-2010, as estimated from the English Longitudinal Study of Ageing (ELSA) by HMRC.[48] Relative mortality is also compared to that in top groups of the US capital income distribution (top 10, top 5 and top 1 per cent) for years 2004 to 2008, as described in Saez and Zucman (2016). Using the database of the HMRC Datalab for 2008, 2009, and 2010 we simulate the effects of changes to multipliers on the final estimates of top wealth shares. We carry out the analysis using both (case A) an internal wealth total endogenous to changes in multipliers (wealth of the identified population plus wealth of the excluded population); and (case B) an external wealth total unaffected by the simulations.

Table J2 provides the comparison between the top 1 per cent wealth share and the respective simulated series in 2008-2010 based on 10, 20, 50 and 100 per cent variation of mortality multipliers above a pre-specified wealth percentile (P95, P99, and P99.9). The results indicate that the potential downward bias of our estimates due to lack of adjustments for "appropriate" wealth differentials are marginal, in either the external or the internal wealth total scenario. Results further show that results are robust if we confine the adjustments only to the very top of the distribution (P99.9th).[49]

[48] Individuals with housing wealth at least equal to £300,000 would fall in the 8th decile of housing wealth. The 9th decile is £400,000 whereas the 10th decile is estimated to be at £500,000.

[49] Although we cannot rule out the possibility that future progress in medicine, and widening gaps in wealth, may reduce the relative mortality rates of the wealthiest individuals to such levels, at present these adjustments are hard to justify. Similarly, future radical changes in the age distribution of wealth may have more tangible implications on the use of wealth differentials (and more generally on the use of mortality multipliers) for the estimation of top wealth shares.

Appendix K. Other estimates of the distribution of wealth in the UK

Table K1 provides

i) the IR/HMRC earlier series C 1966-1976.

ii) the IR/HMRC series C 1966-2005.

iii) the series given in Atkinson and Harrison (1978) and Atkinson, Gordon and Harrison (1989).

Appendix L. Distribution of investment income

There are two sources of tabulated investment income data: the surtax returns and the Survey of Personal Incomes (details for each year in Table A3). The IR tabulated total income by ranges from the introduction of surtax in 1908, but only began to publish the distribution of investment income with effect from 1948-49, referred to here as 1948. We then have a complete annual series up to and including 1972-73, when the surtax was integrated into the regular income tax. The surtax data relate to those tax units assessed to surtax, so that the data are only complete for persons whose investment income is sufficient on its own to render them subject to surtax. The surtax threshold for much of the period was £2,000 plus a number of reliefs (such as the single/married personal allowance, child allowance from 1956-57). The data typically cover some 0.5 per cent of total tax units, but the use of the data for lower ranges could be misleading. In our analysis, we have used ranges of investment income (i) from £4,000 for 1948-49, 1971-72 and 1972-1973; (ii) from £3,000 for 1969-70 and 1970-71; and (iii) from £2,500 for all other years (for example, the 111th IR Report, page 82, shows that married couples with 3 children would indeed have been paying surtax on an income of £2,500 in 1967-68). Table L3 shows the surtax rates and bands in different years. Investment income consists of rent, dividends and interest, and (when in effect) Schedule A income on owner-occupied property and rented property.

The Survey of Personal Incomes (SPI) is based on a sample drawn from the income tax records. In covering all taxpayers, it is superior to the surtax data and it is the sole source since 1972-73. It does however have limitations. Initially, the SPI was only carried out at 5 year intervals; information has only been tabulated by ranges of investment income since 1954-55; the fact that it has been based on a sample limits the detail available on the higher income ranges; and in the earlier years corrections were made for the significant deficiency in the amount of investment income reported (believed to arise where taxpayers report the amount received after deduction of tax at source, where this is not verified for those not liable for surtax). These limitations mostly apply to the earlier years. The SPI became annual with effect from 1962-63; more detail has been published from 1969-70; and the IR ceased to make adjustments for investment income from 1965-66 (although the deficiency continued to be present).

After 1979-80, the tabulations were no longer published in the necessary form, but for the years 1985-86 and 1995-96 to 2010-11 (2008-09 missing) HMRC has provided access to the SPI micro-data sample. In the last years, the sample has an approximate size of 1.5 percent of the adult population. The micro-data sample provides the composition of investment income in four broad categories: dividend income from shares in UK companies and unit trusts, property income, net interest from UK banks, building societies and other deposit takers, and other investment income comprising interest on securities, interest from partnerships and from trusts, settlements and estates.

Table L2 shows the control totals for population (tax units before 1990-91, adults from 1990-91) and total investment income. The derivation of the population series is described in Atkinson (2005). The first part of the series for total investment income is based on the total of rent, dividends and interest received by the household and NPISH sector (initially the personal sector) obtained from the Blue Book sources listed in Table L2. Changes to the national accounts with effect from 1996 meant that, to construct a comparable investment income control total, we started with the most recent data on

rent, dividends and interest (given jointly for the household sector and NPISH) from the Blue Book 2014, and took 90 per cent of the national accounts figures to allow for differences in definitions. We converted the annual data to a tax year basis by taking ¾ of year t and ¼ of year t+1. Finally, we added back the rental income from the SPI (rental income is not distinguishable from other sources in the mixed income of the national accounts); the control total may be underestimated on this account. Working backwards, the resulting totals were then linked to the earlier series in 1996.

The results for top investment income shares are given in Table L1. The two sources, surtax returns and SPI, may be compared for the years 1969-70 to 1972-73. The top shares are consistently higher for the surtax data, but the difference is not large, and appears similar in all four years (see Table L1).

Appendix M. Top wealth shares based on The Sunday Times Rich Lists

Table M1 shows the wealth share of the top 0.001% group based on the Sunday Times Rich Lists. One major problem with the use of the List is that the unit of analysis is not always clear and could be quite extensive – in contrast to the individual basis of our wealth estimates. *Faute de mieux*, we have assumed that every observation in the list refers to a family of two individuals (so the 1,000 observations in the annual list represent 2,000 adults) in which they equally share their wealth. The population and wealth control totals are those for Great Britain (and not the UK) given in Table D1.

The results from 2002 in an alternative source - the Forbes List - are not shown due to the limited time scope of the series and the sample size on which they are based. The top 0.00003 per cent richest UK individuals owned 0.5 per cent of total UK personal wealth in 2002, and the share went up to 0.7 per cent in 2012. Again the trend, as well as the year-to-year variation, is fairly similar to that of our estate-based series. The Forbes List shows the wealth holding of UK individuals in US$. The annual average spot exchange rate from the Bank of England (XUAAUSS- US$ into Sterling) is used to convert the currency.

Appendix N. Comparison of probate values and Sunday Times Rich Lists

Table N1 provides the comparison between probate values and the Sunday Time Rich List values around the year of death, for those millionaires in the List who have passed away since the List started in 1989. Probates have been obtained from https://probatesearch.service.gov.uk/. In addition to the points made in the main text, it should be noted that several cases disappear from the list before death, despite having estates considerably above the minimum wealth in the list, and that charitable gifts made during lifetime are not given in the probate records, but they are substantial in some known cases (for instance, Anita Roddick and Felix Dennis), affecting the comparison.

Appendix O. The distribution of estates in the United States

Table O1 provides the sources of the distribution of estates in tabulated form from 1916 to 2013. The first publication, the *IRS Statistics of Income 1920*, only gives the data aggregated for the returns filed between September 1916 and January 1922 and we have not used these. Consequently our series start in 1921. Table O2 gives total wealth, estates, adult population and deaths.

Total adult decedents: They come from www.mortality.org from 1933 to 2013. For years before 1933, we have taken the number of adult decedents from the periodical publication *Mortality Statistics* by the US Department of Commerce and the Bureau of the Census; as this only covered the registration states, we have up-scaled the numbers to the continental US using the information given in the same publication.

Total adult population: This comes from www.mortality.org from 1933. For years before 1933, we have linked the series backwards following that given in Kopczuk and Saez (2004).

In both cases, living population and decedents, the adult age cut-off is 20 years old. This is different to that selected for the UK (18 years old), but identical to the definition used by Kopczuk and Saez (2004), making our estate distribution series for the US comparable to their series for the distribution of wealth.

Adult mortality rate (m): It is estimated from total adult decedents over total adult population.

Total personal wealth (w): This comes from Kopczcuk and Saez (2004) for years up to 2002, and from Saez and Zucman (2016) for years from 2003.

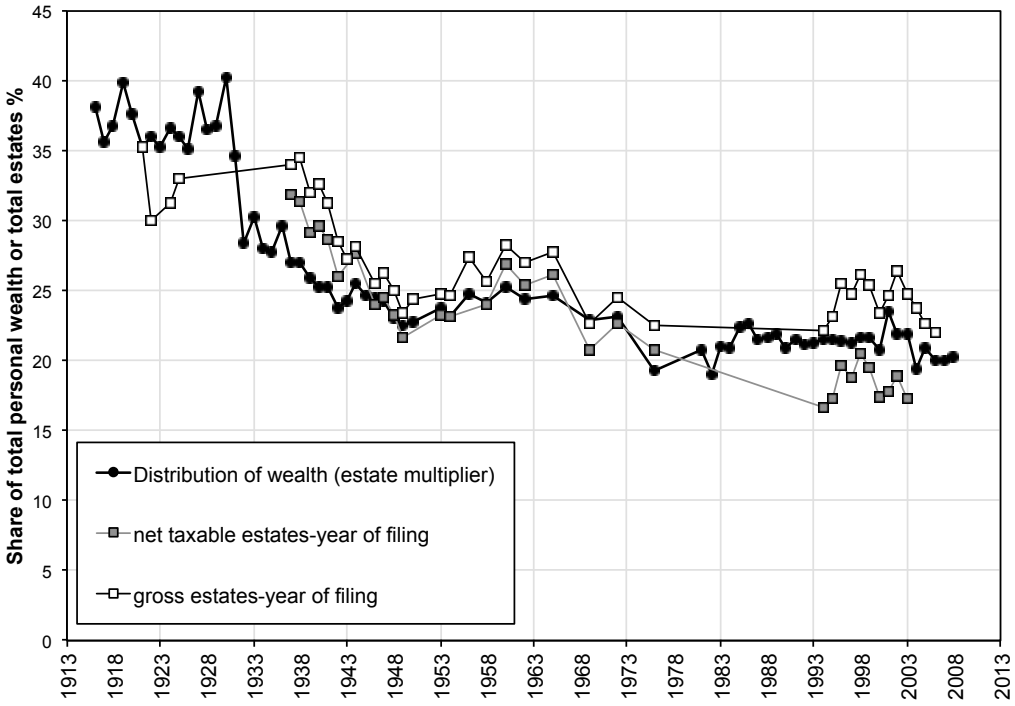
Ratio between the average wealth of the dying and the average wealth of the living (μ): This has been taken from Alvaredo, Garbinti and Piketty (2015), where it is given for years 1870 (based on US Census), 1962, 1983, 1986, 1989, 1992, 1995, 1998, 2001, 2004, 2007, 2010 and 2013 (based on the Survey of Consumer Finances, and corrected by differential mortality). Intermediate years have been linearly interpolated.

Total wealth passed at death: This has been estimated as $(m\,\mu\,w)$. Due to the low population coverage of US estate statistics, this is slightly different from the procedure followed for the UK (where a specific distinction has been made between identified estates and excluded estates – see Section 2 in the main text).

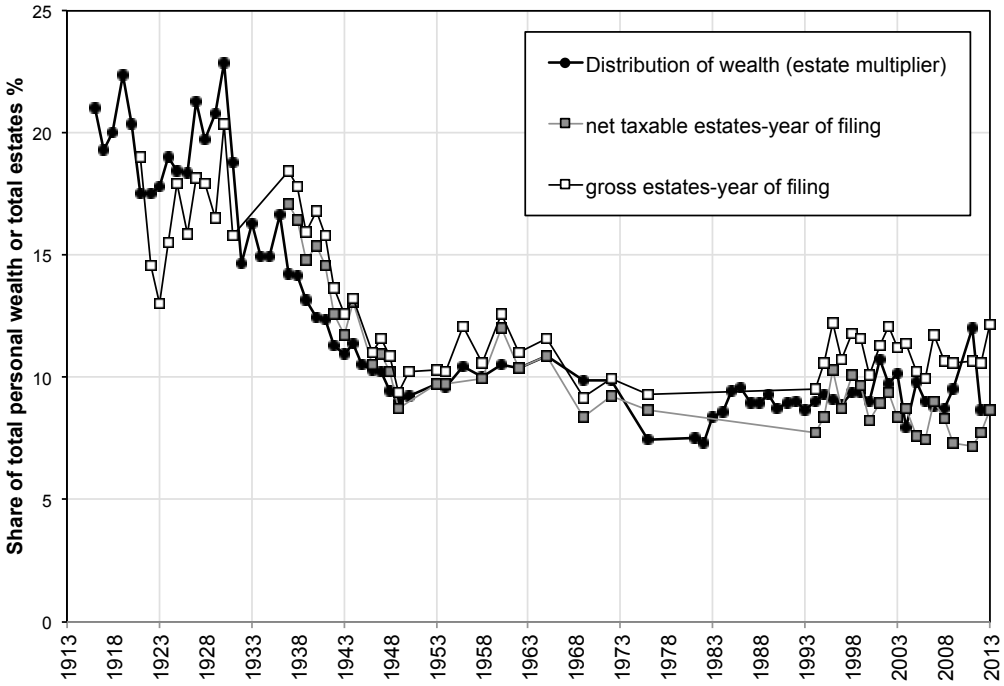
Table O3 gives the distribution of estates on four different bases, none of which corresponds to our preferred choice, but we have to make use of the data as published (we have not had access to estate micro-data). "Taxable estate" refers to its size after deduction of the tax exemptions (but including the specific exemption), whereas the "gross estate" is before deduction of debts. This means that the gross estate is likely to overstate the top shares, and the "taxable estate net of debt" will understate the shares. The difference is most marked in the recent period. There is also the distinction between year of filing and year of death. Figure O1 compares the top 1 per cent and top 0.1 per cent according to the different definitions.

Figure O1. Comparison of wealth and estate distributions in the US

Panel a: Share of top 1%



Panel b: Share of top 0.1%



Appendix additional references

Blake, D and Orszag, J M, 1999, "Annual estimates of personal wealth holdings in the United Kingdom since 1948", *Applied Financial Economics,* vol 9: 397-421.

Bryant, C G E, 1987, "National and sector balance sheets 1957-1985", *Economic Trends,* May: 92-119.

Campion, H, 1939, *Public and private property in Great Britain,* Oxford University Press, London.

Dunn, A T and Hoffman, P D R B, 1978, "Current developments in Inland Revenue estimates of personal wealth" in *Personal sector balance sheets and current developments in Inland Revenue estimates of personal wealth,* Central Statistical Office, London.

Office for National Statistics, 1984, *Financial Statistics*, February 1984.

Pettigrew, C W, 1980, "National and sector balance sheets for the United Kingdom", *Economic Trends*, November: 82-109.

Reid, D J, 1978, "The role of personal sector balance sheets in the national accounting system and sources and methods used to compile them" in *Personal sector balance sheets and current developments in Inland Revenue estimates of personal wealth,* Central Statistical Office, London.

Revell, J, 1967, *The wealth of the nation*, Cambridge University Press, Cambridge.

Roe, A R, 1971, *The financial interdependence of the economy 1957-1966,* Chapman and Hall.

Solomou, S and Weale, M, 1997, "Personal sector wealth in the United Kingdom, 1920-56", *Review of Income and Wealth,* series 43: 297-318.

Table A1. Sources of data on the distribution of estates in the UK 1895-2013

Financial year starting	Threshold £	Threshold £ 2015	Maximum inheritance tax rate	Country	Sources: AR denotes Annual report; IRS denotes Inland Revenue Statistics	Basis for estimate
1895	100	11,858	8	GB	39th AR, pages 56 and 57	Year of account
1896	100	11,998	8	GB	79th AR, Table 18	Year of account
1897	100	11,722	8	GB	79th AR, Table 18	Year of account
1898	100	11,722	8	GB	79th AR, Table 18	Year of account
1899	100	11,589	8	GB	79th AR, Table 18	Year of account
1900	100	11,085	8	GB	79th AR, Table 18	Year of account
1901	100	11,085	8	GB	79th AR, Table 18	Year of account
1902	100	11,085	8	GB	79th AR, Table 18	Year of account
1903	100	11,085	8	GB	79th AR, Table 18	Year of account
1904	100	10,966	8	GB	79th AR, Table 18	Year of account
1905	100	10,966	8	GB	79th AR, Table 18	Year of account
1906	100	10,966	8	GB	79th AR, Table 18	Year of account
1907	100	10,849	15	GB	79th AR, Table 18	Year of account
1908	100	10,849	15	GB	79th AR, Table 18	Year of account
1909	100	10,735	15	GB	79th AR, Table 18	Year of account
1910	100	10,623	15	GB	79th AR, Table 18	Year of account
1911	100	10,623	15	GB	79th AR, Table 18	Year of account
1912	100	10,301	15	GB	79th AR, Table 18	Year of account
1913	100	10,406	15	GB	79th AR, Table 18	Year of account
1914	100	10,406	15	GB	79th AR, Table 18	Year of account
1915	100	9,271	20	GB	No data on amounts	Year of account
1916	100	7,845	20	GB	No data on amounts	Year of account
1917	100	6,256	20	GB	No data on amounts	Year of account
1918	100	5,125	20	GB	No data on amounts	Year of account
1919	100	4,657	20	GB	Data on amounts for 9 months to March 1920. Numbers from 63rd AR, Table 13; amounts from 65th AR, Table 22	Year of account
1920	100	4,031	40	GB	64th AR, Tables 13 and 14	Year of account
1921	100	4,415	40	GB	65th AR, Tables 21 and 22	Year of account
1922	100	5,125	40	GB	66th AR, Tables 10 and 11	Year of account
1923	100	5,453	40	GB	67th AR, Tables 10 and 12	Year of account
1924	100	5,483	40	GB	68th AR, Tables 10 and 12	Year of account
1925	100	5,483	40	GB	69th AR, Tables 11 and 13	Year of account
1926	100	5,512	40	GB	70th AR, Tables 13 and 15	Year of account
1927	100	5,666	40	GB	71st AR, Tables 13 and 15	Year of account
1928	100	5,666	40	GB	72nd AR, Tables 12 and 14	Year of account
1929	100	5,729	40	GB	73rd AR, Tables 12 and 14	Year of account
1930	100	5,895	40	GB	74th AR, Tables 12 and 14	Year of account
1931	100	6,143	50	GB	75th AR, Tables 12 and 13	Year of account
1932	100	6,295	50	GB	76th AR, Tables 12 and 13	Year of account
1933	100	6,454	50	GB	77th AR, Tables 12 and 13	Year of account
1934	100	6,454	50	GB	78th AR, Tables 12 and 13	Year of account
1935	100	6,414	50	GB	79th AR, Tables 12 and 13	Year of account
1936	100	6,374	50	GB	80th AR, Tables 12 and 13	Year of account
1937	100	6,143	50	GB	81st AR, Tables 12 and 13	Year of account
1938	100	6,070	50	GB	82nd AR, Tables 12 and 13	Year of account
1939	100	5,895	55	GB	83rd AR, Tables 4 and 5	Year of account
1940	100	5,048	60	GB	84th AR, Tables 4 and 5	Year of account
1941	100	4,553	65	GB	85th AR, Table 8	Year of account
1942	100	4,249	65	GB	No data on amounts	Year of account
1943	100	4,112	65	GB	No data on amounts	Year of account
1944	100	3,999	65	GB	No data on amounts	Year of account
1945	100	3,892	65	GB	No data on amounts	Year of account
1946	2,000	75,540	75	GB	90th AR, Tables 11 and 13	Year of account
1947	2,000	70,574	75	GB	91st AR, Tables 46 and 48	Year of account
1948	2,000	65,582	75	GB	92nd AR, Tables 107 and 109	Year of account
1949	2,000	63,737	75	GB	93rd AR, Tables 52 and 54	Year of account
1950	2,000	61,806	80	GB	94th AR, Tables 137 and 138	Year of account
1951	2,000	56,655	80	GB	95th AR, Tables 207 and 208	Year of account
1952	2,000	51,898	80	GB	96th AR, Tables 102 and 103	Year of account
1953	2,000	50,360	80	GB	105th AR, Tables 188 and 189	Year of account
1954	3,000	74,077	80	GB	105th AR, Tables 188 and 189	Year of account
1955	3,000	70,983	80	GB	105th AR, Tables 188 and 189	Year of account
1956	3,000	67,536	80	GB	105th AR, Tables 188 and 189	Year of account
1957	3,000	65,232	80	GB	105th AR, Tables 188 and 189	Year of account
1958	3,000	63,210	80	GB	105th AR, Tables 188 and 189	Year of account
1959	3,000	62,950	80	GB	105th AR, Tables 188 and 189	Year of account
1960	3,000	62,309	80	GB	105th AR, Tables 188 and 189	Year of account
1961	3,000	60,224	80	GB	105th AR, Tables 188 and 189	Year of account
1962	4,000	76,966	80	GB	111th AR, Table 130	Year of account
1963	5,000	94,425	80	GB	111th AR, Table 130	Year of account
1964	5,000	91,379	80	GB	111th AR, Table 130	Year of account
1965	5,000	87,311	80	GB	111th AR, Table 130	Year of account
1966	5,000	84,003	80	GB	111th AR, Table 130	Year of account
1967	5,000	81,845	80	GB	111th AR, Table 130	Year of account
1968	5,000	78,205	80	GB	IRS 1972, Tables 69 and 72	Year of account
1969	10,000	148,442	80	GB	IRS 1972, Tables 69 and 72	Year of account
1970	10,000	139,507	80	GB	IRS 1972, Tables 69 and 72	Year of account
1971	12,500	159,343	80	GB	IRS 1976, Tables 90 and 92	Year of account
1972	15,000	178,494	80	GB	IRS 1976, Tables 90 and 92	Year of account
1973	15,000	163,603	80	GB	IRS 1976, Tables 90 and 92	Year of account
1974	15,000	140,985	80	UK	IRS 1976, Tables 90 and 92. UK from 1 January 1974	Year of account
1975	15,000	113,479	75	UK	IRS 1980, Tables 4.2 and 4.4	Year of account
1976	15,000	97,371	75	UK	IRS 1980, Tables 4.2 and 4.4	Year of account
1977	25,000	140,082	75	UK	IRS 1980, Tables 4.2 and 4.4	Year of account
1978	25,000	129,350	75	UK	IRS 1980, Tables 4.2 and 4.4	Year of account
1979	25,000	114,071	75	UK	IRS 1982, Tables 4.2 and 4.3	Year of account
1980	50,000	193,363	75	UK	IRS 1984, Table 4.6	Year of death
1981	50,000	172,846	75	UK	IRS 1985, Table 4.6	Year of death
1982	55,000	175,058	75	UK	IRS 1986, Table 4.6	Year of death
1983	60,000	182,595	75	UK	IRS 1987, Table 6.6	Year of death
1984	64,000	185,522	75	UK	IRS 1988, Table 9.6	Year of death
1985	67,000	183,082	60	UK	IRS 1989, Table 9.6	Year of death
1986	71,000	187,627	60	UK	IRS 1990, Table 9.6	Year of death
1987	90,000	228,312	60	UK	IRS 1990, Table 10.6	Year of death
1988	110,000	265,996	40	UK	IRS 1992, Table 10.6	Year of death
1989	118,000	264,783	40	UK	IRS 1993, Table 12.6	Year of death
1990	128,000	262,395	40	UK	IRS 1994, Table 12.5	Year of death
1991	140,000	271,086	40	UK	IRS 1994, Table 12.5	Year of death
1992	150,000	279,964	40	UK	IRS 1996, Table 12.5	Year of death
1993	150,000	275,586	40	UK	IRS 1997, table 12.5	Year of death
1994	150,000	269,084	40	UK	IRS 1998, Table 12.5	Year of death
1995	154,000	266,995	40	UK		Year of death
1996	200,000	338,572	40	UK	IRS 1999, T 12.5	Year of death
1997	215,000	352,873	40	UK	IRS 2000, T 12.5	Year of death
1998	223,000	353,870	40	UK	supplied by HMRC	Year of death
1999	231,000	361,025	40	UK	supplied by HMRC	Year of death
2000	234,000	355,191	40	UK	HMRC website, Table 12.3	Year of death
2001	242,000	360,975	40	UK	HMRC website, Table 12.4	Year of death
2002	250,000	366,771	40	UK	National Archive, Table 12.4	Year of death
2003	255,000	363,582	40	UK	National Archive, Table 12.4	Year of death
2004	263,000	364,143	40	UK		Year of death
2005	275,000	370,247	40	UK	National Archive, Table 12.4	Year of death
2006	285,000	371,896	40	UK	National Archive, Table 12.4	Year of death
2007	300,000	375,363	40	UK	HMRC website, Table 12.4	Year of death
2008	312,000	375,475	40	UK	HMRC website, Table 12.4	Year of death
2009	325,000	393,133	40	UK	National Archive, Table 12.4	Year of death
2010	325,000	375,727	40	UK	National Archive, Table 12.4	Year of death
2011	325,000	357,196	40	UK	HMRC website, Table 12.4	Year of death
2012	325,000	346,158	40	UK	HMRC website, Table 12.4	Year of death
2013	325,000	335,916	40	UK	HMRC website, Table 12.3; Table 12.4	Year of death

Notes:
(1) Up to 1922, the UK includes the whole of Ireland; from 1922 UK includes England, Wales, Scotland and Northern Ireland.
(2) From 1980 the data refer to deaths occurring in the year; before 1980 they refer to deaths reported in the year.
(3) The Estate Duty was introduced in 1894. It was replaced in 1975 by the Capital Transfer Tax, renamed in 1986 Inheritance Tax.

Table A2. Sources of data for IR/HMRC distribution of identified wealth 1960-2013

Financial year starting	Source for IR/HMRC distribution of wealth	Basis for estimate
1960	IRS 1970, Table 123	Year of account adjusted
1961	IRS 1970, Table 123	Year of account adjusted
1962	IRS 1970, Table 123	Year of account adjusted
1963	IRS 1970, Table 123	Year of account adjusted
1964	IRS 1970, Table 123	Year of account adjusted
1965	IRS 1970, Table 123	Year of account adjusted
1966	IRS 1970, Table 123	Year of account adjusted
1967	IRS 1970, Table 123	Year of account adjusted
1968	IRS 1970, Table 123	Year of account adjusted
1969	IRS 1971, Table 130	Year of account adjusted
1970	IRS 1972, Table 86	Year of account adjusted
1971	IRS 1973, Table 92	Year of account adjusted
1972	IRS 1974, Table 104	Year of account adjusted
1973	IRS 1975, Table 106	Year of account adjusted
1974	IRS 1976, Table 104	Year of account adjusted
1975	IRS 1977, Table 111	Year of account adjusted
1976	IRS 1978, Table 4.16	Year of account adjusted
1977	IRS 1979, Table 4.16	Year of account adjusted
1978	IRS 1980, Table D3	Year of account adjusted
1979	IRS 1983, Table 4.12	Year of death
1980	IRS 1984, Table 4.12	Year of death
1981	IRS 1985, Table 4.11	Year of death
1982	IRS 1986, Table 4.11	Year of death
1983	IRS 1987, table 7.1	Year of death
1984	IRS 1988, table 10.1	Year of death
1985	IRS 1989, table 10.1	Year of death
1986	IRS 1990, table 10.1	Year of death
1987	IRS 1991, table 11.1	Year of death
1988	IRS 1992, table 11.1	Year of death
1989	IRS 1993, table 13.1	Year of death
1990	IRS 1994, table 13.1	Year of death
1991	IRS 1995, table 13.1	Year of death
1992	IRS 1996, table 13.1	Year of death
1993	IRS 1997, table 13.1	Year of death
1994	IRS 1998, table 13.1	Year of death
1995	IRS 1999, table 13.1	Year of death
1996	IRS 2000, table 13.1	Year of death
1997	IRS 2000, table 13.3	Year of death
1998		Year of death
1999	HMRC website 2002, table 13.1	Year of death
2000		Year of death
2001	HMRC website through the National Web Archives 2003, table 13.1	Year of death
2002	HMRC website through the National Web Archives 2003, table 13.1 (2002 and 2001-2003)	Year of death
2003	HMRC website through the National Web Archives 2003, table 13.1	Year of death
2004		Year of death
2005	HMRC website through the National Web Archives 2010, table 13.1	Year of death
2006	HMRC website through the National Web Archives 2011, table 13.1 (2005-2007)	Year of death
2007		
2008	HMRC Datalab microdata	Year of death
2009	HMRC Datalab microdata and HMRC website 2012, table 13.1 (2008-2010)	Year of death
2010	HMRC Datalab microdata	Year of death
2011-2013	HMRC website 2016, table 13.1 (2011-2013)	Year of death

Note: IRS denotes Inland Revenue Statistics.

Table A3. Sources of data for the distribution of investment income 1948-2010

Financial year starting	Surtax data
1948	IR 93rd Report, page 60 Table 45
1949	IR 94th Report, page 139 Table 129
1950	IR 95th Report, page 157 Table 199
1951	IR 96th Report, page 87 Table 71
1952	IR 97th Report, page 85 Table 73
1953	IR 98th Report, page 82 Table 73
1954	IR 99th Report, page 109 Table 98
1955	IR 100th Report, page147 Table 170
1956	IR 101st Report, page 99 Table 81
1957	IR 102nd Report, page 85 Table 74
1958	IR 103rd Report, page 87 Table 78
1959	IR 104th Report, page 95 Table 83
1960	IR 105th Report, page 210 Table 146
1961	IR 106th Report, page 102 Table 86
1962	IR 107th Report, page 104 Table 91
1963	IR 108th Report, page 105 Table 82
1964	IR 109th Report, page 91 Table 68
1965	IR 110th Report, page 116 Table 70
1966	IR 111th Report, page 91 Table 63
1967	IRS 1970, page 53, Table 42
1968	IRS 1971, page 58, Table 47
1969	IRS 1972, page 58, Table 47
	Survey of Personal Incomes (SPI) data
1954	IR 101st Report, page 76+77 Table 61
1959	IR 105th Report, page 136+137 Table 106
1964	IR 109th Report, page 132 to 133 Table 96
1968	IRS 1971, Table 78, pages 98-99
1969	SPI 1969-70, Tables 32 and 33, pages 52-55
1970	SPI 1970-71 pages 42-43 Tables 34 and 35
1971	IRS 1974 Tables 88 and 89, pages 100-101
1972	IRS 1975 pages 92 and 93
1973	IRS 1977, pages 100-101
1974	IRS 1977, pages 100-101
1975	SPI 1975/76 and 76/77, pages 82-83
1976	SPI 1975/76 and 76/77, pages 154-155
1977	SPI 1977/78, pages 88-89
1978	SPI 1978/79, pages 92-93
1979	SPI 1979/80, Table 71, pages 88-89
1985 and 1995 to 2010	HMRC SPI micro-data

Notes: AR denotes Annual Report of the Inland Revenue; SPI denotes Survey of Personal Incomes; IRS denotes Inland Revenue Statistics; NIE denotes National Income and Expenditure (Blue Book).

Table B1. Mortality multipliers (inverse of mortality rates, before social class adjustment factors) 1911-1960

	Country	age												
		0-5	5-10	10-15	15-20	20-25	25-35	35-45	45-55	55-65	65-75	75-85	above 85	age not stated
1911	EW	22.7	290.7	485.1	339.9	275.3	213.3	133.4	73.9	37.1	17.3	7.8	3.9	67.1
1912	EW	29.7	322.0	528.6	355.2	291.1	222.3	136.9	75.3	37.5	17.1	7.8	3.9	73.2
1913	EW	26.6	314.0	514.8	369.4	292.8	224.2	137.1	74.8	37.2	17.2	7.9	3.9	70.9
1914	EW	27.0	292.5	476.6	340.9	275.3	212.4	131.9	73.5	37.1	17.1	7.9	3.7	70.1
1920	EW	29.9	302.4	512.9	345.3	259.7	215.2	155.0	92.1	45.5	19.9	8.5	4.4	77.8
1923	EW					345.5	264.3	176.4	99.8	46.7	19.8	8.4	4.1	
1924	EW					342.5	263.9	170.3	97.5	44.9	18.5	7.9	3.9	

	Country	MALES									FEMALES								
		age									age								
		under 25	25-35	35-45	45-55	55-65	65-75	75-85	above 85	age not identified	under 25	25-35	35-45	45-55	55-65	65-75	75-85	above 85	age not stated
1923	EW	336.9	250.9	158.1	89.1	41.5	17.9	7.7	3.8		367.8	292.5	208.4	117.5	55.1	22.7	9.2	4.3	
1924	EW	335.8	255.2	153.9	86.4	40.1	16.6	7.3	3.7		360.2	285.0	200.9	115.5	52.9	21.1	8.6	4.0	
1925	EW	340.8	259.3	157.5	86.2	40.9	16.8	7.1	3.5		357.5	292.4	209.8	116.2	55.2	21.6	8.6	3.7	
1926	EW	361.1	271.8	164.2	90.5	42.9	17.6	7.5	3.5		377.0	301.6	215.7	122.1	57.4	22.8	9.3	3.9	
1927	EW	346.4	263.2	151.8	84.1	40.7	16.4	7.1	3.2		371.7	290.4	205.9	114.9	54.7	21.1	8.4	3.5	
1928	EW	350.1	272.3	166.5	88.9	42.9	17.3	7.7	3.5		373.9	306.6	218.7	123.0	58.5	22.6	9.4	3.8	
1929	EW	331.9	255.2	147.9	77.4	38.7	15.2	6.5	3.0		354.6	288.3	204.7	111.6	51.9	19.2	7.6	3.1	
1930	EW	353.2	279.8	174.7	89.2	43.5	17.6	7.8	3.9		390.8	310.6	232.3	128.2	60.1	23.5	9.4	4.0	
1936	EW	404.8	340.2	203.8	92.3	41.3	17.8	7.3	3.4	30.1	455.8	369.0	254.0	131.6	60.5	23.7	9.4	4.0	36.4
1938	EW	425.7	353.9	218.8	97.8	43.3	18.6	7.7	3.8	26.6	507.8	402.4	278.8	143.4	64.5	25.8	10.2	4.4	38.8
	Scotland	400.0	316.5	178.6	85.8	42.1	17.5	7.3	3.1	28.9	398.4	333.3	228.3	119.8	55.0	22.1	9.2	3.8	33.8
1950	EW	863.1	599.2	344.3	121.1	44.4	18.8	8.2	4.0	30.3	1,058.7	690.3	431.3	188.7	79.3	28.8	10.4	4.6	37.9
	Scotland	734.1	520.0	272.0	97.5	39.5	17.8	8.4	4.2	27.7	643.7	400.1	313.0	159.8	64.9	23.6	9.6	4.5	34.2
1951	EW	887.5	620.8	338.3	115.9	41.1	17.0	7.3	3.3	27.7	1,297.0	766.8	433.5	187.6	76.3	27.1	9.5	3.9	35.2
	Scotland	778.4	485.3	277.2	95.9	37.7	16.9	7.1	3.3	26.3	843.5	529.5	335.3	157.0	63.6	22.9	8.6	3.7	32.1
1952	EW	894.7	697.9	363.1	126.4	45.0	18.9	8.2	3.8	30.8	1,560.2	911.9	477.9	204.2	84.1	31.0	11.2	4.7	39.9
	Scotland	836.0	566.3	302.2	102.7	39.5	17.6	7.6	3.7	27.9	1,008.8	637.8	364.7	164.1	68.4	24.8	9.7	4.3	35.1
1953	EW	996.0	730.7	383.6	128.0	45.0	18.6	8.1	3.9	30.8	1,755.9	935.4	474.8	208.8	85.9	31.1	11.0	4.6	39.5
	Scotland	813.4	564.5	288.4	109.4	40.2	18.0	8.2	4.1	29.2	1,299.0	708.3	387.5	166.8	74.3	27.1	10.2	4.5	37.1
1954	EW	1,033.1	775.0	375.9	130.0	45.7	18.8	8.1	4.0	31.0	1,838.3	987.3	478.9	210.4	88.0	31.6	11.4	4.8	40.2
	Scotland	889.5	575.5	308.8	105.3	38.4	17.7	7.7	3.7	28.1	1,472.8	758.6	387.7	161.3	69.6	26.6	9.7	4.3	35.4
1955	EW	971.6	797.5	394.5	130.6	45.4	18.4	7.8	3.9	30.4	2,105.1	1,061.1	519.0	212.8	88.4	30.9	11.0	4.5	38.7
	Scotland	964.3	608.3	302.4	105.5	39.7	17.5	7.8	3.6	28.4	1,643.4	778.6	422.0	178.9	70.8	25.6	9.6	4.0	35.0
1956	EW	1,075.6	826.4	402.0	134.3	45.3	18.4	7.8	3.9	30.5	2,240.3	130.9	525.2	221.4	89.1	31.4	11.1	4.5	38.8
	Scotland	1,040.3	643.0	322.5	108.5	39.8	16.9	7.7	3.8	28.1	2,040.0	931.4	448.7	179.3	72.1	26.3	9.7	4.0	35.2
1957	England	971.5	838.0	400.1	133.1	44.8	18.5	8.3	4.4	31.2	2,024.1	1,157.8	522.0	219.4	89.2	32.3	11.9	5.0	40.2
	Wales	971.5	838.0	400.1	133.1	44.8	18.5	8.3	4.4	31.2	2,024.1	1,157.8	522.0	219.4	89.2	32.3	11.9	5.0	40.2
	Scotland	1,061.9	662.4	318.9	105.4	39.1	17.3	8.1	3.9	28.6	1,916.8	958.7	403.1	183.2	73.2	27.2	10.4	4.1	36.5
1958	England	1,054.1	855.5	411.2	135.2	45.8	18.4	8.0	4.1	30.9	2,236.9	1,253.7	555.6	222.4	91.5	32.4	11.4	4.6	39.1
	Wales	1,054.1	855.5	411.2	135.2	45.8	18.4	8.0	4.1	30.9	2,236.9	1,253.7	555.6	222.4	91.5	32.4	11.4	4.6	39.1
	Scotland	1,003.2	717.9	315.2	110.6	40.2	16.8	7.8	3.9	28.5	2,062.7	931.5	407.1	181.6	73.0	27.0	10.0	4.0	35.7
1959	England	967.3	883.5	413.6	138.3	45.8	18.6	8.2	4.2	31.3	2,249.4	1,265.5	562.3	229.1	92.6	32.8	11.6	4.6	39.3
	Wales	967.3	883.5	413.6	138.3	45.8	18.6	8.2	4.2	31.3	2,249.4	1,265.5	562.3	229.1	92.6	32.8	11.6	4.6	39.3
	Scotland	1,103.2	747.2	325.7	109.0	39.2	16.6	7.6	3.9	28.0	2,026.0	1,083.6	436.0	191.7	72.5	27.0	10.0	3.9	35.5
1960	EW	967.5	892.0	414.4	139.5	46.7	19.1	8.4	4.3	31.9	2,492.8	1,361.6	577.6	230.1	94.7	33.9	11.9	4.8	40.1
	Scotland	1,092.2	696.5	341.8	110.7	39.8	17.2	7.9	4.3	28.9	2,228.0	1,172.3	452.0	189.9	77.0	27.4	10.3	4.2	36.3

Table B1 (cont). Mortality multipliers (inverse of mortality rates, before adjustment factors) 2001-2013

		age																		
		0-1	01-04	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	above 85
2001	Males	186.2	4,391.6	9,661.9	6,229.1	2,027.5	1,404.4	1,214.6	1,018.0	848.1	599.0	369.4	237.8	146.0	87.6	53.4	30.9	18.1	11.6	5.9
	Females	223.8	5,054.0	9,198.8	11,092.0	4,659.5	3,792.0	3,107.9	2,222.2	1,446.7	945.7	573.4	356.8	233.1	143.6	89.2	50.4	28.9	17.0	7.2
2002	Males	184.9	4,296.9	9,581.0	6,993.0	2,105.6	1,397.0	1,233.2	1,044.5	853.9	605.7	368.2	241.6	151.7	89.0	54.5	31.8	18.5	11.7	5.8
	Females	241.7	5,628.0	11,274.7	9,357.8	4,667.6	3,928.9	3,283.6	2,220.5	1,554.0	968.2	560.9	369.2	240.0	146.2	91.3	51.7	28.9	17.2	6.9
2003	Males	191.2	4,494.7	9,283.5	7,576.1	2,294.3	1,390.2	1,316.3	1,055.1	860.1	586.4	387.4	239.5	152.2	90.5	56.1	33.1	19.2	11.7	5.7
	Females	223.6	4,782.0	11,281.2	9,105.0	5,050.3	3,866.1	2,977.2	2,193.8	1,542.0	946.9	579.3	364.5	240.9	150.5	92.2	52.9	29.1	16.8	6.7
2005	Males	195.4	4,701.5	13,815.5	7,250.2	2,310.1	1,624.7	1,501.2	1,112.3	872.7	614.1	399.8	255.5	164.8	98.3	61.3	36.3	21.2	12.4	6.3
	Females	254.9	5,987.7	13,151.6	9,941.1	5,073.2	4,104.3	3,274.0	2,368.8	1,595.8	996.9	614.8	381.5	250.0	160.9	97.4	58.4	31.8	17.6	7.3
2006	Males	201.5	4,857.1	9,743.2	7,463.3	2,381.4	1,654.9	1,467.0	1,130.9	871.3	626.9	410.6	253.5	164.2	101.2	62.8	38.4	22.2	12.8	6.6
	Females	238.3	5,057.4	12,877.4	11,059.6	5,083.9	4,514.3	3,382.0	2,581.8	1,587.0	1,011.6	627.2	391.7	254.8	162.7	101.4	60.2	33.4	18.5	7.7
2007	Males	205.6	4,297.9	9,831.6	8,578.5	2,553.9	1,682.2	1,493.7	1,110.9	878.3	633.2	431.5	265.8	163.8	106.1	63.5	40.3	23.0	13.2	6.6
	Females	253.5	5,902.6	14,117.8	9,619.9	5,484.9	4,494.4	3,775.7	2,438.7	1,637.2	1,002.7	642.3	400.6	257.6	165.5	103.3	61.6	34.4	18.6	7.7
2008	Males	210.1	5,270.8	12,936.4	10,142.9	2,612.4	1,649.0	1,511.8	1,152.0	843.7	618.4	417.0	268.4	170.2	108.8	65.9	40.7	23.6	13.5	6.6
	Females	265.6	5,284.6	12,333.3	13,114.6	5,588.0	4,523.1	3,593.3	2,291.0	1,606.1	992.2	650.3	394.3	261.8	167.3	105.3	62.7	35.1	18.8	7.5
2009	Males	215.9	6,284.9	12,037.0	9,813.4	2,630.7	1,844.4	1,542.9	1,236.9	841.3	599.4	434.3	282.8	171.3	113.0	69.7	42.6	25.0	14.1	6.8
	Females	262.4	6,126.7	12,772.7	11,031.9	6,006.8	4,845.9	3,546.5	2,492.6	1,654.4	1,027.4	674.2	424.9	266.5	174.5	111.3	66.2	37.4	20.0	8.0
2010	Males	235.5	5,813.8	11,329.4	10,552.7	3,401.1	1,913.7	1,760.3	1,275.7	918.3	628.3	444.7	288.4	176.8	113.6	71.2	43.3	25.7	14.6	6.9
	Females	272.3	6,564.2	12,581.2	12,285.6	5,724.3	5,314.0	3,728.5	2,621.0	1,587.8	1,039.6	693.1	420.0	269.8	178.4	113.7	67.3	38.0	20.4	8.0
2011	Males	222.4	5,752.7	18,666.0	11,475.2	3,647.3	2,265.2	1,846.8	1,425.6	941.8	649.2	459.5	296.8	184.0	118.2	75.1	44.1	27.2	15.2	7.1
	Females	298.6	6,523.3	17,794.8	14,257.4	7,410.1	5,010.4	3,814.3	2,521.3	1,715.6	1,062.3	699.2	438.9	282.9	180.1	115.3	69.1	39.9	21.4	8.2
2012	Males	241.7	5,960.3	12,596.1	10,647.2	3,569.5	2,348.9	1,961.8	1,477.0	1,023.8	670.7	466.1	313.3	193.5	119.3	77.2	45.2	27.2	15.2	6.8
	Females	303.7	7,651.5	13,667.5	13,633.1	7,622.8	5,517.3	4,205.4	2,707.4	1,755.6	1,132.5	705.6	454.4	281.1	181.0	117.7	69.2	39.9	21.0	7.8
2013	Males	1,517.3	6,152.4	12,752.5	11,164.3	3,748.2	2,437.9	1,870.3	1,419.4	944.1	654.7	455.6	308.2	191.9	117.7	78.3	46.0	27.5	15.2	6.8
	Females	1,440.2	6,866.3	15,047.0	12,958.8	7,913.1	5,507.9	3,932.4	2,589.7	1,705.3	1,091.6	726.4	458.6	287.3	184.2	119.2	70.6	40.3	21.2	7.7

Table B1 (end). Mortality multipliers (inverse of mortality rates, before adjustment factors) 2008-2010

A. As applied by HMRC

		age									
		0-18	**18-25**	**25-35**	**35-45**	**45-55**	**55-65**	**65-75**	**75-85**	**above 85**	**Age not stated**
2008	Males	1,705.4	1,595.5	944.7	461.0	194.2	78.6	33.5	13.9	6.2	32.2
	Females	3,722.3	3,722.3	1,728.7	762.6	320.2	136.1	58.6	21.5	6.5	38.5
2009	Males	1,739.6	1,755.4	1,254.3	421.8	210.0	82.8	34.5	14.5	6.6	31.0
	Females	393.0	4,268.4	2,468.5	830.0	326.7	142.4	62.0	23.1	7.0	38.6
2010	Males	661.0	1,808.6	1,216.1	469.7	211.7	84.7	36.1	15.0	6.6	35.0
	Females	818.7	1,054.7	2,352.8	761.3	354.4	142.0	62.6	23.3	7.1	41.0

B. As computed from ONS registers on deaths and population

		age									
		0-18	**18-25**	**25-35**	**35-45**	**45-55**	**55-65**	**65-75**	**75-85**	**above 85**	**Age not stated**
2008	Males	2,306.6	1,649.0	1,313.9	711.2	331.4	132.8	51.3	18.2	6.6	124.7
	Females	3,109.8	4,523.1	2,819.2	1,219.5	802.4	204.0	79.7	25.4	7.5	119.9
2009	Males	2,381.3	1,844.4	1,378.0	696.0	347.5	135.8	54.0	19.1	6.8	128.3
	Females	3,157.7	4,845.9	2,946.6	1,257.5	529.8	210.1	84.4	27.1	8.0	125.3
2010	Males	2,629.9	1,913.7	1,485.4	740.7	354.9	137.7	55.2	19.7	6.9	129.5
	Females	3,234.5	5,314.0	3,094.7	1,245.9	532.2	213.6	86.2	27.5	8.0	125.1

Table C1. Sources and amounts for IR/HMRC distribution of identified wealth

year	Sources for IR/HMRC reconciliation of estimates of identified personal marketable wealth and personal sector balance sheets	Small estates	Joint property
		£ billion	£ billion
1971	Economic Trends, November 1978, page 106, Table 3 UK	3.5	7
1972			
1973			
1974			
1975	Economic Trends, November 1978, page 105, Table 2 UK	8.5	11.5
1976	IRS 1980 Table 4.19	10	13.5
1977	IRS 1981, Table 4.12	11.5	22
1978	IRS 1982, Table 4.12	11	28
1979	IRS 1983, Table 4.11	16	41
1980	IRS 1984, Table 4.11	10	67
1981	IRS 1985, Table 4.10	16	93
1982	IRS 1986, Table 4.10	9	108
1983	IRS 1987, Table 7.2	11	117
1984	IRS 1988, Table 10.2	33	182
1985	IRS 1989, Table 10.2	38	209
1986	IRS 1990, Table 10.2	48	187
1987	IRS 1991, Table 11.2	49	254
1988	IRS 1992, Table 11.2	48	354
1989	IRS 1993, Table 13.2	40	360
1990	IRS 1994, Table 13.2	52	502
1991	IRS 1995, Table 13.2	55	504
1992	IRS 1996, Table 13.2	59	472
1993	IRS 1997, Table 13.2	59	414
1994	IRS 1998, Table 13.2	56	411
1995	IRS 1999, Table 13.2	55	517
1996	IRS 2000, Table 13.2	57	458
1997			
1998			
1999	IRS webarchive, Table 13.3	67	712
2000	IRS webarchive, Table 13.3	53	661
2001	HMRC website Table 13.3	59	718
2002	HMRC website Table 13.3	59	766
2003	HMRC website Table 13.3	68	861
2004			
2005	HMRC website Table 13.3	75	809

Table D1. Control totals UK. Wealth, estates, population, prices

	Adult decedents aged 18 and over			Adult population aged 18 and over			Wealth of identified estates	Wealth of excluded estates	Wealth passed at death	Identified wealth (or wealth of the identified population)			Excluded wealth (or wealth of the excluded population)			Wealth control total: Identified Wealth plus Excluded Wealth			Marketable wealth (series C basis)			Control wealth per adult	Marketable wealth per adult	Control wealth per adult	Marketable wealth per adult	Price index
	UK	GB	EW	UK	GB	EW				UK	GB	EW	UK	GB	EW	UK	GB	EW	UK	GB	EW					
	000	000	000	000	000	000	£ million	£ million	£ million	£ million	£ million	£ million	£ million	£ million	£ million	£ million	£ million	£ million	£ million	£ million	£ million	£	£	£ 2015	£ 2015	2015=100
1895		368,549					204	5	209				309		278											0.8433
1896		331,446					204	4	209				306		274											0.8335
1897		349,118					236	5	241				323		289											0.8531
1898		355,637					238	5	243				332		298											0.8531
1899		385,214					280	6	286				346		310											0.8629
1900		399,306					250	6	256				362		324											0.9021
1901		369,391					276	6	282				371		333											0.9021
1902		372,091					259	6	265				383		344											0.9021
1903		356,615					251	6	257				391		351											0.9021
1904		371,743					253	6	259				399		358											0.9119
1905		366,348					261	6	267				409		367											0.9119
1906		374,151					286	6	292				421		377											0.9119
1907		384,830					269	6	275				432		387											0.9218
1908		379,334					258	6	265				440		395											0.9218
1909		390,571					272	6	278				452		406											0.9316
1910		366,572					258	6	264				465		418											0.9414
1911		378,499			25,966	23,024	266	7	272			8	480		431			7,961			9,898	346	430	36,732	45,670	0.9414
1912		382,979			26,195	23,243	267	7	273			8	491		441			8,442			10,496	363	452	37,414	46,517	0.9708
1913		387,563			26,429	23,474	282	7	289			8	503		451			8,553			10,634	364	453	37,916	47,141	0.9610
1914		400,152			26,789	23,812	293	7	300			9	515		462			9,271			11,527	389	484	40,516	50,374	0.9610
1915		440,137			25,254	22,255		9					556		499											1.0786
1916		419,626			24,720	21,694		10					638		573											1.2748
1917		413,536			24,430	21,374		12					729		655											1.5984
1918		492,362			24,443	21,362		16					850		762											1.9514
1919		434,051			26,037	22,930	289	15	304				964		865											2.1475
1920		382,101			27,793	24,654	373	13	386			13	1,034		928			13,886	19,167	19,167	17,499	563	777	22,702	31,336	2.4809
1921		386,344			28,439	25,284	402	13	415				995		893				17,908	17,908	16,350		708		31,268	2.2652
1922		421,854			28,740	25,568	431	14	445				1,016	998	912				18,199	18,199	16,615		712		36,475	1.9514
1923		393,528			29,058	25,880	442	13	455				1,035	1,018	929				18,199	18,199	16,615		703		38,348	1.8337
1924		420,574			29,447	26,279	461	14	475			14	1,066	1,048	957			15,173	19,360	19,360	17,676	577	737	31,656	40,392	1.8239
1925		420,996			29,736	26,549	456	14	471			15	1,099	1,080	986			15,995	20,425	20,425	18,648	602	769	33,032	42,181	1.8239
1926		412,210			30,044	26,842	466	14	481			15	1,118	1,099	1,003			16,313	20,231	20,231	18,471	608	754	33,501	41,548	1.8141
1927		446,723			30,353	27,144	511	16	527			16	1,145	1,126	1,028			17,210	21,103	21,103	19,267	634	777	35,920	44,045	1.7651
1928		429,035			30,713	27,490	525	15	540			16	1,187	1,166	1,065			17,004	21,974	21,974	20,062	619	799	35,044	45,286	1.7651
1929		494,490			31,011	27,771	538	18	556			15	1,207	1,186	1,083			16,122	20,715	20,715	18,913	581	746	33,259	42,735	1.7455
1930		432,344			31,359	28,107	517	16	533			16	1,251	1,230	1,123			17,604	20,231	20,231	18,471	626	720	36,920	42,430	1.6964
1931		465,640			31,671	28,396	467	17	485				1,284	1,262					18,973	18,973	17,322		668		41,047	1.6278
1932		463,941			32,019	28,702	516	17	533				1,317	1,295					21,103	21,103	19,267		735		46,283	1.5886
1933		480,409			32,297	28,945	524	18	542				1,350	1,327					23,426	23,426	21,388		809		52,236	1.5493
1934		461,598			32,563	29,184	534	18	552				1,383	1,359					24,975	24,975	22,802		856		55,235	1.5493
1935		471,506			32,972	29,557	571	19	589				1,416	1,392					26,330	26,330	24,039		891		57,136	1.5591
1936		489,312			33,316	29,873	592	19	611			18	1,449	1,424	1,300			19,384	27,782	27,782	25,365	649	930	41,358	59,275	1.5689
1937		507,498			33,609	30,144	595	20	615				1,485	1,459					26,233	26,233	23,951		870		53,463	1.6278
1938		475,668			33,826	30,343	554	19	573		22	20	1,521	1,495	1,365		23,119	21,107	25,168	25,168	22,979	683	744	41,488	45,165	1.6474
1939		504,025			33,890	30,389	533	21	554				1,557	1,531					25,265	25,265			745		43,945	1.6964
1940		574,556			32,585	29,237	538	25	563				1,593	1,566					27,491	27,491			844		42,593	1.9808
1941		523,729			31,672	28,364	569	24	594				1,630	1,602					30,879	30,879			975		44,388	2.1965
1942		475,506			31,263	27,997													33,590	33,590			1,074		45,654	2.3534
1943		497,830			30,822	27,635													35,719	35,719			1,159		47,655	2.4319
1944		486,793			30,727	27,544													38,527	38,527			1,254		50,144	2.5005
1945		489,669			30,809	27,608													40,560	40,560			1,316		51,241	2.5691
1946		500,123			33,682	30,215	657	98	754				7,329	7,204					44,238	44,238			1,313		49,608	2.6476
1947		523,928			34,791	31,162	803	106	909				7,844	7,711					43,851	43,851			1,260		44,476	2.8339
1948		485,681			35,527	31,894	808	104	912				8,442	8,298					43,249	43,249			1,217		39,918	3.0496
1949		533,921			35,720	32,083	819	117	936				8,686	8,538					43,978	43,978			1,231		39,236	3.1379
1950		539,500			36,203	32,558	808	125	932		32	29	8,957	8,805			40,567		45,846	45,646		1,121	1,261	34,628	38,963	3.2359
1951		581,613			36,082	32,455	841	143	984		30	27	9,479	9,318			39,609		47,834	47,834		1,098	1,326	31,097	37,555	3.5301
1952		528,617			36,159	32,530	748	133	881		31	29	9,744	9,578			41,012		48,668	48,668		1,134	1,346	29,432	34,926	3.8537
1953		532,898			36,229	32,601	751	137	889		28	25	10,094	9,922			37,650		49,293	49,293		1,039	1,361	26,168	34,260	3.9714
1954		536,082			36,300	32,672	850	144	993		31	28	10,623	10,442			41,151		50,544	50,544		1,134	1,392	27,992	34,381	4.0498
1955		553,599			36,379	32,751	758	207	965		27	24	14,802	14,550			41,948		52,836	52,836		1,153	1,452	27,283	34,365	4.2263
1956		557,073			36,476	32,849	769	225	994		28	25	16,047	15,774			43,739		55,129	55,129		1,199	1,511	26,995	34,025	4.4421
1957		549,089			36,597	32,975	780	243	1,023		31	28	17,286	16,992			47,867		57,109	57,109		1,308	1,561	28,440	33,932	4.5990
1958		562,730			36,695	33,072	881	261	1,142		35	32	18,211	17,901			52,960		60,131	60,131		1,443	1,639	30,409	34,527	4.7461
1959		564,077			36,854	33,226	979	275	1,254		39	35	19,362	19,033			57,795		63,466	63,466		1,568	1,722	32,906	36,136	4.7657
1960		561,062			37,071	33,443	1,244	76	1,321		52	50	5,305	5,215			56,815		67,635	67,635		1,533	1,824	31,832	37,893	4.8147
1961		588,271			37,258	33,640	1,347	96	1,442		55		6,302	6,195			61,095		73,054	73,054		1,640	1,961	32,918	39,361	4.9814
1962		592,515			37,565	33,936	1,430	108	1,537		58		7,304	7,180			65,480		78,577	78,577		1,743	2,092	33,540	40,248	5.1971
1963		610,148			37,745	34,111	1,531	135	1,665		64		8,957	8,805			72,505		84,309	84,309		1,921	2,234	36,277	42,182	5.2952
1964		568,370			37,951	34,318	1,531	104	1,635		72		7,141	7,020			78,820		92,646	92,646		2,077	2,441	37,957	44,615	5.4717
1965		585,758			38,134	34,508	1,591	108	1,699		74		7,330	7,205			81,505		94,522	94,522		2,137	2,479	37,323	43,284	5.7266
1966		601,091			38,279	34,665	1,661	126	1,788		77		8,108	7,970			84,770		95,773	95,773		2,215	2,502	37,206	42,035	5.9522
1967		577,254			38,544	34,927	1,739	128	1,867		84		8,913	8,761			92,361		106,194	106,194		2,396	2,755	39,224	45,099	6.1091
1968		615,630			38,689	35,069	1,923	164	2,087		88		10,354	10,178			98,178		111,300	111,300		2,538	2,877	39,691	44,997	6.3934
1969		619,759			38,828	35,203	1,948	146	2,094		91		9,199	9,043			100,443		117,553	117,553		2,587	3,028	38,400	44,942	6.7367
1970		615,965			38,924	35,296	1,968	174	2,142		97		11,127	10,938			107,938		123,285	123,285		2,773	3,167	38,686	44,186	7.1681
1971		606,500		40,674	39,134	35,489	2,275	163	2,438		113		10,682	10,500			123,200		142,877	142,877		3,148	3,513	40,131	44,778	7.8447
1972		636,037		40,864	39,253	35,607	2,744	260	3,003		138		15,977	15,705			154,105		169,452	169,452		3,926	4,147	46,717	49,344	8.4037
1973		632,561		41,054	39,393	35,735	3,127	234	3,361		164		14,269	14,026			177,726		209,053	209,053		4,512	5,092	49,207	55,539	9.1685
1974	648,656	631,888		41,244	39,502	35,823	2,997	307	3,304	159,800			18,871	18,550		178,671			214,789			4,332	5,208	40,717	48,948	10.6394
1975	645,310	629,323		41,434	39,613	35,921	3,442	328	3,770	190,300			20,000			210,300			242,777			5,076	5,859	38,398	44,327	13.2184
1976	665,305	648,734		41,624	39,770	36,058	3,911	376	4,287	203,800			23,500			227,300			280,000			5,461	6,727	35,448	43,667	15.4051
1977	640,465	623,989		41,814	39,963	36,229	3,867	509	4,376	209,800			33,500			243,300			330,000			5,819	7,892	32,603	44,221	17.8467
1978	652,536	636,733		42,004	40,164	36,412	4,824	601	5,424	258,990			39,000			297,990			378,000			7,094	8,999	36,706	46,561	19.3274
1979	661,090	644,493		42,194	40,399	36,627	5,921	929	6,851	317,940			57,000			374,940			436,000			8,886	10,333	40,546	47,149	21.9162
1980	647,497	630,899		42,384	40,659	36,868	7,012	1,245	8,257	394,760			77,000			471,760			522,000			11,131	12,316	43,045	47,629	25.8582
1981	645,093	629,034		42,574	40,872	37,066	7,172	1,536	8,708	372,670			109,000			481,670			565,000			11,314	13,271	39,111	45,877	28.9274
1982	650,426	634,698		42,764	41,042	37,223	8,211	1,781	9,991	452,100			117,000			569,100			618,000			13,308	14,451	42,357	45,997	31.4181
1983	647,423	631,564		42,954	41,287	37,454	9,196	1,881	11,077	539,940			128,000			667,940			709,000			15,550	16,506	47,323	50,232	32.8596
1984	633,787	618,218		43,144	41,610	37,757	10,370	3,059	13,428	581,470			215,000			796,470			774,000			18,461	17,940	53,514	52,004	34.4972
1985	659,534	643,715		43,334	41,917	38,046	11,482	3,616	15,098	603,990			247,000			850,990			869,000			19,638	20,054	53,662	54,798	36.5956
1986	649,808	633,807		43,524	42,186	38,307	12,784	3,388	16,172	706,120			235,000			941,120			955,000			21,623	21,942	57,142	57,985	37.8410
1987	633,587	618,292		43,714	42,452	38,563	14,307	4,465	18,772	874,510			303,000			1,177,510			1,186,000			26,937	27,131	68,333	68,826	39.4197
1988	638,400	622,700		43,904	42,642	38,755	17,320	5,820	23,140	1,019,660			402,000			1,421,660			1,445,000			32,381	32,913	78,302	79,588	41.3540
1989	647,566	631,709		44,094	42,845	38,945	20,122	6,076	26,198	1,204,590			400,000			1,604,590			1,620,000			36,390	36,740	81,657	82,441	44.5648
1990	632,047	616,666		44,284	43,007	39,096	18,581	7,709	26,289	1,103,650			554,000			1,657,650			1,674,000			37,432	37,801	76,735	77,492	48.7814
1991	636,932	621,841		44,474	43,093	39,425	19,453	7,720	27,173	1,124,354			559,000			1,683,354			1,711,000			37,850	38,472	73,291	74,494	51.6441
1992	626,125	611,117		44,765	43,179	39,573	19,511	7,221	26,732	1,163,570			531,000			1,694,570			1,708,000			37,855	38,155	70,653	71,213	53.5783
1993	650,336			44,897	43,323		22,196	6,496	28,692	1,254,530			473,000			1,727,530			1,863,000			38,478	41,495	70,693	76,236	54.4294
1994	618,811			45,007	43,378		21,759	6,316	28,075	1,326,820			467,000			1,793,820			1,950,000			39,856	43,327	71,498	77,723	55.7447
1995	634,437			45,121	43,442			7,912		1,314,190			572,000			1,886,190			2,013,000			41,803	44,613	72,475	77,348	57.6789
1996	631,646			45,191	43,500		25,215	6,964	32,179	1,397,400			515,000			1,912,400			2,092,000			42,318	46,292	71,639	78,367	59.0716
1997	625,489			45,422	43,616		25,716	7,367	33,084	1,481,050			553,403			2,034,453			2,248,000			44,790	49,491	73,513	81,229	60.9284
1998	620,827			45,654	43,789		29,620	8,395	38,015				638,580						2,594,000				56,819		90,163	63.0174
1999	622,825			45,086	44,008		34,604	9,259	43,862	1,728,880			779,000			2,507,880			2,841,000			55,624	63,013	86,934	98,481	63.9845
2000	604,443			45,263	44,253		39,313	8,203	47,517	2,054,688			714,000			2,768,688			3,122,000			61,169	68,975	92,849	104,697	65.8801
2001	598,309			45,756	44,518	40,552	41,911	9,424	51,335	2,480,820			777,000			3,257,820			3,464,000			71,200	75,706	106,204	112,925	67.0406
2002	602,140			46,048	44,797	40,818	44,357	9,977	54,333	2,625,470			825,000			3,450,470			3,691,000			74,932	80,155	109,931	117,594	68.1625
2003	606,087			46,354	45,089	41,095	48,141	10,348	58,489	2,840,360			929,000			3,769,360			4,050,000			81,317	87,372	115,943	124,576	70.1354
2004	578,961			46,689	45,411	41,393																				72.2244
2005	577,113			47,163	45,867	41,817	55,724	9,436	65,160	3,433,580			884,000			4,317,580			5,005,000			91,547	106,122	123,254	142,878	74.2747
2006	566,279			47,592	46,278	42,198	59,445	11,290	70,735	3,361,083			1,232,603			4,593,686			5,314,963			96,340	111,679	125,714	145,729	76.6344
2007	568,804			48,043	46,710	42,594	62,063	11,240	73,303										5,655,237			101,545	117,712	127,054	147,282	79.9226
2008	573,931			48,499	47,150	42,999	61,417	11,189	72,606										5,160,538			91,790	106,404	110,464	128,052	83.0948
2009	554,037			48,910	47,547	43,367	62,204	10,407	72,611	3,519,681			1,233,748			4,753,429			5,469,362			96,467	111,825	116,690	135,269	82.6692
2010	556,373			49,371	47,997	43,780	63,785	12,129	75,914										5,900,827			103,104	119,520	119,197	138,175	86.4990
2011	547,090			49,839	48,456	44,198	66,297	12,961	79,258										6,205,880			107,416	124,519	118,058	136,854	90.9865
2012	564,070			50,181	48,789	44,514	71,113	13,691	84,804	3,857,988			1,694,863			5,552,851			6,467,991			111,191	128,894	118,429	137,285	93.8878
2013	571,789			50,502	49,104	44,812	77,131	14,725	91,855										6,636,958			113,371	131,421	117,178	135,835	96.7505

Table E1. Distribution of estates in the UK 1895-2013

	Bottom 90%	Top 10%	Top 5%	Top 1%	Top 0.5%	Top 0.1%	Top 0.05%	Top 10-5%	Top 5-1%	Top 1-0.5%	Top 0.5-0.1%	Top 0.1-0.05%
				per cent						per cent		
1895	3.5	96.5	91.8	69.2	56.4	31.8	23.9	4.6	22.6	12.8	24.7	7.9
1896	3.6	96.4	91.7	69.7	57.1	31.6	23.4	4.6	22.0	12.6	25.5	8.2
1897	3.8	96.2	91.7	70.6	58.5	34.5	26.3	4.5	21.1	12.1	24.0	8.2
1898	3.9	96.1	91.4	69.4	57.2	31.7	23.2	4.7	22.0	12.2	25.5	8.5
1899	4.0	96.0	91.5	70.6	58.9	36.0	28.1	4.5	20.9	11.7	22.9	8.0
1900	3.9	96.1	91.4	69.9	58.1	33.7	25.3	4.7	21.6	11.8	24.3	8.5
1901	3.6	96.4	92.2	73.0	61.9	40.3	33.0	4.2	19.3	11.1	21.5	7.3
1902	4.0	96.0	91.4	69.9	57.6	33.5	25.4	4.6	21.5	12.3	24.1	8.1
1903	4.2	95.8	91.0	69.6	57.6	33.9	25.7	4.8	21.5	11.9	23.8	8.2
1904	4.2	95.8	90.9	69.2	56.8	32.1	24.9	4.8	21.7	12.5	24.6	7.2
1905	4.0	96.0	91.4	70.6	58.6	33.7	25.2	4.5	20.9	12.0	24.9	8.5
1906	4.0	96.0	91.5	71.3	60.4	38.0	30.6	4.5	20.2	10.9	22.4	7.4
1907	4.4	95.6	90.8	69.2	58.2	35.3	26.9	4.8	21.7	10.9	23.0	8.4
1908	4.5	95.5	90.4	67.9	56.3	32.6	25.1	5.0	22.5	11.6	23.6	7.5
1909	4.4	95.6	90.7	69.5	58.4	36.5	28.9	4.8	21.3	11.1	21.9	7.6
1910	4.7	95.3	90.1	68.1	56.9	34.6	27.1	5.2	22.1	11.2	22.3	7.5
1911	4.8	95.2	90.1	67.9	57.1	34.1	26.5	5.1	22.2	10.8	23.0	7.6
1912	4.8	95.2	90.0	67.8	56.3	33.4	25.3	5.2	22.2	11.5	22.9	8.1
1913	5.0	95.0	89.6	66.7	55.3	33.1	26.0	5.5	22.9	11.3	22.2	7.1
1914	4.9	95.1	89.9	67.3	55.4	33.1	25.4	5.3	22.6	11.8	22.3	7.7
1915												
1916												
1917												
1918												
1919	8.3	91.7	85.4	61.8	51.5	31.2	24.0	6.3	23.5	10.3	20.4	7.2
1920	8.3	91.7	84.7	60.1	49.5	29.5	22.3	7.0	24.6	10.6	20.0	7.2
1921	8.7	91.3	83.7	59.8	49.7	29.6	23.3	7.6	23.9	10.2	20.1	6.3
1922	8.0	92.0	84.9	61.0	50.6	30.4	24.5	7.1	23.9	10.4	20.2	5.8
1923	8.3	91.7	84.2	59.6	49.2	28.5	21.6	7.5	24.5	10.5	20.7	6.9
1924	8.4	91.6	83.9	59.3	48.4	28.4	21.0	7.6	24.6	10.8	20.0	7.5
1925	8.6	91.4	83.6	58.2	47.2	27.3	21.0	7.8	25.4	11.0	19.9	6.3
1926	9.2	90.8	82.5	56.6	45.8	25.8	19.8	8.3	25.9	10.8	20.0	6.0
1927	8.9	91.1	82.6	56.7	46.1	27.0	20.9	8.5	25.9	10.6	19.1	6.0
1928	9.2	90.8	82.3	57.4	47.1	27.6	21.1	8.5	24.9	10.3	19.5	6.6
1929	9.5	90.5	82.3	56.3	45.3	25.2	19.1	8.2	26.1	11.0	20.0	6.1
1930	10.1	89.9	81.8	56.8	46.6	28.1	22.2	8.1	25.1	10.2	18.5	5.9
1931	11.2	88.8	79.4	52.4	41.8	22.9	17.0	9.4	27.0	10.7	18.9	5.9
1932	11.3	88.7	79.5	53.6	43.5	25.3	19.6	9.2	25.9	10.2	18.2	5.7
1933	10.6	89.4	80.9	55.3	45.2	26.9	21.3	8.5	25.6	10.1	18.3	5.6
1934	10.9	89.1	79.9	53.1	42.6	23.8	18.1	9.3	26.7	10.5	18.8	5.7
1935	11.1	88.9	80.2	53.3	42.7	23.8	18.2	8.7	26.9	10.6	18.9	5.6
1936	11.2	88.8	79.8	52.9	41.6	22.3	16.5	9.0	26.9	11.3	19.3	5.9
1937	11.6	88.4	79.4	52.5	41.8	22.7	17.3	9.1	26.9	10.7	19.1	5.4
1938	12.8	87.2	77.4	49.9	39.2	20.5	15.1	9.8	27.5	10.8	18.6	5.4
1939	12.8	87.2	77.2	50.5	40.0	22.0	16.7	10.0	26.6	10.6	17.9	5.4
1940	13.3	86.7	77.1	50.3	39.8	21.7	16.5	9.5	26.8	10.5	18.1	5.2
1941	14.4	85.6	76.2	49.2	38.8	21.0	15.9	9.4	27.0	10.4	17.8	5.1
1942												
1943												
1944												
1945												
1946	13.7	86.3	74.5	45.4	35.3	17.7	13.3	11.8	29.1	10.1	17.7	4.4
1947	14.2	85.8	73.5	44.3	34.2	17.7	12.9	12.3	29.1	10.1	16.6	4.8
1948	14.1	85.9	73.0	43.8	33.5	17.4	13.0	12.9	29.2	10.2	16.1	4.5
1949	15.5	84.5	71.9	42.8	32.8	16.8	12.6	12.5	29.2	10.0	16.0	4.2
1950	17.5	82.5	69.7	40.8	31.3	16.0	11.7	12.9	28.8	9.5	15.3	4.3
1951	19.2	80.8	68.2	39.3	29.7	14.8	10.7	12.6	28.9	9.5	15.0	4.1
1952	20.1	79.9	66.4	38.3	28.7	14.1	10.1	13.5	28.1	9.6	14.6	4.0
1953	20.7	79.3	66.1	38.6	29.3	15.0	10.9	13.2	27.5	9.3	14.3	4.1
1954	21.0	79.0	66.4	38.6	28.9	14.3	10.4	12.6	27.8	9.7	14.6	3.9
1955	22.4	77.6	64.7	37.7	28.4	14.5	10.7	12.9	27.0	9.3	13.9	3.8
1956	23.9	76.1	63.2	36.0	26.9	12.8	9.1	12.9	27.2	9.1	14.2	3.6
1957	25.5	74.5	61.9	35.4	26.6	13.3	9.9	12.6	26.5	8.8	13.3	3.4
1958	25.9	74.1	60.9	34.2	25.3	12.0	8.6	13.2	26.6	8.9	13.3	3.5
1959	26.3	73.7	61.0	34.7	25.8	12.7	9.4	12.7	26.3	8.9	13.1	3.3
1960	27.0	73.0	60.4	33.7	24.9	11.6	8.1	12.5	26.8	8.8	13.3	3.5
1961	28.0	72.0	59.6	33.2	24.8	11.6	8.3	12.5	26.3	8.5	13.1	3.3
1962	29.5	70.5	57.9	31.8	23.5	10.9	7.7	12.6	26.1	8.3	12.6	3.1
1963	30.0	70.0	57.8	32.0	23.4	10.6	7.6	12.2	25.8	8.7	12.7	3.0
1964	29.3	70.7	58.2	31.7	23.0	10.6	7.5	12.5	26.6	8.6	12.5	3.0
1965	30.1	69.9	56.5	29.8	21.4	9.4	6.3	13.3	26.8	8.4	12.0	3.0
1966	31.2	68.8	55.4	28.6	20.6	9.1	6.3	13.5	26.7	8.1	11.5	2.8
1967	31.6	68.4	55.0	28.9	20.9	9.7	7.2	13.4	26.1	8.0	11.2	2.5
1968	31.0	69.0	56.0	29.8	21.7	10.1	7.1	13.0	26.2	8.1	11.6	2.9
1969	33.0	67.0	54.7	28.4	20.5	9.4	6.7	12.3	26.3	7.9	11.1	2.7
1970	34.8	65.2	51.3	26.1	18.8	8.5	6.1	13.9	25.2	7.3	10.3	2.4
1971	35.2	64.8	51.0	26.6	19.1	8.4	5.6	13.8	24.4	7.5	10.7	2.7
1972	32.7	67.3	54.0	27.3	19.9	9.3	6.7	13.3	26.7	7.4	10.6	2.6
1973	36.3	63.7	48.9	24.1	17.4	8.2	5.9	14.8	24.8	6.7	9.1	2.4
1974	38.3	61.7	46.9	22.6	16.4	7.5	5.5	14.8	24.3	6.2	8.9	2.1
1975	41.8	58.2	42.8	21.4	15.6	6.7	4.6	15.4	21.4	5.8	8.9	2.1
1976	40.0	60.0	44.8	21.1	15.0	6.9	4.8	15.1	23.8	6.1	8.1	2.0
1977	42.3	57.7	43.3	20.5	14.4	6.5	4.7	14.4	22.8	6.0	7.9	1.9
1978	43.2	56.8	41.7	19.2	13.5	5.9	4.1	15.1	22.5	5.7	7.6	1.8
1979	44.8	55.2	40.7	18.7	13.2	5.9	4.2	14.5	22.0	5.5	7.3	1.7
1980	47.7	52.3	37.2	16.7	11.7	5.0	3.5	15.1	20.5	5.1	6.6	1.5
1981	48.0	52.0	37.4	16.9	11.8	5.2	3.6	14.5	20.6	5.1	6.6	1.5
1982	47.9	52.1	37.7	16.9	11.7	5.0	3.4	14.4	20.8	5.2	6.7	1.6
1983	48.2	51.8	37.8	17.1	11.8	4.9	3.3	14.0	20.6	5.3	6.9	1.6
1984	51.3	48.7	35.4	16.1	11.2	4.8	3.4	13.2	19.4	4.8	6.4	1.4
1985	48.9	51.1	37.6	17.4	12.1	5.0	3.5	13.5	20.1	5.4	7.1	1.5
1986	49.2	50.8	36.9	16.7	11.9	5.2	3.5	13.9	20.2	4.8	6.8	1.7
1987	47.4	52.6	38.7	18.0	12.6	5.4	3.7	13.9	20.7	5.4	7.1	1.7
1988	50.7	49.3	35.6	16.2	11.5	5.2	3.7	13.7	19.4	4.7	6.3	1.5
1989	50.7	49.3	36.4	17.7	12.9	6.3	4.8	12.9	18.7	4.8	6.6	1.5
1990	53.4	46.6	34.0	15.8	11.2	4.9	3.5	12.5	18.3	4.6	6.2	1.4
1991	53.5	46.5	34.0	15.7	11.1	4.7	3.3	12.5	18.3	4.6	6.4	1.4
1992	50.9	49.1	36.6	17.4	12.5	5.7	4.2	12.5	19.2	4.9	6.7	1.6
1993	48.6	51.4	38.7	18.8	13.7	6.7	5.1	12.7	19.9	5.2	6.9	1.6
1994	48.9	51.1	38.2	18.3	13.1	6.3	4.7	12.9	19.9	5.2	6.9	1.6
1995												
1996	47.4	52.6	39.5	18.9	13.5	6.2		13.1	20.6	5.4	7.3	
1997	45.1	54.9	41.7	20.4	14.8	6.8		13.2	21.4	5.6	8.0	
1998	47.4	52.6	39.8	19.5	14.3	6.9		12.8	20.3	5.2	7.4	
1999	48.5	51.5	38.6	18.5	13.3			13.0	20.1	5.1		
2000	48.3	51.7	38.9	19.4	14.3			12.8	19.5	5.1		
2001	49.0	51.0	37.9	18.6	13.6			13.1	19.3	5.0		
2002	50.6	49.4	35.5	16.8	12.2			13.9	18.7	4.5		
2003	51.9	48.1	34.2	15.8	11.4			13.9	18.4	4.4		
2004												
2005	51.8	48.2	34.4	15.7	11.0			13.8	18.7	4.6		
2006	53.1	46.9	33.8	15.6	11.2			13.1	18.2	4.3		
2007	53.1	46.9	34.0	16.1	11.8			13.0	17.8	4.3		
2008	51.7	48.3	34.7	16.4	11.9	5.8		13.6	18.3	4.5		
2009	53.8	46.2	33.1	15.2	10.9	5.0		13.2	17.9	4.3		
2010	51.7	48.3	34.8	16.3	11.7	5.8		13.5	18.5	4.6		
2011	52.6	47.4	34.5	16.5	12.4			12.9	17.9	4.1		
2012	52.9	47.1	34.0	16.1	12.0			13.1	17.9	4.2		
2013	52.7	47.3	33.8	16.2	12.0			13.5	17.6	4.2		

Table E2. Fractiles of the distribution of estates 1895-2013
(amounts in £ 2015)

	Mean estate	P0-90	P90-100	P95-100	P99-100	P99.5-100	P99.9-100	P99.95-100	P90-95	P95-99	P99-99.5	P99.5-99.9	P99.9-99.95	P90	P95	P99	P99.5	P99.9	P.99.95
1895	67,172	2,644	647,929	1,233,747	4,648,417	7,583,280	21,328,313	32,046,298	62,110	380,080	1,713,554	3,317,617	10,610,328	22,614	101,078	1,063,445	2,190,078	8,523,508	14,054,214
1896	75,551	3,058	727,989	1,385,808	5,267,822	8,628,827	23,906,620	35,417,615	70,171	415,304	1,906,816	3,847,503	12,395,626	24,777	102,582	1,140,776	2,383,330	9,507,134	15,601,949
1897	80,780	3,373	777,441	1,481,464	5,702,262	9,444,778	27,853,661	42,476,662	73,419	426,264	1,959,746	3,874,046	13,230,661	25,096	103,961	1,145,499	2,406,506	9,697,359	15,956,689
1898	80,027	3,492	768,837	1,462,976	5,555,397	9,159,909	25,364,977	37,187,836	74,698	439,871	1,950,886	4,086,913	13,542,117	25,864	109,016	1,185,609	2,418,016	10,183,510	16,051,058
1899	85,914	3,793	825,008	1,572,785	6,068,370	10,125,522	30,945,740	48,204,540	77,231	448,889	2,011,219	3,936,374	13,686,940	28,511	115,968	1,209,349	2,524,730	10,246,952	16,620,678
1900	71,165	3,082	683,912	1,301,560	4,972,489	8,265,520	23,999,156	35,938,322	66,263	383,828	1,679,457	3,465,689	12,059,989	24,045	97,506	984,804	2,080,046	8,552,815	13,906,338
1901	84,591	3,381	815,476	1,560,632	6,172,831	10,465,154	34,106,657	55,848,233	70,320	407,582	1,880,507	3,643,823	12,365,081	28,407	111,269	1,097,008	2,262,710	8,696,651	13,847,626
1902	78,977	3,509	758,186	1,443,354	5,518,437	9,091,111	26,450,242	40,065,616	73,018	424,584	1,945,762	3,801,063	12,834,868	29,589	115,286	1,082,479	2,296,854	8,856,072	14,210,827
1903	79,807	3,708	764,697	1,452,867	5,551,336	9,201,648	27,037,868	40,949,649	76,527	428,250	1,901,024	3,794,074	13,126,087	32,129	119,526	1,117,509	2,303,976	9,018,572	14,976,338
1904	76,294	3,571	730,796	1,387,705	5,281,773	8,662,533	24,527,506	38,013,529	73,886	414,188	1,901,014	3,757,032	11,041,483	31,066	117,312	1,100,123	2,271,612	8,962,240	14,145,729
1905	79,839	3,593	766,059	1,459,941	5,633,364	9,352,124	26,907,105	40,209,660	72,178	416,585	1,914,604	3,970,703	13,604,551	30,836	116,262	1,125,981	2,369,343	9,765,733	16,719,311
1906	85,591	3,826	821,473	1,566,266	6,102,430	10,333,008	32,495,107	52,311,208	76,681	432,225	1,871,853	3,833,986	12,679,007	33,228	121,813	1,167,541	2,373,394	9,926,045	16,207,127
1907	77,593	3,776	741,941	1,409,323	5,366,068	9,039,423	27,357,488	41,736,365	74,559	420,136	1,692,712	3,567,926	12,978,612	31,490	115,677	1,049,017	2,152,914	8,408,244	14,228,507
1908	75,694	3,823	722,530	1,368,794	5,138,212	8,516,671	24,686,432	38,037,089	76,266	426,440	1,759,753	3,579,385	11,335,775	32,272	117,696	1,087,773	2,243,980	8,866,291	13,910,611
1909	76,447	3,759	730,639	1,387,427	5,310,550	8,923,059	27,904,170	44,177,949	73,852	406,646	1,698,041	3,342,225	11,630,391	31,511	115,343	1,045,579	2,126,932	7,940,679	13,870,562
1910	76,558	4,006	729,527	1,379,937	5,210,880	8,707,233	26,469,791	41,451,399	79,118	422,202	1,714,528	3,413,275	11,488,183	34,834	123,289	1,075,853	2,137,244	8,462,498	14,539,972
1911	76,452	4,070	727,887	1,377,218	5,191,365	8,728,725	26,065,260	40,548,422	78,556	423,681	1,654,005	3,515,673	11,582,098	34,734	122,591	1,092,656	2,185,817	9,167,708	15,299,798
1912	73,549	3,925	700,170	1,323,961	4,987,597	8,283,195	24,599,866	37,258,054	76,380	408,051	1,692,000	3,363,222	11,941,677	33,367	120,520	1,029,550	2,137,216	8,239,034	14,023,965
1913	77,486	4,281	736,333	1,387,792	5,165,112	8,576,074	25,653,803	40,266,334	84,874	443,462	1,754,150	3,445,313	11,041,272	37,351	130,191	1,122,934	2,218,126	8,759,025	13,763,344
1914	78,038	4,216	742,438	1,402,371	5,248,921	8,651,432	25,835,248	39,713,894	82,504	440,733	1,846,409	3,484,382	11,956,601	36,082	125,749	1,095,985	2,230,780	8,241,184	13,558,984
1915																			
1916																			
1917																			
1918																			
1919																			
1920	40,755	3,763	373,690	690,066	2,448,815	4,033,468	12,023,910	18,140,734	57,313	250,379	864,162	1,628,686	5,907,086	24,892	77,627	543,536	1,033,443	3,609,551	5,663,275
1921	47,397	4,569	432,848	793,366	2,835,371	4,707,405	14,021,930	22,078,865	72,331	282,865	963,337	1,903,019	5,964,995	32,049	92,527	601,515	1,152,600	3,974,459	6,913,077
1922	54,082	4,800	497,623	918,610	3,299,344	5,474,919	16,432,225	26,547,794	76,637	323,427	1,123,769	2,188,475	6,316,656	33,421	102,859	700,784	1,324,623	4,612,094	7,436,857
1923	63,063	5,826	578,195	1,061,393	3,761,498	6,200,455	17,967,019	27,248,119	94,997	386,367	1,322,540	2,607,051	8,685,919	43,838	125,615	843,563	1,593,552	5,392,345	8,694,491
1924	61,962	5,811	567,318	1,039,843	3,671,992	6,000,007	17,608,921	25,966,940	94,792	381,806	1,343,978	2,478,223	9,250,902	43,725	126,637	839,005	1,544,349	5,580,703	9,162,307
1925	61,325	5,865	560,464	1,025,070	3,570,311	5,788,362	16,739,054	25,794,225	95,858	388,760	1,352,261	2,440,551	7,683,884	44,591	127,695	848,644	1,580,024	5,361,284	8,765,670
1926	64,280	6,540	583,942	1,060,834	3,640,366	5,892,369	16,602,560	25,443,144	107,050	415,951	1,388,363	2,571,857	7,761,977	52,060	144,489	944,034	1,732,775	6,000,172	9,090,948
1927	66,799	6,604	608,556	1,104,005	3,790,654	6,158,648	18,016,338	27,969,453	113,107	432,343	1,422,661	2,555,380	8,063,223	52,607	148,224	999,407	1,816,298	6,119,224	10,394,901
1928	71,358	7,295	647,929	1,173,982	4,094,136	6,722,006	19,712,390	30,044,937	121,876	443,944	1,466,266	2,779,528	9,379,843	57,828	161,698	1,048,735	1,947,824	6,743,218	11,167,521
1929	64,449	6,798	583,312	1,060,892	3,625,344	5,836,516	16,272,386	24,663,404	105,732	419,779	1,414,172	2,582,038	7,881,368	52,293	150,042	1,025,898	1,904,646	6,381,936	10,308,757
1930	72,617	8,139	652,922	1,188,682	4,123,384	6,763,861	20,401,251	32,222,045	117,162	455,007	1,482,907	2,683,610	8,580,458	63,976	176,254	1,086,858	1,948,853	6,516,973	10,740,594
1931	63,953	7,969	567,810	1,015,531	3,353,979	5,343,800	14,633,866	21,688,610	120,088	430,919	1,364,159	2,417,027	7,579,122	61,621	163,291	1,005,250	1,828,069	5,799,459	9,336,872
1932	72,340	9,067	641,797	1,150,745	3,880,305	6,288,003	18,268,463	28,296,151	132,850	468,355	1,472,606	2,634,311	8,240,775	69,470	184,799	1,061,547	1,874,966	6,091,060	9,293,875
1933	72,870	8,558	651,672	1,178,956	4,026,696	6,582,393	19,599,141	31,053,534	124,387	467,021	1,471,000	2,662,565	8,144,748	66,095	175,857	1,087,828	1,887,231	6,239,016	10,131,313
1934	77,134	9,326	687,410	1,231,949	4,097,483	6,567,472	18,330,408	27,922,140	142,871	515,565	1,627,495	2,901,390	8,738,676	72,635	198,787	1,197,475	2,145,606	6,822,855	10,733,069
1935	80,165	9,919	712,378	1,285,747	4,272,890	6,848,521	19,078,340	29,139,066	139,009	538,961	1,697,259	3,032,853	9,017,614	76,216	208,735	1,248,968	2,206,347	7,111,765	11,417,521
1936	79,631	9,913	707,094	1,271,092	4,213,477	6,625,120	17,783,466	26,224,499	143,095	535,496	1,801,835	3,068,427	9,342,434	76,350	211,190	1,289,532	2,330,667	7,208,442	11,073,439
1937	74,461	9,572	658,467	1,181,931	3,905,870	6,223,937	16,889,862	25,780,296	135,004	500,947	1,587,803	2,845,964	7,999,427	72,402	196,347	1,178,049	2,101,253	6,928,078	10,899,461
1938	73,095	10,375	637,578	1,131,375	3,650,082	5,723,481	14,996,730	22,068,991	143,782	501,699	1,576,683	2,724,135	7,924,468	75,985	204,521	1,156,129	2,087,661	6,253,127	9,978,251
1939	64,780	9,236	564,671	999,621	3,273,068	5,177,944	14,272,595	21,578,757	129,722	431,259	1,368,192	2,323,425	6,966,432	66,694	173,822	987,789	1,747,061	5,389,744	8,924,197
1940	49,475	7,336	428,731	763,049	2,489,762	3,942,151	10,737,414	16,291,762	94,413	331,371	1,037,373	1,794,668	5,183,066	52,250	131,691	752,995	1,327,599	4,254,350	6,548,245
1941	51,596	8,234	441,848	786,729	2,538,658	4,003,861	10,845,011	16,437,212	96,966	348,747	1,073,455	1,834,859	5,252,811	58,613	149,089	782,865	1,375,628	4,169,011	6,365,899
1942																			
1943																			
1944																			
1945																			
1946	56,960	8,642	491,816	849,189	2,588,702	4,024,783	10,064,673	15,157,309	134,442	414,311	1,152,621	2,011,848	4,972,037	80,796	204,899	947,316	1,588,098	4,842,806	7,368,102
1947	61,220	9,682	525,067	899,707	2,714,004	4,193,267	10,823,590	15,771,702	150,427	446,133	1,234,742	2,028,549	5,875,478	88,738	214,728	933,459	1,574,162	4,630,246	7,136,078
1948	61,542	9,644	528,620	898,326	2,693,410	4,129,382	10,738,393	15,942,634	158,913	449,555	1,257,438	1,981,704	5,534,152	83,533	204,819	890,881	1,500,698	4,106,552	6,614,828
1949	55,861	9,633	471,913	803,757	2,388,995	3,662,653	9,372,541	14,024,386	140,070	407,447	1,115,338	1,788,145	4,720,697	82,338	194,228	827,553	1,370,436	3,852,312	6,012,257
1950	53,408	10,370	440,753	744,102	2,180,776	3,341,751	8,532,766	12,475,472	137,404	384,934	1,019,801	1,635,198	4,590,060	83,487	188,370	775,888	1,280,847	3,597,438	5,321,856
1951	47,929	10,238	387,154	653,884	1,882,182	2,851,775	7,072,162	10,261,011	120,425	346,809	912,590	1,437,343	3,883,313	78,292	170,150	698,177	1,121,929	3,116,301	4,619,436
1952	43,246	9,654	345,573	574,070	1,654,613	2,478,681	6,091,184	8,764,636	117,076	303,934	830,546	1,260,444	3,417,733	72,194	159,402	634,430	1,020,060	2,712,903	3,944,349
1953	41,992	9,650	333,062	555,275	1,621,137	2,463,078	6,289,991	9,143,078	110,849	288,810	779,195	1,205,080	3,436,905	72,085	158,285	618,860	978,702	2,657,947	3,916,733
1954	45,757	10,679	361,451	607,274	1,766,216	2,647,137	6,564,537	9,521,195	115,628	317,539	885,295	1,334,230	3,607,878	78,474	165,077	674,592	1,071,482	2,821,272	4,140,957
1955	41,237	10,264	319,987	533,767	1,554,523	2,339,260	5,977,895	8,818,641	106,207	278,578	769,787	1,143,681	3,137,149	75,341	155,408	618,170	995,727	2,580,833	3,891,725
1956	40,149	10,646	305,674	507,365	1,446,327	2,161,824	5,120,834	7,322,996	103,983	272,625	730,830	1,137,657	2,918,672	72,577	146,613	576,054	916,157	2,324,731	3,426,532
1957	40,494	11,474	301,681	501,052	1,434,100	2,154,676	5,391,465	8,055,275	102,310	267,790	713,524	1,076,383	2,727,654	72,143	142,785	550,951	874,119	2,237,902	3,301,501
1958	42,774	12,312	316,936	520,677	1,463,495	2,164,223	5,150,298	7,348,646	113,194	284,973	762,767	1,134,163	2,951,950	75,020	148,913	558,606	894,797	2,297,471	3,371,385
1959	46,663	13,649	343,786	569,505	1,619,932	2,406,317	5,905,247	8,755,345	118,066	306,899	833,546	1,225,268	3,055,149	81,722	163,494	643,424	1,024,356	2,580,351	3,757,355
1960	48,887	14,681	356,742	590,869	1,645,945	2,430,297	5,651,752	7,920,172	122,615	327,100	861,592	1,299,947	3,383,332	86,375	173,444	691,635	1,085,351	2,764,964	4,021,143
1961	49,225	15,288	354,651	586,427	1,636,160	2,437,443	5,722,694	8,154,967	122,876	323,994	834,877	1,292,904	3,290,421	86,924	171,758	681,497	1,077,741	2,719,666	3,875,510
1962	49,914	16,339	352,087	578,131	1,586,797	2,341,137	5,423,839	7,729,384	126,043	325,965	832,457	1,256,369	3,118,293	89,914	175,712	682,869	1,076,159	2,580,142	3,716,267
1963	51,545	17,165	360,970	596,172	1,650,841	2,408,532	5,472,170	7,846,128	125,769	332,504	893,150	1,314,098	3,098,211	93,271	183,293	717,306	1,117,386	2,773,156	4,013,764
1964	52,564	17,091	371,820	612,096	1,664,877	2,422,977	5,546,333	7,928,971	131,544	348,901	906,778	1,313,711	3,163,695	99,814	194,013	730,887	1,123,613	2,782,340	3,849,849
1965	50,652	16,962	353,869	572,816	1,508,387	2,166,363	4,756,671	6,430,146	134,921	338,924	850,411	1,215,029	3,083,197	98,553	187,825	680,842	1,051,605	2,533,759	3,653,084
1966	49,966	17,303	343,937	553,267	1,431,259	2,058,055	4,536,174	6,264,561	134,607	333,770	804,463	1,150,820	2,807,788	98,204	183,666	672,558	1,010,971	2,402,506	3,470,938
1967	52,936	18,600	361,961	582,091	1,528,194	2,211,218	5,130,652	7,586,847	141,831	345,565	845,171	1,185,087	2,674,457	104,601	193,619	680,914	1,041,601	2,488,552	3,401,527
1968	53,017	18,246	365,953	594,086	1,579,713	2,299,666	5,342,164	7,563,486	137,820	347,679	859,759	1,231,234	3,120,841	101,539	190,317	700,521	1,079,920	2,622,319	3,854,438
1969	50,151	18,409	335,828	548,151	1,423,505	2,052,895	4,722,280	6,752,430	123,504	329,313	794,116	1,108,439	2,692,130	106,524	187,882	653,148	997,193	2,299,759	3,257,376
1970	48,520	18,767	316,292	497,756	1,266,586	1,821,932	4,114,077	5,887,678	134,827	305,549	711,240	999,116	2,340,476	106,014	185,644	618,469	932,736	2,218,658	3,117,200
1971	51,234	20,063	331,775	522,627	1,365,081	1,958,375	4,286,456	5,787,573	140,923	312,014	771,787	1,101,083	2,785,338	110,564	194,505	643,708	961,431	2,289,462	3,272,859
1972	56,187	20,415	378,136	606,407	1,534,361	2,233,752	5,215,183	7,523,919	149,864	374,418	834,969	1,190,715	2,906,447	118,297	201,505	711,530	1,067,000	2,455,272	3,500,209
1973	57,955	23,380	369,126	566,310	1,395,643	2,012,820	4,761,659	6,795,390	171,942	358,977	778,466	1,060,489	2,727,928	136,336	220,136	664,048	991,990	2,216,441	3,193,381
1974	47,877	20,369	295,454	449,126	1,081,450	1,572,432	3,610,714	5,237,631	141,782	291,045	590,469	850,289	1,983,797	112,053	185,151	536,684	767,236	1,694,913	2,347,519
1975	44,196	20,531	257,186	378,151	945,150	1,379,045	2,964,121	4,046,832	136,221	236,401	511,255	786,221	1,881,411	105,065	169,826	450,473	646,045	1,349,242	1,891,821
1976	41,826	18,609	250,778	375,079	881,420	1,251,025	2,875,838	4,038,312	126,477	248,494	511,814	675,858	1,713,364	99,312	161,926	434,122	608,085	1,279,721	1,851,149
1977	38,282	17,981	220,991	331,400	783,702	1,104,781	2,502,774	3,571,814	110,582	218,325	462,623	604,226	1,433,733	88,221	138,702	366,094	523,800	1,126,566	1,624,307
1978	43,010	20,664	244,125	358,516	825,167	1,159,672	2,537,554	3,485,352	129,733	241,853	490,662	652,161	1,589,756	104,963	168,889	440,803	626,322	1,421,886	2,037,321
1979	47,282	23,559	260,797	384,645	883,448	1,250,654	2,806,163	3,995,337	136,949	259,944	516,241	689,421	1,616,990	113,902	183,796	454,405	650,499	1,440,758	1,994,193
1980	49,317	26,144	257,878	367,139	825,746	1,150,081	2,476,914	3,496,768	148,618	252,487	501,411	654,698	1,457,061	116,697	176,093	431,989	613,140	1,378,668	1,978,672
1981	46,665	24,897	242,576	349,519	787,312	1,101,327	2,405,966	3,370,673	135,634	240,071	473,297	620,134	1,441,259	110,351	165,640	413,514	589,528	1,255,256	1,759,339
1982	48,893	26,016	254,789	368,794	826,552	1,144,291	2,437,638	3,317,357	140,784	254,355	508,813	656,763	1,557,920	112,905	175,300	433,625	628,153	1,346,864	1,886,272
1983	52,066	27,901	269,558	393,124	890,457	1,225,430	2,550,849	3,430,081	145,992	268,791	555,484	715,261	1,671,616	118,756	184,551	470,818	684,326	1,552,274	2,161,954
1984	61,418	35,029	298,917	435,262	986,027	1,376,824	2,933,636	4,165,835	162,573	297,571	595,230	790,097	1,701,438	132,850	209,794	524,265	766,570	1,674,447	2,352,909
1985	62,554	34,001	319,524	469,855	1,090,436	1,509,513	3,133,102	4,427,024	169,193	314,710	671,358	882,893	1,839,180	138,622	220,461	587,166	881,606	1,853,114	2,600,735
1986	65,769	35,936	334,266	485,053	1,097,648	1,570,260	3,396,133	4,574,637	183,480	331,904	625,035	891,033	2,217,629	150,395	235,637	587,102	807,264	1,973,453	2,802,211
1987	75,159	39,621	395,004	581,206	1,349,240	1,889,091	4,079,453	5,589,081	208,802	389,197	809,389	1,073,200	2,569,826	168,921	261,902	687,442	997,272	2,203,271	3,088,831
1988	87,652	49,396	431,955	624,026	1,419,789	2,008,745	4,559,454	6,514,628	239,884	425,086	830,832	1,096,854	2,604,280	200,955	297,781	726,213	1,019,358	2,264,401	3,239,204
1989	90,781	51,127	447,662	661,442	1,608,738	2,337,927	5,725,624	8,643,884	233,883	424,618	879,549	1,192,802	2,807,365	194,490	293,312	764,912	1,110,494	2,598,265	3,752,038
1990	85,266	50,617	397,107	580,508	1,343,382	1,903,395	4,209,864	6,007,939	213,707	389,789	783,369	1,061,422	2,411,789	177,028	271,082	686,216	1,000,521	2,236,477	3,258,433
1991	82,609	49,146	383,774	561,007	1,294,609	1,832,825	3,902,400	5,453,570	206,541	377,606	756,393	1,052,345	2,351,231	171,704	260,118	666,934	966,916	2,242,891	3,187,879
1992	79,686	45,072	391,212	583,182	1,385,123	1,984,404	4,578,604	6,622,488	199,242	382,696	785,841	1,068,683	2,534,721	161,274	254,863	677,196	992,474	2,309,536	3,303,002
1993	81,057	43,765	416,682	627,807	1,526,536	2,216,141	5,467,824	8,295,343	205,557	403,125	836,932	1,122,576	2,640,306	165,243	265,940	717,942	1,043,890	2,419,138	3,506,717
1994	81,387	44,190	416,159	621,574	1,490,035	2,138,175	5,091,360	7,605,667	210,744	404,458	841,896	1,119,903	2,577,053	169,889	270,535	716,676	1,044,077	2,387,929	3,403,044
1995																			
1996	86,242	45,412	453,710	681,458	1,633,302	2,330,477	5,379,338		225,963	443,497	936,126	1,254,609		175,513	290,434	801,786	1,160,345	2,727,524	
1997	86,811	43,473	476,846	724,716	1,768,562	2,564,500	5,872,141		228,975	463,755	972,623	1,390,072		171,985	309,039	840,000	1,254,807	2,963,492	
1998	97,167	51,185	511,009	773,259	1,894,809	2,783,451	6,744,921		248,759	492,872	1,006,168	1,434,467		191,682	333,210	894,422	1,312,583	3,063,553	
1999	110,065	59,272	567,201	848,916	2,033,211	2,935,783			285,486	552,843	1,130,638			223,105	365,960	995,978	1,461,346		
2000	119,327	64,071	616,632	927,378	2,315,860	3,415,838			305,886	580,257	1,215,883			245,749	395,781	1,055,347	1,592,285		
2001	127,982	69,697	652,551	969,322	2,378,111	3,476,477			335,781	617,125	1,279,745			279,795	429,423	1,092,413	1,600,677		
2002	132,380	74,496	653,340	939,250	2,222,552	3,241,764			367,429	618,425	1,203,340			316,459	455,304	1,054,098	1,524,210		
2003	137,595	79,276	662,471	941,369	2,179,009	3,149,765			383,573	631,959	1,208,253			322,393	463,904	1,042,593	1,476,348		
2004																			
2005	152,013	87,552	732,161	1,045,355	2,380,308	3,352,109			418,967	711,616	1,408,506			355,650	520,262	1,214,885	1,724,961		
2006	162,997	96,247	763,752	1,101,679	2,537,800	3,658,965			425,825	742,649	1,416,634			371,969	554,706	1,254,421	1,797,173		
2007	161,246	95,106	756,508	1,095,224	2,598,412	3,800,923			417,792	719,426	1,395,902			362,817	524,794	1,236,758	1,773,037		
2008	152,245	87,466	735,256	1,055,559	2,494,555	3,630,842			414,953	695,810	1,358,268			351,904	511,608	1,157,277	1,689,042		
2009	158,533	94,752	732,570	1,048,041	2,402,014	3,442,903			417,099	709,548	1,361,126			367,445	543,825	1,250,520	1,787,519		
2010	157,742	90,657	761,508	1,096,706	2,567,990	3,694,430			426,309	728,886	1,441,550			369,351	546,054	1,239,099	1,769,968		
2011	159,224	93,069	754,626	1,098,355	2,634,533	3,952,154			410,896	714,310	1,316,912			365,662	543,441	1,255,908	1,820,866		
2012	160,131	94,176	753,731	1,088,262	2,580,388	3,830,061			419,200	715,231	1,330,714			371,519	545,729	1,274,421	1,840,232		
2013	166,041	97,279	784,902	1,122,838	2,688,199	3,977,959			446,965	731,498	1,398,438			396,208	558,668	1,330,042	1,926,446		

Table F1. Sensitivity of wealth shares to total wealth in the 21st century

	Total wealth extrapolated with National Balance Sheet (preferred)		Wealth of EP extrapolated with National Balance Sheet		Wealth of EP extrapolated with Housing Price Index		Total wealth extrapolated with Housing Price Index	
	Top 10%	Top 1%	Top 10%	Top 1%	Top 10%	Top 1%	Top 10%	Top 1%
	per cent		per cent		per cent		per cent	
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
2000	50.6	18.5	50.6	18.5	50.6	18.5	50.6	18.5
2001	50.2	18.9	50.2	18.9	50.2	18.9	50.2	18.9
2002	50.8	18.0	50.8	18.0	50.8	18.0	50.8	18.0
2003	50.3	16.8	50.3	16.8	50.3	16.8	50.3	16.8
2004								
2005								
2006	52.0	19.9	53.1	20.3	52.8	20.2	51.0	19.5
2007								
2008								
2009	54.0	20.6	54.3	20.7	54.5	20.8	54.9	20.9
2010								
2011								
2012	51.9	19.9	54.1	20.7	56.5	21.7	61.7	23.6
2013								

Notes: The preferred series (columns [1] and [2]) correspond to results also shown in Table G1. The extrapolation of wealth in the different scenarios starts from 2005 onwards, as explain in the text.

Table G1. New series for the distribution of personal wealth in the UK 1895-2013
Shares

	Bottom 90%	Top 10%	Top 5%	Top 1%	Top 0.5%	Top 0.1%	Top 10-5%	Top 5-1%	Top 1-0.5%	Top 0.5-0.1%
	per cent						per cent			
1895	7.0	93.0	89.5	70.0	57.4	34.3	3.6	19.5	12.6	23.1
1896	7.1	92.9	89.3	70.5	58.0	34.2	3.6	18.8	12.5	23.8
1897	7.2	92.8	89.3	71.4	59.4	37.2	3.5	17.9	12.0	22.2
1898	7.4	92.6	89.0	70.2	58.1	34.2	3.6	18.8	12.1	23.9
1899	7.4	92.6	89.1	71.4	59.9	38.8	3.5	17.7	11.6	21.0
1900	7.3	92.7	89.1	70.7	59.0	36.4	3.6	18.4	11.7	22.6
1901	7.1	92.9	89.8	73.8	62.8	43.4	3.1	16.1	11.0	19.4
1902	7.4	92.6	89.0	70.7	58.5	36.2	3.6	18.3	12.2	22.3
1903	7.6	92.4	88.6	70.3	58.6	36.6	3.7	18.3	11.8	22.0
1904	7.6	92.4	88.6	70.0	57.7	34.7	3.8	18.6	12.3	23.0
1905	7.5	92.5	89.0	71.3	59.5	36.4	3.5	17.7	11.9	23.1
1906	7.5	92.5	89.1	72.1	61.3	40.9	3.4	17.0	10.8	20.4
1907	7.8	92.2	88.5	69.9	59.2	38.0	3.8	18.5	10.8	21.1
1908	8.0	92.0	88.1	68.6	57.2	35.2	4.0	19.4	11.5	22.0
1909	7.8	92.2	88.4	70.2	59.3	39.4	3.8	18.1	11.0	19.9
1910	8.1	91.9	87.8	68.8	57.8	37.3	4.1	18.9	11.0	20.5
1911	7.3	92.7	87.8	67.7	56.1	34.3	4.9	20.1	11.6	21.8
1912	7.2	92.8	88.1	68.8	57.9	35.7	4.8	19.3	10.9	22.2
1913	7.4	92.6	87.6	66.6	55.2	34.1	5.0	21.0	11.4	21.1
1914	7.0	93.0	88.2	67.2	55.2	32.0	4.7	21.0	12.0	23.2
1915										
1916										
1917										
1918										
1919	11.5	88.5	83.2	62.6	52.4	33.7	5.3	20.6	10.1	18.7
1920	12.0	88.0	81.4	57.3	45.6	27.8	6.6	24.0	11.7	17.8
1921	11.8	88.2	81.6	60.5	50.5	32.0	6.6	21.0	10.0	18.6
1922	11.2	88.8	82.8	61.7	51.5	32.8	6.1	21.0	10.2	18.7
1923	11.7	88.3	82.2	60.2	50.4	33.1	6.2	21.9	9.8	17.3
1924	12.1	87.9	81.7	59.5	49.4	31.4	6.3	22.2	10.0	18.0
1925	11.8	88.2	82.0	60.3	50.5	33.8	6.2	21.7	9.7	16.7
1926	12.8	87.2	80.4	56.9	46.6	28.9	6.8	23.6	10.2	17.7
1927	12.0	88.0	81.7	59.1	48.6	30.7	6.3	22.5	10.5	18.0
1928	13.3	86.7	80.1	56.5	46.1	28.4	6.6	23.6	10.4	17.7
1929	12.9	87.1	79.9	56.3	45.9	27.6	7.2	23.5	10.4	18.2
1930	13.9	86.1	79.2	56.9	47.0	29.5	6.9	22.2	10.0	17.5
1931	14.2	85.8	77.4	53.1	42.6	24.8	8.4	24.3	10.5	17.8
1932	14.3	85.7	77.6	54.3	44.3	27.4	8.2	23.3	10.0	16.9
1933	13.6	86.4	78.9	55.9	46.0	29.1	7.5	22.9	9.9	16.9
1934	13.9	86.1	77.9	53.8	43.4	25.8	8.2	24.1	10.4	17.6
1935	14.1	85.9	78.2	54.0	43.6	25.8	7.7	24.2	10.4	17.7
1936	14.8	85.2	77.5	53.4	42.1	23.5	7.6	24.1	11.3	18.7
1937	14.5	85.5	77.4	53.1	42.6	24.6	8.1	24.3	10.5	18.0
1938	15.0	85.0	77.5	54.1	43.8	27.0	7.5	23.4	10.2	16.8
1939	15.7	84.3	75.3	51.2	40.8	23.9	9.0	24.1	10.4	16.9
1940	16.2	83.8	75.2	51.0	40.7	23.6	8.6	24.3	10.3	17.1
1941	17.1	82.9	74.4	49.9	39.6	22.9	8.5	24.5	10.2	16.8
1942										
1943										
1944										
1945										
1946	16.5	83.5	72.7	46.1	36.1	19.3	10.8	26.7	9.9	16.9
1947	17.0	83.0	71.7	44.9	35.1	19.3	11.3	26.8	9.9	15.8
1948	16.9	83.1	71.3	44.4	34.4	19.1	11.8	26.9	10.0	15.3
1949	18.2	81.8	70.2	43.4	33.6	18.3	11.5	26.9	9.8	15.2
1950	20.1	79.9	69.0	43.0	33.3	20.1	11.0	25.9	9.7	13.2
1951	21.7	78.3	68.2	41.9	32.2	19.0	10.1	26.3	9.6	13.2
1952	22.5	77.5	64.7	38.8	29.8	17.2	12.8	25.9	9.0	12.5
1953	23.1	76.9	64.9	38.9	29.2	15.8	12.0	26.0	9.7	13.3
1954	23.4	76.6	65.6	40.9	31.2	16.1	11.0	24.6	9.8	15.0
1955	24.7	75.3	62.2	37.9	28.9	15.8	13.2	24.3	8.9	13.2
1956	26.0	74.0	61.9	37.9	28.7	15.5	12.0	24.0	9.2	13.2
1957	27.6	72.4	59.7	36.6	28.4	16.0	12.7	23.1	8.2	12.4
1958	28.0	72.0	59.4	35.3	27.1	15.1	12.6	24.1	8.1	12.0
1959	28.4	71.6	59.7	36.1	27.5	14.7	11.9	23.6	8.6	12.8
1960	29.5	70.5	59.1	35.0	26.6	13.6	11.4	24.1	8.5	13.0
1961	30.6	69.4	57.9	34.0	25.8	13.1	11.4	23.9	8.3	12.7
1962	32.7	67.3	55.7	32.8	24.8	12.4	11.6	22.9	8.0	12.3
1963	32.1	67.9	56.2	32.4	24.2	11.2	11.7	23.8	8.2	13.0
1964	31.5	68.5	56.0	32.1	23.8	11.2	12.5	23.9	8.2	12.7
1965	31.8	68.2	55.2	30.9	23.0	10.6	13.0	24.2	8.0	12.4
1966	33.7	66.3	53.2	29.3	21.7	10.2	13.1	23.9	7.5	11.5
1967	33.3	66.7	53.5	29.9	22.1	10.5	13.2	23.6	7.8	11.6
1968	32.6	67.4	54.5	30.5	22.8	11.1	12.9	24.0	7.7	11.7
1969	35.4	64.6	50.5	27.6	20.5	9.5	14.1	22.9	7.1	11.0
1970	35.5	64.5	50.1	27.4	20.2	9.9	14.3	22.8	7.2	10.3
1971	36.6	63.4	49.4	26.7	19.5	8.9	14.0	22.7	7.2	10.6
1972	34.0	66.0	52.1	28.4	21.3	11.5	13.9	23.8	7.0	9.8
1973	36.6	63.4	48.8	26.7	20.6	12.0	14.6	22.1	6.1	8.6
1974	39.0	61.0	46.4	23.7	17.2	8.3	14.6	22.8	6.4	8.9
1975	41.3	58.7	44.0	22.1	16.1	7.1	14.6	21.9	6.0	9.0
1976	39.0	61.0	45.9	23.1	16.8	8.2	15.0	22.8	6.3	8.6
1977	42.3	57.7	42.9	20.6	14.7	6.6	14.8	22.3	6.0	8.0
1978	41.2	58.8	43.4	21.2	15.4	6.7	15.5	22.2	5.8	8.7
1979	46.0	54.0	39.6	18.5	13.2	6.8	14.4	21.1	5.4	6.4
1980	47.9	52.1	38.3	18.8	13.8	6.6	13.8	19.6	4.9	7.2
1981	46.8	53.2	38.4	17.4	12.3	4.9	14.7	21.0	5.1	7.4
1982	48.8	51.2	37.1	17.2	12.3	5.4	14.1	19.9	4.9	6.9
1983	49.3	50.7	37.0	17.5	12.6	5.5	13.6	19.6	4.9	7.1
1984	53.3	46.7	33.8	15.2	10.7	4.5	12.9	18.6	4.5	6.2
1985	51.3	48.7	35.2	15.8	10.9	4.6	13.5	19.4	4.9	6.3
1986	51.2	48.8	35.3	16.3	11.6	5.3	13.5	19.0	4.7	6.3
1987	49.6	50.4	36.5	16.7	11.8	5.4	13.9	19.8	4.8	6.5
1988	51.8	48.2	34.5	15.2	10.6	4.6	13.7	19.3	4.6	6.0
1989	51.5	48.5	35.3	16.6	11.9	5.6	13.2	18.7	4.7	6.2
1990	54.0	46.0	33.8	16.3	12.0	5.9	12.2	17.5	4.4	6.1
1991	54.4	45.6	33.3	15.6	11.2	4.9	12.3	17.7	4.4	6.3
1992	52.0	48.0	35.6	17.0	12.3	5.8	12.4	18.7	4.7	6.5
1993	50.2	49.8	37.4	18.3	13.5	7.0	12.4	19.1	4.8	6.4
1994	50.5	49.5	36.8	17.6	12.8	6.0	12.7	19.2	4.8	6.8
1995	53.1	46.9	34.6	16.2	11.6	5.4	12.3	18.4	4.6	6.3
1996	51.6	48.4	35.7	16.5	11.7	5.1	12.7	19.1	4.8	6.6
1997	48.4	51.6	39.3	19.3	13.9	6.6	12.2	20.1	5.4	7.3
1998	48.1	51.9	39.2	20.0	15.0	7.8	12.7	19.3	4.9	7.2
1999	49.9	50.1	37.8	19.3	14.5	7.5	12.3	18.5	4.8	7.0
2000	49.4	50.6	38.1	18.5	13.4	5.9	12.4	19.6	5.1	7.4
2001	49.8	50.2	37.6	18.9	14.2	7.5	12.6	18.7	4.6	6.7
2002	49.2	50.8	37.8	18.0	13.3		13.1	19.7	4.7	
2003	49.7	50.3	36.9	16.8	12.3	6.7	13.4	20.1	4.5	5.7
2004										
2005	48.8	51.2	37.3	18.8	14.0		13.9	18.5	4.8	
2006	48.0	52.0	38.6	19.9	15.1		13.4	18.7	4.8	
2007										
2008										
2009	46.0	54.0	40.3	20.6	15.6	8.2	13.7	19.8	5.0	7.3
2010										
2011										
2012	48.1	51.9	39.0	19.9	15.0		13.0	19.1	4.9	
2013										

Memorandum items: shares estimated applying average multipliers per estate bracket in 2002

2001										
2002	51.8	48.2	37.6	18.1	13.4		10.6	19.5	4.8	
2003										
2004										
2005										
2006	51.3	48.7	36.4	17.2	12.4		12.4	19.2	4.8	
2007										
2008										
2009	48.4	51.6	37.9	17.9	12.7		13.7	20.0	5.2	
2010										
2011										
2012	47.7	52.3	38.4	18.6	13.7		13.9	19.8	4.9	
2013										

Table G2. New series for the distribution of personal wealth in the UK 1895-2013
Fractiles

	Mean wealth	P0-90	P90-100	P95-100	P99-100	P99.5-100	P99.9-100	P90-95	P95-99	P99-99.5	P99.5-99.9
		£ 2015						£ 2015			
1895											
1896											
1897											
1898											
1899											
1900											
1901											
1902											
1903											
1904											
1905											
1906											
1907											
1908											
1909											
1910											
1911	36,732	2,980	340,507	644,852	2,485,014	4,120,625	12,610,216	36,162	184,811	849,404	1,998,227
1912	37,414	2,974	347,371	659,016	2,573,298	4,332,738	13,373,428	35,726	180,445	813,857	2,072,566
1913	37,916	3,129	351,000	664,006	2,524,614	4,182,779	12,913,961	37,994	198,854	866,449	1,999,984
1914	40,516	3,167	376,660	714,949	2,723,250	4,470,864	12,962,615	38,371	212,874	975,636	2,347,927
1915											
1916											
1917											
1918											
1919											
1920	22,702	3,034	199,717	369,404	1,301,158	2,069,517	6,301,185	30,030	136,466	532,798	1,011,600
1921											
1922											
1923											
1924	31,656	4,246	278,347	517,064	1,882,385	3,130,251	9,955,279	39,630	175,734	634,520	1,423,994
1925	33,032	4,344	291,228	541,633	1,990,852	3,337,805	11,156,825	40,822	179,328	643,898	1,383,050
1926	33,501	4,760	292,165	538,964	1,905,770	3,125,181	9,682,600	45,366	197,262	686,359	1,485,826
1927	35,920	4,796	316,033	586,616	2,123,240	3,492,065	11,012,427	45,451	202,460	754,414	1,611,975
1928	35,044	5,185	303,767	561,392	1,978,546	3,231,514	9,958,964	46,142	207,104	725,577	1,549,652
1929	33,259	4,778	289,584	531,198	1,873,209	3,051,811	9,192,409	47,970	195,696	694,606	1,516,662
1930	36,920	5,689	317,999	584,688	2,102,165	3,468,996	10,900,565	51,310	205,318	735,334	1,611,103
1931											
1932											
1933											
1934											
1935											
1936	41,358	6,818	352,222	641,326	2,209,649	3,485,442	9,700,920	63,117	249,246	933,855	1,931,572
1937											
1938	41,488	6,909	352,698	642,976	2,243,322	3,636,919	11,210,922	62,420	242,889	849,725	1,743,418
1939											
1940											
1941											
1942											
1943											
1944											
1945											
1946											
1947											
1948											
1949											
1950	34,628	7,718	276,824	477,545	1,490,460	2,308,785	6,955,992	76,103	224,317	672,135	1,146,983
1951	31,097	7,497	243,495	423,886	1,301,491	2,003,400	5,914,519	63,103	204,485	599,581	1,025,621
1952	29,432	7,362	228,059	380,614	1,141,244	1,752,407	5,069,268	75,504	190,456	530,081	923,192
1953	26,168	6,707	201,318	339,665	1,017,587	1,526,155	4,138,644	62,970	170,185	509,018	873,033
1954	27,992	7,270	214,488	367,132	1,145,742	1,744,045	4,513,715	61,844	172,479	547,439	1,051,628
1955	27,283	7,481	205,505	339,138	1,033,015	1,577,809	4,298,799	71,872	165,668	488,222	897,562
1956	26,995	7,812	199,638	334,263	1,023,271	1,550,406	4,192,331	65,013	162,011	496,136	889,925
1957	28,440	8,716	205,956	339,629	1,040,029	1,616,293	4,556,691	72,283	164,529	463,764	881,193
1958	30,409	9,446	219,076	361,410	1,072,819	1,651,106	4,593,268	76,743	183,557	494,532	915,566
1959	32,906	10,369	235,739	392,950	1,187,725	1,810,531	4,844,233	78,528	194,257	564,920	1,052,105
1960	31,832	10,419	224,544	376,359	1,115,507	1,692,822	4,335,855	72,729	191,572	538,191	1,032,063
1961	32,918	11,207	228,319	381,307	1,120,302	1,696,624	4,313,238	75,331	196,559	543,979	1,042,471
1962	33,540	12,168	225,888	373,665	1,098,890	1,660,935	4,171,173	78,111	192,358	536,846	1,033,375
1963	36,277	12,920	246,484	407,969	1,174,734	1,755,859	4,049,844	85,000	216,278	593,610	1,182,362
1964	37,957	13,287	259,979	425,095	1,217,334	1,810,057	4,235,601	94,863	227,035	624,610	1,203,671
1965	37,323	13,204	254,391	411,908	1,154,626	1,714,318	3,947,544	96,873	226,229	594,934	1,156,011
1966	37,206	13,936	246,635	395,904	1,089,036	1,616,696	3,794,990	97,365	222,621	561,377	1,072,122
1967	39,224	14,507	261,678	419,652	1,173,295	1,732,808	4,113,434	103,704	231,241	613,783	1,137,651
1968	39,691	14,395	267,356	432,534	1,211,761	1,808,818	4,419,682	102,178	237,727	614,704	1,156,102
1969	38,400	15,102	248,086	388,140	1,059,890	1,572,578	3,635,905	108,032	220,202	547,202	1,056,747
1970	38,686	15,276	249,373	387,940	1,059,471	1,561,531	3,838,654	110,806	220,058	557,411	992,250
1971	40,131	16,321	254,428	396,491	1,072,608	1,564,384	3,562,220	112,365	227,461	580,832	1,064,925
1972	46,717	17,655	308,276	486,981	1,324,541	1,992,192	5,384,895	129,571	277,591	656,889	1,144,016
1973	49,207	20,009	311,989	479,915	1,312,146	2,023,789	5,886,703	144,063	271,858	600,503	1,058,060
1974	40,717	17,625	248,541	378,113	963,657	1,402,852	3,373,244	118,969	231,727	524,462	910,254
1975	38,398	17,640	225,221	337,999	849,600	1,236,698	2,729,417	112,443	210,099	462,502	863,519
1976	35,448	15,380	216,062	325,444	818,180	1,191,237	2,908,219	106,680	202,260	445,123	761,992
1977	32,603	15,336	188,009	279,676	672,544	955,980	2,157,853	96,342	181,458	389,109	655,512
1978	36,706	16,787	215,981	318,300	776,505	1,128,721	2,466,280	113,663	203,748	424,289	794,332
1979	40,546	20,712	219,048	321,029	751,146	1,067,382	2,737,245	117,067	213,500	434,910	649,917
1980	43,045	22,908	224,277	330,118	807,283	1,190,793	2,859,381	118,436	210,827	423,772	773,646
1981	39,111	20,353	207,932	300,538	679,963	961,848	1,930,528	115,326	205,682	398,079	719,678
1982	42,357	22,954	216,990	314,349	728,664	1,043,960	2,288,186	119,631	210,770	413,368	732,903
1983	47,323	25,941	239,756	350,620	826,333	1,192,201	2,602,030	128,893	231,692	460,464	839,744
1984	53,514	31,689	249,941	362,048	814,566	1,145,070	2,393,172	137,833	248,919	484,063	833,044
1985	53,662	30,598	261,233	377,684	846,918	1,166,401	2,459,435	144,783	260,376	527,435	843,143
1986	57,142	32,492	278,989	403,230	931,455	1,321,754	3,017,900	154,748	271,174	541,156	897,718
1987	68,333	37,690	344,117	498,800	1,139,334	1,617,338	3,670,644	189,434	338,666	661,330	1,104,012
1988	78,302	45,080	377,303	540,800	1,190,462	1,658,241	3,630,818	213,806	378,384	722,684	1,165,097
1989	81,657	46,702	396,251	577,070	1,354,919	1,935,393	4,608,284	215,433	382,608	774,446	1,267,170
1990	76,735	46,053	352,870	518,872	1,254,406	1,835,556	4,497,661	186,868	334,988	673,257	1,170,030
1991											
1992	70,653	40,825	339,106	503,659	1,200,516	1,742,844	4,111,351	174,553	329,444	658,187	1,150,718
1993	70,693	39,408	352,259	529,094	1,292,938	1,902,990	4,974,249	175,424	338,134	682,886	1,135,175
1994	71,498	40,082	354,240	526,378	1,261,593	1,831,977	4,320,736	182,102	342,575	691,209	1,209,787
1995	72,475	42,747	340,032	501,915	1,175,951	1,687,774	3,877,788	178,149	333,406	664,128	1,140,271
1996	71,639	41,090	346,580	511,466	1,185,484	1,677,505	3,677,579	181,694	342,961	693,463	1,177,486
1997	73,513	39,555	379,126	578,483	1,416,524	2,043,191	4,841,009	179,770	368,973	789,856	1,343,737
1998											
1999	86,934	48,227	435,296	656,716	1,678,084	2,519,274	6,526,767	213,876	401,374	836,893	1,517,401
2000	92,849	51,010	469,398	708,211	1,717,409	2,479,616	5,489,109	230,586	455,911	955,201	1,727,243
2001	106,204	58,719	533,568	798,644	2,002,669	3,022,511	7,994,105	268,493	497,638	982,828	1,779,612
2002	109,931	60,040	558,952	830,479	1,983,742	2,933,230		287,425	542,163	1,034,255	
2003	115,943	64,084	582,677	855,266	1,946,649	2,860,106	7,717,241	310,088	582,420	1,033,193	1,645,822
2004											
2005	123,254	66,846	630,927	918,319	2,312,945	3,439,818		343,535	569,663	1,186,072	
2006	125,714	67,079	653,426	971,009	2,498,487	3,791,742		335,844	589,139	1,205,232	
2007											
2008	110,464										
2009	116,690	59,624	630,283	941,643	2,401,644	3,638,236		318,922	576,643	1,165,051	
2010	119,197										
2011											
2012	118,429	63,273	614,838	922,838	2,354,522	3,551,180		306,837	564,917	1,157,863	
2013											

Table H1. Sources of data for the distribution and control total excluding housing wealth

	Source for IR/HMRC distribution of housing wealth	Notes	Source for IR/HMRC net housing wealth of excluded population	Control total excluding housing wealth
				£ million
1971	IRS 1973, Table 94	Great Britain; Year of account basis until 1979		86,307
1972	IRS 1974, Table 106	Great Britain		105,464
1973	IRS 1975, Table 108	Great Britain		111,777
1974	IRS 1975, Table 113	United Kingdom from 1974		105,823
1975	IRS 1977, Table 113		Dunn and Hoffman, 1978, Table 1	132,320
1976	IRS 1978, Table 4.18		IRS 1980, Table 4.19	146,287
1977	IRS 1979, Table 4.18		IRS 1981, Table 4.12	157,932
1978	IRS 1980, Table D3		IRS 1982, Table 4.12	188,976
1979	IRS 1981, Table D1		IRS 1983, Table 4.11	219,306
1980	IRS 1984, Table 4.12	Year of death basis from 1980	IRS1984, Table 4.11	258,669
1981	IRS 1985, Table 4.11		IRS 1985, Table 4.10	276,902
1982	IRS 1986, Table 4.11		IRS 1986, Table 4.10	324,146
1983	IRS 1987, Table 7.1		IRS 1987, Table 7.2	386,467
1984	IRS 1988, Table 10.1		IRS 1988, Table 10.2	449,619
1985	IRS 1989, Table 10.1		IRS 1989, Table 10.2	463,664
1986	IRS 1990, Table 10.1			483,742
1987	IRS 1991, Table 11.1		IRS 1991, Table 11.2	672,164
1988	IRS 1992, Table 11.1		IRS 1992, Table 11.2	721,340
1989	IRS 1993, Table 13.1		IRS 1993, Table 13.2	785,639
1990	IRS 1994, Table 13.1		IRS 1994, Table 13.2	778,518
1991	IRS 1995, Table 13.1		IRS 1995, Table 13.2	830,029
1992	IRS 1996, Table 13.1		IRS 1996, Table 13.2	903,929
1993	IRS 1997, Table 13.1		IRS 1997, Table 13.2	969,640
1994	IRS 1998, Table 13.1		IRS 1998, Table 13.2	1,007,301
1995	IRS 1999, Table 13.1		IRS 1999, Table 13.2	1,072,145
1996	IRS 2000, Table 13.1	Last entry for wealth of excluded population referring to "dwellings".	IRS 2000, Table 13.2	1,103,354
1997	IRS 2000, Table 13.3			1,152,784
1998				
1999				1,425,697
2000				1,562,924
2001	HMRC website, 2002, Table 13.1	Entries for wealth of excluded population refer to "UK residential buildings"	Table 13.3 website	1,640,260
2002	HMRC website, 2002, Table 13.1		Table 13.3 website UK	1,670,859
2003	HMRC website, 2003, Table 13.1		Table 13.3 website UK	2,038,201
2004				
2005	HMRC website, 2005, Table 13.1		Table 13.3 website UK	1,959,065
2005 to 2007	HMRC website, 2005-07, Table 13.1	Averaged over 3 years		2,025,511
2008 to 2010	HMRC website, 2008-10, Table 13.1	Averaged over 3 years		1,792,431
2011 to 2013	HMRC website, 2011-13, Table 13.1	Averaged over 3 years		2,221,471

Notes
(1) IR denots Inland Revenue; IRS denotes Inland Revenue Statistics.
(2) where no source shown for housing wealth of excluded population, the total has been interpolated as described in the text.

Table H2. Distribution of personal wealth including and excluding housing wealth
Shares

		Excluding housing wealth						Including housing wealth					
		Top 10%	Top 5%	Top 1%	Top 0.5%	Top 0.1%	Top 0.05%	Top 10%	Top 5%	Top 1%	Top 0.5%	Top 0.1%	Top 0.05%
		per cent						per cent					
1971	GB	67.3	56.1	31.4	24.8	11.5		60.4	48.0	24.5	18.9	8.4	
1972	GB	67.3	56.5	33.5	25.9	14.3		63.5	50.3	26.6	20.1	11.0	
1973	GB	68.8	57.1	34.6	27.8	17.0		61.6	47.3	25.1	19.6	11.5	
1974		64.4	53.1	29.6	22.4	11.6		59.4	45.0	22.1	16.1	7.8	
1975		56.6	45.7	25.4	18.9	9.3		55.6	41.8	20.5	14.7	6.7	
1976		60.8	48.7	26.8	19.7	10.4		58.6	44.0	21.9	15.5	7.7	
1977		58.8	45.4	24.1	17.3	8.5		56.1	40.9	19.5	13.5	6.2	
1978		45.2	34.8	18.6	13.3	6.5		44.1	32.1	15.0	10.3	4.6	
1979		54.6	40.6	22.9	17.2			52.6	36.2	17.6	12.7		
1980		57.1	44.9	24.7	17.8	9.0	6.8	51.8	37.7	18.6	13.2	6.5	4.9
1981		57.9	45.2	23.5	16.3	7.0	4.6	52.5	38.1	17.3	11.6	4.7	3.2
1982		58.8	46.0	23.7	17.4	8.2	5.9	50.0	36.7	16.7	11.7	5.2	3.6
1983		59.2	47.1	24.2	18.7	8.7	5.5	49.5	36.7	16.7	12.4	5.4	3.4
1984		54.8	42.6	20.5	15.7	6.8	4.3	46.1	33.6	14.4	10.6	4.4	2.8
1985		57.3	43.9	21.4	15.9	7.2	4.8	48.3	34.7	15.0	10.7	4.5	2.9
1986		59.1	45.1	22.9	17.2	8.2	5.8	48.4	34.8	15.9	11.3	5.1	3.6
1987		54.0	41.9	21.4	15.5	7.3	5.4	50.0	36.1	16.5	11.6	5.1	3.7
1988		53.3	40.6	20.8	15.1	7.0	5.2	47.6	33.6	14.9	10.2	4.3	3.1
1989		55.6	42.0	22.8	17.2	9.1	7.1	48.1	34.0	16.5	11.4	5.4	4.0
1990		56.3	44.2	24.8	18.5	9.8	6.9	45.4	32.8	16.2	11.6	5.8	4.2
1991		57.2	43.5	23.8	17.3	8.1	5.5	45.4	32.4	15.5	10.9	4.8	3.2
1992		59.6	45.9	25.0	18.5	9.5	6.7	47.4	34.3	16.9	12.0	5.8	4.0
1993		60.2	46.5	25.7	19.4	11.1	8.6	49.3	36.0	18.0	13.1	6.9	5.3
1994		59.8	45.7	24.6	18.3	9.0	6.6	49.1	35.3	17.4	12.6	5.8	4.1
1995		56.9	42.1	22.0	16.2	7.7	5.5	46.5	33.1	15.9	11.4	5.2	3.5
1996		56.6	41.7	21.2	15.8	7.3	5.2	47.9	34.0	16.1	11.7	5.0	3.4
1997		61.1	47.1	25.0	18.4	9.4	7.3	51.1	37.8	18.8	13.3	6.2	4.8
1998													
1999													
2000													
2001		63.5	49.8	28.5	22.1	12.9		49.8	36.9	18.4	13.7	7.4	
2002		61.3	48.3	25.0	19.3			50.3	37.0	17.4	12.9		
2003		62.1	52.6	24.2	17.9	10.8		49.6	36.4	15.9	11.8	6.6	
2004													
2005		61.8	48.8	27.5	22.0			50.4	37.0	18.0	13.6		
2006		61.6	50.1	30.2	25.0			51.6	38.3	19.0	14.7		
2007													
2008													
2009		78.0	62.7	36.7	29.8			53.6	39.8	19.7	15.2		
2010													
2011													
2012		71.0	56.5	33.1	25.7			51.4	38.2	19.4	14.4		
2013													

Table H3. Composition of wealth at the top of the distribution in the UK: housing and non-housing assets

	Top 10%		Top 5%		Top 1%		Top 0.5%		Top 0.1%		Top 0.05%		Top 10-5%		Top 5-1%		Top 1-0.5%		Top 0.5-0.1%		Top 0.1-0.05%	
	Non-housing	Housing	Non-housing	Housing	Non-housing	Housing	Non-housing	Housing	Non-housing	Housing	Non-housing	Housing	Non-housing	Housing	Non-housing	Housing	Non-housing	Housing	Non-housing	Housing	Non-housing	Housing
1971 GB	77.7	22.4	82.0	18.0	89.1	11.0	92.0	8.0	95.4	4.6	97.0	3.0	62.4	37.6	73.6	26.4	80.4	19.6	89.2	10.8	92.1	7.9
1972 GB	72.3	27.7	76.7	23.3	85.7	14.3	87.7	12.3	88.7	11.3	88.7	11.3	56.2	43.8	66.1	33.9	78.9	21.1	86.5	13.5	88.9	11.1
1973 GB	70.3	29.7	76.0	24.0	86.0	14.0	88.7	11.3	92.7	7.3	93.3	6.7	51.5	48.5	63.9	36.1	75.6	24.4	83.3	16.7	90.4	9.6
1974	64.2	35.8	69.9	30.1	78.9	21.1	82.0	18.0	87.8	12.3	89.5	10.5	46.5	53.5	60.5	39.5	70.4	29.6	76.6	23.4	82.9	17.1
1975	63.7	36.3	68.6	31.5	77.5	22.6	80.7	19.3	87.4	12.6	89.1	10.9	49.3	50.7	59.7	40.3	69.1	30.9	75.2	24.8	83.2	16.8
1976	66.7	33.3	71.2	28.8	78.8	21.2	81.4	18.6	86.6	13.4	87.4	12.6	53.5	46.5	63.7	36.3	71.3	28.7	76.4	23.6	83.8	16.2
1977	67.9	32.1	72.1	27.9	80.3	19.7	82.9	17.2	88.9	11.1	90.5	9.5	56.6	43.4	64.7	35.3	73.5	26.5	77.8	22.2	84.4	15.6
1978	67.8	32.2	71.6	28.4	81.8	18.2	86.5	13.5	93.0	7.0	93.0	7.0	57.3	42.7	62.0	38.0	69.3	30.7	80.3	19.8	93.0	7.0
1979	62.9	37.1	66.6	33.4	77.5	22.5	82.0	18.0	87.1	13.0	87.1	13.0	51.8	48.3	56.5	43.5	66.5	33.6	76.4	23.6	87.1	13.0
1980	60.5	39.6	65.0	35.0	72.7	27.3	73.7	26.3	76.3	23.7	76.8	23.2	47.7	52.3	57.6	42.4	69.8	30.2	71.2	28.8	74.8	25.2
1981	63.5	36.6	68.3	31.8	77.8	22.2	80.4	19.6	85.4	14.6	83.1	16.9	50.6	49.4	60.3	39.8	71.5	28.6	77.0	23.0	89.5	10.5
1982	66.8	33.2	71.3	28.7	80.5	19.5	84.1	15.9	90.1	9.9	91.4	8.6	54.6	45.4	63.2	36.8	71.8	28.2	79.3	20.7	86.8	13.2
1983	69.0	31.0	74.2	25.8	83.5	16.5	87.2	12.8	92.4	7.6	93.4	6.6	54.7	45.3	65.9	34.1	73.9	26.1	83.2	16.8	90.3	9.7
1984	67.1	32.9	71.7	28.3	80.0	20.0	83.6	16.4	87.8	12.2	88.6	11.4	54.9	45.1	64.8	35.2	71.2	28.8	80.3	19.7	86.4	13.6
1985	64.7	35.4	68.9	31.1	77.1	22.9	80.7	19.3	87.3	12.7	89.2	10.8	53.5	46.5	62.2	37.8	68.6	31.4	75.7	24.3	83.3	16.7
1986	62.8	37.3	66.6	33.4	74.1	25.9	77.8	22.2	83.1	16.9	83.8	16.2	52.7	47.3	60.0	40.0	64.8	35.2	73.3	26.7	81.7	18.3
1987	61.7	38.4	66.3	33.7	74.1	25.9	76.1	23.9	81.7	18.3	83.9	16.1	49.4	50.6	59.7	40.3	69.1	31.0	71.5	28.5	76.3	23.8
1988	56.8	43.2	61.2	38.8	70.6	29.4	74.6	25.4	81.8	18.3	84.5	15.5	46.0	54.0	53.6	46.4	61.8	38.2	69.0	31.0	75.0	25.0
1989	56.5	43.5	60.3	39.7	67.6	32.4	73.0	27.0	82.1	17.9	86.0	14.0	46.5	53.5	53.8	46.2	54.3	45.7	64.7	35.3	70.8	29.2
1990	58.2	41.8	63.1	36.9	72.0	28.0	74.8	25.3	79.7	20.3	78.3	21.7	44.3	55.7	54.8	45.2	64.4	35.6	70.0	30.0	83.8	16.2
1991	62.3	37.7	66.0	34.0	75.5	24.5	78.0	22.0	83.9	16.1	85.4	14.6	52.0	48.0	57.6	42.4	69.2	30.8	73.6	26.4	80.6	19.4
1992	66.9	33.1	71.1	28.9	78.9	21.1	81.6	18.4	88.5	11.5	89.7	10.3	55.0	45.0	63.9	36.1	71.7	28.3	75.5	24.5	85.1	14.9
1993	68.5	31.5	72.1	27.9	80.0	20.0	82.7	17.3	89.4	10.6	91.4	8.6	57.8	42.2	64.4	35.6	72.4	27.6	75.4	24.7	82.4	17.6
1994	68.4	31.6	72.4	27.6	79.4	20.6	81.4	18.6	87.0	13.0	89.0	11.0	56.8	43.2	65.9	34.1	74.2	25.8	76.4	23.7	82.1	17.9
1995	69.5	30.5	72.1	27.9	78.4	21.6	80.5	19.5	85.1	14.9	87.6	12.4	62.4	37.6	66.4	33.6	73.3	26.7	76.7	23.4	79.0	21.0
1996	68.2	31.9	70.5	29.5	75.8	24.2	78.1	21.9	84.6	15.4	87.1	12.9	61.7	38.3	65.8	34.2	70.3	29.7	72.9	27.1	78.8	21.2
1997	67.8	32.2	70.4	29.6	75.4	24.6	78.1	21.9	84.5	15.5	86.8	13.2	59.4	40.6	65.5	34.5	68.6	31.4	72.3	27.7	78.0	22.0
1998																						
1999																						
2000																						
2001	63.2	36.8	66.8	33.2	76.5	23.6	79.6	20.4	85.8	14.2	86.1	13.9	52.5	47.5	56.9	43.1	67.1	32.9	72.6	27.4	84.9	15.1
2002	62.8	37.2	67.0	33.0	74.0	26.0	76.6	23.4	82.5	17.5	82.5	17.5	50.7	49.3	60.6	39.4	66.8	33.2	70.9	29.1	82.5	17.5
2003	57.4	42.6	66.2	33.8	69.9	30.1	69.9	30.1	75.4	24.6	75.8	24.2	33.1	66.9	63.1	37.0	69.8	30.3	63.6	36.4	73.9	26.1
2004																						
2005	55.6	44.4	59.8	40.2	68.7	31.3	73.3	26.7	78.9	21.1	78.9	21.1	43.9	56.2	50.7	49.3	55.6	44.4	68.1	31.9	78.9	21.1
2006	52.6	47.4	57.5	42.5	69.1	30.9	74.5	25.5	79.7	20.3	79.7	20.3	38.3	61.7	45.3	54.8	52.1	47.9	68.4	31.6	79.7	20.3
2007																						
2008																						
2009	54.8	45.2	59.3	40.7	69.4	30.6	73.9	26.2	78.9	21.1	78.9	21.1	41.4	58.6	48.8	51.2	55.2	44.8	67.9	32.1	78.9	21.1
2010																						
2011																						
2012	55.1	44.9	58.9	41.1	67.8	32.2	70.8	29.2	74.1	25.9	74.1	25.9	43.6	56.5	49.7	50.3	58.3	41.7	67.2	32.8	74.1	25.9
2013																						

Table J1. Relative mortality in UK and US

UK

	Mortality rate relative to population wide mortality rate for the same age class			population wide mortality rate (%)
	UK housing wealth distribution			
Men (2008-2010)	Top 30%	Top 20%	Top 10%	
Aged 50-64	0.84	0.78	0.72	0.65
Aged 65-75	0.81	0.75	0.69	1.91
Aged 75-75	0.79	0.73	0.67	5.58
Aged 85+	0.78	0.73	0.67	14.82
Women (2008-2010)				
Aged 50-64	0.81	0.75	0.69	0.42
Aged 65-75	0.78	0.72	0.66	1.35
Aged 75-75	0.72	0.67	0.62	3.89
Aged 85+	0.74	0.68	0.63	12.75

US

	Mortality rate relative to population wide mortality rate for the same age class			population wide mortality rate (%)
	US capital income distribution			
Men (2004-2008)	Top 10%	Top 5%	Top 1%	
Aged 50-64	0.61	0.53	0.43	0.81
Aged 65-79	0.77	0.71	0.60	2.76
Aged 80+	0.97	0.91	0.92	8.47
Women (2004-2008)				
Aged 50-64	0.67	0.57	0.71	0.48
Aged 65-79	0.76	0.73	0.69	1.99
Aged 80+	0.97	0.92	0.91	7.22

Sources: Data on relative mortality rates of UK population across household housing deciles taken from HMRC estate database from the HMRC datalab, estimated from ELSA. Data on UK mortality and population are taken from ONS, The 21st Century Mortality Files, Deaths Dataset, 2001-2014. Data on the US relative mortality and population wide mortality are taken from Saez and Zucman (2016).

Table J2. Sensitivity of the top 1% wealth share to changes in the mortality-wealth gradient

	Original estimates with mortality multipliers as applied by HMRC	+20% adjustment to multipliers above P99	+20% adjustment to multipliers above P99.9	+50% adjustment to multipliers above P99	+50% adjustment to multipliers above P99.9	+100% adjustment to multipliers above P99	+100% adjustment to multipliers above P99.9
Case A: simulated top wealth shares based on internal wealth total							
Wealth shares (per cent)							
2008	19.6	21.9	21.0	25.1	23.1	30.5	27.2
2009	18.2	20.1	19.2	22.7	20.8	24.8	21.9
2010	23.5	26.5	25.7	30.7	29.1	37.4	35.0
Wealth of the identified population (£ billion)							
2008	3,339	3,505	3,411	3,754	3,520	4,169	3,701
2009	3,280	3,434	3,334	3,665	3,416	4,051	3,551
2010	3,940	4,186	4,064	4,554	4,252	5,169	4,564
Wealth of the excluded population (£ billion)							
2008	1,224	1,221	1,224	1,217	1,223	1,209	1,222
2009	1,142	1,139	1,142	1,135	1,141	1,127	1,140
2010	1,199	1,196	1,199	1,190	1,198	1,181	1,197
Case B: simulated top wealth shares based on external fixed wealth total							
Wealth shares (per cent)							
2008	20.1	22.4	21.5	30.5	27.2	30.5	27.2
2009	17.0	18.8	18.0	24.8	21.9	24.8	21.9
2010	23.7	26.8	26.0	37.4	35.0	37.4	35.0

Notes: The table shows the effect of changes in mortality adjustment factors on the top 1% wealth share. 20 percent, 50 percent and 100 percent changes are applied above P99 and P99.9 fractiles respectively. Two cases are considered. Case A refers to the internal wealth total: the sum of the identified wealth and the wealth of the excluded population. The latter is derived by extrapolating to 2008-2010 the 2005 HMRC estimate of the wealth of the excluded population using ONS UK housing prices index. Case B refers to the external wealth total, which does not change with changes in adjustment factors.

Table K1. Earlier estimates of the distribution of wealth in the UK

	IR/HMRC Series C							IR/HMRC Earlier Series C				
	Distribution among the adult population of marketable wealth							Distribution among the adult population of marketable wealth				
	Top 50%	Top 25%	Top 10%	Top 5%	Top 2%	Top 1%	Gini Coeff.	Top 25%	Top 10%	Top 5%	Top 2%	Top 1%
	per cent							per cent				
1966								87	65	56	42	33
1967												
1968												
1969												
1970												
1971								86	65	52	39	31
1972												
1973												
1974								84	57	43	30	23
1975								83	58	44	31	24
1976	92	71	50	38	27	21	66	84	60	45	32	24
1977	92	71	50	39	28	22	66					
1978	92	71	49	37	26	20	64					
1979	92	72	50	37	26	20	65					
1980	91	73	50	36	25	19	65					
1981	92	73	50	36	24	18	65					
1982	91	72	49	36	24	18	64					
1983	91	73	50	37	26	20	65					
1984	91	71	48	35	24	18	64					
1985	91	73	49	36	24	18	65					
1986	90	73	50	36	24	18	64					
1987	91	74	51	37	25	18	66					
1988	92	71	49	36	23	17	65					
1989	92	70	48	35	24	17	65					
1990	93	71	47	35	24	18	64					
1991	92	71	47	35	24	17	64					
1992	93	73	50	38	25	18	66					
1993	93	73	51	38	26	18	66					
1994	93	74	52	39	27	19	67					
1995	92	72	50	38	26	19	65					
1996	93	74	52	40	27	20	68					
1997	93	75	54	43	30	22	69					
1998	91	72	52	40	28	22	69					
1999	94	74	55	43	30	23	70					
2000	95	75	56	44	31	23	71					
2001	93	72	54	41	29	22	68					
2002	92	72	54	41	28	21	67					
2003	93	73	53	40	27	19	67					
2004												
2005	94	77	54	40	28	21	70					

Sources: IRS 1981, Table 4.8; IRS 1984, Table 4.8; and HMRC website, Table 13.5, 2005.

Table K1 (Cont.). Earlier estimates of the distribution of wealth in the UK

	Series given in Atkinson and Harrison (1978) and Atkinson, Gordon and Harrison (1989) Shares of total personal wealth							
	England and Wales				Great Britain			
	Top 20%	Top 10%	Top 5%	Top 1%	Top 20%	Top 10%	Top 5%	Top 1%
	per cent				per cent			
1923	94.2	89.1	82.0	60.9				
1924	93.8	88.1	81.5	59.9				
1925	93.8	88.4	82.1	61.0				
1926	93.2	87.4	79.9	57.3				
1927	93.8	88.3	81.3	59.8				
1928	93.1	87.2	79.6	57.0				
1929	92.6	86.3	78.9	55.5				
1930	92.6	86.6	79.2	57.9				
1931								
1932								
1933								
1934								
1935								
1936	92.0	85.7	77.4	54.2				
1937								
1938	91.2	85.0	76.9	55.0	91.6	85.4	77.2	55.0
1939								
1940								
1941								
1942								
1943								
1944								
1945								
1946								
1947								
1948								
1949								
1950			74.3	47.2			74.4	47.2
1951			73.6	45.8			73.8	45.9
1952			70.2	43.0			70.3	42.9
1953			71.1	43.6			71.2	43.5
1954			71.8	45.3			72.0	45.3
1955			71.1	44.5			70.8	43.8
1956			71.3	44.5			71.1	44.0
1957			68.7	43.4			68.6	42.9
1958			67.8	41.4			67.7	40.9
1959			67.6	41.4			67.9	41.8
1960	83.1	71.5	59.4	33.9	83.6	72.1	60.0	34.4
1961	83.3	71.7	60.6	36.5	83.6	72.1	60.8	36.5
1962	80.2	67.3	54.8	31.4	80.7	67.9	55.4	31.9
1963								
1964	84.3	71.4	58.6	34.5	85.2	72.0	59.2	34.7
1965	85.5	71.7	58.1	33.0	85.8	72.3	58.7	33.3
1966	83.8	69.2	55.5	30.6	84.2	69.9	56.1	31.0
1967	84.5	70.0	56.0	31.4	84.9	70.5	56.4	81.5
1968	35.1	71.6	58.3	33.6	85.4	72.0	58.6	33.6
1969	83.3	67.7	56.1	31.1	84.1	68.6	56.6	31.3
1970	84.5	68.7	53.6	29.7	84.9	69.4	54.3	30.1
1971	84.2	67.6	52.3	28.4	84.8	68.3	53.0	28.8
1972	84.9	70.4	56.0	31.7	85.3	71.7	57.2	32.0
1973	84.9	66.8	50.8	27.3	85.4	67.5	51.5	27.4
1974	83.1	64.1	47.8	22.6	83.6	65.0	48.6	22.9
1975	80.8	61.9	45.8	22.7	81.1	62.5	46.5	23.1
1976	83.7	65.1	48.7	24.4	84.0	65.4	49.0	24.6
1977	81.0	62.5	46.5	22.1	80.9	62.5	46.4	22.1
1978	81.5	62.4	45.6	21.9	81.9	62.9	45.9	22.0
1979	80.3	61.2	45.2	21.5	80.5	61.4	45.3	21.4
1980	79.4	59.3	42.4	19.4	79.9	59.8	42.8	19.6
1981	82.3	62.6	45.9	22.7	82.5	62.8	46.0	22.5

Sources: Atkinson and Harrison, 1978, Table 6.5, and Atkinson, Gordon and Harrison, 1989, Table 1.

Table L1. Distribution of taxable investment income in the UK 1948-2010
Shares

	Top 0.5%	Top 0.25%	Top 0.1%	Top 0.05%	Top 0.01%	Top 10%	Top 5%	Top 1%	Top 0.5%	Top 0.25%	Top 0.1%	Top 0.05%	Top 0.01%
	based on Surtax per cent					based on Survey of Personal Incomes per cent							
1948				13.5	6.1								
1949			17.5	12.7	5.7								
1950			17.5	12.5	5.5								
1951			17.2	12.3	5.4								
1952			17.3	12.3	5.3								
1953			16.0	11.3	4.8								
1954			16.2	11.4	4.8		65.8	43.6	33.8				
1955			14.6	9.5	3.4								
1956			15.9	11.2	4.7								
1957		24.1	15.5	10.8	4.5								
1958		22.5	14.4	10.1	4.2								
1959		21.3	13.7	9.6	4.0		57.7	37.5	28.6				
1960		20.2	13.0	9.1	3.8								
1961		19.5	12.5	8.8	3.7								
1962		19.9	12.8	9.0	3.8								
1963		19.6	12.5	8.8	3.8								
1964		19.7	12.5	8.8			51.4	34.2					
1965	28.2	20.6	13.2	9.2									
1966		15.6	10.0	7.0	3.0								
1967	23.9	17.3	11.0	7.7									
1968	23.2	16.7	10.4	7.2			45.4	28.8					
1969		16.5	10.3	7.1			47.5	29.2	21.5	15.4	9.6	6.6	2.8
1970		17.4	10.8	7.4			52.9	31.6	23.0	16.2	9.9	6.7	2.7
1971		17.4	10.7	7.4			51.4	30.4	22.3	15.8	9.7	6.6	2.7
1972		16.2	9.9	6.8			48.3	29.2	21.3	15.1	9.3	6.3	
1973							47.0	29.0	21.4	15.2	9.3	6.3	
1974							45.0	26.3	19.2	13.7	8.5	5.9	
1975							47.0	26.4	19.0	13.5	8.4	5.8	
1976							47.0	25.0	17.8	12.4	7.7	5.4	
1977							49.1	25.9	18.4	12.7	7.6	5.2	
1978							47.3	25.0	17.6	12.1	7.4	5.0	
1979							39.7	21.0	14.8	10.2	6.0		
1980													
1981													
1982													
1983													
1984													
1985							31.7	16.9	12.3	8.6	5.2	3.4	
1986													
1987													
1988													
1989													
1990													
1991													
1992													
1993													
1994													
1995						44.4	38.6	22.2	17.0	12.9	8.8	6.4	
1996						46.4	42.0	25.4	19.8	15.3	10.6	7.8	
1997						52.1	46.7	28.4	22.1	17.3	12.3	9.7	
1998						61.7	54.0	31.8	24.8	19.2	14.2	11.3	
1999						61.7	54.0	31.8	24.8	19.2	14.2	11.3	
2000						55.5	47.6	26.5	20.3	15.4	10.6	7.8	
2001						60.4	53.1	31.5	24.4	18.5	13.1	9.7	
2002						61.8	55.2	33.6	26.0	19.5	13.8	10.1	
2003						65.4	59.2	36.6	28.0	21.1	14.8	10.8	
2004						69.8	61.5	35.9	26.3	19.0	12.8	9.3	
2005						75.6	68.0	40.3	29.9	21.6	14.5	10.2	
2006						76.9	70.3	40.5	30.0	21.7	14.1	10.0	
2007						90.5	81.4	46.7	34.6	24.6	15.9	11.2	
2008													
2009						99.1	91.8	60.0	47.4	37.2	27.8	21.1	
2010						74.8	68.7	39.3	27.7	19.7	12.4	8.9	
2011													
2012													
2013													

Table L2. Population and income control totals for the distribution of taxable investment income in the UK 1948-2013

	Population control		Income control sources							Income control
	Tax units	Adults	Rent, dividends and interest of the personal sector	Rent, dividends and interest of HH and NPISH		Rent, dividends and interest of HH	Rent, dividends and interest of HH and NPISH	Rent, dividends and interest of HH and NPISH	Source	
				Earlier series including taxes on portfolio income paid by non residents	Post-1950 series					
	000	000	million £	million £	million £	million £	million £	million £		million £
1946	25,473		1,255						NIE 1956 page 2	1,133
1947	25,583		1,340						NIE 1956 page 2	1,209
1948	25,791		1,175	964					NIE 1959 page 23 and NIE 1956 page 2	1,060
1949	25,900			978					NIE 1960 page 23	1,076
1950	25,767			1,001					NIE 1961 page 23	1,101
1951	25,633			1,045	984				NIE 1962 page 27 and NIE 1961 page 23	1,149
1952	25,500				964				NIE 1963 page 27	1,126
1953	25,300				1,054				NIE 1964 page 29	1,231
1954	26,250				1,095				NIE 1965 page 32	1,279
1955	26,200				1,198				NIE 1965 page 32	1,399
1956	26,150				1,219				NIE 1967 page 31	1,424
1957	26,100				1,289				NIE 1967 page 31	1,506
1958	26,250				1,420				NIE 1969 page 26	1,659
1959	26,500				1,547				NIE 1969 page 26	1,807
1960	26,700				1,861				NIE 1971 page 32	2,174
1961	26,900				2,041				NIE 1972 page 30	2,384
1962	27,200				2,021				NIE 1973 page 30	2,361
1963	27,400				2,152				NIE 1974 page 32	2,514
1964	27,500				2,334				NIE 1974 page 32	2,726
1965	27,600				2,681				NIE 1974 page 32	3,132
1966	27,700				2,825	2,632			NIE 1977 page 32 and NIE 1974 page 32	3,300
1967	27,800					2,642			NIE 1978 page 36	3,312
1968	28,091					2,759			NIE 1979 p 36	3,459
1969	28,161					2,920			NIE 1980 page 30	3,661
1970	28,206					2,809			NIE 1981 page 30	3,522
1971	28,240					2,897			NIE 1982 page 30	3,632
1972	28,351					2,958			NIE 1983 page 27	3,709
1973	28,123					3,751			NIE 1984 page 39	4,703
1974	28,274					4,755			NIE 1985 page 39	5,962
1975	28,341					5,271			NIE 1986 page 39	6,609
1976	28,549					5,963			NIE 1986 page 39	7,476
1977	28,892					6,386			NIE 1986 page 39	8,006
1978	29,076					6,227			NIE 1989 page 46	7,807
1979	29,390					9,328			NIE 1990 page 44	11,695
1980	29,704					12,515			NIE 1991 page 44	15,691
1981	30,018					13,333			NIE 1992 page 44	16,716
1982	30,484					14,276			NIE 1993 page 50	17,899
1983	30,950					14,521			NIE 1993 page 50	18,206
1984	31,416					18,656			NIE 1995 page 52	23,390
1985	31,743					23,550			Nie 1996 page 82	29,526
1986	31,998					24,044			NIE 1997 page 83	30,145
1987	32,249					25,601	31,939		NIE 1997 page 83, and Blue Book 2013	32,097
1988	32,507					28,708	38,461		NIE 1997 page 83, and Blue Book 2013	38,652
1989	32,788	44,094				39,164	53,074		NIE 1997 page 83, and Blue Book 2013	53,337
1990		44,284				47,343	65,745		NIE 1997 page 83, and Blue Book 2013	66,071
1991		44,474				46,606	61,500		NIE 1997 page 83, and Blue Book 2013	61,805
1992		44,765				45,985	58,398		NIE 1997 page 83, and Blue Book 2013	58,687
1993		44,897				36,921	48,973		NIE 1997 page 83, and Blue Book 2013	49,216
1994		45,007				37,041	51,111		NIE 1997 page 83, and Blue Book 2013	51,364
1995		45,121				42,975	60,487		NIE 1997 page 83, and Blue Book 2013	60,787
1996		45,191				44,307	60,387		NIE 1997 page 83, and Blue Book 2013	60,686
1997		45,422					68,430	65,380	Blue Book 2013, and Blue Book 2014	65,132
1998		45,654					71,690	68,601	Blue Book 2013, and Blue Book 2014	62,899
1999		45,086					66,416	63,598	Blue Book 2013, and Blue Book 2014	65,820
2000		45,263					72,138	68,862	Blue Book 2013, and Blue Book 2014	71,137
2001		45,756					77,912	74,589	Blue Book 2013, and Blue Book 2014	64,823
2002		46,048					63,104	62,697	Blue Book 2013, and Blue Book 2014	62,710
2003		46,354					60,955	62,739	Blue Book 2013, and Blue Book 2014	67,272
2004		46,689					72,883	68,719	Blue Book 2013, and Blue Book 2014	74,565
2005		47,163					81,081	77,512	Blue Book 2013, and Blue Book 2014	80,135
2006		47,592					85,801	81,535	Blue Book 2013, and Blue Book 2014	87,598
2007		48,043					95,944	90,954	Blue Book 2013, and Blue Book 2014	86,440
2008		48,499					89,568	85,683	Blue Book 2013, and Blue Book 2014	76,649
2009		48,910					67,000	71,075	Blue Book 2013, and Blue Book 2014	76,671
2010		49,371					70,458	74,118	Blue Book 2013, and Blue Book 2014	79,808
2011		49,839					75,520	76,145	Blue Book 2013, and Blue Book 2014	79,493
2012		50,181					76,082	74,528	Blue Book 2013, and Blue Book 2014	
2013		50,502						75,210	Blue Book 2014	

Table L3. Rates of surtax in the UK 1948-49 to 1972-73

1948-59 to 1964-65 and 1966-67 to 1971-72		1965-66 and 1972-33	
Bands of surtaxable income	**Rate of surtax**	**Bands of surtaxable income**	**Rate of surtax**
£	%	£	%
up to 2,000	Nil	up to 2,000	Nil
2,000-2,500	10.00 (1, 2)	2,000-2,500	11.00 (2)
2,500-3,000	12.50 (1, 2)	2,500-3,000	13.75 (2)
3,000-4,000	17.50 (2)	3,000-4,000	19.25 (2)
4,000-5,000	22.5	4,000-5,000	24.75
5,000-6,000	27.5	5,000-6,000	30.25
6,000-8,000	32.5	6,000-8,000	35.75
8,000-10,000	37.5	8,000-10,000	41.25
10,000-12,000	42.5	10,000-12,000	46.75
12,000-15,000	47.5	12,000-15,000	52.25
15,000-20,000	50	Above 15,000	55
Above 20,000	50.00 (3)		

Notes:

(1) For 1969-70 and 1970-71 surtaxable incomes below £2,500 were exempt from surtax but above that level the whole schedule applied so that tax was paid on all surtaxable income above £2,000. However, marginal relief was available to prevent a large jump in taxable liability at £2,300 whereby incomes between £2,500 and £2,681 were charged at 40% of the excess over £2,500.

(2) For 1971-72 and 1972-73 incomes below £3,000 were exempt from surtax. Marginal relief was available for surtaxable incomes in the range £3,000 to £3,499 whereby tax was only charged at 40 per cent (44 per cent in 1972-73) of the excess over £3,000.

(3) 52.5% 1948-49 to 1950-51.

Source: https://www.gov.uk/government/statistics/rates-of-surtax-1948-to-1973.

Table L4. Rate of return implied by the comparison of top wealth levels (excluding housing wealth) and top investment incomes

	Top 1%			Top 10%		
	Mean investment income £	Mean wealth excl. housing assets £	implied rate of return %	Mean investment income £	Mean wealth excl. housing assets £	implied rate of return %
1995	28,508	522,637	5.5	5,707	135,177	4.2
1996	32,932	518,715	6.3	6,020	138,189	4.4
1997	39,432	635,338	6.2	7,238	155,154	4.7
1998	42,492			8,246		
1999	43,431			8,339		
2000	39,622			8,288		
2001	42,566	1,006,984	4.2	8,162	224,353	3.6
2002	43,607	966,084	4.5	8,017	236,996	3.4
2003	50,611	904,690	5.6	9,050	231,903	3.9
2004	54,583			10,627		
2005	65,373	1,142,146	5.7	12,257	256,637	4.8
2006	71,201	1,284,517	5.5	13,520	262,117	5.2
2007	80,362			15,560		
2008						
2009	90,265	1,343,869	6.7	14,899	285,802	5.2
2010	60,573			11,534		
Average excluding 2009			5.5			4.3

Table M1. Wealth share of the top based on The Sunday Times Rich List

	Share of 0.001% per cent	# of cases	P99.999 (£ million)	average wealth (£ million)	Inverted Pareto-Lorenz coefficient	Share of 0.002% per cent	# of cases	P99.998 (£ million)	average wealth (£ million)	Inverted Pareto-Lorenz coefficient
1989	2.44	428	30	91.2	3.0					
1990	2.92	430	50	112.5	2.3					
1991	2.77	431	50	109.0	2.2					
1992	2.83	432	35	110.9	3.2					
1993	2.84	433	41	113.4	2.8					
1994	3.16	434	60	130.5	2.2	3.63	868	25	75	3.0
1995	2.38	434	55	103.2	1.9	2.83	868	30	61	2.0
1996	2.99	435	70	131.5	1.9	3.57	870	40	78	2.0
1997	3.49	436	90	162.7	1.8	4.14	872	45	97	2.1
1998	3.21	438	100	171.9	1.7	3.72	874	50	100	2.0
1999	3.20	440	110	182.2	1.7	3.86	880	57	110	1.9
2000	3.56	443	140	222.6	1.6	4.34	886	72	136	1.9
2001										
2002										
2003	2.81	451	147	234.6	1.6	3.41	898	75	143	1.9
2004	3.52	454	180	313.7	1.7	4.22	904	90	189	2.1
2005										
2006	4.81	463	272	476.8	1.8	5.74	920	125	286	2.3
2007	5.26	467	314	549.5	1.8	6.29	928	150	330	2.2
2008	6.63	472	380	626.4	1.6	7.93	936	175	377	2.2
2009	3.77	475	235	374.2	1.6	4.59	942	115	230	2.0
2010	4.74	480	300	503.2	1.7	5.66	948	135	304	2.3
2011	4.51	485	325	498.4	1.5	6.42	954	150	360	2.4
2012	4.33	488	343	495.0	1.4	6.45	960	155	375	2.4
2013	5.88	491	350	686.2	2.0	6.87	966	160	407	2.5

Table N1. Comparison of wealth in probates and in The Sunday Times Rich List

Note: This table is being updated.

	Surname	Name	Title	year of death	Domicile	Gross estate (£)	Net estate (£)	Net estate (£ 2015)		ratio probate/ST Rich List around year of death (%)
Panel A: Labelled as individuals in list; domiciled in England and Wales according to probate										
1	Heselden	James William		2010	EW	350,340,230	343,172,206	396,735,310		206.7
2	Harding	Matthew Charles		1996	EW	202,000,785	191,673,907	324,477,439		112.7
3	Lascelles	George Henry Hubert	The Earl of Harewood	2011	EW	264,765,961	260,386,241	286,181,307	(*)	
4	Cavendish-Bentinck	Alexandra Margaret Anne		2008	EW	231,091,806	226,913,450	273,077,872		143.6
5	Cholmondeley	George Hugh		1990	EW	119,847,956	118,221,949	242,350,308		262.7
6	Dennis	Felix		2014	EW	280,971,375	195,646,793	197,557,406		39.1
7	Doughty	Nigel Edward		2012	EW	216,121,803	170,079,765	181,152,119		132.9
8	Harrison	George		2001	EW	99,226,780	98,916,464	147,547,063		82.4
9	Diggens	Ronald William		1997	EW	78,318,968	77,340,831	126,937,173		171.9
10	Wheatcroft	Frederick Bernard		2009	EW	98,854,678	98,851,026	119,574,124		79.1
11	Cobham	Michael John	Sir	2006	EW	91,464,644	91,264,379	119,090,570		98.1
12	Lowther	James Hugh William	7th Earl of Londsdale	2006	EW	56,502,153	56,502,153	73,729,463		70.6
13	Rosenfeld	Andrew Ian		2015	EW	77,650,826	65,049,564	65,049,564		54.2
14	Bathurst	Henry Allen John	8th Earl of Bathurst	2011	EW	45,438,397	45,433,397	49,934,239	(*)	
15	Bryce	Philip William	Viscount Leverhulme	2000	EW	31,477,042	31,154,398	47,289,559		103.8
16	Matthews	Bernard Trevor		2010	EW	40,897,973	40,548,249	46,877,113		30.0
17	Gavron	Robert		2015	EW	39,407,212	39,085,106	39,085,106	(*)	
18	King	John Leonard	Baron King	2005	EW	27,603,459	27,389,882	36,876,482	(*)	
19	Goodman	Everard Nicholas		2011	EW	40,239,606	31,929,880	35,093,002		27.8
20	Spencer	Diana	Princess of Wales	1997	EW	21,711,485	21,468,352	35,235,359		126.3
21	Goodman	Everard Nicholas		2011	EW	40,239,606	31,929,880	35,093,002		27.8
22	Cowie	Thomas	Sir OBE	2012	EW	36,485,595	31,663,298	33,724,609	(*)	
23	Aspinall	John Victor		2000	EW	25,269,919	20,578,842	31,236,821	(*)	
24	Buxton	Andrew Robert	11th Duke of Devonshire	2004	EW	19,422,378	19,128,574	26,484,930		3.8
25	Broackes	Nigel		1999	EW	16,170,313	16,127,898	25,205,935		64.5
26	Harrison	Ernest Thomas	Sir	2009	EW	15,384,762	15,379,915	18,604,155	(*)	
27	Manners	Charles John Robert	10th Duke of Rutland	1999	EW	10,739,631	10,637,511	16,625,131		10.6
28	Dellal	Jack		2012	EW	15,577,009	15,414,516	16,418,016		3.4
29	Gulliver	James Gerald		1996	EW	8,278,897	6,984,923	11,824,509	(*)	
30	Marshall	Arthur Gregory George	Sir	2007	EW	4,875,930	4,830,699	6,044,219	(*)	
31	Morrison	John Granville	Baron Margadale of Islay	1996	EW	4,486,647	4,443,625	7,522,443		10.1
32	Lister	Noel Arthur Vaughan		2015	EW	3,078,950	3,029,238	3,029,238	(*)	
Panel B: Labelled as individuals in list, domiciled abroad according to probate										
33	Fiszman	Daniel David		2011	Switzerland	127,615,470	127,599,972	140,240,615		59.6
34	Harmsworth	Vere Harold Esmond	Viscount Rothermere	1998	France	60,219,897	58,883,981	93,440,817		4.9
35	Rowland	Roland Walter		1998	Zimbabwe	26,087,986	25,973,190	41,215,897		4.7
36	Lambton	Antony Claud Frederick		2006	Italy	12,100,360	11,800,360	15,398,249	(*)	
37	De Botton	Gilbert Moise		2000	Switzerland	8,258,273	7,787,191	11,820,252		3.0
38	Copley	Martin		2014	Australia	278,111	278,111	280,827	(*)	
39	Grenville Manton	Edwin Alfred	Sir	2005	US	64,907	64,907	87,388		0.03
40	White	Vincent Gordon Lindsay	Lord White	1995	Bermuda	2,583,092	nil	nil		
Panel C: Labelled as extended families in list; head domiciled in England and Wales according to probate										
41	Getty	John Paul	Sir	2003	EW	208,847,012	202,208,206	288,311,204		44.9
42	Rayne	Max	Baron	2003	EW	120,008,279	119,662,576	170,616,525		133.0
43	Pearson	Weetman John Churchill	3rd Viscount Cowdray	1995	EW	59,738,059	59,433,878	103,042,639		8.5
44	Weinstock	Arnold	Baron	2002	EW	76,230,227	63,826,088	93,638,160		88.6
45	Scott-Ellis	John Osmael	9th Baron Howard de Walden; 5th Baron Seaford	1999	EW	37,124,845	34,854,453	54,473,253		13.4
46	Brotherton-Ratcliffe	John		2009	EW	38,138,323	36,969,092	44,719,281		18.5
47	Coke	Edward Cecil Douglas	7th Earl of Leicester	2015	EW	36,984,818	36,746,857	36,746,857	(*)	
48	Schild	Rolf		2003	EW	19,501,457	19,489,017	27,787,705		20.5
49	Langdon	Edward	Baron Iliffe of Yattendon	1996	EW	12,689,296	12,597,361	21,840,495		13.3
50	Vestey	Edmund Hoyle		2007	EW	16,914,603	16,752,021	20,960,297		2.0
51	Hartwell	William Michael	Baron Hartwell	2001	EW	12,781,721	12,667,928	18,895,900	(*)	
52	Moores	John	Sir	1993	EW	10,208,599	9,954,642	18,289,090		0.8
53	Edward	James	Baron Hanson	2004	EW	10,927,923	10,584,597	14,655,160		21.2
54	Sainsbury	Alan John	Baron Sainsbury of Drury Lane	1998	EW	9,113,876	9,033,868	14,335,512		0.4
55	Hollingbery	Michael John		2009	EW	11,617,211	11,588,061	14,017,378	(*)	
56	Jacobs	David Anthony	Lord	2014	EW	18,431,594	13,398,782	13,529,629	(*)	
57	Hamilton Wills	Frederick Anthony	Lord Dulverton	1992	EW	-	7,162,827	13,368,886		2.7
58	Cayzer	Herbert Robin	Baron Rotherwick	1996	EW	7,161,969	5,972,301	10,110,280		1.8
59	Charles	William Gerald	7th Earl Cadogan	1997	EW	5,996,916	5,813,367	9,541,304		1.2
60	Pilkington	Antony Richard	Sir	2000	EW	6,256,376	6,198,475	9,408,725	(*)	
61	Warner	Edward Courtenay Henry	Sir	2011	EW	7,732,778	7,685,279	8,446,618	(*)	
62	Laing	William Kirby		2009	EW	6,621,607	6,571,007	7,948,551	(*)	
63	Samuel	Peter Montefiore	Viscount Bearsted	1996	EW	4,212,084	3,811,346	6,452,082		9.5
64	Batley	Lawrence		2002	EW	4,432,805	4,291,065	6,295,348		6.6
65	Ashley	Bernard Albert	Sir	2009	EW	4,112,441	4,095,935	4,954,606	(*)	
66	Mackay	Kenneth James William	3rd Earl of Inchcape	1994	EW	3,012,018	2,674,241	4,797,303		3.0
67	Hammerson	Sue	CBE	2014	EW	3,816,195	3,540,618	3,575,194	(*)	
68	Porter	Leslie	Sir	2005	EW	2,626,100	2,626,100	3,535,661		6.3
69	Berkeley	Edward Henry Berkeley	9th Viscount Portman	1999	EW	1,820,625	1,473,857	2,303,458		0.5
70	Aisher	Owen Arthur	Sir	1993	EW	308,141	211,519	388,612		0.7
71	Roddick	Anita Lucia		2007	EW	665,747	nil	nil		
Panel D: Labelled as extended families in list; head domiciled abroad according to probate										
72	Weston	Garfield Howard		2002	Canada	24,317,352	24,303,068	35,654,615		4.1
73	Guinness	Arthur Francis Benjamin	3rd Earl of Iveagh of Farmleigh Castleknock	1992	Ireland	13,946,423	13,670,268	25,514,544		2.4
74	Wohl	Maurice		2007	Poland	22,219,912	14,219,910	17,792,095		14.2

Notes:
(*) The individual dissapears from the list several years before death, most likely because the ST estimates wealth below the minimum of the list, in spite of probate showing in many cases wealth above such minimum.

Table O1. Sources of tabulated data on the distribution of estates in the US 1920-2013

Year	Sources	
1920	SOI 1920	p. 41
1921	SOI 1921	pp. 27-30
1922	SOI 1922	pp. 58-63
1923	SOI 1923	pp. 36-42
1924	SOI 1924	pp. 78-84
1925	SOI 1925	pp. 72-78
1926	SOI 1926	pp. 52-57, 66
1927	SOI 1927	pp. 48-55, 62
1928	SOI 1928	pp. 54-59, 68
1929	SOI 1929	pp. 46-51, 54
1930	SOI 1930	pp. 54-59, 62
1931	SOI 1931	pp. 50-53
1932	SOI 1932	pp. 52-55
1933		
1934		
1935		
1936		
1937	SOI 1937	pp. 76-79, 88-89
1938	SOI 1938	pp. 237-247
1939	SOI 1939	pp. 262-269
1940	SOI 1940	pp. 212-219
1941	SOI 1941	pp. 258-265
1942	SOI 1942	pp. 284-291
1943	SOI 1943	pp. 312-319
1944	SOI 1944	pp. 316-323
1945		
1946	SOI 1946	pp. 360-367
1947	SOI 1947	pp. 380-387
1948	SOI 1948	pp. 342-349
1949	SOI 1949	pp. 362-369
1950	SOI 1950	pp. 237, 239
1951		
1952		
1953	SOI 1953	p. 74
1954	SOI 1954 Estate tax returns	pp. 17-18
1955		
1956	SOI 1956 Estate and gift tax returns	p. 7
1957		
1958	SOI 1958 Fiduciary, gift, and estate tax returns	pp. 59-60
1959		
1960	SOI 1960 Fiduciary, gift, and estate tax returns	p. 47-48
1961		
1962	SOI 1962 Fiduciary, gift, and estate tax returns	p. 60
1963		
1964		
1965	SOI 1965 Fiduciary, gift, and estate tax returns	p. 71
1966		
1967		
1968		
1969	SOI 1969 Estate tax returns	p. 11
1970		
1971		
1972	SOI 1972 Estate tax returns	p. 12
1973		
1974		
1975		
1976	SOI 1976 Estate tax returns	p. 15, Table 1
1977		
1978		
1979		
1980		
1981		
1982		
1983		
1984		
1985		
1986		
1987		
1988		
1989	IRS website	
1990		
1991		
1992	IRS website	
1993		
1994	IRS website	
1995	IRS website	
1996	IRS website	
1997	IRS website	
1998	IRS website	
1999	IRS website	
2000	IRS website	
2001	IRS website	
2002	IRS website	
2003	IRS website	
2004	IRS website	
2005	IRS website	
2006	IRS website	
2007	IRS website	
2008	IRS website	
2009	IRS website	
2010	IRS website	
2011	IRS website	
2012	IRS website	
2013	IRS website	

Notes: SOI denotes Statistics of Income published by the Internal Revenue Service (IRS)

Table O2. Control totals for the distribution of estates in the US 1921-2013

	Adult decedents aged 20 and over	Adult population aged 20 and over	Adult mortality rate	Total personal wealth	Total personal wealth passed at death
	000	000	per cent	billion USD	billion USD
1920					
1921	940	63,898	1.47	276	5.94
1922	955	64,769	1.48	281	6.07
1923	976	66,021	1.48	296	6.44
1924	1,000	67,457	1.48	310	6.78
1925	1,037	68,641	1.51	335	7.48
1926	1,130	69,843	1.62	356	8.53
1927	1,089	71,101	1.53	382	8.69
1928	1,138	72,359	1.57	428	10.04
1929	1,154	73,580	1.57	474	11.10
1930	1,138	74,963	1.52	414	9.43
1931	1,116	76,070	1.47	343	7.55
1932	1,126	77,125	1.46	281	6.13
1933	1,117	78,198	1.43	284	6.06
1934	1,159	79,362	1.46	304	6.62
1935	1,172	80,508	1.46	323	6.99
1936	1,257	81,625	1.54	365	8.34
1937	1,237	82,683	1.50	368	8.16
1938	1,181	83,769	1.41	357	7.44
1939	1,205	84,920	1.42	368	7.72
1940	1,237	86,118	1.44	376	7.98
1941	1,217	87,365	1.39	394	8.08
1942	1,211	88,393	1.37	430	8.67
1943	1,277	88,839	1.44	488	10.30
1944	1,239	88,258	1.40	552	11.35
1945	1,240	87,375	1.42	629	13.05
1946	1,232	90,619	1.36	705	13.99
1947	1,279	94,946	1.35	767	15.05
1948	1,283	96,467	1.33	822	15.91
1949	1,286	97,860	1.31	862	16.45
1950	1,304	99,223	1.31	917	17.48
1951	1,330	100,261	1.33	1,000	19.21
1952	1,340	101,048	1.33	1,067	20.45
1953	1,364	101,898	1.34	1,103	21.29
1954	1,332	102,868	1.30	1,160	21.63
1955	1,380	104,109	1.33	1,249	23.80
1956	1,414	105,351	1.34	1,338	25.77
1957	1,476	106,422	1.39	1,393	27.67
1958	1,488	107,448	1.38	1,471	29.12
1959	1,502	108,498	1.38	1,574	31.10
1960	1,555	110,080	1.41	1,637	32.95
1961	1,549	111,249	1.39	1,732	34.30
1962	1,606	112,475	1.43	1,822	36.94
1963	1,663	113,887	1.46	1,885	39.25
1964	1,650	115,376	1.43	1,999	40.92
1965	1,687	116,753	1.44	2,148	44.60
1966	1,727	117,983	1.46	2,253	47.58
1967	1,724	119,594	1.44	2,407	50.26
1968	1,804	121,591	1.48	2,694	58.11
1969	1,796	123,551	1.45	2,861	60.73
1970	1,797	125,666	1.43	2,936	61.52
1971	1,810	128,066	1.41	3,157	65.66
1972	1,854	130,636	1.42	3,546	74.35
1973	1,868	133,213	1.40	3,838	79.80
1974	1,835	135,757	1.35	3,885	78.18
1975	1,799	138,398	1.30	4,132	80.24
1976	1,819	141,174	1.29	4,670	90.26
1977	1,810	144,077	1.26	5,167	97.76
1978	1,840	147,093	1.25	5,726	108.27
1979	1,828	150,161	1.22	6,539	120.75
1980	1,905	153,197	1.24	7,509	142.17
1981	1,898	156,305	1.21	8,303	154.11
1982	1,898	159,053	1.19	8,853	162.07
1983	1,946	161,681	1.20	9,409	174.40
1984	1,968	164,179	1.20	10,093	185.71
1985	2,015	166,591	1.21	11,058	204.64
1986	2,034	168,745	1.21	12,222	224.66
1987	2,053	170,752	1.20	13,247	242.10
1988	2,097	172,634	1.21	14,350	264.04
1989	2,078	174,480	1.19	15,639	281.31
1990	2,079	176,422	1.18	16,371	288.67
1991	2,101	178,968	1.17	17,092	297.68
1992	2,111	181,706	1.16	18,057	308.43
1993	2,204	184,172	1.20	18,843	336.03
1994	2,217	186,277	1.19	19,455	349.58
1995	2,252	188,402	1.20	20,696	378.56
1996	2,257	190,500	1.18	22,684	397.79
1997	2,258	192,695	1.17	25,012	419.18
1998	2,282	195,144	1.17	27,740	447.66
1999	2,337	197,473	1.18	31,134	510.89
2000	2,349	199,878	1.18	32,936	539.40
2001	2,363	202,446	1.17	32,407	529.58
2002	2,390	204,943	1.17	31,544	518.59
2003	2,395	207,272	1.16	34,094	559.35
2004	2,344	209,606	1.12	39,338	629.16
2005	2,394	212,106	1.13	44,794	728.19
2006	2,373	214,634	1.11	49,178	788.45
2007	2,370	217,164	1.09	50,725	808.37
2008	2,421	219,668	1.10	45,194	742.20
2009	2,389	222,199	1.08	40,883	668.16
2010	2,423	224,830	1.08	43,375	724.66
2011	2,471	227,481	1.09	45,278	754.21
2012	2,500	230,100	1.09	48,235	794.88
2013	2,555	232,656	1.10	53,061	873.94

Table O3. Distribution of estates in the US 1921-2013
Shares

	Distribution of gross taxable estates year of filing					Distribution of taxable estates net of debts year of filing					Distribution of gross estates (taxable and non taxable) year of filing					Distribution of gross taxable estates year of death			
	Top 1%	Top 0.5%	Top 0.1%	Top 0.05%	Top 0.01%	Top 1%	Top 0.5%	Top 0.1%	Top 0.05%	Top 0.01%	Top 1%	Top 0.5%	Top 0.1%	Top 0.05%	Top 0.01%	Top 1%	Top 0.5%	Top 0.1%	Top 0.05%	Top 0.01%
	per cent					per cent					per cent					per cent			
1920																			
1921	35.2	29.8	19.0	15.2	8.5														
1922	30.1	24.8	14.6	11.1	5.3														
1923		22.3	13.0	9.9	5.0														
1924	31.3	26.0	15.5	11.9	6.1														
1925	33.0	28.2	17.9	14.2	7.8														
1926			15.9	12.2	6.2														
1927			18.2	14.5	7.9														
1928			17.9	14.2	8.2														
1929			16.5	12.8	6.4														
1930			20.3	16.5	9.6														
1931			15.8	12.4	6.5														
1932																			
1933																			
1934																			
1935																			
1936																			
1937	34.4	29.1	18.5	14.9	8.3	31.9	26.9	17.1	13.8	7.7	34.1	29.0	18.4	14.8	8.3				
1938	33.7	28.3	17.7	14.0	7.9	31.4	26.2	16.5	13.0	7.3	34.5	28.8	17.8	14.1	7.9				
1939	31.2	26.0	15.7	12.3	6.3	29.2	24.2	14.8	11.6	6.0	32.0	26.5	16.0	12.5	6.4				
1940	31.7	26.5	16.5	13.2	7.4	29.6	24.7	15.4	12.3	6.9	32.6	27.1	16.8	13.4	7.5				
1941	30.8	25.6	15.7	12.3	6.7	28.6	23.7	14.6	11.5	6.3	31.3	25.9	15.8	12.3	6.7				
1942	28.0	23.0	13.5	10.4	5.3	26.0	21.3	12.6	9.7	5.0	28.5	23.2	13.6	10.5	5.3				
1943		21.7	12.6	9.7	5.1		20.3	11.7	9.1	4.8	27.3	22.0	12.6	9.8	5.1				
1944	27.7	22.5	13.2	10.2	5.3	27.6	22.4	13.1	10.1	5.2	28.2	22.8	13.3	10.2	5.3				
1945																			
1946	25.3	20.1	11.0	8.2	3.9	24.0	19.1	10.5	7.8	3.8	25.6	20.2	11.0	8.2	3.9				
1947	25.9	20.6	11.5	8.8	4.5	24.5	19.5	11.0	8.4	4.3	26.2	20.8	11.6	8.8	4.5				
1948	24.6	19.5	10.8	8.3	4.4	23.3	18.4	10.3	7.8	4.2	25.1	19.7	10.9	8.3	4.4				
1949	22.9	17.9	9.3	6.8	3.1	21.7	16.9	8.7	6.4	2.9	23.4	18.1	9.4	6.8	3.1				
1950	23.9	18.8	10.2	7.7	3.9						24.4	19.0	10.3	7.7	3.9				
1951																			
1952																			
1953	24.5	19.1	10.2	7.7	3.7	23.3	18.1	9.8	7.3	3.6	24.8	19.3	10.3	7.7	3.7				
1954	24.3	19.0	10.2	7.7	3.8	23.2	18.1	9.8	7.4	3.6	24.6	19.1	10.3	7.7	3.8				
1955																			
1956	27.2	21.6	12.0	9.2	4.8						27.4	21.8	12.1	9.2	4.8				
1957																			
1958	25.3	19.7	10.5	7.9	3.9	24.0	18.7	9.9	7.4	3.7	25.6	19.9	10.6	7.9	3.9				
1959																			
1960	28.0	22.1	12.5	9.7	5.3	26.9	21.3	12.0	9.4	5.1	28.3	22.4	12.6	9.8	5.4				
1961																			
1962	26.7	20.7	11.0	8.1	3.7	25.4	19.7	10.4	7.7	3.5	27.1	21.0	11.1	8.2	3.7				
1963																			
1964																			
1965	27.5	21.5	11.5	8.6	4.2	26.1	20.4	10.9	8.1	3.9	27.8	21.7	11.6	8.7	4.2				
1966																			
1967																			
1968																			
1969	22.3	17.2	9.1	6.9		20.8	15.9	8.4	6.3		22.6	17.4	9.2	6.9					
1970																			
1971																			
1972	24.1	18.7	10.0	7.4		22.7	17.5	9.3	6.9		24.5	19.0	10.0	7.4					
1973																			
1974																			
1975																			
1976	22.2	17.0	9.3	7.2		20.8	15.9	8.7	6.7		22.5	17.3	9.3	7.2					
1977																			
1978																			
1979																			
1980																			
1981																			
1982																			
1983																			
1984																			
1985																			
1986																			
1987																			
1988																			
1989																17.7	14.3	8.6	6.8
1990																			
1991																			
1992																18.0	14.4	8.6	6.8
1993																			
1994	17.2	13.8	8.1	6.3		16.6	13.3	7.8	6.1		22.1	17.3	9.5	7.3					
1995	18.1	14.5	8.9	7.2		17.3	13.9	8.4	6.7		23.2	18.3	10.6	8.4		17.9	14.4	8.7	7.0
1996	20.4	16.7	10.6	8.7		19.7	16.2	10.3	8.4		25.6	20.4	12.2	9.9					
1997	19.4	15.7	9.1	7.1		18.8	15.1	8.7	6.8		24.8	19.3	10.7	8.3					
1998	21.1	17.2	10.4	8.3		20.5	16.7	10.1	8.1		26.2	20.5	11.8	9.2		20.8	16.9	10.0	
1999	20.2	16.5	10.0	8.1		19.5	15.9	9.7	7.8		25.4	20.0	11.6	9.2					
2000	18.0	14.5	8.6	6.8		17.4	14.0	8.2	6.5		23.4	18.3	10.1	7.7					
2001	18.4	15.1	9.3	7.5		17.8	14.5	9.0	7.2		24.7	19.5	11.3	8.9		19.9	16.3	10.1	
2002	19.7	16.0	9.8	7.9		18.9	15.3	9.4	7.6		26.5	20.9	12.1	9.6					
2003	17.9	14.4	8.7	6.9		17.3	13.9	8.4	6.6		24.8	19.5	11.2	8.8					
2004		14.2	9.0	7.5			13.8	8.8	7.2		23.8	19.0	11.4	9.2			14.0	8.7	
2005		13.1	7.9	6.4			12.6	7.6	6.1		22.7	17.8	10.3	8.1					
2006		12.7	7.8	6.2			12.3	7.5	6.0		22.0	17.3	9.9	7.8					
2007		14.4	9.4	7.8			13.9	9.0	7.5			19.4	11.7	9.5			14.7	9.4	
2008			8.0	6.4				8.3	6.8			18.6	10.7	8.4					
2009			7.7					7.3				18.3	10.6	8.3				8.3	
2010																			
2011			7.4					7.2					10.6	8.6				9.1	7.6
2012			9.1					7.7	6.2				10.6	8.3					
2013			8.7	7.2				8.7	7.2				12.2	9.9					