Office for National Statistics

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The Director of ONS is also the National Statistician.

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In brief

Visits to the UK fell in 2008

Figures based on the International Passenger Survey, show that overseas residents made 31.9 million visits to the UK in 2008 compared with 32.8 million the year before, a fall of 2.7 per cent. This was the first fall in the number of visits to the UK since 2001, the year that saw the outbreak of foot and mouth disease and the terrorist attacks of 9/11. In particular the number of visits to the UK in the final quarter of 2008 fell 13 per cent when compared with the equivalent quarter 12 months earlier. This data and other commentary can be found in the annual ONS report *Travel Trends 2008*.

Despite this fall, the amount spent by overseas residents in the UK increased to a record high of £16.3 billion in 2008 compared with £16.0 billion in 2007, an increase of 2.3 per cent.

There was also a decline in the number of visits abroad by UK residents from 69.5 million visits in 2007 to 69.0 million in 2008, a fall of 0.6 per cent. Again, though, associated spend increased from £35.0 billion in 2007 to a new high of £36.8 billion in 2008.

Visits to the UK by USA residents declined in 2008 and, accompanied by increase in the numbers of visits from French and Irish Republic residents, resulted in USA slipping to third place, from first, in terms of the number of visits by residents of that country.

Spain and France remained as the top two countries visited by UK residents, although there were falls to both countries. However, 35 per cent of visits abroad by UK residents were made to one of these two countries.

More information

www.statistics.gov.uk/statbase/Product.asp?vlnk=1391

Contact

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Blue Book 2009

The United Kingdom National Accounts Blue Book 2009 edition is published on 28 August 2009. An electronic version of the publication is available on the ONS website.

The UK National Accounts represent the full set of economic accounts of the UK. The accounts record and describe economic activity in the UK and as such are used to support the formulation and monitoring of economic and social policies. The 2009 edition Blue Book summarises the accounts for 2008 as well as a reassessment of previous years.

The content of this year's edition includes all of the regular sections:

- a summary of main aggregates and the summary sector accounts - including Gross Domestic Product, Gross National Income and their main components
- industrial analyses - including summary supply and use table for 2007 for the first time and updated tables for earlier years
- detailed sector tables - including analysis of Non-financial and financial corporations, general government, households and non-profit making institutions and UK transactions with the rest of the world
- a range of analyses and derived statistics - including detailed tables on gross fixed capital formation, non-financial balance sheets and taxes paid by UK residents
- UK Environmental accounts - updated with latest available data

The Blue Book is released simultaneously with the UK Balance of Payments: The Pink Book.

More information

www.statistics.gov.uk/statbase/Product.asp?vlnk=1143

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Shetland Islands and Hart (Hampshire) report the highest employment rate in 2008

The areas with the highest employment rate were the Shetland Islands and Hart in Hampshire both with 88.0 per cent according to the latest local area market data for the 12 month period ending December 2008. The lowest was in Newham, London where the employment rate was 60.0 per cent. There was also found to be considerable variation within each region. For example, in the region with the highest average rate, the South East (78.5 per cent), employment varied between 88.0 per cent in Hart and 68.5 per cent in Hastings.

Tower Hamlets with 11.7 per cent was the area with the highest unemployment rate in the 12 months ending December 2008, while the lowest rate was 2.4 per cent in the Shetland Islands. Again, there was considerable variation within regions. The North East had the highest average rate (7.5 per cent), but varied between 9.8 per cent in Middlesborough and 4.4 per cent in Teesdale. In the South West (4.1 per cent), unemployment varied between Torbay (6.0 per cent) and Purbeck (2.6 per cent).

The latest estimates of jobs density (2007) show there were 0.83 jobs per working-age resident in the UK. London had the highest jobs density at 0.93 compared with 0.72 in the lowest region, the North East. The local area with the highest jobs density was the City of London, with over 50 jobs per working-age resident, while the lowest was in Carrickfergus, Northern Ireland, with 0.39 jobs per resident.

People who work in the City of London had the highest earnings, with median full-time gross pay of £896 a week as at April 2008. The lowest pay was for people who work in West Devon, South West, at £302 a week.

These and other analyses can be found in the report, 'Local area labour markets: Statistical indicators July 2009', published on the ONS website. It also contains sections looking at economic inactivity, ethnicity and the labour market, claimants of Jobseeker's Allowance (the claimant count), and earnings by place of residence. It brings together data from a number of different

sources – the Annual Population Survey, Annual Business Inquiry, Annual Survey of Hours and Earnings, and administrative data on benefits from the Department for Work and Pensions – to give an overall picture of the labour market looking at both labour supply and demand in each area.

Also available are spreadsheets giving data for key indicators such as employment, unemployment, economic inactivity, claimant count and jobs for both local authorities and parliamentary constituencies.

More information

www.statistics.gov.uk/StatBase/Product.asp?vlnk=14160

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ONS hosts workshop on 'Developing financial statistics'

Last month's special edition of the *Economic and Labour Market Review* – 'Developing financial statistics for policy' – included five chapters on improving the measurement of financial sector activity and enhancing the detail presented in household, corporate and government sector balance sheets. These chapters, along with interim recommendations, were also presented at a workshop hosted by ONS at the Cass Business School on 15 July 2009. Participants included representatives from the Bank of England, HM Treasury and the Financial Services Authority among others.

Attention now turns to taking forward these recommendations and, in conjunction with other stakeholders, developing a programme of work to deliver statistics that better reflect recent developments and the changing structure of the UK economy.

More information

www.statistics.gov.uk/StatBase/Product.asp?vlnk=14160

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UPDATES

Updates to statistics on www.statistics.gov.uk

1 July

Productivity

Fall in productivity in Q1 2009
www.statistics.gov.uk/cci/nugget.asp?id=279

Profitability of UK companies

12.3% in Q1 2009
www.statistics.gov.uk/cci/nugget.asp?id=176

3 July

Net Investment

Institutional net investment rises
www.statistics.gov.uk/cci/nugget.asp?id=396

10 July

Index of production

1.8% three-monthly fall to May 2009
www.statistics.gov.uk/cci/nugget.asp?id=374

UK trade

Deficit narrowed to £2.2 billion in May
www.statistics.gov.uk/cci/nugget.asp?id=199

Producer prices

Factory gate inflation falls to 1.2% in June
www.statistics.gov.uk/cci/nugget.asp?id=248

14 July

Inflation

January: CPI inflation 1.8%, RPI inflation -1.6%
www.statistics.gov.uk/cci/nugget.asp?id=19

15 July

Average earnings

Regular pay slows in year to May 2009
www.statistics.gov.uk/cci/nugget.asp?id=10

Employment

Rate falls to 72.9%
www.statistics.gov.uk/cci/nugget.asp?id=12

21 July

Public sector

June: £9.9 billion current budget deficit
www.statistics.gov.uk/cci/nugget.asp?id=206

23 July

Retail sales

Underlying growth increases in June
www.statistics.gov.uk/cci/nugget.asp?id=256

24 July

Index of services

1.0% three-monthly fall into May
www.statistics.gov.uk/cci/nugget.asp?id=558

GDP growth

UK output decreases by 0.8% in Q2 2009
www.statistics.gov.uk/cci/nugget.asp?id=192

FORTHCOMING RELEASES

Future statistical releases on www.statistics.gov.uk

5 August

Index of production – June 2009

6 August

New orders in the construction industry – June 2009

7 August

Producer price index – July 2009

11 August

UK trade – June 2009

12 August

Labour market statistics – August 2009

13 August

Public and private breakdown of labour disputes

Digest of engineering turnover and orders – June 2009

18 August

Consumer price indices – July 2009

20 August

Retail sales – July 2009

Internet retail sales – July 2009

Public sector finances – July 2009

26 August

Services producer price index (experimental) – Q2 2009

28 August

GDP output, income and expenditure estimate – Q2 2009

Distributive and service trades – June 2009

Index of services – June 2009

Economic review

August 2009

Graeme Chamberlin
Office for National Statistics

SUMMARY

Although the pace of contraction in the UK economy slowed sharply in the second quarter of 2009, preliminary estimates of economic growth still surprised on the downside. Output fell by 0.8 per cent relative to the first quarter even though several business surveys had suggested a return to growth might have been likely. Falling output continues to pass through to the labour market where the working age employment rate fell by 2 percentage points in the three months to May compared to the same period last year. Consumer price inflation, based on the Consumer Prices Index (CPI) fell to 1.8 per cent in June, the first time for almost two years that inflation has been below the Bank of England's target rate.

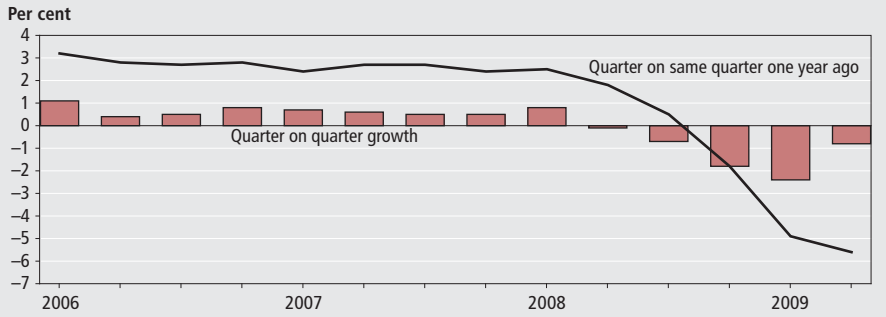
GROSS DOMESTIC PRODUCT

Pace of contraction slows

According to preliminary estimates of Gross Domestic Product (GDP) the UK economy contracted by 0.8 per cent in the second quarter of the year (see **Figure 1**). This means that growth has now been negative for five successive quarters generating a cumulative loss in output of 5.7 per cent since the recession started.

Although the latest figures show the pace of the contraction was much slower than in the first quarter, when official data reported a record quarterly drop of 2.4 per cent, they still surprised on the downside. The Thomson Reuters survey of independent forecasters had predicted a fall of 0.3 per cent and many business surveys reported signs of a marked improvement in April and May suggesting the worst had passed. In fact, the range of survey responses showed a number of forecasters had expected a return to growth. According to monthly estimates of GDP published by the National Institute of Research (NIESR) growth returned in April and more significantly in June. As a consequence, the rate of decline in GDP in their quarterly estimates (three months on the preceding three month period) fell sharply from 2.4 per cent in March to 0.4 per cent in June.

Figure 1
GDP growth



Source: ONS GDP preliminary estimate

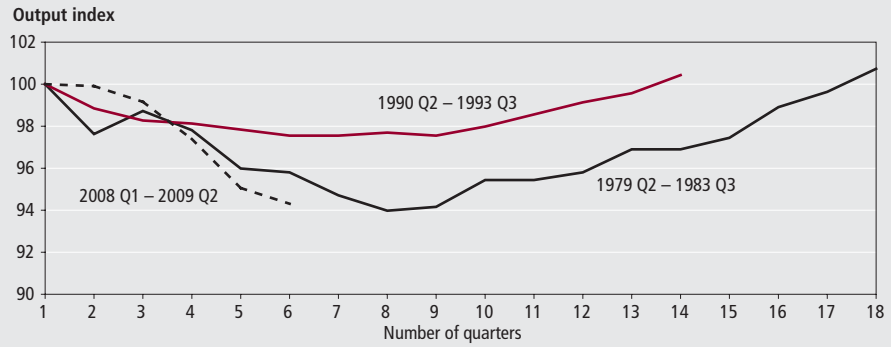
Each month the Treasury publishes the averages of independent forecasts made for the UK economy. In July, the average forecast for GDP growth in 2009 was a contraction of 4.0 per cent. This represented a gloomier outlook than in June, when the corresponding average was for a fall of 3.7 per cent. And the average based exclusively on new forecasts (those actually made in July) was an even more pessimistic -4.1 per cent. Downward revisions to forecasts reflected downward revisions to official data, when growth estimates for the first quarter of 2009 were updated to -2.4 per cent from -1.9 per cent. The fact that second quarter GDP estimates are lower than expected is likely to lead to further downward revisions to growth forecasts for 2009.

It also moves the Treasury forecast of a 3.5 per cent contraction in UK GDP during 2009, published in the Budget Report, very much towards the optimistic part of the range. Providing the data for the first two quarters remain unrevised, the UK economy would need to start recovering fairly rapidly in the second half of the year for this forecast to be correct.

All in all, the data points to the recession being deeper than expected. **Figure 2** plots the cumulative loss in output during this recession and compares it to the experiences of the two previous recessions of the early 1980s and early 1990s. Since output reached its peak in 2008 Q1 it has fallen by 5.7 per cent up to the present. The peak-to-trough output fall between 1990 Q2 and 1991 Q2 saw output fall by a relatively modest 2.5 per cent, and between 1979 Q2 and 1981 Q1 the cumulative fall was 6.0 per cent. Given that output in the current recession is falling faster and has yet to reach a trough, the likelihood is that the UK economy is already in its deepest post war recession.

Figure 2 also shows how long it took for output to recover to its pre-recession levels in the two previous episodes. Although the fall in output was not as severe in the

Figure 2
Tracking UK recessions



Source: ONS GDP preliminary estimate

early 1990s, once the economy reached the trough in 1991 Q2 it stayed there for some time. It was a year later in 1992 Q3 that the output began a sustained recovery, surpassing its pre-recession level in 1993 Q3. In contrast, while the 1980s recession was much deeper the recovery was also much sharper – with the path of GDP resembling a V shape compared to a flat U shape in the early 1990s. However, it still took over four years for output to recover fully due to the depth of the recession. Attention is now turning to the questions of when and how quickly the UK will recover from its current downturn. The current recession has similar elements to both those of the early 1980s and early 1990s.

Sharp output falls in the early 1980s were mainly concentrated in the manufacturing sector. As the recession was global, with most of the major economies experiencing a synchronised downturn, there was a disproportionate impact on manufacturing where a high proportion of output is traded internationally. Here swings in inventories can play a large role in amplifying the cycle. In a downturn, firms expecting lower future output will cut back sharply on their holdings of inventories – these are the stocks of inputs, semi-finished and finished goods used to satisfy orders or as inputs into future production. Production will also fall more quickly because orders are increasingly met from existing stocks that are not replenished.

However, when demand starts to pick up again firms would re-stock with the same intensity in order to meet higher future production, and because stocks have been run down and so are inadequate to meet current and future demand. So while output will fall abruptly in the recession the recovery would be marked with an equally strong increase.

While stockbuilding is only a small component of the level of GDP, it can account for a large part of changes in GDP. In the current media this is often referred to as the stock cycle, and explains why the fall in GDP has been so rapid and why the manufacturing sector, which only accounts for around 14 per cent of value added, has accounted for just under half the total loss in output. But the good news is that the upswing in the stock cycle would lead to a much faster recovery in output.

The recession in the early 1990s was caused by a different set of factors and was more idiosyncratic to the UK rather than global. However, the correction to an overvalued housing market, a fall in consumer spending as households looked to rebuild balance sheets, and rapid moves by lenders to impose tougher constraints on credit availability and reverse previous over-lending are similar features to the current downturn. Considering also the added effect of the credit crunch leading to a much greater and more persistent fall in lending – then these are factors suggesting a protracted fall in growth and a sluggish recovery.

Therefore growth forecasts for 2010 vary considerably depending on expectations of the global recovery and the resumption of normal activity in financial markets. In July the range of independent GDP estimates had a low of -1.3 per cent and a high of 2.0 per cent – with the average of 0.7 per cent. The Treasury is again on the optimistic side of the range, at the time of its Budget Report, forecasting GDP growth of 1.25 per cent next year and then 3.5 per cent the year after. This would imply that the recession was V shaped with the recovery mirroring the present rapid fall in output. NIESR though recently reported that they did not expect UK output (GDP per head) to reach its peak value in 2008 Q1 until 2014.

Recent updates to independent and city forecasts for next year though have been upwards. In June the average for GDP growth in 2010 was 0.6 per cent, and based on forecasts made only in July the average was 0.9 per cent. These upward revisions may be the direct response to the downward forecasts for 2009 because the workings of the stock cycle predict a sharper recovery as the consequence of a more abrupt downturn.

Manufacturing output begins to stabilise

GDP fell by 0.8 per cent in the second quarter of 2009 and **Figure 3** presents the industry contributions to this decline. **Figure 4** on the other hand gives the same industry breakdown but for the total 5.7 per cent fall in output since the current recession started in 2008 Q2.

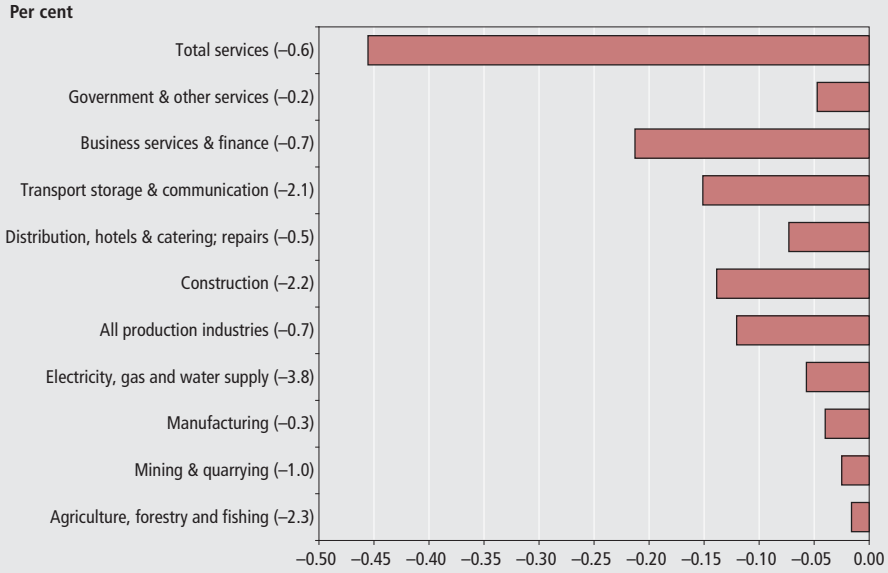
Output in the manufacturing sector has contracted by 14.1 per cent during the recession – and despite only accounting for approximately 14 per cent of all value added – has made the largest single contribution (1.9 per cent) to the downturn so far.

Between 2008 Q2 and 2009 Q1 manufacturing output fell at an average quarterly rate of 3.6 per cent, including contractions in excess of 5 per cent in 2008 Q4 and 2009 Q1. Therefore, the fall in output of 0.3 per cent recorded in the preliminary estimate for 2009 Q2 is a sharp turnaround – and perhaps a sign that things are beginning to improve. Evidence that the manufacturing sector may be reaching a turning point has been exhibited in various monthly data sources.

Official data from the monthly Index of Production shows that, after a strong fall between December and January, output has been relatively stable up to May. Prior to the New Year, monthly output had fallen sharply in the second half of 2008. Similar trends were also reported in business survey data. The Report on Manufacturing, published by Markit Economics on behalf of the Chartered Institute of Purchasing and Supply and known globally as the Purchasing Managers Index (PMI) is a frequently cited survey. In June the output index moved back into positive territory for the first time since March 2008. In accordance with the official data record negative balances were reported in the final quarter of 2008, but throughout 2009 the rate of fall in output has seen a hard deceleration.

Results from the Quarterly Industrial Trends Survey, published by the Confederation of British Industry (CBI) in July, also showed an improvement in output balances, but the survey remains

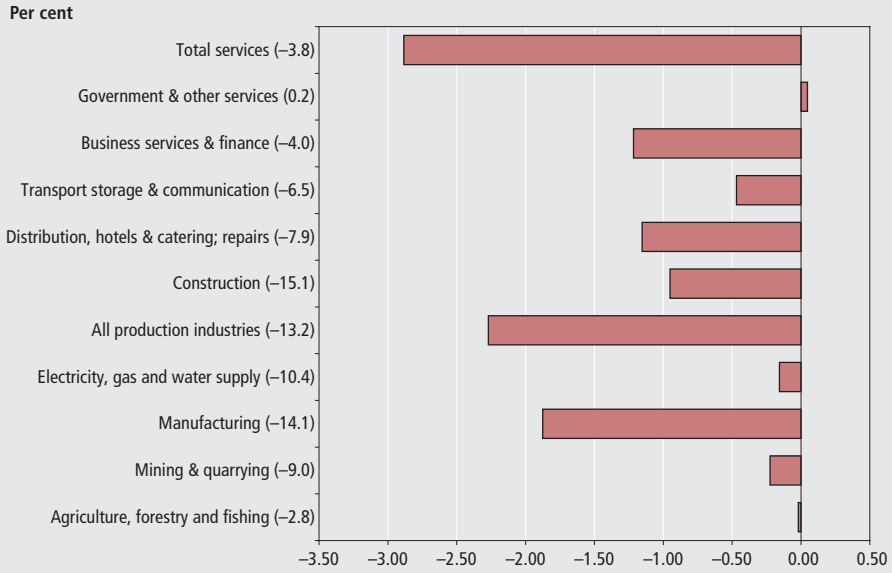
Figure 3
Contributions to the 0.8 per cent contraction in GDP in 2009 Q2[1]



Note: *Source: ONS GDP preliminary estimate*

1 Actual quarterly changes in output are shown in brackets.

Figure 4
Contributions to the peak-to-trough 5.7 per cent fall in output[1]



Note: *Source: ONS GDP preliminary estimate*

1 Actual output changes between 2008 Q1 and 2009 Q2 are shown in brackets.

in significantly negative territory. On the upside output expectations are more buoyant for the next three months, and suggestive of further easing in output falls. All the evidence, official and business survey, identifies that the worse may have passed for the UK manufacturing sector.

Whether the improvement in output can be sustained is not yet clear. Rising output has been partly driven by firms reducing backlogs of work. And as stocks have been reduced significantly this has necessitated an increase in production. But as work backlogs begin to fall, future output will be dependent on new orders, and here the evidence is rather mixed.

PMI data shows that while new orders have continued to fall, the speed of that decline lessened considerably in 2009. Stocks have also started falling at a slower rate indicating the stock cycle might soon start making positive contributions to GDP. CBI data though were less positive. While the rate of decline in new orders also fell there is no immediate sign of a return to growth. The survey also reported that further de-stocking may be yet to come as firms have not been able to reduce stocks as much as desired. This is reflected in stock adequacy levels which remain elevated.

Time series tracking manufacturing output through the current and past recessions are shown in **Figure 5.** So far the loss in output is similar to that of the early 1980s, but as seen in Figure 5, output took a long time to completely recover to its pre-recession level. It was not until 1988 Q1 that, over five years after the end of the recession, output reached its previous 1979 Q2 level. However, the recession of the early 1980s had a profound impact on the structure of the UK economy – prompting a large shift away from manufacturing towards services. Therefore much of the output lost in the recession was lost forever explaining why the drop in output was so persistent. Given the speed and depth of the current manufacturing recession there may be a permanent negative effect on manufacturing output.

Construction output continues to fall quickly

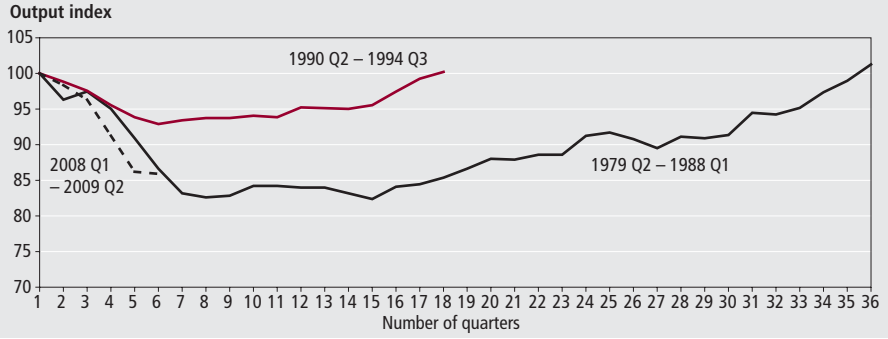
Construction output fell by 2.2 per cent in 2009 Q2 and since the UK economy entered recession total construction output has fallen by 15.1 per cent. Therefore, unlike in manufacturing, there is little sign that the rate of contraction is abating. **Figure 6** compares the recent output of the sector relative to the two previous recessions.

While the recession of the early 1990s was relatively mild in terms of total output loss, the fall in construction output was much more protracted than in the early 1980s with output taking over a decade to return to its pre-recession levels. Like then, much of the recent fall in construction output has been concentrated in the private house building sector and linked to the general fall in the housing market.

According to figures from Communities and Local Government (CLG) – UK house prices have fallen by over 13 per cent since their peak at the end of 2007 – and average independent forecasts published each month by HM Treasury predict that a further 10.9 per cent fall in 2009 could be likely. More pessimistic forecasts suggest that further price falls could be as great as 15-20 per cent.

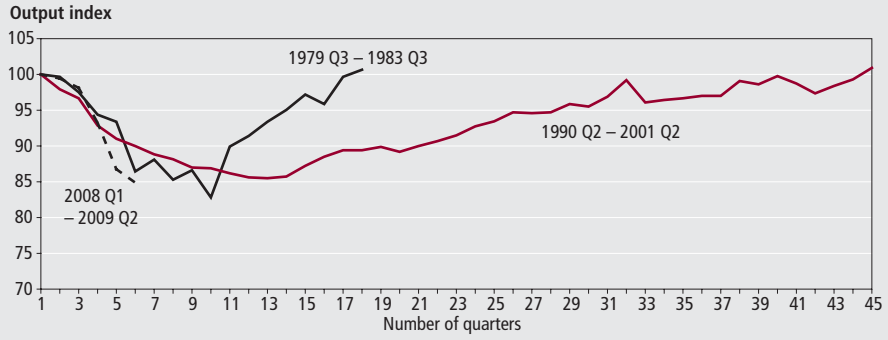
The falling market discourages both buyers and mortgage lenders. Property transactions and mortgage approvals have fallen in tandem, and in the first quarter of 2009 were less than half of the level in 2008 Q1. Restrictions in lending also reflect the global credit crunch – with banks

Figure 5
Tracking manufacturing output in this and past recessions



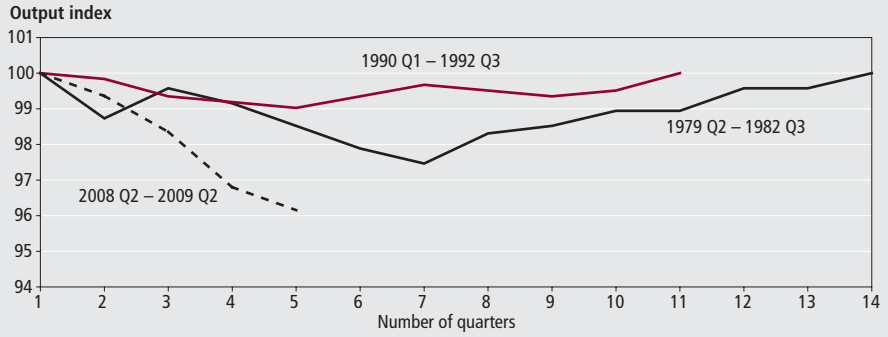
Source: ONS GDP preliminary estimate

Figure 6
Tracking construction output in this and past recessions



Source: ONS GDP preliminary estimate

Figure 7
Tracking services output in this and past recessions



Source: ONS GDP preliminary estimate

keen to cut lending in order to rebuild and protect their balance sheets following large losses in assets related to the US sub prime mortgage market. The collapse of Northern Rock last year has also dented mortgage lending, not only because it had accounted for a significant proportion of new mortgage lending in the UK, but by initially attempting to redeem mortgages in order to pay back government loans it crowded out lending capacity in other parts of the economy (that is, mortgage lending by other banks did not go to new lending but to previous Northern Rock mortgagees).

ONS data on new orders in the construction industry show that in 2009 Q1 new private housing orders were at their lowest level since the quarterly series began in 1964. This trend has been mirrored in PMI construction data, where new orders have been falling as clients 'tighten their spending budgets'. So as a result construction output has declined as house builders are unwilling to construct stocks of unsold properties. Last summer almost all the major house building firms announced plans to cut back on new developments and redundancies have followed. PMI output balances have now been in negative territory for 16 successive months.

However, recent news from the housing market has been more positive. Based on the Land Registry index, which records house prices at completion rather than at the mortgage approval stage (as in the Nationwide and Halifax indices), house prices increased in June – no doubt boosted by low interest rates and recent price falls. And it must also be considered that despite short-term volatility the UK housing market is still in a position of long-term undersupply which could put a floor under prices. But the recent rise in prices may also reflect the low supply of properties coming on to the market and a seasonal upturn in the summer months, so the recent improvement in market conditions might not be sustained.

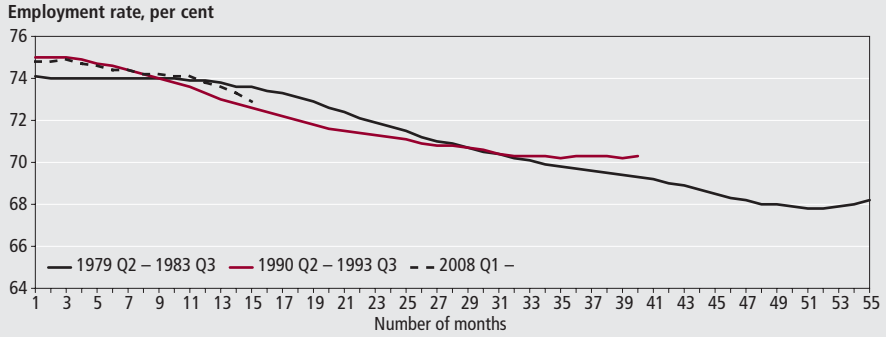
Fall in service sector output greater than expected

If the GDP preliminary estimate surprised on the downside it was probably due to the service sector turning out to be weaker than expected. As Figure 3 shows, the rate of contraction in the production industries has slowed and the services sector made the largest contribution to the 0.8 per cent fall in output. And in Figure 4, the service sector now accounts for most of the total loss in output since GDP peaked in 2008 Q1. The distribution, hotels and catering, and the business and financial services industries have recorded the largest falls in output.

PMI data though had recorded two consecutive months of positive activity in May and June. As this is a widely cited statistic, with the Bank of England acknowledging its important role in forming their assessment of the current economic situation, it is unsurprising a number of commentators thought growth might return in the second quarter. However, the official data suggests that the fall in service sector output is robust. Looking at **Figure 7**, the decline in service sector output has been much faster and pronounced than in previous recessions where falls in service sector activity were relatively mild.

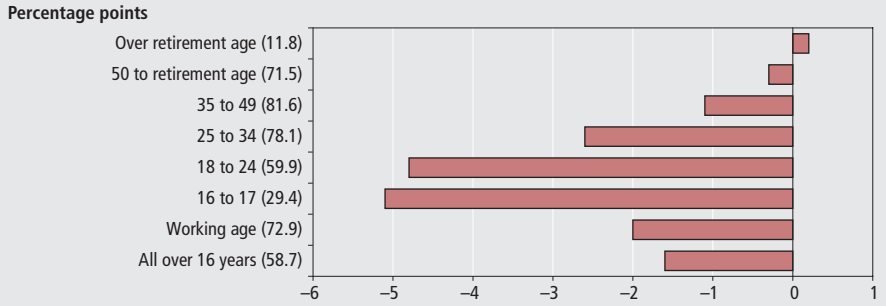
Recent research by Goldman Sachs has argued that preliminary estimates are biased downwards, their findings are that average revisions to the four quarter growth rate between the first and latest estimates, over the sample 1999 Q1 to 2006 Q4, was 0.5 per cent. This would imply that the UK economy is not as weak as it first appears. However, the sample used is

Figure 8
Employment rates in this and past recessions



Source: ONS Labour Market Statistics

Figure 9
Employment rates by age – change on year[1]



Note: *Source: ONS Labour Market Statistics*

1 Actual employment rates for March–May 2009 are shown in brackets.

not long enough to include any previous recession and there is a strong expectation that revisions may be pro-cyclical. In the first quarter of 2009 the data were actually revised significantly downwards from -1.9 per cent to -2.4 per cent.

The Goldman research though does legitimately remind data users that preliminary estimates are based on lower information content than subsequent vintages, and that forecasts used to fill missing information may not perform well around turning points in the economy. This is especially so for the services sector. But the view from the preliminary estimate is that the service sector is now the principal driver of the downturn and has not shown clear signs of approaching a turning point.

LABOUR MARKET

Employment rates continues to fall

The downturn in output continues to be reflected in the labour market. In the three months to May total employment fell by 543,000 compared to the same three month period in 2008. As a result, the headline working age employment rate fell from 74.9 per cent to 72.9 per cent.

Figure 8 plots the employment rate in the current recession compared to its trend in previous downturns. The dates of the early 1980s and 1990s recessions are taken from Figure 2 as the period when output first started to fall up to the point when output had recovered to its pre-recession level. Clearly the employment rate had yet to return to its pre-recession level in these two episodes, indicating that employment continued to fall even after output began a sustained recovery.

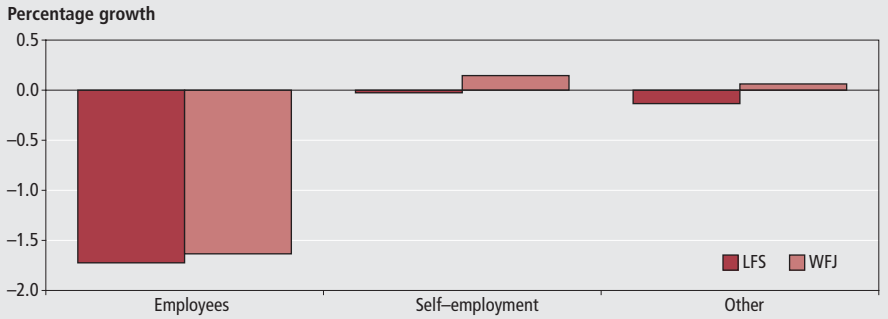
As firms face costs in adjusting their workforce it is generally accepted that the labour market will lag output movements. The cumulative loss of output in the current recession so far (5.7 per cent) is much closer to the experience of the early 1980s when output fell by 6 per cent from peak-to-trough and the economy is still yet to reach a turning point. In the early 1990s the peak-to-trough output fall was much lower at 2.5 per cent. But it is difficult to predict the extent of the pass-through from output to employment based on previous experiences due to structural changes in the labour market over time and because much will depend on the timing and speed of any recovery.

This view has been reflected in business surveys. While balance statistics for output have improved in 2009, which led some commentators to predict that growth would return in 2009 Q2, the outlook for employment intentions remains very subdued. Firms generally appear hesitant to commit to new recruitment until they are sure that the economy has emerged from recession and until then they will continue to rationalise their workforces in order to keep costs at competitive levels.

Employment rates fall faster for younger workers and employees

While the total working age employment rate has fallen by 2 percentage points in the last year there has been marked variation in a breakdown by age profile (see **Figure 9**). The biggest percentage point drops were in the 16-17 and 18-24 age categories, a firm indication that young people (under 25 years of age) have been disproportionately affected by the weakening labour market.

Figure 10
Breakdown of employment and jobs by employees, self-employment and other components[1]



Note: *Source: ONS Labour Market Statistics*

1 LFS employment figures are based on a comparison of March-May 2009 with March-May 2008 and Workforce Jobs (WFJ) on 2009 Q1 with 2008 Q1.

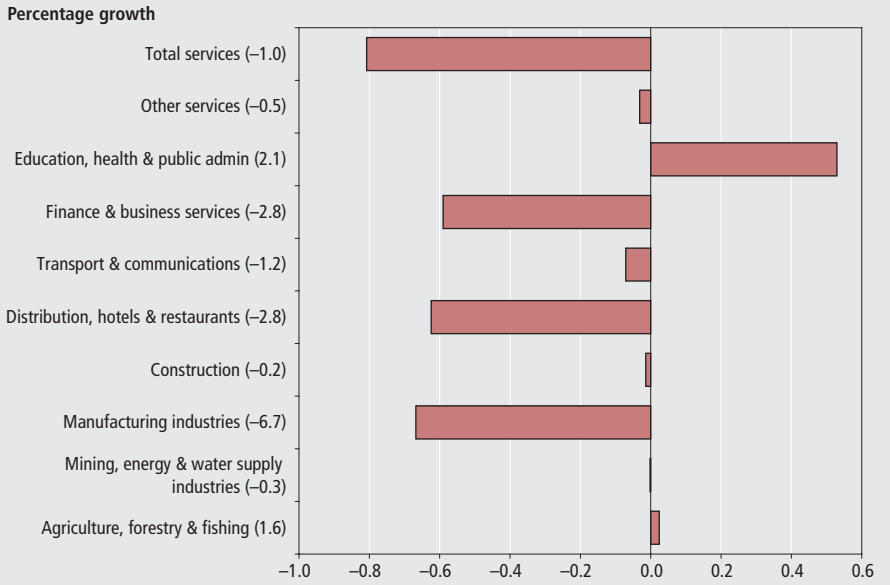
Employment in these groups is likely to be particularly sensitive to firm (graduate) recruitment schemes which have been heavily reduced in the current recession. In fact, Figure 9 shows that the percentage point drop in the employment rate falls as you move up the age categories and even that the employment rate of those above state retirement age increased. This might reflect changing attitudes to the employment of older workers and also the impact of falls in equity and housing markets on the financial position (pensions) of older households – encouraging retirement to be postponed.

However, it should be noted that even though the impact of the recession appears to have been disproportionate towards the young, because the under 25 age group only represent a relatively small proportion of the active workforce, the major contribution to falling employment is still in the older age categories. Here falling employment reflects a sharp rise in redundancies. According to the Labour Force Survey (LFS), there were 301,000 redundancies in the three months to May 2009. This is a marked increase from 120,000 in the same period last year, prompting a sharp jump in the redundancy rate (the number of redundancies divided by the number of employees in the previous quarter multiplied by 1,000) from 4.7 to 11.9.

The high level of redundancies might explain the features of **Figure 10** which breaks down changes in employment (LFS) and the number of jobs (Workforce Jobs) by employees, self-employed and other. Based on all in employment figures, the LFS recorded a 543,000 fall in employment from the three month period March to May 2008 to the same period in 2009. Of this, 497,000 were accounted for by a fall in employee numbers. Likewise, in the first quarter of 2009 the number of jobs fell by 455,000 relative to the same quarter in 2008, but the fall in employee jobs over this period was even greater at 520,000. The evidence suggests that falling numbers of employees (employment and jobs) have driven the downturn in the labour market.

Numbers of self-employed have been much more stable components of total employment and jobs. By international standards the UK has a fairly high proportion of self-employed, which according to the most recent figures, accounted for 13.2 per cent of all employment and 13.5 per cent of total jobs. Reforms to capital gains and corporation taxes in 2003 along with improved access to finance (helped by equity gains from strong house price inflation that could be used as collateral) also meant that self-employment numbers and jobs had been increasing in recent years, especially in the banking, finance and insurance industry. It might have been thought that the current recession would reverse these trends. But it might also be the case that rising unemployment has increased flows into self-employment.

Figure 11
Contributions to the 1.4 per cent fall in jobs by industry (2008 Q1 to 2009 Q1)[1]



Note: *Source: ONS Labour Market Statistics*

1 Actual four-quarterly changes in jobs for each industry are shown in brackets.

Figure 12
Employment by region – change on year (March–May 2008 to March–May 2009)[1]

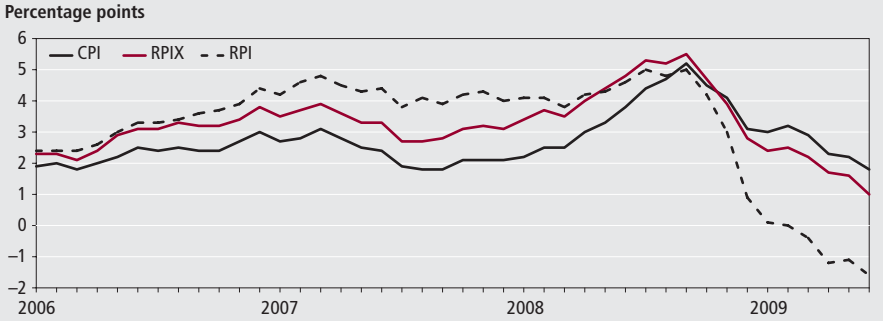
Note: *Source: ONS Labour Market Statistics*

1 Employment rates in Mar-May 2009 shown in brackets.

Jobs by industry follow movements in output

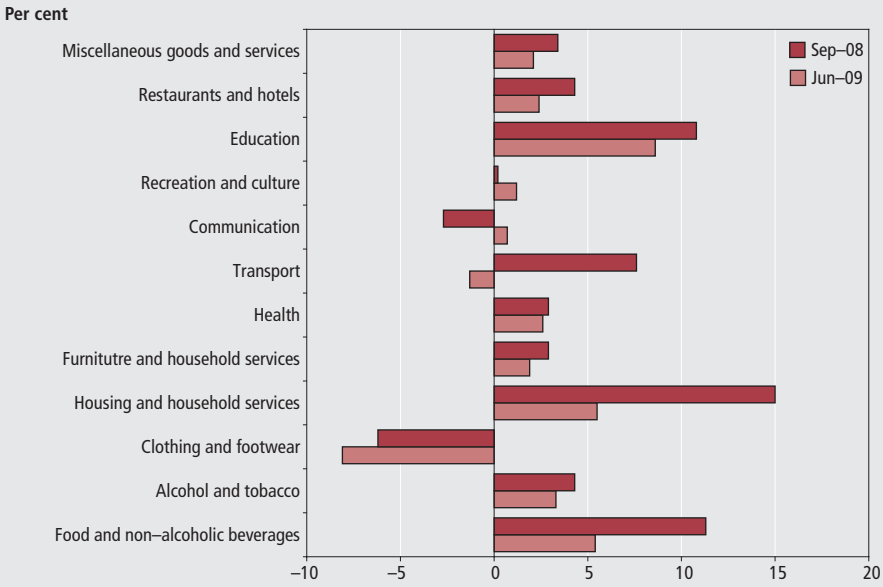
Workforce Jobs data can also be broken down by industry. **Figure 11** shows the relative contribution of each industry to the total 455,000 (1.4 per cent) fall in jobs between March 2008 and March 2009. For the most part the trend in jobs matches the movement in output throughout the recession (see Figure 4).

Figure 13
Consumer prices inflation rates



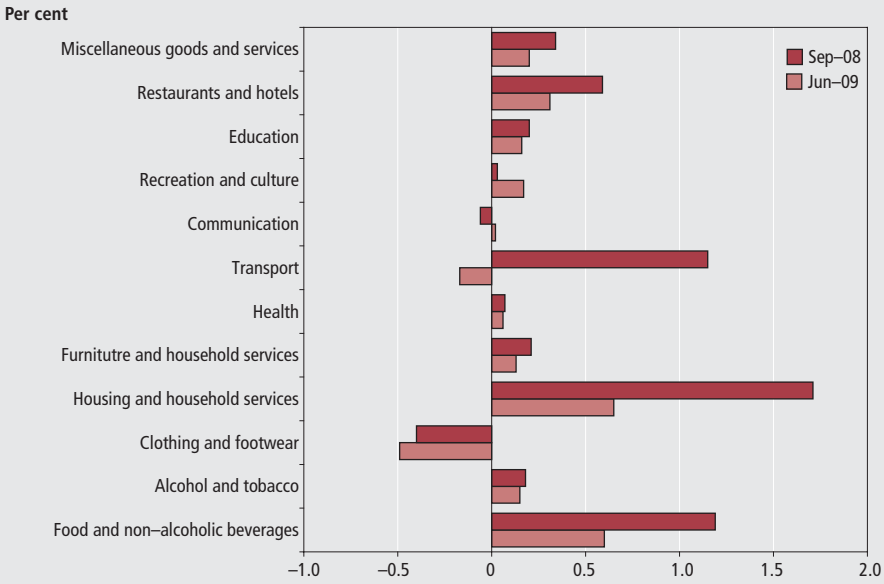
Source: ONS Consumer prices

Figure 14
CPI inflation rates – main components



Source: ONS Consumer prices

Figure 15
CPI inflation rates, contributions by main component



Source: ONS Consumer prices

Manufacturing jobs fell by 212,000 or 6.7 per cent over the year, contributing approximately 0.6 percentage points of the total 1.4 per cent fall. This is consistent with the sharp output fall of the sector shown in Figure 4 during the recession, where the sector also accounted for just under half of the total fall in output. Business surveys report that employment has contracted as a result of redundancies aimed at restructuring businesses and cutting costs.

In the services sector the pattern of job falls has also reflected output movements with large falls in the distribution, hotels and catering sector, and also the business and financial services sector. Labour markets in the hotels and catering industry tend to be quite flexible, so movement in employment or jobs readily reflects changing demand patterns – a point emphasised in the recent PMI for services. And the sharp fall in financial and business services jobs reflects a strong reversal of recent growth in this industry following the effects of the credit crunch on financial sector activity and the recession on business to business services. The public administration, education and health sector though showed an increase in jobs, particularly in the health service. This also provides some evidence that jobs have been more robust in the public sector than the private sector.

The odd industry out is construction, where output has fallen significantly (-15.1 per cent since 2008 Q1) but the number of jobs has only shown a very modest fall (-0.2 per cent) in the last year.

The regional pattern of employment changes has been largely determined by the location of industry. **Figure 12** shows the percentage point fall in the working age employment rate in each region between the periods March to May 2008 and the same three months in 2009. While most regions have shown a similar change to the UK average of a 2.0 percentage fall, there are some divergences between regions – Northern Ireland where the employment rate fell by 5.1 percentage points and the East Midlands where the employment rate fell by just 0.1 percentage point.

CONSUMER PRICES

CPI inflation falls below target

The main headline in the latest consumer prices data is that the rate of inflation in the Consumer Prices Index (CPI) fell to 1.8 per cent in June – so is now below the Bank of England's 2.0 per cent

target for the first time since September 2007 (see **Figure 13**). Inflation has now fallen steadily from its peak of 5.2 per cent in September 2008.

Inflation in the Retail Prices Index has been negative (deflation) since March and fell further to -1.6 per cent in June. The 3.4 percentage point differences between CPI and RPI inflation is more than accounted for by housing components excluded from the CPI. Mortgage interest payments dragged RPI inflation down by 2.63 per cent, reflecting the large fall in interest rates since last autumn. A further 0.84 percentage point difference consisted of other housing components such as depreciation which reflects the downward movement in house prices since last summer. RPIX is the Retail Prices Index excluding mortgage interest payments and inflation on this measure was 1.0 per cent in June.

A comparison of the main contributions to the current CPI inflation rate with the peak in September 2008 is shown in **Figure 14** (actual inflation rates) and **Figure 15** (contributions to the headline CPI inflation rate).

Clearly the general fall in inflation has been driven by food and alcoholic beverages, housing and household services (specifically gas and electricity) and transport (specifically motor fuels). Therefore falling inflation is a consequence of the same factors that caused inflation to spike last year either reversing or beginning to fall out of the annual comparison.

The average of independent and city forecasts is for CPI inflation to continue its fall and end 2009 at 1.1 per cent. However, inflation expectations have been edging upwards throughout the year indicating that CPI inflation was more persistent and the fall less rapid than anticipated. Earlier in the year there was serious talk of deflation being a very real possibility. Although the range of forecasts published by HM Treasury in July did have a low of -0.6 per cent for CPI inflation at the end of the year, closer inspection reveals that this bottom of the range forecast is a complete outlier and the only one still predicting a fall in the CPI.

The main factor creating inertia in the downward path of CPI inflation is the substantial depreciation of sterling in the second half of 2008 – which will put upward pressure on prices by raising the cost of imported goods and services. In 2010 the average forecast is for CPI inflation to end the year at 1.7 per cent. Part of the increase from 2009 will reflect the reversing of the temporary VAT rate cut that took effect in December 2008.

Key indicators

The data in this table support the Economic review by providing some of the latest estimates of Key indicators.

Seasonally adjusted unless otherwise stated

	Source CDID	2007	2008	2008 Q3	2008 Q4	2009 Q1	2009 Mar	2009 Apr	2009 May
GDP growth – chained volume measures (CVM)									
Gross domestic product at market prices	ABMI	2.6	0.7	–0.7	–1.8	–2.4	..	..	..
Output growth – chained volume measures (CVM)									
Gross value added (GVA) at basic prices	ABMM	2.6	0.8	–0.9	–1.8	–2.5	..	..	..
Industrial production	CKYW	0.1	–2.6	–2.0	–4.6	–5.4	–0.2	0.2	..
Manufacturing	CKYY	0.2	–2.5	–2.0	–5.1	–5.6	0.2	0.2	..
Construction	GDQB	2.7	0.2	–1.3	–5.0	–6.9	..	..	..
Services	GDQS	3.5	1.3	–0.6	–1.0	–1.6	..	..	..
Oil and gas extraction	CKZO	–2.4	–4.5	–1.0	–1.7	–2.5	–2.7	2.6	..
Electricity, gas and water supply	CKYZ	1.1	0.3	–1.3	–2.0	–3.6	–2.5	–1.3	..
Business services and finance	GDQN	5.6	2.4	–0.7	–0.6	–2.5	..	..	..
Household demand									
Retail sales volume growth	EAPS	4.2	2.6	–0.5	0.6	0.2	1.2	1.0	–0.7
Household final consumption expenditure growth (CVM)	ABJR	2.5	0.9	–0.4	–1.1	–1.3	..	..	..
GB new registrations of cars (thousands)[1]	BCGT	2,390	2,112	542	338	..	..	..	..
Labour market[2,3]									
Employment: 16 and over (thousands)	MGRZ	29,222	29,443	29,407	29,361	29,204	29,108	..	..
Employment rate: working age (%)	MGSU	74.6	74.5	74.4	74.1	73.6	73.3	..	..
Workforce jobs (thousands)	DYDC	31,471	31,661	31,520	31,296	31,188	..	..	..
Total actual weekly hours of work: all workers (millions)	YBUS	936.1	940.7	940.9	934.0	921.0	918.9	..	..
Unemployment: 16 and over (thousands)	MGSC	1,653	1,776	1,825	1,971	2,215	2,261	..	..
Unemployment rate: 16 and over (%)	MGSX	5.3	5.7	5.8	6.3	7.1	7.2	..	..
Claimant count (thousands)	BCJD	863.6	905.1	914.7	1,091.4	1,366.7	1,455.9	1,505.5	1,544.8
Economically active: 16 and over (thousands)	MGSF	30,875	31,220	31,232	31,333	31,419	31,369	..	..
Economic activity rate: working age (%)	MGSO	78.9	79.1	79.1	79.2	79.3	79.2	..	..
Economically inactive: working age (thousands)	YBSN	7,940	7,872	7,887	7,858	7,828	7,889	..	..
Economic inactivity rate: working age (%)	YBTL	21.1	20.9	20.9	20.8	20.7	20.8	..	..
Vacancies (thousands)	AP2Y	657	617	598	530	465	465	452	444
Redundancies (thousands)	BEAO	127	163	156	259	286	302	..	..
Productivity and earnings annual growth									
GB average earnings (including bonuses)[3]	LNNC	..	..	3.3	3.0	–0.3	–0.3	0.8	..
GB average earnings (excluding bonuses)[3]	JQDY	..	..	3.6	3.6	3.0	3.0	2.7	..
Whole economy productivity (output per worker)	A4YN	..	..	0.1	–1.8	..	..	..	..
Manufacturing productivity (output per job)	LOUV	..	..	..	..	..	–8.5	–7.5	..
Unit wage costs: whole economy	LOJE	..	..	2.9	4.7	..	..	..	..
Unit wage costs: manufacturing	LOJF	..	..	..	..	..	10.4	9.4	..
Business demand									
Business investment growth (CVM)	NPEL	11.9	1.7	–0.7	–0.6	–7.6	..	..	..
Government demand									
Government final consumption expenditure growth	NMRY	1.2	2.8	0.5	1.1	0.2	..	..	..
Prices (12-monthly percentage change – except oil prices)[1]									
Consumer prices index	D7G7	2.3	3.6	4.8	3.9	3.0	2.9	2.3	2.2
Retail prices index	CZBH	4.3	4.0	5.0	2.7	–0.1	–0.4	–1.2	–1.1
Retail prices index (excluding mortgage interest payments)	CDKQ	3.2	4.3	5.3	3.8	2.4	2.2	1.7	1.6
Producer output prices (excluding FBTP)[4,5]	PLLV	1.9	4.7	5.9	5.0	3.6	3.2	2.5	1.2
Producer input prices[5]	RNNK	3.0	21.6	28.2	9.0	0.6	–0.5	–5.8	–9.4
Oil price: sterling (£ per barrel)	ETXR	36.11	52.10	61.64	35.69	31.33	33.42	35.00	38.00
Oil price: dollars ($ per barrel)	ETXQ	72.44	98.37	116.89	57.24	44.94	47.42	51.51	58.67

Seasonally adjusted unless otherwise stated

	Source CDID	2007	2008	2008 Q3	2008 Q4	2009 Q1	2009 Mar	2009 Apr	2009 May
Financial markets[1]									
Sterling ERI (January 2005=100)	BK67	103.5	90.9	91.6	83.6	77.1	76.4	78.4	79.9
Average exchange rate /US$	AUSS	2.0018	1.8528	1.8918	1.5699	1.4346	1.4174	1.4715	1.5429
Average exchange rate /Euro	THAP	1.4619	1.2588	1.2586	1.1957	1.1010	1.0867	1.1157	1.1295
3-month inter-bank rate	HSAJ	5.95	2.75	6.15	2.75	1.60	1.60	1.30	1.15
Selected retail banks: base rate	ZCMG						0.50	0.50	0.50
3-month interest rate on US Treasury bills	LUST	3.29	0.11	0.90	0.11	0.13	0.13	0.14	0.19
Trade and the balance of payments									
UK balance on trade in goods (£m)	BOKI	–89,754	–92,877	–23,507	–22,294	–20,821	–6,471	–7,003	..
Exports of services (£m)	IKBB	150,645	170,399	41,566	45,523	41,882	14,038	14,113	..
Non-EU balance on trade in goods (£m)	LGDT	–47,768	–53,633	–14,486	–13,621	–12,708	–3,355	–4,139	..
Non-EU exports of goods (excl oil & erratics)[6]	SHDJ	98.8	105.8	108.2	99.5	92.6	96.2	92.7	..
Non-EU imports of goods (excl oil & erratics)[6]	SHED	113.3	113.5	115.5	109.8	101.3	95.7	101.4	..
Non-EU import and price index (excl oil)[6]	LKWQ	102.6	115.3	115.8	125.3	130.9	131.5	128.7	..
Non-EU export and price index (excl oil)[6]	LKVX	101.8	109.8	109.5	115.9	121.5	122.2	120.1	..
Monetary conditions/government finances									
Narrow money: notes and coin (year on year percentage growth)[7]	VQUU	5.8	7.3	5.2	7.3	8.4	8.4	8.6	8.6
M4 (year on year percentage growth)	VQJW	12.6	12.9	12.0	16.5	18.1	18.1	17.4	16.6
Public sector net borrowing (£m)	–ANNX	33,546	64,377	13,423	30,347	22,269	18,978	10,641	19,861
Net lending to consumers (£m)	RLMH	12,912	11,548	2,067	1,857	210	42	200	300

External indicators – non-ONS statistics

		2008 Nov	2008 Dec	2008 Jan	2008 Feb	2009 Mar	2009 Apr	2009 May	2009 Jun
Activity and expectations									
CBI output expectations balance[1]	ETCU	–42	–42	–43	–44	–48	–32	–17	–17
CBI optimism balance[1]	ETBV			–60			–64		
CBI price expectations balance	ETDQ	1	3	–15	–13	–13	–19	–16	–7

Notes:

Source: Office for National Statistics

1 Not seasonally adjusted.
2 Annual data are the average of the four quarters except for workforce jobs (June).
3 Monthly data for vacancies and average earnings are averages of the three months ending in the month shown. Monthly data for all other series except claimant count are averages of the three months centred on the month shown.
4 FBTP: food, beverages, tobacco and petroleum.
5 Now derived from not seasonally adjusted series.
6 Volumes, 2003 = 100.
7 Replacement for series M0 which has ceased publication.

Further explanatory notes appear at the end of the Key times series section.

Independent forecasts

July 2009

UK forecasts

The tables below supplement the Economic Review by providing a forward-looking view of the UK economy. The tables shows the average and range of independent forecasts for 2009 and 2010 and are extracted from HM Treasury's Forecasts for the UK Economy.

2009

	Average	Lowest	Highest
GDP growth (per cent)	*–4.0*	*–4.4*	*–3.1*
Inflation rate (Q4, per cent)			
CPI	*1.1*	*–0.6*	*1.8*
RPI	*–1.3*	*–2.8*	*1.0*
Claimant count (Q4, million)	1.99	1.60	2.60
Current account (£ billion)	–29.5	–56.0	–11.2
Public Sector Net Borrowing (2008–09, £ billion)	180.8	155.0	202.0

2010

	Average	Lowest	Highest
GDP growth (per cent)	*0.7*	*–1.3*	*2.0*
Inflation rate (Q4, per cent)			
CPI	*1.7*	*0.5*	*3.5*
RPI	*2.7*	*0.6*	*4.4*
Claimant count (Q4, million)	2.29	1.57	3.10
Current account (£ billion)	–28.7	–107.4	–0.8
Public Sector Net Borrowing (2009–10, £ billion)	184.2	154.0	240.0

Notes

Forecast for the UK economy gives more detailed forecasts, and is published monthly by HM Treasury. It is available on the Treasury's website at: www.hm-treasury.gov.uk/data_forecasts_index.htm

Selected world forecasts

The tables below supplement the Economic Review by providing a forward-looking view of the world economy. The tables show forecasts for a range of economic indicators taken from *Economic Outlook* (June 2009), published by OECD (Organisation for Economic Co-operation and Development).

2009

	US	Japan	Euro area	Total OECD
Real GDP growth (per cent)	*–2.8*	*–6.8*	*–4.8*	*–4.1*
Consumer price (percentage change from previous year)	*–0.6*	*–1.4*	*0.5*	*..*
Unemployment rate (per cent of the labour force)	*9.3*	*5.2*	*10.0*	*8.5*
Current account (as a percentage of GDP)	*..*	*..*	*..*	*..*
Fiscal balance (as a percentage of GDP)	*–10.2*	*–7.8*	*–5.6*	*–7.7*

2010

	US	Japan	Euro area	Total OECD
Real GDP growth (per cent)	*0.9*	*0.7*	*0.0*	*0.7*
Consumer price (percentage change from previous year)	*1.0*	*–1.4*	*0.7*	*..*
Unemployment rate (per cent of the labour force)	*10.1*	*5.7*	*12.0*	*9.8*
Current account (as a percentage of GDP)	*..*	*..*	*..*	*..*
Fiscal balance (as a percentage of GDP)	*–11.2*	*–8.7*	*–7.0*	*–8.8*

Notes

The OECD *Economic Outlook* is published bi-annually. Further information about this publication can be found at www.oecd.org/eco/Economic_Outlook

ARTICLE

Rob Pike, Mark Lewis and Daniel Turner
Office for National Statistics

Impact of VAT reduction on the consumer price indices

SUMMARY

This article explains how ONS successfully measured prices for the consumer price indices following the temporary reduction in the rate of VAT from 17.5 per cent to 15 per cent from 1 December 2008. It became more difficult to measure prices because in December 2008 many shops lowered their till price to reflect the new VAT rate but they did not change the shelf price - prices are collected for consumer price indices by visiting shops and looking at the shelf price. This article explains how information was collected from each shop on whether it had passed on the VAT reduction and, if so, whether the price was changed on the shelf or only at the till. It explains how ONS used this information to adjust the price information collected from the shelf and how checks were introduced to maintain quality. It provides information on the impact of the VAT change on the Consumer Prices Index and estimates that in December 2008 the effect on the CPI from retailers and service providers passing on both the VAT reduction and increases to excise duty was to reduce the 12-month rate by around 0.5 percentage points.

Introduction

On 24 November 2008 the Chancellor announced in his Pre-Budget Report that he would temporarily reduce the standard rate of Value Added Tax (VAT) from 17.5 per cent to 15 per cent from 1 December 2008 (excise duty for road fuel, alcohol and tobacco were raised so that the combined total of VAT and duty remained unchanged for these commodities).

Each month over 100,000 prices are collected for the Retail Prices Index (RPI) and Consumer Prices Index (CPI) by visiting shops and some service providers and noting the price on the shelf. Also over 80,000 prices are collected centrally, for example, via the internet and by writing to service providers (e.g. energy companies) and other data providers. In December a large number of retailers who had passed on the reduced VAT rate to customers left the shelf price unchanged, but adjusted the price at the till.

This article provides an explanation of how this collection difficulty was overcome and it estimates the impact of the change in the VAT rate on the Consumer Prices Index. The article comprises four sections which are outlined below.

CPI/RPI sources, methods and uses

This section provides some background information about the CPI and the RPI. It explains why these inflation measures are important to their users and how they are calculated. It covers how prices are collected for the CPI and RPI and how they are weighted together to produce the consumer price indices. This provides an insight into why it became more difficult to collect price information following the reduction in the VAT rate.

How prices were measured following the VAT change

This section explains how ONS measured consumer prices when many shops' shelf prices did not reflect the price being charged at the till, following the reduction in the VAT rate. It explains how ONS obtained information about whether each retailer had passed on the VAT reduction to customers and, if so, whether the adjustment to the price had been made at the shelf or only at the till. It shows how this information was used to adjust the prices collected from the shelf. It also covers the difficulties in collecting this information and it explains how checks and procedures were developed and implemented to maintain the quality of the outputs.

Impact of change in VAT rate on CPI

The third section shows the proportion of 'locally collected' shops that passed on the VAT reduction to consumers in December 2008. It looks at the estimated impact on the CPI from the shops, service providers and internet sellers who passed on the reduction in the VAT rate. It also shows how ONS dealt with the impact of the VAT reduction for those few outlets where prices are collected only quarterly. This section also provides information on the extent to which prices that decreased between November and December 2008 to reflect the VAT reduction had returned to the November price, or higher by February 2009.

Conclusions

The article concludes that despite the difficulty in collecting price information the reduction in the quality of the inflation indicators is likely to be negligible.

CPI/RPI sources, methods and uses

Why are the CPI and RPI important?

Both the CPI and the RPI are measures of change in the prices of goods and services bought for consumption in the UK. The RPI is used as the basis for uprating tax allowances and state benefits and many private sector contracts (e.g. rental payments) are linked to RPI. Also, the interest payments and redemption value for index linked gilts are determined by the RPI, and so it is imperative that an accurate RPI is available every month. Should it not be available, it would be necessary to construct an alternative index.

The CPI is used as the basis for the Government's inflation target and so a timely accurate estimate is necessary. Key stakeholders such as the Bank of England and HM Treasury forecast consumer inflation, and so it is also important to them that they understand the impact of the change in the VAT rate on consumer inflation, and the likely impact when the VAT rate reverts to 17.5% from January 2010.

A more detailed explanation of the uses of CPI and RPI and why ONS publishes two measures of consumer inflation is given in **Box 1**.

How are the CPI and RPI calculated?

ONS collects around 180,000 prices for 650 items each month from a wide range of shops across the UK (including those in shopping centres, out-of-town retail outlets, supermarkets and corner shops), from the internet and through correspondence with some service providers and specialist retailers. These prices represent the goods and services typically bought by households. Around 100,000 prices are collected from shops under a contract with Research International, a market research company. These are commonly referred to as 'locally collected prices'. A further 12,000 prices are collected centrally, by ONS, for shops that have consistent prices for their goods or services across the UK. Also around 70,000 other prices of goods and services are collected centrally (this includes around 46,000 insurance quotes which are not subject to standard rate VAT). See **Box 2** for more detail on the three methods of price collection.

The items included for price collection are referred to as the basket of goods and services. The basket contains a sample of representative consumer goods and services on which households typically spend their money. The prices of these goods and services are used to give a reliable measure of the price movements for a broader range of items. The number of items chosen to represent each product group depends on the expenditure on the group and the variability of price changes. This information principally comes from household expenditure data within the national accounts for CPI and ONS's Living Costs and Food survey (formerly the Expenditure and Food Survey) for RPI. Other sources include information from market research.

Households spend more on some items than others, and the amount they spend on an item influences the sensitivity of the index to price changes for that item. For example, a 10 per cent rise in the price of petrol should have a larger impact on the CPI and RPI than a 10 per cent rise in the price of tea. To reflect this, products are grouped together, and a weight is allocated to represent the appropriate share of household expenditure. The items in the basket and their weights are reviewed and updated annually so that changes in household spending patterns are reflected.

How prices were measured following the VAT change

Retail outlets' approach to passing on the VAT reduction

In December a large number of retailers who passed on the VAT reduction to their customers adjusted the price at the till, but left the shelf price unchanged. There were two approaches:

- Most shops aimed to change their shelf price to reflect the VAT reduction but, because of the short notice of the change in VAT, they temporarily changed the till price but not the shelf price. The majority of these aimed to have changed the shelf price by the end of January or February 2009. Some

Box 1

Why does the ONS publish two measures of inflation?

A single measure of inflation would not be able to meet all users' needs.

The RPI is the older and more familiar measure of inflation. It is used for the indexation of various incomes and prices and the uprating of pensions, benefits and index-linked gilts. The RPI provides a consistent series back to 1947, allowing analysis of price changes over time. In contrast, the CPI is available back to 1996.

The CPI is the main measure of consumer price inflation for macroeconomic purposes in the UK. It uses methods that are consistent across the European Union, allowing comparisons of the rate of inflation across European countries. It forms the basis for the Government's inflation target that the Bank of England's Monetary Policy Committee is required to achieve.

There are several key differences between the CPI and the RPI

- There are differences in the goods and services represented in the basket. For example:
  - The CPI excludes council tax and mortgage interest payments which are included in the RPI.
  - The CPI includes some charges for financial services that are excluded from the RPI.
- The way prices are combined using people's spending patterns are different:
  - The CPI represents a broader population than the RPI – the RPI excludes households with the top four per cent of income and excludes some pensioners.
  - The CPI produces weights for items in the basket using a breakdown of household expenditure taken from the national accounts. The RPI uses the Living Costs and Food survey to calculate weights.
- Different mathematical formulae are used for combining the prices collected for each item in the basket. The formula effect means that the average price for each item in the CPI is always lower than or equal to the average price for the same item within the RPI.

Box 2
Methods of price collection

There are three distinct methods of price collection:

- Local collection - local price collectors visit shops in 141 locations to collect over 100,000 prices. This ensures that variations in price across the UK are captured. The prices are collected by Research International, a market research company contracted by the ONS. The price collectors visit the same shops each month to collect the prices of identical products to ensure they are collecting like for like. The shelf-price of an item is collected, and entered into a hand-held computer.
- Central shops - for some larger chain stores, there is a central pricing policy which is used throughout their UK branches. These prices are collected centrally, and weighted according to the retailer's market share. The results are then combined with those from the local price collection.
- Central collection – prices are collected centrally for goods and services where the price is the same for all UK residents or the regional variation in prices can be collected centrally (for example, internet purchases and utility costs). Index calculations are carried out separately from the main method of index production. This is the case for around 130 items.

of these shops had notices advising customers that the VAT reduction would be reflected in the price at the till, however many did not.

- A few chains of shops deducted 2.13[1] per cent from the total of all those items that were subject to standard rate VAT, and they showed this adjustment on the till receipt. These shops are likely to continue with this approach throughout the thirteen months that VAT is reduced.

Some shops did change the shelf price by 1 December, although some of these shops that changed the shelf price did so only for some items.

Some shops had changed some but not all of their shelf prices by index day (the day the prices were collected) in December. Other shops had changed some but not all of their shelf prices when collection took place on the January and February index days. These mainly represent shops that were in a transitional phase of updating shelf prices to reflect the change in the VAT rate, having previously changed only their till price for all goods subject to VAT.

ONS's approach to measuring prices

For the locally collected prices, each shop and service provider that was visited by Research International was asked to provide information about whether they had passed on the VAT reduction to customers and, if so, whether the adjustment to the price had been made at the shelf or only at the till. Where the price had been changed only at the till, and the item was subject to standard rate VAT, the shelf price collected was adjusted to reflect the new VAT rate, rounding each price to the nearest penny. Where shops had fully passed on the VAT reduction but had adjusted only some shelf prices by December index day, 2.13 per cent was deducted from those prices that, on December index day, were unchanged compared with the price on November index day. A similar procedure was adopted in January and February.

The information about the shops' approach was quality assured by identifying where there were inconsistent responses for different shops within a chain. A team of price analysts telephoned local shops and head offices to clarify the position in these cases. Where no information was obtainable or the situation could not be clarified the prices from these shops were excluded from the index.

At this point, it may be helpful to explain one particular challenge in collecting information about passing on the VAT reduction. When shops reported that they had passed on the VAT reduction by changing the till price but not the shelf price, it was assumed that the retailer had reduced the price of all their goods that were subject to full rate VAT. It was not practical to collect information on an individual item basis. If a retailer had passed on the VAT reduction by only adjusting the price at the till, for only some of the items, it is possible that ONS would have applied a reduction in the price where the price should have remained constant. In these cases the price would be seen to return to the November price when the shelf price was updated. So it is possible that in some cases the price did not move at all. However, in the main, enquiries to shops revealed that they had initially passed on the VAT reduction for all prices.

For centrally collected prices, where the prices were collected on the internet, the prices were extracted from the "checkout" to ensure the price collected was the price charged to the customer. Prices collected through correspondence with organisations included any change in the rate of VAT. See Pike (2009) for a more detailed explanation of ONS's approach to measuring the prices.

Impact of change in VAT rate on CPI

Proportion of shops passing on VAT reduction in December

Table 1 shows the proportion of locally collected shops (i.e. those visited by RI) that passed on the VAT reduction to customers in December 2008. It also shows the proportion that had updated the price information on the shelf and the proportion that had changed only the till price. The results show that although 66 per cent of these shops had passed on the VAT reduction, only 14 per cent of shops had passed on the price reduction and updated all their shelf prices.

Impact of VAT reduction on CPI

Method

The change in the VAT rate had an impact on both the CPI and the RPI inflation rates. However for practical reasons this article focuses on the CPI alone in analysing the impact of the change in the VAT rate. An analysis covering both the CPI and RPI would have taken substantially longer.

The estimated impact of the VAT reduction on CPI was calculated by identifying the prices that had decreased in December because of the lower VAT rate and reverting these prices to the price they were in November. The CPI aggregation was re-run using these adjusted prices. The adjusted data were then compared with the data that were published for the December 2008 CPI. This approach facilitates a comparison of component series; a breakdown of differences by COICOP category is presented in this article.

A three-stage approach was used to identify which prices had to be increased. First those series that are subject to full rate VAT were selected. Then a program was run to identify which prices had decreased by around 2.13 per cent between November 2008 and December 2008 (a range of -1.4

Table 1
Local shops' approach to passing on VAT reduction in December 2008

Method of passing on VAT reduction	Per cent
Shelf price changed	14
Only till price changed	43
Mixed – some shelf prices updated, other prices changed only at till	9
Not passing on VAT reduction	34

Source: ONS Consumer Prices

per cent to -2.9 percent was used for the price decrease, to allow for rounding to the nearest penny). This information was checked against information about the relevant shop's approach to passing on the VAT reduction. For locally collected prices this information had been collected by Research International and for the 'central shops' the information had been collected by ONS's prices analysts, mainly by telephone.

Only those prices that had decreased by around 2.13 per cent were returned to their November price for this analysis. Some prices had fallen by substantially more than 2.13 per cent between November and December 2008 (in December there was some strong discounting in the closing down sales of two major retailers, and other sales were taking place). Some shops that were asked whether they had passed on the VAT reduction within a sale price (for example a reduction of 20 per cent) replied that they had because the reduced VAT rate was included within the price reduction. However, in these circumstances it seemed unlikely to the authors that a retailer would have reduced the price by less if there had not been a reduction in the VAT rate (for example they were unlikely to have reduced the price by around 18 per cent instead of 20 per cent). For simplicity this analysis excluded all price reductions outside the bound -1.4 per cent to -2.9 per cent. It is possible that this approach under-estimates the impact of the VAT reduction slightly. However, it is likely that if all price reductions had been increased to reflect the higher VAT rate the result would have over-estimated the impact. The price quotes that decreased by more than 2.9 per cent in December, and were therefore excluded from the analysis, account for less than ten per cent of all price quotes that decreased between November and December.

A different method was used for identifying the 'central collection' prices. These prices are processed using spreadsheets, so it would have been a lengthy process to adjust individual prices. ONS's price analysts obtained information about whether the online retailer or the data provider had passed on the VAT reduction. This information was used to estimate the proportion of retailers that had passed on the VAT reduction, for each item. The December index for each item was increased by a ratio of between 0 and 2.17[2] per cent, depending on the proportion of retailers that had passed on the VAT reduction. The impact of these price changes was more difficult to measure because the individual prices are not held on a database.

Results

Table 2 presents the contributions to the published CPI 12-month rate in December 2008 (column 1) and the contributions to an estimate of what the CPI 12-month rate would have been if there had not been a reduction in the VAT rate (column 2). The difference between these columns represents the impact of shops and service providers passing on the VAT reduction and is presented in column 3.

Using the approach described above it is estimated that if VAT had remained at 17.5% in December 2008 and there had been no change to November's excise duty rates, the CPI 12-month rate to December 2008 would have been around 0.5 percentage points higher than the published figure of 3.1 per cent. ONS estimates that if the VAT reduction and offsetting changes in excise duty (for alcohol, tobacco and road fuel) had been taken on in full the impact on the CPI 12-month rate would have been around -1.3 percentage points (-1.5 percentage points from VAT partly offset by +0.2 percentage points from excise duties).

The largest effect from the change in the VAT rate is seen in recreation and culture where the VAT reduction was passed on in December for most televisions, radios, cameras, CDs and DVDs.

Another large effect came from transport where the effect of the VAT reduction is seen in prices for motorcycles, bicycles and new cars (VAT is payable only on the profit margin for used cars).

There was also an effect from:

- Furniture, household equipment and routine maintenance, as retailers across the furniture sector passed on the VAT reduction.
- Clothing and footwear where most items had seen the VAT reduction passed on by the retailer.
- Miscellaneous goods and services where the effect came from items including haircuts, tissues, toothpaste and electric razors.
- Restaurants and hotels, with meals and non-alcoholic drinks across the sector showing the impact of the VAT reduction.
- Communication where the effect came from telephone charges, mobile phone charges and phone handsets.

There were some very small effects within categories where most items are not subject to standard rate VAT:

- Food and non-alcoholic beverages, mainly due to ice cream, crisps, fizzy drinks and fruit drinks. There was no effect from alcoholic drinks, as the VAT reduction was offset by increases in excise duty.
- Housing, water, electricity, gas and other fuels, mainly due to wallpaper, paint and general DIY items.
- Health, mainly due to non-prescription medicine, spectacle frames and contact lenses.

Also there is no effect from most holidays. For holidays the relevant price paid is the price paid when the holiday was booked. So for most holidays taken in December 2008 the price paid would have included VAT at 17.5 per cent.

There were no effects from alcohol, tobacco or road fuel because in December 2008 the reduction in their VAT was offset by an increase in their excise duty.

Prices collected quarterly

Some prices are collected only quarterly. The rationale is that these prices do not change frequently and so it is not necessary to visit the outlet each month. While this provides savings on collection costs, inevitably there is a delay in picking up some price changes. Quarterly series include estate agents' fees, car servicing, and services such as plumbers as well as centrally collected prices such as golf course fees. Most quarterly prices are collected for the month of January as this is the base month.

For the December estimate, many of the prices for items that are collected on a quarterly basis were not collected. All prices were, however, collected in January 2009. At the time the December index was finalised the price was adjusted down for the December index where information about the outlet passing on the VAT reduction was available (e.g. for Estate Agents' fees) but for other areas the previous prices were rolled forward to December. Once January data had been collected it appeared likely that

Table 2
Impact of the VAT cut to the contributions to the 12 month CPI

Column number	1	2	3 (1–2)
	LIVE PUBLISHED CPI 3.1%	IF VAT HAD NOT BEEN REDUCED	IMPACT OF VAT CUT IN DEC 08
Contribution To 12 Month Change	Dec–08	Dec–08	
All HICP	**3.05**	**3.54**	**–0.49**
Food And Non-Alcoholic Beverages	1.13	1.15	–0.02
Alcoholic Beverages, Tobacco	0.18	0.18	0.00
Clothing And Footwear	–0.67	–0.60	–0.07
Housing, Water, Electricity, Gas And Other Fuels	1.63	1.65	–0.02
Furniture, Household Equipment And Routine Maintenance	0.06	0.13	–0.07
Health	0.05	0.06	–0.01
Transport	0.02	0.10	–0.08
Communication	–0.08	–0.03	–0.05
Recreation And Culture	–0.19	–0.08	–0.11
Education	0.16	0.16	0.00
Restaurants And Hotels	0.49	0.53	–0.04
Miscellaneous Goods And Services	0.26	0.30	–0.04
Goods And Services			
Goods	0.99	1.37	–0.38
Services	2.06	2.17	–0.11

Note: *Source: ONS Consumer Prices*

1 Column 3 components do not sum to total due to rounding.

the number of quarterly outlets that had passed on the VAT reduction in December had been under-estimated. The impact on the December CPI 12-month rate is estimated to be around -0.02 percentage points (it is important to note that these quarterly prices were fully captured in the January 2009 index and so the current inflation rate is not affected). A more detailed explanation of the issues relating to quarterly collection can be found in Pike (2009).

Prices returning to higher levels by February 2009

The CPI 12-month rate for February rose to 3.2 per cent from 3.0 per cent in January. One of the reasons for this increase was that some prices returned to the November price, or higher, having previously decreased in price due to the VAT reduction in December. Reasons given for the price rises include "higher import costs" and, to a lesser extent, "company policy".

An analysis of these price changes shows the extent to which prices that decreased between November and December 2008 to reflect the VAT reduction had returned to the November price, or higher by February 2009. The analysis is restricted to prices collected from 'local shops' or 'central shops' and it is based on goods and services that are subject to standard rate VAT. It uses all data where a price quote can be tracked for an identical good or service from December 2008 through to February 2009.

This analysis shows that 36 per cent of prices that decreased between November and December 2008 to reflect the VAT reduction had returned to exactly the same price as November 2008 by the time prices were collected in February 2009. A further 15 per cent of the prices that decreased between November and December 2008 to reflect the VAT reduction had risen to a figure that was higher than the November price by February 2009.

The prices used in compiling the CPI have different weights attributed to them, depending on whether they represent "local shops" or "central shops" and what item they represent, so it is not practical to provide a precise estimate of their impact. Nevertheless the pattern is broadly consistent for centrally collected prices and locally collected prices with around fifty percent of February prices having risen to a figure that was equal to or higher than the November price by February 2009.

An analysis of the actual prices for the 'local shops' has shown that around 20 per cent of those prices that returned to the November price were returning to a price pitched one penny below the pound (£0.99, 1.99, 2.99 etc).

Conclusions

Following the Chancellor's announcement on 24 November 2008 that the VAT rate would be temporarily reduced from 17.5% to 15% many retail outlets initially changed their prices only at the till. ONS overcame this collection challenge by collecting information about the approach shops and service providers were taking, and adjusting the shelf prices that had been collected. Comprehensive checks were put in place to quality assure the information provided, and where discrepancies were identified further investigation was carried out. The transition stage, when many shops were in the process of introducing new shelf prices, was particularly difficult. The situation had stabilised by the time prices were collected in March. Although the price collection was more difficult over this period it is likely that there was a negligible reduction in the quality of the CPI and RPI. The impact on the CPI 12-month rate from retail outlets passing on the VAT reduction and the offsetting alcohol, tobacco and road fuel duties in December 2008 is estimated to be around -0.5 percentage points. However, it is estimated that by February 2009 a substantial proportion of the prices that decreased in December 2008 had returned to the November 2008 level or higher.

Notes

1. Reducing the total price by 2.13 per cent takes the price to the correct level for VAT at 15 per cent. Another way of looking at it would be to say that the original price (including VAT at 17.5 per cent) was divided by 1.175 (to remove the 17.5 per cent VAT) and multiplied by 1.15 (to apply the 15 per cent VAT).
2. The index was increased by 2.17 per cent if all retailers or service providers for this item had passed on the VAT reduction. An increase of 2.17 per cent is arrived at by multiplying by 1.175 and dividing by 1.15. This represents applying VAT at 17.5 per cent and removing the 15 per cent VAT rate.

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ARTICLE

The impact of the recession on retail sales volumes

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SUMMARY

This is the second of two articles on retailing activity in the current economic downturn. This article considers how the changing structure of the economy over the last decade has impacted on retail sales volumes. It compares the pattern of retail sales in the current recession to that observed in the recession of the 1990s. Notably, it examines why non-food stores appear to have (so far) performed better than food stores in the current recession.

It concludes that the observed growth in retail sales has been supported by falling retail prices and a flexible labour market that has limited the effect of unemployment on household consumption. It also identifies two factors that explain why non-food stores have performed more strongly than food stores in the recession: the changing structure of UK store types and relative price changes.

The Retail Sales Index (RSI) measures an element of consumer spending, which is used in compiling the National Accounts. The RSI is also one of the most timely short-term measures of economic activity and it is an important input to the evidence base used in macroeconomic management. The monthly Retail Sales Statistical Bulletin produced by the Office for National Statistics (ONS) provides estimates of the volume of sales (after the estimated effects of prices have been removed) and value of sales (total value of sales in current prices).

This is the second of two ONS articles on retailing activity in the economic downturn. The first article (Anagboso, 2009) focused on recent changes in the value of retail sales from 2006 to 2008. This article will examine volume estimates for retail sales with a focus on the last two recorded economic recessions. The article will be organised as follows:

- the RSI in context
- long-term view of the RSI against the backdrop of the UK economy
- consideration of why some retail sectors have (so far) performed better in the current recession compared to the recession of the 1990s
- conclusion

The RSI in context

The ONS Retail Sales Inquiry is the most comprehensive measure of retail activity in Great Britain. It measures movements in the average weekly sales of retailers in Great Britain. The RSI covers the activities of businesses selling goods directly to consumers and is a comprehensive broad-based sample survey which requests turnover information from approximately 5,000 businesses each month. The scope of the survey includes retailing businesses ranging from small corner shops to larger employers. Businesses provide turnover data, for example, the cash value of items passed through the till for a given reporting period.

The RSI uses annual chain-linking methods to calculate volume estimates. Chain-linking is a statistical technique which is the most appropriate way to measure sales volume growth, because it reflects changes in purchasing when consumers switch purchases to goods that have fallen in price. Annual chain-linking uses base year prices updated each year and then linked together to form a continuous time series. This linking process effectively absorbs price changes into the RSI volume index but in a way that maintains the integrity of the index as a measure of volume change. It allows price changes to be reflected in the measurement of retail sales volumes in a rapidly changing economy (McLaren 2009).

The RSI is published in three main categories: predominantly food stores, predominantly non-food stores and non-store retailing and repair. **Box 1** shows a breakdown of the RSI main categories.

Retailing is a high turn-over industry but it does not represent a large share of Gross Value Added (GVA) or roughly, Gross

Box 1
RSI main categories

Publication category	Percentage of all retailing (2008 weights)
Predominantly food stores	**44.9**
■ Non-specialised stores with food, beverages or tobacco predominating eg supermarkets	
■ Specialist food stores	
■ Retail sales of alcoholic drinks, other beverages and tobacco	
Predominantly non-food stores	**49.8**
■ Non-specialised stores where sales of food, beverages and tobacco is not predominant eg department stores	
■ Textile, clothing and footwear stores	
■ Household goods stores eg furniture, electrical appliances and hardware stores	
■ Other non-food stores	
Non-store retailing and repair	**5.3**

Source: ONS Retail Sales

Table 1
Household final expenditure by retail and non-retail expenditure

	Chained volumes (reference year 2005)			
	2005	2006	2007	2008
Total household final consumption expenditure	£784 bn	£796 bn	£815 bn	£823 bn
RSI expenditure	*33.6%*	*34.1%*	*33.9%*	*34.0%*
Non-RSI expenditure	*66.4%*	*65.9%*	*66.1%*	*66.0%*

Source: ONS Retail Sales and Consumer Trends

Domestic Product (GDP). In 2008, total turnover in retailing was over £280 billion. However, despite a very high level of sales, retail sales contribution to GVA is much less than this. This is because the value added measure requires that intermediate costs (that is, goods and services used up in the process of producing output) are deducted from the total output. The value added measure of RSI (calculated as part of GVA) could therefore be seen as a measure of mark-up in the retail sector. In 2008, the value added measure of retailing (from National Accounts) was estimated to be over £77 billion or approximately 5.6 per cent of total GVA. In 2008, retailing mark-ups (the value added measure of RSI) were approximately 27 per cent of total retail turnover. Note that this measure is not a direct measure of profit margins as the value added measure includes the retail sector's own labour and capital costs. The Retail Sales Inquiry is not specifically designed to measure profit margins.

Retail sales volumes and household consumption expenditure

The monthly estimate of retail sales is a useful early indicator of consumer spending because it is available as early as three to four weeks after each reporting period. However, the RSI is not a full measure of consumer expenditure as only approximately a third of all consumer expenditure is spent in retail establishments. **Table 1** shows a break-down of household expenditure by retail and non-retail expenditure.

The RSI excludes a number of goods - notably expenditure on motor cars, electricity, gas and other fuels. It also excludes services (for example, hotels and restaurants, banking, and air travel) which make up about half of total household consumption expenditure.

Long-term view of the RSI against the backdrop of the economy

Over the last 20 years, the UK economy has experienced two economic recessions - the current recession, which started in the third quarter of 2008, and another, which lasted from the fourth quarter of 1990 to the third quarter of 1991. **Figure 1** shows GDP and total retail sales volumes (by contributions to its annual volume growth) over the last two decades. It shows that, apart from 2008, predominantly food stores (food stores hereafter) have generally shown a steady contribution to the growth in retail sales volumes. Over the 20-year period, predominantly non-food stores (non-food stores hereafter) have been the main driver of retail sales volume growth, while non-store retailing and repair have contributed the least to the growth of retail sales volumes (although in recent years, some aspects such as internet sales have contributed to the increase in contribution of this sector).

In the last decade, economic conditions have supported growth in the volume of retail sales; an annual average growth of 4.1 per cent between 1999 and 2008, compared to 1.6 per cent between 1989 and 1998. Sustained GDP growth, coupled with low unemployment boosted real average earnings, which grew at an average annual rate of about 4.0 per cent between 1999 and 2008 (see **Table 2**). Interest rates and general inflation were also significantly lower than the levels seen in the previous decade.

Why have some retail sectors (so far) performed better in the current recession compared to the recession of the early 1990s?

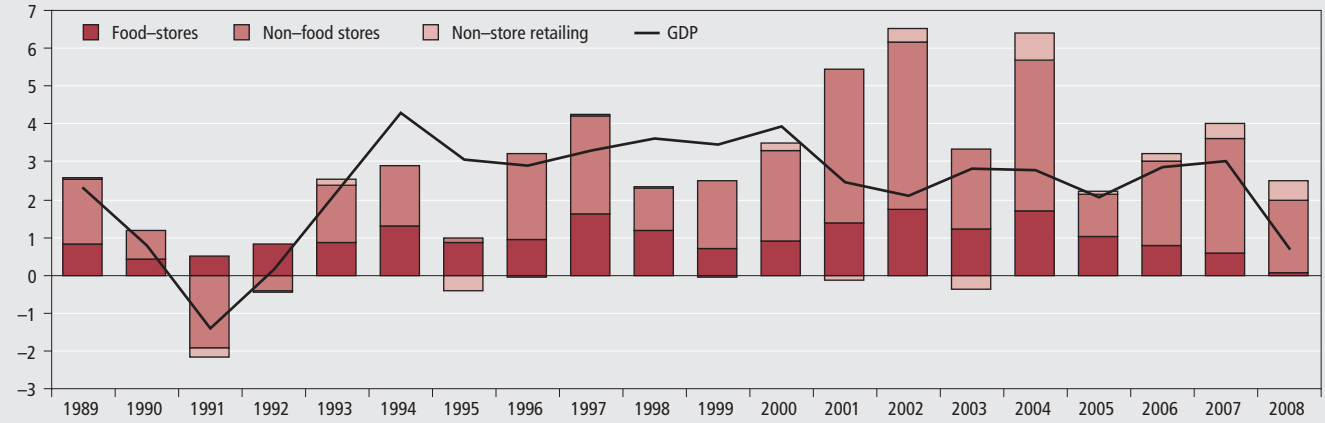
The pattern of retail sales in the current recession has differed considerably from what was observed in the 1991 recession. For instance, while there was a sharp contraction in non-food store sales in 1991, this category has continued to record positive growth in the current recession. The following section takes a closer look at both recessions.

Retail sales in the 1991 recession

In the fourth quarter of 1990, the UK economy entered a recession, ten years after the last recession in 1980. The Gulf war that started in August 1990 triggered a spike in oil prices peaking at almost $40 per barrel by October 1990. This oil shock was accompanied by a sharp rise in inflation (in September 1990 RPI inflation reached 10.9 per cent, its highest level in almost a decade) and acceleration in wage growth. Additionally, households faced record levels of unemployment, which added to the pressure on disposable incomes. Subsequently, there was a sharp contraction in the volume of retail sales. However, despite this, the value measure of total retail sales showed positive growth in that

Figure 1
GDP and total retail sales volumes by the contributions to growth of its main components

Percentage change on previous year, seasonally adjusted, chained-volume measure (2005=100)



Source: ONS Retail Sales and Quarterly National Accounts

Table 2
Two decades compared

Annual average growth rates[1]

Time	GDP	Retail sales Volumes	Consumer expenditure	Unemploy-ment rate	Average earnings	Net lending to households	Inflation CPI	Inflation RPI
1989-1998	*2.1*	*1.6*	*2.1*	*8.3*	*4.6*[2]	*8.2*	*3.5*	*3.9*
1999-2008	*2.5*	*4.1*	*2.9*	*5.3*	*4.0*	*10.4*	*1.8*	*2.9*

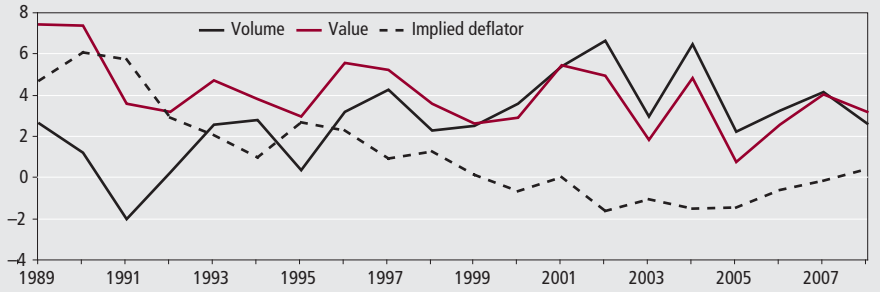
Notes:

Source: Bank of England Bank Stats and ONS Quarterly National Accounts, Labour Market Statistics, Consumer Prices and Retail Sales

1 These have been calculated as compound annual growth rates. The exception to this are unemployment rates which have been estimated as arithmetic means.
2 Average earnings data is available only from 1990 so the mean growth shown in the first row is based on the period 1990 to 1998.
3 Note that the CPI has only existed since 1996 so CPI rates of change before 1997 are constructed.

Figure 2
Total retail sales by: volume, value and implied deflator

Percentage change on previous year, seasonally adjusted, chained-volume measure (2005=100)



Note:

Source: ONS Retail Sales

1 The implied deflator is not seasonally adjusted, and prior to 2000, is based on the RPI rather than the CPI.

period; reflecting prevailing high retail prices (**Figure 2**). **Box 2** provides a description of how prices are estimated in the retail sector.

Disaggregated data shows that the sharp fall in the volume of retail sales in the early 1990s was mostly driven by a fall in non-food store sales and non-store retailing; while food store sales recorded positive growth. Within non-food stores, all categories recorded negative growth for most of the recession. However, non-specialised stores (for example, department stores) showed the least fall in sales output, even recording positive growth in some months (see **Figure 3**).

In the RSI, non-specialised stores are described as stores that do not specialise in the sale of food or other commodities. Examples of stores found in this category are department stores, discount stores where food items are not the predominant retail good (for instance shops that sell a wide variety of discount products), and family run shops that sell a range of household products (for instance ethnic food, and household essentials like batteries, shampoo, among others). As a broad spectrum of shops is included in this category, it is difficult to explain the resilience of this sector in the early 1990s.

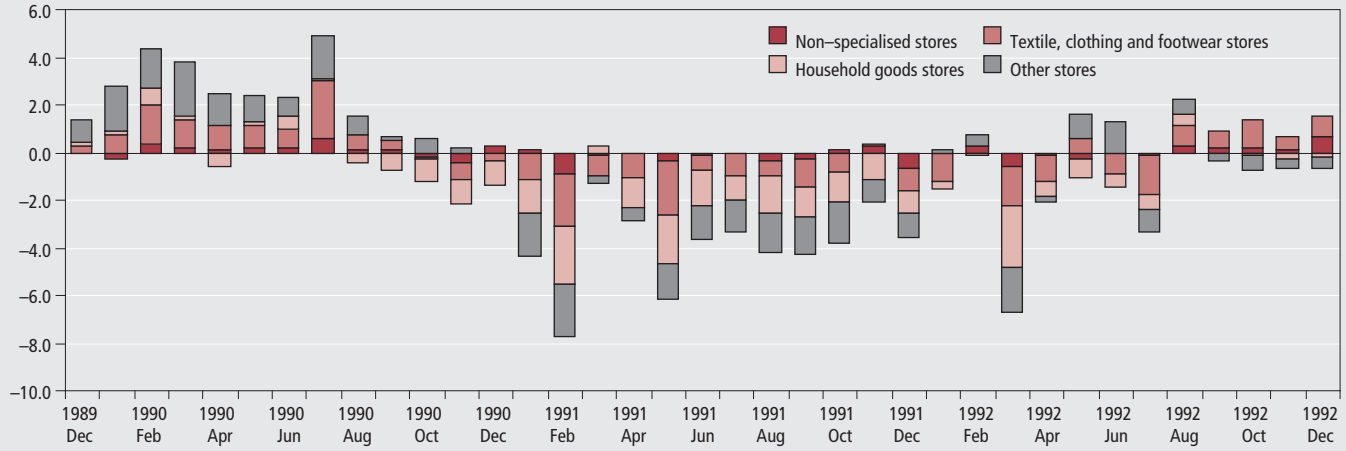
To summarise, as the economy went into recession in the early 1990s, sales volume data has suggested that households cut back on discretionary expenditure and maintained non-discretionary expenditure. Consequently, food stores continued to record positive growth in volumes terms while there was a sharp fall in the volume of non-food store sales.

Retail sales in the current recession

The current recession is the first recession in the UK for nearly 20 years and as the Bank of England has noted: 'the structure of our economy has changed significantly since the early 1990s' (see Dale 2009). The pattern of retail sales in the current recession is different from what was observed in the recession of the 1990s. In the last recession, there was a sharp contraction in the volume of sales in non-food stores and non-store retailers, while food store sales recorded positive growth. In the current recession, food stores have, on average, shown a much weaker level of sales than observed in the 1991 recession. In addition, non-food stores and non-store retailers have shown positive growth in retail sales in the first months of the current recession, a contrast to what was observed in the previous recession. **Figure 4** shows the total volume of retail sales between 2006 and 2009, highlighting the contributions to growth in each month. It shows that so far, for the most part of the current recession, the total volume of retail sales has continued to show positive (albeit

Figure 3
Total volume of retail sales in non-food stores by contributions to growth of its main components (1989–1992)

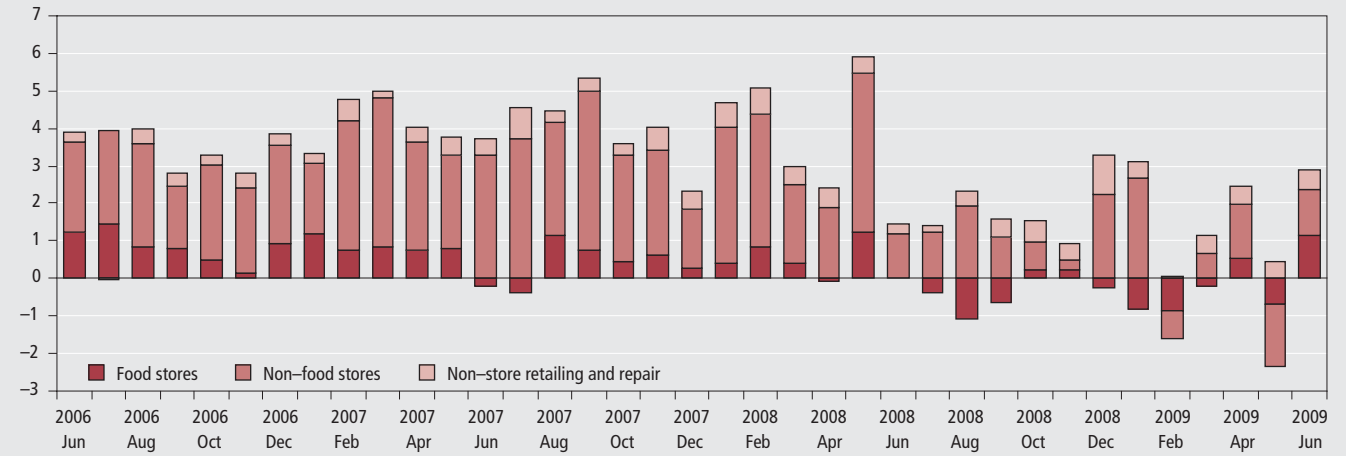
Percentage change on same month a year earlier, seasonally adjusted, chained-volume measure



Source: ONS Retail Sales

Figure 4
Total volume of retail sales by contributions to growth of its main components (2006–2009)

Percentage change on same month a year earlier, seasonally adjusted, chained-volume measure (2005=100)



Source: ONS Retail Sales

slower) growth, which has mostly been driven by the non-food retailing sector.

Other notable trends observed since the third quarter of 2008 are:

- food stores have contributed negatively to the growth of total retail sales volumes in eight out of 12 months of the recession
- the contribution of non-store retailing and repair to the total volume of retail sales has become increasing important. Even though this sector contributes approximately 5.3% to the total retail estimate, this illustrates to some extent, the impact of sales made over the internet. A separate experimental statistic is also available in the Retail Sales Statistical Bulletin
- the 12-monthly growth in the total volume of retail sales has recorded negative year on year growth only twice in the current recession: in February and May 2009. On both occasions, there was a strong contraction in the growth of non-food store sales. However, caution should be used in the interpretation of these two movements as the corresponding estimates in 2008 were unusually high resulting in an unusually low year-on-year movement.

Prevailing economic conditions explain why the volume of retail sales has shown positive growth for most of the current recession. These will be discussed under two separate headings: labour market conditions and price movements.

Labour market conditions

Labour market conditions are important in understanding consumer spending behaviour because the demand and supply of labour affect household earnings. In most months of the current recession, real average earnings based on the Labour Force Survey have recorded positive growth (albeit at a decreasing rate). The exception to this is January and February 2009 when real average earnings (including bonuses) recorded negative growth as the knock-on effect of the financial crisis took its toll on the economy. As earnings make up approximately 60 per cent of household income, a positive growth rate has supported household retail expenditure. Furthermore, households have benefited from lower debt servicing costs with the fall in interest rates over the last 12 months. Although households have faced reduced earnings, this has been slightly offset by lower tax payments and greater social transfers (benefits payments) which could support consumer expenditure. Simmons (1981) has shown that such redundancy payments and tax rebates provide a

Box 2
Measuring retail prices

The Consumer Price Index (CPI) and the Retail Price Index (RPI) are the two main measures of inflation in the UK. These are comprehensive measures designed to cover a much wider range of transactions than just sales by retailers.

On the other hand implied price deflators (IPD), are derived by dividing the value series for the RSI by the volume series and are an alternative measure of price changes in the retail sector. A range of IPDs are published for different categories of the RSI.

The scope of the RSI is, by definition, 'limited to businesses that sell goods directly to the public, but may also include non-identifiable sales from businesses to non-households which have been excluded from the CPI' (McCrae et al 2008). Consequently there are significant scope, timing coverage and definitional differences between the CPI, RPI and IPD. Before 1997 the CPI is a constructed series.

cushioning effect on spending which can last for at least six months.

The flexibility of the UK labour market could also be said to contribute to the household behaviour in the recession. Dynarksi and Sheffrin (1987) have demonstrated that workers who experience short spells of unemployment will often exhibit small changes in consumption. Thus, as people are moving quickly out of unemployment they are only making small changes in their consumption expenditure. The ONS Labour Force Survey shows that, so far, the largest proportion of unemployed workers (approximately 60 per cent) have been unemployed for less than six months. While this does not suggest that re-employment rates are high, it indicates that over the last year this may have acted to subdue the effects of unemployment on consumption. These factors partly explain why households have been able to maintain retail expenditure despite pressures from rising unemployment and reduced earnings growth.

Price movements

The resilience demonstrated by the retail sector in the recession can be partly explained by price flexibility over the past year.

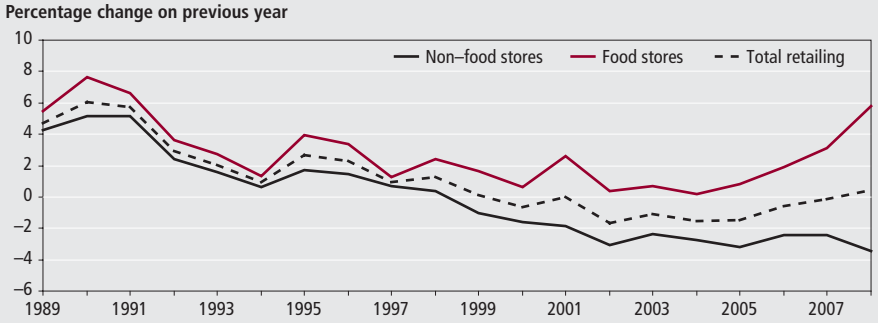
Using data from the RSI, there is a clear split between price changes in the retail store categories. **Figure 5** shows that over the years, food stores, have recorded a faster growth in prices compared to non-food stores. The divergence between these categories is more apparent from 2007 onwards when food stores have continued to record rising prices while non-food stores have recorded a sharp fall in prices. It seems probably that this differential behaviour has contributed to the stronger growth in non-food store sales.

Figure 5 shows that the 1990s were marked by positive price growth which started high and subsequently grew at a decreasing rate for the rest of the decade. The last decade has been noted as a period of negative price growth across most categories of the retail sector (apart from food retailing that has continued to record positive price growth). There are several factors that have supported falling prices in the retail sector. Some notable ones include: productivity gains, the relative strength of sterling and the integration of emerging countries into the global economy. Particularly, the 'China effect' has often been described as the strongest influence supporting low retail prices in the last decade. By shifting production to countries with low production costs, manufacturers have been able to produce goods at lower prices; thereby supporting low prices in the UK.

Falling prices have been particularly observed in household manufactured goods sold in non-food stores. For instance, within non-food stores, electrical appliance stores and textile, clothing and footwear stores have shown a sharp fall in prices over the last decade (**Figure 6**).

In the recession of the 1990s, households faced rising prices in all categories of the retail sector. In the current recession, this has not been the case. All categories of the RSI have recorded falling prices, apart from food which has shown increasing prices. For instance, among the four broad categories that make up non-food stores, textile, clothing and footwear stores have shown the fastest fall in retail prices (**Figure 7**). Indeed, this category has been the largest contributor to the positive growth in retail sales volumes since 2008. The widespread price-reductions in this sector have contributed to positive growth of retail sales volumes being maintained, despite a weaker economic climate.

Figure 5
Implied Price Deflators for retail sales



Source: ONS Retail Sales

Figure 6
The Consumer Price Index and Implied Price Deflators for selected non-food stores

Source: ONS Retail Sales

Figure 7
Implied Price Deflator for retail sales in non-food stores (2006–2009)

Source: ONS Retail Sales

The non-store retailing category has recorded negative price growth in every year since 1999. Non-store retailers sell a wide array of commodities so it is difficult to generalise on consumer behaviour on a commodity basis. Nevertheless, the categories that make up this sector have something in common; retailers have little or no geographical boundaries that separate them from millions of potential buyers. In this 'virtual' retailing environment, consumers are better able to truly shop around and so retailers have to offer competitive prices to attract consumers. In addition, dedicated online retailers can be said to face relatively lower fixed costs of production which can (at least in theory) be passed on to consumers.

Why do some non-food stores appear to be (so far) doing better than food-stores in the current recession?

Over the last 12 months (from June 2008 to June 2009), the 12-monthly growth rate of RSI volumes has mostly been driven by a growth in non-food store sales. Indeed the positive growth in retail sales so far in this recession has been almost entirely driven by sales in textile, clothing and footwear (within this category, clothing stores make up about 85 per cent of the aggregate) and 'other' non-food stores.

This is a reversal of what was observed in the recession of the 1990s when food-stores continued to show positive growth despite the overall contraction of economic activity. At least two factors can be identified that bear on this: the changing structure of store types in Great Britain and relative price changes.

Changing structure of GB store types

Data from the Retail Sales Inquiry suggests that the composition of goods sold in food stores has changed over time. **Table 3** summarises the composition of goods sold in a selection of predominantly food stores over time. It shows that in the ten-year period from 1998 to 2008, there has been an increase in the proportion of non-food items sold in food stores.

In a recession, households typically cut down expenditure on discretionary items because of labour market uncertainties. Thus, as unemployment increases, there may be a fall in discretionary expenditure. For instance, non-food store sales might be more cyclical because they sell goods whose purchase can often be deferred. So far, only certain categories of non-food stores (notably household goods stores and non-specialised stores) have exhibited such cyclicality. Other store categories such as textile, clothing and footwear stores have continued to record positive growth in the recession.

Over the years, the changing structure of UK store types means a growing number of 'predominantly food' stores also sell an increasing proportion of non-food items; blurring the distinction between store types and making it more difficult to see a clear split between discretionary and non-discretionary expenditure in the RSI. The RSI shows that food store sales have generally been weaker than non-food store sales. Because of the changing structure of UK store types, the underlying weakness in food stores cannot necessarily be attributed to a fall in discretionary expenditure.

Relative price changes

One of the reasons non-food stores have performed better in the current recession is that prices in non-food stores have, on average, fallen faster than prices in food stores. **Figure 8** illustrates that while food store prices have continued to show positive growth over the last three years, there has been wide-spread price-cutting among non-food stores.

Interestingly, the pattern of non-food stores performing relatively stronger than food stores appears in Europe more widely. **Figure 9** shows returns for the Eurozone. This highlights that the recent contraction of global activity has had a similar effect on European food store and non-food store retailers as in Great Britain.

Table 3
Commodity breakdown of retail sales in a selection[1] of food stores

Percentages as proportion of total turnover

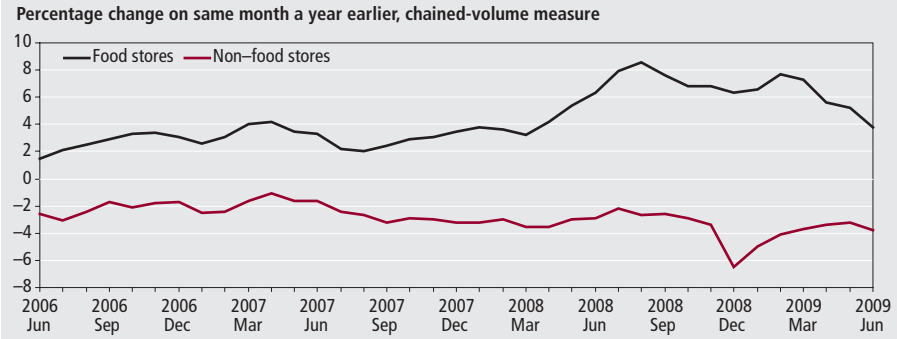
Year	Food	Clothing and Footwear	Household goods	Other goods	Alcohol, confectionery, tobacco	Total
1998	*70.4*	*3.6*	*3.4*	*9.4*	*13.1*	*100*
2008	*58.3*	*5.2*	*8.5*	*14.4*	*13.8*	*100*

Note:

Source: ONS Retail Sales Inquiry

1 Note that proportions are based on a selection of retail businesses.

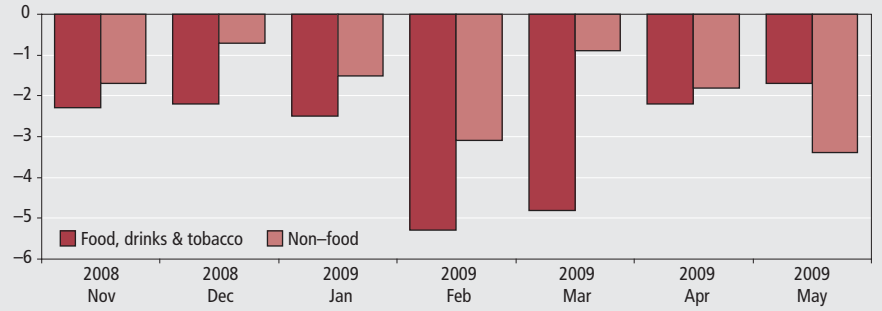
Figure 8
Implied deflator for retail sales in food and non-food stores



Source: ONS Retail Sales

Figure 9
Volume of retail trade in Euro Area[1]

Percentage change, month on same month a year earlier, working days and seasonally adjusted volume measure



Note: *Source: Eurostat*

1 The euro area includes Belgium, Germany, Ireland, Greece, Spain, France, Italy, Cyprus, Luxembourg, Malta, the Netherlands, Austria, Portugal, Slovenia, Finland and Slovakia.

Conclusions

So far, retail sales volumes have recorded positive growth in most months of the current recession, despite other economic indicators showing weakness in the UK economy. The observed growth in the volume of retail sales has been supported by falling retail prices and a flexible labour market which has subdued the effect of unemployment on the household consumption of retail items.

Since the onset of the recession, the performance of non-food stores has been relatively stronger than food stores, a reversal of what was observed in the previous recession. The two main contributing factors to this are the changing structure of UK store types and relative price changes. A blurring of the distinction between retail store types makes it more difficult to see a clear spilt between discretionary and non-discretionary expenditure in the RSI. Because of this, the underlying weakness in the volume of sales in food stores cannot necessarily be attributed to a fall in discretionary expenditure.

Retail sales in non-food stores have been supported by price-cutting which is particularly noticeable in household manufactured goods such as electrical appliance stores and, textile, clothing and footwear stores.

Notes

1. For further discussion on the differences between the RSI and household final expenditure, see Dolling et al (2005)
2. The 'China effect' is often described as the deflationary effect on the price level in the UK and other countries that has come from China's huge export-led growth.

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ARTICLE

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Recent developments in the UK housing market

SUMMARY

This article uses publicly available statistics to describe recent key developments in the UK housing market. These include trends in UK house prices, indicators of affordability, availability of housing finance and the impact of demographic changes on housing needs. A future ELMR article will attempt to explain what impact these housing market developments have had on the balance sheets and behaviour of the household sector.

Over the last decade the UK housing market has generated a large amount of interest and discussion. Between 1998 and 2007 house prices rose dramatically, generating large increases in equity for homeowners but also making homeownership unaffordable for a large segment of the population. Both winners and losers must have been astonished by the magnitude and the duration of the housing market boom.

But rising house prices have also led to an unprecedented increase in the level of household debt. With the UK economy now in the midst of what is likely to be its worst ever recession, the fragility of household balance sheets may then feed back into weaker demand, prolonging the extent of the downturn.

The purpose of this article is to outline, using publicly available statistics, key developments in the UK housing market since 1998 including:

- trends in UK house prices
- indicators of affordability and sustainable prices
- housing finance, and
- housing supply and demographic factors

The first part of this article will describe trends in UK house prices, presenting the recent boom and bust in a historical and regional context. Next, the effect of house price movements on affordability will be analysed as this might give insight to whether house prices have now fallen to sustainable levels or may have further to go.

Following this, housing finance will be looked at, specifically the growth in mortgage lending to households. And finally, the article looks at current housing stocks and how these compare to future needs based on likely changes in the size and characteristics of the population.

The Office for National Statistics (ONS) publishes a full set of household balance sheets each quarter (alongside the Quarterly National Accounts). A future article, also to be published in ELMR, will attempt to explain what impact these housing market developments have had on the financial position of households and how it might be affecting their behaviour.

UK house prices

As interest in UK house prices intensified there has also been a marked increase in the number of published indices. However, different results often emerge because indices are calculated using different methodologies. For example, price comparisons could be based on:

- asking prices, prices at mortgage approval or prices at completion
- simple average prices or mix-adjusted prices designed to account for changes in the composition of properties being bought or sold in any time period
- seasonally adjusted or non-seasonally adjusted prices, and
- the area where price data is collected, either UK, Great Britain or England and Wales

Dey-Chowdhury (2007) provides a good description of these methodological issues and the characteristics of the main UK house price indices.

Figure 1 plots annual house price inflation over the last 25 years using the four most cited indices. These are the Nationwide, Halifax, CLG (Communities and Local Government formerly known as the Office for the Deputy Prime Minister (ODPM)) and Land Registry indices. Despite small differences it is clear that all four series are unanimous in the general path of house price growth presented over this period.

House price movements over the last decade have been spectacular. Between 1998 and the peak in the summer of 2007, prices rose quickly and for a sustained period of time (see **Table 1**). According to CLG figures, the average (mix-adjusted) house price in the first quarter of 1998 was £81,722, but at the peak of the market in the third quarter of 2007 the average price was £219,256 – over two and a half times higher or a total increase of 168 per cent.

But in the last year these rapid price increases have gone into reverse. In the first quarter of 2009 the average house price, based on the CLG measure, had fallen back to £190,684. This represents a 13 per cent fall from the peak.

More recent data though indicates that house prices have stabilised in the second quarter. This is shown in Figure 1 by the pick-up in the Nationwide and Halifax indices which, being based on house prices at the mortgage approval stage, are timely indicators. Significant reductions in interest rates combined with recent fall in prices may be easing affordability constraints and strengthening demand. But because the housing market's normal seasonal pattern is for a pick up in activity in the summer months, it is perhaps too early to tell whether the arrest in falling prices will be sustained and that the housing market has reached a genuine turning point.

Regional house prices

Most developed countries have experienced sharp increases in house prices since the start of the new millennium. The UK situation is slightly different in two regards. First, the house price boom started earlier than average and has seen more sustained increases. Second, the regional pattern has been fairly uniform. That is not to say that some regions saw larger rises and then subsequent falls than others but the general pattern of strong growth followed by rapid falls has been repeated across the UK (see **Table 2**). In the US for example, regional trends were much more diverse; in fact many areas saw large falls in house prices during the period when average national prices rose strongly.

Table 2 also shows that, in general, the UK regions that saw the greatest house price inflation between 1998 Q1 and 2007 Q3 also saw stronger corrections. And with the exception of Northern Ireland (which started from a much lower base) and Scotland (which has its own housing market system based on sealed bids) the rise and fall in house prices across regions has been close to the national average. Furthermore there is some evidence of a ripple effect emanating from London and the South East which has led regional house price movements.

Real house prices

UK house prices have undergone similar cyclical episodes in the past. Looking at the history of the CLG index, it can be seen that prices rose by 72 per cent between the beginning of 1977 and the end of 1979. And in the late 1980s, prices rose by 69 per cent between 1987 Q1 and 1989 Q3. These were both periods where nominal prices rose sharply over a small time scale.

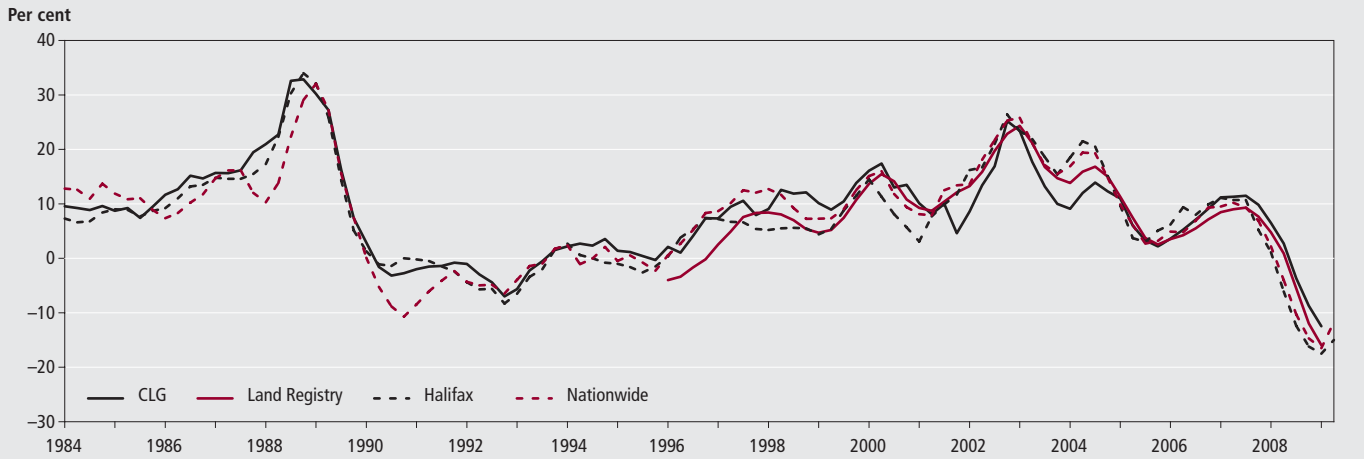
What makes the recent movements distinct though is that house prices have risen substantially at a time when inflation in the rest of the economy has been low. For example, the strong rises in prices in both the late 1970s and late 1980s coincided with periods of strong inflation, so in real terms, house price growth was not so marked. **Figure 2** shows Halifax and Nationwide house price indices in real terms, held at constant 1983 Q1 prices. The figure also shows the general implied inflation rates calculated as the difference between real and nominal house price inflation – which should be close to the official Retail Prices Index. Clearly the strong rise in real house prices in the recent boom also coincided

Table 1
UK house prices – boom and bust percentage changes

		Percentage change
House price index	**1998 Q1 to 2007 Q3**	**2007 Q3 to 2009 Q1**
Nationwide	*192.7*	*–18.7*
Halifax	*182.5*	*–19.3*
CLG	*168.3*	*–13.0*
Land Registry	*171.0*	*–15.2*

Source: Nationwide, Halifax, CLG and Land Registry

Figure 1
UK annual house price growth



Source: Nationwide, Halifax, CLG and Land Registry

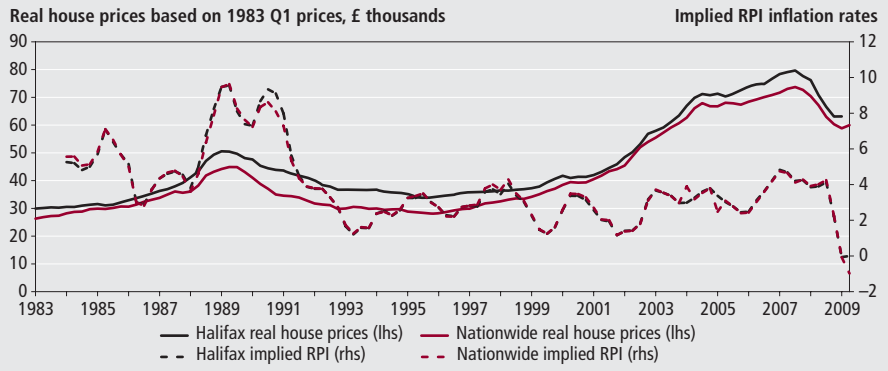
Table 2
Regional rise and fall in UK house prices

Per cent

1998 Q1 to 2007 Q3		2007 Q3 to 2009 Q1	
Region	House price growth	Region	House price growth
Northern Ireland	*302.9*	Northern Ireland	*–33.0*
London	*205.8*	London	*–21.9*
South West	*200.0*	Wales	*–20.6*
Wales	*199.6*	South East	*–20.5*
East Anglia	*193.0*	East Anglia	*–19.8*
UK	*185.9*	East Midlands	*–18.9*
Yorkshire and Humberside	*185.7*	UK	*–18.7*
North	*185.5*	Yorkshire and Humberside	*–18.3*
East Midlands	*184.7*	North West	*–18.0*
South East	*183.3*	South West	*–16.5*
North West	*178.2*	West Midlands	*–15.9*
West Midlands	*159.7*	North	*–13.7*
Scotland	*149.9*	Scotland	*–12.6*

Source: Figures based on an average of the Halifax and Nationwide house price indices

Figure 2
Real house price growth



Source: Nationwide and Halifax

with historically low rates of general inflation.

Housing affordability

There are various indicators of affordability which might give some insight to how housing market developments affect both the financial position of households and the future direction of house prices. These include the ratio of house prices to income, the relative size of mortgage payments compared to earnings, numbers of arrears and repossessions, and finally the activities of first time buyers who are likely to face the biggest constraints in obtaining mortgage finance.

House price to income ratios

Because houses, and more importantly the land on which they are built, is in limited supply it is not inconceivable that house prices should grow at a faster rate than general inflation. Any asset in fixed supply would be expected to grow at a similar rate to the economy, or broadly in line with household incomes, so real house prices will trend upwards over time and earnings rather than prices are a better deflator for judging affordability.

Figure 3 plots average house price to average earnings ratios from the Halifax and Nationwide indices, the second of which specifically relates to first time buyers (FTB). According to the Halifax data, this ratio increased from 3.14 to 5.86 between 1998 Q1 and 2007 Q3. Subsequently the fall in house prices has been reflected in the ratio which fell back to 4.35 in 2009 Q1. This suggests that house prices are still 8 per cent overvalued relative to the long term average (1983 Q2 to 2009 Q1) ratio of 4.02.

Looking at the situation for first time buyers a ratio of average house prices to earnings peaked at 5.4 in 2007 Q3 before falling back to 4.2 in 2009 Q2. A much larger 25 per cent fall in prices though would be required to restore the long term average of 3.3 (based on 1983 Q1 to 2009 Q2).

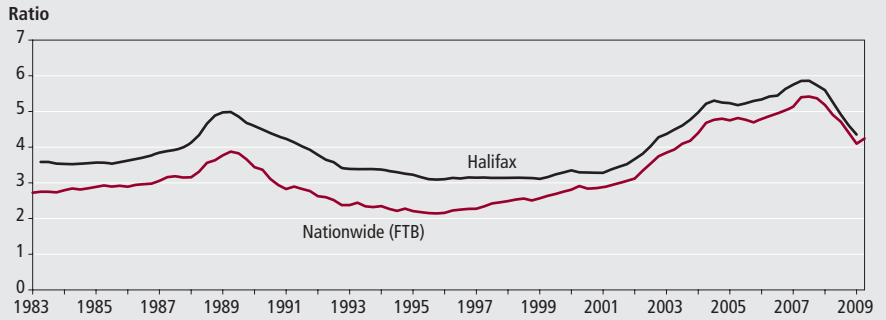
One school of thought is that the long-term ratio is indicative of a sustainable level of house prices which house prices should gravitate towards. If this were so it would suggest a further fall in house prices was warranted. For the first time buyer segment of the market an even greater fall would be required. Meen and Andrew (2008) have reported that that the earnings distribution has shifted away from this (generally young persons) group in recent years so the current high ratio could be a result of their earnings situation as much as the house prices they face.

An alternative view is that even though there is a general relationship between house prices and earnings, an equilibrium ratio between the two can itself change over time linked with other fundamentals. For example, the relationship may change due to structural shifts in credit (mortgage) availability and the interest rate regime. In the mid-1980s financial deregulation led to a rapid easing of credit constraints, making it easier to borrow larger sums of money for home purchase. And the inflation targeting era (1993 - present) has coincided with a long period of low interest rates and inflation so the cost of borrowing is much cheaper. If as a result of these factors the equilibrium relationship between average house prices and earnings has changed there is no reason to expect long-term ratios to be restored.

Interest rates and affordability

A simple ratio of average house prices to earnings is generally considered to be a

Figure 3
House price to income ratios



Source: Halifax and Nationwide

too one-dimensional view of affordability. A better measure would take into account the relative ease that households face in servicing the mortgages secured on their homes. Here the interest rate plays an important role.

However, when thinking in terms of affordability is it the nominal or real interest rate that matters? The real rate of interest adjusts the nominal rate for inflation, and because inflation erodes the real value of debt, it is often considered to be a truer measure of the long term costs of finance. To understand the relevance of the nominal and real interest rates in assessing affordability consider the following example.

A household takes out a £100,000 mortgage with a 20 year repayment schedule. If nominal interest rates were 5 per cent, then repayment of the debt would require monthly repayments of £637.85. However, at nominal interest rates of 13 per cent these repayments would rise to £1049.81. In each case the amount outstanding on the loan after each year, which is the same amount, is shown in **Figure 4.** In both cases the whole loan and interest is paid off by the end of the 20 years.

Now suppose that the household's income is £25,000 which is assumed to grow in line with inflation. What will happen to mortgage payments as a share of income with different nominal rates of interest but the same real rate of interest? This is shown in **Figure 5** where two scenarios are presented for a real interest rate of 3 per cent. The first case corresponds to a nominal rate of 5 per cent and inflation of 2 per cent, while the second case represents a nominal rate of 13 per cent and inflation of 10 per cent.

In the first case, monthly repayments as a proportion of income start off relatively low but, because inflation only steadily erodes the real value of the debt, repayments as a proportion of income falls slowly. The second case presents the opposite situation. High nominal rates means that initial repayments are a high proportion of income, but inflation quickly erodes the real value of the debt so repayments as a proportion of income fall much faster.

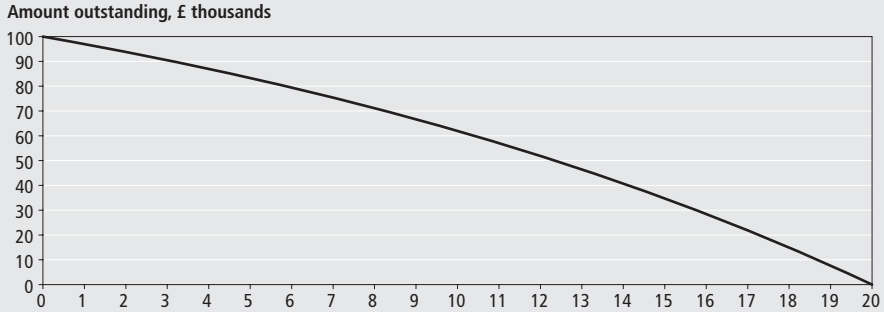
Figure 5 gives two different aspects of affordability. In the world of low inflation and nominal interest rates, debt servicing is more affordable at the beginning of the repayment period. When nominal rates and inflation are higher then affordability is better at the end of the repayment period.

In reality lenders are likely to base their assessment of affordability on the short-term. In this example it is unlikely that a creditor will advance a mortgage where repayments constitute 50 per cent of household income, and a household may be unwilling take on such a loan anyway. The low inflation and nominal interest rate regime that has prevailed in the UK since the early 1990s has therefore pivoted housing affordability to the near term and prompted a rise in mortgage lending.

Figure 6 shows actual mortgage payments as a proportion of income (averages) in the UK. The Halifax series shows that the recent peak in 2008 was somewhat below the peak in the early 1990s, when nominal interest rates rose sharply to fight against inflation and maintain sterling's parity in the European Exchange Rate Mechanism (ERM). It also shows the impact of the large recent cuts in interest rates at the end of 2008 and beginning of 2009, with the Bank of England base rate at a historic low of 0.5 per cent. This has certainly eased current mortgage affordability.

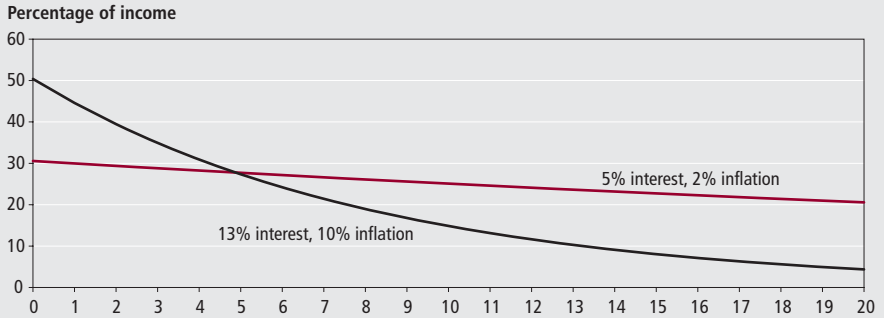
The Nationwide index in Figure 6 relates to first time buyers. Once again it is clear that affordability concerns have been placated by recent interest rate cuts. But prior to this and in the period leading up to the end of 2007 the index was at similar

Figure 4
Amount outstanding on a £100,000 mortgage



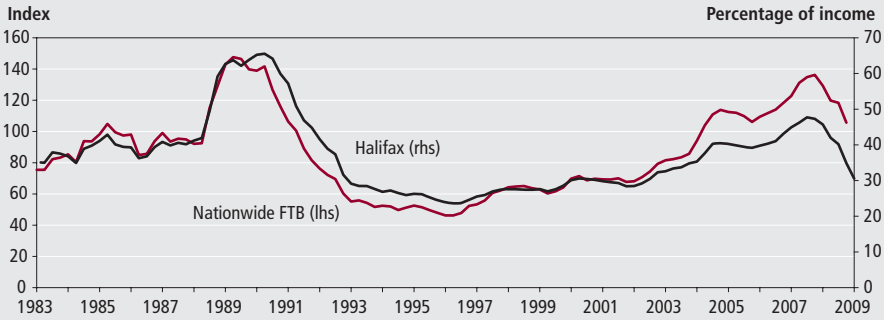
Source: Author's calculations

Figure 5
Monthly repayments as percentage of income



Source: Author's calculations

Figure 6
Mortgage payments as a proportion of income



Source: Nationwide and Halifax

levels to the peak in late 1989 – suggesting that underlying affordability is a concern for this segment of the housing market – especially if interest rates return to more normal levels.

A critical factor going forward is the strong rise in mortgage debt held by the household sector because debt servicing costs then become more sensitive to smaller interest rate movements. The long period of low nominal interest rates combined with high credit availability has probably been a significant factor in both driving up house prices and in the household sector incurring more and more debt.

The example in Figures 5 and 6 shows that at nominal interest rate of 5 per cent a household earning £25,000 per year can borrow £100,000 and faces initial repayments equalling 30 per cent of income. But if nominal rates were at 13 per cent, then maintaining the same 30 per cent of income rule in the first year (i.e. monthly repayment are £637.85) would only allow the household to borrow up to £60,663. Hence the reduction in nominal interest rates has made it affordable to borrow larger and larger amounts.

However, for this to be possible the supply of credit must also respond positively – which appears to have been the case. **Figure 7** shows data on the ratio of mortgage advances to house prices and mortgage advances to incomes. Advance to price ratios have remained fairly steady, and as house prices have increased significantly it must be the case that mortgage advances have followed the same path. The ratio of advances to incomes (averages) though has drifted upwards, consistent with the data on the price-income ratio in Figure 3.

This is all evidence that mortgage lenders have relaxed lending restrictions based on simple multiples to income and moved to a broader notion of credit scoring that implicitly takes into account lower prevailing interest rates on affordability. As a result household borrowing has been able to track house price increases leading to a large rise in mortgage debt. And as lending policies evolved to suit homeownership there was also a growing sub-prime element in the UK. The consequence is that future interest rate movements will have a much more profound impact on the ratio of mortgage interest payments to income ratios than in the past – and the likely direction of future interest rates is up.

Certain first time buyer households are particularly vulnerable to a future increase in interest rates. First, the income distribution has moved against them, so income is relatively lower compared to other households. Second, they are more likely to have bought recently, towards the top of the market, meaning many of them will have borrowed using high loan-to-value mortgages.

Arrears and repossessions

Arrears and repossession are direct measures of the stress faced by households in servicing their mortgage debt. Data used to be made freely available by the Council of Mortgage Lenders (CML) but unfortunately this is no longer the case so it is not possible to show a fully up to date series.

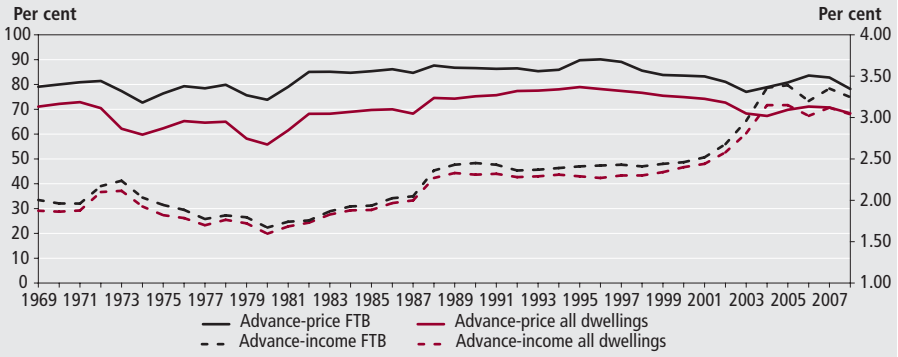
While repossessions have been rising (see **Figure 8**), there is no evidence as yet that households are under the same pressure as in the early 1990s (although it should be noted that annual figures may hide a sharper rise in the second half of 2008). The key factor here appears to be the substantial cuts in interest rates easing the burden on the household sector. Recently the Council for Mortgage Lenders revised down their forecasts for repossessions in 2009 in response to sharp interest rate cuts.

The direction of monetary policy in the current recession is in sharp contrast to the experience of the early 1990s when rates, instead of being cut aggressively, were actually hiked in order to control inflation and then to maintain the value of sterling against the German Deutschmark in the ERM. However, unemployment is still rising quickly, and could reach the 3 million level experienced in the last recession, which will continue to put some households under pressure.

The fact that repossessions have not spiked to the same extent as in the previous housing market recession is an indicator that prices may not fall by as much. High rates of possessed houses tend to push down on market prices, especially if lenders flood the market with repossessed homes at times of depressed demand and poor credit availability. And the threat of possession is a depressing force in its own right, because once possessed the former owner simply becomes a residual claimant on any equity still in the property. As lenders only have an incentive to claw back the value of their loans, they may try to sell at fire sale prices – creating an incentive for distressed households to try and sell before repossession becomes a certainty.

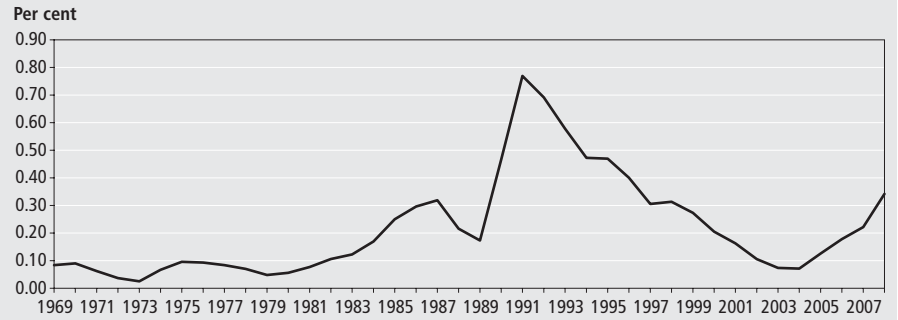
It is also a mistaken belief that in the UK,

Figure 7
Ratios of advances to income and prices



Source: CLG

Figure 8
Properties taken into possession as a percentage of all mortgaged properties



Source: Council for Mortgage Lenders

unlike in the US, households can simply walk away from their properties should the efforts of servicing mortgage debt become too onerous, so encouraging repossession. The responsibility for any negative equity is not removed by simply posting the keys through the lenders letter box. Households can still be pursued through the courts. There is a further disincentive as credit ratings will be impaired making it harder to borrow in the future.

Lenders also appear to be using possession orders as a last resort. This may partly reflect government influence through its large stake in the UK banking sector. But also banks themselves may see limited value in forcing people from their homes and attempting to sell the property in a difficult market.

Despite these reasons, a weakening labour market is likely to put some upward pressure on the repossession figures in 2009. And given the large stock of mortgage debt held by the household sector repossession orders may increase if interest rates start to rise again.

First time buyers and the buy-to-let market

First time buyers are important because they are a source of liquidity to the entire housing market. Not only do they normally account for a large proportion of all transactions, they generally enter at the base of chains enabling transactions to proceed higher up the property ladder. Without first time buyers the rate at which transactions proceed may stall, putting downward pressure on house prices. Interest in first time buyers also arises because this group, not having built up previous equity and likely to be on lower earnings than the general population, will face more acute affordability pressures when house prices rise quickly.

An indication that first time buyers are facing severe affordability constraints is shown in **Figure 9** where the proportion of transactions accounted for by first time buyers has fallen from around a half to a third since 1998. There is though some difficulty in defining a 'true' first time buyer. During the mid to late 1980s a significant number of first time buyers came from council tenants purchasing their homes under 'right to buy' schemes which would have pushed up the general age and proportion of first time buyers in the market during this time.

More recently, figures from the Council for Mortgage Lenders, suggest that one in five first time buyers are actually 'returners' – that is they were previous owner-occupiers who temporarily moved into rented accommodation. Rising numbers of returners have generally resulted from breakdowns in household units - for example widows and divorcees who may not have previously had property in their name but did have a share in past equity. Therefore recent increases in the average age of first time buyers may be reflecting these factors, rather than underlying affordability pressure on younger cohorts.

However, it is undeniable that first time buyers under the age of 25 are becoming increasingly scarce. Meen and Andrew (2005) argue that this cohort has seen their relative earnings position deteriorate, and when combined with increasing levels of graduate debt, this has exacerbated affordability constraints from strongly rising prices. However, there are a number of factors which suggest that these trends are not solely related to affordability, including:

- demography – an aging population lowering the relative proportions of young people
- the timing of house purchase. This is usually related to key events such as marriage and starting a family which are now occurring later in life
- the high premium attached to mobility in professional and personal lives. The transaction costs associated with home ownership are a barrier to this, and
- the private rental market. This has improved with buy to lets (professional landlords) providing better quality properties and with competition keeping rents down

Home ownership though still appears to remain a long-term aspiration of young people even if it is not a short term one. And as Meen and Andrew (2005) suggest: tenure choices of young people including the decision to settle down later in life may actually be the consequence of rising house prices.

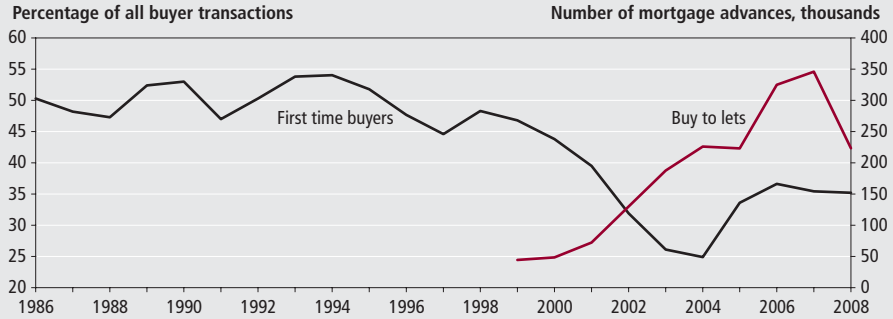
There are essentially two types of first time buyers, both of which face vulnerability in the current housing market. Unassisted first time buyers tend to have relatively high income but have bought properties with a high loan to value ratios. This group is most likely to move into negative equity in a falling market.

Assisted first time buyers, on the other hand, have lower incomes but due to financial help from parents can put up larger deposits, so their mortgages are based on lower loan to value ratios. While this protects against negative equity, the assisted group tends to have a higher multiple of mortgage payments to income – so are more susceptible to an increase in interest rates.

Proof that affordability constraints are having a large effect is the changing proportion of first time buyer types. In 2006, 40 per cent were assisted, but in 2009 the proportion had jumped to 80 per cent according to CML data. This partly reflects the withdrawal of high loan to value mortgages that the unassisted group were dependent on, but primarily that house prices have increased to such an extent that the first time buyer group cannot raise sufficient deposits independently. In fact, the CML report there is now little evidence of younger generations even attempting to save for deposits and a high expectation that parental assistance will be required.

Mortgage products have adapted to allow for greater parental involvement in their children's house purchases. For example, not only do parents increasingly pay higher proportions of deposits, they can also secure mortgage repayments against their own equity or income. Rising house prices have had the effect of redistributing wealth from the young to older owner-occupiers, so parental assistance may be thought of as an early inheritance or living bequest.

Figure 9
Proportion of first time buyers and numbers of buy to let mortgages



Source: Council for Mortgage Lenders

While this certainly helps individuals, in a perverse way it may be detrimental to general affordability. The recycling of equity gains from the top of the market may keep prices higher than they would otherwise be by breaking the self-correcting mechanism between affordability and demand.

Another way in which equity has been injected from the top of the market into the lower rungs of the property ladder has been through the emergence of buy to let investors. This is a relatively new phenomenon in the UK housing market, but as Figure 9 shows, the number of buy to let mortgages grew by around 50 per cent a year between 1999 and 2007 due to:

- strong house price growth generating significant capital gains and a cheap source of finance from equity release
- new specialist buy to let mortgage products, and
- low returns on other assets and concern over future pension provisions

The anecdotal evidence suggests that new buy to let investor demand has offset the effects of falling first time buyer numbers on housing demand which also prevents affordability constraints from influencing prices.

Since the start of the recession in the second half of 2008, the buy to let market though has declined markedly. Much of the funding had come from providers dependent on wholesale funding, the biggest of which was Bradford and Bingley, so the impasse in money markets caused by the global credit crunch basically led to a cut off in new buy to let mortgages. These loans were also seen as particularly risky because many buy to let investors were highly leveraged. But even before this, yields were lagging behind the interest payments on loans – due to rising interest rates and the increasing size of loans – with investors relying solely on long term capital gains for their returns. Ironically, now that the market has all but closed, buy to lets have seen a significant improvement in profitability due to the low cost of borrowing and strong activity in the rental market.

Home ownership at the crossroads

Evidence that affordability constraints have had an impact on the housing market is shown in **Figure 10** which shows that the proportion of owner-occupied housing in all tenure types, after rising for many decades, started to fall in 2004.This is despite an increase in the number of people owning several properties such as buy to let investors and casts doubt on the government's goal of increasing homeownership to 75 per cent of households. In fact, the proportion of owner-occupied properties purchased with a mortgage has been falling for even longer with the decline starting in 2001. The Council for Mortgage Lenders has argued that this is evidence that growing affordability pressures have put homeownership at the crossroads, where strong price increases are beginning to reverse the traditional preference for homeownership.

Housing finance

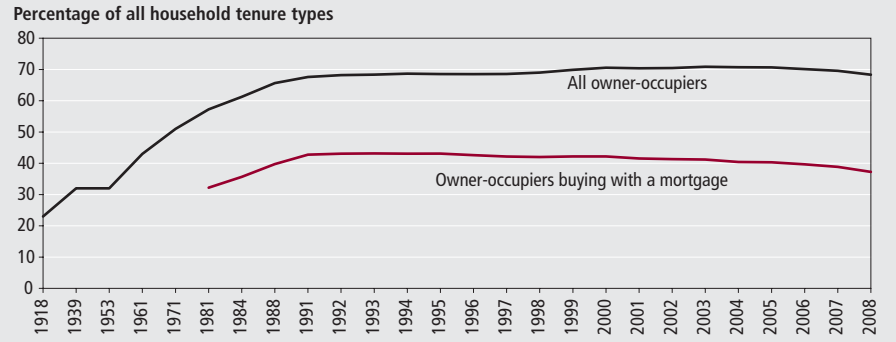
The recession in the UK housing market has not just manifested itself in prices but also volumes. **Figure 11** plots a long history of data on mortgage approvals and also more recent numbers of recorded property transactions. Both have moved in tandem in the recent downturn and are at their lowest ever recorded levels. Mortgage approvals in the first quarter of 2009 were half the number of the year before, and less than a third of the peak. Property transactions have showed the same pattern, slowing down considerably in the last year and well below the peak number in 2006.

Although not all property transactions are financed by mortgages, clearly there has been a strong pass-through from mortgage approvals to actual transactions. It is unclear to what extent the fall in approvals is demand or supply related, but both are likely to have played a role. Uncertainty over future house prices and a weakening job market is a large deterrent for households considering taking on debt. Especially as the short term movement in the market could be downwards meaning buyers face immediate losses in equity.

On the supply side, mortgage availability has been tightened considerably, making it very difficult to obtain mortgages with high loan to value ratios. Falling prices mean that anybody with only a small amount of equity in their property would be at risk of falling into negative equity. Therefore, the type of mortgage deals that used be achieved with the traditional 10 per cent deposit now require a 25 per cent deposit. And better rates typically available for those with a 25 per cent deposit will now require a 40 per cent down payment.

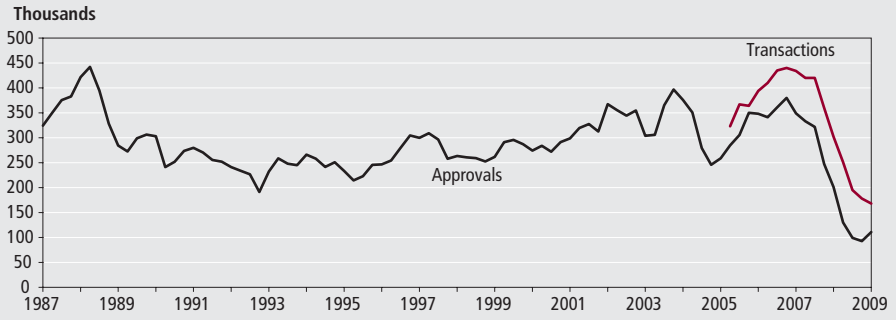
The global credit crunch has also encouraged banks and building societies to cut back on lending in order to rebuild balance sheets and hoard liquidity in the face of large and uncertain losses in

Figure 10
Homeownership at the crossroads



Source: CLG

Figure 11
Mortgage approvals and property transactions



Source: Bank of England Financial Statistics and CLG

financial assets based on residential and commercial property loans.

Figure 12 shows both consumer lending (unsecured) and lending for dwellings (secured) to the UK household sector. After a period of very strong growth in lending, driven by rising house prices, loans secured on dwellings were cut back sharply in 2008. Consumer credit on the other hand has been falling back since 2005, both as a result of a tightening in credit conditions and due to lower appetites for more expensive consumer debt. In fact there is evidence that households had been increasing their secured debt to pay down their more expensive consumer debts.

The sharp rise in lending secured on dwellings between 1998 and 2007 followed the rise in house prices and is consistent with the data on advances in Figure 7 and mortgage approvals in Figure 11. Strong house price growth, by generating equity for the borrower and security for the lender, improves the quality of loans on bank and building society balance sheets and encourages an expansion in profitable lending – especially because there were plentiful and cheap sources of wholesale funding in very liquid financial markets. Therefore the evidence in Figure 12 is that between 1998 and 2007 the financial system accommodated rising house prices by increasing the availability of secured lending.

Of course, the sudden contraction in lending in 2008 reflects a sharp reversal of these developments. First, falling house prices reduces the quality of loans on bank balance sheets and raises the risks of further lending. Banks have also been forced to cut back lending in order to rebuild balance sheets after making losses on bad loans. Second, the plentiful and cheap sources of wholesale funding that drove much of the expansion in mortgage credit dried up as a consequence of the global credit crunch. The collapse of Northern Rock, which had accounted for much of the increase in UK mortgage lending, was also a direct consequence of this. Future regulatory reforms to the financial system may focus on reducing the pro-cyclicality of the credit system. For example, Goodhart and Hoffmann (2008) suggested that the loan to value ratio might be used as an additional monetary policy tool aimed to protect against house price bubbles.

Housing supply

New housing stocks

Although it has been accepted that UK house prices were overvalued in recent years it was also acknowledged that the market was in undersupply and this may provide a floor to the extent that prices fall.

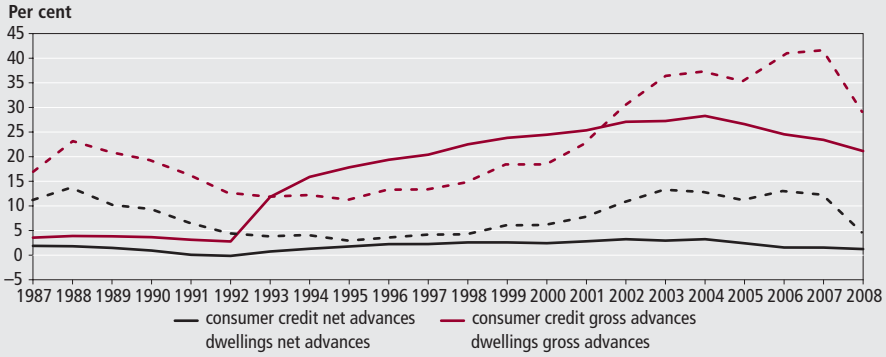
Figure 13 shows even though the number of housing completions each year has picked up since 2001 they remain relatively low by historical comparisons and still below the required numbers identified in the Barker Review (see Barker 2004). In fact, Meen and Andrew (2005) argue that housing supply in the UK is almost completely insensitive to prices, meaning that changes in demand for housing generate large price but almost no volume responses. In the US for example, housing supply is much more elastic with respect to price, which therefore dampens overall swings in house prices as supply reacts more readily to demand patterns.

There have been suggestions (see Barker 2008 and Cheshire 2008) that the poor response of housing supply to price signals is a reflection of an overly complex planning system. Being a timely and costly process it favours large companies reducing competition in supply, as evidenced by the high concentration in the UK house building industry. It has also raised suspicions of 'land banking' – where developers sit on permissions in order to reduce the supply of housing to the market and raise prices – although there is little evidence to support this. Of course, housing could also be held back by factors that are not really planning at all such as necessary improvements to local infrastructure and drainage.

The system of local government finances may also act as a disincentive to accept new developments. Because central government grant allocations tend to lag population changes the immediate impact of new developments is to put pressure on the existing infrastructure. Perhaps by making the local tax base more responsive to population changes and allowing local councils to levy a planning charge or a windfall tax on the premiums gained from planning permissions would reverse this.

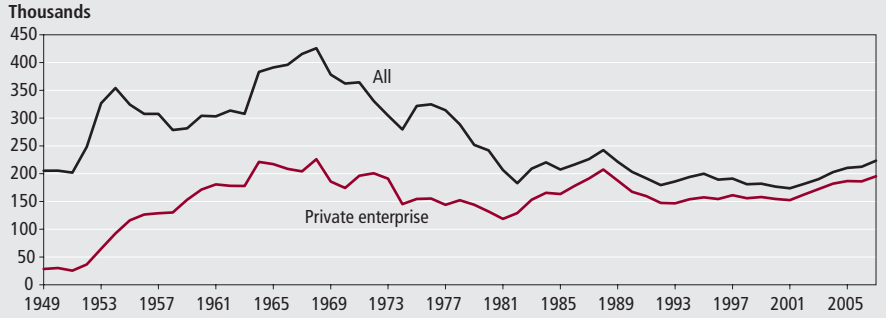
A further issue is the growing mismatch in recent years between the types of dwellings being constructed and the types demanded. **Table 3** shows that in the last decade there has been a sharp rise in the proportion of 1-2 bedroom flats at the expense of houses (particularly 3+ bedrooms). Barker (2008) though reports that in the UK there is a strong preference

Figure 12
Secured and unsecured lending as a proportion of gross household disposable income



Source: Bank of England Financial Statistics and ONS Economic Accounts

Figure 13
Permanent dwelling completed in the UK



Source: CLG

Table 3
Proportions of each dwelling type in all new permanent dwelling in each financial year

Per cent

	Houses			Flats		
Financial year	1–2 bedrooms	3+ bedrooms	All	1–2 bedroom	3+ bedrooms	All
1991/92	26	48	74	25	1	26
1992/93	27	49	76	23	1	24
1993/94	28	52	80	19	1	20
1994/95	27	55	82	17	1	18
1995/96	26	56	82	17	1	18
1996/97	22	62	84	15	1	16
1997/98	20	65	85	13	2	15
1998/99	19	65	84	15	1	16
1999/00	18	65	83	16	1	17
2000/01	16	64	80	18	2	20
2001/02	11	66	77	21	2	23
2002/03	11	62	73	25	2	27
2003/04	9	57	66	32	2	34
2004/05	8	51	59	40	1	41
2005/06	8	46	54	45	1	46
2006/07	8	45	53	46	1	47
2007/08	8	44	52	47	1	48

Source: CLG

for houses over flats – the exact opposite to what is actually being supplied. This mismatch is likely to lead to further supply side and affordability constraints as the prices of favoured houses are bid upwards leaving a glut of smaller apartments on the market.

The impact of the current recession though has been to critically reduce new housing starts exacerbating the long-term problem of undersupply. **Figure 14** shows that new residential housing orders have fallen to their lowest level since the series began in 1964. The house building sector has been hit in two ways. First, falling house prices and tighter credit constraints have reduced demand with house building firms unwilling to construct stocks of unsold properties. Second, commercial loans typically used to fund new developments have become scarcer and more expensive as a result of the global credit crunch.

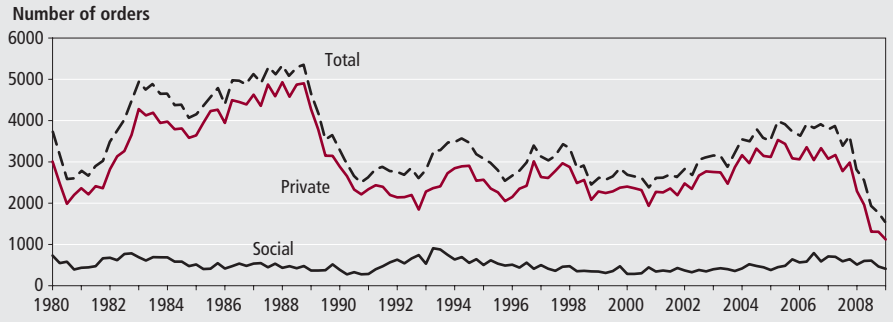
Demographic changes and the housing supply

Looking to the future, demographic factors are likely to play an important role in underpinning the demand for housing. Due to increasing longevity and greater net-immigration, UK population forecasts have recently been revised upwards. The UK population is expected to rise steadily over the next two and half decades from 58.8 million in 2001 to 66.2 million in 2021. Rising population is important due to its impact on household formation, but as **Table 4** shows, UK household numbers are expected to increase substantially over the same period because a falling average household size means there is a greater propensity to form more households out of a given population. Specifically, **Table 5** shows that there are projections for a steep rise in the number of one person households. Total household numbers in the UK are forecast to reach 30.3 million in 2021 up from 24.6 million in 2001.

A breakdown of the household projections for England in Table 4 by household type and age is shown in **Table 6**. Between 2006 and 2031 average household numbers are expected to grow by 252,000 per year, of which 163,000 will be in one person households. And a significant proportion of the average rise in household numbers, both one person and all types, is accounted for by growing numbers of older people which have a higher propensity to form smaller household sizes. Increasing numbers of one person households will also come from high divorce and separation rates. Although couples that split up will often go on to form other multi-person households the process takes time and some choose to continue living separately.

The combination of rising household numbers and low housing completions means that the stock of housing is going to struggle to keep pace with the population's needs. The Barker Review, based on an expected annual increase in household numbers in England of 190,000 per year between 2001 and 2021 argued that 215,000 new houses per year would be required (net output of 200,000 per year). Since then household projections have been raised upwards. Based on the figures in Table 4 household numbers in England are

Figure 14
New residential housing orders



Source: ONS new orders in the construction industry

Table 4
Household estimates and projections 1961–2031

Year	Thousands of households (UK)	Thousands of households (England)	Average household size (England)
1961	16,662	13,915	3.01
1971	19,027	16,012	2.84
1981	20,727	17,362	2.65
1991	22,886	19,165	2.45
2001	24,553	20,522	2.37
2006	25,751	21,515	2.32
2011	27,209	22,748	2.28
2016	28,784	24,107	2.23
2021	30,310	25,439	2.19
2026	31,716	26,674	2.16
2031	33,002	27,818	2.13

Source: CLG

Table 5
Projections of household structure in England 1961–2031

Percentage of total

Year	Married/cohabitating couples	Lone parent and other multi-person households	One person
1971	*71.4*	*10.0*	*18.6*
1981	*66.2*	*11.0*	*22.8*
1991	*61.0*	*12.4*	*26.6*
2001	*56.0*	*14.0*	*30.0*
2006	*53.8*	*14.5*	*31.7*
2011	*52.0*	*14.6*	*33.4*
2016	*50.4*	*14.5*	*35.1*
2021	*48.9*	*14.4*	*36.7*
2026	*47.6*	*14.2*	*38.2*
2031	*46.7*	*14.1*	*39.2*

Source: CLG

Table 6
Projections of English household numbers by age and type of household

Thousands

	All household types			One person households		
Age	2006	2031	Average annual change	2006	2031	Average annual change
Under 25	860	980	5	248	290	2
25 - 34	3,179	3,680	20	815	1,088	11
35 - 44	4,523	5,322	32	1,017	1,695	27
45 - 54	3,804	4,554	30	940	1,626	27
55 - 64	3,582	4,353	31	1,059	1,726	27
65 - 74	2,737	4,133	56	1,052	1,766	29
75+	2,829	4,796	79	1,692	2,708	41
Total	21,515	27,818	252	6,822	10,899	163

Source: CLG

now expected to increase by 246,000 each year between 2001 and 2021 meaning the required additions to the housing stock would have to rise considerably. This is far in excess of the current number of completions for Great Britain shown in Figure 13. The collapse in new housing orders (see Figure 14) will only add to supply pressures.

Concluding remarks

The key points from this article are as follows:

- UK house prices exhibited a strong rise between 1998 and the summer of 2007 before falling back in the current recession and financial crisis - although there is now some evidence that prices have stabilised
- the rise in house prices happened at a time of low general inflation, meaning the rise in real house prices was unprecedented
- average house price to income ratios have fallen back towards but are not quite at their long-term averages. But for first time buyers the ratio is still significantly above the long-term average
- low nominal interest rates have kept the ratio of mortgage payments to income at lower levels but this has encouraged a large rise in mortgage borrowing making the ratio more sensitive to smaller rate changes
- repossessions have not reached the same level as in the early 1990s, reflecting sharp cuts in interest rates and lenders treating possession as a last resort
- the proportion of first time buyers has fallen, but this might reflect changing preferences to homeownership as well as affordability constraints. Their presence in the market had been replaced by buy to let investors until the credit crunch limited funding,
- housing finance appears to be very procyclical – strengthening cyclical movements in the housing market, and
- the UK housing market continues to exhibit strong evidence of undersupply based on low house building, growing numbers of households and a mismatch between the types of properties demanded and supplied. The fall in residential new orders brought on by the current recession and credit crunch will exacerbate these supply issues

The impact of these housing market developments on household balance sheets, notably the sharp increase in housing wealth and mortgage debt, will be analysed in a future ELMR article.

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ARTICLE

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Progress in implementing the Atkinson review recommendations

SUMMARY

This article summarises the progress made in implementing the recommendations in the review of *Measurement of Government Output and Productivity for the National Accounts* led by Sir Tony Atkinson which reported in January 2005. The review recommended changes to the way output was then directly measured in the National Accounts for particular services, as well as making proposals for measuring the output of services which were not directly measured. Resulting improvements in measuring government output have led to an estimated 5.1 percentage point addition to the cumulative growth in government output between 1995 and 2005.

Background to the review

The 1993 System of National Accounts, followed by the 1995 European System of Accounts, proposed that rather than measuring public sector output in the conventional manner by assuming output is equal to input, that instead it was measured directly. This later evolved into a binding condition for EU member states to implement direct volume measures into their national accounts by 2006.[1]

The 'output equals input' convention meant that measured output could only ever grow at the same rate as input, which has three unwanted implications:

1. Measured productivity growth is always zero since productivity is calculated as the ratio of outputs to inputs
2. Increases in real expenditure are self-justifying as they always produce equal increases in outputs
3. Technological improvements that reduce production costs cause both inputs and outputs to fall, when in reality output may be unaffected

In line with the 1993 System of National Accounts proposals, the Office for National Statistics began to develop direct output measures using Laspeyres cost-weighted activity indices, but progress was rather slow and piecemeal. In 2003 the then National Statistician, Len Cook, asked Sir Tony Atkinson to review the problems of measuring public sector output, and the productivity of the public sector.

Key recommendations of the review

As recommended by the Atkinson Review, a new unit, the United Kingdom Centre for the Measurement of Government Activity (UKCeMGA) was set up within the Office for National Statistics in July 2005. Its remit is to implement the Atkinson recommendations and to improve measures of output in the National Accounts working with government departments and the devolved administrations.

The Atkinson Review noted that the specific method used to measure government non-market output can make a considerable difference to the recorded growth rate of the economy and that this should not be done by simply assuming the convention that 'output equals input'.

The first estimates of direct measures of government output developed in the late 1990s were pioneering but the Atkinson Review recognised that these measures were in need of major improvement. The review made a number of recommendations to improve these measures both overall and for individual services. However, similar shortcomings were revealed in the measures of inputs (labour, goods and services and capital) that were still being used to measure some outputs and the review also made a number of recommendations to improve these.

The review recommended a framework with nine principles covering the measurement of outputs, inputs and productivity. The two main principles were:

- to measure government non-market output as far as possible following a procedure parallel to that adopted in National Accounts for market output
- that the output of the government sector should in principle be measured in a way that is adjusted for quality, taking account of the attributable contribution of the service to the outcome

Based on these principles, the Atkinson Review recommended changes to both the quantity measures of output and the improvement or introduction of quality adjustments. In summary the recommendations included:

- widening the coverage of output volume indicators for each function
- increasing the level of detail at which output indicators are measured
- adopting more reliable data sources
- revisions to the weighting process
- replacing activity indicators with output measures that reflect changes in quality or outcome attributable to a unit of output
- introducing or revising quality adjustments
- improving timeliness and in-year indicators
- improving UK coverage by making full use of measures from Scotland, Wales and Northern Ireland

Inputs can be calculated either by taking expenditure and deflating by appropriate price or cost indices or, in the case of labour inputs, by measuring the component directly using the number of hours worked or the number of full-time equivalent workers. These input measures were rather less developed than the output measures and Atkinson recommended a number of improvements, which included:

- improvements to the accuracy of data classed by type of government spending on public services in the National Accounts, working with HM Treasury, Communities and Local Government, and the devolved administrations
- improvements to deflators used in the measurement of the volume of public service spending and productivity
- continued development of estimates of labour inputs using both direct and indirect approaches and comparing the results of both methods

ONS approach to implementing the recommendations

From the outset, responsibility for implementing the Atkinson recommendations was jointly owned by UKCeMGA, government departments and the devolved administrations. An advisory board, chaired by Martin Weale since July 2008, was set up to advise on the work programme, to offer independent advice on the methods being developed, and to monitor progress. A number of advisory panels were also set up – these include health, education and children, and defence. The panels offer independent advice on methodological developments as well as providing quality assurance for UKCeMGA publications.

A considerable amount of development work has been undertaken by UKCeMGA in conjunction with government departments and the devolved administrations. This has resulted in:

- an improvement to the measure of gross domestic product (GDP) which has resulted in an estimated 5.1 percentage points addition to the cumulative growth in government output from 1995 and 2005
- improved quantity measures of all the major individual services, many of which have already been included in the National Accounts (see further details below)
- a conceptual framework and strategy for measuring quality as part of public service output, based on consultation, which has been introduced for productivity articles, quality measures for healthcare and education, and exploratory work on quality change in social security administration
- improved direct and indirect inputs methods used for public services
- improvements to data used in inputs and exploration of better methods for analysis, for example capital services

Some measures are still being developed and are experimental. Hence they are not included in the National Accounts, though they are included in the UKCeMGA productivity measures and articles. Examples include quality measures for healthcare and the latest quality measure for education.

The developments are discussed in detail in the next section.

Achievements to date in implementing the Atkinson Review

When the Atkinson Review published its recommendations, some of the output and input measures and hence productivity measures were more advanced than others. However, even those measures at a more advanced stage needed to be developed further. The methodology used to calculate inputs and outputs is equally important in the productivity calculation and while the initial focus was on improving the outputs, improvements have now also been made to the inputs.

Measures of government output

Government output accounted for 21 per cent of GDP in 2007. Around 65 per cent of government output is now measured directly or in part directly with the remainder still being estimated using the conventional 'output equals input' measures.

Healthcare, education, adult social care, social security administration (SSA) and parts of public order and safety are measured directly using chain linked Laspeyres cost-weighted activity indices. Education and healthcare are also quality adjusted in UKCeMGA's productivity articles, although in the National Accounts, only a quality adjustment for education is applied. Children's social care uses a direct measure for looked-after children and indirect measures for the remainder such as preventative services for children in need.

Some services are provided on a collective basis, for example police and defence. These areas are measured by the 'output equals input' convention. This is in line with current international national accounts guidance for collective services. The 'output equals input' convention is also used for the other services, which include general administration, culture and religion, and environmental services.

Figure 1 illustrates the proportion each government service contributes to the overall output measure using expenditure weights for 2007.

Where it has not been possible to measure outputs directly, improvements have been made to the input figures and hence, by using the 'output equals input' convention, it has still been possible to improve output estimates.

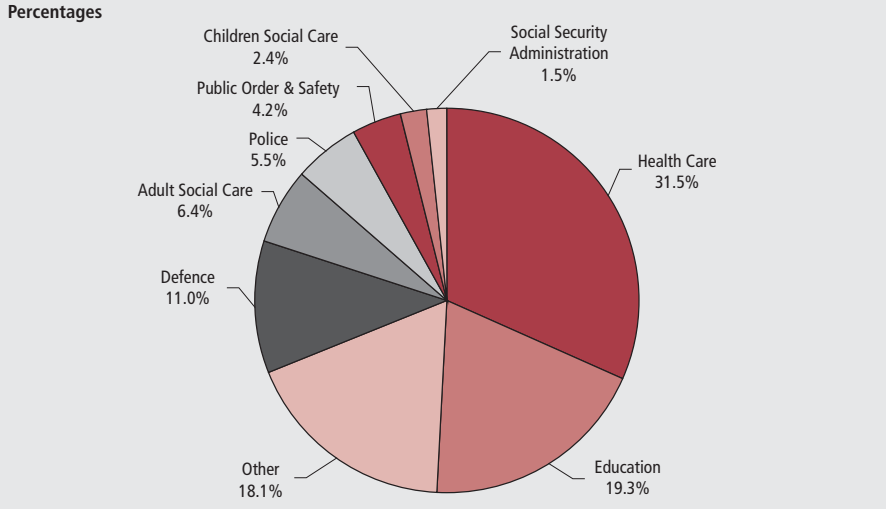
Improvements resulting from the Atkinson Review

The development work undertaken has led to almost all recommendations being achieved, at least in part, though a few have been found to be impractical. A summary of the recommendations by government service and what has been achieved in terms of improvement is given below:

Recommendation for health

On health, the major concerns and recommendations for improvement were: to include data from Scotland, Wales and

Figure 1
General government final consumption expenditure shares by service, 2007



Source: UKCeMGA

Northern Ireland in the measure; to measure primary care output; to move towards measuring whole courses of treatment; and to measure quality change.

The current healthcare output measure is based on data only from England and Northern Ireland. UKCeMGA has been working with colleagues in the Welsh Assembly Government and in the Scottish Government to incorporate their data in to ONS estimates of UK health output. Welsh data have been received and are currently being quality assured in partnership with the Welsh Assembly Government. Scottish data are going through internal quality assurance before being used as part of the Scottish Government estimates of Scotland GDP, and in UKCeMGA output measures.

In healthcare, the scope of hospital activity data has been widened progressively, working closely with Department of Health and the Information Centre to keep up with technical changes in available data. The measure of GP output has been improved, using information from a research database of GP records. The measure of prescription drugs has been improved, with a more disaggregated breakdown of drugs from the Department of Health.

Quality adjustment is used in productivity articles, based on a combination of sources, with the main effects coming from data on reduced mortality after hospital admission and improved blood pressure and cholesterol control in general practice. Quality adjustment of hospital care is based on a Quality Adjusted Life Year (QALY) concept so that the increase in QALYs from an activity are an additional factor applied to the count of episodes for that activity. The QALY measure is impacted by changes in 30-day mortality rates, the age and sex profile of patients and their waiting time for treatment. Quality adjustment of primary care is based on the results of outcomes monitored under the Quality Outcome Framework. These include blood pressure and cholesterol levels of patients with chronic conditions such as stroke, heart disease and diabetes.

Three productivity articles have been published.

Recommendation for education

For education, the major proposals were: to update the quality measure for schools as an interim measure while further development work is done on an extended quality measure; for completeness of coverage, to include additional output measures for initial teacher training and for publicly funded nursery places (including information for Scotland, Wales and Northern Ireland); and to develop improved deflators.

Working in partnership with Department of Children Schools and Families (DCFS) and the devolved administrations, several improvements have been made.

Improvements have been made in the output measure by using pupil attendance rather than pupil numbers in schools, including further education for under-19s (which includes sixth form colleges). Data on publicly funded preschool education and on publicly funded initial teacher training and allied health professionals for all four countries of the UK have been included.

A new quality adjustment based on GCSE scores in England and Wales, and the Standard Grade examinations in Scotland, has been developed. It adjusts pupil attendance by the annual change in Average Point Scores. Work is now in progress to review whether this can be extended to allow quality change to be presented separately for primary and secondary education in England and Wales with the additional use of Key Stage 2 results. However, National Accounts continue to use a constant ¼ per cent annual uplift for educational quality, first introduced in the 1990s based on GCSE exam results in England only and taking an average over a number of years of rate of change in GCSE results, with the disadvantage that it is not sensitive to potential changes in quality over time. A quality adjustment for initial teacher training has also been included in the productivity figures, based on the pass rate of final year students studying both one- and three-year teaching degrees.

In addition, there are now new sets of deflators for both labour and procurement and, more recently, a new direct measure of labour inputs has been developed based on the number of hours worked by teachers and the number of full-time equivalent support staff. Numbers of teachers by level of employment (for example, headteachers, department heads and classroom teachers) have been adjusted for actual working hours using data from the Office of Manpower Economics, and weighted together by average salaries for each level. Support staff full-time equivalent numbers have been weighted together by applying wage data from the Annual Survey of Hours and Earnings (ASHE) to the most detailed staff breakdowns available for each country. The new measure also uses a fuller breakdown of procurement expenditure with appropriate deflators being applied.

Two education productivity articles have been published.

Recommendation for public order and safety

For public order and safety, the major proposals included: to improve current cost-weighted activity indices by using more detailed activities and costs, with the possibility of a quality adjustment for prison output; to reduce the value of overcrowded prison cells; and to measure fire output on the basis of weights which reflect the cost to the community of fire, rather than the response costs for the fire service. A further recommendation was to work on an integrated administration of justice approach to measure the output of the criminal justice system as a whole. In addition, Atkinson recommended improvements to the output measure for civil courts.

Working with the Home Office, an

improved 'output equals input' measure has been developed for police, which involves an indirect labour measure and a specific composite price deflator for goods and services. Work is underway to improve the output measure for prisons by differentiating between different types of prisons using average cost weights per prisoner place, in a cost-weighted activity index.

A scoping document was published which considered an integrated administration approach to measure the output of the criminal justice system as a whole. It concluded that it is not achievable given current availability of data sources.

The output of civil courts is now measured using a detailed cost-weighted activity index as recommended.

Recommendation for social protection

For social protection, the major proposals included: to improve the adult social care output measure by improving detailed coverage and cost weights; to consider an extension to the children's social services measure and to continue to develop work towards quality adjustments for adult and children's social services; and to update the index for the administration of social security.

The adult social care output measure has been updated using new cost weights. Data for Scotland have been included and work is progressing within the Quality Measurement Framework project to measure the quality of some of the adult social care services.

UKCeMGA has been working closely with the devolved administrations on the output measure of children's social care. Part of the output measure is directly measured and is based on looked-after children. Previously the output measure was based on looked-after-children in England only and the measure has now been extended to include looked-after children in the whole of the UK. Further improvements to that part of the output measure which is measured indirectly and covers children in need but who are not looked after, as well as possible quality adjustments, will be considered once the new Department for Children, Schools and Families' children in need data set becomes available in 2009.

For social security administration, the administration of child benefit claims are now included in the National Accounts output figure and an index for the administration of child support activity has been developed. Some of the unit costs used to weight the cost-weighted activity index have been updated. The Department for Work and Pensions is using similar figures for internal management and accountability.

Two productivity articles have been published on adult social care and two on social security administration. The last social security administration productivity article set out a possible approach to quality adjustment, but recognised that further consultation and development is required.

Other government services

A scoping paper on measuring the output and input of defence was published in December 2008, working closely with Defence Analytical Services and Advice. The paper set out defects in the current inputs methods used for National Accounts, which are now being addressed. It also made proposals for measuring output although they are likely to be quite difficult to develop fully.

Overarching developments

To ensure the quality of data, finance directors in government spending departments now sign off their submission of central government expenditure data to HM Treasury on a quarterly basis. These data are submitted to HM Treasury for monitoring purposes and the data are also used by ONS. In addition, there have been improvements to the timeliness of local government data. Extensive work was undertaken in securing a better breakdown of data on both central and local government purchases of goods and services to enable better production of deflators. Work has been undertaken to develop measures of capital services and improvements identified to the measures of capital consumption.

Principles for measuring quality as a part of public service output have been developed through a series of consultations. This has resulted in a theoretical framework for adjusting quantity of public service output for quality of service in the UK. The work drew on existing research and made a proposal for how quality adjustments could be developed in the future.

UKCeMGA publishes new methods and data in articles throughout the year. Over 40 methods articles have been published so far as well as nine productivity articles on various services. UKCeMGA's latest article on total public sector productivity was published in June 2009.

UKCeMGA is frequently approached by national statistical institutes for advice on measuring government output and productivity and also receives regular invitations to speak at international conferences. UKCeMGA frequently hosts visits by other national and international statistical organisations.

Wider impacts

Improving measures of GDP

Government output is included in the expenditure measure of gross domestic product (GDP(E)). GDP(E) measures final consumption expenditure, so the measure of government output that UKCeMGA estimates feeds into is general government final consumption expenditure (GGFCE), but for convenience UKCeMGA refers to it as government output. It excludes transfer payments such as social security payments, but it includes the costs involved in administering those payments. General government includes both central and local government.

As previously mentioned, the improvements so far included in the National Accounts have led to an estimated 5.1 percentage points addition to the cumulative growth in government output from 1995 and 2005, although the size of the revision could be higher, partly due to improvements yet to be included in the National Accounts and partly due to difficulty in knowing how the old and new methods diverge. Further details are available in *Economic and Labour Market Review*, February 2008. The impact of the improved measure for prescription drugs is described in *Health Care Output 1995–2007* (ONS 2009).

Measuring government performance and efficiency

UKCeMGA and HM Treasury both measure aspects of the performance of public services. There is a common theme of measuring what is achieved from taxpayer's money, and whether society is getting 'more for less' over time. However, UKCeMGA reports retrospectively 'for public accountability' with no advance targets or expectations of what productivity change should be. HM Treasury and government departments actively plan to set and achieve efficiency targets and build up measures from relatively local levels in such a way that managers know what they are meant to deliver, and how they are doing. As part of the Government's Spending Review in 2007, each government department produced a value for money delivery agreement. One approach taken in these, across government, was to use counterfactuals against which to measure savings. These counterfactuals are estimates, and it is therefore difficult to do direct comparisons with the UKCeMGA measures. Further work will be undertaken so that the approaches discussed above are able to inform one another and give a more coherent picture of the performance of government.

Another area where the UKCeMGA work can inform the performance of government is in the area of quality measures. UKCeMGA measures output in a way that includes the quality of service. A priority has been to develop measures for the quality of public services in terms of their attributable impact on intended outcomes, to include in output and productivity measures. This involves making evidence-led judgements on the relative importance of different aspects of quality for each service, using the structure of 'success in delivering intended outcome' and 'responsiveness to users' needs'. There are some synergies between these measures and the departmental measures of outcomes for their public service agreements (PSA) targets. UKCeMGA is working with several departments on the issues raised, for example, on how to measure the impact schools have on the five 'Every Child Matters' outcomes.

Legacy projects

The Atkinson Review has led to a series of further research projects. Some of these are discussed below including the high profile Quality Measurement Framework project.

Quality Measurement Framework

Building on the Atkinson work programme, HM Treasury is funding, through the Invest to Save Budget, a three-year project on measuring the quality of government services. UKCeMGA is leading this project and is working in partnership with the Personal Social Services Research Unit (PSSRU) at the University of Kent, the National Institute of Economic and Social Research (NIESR), the National Council for Voluntary Organisations (NCVO) and the Department of Health (DH). The project's main focus is on measuring the quality of two particular public services: adult social care and preschool education.

Adult social care

PSSRU is carrying out research on the quality of adult social care services and is looking into three areas:

1. Care homes for both older people and people with learning difficulties
2. Low level intervention focusing mainly on day care
3. Advice and information

The aim of the research is to generate measures of quality-weighted outputs which reflect the user perspective and which are not too burdensome to produce.

The research study has allowed the time and resource to collect more detailed and in-depth measures than are collected routinely. These in-depth measures have been compared with more routine low-burden measures, in particular those collected as part of annual inspections by the Commission for Social Care Inspection (now the Care Quality Commission).

It is expected that some of the detailed study measures will compare or correlate well with more commonly used, low-burden measures while others will be quite different from the lower-burden measures. Where the two compare well, the research will recommend that the simpler and more common routine measures continue to be used. Where the two are quite different, the study measures will usually be providing important additional information about the services but based on information too burdensome to collect routinely. Therefore, the research will aim to provide simplified versions of those study questions/measures; versions that are low-burden and could start to be used routinely.

The results of this research will not be available until later this year. A final framework of measures (and the questions that generate them) will then be produced, which is likely to be a mixture of commonly used routine measures and new measures drawn from the study and simplified for routine use. This is the framework that commissioners and providers can then use to help assess the quality and outcomes of services.

Preschools

As part of the QMF project, the National Institute of Economic and Social Research (NIESR) has undertaken some research on the quality of preschool provision. Their study of preschool education and childcare seeks to compare the quality of provision by using information on 19,000 babies born between 2000 and 2002 as part of the Millennium Cohort Study. This was a primary source of data on child outcomes, including cognitive ability, as well as providing data on socio-economic background. NIESR also used data from Ofsted reports on individual providers to enrich the comparison of the quality of provision.

NIESR developed a range of analyses for each aspect of provider quality with a full range of control variables taking into account provider, child and family characteristics. These were used to assess whether there were significant differences between the quality of provision between the third, private and public sectors. NIESR's main measure of quality is based around the child outcome measures which are collected after completion of preschool education so an assessment can be made on the extent to which the various providers' input measures determine child outcomes. One of the final challenges is to try to embody provider quality into a single measure using a weighting scheme to rate the importance of different aspects of service provision.

NIESR also conducted research into the comparison of costs between providers in the third, private and public sectors as part of an exercise to determine the value for money achieved by various sectors.

The results of this research are due to be published during 2009–10.

Satellite accounts

The Atkinson Review recommended that UKCeMGA explores ways of analysing and publishing information about public service outputs in parallel to the National Accounts, such as satellite accounts. Work has begun on producing a satellite account on human capital resource formation.

Future work will examine the impact of investment in human capital by employers on organisational performance. By matching administrative data from the Department of Innovation, Universities and Skills (now part of the Department for Business, Innovation and Skills) to the Annual Business Inquiry, estimates can be calculated of how much training is being undertaken by employers and its value to them.

In most of the previous studies, the most common approach to assessing the value of training has been either to use cost data or to assume that wages equal the marginal productivity and, therefore, wages are sufficient to capture the impact of training. However, when the link between wages and marginal productivity is broken – for instance, when training has a large firm-specific component and, more generally, when labour mobility is effectively restricted – there may be gains from training that are not passed on to the employee in terms of wages but are only reflected in direct measures of competitiveness, productivity and profitability. This work will measure these gains.

The first part of the work, examining investment in human capital by firms is due to be completed by the summer of 2009. ONS continues to work with other statistical agencies on developing the methods for producing these accounts, and is part of the OECD working group on this topic.

Outstanding issues

Further work is planned to fully implement the Atkinson recommendations, including:

Adult social care

To complement the work being done by PSSRU on adult social care quality, UKCeMGA is also testing a hedonic pricing model of care home quality. This makes use of local authority level cross-sectional data on cost, Commission for Social Care Quality star ratings of care homes, population-need variables and other appropriate control variables. The results may be used to construct cost weights for elements of output aside from the activity units in the current index.

Children's social care

Recent UKCeMGA work improved the measure of the quantity of children's social care, but further work is required in three areas. In terms of output, around 50 per cent of activity is still measured indirectly, which may be reduced if more robust data on preventative services can be obtained. As yet, no adjustment is made for service quality, partly because the cross-cutting nature of children's social care outcomes make attribution very difficult, and partly because the likely offsetting impact of improvements in the delivery of preventative services on long-run output of care services would be hard to reflect in a single measure. Preliminary work has been carried out on children's social care inputs, but further work is required to produce robust labour and procurement estimates, in particular to find a better data source for staff mix and cost by type of employment.

Education

The Atkinson Review excluded further and higher education from scrutiny as they are funded through grants and transfers and are therefore not scored in the public sector in the National Accounts. Nevertheless, there is a functional argument for attempting to measure and include these sectors with other publicly funded education in figures presented outside of the bounds of the public sector in the National Accounts. In April 2008 UKCeMGA published updated estimates of education quantity including initial estimates of further education for under-19s, based on pupil numbers and grant/transfer expenditures in the UK. In the nearer term, work aims to broaden coverage further by including all publicly funded further education. Beyond that, UKCeMGA will investigate ways of measuring higher education that take into account separate transfer and fee arrangements in the devolved administrations.

UKCeMGA and the Department for Children, Schools and Families are currently investigating whether the school quality adjustment can be extended to include the Key Stage exam results along with the GCSE results.

Health

Further work is planned to undertake more analysis of the role of purchases from non-NHS bodies, disaggregation of output and productivity measures to show results for hospital and community health services and for family health services. Commentary on the sources of possible errors is another new feature of articles about healthcare that allows readers to assess the results and the analytical community to consider further possible developments.

There has been a well documented decline in the rate of mortality from diseases amenable to medical intervention in the UK in recent decades. UKCeMGA will survey the research in this area to see whether the determinants of potentially avoidable mortality have been established and whether this provides a basis for quality adjustment of healthcare.

UKCeMGA's current measure of GP activity is based only on growth in the numbers of consultations. However, GP practices are actually paid for managing a patient list adjusted for the level of need. GP practice contracts also list various activities such as out-of-hours services and thus administrative data is generated that would allow UKCeMGA to construct an activity index for GP practices with a stronger economic rationale. Hence UKCeMGA will investigate the possibility of disaggregating activity and expenditure data on GP practices into proportions for the different activities that take place within them to be used to weight appropriate indices of those activities.

Defence and other collective services

UKCeMGA published a scoping paper on possible improvements to measurement of defence in the UK National Accounts in November 2008. This proposed three potential measures of defence output and also identified the need to improve the defence inputs measure. Development work during 2009 will focus on the latter.

UKCeMGA has been working with government departments to develop innovative measures of the output of collective services. This is long-term development work that may contribute to estimates of productivity for these services and eventually feed into revision of the System of National Accounts rules on measurement of output in the National Accounts. The work done so far has developed a capabilities approach to activity measurement.

The capabilities approach has been proposed as a method for directly measuring the output of defence. A capabilities measure would define defence output as the ability of the Armed Forces to execute specific courses of action that are essential for war-fighting or are needed for peace support and humanitarian operations. The measure would essentially be a measure of intermediate inputs being based on staff numbers and equipment counts. Explicit quality adjustment would be carried out to take account of technological advances, improved training, morale and readiness to deploy (both equipment and the personnel required to operate and maintain it). There has also been some interest shown in using this approach to measure those aspects of the Fire and Rescue Services which are not adequately covered by the current measure. These include new responsibilities for mass decontamination.

Conclusion

UKCeMGA, working with departments and devolved administrations, has made substantial progress over the last few years, and has plans for further development work. However, some developments have been taken as far as they can with data currently available but, as new data comes on stream, these areas can be reviewed. UKCeMGA will continue to improve measures of input, output and productivity and will publish progress on the UKCeMGA website: www.ons.gov.uk/about-statistics/ukcemga/publications-home/publications/index.html

Notes

1. With the exception of Denmark, which secured a postponement.

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ARTICLE

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Total public service output and productivity

SUMMARY

Public services account for over 20 per cent of Gross Domestic Product (GDP). Almost everyone is a potential user of public services such as the NHS or schools. Taxpayers, as the main funders of public services, also have a legitimate concern about 'what we are getting for our money'. One important aspect of this, though not the only aspect, is productivity: the quantity of output that is produced divided by the quantity of input used. The Office for National Statistics (ONS) has published periodic assessments of the productivity performance of key public services. This article presents estimates for all public services collectively for the first time since the 2003 ONS article *Understanding Government Output and Productivity* (Pritchard, 2003).

Introduction

Figure 1 shows the year-on-year growth in overall output, inputs and productivity.

Key points to note are that:

- annual input growth, that is growth in the quantity of labour, materials and capital assets used in production, increased from 1998 and reached its highest rate in 2002
- since 2002 annual rates of growth in inputs have fallen
- output growth, measured by activities performed, together with some quality adjustments, followed a similar profile, except that when input growth was increasing the rate of output growth was generally lower, and as input growth rates fell, output growth rates fell less
- with the exception of 1998 and 2001, productivity growth was negative until 2006
- in 2006 and 2007 productivity growth in total public services became positive, at 0.8 per cent in 2006 and 0.6 per cent in 2007, because output growth was faster than input growth
- the largest annual falls in productivity were in 2002 and 2003, when productivity fell by 1.3 per cent and 1.5 per cent respectively. These were also the years when inputs growth was at its highest

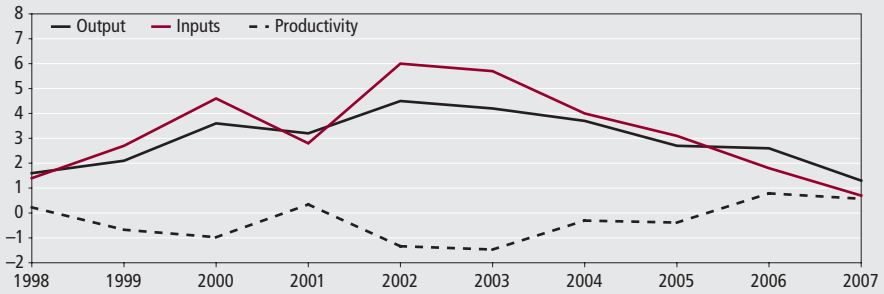
Figure 2 shows the overall percentage change in output, inputs productivity since 1997.

Key points to note are that:

- in the period 1997 to 2007, the output

Figure 1
Growth in total public service output, inputs and productivity, 1998–2007

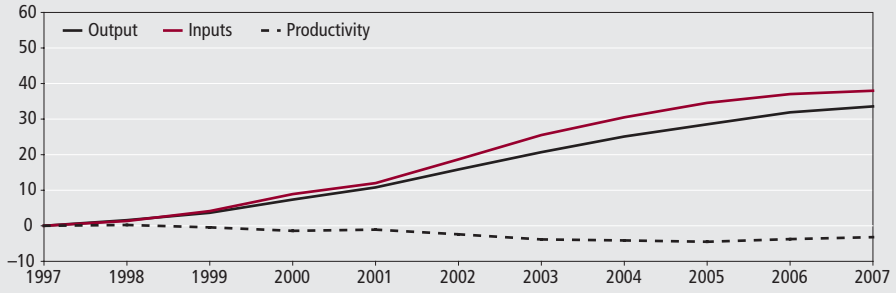
United Kingdom
Annual percentage growth rates



Source: Office for National Statistics, UKCeMGA

Figure 2
Total public service output, inputs and productivity estimates, 1997–2007

United Kingdom
Percentage change from 1997[1]



Source: Office for National Statistics, UKCeMGA

of total public services rose by 33.6 per cent, an annual average growth of 2.9 per cent. Over the same period total GDP also grew by an annual average of 2.9 per cent

- the volume of inputs used to provide these services grew by 38.0 per cent over the period, an annual average of 3.3 per cent
- as a result the total public service productivity index fell over the period by 3.2 per cent, an annual average of 0.3 per cent

Measuring public service output presents special difficulties, particularly in taking adequate account of quality change. The methods are still being developed, so the estimates here are experimental statistics. For healthcare and education services, which account for half of all spending on public services, the estimates include an adjustment for quality (which had not been developed for the previous publication (Pritchard, 2003)). It has not yet been possible to develop satisfactory quality measures for the smaller spending areas. Absence of quality adjustment can lead to measured output falling if high cost activities are replaced by lower cost activities with improved or equivalent quality (or rising if the converse is true). Errors can also arise if there are changes in the characteristics of the population to whom services are delivered, for example, increasing levels of need of those in care homes.

Background

There is (usually) no market for public services, so it is difficult to provide a measure of how much the quantity of service changes over time, or what 'price' should be used to value the quantity, to combine with other sectors of the economy in an overall output measure. There is, however, information on the inputs used (of labour, goods and services and capital). So the output of public services in the National Accounts was previously measured by assuming that output growth was simply equal to the growth in inputs. Since 1998 some parts of public service output have been measured using direct measures of activity such as pupil attendance or health care procedures performed as the units of output, and unit cost weights (the average cost of the relevant activity) have been used instead of market prices to add the different measures of activity together. Once output is measured directly it becomes possible to calculate productivity, that is output per unit of input.

In 2003, the then National Statistician, commissioned Sir Tony Atkinson to conduct an independent review of the measurement of government inputs and output in the context of National Accounts (Atkinson, 2005). The UK Centre for the Measurement of Government Activity (UKCeMGA) was launched within ONS in July 2005 to take forward the Atkinson agenda and has since worked to improve measures of public service output. Productivity articles for individual services, such as healthcare and education, have been published previously. This article brings together, for the first time since Sir Tony Atkinson's review, an overall assessment of the public services collectively. While many other countries, following the UN System of National Accounts (SNA) (United Nations, 1993), have produced direct output measures for public services only the UK has produced regular productivity articles.

One important recommendation of the Atkinson Review was that activity measures for public service output should be adjusted for quality. In the market sector higher quality goods can be distinguished and be given higher weights through the higher prices consumers will pay for the extra quality. Within public services, while it is possible to differentiate between different activities such as knee or hip replacements, the average cost of such procedures is not necessarily an accurate indication of the quality of the outcome provided by the procedure. Where such inaccuracy is thought to be a problem, the recommendation was to adjust activity measures to take account of the improvement in the outcome for the service user that could reliably be attributed to the relevant activity. The estimates for healthcare and education included here incorporate quality adjustments. However the quality adjustments are not necessarily comprehensive. For example, the education quality adjustment is based on pupil attainment and takes no account of other possible desired outcomes of education, such as the wider outcomes targeted in England in "Every Child Matters" (DCSF, 2008).

It should be noted that there may be lags in the way in which measured output responds to increases in the quantity or quality of inputs. For example, it could take time for improved medical equipment to be used to its full potential. So the initial increase in inputs will lead to output rising for some years afterwards.

Note also that the article only considers General Government Final Consumption Expenditure (GGFCE) – the expenditure on the provision of publicly-funded services. It does not include the value of transfer payments, for example, cash benefits provided to people of working age and in retirement. Although the value of such benefits is excluded from this analysis the activity of administering the majority of these benefits is included (mainly under the social security administration (SSA) heading).

For the purposes of this article, public services fall into distinct categories:

- the majority (representing around two thirds of total expenditure) have their output measured by direct indicators
- the remaining services are currently measured using the 'output=inputs' convention. That is, the output is deemed to be equal to the volume of the inputs used in generating the output

The output of healthcare, education, adult social care, SSA and public order and safety[1] (POS) are measured directly, using measures of activity, quality

adjusted in the cases of healthcare and education. Children's social care uses direct measures for looked-after children and indirect measures for the remainder such as preventative services. The output measurements are for the whole of the UK. However, in some areas it has not yet been possible to directly measure the output in Northern Ireland, Scotland or Wales. For example, the measure of healthcare activity only uses data for England and Northern Ireland. In such cases the output index for each service refers to what is measured directly, but the weights used to combine different services into the overall total reflect total UK spending on each service. ONS is working with the devolved administrations to improve coverage.

The services for which the 'output=inputs' convention is used include those services provided collectively to all national residents. The most important of these are the services of the police and defence. This is in line with current international National Accounts guidance for collective services. The 'output=inputs' convention is also used for the 'other'[2] category. In some cases, development work is underway to generate direct measures of output for services currently subject to the 'output=inputs' convention. However, that work has not yet reached fruition. The implication of this approach is that productivity for such services is always unchanged.

In large part, the methodologies underpinning these estimates have been accepted for use in the National Accounts, following ONS's normal rigorous approval processes. So the associated estimates themselves are also the ones implicit in the National Accounts. However, there are some exceptions:

- not all of the relevant methodologies have yet completed the National Accounts approval process. These include some of the quality adjustments for healthcare and education
- in the National Accounts further education is included in the Non-Profit Institutions Serving Households (NPISH) sector, not the General Government sector. But most of further education for under-19s is funded by the public sector. This article, therefore, includes estimates for further education for under-19s[3]

For purposes of transparency, this article therefore also presents the estimates of public service productivity implicit in the current National Accounts.

Estimates of the Volume of Output

What is being measured?

This section reports estimates of the growth in the output of public services from 1997 to 2007. It uses the most up-to-date methods and quality adjustments, whether in National Accounts or still in development. More detail on the output measures can be found in the relevant productivity articles produced by UKCeMGA. These include healthcare (ONS, 2008b, 2009a), education (ONS, 2007a), adult social care (ONS, 2007b), children's social care (ONS, 2008e) and SSA (ONS, 2008d).

Estimates used are the latest available as at February 2009. Healthcare output for 2007 is thus a forecast based on only the first quarter of 2007 (the remaining quarters falling in the subsequent financial year). The forthcoming healthcare productivity article will incorporate estimates based on the full calendar year.

The estimates here are calculated from many data sources. The periods for which there are consistent series have starting points ranging from 1994 to 2003. It is possible to backcast as well as forecast series to some degree. 1997 was chosen as the start date to keep backcasting to reasonable levels while allowing analysis over most of the period for which direct estimates have been made.

What is included and how are the parts combined?

The different individual service output indices are combined together into a single overall index using weights based on relevant service spending as a proportion of total GGFCE, plus that part of further education dealing with under-19s (GGFCEplusFE).

Table 1 illustrates movements in these proportions between 1997 and 2007. The most notable change is the rise in the share of healthcare spending from 27.6 per cent of the total in 1997 to 31.5 per cent in 2007, broadly matched by the fall in the share of defence spending from 15.1 per cent to 11.0 per cent.

The breakdown of the 2007 values is illustrated in **Figure 3**. Healthcare is the largest identified component of GGFCEplusFE, followed by education and defence. Adult social care, POS and police also account for substantial proportions of GGFCEplusFE. There is also a substantial 'other' category.

What measures of output are used?

Most of the direct measures are cost-weighted activity indices. For example, healthcare output largely consists of activities divided into Health Care Resource Groups (HRGs): health procedures of a similar type. In education the basic unit is attendance-adjusted pupil numbers. In some areas the activity measures are less well focused, for example, prison output is measured by unweighted prisoner numbers.

Which areas are quality-adjusted?

The output figures for education are quality-adjusted using GCSE (Standard Grades in Scotland) average point scores (ONS, 2007a) over the whole period. The healthcare output figures are quality-adjusted for the period 2001 to 2007 (using a forecast for 2007). The overall adjustment incorporates adjustments for patient experience, reflecting how patients are treated, clinical outcomes in general

Table 1
General Government Final Consumption Expenditure weights by service,[1] 1997–2007

United Kingdom — Percentages

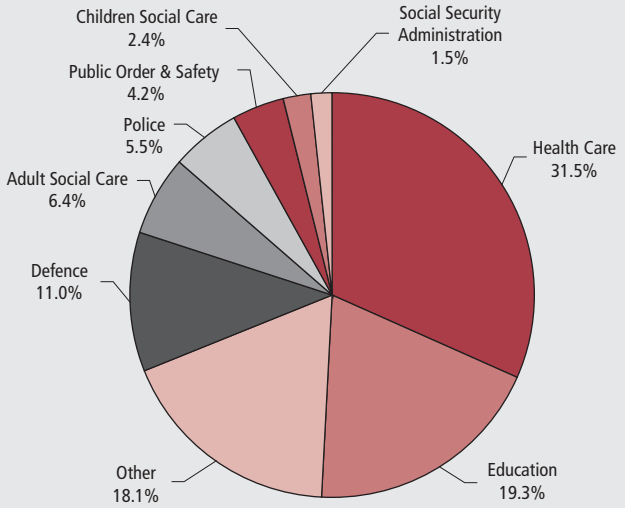
	Health Care	Education	Adult Social Care	Social Security Admin.	Children Social Care	Public Order & Safety	Police	Defence	Other	Total
1997	27.6	18.8	5.8	2.2	1.9	4.3	5.5	15.1	18.8	100.0
1998	28.4	18.8	5.9	2.1	2.0	4.2	5.5	14.3	18.8	100.0
1999	28.8	18.7	5.9	2.2	2.1	4.5	5.4	13.2	19.2	100.0
2000	28.5	18.8	6.0	2.3	2.0	4.7	5.2	13.6	18.9	100.0
2001	29.0	19.2	5.9	2.0	2.1	4.5	5.6	12.4	19.3	100.0
2002	29.1	19.5	6.1	1.9	2.1	4.4	5.6	12.3	19.0	100.0
2003	29.3	19.1	6.3	2.2	2.2	4.5	5.5	12.4	18.4	100.0
2004	30.0	19.0	6.4	2.1	2.3	4.5	5.5	11.6	18.7	100.0
2005	30.1	18.9	6.5	2.2	2.3	4.5	5.5	11.1	18.9	100.0
2006	31.0	18.9	6.4	1.6	2.4	4.3	5.4	11.8	18.2	100.0
2007	31.5	19.3	6.4	1.5	2.4	4.2	5.5	11.0	18.1	100.0

Note: *Source: Office for National Statistics, UKCeMGA*

1 Includes that part of further education dealing with under-19s.

Figure 3
General Government Final Consumption Expenditure weights by service,[1] 2007

United Kingdom
Percentages

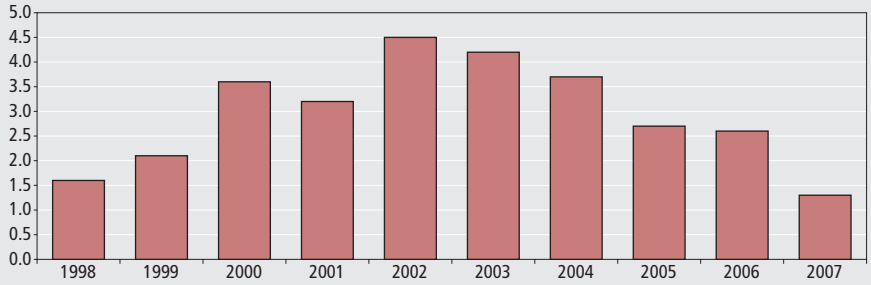


Note: *Source: Office for National Statistics, UKCeMGA*

1 Includes that part of further education dealing with under-19s.

Figure 4
Growth in total public service output, 1997–2007

United Kingdom
Percentages



Source: Office for National Statistics, UKCeMGA

Table 2
Total public service output estimates by service, 1997–2007

United Kingdom — Index 1997=100

	Health Care	Education	Adult Social Care	Social Security Admin.	Children Social Care	Public Order & Safety	Police	Defence	Other	Total
1997	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1998	103.8	103.1	102.3	101.7	102.4	94.7	99.6	98.4	101.3	101.6
1999	107.0	106.3	101.5	100.4	106.6	91.8	98.5	94.5	108.4	103.7
2000	111.7	108.5	102.5	98.7	108.5	92.6	98.0	101.5	113.3	107.4
2001	118.0	110.2	104.2	96.5	110.4	97.5	99.9	97.3	121.9	110.8
2002	123.7	113.5	112.0	99.4	116.6	100.3	103.4	103.0	127.5	115.8
2003	130.2	115.9	115.6	102.9	124.1	105.2	108.4	109.8	131.3	120.7
2004	136.3	118.4	122.6	106.5	131.3	103.3	113.6	108.0	140.6	125.1
2005	143.0	120.8	123.6	102.1	135.4	104.8	115.8	105.3	147.8	128.5
2006	147.7	123.1	124.2	103.5	136.3	106.8	118.5	114.9	147.5	131.9
2007	152.5	125.4	125.8	103.9	137.9	107.9	121.3	110.9	147.8	133.6
Mean compound growth rate %	*4.3*	*2.3*	*2.3*	*0.4*	*3.3*	*0.8*	*2.0*	*1.0*	*4.0*	*2.9*

Source: Office for National Statistics, UKCeMGA

practice, and health effects, measuring impact in terms of life expectancy, health gains, survival rates and waiting times (ONS, 2008b).

None of the other public service output measures are quality adjusted. For certain areas this is likely to lead to under- or over-estimation of output. For example, being adopted is known to lead to some better outcomes for looked-after children than being in residential care homes, but this is not currently reflected in the measurement of output. Similarly, education may lead to improved wider outcomes that a simple GCSE-adjusted pupil attendance measure cannot capture, for example, improved child health or improved outcomes in later life not related to exam attainment.

How much has overall output grown?

Figure 4 shows the year-on-year growth in overall output.

Key points to note are that:

- in the period 1997 to 2007, the total public service output index increased by 33.6 per cent, an average of 2.9 per cent a year
- output growth was particularly high in 2002, with annual growth of 4.5 per cent, and 2003, with annual growth of 4.2 per cent
- in 2007 the increase in output was the smallest at 1.3 per cent

Which services grew fastest?

Table 2 shows the output indices and (last row) the annual percentage growth rate over the whole period for each service.

- Over the period 1997-2007, healthcare output has grown the fastest, by 52.5 per cent, with an annual average growth of 4.3 per cent
- The omnibus 'other' category grew by 47.8 per cent, an annual average of 4.0 per cent
- Children's social care has grown by 37.9 per cent, an annual average of 3.3 per cent
- These were the only services which grew faster than GDP as a whole, which over this period grew at an annual rate of 2.9 per cent
- Both education and adult social care have grown by around 25 per cent, an annual average of 2.3 per cent
- Education output is strongly affected by the number of school age children, which has been almost static over the period, though GCSE results have improved

- The below average growth of adult social care may reflect the failure of the measure to account for an increasingly complex case mix and a shift from residential care to cheaper care provided at home
- The output of the remaining categories all grew, though more slowly

Contributions to growth

The fastest growing individual services do not necessarily make the biggest difference to the total growth of all the services, because they may only account for a small share in the total. **Figure 5** illustrates the contribution each service makes to the growth in the total between 1997 and 2007, taking account of its individual share as well as its individual growth rate.

Of the total 33.6 percentage point change:

- healthcare made the largest contribution, of 14.4 percentage points, reflecting its large share in the total and its high individual growth rate
- the next largest contribution is the omnibus 'other' category, with 8.4 percentage points
- education contributed 4.9 percentage points, reflecting its relatively large share, despite a below average increase in its individual output
- the remaining services made small contributions of 1.7 percentage points or less
- the low share of children's social care in total spending offsets its high individual growth rate, so it contributes 0.8 percentage points to the total

Estimates of the Volume of Inputs

What is being measured?

This section reports estimates of the growth in the volume of inputs used in providing public services: that is the amount of quality-adjusted labour, goods and services and capital (usually capital consumption). Within each category different kinds of input, for example teachers and teachers' assistants, are calculated separately and weighted together using appropriate weights to account for the differences in 'quality'. An overall index of inputs to public services as a whole is calculated by combining the various inputs using the proportions of expenditure in Table 1 as weights.

Input should ideally be measured directly (OECD, 2001), for example, using hours worked or a measure of staff numbers in the case of labour input. Where data do not allow for a direct measure of inputs a volume measure can be derived by dividing a figure for the value of spending on an input by an appropriate estimate of the price of the input (the deflator)[4].

For the services where output was assumed to be the same as inputs, inputs were usually measured by deflating total expenditure by some appropriate price index. ONS has recently published new estimates of police inputs (ONS, 2009b) based on an improved deflation method. The paper also discussed whether it might be possible to use a direct method, though current data sources do not allow adequately for actual hours worked. In the *Defence Scoping Paper* (ONS, 2008f) ONS outlined a method of improving the current direct measure of labour input to better reflect the skill mix of labour input. A paper using these improved measures will be published at a later date.

How much have inputs grown?

Figure 6 shows the year-on-year growth in overall inputs.

Key points to note are that:

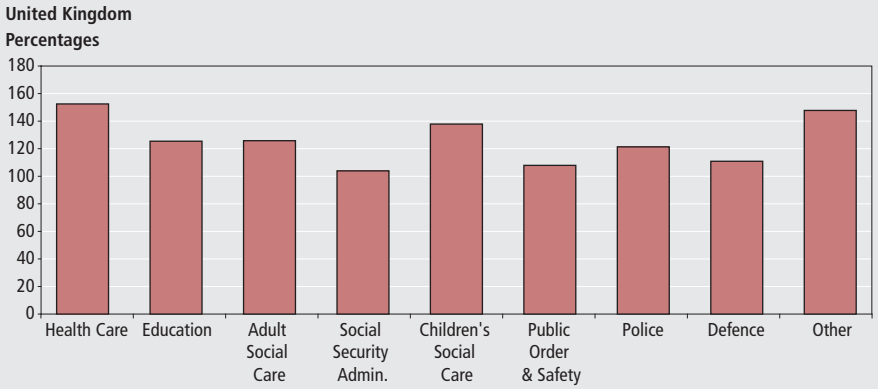
- in the period 1997 to 2007, the volume of total public service inputs increased by 38.0 per cent, an annual average of 3.3 per cent
- input growth was particularly high in 2002 and 2003, with annual growth rates of 6.0 per cent and 5.7 per cent respectively
- in 2007 the increase in inputs was smallest at 0.7 per cent

In which services did inputs grow fastest?

Table 3 shows the index of inputs and (last row) the annual percentage growth rate over the whole period for each service.

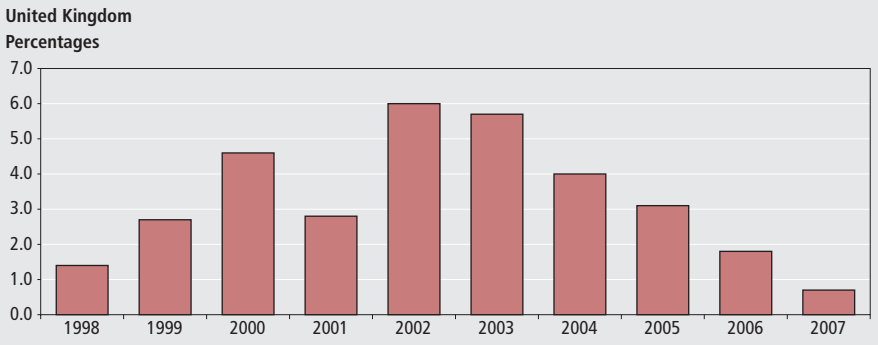
- Inputs have risen fastest in the areas where output growth has also been the fastest, healthcare and children's social care
- Children's social care inputs increased by 74.3 per cent, an annual average of 5.7 per cent
- Healthcare inputs increased by 59.3 per cent, an annual average of 4.8 per cent
- Inputs also increased substantially in adult social care (annual average 2.8 per

Figure 5
Contribution to growth in total public service output by service, 1997–2007



Source: Office for National Statistics, UKCeMGA

Figure 6
Growth in total public service inputs, 1997–2007



Source: Office for National Statistics, UKCeMGA

Table 3
Total public service inputs estimates by service, 1997–2007

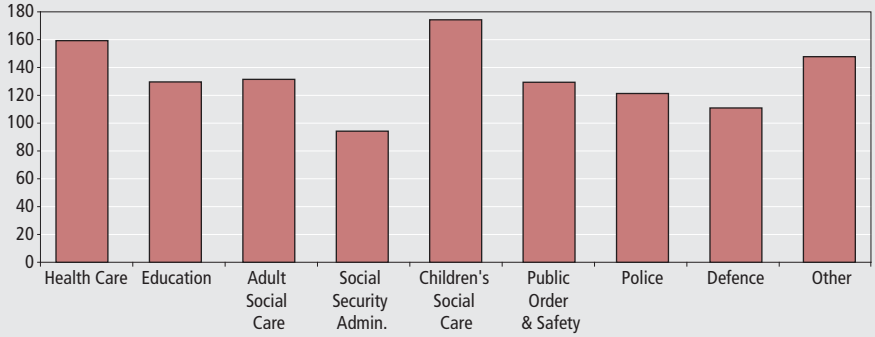
United Kingdom Index 1997=100

	Health Care	Education	Adult Social Care	Social Security Admin.	Children Social Care	Public Order & Safety	Police	Defence	Other	Total
1997	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1998	104.8	101.3	100.7	94.7	104.2	95.2	99.6	98.4	101.3	101.4
1999	108.0	102.4	104.0	102.4	113.6	104.7	98.5	94.5	108.4	104.1
2000	114.1	104.9	106.2	108.6	116.0	114.1	98.0	101.5	113.3	108.9
2001	119.0	108.9	108.7	96.3	122.0	113.0	99.9	97.3	121.9	112.0
2002	128.0	114.7	117.3	97.7	132.5	118.9	103.4	103.0	127.5	118.7
2003	137.5	117.8	126.6	123.0	145.9	125.7	108.4	109.8	131.3	125.5
2004	144.2	122.0	130.0	119.5	156.0	132.4	113.6	108.0	140.6	130.5
2005	152.3	124.4	132.4	121.1	162.8	134.4	115.8	105.3	147.8	134.6
2006	156.2	126.2	132.4	100.9	173.2	131.4	118.5	114.9	147.5	137.0
2007	159.3	129.6	131.5	94.2	174.3	129.4	121.3	110.9	147.8	138.0
Mean compound growth rate %	*4.8*	*2.6*	*2.8*	*-0.6*	*5.7*	*2.6*	*2.0*	*1.0*	*4.0*	*3.3*

Source: Office for National Statistics, UKCeMGA

Figure 7
Contribution to growth in total public service inputs by service, 1997–2007

United Kingdom
Percentages



Source: Office for National Statistics, UKCeMGA

cent), POS (2.6 per cent) and education (2.6 per cent)

- SSA inputs fell over the period, at an annual rate of 0.6 per cent
- For the remaining areas (police, defence and 'other'), input growth is, by definition, the same as the growth in output

Contributions to growth

As with output, the fastest growing individual services do not necessarily make the biggest differences to the total inputs growth of all the services, because they may only account for a small share in the total. **Figure 7** illustrates the contribution each service makes to the growth in the total between 1997 and 2007, taking account of its individual share as well as its individual growth rate.

Of the growth in the total inputs index of 38.0 per cent:

- healthcare contributed 16.1 percentage points, reflecting both the strong growth in inputs and the high share of total spending
- the 'other' category contributed 8.6 percentage points
- education contributed 5.9 percentage points, reflecting its relatively high share of spending
- the remaining services all contributed relatively small amounts, less than 1.9 percentage points, apart from SSA, which made a negative contribution
- although inputs into children's social care grew the fastest, its contribution to overall inputs growth was quite small because of its relatively small share in spending

Total Productivity Growth in Public Services

What is being measured?

This section reports estimates of productivity. The growth of multi-factor productivity is calculated by subtracting the growth in the index of inputs from the growth in the index of output[5]. These estimates provide information relevant to the measurement of the efficiency with which public services are provided. However, it does not provide direct information on how far (if at all) public service productivity is below best practice (which would require systematic quantitative measures of best practice), or on how much of any productivity change is due to changes in the way services are provided (which would require an estimate of what would have happened if the changes had not been made).

More information on services can be found from other sources such as the reports of the National Audit Office or papers arising from the Gershon Review. These offer some information relevant to the above questions. The individual articles on public service productivity from ONS include, in their sections on triangulation, discussions of studies relevant to productivity in the particular service.

The approach taken here is to account, as far as possible, for all inputs. Any changes in the index therefore reflect some combination of changes in the efficiency with which measured inputs are used, returns to scale (where the amount of inputs used per unit of output changes with the scale of inputs) and changes in unmeasured inputs. Note that increases in the quality of inputs, such as labour, will reduce this measure of productivity growth if output does not increase in proportion. This may be a particular problem if improved quality of input is expected to lead to an improved quality of output, which is not fully captured by existing measures, for example if using better trained teachers raises pupil attainment but only at some future date outside the time period covered.

Estimates of total public services productivity

Figure 8 shows the year-on-year growth in overall productivity.

Key points to note are that:

- over the period 1997 to 2007, the total public services productivity index fell 3.2 per cent, an average of 0.3 per cent a year
- productivity fell most in 2002 and 2003, by 1.3 and 1.5 per cent respectively
- in 2006 productivity grew by 0.8 per cent and in 2007 by 0.6 per cent

Figure 8
Growth in total public service productivity, 1997–2007

Source: Office for National Statistics, UKCeMGA

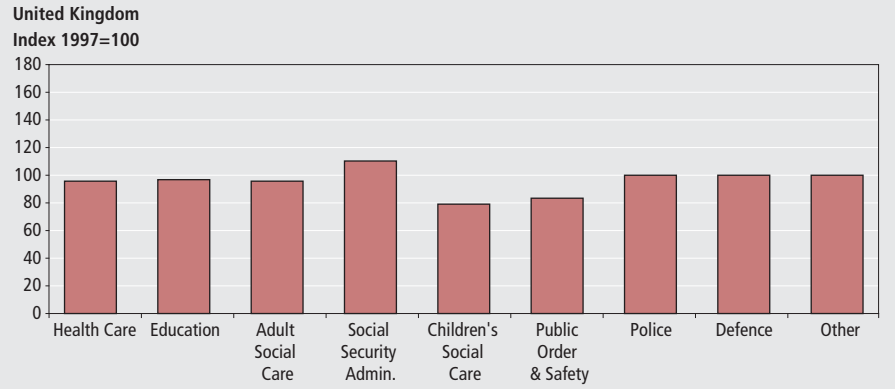
Table 4
Total public service productivity estimates by service, 1997–2007

United Kingdom — Index 1997=100

	Health Care	Education	Adult Social Care	Social Security Admin.	Children Social Care	Public Order & Safety	Police	Defence	Other	Total
1997	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1998	99.0	101.8	101.6	107.4	98.3	99.5	100.0	100.0	100.0	100.2
1999	99.0	103.8	97.7	98.0	93.8	87.6	100.0	100.0	100.0	99.6
2000	97.9	103.5	96.5	90.8	93.5	81.2	100.0	100.0	100.0	98.6
2001	99.1	101.2	95.9	100.2	90.5	86.3	100.0	100.0	100.0	98.9
2002	96.6	99.0	95.5	101.7	88.0	84.3	100.0	100.0	100.0	97.6
2003	94.7	98.4	91.3	83.7	85.0	83.7	100.0	100.0	100.0	96.2
2004	94.5	97.0	94.3	89.1	84.2	78.0	100.0	100.0	100.0	95.9
2005	93.9	97.1	93.4	84.3	83.1	78.0	100.0	100.0	100.0	95.5
2006	94.6	97.6	93.8	102.6	78.7	81.3	100.0	100.0	100.0	96.3
2007	95.7	96.8	95.7	110.3	79.1	83.4	100.0	100.0	100.0	96.8
Mean compound growth rate %	*-0.4*	*-0.3*	*-0.4*	*1.0*	*-2.3*	*-1.8*	*0.0*	*0.0*	*0.0*	*-0.3*

Source: Office for National Statistics, UKCeMGA

Figure 9
Total public service productivity estimates by service, 2007



Source: Office for National Statistics, UKCeMGA

How did productivity growth vary by service?

Table 4 shows the productivity indices and (last row) the annual average growth rates over the whole period for each service. For services where 'output=inputs' productivity change, by definition, is always zero.

- Productivity grew over the period in SSA by 10.3 per cent, an annual average increase of 1.0 per cent
- Education productivity fell by 3.2 per cent, an annual average fall of 0.3 per cent
- Adult social care productivity fell by 4.3 per cent, an annual average fall of 0.4 per cent
- Healthcare productivity fell by 4.3 per cent, an annual average fall of 0.4 per cent
- POS productivity fell by 16.6 per cent, an annual average fall of 1.8 per cent
- The largest fall in productivity was in children's social care, which fell by 20.9 per cent, an annual average fall of 2.3 per cent
- For police, defence and 'other' productivity was unchanged since 'output=inputs'

Figure 9 shows the level of the productivity indices for each service in 2007.

The large fall in this measure of productivity in children's social care and POS require some explanation.

Output for looked-after children, accounting for approximately half of total children's social care output, is measured directly. Within this category the relatively cheap (hence low cost weight) adoption, fostering and similar categories have expanded at the expense of higher cost residential care homes. This has been the deliberate focus of policy because adoption and similar placements have been shown to give better outcomes for the child. But the output measure is not adjusted for quality, so the net effect is to depress output growth.

The remaining part of children's social care output, including that part associated with child protection, is measured assuming output equals inputs and has experienced a large increase in inputs, but, by definition, no change in productivity. The large fall therefore needs to be interpreted with caution.

POS is complicated because it is made up of several components. Fire productivity has fallen, which may reflect expenditures on new responsibilities of the fire service, such as mass decontamination, which are not fully reflected in the output measure. The *Criminal Justice Scoping Paper* (ONS, 2008c) discussed the difficulties in finding appropriate measures for the output of the Criminal Justice system. The ideal of a measure which tracked offenders through detection, conviction and disposal proved too difficult to implement in the short term. So current measures are of activities such as court cases and volume measures such as prisoner numbers. These measures leave much to be desired. For example, prison output goes up if the number of prisoners increases even though this could reflect failures of crime prevention. The output of courts will go down when procedures are simplified and fewer cases, therefore, come to trial.

The existing measures show a mixed

picture. Prison productivity has fallen because, although the number of prisoners has gone up, the volume of inputs has increased even faster since 2004. Productivity in the probation service has improved, though the output measure is based on a forecast. Court productivity fell sharply between 1998 and 2000. Overall the measure needs to be interpreted with care.

Contributions to growth

Figure 10 illustrates how much each service contributed to the total change in productivity, taking account of both how much activity in the service itself has changed and how important the service is in the total.

- Healthcare is the major contributor to the fall in productivity over the whole period, contributing 1.2 percentage points, 37.5 per cent of the 3.2 percentage point total fall. This reflects its large weight in the total as well as the overall fall in productivity
- The second largest contributor is POS, which contributed a fall of 0.8 percentage points. The output measures in this area are relatively undeveloped and some of this fall may reflect deficiencies in the output measures
- Education contributed a fall of 0.6 percentage points. Although the fall in productivity in education is modest, education has a relatively large share in total spending
- Children's social care contributed a fall of 0.5 percentage points, a noticeable effect despite its small share in the total. As discussed, the fall in measured output reflects a shift towards adoption, which is the intended effect of policy since adoption is thought to have better outcomes for looked-after children than residential care homes
- Adult social care contributed a fall of 0.2 percentage points
- SSA productivity has risen over the period and makes a small positive contribution of 0.1 per cent, hence reduces the fall in productivity

Discussion of Particular Services

This section discusses how the relative movements of inputs and output within each public service impact on the overall change in total service productivity.

Healthcare

Healthcare makes up the largest part of spending and both inputs and output have risen substantially over the period. Inputs increased particularly fast in 2002 and 2003 (by 7.6 and 7.4 per cent respectively). Output also grew fast in these years (4.8 and 5.3 per cent respectively), but not as fast in inputs. These movements are illustrated in **Figure 11**.

The main factors in the overall rise in output were:

- more patient treatments in hospital and community healthcare services
- an increase in general practitioner (GP) and practice nurse consultations
- a large increase in drugs prescribed by GPs
- a small rise in the quality of healthcare (based on short-term survival, health gain, waiting times and patient experience) from when it was first measured in 2001

These factors are discussed in ONS (2008b, 2009a).

The main factors underlying the overall increase in inputs used to deliver healthcare were:

- increases in the volume of labour, with especially high growth between 2000 and 2004
- high growth in the volume of goods and services, particularly in GP prescribed drugs, healthcare purchased from outside the NHS and other purchased goods and services

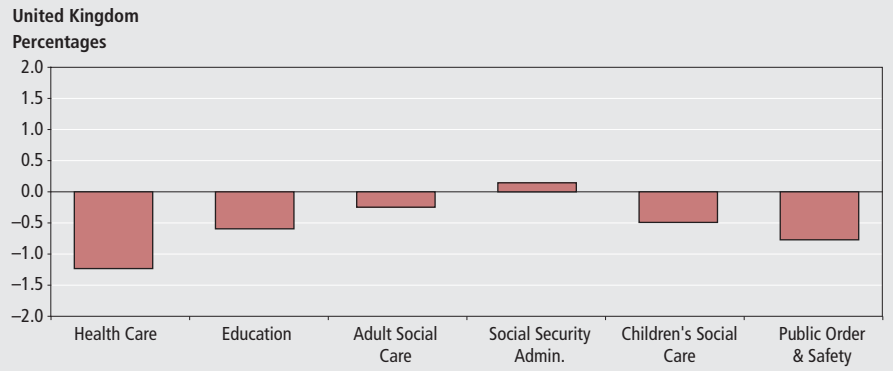
The increase in healthcare productivity in 2006 and 2007 arose from substantially reduced inputs growth (2.6 per cent and 2.0 per cent respectively) combined with reduced but still strong growth in output (3.3 and 3.2 per cent respectively).

Healthcare productivity will be the subject of a separate article later this year. This will include fuller discussion, for example, providing a breakdown of healthcare into family health services and hospital and community services, as well as updated output numbers.

Education

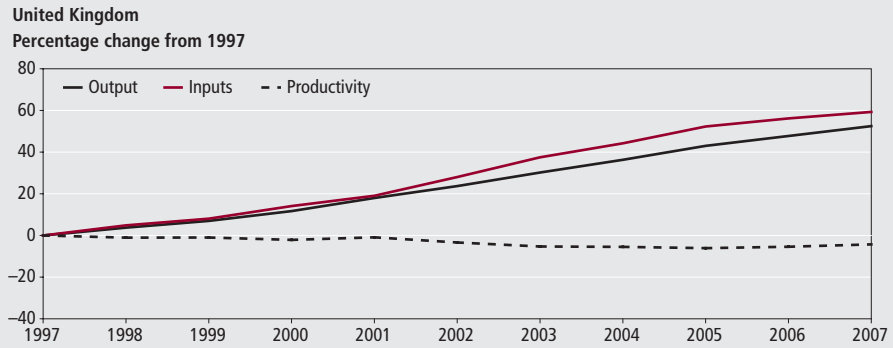
Education is the second largest area of spending. Output growth has been fairly steady, reflecting rising pupil numbers in secondary schools, improved attendance rates and improvements in GCSE grades,

Figure 10
Contribution to growth in total public service productivity by service, 1997–2007



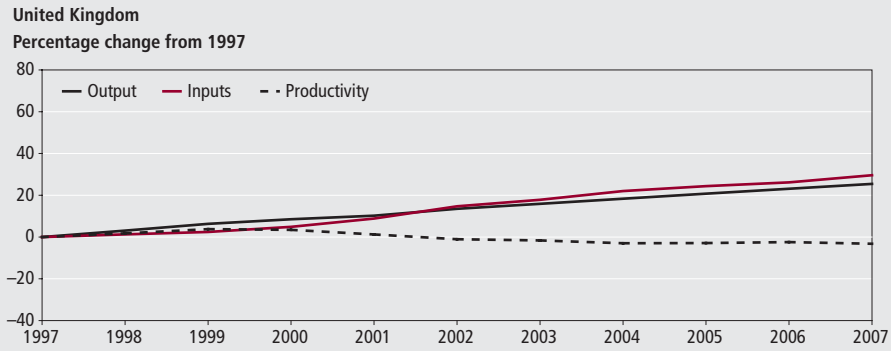
Source: Office for National Statistics, UKCeMGA

Figure 11
Components of healthcare productivity, 1997–2007



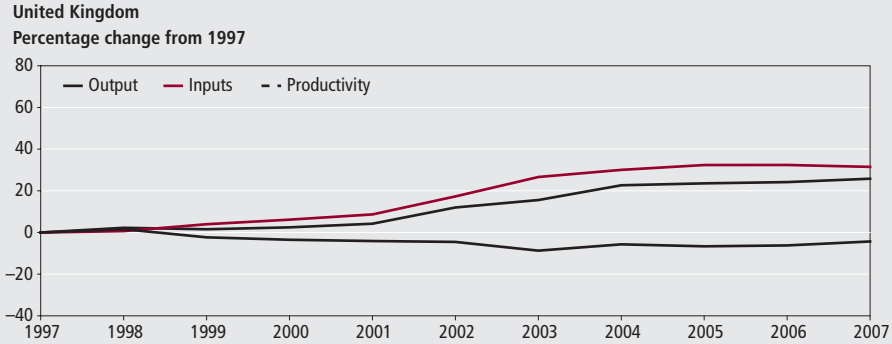
Source: Office for National Statistics, UKCeMGA

Figure 12
Components of education productivity, 1997–2007



Source: Office for National Statistics, UKCeMGA

Figure 13
Components of adult social care productivity, 1997–2007



Source: Office for National Statistics, UKCeMGA

offset to some degree by falling pupil numbers in primary schools. Inputs growth was relatively high between 2000 and 2004, explained in part by increases in support staff. Some of this growth in inputs might well lead to improvements in the quality of education which are not captured by the existing quality adjustment which only takes account of GCSE results. The increase in inputs was sufficiently large to offset the rise in output leading to a fall in productivity. These movements are illustrated in **Figure 12**.

Education productivity will be the subject of a separate article later in the year.

Adult social care

Adult social care is the third largest of the areas where output is measured directly. There was a large increase in inputs between 2001 and 2003, after which inputs growth reduced and indeed was negative in 2007. The path of output was broadly similar, but slightly later, with the largest increases in output in 2002 and 2004. The large rise in 2002 arose because responsibility for the funding arrangements for a group of residents (around 50,000 people) of independent care homes passed to local authorities in that year. These movements are illustrated in **Figure 13**.

Productivity fell by approximately four percentage points in 2003 to 8.7 per cent below the 1997 level, but has since recovered, so that now it stands 4.3 per cent below.

The output measure makes no allowance for quality. In particular, it takes no account of intensity of need, which may have been increasing. It may also understate output if an increasing proportion of people have services provided to them at home instead of being taken into residential care. Residential care is more expensive than care at home, so any such shift will reduce output growth because of the lower weight of home care. ONS is working on ways to take account of quality changes.

Public order and safety

POS consists of a diverse set of activities, including prisons, probation and courts. The figures suggest a large fall in productivity between 1997 and 2000. However, the existing measures of output still leave much to be desired. For example, prison output is simply driven by prisoner numbers. ONS is working to improve measures in all these areas and existing estimates should be treated with caution. These movements are illustrated in **Figure 14**.

Children's social care

Children's social care accounts for a much smaller share of spending than adult social care, reflecting the smaller numbers in the target population. There has been a large fall in productivity. As discussed, this reflects both a large overall increase in inputs and a shift towards adoption and fostering and away from residential care, which, given the absence of quality adjustment, has reduced output. These movements are illustrated in **Figure 15**.

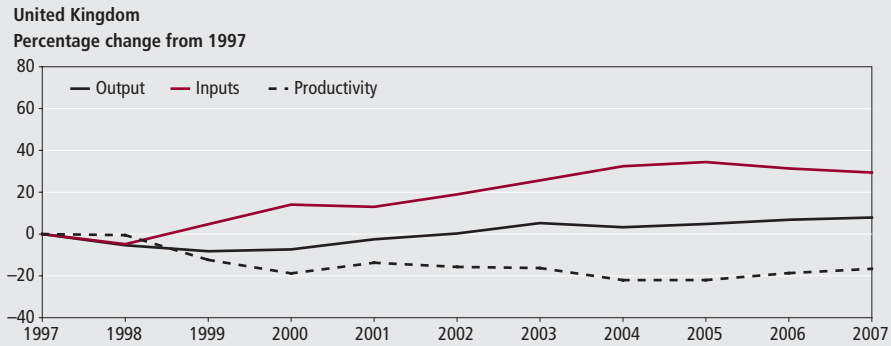
Social security administration

Productivity change for SSA was dominated by the time profile of inputs, which increased sharply when the Department of Work and Pensions was set up, but fell equally as sharply from 2005. In contrast, the absolute size of the output growth was much smaller. For a fuller discussion see ONS (2008d). These movements are illustrated in **Figure 16**.

Collective services and 'other'

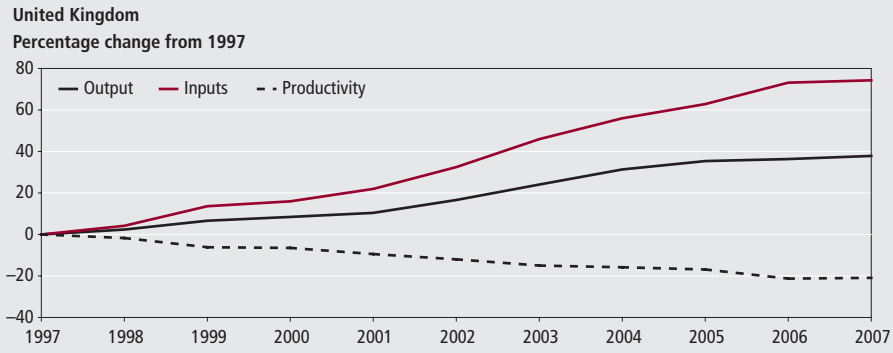
The 'output=inputs' convention is used for the remaining services, so productivity is unchanged by definition.

Figure 14
Components of public order and safety productivity, 1997–2007



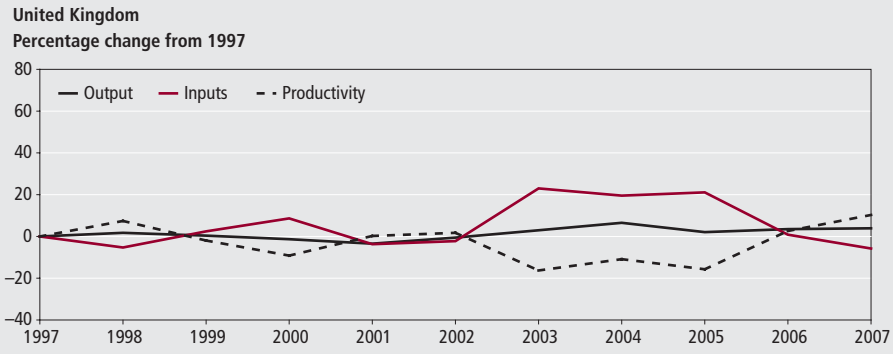
Source: Office for National Statistics, UKCeMGA

Figure 15
Components of children's social care productivity, 1997–2007



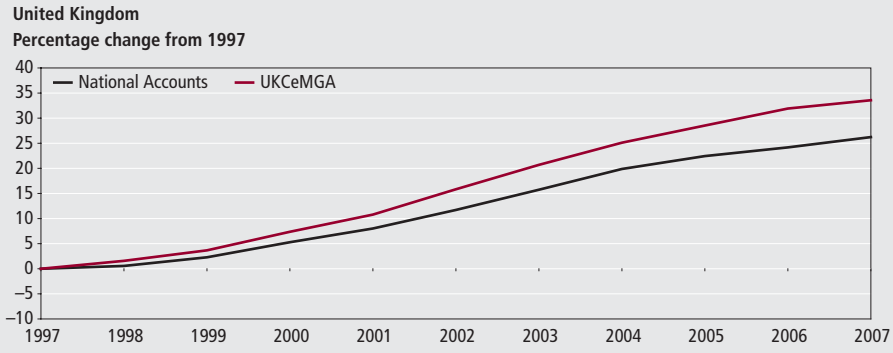
Source: Office for National Statistics, UKCeMGA

Figure 16
Components of social security administration productivity, 1997–2007



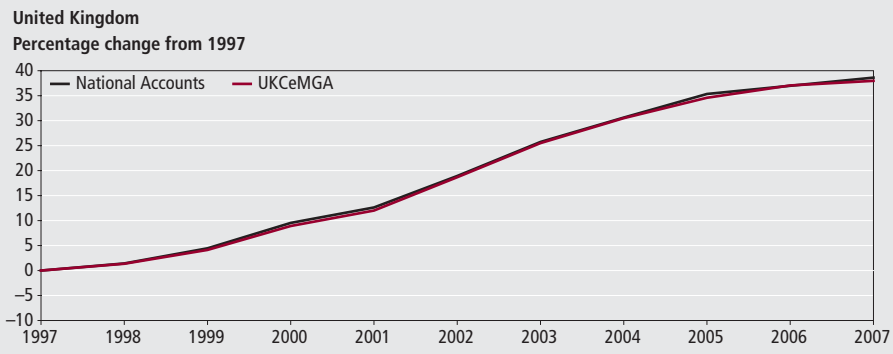
Source: Office for National Statistics, UKCeMGA

Figure 17
Comparison of total public service output estimates, 1997–2007



Source: Office for National Statistics, UKCeMGA

Figure 18
Comparison of total public service inputs estimates, 1997–2007



Source: Office for National Statistics, UKCeMGA

Comparison with the National Accounts' Blue Book 2008

Figures 17, 18 and 19 compare the total public service output, inputs and productivity estimates discussed in this article with those calculated using data consistent with the *National Accounts' Blue Book 2008* (ONS, 2008a).

Output

Figure 17 illustrates that the Blue Book 2008 estimates are below the estimates in this article. The major reasons for this are:

- there is no quality adjustment for healthcare in the Blue Book, whereas this article includes a quality adjustment from 2001 which, on average, raises healthcare output growth by 0.4 percentage points a year
- the Blue Book has a multiplicative quality adjustment for education, which increases output by 0.25 per cent a year, whereas this article uses an additive method which adds, on average, around 2.5 per cent a year to output
- the Blue Book 2008 does not include the revised method of estimating drugs growth described in (ONS, 2008b & 2009a). This will, however, be incorporated into Blue Book 2009

Inputs

Figure 18 illustrates that the inputs data used in this article are very close to those underlying the Blue Book 2008. The small differences arise mainly because of revisions to the volume of police inputs.

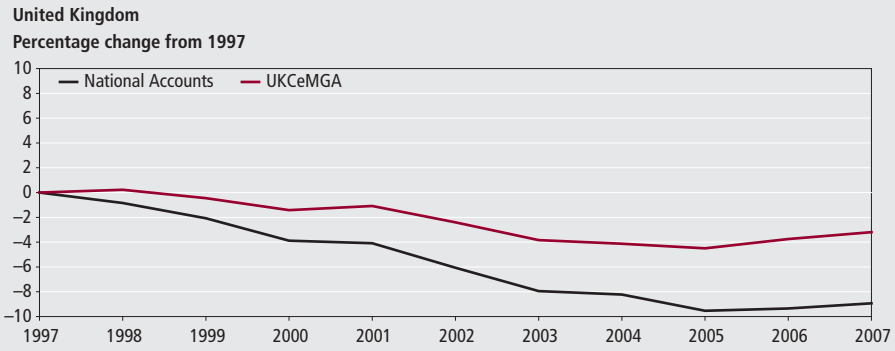
Productivity

This article gives higher estimates for output than, and very similar estimates for inputs to, the implied Blue Book estimates. Therefore, the productivity estimates headlined in this article are higher than those implied by the Blue Book 2008. This is illustrated in Figure 19.

Conclusion

In 2006 and 2007 total public service productivity rose for the first time since 1998. Over the whole period 1997 to 2007 total public service output has increased substantially. This largely reflects the increase in the volume of inputs, where growth was particularly high between 2000 and 2004. But the growth in inputs exceeded the growth in output, so over the whole period productivity has not recovered to its 1997 level.

Figure 19
Comparison of total public service productivity estimates, 1997–2007



Source: Office for National Statistics, UKCeMGA

Future work

This article is intended to be the first in an annual series reporting output, inputs and productivity growth for the whole of public services. There will be separate articles for the larger public services, such as healthcare and education, which will allow fuller discussion of the composition of output and the reasons for service-specific change. These articles will also consider the movements in the cost of inputs, which are another important aspect of what taxpayers are getting for their money. New methods in measuring any service or proposals for extending coverage, for example the inclusion of higher education, will be the subject of methods articles.

Annexes containing extra information on this article can be found at: www.statistics.gov.uk/articles/nojournal/TotalPublicServiceFinalv5.pdf

Notes

1. The POS category consists of fire, courts, probation and prisons. Police has been separated, as its output is measured simply by its inputs.
2. The 'other' category consists of general public services, economic affairs, environmental protection, housing & community amenities and recreation, culture & religion.
3. Higher education also falls in the NPISH sector, but has more diverse sources of funding. The estimates exclude higher education.
4. These indirect measures are not necessarily the same as measures of real spending, which are derived by dividing spending on an input by an overall price index (such as the GDP deflator or the Consumer Price Index).
5. The measure reported here is not the same as labour productivity growth, which only measures the growth in output per person (or person hour) employed. Output per person (or person hour) may increase because of increases in the amount of capital services or intermediate consumption per person (or person hour) or improvements in the quality of the labour input, rather than through improvements in efficiency. Moreover, since non-labour inputs typically grow rather than decline, growth in this multi-factor measure of productivity will usually be less than growth in labour productivity.

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ARTICLE

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The effects of taxes and benefits on household income, 2007/08

SUMMARY

This article looks at how taxes and benefits affect the income of households in the UK. It provides estimates of the average amount of taxes paid, and the value of benefits received, for households with different levels of income. It also shows how the estimates are different for various types of households, according to factors such as whether the household is retired, and the number of adults and children living in the household. The analysis also examines how income inequality has changed over time. The analysis is published annually and results are presented here for 2007/08. Appendix 1 (21 additional tables) and Appendix 2 (Methodology and Definitions) are available on the web version of this article at www.statistics.gov.uk/cci/article.asp?id2257

The incomes of households are altered by government intervention, through taxes and benefits. In general, households with the highest amount of income pay more in taxes than they receive in benefits, while the reverse is true for those with lower incomes. Taxes and benefits therefore decrease the inequality of income. In 2007/08, before taxes and benefits, the top fifth of households had an average of £72,600 per year in income from sources such as earnings, occupational pensions and investments (defined as original income). This is approximately 16 times as great as the figure of £4,700 for the bottom fifth. After taking account of all taxes and benefits, the top fifth had an average final income of £52,400 per year compared with £14,300 for the bottom fifth of households, a ratio of four to one. The difference between original income and final income for 2007/08, broken down by quintiles, is also shown graphically in **Figure 1**.

Cash benefits play the largest part in reducing inequality. **Figure 2** shows the extent to which cash benefits increase the income of households, by income quintile group. It can be seen that the majority of cash benefits go to households with the lowest incomes. When cash benefits are added to a household's original income it forms their gross income.

Direct taxes (income tax, employees' National Insurance contributions and council tax and Northern Ireland rates), except for council tax and Northern Ireland rates, are progressive – they take a larger proportion of income from those with higher incomes. Therefore, they also contribute to a reduction in inequality although not to the same extent as cash benefits. Indirect taxes (taxes on final goods and services, such as VAT, and intermediate taxes, such as employers' National Insurance contributions) have the opposite effect to direct taxes taking a higher proportion of income from those with lower incomes, that is, they are regressive. While households higher up the income distribution pay more indirect tax in absolute terms, they pay a lower proportion of their income in indirect tax.

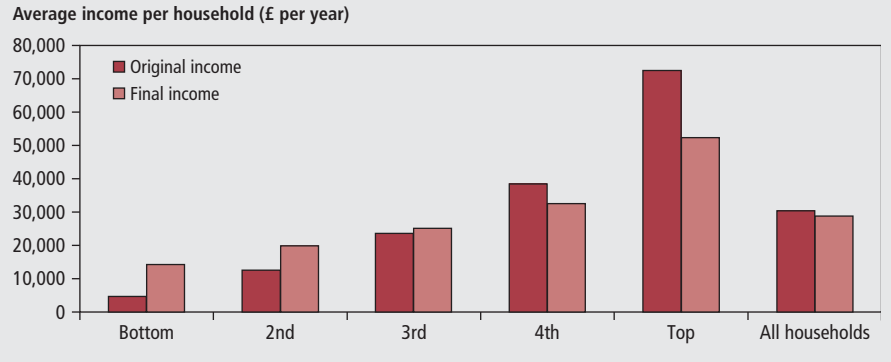
Households also receive benefits in kind from services provided free or at subsidised prices by government, such as health and education services. The amount of benefits in kind received falls gradually as income increases, indicating that they also lead to a reduction in inequality.

Household characteristics

Households can be grouped according to the number of adults and children living in the household, and according to whether the household is retired or not. Grouping households allows for analysis of how the tax and benefit system affects different types of households. Additionally, some types of households are more likely to have high incomes, whereas others tend to have lower incomes. This is presented in **Table 4**.

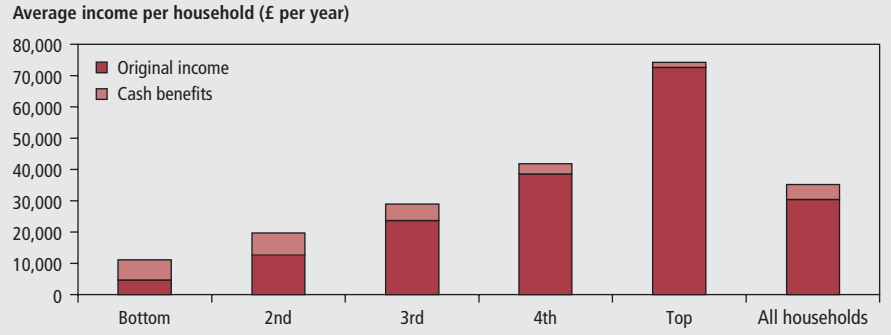
Single person households are slightly more likely to have higher incomes, while households consisting of two adults with no children, are very clearly concentrated in the higher groups.

Figure 1
Original income and Final income by quintile groups for ALL households[1], 2007/08



Note:
1 Households are ranked throughout by their grossed equivalised disposable incomes.

Figure 2
Gross Income by quintile groups for ALL households[1], 2007/08



Note:
1 Households are ranked throughout by their grossed equivalised disposable incomes.

Households containing two adults with children tend to have lower incomes than those with no children. Households which consist of only one adult with children are much more concentrated in the lower income groups. Retired households also tend to have lower incomes.

Trends in income inequality

Disposable income is defined as gross income minus direct taxes. Inequality of disposable income, as measured by the Gini coefficient, was almost unchanged between 2006/07 and 2007/08, as shown in **Figure 5**. Income inequality has remained at roughly the same level since 1987. Income inequality increased rapidly in the second half of the 1980s, reaching a peak in 1990. After 1990 the trend was downwards, although inequality did not decrease to the levels of the early 1980s. After 1995/96 inequality began to rise again reaching a peak in 2001/02 – at a level very similar to that in 1990. Inequality of income fell between 2001/02 and 2004/05 before rising again in the years to 2006/07. For details of how the Gini coefficient is calculated see Appendix 2, paragraph 53.

Concepts and Sources

This analysis looks at how taxes and benefits affect the distribution of income. **Diagram 1** shows the stages in the redistribution of income used in this analysis. Household members receive income from employment, occupational pensions, investments and from other non-government sources. The diagram shows the various ways that government raises revenue from households through taxation and distributes benefits to them in cash, and in kind.

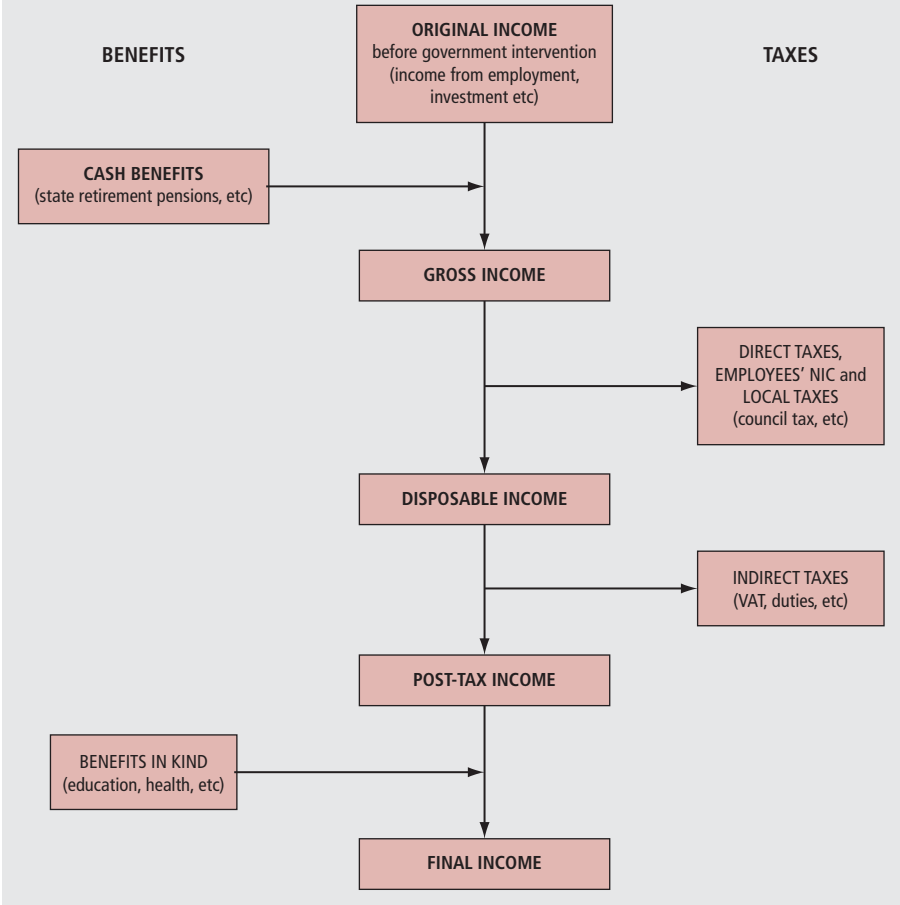
The analysis only allocates those taxes and benefits that can reasonably be attributed to households. Therefore, some government revenue and expenditure is not allocated, such as revenue from corporation tax and expenditure on defence and public order. There are three main reasons for not including some taxes and benefits in the analysis. Some taxes and benefits fall on people who do not live in private households. In other cases, there is no clear conceptual basis for allocation to particular households. Finally, there may be a lack of data to enable allocation. In this study, some £359 billion of taxes and compulsory social contributions have been allocated to households. This is equivalent to 61 per cent of general government expenditure, which totalled £593 billion in 2007. Similarly, £321 billion of cash benefits and benefits in kind have been allocated to households, making up 54 per cent of general government expenditure. These proportions are broadly the same to those in recent years' analyses.

The estimated values of taxes and benefits reflect the methodology used in this study. They are based on assumptions about which taxes and benefits should be covered and to whom they should apply. Where it is practical, the methodology used is similar to that used in previous years. However, there have been some changes in the underlying surveys and improvements in the methodology. For this reason, one should be cautious about making direct comparisons with earlier years. Comparisons with previous years are also affected by sampling error (for more details see Appendix 2, paragraph 57). This is especially true for estimates which are based on sub-samples such as the results for decile or quintile groups, or particular types of household. Time series are presented for some of the more robust measures, and these include Gini coefficients and other measures of inequality.

Unit of analysis

The unit of analysis used in this study is the household. The households are ranked by their equivalised disposable income, which the analysis uses as a proxy for standard of living. Equivalisation is a process that adjusts households' incomes to take account of their size and composition, to recognise that this affects the demand on resources. For example, a couple with a child would need a higher income than a childless couple for the two households to achieve the same standard of living. The equivalence scale used in this analysis is the *McClements scale* (before housing costs are deducted). In the earlier example, a childless couple's income of £10,000 is treated as equivalent to an income of £12,300 for a couple with a ten year old child (see Appendix 2, paragraph 48). Households with the same equivalised income do not necessarily have the same standard of living where other characteristics are different. For example,

Diagram 1
Stages of redistribution



households which own their homes outright would be in a better position than identical households with the same income which had to pay rent or mortgage payments. Equivalisation does not adjust for these differences.

Equivalised income is used only to rank the households. Most monetary values shown in the analysis are not equivalised. Where equivalised amounts are given, they are shown in *italics*. Once the households have been ranked, the distribution is split into five or ten equally sized groups – that is quintile groups or decile groups. The bottom quintile (or decile) group is that with the lowest equivalised disposable incomes, while the top quintile (or decile) is that with the highest.

Data sources

The main data source for this analysis is the Expenditure and Food Survey (EFS) which covers about 6,100 households in the UK each year. It only covers private households – people living in hotels, lodging houses and in institutions, such as old peoples' homes, are excluded. The EFS is used because as well as collecting data on household income, it also collects expenditure data which are used here to estimate payment of indirect taxes. The weighting process for the EFS data used for this analysis has been updated to use 2001 Census data, for further details please refer to Appendix 2, paragraph 5.

There is known to be a degree of under-reporting in the EFS for some benefits. For example, when compared to administrative data from HM Revenue and Customs (HMRC), the EFS estimate of total tax credit payments is only around two-thirds of the HMRC figure. Further details of the concepts and methodology used are given in Appendix 2.

The results of the analysis are reported in three sections. The first looks at the effects for all households. Non-retired and retired households have distinct income and expenditure patterns and so the tax and benefit systems affect the two groups in very different ways. Therefore, the second and third sections look separately at results for non-retired and retired households.

Results for all households

Overall effect

Taken as a whole the tax and benefit system leads to income being shared more equally between households. In this analysis, income before taxes and benefits is termed original income and includes income from earnings, occupational pensions and investments. Original income varies considerably between households. Those in the top quintile group have an average of £72,600 compared with £4,700 per year for the bottom group (**Table 1**).

The extent of inequality in this measure of income can be seen by looking at the proportion of total original income received by groups of households in different parts of the income distribution. At this stage,

Table 1
Summary of the effects of taxes and benefits by quintile groups on ALL households, 2007-08

	Quintile groups of ALL households[1]						Ratio
	Bottom	2nd	3rd	4th	Top	All households	top/bottom quintile
Income, taxes and benefits per household (£ per year)[2]							
Original income	4 651	12 574	23 640	38 505	72 581	30 390	16
plus cash benefits	6 453	7 131	5 309	3 311	1 666	4 774	0.3
Gross income	11 105	19 705	28 949	41 816	74 247	35 164	7
less direct taxes[3] and employees' NIC	1 202	2 770	5 393	9 096	18 517	7 396	15
Disposable income	9 903	16 936	23 556	32 720	55 729	27 769	6
less indirect taxes	3 100	3 672	4 615	5 723	7 408	4 904	2
Post-tax income	6 803	13 264	18 941	26 997	48 321	22 865	7
plus benefits in kind	7 494	6 602	6 206	5 591	4 050	5 989	0.5
Final income	14 297	19 866	25 147	32 588	52 371	28 854	4

Source: Office for National Statistics

Notes:

1 Households are ranked by equivalised disposable income.
2 All the tables in Part 1 of this article show unequivalised income. Equivalised income has only been used in the ranking process to produce the quintile groups (and to produce the percentage shares and Gini coefficients).
3 These are income tax (which is after deducting tax credits and tax relief at source on life assurance premiums), council tax and Northern Ireland rates but after deducting discounts, council tax benefits and rates rebates.

Table 2
Percentage shares of household income and Gini coefficients,[1] 2007-08

	Percentage shares of equivalised income for ALL households[2]			
	Original income	Gross income	Disposable income	Post-tax income
Quintile group[2]				
Bottom	3	7	7	6
2nd	8	11	12	12
3rd	14	16	16	16
4th	24	22	22	22
Top	51	44	42	44
All households	100	100	100	100
Decile group[2]				
Bottom	1	3	3	2
Top	33	28	26	28
Gini coefficient (per cent)	52	38	34	38

Source: Office for National Statistics

Notes:

1 This is a measure of the dispersion of each definition of income (see Appendix 2, paragraph 51).
2 Households are ranked by equivalised disposable income.

the richest fifth of households (those in the top quintile group) receive 51 per cent of all original income (**Table 2**). This compares with only 3 per cent for households in the bottom fifth.

Adding cash benefits to original income gives gross income. In contrast to original income, the amount received from cash benefits is higher for households lower down the income distribution than for those at the top. Of the total amount of cash benefits received, the bottom two quintile groups together receive 57 per cent. These households receive an average of £6,800 per year from cash benefits, representing around 58 per cent of gross income for the bottom quintile group and 36 per cent for the second quintile group. This reduces the inequality of income.

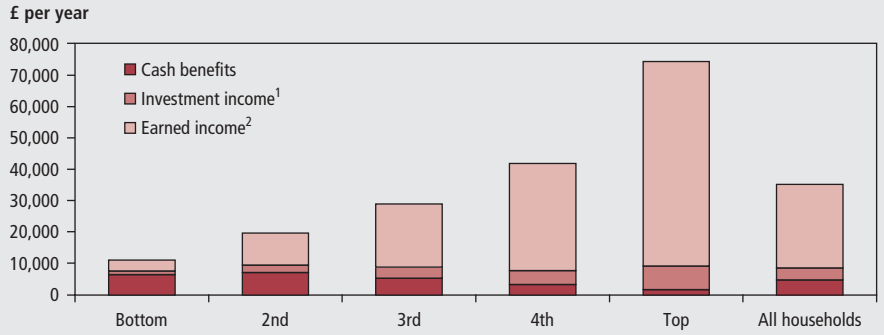
Direct taxes

Direct taxes include income tax, national insurance contributions (NICs) and council tax or Northern Ireland rates. Households with higher incomes pay both higher amounts of direct tax and higher proportions of their income in direct tax with the top quintile group paying an average of £18,500 per household in direct taxes. In contrast, the direct tax bill for households in the bottom quintile group is around £1,200. Consequently, direct taxes also reduce inequality of income. Looking at income tax on its own, the top two quintile groups pay 79 per cent of total income tax, while the bottom two quintile groups together pay 8 per cent.

Table 3 shows the effect of direct and indirect tax on each quintile group. Households at the lower end of the income distribution pay smaller amounts of direct tax compared with higher income households. In addition, low income households also pay a smaller proportion of their income in income tax because tax is not paid on the first tranche of income and higher rates of tax are paid on higher incomes. As a proportion of their gross incomes, households in the bottom quintile group pay an average of 4 per cent in income tax compared with 18 per cent for those in the top quintile group. The proportion of gross income paid in employees' National Insurance Contributions (NICs) rises with income until the third quintile group.

Council tax (and domestic rates in Northern Ireland) on the other hand are regressive even after taking into account council tax benefits and rates rebates. Households in the lower part of the income distribution pay smaller absolute amounts – average net payments by the bottom fifth of households are half those of the top fifth. However, when expressed as a proportion of gross income, the burden decreases as income rises. Council tax in Great Britain and domestic rates in Northern Ireland represent 6 per cent of gross income for those in the bottom fifth but only 2 per cent for those in the top fifth.

Figure 3
Sources of gross income by quintile groups of equivalised disposable income, 2007/08



Notes:

1 Investment income includes occupational pensions and annuities.
2 Earned income includes wages and salaries, income from self-employment and income from "fringe benefits".

Indirect taxes

The amount of indirect tax each household pays is determined by their expenditure rather than their income. While the payment of indirect taxes can be expressed as a percentage of gross income in the same way as for direct taxes, it should be remembered that for some households, particularly towards the bottom of the income distribution, annual expenditure exceeds annual income. For these households, expenditure is not being funded entirely from income. To express the payment of indirect taxes as a percentage of gross or disposable income is potentially misleading because for these households their expenditure will be a better indicator of standard of living than their income. Therefore, payment of indirect taxes is also presented as a percentage of expenditure.

There are a number of possible reasons why expenditure may exceed income. Some households with low incomes may draw on their savings or borrow in order to finance their expenditure. In addition, the bottom decile in particular includes some groups who have, or report, very little income (for example people not currently in employment and some self-employed people). For some people this spell of very low income may only be temporary and, during this period, they may continue with previous patterns of spending. Some types of one-off receipts are not included as current income in the EFS, for example, inheritance and severance payments. In

Table 3
Taxes as a percentage of gross income, disposable income and expenditure for ALL households by quintile groups,[1] 2007/08

	Quintile groups of ALL households[2]					All
	Bottom	2nd	3rd	4th	Top	households
(a) Direct and indirect taxes as a percentage of gross income						
Direct taxes						
Income tax[3]	3.2	6.9	10.7	13.5	18.4	13.7
Employees' NIC	1.5	3.1	4.6	5.5	4.7	4.5
Council tax & Northern Ireland rates[4]	6.1	4.0	3.4	2.8	1.8	2.8
All direct taxes	*10.8*	*14.1*	*18.6*	*21.8*	*24.9*	*21.0*
Indirect taxes						
VAT	10.8	7.2	6.5	5.8	4.5	5.8
Duty on alcohol	1.5	1.0	0.9	0.8	0.6	0.8
Duty on tobacco	2.6	1.8	1.2	0.7	0.3	0.8
Duty on hydrocarbon oils & vehicle excise duty	3.2	2.3	2.2	1.9	1.2	1.8
Other indirect taxes	9.9	6.3	5.3	4.4	3.5	4.7
All indirect taxes	*27.9*	*18.6*	*15.9*	*13.7*	*10.0*	*13.9*
All taxes	*38.7*	*32.7*	*34.6*	*35.4*	*34.9*	*35.0*
(b) Indirect taxes as a percentage of disposable income						
VAT	12.1	8.4	8.0	7.4	5.9	7.4
Duty on alcohol	1.6	1.2	1.1	1.1	0.8	1.0
Duty on tobacco	2.9	2.1	1.4	0.9	0.4	1.1
Duty on hydrocarbon oils & vehicle excise duty	3.6	2.7	2.7	2.4	1.5	2.2
Other indirect taxes	11.1	7.4	6.5	5.7	4.6	6.0
All indirect taxes	*31.3*	*21.7*	*19.6*	*17.5*	*13.3*	*17.7*
(c) Indirect taxes as a percentage of expenditure[2]						
VAT	7.9	7.9	7.8	7.7	7.1	7.5
Duty on alcohol	1.1	1.1	1.1	1.1	1.0	1.0
Duty on tobacco	1.9	2.0	1.4	0.9	0.4	1.1
Duty on hydrocarbon oils & vehicle excise duty	2.3	2.5	2.6	2.5	1.8	2.3
Other indirect taxes	7.2	7.0	6.3	5.9	5.5	6.1
All indirect taxes	*20.3*	*20.5*	*19.2*	*18.1*	*15.8*	*18.1*

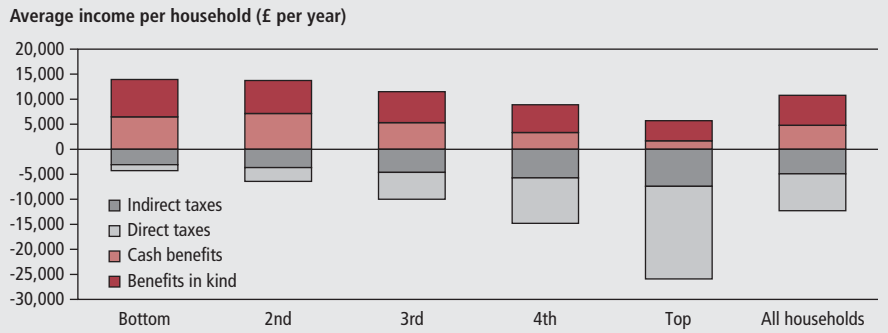
Source: Office for National Statistics

Notes:

1 Households are ranked by equivalised disposable income.
2 Calculated to be consistent with disposable income. See paragraph 35 of Appendix 2 for the definition of expenditure.
3 After deducting tax credits and tax relief at source on life assurance premiums.
4 After deducting discounts, council tax benefits and rates rebates.

some cases, the information given on direct tax is not consistent with that on income received, possibly because of timing differences. The income and expenditure data are measured in different ways in the EFS, and either could be affected by measurement errors of different kinds (see Appendix 2, paragraph 6).

Figure 4
Summary of the effects of taxes and benefits on ALL households, 2007/08



Note:

1 Households are ranked throughout by their grossed equivalised disposable incomes.

To give a more complete picture of the impact of indirect taxes, they are shown in **Table 3** separately as a proportion of gross income, disposable income and expenditure. Direct taxes are also shown as a proportion of gross income so that the impact of direct and indirect taxes can be compared.

In cash terms, the top fifth of households pay almost two and a half times as much indirect tax as the bottom fifth. This simply reflects higher expenditure by higher income households. The only indirect taxes where average payments do not vary much across the income distribution are duties on tobacco, television licences, taxes on betting, and the tax element of the National Lottery.

When expressed as a percentage of expenditure, the proportion paid in indirect tax tends to be lower for households at the top of the distribution compared with those lower down (16 per cent for the top quintile compared with 20 per cent for the bottom quintile). The higher percentage of expenditure by low income groups on tobacco (1.9 per cent of total expenditure for the bottom quintile group compared with 0.4 per cent for the top quintile group) accounts for part of this difference.

When expressed as a proportion of gross or disposable income, the impact of indirect taxes declines much more sharply as income rises. This is because those in higher income groups tend to channel a larger proportion of their income into savings and mortgage payments, which do not attract indirect taxes. In addition, for many households in the lower half of the distribution, recorded current expenditure is greater than recorded current income. As a result, indirect taxes expressed as a proportion of income appear more regressive than when expressed as a proportion of expenditure.

The final stage in the redistribution process is the addition of benefits in kind, such as those from state education and the health service. Households in the bottom quintile group receive the equivalent of around £7,500 per year from all benefits in kind, compared with £4,100 received by the top fifth (see **Figure 4**). These are described in more detail later in the analysis.

Estimates of final income include receipt of all benefits and payment of all taxes. After redistribution through taxes and benefits, the share of income received by the bottom quintile group increased from 3 per cent for original income to 6 per cent for post tax income. The share of income received by the top quintile group fell from 51 per cent to 44 per cent.

The effect of taxes and benefits on income inequality can be seen by their effect on the Gini coefficient. It can take values from 0 to 100 per cent where a value of zero would indicate that each household had an equal share of income, while higher values indicate greater inequality.

The Gini coefficients which appear in Table 2 produce a similar picture to the shares of income discussed earlier. For 2007/08, the figure of 52 per cent for original income is reduced to 38 per cent for gross income by the inclusion of cash benefits – a large reduction in inequality. The coefficient for disposable income shows the equalising effect of direct taxes with the figure falling further to 34 per cent. Indirect taxes reverse this effect, as the Gini coefficient is increased to 38 per cent for post-tax income.

Characteristics of households

Some types of household are more likely to be located in one part of the income distribution than another and hence it is possible to provide analysis of how different household characteristics may affect households' incomes. Information about the characteristics of households in the different income groups is shown in **Table 4**. Household size does not vary much across the income distribution, with an average of between 2.2 and 2.5 people per household in each quintile group in 2007/08. There are fewer children in the upper part of the income distribution. Men are slightly more likely to be in the upper part of the distribution while women are spread more evenly across the distribution. Higher income groups also contain more economically active people. The top fifth of households have almost three times as many economically active people as the bottom fifth.

Among non-retired two adult households, those without children tend to be concentrated towards the top of the income distribution with 62 per cent in the top two quintiles, while those with more children are lower down. For two adult households with children, the position in the income distribution tends to vary according to the number of children. Households with more children, unless there is a corresponding increase in income, will have lower equivalised incomes to reflect the additional demand on resources. Non-retired households with one adult and one or more children are concentrated in the lower groups. Around 67 per cent of these households are in the bottom two quintile groups.

Table 4
Summary of household characteristics of quintile groups of ALL households,[1] 2007-08

	Quintile groups of ALL households[1]					
	Bottom	2nd	3rd	4th	Top	All households
Number of individuals per household						
Children[2]	*0.6*	*0.6*	*0.6*	*0.5*	*0.4*	*0.5*
Adults	*1.7*	*1.8*	*1.9*	*2.0*	*1.8*	*1.8*
Men	*0.8*	*0.8*	*0.9*	*1.0*	*1.0*	*0.9*
Women	*0.9*	*1.0*	*1.0*	*1.0*	*0.9*	*1.0*
People	2.3	2.3	2.4	2.5	2.2	2.4
People in full-time education	0.7	0.5	0.5	0.5	0.3	0.5
Economically active people	0.6	0.8	1.3	1.6	1.6	1.2
Retired people	0.6	0.6	0.5	0.3	0.2	0.4
Household type (percentages)						
Retired	39	40	29	16	7	26
Non-retired						
1 adult without children	16	9	10	14	21	14
2 adults without children	11	14	19	29	43	23
1 adult with children[3]	12	8	5	3	1	6
2 adults with children	14	18	22	21	19	19
3 or more adults[4]	8	11	15	17	8	12
All household types	100	100	100	100	100	100

Source: Office for National Statistics

Notes:

1 Households are ranked by equivalised disposable income.
2 Children are defined as people aged under 16 or aged between 16 and 18, unmarried and receiving non-advanced further education.
3 This group is smaller than the category of 'one parent families' because some of these families will be contained in the larger household types.
4 With or without children.

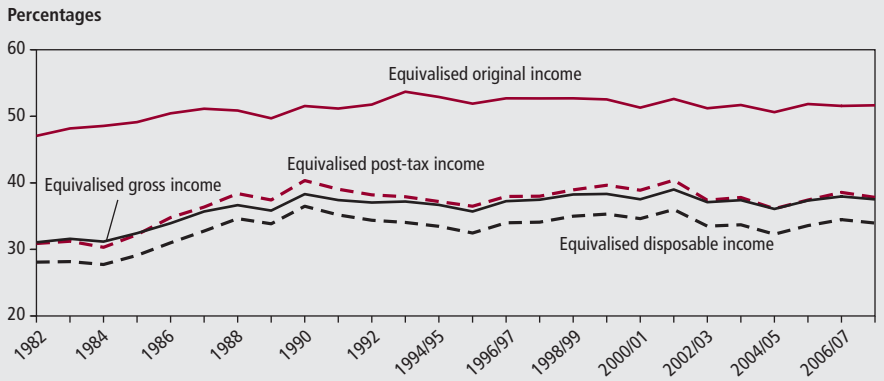
Retired households are over-represented at the lower end of the distribution with 60 per cent falling into the bottom two quintile groups. Among single person retired households, women are both more numerous and also more concentrated towards the bottom of the income distribution compared with men.

Changes in inequality over time

There are several ways of measuring income inequality of which the Gini coefficient is one of the most widely used. It is described in more detail in Appendix 2, while **Figure 5** shows how the Gini coefficients for the various measures of income have changed since 1982. As with other estimates presented here, they are subject to sampling error and some caution is needed particularly in the interpretation of year-to-year changes. However, by looking at data over several years it is possible to see some underlying trends.

As shown in Figure 5, the Gini coefficient for disposable income was almost unchanged between 2006/07 and 2007/08.

Figure 5
Gini coefficients 1982 to 2007/08



Nonetheless, the general trend of increase between 2004/05 and 2007/08 was due to increased inequality of original income. It was due in part to the faster rate of growth of wages and salaries and investment income in the upper part of the distribution compared with the lower part.

The Department for Work and Pensions (DWP) publishes analysis each year of the income distribution in their publication *Households Below Average Income (HBAI)*, based on data from the Family Resources Survey. The Gini coefficients for disposable income in HBAI were also marginally higher in 2007/08 and 2006/07 compared with 2004/05. Due to HBAI being based on a different survey, and some conceptual differences (for example, the use of a different equivalisation scale), HBAI estimates will differ slightly. However, the underlying trends between 2004/05 and 2007/08 are similar.

The recent growth in inequality followed a period between 2001/02 and 2004/05 when income inequality was falling. Over this period there was a slight fall in inequality of original income due to faster growth in income from earnings and self-employment income at the bottom end of the income distribution. Policy changes such as the increases in the national minimum wage, increases in tax credit payments, and the increase in national insurance contributions in 2003/04 would also have resulted in small reductions in inequality of disposable and post-tax income during this period.

Inequality of disposable income increased in the late 1980s and late 1990s during periods of faster growth in income from employment, and fell in the early 1990s during a period of slower growth in employment income. Households which typically benefit the most during periods of growth in employment income are those in the middle and upper part of the income distribution. This is due to there being a much higher proportion of economically active adults in higher quintile households compared with households in the lower part of the income distribution.

The Institute for Fiscal Studies (IFS) in their report '*Permanent Differences? Income and Expenditure Inequality in 1990s and 2000s*' has investigated some of the possible reasons for the higher level of inequality since 1990. There has been an increase in wage inequality, and particularly an increase in the gap between wages for skilled and unskilled workers. Suggested reasons include skills-biased technological change, a decline in the role of trade unions, and a growth in self-employment income. There has also been a decrease in the rate of male participation in the labour market, often in households where there is no other earner, as well as increased female participation among those with working partners. This has lead to an increased polarisation between two-earner and zero-earner households. In the late 1990s, the proportion of people in workless households started to fall slowly, probably contributing to the small reduction in inequality of original income seen since 2001/02.

Results for non-retired households

This section looks at the effect of taxes and benefits on the income of non-retired households. It examines how the characteristics of non-retired households affect the receipt of benefits and payment of taxes (for a definition of retired and non-retired households refer to Appendix 2, paragraph 9).

Overall effect

As for all households, the tax and benefit systems lead to income being shared more equally between non-retired households. Before taxes and benefits, there is less inequality of non-retired households' income, as shown in **Table 5**, than for all households, as shown in Table 2. However, after the process of redistribution, inequality of post-tax income (as measured, for example, by the Gini coefficient) is very similar to that for all households. The effect of taxes and benefits is therefore smaller for non-retired households than for all households, and a summary is shown in **Table 6**.

Characteristics of non-retired households

There is more variation in the size of non-retired households, compared with households in total. The average non-retired household size tends to decrease as income increases. This fall is largely accounted for by the decrease in the average number of children in each household from 1.0 in the bottom quintile group to 0.4 in the top.

Although one adult households with children tend to be concentrated lower down the income distribution, this tendency is slightly less pronounced than it used to be. In 1998/99, 75 per cent of these households were in the bottom two quintile groups, which compares with 67 per cent in 2007/08.

Original income

The average original income for non-retired households is £38,100 per year (Table 6). As mentioned above, inequality of original income is lower for non-retired households than for all households. For example, the ratio of the average original incomes for the top and bottom quintiles is 11 to one, compared with 16 to one for all households.

The original income of non-retired households shows a relatively strong relationship to the number of economically active people they contain. On average, households in the top three quintile groups contain almost twice as many economically active people as those in the lowest group (Table 6).

Table 5

Percentage shares of household income and Gini coefficients[1] for NON-RETIRED households, 2007/08

	Percentage shares of equivalised income for NON-RETIRED households[2]			
	Original income	Gross income	Disposable income	Post-tax income
Quintile group[2]				
Bottom	3	6	7	6
2nd	10	12	12	12
3rd	16	16	17	16
4th	24	23	23	23
Top	46	43	41	44
All non-retired households	100	100	100	100
Decile group[2]				
Bottom	1	2	3	2
Top	29	27	26	28
Gini coefficient (per cent)	44	37	34	38

Source: Office for National Statistics

Notes:

1 This is a measure of the dispersion of each definition of income (see Appendix 2, paragraph 53).
2 Households are ranked by equivalised disposable income.

Table 6

Summary of the effects of taxes and benefits by quintile groups on NON-RETIRED households,[1] 2007/08

	Quintile groups of NON-RETIRED households[1]						Ratio
	Bottom	2nd	3rd	4th	Top	All non-retired households	top/bottom quintile
Income, taxes and benefits per household (£ per year)							
Original income	7 502	21 814	33 864	47 081	80 185	38 089	11
plus cash benefits	5 984	4 816	2 759	1 768	1 113	3 288	0.2
Gross income	13 485	26 629	36 624	48 849	81 298	41 377	6
less direct taxes[2] and employees' NIC	1 561	4 711	7 744	11 387	20 510	9 183	13
Disposable income	11 924	21 918	28 879	37 462	60 789	32 194	5
less indirect taxes	3 661	4 716	5 633	6 239	7 776	5 605	2
Post-tax income	8 263	17 202	23 247	31 223	53 012	26 590	6
plus benefits in kind	8 347	7 388	5 950	5 224	3 843	6 151	0.5
Final income	16 611	24 591	29 196	36 448	56 855	32 740	3
Number of individuals per household							
Children[3]	*1.0*	*0.9*	*0.6*	*0.5*	*0.4*	*0.7*	
Adults	*1.8*	*2.0*	*2.1*	*2.1*	*1.8*	*2.0*	
Men	*0.8*	*1.0*	*1.1*	*1.1*	*1.0*	*1.0*	
Women	*1.0*	*1.0*	*1.0*	*1.0*	*0.9*	*1.0*	
People	2.8	2.9	2.7	2.6	2.2	2.7	
People in full-time education	1.0	0.8	0.6	0.5	0.3	0.6	
Economically active people	0.9	1.5	1.8	1.9	1.7	1.6	
Retired people	0.1	0.1	0.1	0.1	0.1	0.1	

Source: Office for National Statistics

Notes:

1 Households are ranked by equivalised disposable income.
2 These are income tax (which is after deducting tax credits and tax relief at source on life assurance premiums), council tax and Northern Ireland rates but after deducting discounts, council tax benefit and rates rebates.
3 Children are defined as people aged under 16 or aged between 16 and 18, unmarried and receiving non-advanced further education.

Table 7

Cash benefits for NON-RETIRED households by quintile groups,[1] 2007/08

	Quintile groups of NON-RETIRED households[1]					
	Bottom	2nd	3rd	4th	Top	All non-retired households
Average per household (£ per year)						
Contributory						
Retirement pension	321	714	578	639	455	542
Incapacity benefit	521	428	192	69	30	248
Jobseeker's allowance[2]	70	40	5	1	2	24
Other	64	89	58	147	137	99
Total contributory	975	1 271	833	856	624	912
Non-contributory						
Income support[3]	1 022	545	252	48	7	375
Tax credits[4]	1 162	679	242	76	26	437
Child benefit	757	705	522	416	295	539
Housing benefit	1 324	676	239	47	31	464
Jobseeker's allowance[5]	148	36	1	-	-	37
Sickness/disablement related	381	682	543	205	93	381
Other	213	221	128	120	37	144
Total non-contributory	5 008	3 545	1 927	912	489	2 376
Total cash benefits	5 984	4 816	2 759	1 768	1 113	3 288
Cash benefits as a percentage of gross income	*44*	*18*	*8*	*4*	*1*	*8*

Source: Office for National Statistics

Notes:

1 Households are ranked by equivalised disposable income.
2 Contribution based.
3 Including pension credit.
4 Child tax credit and working tax credit.
5 Income based.

Cash benefits

Table 7 gives a summary of the cash benefits that each non-retired quintile group receives. There are two types of cash benefits: contributory benefits which are paid from the National Insurance Fund (to which individuals and their employers make contributions while working) and non-contributory benefits. For non-retired households, non-contributory benefits make up nearly three-quarters of all cash benefits on average.

Most non-contributory benefits, particularly income support, tax credits and housing benefit, are income related and so payments are concentrated in the two lowest quintile groups. The presence of some individuals with low incomes in high income households means that some payments are recorded further up the income distribution. Of the total amount of income support, tax credits and housing benefit paid to non-retired households, 85 per cent goes to the bottom two-fifths, with the majority of this going to the bottom quintile.

Child benefit is based on the number of children in the household. Levels of child benefit received are also higher at the lower end of the distribution, as these households tend to have more children.

In contrast to non-contributory benefits, a criterion for receipt of contributory benefits is the amount of national insurance contributions that have been paid by, or on behalf of, the individual. The amounts received from these benefits are also higher in the lower half of the distribution, but to a lesser extent than for non-contributory benefits.

Cash benefits provide 44 per cent of gross income for households in the bottom quintile group, falling to just 1 per cent for households in the top quintile. Their payment results in a significant reduction in income inequality.

Direct and indirect taxes

Tables 8 and **9** show estimates of how much direct and indirect taxes are paid by non-retired households. The patterns are similar to those described for all households. As noted for all households, national insurance contributions as a proportion of gross income increase from the first to the fourth quintile group, but are then lower for the top fifth of households. In 2007/08, employees NICs were levied at 11 per cent on weekly earnings from £100 to £670 and at 1 per cent above this. Many people in households in the top quintile group will have a significant part of their earnings

Table 8

Taxes as a percentage of gross income for NON-RETIRED households by quintile groups,[1] 2007/08

	Quintile groups of NON-RETIRED households[1]					
	Bottom	2nd	3rd	4th	Top	All non-retired households
Percentages						
Direct taxes						
Income tax[2]	4.4	9.3	12.3	14.7	18.8	14.5
Employees' NIC	2.6	4.9	5.9	6.2	4.7	5.2
Council tax & NI rates[3]	4.5	3.5	2.9	2.5	1.7	2.5
All direct taxes	11.6	17.7	21.1	23.3	25.2	22.2
All indirect taxes	27.1	17.7	15.4	12.8	9.6	13.5
All taxes	38.7	35.4	36.5	36.1	34.8	35.7

Source: Office for National Statistics

Notes:

1 Households are ranked by equivalised disposable income.
2 After deducting tax credits and tax relief at source on life assurance premiums.
3 Council tax and Northern Ireland rates after deducting discounts, council tax benefit and rates rebates.

Table 9

Indirect taxes as a percentage of (a) disposable income and (b) household expenditure[1] for NON-RETIRED households by quintile groups,[2] 2007/08

	Quintile groups of NON-RETIRED households[2]					
	Bottom	2nd	3rd	4th	Top	All non-retired households
(a) Percentages of disposable income						
VAT	11.6	8.4	7.9	7.2	5.7	7.3
Duty on alcohol	1.5	1.2	1.2	1.0	0.8	1.0
Duty on tobacco	3.2	2.0	1.4	0.8	0.3	1.1
Duty on hydrocarbon oils & vehicle excise duty	3.6	2.9	2.8	2.4	1.4	2.3
Other indirect taxes	10.7	7.0	6.2	5.3	4.5	5.8
All indirect taxes	30.7	21.5	19.5	16.7	12.8	17.4
(b) Percentages of expenditure[1]						
VAT	7.7	7.6	7.7	7.5	6.9	7.4
Duty on alcohol	1.0	1.1	1.2	1.0	1.0	1.0
Duty on tobacco	2.1	1.8	1.3	0.8	0.4	1.1
Duty on hydrocarbon oils & vehicle excise duty	2.4	2.6	2.7	2.5	1.7	2.3
Other indirect taxes	7.1	6.4	6.0	5.6	5.4	5.9
All indirect taxes	20.4	19.5	18.9	17.5	15.4	17.7

Source: Office for National Statistics

Notes:

1 Calculated to be consistent with disposable income. See paragraph 35 of Appendix 2 for the definition of expenditure.
2 Households are ranked by equivalised disposable income.

Table 10

Benefits in kind for NON-RETIRED households by quintile groups,[1] 2007/08

	Quintile groups of NON-RETIRED households[1]					
	Bottom	2nd	3rd	4th	Top	All non-retired households
Average per household (£ per year)						
Education	5 260	4 096	3 100	2 287	1 223	3 193
National health service	2 870	3 137	2 738	2 809	2 406	2 792
Housing subsidy	46	26	14	6	3	19
Travel subsidies	64	90	86	118	211	114
School meals and welfare milk	106	40	13	4	1	33
All benefits in kind	8 347	7 388	5 950	5 224	3 843	6 151
Benefits in kind as a percentage of post-tax income	*101*	*43*	*26*	*17*	*7*	*23*

Source: Office for National Statistics

Note:

1 Households are ranked by equivalised disposable income.

taxed at this lower rate and hence they will contribute less, as a proportion of their income.

Benefits in kind

The Government provides a number of goods and services to households that are either free at the time of use or at subsidised prices. These goods and services can be assigned a monetary value and this analysis allocates this value to individual households. The addition of benefits in kind to disposable income results in an estimate of households' final income. The largest two categories for which a value is assigned are health and education services and, in total, six categories are assigned values. The value given to these benefits is based on the estimated cost of providing them, which for all households is detailed in **Table 13**. However, the actual value to households may be greater, or smaller, than the cost to the Government of provision. Future work may investigate methods for improving these estimates.

Table 10 gives a summary of the value of benefits in kind for each quintile group for non-retired households. The benefit in kind from education is allocated to a household according to its members' use of state education (Appendix 2, paragraph 38). Households in the lower quintiles receive the highest benefit from education, as shown in Table 10. This is due to the concentration of children in this part of the distribution. In addition, children in households in the higher quintiles are more likely to be attending private schools and an allocation is not made in these cases. Free school meals and welfare milk go predominantly to lower income groups, where children are more likely to have school meals provided free of charge.

The benefit from the health service is estimated according to the age and sex of the household members rather than their actual use of the service, as the EFS does not contain this information (Appendix 2, paragraph 40). The assigned benefit is relatively high for young children, low in later childhood and through the adult years until it begins to rise from late middle age onwards. This benefit is similar in the first four quintiles and lower in the top group, as shown in Table 10. This pattern is a reflection of the demographic composition of households. Studies by Sefton have attempted to allow for variations in use of the health service according to socio-economic characteristics.

The benefit given to households for the National Health Service has risen in recent

years, reflecting increased government spending on health. Throughout the 1990s, it was equivalent to around 9 per cent of average post-tax income for non-retired households. From 2001/02 onwards, although it has fluctuated year on year, the benefit has increased and by 2007/08 was equivalent to 11 per cent of post-tax income, or an average of £2,800 per year.

The housing subsidy, which excludes housing benefit (Appendix 2, paragraph 41), fell in the years leading to 2006/07, as the proportion of households in public sector, housing association and Registered Social Landlord housing has declined. However, due to a slight change to the methodology of calculation, the average value attributed to housing subsidy rose slightly between 2006/07 and 2007/08.

Travel subsidies cover the support payments made to bus and train operating companies. The use of public transport by non-retired households is partly related to the need to travel to work and therefore to the number of economically active people in a household. This results in estimates of these subsidies being higher for households in higher income quintiles. This pattern is also due to London and the South East having higher levels of commuting by public transport together with higher than average household incomes.

Taken together, the absolute value of these benefits in kind declines as household income increases. The ratio of benefits in kind to post-tax income decreases from 101 per cent for the lowest quintile group to 7 per cent for the highest. This indicates that these benefits contribute to the reduction of inequality.

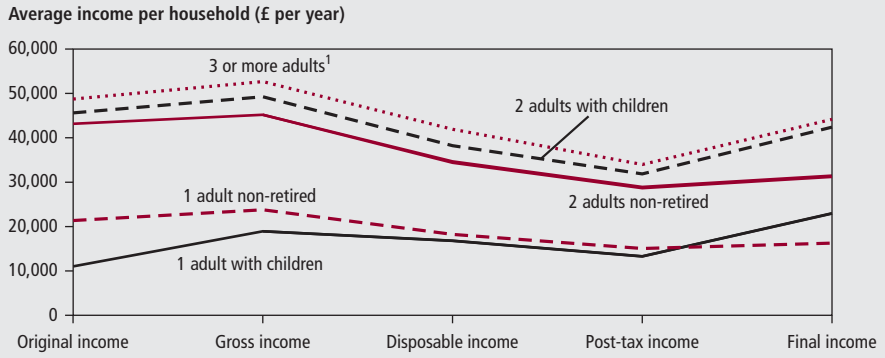
The effects of taxes and benefits by household type

The tax and benefit systems affect different types of household in different ways reflecting, in part, the number and ages of people within each household type. Of the types of non-retired households shown in **Figure 6**, only those containing one adult and children make significant net gains, with average final incomes of £23,000 per year compared with original incomes of £11,000. Households with two adults and three or more children, and households with three or more adults with children are also net beneficiaries, but to a smaller extent.

Original income is strongly related to the number of adults in the household. For two adult households, those with children have broadly similar levels of original income to those without, but they receive more cash benefits such as tax credits and child benefit than those without children. Final incomes are also higher for those with children due to the value assigned to education services.

For one adult households, original income is much lower for those with children as the adult is less likely to be economically active. Benefits, both in cash and in kind, are significantly higher for those with children.

Figure 6
Income stages by non-retired household types, 2007/08



Note:
1 With or without children.

Results for retired households

In this analysis retired households are those where the income of retired household members accounts for more than half of the household gross income (see Appendix 2, paragraph 9 for the definition of a retired person). These households have quite distinct income and expenditure patterns. The tax and benefit systems affect them in different ways from non-retired households.

Retired households are much more likely to be towards the bottom of the income distribution. Of retired households with two or more adults, 63 per cent are in the bottom two quintile groups. One adult male households are slightly less concentrated towards the bottom of the income distribution, with 54 per cent in the lowest two quintiles. However, among one adult female households, which outnumber one adult male households by about two and a half to one, 60 per cent are in the bottom two quintiles.

Among retired households, there is a high degree of inequality in income before taxes and benefits. **Table 11** shows that, before government intervention, the richest fifth of retired households receive 57 per cent of total original income, while the Gini coefficient for this measure of income is 64 per cent. Both these measures are higher (showing more inequality) than equivalent figures for non-retired households. After the impact of taxes and benefits there is a large reduction in inequality. Cash benefits

Table 11
Percentage shares of household income and Gini coefficients[1] for RETIRED households, 2007/08

	Percentage shares of equivalised income for RETIRED households[2]			
	Original income	Gross income	Disposable income	Post-tax income
Quintile group[2]				
Bottom	3	9	9	8
2nd	7	14	14	14
3rd	12	17	18	18
4th	21	22	22	22
Top	57	39	37	38
All households	100	100	100	100
Decile group[2]				
Bottom	1	4	4	3
Top	42	25	23	24
Gini coefficient (per cent)	*64*	*29*	*27*	*31*

Source: Office for National Statistics

Notes:
1 This is a measure of the dispersion of each definition of income (see Appendix 2, paragraph 53).
2 Households are ranked by equivalised disposable income.

Table 12
Summary of the effects of taxes and benefits on RETIRED households by quintile groups,[1] 2007/08

	Quintile groups of RETIRED households[1]					
	Bottom	2nd	3rd	4th	Top	All retired households
Income, taxes and benefits per household (£ per year)						
Original income						
Earnings	55	122	471	538	1 049	447
Occupational pensions	981	2 458	4 234	7 118	17 116	6 381
Investment income	459	482	550	1 067	6 756	1 863
Other income	43	106	104	140	64	91
Total original income	1 537	3 168	5 359	8 863	24 985	8 782
plus Contributory benefits	5 864	6 997	6 949	7 119	6 950	6 776
Non-contributory benefits	988	2 011	2 794	2 683	2 370	2 169
Total cash benefits	6 853	9 008	9 743	9 802	9 320	8 945
Gross income	8 390	12 176	15 102	18 665	34 306	17 727
less Income tax[2]	149	365	694	1 282	4 904	1 479
Employees' NIC	8	3	31	22	69	27
Council tax & Northern Ireland rates[3]	873	715	690	868	1 224	874
Disposable income	7 360	11 092	13 687	16 493	28 109	15 348
less Indirect taxes	2 327	2 387	2 688	2 914	4 364	2 936
Post-tax income	5 033	8 706	10 999	13 579	23 745	12 412
plus National health service	5 421	5 470	4 972	5 327	5 128	5 264
Housing subsidy	15	30	37	30	16	26
Other benefits in kind	320	373	160	219	158	246
Final income	10 789	14 579	16 167	19 154	29 046	17 947
Cash benefits as a percentage of gross income	82	74	65	53	27	50
Retirement pension as a percentage of cash benefits	84	75	70	72	73	74

Source: Office for National Statistics

Notes:

1 Households are ranked by equivalised disposable income.
2 After deducting tax credits and tax relief at source on life assurance premiums.
3 Council tax and Northern Ireland rates after deducting discounts, council tax benefit and rates rebates.

play by far the largest part in bringing about this reduction. Payment of direct taxes makes a further, though much smaller, contribution. Payments of indirect taxes result in an increase in inequality.

Overall, retired households receive an average of £8,800 per year in original income with most of this coming from occupational pensions and investments (**Table 12**). Original income ranges from £1,500 for the bottom quintile group to £25,000 per year for the top. On the other hand, amounts received from cash benefits vary less across the distribution. On average, households in the bottom fifth receive around £6,900 per year from this source, while those in the second to fifth quintile groups receive between £9,000 and £9,800 per year. These cash benefits make up large proportions of the gross incomes for the bottom four quintiles ranging from 82 per cent for the bottom quintile group to 53 per cent for the fourth quintile group. The top fifth are much less dependent on cash benefits – these account for only 27 per cent of their gross incomes.

Most retired people will have made contributions to the National Insurance Fund throughout their working lives. Many of the benefits which retired households receive are paid out of this fund in the form of contributory benefits. The most significant of these is the state retirement pension, which on average accounts for three-quarters of retired households' cash benefits.

Non-contributory benefits are lowest in the bottom two quintile groups. Housing benefit and disability benefits can sometimes make up a significant proportion of the income of retired households, who as a result will appear higher up the income distribution. However, this does not necessarily mean that they have a higher standard of living. Households receiving housing benefit are likely to have higher housing costs than owner occupiers (who may own their property outright), and similarly the income from disability benefits may be offset by additional costs incurred by the individual due to their illness or disability.

Retired households derive significant benefits from health services. Health benefit is spread fairly evenly between retired households and in 2007/08 was worth an average of £5,300. This is close to twice the figure for non-retired households, and increases their post tax income by 42 per cent. The benefits received by retired households from travel subsidies are mainly for bus travel, particularly in the form of concessionary fares and passes for senior citizens and, since these are not usually means-tested, there is no particular relationship with income.

Overall, retired households are major beneficiaries from redistribution through the tax and benefit system. Retired households with two or more adults have an average original income of £13,100, but a final income of £22,200. The corresponding figures for one adult retired households are £5,100 and £14,300. Among one adult households, women have a lower original income than men, but after the addition of benefits and the deduction of taxes, the differences are greatly reduced.

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ARTICLE

Implementation of SIC 2007 across the Government Statistical Service (GSS)

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SUMMARY

Standard Industrial Classification (SIC) is a method of classifying businesses by their type of economic activity. The classification is used in the collection and presentation of data across the Government Statistical Service (GSS) and for administrative purposes and by government and non-government bodies as a convenient way of classifying industrial activities into a uniform and common structure. The UK's SIC has been revised six times since its introduction in 1948, but SIC 2007 represents the first major revision since 1992 and follows a series of consultations in conjunction with a revision of the European Union's industrial classification system. This article give an overview of ONS's progress over the last year towards carrying out the revision and discusses the wider impact across the GSS.

ONS surveys

Work over the last year has continued in order to meet the SIC 2007 revision timetable as set out by Eurostat. The Annual Business Inquiry (ABI) and PRODCOM (PROducts of the European COMmunity) both now use the new classification for results related to 2008 and onwards, and short term statistics have been supplied to Eurostat on the new SIC 2007 basis since the start of 2009. This has been achieved by using conversion matrices for the interim period until 2010 when the surveys will be converted.

Planning for the latter phases of the implementation project has also continued with some changes to the timetable following last years 'SIC 2007: implementation in ONS' article in the August 2008 edition of ELMR : www.statistics.gov.uk/cci/article.asp?id=2034

- the prices surveys (PPI and SPPI) will now be based on SIC 2007 from June 2010 and not January 2010, a more realistic timeframe
- the quarterly International Trade in Services (ITIS) survey moved to the new SIC basis from 2009 Q1, in order to run the quarterly survey in line with the annual ITIS survey, which will also adopt SIC 2007 during 2009

With Labour Market Statistics, ONS has firmed up plans for implementation and they will move to SIC 2007 in four tranches - the greater part of the transition occurring with the June 2010 Labour Market Statistics Statistical Bulletin.

Progress towards implementation: Labour Market Statistics

The following schedule outlines the progress towards the implementation of SIC 2007 in Labour Market Statistics.

May 2009

The Labour Force Survey (LFS) did not convert from SIC 1992 to the revised SIC 2003, and so the 'LFS microdata' moved directly from SIC 1992 to SIC 2007 from May 2009 to meet European regulatory requirements, although data on a SIC 1992 basis will continue to be available to users. However, to ensure consistency with other published labour market aggregate estimates, industrial based estimates published in the monthly integrated Statistical Bulletin of Labour Market Statistics, and the web based Historical Quarterly Supplement, will not move to a SIC 2007 basis until June 2010. Further details are given below.

November 2009

The next Labour Market outputs to be published on a SIC 2007 basis will be the 2008 results from the Annual Survey of Hours and Earnings (ASHE) and the Annual Business Inquiry (ABI/1) in November and December 2009 respectively.

June 2010

The monthly Labour Market Statistics Statistical Bulletin release includes industrial

based estimates of Workforce Jobs (Table 5(2)), Vacancies (Table 22) and Redundancies (Table 24). These tables will move to a SIC 2007 basis in the June 2010 edition. ONS plans to provide historical back data for the SIC 2007 estimates for as far back as currently existing SIC 2003 estimates (for example, back to 1978 for Workforce Jobs).

The SIC 2007 Workforce Jobs table is expected to show more detailed industrial breakdown than the current Table 5(2). It is expected that the SIC 2007 Vacancies and Redundancies tables will show a less detailed breakdown than the SIC 2007 Workforce Jobs table for data quality reasons.

The industrial breakdown of redundancies, shown at Table 24 of the Labour Market Statistical Bulletin, is not seasonally adjusted and is for calendar quarters only. With the move to SIC 2007 in June 2010, ONS plans to improve the presentation of vacancies by industry by showing seasonally adjusted estimates for rolling three-monthly time periods.

2011

Productivity estimates will not move to SIC 2007 until 2011 for consistency with National Accounts, which will go over to SIC 2007 in 2011.

Non-ONS surveys

Government Statistical Service (GSS) staff in policy departments and the devolved administrations are responsible for the implementation of the SIC 2007 for non-ONS surveys or administrative sources. This activity is being reviewed and monitored through a GSS Steering group responsible for co-ordinating the implementation of SIC 2007 across the GSS, including ONS surveys and activities.

The Steering group is chaired by the Department for Business, Innovation and Skills (BIS) and includes representatives from ONS and policy departments which have a strong 'industry' interest, such as Defence Analytical Services Agency, Bank of England and Revenue and Customs. A representative from the Steering group sits as a GSS representative on the ONS SIC 2007 Implementation Project board.

Where a survey is undertaken by ONS on behalf of another department, in the majority of cases the ONS is taking responsibility for implementation on behalf of the department. Examples include the Family Resources survey, a household survey undertaken by ONS on behalf of the Department for Work and Pensions, and the UK Innovation survey, undertaken by the ONS on behalf of BIS.

Departments were contacted in 2007/08 to identify non-ONS surveys and administrative sources which need to move to SIC 2007. This exercise identified 58 sources, with 20 being from Northern Ireland. They are a mixture of business and household surveys and administrative databases as summarised in **Table 1**. A number of departments are planning to implement SIC 2007 during 2009 and some have already done so.

With the exception of those of Northern Ireland, the majority of the sources do not impact on ONS outputs and are stand-alone surveys, often undertaken on an annual or more occasional basis.

With the support and agreement of the Statistical Head of Profession in each department, SIC 2007 should be brought in everywhere by 2011 when the UK National Accounts and outstanding ONS sources are converted.

The majority of the Northern Ireland sources are regular surveys which mirror key ONS surveys where coverage is limited to Great Britain (GB). GB and Northern Ireland outputs are combined by the ONS to produce UK estimates. The Northern Ireland Administration has collaborated with the ONS on an implementation timetable to ensure that UK estimates are preserved on a consistent basis for business and household surveys covering key economic outputs such as Gross Value Added (GVA) and employment.

Key Transitional Issues

The ONS has already introduced SIC 2007 in some key surveys, including the ABI and the LFS. Implementation is now entering a transitional stage with some outputs published on the new SIC 2007 basis and the majority of outputs remaining on the existing SIC 2003 basis. Over the next two years the balance will move towards outputs being published on a SIC 2007 basis until 2011 when National Accounts and Productivity outputs are converted and SIC 2003 will no longer be used.

There may be timing differences between when SIC 2007 is implemented into a survey collection and when the corresponding outputs are published on the new basis. Labour Market Statistics is an example: the Labour Force Survey has now brought in SIC 2007 from 2009 Q1, but the monthly Labour Market Statistics Bulletin, which draws on a range of survey outputs in addition to the LFS, will continue to publish on the SIC 1992/2003 basis until June 2010. However, analysts who make use of the 2009 LFS micro-datasets will only have access to SIC 2007 based industry characteristics. A conversion matrix is available from ONS to convert from SIC 2007 back to SIC 1992, but only down to two digit SIC detail.

Users need to anticipate that where analyses draw on a number of sources, there may be a lack of coherence in the industry classification for some time, both in terms of outputs and the availability of consistent time-series. Some back series will be published for short-terms outputs, but only on a limited basis for annual surveys. Of necessity back-series will be of a limited length and generally at a higher level of aggregation with the focus on key

Table 1
Summary of non-ONS sources requiring SIC 2007 implementation

Department	Number	Type	Frequency	Implementation plans
BIS	5	Business / Higher Education	Annual / Occasional	2009/10
BoE	1	Administrative	Quarterly	2010/11
DASA	1	Administrative		2008
DCSF	2	Household / Young people	Occasional	2009 (industry in some sweeps)
DCMS	1	Household	Annual	2009/10
DEFRA	2	Business	Annual / Occasional	2009/10
DETINI	12	Business	Annual / Quarterly	2009/10
DFPNI	8	Household	Quarterly / Longitudinal	2009
DfT	1	Business	Annual	To be agreed
DWP	4	Business / Administrative	Annual	To be agreed
Forestry	1	Business	Occasional	2010 or later
HMRC	5	Administrative	Continuous	2008-10
HSE	3	Administrative	Continuous	2009
Insolvency	3	Administrative	Quarterly outputs	2009/10 or later
Learning & Skills Council	3	Administrative	Occasional	2009
Scotland	2	Business	Annual	2009
Wales	4	Administrative / Household	Annual / Occasional	To be agreed

Source: GSS steering group for implementing SIC 2007

variables and outputs. ONS is able to advise on the availability and feasibility of using conversion matrices to provide consistent historical time-series for other more detailed outputs.

During this transitional period, Parliamentary Questions (PQs) will be answered on the old SIC 2003 basis until survey outputs are published on the new SIC 2007 basis. For example, PQs that use LFS data should continue to answer on the SIC 1992 basis until June 2010 when the Statistics Bulletin starts using SIC 2007. However, if a PQ requests data in SIC 2007 form, for example to compare to another series that has already changed over, it will be given if it is available. There may also be difficulties with continuing to publish on the old basis due to the limited availability of and quality of conversion matrices, eg below two digit SIC for the LFS.

While Northern Ireland has co-ordinated its implementation timetable with the ONS to ensure that UK consistent data are maintained, there are some differences in the timing of publication between Northern Ireland and ONS. Northern Ireland has now implemented SIC 2007 into its employment census and started publishing employee jobs industry statistics on their web-site on a SIC 2007 basis, but the rest of the UK will not make the transition until 2010. Northern Ireland needed to choose between implementing either a year ahead or a year behind ONS and decided on the former due to the Eurostat timetable. In the interim period, Northern Ireland is supplying ONS with SIC 2003 based employee jobs estimates using conversion matrices and these are available to other users on request from Northern Ireland Statistics and Research Agency (NISRA).

As mentioned, ONS has now started to supply Eurostat with short term statistics on a SIC 2007 basis, which is a legal requirement. With the exception of LFS employment, this is being derived by the UK from conversion matrices since most short-term surveys will not be converted until 2010. Existing data supplied to Eurostat in this interim period will be revised following the implementation of SIC 2007 into these surveys and will include back-cast data for a number of years to provide a coherent time-series. Users who access Eurostat data need to be aware that the data may be of lesser quality while conversion matrices are being used. The Eurostat web-site is not transparent in terms of which countries have already implemented SIC 2007 or are adopting the UK approach of using conversion matrices on an interim basis. Hence the coherence of Eurostat data between countries may be weakened for the interim period until all countries have implemented the new classification.

While Eurostat has required, by regulation, that NACE Rev2 (the European version of SIC 2007) is implemented across member states to an agreed timetable, this is not the case for non-EU countries. In time, this will impact on the coherence of country statistics published by organisations such as the OECD and World Bank. This may be a problem for data relating to non-EU countries, particularly major countries such as the US, Canada and Japan and the key developing BRIC countries (Brazil, Russia, India and China). The GSS Steering group is planning to investigate any potential coherence issues with the OECD and World Bank so that users can be advised both on the expected impacts and on any transitional arrangements for the implementation of SITC Rev4 (the UN version of SIC 2007).

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Key time series

1 National accounts aggregates

Last updated: 24/07/09

Seasonally adjusted

	£ million		Indices (2003 = 100)						
	At current prices		Value indices at current prices		Chained volume indices			Implied deflators[3]	
	Gross domestic product (GDP) at market prices	Gross value added (GVA) at basic prices	GDP at market prices[1]	GVA at basic prices	Gross national disposable income at market prices[2]	GDP at market prices	GVA at basic prices	GDP at market prices	GVA at basic prices
	YBHA	ABML	YBEU	YBEX	YBFP	YBEZ	CGCE	YBGB	CGBV
2004	1,202,956	1,070,951	95.9	95.9	98.4	97.9	97.7	98.0	98.2
2005	1,254,058	1,116,648	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2006	1,325,795	1,181,141	105.7	105.8	101.7	102.9	103.0	102.8	102.7
2007	1,398,882	1,245,735	111.5	111.6	105.4	105.5	105.7	105.7	105.6
2008	1,446,113	1,296,332	115.3	116.1	107.0	106.3	106.5	108.5	109.0
2004 Q1	294,112	261,280	93.8	93.6	97.9	97.2	96.9	96.5	96.5
2004 Q2	299,142	265,977	95.4	95.3	98.0	97.8	97.6	97.6	97.6
2004 Q3	302,115	269,503	96.4	96.5	97.8	97.9	97.7	98.5	98.8
2004 Q4	307,587	274,191	98.1	98.2	100.0	98.7	98.5	99.5	99.7
2005 Q1	308,723	274,756	98.5	98.4	99.6	99.0	99.0	99.5	99.4
2005 Q2	313,479	279,258	100.0	100.0	101.1	99.7	99.7	100.3	100.3
2005 Q3	313,378	278,669	100.0	99.8	99.2	100.3	100.3	99.6	99.6
2005 Q4	318,478	283,965	101.6	101.7	100.0	101.0	101.0	100.6	100.7
2006 Q1	326,085	291,002	104.0	104.2	101.2	102.1	102.2	101.9	102.0
2006 Q2	327,836	291,886	104.6	104.6	101.5	102.5	102.6	102.0	101.9
2006 Q3	333,542	297,046	106.4	106.4	101.8	103.0	103.1	103.3	103.2
2006 Q4	338,332	301,207	107.9	107.9	102.3	103.8	104.0	103.9	103.8
2007 Q1	344,238	306,154	109.8	109.7	103.6	104.6	104.7	105.0	104.7
2007 Q2	348,010	309,585	111.0	110.9	104.7	105.2	105.4	105.5	105.2
2007 Q3	351,635	313,159	112.2	112.2	105.1	105.8	106.0	106.0	105.8
2007 Q4	354,999	316,837	113.2	113.5	108.0	106.3	106.6	106.5	106.5
2008 Q1	362,184	323,218	115.5	115.8	109.3	107.2	107.6	107.8	107.6
2008 Q2	363,353	323,922	115.9	116.0	108.0	107.1	107.5	108.2	108.0
2008 Q3	362,179	325,676	115.5	116.7	106.7	106.3	106.5	108.6	109.5
2008 Q4	358,397	323,516	114.3	115.9	103.8	104.4	104.6	109.5	110.8
2009 Q1	347,718	315,097	110.9	112.9	101.4	101.9	102.0	108.8	110.7
2009 Q2						101.1	101.2		

Percentage change, quarter on corresponding quarter of previous year

			IHYO	ABML[4]	YBGO[4]	IHYR	ABMM[4]	IHYU	ABML/ABMM[4]
2004 Q1	*5.7*	*5.4*	*5.7*	*5.4*	*3.0*	*3.6*	*3.4*	*2.0*	*1.9*
2004 Q2	*5.6*	*5.3*	*5.6*	*5.3*	*3.4*	*3.2*	*3.2*	*2.3*	*2.1*
2004 Q3	*5.2*	*5.4*	*5.2*	*5.4*	*2.5*	*2.6*	*2.6*	*2.6*	*2.8*
2004 Q4	*5.7*	*5.9*	*5.7*	*5.9*	*3.0*	*2.4*	*2.4*	*3.1*	*3.4*
2005 Q1	*5.0*	*5.2*	*5.0*	*5.2*	*1.8*	*1.8*	*2.1*	*3.1*	*3.0*
2005 Q2	*4.8*	*5.0*	*4.8*	*5.0*	*3.2*	*2.0*	*2.2*	*2.8*	*2.7*
2005 Q3	*3.7*	*3.4*	*3.7*	*3.4*	*1.4*	*2.5*	*2.6*	*1.2*	*0.7*
2005 Q4	*3.5*	*3.6*	*3.5*	*3.6*	*0.0*	*2.4*	*2.6*	*1.1*	*1.0*
2006 Q1	*5.6*	*5.9*	*5.6*	*5.9*	*1.6*	*3.2*	*3.2*	*2.4*	*2.6*
2006 Q2	*4.6*	*4.5*	*4.6*	*4.5*	*0.4*	*2.8*	*2.9*	*1.7*	*1.5*
2006 Q3	*6.4*	*6.6*	*6.4*	*6.6*	*2.6*	*2.7*	*2.9*	*3.7*	*3.6*
2006 Q4	*6.2*	*6.1*	*6.2*	*6.1*	*2.3*	*2.8*	*2.9*	*3.3*	*3.1*
2007 Q1	*5.6*	*5.2*	*5.6*	*5.2*	*2.3*	*2.4*	*2.5*	*3.1*	*2.7*
2007 Q2	*6.2*	*6.1*	*6.2*	*6.1*	*3.1*	*2.7*	*2.7*	*3.4*	*3.3*
2007 Q3	*5.4*	*5.4*	*5.4*	*5.4*	*3.3*	*2.7*	*2.8*	*2.6*	*2.5*
2007 Q4	*4.9*	*5.2*	*4.9*	*5.2*	*5.6*	*2.4*	*2.6*	*2.5*	*2.6*
2008 Q1	*5.2*	*5.6*	*5.2*	*5.6*	*5.5*	*2.5*	*2.8*	*2.7*	*2.7*
2008 Q2	*4.4*	*4.6*	*4.4*	*4.6*	*3.1*	*1.8*	*1.9*	*2.6*	*2.6*
2008 Q3	*3.0*	*4.0*	*3.0*	*4.0*	*1.5*	*0.5*	*0.5*	*2.5*	*3.5*
2008 Q4	*1.0*	*2.1*	*1.0*	*2.1*	*–3.9*	*–1.8*	*–1.9*	*2.8*	*4.1*
2009 Q1	*–4.0*	*–2.5*	*–4.0*	*–2.5*	*–7.2*	*–4.9*	*–5.2*	*1.0*	*2.8*
2009 Q2						*–5.6*	*–5.9*		

Notes:

Source: Office for National Statistics

1 "Money GDP".
2 This series is only updated once a quarter, in line with the full quarterly national accounts data set.
3 Based on chained volume measures and current price estimates of expenditure components of GDP.
4 Derived from these identification (CDID) codes.

2 Gross domestic product: by category of expenditure

Last updated: 24/07/09

£ million, chained volume measures, reference year 2003, seasonally adjusted

	Domestic expenditure on goods and services at market prices											
	Final consumption expenditure			Gross capital formation								
	Households	Non-profit institutions[1]	General government	Gross fixed capital formation	Changes in inventories[2]	Acquisitions less disposals of valuables	Total	Exports of goods and services	Gross final expenditure	*less* imports of goods and services	Statistical discrepancy (expenditure)	Gross domestic at product market prices
	ABJR	HAYO	NMRY	NPQT	CAFU	NPJR	YBIM	IKBK	ABMG	IKBL	GIXS	ABMI
2004	766,856	30,827	262,917	204,756	4,371	–39	1,270,173	306,582	1,576,497	348,894	0	1,227,387
2005	784,140	30,824	268,088	209,758	4,814	–377	1,296,905	330,794	1,627,699	373,641	0	1,254,058
2006	795,595	31,868	272,271	223,305	4,575	304	1,328,132	368,076	1,696,207	406,374	0	1,289,833
2007	815,157	30,040	275,488	240,613	6,561	562	1,368,506	357,677	1,726,183	403,341	0	1,322,842
2008	822,689	32,984	283,262	233,846	1,812	1,296	1,375,189	360,517	1,735,706	400,898	–2,156	1,332,652
2004 Q1	189,235	7,875	65,615	50,706	–684	–113	314,855	74,389	389,121	84,284	0	304,784
2004 Q2	191,672	7,737	65,323	51,680	603	65	316,727	76,058	392,705	86,139	0	306,510
2004 Q3	192,642	7,664	65,746	51,351	936	8	317,863	76,895	394,700	87,840	0	306,806
2004 Q4	193,307	7,551	66,233	51,019	3,516	1	320,728	79,240	399,971	90,631	0	309,287
2005 Q1	194,294	7,745	66,418	51,092	3,151	–45	322,029	77,762	399,757	89,398	0	310,313
2005 Q2	195,610	7,676	66,986	51,273	1,895	90	323,588	80,830	404,405	91,846	0	312,550
2005 Q3	196,450	7,687	67,265	53,964	187	–292	325,046	84,250	409,304	94,834	0	314,490
2005 Q4	197,786	7,716	67,419	53,429	–419	–130	326,242	87,952	414,233	97,563	0	316,705
2006 Q1	197,278	7,941	67,862	53,372	1,593	106	328,906	95,835	424,741	104,616	0	320,125
2006 Q2	199,392	8,025	67,692	54,499	–153	241	329,912	97,932	427,844	106,555	0	321,289
2006 Q3	198,692	8,012	68,232	56,780	1,844	–30	333,365	86,854	420,220	97,364	0	322,855
2006 Q4	200,233	7,890	68,485	58,654	1,291	–13	335,949	87,455	423,402	97,839	0	325,564
2007 Q1	202,299	7,447	68,394	59,659	1,595	76	338,804	88,279	427,083	99,211	0	327,872
2007 Q2	203,492	7,413	68,650	59,620	655	348	339,510	88,650	428,160	98,193	0	329,967
2007 Q3	204,321	7,471	69,165	59,777	2,086	45	343,909	90,348	434,256	102,647	0	331,609
2007 Q4	205,045	7,709	69,279	61,557	2,225	93	346,283	90,400	436,684	103,290	0	333,394
2008 Q1	207,200	8,007	69,944	60,495	1,136	211	347,891	91,581	439,472	103,004	–425	336,042
2008 Q2	206,416	8,322	70,631	59,115	1,835	438	346,848	91,158	438,005	101,611	–527	335,868
2008 Q3	205,655	8,376	70,970	57,459	1,440	367	344,103	90,769	434,872	100,904	–591	333,377
2008 Q4	203,418	8,279	71,717	56,777	–2,599	280	336,347	87,009	423,357	95,379	–613	327,365
2009 Q1	200,830	8,017	71,875	52,497		278	328,072	80,971	409,043	89,014	–517	319,512
2009 Q2												316,956

Percentage change, quarter on corresponding quarter of previous year

										IHYR
2004 Q1	*3.4*	*1.6*	*4.7*	*4.4*	*4.4*	*0.2*	*3.5*	*3.3*	*3.6*
2004 Q2	*3.3*	*0.7*	*3.2*	*8.0*	*3.9*	*5.3*	*4.2*	*7.6*	*3.2*
2004 Q3	*3.2*	*–0.6*	*2.6*	*7.7*	*3.1*	*6.8*	*3.8*	*8.5*	*2.6*
2004 Q4	*3.0*	*–2.1*	*1.7*	*2.9*	*2.7*	*7.9*	*3.7*	*8.4*	*2.4*
2005 Q1	*2.7*	*–1.7*	*1.2*	*0.8*	*2.3*	*4.5*	*2.7*	*6.1*	*1.8*
2005 Q2	*2.1*	*–0.8*	*2.5*	*–0.8*	*2.2*	*6.3*	*3.0*	*6.6*	*2.0*
2005 Q3	*2.0*	*0.3*	*2.3*	*5.1*	*2.3*	*9.6*	*3.7*	*8.0*	*2.5*
2005 Q4	*2.3*	*2.2*	*1.8*	*4.7*	*1.7*	*11.0*	*3.6*	*7.6*	*2.4*
2006 Q1	*1.5*	*2.5*	*2.2*	*4.5*	*2.1*	*23.2*	*6.2*	*17.0*	*3.2*
2006 Q2	*1.9*	*4.5*	*1.1*	*6.3*	*2.0*	*21.2*	*5.8*	*16.0*	*2.8*
2006 Q3	*1.1*	*4.2*	*1.4*	*5.2*	*2.6*	*3.1*	*2.7*	*2.7*	*2.7*
2006 Q4	*1.2*	*2.3*	*1.6*	*9.8*	*3.0*	*–0.6*	*2.2*	*0.3*	*2.8*
2007 Q1	*2.5*	*–6.2*	*0.8*	*11.8*	*3.0*	*–7.9*	*0.6*	*–5.2*	*2.4*
2007 Q2	*2.1*	*–7.6*	*1.4*	*9.4*	*2.9*	*–9.5*	*0.1*	*–7.8*	*2.7*
2007 Q3	*2.8*	*–6.8*	*1.4*	*5.3*	*3.2*	*4.0*	*3.3*	*5.4*	*2.7*
2007 Q4	*2.4*	*–2.3*	*1.2*	*4.9*	*3.1*	*3.4*	*3.1*	*5.6*	*2.4*
2008 Q1	*2.4*	*7.5*	*2.3*	*1.4*	*2.7*	*3.7*	*2.9*	*3.8*	*2.5*
2008 Q2	*1.4*	*12.3*	*2.9*	*–0.8*	*2.2*	*2.8*	*2.3*	*3.5*	*1.8*
2008 Q3	*0.7*	*12.1*	*2.6*	*–3.9*	*0.1*	*0.5*	*0.1*	*–1.7*	*0.5*
2008 Q4	*–0.8*	*7.4*	*3.5*	*–7.8*	*–2.9*	*–3.8*	*–3.1*	*–7.7*	*–1.8*
2009 Q1	*–3.1*	*0.1*	*2.8*	*–13.2*	*–5.7*	*–11.6*	*–6.9*	*–13.6*	*–4.9*
2009 Q2									*–5.6*

Notes:

Source: Office for National Statistics

1 Non-profit institutions serving households (NPISH).
2 This series includes a quarterly alignment adjustment.

3 Labour market summary

Last updated: 15/07/09

United Kingdom (thousands), seasonally adjusted

	All aged 16 and over								
	All	Total economically active	Total in employment	Unemployed	Economically inactive	Economic activity rate (%)	Employment rate (%)	Unemployment rate (%)	Economic inactivity rate (%)
	1	2	3	4	5	6	7	8	9
All persons	MGSL	MGSF	MGRZ	MGSC	MGSI	MGWG	MGSR	MGSX	YBTC
Mar–May 2007	48,587	30,830	29,157	1,673	17,757	*63.5*	*60.0*	*5.4*	*36.5*
Mar–May 2008	48,975	31,169	29,541	1,628	17,805	*63.6*	*60.3*	*5.2*	*36.4*
Jun–Aug 2008	49,073	31,211	29,419	1,792	17,862	*63.6*	*60.0*	*5.7*	*36.4*
Sep–Nov 2008	49,176	31,316	29,393	1,923	17,860	*63.7*	*59.8*	*6.1*	*36.3*
Dec–Feb 2009	49,278	31,367	29,267	2,100	17,911	*63.7*	*59.4*	*6.7*	*36.3*
Mar–May 2009	49,381	31,379	28,998	2,381	18,002	*63.5*	*58.7*	*7.6*	*36.5*
Male	MGSM	MGSG	MGSA	MGSD	MGSJ	MGWH	MGSS	MGSY	YBTD
Mar–May 2007	23,621	16,765	15,802	963	6,856	*71.0*	*66.9*	*5.7*	*29.0*
Mar–May 2008	23,844	16,902	15,953	949	6,942	*70.9*	*66.9*	*5.6*	*29.1*
Jun–Aug 2008	23,900	16,927	15,867	1,060	6,972	*70.8*	*66.4*	*6.3*	*29.2*
Sep–Nov 2008	23,957	16,986	15,839	1,147	6,971	*70.9*	*66.1*	*6.8*	*29.1*
Dec–Feb 2009	24,014	17,006	15,746	1,261	7,008	*70.8*	*65.6*	*7.4*	*29.2*
Mar–May 2009	24,071	17,012	15,554	1,458	7,059	*70.7*	*64.6*	*8.6*	*29.3*
Female	MGSN	MGSH	MGSB	MGSE	MGSK	MGWI	MGST	MGSZ	YBTE
Mar–May 2007	24,966	14,065	13,355	710	10,901	*56.3*	*53.5*	*5.0*	*43.7*
Mar–May 2008	25,131	14,267	13,588	679	10,864	*56.8*	*54.1*	*4.8*	*43.2*
Jun–Aug 2008	25,173	14,284	13,552	732	10,889	*56.7*	*53.8*	*5.1*	*43.3*
Sep–Nov 2008	25,219	14,329	13,554	775	10,889	*56.8*	*53.7*	*5.4*	*43.2*
Dec–Feb 2009	25,264	14,360	13,522	839	10,904	*56.8*	*53.5*	*5.8*	*43.2*
Mar–May 2009	25,309	14,367	13,443	923	10,943	*56.8*	*53.1*	*6.4*	*43.2*

	All aged 16 to 59/64								
	All	Total economically active	Total in employment	Unemployed	Economically inactive	Economic activity rate (%)	Employment rate (%)	Unemployment rate (%)	Economic inactivity rate (%)
	10	11	12	13	14	15	16	17	18
All persons	YBTF	YBSK	YBSE	YBSH	YBSN	MGSO	MGSU	YBTI	YBTL
Mar–May 2007	37,528	29,595	27,948	1,647	7,932	*78.9*	*74.5*	*5.6*	*21.1*
Mar–May 2008	37,702	29,833	28,229	1,604	7,869	*79.1*	*74.9*	*5.4*	*20.9*
Jun–Aug 2008	37,748	29,862	28,094	1,768	7,886	*79.1*	*74.4*	*5.9*	*20.9*
Sep–Nov 2008	37,799	29,943	28,051	1,892	7,856	*79.2*	*74.2*	*6.3*	*20.8*
Dec–Feb 2009	37,850	29,999	27,933	2,066	7,851	*79.3*	*73.8*	*6.9*	*20.7*
Mar–May 2009	37,901	29,986	27,638	2,348	7,915	*79.1*	*72.9*	*7.8*	*20.9*
Male	YBTG	YBSL	YBSF	YBSI	YBSO	MGSP	MGSV	YBTJ	YBTM
Mar–May 2007	19,518	16,354	15,401	953	3,164	*83.8*	*78.9*	*5.8*	*16.2*
Mar–May 2008	19,661	16,449	15,512	938	3,211	*83.7*	*78.9*	*5.7*	*16.3*
Jun–Aug 2008	19,694	16,475	15,426	1,048	3,220	*83.7*	*78.3*	*6.4*	*16.3*
Sep–Nov 2008	19,727	16,525	15,391	1,133	3,202	*83.8*	*78.0*	*6.9*	*16.2*
Dec–Feb 2009	19,759	16,557	15,309	1,248	3,202	*83.8*	*77.5*	*7.5*	*16.2*
Mar–May 2009	19,791	16,561	15,115	1,446	3,231	*83.7*	*76.4*	*8.7*	*16.3*
Female	YBTH	YBSM	YBSG	YBSJ	YBSP	MGSQ	MGSW	YBTK	YBTN
Mar–May 2007	18,010	13,241	12,547	694	4,769	*73.5*	*69.7*	*5.2*	*26.5*
Mar–May 2008	18,041	13,384	12,717	666	4,658	*74.2*	*70.5*	*5.0*	*25.8*
Jun–Aug 2008	18,053	13,387	12,668	719	4,666	*74.2*	*70.2*	*5.4*	*25.8*
Sep–Nov 2008	18,072	13,418	12,660	759	4,654	*74.2*	*70.1*	*5.7*	*25.8*
Dec–Feb 2009	18,091	13,442	12,624	818	4,649	*74.3*	*69.8*	*6.1*	*25.7*
Mar–May 2009	18,110	13,425	12,523	902	4,685	*74.1*	*69.1*	*6.7*	*25.9*

Notes:

Relationship between columns: 1 = 2 + 5; 2 = 3 + 4; 6 = 2/1; 7 = 3/1; 8 = 4/2; 9 = 5/1; 10 = 11 + 14; 11 = 12 + 13; 15 = 11/10; 16 = 12/10; 17 = 13/11; 18 = 14/10
The Labour Force Survey is a survey of the population of private households, student halls of residence and NHS accommodation.

Source: Labour Force Survey, Office for National Statistics
Labour Market Statistics Helpline: 01633 456901

4 Prices

Last updated: 14/07/09

Percentage change over 12 months

Not seasonally adjusted

	Consumer prices						Producer prices			
	Consumer prices index (CPI)			Retail prices index (RPI)			Output prices		Input prices	
	All items	CPI excluding indirect taxes (CPIY)[1]	CPI at constant tax rates (CPI-CT)	All items	All items excluding mortgage interest payments (RPIX)	All items excluding mortgage interest payments and indirect taxes (RPIY)[2]	All manufactured products	Excluding food, beverages, tobacco and petroleum products	Materials and fuels purchased by manufacturing industry	Excluding food, beverages, tobacco and petroleum products
	D7G7	EL2S	EAD6	CZBH	CDKQ	CBZX	PLLU[3]	PLLV[3,4]	RNNK[3,4]	RNNQ[3,4]
2005 Jan	1.6	1.7	1.5	3.2	2.1	2.0	1.4	0.9	7.6	5.4
2005 Feb	1.7	1.7	1.6	3.2	2.1	2.0	1.6	0.9	9.0	6.3
2005 Mar	1.9	2.0	1.8	3.2	2.4	2.3	1.8	1.0	9.3	5.8
2005 Apr	1.9	2.0	1.9	3.2	2.3	2.3	2.3	1.1	8.6	5.4
2005 May	1.9	2.0	1.8	2.9	2.1	2.2	1.6	1.0	6.2	4.6
2005 Jun	2.0	2.2	1.9	2.9	2.2	2.2	1.5	0.8	10.6	5.9
2005 Jul	2.3	2.5	2.3	2.9	2.4	2.5	2.0	1.0	13.3	7.6
2005 Aug	2.4	2.6	2.3	2.8	2.3	2.3	2.1	0.9	12.1	6.7
2005 Sep	2.5	2.6	2.4	2.7	2.5	2.5	2.3	0.9	9.3	4.9
2005 Oct	2.3	2.5	2.3	2.5	2.4	2.3	1.8	0.5	8.2	5.6
2005 Nov	2.1	2.3	2.1	2.4	2.3	2.3	1.5	0.5	13.6	8.8
2005 Dec	1.9	2.1	1.8	2.2	2.0	2.0	1.9	1.1	18.0	11.4
2006 Jan	1.9	2.1	1.9	2.4	2.3	2.3	2.5	1.4	15.8	10.1
2006 Feb	2.0	2.1	2.0	2.4	2.3	2.3	2.3	1.4	15.2	10.1
2006 Mar	1.8	1.9	1.7	2.4	2.1	2.2	2.2	1.5	13.1	9.2
2006 Apr	2.0	2.1	2.0	2.6	2.4	2.3	2.3	1.9	15.6	9.8
2006 May	2.2	2.3	2.2	3.0	2.9	2.8	2.9	2.0	13.7	8.4
2006 Jun	2.5	2.6	2.4	3.3	3.1	3.2	3.1	2.5	11.3	8.1
2006 Jul	2.4	2.4	2.3	3.3	3.1	3.2	2.6	2.1	10.6	7.7
2006 Aug	2.5	2.6	2.4	3.4	3.3	3.4	2.3	1.7	8.4	6.7
2006 Sep	2.4	2.6	2.3	3.6	3.2	3.3	1.6	1.7	5.4	5.5
2006 Oct	2.4	2.7	2.3	3.7	3.2	3.3	1.3	2.0	3.9	4.5
2006 Nov	2.7	3.0	2.6	3.9	3.4	3.6	1.4	1.9	2.3	2.8
2006 Dec	3.0	3.2	2.9	4.4	3.8	3.9	1.7	1.6	1.7	1.5
2007 Jan	2.7	2.9	2.6	4.2	3.5	3.7	1.5	1.6	–3.4	–0.5
2007 Feb	2.8	2.9	2.6	4.6	3.7	3.9	1.9	2.0	–2.1	–0.2
2007 Mar	3.1	3.1	2.9	4.8	3.9	4.0	2.2	2.2	–0.3	1.0
2007 Apr	2.8	2.9	2.6	4.5	3.6	3.7	1.8	1.8	–1.5	0.0
2007 May	2.5	2.6	2.3	4.3	3.3	3.4	1.9	1.9	0.6	1.9
2007 Jun	2.4	2.5	2.2	4.4	3.3	3.3	1.9	1.7	1.7	2.2
2007 Jul	1.9	2.0	1.7	3.8	2.7	2.6	2.0	1.8	0.3	0.6
2007 Aug	1.8	1.9	1.6	4.1	2.7	2.6	2.1	2.0	–0.2	1.0
2007 Sep	1.8	1.7	1.6	3.9	2.8	2.8	2.6	1.9	6.0	3.6
2007 Oct	2.1	1.9	1.8	4.2	3.1	3.0	3.6	1.8	9.4	4.6
2007 Nov	2.1	1.9	1.8	4.3	3.2	3.0	4.5	1.9	12.1	5.6
2007 Dec	2.1	2.0	1.9	4.0	3.1	3.1	4.7	2.2	13.2	6.9
2008 Jan	2.2	2.1	2.0	4.1	3.4	3.3	5.7	3.0	20.4	11.0
2008 Feb	2.5	2.5	2.3	4.1	3.7	3.6	5.7	2.8	20.9	11.9
2008 Mar	2.5	2.6	2.3	3.8	3.5	3.6	6.2	2.9	20.8	12.7
2008 Apr	3.0	3.0	2.7	4.2	4.0	3.9	7.4	4.1	25.3	16.6
2008 May	3.3	3.3	3.1	4.3	4.4	4.4	9.1	5.6	30.2	18.9
2008 Jun	3.8	3.9	3.6	4.6	4.8	4.9	9.8	5.9	34.1	21.1
2008 Jul	4.4	4.5	4.2	5.0	5.3	5.4	10.0	6.3	31.3	21.3
2008 Aug	4.7	4.9	4.5	4.8	5.2	5.4	9.1	5.7	29.0	20.8
2008 Sep	5.2	5.4	5.0	5.0	5.5	5.6	8.5	5.6	24.1	19.5
2008 Oct	4.5	4.7	4.3	4.2	4.7	4.9	6.7	5.0	16.0	16.9
2008 Nov	4.1	4.3	3.9	3.0	3.9	3.9	5.0	5.0	8.1	14.1
2008 Dec	3.1	4.6	4.1	0.9	2.8	3.9	4.6	5.0	3.2	12.6
2009 Jan	3.0	4.5	4.1	0.1	2.4	3.4	3.5	4.0	1.7	10.8
2009 Feb	3.2	4.6	4.2	0.0	2.5	3.5	3.0	3.7	0.8	8.9
2009 Mar	2.9	4.3	3.9	–0.4	2.2	3.2	2.0	3.2	–0.4	7.5
2009 Apr	2.3	3.8	3.4	–1.2	1.7	2.7	1.3	2.5	–5.7	2.6
2009 May	2.2	3.6	3.3	–1.1	1.6	2.6	–0.3	1.2	–8.6	–0.1
2009 Jun	1.8	3.1	2.9	–1.6	1.0	1.9	–1.2	0.1	–11.0	–2.6

Notes:

Source: Office for National Statistics

1 The taxes excluded are VAT, duties, insurance premium tax, air passenger duty and stamp duty on share transactions.
2 The taxes excluded are council tax, VAT, duties, vehicle excise duty, insurance premium tax and air passenger duty.
3 Derived from these identification (CDID) codes.
4 These derived series replace those previously shown.

NOTES TO TABLES

Identification (CDID) codes

The four-character identification code at the top of each alpha column of data is the ONS reference for that series of data on our time series database. Please quote the relevant code if you contact us about the data.

Conventions

Where figures have been rounded to the final digit, there may be an apparent slight discrepancy between the sum of the constituent items and the total shown. Although figures may be given in unrounded form to facilitate readers' calculation of percentage changes, rates of change, etc, this does not imply that the figures can be estimated to this degree of precision as they may be affected by sampling variability or imprecision in estimation methods.

The following standard symbols are used:

..	not available
-	nil or negligible
P	provisional
–	break in series
R	revised
r	series revised from indicated entry onwards

CONCEPTS AND DEFINITIONS

Labour Force Survey 'monthly' estimates

Labour Force Survey (LFS) results are three-monthly averages, so consecutive months' results overlap. Comparing estimates for overlapping three-month periods can produce more volatile results, which can be difficult to interpret.

Labour market summary

Economically active

People aged 16 and over who are either in employment or unemployed.

Economically inactive

People who are neither in employment nor unemployed. This includes those who want a job but have not been seeking work in the last four weeks, those who want a job and are seeking work but not available to start work, and those who do not want a job.

Employment and jobs

There are two ways of looking at employment: the number of people with jobs, or the number of jobs. The two concepts are not the same as one person can have more than one job. The number of people with jobs is measured by the Labour Force Survey (LFS) and includes people aged 16 or over who do paid work (as an employee or self-employed), those who have a job that they are temporarily away from, those on government-supported training and employment programmes, and those doing unpaid family work. The number of jobs is measured by workforce jobs and is the sum of employee jobs (as measured by surveys of employers), self-employment jobs from the LFS, people in HM Forces, and government-supported trainees. Vacant jobs are not included.

Unemployment

The number of unemployed people in the UK is measured through the Labour Force Survey following the internationally agreed definition recommended by the ILO (International Labour Organisation) – an agency of the United Nations.

Unemployed people:

- are without a job, want a job, have actively sought work in the last four weeks and are available to start work in the next two weeks, or
- are out of work, have found a job and are waiting to start it in the next two weeks

Other key indicators

Claimant count

The number of people claiming Jobseeker's Allowance benefits.

Earnings

A measure of the money people receive in return for work done, gross of tax. It includes salaries and, unless otherwise stated, bonuses but not unearned income, benefits in kind or arrears of pay.

Productivity

Whole economy output per worker is the ratio of Gross Value Added (GVA) at basic prices and Labour Force Survey (LFS) total employment. Manufacturing output per filled job is the ratio of manufacturing output (from the Index of Production) and productivity jobs for manufacturing (constrained to LFS jobs at the whole economy level).

Redundancies

The number of people, whether working or not working, who reported that they had been made redundant or taken voluntary redundancy in the month of the reference week or in the two calendar months prior to this.

Unit wage costs

A measure of the cost of wages and salaries per unit of output.

Vacancies

The statistics are based on ONS's Vacancy Survey of businesses. The survey is designed to provide comprehensive estimates of the stock of vacancies across the economy, excluding those in agriculture, forestry and fishing. Vacancies are defined as positions for which employers are actively seeking recruits from outside their business or organisation. More information on labour market concepts, sources and methods is available in the *Guide to Labour Market Statistics* at www.statistics.gov.uk/about/data/guides/LabourMarket/default.asp

Directory of online tables

The tables listed below are available as Excel spreadsheets via weblinks accessible from the main *Economic & Labour Market Review* (ELMR) page of the National Statistics website. Tables in sections 1, 3, 4 and 5 replace equivalent ones formerly published in *Economic Trends*, although there are one or two new tables here; others have been expanded to include, as appropriate, both unadjusted/seasonally adjusted, and current price/chained volume measure variants. Tables in sections 2 and 6 were formerly in *Labour Market Trends*. The opportunity has also been taken to extend the range of dates shown in many cases, as the online tables are not constrained by page size.

In the online tables, the four-character identification codes at the top of each data column correspond to the ONS reference for that series on our time series database. The latest data sets for the Labour Market Statistics First Release tables are still available on this database via the 'Time Series Data' link on the National Statistics main web page. These data sets can also be accessed from links at the bottom of each section's table listings via the 'Data tables' link in the individual ELMR edition pages on the website. The old *Economic Trends* tables are no longer being updated with effect from January 2009.

Weblink: www.statistics.gov.uk/elmr/08_09/data_page.asp

Title	Frequency of update
UK economic accounts	
1.01 National accounts aggregates	M
1.02 Gross domestic product and gross national income	M
1.03 Gross domestic product, by category of expenditure	M
1.04 Gross domestic product, by category of income	M
1.05 Gross domestic product and shares of income and expenditure	M
1.06 Income, product and spending per head	Q
1.07 Households' disposable income and consumption	M
1.08 Household final consumption expenditure	M
1.09 Gross fixed capital formation	M
1.10 Gross value added, by category of output	M
1.11 Gross value added, by category of output: service industries	M
1.12 Summary capital accounts and net lending/net borrowing	Q
1.13 Private non-financial corporations: allocation of primary income account[1]	Q
1.14 Private non-financial corporations: secondary distribution of income account and capital account[1]	Q
1.15 Balance of payments: current account	M
1.16 Trade in goods (on a balance of payments basis)	M
1.17 Measures of variability of selected economic series	Q
1.18 Index of services	M
Selected labour market statistics	
2.01 Summary of Labour Force Survey data	M
2.02 Employment by age	M
2.03 Full-time, part-time and temporary workers	M
2.04 Public and private sector employment	Q
2.05 Workforce jobs	Q
2.06 Workforce jobs by industry	Q
2.07 Actual weekly hours of work	M
2.08 Usual weekly hours of work	M
2.09 Unemployment by age and duration	M
2.10 Claimant count levels and rates	M
2.11 Claimant count by age and duration	M
2.12 Economic activity by age	M
2.13 Economic inactivity by age	M
2.14 Economic inactivity: reasons	M
2.15 Educational status, economic activity and inactivity of young people	M
2.16 Average earnings – including bonuses	M
2.17 Average earnings – excluding bonuses	M
2.18 Productivity and unit wage costs	M
2.19 Regional labour market summary	M

Weblink: www.statistics.gov.uk/elmr/08_09/data_page.asp

2.20	International comparisons	M
2.21	Labour disputes	M
2.22	Vacancies	M
2.23	Vacancies by industry	M
2.24	Redundancies: levels and rates	M
2.25	Redundancies: by industry	Q
2.26	Sampling variability for headline labour market statistics	M

Prices

3.01	Producer and consumer prices	M
3.02	Harmonised Indices of Consumer Prices: EU comparisons	M

Selected output and demand indicators

4.01	Output of the production industries	M
4.02	Engineering and construction: output and orders	M
4.03	Motor vehicle and steel production[1]	M
4.04	Indicators of fixed investment in dwellings	M
4.05	Number of property transactions	M
4.06	Change in inventories[1]	Q
4.07	Inventory ratios[1]	Q
4.08	Retail sales, new registrations of cars and credit business	M
4.09	Inland energy consumption: primary fuel input basis[1]	M

Selected financial statistics

5.01	Sterling exchange rates and UK reserves	M
5.02	Monetary aggregates	M
5.03	Counterparts to changes in money stock M4[1]	M
5.04	Public sector receipts and expenditure	Q
5.05	Public sector key fiscal indicators	M
5.06	Consumer credit and other household sector borrowing	M
5.07	Analysis of bank lending to UK residents	M
5.08	Interest rates and yields	M
5.09	A selection of asset prices	M

Further labour market statistics

6.01	Working-age households	A
6.02	Local labour market indicators by unitary and local authority	Q
6.03	Employment by occupation	Q
6.04	Employee jobs by industry	M
6.05	Employee jobs by industry division, class or group	Q
6.06	Employee jobs by region and industry	Q
6.07	Key productivity measures by industry	M
6.08	Total workforce hours worked per week	Q
6.09	Total workforce hours worked per week by region and industry group	Q
6.10	Job-related training received by employees	Q
6.11	Unemployment rates by previous occupation	Q
6.12	Average Earnings Index by industry: excluding and including bonuses	M

Weblink: www.statistics.gov.uk/elmr/08_09/data_page.asp

6.13	Average Earnings Index: effect of bonus payments by main industrial sector	M
6.14	Median earnings and hours by main industrial sector	A
6.15	Median earnings and hours by industry section	A
6.16	Index of wages per head: international comparisons	M
6.17	Regional Jobseeker's Allowance claimant count rates	M
6.18	Claimant count area statistics: counties, unitary and local authorities	M
6.19	Claimant count area statistics: UK parliamentary constituencies	M
6.20	Claimant count area statistics: constituencies of the Scottish Parliament	M
6.21	Jobseeker's Allowance claimant count flows	M
6.22	Number of previous Jobseeker's Allowance claims	Q
6.23	Interval between Jobseeker's Allowance claims	Q
6.24	Average duration of Jobseeker's Allowance claims by age	Q
6.25	Vacancies by size of enterprise	M
6.26	Redundancies: re-employment rates	Q
6.27	Redundancies by Government Office Region	Q
6.28	Redundancy rates by industry	Q
6.29	Labour disputes: summary	M
6.30	Labour disputes: stoppages in progress	M

Notes:

1 These tables, though still accessible, are no longer being updated.
A Annually
Q Quarterly
M Monthly

More information

Time series are available from www.statistics.gov.uk/statbase/tsdintro.asp
Subnational labour market data are available from www.statistics.gov.uk/statbase/product.asp?vlnk=14160 and www.nomisweb.co.uk
Labour Force Survey tables are available from www.statistics.gov.uk/statbase/product.asp?vlnk=14365
Annual Survey of Hours and Earnings data are available from www.statistics.gov.uk/statbase/product.asp?vlnk=13101

Contact points

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Skills and Education Network
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Department for Children, Schools and Families Public Enquiry Unit
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For statistical information on

Average Earnings Index (monthly)
01633 819024

Claimant count
01633 456901

Consumer Prices Index
01633 456900
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Earnings
Annual Survey of Hours and Earnings
01633 456120

Basic wage rates and hours for manual workers with a collective agreement
01633 819008

Low-paid workers
01633 819024
lowpay@ons.gsi.gov.uk

Labour Force Survey
01633 456901
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Economic activity and inactivity
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Employment
Labour Force Survey
01633 456901
labour.market@ons.gsi.gov.uk

Employee jobs by industry
01633 456776

Total workforce hours worked per week
01633 456720
productivity@ons.gsi.gov.uk

Workforce jobs series – short-term estimates
01633 456776
workforce.jobs@ons.gsi.gov.uk

Labour costs
01633 819024

Labour disputes
01633 456721

Labour Force Survey
01633 456901
labour.market@ons.gsi.gov.uk

Labour Force Survey Data Service
01633 455732
lfs.dataservice@ons.gsi.gov.uk

New Deal
0114 209 8228

Productivity and unit wage costs
01633 456720

Public sector employment
General enquiries
01633 455889

Source and methodology enquiries
01633 812865

Qualifications (Department for Children, Schools and Families)
0870 000 2288

Redundancy statistics
01633 456901

Retail Prices Index
01633 456900
rpi@ons.gsi.gov.uk

Skills (Department for Innovation, Universities & Skills)
0870 001 0336

Skill needs surveys and research into skill shortages
0870 001 0336

Small firms (BERR)
Enterprise Directorate
0114 279 4439

Subregional estimates
01633 812038

Annual employment statistics
annual.employment.figures@ons.gsi.gov.uk

Annual Population Survey, local area statistics
01633 455070

Trade unions (BERR)
Employment relations
020 7215 5934

Training
Adult learning – work-based training (DWP)
0114 209 8236

Employer-provided training (Department for Innovation, Universities & Skills)
0870 001 0336

Travel-to-Work Areas
Composition and review
01329 813054

Unemployment
01633 456901

Vacancies
Vacancy Survey: total stocks of vacancies
01633 455070

ONS economic and labour market publications

ANNUAL

Financial Statistics Explanatory Handbook

2008 edition. Palgrave Macmillan, ISBN 978-0-230-52583-2. Price £47.50.

www.statistics.gov.uk/StatBase/Product.asp?vlnk=4861

Foreign Direct Investment (MA4)

2007 edition

www.statistics.gov.uk/StatBase/Product.asp?vlnk=9614

Input-Output analyses for the United Kingdom

2006 edition

www.statistics.gov.uk/StatBase/Product.asp?vlnk=7640

Research and development in UK businesses (MA14)

2006 edition

www.statistics.gov.uk/StatBase/Product.asp?vlnk=165

Share Ownership

2006 edition

www.statistics.gov.uk/StatBase/Product.asp?vlnk=930

United Kingdom Balance of Payments (Pink Book)

2009 edition. Palgrave Macmillan, ISBN 978-0-230-54565-6. Price £49.50.

www.statistics.gov.uk/StatBase/Product.asp?vlnk=1140

United Kingdom National Accounts (Blue Book)

2009 edition. Palgrave Macmillan, ISBN 978-0-230-54566-3. Price £49.50.

www.statistics.gov.uk/StatBase/Product.asp?vlnk=1143

First releases

- Annual survey of hours and earnings
- Foreign direct investment
- Gross domestic expenditure on research and development
- Low pay estimates
- Regional gross value added
- Share ownership
- UK Business enterprise research and development
- Work and worklessness among households

QUARTERLY

Consumer Trends

2009 quarter 1

www.statistics.gov.uk/StatBase/Product.asp?vlnk=242

United Kingdom Economic Accounts

2009 quarter 1. Palgrave Macmillan, ISBN 978-0-230-57713-8. Price £37.50.

www.statistics.gov.uk/StatBase/Product.asp?vlnk=1904

UK trade in goods analysed in terms of industry (MQ10)

2009 quarter 1

www.statistics.gov.uk/StatBase/Product.asp?vlnk=731

First releases

- Balance of payments
- Business investment
- GDP preliminary estimate
- Government deficit and debt under the Maastricht Treaty (six-monthly)
- International comparisons of productivity (six-monthly)
- Internet connectivity
- Investment by insurance companies, pension funds and trusts
- Productivity
- Profitability of UK companies
- Public sector employment
- Quarterly National Accounts
- UK output, income and expenditure

MONTHLY

Financial Statistics

July 2009. Palgrave Macmillan, ISBN 978-0-230-57711-4. Price £50.00.

www.statistics.gov.uk/StatBase/Product.asp?vlnk=376

Focus on Consumer Price Indices

June 2009

www.statistics.gov.uk/StatBase/Product.asp?vlnk=867

Monthly review of external trade statistics (MM24)

May 2009

www.statistics.gov.uk/StatBase/Product.asp?vlnk=613

Producer Price Indices (MM22)

June 2009

www.statistics.gov.uk/StatBase/Product.asp?vlnk=2208

First releases

- Consumer price Indices
- Index of production
- Index of services
- Labour market statistics
- Labour market statistics: regional
- Producer prices
- Public sector finances
- Retail sales
- UK trade

OTHER

The ONS Productivity Handbook: a statistical overview and guide

Palgrave Macmillan, ISBN 978-0-230-57301-7. Price £55.

www.statistics.gov.uk/about/data/guides/productivity/default.asp

Labour Market Review

2006 edition. Palgrave Macmillan, ISBN 1-4039-9735-7. Price £40.

www.statistics.gov.uk/StatBase/Product.asp?vlnk=14315

National Accounts Concepts, Sources and Methods

www.statistics.gov.uk/StatBase/Product.asp?vlnk=1144

Sector classification guide (MA23)

www.statistics.gov.uk/StatBase/Product.asp?vlnk=7163

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Chris Daffin, Sarah Levy and Andrew Walton

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Jim O'Donoghue

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Fenella Maitland-Smith

Regular quarterly feature
Services producer price index (experimental) – first quarter 2009
Pam Davies

Future articles

List is provisional and subject to change.

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