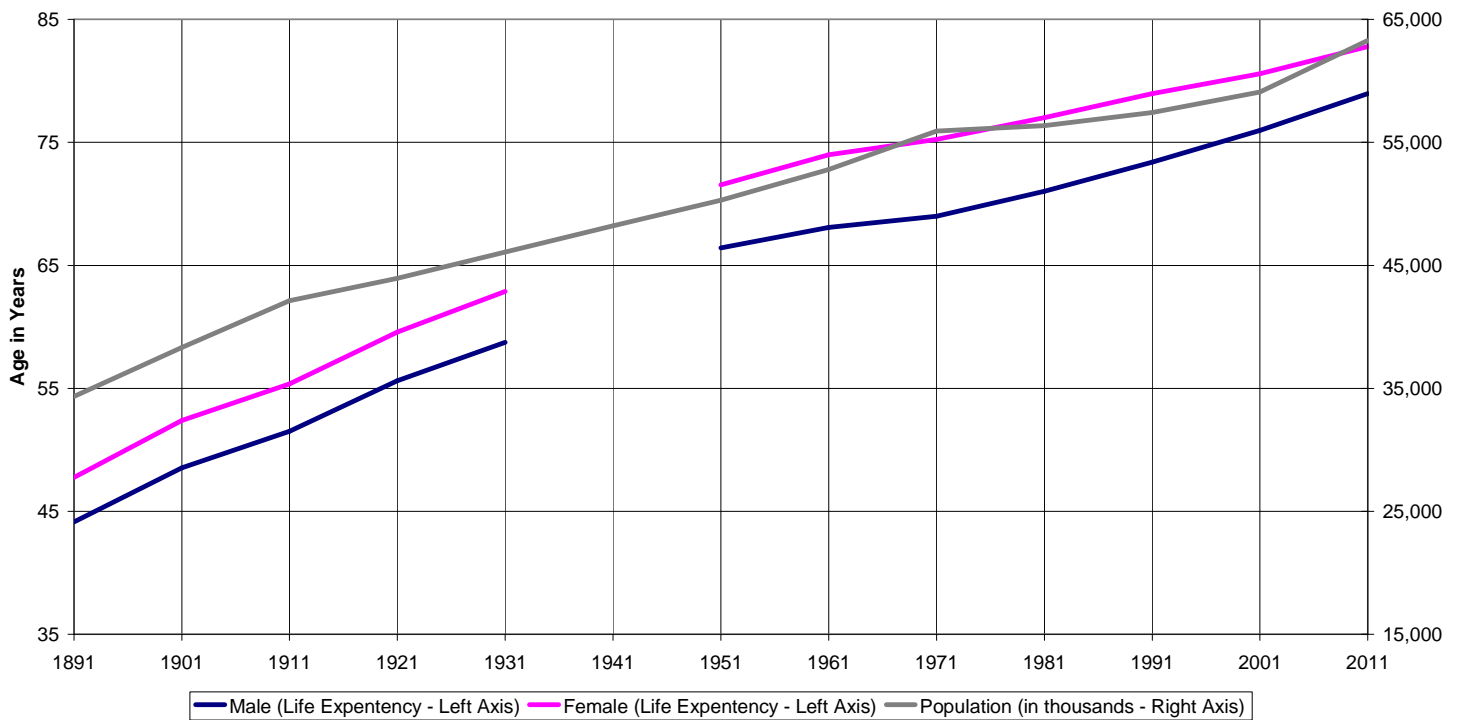


UK Economy

The last century plus

Or four generations

UK Long Term History of Life Expectancy at Birth and Growth in Population

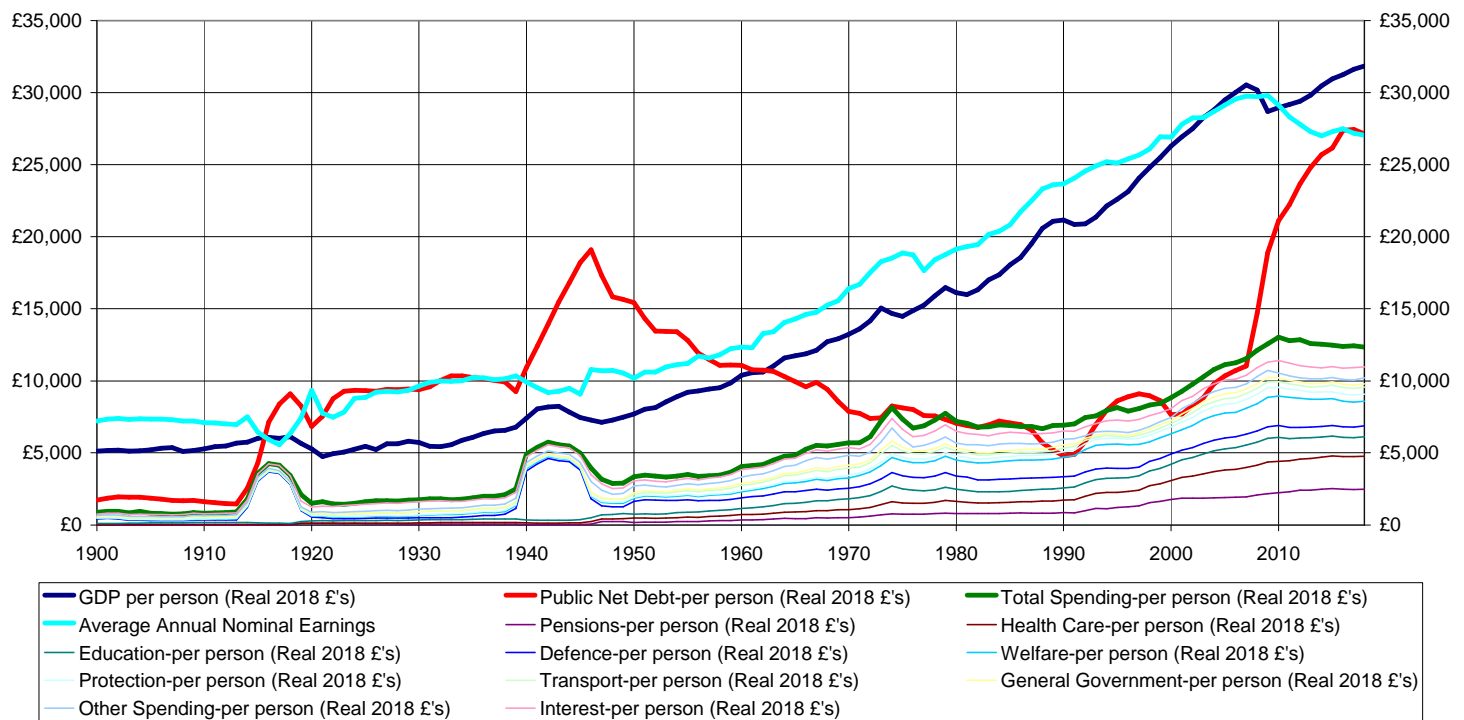


Since the turn of the 19th/20th century the UK population (grey line on the chart from ONS (<https://www.ons.gov.uk/>) and Measuring Worth (<https://measuringworth.com/>)) and life expectancy (pink line, females, blue line males on the chart from ONS published life tables) has risen steadily from 35 million/age 47 to 66 million/age 81 respectively (in 2016/2017).

Much, if not most, of this improvement has happened due to continuous improvements in hygiene and food security and most recently (since the 1970's) from huge improvements in medical and health care.

We are now a substantially wealthier, healthier and long lived society and populace, with wealth more equally shared, offering greater and more equally distributed opportunities, than at any time in the UK's history (notwithstanding a recent stall in improvements thanks to the international crisis in 2008).

Government Spending, GDP, Average Income and Public Debt per person in Current £'s



The chart clearly shows the substantial and relentless real (in 2017 £'s) national and popular improvements in GDP (dark blue), national debt (red), average annual incomes (cyan) and government spending on shared services (green) per person over the period since the start of the 20th century (derived from and factored using deflators and RPI values from Measuring Worth, government spending from UK Public Spending <https://www.ukpublicspending.co.uk/> and cross checked by HM Treasury Outturn reports).

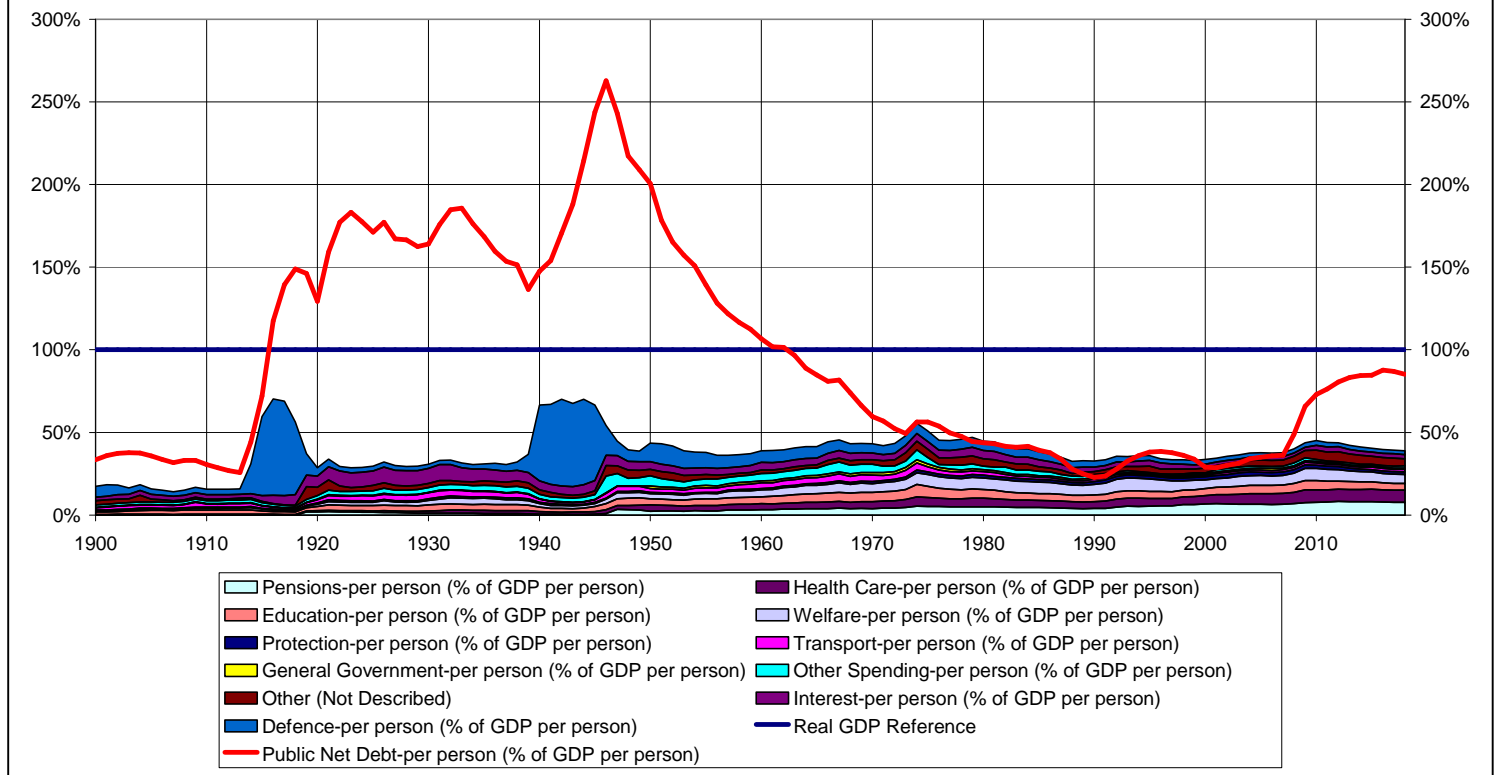
Several events and their consequences can be clearly seen.

The First World War and the subsequent inter-war debt, followed by the Second World War and the escalation of the debt to new levels, can be clearly seen in the red line in the chart. This gradually reduced to a modern low in 1990, but has recently soared again following the 2008 crisis.

Also clearly visible in the chart in average income (cyan) and GDP (blue) are the effects per person of that same 2008 crisis.

Government spending per person (green) also clearly has not increased in real terms since that same time as well, particularly following the 2010 change of government and new fiscal policies.

Government Spending and Debt as a % of GDP per person

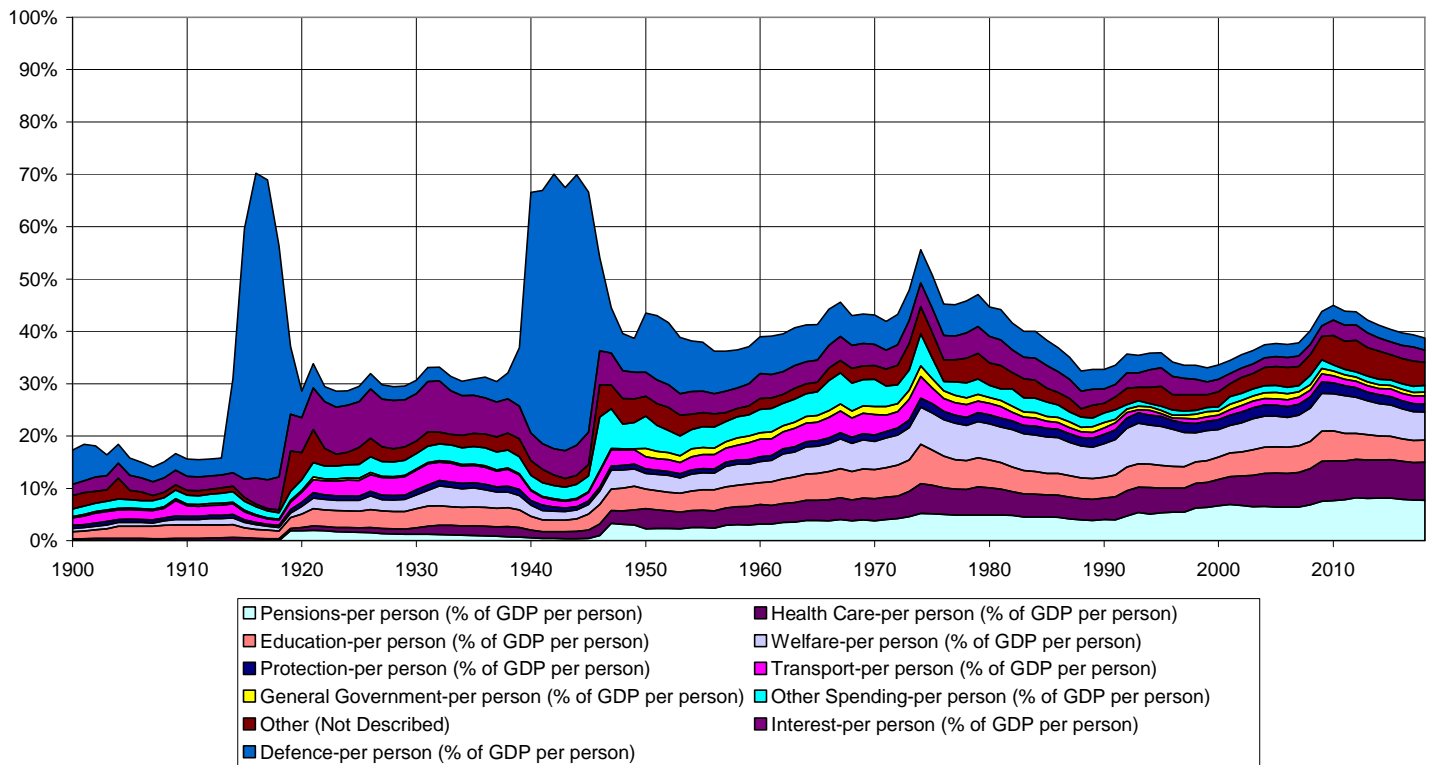


In re-analysing real value data per person and calculating those values as a percentage of GDP each year since 1900, the effective bankruptcy of the UK economy after the Second World War can be seen in the peak of the red line (debt), at more than 2½ times the annual GDP (from 1943 until 1950 at over 2 times GDP).

This debt took 35 years to bring to more manageable levels, but has again risen significantly since the 2008 international crisis, though not to the same extreme levels due to the world wars.

Of course this modern level of debt is common throughout most of the countries of the world as well, so the UK is not unique.

Government Spending as a % of GDP per person



Viewing government spending as a percentage of GDP in more detail, whilst removing national debt from the analysis, illustrates the change in the level of government spending over 120 years, with several clear blocks of time standing out.

The first distinct period is before the First World War, when government spending was operating in the range of 14% to 18% of GDP per person (**Note** the 1900 to 1906 level of defence spending reflecting both the Boer War and subsequent expenditure on Dreadnought's and early preparation for defence against growth in Imperial German military expenditure).

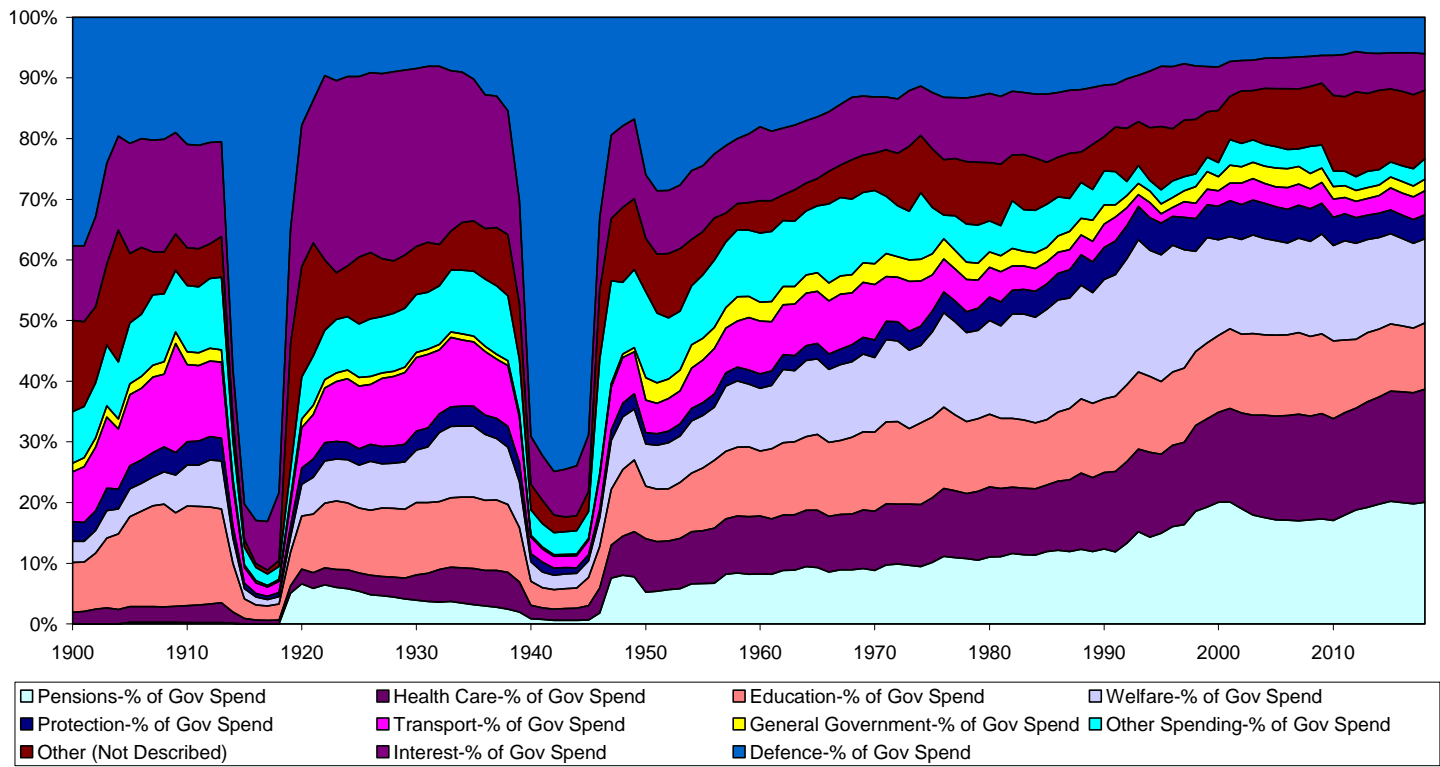
Spending soared to 70% of GDP for a few years, driven mostly by defence spending during the First World War, and remained at about 30% between the two wars due to interest repayment and the general issues with international economic instability.

Again the level soared during the Second World War to 70% but was sustained at that level for a longer period, resulting in the soaring levels of national debt seen previously.

Since the Second World War the changes in emphasis in the national psyche and consequent government policy can be seen in the steady rise to 45% of GDP in 1978/1979, before the election of the Conservative Government under Margaret Thatcher.

The steady reduction back to the recent low of 35% in 1989/1990 and subsequent small rise under John Major can also be seen. It then rose steadily under Tony Blair and Gordon Brown, finally reaching 45% again, just before the Cameron/Clegg coalition of 2010 and George Osborne policies of spending control and austerity.

Government Spending as a % of Total Government Spending



To further illustrate the change in philosophy throughout society, and in practise in government spending, over the last 120 years, the chart plots government spending for major social and infrastructure provision by type as a percentage of total government spending.

Again defence spending stands out during the two wars (and even slightly during the worst early phases of the cold war in the 1950's, and again the 1900 to 1906 period).

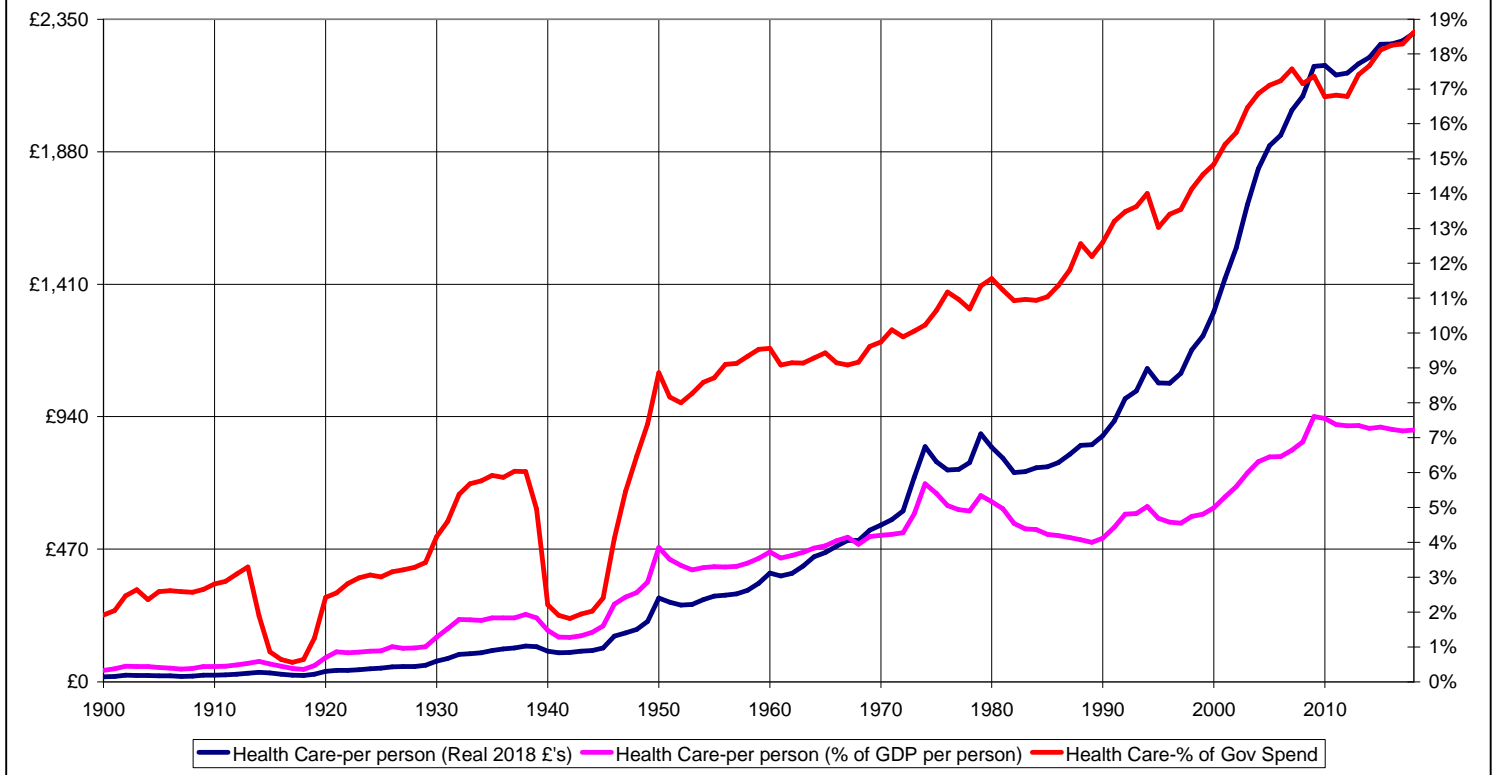
Clearly growing, and more recently sustained, as a percentage of government spending are general social provision for pensions, health care (NHS), education and other welfare benefits, though education had long been accepted as something worthy of government expenditure, from 1870 onwards.

These four can be clearly seen growing as a share of government spending from the time of the cold war (about 1950/1955) until the turn of the millennium. They have now remained steady, as a percentage of total government spending, more or less, since then, totalling a little over 62% of all government spending.

Since the Second World War we have known this approach to government spending and intervention as the "Welfare State".

Specific Areas Of Government Spending

Government Health Care Spending-per person (% of GDP)



In the UK, the real value of government spending on health care per person over the last 120 years can be seen in the chart in the blue line (in 2017 £'s). Currently this is slightly more than £2,200 per person. The formation of the NHS after the war can be seen in the 1948 to 1950 jump to over £300 per person (more than threefold growth in real value).

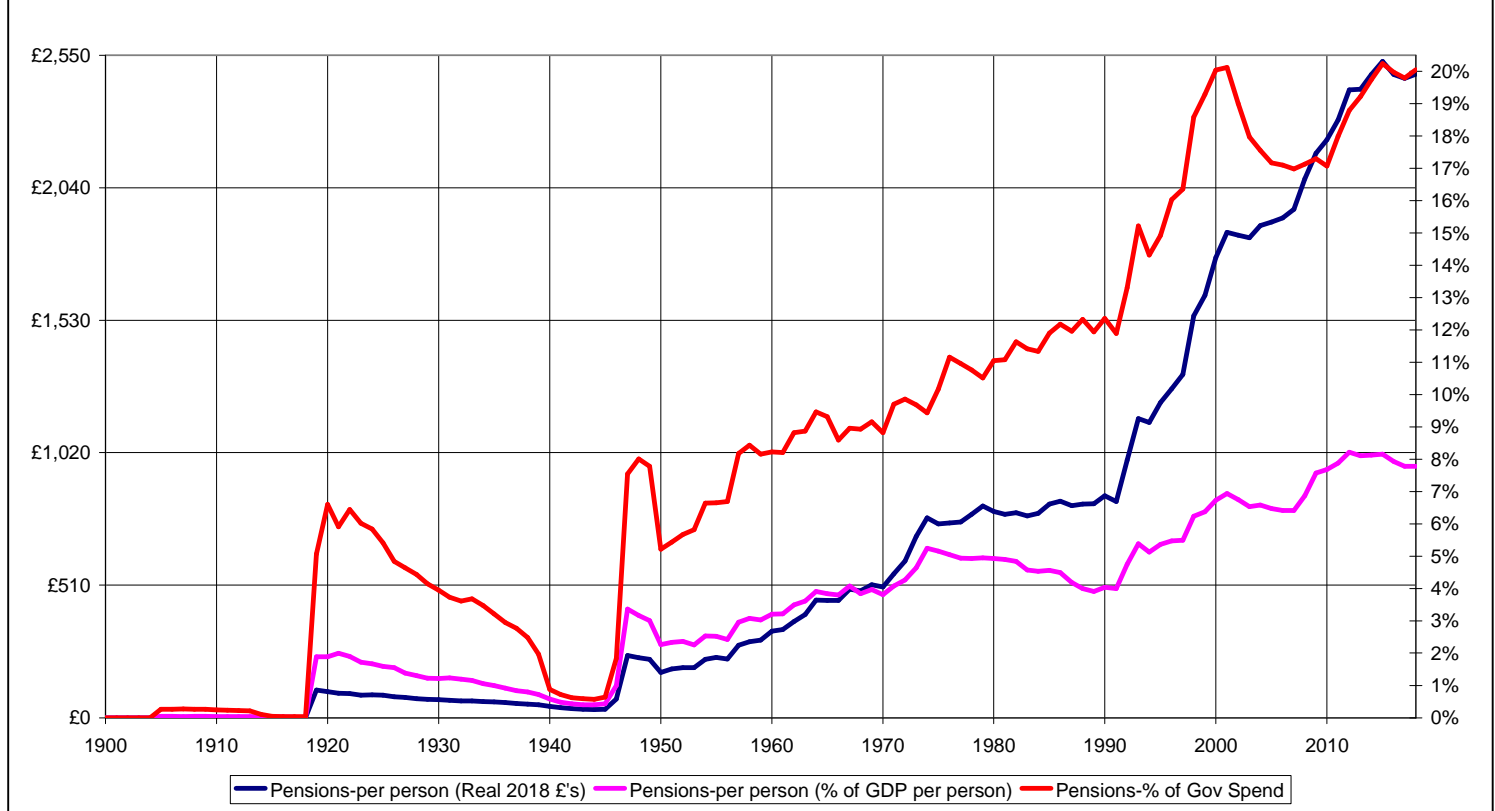
The particular growth in spending under the Blair/Brown governments from 1997, can be clearly seen in both spending per person and as a percentage of GDP, until the 2008 economic crisis and subsequent change of government in 2010.

This growth can also be seen as a share of government spending after the war and subsequent defence cuts from 1950 (red line).

Whilst spending has continued to grow since the economic crisis of 2008 and the subsequent election of 2010, and introduction of austerity, the rate of real growth has been severely constrained over the last 8 years.

Seen as a percentage of GDP per person (pink line), this can be seen to have remained largely static, with no growth as a percentage of GDP during that time since 2009, at about 7 to 7½%.

Government Pension Spending-per person (% of GDP)



Comparing government spending on health care to pension spending shows a broadly similar pattern in recent decades.

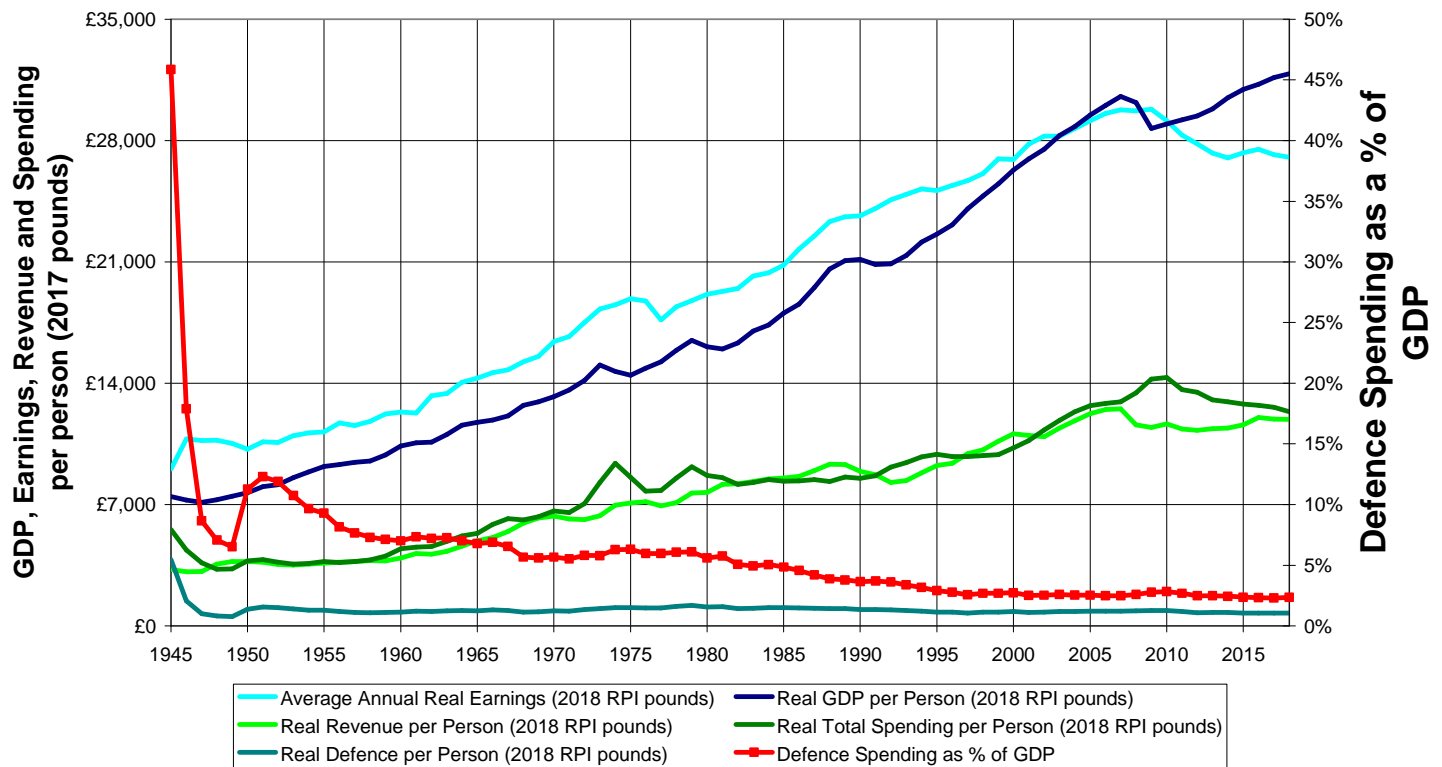
Actually pension spending is now the largest single area of spending by the UK government, both per person and as a percentage of GDP and total government spending.

The key difference to health care spending is the near total absence of pension spending before the First World War, despite the 1906 and 1910 pension provisions. These provisions were restricted to a very small number of people in reality.

The second notable difference is the steady decline in real terms between the two world wars, in fact a time of sustained austerity, hardship and in fact real poverty for many, if not most people.

After the Second World War the pattern is broadly similar to that for health care provision, until 1992/1993, after which time pension spending per person has been consistently greater than health spending, as the UK population's increase in life expectancy has taken greater effect.

UK Defence Spending



The final specific area of Government spending that shows a notable long-term change in emphasis is defence.

Always controversial, especially following the experiences of the First World War and the years of appeasement during the growth of Nazi Germany, the general trend has been to constrain defence spending piecemeal, at least since the post Second World War peak during the early stages of the Cold War in 1950 to 1951.

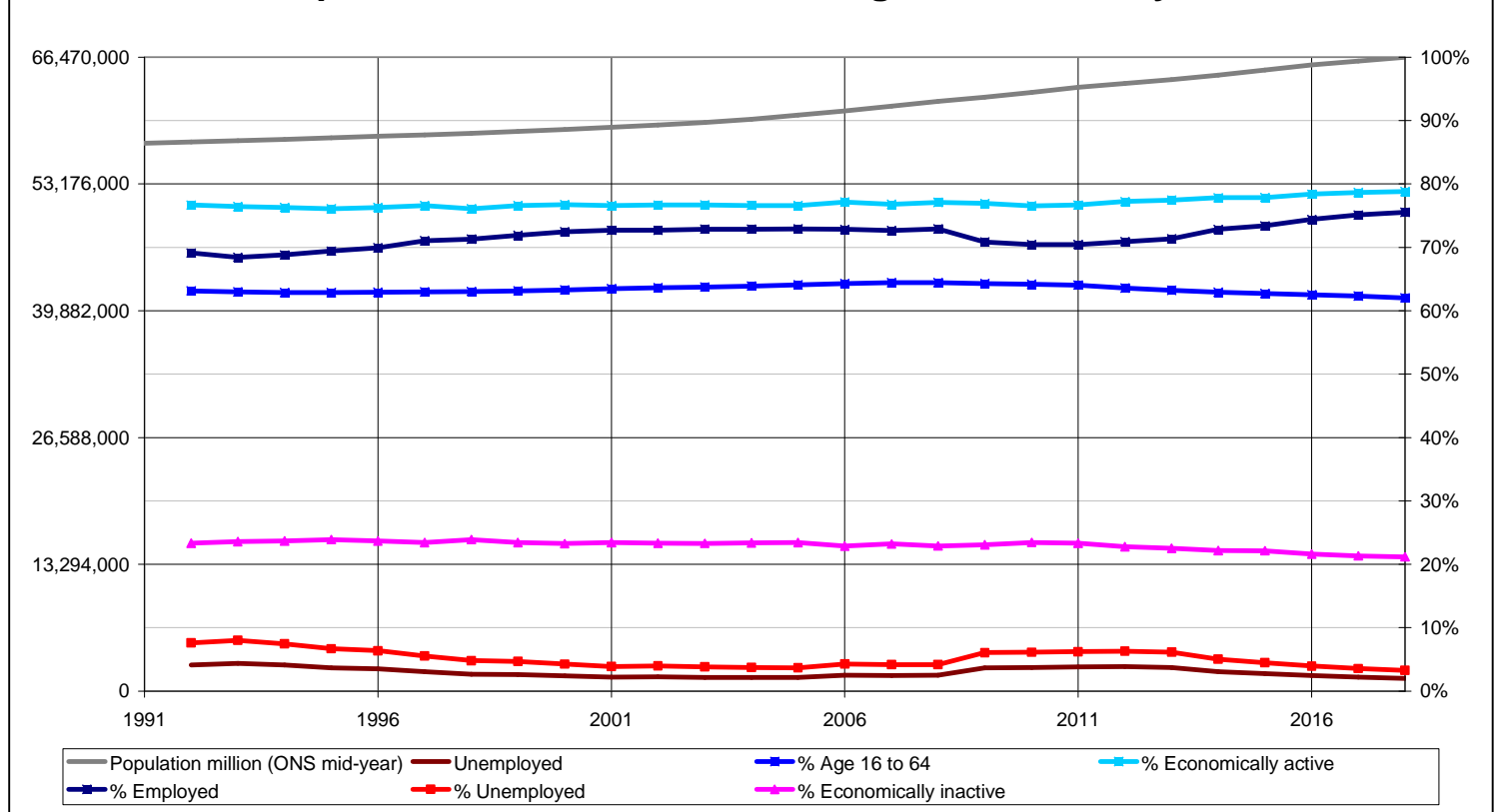
Spending has now declined to such a degree that the UK is only just meeting its commitment to NATO (being to spend 2% of GDP on defence. **Note** only 4 other member's of NATO currently meet their defence spending commitments, including the USA, Greece, Estonia and Latvia).

UK Economy

The last quarter century

Or one generation

UK Population Growth and Percentage Economically Active



Concentrating on the last quarter century, the time span of just one generation, shows recent trends clearly.

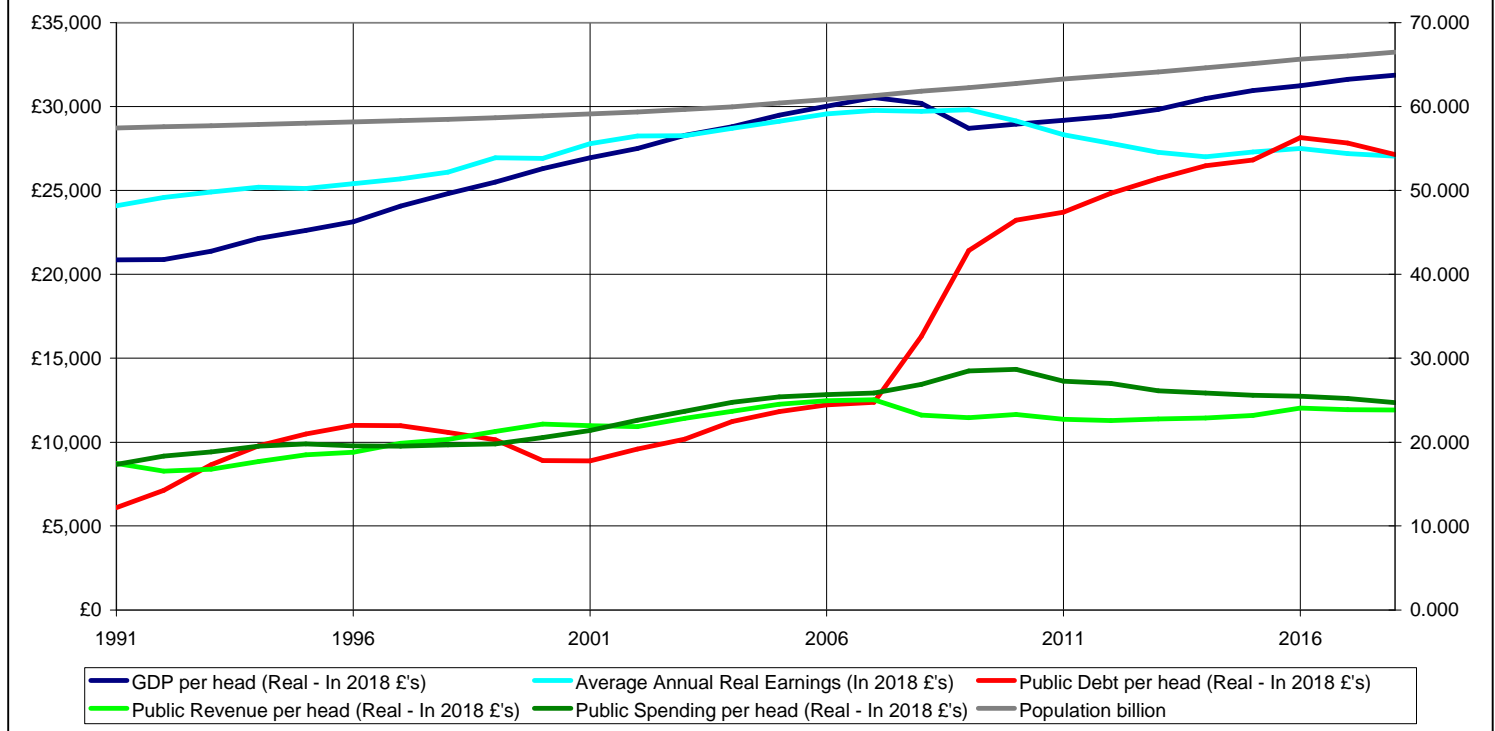
Surprising in the trend is the stability of distributions of the working age, economically active and inactive within the UK population, 62% aged 16-64 of UK population (in bright blue), 80% of those working age range economically active (in cyan) and 20% economically inactive (in pink). (All figures from ONS population tables)

In the last quarter century the effects of the ageing population are still largely masked by the general increase in immigration of younger working age people, who themselves have been more inclined to have more children. Also the gradual ageing of the so called “baby-boomers” will have sustained some of this age profile, though these latter have now variously reached or are soon approaching retirement age.

These have been factors in sustaining the percentage of 16 to 64 year olds in the population and thus the working population.

It might therefore be argued that the greater proportion of the over 65's and more significantly over 70's are amongst the supposed “indigenous” population, which is now set to grow noticeably in the coming decades.

GDP, Public Debt and Government Expenditure per person in real Current £'s



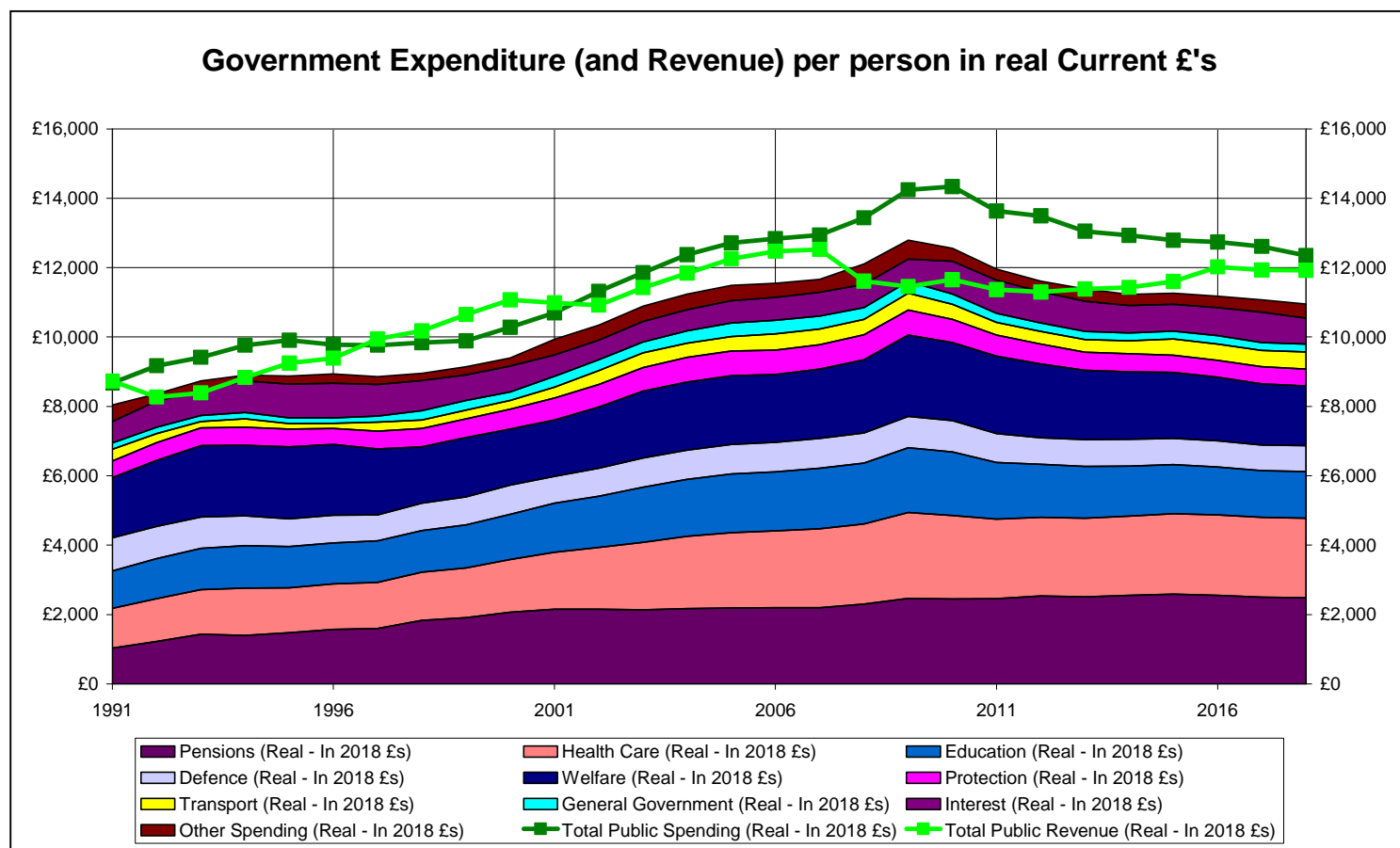
The changes in wealth and economic fortune in the last quarter century are clear in this chart, covering the period. (All numbers sourced from Measuring Worth and UK Public Spending)

As population (grey line) has continued to rise steadily (and life expectancy, see Air Quality document), so have average incomes (cyan), GDP (dark blue) and government spending (dark green) and revenue (light green) per person (all in real 2017 £'s), until the 2008 international economic crisis.

Following the 2008 crisis, national debt soared (red), whilst GDP, average income and government revenue per person, in real terms (2017 £'s) all fell substantially.

Government expenditure only stopped rising after the 2010 election and the new fiscal policies of the coalition government.

Government Expenditure (and Revenue) per person in real Current £'s

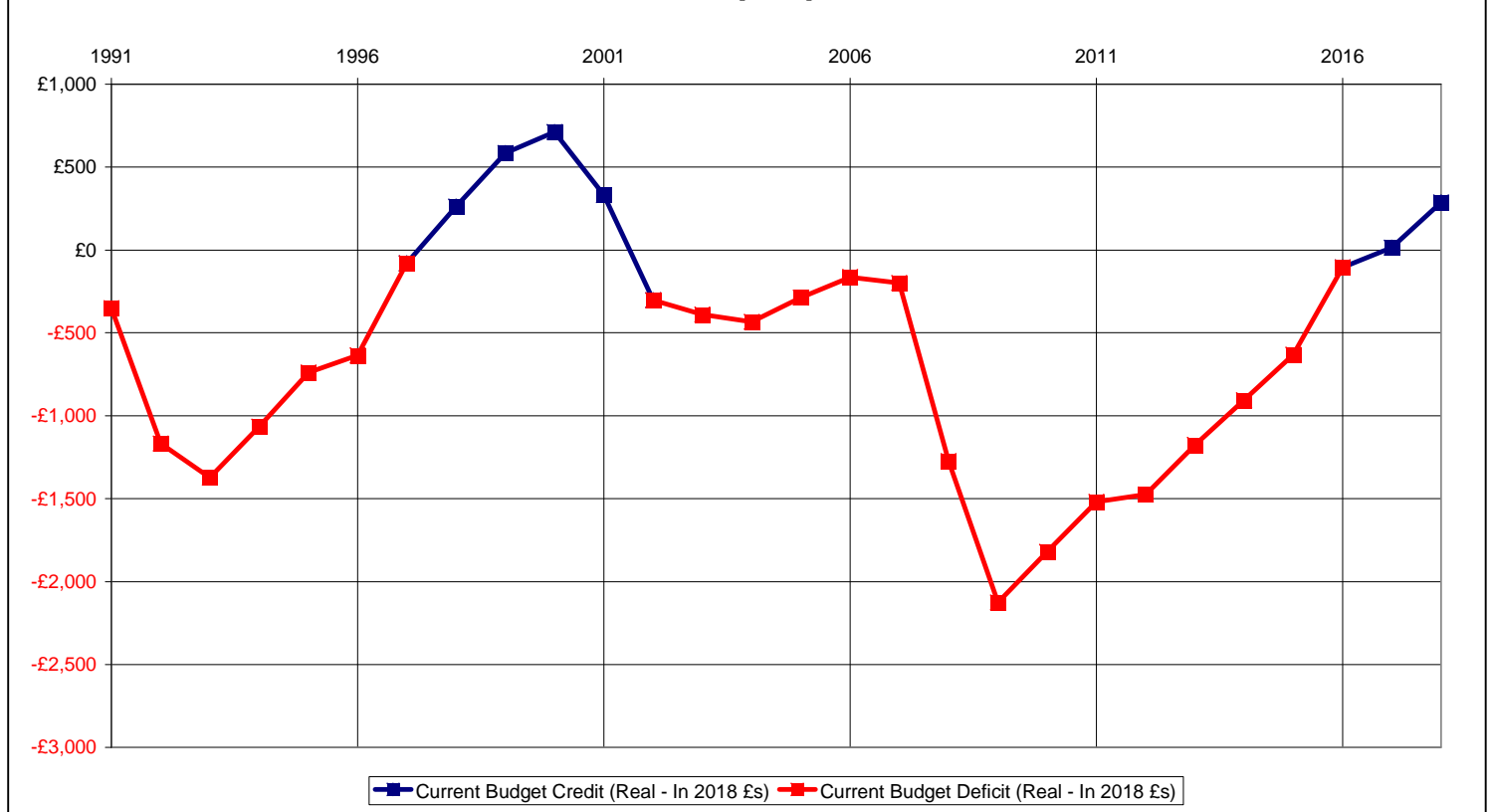


Government expenditure in each primary area generally grew in line with general wealth throughout the period until the 2008 crisis.

The downturn in GDP led directly to a reduction in government revenue (shown in the light green line), whilst government expenditure continued to rise in the subsequent two/three years (shown in the dark green line).

The reduction in government expenditure in all areas can be seen in the chart (after the 2009/2010 peak), though, due to general commitments, it should be noted that spending on pension was less constrained than other areas of government expenditure.

Government Current Deficit per person in real Current £'s



In terms of government finances and current account credit/deficit, this chart shows deficit in red and credit in blue per person in the UK (in 2017 £'s).

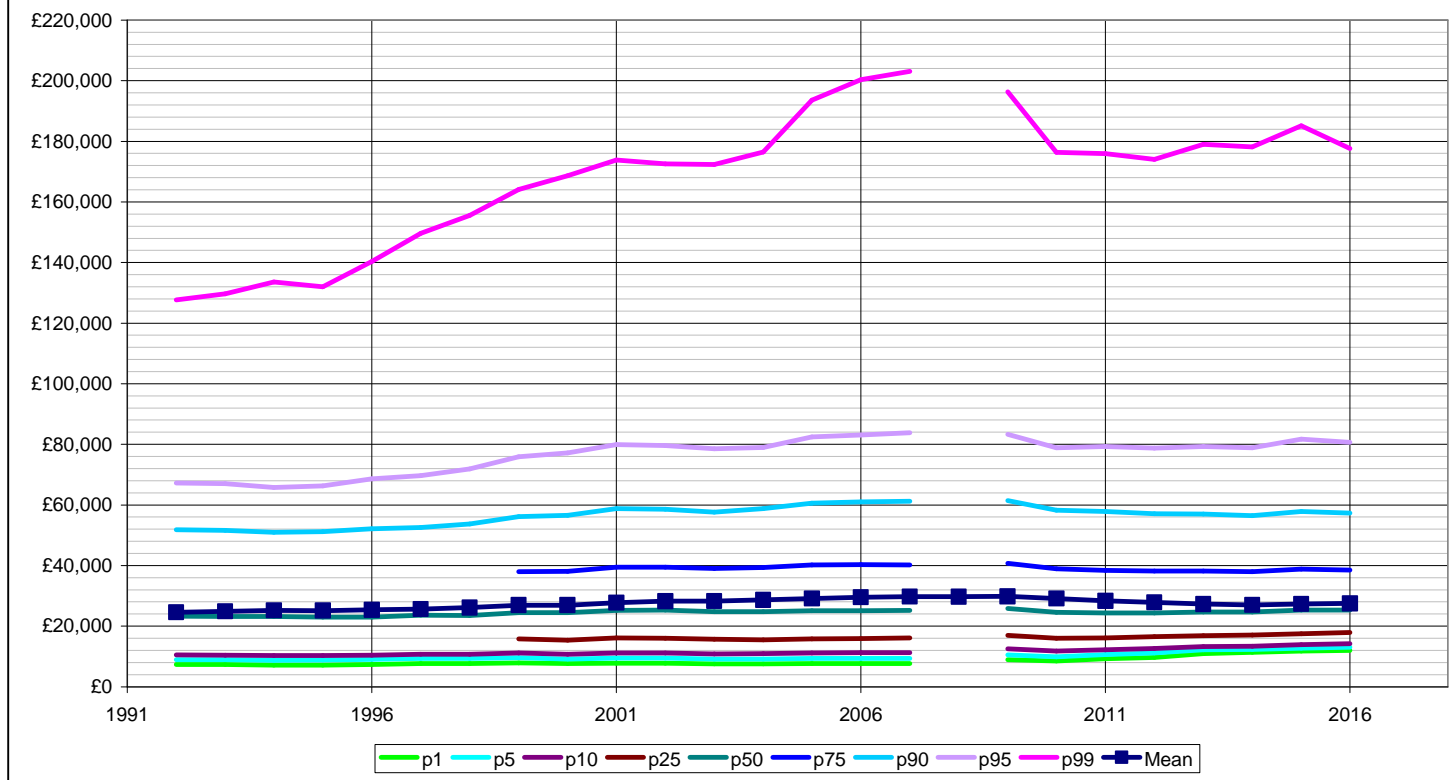
The effects of the 1992 ERM crisis and subsequent deficit until recovered in 1997, and later 2008 crisis can be clearly seen in the rapid increase in government current account deficit in 2008 and 2009.

It has since taken a decade to effectively and steadily reduce annual government deficit, until near balance was achieved in 2018.

It should be noted however that no reduction of UK national debt, in real terms per person, has yet been achieved and the nation continues to be in the deepest level of national debt for 50 years (when the debt of two world wars was still being cleared).

Personal unsecured debt is also at very high levels as well, at approximately £8,000 per person (excluding mortgages).

Percent less than - Actual Real Income Before Tax in 2018 £'s

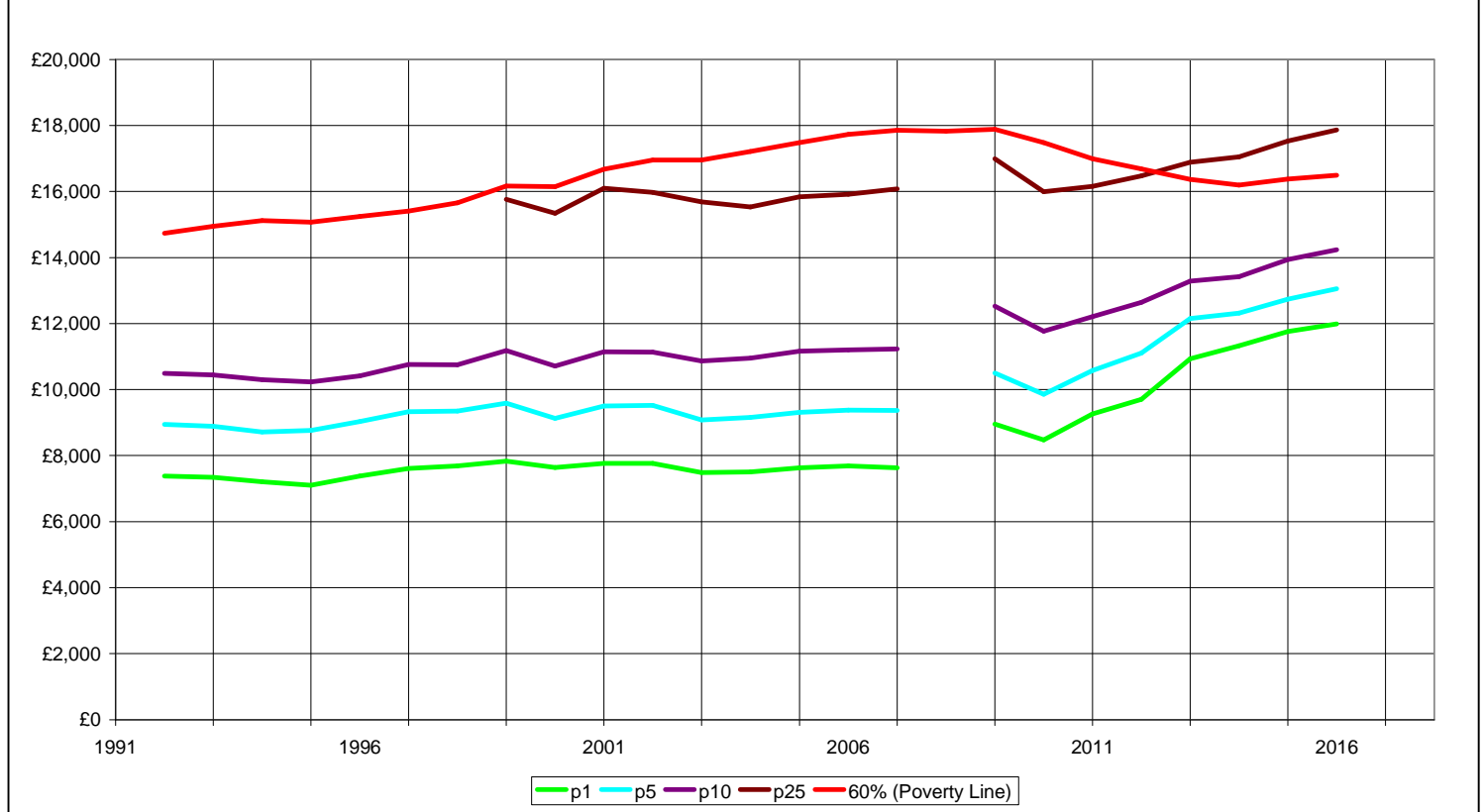


Focussing particularly on the relative distribution of income, amongst the tax paying population, reveals the gradual increase in real incomes earned by most of the tax paying population, but particularly reveals the gains made by the top 1% (pink line) to 5% (violet line) of earners. (All numbers sourced from ONS, personal income survey).

Whilst it must be understood that this is a normal characteristic of such numbers, the particular growth in income for the top 1 percent, especially from 2003 to 2007, as shown in the chart, is a well known and discussed characteristic of the UK economy at that time (and also present internationally), and was mostly a consequence of the “over-heating” of the economy, particularly in relation to property speculation, that directly led to the 2008 crisis.

Slightly obscured in the chart, but still just visible is the relative gain for the lowest percentile earners (green, cyan and burgundy) and below the median (mid-turquoise) after the changes in fiscal policy of the 2010 coalition government.

Percent less than - Actual Real Income Before Tax in 2018 £'s



The median and lower percentile tax payers had for most of the period from 1985 to 2010 missed out on the greatest improvements in living standards enjoyed by those above the median. Shown in this chart by the very slight change from 1992 to 2007.

Focussing on the lower quartile, overlaid by the 60% of mean income theoretical “*poverty*” threshold (in red), clearly shows this substantial (more than 40%) increase in real earnings (also present after tax), but only from 2010.

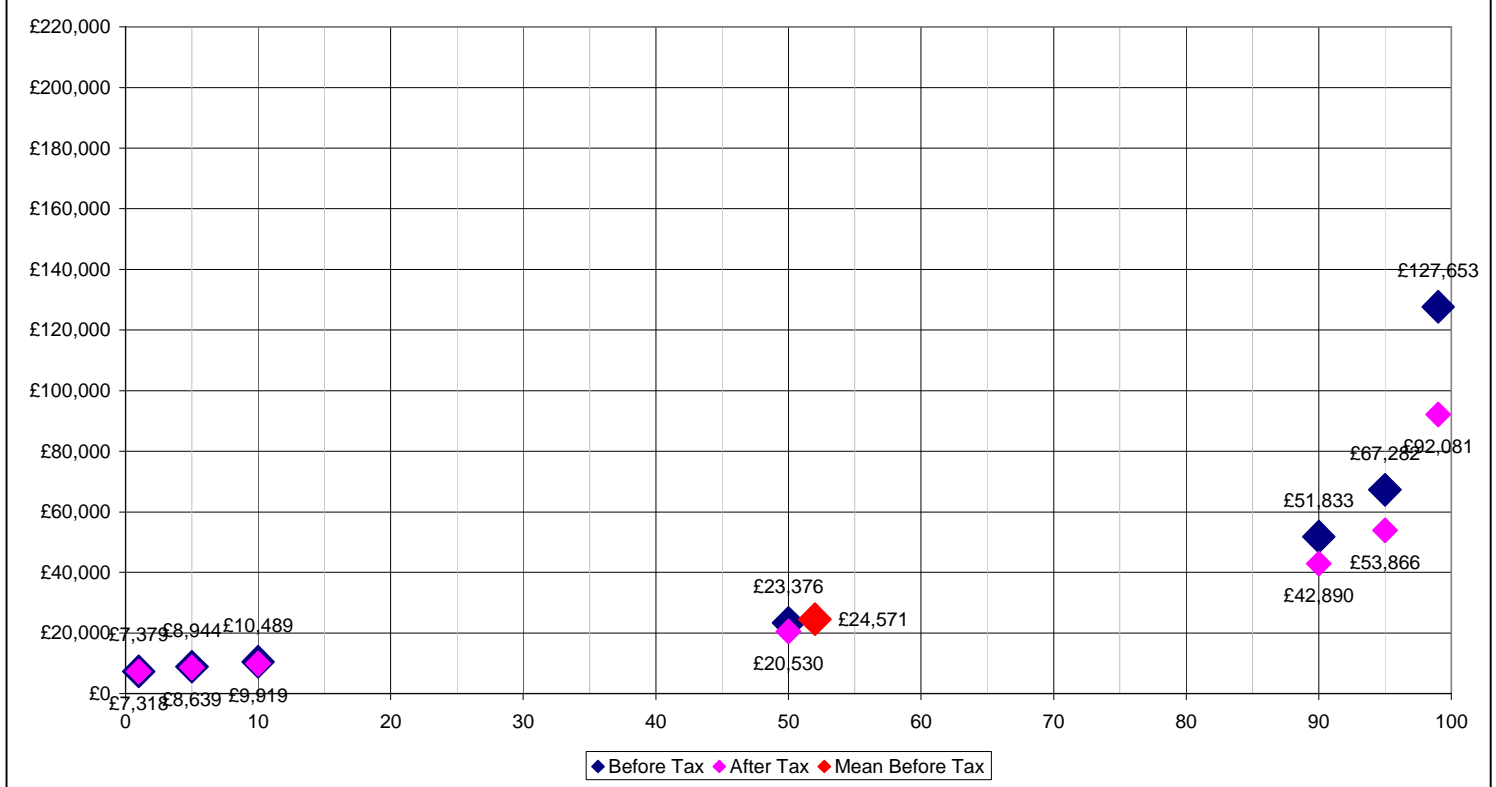
They all finally gained, in opposition to the reductions experienced by the higher earners, after the election of the 2010 coalition government and the dramatic change of policy by George Osborne. This involved the raising of the lower tax threshold, thus allowing low earners to keep a much greater proportion of their earned income. And in addition built upon the earlier introduction of the minimum and then lately, living wage, and their steady increase.

Also visible in the chart is the lifting of a proportion of the top of the lower quartile above the calculated “*poverty*” line (red).

This was already a small but continuing general trend since the late 1980’s, such that it has now resulted, in 2017, in the wealthiest 10% of taxpayers contributing 59% of the income tax receipts, whilst the poorest 50% of taxpayers contribute 10% of the income tax receipts; a more progressive taxation balance than at any time since the 1970’s.

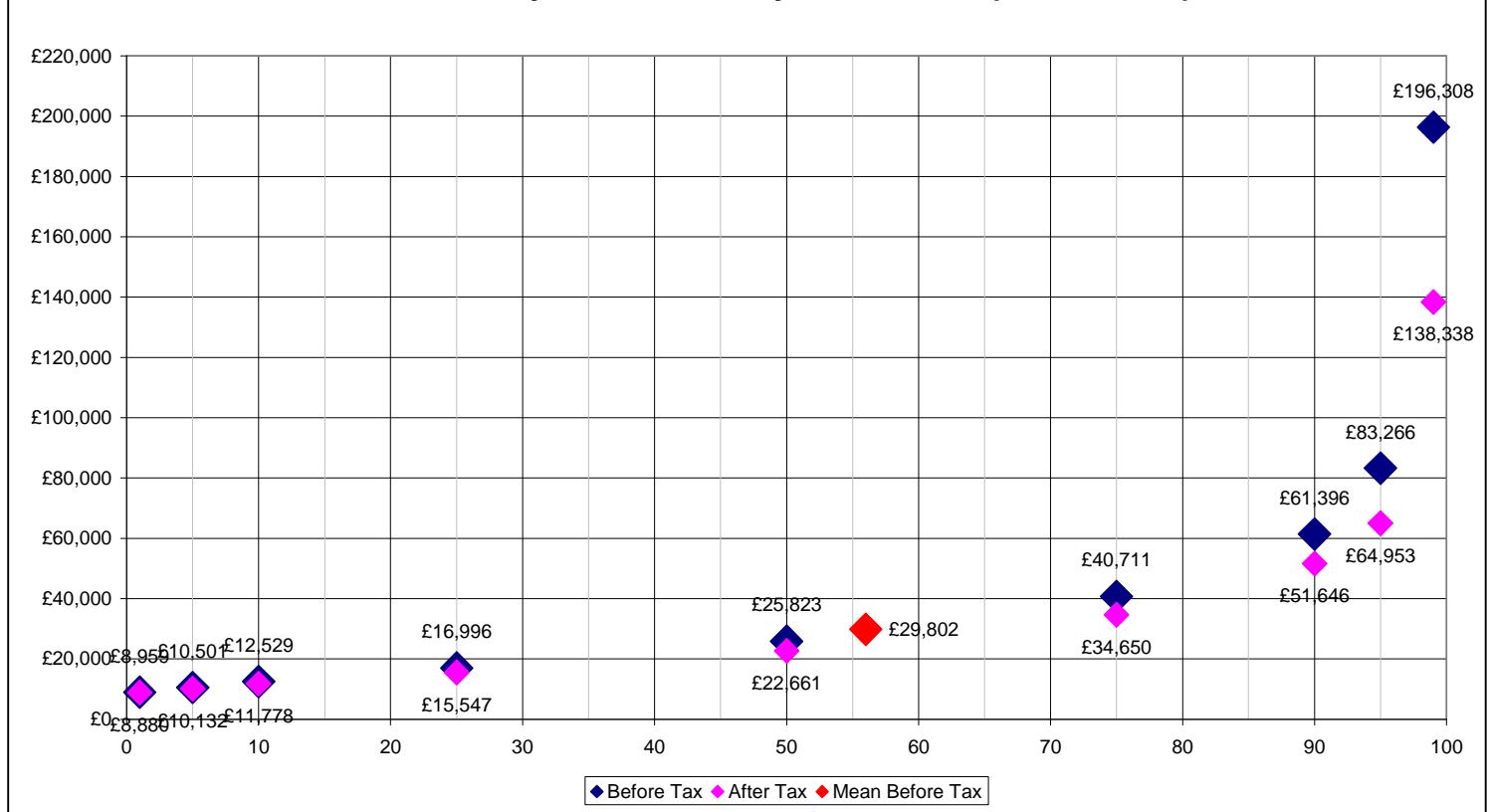
Note the clear correlation with the economist Milanković’s analysis of that portion of the western populous not enjoying the fruits of recent international improvement in wealth.

1992 - Tax Payers Income by Percentile (in 2018 £'s)



Representing the distribution of incomes (before and after tax) in 1992 (in real 2017 £'s) by percentile point, shows that the top 1% earned on average over 123 thousand pounds before tax per year (90 thousand pounds after tax), whilst the lowest 1% earned just over 7 thousand pounds per year (in real 2017 £'s) before tax (and 7 thousand pounds per year after tax).

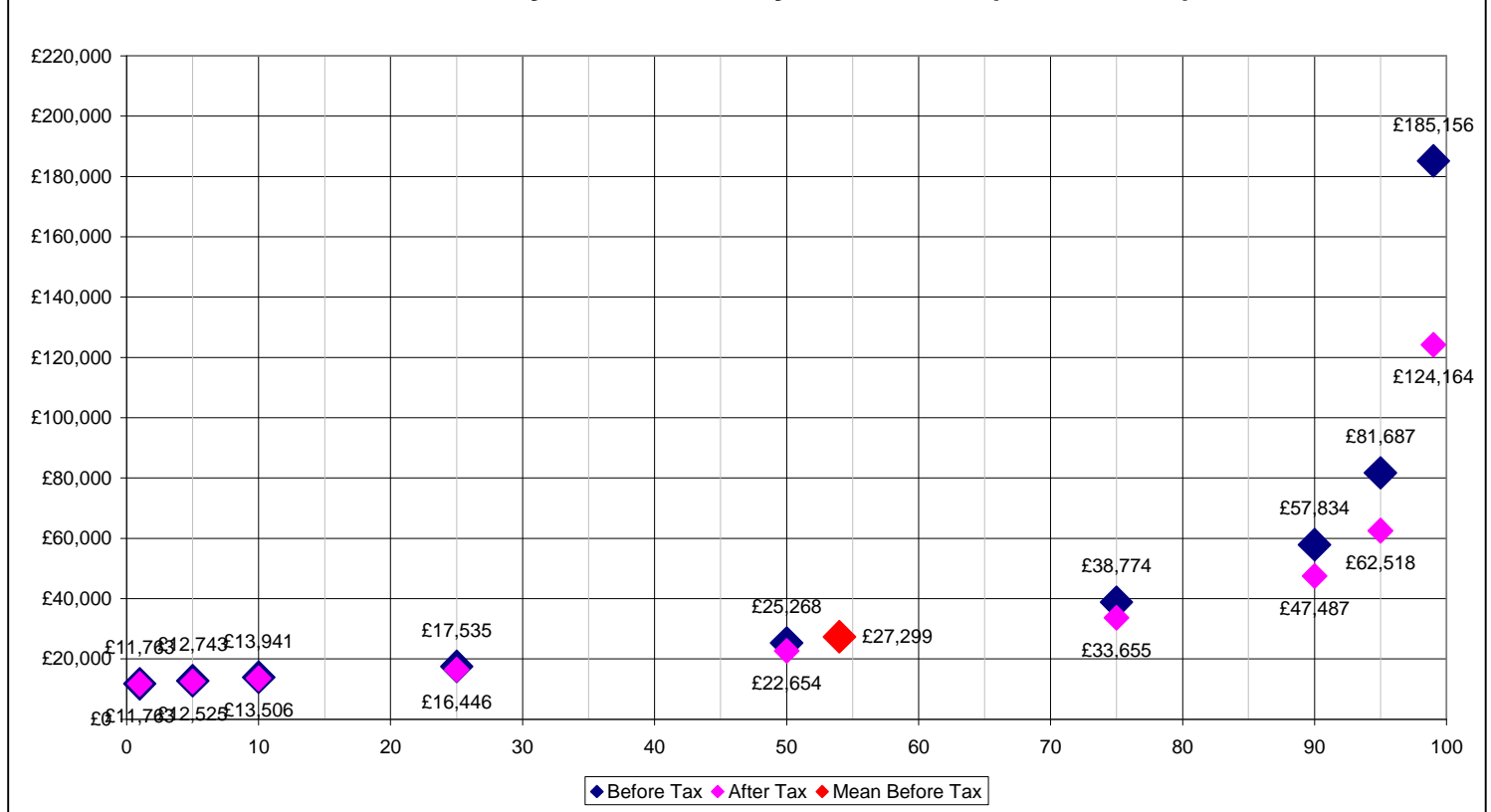
2009 - Tax Payers Income by Percentile (in 2018 £'s)



By 2009 the annual average earnings of the top 1% had soared to just under 190 thousand pounds before tax (in real 2017 £'s) and 134 thousand pounds after tax, a 50 percent increase compared to 1992.

The lowest 1%, however, were earning on average just 8 thousand six hundred pounds, being just a 21 percent increase in annual income compared to 1992.

2015 - Tax Payers Income by Percentile (in 2018 £'s)



After the 2008 downturn, by 2015, the top 1% average annual income in real terms (2017 £'s) has been reduced to just under 180 thousand pounds per year before tax (120 thousand pounds after tax), a 9% fall compared to 2009, whilst the lowest 1% have found their annual average incomes have substantially increased to over 11 thousand pounds per year.

This latter representing a growth of 32 percent compared to 2009.

Whilst the median (50th percentile) has remained static at 24½ thousand pounds per year (in real terms), the lowest quartile earners in general, have gained the most relatively, following the 2008 economic crisis.

The upper quartile (and upper decile in particular) has lost the most in average incomes, reduced in line with the top 1%.

The upper quartile has substantially influenced the average income, which has fallen in real terms by over 500 pounds per annum since 2009.