

Measuring National Well-being, The Economy, 2012

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Abstract

This article is published as part of the ONS Measuring National Well-being Programme. The programme aims to produce accepted and trusted measures of the well-being of the nation - how the UK as a whole is doing. This article focuses on one aspect of well-being, the economy, and is part of a series which aims to explore in more detail the different domains that have been considered as important for the measurement of national well-being. The article describes how economic well-being has evolved over the last decade and focuses on the period beginning with the 2008 recession.

Introduction

The economy is the set of activities related to the production and distribution of goods and services. Its performance will impact on all of us financially and therefore affect our personal well-being.

The article does not focus on gross domestic product (GDP), but rather uses GDP as a reference point before explaining, and then analysing, economic indicators that give a better insight into the material well-being of the UK and its households.

In the recent [ONS Report on the Consultation on Proposed Domains and Measures \(524.4 Kb Pdf\)](#) the domain 'The economy' is described as an important contextual domain for measurement of national well-being. The scope of the domain is given as including measures of economic output and stock. These measures will reflect the household perspective as was recommended in the [Stiglitz, Sen, Fitoussi Report](#) published in 2009.

In the ONS report the four headline indicators proposed to measure the economy domain of national well-being were:

- Real net national income per head,
- Real household actual income per head,
- Inflation rate (as measured by the Consumer Prices Index),
- UK public sector net debt¹ as a percentage of GDP.

The article describes how the economic well-being of the UK and the household sectors has developed by focussing on changes over the past decade, and paying particular attention to changes since the start of the recession in 2008.

The recent data generally describe a stagnant economy. After a period of sustained growth during the beginning and middle part of the last decade, since the recession, real national and household incomes have been under pressure, the rate of inflation has been relatively high, national and household wealth have been squeezed, and public sector net debt (PSND) has risen substantially.

Notes

1. PSND is defined as total gross financial liabilities less liquid financial assets, where liquid assets are cash and short term assets which can be realised for cash at short notice and without significant loss. The version of PSND used in this bulletin is the PSND excluding temporary effects of financial interventions.

Key points

- In the second quarter of 2012 net national income per head in real terms was 13.2 per cent below its level in the first quarter of 2008; a sharper fall in economic well-being than the GDP data alone indicate.
- In the second quarter of 2012, real household actual income per head was 2.9 per cent below its peak in quarter three 2009.
- Household income has been put under pressure from price inflation, for example in September 2011 inflation peaked at 5.2 per cent whereas the annual change in household actual income per head rose by 1.9 per cent in the third quarter of 2011.
- At the end of 2011 public sector net debt was in excess of one trillion pounds, the first time on record, equivalent to 65.7 per cent of annual GDP.

Economic well-being

‘Material living standards are more closely associated with measures of NNI and consumption than with GDP’ (Stiglitz, Sen and Fitoussi, 2009).

GDP is the most high profile macroeconomic indicator, and can be considered as either the total of income, expenditure or production within an economy. It can be defined as the value of all the goods and services produced within the economic territory of a country, in other words its entire output, during a given period.

Equivalently, it is the income during that period from the production of these goods and services to those directly involved, the workers, their employers, and the self-employed; and to government in the form of taxes on goods and services, for example VAT. GDP is also the total expenditure on goods and services within the economy, by individuals, businesses, and government, including both imports and exports.

GDP is often used for judging how well an economy is doing. A country with a higher figure for GDP is said to have a 'bigger economy'. When GDP is increasing, the economy is said to be growing. The term 'recession' is often defined as two consecutive quarters of declining GDP.

GDP, however, was not designed as a measure of individual or national well-being (although it is sometimes used for these purposes).¹ GDP measures production and not material well-being. Living standards are more closely aligned with net national income (NNI) (the total income available to residents of that country) as GDP can expand at the same time as incomes decrease and vice versa.

For example, if the sum of net income paid abroad and the depreciation of capital is greater than the increase in production, the overall effect will be an increase in GDP but a decline in NNI. It was for this reason that NNI was chosen as the first economy headline indicator for measuring economic aspects of National Well-being.

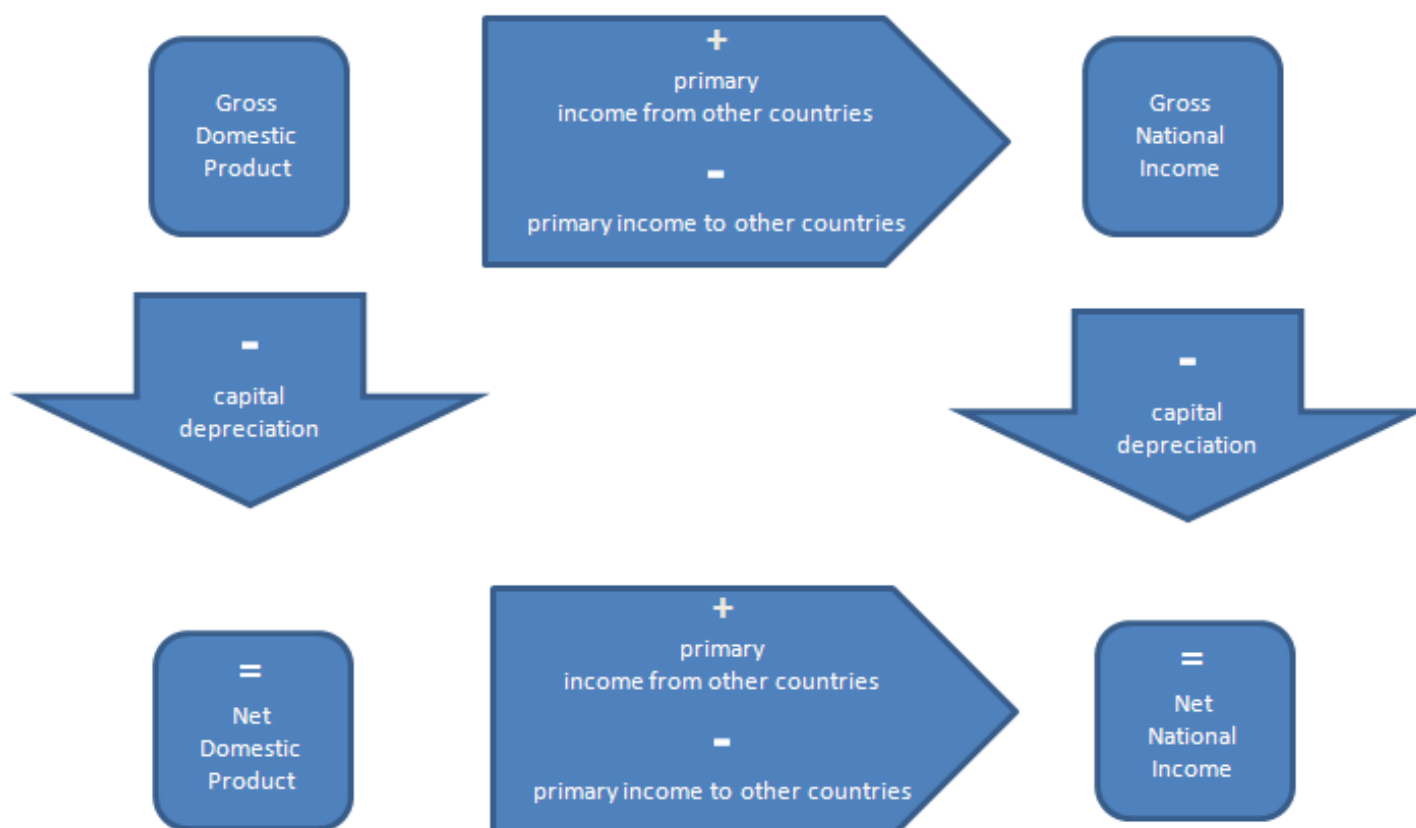
With this in mind, it is worth outlining the connection between GDP and gross national income (GNI), and then the difference between GNI and NNI. Loosely speaking, GNI includes the income from UK production (in other words, the share of GDP) that can be claimed by organisations and individuals resident in the UK plus the income that these residents can claim from the GDP of other countries. They are part of the UK's income but not generated by production within its national boundaries.

The incomes that stem directly from the productive process are known as primary incomes.² Typical examples of primary income that forms part of the UK's GDP but is not a part of its GNI include:

- A non-UK resident receiving wages for seasonal work undertaken in this country.
- The profits of a UK based subsidiary that are repatriated to its parent company in another country.
- A pensioner resident abroad receiving dividends on shares held in a British business.

In measures such as GNI (and for that matter, GDP), the 'gross' refers to the fact capital depreciation - that is to say the day-to-day wear and tear on vehicles, machinery, buildings and other fixed capital used in the productive process - has not been taken into account. A truer estimate of the UK's income for a given period can be made by subtracting the cost of this capital depreciation from GNI to give NNI. Figure 1 graphically represents how GDP is adjusted to take account of depreciation and net income from abroad to derive NNI.

Figure 1: Deriving net national income from gross domestic product

Figure 1: Deriving net national income from gross domestic product**Notes**

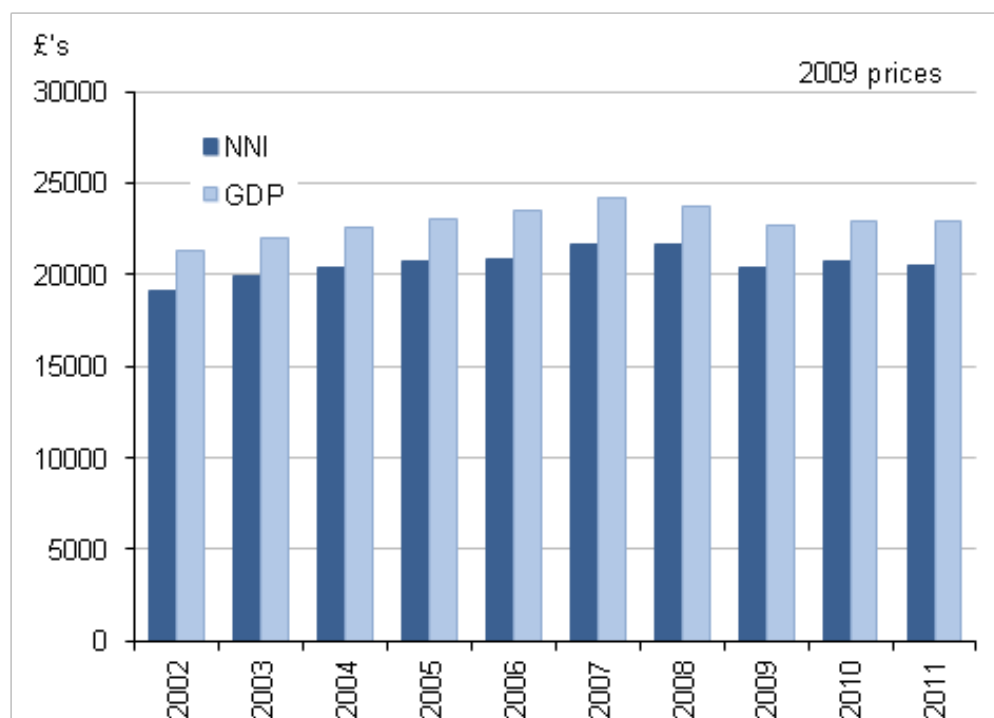
1. See, for example, Vanoli, 2005 for a discussion of the development of national accounts.
2. More formally, primary incomes are those received in return for involvement in the process of production or the ownership of assets that may be needed for the purposes of production. They also include net income to government from production, which is taxes on production and products such as VAT, less subsidies.

National income

Figure 2 shows the annual values of both GDP and NNI per head in the ten years to 2011. To aid comparisons of different years, 2009 prices have been used throughout to remove the effects of inflation.

Figure 2: UK gross domestic product and net national income per head

United Kingdom



Source: Office for National Statistics

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(26.5 Kb)

Prior to the recession, both GDP per head and NNI per head grew steadily up until 2007. During the recessionary years of 2008 and 2009, both GDP and NNI per head fell. The fall in NNI per head was less pronounced in 2008, 0.3 per cent compared to a 1.6 per cent fall in GDP per head. In 2009, NNI per head fell by 5.8 per cent, greater than the GDP fall of 4.6 per cent.

This suggests that in the initial phase of the recession material living standards fell less sharply than output but then fell more sharply as the recession continued. In the latest two years, both NNI and GDP per head have remained relatively flat.

Over the entire period GDP has been higher than NNI. This difference was driven by capital depreciation – it had varied between 10.5 per cent and 12.5 per cent of GDP in the decade described. The difference also included net primary income flows to and from the rest of the world, but these were relatively small and were, in fact, a net gain to the UK for each of the years. The highest of these was 2.5 per cent of GDP recorded in 2004.

This net gain to the UK economy stood at 2.3 per cent in 2008 and explains, at least partially, why NNI per head did not fall as much as GDP per head during this period. Subsequently, however, the net gain from income from abroad decreased year on year and by 2011 it was just 0.2 per cent. In

other words, the income of UK residents from overseas activities has grown more slowly than the corresponding income flow in the opposite direction.

In order to get a fuller understanding of how the 2008 recession has affected the economic well-being of the UK, Table 1 details the growth rates for four indicators; GDP, NNI, GDP per head and NNI per head^{1 2}.

Table 1: Volume comparison of indicators since the first quarter of 2008

United Kingdom

	Per cent		
	Peak to 2009 Q2 trough	2009 Q2 trough to latest	Peak to 2012 Q2
GDP	-6.3%	2.4%	-4.1%
NNI	-11.2%	0.8%	-10.4%
GDP per head	-7.0%	0.0%	-7.0%
NNI per head	-11.9%	-1.5%	-13.2%

Table source: Office for National Statistics

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None of the four indicators have returned to the level they experienced prior to the recession, ranging from a fall of 4.1 per cent for GDP to -13.2 per cent for NNI per head.

Both GDP and NNI were at their lowest in the fifth quarter of the recession, the second quarter of 2009, but the fall was considerably sharper for NNI which contracted by 11.2 per cent compared with a fall of 6.3 per cent for GDP. This indicates that the fall in the economic well-being was sharper than the GDP data alone indicate.

Given that the UK's population increased steadily throughout the period and is the denominator used in the per head calculation, the falls on a per head basis are even greater – a peak to 2009 Q2 trough fall of 11.9 per cent in NNI, compared to a fall of 7.0 per cent for GDP. However, this should not be taken to mean that living standards and well-being have been reduced by population growth, as both GDP and NNI are likely to have grown faster than they would in the absence of an increase to the population.

The trough to latest growth rates shows how the economy has recovered since the 2009 Q2 trough of the recession. NNI has recovered at a slower rate than GDP. However, after taking in to account population growth, GDP growth has remained flat but NNI per head has fallen further, falling to its lowest point in the most recent quarter.

Notes

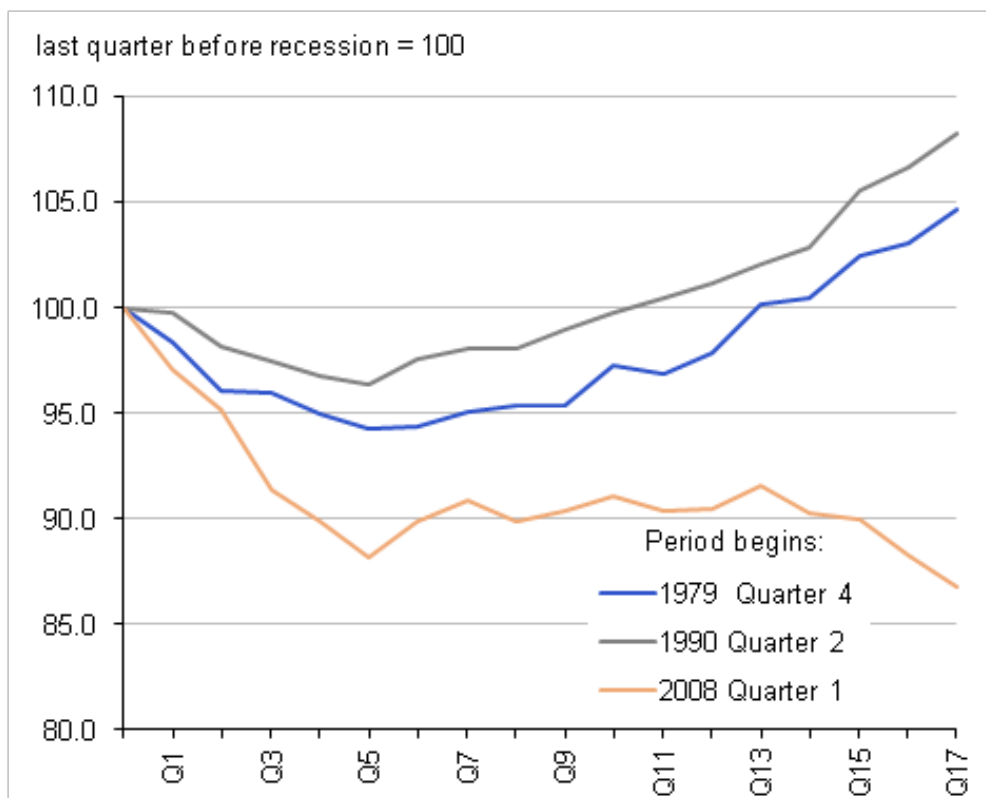
1. Quarterly data for NNI are not available at present, and therefore the analysis presented here estimates NNI using the following methodology. Deduct capital depreciation from GNI giving NNI at current market prices. This is then deflated by the GDP (expenditure) deflator to give real NNI.
2. GNI data for pre-1987 are consistent with Blue book 2010.

Net national income during the recessions

The following analysis concentrates on movements in NNI per head as it is the preferred measure of income in terms of economic well-being. In Figure 3, indices are used to compare NNI per head during the recession that began in the second quarter of 2008, with the two recessions that preceded it; those that began in the first quarter of 1980 and in the third quarter of 1990. For each of the three recessions, the value of NNI per head in the last quarter before the beginning of the downturn has been used as a reference point to index its values for the following seventeen quarters.

Figure 3: net national income per head during three recessions

United Kingdom



Source: Office for National Statistics

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In all three recessions NNI per head declined quarter on quarter for five consecutive periods. The recession that began in 2008 in the wake of the financial crisis has, however, two distinguishing features as regards NNI per head:

- During this recession, the fall in NNI per head was markedly more pronounced. It fell quarter on quarter throughout the recession and, by the second quarter of 2009 (the fifth quarter of the recession), was 11.9 per cent below its pre-recession level. Coincidentally, both the other recessions also lasted five quarters and, for both, the fifth quarter saw NNI per head at its lowest for the entire recessionary period; down 5.7 per cent on its pre-recession level in the 1980s and 3.6 per cent in the 1990s.
- Immediately following this, there was a short recovery in NNI per head, although the recovery was to a lesser extent than the previous recessions, and was not sustained. The economy returned to recession in the final quarter of 2011, following a period of slow recovery. By the second quarter of 2012 NNI per head was 13.2 per cent below its pre-recession level. In the 1980s, NNI per head had recovered to its pre-recession value three years after the beginning of the recession. The equivalent recovery came earlier in the recession of the 1990s; it took two and a half years.

Household income

Having considered the income of the economy as a whole on a per head basis, an obvious consideration in any discussion of individual well-being is the proportion of this income that goes to the household sector. Most householders, however, would not focus on their share of NNI in describing how well off they feel. Their concern is much more likely to be how much cash they have left after deductions such as tax and pension contributions.

'...the re-distribution of economic flows between sectors needs to be taken into account. For example, some of the income of citizens is taken away in the form of taxes: this is money that is not at their disposal. Conversely, households receive payments from governments and this must be added to their income. Households also receive and pay property income, for instance dividends paid out by corporations and mortgage interest paid to banks. When all these monetary flows are taken into account, one ends up with a measure of household disposable income' (Stiglitz, Sen and Fitoussi, 2009).

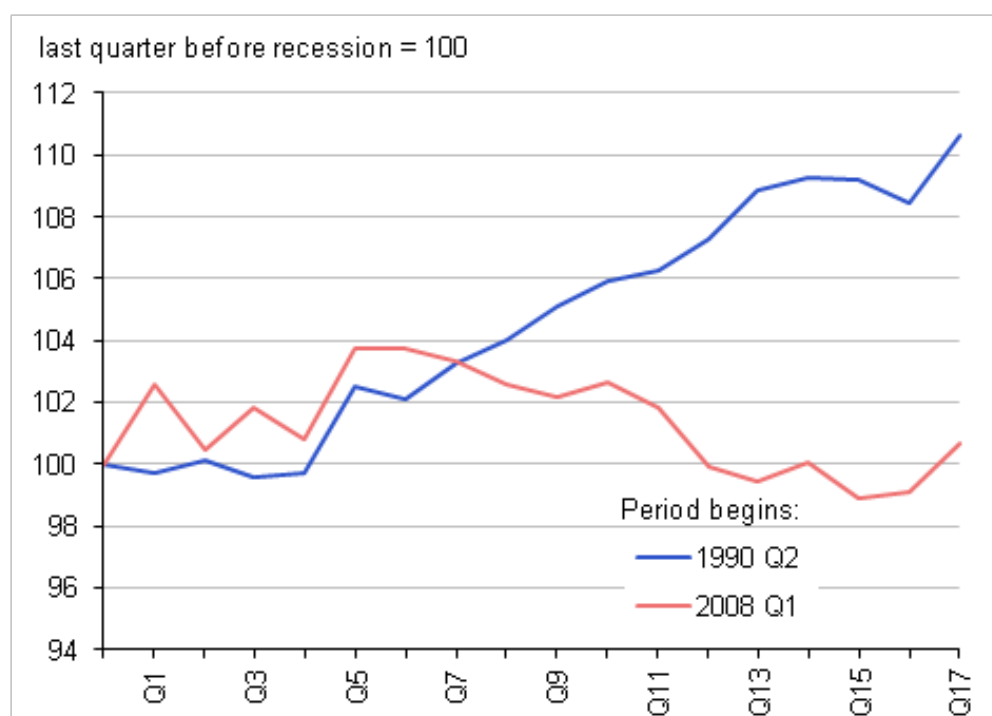
If two individuals whose disposable incomes provide equal levels of purchasing power are compared in the knowledge that one enjoys free education and healthcare while the other has to pay full market price for these services, the likely conclusion is that they do not have equal living standards. The data discussed in this section are adjusted to include the extra benefit to households of goods and services that are free or subsidised, for example healthcare in the UK, thus allowing better international comparisons of material well-being. This adjusted income is known as real household actual income (RHAI).

Real household actual income during the recessions

Figure 4 uses the same method as Figure 3 to compare RHA1¹ per head during the 1990s recession and the recession that began in 2008. The 1980s recession has not been included in this analysis as no data were available.

Figure 4: Real household actual income per head during two recessions

United Kingdom



Source: Office for National Statistics

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We see differences between the behaviour of RHA1 per head. In the early stages of the 1990s recession RHA1 per head remained relatively flat. During the more recent recession, although the paths are similar, RHA1 held up better and initially experienced a small overall increase. However, following this, the behaviour of income in the two recessions begin to diverge considerably.

In the 1990s recession RHA1 began a sustained period of growth from Q6. This is contrasted with the 2008 recession which saw a general period of decline from Q6. The decline was mainly driven by relatively high rates of inflation.

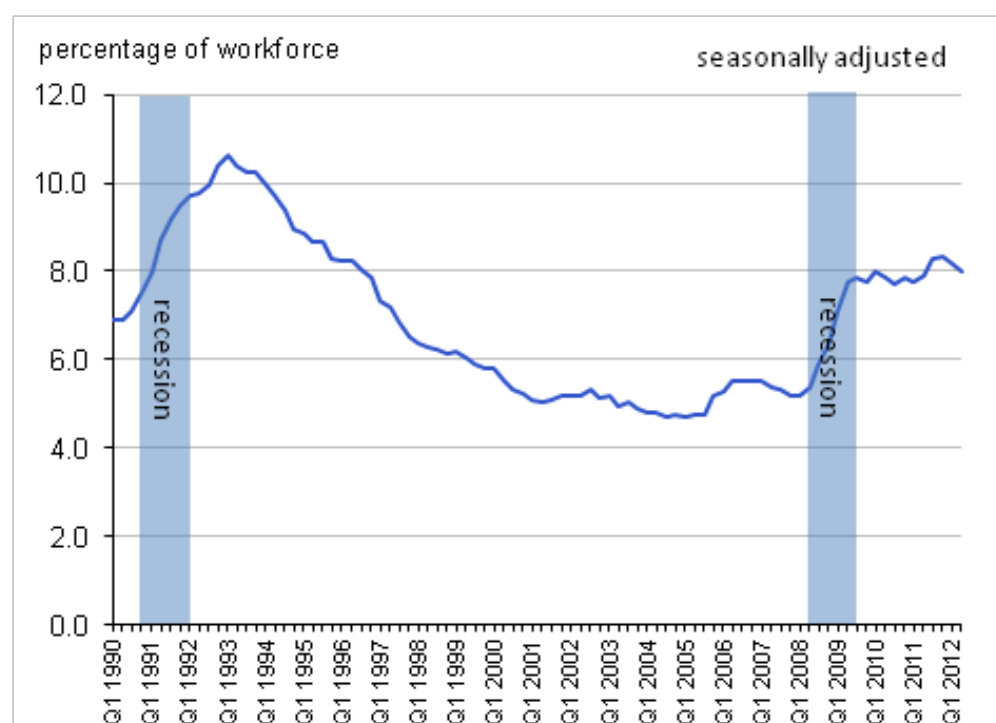
Following the onset of the 2008 recession the economy made a stuttering return to growth in the third quarter of 2009. The average household's real actual income for that quarter had increased by £167 pounds per head compared to its pre-recession level. This happened against a backdrop of toughening economic conditions, falling employment and rising unemployment.

A substantial proportion of household income comes from earnings from employment. We would therefore expect any deterioration in this to have a negative impact on income growth. However, employment did not fall, and unemployment did not rise, to the same extent as previous recessions, or to the extent expected given the size of the fall in GDP. This helped to support RHA1 per head in the initial stages of the recession.

In addition to reducing RHA1 per head, unemployment also has a direct, and strongly negative, impact on individual well-being ([OECD, 2012](#)). [ONS Experimental Subjective Well-being](#) results showed that forty-five per cent of unemployed people rated their life satisfaction as 'low' or 'very low'; over twice the proportion reported by employed people.

Figure 5: UK quarterly unemployment rate

United Kingdom



Source: Office for National Statistics

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The International Labour Organisation (ILO) classifies someone who is unemployed as an individual who is without a job and, available to start a job within two weeks and has either looked for a job in the last four weeks or is waiting to start a job that has already been obtained.

Figure 5 shows the quarterly unemployment rate from 1990 to 2012. Prior to the 2008 recession, the unemployment rate moved around a broadly flat trend, never below 4.7 per cent and never above 5.5 per cent. It climbed steeply throughout the recession, reaching 7.9 per cent as the economy

returned to growth in the third quarter of 2009. There followed another broadly flat period. By the fourth quarter of 2011 as the economy returned to recession, the rate stood at 8.4 per cent.

The subdued extent of the rise in unemployment relative to the fall in output (and income) has been the focus of much discussion. There are a number of aspects that can help explain this conundrum:

- A gradual movement from full-time to part-time employment.
- Firms cutting the hours worked by employees rather than making people unemployed.
- Evidence that cash flow of many businesses remained stronger than in previous recessions, thus making it easier to retain staff.
- The number of self employed has experienced an upward trend since the last quarter of 2008. The flat unemployment trend may have been partly driven by an increased tendency of those who are made redundant to become self-employed.

However, this does not completely account for the growth in real household actual income per head during the recession that began in the second quarter of 2008. Additionally, there were two other factors acting against any fall in income that would be expected from the lower levels of employment associated with the recession:

- Interest rates reached historic lows and therefore many people's mortgage interest payments fell. This meant many householders' disposable incomes rose as a result of lower mortgage payments.
- More significantly, as employment fell and unemployment rose, people paid less in the way of taxes and claimed more in the way of benefits. The result was that real household actual incomes were supported by rising social security benefits and reduced taxes.

The 1990s recession saw a remarkably small fall in RHA1 per head. It fell marginally over the first four quarters of the recession before starting a period of general growth during the fifth and final quarter.

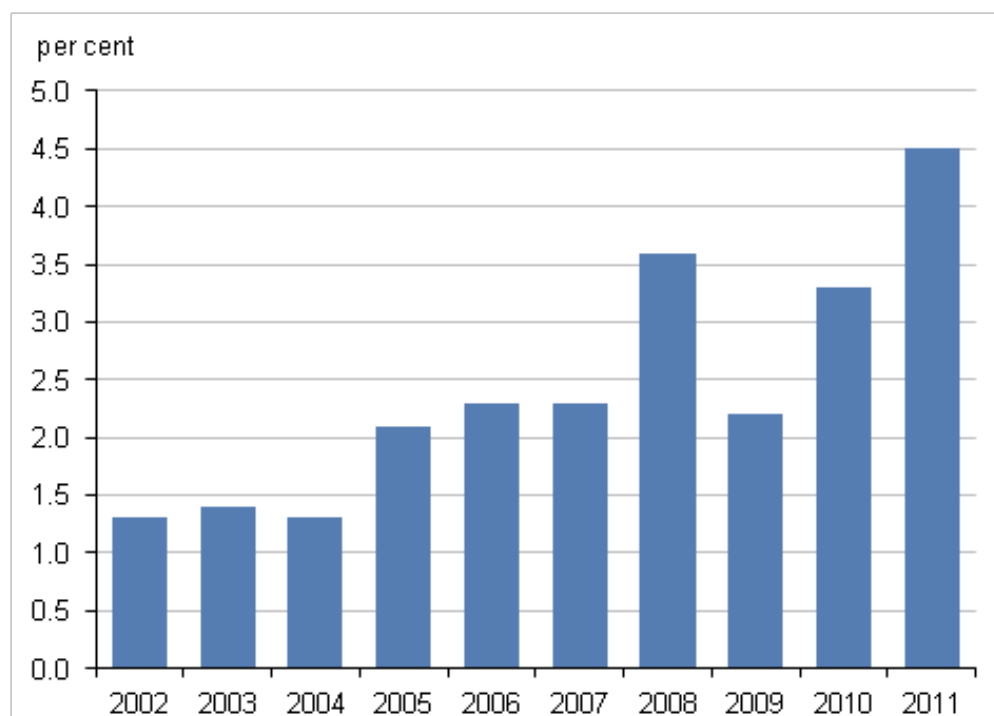
It is after this point, as the economy began to recover, that the two recessions really begin to differ. After the 2008 recession as the economy emerged from the first period of contraction, real household actual income began to fall. In the fourth quarter of 2011, real household actual income per head was slightly lower (about £50 in 2009 prices) than it had been in the first quarter of 2008.

This fall in household actual income per head was primarily due to prices going up at an increasing rate over most of the period. Figure 6 shows that, by 2011, consumer price inflation was markedly stronger than it had been in recent years. Inflation hit a peak of 5.2 per cent in September of that year whereas the annual change in household actual income per head rose by 1.9 per cent in the third quarter of 2011.

This peak equalled the September 2008 inflation rate and was otherwise the highest for almost twenty years. During 2011 high inflation was driven by rises in food prices, utility bills and fuel prices.

Figure 6: Rate of inflation

United Kingdom



Source: Office for National Statistics

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(27 Kb)

The increase in prices eroded the growth of household incomes, meaning real household actual incomes fell. This means that prices were rising at a faster rate than people's incomes, and therefore over time, people have found their income purchased a lower quantity of goods and services. Furthermore, the growth of household actual incomes (ie. without taking account of inflation) also weakened over the period.

This was because the impact of the factors initially providing a boost to income (lower mortgage interest payments and taxes and higher benefits) had worn off – i.e. these factors become part of a new baseline. However, in the latest periods, the first two quarters of 2012, real household actual income has recovered somewhat to return to its pre-recession level, although it remains 2.9 per cent below its peak in the third quarter of 2009.

The analysis on household actual income shows that average real income levels have been under pressure, however averages do not tell the whole story. In terms of economic well-being it is useful to look at median measures, as these provide a better measure of what is happening to the “typical” individual or household, and to examine the effect on different parts of the income distribution. This analysis is out of scope of this economy domain article as it has previously been covered in detail in

the [Measuring National Well-being – Personal Finance 2012](#) domain article published by ONS on 20 September 2012.

Notes

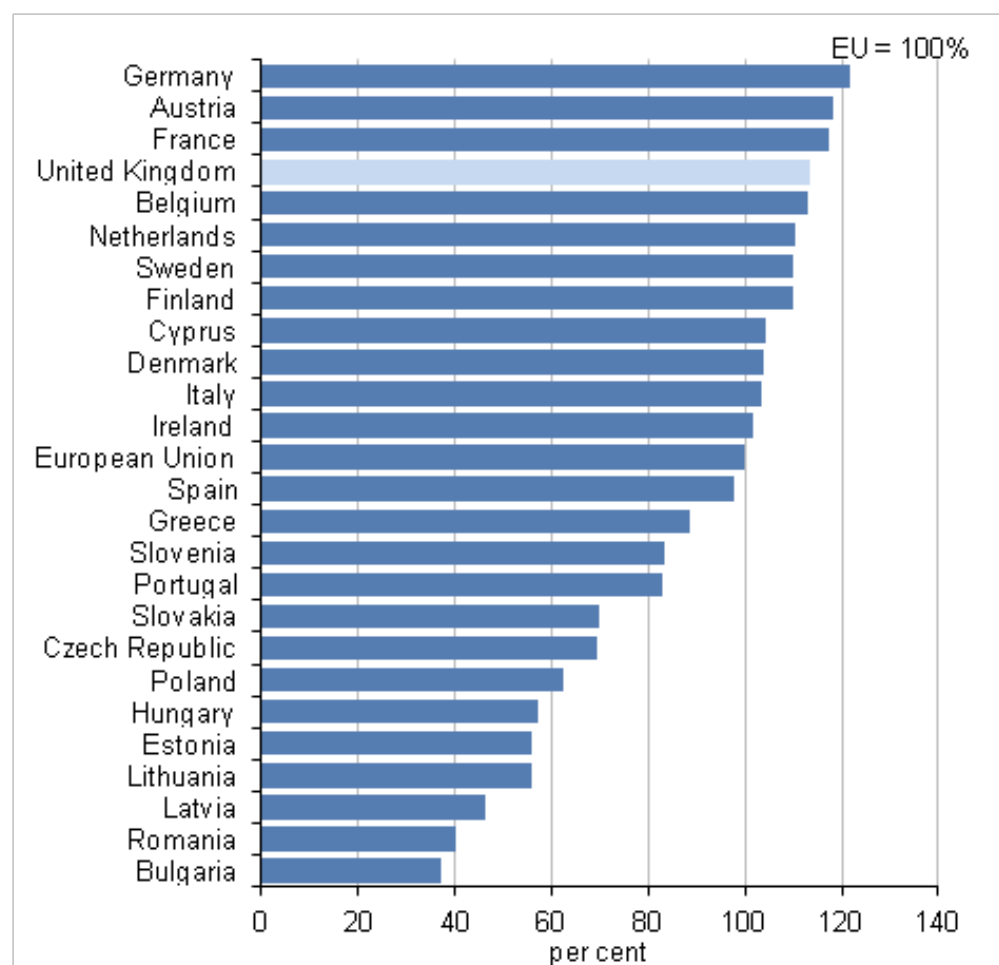
1. Real household actual income = Real household actual gross disposable income.

European Union comparisons of household income

Although real household actual incomes per head have generally fallen since 2009, it is useful to compare the position of the UK internationally. Figure 7 compares household actual income per head in the different Member States of the European Union.

Figure 7: 2010 EU household actual income per head

European Union



Source: Eurostat

Notes:

1. This analysis excludes Luxembourg and Malta due to data availability.
2. Purchasing Power Parities.

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In 2010 the UK was ranked fourth amongst the EU Member States listed, up from fifth place in 2009 after leapfrogging Belgium. The UK's actual income per head was 13.2 per cent above the EU average.

German residents came first enjoying adjusted disposable income that is 21.9 per cent above the average. Three countries – Bulgaria, Romania and Latvia - were below 50 per cent of the EU average at 37.1 per cent, 40.3 per cent and 46.5 per cent respectively.

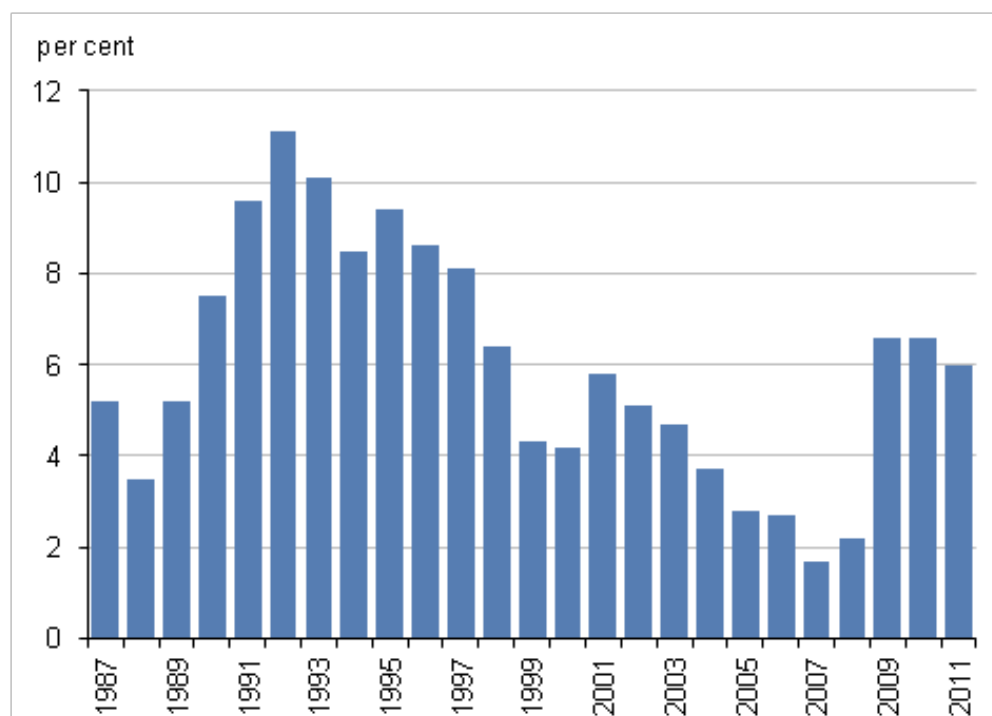
Household saving ratio

Households have a choice as to what they do with their disposable income - they can either spend it on current consumption or save it. The household saving ratio shows the proportion of disposable income households save. This is of interest to economists, not least because it may give an indication of household sentiment. Generally speaking, people save more when they are worried about their future prosperity and may spend more and save less when they are feeling optimistic about the future.

Figure 8 shows the UK household saving ratio from 1987 to 2011. It reached a peak of 11.0 per cent in 1992, a year when unemployment rose above ten per cent for the first time in five years. The trend in the saving ratio was broadly downward until a low of 1.7 per cent was reached in 2007. It remained low the following year but shot up to 6.6 per cent in 2009 as households cut their spending in response to the deteriorating economic environment. It maintained this level for the following year before dropping to 6.0 per cent in 2011.

Figure 8: Household saving ratio

United Kingdom



Source: Office for National Statistics

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In 2011, the household saving ratio remained relatively high against a background of the first annual fall in real household income since 1981. This, coupled with low returns on deposits, may be indicative of increased levels of financial insecurity.

Inflation

As part of the consultation on the proposed domains and measures, the inflation rate, as measured by CPI, was identified as an important indicator of economic well-being. This article has already highlighted the impact of high inflation on household income. However, the rate of inflation also has a considerable impact on net wealth, and hence the distribution of economic well-being.

A high rate of inflation reduces the real value of wealth held in cash terms - the higher the rate of inflation the greater the reduction in the real value of wealth held in cash. In addition, if inflation is above the interest rate, the value of wealth in the form of savings also falls in real terms. The opposite is true for debtors as this scenario results in a fall of the real value of debt.

Therefore the rate of inflation relative to the rate of interest has an important impact on the distributional effects of economic well-being; a relatively high inflation rate redistributes net wealth from savers to debtors and vice versa.

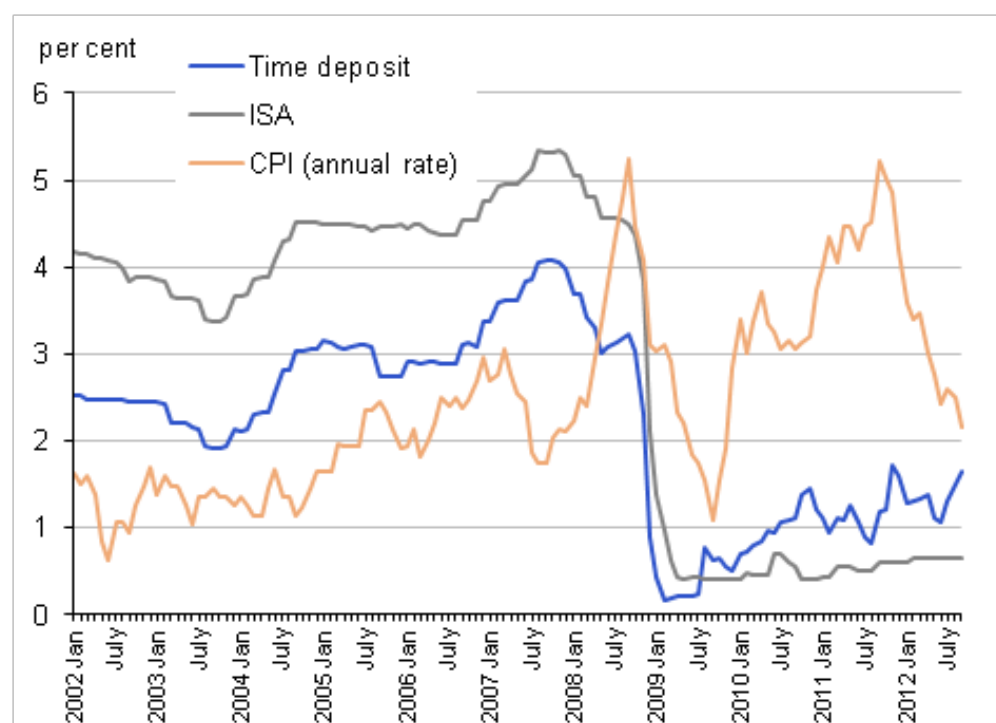
This redistribution can have implications between generational groups. For example older people are more likely to be net savers having paid off a mortgage and saved for their pension, whereas the younger generation are more likely to be debtors as they take out mortgages and unsecured loans to fund other living expenses.

Therefore, a relatively high inflation rate can redistribute wealth from the older to the younger generation. Although this scenario may apply to some it is certainly not true for all. For example some older people's savings will deliver a fixed income indexed to a price index and therefore their real income remains unaltered.

Figure 9 compares the UK's inflation rate, as measured by the CPI, to the interest being paid on individual savings accounts (ISAs) and time deposits (savings accounts where the saver does not have instant access). It shows that since August 2008 inflation has exceeded interest rates resulting in a redistribution of net wealth from savers to debtors.

Figure 9: Inflation and interest rates paid on savings

United Kingdom



Source: Office for National Statistics

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(37 Kb)

In general, up until May 2008 the CPI remained between one and three per cent, and the interest paid on savings higher. However, through 2008 inflation continued to climb month on month until reaching a peak of 5.2 per cent in September 2008. Meanwhile, the Bank of England cut the official

bank rate (base rate) to an unprecedented low of 0.5 per cent, resulting in interest rates paid on savings falling.

By mid to late 2008, the average saver's deposit was earning a rate of interest below that of inflation. This real terms loss to savers was at its most pronounced in September 2011 when the CPI reached its joint peak of 5.2 per cent.

It should be noted that the historically low base rate set by the Bank of England coupled with higher inflation has been beneficial to some debtors. A prime example is those who took out a tracker mortgage, where the interest paid is directly linked to the record low 0.5 per cent base rate.

Wealth

Household income and consumption tell us much about a country's standard of living, but a more complete picture can be afforded by also considering wealth:

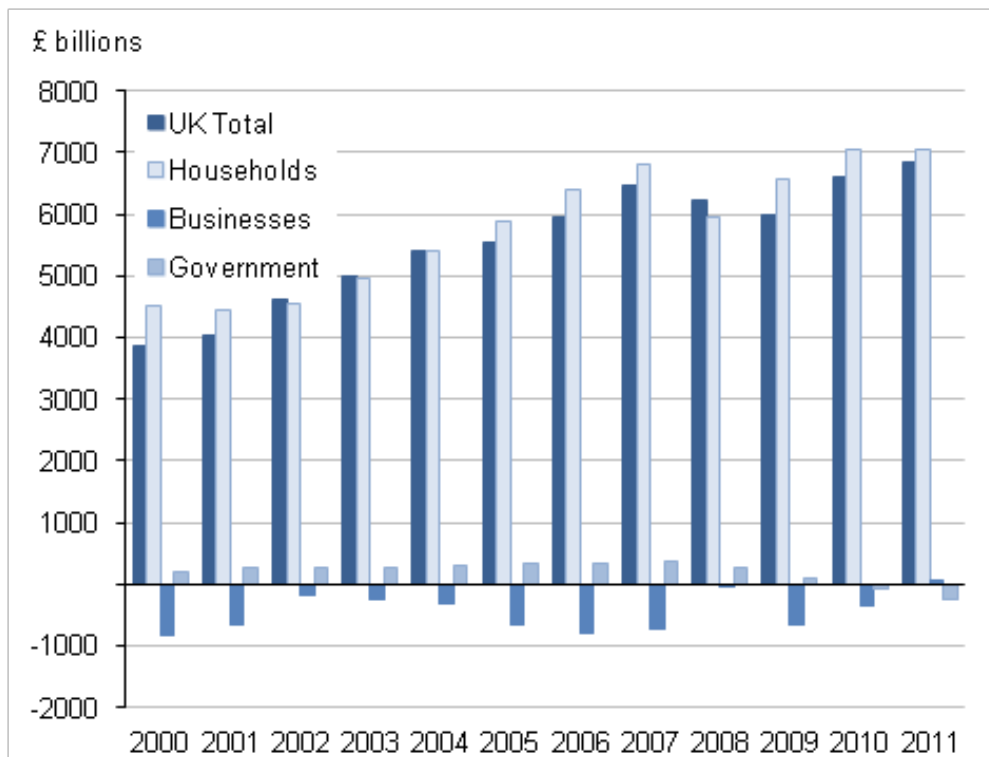
Income flows are an important gauge for the standard of living, but in the end it is consumption and consumption possibilities over time that matter. The time dimension brings in wealth. A low income household with above-average wealth is better off than a low-income household without wealth.

The existence of wealth is also one reason why income and consumption are not necessarily equal: for a given income, consumption can be raised by running down assets or by increasing debt, and consumption can be reduced by saving and adding to assets. For this reason, wealth is an important indicator of the sustainability of actual consumption.' (Stiglitz, Sen and Fitoussi, 2009).

Figure 10 details the net worth (wealth) of the UK and shows the contribution of the household, corporate and government sectors to the overall wealth of the nation - price effects have not been removed.

Figure 10: Net worth of the UK by sector

United Kingdom



Source: Office for National Statistics

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(27 Kb)

The estimates show that net worth of the UK, in current prices, grew consistently from 2000 to 2007. During the recessionary years of 2008 and 2009, the wealth of the nation declined. In 2010, growth in current prices was 10.7 per cent, this growth has slowed in 2011 to just 3.3 per cent.

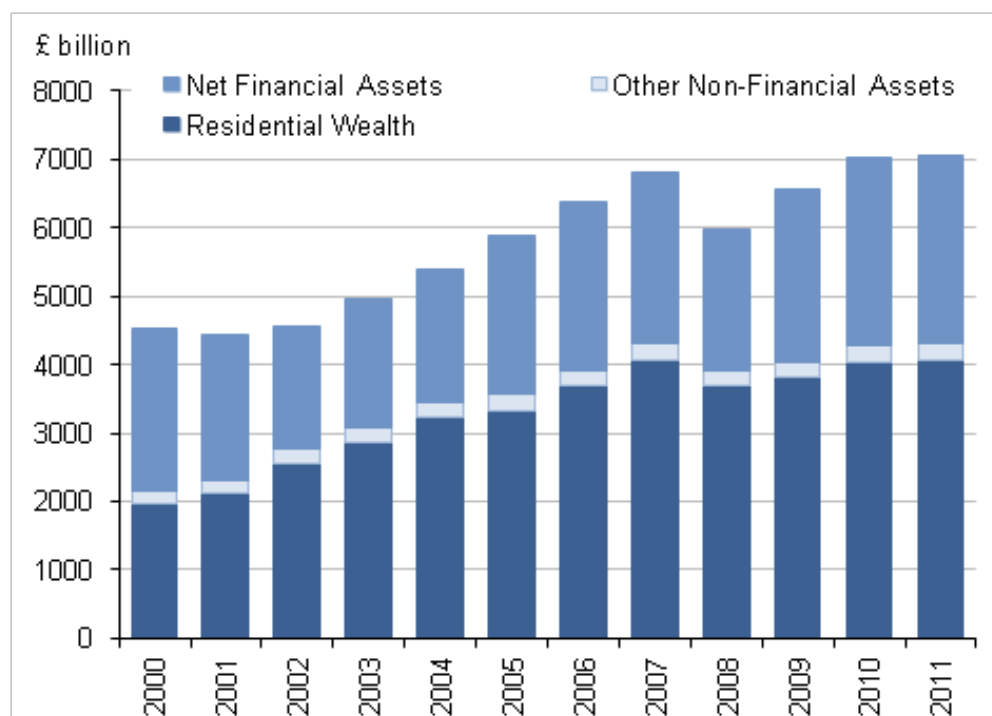
Figure 10 reveals that household wealth exceeds that of the UK as a whole in most years. This is explained by the fact that the average household's assets – mainly the houses themselves – exceed its liabilities, whereas other sectors may owe more than the total worth of their assets.

Household net wealth

Figure 11 shows household net worth since the year 2000¹, all figures are in current prices (i.e. not adjusted for price effects). Other non-financial assets are made up of physical assets; such as vehicles (including cars). Net financial assets include stocks, shares and savings taking account of any debt attributed to households.

Figure 11: Household net wealth

United Kingdom



Source: Office for National Statistics

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After a flat start to the decade, there was an increase in household wealth from 2003 to 2007, driven mainly by rising house prices. However, the onset of the recession in 2008 saw the net worth of households drop 12.4 per cent, leaving a final worth of just under £6 trillion, driven by falls in both residential wealth and other assets.

During this period house prices fell and there was a reduction in the number of new mortgages and an increase in repossessions as the financial crisis deepened. Data from the Department for Communities and Local Government show that the total number of mortgages peaked in 2007 and has fallen since, and repossessions reached a high in 2009.

As the constraints on mortgage lending eased and repossessions slowed, the residential wealth of households began to grow again in 2009 and 2010. However, the annual House Price Index shows house prices in 2011 were 0.9 per cent lower than in 2010. In line with this fall in house prices, growth in the total value of residential wealth also slowed in 2011, and as a result the level remains around its pre-recession peak.

In terms of financial assets, the value of shares and other equities held by the household sector fell sharply in 2008. This fall in the value of assets is the first reduction since 2002 following the burst of the dot com bubble at the start of the century. The fall in 2008 was caused partly by a sell off of

assets but mainly by falling prices, as stock exchanges around the world reacted to the ongoing financial crisis.

The equity households had tied up in life assurance schemes and pension funds also fell sharply in 2008, again as a result of falling markets. By the end of the year the value of the household sector's net financial assets had fallen almost half a trillion pounds - a drop of 17.5 per cent. However these returned to levels broadly similar to their 2007 levels in 2009.

Notes

1. The household wealth data used in this section are consistent with data published in Blue Book 2012.

Economic sustainability

Debt and investment are important indicators of sustainability. Debt effectively transfers the burden of paying for current consumption from the present to the future. Personal debt remains the liability of the individual (at least until their death); however, PSND¹, is government debt and can be transferred from one generation of tax payers to the next. Investment increases future economic well-being as the assets created are used to generate income over its lifetime.

Notes

1. The public sector consists of the government sector and other units under public control, for example, Royal Mail is included within the public sector.

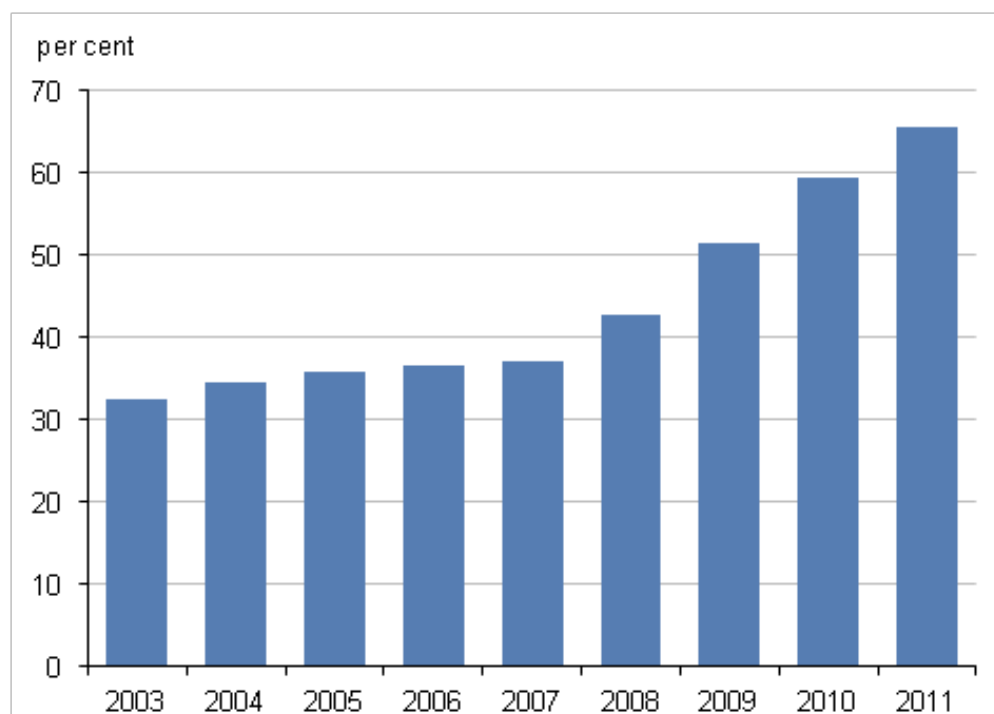
UK public sector net debt

Whereas net worth is calculated by subtracting total liabilities from total assets, PSND is calculated by subtracting the sector's liquid assets from its liabilities. Liquid assets consist of deposits and short term securities which are easily converted into cash¹.

Figure 12 shows net public sector debt as a percentage of GDP, a comparison that is often used as it gives an indication of the sustainability of the debt. There is no precise ratio as to what level of debt is sustainable, this depends on a variety of country specific risks. Growth in GDP, however, is seen as a critical element in reducing the risks. Ultimately debt sustainability is decided by the financial markets. Greece is a recent example of where the financial markets created a vicious circle of increasing government debt refinancing costs and therefore furthered their debt sustainability risk.

Figure 12: Public sector net debt as a percentage of gross domestic product

United Kingdom



Source: Office for National Statistics

Notes:

1. Excluding the temporary effects of financial interventions

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(27 Kb)

Up until 2007, the year the financial crisis began, the UK debt to GDP ratio grew but at a decelerating rate. From 2008, as the recession took hold and the public sector finances began to deteriorate, the ratio grew and reached 42.8 per cent of GDP that year. This was an increase from 37 per cent from the previous year. By 2009, PSND rose to over half the value of annual GDP. By 2011, it was close to two thirds of the annual value of GDP, and exceeded one trillion pounds for the first time in history, equivalent to 65.7 per cent of GDP.

Notes

1. More precisely, net public sector debt is defined as total gross financial liabilities less liquid financial assets, where liquid assets are cash and short term assets which can be realised for cash at short notice and without significant loss. These liquid assets mainly comprise foreign exchange reserves and bank deposits. This is further elaborated on in [The Public Sector Balance Sheet – 2009 \(239.6 Kb Pdf\)](#) (Jim O'Donoghue).

Gross fixed capital formation

Figure 13 illustrates gross fixed capital formation as a percentage of GDP. Gross fixed capital formation consists of acquisitions less disposal of fixed assets. Fixed assets are tangible or intangible produced assets that can be used repeatedly in the productive process.

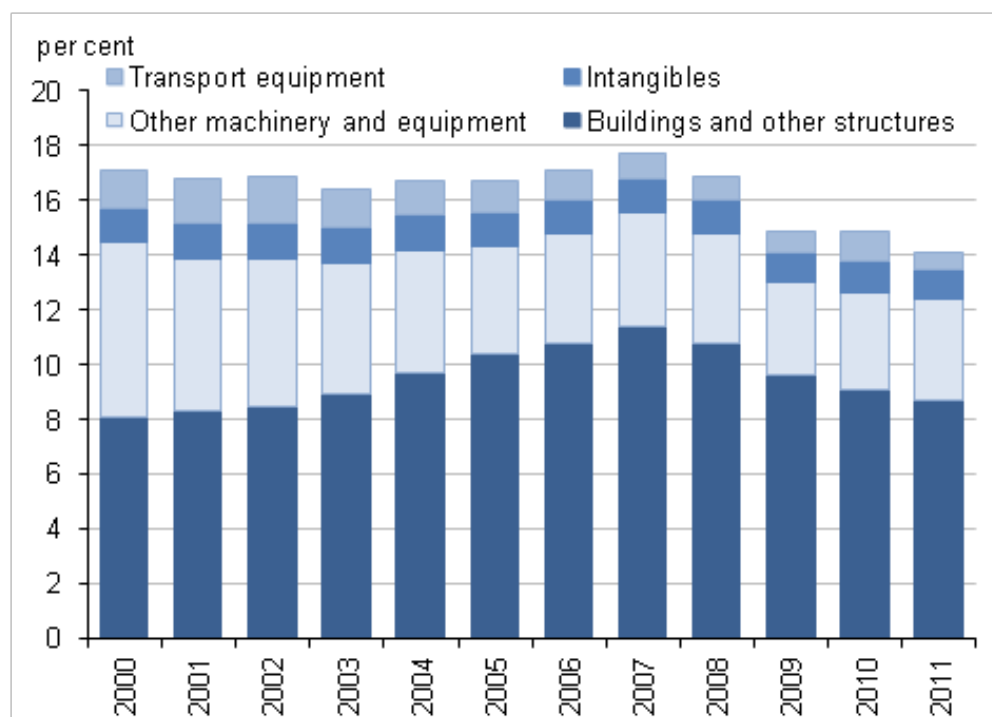
Between 2000 and 2007, the proportion of fixed assets to GDP was broadly flat, varying between 16.4 and 17.7 per cent. From 2007 to 2011 fixed assets as a percentage of GDP fell, dropping by 3.5 percentage points to 14.2 per cent in 2011, its lowest point for the entire period.

Throughout this period, building and other structures was the largest component, increasing as a percentage of GDP every year from 2000 until 2007, when they reached 11.4 per cent. As the financial crisis took hold in 2008, property prices fell and buildings and other structures shrank as a percentage of GDP. In 2011 it fell to 8.7 per cent.

The second largest component throughout was investment in other machinery and equipment. In 2000 it accounted for 6.4 per cent of GDP, this reduced to 3.7 per cent in 2011. Investment in transport equipment fell from 1.4 per cent to 0.6 per cent during the same period, whereas investment in intangibles remained fairly stable throughout the period; in 2011 it was equivalent to 1.1 per cent of GDP.

Figure 13: Gross fixed capital formation as a percentage of gross domestic product

United Kingdom



Source: Office for National Statistics

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(27.5 Kb)

Research and development

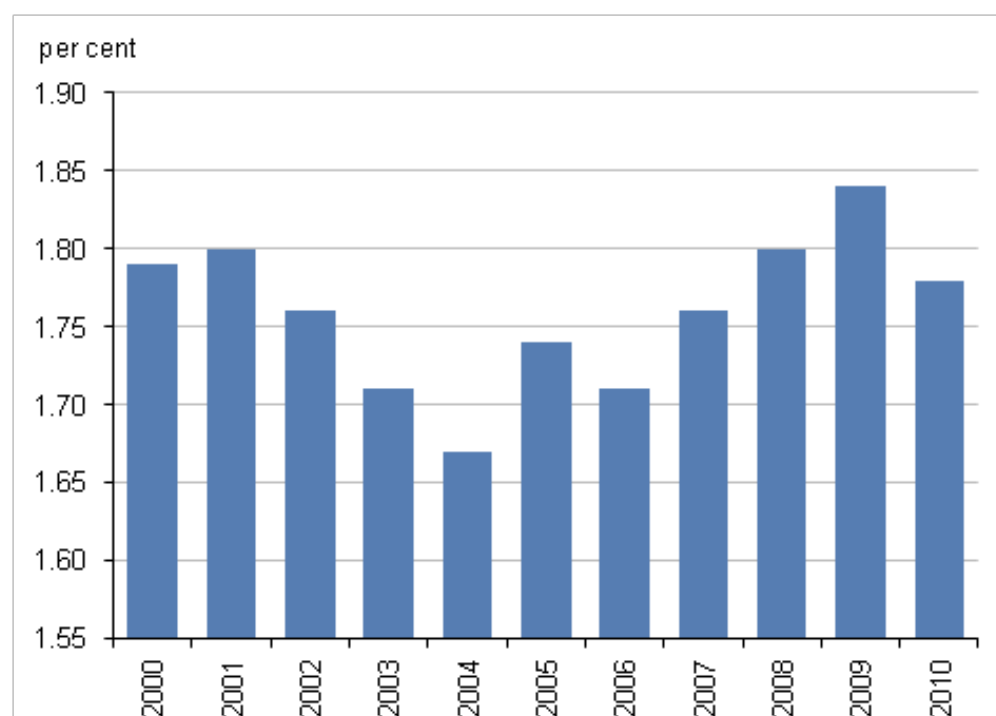
In terms of sustainability, the level of expenditure in research and development (R&D) influences the future economic well-being of a country. R&D spending is similar to ordinary investment in that expenditure is undertaken today to secure returns in the future. The main difference from ordinary investment is that the investment is a driver of innovation in the economy, which has a direct bearing on the rate of productivity growth and hence is a critical element in generating a dynamic and competitive economy.

Figure 14 shows the levels of investment in R&D as a percentage of GDP. From 2001 to 2004, R&D spend as a percentage of GDP fell as GDP growth outstripped growth in spending on R&D; spending on R&D in this period grew in real terms in every year except 2004 when spending was virtually unchanged from the previous year.

In 2004, the R&D to GDP ratio recorded a low of 1.67 per cent. There followed a broadly upward trend until a peak of 1.84 per cent was reached in 2009. The percentage fell back in 2010 to 1.78 per cent; this equated to just over £26 billion in real terms. Expenditure on R&D, in real terms, has declined every year since its £27 billion peak in 2007. In 2010, R&D was mainly carried out by business enterprises (61 per cent of the total) and higher education (27 per cent of the total). The remainder was carried out by government, research councils and non-profit making institutes.

Figure 14: Expenditure on research and development as a percentage of gross domestic product

United Kingdom



Source: Office for National Statistics

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(27 Kb)

Human capital

Stocks are an important measure of sustainability as they give an estimate of how much resource can be carried forward into the future, rather than how much has been consumed. Human capital has been defined as the stock of 'knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being'¹.

Human capital is recognised as having important economic impacts. At a macroeconomic level, the accumulation of human capital is thought to be an important driver of output growth; those countries with higher levels of human capital have greater potential for future growth, other things being equal. At the microeconomic level, individuals' labour market outcomes are linked to their individual level of human capital. Generally speaking individuals with low skills or levels of education are more likely to be unemployed².

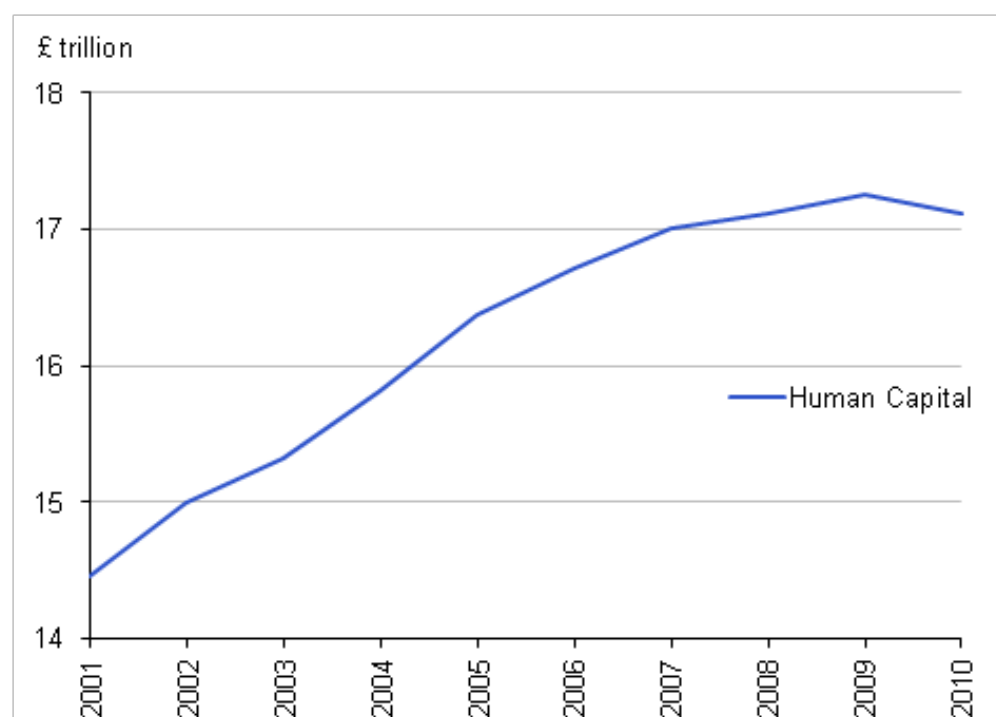
The Office for National Statistics has produced experimental statistics using a 'lifetime labour income approach' to estimate the stock of the UK's human capital.³ In 2010 the UK's human capital stock

was estimated to be worth over £17 trillion, more than two and a half times the value of the UK's tangible assets – its buildings, vehicles, plant, machinery etc.

Figure 15 illustrates the effect of the economic downturn on the UK's human capital stock in real terms. Prior to the recession the value of the UK's human capital stock rose steadily, averaging annual growth of 2.75 per cent (£425 billion). The annual rate of growth then slowed to 0.7 per cent (£120 billion), for 2008 and 2009, before falling by 0.8 per cent (£130 billion) in 2010.

Figure 15: UK human capital stock

United Kingdom



Source: Office for National Statistics

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(27 Kb)

The fall in the level of Human Capital stock was primarily due to a fall in the real average earnings (most notably for those with degrees) combined with a fall in the percentage of those in employment.

Using a 'lifetime labour income approach' the stock of human capital is directly affected by employment rates (e.g. human capital falls as people leave the labour market). Indirectly it is also affected; research has shown that if individuals are away from the labour market for any length of time they face a wage penalty, hence their lifetime income and stock of human capital falls.

The effect is thought to be particularly problematic for the young as long-term unemployment not only comes with a wage penalty but can have a scarring effect leading to an increased probability of being unemployed later in life. During the recession unemployment has not been distributed equally

across the age bands. The youngest of the age bands have seen the greatest percentage point increase in unemployment.

In the three years before the recession of 2008, the percentage of those in the 16 to 24 age group who were unemployed and not in full time education followed a relatively flat quarterly path averaging 13.4 per cent. This is just over two and a half times the rate for the entire workforce over the same period.

By the time the economy emerged from recession in the third quarter of 2009, youth unemployment had climbed sharply to reach 18.8 per cent, at that time it was the highest proportion since records began in 1992. There followed an upward trend and, in the third quarter of 2011, two years after the economy had emerged from the 2008 recession, one in every five people in this age group were unemployed and not in full time education. Youth unemployment has remained broadly similar since (to the second quarter of 2012).⁴

Notes

1. Organisation for Economic cooperation and Development (OECD) (2001).
2. Steedman, H. (1996) Measuring the quality of educational outputs: a note. CEPDP, 302. Centre for Economic Performance, London School of Economics and Political Science, London, UK.
3. Jones, R. and Fender V. (2011).
4. Labour Force Survey (LFS), seasonally adjusted quarterly data.

Background notes

1. Details of the policy governing the release of new data are available by visiting www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html or from the Media Relations Office email: media.relations@ons.gsi.gov.uk

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This document is also available on our website at www.ons.gov.uk.

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2. [Blue Book \(ONS 2012\).](#)
3. [Consumer price index \(ONS 2012\).](#)
4. [First ONS annual experimental subjective well-being results.](#)
5. [Gross domestic expenditure on research and development.](#)
6. [Human Capital Estimates – 2010 \(Jones, R. and Fender V. 2011\).](#)
7. [Labour market statistics, October 2012 \(ONS\).](#)
8. [Measuring national well-being: report on consultation responses on proposed domains and measures.](#)
9. [Measuring the quality of educational outputs: a note. CEPDP, 302. \(London School of Economics 1996\).](#)
10. [Real adjusted gross disposable income of households per capita \(Eurostat 2011\).](#)
11. [Report by the Commission on the Measurement of Economic Performance and Social Progress by Stiglitz, Sen and Fitoussi \(2009\).](#)
12. Steedman, H. (1996) Measuring the quality of educational outputs: a note. CEPDP, 302. Centre for Economic Performance, London School of Economics and Political Science, London, UK.
13. [The economic position of households.](#)
14. [The well-being of nations: the role of human and social capital, \(OECD 2001\).](#)
15. [United Kingdom Economic Accounts \(ONS 2012\).](#)
16. Vanoli A (2005) 'A history of national accounting', IOS Press, Amsterdam.