

# Economic & Labour Market Review

## Contents

### Regulars

In brief	3
Income of self-administered pension funds down in 2008; UK material productivity increases; UKCeMGA: Improving the methods used to calculate the volume of health care inputs; Update on LFS education and training review	
Economic review	6
Independent forecasts	15
Key indicators	16

### Articles

<b>An expenditure-based analysis of the redistribution of household income</b>	18
<i>Sonia Carrera</i>	
Shows how the distribution of household expenditure can provide a different view on material living standards and equality among UK households	
<b>First findings from the UK Innovation Survey 2009</b>	28
<i>Stephanie Robson and Martin Kenchatt</i>	
Presents the initial analysis, including a comparison with the previous surveys of 2007, 2005 and 2001	
<b>Implementation of SIC 2007 for the Vacancy Survey</b>	36
<i>Nick Barford, Jonathan Knight and Bob Watson</i>	
Reports on work to publish this survey on the new Standard Industrial Classification and other changes	
<b>Understanding the divergence between output and employment in the UK construction industry</b>	42
<i>Mavis Anagboso and Yonathan van den Brink</i>	
Looks at the construction labour market and structural changes in the UK economy to explain the divergence	
<b>Development of construction statistics</b>	52
<i>Tony Crook and Graham Sharp</i>	
Outlines key changes to the future publication of construction output and new orders statistics	
<b>Patterns of pay: results of the Annual Survey of Hours and Earnings 1997 to 2009</b>	59
<i>Ceri Holdsworth</i>	
Presents summary analyses of median, make up and distribution of earnings	

### Data and support

Key time series	71
National accounts aggregates; Gross domestic product: by category of expenditure; Labour market summary; Prices. Notes to tables; Concepts and definitions	
Directory of online tables	76
Contact points	79
ONS economic and labour market publications	80
Recent and future articles	81

**Vol 4 No 3**  
March 2010 edition

Office for National Statistics

ISBN 978-0-230-24782-6  
ISSN 1751-8326 (print)  
ISSN 1751-8334 (online)

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This publication first published 2009 by Palgrave Macmillan.

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Palgrave Macmillan in the US is a division of St Martin's Press LLC, 175 Fifth Avenue, New York, NY 10010.

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A catalogue record for this book is available from the British Library.

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This book is printed on paper suitable for recycling and made from fully managed and sustained forest sources. Logging, pulping and manufacturing processes are expected to conform to the environmental regulations of the country of origin.

Printed and bound in Great Britain by Latimer Trend & Company Ltd, Plymouth, Devon

Typeset by Curran Publishing Services, Norwich

## In brief

## Income of self-administered pension funds down in 2008

In 2008, the total income of self-administered pension funds was £58.6 billion, down sharply from £71.8 billion in 2006. The fall was driven by a reduction in employers' special contributions and a drop in transfers between pension funds. These are among the key results reported in the latest update to the Pension scheme funding and investment chapter of *Pension Trends*, published by ONS on 23 February 2010.

Self-administered pension funds are funds managed by scheme trustees or investment managers – who invest the scheme's income, including contributions from employees and employers.

Employers' special contributions were worth £6.8 billion in 2008, compared with £13.2 billion in 2006. Transfers into pension funds were worth £1.5 billion in 2008 compared with £9.7 billion in 2006.

Expenditure of self-administered funds was also lower in 2008 than in 2006, but the decrease was less than the fall in income. Total expenditure was £48.9 billion in 2008, down from £52.1 billion in 2006.

Stock market growth helped to raise the value of self-administered pension fund assets from £620.4 billion in 2002 to £1,092.7 billion in 2007. However, in 2008 the value of these assets fell to £927.7 million as stock markets fell at the start of the 2008-09 recession.

### Further information

[www.statistics.gov.uk/pensiontrends/](http://www.statistics.gov.uk/pensiontrends/)

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## UK material productivity increases

Between 2007 and 2008, the quantity of natural resources used by the UK economy, known as domestic material consumption, fell by 67 million tonnes (or 9.9 per cent) to 613 million tonnes. This is the largest recorded fall since records began in 1970. It follows 10 years where resource use has remained broadly unchanged. This means that with rising level of economic

activity, UK material productivity has been increasing.

The fall in domestic material consumption mainly reflects decreases in the domestic extraction of minerals, with a decrease of 57 million tonnes (or 19.3 per cent) driven by a sharp fall in the extraction of primary aggregates – crushed stone, sand and gravel – as demand was impacted by the economic downturn. Imports of minerals also fell in 2008, by 10.8 per cent.

Much of the period 1990 to 2007 had seen strong economic growth in the UK and material productivity increased, with material use falling in relation to the level of economic activity. This in part reflects the increasing importance of the service industries in the UK economy. Gross domestic product increased in 2008 (by 0.5 per cent) and material use fell. The fall in demand for primary aggregates coincides with the contraction in output in the construction industry in 2008.

This analysis was reported in an update to the Environmental Accounts, published by ONS on 5 February 2010. Also updated are materials flows, environmental taxes, environmental protection by industry, and the physical accounts for forestry and oil and gas.

### Further information

[www.statistics.gov.uk/StatBase/Product.asp?vlnk=369](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=369)

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## UKCeMGA: Improving the methods used to calculate the volume of health care inputs

The UK Centre for the Measurement of Government Activity (UKCeMGA) is the area of ONS responsible for estimates of public service output and productivity. A new article, published on 2 February 2010, discusses improvements to the calculation method for the volume of inputs in one of the service areas: healthcare.

Productivity is measured by dividing an index of output by an index of the volume of inputs. Productivity, output and inputs estimates are calculated for total public services, and by service area.

The methods used to calculate the volume of healthcare inputs have been reviewed and three improvements to the methodology have been made:

1. expenditure on General Practitioner (GP) services is now reclassified at an earlier stage in the calculation process, and in a more straightforward manner
2. all component volume of inputs series are now aggregated using a method which takes account of expenditure patterns changing over time
3. the type of index used to remove price changes from part of the goods and services expenditure series has changed

The overall effect of these changes has been illustrated using the data published in *Total Public Service Output and Productivity* (Phelps 2009a) and in *Changing Costs of Public Services* (Phelps 2009b).

These articles estimated that, between 1997 and 2007, the volume of healthcare inputs grew by 59.3 per cent, an annual average of 4.8 per cent a year. Using the new methods, it is estimated this growth is now 56.7 per cent, an annual average of 4.6 per cent a year. The main cause of the overall change is the reclassification of expenditure on GPs, partially offset by the effect of the other two methodological changes.

### Further information

The full article can be found at [www.statistics.gov.uk/cci/article.asp?ID=2354](http://www.statistics.gov.uk/cci/article.asp?ID=2354). Phelps (2009a) is available at [www.statistics.gov.uk/cci/article.asp?ID=2212](http://www.statistics.gov.uk/cci/article.asp?ID=2212) and Phelps (2009b) is available at [www.statistics.gov.uk/cci/article.asp?ID=2357](http://www.statistics.gov.uk/cci/article.asp?ID=2357)

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## Update on LFS education and training review

An *In brief* item published in the January 2010 edition of ELMR reported on joint work by BIS and ONS to review the Education and Training section of the Labour Force Survey (LFS). The two main parts of the review consisted of a questionnaire review and independent research into the quality of data outputs on educational attainment. The latter has now been completed by RM Data Solutions,

and Government Statistical Service (GSS) professionals in BIS and ONS have produced a paper setting out their response to the research recommendations.

The research identified a number of inter-related potential sources of bias affecting the current estimates of attainment. The research team has proposed a revised method which makes better use of existing LFS data, increases use of administrative data, and introduces enhanced statistical procedures. The new method addresses as many aspects of the potential bias as is possible, within the time and resource constraints of this project, and takes account of the interactions.

Introducing this methodological change will lead to increases in estimated qualification levels among adults. The new method also results in increased growth over recent years in the series for Level 2 and above and Level 3 and above. The recommendations of the research team have been commented on by an external Quality Assurer and reviewed and accepted by the GSS professionals in BIS and ONS. The BIS/ONS GSS response paper sets out the practical steps necessary to introduce the revised estimates, including their use for reporting of progress against PSA Targets in March 2010, and the proposed approach

for taking forward future research and development work recommended by the research team.

Work is continuing on the questionnaire review, which has identified options for improvement. Proposals for change to the 2011 questionnaire will be submitted to the next LFS Steering Group in March 2010.

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**Further information**

[www.thedataservice.org.uk/statistics/lfsmethodology/](http://www.thedataservice.org.uk/statistics/lfsmethodology/)

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✉ [drew.hird@bis.gsi.gov.uk](mailto:drew.hird@bis.gsi.gov.uk)

**UPDATES**

Updates to statistics on [www.statistics.gov.uk](http://www.statistics.gov.uk)

9 February

**UK Trade**

*Deficit widened to 3.3 billion in December 2009*

[www.statistics.gov.uk/cci/nugget.asp?id=199](http://www.statistics.gov.uk/cci/nugget.asp?id=199)

10 February

**Index of production**

*December shows 3.6% annual fall*

[www.statistics.gov.uk/cci/nugget.asp?id=198](http://www.statistics.gov.uk/cci/nugget.asp?id=198)

16 February

**Inflation**

*CPI inflation 3.5%, RPI inflation 3.7%*

[www.statistics.gov.uk/cci/nugget.asp?id=19](http://www.statistics.gov.uk/cci/nugget.asp?id=19)

17 February

**Average weekly earnings**

*Growth unchanged*

[www.statistics.gov.uk/cci/nugget.asp?id=10](http://www.statistics.gov.uk/cci/nugget.asp?id=10)

**Employment**

*Unemployment rate at 7.8%*

[www.statistics.gov.uk/cci/nugget.asp?id=12](http://www.statistics.gov.uk/cci/nugget.asp?id=12)

18 February

**Public sector finances**

*January: £1.2 billion current budget surplus*

[www.statistics.gov.uk/cci/nugget.asp?id=206](http://www.statistics.gov.uk/cci/nugget.asp?id=206)

**Comparisons of productivity**

*Revised estimates for 2008*

[www.statistics.gov.uk/cci/nugget.asp?id=160](http://www.statistics.gov.uk/cci/nugget.asp?id=160)

19 February

**Retail sales**

*Weather impacts sales in January*

[www.statistics.gov.uk/cci/nugget.asp?id=256](http://www.statistics.gov.uk/cci/nugget.asp?id=256)

25 February

**Business investment**

*5.8% down in fourth quarter 2009*

[www.statistics.gov.uk/cci/nugget.asp?id=258](http://www.statistics.gov.uk/cci/nugget.asp?id=258)

26 February

**GDP growth**

*Economy grows by 0.3% in Q4 2009*

[www.statistics.gov.uk/cci/nugget.asp?id=192](http://www.statistics.gov.uk/cci/nugget.asp?id=192)

**Index of services**

*1.4% annual fall into December*

[www.statistics.gov.uk/cci/nugget.asp?id=558](http://www.statistics.gov.uk/cci/nugget.asp?id=558)

5 March

**Producer prices**

*Factory gate inflation up 4.1%*

[www.statistics.gov.uk/cci/nugget.asp?id=248](http://www.statistics.gov.uk/cci/nugget.asp?id=248)

**FORTHCOMING RELEASES**

Future statistical releases on [www.statistics.gov.uk](http://www.statistics.gov.uk)

5 March

**Output and employment in the construction industry – Q4 2009**

9 March

**UK Trade – January 2010**

10 March

**Index of production – January 2010****Aerospace and electronic cost indices – December 2009**

11 March

**Wealth in Great Britain – 2006/2008 – Income annex**

17 March

**Public sector employment – Q4 2009****Labour market statistics – March 2010****Average weekly earnings – January 2010**

18 March

**Public sector finances – February 2010**

23 March

**Financial Statistics – March 2010****Consumer price indices – February 2010**

24 March

**Average earnings index – March 2010**

25 March

**Retail sales – February 2010**

26 March

**Business investment – Q4 2009 revised results****Investment by insurance companies, pension funds and trusts – Q4 2009****Gross Domestic Expenditure on Research and Development – 2008 edition**

30 March

**Quarterly National Accounts – Q4 2009****Consumer Trends – Q4 2009****Balance of payments – Q4 2009**

31 March

**Productivity measures – Q4 2009**

7 April

**Profitability of UK companies – Q4 2009****Index of services – January 2010**

8 April

**Index of services – February 2010****Social Trends – 40 – Expenditure****Social Trends – 40 – Income and wealth**

9 April

**Producer price index – March 2010****Pension Trends – Chapter 8: Pension contributions****Pension Trends – Chapter 2: Population change**

13 April

**UK Trade – February 2010**

15 April

**New orders in the construction industry – December 2009**

# Economic review

## March 2010

Graeme Chamberlin  
Office for National Statistics

### SUMMARY

Revised estimates of GDP report that the UK economy grew by 0.3 per cent in the final quarter of 2009. In the services sector, growth was driven by the motor trades, wholesale distribution and other business activities industries. In the production sector, positive growth contributions came from the engineering and allied industries. In terms of the expenditure measure of GDP the main positive impact was in inventories as the rate of de-stocking declined. Household consumption and government spending also grew during quarter four, but gross fixed capital formation and net trade weighed on GDP growth. Retail sales fell due to a large fall in the purchase of automotive fuels in January, partly due to the impact of bad weather on the amount of travelling. However, excluding automotive fuels retail sales continued to be supported by Internet spending and discounting. In the labour market there was a small reduction in unemployment in 2009 Q4, but average durations of unemployment continue to rise. Evidence continues to suggest that younger people have been particularly affected by tighter labour market conditions, showing the strongest rise in unemployment and inactivity rates. Both CPI and RPI inflation picked up strongly in January due to rising motor fuel prices and also the reversion of VAT from 15 per cent to 17.5 per cent.

## UK economic growth revised up to 0.3 per cent in 2009 Q4

Latest published data show the UK economy grew by 0.3 per cent in the final quarter of 2009. The Output, Income and Expenditure release is the second estimate of GDP for a particular quarter, and marks an upward revision

from the Preliminary estimate, published a month earlier, when GDP was estimated to have grown by 0.1 per cent.

Between 2008 Q1 and 2009 Q3, GDP contracted for six consecutive quarters, registering a total peak to trough fall of 6.2 per cent (Figure 1). This is a similar loss in output to that experienced in the recession of the early 1980s, and far more severe than the drop in GDP associated with the early 1990s recession.

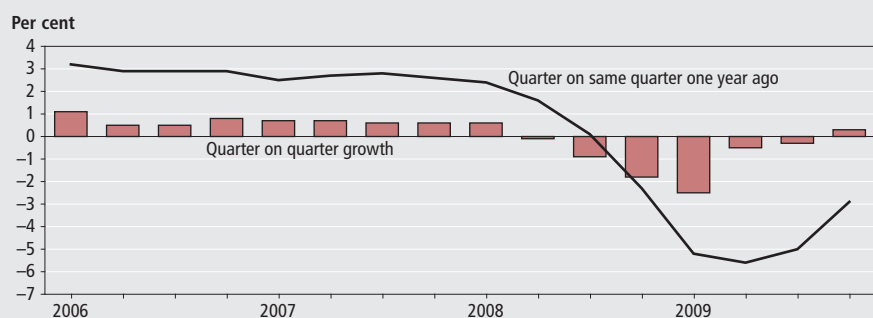
Upward revisions to GDP growth for the final quarter of 2009 have been driven by the services sector. This is now estimated to have grown by 0.5 per cent over the quarter compared to the Preliminary estimate of 0.1 per cent (Figure 2). Within the sector, growth in the distribution, hotels and catering sector was revised up from 0.4 per cent to 1.6 per cent. Transport and communication, and business services and finance were both flat in the Preliminary estimate, but have since been revised up to 0.5 per cent and 0.3 per cent respectively. However, growth in government and other services was revised downwards from 0.2 per cent to flat.

In the production sector, manufacturing output growth was stronger at 0.8 per cent compared to 0.4 per cent. But this was offset by construction, where output is now estimated to have fallen by 1 per cent, having previously been estimated as flat.

Preliminary estimates of GDP are published within 25 days of the end of the reference quarter, and are the most timely estimates published by any National Statistics Institute in the world. They give policy makers, analysts and other data users a rapid indication of activity in the most recent quarter. However, timeliness of publication means that the data content is lower than in subsequent estimates, particularly for the final month of the quarter (December 2009). ONS estimates that the data content for the Preliminary estimate is around 40 per cent and rises to 77 per cent by the time of the Output, Income and Expenditure release. Data content in the third estimate of GDP – the Quarterly National Accounts – rises further to 92 per cent. Revisions are therefore the consequence of previously unavailable information being incorporated into the published data. Analysis of revisions over a long time period has shown, however, that Preliminary GDP estimates do provide an accurate description of UK economic activity (see Brown et al 2009).

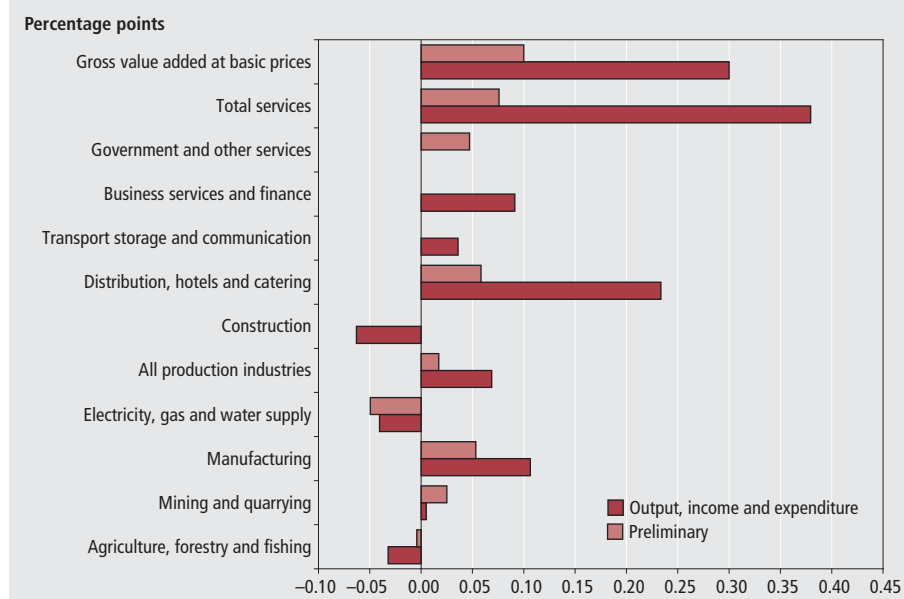
The main cause of the upward revision was strong service sector

Figure 1  
GDP growth



Source: GDP Output, Income and Expenditure

Figure 2

**Contributions to GDP growth by industry, 2009 Q4**

Source: GDP Output, Income and Expenditure and Preliminary estimates

growth in December 2009. This data was unavailable when the Preliminary estimate was compiled. The Index of Services grew by 0.6 per cent during this month, much stronger than the 0.2 per cent growth recorded in November and the unchanged index in October. There was particularly strong growth in motor trades and wholesale industries during December, where output grew by 5.8 per cent and 4.9 per cent respectively. These two industries account for the significant revision to the distribution hotels and catering sector shown in Figure 2, hence the majority of the revision to overall GDP.

Upward revisions in 2009 Q4 were accompanied by a small downward revision of 0.1 percentage points to growth in the third quarter, when output is now estimated to have declined by 0.3 per cent. This mainly reflected a larger contraction in the business services and finance sector.

## Capital goods lead the rise in production output

Output in the production sector fell sharply during the recession, registering a peak to trough fall of 13.8 per cent between 2007 Q4 and 2009 Q3. As a high proportion of UK industrial production is exported, the sector was adversely affected by the large fall in international trade as the main

global economies entered a synchronised downturn. Production output also tends to exhibit greater cyclical volatility than the rest of the economy due to the workings of the stocks cycle – that is production falls faster than demand (GDP) as businesses increasingly meet orders by running down stocks of finished goods, works in progress or raw materials.

Figure 3 compares the growth of the main industrial groupings making up the production sector in the third and fourth quarters of 2009. In the third quarter, production output fell by 0.9 per cent, but after contracting for seven consecutive quarters, there was growth in quarter four when the sector expanded by 0.4 per cent.

Consumer durables production growth picked up significantly in the fourth quarter to 1.8 per cent, but as this accounts for only about 3.5 per cent of

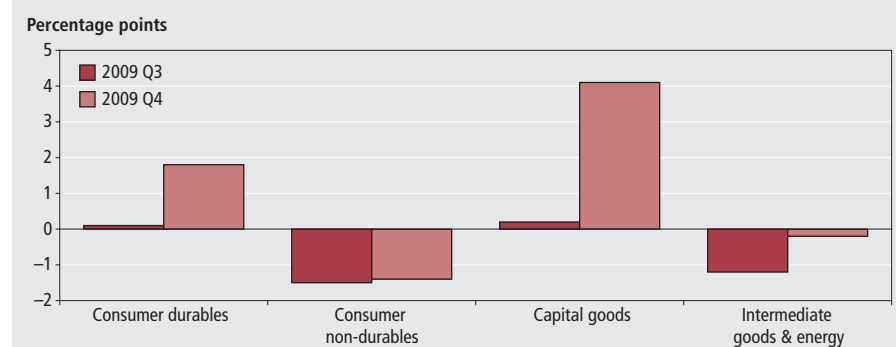
total production activity, the contribution to overall growth was small. Growth in consumer non-durables (26 per cent of production activity) was largely unchanged between the two quarters, contracting by 1.5 per cent in Q3 and 1.4 per cent in Q4 respectively. The biggest contributions to the improvement in growth between the third and fourth quarters came from the capital goods and the intermediate goods and energy industries.

Capital goods producers (21.5 per cent of total production output) saw output growth accelerate from 0.2 per cent to 4.1 per cent. In terms of contributions to growth, this represents a move from broadly flat to 0.9 percentage points, and may be a reflection of improving overseas demand as growth in the rest of the world starts to pick up and from government stimulus spending on infrastructure.

However, it is worth noting that the recent recovery in capital goods production is slight when compared to the 17.1 per cent fall in output between 2008 Q1 and 2009 Q1. This sector had been particularly adversely affected by the global recession. As capital goods purchases are usually lumpy and irreversible, they tend to be very sensitive to credit conditions, sentiment and the economic outlook, and therefore strongly procyclical.

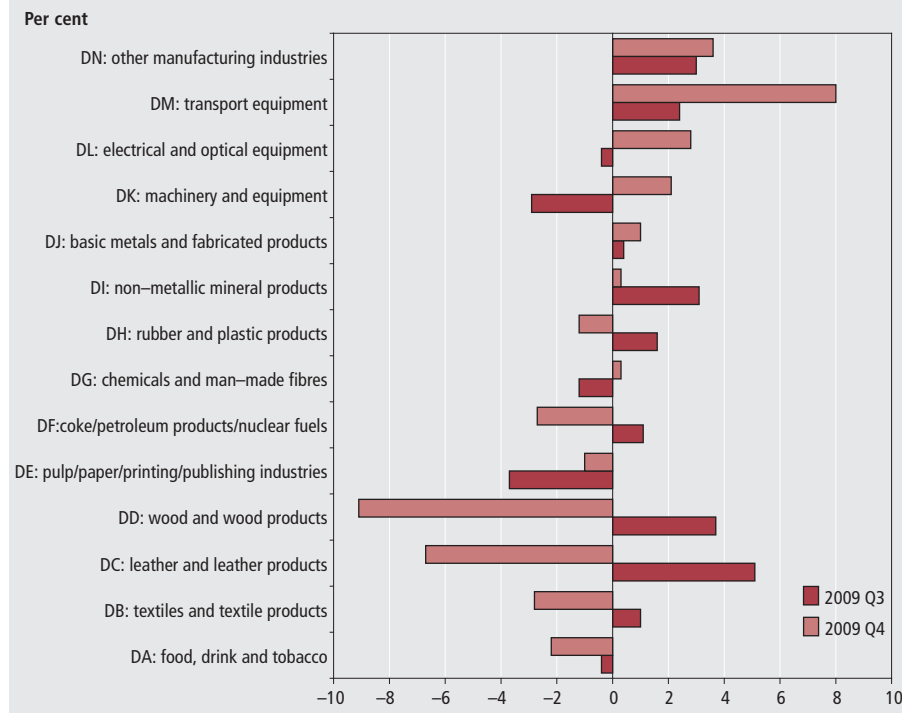
Intermediate goods and energy account for about one half (49 per cent) of the output of the UK production industries. In 2009 Q4 output contracted by 0.2 per cent, but this was a significant easing compared with the 1.2 per cent decline in the previous quarter. The slower pace of contraction meant the contribution to quarterly production growth improved from -0.6 per cent to -0.1 per cent

Figure 3

**Contributions to production sector growth in 2009 Q3 and 2009 Q4**

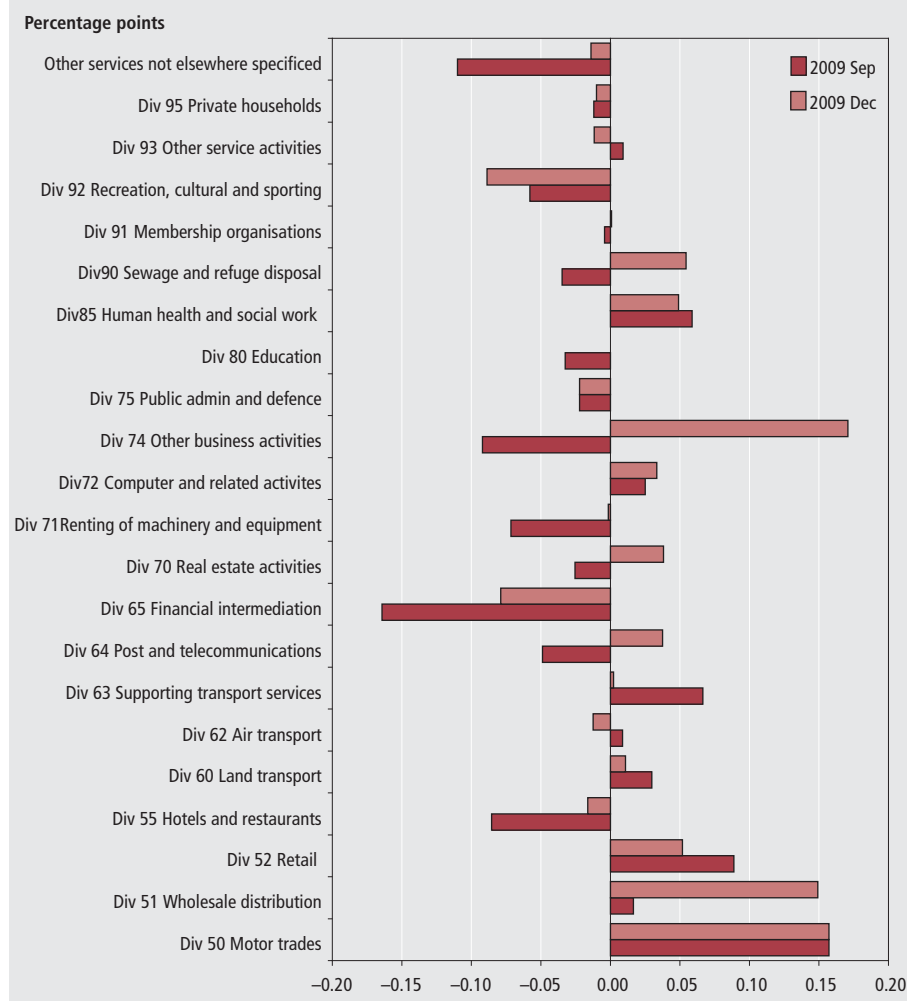
Source: Index of Production

**Figure 4**  
**Manufacturing output growth in 2009 Q3 and 2009 Q4**



Source: Index of Production

**Figure 5**  
**Contributions to services sector growth in 2009 Q3 and 2009 Q4**



Source: Index of Services

between the third and fourth quarters. This provides some evidence of improving activity in the domestic and international economies. Output of intermediate goods rose for the second successive quarter, in line with the reported slowdown in the rate at which companies are de-stocking (running down inventories). And the speed at which energy output was falling slowed from -3.3 per cent in quarter three to -0.8 per cent in quarter four, suggesting that business activity may be starting to improve, or at least is declining at a slower rate than before.

Production activity consists of manufacturing, the extraction industries, and the supply of electricity, gas and water. Manufacturing is the largest of these three broad industry groupings accounting for nearly 80 per cent of all production. Faster growth in capital goods production has been reflected in the patterns of growth within the UK manufacturing sector over the last two quarters (Figure 4).

Between 2008 Q1 and 2009 Q3 manufacturing output fell by 14 per cent. Particularly sharp falls of 5.4 per cent and 5.2 per cent were recorded in the final quarter of 2008 and first quarter of 2009 respectively, but since then the pace of contraction eased, declining by 0.2 per cent in 2009 Q3, before growing by 0.8 per cent in quarter four. Most of the improvement between the third and fourth quarters has been concentrated in industries producing equipment. Growth in the machinery and equipment industry picked up from -2.9 per cent to 2.1 per cent. In the electrical and optical equipment industry a contraction of -0.3 per cent gave way to growth of 2.8 per cent. And transport equipment growth rose sharply from 2.4 per cent to 8.0 per cent. Together, these three industries are classified as the engineering and allied industries, accounting for around 30 per cent of total manufacturing output. Combined growth picked up from zero in quarter three to 4.6 per cent in quarter four, contributing 1.4 percentage points to total manufacturing growth in the final quarter of 2009.

Performance in other manufacturing industries was mixed, but on the whole weaker than in the third quarter. Output in food, drink and tobacco declined by 2.2 per cent, in line with the output of consumer non-durables (Figure 3), and making a -0.3 percentage

points contribution to fourth quarter manufacturing growth. However, chemicals and man-made fibres and basic metals and metal products, both accounting for just over 10 per cent of total manufacturing output, recorded an improvement in output growth between the third and fourth quarters of 2009.

## Motor trades, wholesale distribution and business services contribute to faster service sector growth

As service sector output accounts for around three-quarters of UK GDP it tends to be the main driver of economic growth. Compared to previous recessions, the recent fall in services output has been relatively severe. So despite growth picking up to 0.5 per cent in the fourth quarter of 2009, following a contraction of 0.3 per cent in quarter three, output is still 4.2 per cent lower than the pre-recession level.

Figure 5 shows contributions to service sector output growth in the third and fourth quarters of 2009 for the main divisions of the Index of Services. Three divisions accounted for the majority of service sector growth in the latest quarter – motor trades (division 50), wholesale distribution (division 51) and other business activities (division 74).

Motor trades grew by 5.2 per cent in each of the last two quarters, adding approximately 0.16 percentage points to total service sector growth. Motor car sales may have been supported towards the end of 2009 by the vehicle scrappage scheme and also the lower rate of VAT

before it reverted from 15 per cent to 17.5 per cent in January 2010. Even though output has recovered strongly in the latest two quarters it remains 8.6 per cent below the level in April 2008. It is worth noting that stronger recent growth is from a low base – after motor sales fell substantially at the start of the recession as consumer confidence plunged and credit was restricted.

Wholesale distribution growth accelerated from 0.3 per cent in quarter three to 2.7 per cent in quarter four. Given its relative weight in the level of output, this contributed around 0.15 percentage points to total service sector growth. However, like motor trades, output is still far below its pre-recession level, currently 10.2 per cent lower than in April 2008.

Other business activities include a myriad of services such as management consultancy, accountancy and legal services. As these largely consist of business to business services the output of this sector may reflect the degree of activity and confidence in the corporate sector as a whole. And as a relatively large weight in the Index of Services (12.6 per cent of total services output) it is an important factor in determining services growth. Between the third and fourth quarters growth picked up from 0.4 per cent to 1.3 per cent contributing 0.17 percentage points to services output growth.

The remainder of the services sector either recorded a small improvement in output growth, or an easing in the speed of contraction. However, taking into account relative Index of Services weight, no particular industry significantly impacted on growth in either direction.

In 2009 Q4, the largest downward contributions to growth came from financial services (where output fell by 1.2 per cent) and recreation, cultural and sporting activities (-2.3 per cent), but in both cases the impact on the overall growth rate was smaller than -0.1 percentage point in magnitude.

## Slower rate of de-stocking adds to growth, but business investment contracts strongly

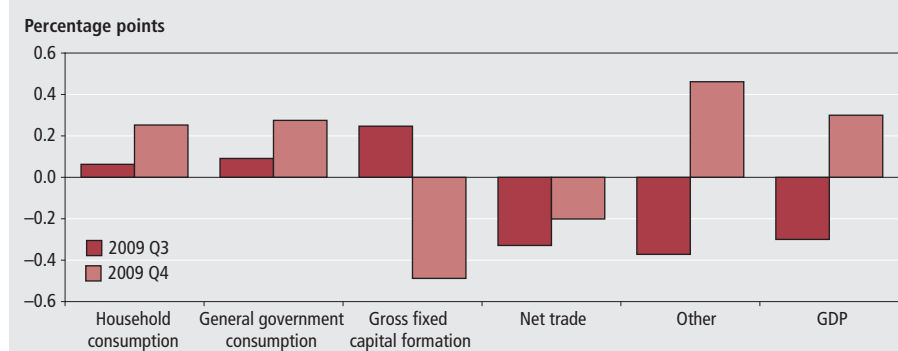
The Output, Income and Expenditure statistical bulletin provides the first estimates for the demand side of the economy for a given quarter. Figure 6 shows the contributions of the main categories of expenditure to total GDP growth in the third and fourth quarters of 2009.

These contributions had a mixed impact on GDP growth in the fourth quarter. Positive contributions came from consumption, government spending, and also the 'other' category which consists of non-profit institutions serving households (NPISH), valuables and inventories. Negative contributions came from gross fixed capital formation and net trade (the difference between exports and imports).

Consumption growth increased to 0.4 per cent in quarter four from 0.1 per cent in quarter three. Although consumption has now grown for two successive quarters, the increase in spending has been modest. The rise in the saving ratio during 2009 suggests that households remain cautious, looking to pay down debts, strengthen balance sheets and provide buffers against shocks to future income. Presently there is no information available on the components of expenditure for the latest published quarter, but this detail will be available when *Consumer Trends* are published alongside the Quarterly National Accounts next month – the third estimate of GDP for 2009 Q4.

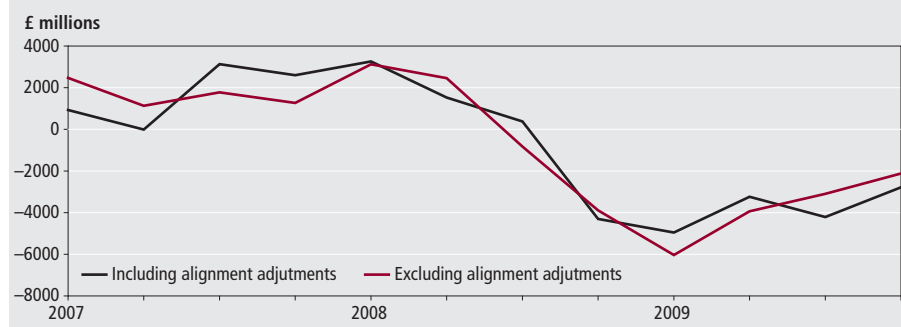
Government consumption growth increased from 0.4 per cent to 1.2 per cent. Stronger growth may possibly reflect counter-cyclical spending. For example maintenance work in the public sector was brought forward as part of the government's fiscal stimulus package.

**Figure 6**  
Contributions to GDP growth by main expenditure categories in 2009 Q3 and 2009 Q4



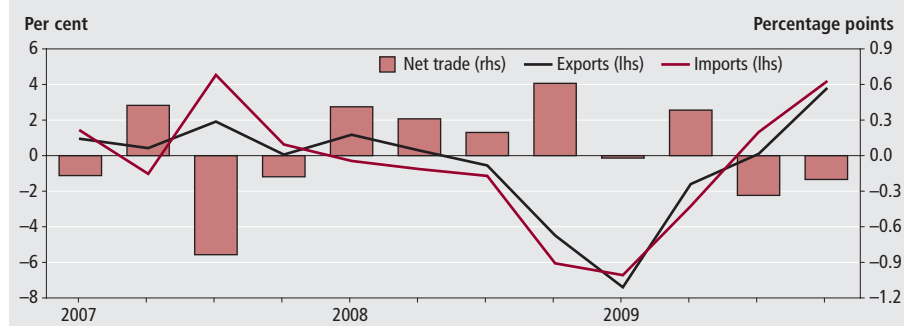
Source: GDP Output, Income and Expenditure

**Figure 7**  
**Contributions to GDP growth by main expenditure categories in 2009 Q3 and 2009 Q4**



Source: GDP Output, Income and Expenditure

**Figure 8**  
**Growth in UK imports and exports and contributions of net trade to GDP growth**



Source: GDP Output, Income and Expenditure

However, despite growing faster than consumption, the lower share in total expenditure meant the contribution to GDP growth in quarter four was similar at around 0.25 percentage points.

The largest positive contribution came from the 'other' category of expenditure adding around a half percentage point to 2009 Q4 GDP growth and was driven almost entirely by changes in inventories. These are stocks of raw materials, semi-finished and finished goods, held by businesses, in order to meet future demand or production needs. Inventories are a small part of the level of GDP (-0.9 per cent in 2009 Q4), but changes in inventories can impact strongly on changes in GDP. This is through the aforementioned stocks cycle where production can fall almost abruptly in a downturn as businesses meet orders by running down stocks. In the upswing of the economic cycle this effect should go into reverse.

Figure 7 shows the pattern of inventories (including and excluding alignment adjustments which are used to help balance the expenditure and output measures of GDP) over recent quarters.

This confirms that although the change in inventories continues to be negative (meaning that firms are running down stocks), the speed at which de-stocking is taking place slowed in quarter four, thus contributing positively to GDP growth.

The speed at which inventories are being run down slowed considerably in the manufacturing and 'other' industries (which includes motor trades among others) sectors, which is consistent with increased output in both these industries. Changes in inventories in wholesale distribution though became increasingly negative in the fourth quarter, even though this industry made a relatively important contribution to services output growth.

Negative contributions to GDP growth came from gross fixed capital formation (GFCF) and net trade.

GFCF contracted by 3.1 per cent in the fourth quarter, pulling total GDP growth down by 0.5 percentage points. Complete data on the components of GFCF will not be available until the publication of the Quarterly National Accounts. However, provisional 2009 Q4 results for business investment reported a contraction of -5.8

per cent. As this accounts for around 60 per cent of total GFCF, the contribution to overall GFCF growth was -3.4 percentage points.

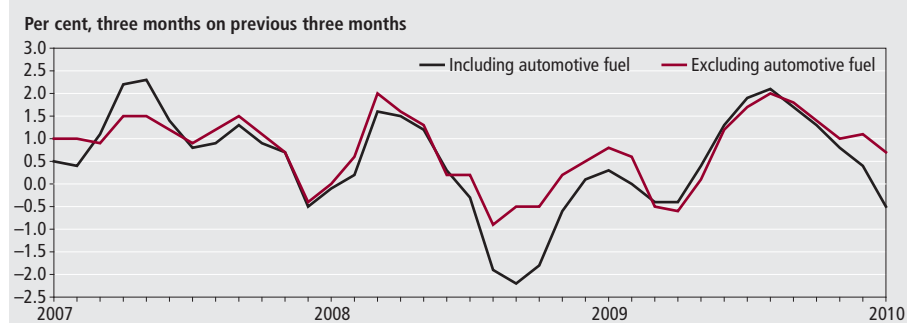
Business investment has now contracted in every quarter since reaching a peak in 2008 Q2. In 2009 Q4 business investment was 27 per cent lower than this peak level. Ongoing weakness in business investment may reflect uncertainty or low confidence over the future strength of the economic recovery, explaining the unwillingness to spend in installing extra capacity. Businesses, looking to rebuild their balance sheets and reduce debt, may also be cautious about borrowing to spend on capital items.

Net trade has made a negative contribution to GDP growth in each of the last two quarters, as imports grew faster than exports (Figure 8). In quarter four, exports grew by 3.7 per cent but imports rose by 4.1 per cent. As a result, net trade had a -0.2 percentage points impact on GDP growth.

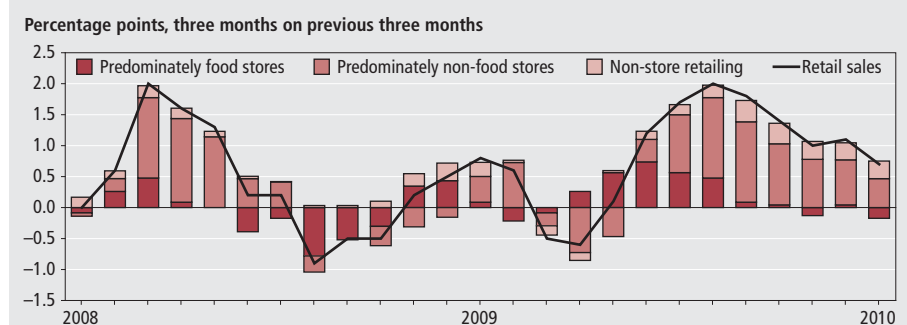
As Figure 8 shows, net trade generally made a positive contribution to GDP growth during the recession as the fall in imports outstripped the fall in exports. The UK has been running a persistent current account deficit for several years so it was suggested that the recession may prompt a rebalancing in the UK economy away from domestic (household) spending to exports. But as the economy emerges from recession, and domestic spending returns to growth, import growth has been stronger than exports. This may also reflect the slow recovery in demand in the rest of the world, particularly within the European Union, where household spending has been sluggish.

It is difficult to identify the precise impact of sterling depreciation on exports and imports. Business surveys have reported little positive effect, largely because this has been outweighed by the weakness in global demand. Net trade and sterling depreciation played an important role in the recovery from the early 1990s recession, but at the time, growth in the rest of the world was relatively robust. Naturally, it is also difficult to prove the counterfactual that the contribution of net trade to growth in the recent quarters would have been smaller had it not been for the effect of sterling depreciation.

**Figure 9**  
**Retail sales growth including and excluding automotive fuel**



**Figure 10**  
**Contributions to retail sales spending (excluding automotive fuel)**



## Internet spending supports retail sales volumes

The January 2010 Retail Sales statistical bulletin introduced a significant classification change with the inclusion of automotive fuels and improved methodology for experimental Internet statistics.

Incorporating automotive fuels into the index has altered the path of retail sales in recent years (**Figure 9**), and particularly so in the last two months when the indices including and excluding automotive fuels diverged. For the three-month period to January 2010, retail sales were 0.5 per cent lower when compared to the previous three-month period. However, once automotive fuel is excluded, retail sales growth over the same period was up 0.7 per cent.

Retail sales from predominantly automotive fuel establishments fell sharply in the three-months to January by 15.1 per cent, and by 11.1 per cent in the month of January alone. This may be the result of further increases in fuel prices and also poor weather impacting on the amount of travelling undertaken in that month.

Excluding automotive fuels, retail sales have been relatively robust throughout the recession period, especially when compared to wider measures of household consumption. The contributions to retail sales growth by main category of retail establishment over the last two years are shown in **Figure 10**. It can be seen that retail sales only briefly contracted towards the end of 2008 and beginning of 2009, but recovered well in the middle of last year. Of particular note has been the growing contribution of non-store retailing despite its relatively small share in total retail spending, and also the strength of predominantly non-food retailing even though this consists of the discretionary consumer items on which consumers may be expected to spend less in a recession.

In the three months to January 2010, the non-store retailing sector grew by 6.1 per cent, much faster than other categories of retail spending, contributing 0.3 percentage points to growth. This segment includes Internet spending, which has been rising rapidly as a proportion of total retail sales volumes in the last three years – from 3 per cent in January 2007 to 8 per cent in 2010. This growing trend in Internet purchases

has therefore been supporting retail sales, although this may have come at the expense of more traditional high street spending.

Other ONS data also highlights the growing importance of Internet spending in the UK economy. The 2008 E-commerce survey, covering private non-financial firms employing 10 or more people, reported a strong rise in sales over the Internet, from £65.8 billion in 2004 to £222.9 billion in 2008. Also, nearly three-quarters (73.5 per cent) of the businesses in the sample had a website and the strong increase in Internet sales has been broadly reflected across all sectors. However, the wholesale and retail sector reported the strongest rise, up from £20.5 billion in 2004 to £83.6 billion in 2008.

At the same time, there has been growing access to and wider use made of the Internet by households. The Internet access statistical bulletin, based on the National Statistics Omnibus survey, reported that 18.31 million households (70 per cent of all households) had internet access in 2009. Of these 90 per cent had a broadband connection. Both these ratios have risen significantly in recent years. In 2006, 57 per cent of households had Internet access of which 70 per cent had a broadband connection. Now only 21 per cent of the UK adult population have never accessed the Internet, concentrated in the more elderly categories. Internet usage has also become more frequent. The 2009 survey reported that 73 per cent of those who said they were frequent users accessed the Internet every day or almost every day.

These trends have also been reflected in household and individual purchases over the Internet. 69 per cent of UK adults have purchased over the Internet, up from 58 per cent in 2008. And of those who reported that they had purchased over the internet, 83 per cent had made a purchase in the three-months prior to the survey, with films, music, clothes, sporting goods, household goods, holiday accommodation, and books and magazines the most popular items. The main reason for buying over the internet was convenience, but other important factors highlighted by the survey included easy to use websites, opportunity to buy goods not available in the area, lower prices and a wider choice of goods.

Retail spending, particularly in the predominantly non-food sector, appears

to have been supported by strong discounting. Inflation in the retail sales deflator, excluding automotive fuels, has consistently been lower than consumer price inflation in recent years. Prices in household goods stores, textiles clothing and footwear stores, non-specialised stores and other stores have been falling for most of the last decade, but the rate of deflation quickened at the end of 2008 and beginning of 2009.

One of the consequences of retail goods price deflation has been a separation in the paths of retail sales values and volumes. **Figure 11** plots the ratio of retail sales to gross household disposable income in both current and also constant (2005) prices. (It should be noted here that not all retail spending is actually done by households, although they are the largest source of retail demand, as businesses and foreign tourists also buy goods from retail establishments.) While retail spending has steadily increased as a proportion of real household disposable incomes in volume terms, the ratio in value terms has been much more stable. More recently, the ratio in value terms has fallen back, while in volume terms it has remained broadly unchanged.

Figure 11 gives different perspectives on the strength of retail spending. In the period leading up to the economic downturn, retail spending grew faster than disposable incomes in real terms. But because retail goods prices were falling and disposable income rising, higher volumes of purchases could be achieved while keeping the value of retail spending at a more stable level relative to disposable incomes. From this perspective, households may not view their past retail spending relative to disposable incomes as very profligate. In turn, this might reduce the extent to which they cut back on the volume of retail spending in the downturn. The volume of retail spending is thus being supported by discounting in the recession.

## Unemployment falls, but duration of unemployment increases

In the final quarter of 2009, headline unemployment fell marginally by 3,000 to 2.457 million. The unemployment rate remains at 7.8 per cent for the third successive quarter, having risen from 5.2

per cent in the final quarter of 2007 as the downturn in output passed through to the labour market. Latest data supports the view that the labour market has somewhat stabilised in the second half of 2009.

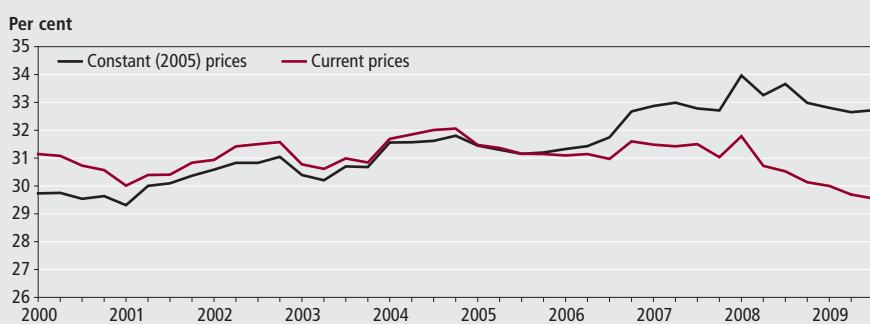
However, the average duration of unemployment has been rising steadily. Although flows into unemployment have slowed, in line with the lower reported redundancy rate, flows out of unemployment into employment are yet to show any marked improvement. Business surveys have reported an easing in the level of redundancies after firms implemented cost saving and efficiency

programmes in 2008, but recruitment intentions remain passive due to the uncertain economic outlook and existing spare capacity.

These flows suggest that those who became unemployed at the start of the recession have continued to face a difficult labour market. Between 2007 Q4 and 2009 Q3, the number of unemployed people per vacancy increased from 2.4 to 5.7. Although the ratio fell back to 5.3 in the final quarter of 2009, it remains well above the long term average. As a result the average duration of unemployment has been on an upward path.

**Figure 11**

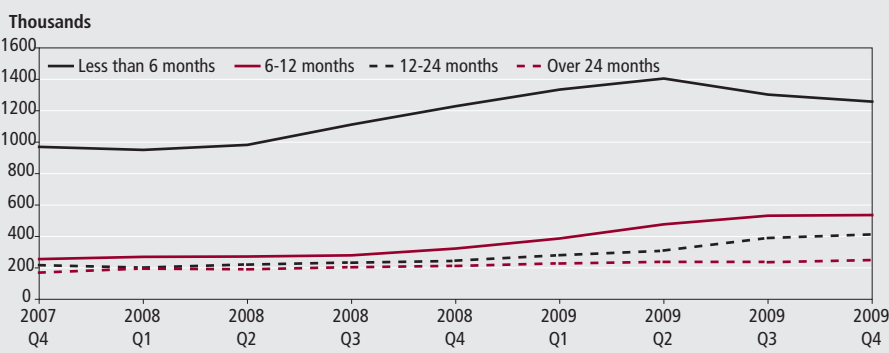
### Proportion of retail sales to gross household disposable income



Source: Retail Sales Index

**Figure 12**

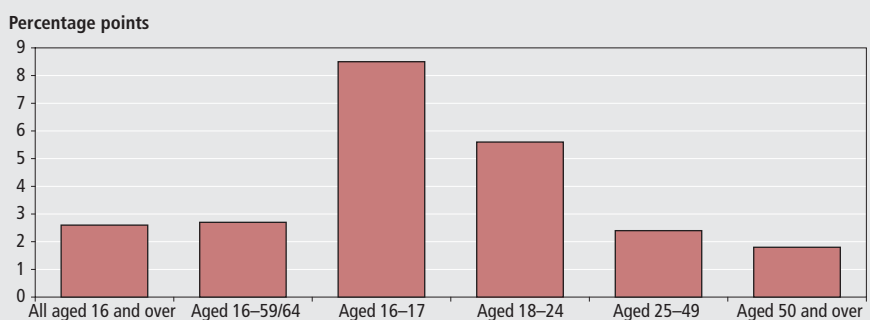
### Numbers of unemployed by duration



Source: Labour Force Survey

**Figure 13**

### Change in the unemployment rate from 2007 Q4 to 2009 Q4 by age group



Source: Labour Force Survey

Figure 12 shows the level of unemployment by duration. Although the majority of unemployed have been so for less than six months (1.258 million in 2009 Q4), as a proportion of total unemployment these have been falling in the last year from 61.2 per cent in 2008 Q4 to 51.2 per cent in 2009 Q4. Numbers unemployed for 6 to 12 months have more than doubled in the last two years, rising from 256,000 in 2007 Q4 to 536,000 in 2009 Q4. As a proportion of total unemployment, this duration increased from 15.9 per cent to 21.8 per cent over this two year period.

Those unemployed for 12 to 24 months and over 24 months have also increased in numbers. Between 2007 Q4 and 2009 Q4 the total unemployed for more than a year increased from 387,000 to 663,000, rising as proportion of total unemployed from 24 per cent to 27 per cent.

## Unemployment and inactivity rates for young people increase the most

Between 2007 Q4 and 2009 Q4, while total unemployment has risen, the change in the unemployment rate has varied between different age groups (Figure 13).

In the 16 to 17 years age category, the unemployment rate increased markedly, up 8.5 percentage points to 33.6 per cent. For the 18 to 24 years age category the unemployment rate rose by 5.6 percentage points to 17.6 per cent and for the 24 to 49 years age group the unemployment rate increased by 2.4 percentage points to 6.2 per cent. The pattern of smaller increases in the unemployment rate for each successive age category continues to the over 50 age category, where the increase in the unemployment rate was the lowest – rising by 1.8 percentage points to 4.7 per cent.

This pattern suggests that younger people have been disproportionately affected by the recession and the associated downturn in the labour market. As these groups tend to be more reliant on graduate recruitment and other entry schemes, their job prospects may have been severely impaired by the sharp fall in employers' recruitment intentions.

However, although proportionately worse affected, due to lower numbers of

economically active people in the younger age groups, the absolute contribution to the rise in unemployment during the last two years was less significant. Total unemployment increased by 844,000 of which only 10,000 was attributed to the 16 to 17 years age group and 226,000 to the 18 to 24 years age group. The largest contribution was in the 25 to 49 years age category where the increase in unemployment of 445,000 accounted for over half the total increase. In the over 50 years age category the number of unemployed increased by 163,000.

Growing inactivity has also been concentrated in the younger age groups. In the last year (that is 2008 Q4 to 2009 Q4) working age inactivity increased by 241,000. This was almost entirely accounted for by the 54,000 increase in the 16 to 17 years age group and the 186,000 increase in the 18 to 24 years age group. The other three age groups, 25 to 34 years, 35 to 49 years, and 50 years to state pension age, only showed marginal changes. As a result the inactivity rate of 16 to 17 years age group increased by 4.9 percentage points to 61.7 per cent. For the 18 to 24 years age group the inactivity rate increased by 2.9 percentage points to 29.2 per cent. Changes in the inactivity rates of other age groups were slight.

Stated reasons for inactivity show a large increase in students. Of the 241,000 rise in the total inactive working age population in the last year, 217,000 were accounted for by growing student numbers, representing a 10 per cent increase on the year. When viewed alongside the increase in unemployment and inactivity rates of young people, it suggests that growing student numbers may be a reflection of the weak labour market conditions facing younger people.

Other reasons for inactivity showed smaller changes in the last year. The numbers of those looking after family or home fell by 27,000, while the temporary and long-term sick grew by 8,000 and 25,000 respectively and the number of retired increased by 10,000. The 28,000 increase in discouraged workers may be further evidence of the restricted labour market, but this still represents a low proportion of the working age inactive population.

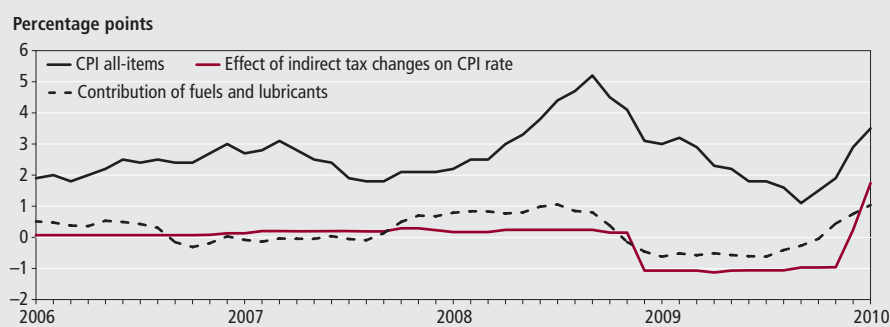
## CPI inflation up to 3.5 per cent, RPI inflation up to 3.7 per cent

Annual inflation in the Consumer Prices Index (CPI) increased to 3.5 per cent in January 2010 (Figure 14). Inflation has picked strongly since September 2009, when the CPI inflation rate reached a recent low of 1.1 per cent. The latest rise has been driven by motor fuel prices and by the reversion of the rate of VAT to 17.5 per cent in January 2010. The rate of VAT was temporarily reduced to 15 per cent in December 2009 as part of the fiscal stimulus package announced in the 2009 Pre-Budget Report.

After falling significantly in the second half of 2008, motor fuel prices have risen strongly throughout 2009. In January 2010, motor fuels and lubricants prices were 25.3 per cent higher than in the same month a year earlier, contributing around 1 percentage point to the overall CPI inflation rate. A further substantial increase in inflation has resulted from the increase in VAT. ONS estimates that changes in indirect taxes contributed 1.7 percentage points to CPI inflation in January 2010.

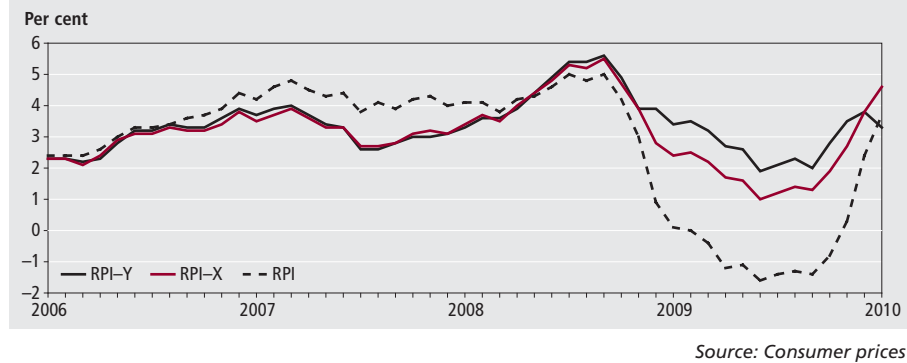
A strong rise in inflation has also been observed in the Retail Prices Index (RPI).

Figure 14  
Annual inflation in the CPI



Source: Consumer prices

**Figure 15**  
**Annual inflation in the RPI**



**Figure 15** shows that the annual RPI inflation rate has increased from -1.4 per cent in September 2009 to 3.7 per cent in January 2010. Although RPI weights differ to those in the CPI, the rise in motor fuel prices and VAT increase have also contributed to the higher inflation rate.

However, the overall pick up in RPI inflation has exceeded that in the CPI. This is largely due to the inclusion of mortgage interest payments in the RPI. The large reduction in interest rates at the end of 2008, to the extent that they were passed through to lower mortgage

rates, reduced the RPI inflation rate throughout 2009, accounting for its fall into negative territory. However, this effect is now beginning to fall out of the annual calculation, pushing up RPI inflation. RPI-X is a measure that excludes mortgage interest payments – the increase in this measure of the inflation rate since September 2009 has been lower at 3.3 percentage points compared to 5.0 percentage point for the total RPI. RPI-Y excludes both mortgage interest payments and indirect taxes so excludes not just last year's reduction in mortgage interest rates but also the impact of the change in the VAT rate. As a result, the rise in the RPIY inflation rate between September 2009 and January 2010 was lower still at 1.3 percentage points.

# Independent forecasts

## February 2009

### UK forecasts

The tables below supplement the Economic Review by providing a forward-looking view of the UK economy. The tables show 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)	-4.7	-4.9	-4.3
Inflation rate (Q4, per cent)			
CPI	2.0	1.5	2.3
RPI	0.3	-2.1	0.7
Claimant count (Q4, million)	1.63	1.60	1.73
Current account (£ billion)	-21.0	-35.3	-13.0
Public Sector Net Borrowing (2009–10, £ billion)	170.7	133.7	200.0

#### 2010

	Average	Lowest	Highest
GDP growth (per cent)	1.4	0.7	2.2
Inflation rate (Q4, per cent)			
CPI	2.1	1.4	3.8
RPI	3.1	1.8	4.8
Claimant count (Q4, million)	1.75	1.44	2.20
Current account (£ billion)	-23.1	-42.3	-7.0
Public Sector Net Borrowing (2010–11, £ billion)	173.3	71.6	200.9

#### 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](http://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* (November 2009), published by OECD (Organisation for Economic Co-operation and Development).

#### 2010

	US	Japan	Euro area	Total OECD
Real GDP growth (per cent)	2.5	1.8	0.9	1.9
Consumer price (percentage change from previous year)	1.7	-0.9	0.9	..
Unemployment rate (per cent of the labour force)	9.9	5.6	10.6	9.0
Current account (as a percentage of GDP)	-3.4	2.8	-0.1	-0.8
Fiscal balance (as a percentage of GDP)	-10.7	-8.2	-6.7	-8.3

#### 2011

	US	Japan	Euro area	Total OECD
Real GDP growth (per cent)	2.8	2.0	1.7	2.5
Consumer price (percentage change from previous year)	1.3	-0.5	0.7	..
Unemployment rate (per cent of the labour force)	9.1	5.4	10.8	8.8
Current account (as a percentage of GDP)	-3.7	2.8	0.3	-0.8
Fiscal balance (as a percentage of GDP)	-9.4	-9.4	-6.2	-7.6

#### Notes

The OECD *Economic Outlook* is published bi-annually. Further information about this publication can be found at [www.oecd.org/eco/Economic\\_Outlook](http://www.oecd.org/eco/Economic_Outlook)

# 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	2008	2009	2009 Q2	2009 Q3	2009 Q4	2009 Dec	2010 Jan	2010 Feb
<b>GDP growth – chained volume measures (CVM)</b>									
Gross domestic product at market prices	ABMI	0.5	–5.0	–0.6	–0.3	0.3	..	..	..
<b>Output growth – chained volume measures (CVM)</b>									
Gross value added (GVA) at basic prices	ABMM	0.4	–4.7	–0.5	–0.3	0.3	..	..	..
Industrial production	CKYW	–3.1	–10.2	–0.5	–0.9	0.4	0.5	..	..
Manufacturing	CKYY	–2.9	–10.5	–0.1	–0.2	0.8	0.9	..	..
Construction	GDQB	–0.8	–9.2	1.1	2.0	–1.0	..	..	..
Services	GDQS	1.4	–3.7	–0.7	–0.3	0.5	..	..	..
Oil and gas extraction	CKZO	–4.8	–7.7	–1.1	–6.5	1.2	–5.6	..	..
Electricity, gas and water supply	CKYZ	0.2	–7.8	–2.9	0.1	–2.7	4.2	..	..
Business services and finance	GDQN	2.4	–4.7	–1.0	–1.1	0.3	..	..	..
<b>Household demand</b>									
Retail sales volume growth	EAPS	2.6	1.7	0.8	1.1	0.7	0.4	..	..
Household final consumption expenditure growth (CVM)	ABJR	0.9	–3.1	–0.9	0.1	0.4	..	..	..
GB new registrations of cars (thousands) <sup>1</sup>	BCGT	..	..	..	..	..	..	..	..
<b>Labour market<sup>2,3</sup></b>									
Employment: 16 and over (thousands)	MGRZ	29,443	..	28,925	28,917	28,905	..	..	..
Employment rate: working age (%)	MGSU	74.5	..	72.7	72.5	72.4	..	..	..
Workforce jobs (thousands)	DYDC	31,661	30,987	30,987	30,861	..	..	..	..
Total actual weekly hours of work: all workers (millions)	YBUS	940.7	..	917.6	909.7	907.9	..	..	..
Unemployment: 16 and over (thousands)	MGSC	1,776	..	2,431	2,461	2,457	..	..	..
Unemployment rate: 16 and over (%)	MGSX	5.7	..	7.8	7.8	7.8	..	..	..
Claimant count (thousands)	BCJD	905.1	1,531.8	1,533.2	1,605.2	1,622.1	1,612.1	1,635.6	..
Economically active: 16 and over (thousands)	MGSF	31,220	..	31,356	31,378	31,363	..	..	..
Economic activity rate: working age (%)	MGSO	79.1	..	79.0	78.9	78.7	..	..	..
Economically inactive: working age (thousands)	YBSN	7,872	..	7,951	8,006	8,077	..	..	..
Economic inactivity rate: working age (%)	YBTL	20.9	..	21.0	21.1	21.3	..	..	..
Vacancies (thousands)	AP2Y	636	452	435	431	465	465	479	..
Redundancies (thousands)	BEAO	163	..	268	204	168	..	..	..
<b>Productivity and earnings annual growth</b>									
GB average earnings (including bonuses) <sup>3</sup>	LNNC	..	..	2.5	1.4	1.5	1.5	..	..
GB average earnings (excluding bonuses) <sup>3</sup>	JQDY	..	..	2.4	1.7	1.4	1.4	..	..
Whole economy productivity (output per worker)	A4YN	..	..	–3.5	–3.1	..	..	..	..
Manufacturing productivity (output per job)	LOUV	..	..	..	..	..	3.6	..	..
Unit wage costs: whole economy	LOJE	..	..	5.1	4.1	..	..	..	..
Unit wage costs: manufacturing	LOJF	..	..	..	..	..	–0.7	..	..
<b>Business demand</b>									
Business investment growth (CVM)	NPEL	1.1	–19.0	–9.9	–1.8	–5.8	..	..	..
<b>Government demand</b>									
Government final consumption expenditure growth	NMRY	2.6	2.0	0.8	0.4	1.2	..	..	..
<b>Prices (12-monthly percentage change – except oil prices)<sup>1</sup></b>									
Consumer prices index	D7G7	3.6	2.2	2.1	1.5	2.1	2.9	3.5	..
Retail prices index	CZBH	4.0	–0.5	–1.3	–1.4	0.6	2.4	3.7	..
Retail prices index (excluding mortgage interest payments)	CDKQ	4.3	2.0	1.4	1.3	2.8	3.8	4.6	..
Producer output prices (excluding FBTP) <sup>4,5</sup>	PLLV	4.7	2.0	1.3	0.7	2.3	2.6	2.5	..
Producer input prices <sup>5</sup>	RNNK	21.6	–3.6	–8.9	–8.7	3.9	7.4	8.4	..
Oil price: sterling (£ per barrel)	ETXR	52.10	39.34	38.44	42.05	45.53	46.41	48.25	47.66
Oil price: dollars (\$ per barrel)	ETXQ	98.37	62.05	59.82	69.02	74.40	75.28	77.05	74.49

Seasonally adjusted unless otherwise stated									
	Source CDID	2008	2009	2009 Q2	2009 Q3	2009 Q4	2009 Dec	2010 Jan	2010 Feb
<b>Financial markets<sup>1</sup></b>									
Sterling ERI (January 2005=100)	BK67	90.8	80.1	80.8	82.5	80.0	80.1	80.6	..
Average exchange rate /US\$	AUSS	1.8528	1.5651	1.5503	1.6411	1.6345	1.6239	1.6162	..
Average exchange rate /Euro	THAP	1.2588	1.1233	1.1389	1.1475	1.1058	1.1127	1.1327	..
3-month inter-bank rate	HSAJ	2.75	0.55	1.15	0.55	0.55	0.55	0.50	..
Selected retail banks: base rate	ZCMG						0.50	0.50	..
3-month interest rate on US Treasury bills	LUST	0.11	0.05	0.20	0.14	0.05	0.05	0.08	..
<b>Trade and the balance of payments</b>									
UK balance on trade in goods (£m)	BOKI	-93,381	-81,901	-19,808	-19,889	-21,276	-7,278	..	..
Exports of services (£m)	IKBB	170,758	159,369	39,614	38,550	39,079	13,189	..	..
Non-EU balance on trade in goods (£m)	LGDT	-53,913	-44,922	-10,949	-10,972	-10,341	-3,553	..	..
Non-EU exports of goods (excl oil & erratics) <sup>6</sup>	SHDJ	105.8	96.1	92.9	96.6	102.4	103.6	..	..
Non-EU imports of goods (excl oil & erratics) <sup>6</sup>	SHED	113.5	98.2	96.3	96.0	99.8	101.3	..	..
Non-EU import and price index (excl oil) <sup>6</sup>	LKWQ	115.3	126.0	126.2	122.8	124.0	124.4	..	..
Non-EU export and price index (excl oil) <sup>6</sup>	LKVX	109.8	118.4	118.4	116.8	116.8	114.9	..	..
<b>Monetary conditions/government finances</b>									
Narrow money: notes and coin (year on year percentage growth) <sup>7</sup>	VQUU	7.3	5.9	8.7	8.6	5.9	5.9	6.8	..
M4 (year on year percentage growth)	VQJW	13.2	12.4	13.6	11.5	6.4	6.4	4.9	..
Public sector net borrowing (£m)	-ANNX	61,686	141,033	41,034	34,718	42,283	13,970	4,339	..
Net lending to consumers (£m)	RLMH	11,185	-1,142	474	-939	-880	52	500	..

## External indicators – non-ONS statistics

		2009 Jul	2009 Aug	2009 Sep	2009 Oct	2009 Nov	2009 Dec	2010 Jan	2010 Feb
<b>Activity and expectations</b>									
CBI output expectations balance <sup>1</sup>	ETCU	-14	-5	-2	4	4	-7	4	7
CBI optimism balance <sup>1</sup>	ETBV	-16			10			12	
CBI price expectations balance	ETDQ	-13	5	-6	-4	-4	-2	6	9

### 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.

## ARTICLE

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# An expenditure-based analysis of the redistribution of household income

## SUMMARY

This article complements existing Office for National Statistics (ONS) analyses which focus on the distribution of disposable income across households by examining the distribution of household expenditure, in particular the effects of taxes.

Analyses of household disposable income and expenditure both show that: households whose members are economically active and composed entirely of adults are more concentrated in the top quintile groups in both distributions; direct taxes are progressive; and benefits are higher for households at the bottom of both distributions.

However, a number of interesting differences were also found. These include: indirect taxes are progressive in expenditure distribution, but regressive in income distribution; inequality in expenditure distribution is lower than in the income distribution; and households composed of single parents, couples with children and people in full-time education are more equally spread within the expenditure distribution than the income distribution, where they tend to be more concentrated in the bottom quintile groups.

Distributional analyses of the economy and of the fiscal system are usually based on the income of households or individuals. For example, the Office for National Statistics (ONS) analyses the effects of taxes and benefits in redistributing resources between UK households by referring to the distribution of their disposable income. However, some of the results of this analysis were found to be different when distribution of expenditure, rather than income, was used to rank households.

This article examines how using the distribution of household expenditure can provide a different view on the material living standards and equality among UK households, and particularly the effects of taxes on them. The aim is not to replace the income-based analysis, but to look at how to complement it by studying the distribution of expenditure. It is also in line with the recommendations presented in the Stiglitz Report<sup>1</sup> for assessing material well-being. The report suggests looking at consumption rather than production when evaluating material well-being. It also recommends giving more importance to the distribution of income, consumption and wealth in social and economic analyses.

Combining the results of the two approaches allows for a more complete understanding of the material living standards of households in the UK. In fact, the results obtained with the two methods share similarities, but also substantial differences.

The most relevant differences between the two analyses are:

- indirect taxes were progressive when analysed using expenditure distribution, but regressive when income distribution was used
- the level of inequality, measured as the ratio between the top and the bottom quintile groups, was lower using expenditure distribution than when income distribution was used – at any stage of the tax and benefit process
- households composed of single parents, couples with children and people in full-time education were more equally spread within the expenditure distribution than in the income distribution, where they tended to be more concentrated in the bottom quintile group

Some of the main similarities between the two analyses are:

- households whose members were economically active, and those composed only of adults, were more concentrated in the top quintile group in both distributions
- direct taxes, considered as a whole, were progressive (that is, they took a larger proportion of income from those with higher incomes)
- benefits (in cash and in kind) were higher for households at the bottom of both distributions

## Measuring household material living standards

Material living standards are not readily measurable as they include a variety of aspects. Therefore, when trying to assess the level of welfare proxies are used.

So far, the most common and agreed method for measuring household's material living standards has been to refer to their income, as it has been considered a good indicator of this command over resources. That does not mean, however, that income is the only, or the best, proxy to welfare. Expenditure, as an indicator of household consumption, is another method for estimating material living standards, although it is much less commonly used.

Some of the main reasons why income is chosen over expenditure to measure living standards include:

- income measures the household's potential living standards, rather than the standards the individuals actively seek to achieve (which may not reflect their resources). For example, consider two households in identical situations and with the same level of income. One of them spends all of their income, while the other saves most of it. The income measure gives both of the households the same standard of living and tells us that they both could have achieved the same level of expenditure, if they had chosen to
- income levels can be directly affected by public policy. Therefore distribution of income might be a more sensible indicator when studying the effects of governmental interventions in the economy
- the proportion of income saved by households contributes to their welfare, along with their consumption. This is because savings may provide financial security, even when not used to sustain spending

However, an increasing number of policy makers and academics are considering expenditure as a reasonable financial indicator of material living standards. Several arguments bear out this approach, including:

- income varies over a person's lifetime, whereas material living standards do not reflect such a marked instability. Levels of spending tend to be maintained at a more constant level over time, compared with levels of income, and therefore may be a better

representation of living standards, even in a long-term perspective

- many households at the bottom of the income distribution spend more than households with higher incomes. It indicates that for a significant number of households, a low level of income does not correspond to a general lack of resources. Therefore for these households, expenditure might provide a more precise proxy for their standard of living
- research at the Institute for Fiscal Studies (IFS) has suggested that in some particular cases, such as for self-employed people and individuals with irregular or informal incomes, expenditure data are subject to fewer measurement errors than for income data (see Brewer et al. 2006). However, measurement errors also exist in expenditure data and it is therefore difficult to ascertain whether these errors are indeed smaller or larger than those for income data

Therefore there is no single correct way to measure material living standards. This is because both income- and expenditure-based methods have both positive and negative elements, and tend to pick up different aspects of a household's financial situation.

## Concepts and sources

The analysis presented is based on data from the Living Costs and Food Survey (LCF) – formerly named the Expenditure and Food Survey – with a sample of 6,120 households across the UK in 2007/08. The sample only covers private households and is weighted using 2001 Census data<sup>2</sup>. The definition of household expenditure used in this analysis is a modified version of that used in the ONS publication *Family Spending*<sup>3</sup>. Similar to the definition used in *Family Spending*, total expenditure represents current expenditure on goods and services and excludes recorded payments that relate to savings and investments, income tax payments, National Insurance Contributions, mortgage capital repayments and other payments for major additions to dwellings. However in this analysis, council tax payments are also excluded from the measure of household expenditure. This allows for consistency with the definition of disposable income used in income-based analyses (see Barnard, 2009).

To allow for comparability with the income-based analysis, expenditure

data are equivalised to take account of household size and composition, using the McClements scale<sup>4</sup>. Expenditure distribution is obtained by ranking the households and dividing them into ten or five groups of equal size (referred to as decile and quintile groups respectively).

## Comparing income and expenditure of the same household: 'the expenditure tick'

Comparing equivalised disposable income with equivalised expenditure of households in the same decile group highlights a number of patterns.

On average, households within the first two decile groups had higher expenditure than disposable income; several authors refer to this phenomenon as an 'expenditure tick'. This is presented in **Figure 1**.

This result is confirmed in several other analyses. Amongst those, an Institute for Fiscal Studies (IFS) publication (Brewer et al. 2006) highlighted that during 2001/02 and 2002/03, the poorest 1 per cent of households spent, on average, more than any percentile up to the 31st (the beginning of the third decile). This implies that those households at the bottom of the income distribution sustained their expenditure with resources that were additional to their income, such as borrowing or making use of savings. It might also reflect the fact that some of these households were only temporarily at the bottom of the income distribution, maintaining their consumption at a constant level. As previously mentioned, researchers from IFS also took into account the possibility that these results reflect errors in the measurement of income by the LCF.

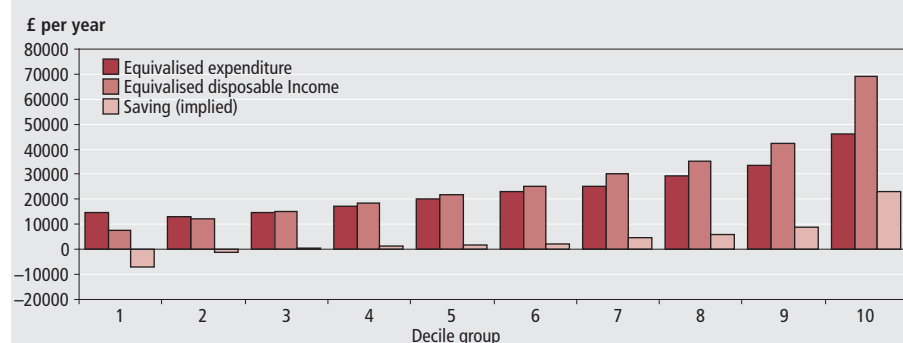
Moreover, the LCF does not collect any information that would enable a balance sheet of income and expenditure to be drawn up for a household over any particular period. Also, LCF income data do not include proceeds from the sale of assets (for example, the sale of a car) or windfalls such as inheritances, but recorded expenditure might reflect these items.

It is therefore worth investigating the features of households with expenditure significantly higher than their income, in order to identify possible characteristics able to explain this anomaly.

## Characteristics of households with expenditure higher than income

Approximately 6 per cent of the households analysed had a level of expenditure that was greater than twice the level of their

**Figure 1**  
**Household expenditure and disposable income: by income decile group, 2007/08**



Source: Office for National Statistics

**Table 1**  
**High expenditure households:<sup>1</sup> household characteristics 2007–08**

	High expenditure <sup>1</sup>	All households	Difference	Percentage difference
<b>Average per household (number)</b>				
People	2.2	2.4	–0.2	–8
Adults	1.8	1.8	0.0	0
Children	0.4	0.5	–0.1	–20
Economically active people	0.8	1.2	–0.4	–33
Retired people	0.4	0.4	0.0	0
People in full-time education	0.65	0.48	0.17	35
In state primary schools	0.14	0.21	–0.07	–33
In state secondary schools	0.14	0.16	–0.02	–13
In further and higher education	0.35	0.09	0.26	289
In other educational establishments	0.01	0.02	–0.01	–50
<b>Composition (percentages)</b>				
<b>Age of chief economic supporter</b>				
Under 25	11	4	7	175
Over 24 and under 35	9	15	–6	–40
Over 34 and under 45	17	20	–3	–15
Over 44 and under 55	21	19	2	11
Over 54 and under 65	22	17	5	29
Over 64 and under 75	13	12	1	8
Over 74	7	13	–6	–46
<b>Employment status of chief economic supporter</b>				
Self-employed	13	8	5	63
Full-time employee	19	45	–26	–58
Part-time employee	12	8	4	50
Unemployed	3	2	1	50
Unoccupied and under minimum NI pension age	28	12	16	133
Retired/unoccupied over minimum NI pension age	24	26	–2	–8
Other	0	0	0	0

**Note:**

1 Households with expenditure more than twice their income.

Source: Office for National Statistics

disposable income. This group is referred to as 'households with high expenditure'. These households were mainly concentrated at the bottom of the income distribution. In fact, 68 per cent of these households were in the quintile group with the lowest income,

followed by 14 per cent in the second group, 9 per cent in the third group and only 4 per cent in both the fourth and top quintile groups. Conversely, using the distribution of expenditure, high expenditure households were more concentrated at the

top of the distribution. 46 per cent of these households were in the highest quintile group, 20 per cent in the fourth group, 17 in the third group, 12 per cent in the second group and only 5 per cent in the bottom group.

**Table 1** compares the composition of households with high expenditure against that of the overall sample. This shows that a main difference is the substantially higher presence of households with a reference person aged less than 25 within the high expenditure group, compared with the overall average (11 per cent and 4 per cent, respectively). Similarly, more than one in three (35 per cent) members of households with high expenditure were in higher and further education, compared with the overall average of 9 per cent.

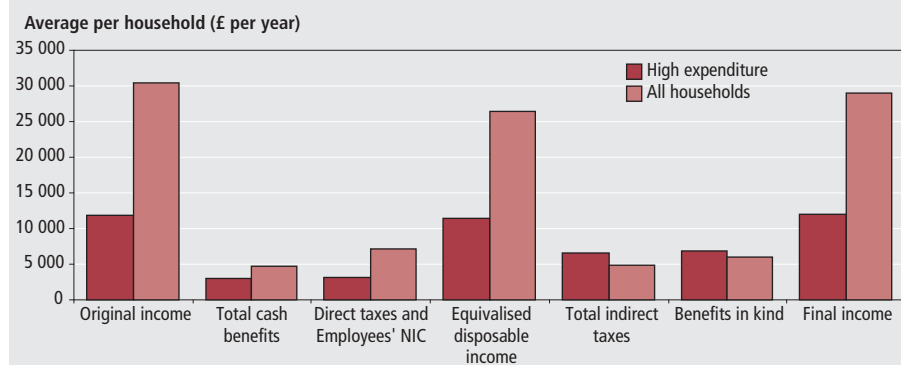
Among households with high expenditure, there was a higher than average presence of households where the reference person was self-employed (13 per cent, compared with 8 per cent in the overall sample). Another peculiarity of this sub-sample was the high presence (28 per cent) of households with a chief economic supporter unoccupied and under the National Insurance pension age. This proportion is more than twice the overall average of 12 per cent.

**Figure 2** shows that high expenditure households had an average annual equivalised disposable income 57 per cent lower than those for all households (£11,440 and £26,360 per year, respectively). In fact, the only income category for which high expenditure households had a higher income compared with the overall average was for 'other income' (£450 per year, against £210 per year); this source of income includes income from odd jobs, short-term benefits and education grants<sup>5</sup>. Similarly, high expenditure households received lower cash benefits than the overall average (£2,980 against £4,780 per year), with the exception being income from student support and job seekers' allowance (48 per cent and 3 per cent higher than average, respectively).

High expenditure households paid 57 per cent less direct taxes than the average for all households. This reflects their lower than average income. On the other hand, these households paid higher indirect taxes (35 per cent more than the overall sample), as these taxes are levied on expenditure, rather than on income.

High expenditure households received higher benefits in kind than the average (£6,820 per year against £5,990 per year). This difference was because of the large

Figure 2

**Effects of taxes and benefits on high expenditure households and on all households**

Source: Office for National Statistics

number of people in full-time education in high expenditure households, which led to a higher than average level of education benefit (£3,840 per year, compared with £2,390), 61 per cent higher than that received on average by the overall sample. Conversely, they received lower than average benefits in kind from all the other sources, such as NHS (17 per cent lower), housing subsidies (35 per cent lower), rail travel subsidy (22 per cent lower), and school meals and welfare milk (68 per cent lower).

These figures provide a better understanding of the 'expenditure tick'. Many of the peculiarities of high expenditure households can be associated with a temporary condition of low income, rather than with a permanency of poverty. For example, students and young people just starting their careers often have low incomes, but can benefit from resources provided by their families or money derived from borrowing and loans which would not be picked up by the LCF. Similarly, they often incur higher costs than during other periods of their life, such as education fees and first-time purchases of durables (for example, furniture, cars and domestic appliances). However, for most households, this condition can be expected to change, for example as careers are progressed.

**How do households sustain expenditure greater than income?**

The composition of high expenditure households allows the formulation of hypotheses regarding the resources these households use to sustain their level of spending. Furthermore, the LCF asks these households how they fund their expenditure, from eight different options<sup>6</sup>. Among the high expenditure households 53 per cent chose at least one of the possible options.

Savings were the most common resource indicated as used for sustaining expenditure (32 per cent), followed by overdraft (19 per cent) and 'Credit/Store Card Debt' (15 per cent). Loans from other sources and loans from friends or relatives were next, chosen in 12 per cent and 11 per cent of the cases respectively.

These figures show that a good proportion of the high expenditure households relied on funds previously accumulated in the form of savings. This might be the case for households that were experiencing a temporary period of low income (for example, those temporarily out of employment). The use of overdrafts, credit and store cards and loans, on the contrary, implies that these households relied on the possibility of repaying the current level of expenditure in the future. This scenario is most likely for young households, people in education and those temporarily out of employment.

These data provide more information on the 'expenditure tick'. However they are only indicative, as they are based on the respondent's opinions. Furthermore, these data are not exhaustive, as many high expenditure households did not provide any answer.

**The distribution of household expenditure**

The 'expenditure tick' supports the hypothesis that analysing a household's material living standards, using expenditure distribution rather than income distributions, provides interesting insights into the welfare of households. Therefore, some of the analyses carried out annually by ONS and presented in 'The effects of taxes and benefits on household income' (see Barnard 2009) have been repeated, ranking the households based on their expenditure, using 2007/08 data.

**Household characteristics**

By analysing household features, it is possible to see which types of households have the highest level of expenditure. It also shows how taxes and benefits affect different types of households.

**Table 2** presents the household composition of quintile groups ranked by equivalised expenditure and shows that:

- among non-retired households, those composed of singles or couples (without children) were more concentrated in the upper part of the expenditure distribution, while single parent households were more likely to be found at the bottom of the distribution
- the middle of the distribution had a higher concentration of couples with children
- retired households spent less than non-retired households, so that they made up 48 per cent of the bottom quintile group, but only 13 per cent of the top quintile group

Household size does not vary much across the expenditure distribution. On the other hand, the number of economically active people per household appears to be related to the level of spending:

- households in the top quintile group had three times as many economically active members as households in the bottom quintile group
- the bottom quintile group contained on average 0.7 retired people per household, compared with an average of 0.2 people in the top quintile group
- there were a higher number of people in full-time education per household in the central part of the expenditure distribution than at the top and bottom of the distribution

There are similarities between these results and those obtained by ranking households based on their income, but also noticeable differences. In both the distributions, the top quintile groups had a high concentration of economically active households and households composed of only adults. However, the proportion of single parents and couples with children at the bottom of the distribution was lower when expenditure, rather than income, was used. Similarly, people in full time education were much less numerous in the bottom quintile group of the expenditure distribution than in the same income

Table 2

**Summary of household characteristics of expenditure quintile groups<sup>1</sup>, 2007–08**

	Quintile groups of ALL households <sup>1</sup>					All
	Bottom	2nd	3rd	4th	Top	households
Number of individuals per household						
Children <sup>2</sup>	0.5	0.6	0.6	0.5	0.4	0.5
Adults	1.6	1.9	1.9	2.0	1.8	1.8
Men	0.7	0.9	1.0	1.0	0.9	0.9
Women	0.9	1.0	1.0	1.0	0.9	1.0
People	2.1	2.5	2.5	2.5	2.2	2.4
People in full-time education	0.4	0.6	0.6	0.5	0.4	0.5
Economically active people	0.5	1.1	1.4	1.5	1.5	1.2
Retired people	0.7	0.5	0.4	0.3	0.2	0.4
Household type (percentages)						
Retired	48	32	21	17	13	26
Non-retired						
1 adult	14	11	12	12	21	14
2 adults	10	17	25	29	34	23
1 adult with children <sup>3</sup>	9	7	5	4	3	6
2 adults with children	11	18	23	23	20	19
3 or more adults <sup>4</sup>	8	15	15	14	9	12
All household types	100	100	100	100	100	100

**Notes:**

Source: Office for National Statistics

1 Households are ranked by equivalised expenditure.

2 Children are defined as people aged under 16, or aged 16 to 18 unmarried and receiving non-advanced education.

3 This group was smaller than the category of one parent families because some of the families will be contained in the larger household types.

4 With or without children.

quintile group, and economically active people were more evenly spread across the distribution when expenditure, rather than income, was used.

**The effects of taxes and benefits**

The effects of taxes and benefits on household income can be analysed using the equivalised expenditure distribution. As with the income-based analysis, particular attention is given to the redistributive effect of taxes and benefits (see **Table 3**).

Original income is the income that households receive from earnings, occupational pensions and investments, before taxes and benefits. It varies substantially between households at different points of the expenditure distribution, as shown in **Tables 4a** and **4b**. The proportion of original income received by quintile groups can be used as an indicator of the extent of inequality. Households in the bottom quintile group of the expenditure distribution received an original income that was about eight times lower than that received by households in the top quintile group (£7,330 and £60,900 per year, respectively). Although this suggests the existence of a substantial

level of inequality for original income, this level was lower than that observed for the distribution of disposable income. In that case, households in the top quintile were receiving an income about 17 times higher than that received by households in the bottom quintile group. Therefore, there was a lower degree of inequality for original income within the expenditure distribution than within the income distribution.

Households also receive money in the form of cash benefits, which are generally higher for households with lower incomes. The quintile of households with the lowest expenditure received on average £9,000 per year in cash benefits, while the group at the top of the distribution received £2,000 per year. Therefore gross income (original income plus cash benefits), is more equally spread than original income among households at different levels of the expenditure distribution. Those in the bottom quintile group had a share of 10 per cent of the total gross income available, and those at the top received 37 per cent of it. Inequality for gross income was higher within the income distribution (7 per cent of gross income received by households in the bottom quintile group, and 44 per

cent received by those in the top quintile group).

Direct taxes, including income tax, National Insurance Contributions (NIC) and council tax, are progressive with respect to income when considered as a whole, as households with higher incomes pay both higher amounts and higher proportions of their income in direct taxes. Direct taxes also appear to be progressive when their effect is analysed using expenditure distribution. Households in the bottom quintile group paid 10.4 per cent of their gross income in direct taxes. This proportion grew for groups higher up in the expenditure distribution, reaching 25.4 per cent for the top quintile of households with the highest expenditure. This pattern is very similar to the one observed when analysing the distribution of income.

Income tax and National Insurance Contributions (NIC) are progressive with respect to both the income and the expenditure distributions. However, households in the bottom two quintile groups of the expenditure distribution paid a slightly higher proportion of their income in income tax (5.1 per cent and 9.2 per cent, respectively) than those in the same quintile groups of the income distribution (3.2 per cent and 6.9 per cent). Similarly, households at the bottom of the expenditure distribution paid a larger part of their gross income in NIC (1.9 per cent and 4.0 per cent for the first and second quintile, respectively) than those in similar positions within the income distribution (1.5 per cent and 3.1 per cent, respectively). Therefore the main conclusions regarding the effect of direct taxes drawn with the income-based analyses remain valid for the expenditure distribution.

Council tax is usually reported as being a regressive tax, as households at the top of the income distribution pay a lower proportion of their income in council tax than those lower down. For example in 2007/08, households in the top quintile group of the income distribution paid 1.8 per cent of their gross income in council tax, while those in the bottom group paid 6.1 per cent. Council tax is also regressive when expenditure distribution is used for ranking households, but to a much lesser extent. On average, the top quintile group of the expenditure distribution paid 2.1 per cent of their gross income in council tax, compared with the 3.4 per cent paid by the bottom one. Furthermore, the second quintile group paid the highest proportion of their income in council tax (3.7 per cent).

As with council tax, indirect taxes

Table 3

**Average incomes, taxes and benefits by expenditure quintile groups, 2007–08**

	Quintile groups of all households ranked by equivalised expenditure					All households
	Bottom	2nd	3rd	4th	Top	
Average per household (£ per year)						
Quintile points (equivalised £)		10 748	15 810	21 446	30 611	
Number of households in the population ('000s)	5 197	5 018	4 963	5 043	5 067	25 289
Original income						
Wages and salaries	4 699	13 676	21 754	29 699	46 491	23 264
Imputed income from benefits in kind	45	109	203	356	777	298
Self-employment income	559	1 263	2 266	4 409	6 619	3 023
Occupational pensions, annuities	1 550	2 081	2 007	2 732	3 723	2 419
Investment income	338	558	823	1 089	3 084	1 179
Other income	142	180	281	236	203	208
Total	7 333	17 867	27 334	38 520	60 897	30 390
Direct benefits in cash						
Contributory						
Retirement pension	3 501	2 740	1 902	1 431	1 145	2 144
Job seeker's allowance (Contribution based)	49	31	15	1	2	20
Incapacity benefit	436	263	176	115	49	208
Widows' benefits	39	37	6	3	32	24
Statutory Maternity Pay/Allowance	37	32	71	64	85	58
Non-contributory						
Income support and pension credit	1 177	521	204	96	39	408
Child benefit	376	421	459	431	314	400
Housing benefit	1 609	568	233	94	10	503
Job seeker's allowance (Income based)	109	26	8	1	-	29
Carer's allowance	89	93	61	28	9	56
Attendance allowance	107	58	25	25	10	45
Disability living allowance	458	427	324	201	117	306
War pensions/War widows' pensions	47	35	36	41	4	33
Severe disablement allowance	30	47	16	19	6	23
Industrial injury disablement benefit	9	34	25	14	17	20
Student support	44	94	72	56	45	62
Government training schemes	2	9	2	2	1	3
Tax credits <sup>1</sup>	665	470	263	152	73	325
Other non-contributory benefits	196	135	93	82	47	111
Total cash benefits	8 980	6 040	3 990	2 856	2 004	4 774
Gross income	16 313	23 907	31 324	41 376	62 902	35 164
Direct taxes and Employees' NIC						
Income tax	901	2 390	3 931	5 897	11 756	4 975
less:Tax credits <sup>2</sup>	76	202	226	182	87	154
Employees' NI contributions	317	956	1 556	2 142	2 931	1 580
Council tax and Northern Ireland rates <sup>3</sup>	987	1 045	1 098	1 216	1 361	1 141
less: Council tax benefit/Rates rebates	435	167	84	35	13	147
Total	1 695	4 021	6 276	9 038	15 948	7 396
Disposable income	14 618	19 885	25 048	32 339	46 954	27 769
Equivalised disposable income	15 432	18 311	22 346	29 098	45 708	26 179
Indirect taxes						
Taxes on final goods and services						
VAT	610	1 260	1 757	2 502	4 103	2 046
Duty on tobacco	220	325	375	298	246	293
Duty on beer and cider	35	90	129	163	168	117
Duty on wines & spirits	44	105	141	217	327	167
Duty on hydrocarbon oils	119	356	516	652	755	480
Vehicle excise duty	55	110	145	179	203	138
Television licences	89	103	116	124	128	112
Stamp duty on house purchase	47	93	162	232	456	198
Customs duties	13	19	25	32	51	28
Betting taxes	20	31	38	45	46	36
Insurance premium tax	16	30	43	57	83	46
Air passenger duty	2	18	29	53	163	53

Table 3 continued

**Average incomes, taxes and benefits by expenditure quintile groups, 2007–08**

	Quintile groups of all households ranked by equivalised expenditure					All households
	Bottom	2nd	3rd	4th	Top	
Camelot National Lottery Fund	35	48	60	54	48	49
Other	3	7	16	25	32	17
Intermediate taxes						
Commercial and industrial rates	111	169	217	287	447	246
Employers' NI contributions	208	316	404	535	833	459
Duty on hydrocarbon oils	70	106	136	180	281	155
Vehicle excise duty	6	8	11	14	22	12
Other	114	174	222	294	458	252
Total indirect taxes	1 816	3 368	4 543	5 942	8 849	4 904
Post-tax income	12 803	16 517	20 505	26 397	38 105	22 865
Benefits in kind						
Education	1 953	2 805	2 983	2 544	1 656	2 388
National health service	4 517	3 774	3 297	3 002	2 616	3 441
Housing subsidy	50	25	14	9	4	20
Rail travel subsidy	3	21	28	48	123	45
Bus travel subsidy	78	76	64	58	73	70
School meals and welfare milk	66	30	16	8	2	25
Total	6 668	6 731	6 402	5 670	4 474	5 989
Final income	19 470	23 248	26 907	32 067	42 579	28 854

**Notes:**

- 1 Child tax credit and working tax credit.
- 2 Including tax relief at source on life assurance premiums.
- 3 Council tax and Northern Ireland rates after deducting discounts.

Source: Office for National Statistics

Table 4a

**Percentage shares of household income: expenditure distribution, 2007–08**

Quintile group <sup>1</sup>	Percentage shares of equivalised income for ALL households <sup>1</sup>			
	Original income	Gross income	Disposable income	Post-tax income
Bottom	5	10	12	13
2nd	11	13	14	14
3rd	17	17	17	17
4th	25	23	22	22
Top	42	37	35	34
All households <sup>2</sup>	100	100	100	100
Decile group <sup>1</sup>				
Bottom	2	5	6	6
Top	26	22	21	21

**Notes:**

- 1 Households are ranked by equivalised expenditures.
- 2 Totals may not sum to 100 due to rounding.

are usually reported as being regressive. However, the amount of indirect taxes paid by a household tends to be determined by their expenditure rather than by their income, because these taxes are typically levied on expenditure items. In particular, referring to income distribution to identify the incidence of indirect taxes on households with low income can be misleading. This is because in many cases the spending of low-income households is not entirely funded by their income and,

as previously discussed, some of these households have expenditure that exceeds their income. In these cases therefore, looking at the income distribution might lead to overestimating the burden of indirect taxes on households at the bottom of the distribution. The article 'The effect of taxes and benefits on household income, 2007/08' (see Barnard 2009) was based on income distribution, but also presented indirect taxes as a percentage of expenditure to reduce this problem.

Table 4b

**Percentage shares of household income: income distribution, 2007–08**

Quintile group <sup>1</sup>	Percentage shares of equivalised income for ALL households <sup>1</sup>			
	Original income	Gross income	Disposable income	Post-tax income
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 <sup>2</sup>	100	100	100	100
Decile group <sup>1</sup>				
Bottom	1	3	3	2
Top	33	28	26	28

- 1 Households are ranked by equivalised disposable income.
- 2 Totals may not sum to 100 due to rounding.

Source: Office for National Statistics

Therefore the analysis of indirect taxes using the expenditure distribution, rather than the income distribution, leads to different conclusions regarding their impact on household finance (see **Table 5** and **Figures 3a and 3b**).

In cash terms, households within the top expenditure quintile group paid almost five times as much indirect tax as the bottom quintile, simply because of their higher expenditure. However, the proportion of expenditure paid in indirect taxes tended to

Table 5

**Indirect taxes as a percentage of disposable income by expenditure<sup>1</sup> and disposable income<sup>2</sup> quintile groups, 2007–08**

	Quintile groups of ALL households					Per cent
	Bottom	2nd	3rd	4th	Top	All households
<b>(a) Expenditure distribution</b>						
VAT	4.2	6.3	7.0	7.7	8.7	7.4
Duty on alcohol	0.5	1.0	1.1	1.2	1.1	1.0
Duty on tobacco	1.5	1.6	1.5	0.9	0.5	1.1
Duty on hydrocarbon oils & Vehicle excise duty	1.2	2.3	2.6	2.6	2.0	2.2
Other indirect taxes	5.0	5.6	5.9	6.0	6.5	6.0
All indirect taxes	12.4	16.9	18.1	18.4	18.8	17.7
<b>(b) Disposable income distribution</b>						
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

**Notes:**

Source: Office for National Statistics

- Households are ranked by equivalised expenditures.
- Households are ranked by equivalised disposable income.

be higher for households at the bottom of the distribution (21.7 per cent) when compared with those at the top (16.2 per cent) (see Figures 3a and 3b). Part of this difference can be attributed to the higher percentage of expenditure on tobacco by households in the lowest fifth quintile group compared with those in the top quintile group (2.6 per cent and 0.5 per cent, respectively). They also paid a higher percentage than households in higher quintile groups in other indirect taxes. These include vehicle excise duty, television licences, stamp duty on house purchases, betting taxes, insurance premium tax, air

passenger duty and the Camelot National Lottery Fund.

When indirect taxes are expressed as a percentage of gross or disposable income, their effects are progressive using the expenditure distribution. Households with lower expenditure paid a lower proportion of their income in indirect taxes (Table 5). Households in the bottom quintile group paid 10.4 per cent of their gross income and 12.4 per cent of their disposable income in indirect taxes, compared with households in the top quintile with 14.1 per cent and 18.8 per cent respectively. These results represent

a substantial difference compared to those obtained using the income distribution. In that case, in fact, indirect taxes were regressive when expressed as a proportion of income, their impact declining sharply towards the top of the distribution.

Considering that expenditure could be regarded as a better proxy for the standard of living of households with few resources, these results are important: they allow for a better understanding of the effects of indirect taxes on different households. In fact, referring to expenditure distribution means that indirect taxes would contribute toward reducing inequality, rather than increasing it as is traditionally reported.

The consequences of variations in the level of indirect taxes are different whether income distribution or expenditure distribution are analysed. Referring to the distribution of disposable income, a change in the level of indirect taxes would have a larger effect on the incomes of households in the bottom of the income distribution than of those in higher quintile groups. However referring to the expenditure distribution, the households in the bottom quintile group would be relatively less affected by changes to indirect taxes, which would make more difference to those in the top quintile groups.

Changes in indirect taxes affecting goods and services prices can have an effect on household consumption rather than on their finances. For example, an increase in the indirect tax on a good may result in some households reducing their consumption of that good. Therefore, these households do not experience an increase in the tax they pay and a consequent reduction in their income. However they do experience the burden of the tax by foregoing consumption

Figure 3a

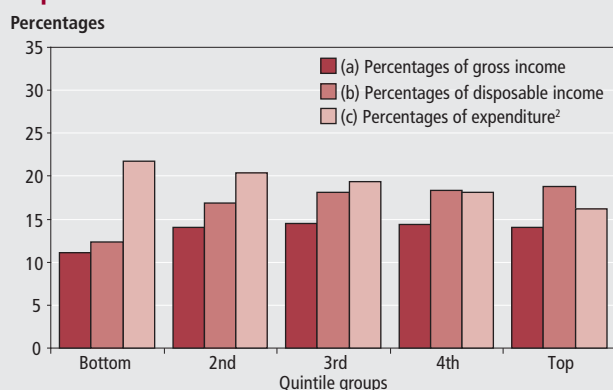
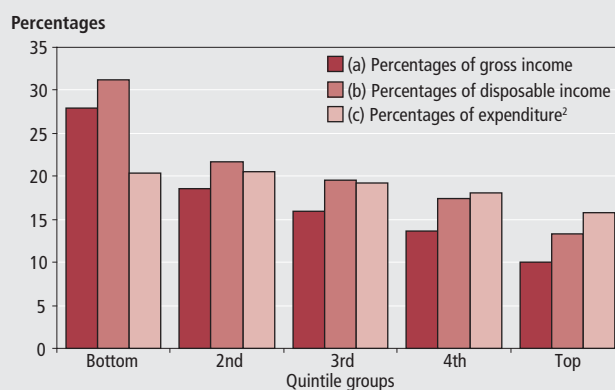
**Indirect taxes as a percentage of income within the expenditure distribution<sup>1</sup>**

Figure 3b

**Indirect taxes as a percentage of income within the income distribution<sup>2</sup>****Notes:**

- Households are ranked by equivalised expenditures.
- Households are ranked by equivalised disposable income.

Source: Office for National Statistics

of the good they would have otherwise consumed in the absence of the tax (in economics this phenomenon is referred to as the *deadweight loss*).

These points should be borne in mind when assessing the effect of changes to indirect taxes. Such changes have occurred periodically, especially concerning the level of duties on tobacco, alcoholic drinks and fuel. Re-assessing the impact of these changes, referring to expenditure distribution, may therefore lead to different conclusions. It would also be relevant when assessing the effect of recent actions, such as the changes to VAT during 2009.

The last stage in the tax and benefit process is the addition of benefits in kind to post-tax income. Households at the bottom of the expenditure distribution received the equivalent of about £6,670 per year from these benefits, compared with those in the top quintile receiving the equivalent of £4,480. These figures are similar to those observed for income distribution, although in that case the difference between the bottom and the top quintile groups was higher (£7,490 and £4,050 respectively). Benefits in kind also contribute to reducing inequality; as a result, the share of income received by households at the bottom of the expenditure distribution increased from 5 per cent for original income to 13 per cent for final income. On the other hand, households at the top of the expenditure distribution had their share of income reduced from 42 per cent for original income to 30 per cent for final income.

The redistributive effects of taxes and benefits (see **Figure 4**) were larger within the distribution of expenditure, compared with income distribution. For example, households in the bottom quintile of the expenditure distribution had their share of income increased from 5 per cent of the

total original income to 13 per cent of the total post-tax income. The share received by households at the top of the distribution fell from 42 per cent for original income to 34 per cent for post tax income. On the other hand, when income distribution was used, the share of income received by households in the bottom quintile group grew from 3 per cent of the total original income to 6 per cent of the total post-tax income. Households in the top quintile group also had their share of income reduced from 51 per cent to 44 per cent.

The Gini coefficient is one of the most common measures of inequality and is generally applied to income distribution, but it can be used for expenditure distribution too. In this case it shows the extent of inequality of expenditures between households<sup>7</sup>.

During 2007/08, the Gini coefficient for expenditure had a value of 35, indicating a level of inequality similar to the one for disposable income (which was 34).

However, the Gini coefficient is used here for measuring the inequality of expenditure, and does not allow for comparing the extent of inequality of income between expenditure distribution and income distribution. Therefore in order to compare the inequality of income within the two distributions, at different stages of the redistributive process, the top-to-bottom quintile income ratio can be used.

The level of inequality for disposable income, as measured by the ratio between the top and the bottom quintile groups, was substantially lower within the expenditure distribution than within the income distribution, at all stages of the tax and benefit process. Original income for the top quintile group was eight times as much as the one for the bottom quintile group within the expenditure distribution, while

this ratio was equal to 16 using the income distribution. The same ratio for disposable income was three using the expenditure distribution, compared with six using the income distribution. Finally, the ratio for final income was two when measured using the distribution of expenditure, while it was four when referring to the distribution of income.

## Conclusions

The most relevant difference between results obtained using expenditure distribution and those obtained using the income-based analysis concerns the effects of indirect taxes. In fact, this study shows that these taxes are regressive when measured using income distribution, but progressive when their effects are analysed using expenditure distribution. They represent a percentage of income that grows from the bottom to the top of the distribution, similar to the trend for direct taxes (as highlighted also in Crossley et al. 2009). The need for an improvement to the income-based analyses for indirect taxes was also highlighted in Barnard (2009), as previously discussed, and in Chose et al. (eds) (2010).

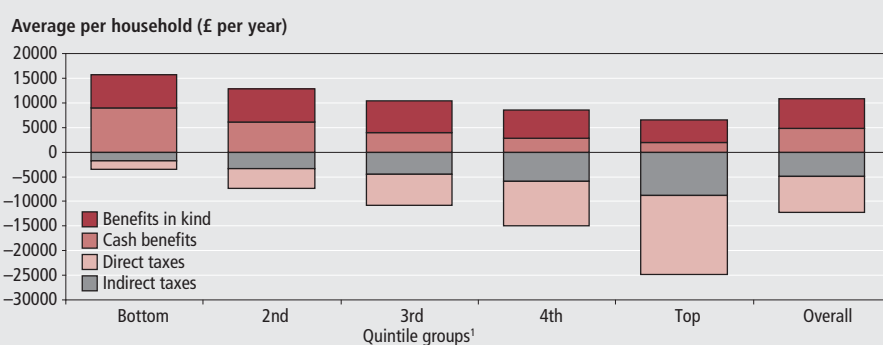
Therefore the effect of indirect taxes on household income, as much as household material living standards, might be better assessed by also referring to the expenditure distribution. This method complements the more standard analysis, based on income distribution, for studying the effects of indirect taxes and policies affecting them.

## Notes

1. Commission on the Measurement of Economic Performance and Social Progress (2009) Report by the Commission on the Measurement of Economic Performance and Social Progress, available at: [www.stiglitz-sen-fitoussi.fr/documents/rapport\\_anglais.pdf](http://www.stiglitz-sen-fitoussi.fr/documents/rapport_anglais.pdf)
2. The survey results have been re-weighted and grossed so that the population totals reflect the whole household population, a process described as population weighting.
3. A detailed list of the components of household expenditure can be found in Table A1 of Family Spending. Please refer to: [www.statistics.gov.uk/downloads/theme\\_social/Family-Spending-2008/FamilySpending2009.pdf](http://www.statistics.gov.uk/downloads/theme_social/Family-Spending-2008/FamilySpending2009.pdf)
4. The equivalence scale used in this analysis is the McClements scale (before housing costs are deducted). For more information refer to:

**Figure 4**

### Summary of the effects of taxes and benefits on households' income: expenditure distribution, 2007–08



**Note:**

1 Households are ranked throughout by their equivalised expenditure.

Source: Office for National Statistics

[www.ons.gov.uk/about-statistics/harmonisation/secondary-concepts-and-questions/S4.pdf](http://www.ons.gov.uk/about-statistics/harmonisation/secondary-concepts-and-questions/S4.pdf)

5. 'Other incomes' includes: regular allowances from other members of the household; income from odd jobs; short term benefits; education grants; and imputed rent from rent-free accommodation.
6. Respondents were provided with eight options to choose from:
  - credit/store card debt
  - overdraft
  - loans from friends/relatives
  - loans from other sources, for example banks and loan companies
  - savings
  - sell assets (property, possessions, stocks, shares, bonds)
  - other
  - current household income sufficient – no need to borrow or rely on credit card debt
7. The Gini coefficient is the most widely used summary measure of the degree

of inequality in a distribution. The Gini coefficient takes values from 0 to 100 per cent, where a value of zero indicates that each household had an equal level of expenditure, while higher values indicates greater inequality. For more information refer to:

[www.statistics.gov.uk/about/methodology\\_by\\_theme/gini/default.asp](http://www.statistics.gov.uk/about/methodology_by_theme/gini/default.asp)

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## ARTICLE

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# First findings from the UK Innovation Survey 2009

## SUMMARY

This article presents initial analysis from the 2009 UK Innovation Survey (UK IS 2009). Beginning with key statistics on overall innovation activity the article moves on to examine in which markets and regions innovative UK businesses are operating; discuss collaborations and sources of information, barriers to innovation and the uptake of intellectual property by firms to protect the value of innovations. A broader range of innovations in business practices and organisational structures, such as the introduction of new management techniques is then considered. The article includes a few highlights from analysis of the panel (overlap) between the 2009 survey and its predecessors from 2007 and 2005 and concludes with a comparison of the last four surveys from 2009, 2007, 2005 and 2001.

## Introduction

This article presents the first findings from the UK Innovation Survey (UK IS) 2009, covering the three-year period from 2006 to 2008. This is the UK contribution to a Europe-wide Community Innovation Survey (CIS). The 2009 survey is the second survey run on the biennial cycle. Further information on the UK IS methodology is presented in the **Annex**.

The 2009 survey followed the same sampling format as the 2007 survey. It was again sent to 28,000 UK enterprises with 10 or more employees across the manufacturing and services sectors achieving a 50 per cent response rate. The latest data also continues to provide a significant panel (respondents common to the 2009, 2007 and 2005 surveys) of over 4,000 businesses making it an even more valuable resource for both government and academic users alike. The Department for Business, Innovation, and Skills (BIS) would like to thank all those businesses that completed the survey form.

Promoting innovation, enterprise and science is a key component in achieving BIS's mission of building a dynamic and competitive UK economy. The UK IS continues to provide a means to measuring the level, types and trends in innovation activity in the UK. In doing so, it contributes to understanding of the constraining factors faced by businesses, across all sectors, to innovate, thus providing the empirical evidence to support policy measures. The UK IS is a periodic snapshot of innovation behaviour and has

the additional benefit of providing the basis for some comparisons with other countries. The large panel dataset also facilitates longitudinal studies.

The majority of the survey questions are concerned with innovation through new and improved products, along with the processes and investments that develop and implement them. It also asks businesses about the drivers to innovate as well as their perception of barriers to innovation. The markets businesses operate in, changes in businesses structures and management practices, and the roles of knowledge and intellectual property are also covered.

## Innovation activity

Innovation takes place through a wide variety of business practices and a range of indicators can be used to measure its level within the enterprise or in the economy as a whole. These include the levels of effort employed (measured through resources allocated to innovation) and of achievement (the introduction of new or improved products and processes). This section reports on the types and levels of innovation activity over the three year period 2006 to 2008<sup>1</sup> and makes some general comparisons with the results obtained from the previous survey in 2007<sup>2</sup>.

Innovation activity<sup>3</sup> is defined here as where enterprises were engaged in any of the following:

- introduction of a new or significantly improved product (good or service) or process

- engagement in innovation projects not yet complete or abandoned
- expenditure (activities) in areas such as internal research and development, training, acquisition of external knowledge or machinery and equipment linked to innovation activities<sup>4</sup>

**Table 1** shows the proportions of businesses that were innovation active in the period 2006-2008, broken down by type of innovation activity and the size of enterprise (in terms of number of employees). Before looking more closely at the results from Table 1, it is worth noting that GDP started to contract in Q2 2008, so economic conditions were probably unfavourable from the start of the year. Whilst the survey refers to innovation in the period 2006-2008, this is likely to have had an impact on the number of businesses starting innovation activities in 2008 and an affect on the overall number of innovation active firms. 58 per cent of enterprises were classed as being innovation active during this period with 45 per cent reporting innovation expenditure, but both measures were down relative to the previous survey. Interestingly, the proportion of innovation active large enterprises (those with more than 250 employees) was only marginally higher (2 percentage points) than small and medium enterprises (SMEs), although large firms were more likely to engage in most forms of innovation behaviour.

Results from the previous survey showed businesses had increased investment in innovation related activities. These findings suggest that those investments have, in many cases, resulted in product and process innovations during the period 2006-2008 which saw increases of 2 and 1 percentage points respectively. Nearly half of all product innovators were market leaders while nearly a third of process innovations were new to the industry in question.

Improvements to the 2009 survey enable us to distinguish how the development of good and service innovations differs. The majority of goods and service innovations are developed within the business (70 per cent and 67 per cent respectively). However, around two-fifths of service innovations are also developed by the business with other businesses or organisations (compared with less than a third of goods innovations) and a quarter by other organisations (in contrast to 15 per cent of goods innovations.).

The proportion of ongoing and abandoned innovation activities projects

were both lower than during the last survey period. It is likely that some of those ongoing projects materialized into innovations during 2006-2008.

### Innovation activities

As **Figure 1** shows, the most commonly reported innovation activities were acquisition of computer software and hardware, though these were considerably lower than during the last sample period. The share of enterprises reporting Internal R&D was slightly higher (by 1 percentage point), noting the recent Business Expenditure on R&D (BERD) release also showed increases in expenditure in R&D (2007 and 2008) and the number of personnel (BERD 2007). The share reporting design activity remained constant. But, the share of businesses

reporting innovation activity in all the other categories showed a decline. Training, in particular, was reported by a third fewer enterprises.

These early results seem to indicate that businesses have continued R&D projects through the financial downturn and, although there has inevitably been some retrenchment in the face of difficult economic conditions, innovative performance has remained fairly strong.

### Markets and exports

The businesses surveyed were asked which markets they operated in. **Figure 2** shows that regional markets are the most dominant for UK enterprises, and just over a half (55 per cent) operate at a National level. Outside of the UK, 27 per cent operated in European markets and just

**Table 1**

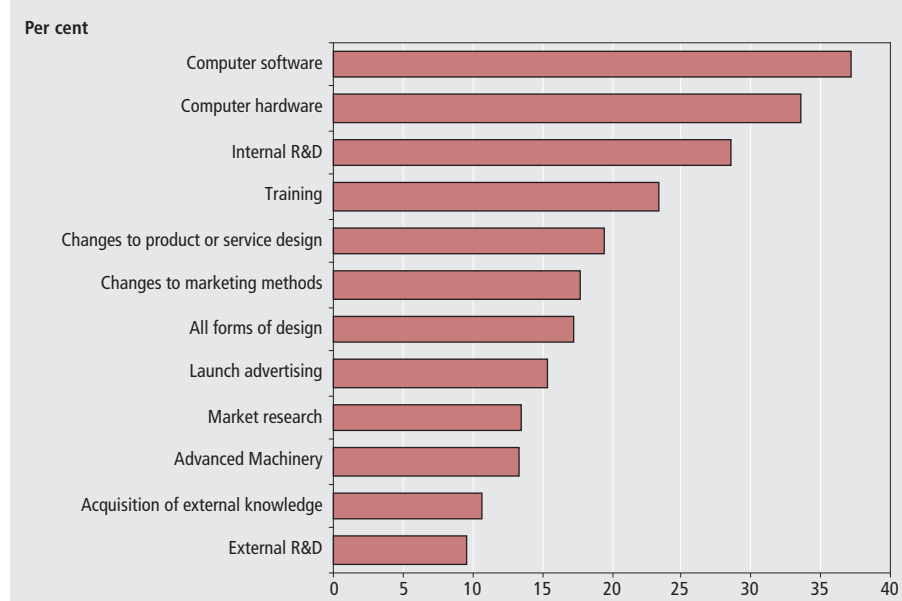
**Percentage of enterprises who were innovation active, by size and type of activity, 2006-2008**

Type of activity	Size of enterprise			Per cent
	10-250	250+	All	
	employees	employees	(10+ employees)	
Innovation-active	58	60		58
Product innovator	24	30		24
of which (share with new-to-market products)	45	43		45
Process innovator	12	18		13
of which (share with new-to-industry processes)	29	30		29
Abandoned activities	4	6		4
On-going activities	6	9		6
Some innovation related expenditure (activity)	45	48		45
Both product AND process innovator	9	14		9
Either product OR process innovator	27	35		28

Source: UK Innovation Survey

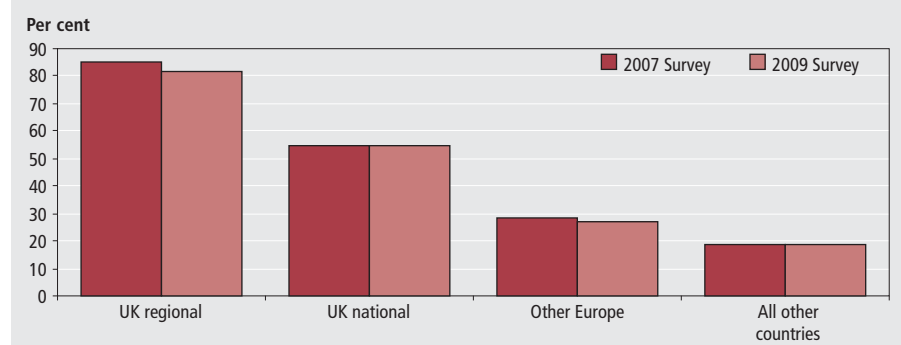
**Figure 1**

**Share of enterprises reporting types of innovation activity, 2006-2008**



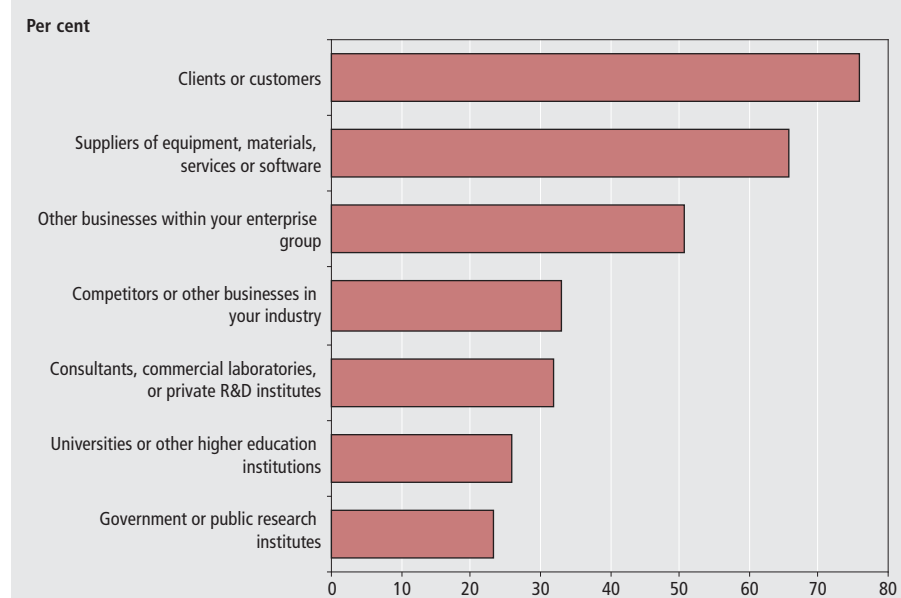
Source: UK Innovation Survey

**Figure 2**  
**Proportion of UK enterprises operating in different geographical markets**



Source: UK Innovation Survey

**Figure 3**  
**Proportion of firms with different types of co-operation partners in innovation activities (innovation-active, collaborative firms only)**



Source: UK Innovation Survey

under a fifth world-wide. Proportions of businesses surveyed in 2009 were slightly lower in Regional and European markets, but remained consistent nationally and internationally with results from businesses surveyed in 2007.

### Co-operation agreements and sources of information

There was a large increase in the proportion of firms collaborating on innovation projects during the latest survey period. Nearly a quarter (23 per cent) of all innovating enterprises had co-operation arrangements on innovation activities, compared to only a tenth in the previous survey. And, 64 per cent of these collaborations were agreements that operated at a national level. The most frequent partners for co-operation were clients or customers (76 per cent of innovation active enterprises with co-operation agreements, see **Figure 3**). Just over a quarter of collaborators included universities among their partners, a slightly lower proportion than in the 2007 survey. However, the number of cooperation partnerships were slightly up in all categories.

### Sources of information

It is important to know how far enterprises engage with external sources of technology and other innovation-related knowledge and information, as innovation is increasingly complex, requiring the co-ordination of multiple inputs. Firms can gain guidance, advice or even inspiration for their prospective innovation projects from a variety of both public and private sources.

Respondents to the UK IS were asked to rank a number of potential information sources on a scale from 'no relationship' to 'high importance'. The proportion who answered 'high' in each category is shown in **Table 2**. These sources are:

- **internal:** from within the enterprise itself or other enterprises within the enterprise group
- **market:** from suppliers, customers, clients, consultants, competitors, commercial laboratories or research and development enterprises
- **institutional:** from the public sector such as government research organisations and universities or private research institutes
- **other:** from conferences, trade fairs and exhibitions; scientific journals, trade/technical publications; professional

**Table 2**  
**Sources of innovation information (percentage of all firms rating 'high')**

Source of innovation information	Per cent		
	Size of enterprise		All (10+ employees)
	10-250 employees	250+ employees	
<b>Internal</b>			
Within your enterprise group	26	34	26
<b>Market</b>			
Clients or customers	30	34	30
Suppliers of equipment	15	15	15
Competitors or other enterprises in your industry	12	14	12
Consultants, commercial labs or private R&D institutes	3	5	3
<b>Institutional</b>			
Universities or other higher education institutes	2	2	2
Government or public research institutes	2	3	2
<b>Other sources</b>			
Technical, industry or service standards	7	9	7
Conferences, trade fairs, exhibitions	5	3	5
Scientific journals and trade/technical publications	3	3	3
Professional and industry associations	6	6	6

Source: UK Innovation Survey

and industry associations; technical industry or service standards

Firstly, proportions of businesses using all forms of information sources were higher than recorded in UK IS 2007. It seems this is predominantly driven by the increased value SMEs are placing on all information sources. In contrast, there was a decrease in the value large firms placed on all but two of the information sources. Overall, market sources such as clients and customers and internal sources (within their enterprise group), were rated as the most important source of information for innovation. Earlier survey results are also consistent with these findings indicating businesses rely on their own experience coupled with information from suppliers, customers and clients. The least frequently cited sources were institutional sources. Technical, industry or service standards were the most highly important source from the 'other sources' category. Conferences, trade fairs and exhibitions were the only category rated as more important by SMEs than by large firms.

### Innovation in sectors

As expected the percentage of firms reported to be innovation active varied considerably across industrial and commercial sectors. 77 per cent of electrical and precision engineering enterprises were innovation active, against 51 per cent of enterprises in mining and quarrying, construction and utilities (see **Figure 4**). In distribution and services, real estate, renting and business activities (which includes the R&D services sector) had the highest share of innovation active businesses (62 per cent), while hotels and restaurants (at 47 per cent, although up by 1 percentage point from UK IS 2007) had the lowest share.

### Geography of innovation

**Figure 5** shows the shares of innovation active businesses across the countries and regions of the UK. The 2009 data exhibits less regional variation in these proportions than the 2007 survey, ranging from 62 per cent in the South East region down to 55 per cent in London and Northern Ireland. Regional innovation rankings vary considerably from survey to survey and are generally a reflection of industrial location and variations in sectoral business cycles and product life cycles.

### Factors driving innovation

Respondents were asked to rank a number of drivers for innovating on a scale from

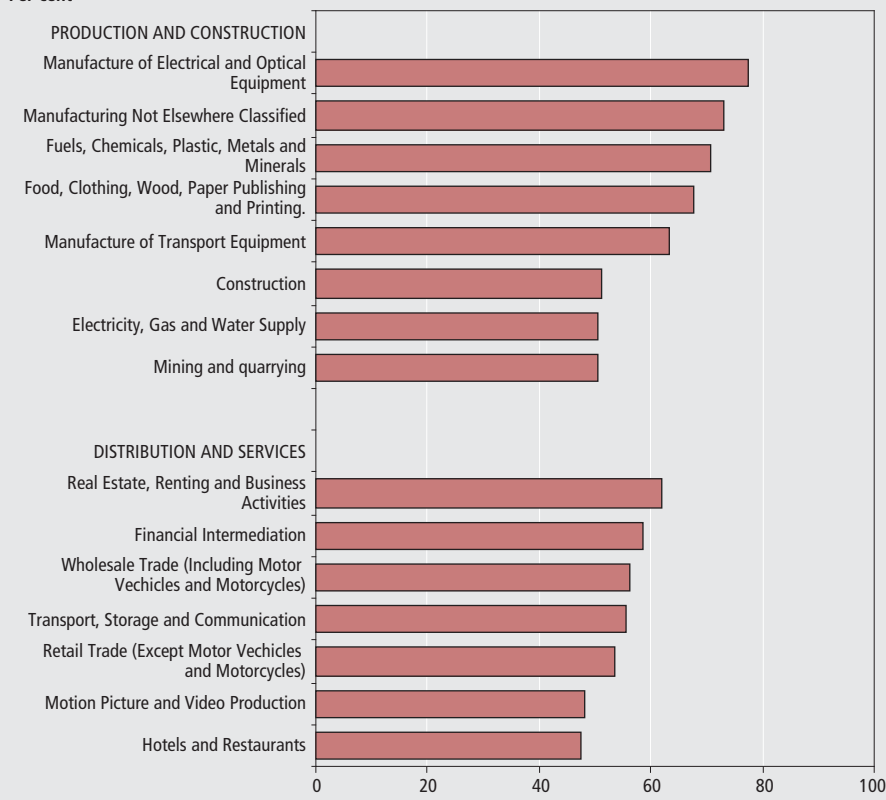
'no impact', through 'low', 'medium' or 'high'. Looking at the proportion of respondents<sup>5</sup> who answered 'high' in each category indicates 'product-related' factors were the most frequent drivers, with 'quality enhancements' by far the most motivating factor (for over half of innovators). This was followed by

'increased range of goods and services' and 'value added' (both 36 per cent), highlighting the strong customer-focused approach to innovation. Reducing environment impacts was the least highly rated factor with only 18 per cent of respondents reporting this to be a 'high' driver of innovation activity.

**Figure 4**

### Proportion of innovative businesses in each industry

Per cent

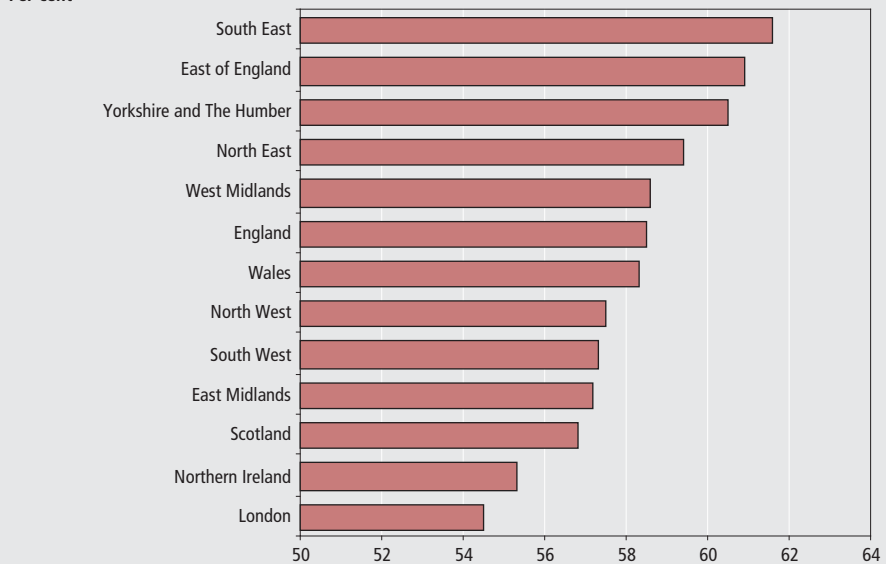


Source: UK Innovation Survey

**Figure 5**

### Shares of innovation-active businesses by region

Per cent



Source: UK Innovation Survey

Table 3

**Percentage of enterprises regarding potential barriers to innovation as 'high'**

Barrier to entry	Size of enterprise		Per cent
	10-250 employees	250+ employees (10+ employees)	All
<b>Costs factors</b>			
Direct innovation cost too high	17	13	17
Excessive perceived economic risks	15	12	15
Cost of finance	17	10	17
Availability of finance	16	8	16
<b>Knowledge factors</b>			
Lack of qualified personnel	7	4	7
Lack of information on markets	3	2	3
Lack of information on technology	3	2	3
<b>Market factors</b>			
Market dominated by established businesses	9	6	9
Uncertain demand for innovative goods or services	8	7	8
<b>Other factors</b>			
UK Gov regulations	8	5	8
EU regulations	7	4	7

Source: UK Innovation Survey

**Barriers to innovation**

An understanding of the barriers to business innovation is considered key in forming the evidence base for and the successful implementation of policy interventions. These barriers can be internal obstacles that the enterprise encounters while carrying out innovation activities as well as external factors preventing innovation.

The survey asked about a range of constraining factors and their effect on the ability to innovate. **Table 3** shows the proportions of respondents who gave a 'high' rating to each category of constraint.

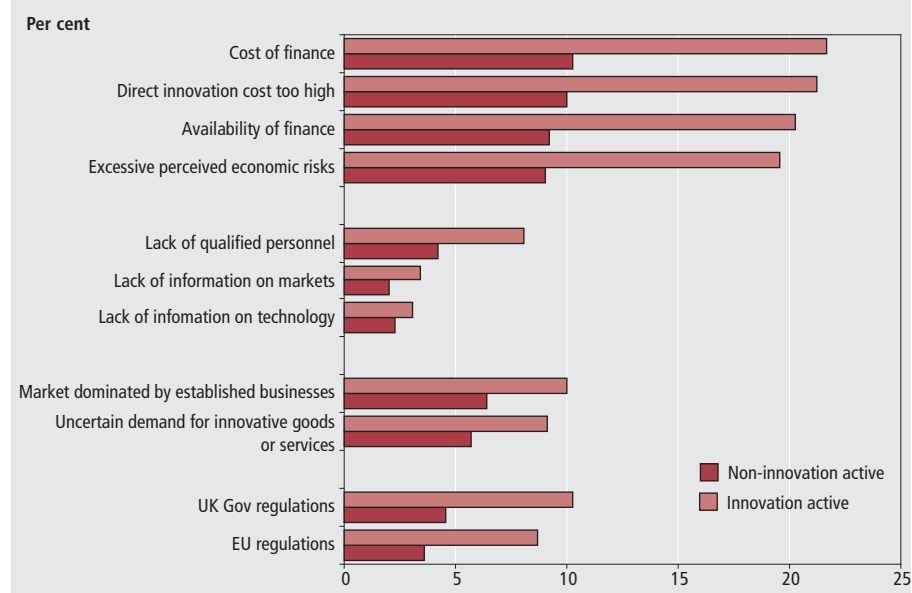
Not surprisingly, the 2009 UK IS data shows an increase in the perception of cost barriers to innovate with the availability of finance showing the greatest rise (up 9 percentage points) on the 2007 results. SMEs perceive all barriers to be greater than large firms. However, relative to the other barriers, and as noted in the previous survey, cost factors were most commonly regarded as the most significant barriers to innovation, including the direct resource costs of innovation activities, their perceived economic risk and the costs of acquiring finance. Market factors were also identified by more firms as barriers than in the 2007 survey. Again, relatively few enterprises felt constrained by a lack of knowledge, although a lack of qualified personnel was viewed as one of the more important of these constraining factors.

Enterprises engaged in innovation activity were, on average, more than twice as likely to perceive cost and regulatory factors as barriers than businesses who did not attempt to innovate (see **Figure 6**). Market factors (and knowledge factors to a lesser extent) were closer matched though neither technology nor market knowledge is widely cited as a constraint on effective innovation. These results suggest that businesses 'learn' about barriers to innovation as a result of their attempts to innovate.

**Non-innovators**

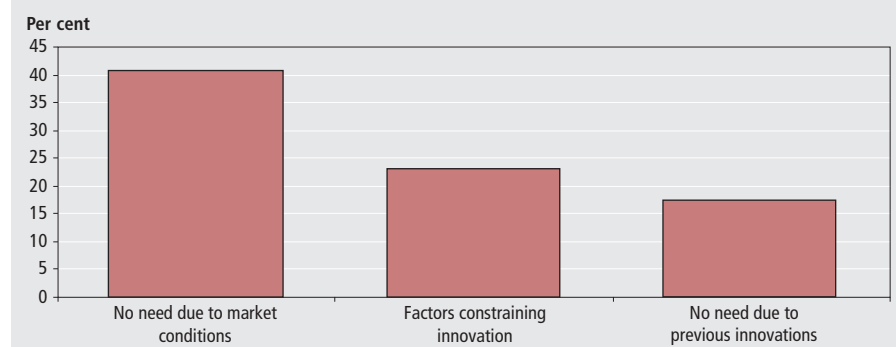
The UK IS 2009 also attempts to gain an appreciation of the possible reasons why businesses were not involved in innovation activity during the period 2006–2008. The pattern of response has remained relatively stable through the iterations of the survey, with the majority of non-innovators reporting there was not a 'market need' (see **Figure 7**). Just under a quarter of non-innovators reported that particular constraints were sufficiently binding to prevent innovation.

Figure 6

**Perception of barriers to innovate: percentage of innovators and non-innovators rating each factor as 'high'**

Source: UK Innovation Survey

Figure 7

**Percentage of enterprises giving each reason for why they didn't innovate in 2006-2008 (non-innovative enterprises only)**

Source: UK Innovation Survey

## Methods to protect the value of innovations

Successful innovations often generate intellectual property that businesses will try to protect. This can be done in numerous ways depending upon the knowledge generated and the business and market contexts. This may involve attempts to exercise formal intellectual property (IP) rights, but 'strategic' ways of preventing emulation are important for many firms.

Previous surveys have asked about the perceived levels of importance associated with intellectual property, both formal and strategic. The UK IS 2009 asked about the use of formal protection methods. All levels of take-up were low; with registering a trademark the most frequently used method amongst large firms at 10 per cent (see **Table 4**). SMEs are generally only half as likely to take out formal IP protection. These results seem to suggest that, although firms have reported in previous surveys, they see IP as an important tool in protecting their innovations, formal methods have been little used in practice over the most recent survey period.

## Wider forms of innovation

Innovation is not wholly about the development or use of technology or other forms of product (goods and services) and process change. Enterprises can also change their behaviour or business strategies to make themselves more competitive, often in conjunction with product or process innovation, but also as independent means of improving competitiveness.

Enterprises were asked whether they have made major changes to their business structure and practices in the three-year period 2006–2008. Some of the findings are summarised in **Table 5**. Businesses engaged slightly less in all forms of non-technological innovation over the latest survey period compared with the levels seen in the last two surveys with some form of activity in 27 per cent of firms. In particular, large firms significantly reduced their levels of 'managerial and organisational change'. The implementation of a 'new organisational structure' was (marginally) the most commonly reported with the introduction of 'advanced management techniques' being least frequent. Smaller enterprises were less likely to have introduced a major organisational change than were large enterprises.

## Comparisons with the 2007 and 2005 UK Innovation Survey panel

The number of businesses responding to both the 2009, 2007 and 2005 surveys enables some direct comparison of their innovation activities and outturns. Of the

4,000 businesses in the three survey panel, nearly 40 per cent are small enterprises, a third are medium-sized, and just over a quarter are large firms. **Figure 8** shows the innovation characteristics of the panel. A comparison with Table 1 shows the 2009 panel results are broadly similar, indicating

Table 4

### Percentages of firms reporting protection of innovation

Method for protecting innovation	Size of enterprise			Per cent
	10-250 employees	250+ employees	All (10+ employees)	
Register an industrial design	1	3		1
Register a trademark	5	10		5
Apply for a patent	3	7		3
Produce materials eligible for copyright	6	7		6

Source: UK Innovation Survey

Table 5

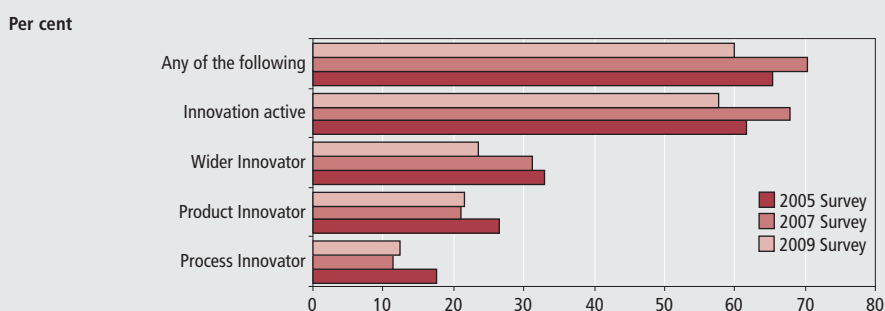
### Percentages of enterprises that introduced wider forms of innovation

Form of innovation	Size of enterprise			Per cent
	10-250 employees	250+ employees	All (10+ employees)	
Wider Innovator	26	38		27
Major changes to organisation structure	16	27		16
Changes to marketing concepts or strategies	15	18		15
New or significantly changed corporate strategy	12	19		13
New management techniques	10	19		10

Source: UK Innovation Survey

Figure 8

### UK Innovation Survey panel data, 2009, 2007 and 2005



Source: UK Innovation Surveys, 2009, 2007 and 2005

Figure 9

### UK IS 2001, 2005, 2007 and 2009 surveys (restricted to 2001 sectoral coverage)



Source: UK Innovation Surveys, 2009, 2007, 2005 and 2001

the panel is representative of the survey as a whole.

### Comparisons with the 2001, 2005 and 2007 UK Innovation Surveys

There are now four broadly similar surveys enabling some time series analysis. **Figure 9** compares the main results for the four surveys based on the common sectoral coverage<sup>6</sup>. Wider innovation activities were widely reported in 2001, with higher levels of product and process innovation reported in 2005. The 2007 survey found a higher share of firms with innovation activity. The outcome of this investment appears in increased levels of product and process innovation in the 2009 survey.

It's striking that the shares of firms with each type of innovation fluctuate between surveys, often in opposite directions. For example as the reported level of product innovation is higher, the level of undertaking some form of wider innovation is rather lower. Results may also be affected by effects such as improved understanding by respondents of the survey and perhaps by changes in the layout of the questionnaire<sup>7</sup>.

### Conclusions and next steps

This short article has reported just a few of the results of the latest UK Innovation Survey and on some dimensions of the

changes in innovation behaviour in the UK relative to the previous survey in 2007, together with some comparisons with earlier surveys.

BIS will publish more extensive detailed survey results over the next few months as well as applying the innovation indicators to policy analysis and monitoring purposes.

The survey represents a major source of data for the research community. As with previous surveys, we expect a substantial body of further research using the survey results to be undertaken and published in various forms over the next few years. Data will be available for researchers in the ONS's Virtual Micro Data Laboratory<sup>8</sup>.

### Notes

1. All results are grossed up to the business population.
2. General comparisons refer to overall survey results. Other differences between the survey, such as variations between the questionnaires including wording, filtering and layout or the overlap of the reference period (2008 for the 2009/2007 survey period, 2008 and 2006 for the 2009/2007/2005 survey time series comparison) in question, are not accounted for.
3. The UK definition used differs from that adopted by Eurostat. The EU -wide definition of innovation active

is as follows: Introduction of a new or significantly improved product (goods or service) or process; Engagement in innovation projects not yet complete or abandoned. It excludes expenditure in areas linked to innovation activities.

4. Expenditure in innovation activities over the three year period relates to responses from engagement in innovation activities (UK IS 2009, question 4).
5. The factors question is only asked if the respondent said 'yes' to Q6,7,11 or 14 (that is strategic innovator, product innovator, process innovator, abandoned/incomplete innovation).
6. Sectors covered in CIS3 were SIC (92) 10-14, 15-37, 40-41, 45, 50-51, 60-64, 65-67, 70, 71, 72, 73, 74.2, 74.3.
7. The survey layout was changed considerably for UK IS 2009. In particular, improvements to question routing have improved data quality.
8. Details on how to access the VML can be found here:  
[www.ons.gov.uk/about/who-we-are/our-services/vml/index.html](http://www.ons.gov.uk/about/who-we-are/our-services/vml/index.html)

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**ANNEX****UK Innovation methodology**

The UK Innovation Survey is funded by the Department of Business, Innovation and Skills (BIS). The survey was conducted on behalf of the BIS by the Office for National Statistics (ONS), with assistance from the Northern Ireland Department of Enterprise, Trade and Investment (DETI).

The UK Innovation Survey is part of a wider Community Innovation Survey (CIS) covering EU countries. The survey is based on a core questionnaire developed by the European Commission (Eurostat) and Member States. This is the sixth iteration of the survey (CIS 6) – CIS 5, covering the period 2004 to 2006, was carried out in 2007 and the results form part of various EU benchmarking exercises (see [www.cordis.lu/innovation-smes/scoreboard/home.htm](http://www.cordis.lu/innovation-smes/scoreboard/home.htm)).

The UK Innovation Survey 2009 sampled over 28,000 UK enterprises. The survey was voluntary and conducted by means of a postal questionnaire. A copy of the questionnaire used can be found on

**Coverage and Sampling**

The survey covered enterprises with 10 or more employees in sections C-K of the Standard Industrial Classification (SIC) 2003. The 2007 and 2009 surveys included additional sectors (SIC 92.1/2).

The sample was drawn from the ONS Inter-Departmental Business Register (IDBR) in January 2009.

**Response and weighting**

The questionnaires for the survey were distributed on March 31 2009.

Valid responses were received from 14, 218 enterprises to give a response rate of 50 per cent.

The results in this article are based on weighted data in order to be representative of the population of firms. The responses were weighted back to the total business population of those in the IDBR. On average each respondent represents 13 enterprises in the population.

## ARTICLE

Nick Barford, Jonathan Knight  
and Bob Watson  
Office for National Statistics

# Implementation of SIC 2007 for the Vacancy Survey

## SUMMARY

The article reports on the work to publish the Vacancy Survey on Standard Industrial Classification 2007 (SIC 2007). The main developments are:

- changes to the survey design have led to changes in both the industrial groupings and employment size bands used for sampling
- creation of historical series on a consistent basis with the latest data
- seasonal adjustment of the new series
- changes made to published outputs, including the impact of the revisions.

## Introduction

In December 2009, the Office for National Statistics (ONS) published updated plans for moving to the new Standard Industrial Classification 2007 (SIC 2007) – that is the method of classifying businesses by their type of economic activity (see Hughes et al 2009). This included the intention to move the Vacancy Survey to SIC 2007 from February 2010. The first estimates on this basis, corresponding to the three months November 2009 to January 2010, were published in the Labour Market statistical bulletin on 17 February 2010.

This article describes how SIC 2007 was implemented for the Vacancy Survey and explains other changes made to the survey methods and publications.

## Changes to the survey design and sample allocation

Like many business surveys conducted by ONS, the Vacancy Survey is stratified by industrial activity and business size. To reflect the new SIC 2007, the first major revision of the classification since 1992 and the outcome of a series of consultations across Europe since 2002, the sample design has had to be changed. The move to SIC 2007 complies with European regulations and has been pre-announced by ONS. The industry strata for the Vacancy Survey are defined by sections within SIC 2007, with the exception of section G (wholesale and retail trade; repair of motor vehicles and motor cycles) which is split into its three divisions given their large size. **Table 1**

shows the industries under the SIC 2007 survey design compared to their nearest equivalent in the original SIC 2003 survey design.

ONS also took the opportunity to standardise business size bands (based on employment) across industries, fulfilling a recommendation from the Report on the Triennial Review of the Monthly Vacancy Survey (2005). Originally, different combinations of 10 size bands were applied to different industries, which did not always align with the published size bands required under European regulation. These have now been reduced to five standard size bands across all industries in line with the published size bands (see **Table 2**). This improvement has caused significant revisions to the level of some of the size band estimates, increasing the proportion of vacancies reported in businesses with more than 2500 employees, while reducing the number in the 250–2499 size band. This is explained in greater detail later in the article.

For the sample, the lower size band limit was raised from businesses with employment of one, to businesses with employment of two. Businesses with employment of one are still included in the population and thus estimated for. This fulfils a recommendation from the Report on the Triennial Review of the Vacancy Survey (2009), with the aim of reducing the administrative burden on the smallest businesses.

The overall sample size remains at approximately 6,000 businesses per month

Table 1

**Industries used to stratify the Vacancy Survey: SIC 2007 compared to their nearest equivalent in SIC 2003**

SIC 2003 Sections	Description	SIC 2003 Range		SIC 2007 Sections	Description	SIC 2007 Range	
C	Mining and quarrying	10100	14500	B	Mining and quarrying	0510	0990
DA	Food, drink and tobacco	15111	16000	C	Manufacturing	1011	3320
DB/DC	Textiles, clothing and leather	17100	19300				
DD	Wood	20100	20520				
DE	Paper, pulp, printing and publishing	21110	22330				
DF	Coke, nuclear fuels, refined oil	23100	23300				
DG	Chemicals	24110	24700				
DH	Rubber and plastics	25110	25240				
DI	Non-metallic mineral products	26110	26829				
DJ	Base metals and fabricated metal products	27100	28750				
DK	Machinery and equipment	29110	29720				
DL	Electrical and optical equipment	30010	33500				
DM	Transport equipment	34100	35500				
DN	Manufacturing (NEC)	36110	37200				
E	Gas, electricity and water supply	40110	42000	D	Electricity, gas, steam and air conditioning supply	3511	3530
				E	Water supply, sewerage, waste management and remediation activities	3600	3900
F	Construction	45110	45500	F	Construction	4110	43999
G	Motor Vehicles	50101	50500	G	Motor Vehicles	4511	4540
G	Wholesale	51110	51900	G	Wholesale	4611	4690
G	Retail	52110	52740	G	Retail	4711	4799
H	Hotels and restaurants	55101	55520	I	Accommodation and food service activities	5510	56302
I	Transport, storage	60101	63400	H	Transport and storage	4910	53202
I	Communications	64110	64200	J	Information and communication	5811	6399
J	Financial Intermediation	65110	67200	K	Financial and insurance activities	6411	6630
K	Real estate, renting	70110	70320	L	Real estate activities	6810	6832
K	Business activities	71100	74849 (exc. 74500)	M	Professional, scientific and technical activities	6910	7500
				N	Administrative and support service activities	7711	8299 (exc. 781-3)
L	Public administration and defence; compulsory social security	75110	75300	O	Public administration and defence; compulsory social security	8411	8430
M	Education	80100	80429	P	Education	8510	8560
N	Health and social work	85111	85322	Q	Human health and social work	8610	8899
O	Other community, social and personal service activities;	90010	93059	R	Arts, entertainment and recreation	9001	9329
				S	Other service activities	9411	9609

Source: Office for National Statistics

Table 2

**Approximate sample sizes by size band under the latest sample design**

Employment size band	Sample size
2-9	2086
10-49	978
50-249	702
250-2499	1056
2500 and over	1176

Source: Office for National Statistics

(15,000 different businesses per quarter). The sample was allocated across the new sample design, using a method that minimises the variance at the total level but also gives good estimates for subgroups. This objective is balanced by following ONS guidance to minimise the administrative burden and ensure the confidentiality of respondents. The achieved sample by size band is shown in Table 2.

The sample rotates for businesses below a certain size depending on the industry:

- for most industries in the new design,

sample rotation occurs for businesses below employment of 2500

- for section B (mining and quarrying) and section E (water supply, sewerage waste and remediation), the cut-off is employment of 250
- for section D (electricity, gas, steam and air conditioning supply), the cut-off is employment of 50

The lower cut-offs in sections B, D and E are because the business population in these relatively small industries cannot support rotational sampling above these thresholds.

All businesses in the population above the sampling cut-off are selected every month. Businesses sampled below the cut-off are selected once a quarter, and remain in the sample for a number of consecutive quarters before being rotated out. There are three separate samples, one for each month of the quarter, which are combined in the rolling three-month average series. Due to the changes in classification and sample design, businesses might remain in the sample for a shorter or longer period than would usually be expected, but ONS has attempted to minimise those occurrences.

**Constructing continuous series over time**

Continuous time series are required in order to ensure comparability of estimates over time. ONS used a combination of the following three methods for different time spans, which have then been linked to form a continuous time series:

1. from the start of the series in April 2001 to January 2008, a conversion matrix was used (in fact series were produced up to September 2009 to give an overlap with the second method to enable the linking process). This method apportions the SIC 2003 series to SIC 2007 sections, using proportions derived from dual coded employment data in the Inter-Departmental Business Register (IDBR). This aggregate level method was widely used by ONS at the last major classification change and is widely used by other National Statistics Institutes
2. from February 2008 to December 2009, a micro-method was used. The individual survey responses selected under the original design were re-weighted and aggregated using the new sample design with strata based on SIC 2007 and the new five standard size bands. This method was deemed to give better estimates than the first method. It was only applicable from the start of 2008, when businesses were first dual coded on the IDBR for both SIC 2003 and SIC 2007
3. from January 2010, the survey was selected, weighted and aggregated using the new design

The series produced from the first and second methods were joined by applying linking factors. These were calculated by taking the ratio of the data calculated by the second method with the first method for the overlapping data points between February 2008 to September 2009, producing 12 month rolling averages of these ratios, and then selecting a robust rolling average based on the nine spans. The link factors were applied backwards from January 2008 to the series generated from the first method, and then attached to the latter part of the series generated by the

second method. In effect, the level of the linked series was set by the second method. Because this is a micro-method it gives the best estimate of the level of SIC 2007 series. However, this differs to the total level when estimated using SIC 2003 industries. Consequently there were revisions across the whole length of the series, at both subgroup and aggregate levels.

The linking process was applied to the industry and size band series. The size band series were then constrained to the sum of the industry series, to remove small differences between the sum of the industry series and the sum of the size band series. No linking between the second and third methods was undertaken because there were no overlapping periods – the selection switched over to the new design in January 2010. There do not appear to be any discontinuities at this point.

### Seasonal adjustment review

Seasonal adjustment reviews of the Vacancy Survey are carried out each year, usually in the April release. Given the described changes in moving the survey on to a SIC 2007 basis, it was necessary to conduct a seasonal adjustment review on the revised series ahead of the February 2010 release. The review involves looking at each component and aggregate series individually to determine the type of adjustment to be used, identifying the seasonal pattern and any other effects on the data that are not strictly seasonal. A number of improvements were identified which also contributed to revisions to the seasonally adjusted series.

In addition, the review has resulted in modifications to the seasonal adjustment modelling options in all the series. An additive decomposition has been adopted for the total vacancies seasonally adjusted series. Analysis of the 20 industry series has resulted in eight series adopting a

multiplicative decomposition, seven series an additive composition, with the remaining five showing no seasonality. The five 'size of enterprise' series have three with a multiplicative decomposition and two with an additive decomposition. (see **Box 1**, Seasonal adjustment using X12 ARIMA). As a consequence, seasonally adjusted figures have been revised back to the beginning of the series.

Revisions to the seasonally adjusted series have been relatively small and have had little effect on the assessment of the latest trends.

### Impact of changes

The impact of the changes to the continuous back series on the total non-seasonally adjusted series, and the subsequent revisions to the total seasonally adjusted series, are shown in **Table 3**. These are also illustrated in **Figure 1**, which shows the old unadjusted vacancy series, the revised unadjusted vacancy series, the old seasonally adjusted vacancy series and the revised seasonally adjusted vacancy series.

The main impact on the size band analysis has been to increase the proportion of the total vacancies that are in businesses with more than 2,500 employees, while reducing the number in the 250–2,499 employee size band. This is because the previous methodology was generally over-attributing vacancies within cells that straddled size bands to the smaller category. Changes in the number of vacancies in other size bands are much smaller than the movement between these two. **Figure 2** shows the seasonally adjusted figures for each of the size bands before and after the changes to the sample design.

### Changes to published tables

The introduction of SIC 2007 required some changes to the tables published in the Statistical Bulletin to reflect the new

#### Box 1

##### Seasonal adjustment using X-12 ARIMA

Seasonal adjustment is the process of identifying and removing the seasonal components from a series leaving the trend and irregular components.

The Vacancy Survey series are seasonally adjusted using X-12 ARIMA. In future this program will be used across ONS as the logical replacement for X-11 ARIMA, due to its superior power and additional capabilities. It is now being introduced for some new series where practical.

The program splits the series into a trend, seasonal, and irregular components. If the series is modelled additively, summing

the three parts gives the unadjusted data. If it is modelled multiplicatively, the raw data is the product of the three components. The seasonal component cannot be found without knowing the trend component. Therefore, X-12 ARIMA performs a series of iterations, obtaining a better estimate for the trend and seasonality with each one.

The ARIMA functionality can be used with series of five years or more. The program fits an autoregressive integrated moving average (ARIMA) model to the data, using forecasts for one year ahead to improve the estimation of seasonal factors at the end of the series.

**Table 3**  
**Revisions to Vacancy Survey series, April 2001 to December 2009**

United Kingdom				Thousands and per cent (three-month averages)		
	Non- seasonally adjusted series			Seasonally adjusted series		
	Revised Series (000s)	Change (000s)	Change (per cent)	Revised Series (000s)	Change (000s)	Change (per cent)
Apr-Jun 2001	676	9	1.4	670	10	1.5
May-Jul 2001	676	9	1.4	664	9	1.4
Jun-Aug 2001	664	9	1.4	652	9	1.4
Jul-Sep 2001	672	8	1.2	654	9	1.4
Aug-Oct 2001	666	8	1.2	630	8	1.3
Sep-Nov 2001	651	7	1.1	617	7	1.2
Oct-Dec 2001	596	5	0.9	593	5	0.9
Nov-Jan 2002	557	5	0.9	598	6	1.1
Dec-Feb 2002	563	5	0.9	607	6	1.0
Jan-Mar 2002	583	6	1.1	610	7	1.1
Feb-Apr 2002	604	6	1.0	610	6	1.0
Mar-May 2002	602	6	0.9	604	6	1.0
Apr-Jun 2002	613	6	1.0	607	6	1.0
May-Jul 2002	615	7	1.2	602	6	1.1
Jun-Aug 2002	615	7	1.1	604	6	1.0
Jul-Sep 2002	619	5	0.9	600	4	0.7
Aug-Oct 2002	636	4	0.7	600	3	0.5
Sep-Nov 2002	633	4	0.6	599	3	0.5
Oct-Dec 2002	597	3	0.5	595	3	0.6
Nov-Jan 2003	553	3	0.6	594	4	0.7
Dec-Feb 2003	543	3	0.6	587	6	1.0
Jan-Mar 2003	557	4	0.7	585	5	0.9
Feb-Apr 2003	571	3	0.6	577	4	0.7
Mar-May 2003	578	3	0.6	581	4	0.6
Apr-Jun 2003	577	3	0.5	571	3	0.5
May-Jul 2003	579	4	0.6	565	2	0.4
Jun-Aug 2003	580	3	0.6	568	2	0.4
Jul-Sep 2003	601	4	0.7	583	3	0.5
Aug-Oct 2003	629	5	0.7	595	3	0.6
Sep-Nov 2003	634	5	0.7	602	4	0.7
Oct-Dec 2003	608	4	0.7	606	5	0.8
Nov-Jan 2004	565	4	0.7	605	4	0.7
Dec-Feb 2004	565	4	0.6	608	5	0.8
Jan-Mar 2004	587	4	0.7	615	4	0.6
Feb-Apr 2004	615	5	0.8	621	5	0.8
Mar-May 2004	626	5	0.7	628	5	0.7
Apr-Jun 2004	638	5	0.9	632	6	0.9
May-Jul 2004	658	6	0.9	643	6	1.0
Jun-Aug 2004	657	7	1.1	644	7	1.2
Jul-Sep 2004	662	8	1.2	643	8	1.3
Aug-Oct 2004	678	8	1.2	645	10	1.5
Sep-Nov 2004	680	8	1.2	649	10	1.5
Oct-Dec 2004	654	7	1.1	653	8	1.2
Nov-Jan 2005	614	6	0.9	653	3	0.4
Dec-Feb 2005	604	5	0.8	648	3	0.5
Jan-Mar 2005	610	5	0.9	638	4	0.6
Feb-Apr 2005	625	6	0.9	630	5	0.9
Mar-May 2005	635	5	0.8	637	5	0.8
Apr-June 2005	642	5	0.8	636	5	0.8
May-Jul 2005	644	5	0.7	628	4	0.7
Jun-Aug 2005	632	5	0.8	617	5	0.9
Jul-Sep 2005	633	5	0.9	614	5	0.9
Aug-Oct 2005	634	6	1.0	603	5	0.9
Sep-Nov 2005	631	7	1.1	602	6	1.0
Oct-Dec 2005	606	6	1.0	605	7	1.2
Nov-Jan 2006	570	5	0.9	610	5	0.8
Dec-Feb 2006	564	5	1.0	608	7	1.1
Jan-Mar 2006	569	5	0.9	596	5	0.8
Feb-Apr 2006	590	5	0.9	594	5	0.8
Mar-May 2006	593	6	1.0	593	6	0.9
Apr-June 2006	606	6	1.1	600	6	1.1
May-Jul 2006	619	7	1.1	604	5	0.9
Jun-Aug 2006	624	7	1.1	610	8	1.3
Jul-Sep 2006	627	7	1.1	608	7	1.2

Table 3 continued

## Revisions to Vacancy Survey series, April 2001 to December 2009

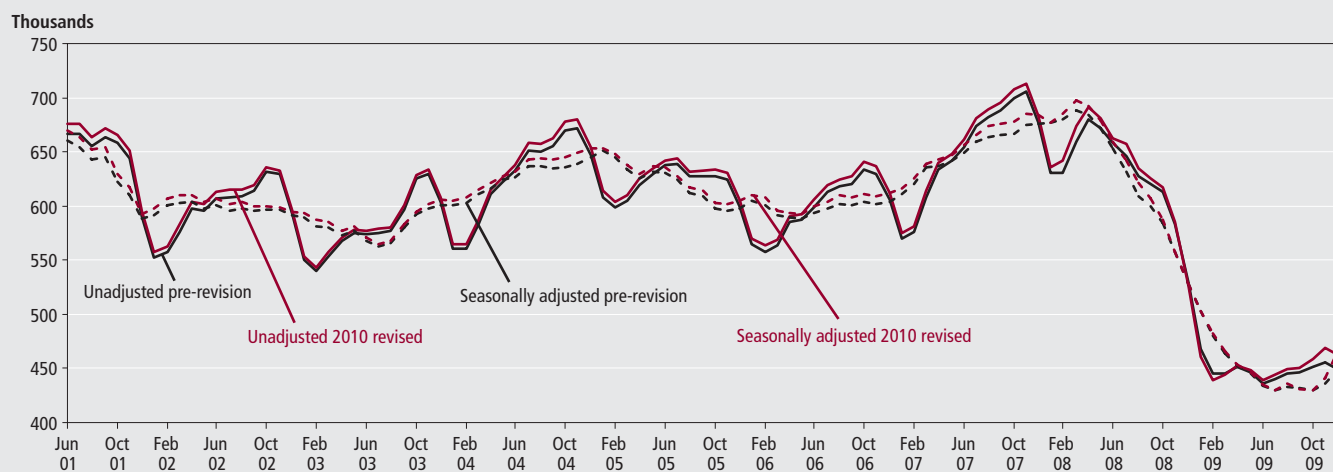
United Kingdom

Thousands and per cent (three-month averages)

	Non- seasonally adjusted series			Seasonally adjusted series		
	Revised Series (000s)	Change (000s)	Change (per cent)	Revised Series (000s)	Change (000s)	Change (per cent)
Aug-Oct 2006	641	7	1.2	611	7	1.2
Sep-Nov 2006	637	7	1.1	609	7	1.1
Oct-Dec 2006	612	6	1.0	612	8	1.3
Nov-Jan 2007	575	5	0.9	616	4	0.7
Dec-Feb 2007	581	5	0.9	625	5	0.8
Jan-Mar 2007	614	6	1.0	639	3	0.5
Feb-Apr 2007	640	7	1.0	643	5	0.8
Mar-May 2007	648	6	1.0	647	6	0.9
Apr-June 2007	661	7	1.0	656	7	1.0
May-Jul 2007	681	7	1.0	666	7	1.1
Jun-Aug 2007	689	7	1.0	674	11	1.6
Jul-Sep 2007	695	7	1.0	676	10	1.5
Aug-Oct 2007	708	7	1.0	678	11	1.6
Sep-Nov 2007	713	7	1.0	685	10	1.5
Oct-Dec 2007	683	6	0.9	684	9	1.3
Nov-Jan 2008	636	5	0.9	677	0	0.0
Dec-Feb 2008	642	11	1.7	685	5	0.8
Jan-Mar 2008	674	15	2.3	697	9	1.3
Feb-Apr 2008	691	11	1.6	692	9	1.3
Mar-May 2008	681	9	1.3	679	8	1.1
Apr-June 2008	663	5	0.8	659	5	0.8
May-Jul 2008	657	11	1.7	642	10	1.6
Jun-Aug 2008	635	8	1.3	621	12	1.9
Jul-Sep 2008	625	5	0.9	607	7	1.1
Aug-Oct 2008	617	4	0.7	587	3	0.6
Sep-Nov 2008	585	2	0.4	558	0	0.0
Oct-Dec 2008	526	-3	-0.5	528	0	0.0
Nov-Jan 2009	461	-7	-1.4	503	0	0.0
Dec-Feb 2009	439	-6	-1.5	482	2	0.4
Jan-Mar 2009	444	-1	-0.2	466	2	0.5
Feb-Apr 2009	453	2	0.4	454	1	0.2
Mar-May 2009	448	2	0.5	446	1	0.2
Apr-June 2009	439	3	0.6	435	1	0.3
May-Jul 2009	444	4	1.0	430	0	-0.1
Jun-Aug 2009	449	4	0.8	436	3	0.7
Jul-Sep 2009	450	3	0.8	431	0	-0.1
Aug-Oct 2009	459	8	1.8	430	0	-0.1
Sep-Nov 2009	469	13	2.8	441	5	1.1
Oct-Dec 2009	463	15	3.3	465	17	3.9

Source: ONS Vacancy Survey

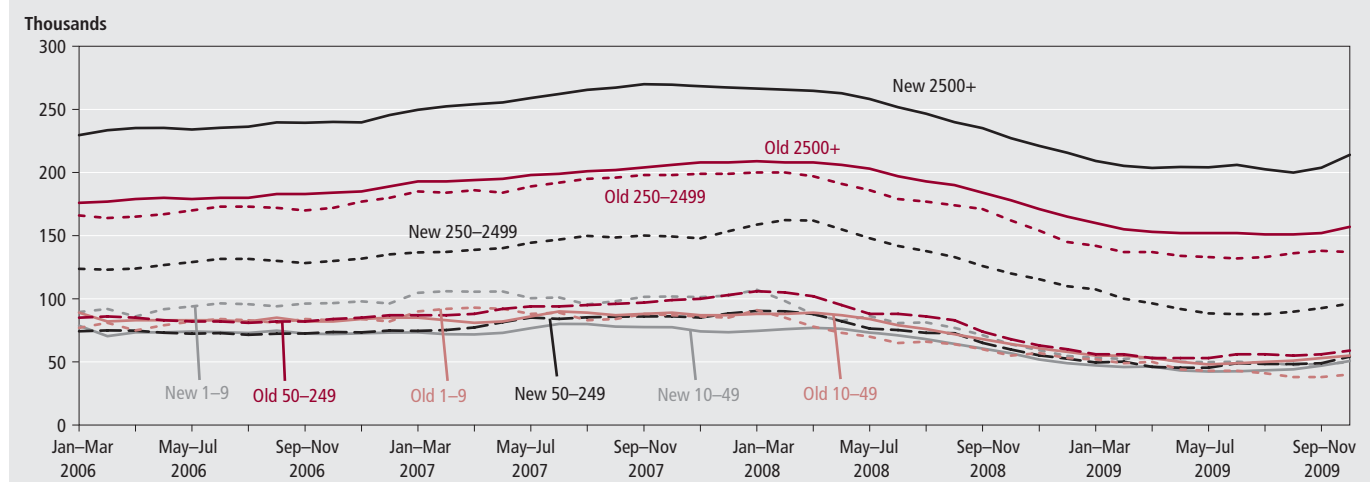
Figure 1  
Number of job vacancies in the UK, three-month averages



Source: ONS Vacancy Survey

Figure 2

## Vacancy size bands before and after improvements to the survey sample design



Source: ONS Vacancy Survey

industry breakdown. At the same time ONS took the opportunity to implement other changes to the published outputs, based on the recommendations of the Report on the Triennial Review of the Vacancy Survey (2009) and an internal review of all Labour Market statistical outputs.

One of the outcomes of these reviews was that users would like to see information at a more detailed level of industrial breakdown than the eight broad industrial groupings that were previously published. These groupings reflected the level at which seasonal adjustment of the industrial series was carried out. Under SIC 2007, the publication has been moved from these broad industrial groupings to 18 individual sections. Consequently this has required the seasonal adjustment of a larger number of industrial series. The new breakdowns will give the user more information on the relative performance of the different industry sections than was previously available. However, the more detailed breakdown does mean that for some smaller sectors little variation in the published estimate of vacancies is likely to be seen over time.

Another recommendation of the 2009 triennial review was the removal of the single month series in favour of the rolling three-month average. The design of the Vacancy Survey is optimised to produce rolling three-monthly average estimates.

Although single month estimates are possible from the series and have been published in the past, the relatively high sampling variability of these estimates make it difficult to conclude to what extent movements are reflecting real variations in the labour market. Therefore rather than continue to publish this series, which may lead to spurious conclusions about the state of the labour market, ONS will only publish the rolling three-month average estimates that the survey is designed to produce.

In place of the single month series, ONS have introduced two new tables to the Labour Market statistical bulletin. The first of these is a table giving the breakdown of vacancies by the size of business, as measured by the number of employees working for the business. Although not in the Statistical Bulletin, this table has previously been published in ELMR as Table 6.25 in the section on Further Labour Market Statistics. However as explained, due to changes to the sample design, the methodology used to produce this table has now improved, leading to significant revisions from the previous versions. This table is now additionally included as Table 21 in the Statistical Bulletin.

A second new table introduces a ratio of the number of unemployed people per vacancy. Although not all people who will apply for vacancies will be unemployed, this will give some indication of the supply

and demand relationship prevalent in the labour market. This new table will appear as Table 21(1) of the Statistical Bulletin. The periods available in this table differ from the other vacancy tables to reflect the latest unemployment figures available in Table 1 of the Statistical Bulletin. This means that the latest figures will always be one month behind the other vacancy tables. This new table has also replaced Table 6.25 of the ELMR tables.

## CONTACT

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Hughes J C, James G, Evans A and Prestwood D (2009) 'Implementation of Standard Industrial Classification 2007: December 2009 update', Economic and Labour Market Review December 2009. Available at [www.statistics.gov.uk/elmr/12\\_09/downloads/ELMR\\_Dec09\\_Hughes.pdf](http://www.statistics.gov.uk/elmr/12_09/downloads/ELMR_Dec09_Hughes.pdf)

Report on the Triennial Review of the Monthly Vacancy Survey (2005). Available at [www.statistics.gov.uk/downloads/theme\\_other/VacancyTriennialReviewReport.pdf](http://www.statistics.gov.uk/downloads/theme_other/VacancyTriennialReviewReport.pdf)

Report on the Triennial Review of the Vacancy Survey (2009). Available at [www.statistics.gov.uk/downloads/theme\\_other/VacancyTriennialReviewReport2009a.pdf](http://www.statistics.gov.uk/downloads/theme_other/VacancyTriennialReviewReport2009a.pdf)

## ARTICLE

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# Understanding the divergence between output and employment in the UK construction industry

## SUMMARY

This article examines recent divergence between output and employment in the UK construction industry. It looks at the construction labour market and highlights how its flexibility (in relation to other industries) may have contributed to the observed divergence. It also looks at structural changes in the UK economy that may have contributed to the observed divergence between employment and output. Notably, it considers the measurement of migrant workers in the construction sector and the growth in the number of small businesses. The article concludes that, although construction statistics are well developed, the construction industry's unique characteristics still present significant challenges in the measurement methodology of output and employment.

## Introduction

In the second quarter of 2008, the UK economy went into recession and the construction sector also entered a period of negative growth. Quarterly output growth in the construction sector was negative for four successive quarters (from the second quarter of 2008 to the first quarter of 2009), resulting in a peak to trough loss of output of approximately 14 per cent. However, while construction output figures started to decline in the second quarter of 2008 (**Figure 1**), employment growth figures for the industry remained positive for most of 2008 and only started falling slowly in the fourth quarter of 2008. The number of redundancies in the industry started to pick up in the third quarter of the 2008 and have been elevated since (**Figure 2**).

This article will examine the UK construction industry and attempt to explain the observed divergence between the employment and output growth figures for this industry. It will be organised as follows:

- an overview of the industry
- the methodology used in the measurement of construction statistics
- recent influences in the construction sector
- the divergence between construction output and employment
- conclusion

## Background

The UK construction industry has an output of approximately £100 billion a year.

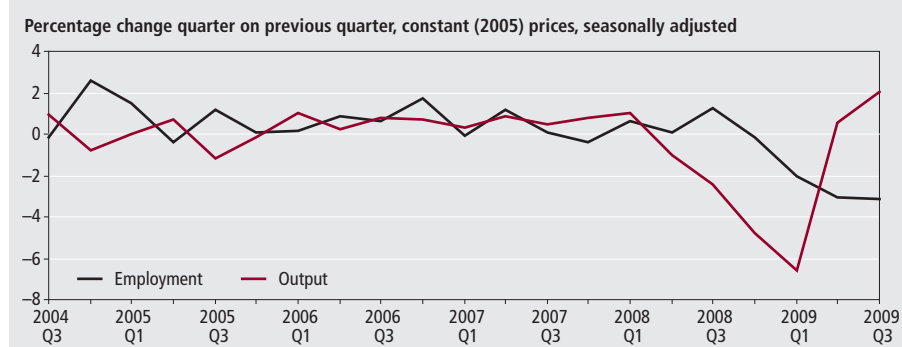
It accounts for approximately 6 per cent of Gross Domestic Product (GDP) and 7 per cent of all jobs in the UK. These jobs are located in construction businesses with sizes varying from a small business of one sole-proprietor to a corporation hiring hundreds of employees and sub-contractors.

The Office for National Statistics (ONS) classification 'construction' covers a wide range of construction activities which include house building, office building, infrastructure, and repair and maintenance. These categories apply to the measurement of output and employment in the construction sector. The output measures in these sub-categories however, are based on what many refer to as 'the narrow definition of construction' (Pearce 2003). This definition (Division 45 of the Standard Industrial Classification (SIC)) refers to the output of contractors and excludes 'the supply chain for construction materials, products and assemblies, and professional services such as management, architecture, engineering design and surveying'. It also excludes the informal sector (for example DIY and black market work).

The labour market characteristics of the construction industry are unique, with the self-employed making up approximately 40 per cent of the workforce; the largest proportion of self-employed workers in the UK's industrial makeup. Additionally in 2000, the UK construction sector was shown to have the largest rate of self-employment of the EU-15 countries<sup>1</sup> (Briscoe et al. 2000)<sup>2</sup>.

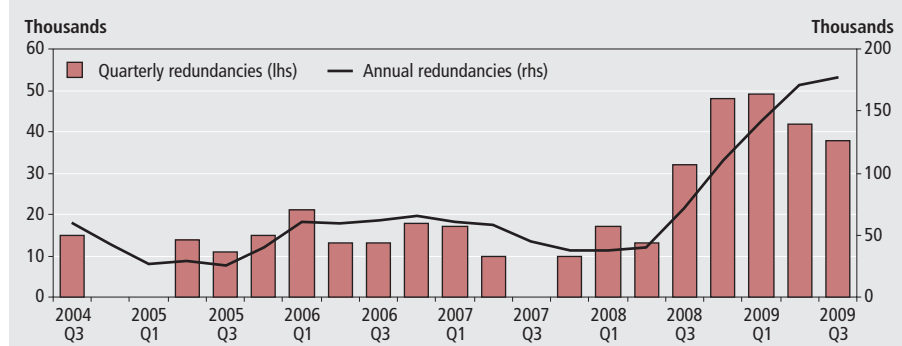
Briscoe (2006) has argued that even

**Figure 1**  
**Output and employment of UK construction, 2004–2009**



Source: Workforce Jobs series and Output in the Construction Industry, ONS

**Figure 2**  
**Redundancies per quarter in the construction industry**



Source: Labour Market Statistics, ONS

though 'construction in the UK is today served by a well-developed system of statistical reporting', the above mentioned characteristics cause difficulties in the measurement of output and employment. Consequently, methodological improvements and revisions are continually introduced, as a result of ONS's and users' scrutiny.

## Measuring construction

### Construction output

Output is measured using the 'Quarterly Inquiry of Activities for Construction and Allied Trades'. This is a business (employer-based) survey which asks a sample of VAT registered construction contractors<sup>3</sup> for the value of their construction output. Note that this is different from the measure 'turnover', which is used for most UK<sup>4</sup> industries, as 'value of construction output' excludes the supply chain (for example architect bureaus, brick-makers and so on). Further, this measure excludes VAT and any work done by subcontractors, to avoid double counting. In the National Accounts, the value added measure of construction (which excludes all intermediate consumption) is used in the measurement of GDP. Planned improvements in the

measurement of construction output are outlined in the **Appendix**.

### Construction employment

ONS measures employment in the economy as a whole through two types of surveys: household and employer-based surveys. From these surveys the Workforce Jobs (WFJ) series is constructed. WFJ is the sum of employee jobs (which is normally derived from employer-based surveys) and self-employment jobs (derived from the Labour Force Survey (LFS), a household survey<sup>5</sup>).

The construction industry differs from other industries with regard to the measurement of employee jobs. Unlike most industries, the LFS (benchmarked against the Annual Business Inquiry (ABI)<sup>6</sup>) is, for historic reasons, used to measure the number of employee jobs as well as self-employed jobs in construction (**Table 1**). To bring the construction methodology in line with other industries in the National Accounts, ONS is currently developing new methodologies for the measurement of construction jobs, information on which can be found in the appendix.

## Recent influences in the construction sector

The level of construction activity depends on the interaction of demand and supply factors that are often cyclical in nature. The recent contraction in construction activity has (to a large extent) been driven by a fall in demand which has inevitably led to reduced supply. Prior to the financial crisis, households engaged in excessive borrowing to pay elevated house prices in the period of low interest rates and steady economic growth. However, the effect of cyclical policy tightening, such as increasing interest rates, increased the burden of servicing the debts of over-extended households, while placing downward pressure on both domestic demand and house prices, and resulted in a loss of output in the private housing industry.

Other demand-side factors that have influenced changes in construction activity include:

- consumer/business access to credit
- consumer/business optimism
- domestic housing market
- labour market conditions
- government policies (for instance to bring forward public sector

**Table 1**  
**Schematic representation of the estimation of WFJ in construction**

<b>UK Workforce Jobs in Construction</b>	
=	
<b>Employee Jobs</b>	
GB: LFS benchmarked to ABI <sup>1</sup>	
Northern Ireland: DETINI's Quarterly Employment Survey <sup>1</sup>	
+	
<b>Self-employed Jobs</b>	
GB: LFS	
Northern Ireland: DETINI's Quarterly Employment Survey <sup>1</sup>	
+	
<b>Government Supported Trainees</b>	
DIUS, Northern Ireland <sup>1</sup>	

### Note:

- 1 Northern Ireland Jobs and Government Supported Trainees are a relatively small part of the construction workforce and will therefore not be discussed in this article.

Source: ONS

construction projects in response to falling economic activity)

The fortunes of the construction industry have played a pivotal role in the recent economic downturn and in the subsequent policy debate to aid recovery. The construction sector has been particularly affected by the ongoing financial crisis because of its link to the housing market (new housing work and housing repair and maintenance make up over a third of construction activity). Thus, while the contraction in construction volume growth has been broad-based across the different categories of construction, it has been particularly noticeable in construction housing activity. The relationship between construction activity and house prices is highlighted in **Figure 3**. It shows that the

performance of the construction industry over the last thirty years has been strongly allied to developments in private residential real estate markets. In particular, it shows that the recent fall in construction output has been driven by weakness in the real estate market. Figure 3 indicates that there is a positive relationship between house price changes and construction activity; higher house prices (which may be taken as an indication of excess demand over supply) are likely to lead to an increase in house building and therefore construction output.

The construction sector accounts for approximately 6 per cent of GDP; nevertheless, GDP growth is sensitive to fluctuations in construction activity due to the tendency for swings in construction output to be both large and rapid (**Figure 4**). The sensitivity of GDP to

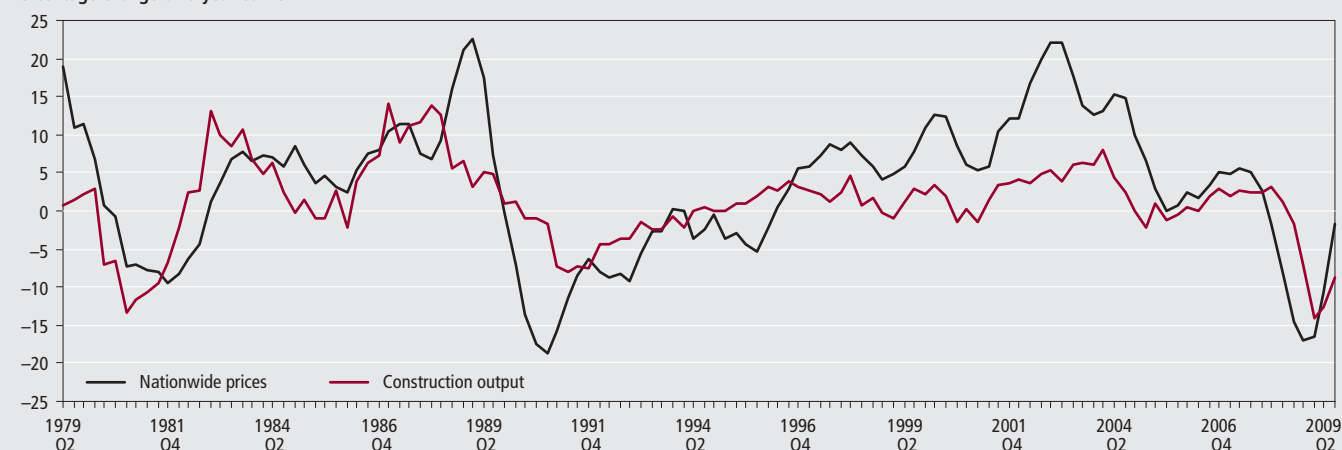
developments in construction is also attributed to the fact that construction activity is intrinsically linked to other sectors of the economy; for instance manufacturing, business investment and the labour market. Therefore, falling output in construction could affect related industries like brick manufacture, conveyancing, and removal services.

### The divergence between construction jobs and output

The effect of the 2008/09 recession on the labour market was varied across different sectors of the economy. Generally, falling output is expected to lead to a weakening in the demand for labour, as this demand is derived from output. Due to adjustment costs however, there is often a lag between the fall in output and labour demand.

**Figure 3**  
**Nationwide house prices<sup>1</sup> and construction output<sup>2</sup>**

Percentage change on a year earlier



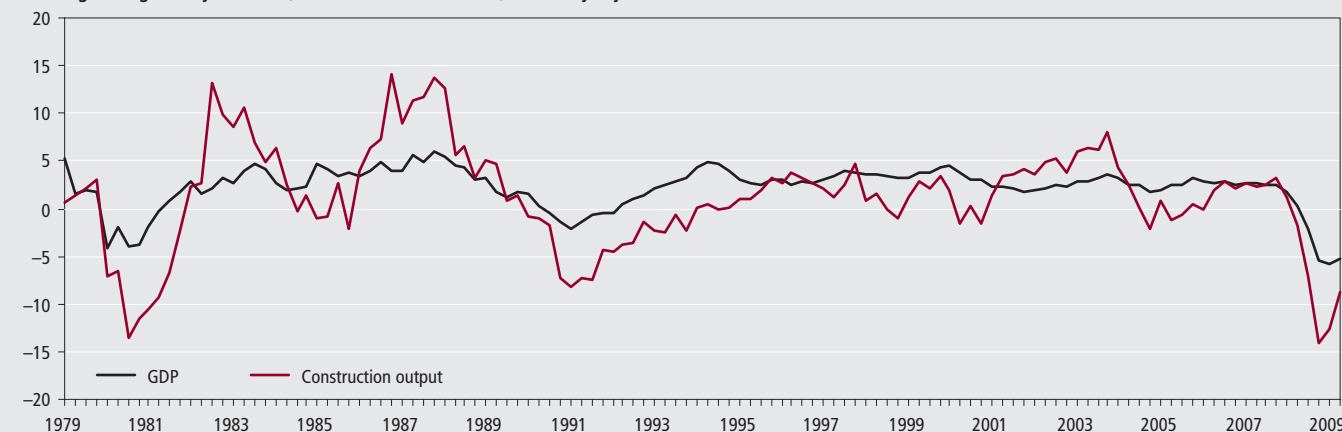
#### Notes:

- 1 Not seasonally adjusted.
- 2 Seasonally adjusted.

Source: *Output in the Construction Industry, ONS and Nationwide*

**Figure 4**  
**Construction output and GDP**

Percentage change on a year earlier, chained volume measures, seasonally adjusted



Source: *Output in the Construction Industry and National Accounts, ONS*

Specifically, employers may find that the cost of keeping their labour force on is less than having to hire them back when the economy picks up again. Although this can have future cost saving benefits, the risks to this policy are that it is dependent on the recovery of the economy before the financial means of a business to pay salaries runs out.

The drop in whole-economy employment in the 2008/2009 recession was mild compared to previous recessions. At similar points in the 1980s and 1990s recessions, employment (whole economy) had fallen by more than the 2008/09 recession, despite smaller falls in output (**Table 2**). The delayed adjustment in employment observed in the UK economy may in part be attributable to a moderation in pay growth and the adoption of flexible working practices (for instance, a reduction in hours) as well as Government's support and the forbearance of banks in the case of breaches of loan covenants (Bank of England 2009). A forthcoming ELMR article will look more closely at the performance of the labour market relative to GDP.

While these are influences contributing to the observed divergence between output and employment in the construction sector, there are other factors that have contributed to the resilience in construction jobs. This article considers two possibilities:

- flexibility of the construction labour market
- structural changes in the UK economy

### Flexibility of the construction labour market

The construction industry has seen a stronger lag in employment figures compared with the rest of the economy, despite the much stronger drop in output compared to UK GDP figures. This industry has a high rate of self-employment, with the self-employed making up approximately 40 per cent of the workforce. These high levels compared to other industries (**Figure 5**) can be explained by high levels of subcontracting in the industry, as 'main contractors use subcontractors as a means of surviving the volatility of the construction business cycle' (Dainty et al. 2001). In addition, government policies have made the setting up of small businesses fiscally attractive (see HM Treasury and HMRC 2009 and Edgell 2006).

While this might be expected to result in a rapid shakeout of labour, as subcontractors can be laid off at short notice,

in practice there appear to be significant effects in the opposite direction. A side-effect of the high number of subcontractors and self-employed could be that a drop in output takes longer to feed through into the construction employment figures, because small subcontractors may continue to perform small time work even after the major contractors stop hiring them. In addition, workers from other ailing industries who have been laid-off may decide to set up their own construction business, the threshold for which is relatively low. It is therefore possible that a drop in employment in some other industries could have made a positive contribution to construction employment. Although it is unlikely that there would be sufficient work for all of these businesses during a recession, it is possible that the amount of small scale residential work will increase during recessions as people

are unable to move homes. Moreover, psychological factors may still make running a struggling business preferable to applying for unemployment benefits.

The employee versus self-employment data for the construction industry (**Figure 6**) partly supports this observation. Self-employment as a proportion of total WFJ rose as output in construction started to contract in 2008. In early 2009 however, as the severity of the downturn became apparent, this trend reversed as self-employment figures dropped sharply. As a consequence of even sharper drops in employee figures in the third quarter of 2009, the latest data show a sharp rise in relative self-employment levels. It is unclear whether the recent rebound in the share of self-employment represents a response to the return to positive output growth. However, it could suggest that as the output shocks have worked their way through

Table 2

### Output and employment in the 1980s, 1990s and 2008/09 recessions

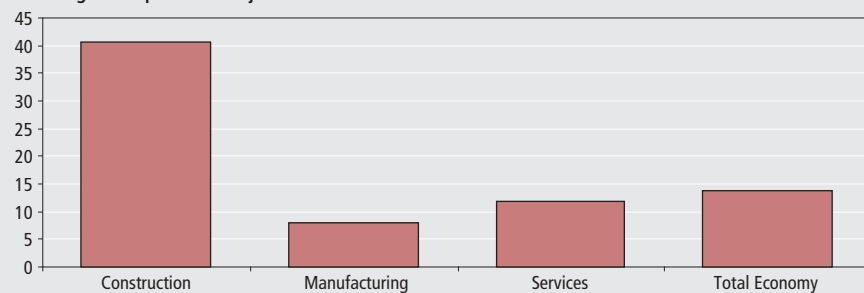
United Kingdom	Percentage changes five quarters after start of recession		
	1980s	1990s	2008/09
GDP	-4.7	-2.5	-6.0
Employment (WFJ)	-2.4	-3.4	-2.1

Source: Workforce jobs, ONS

Figure 5

### Self-employed in construction, manufacturing, services and UK total economy

Percentage of respective total jobs

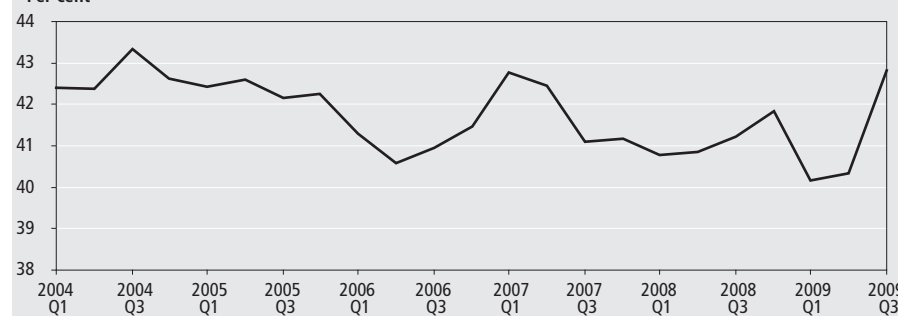


Source: Workforce Jobs series, ONS

Figure 6

### Self-employment as proportion of total construction, 2004–2009

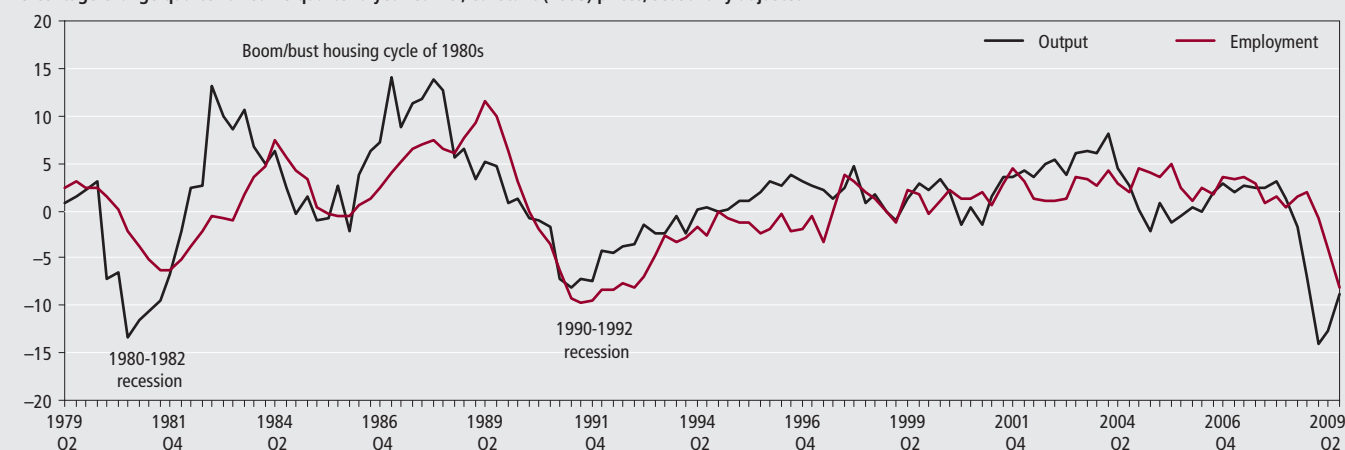
Per cent



Source: Workforce Jobs series, ONS

**Figure 7**  
**Output and employment of UK construction, 1979–2009**

Percentage change quarter on same quarter a year earlier, constant (2005) prices, seasonally adjusted



Source: *Workforce Job series and Output in the Construction Industry*, ONS

the economy, self-employed jobs will have suffered less than employee jobs. Note that this data is volatile, on a quarterly basis, and thus it may not be possible to draw definite conclusions from it concerning 2008/2009 until a longer time-series is available. In addition the data may be clouded by the existence of high levels of what is known as false self-employment<sup>7</sup>.

To supplement the analysis in the previous two paragraphs, it might be useful to see how the current figures and trends compare to past observations. In particular, if a divergence such as we are seeing now has occurred in the past. **Figure 7** shows quarterly Workforce Jobs and output figures for the construction industry on a year-on-year basis over the last 30 years. This graph suggests that a change in employment tends to lag a change in output. In particular, it took two quarters for the large falls in construction output in the early 1980s to be translated in to falling employment. Furthermore, **Table 3** shows that at similar points in the recession during the early 1980s, employment and output growth in the construction sector contracted at approximately the same rate as is currently observed. The current divergence between employment and output is therefore, by no means out of line with previous experience, as is most clearly illustrated in the early eighties recession.

In addition to a time-series comparison it is useful to make a cross-sectional comparison by looking at the same figures for some of the larger European Union countries (**Figure 8**).

The four countries shown in **Figure 8** have seen significant drops in construction output at some point during the last 2 years, although in terms of magnitude only Italy

and Spain come close to the situation in the UK. In Germany and France, as in the UK, employment started contracting two quarters after output first started to show negative growth, while in Italy this took three quarters and in Spain four quarters. Direct government support for construction jobs may explain why some of the above countries have barely seen any negative growth in construction employment figures at all.

This provides a plausible explanation for the divergence between output and employment in the light of economic factors and time-series and cross-sectional comparisons. Nonetheless, it is also possible that changes in the structure of the economy, or in a specific industry, cause existing measurement methods to become less accurate. It is important to recognise these changes in order to ensure that ONS's statistics continue to be of the highest possible quality. The following two sections will look at two structural changes that may have contributed to the divergence between construction output and employment.

### Structural changes in the UK economy

The UK economy is constantly evolving, and to make official statistics of the UK economy representative of the economy

the ONS continues to develop the methodologies used in producing its statistics. In the construction sector, there are a few structural changes in the UK economy that may have contributed to the divergence between employment and output in the construction industry. They include:

- migration flows of foreign workers in the construction industry
- growth in the number of small businesses

### Migration flows of foreign workers in the construction industry

A possible reason for the divergence between employment and output in the construction sector could be related to the measurement of migrant workers. LFS data shows that roughly one in ten construction workers are foreign born (Green 2008). Although this is below the UK average of 13 per cent (ONS 2009a), Chappell et al. (2008) have argued that migrant workers play a significant role in the UK construction industry. More importantly, the seasonality of construction work and thus migration means that foreign construction workers are likely to live in the UK for relatively short amounts of time (Pollard et al. 2008). This means that,

**Table 3**  
**Output and employment in construction: 1980s, 1990s and 2008/09 recessions**

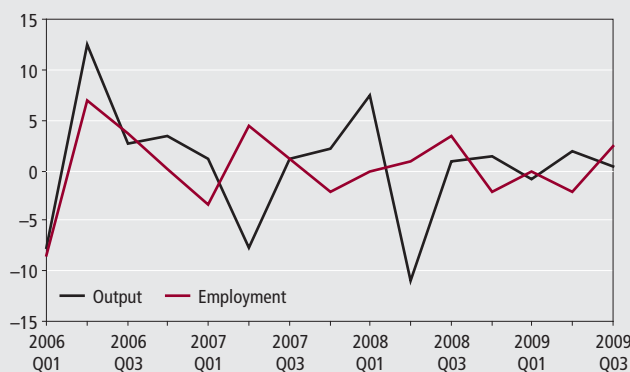
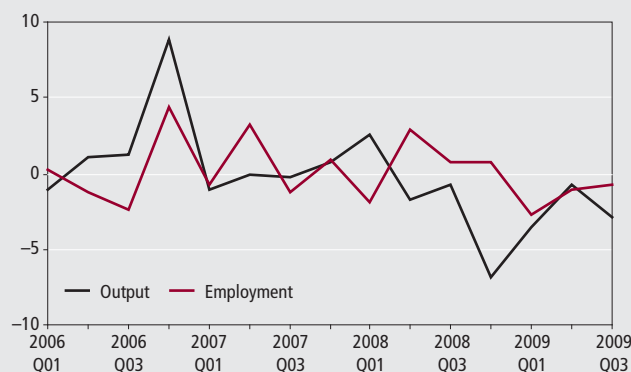
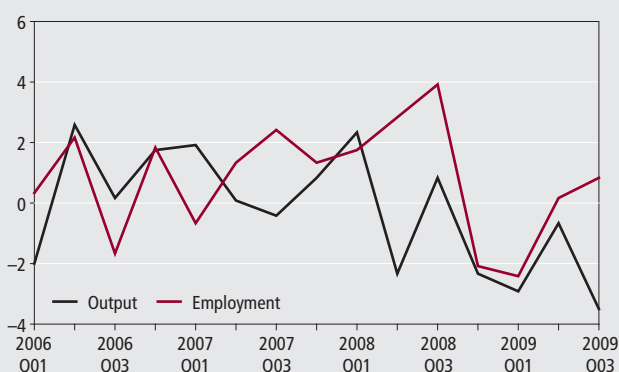
	Percentage changes five quarters after start of recession in total economy		
	1980s	1990s	2008/09
Output	-13.9	-9.1	-13.6
Employment (WFI)	-3.5	-11.2	-4.0

Source: ONS

Figure 8

**Construction output and employment in construction, 2006–2009<sup>1</sup>**

Percentage change quarter on quarter, constant (2005) prices, seasonally adjusted

**Germany****Italy****France****Spain****Note:**

1 The 2009 employment figures are according to NACE rev.2, while the employment figures before 2009 are NACE rev 1.1.

Source: Eurostat

especially in the construction industry, there are significant issues in the recording of migrant workers, as construction employee statistics are based on the LFS (a household survey), rather than on an employer-based survey. The LFS covers all people living in private households, but excludes those living in communal housing. As a disproportionate number of temporary workers are likely to live in the latter type of accommodation, the LFS may be under-reporting the number of migrant workers (Clancy 2008). The number of temporary workers underreported in the LFS is difficult to estimate. Official estimates range from 60,000 to 300,000 (Machin 2008), which is approximately 2 to 8 per cent of the estimated 3.6 million foreign nationals working in the UK.

The implications are that if there were a large outflow of migrant workers the LFS would overstate the growth of employment. Conversely, a large inflow of migrant workers would result in the LFS understating the growth of employment. Although there is no definitive information,

there is emerging evidence to suggest that there has been a considerable outflow of migrant workers recently. ONS migration data (2009b) shows an increased amount of emigration of eastern and central Europeans. In addition, a migration study by the Institute of Public Policy Research (Pollard et al. 2008) suggests that many Polish workers are returning home<sup>8</sup> and information from Tesco shows that the sales of Polish products were down by 23 per cent in December 2008 compared to the previous year (BBC 2009 in Green 2009). Although A8 nationals (a group of countries<sup>9</sup> of which Poland is by far the largest) only make up 14 per cent of the estimated 3.6 million foreign workers in the UK they are more likely to be under-recorded in the LFS, as much of the increased immigration in this group over the past years has been 'short-term and circular' (Eade et al. 2006 in Chappell et al. 2008).

We can see indirect evidence of the under-recording of migrant workers when we look at manufacturing, another industry

that has experienced sharp falls in output in the 2008/2009 recession. LFS estimates show that the manufacturing industry has an even larger amount of both A8 as well as other foreign born workers (Clancy 2008), which makes it suitable for comparison. Manufacturing jobs have been in decline for some time, although they have clearly responded to the recent fall in the industry's output (Figure 9).

In contrast to construction employment figures, those from manufacturing are largely sourced from an employer-based survey. In addition, the use of an employer-based survey in manufacturing is particularly effective as this industry, as can be seen in Figure 5, has relatively low levels of self-employment. The manufacturing figures show a larger fall in employment, compared with construction, and this perhaps highlights the shortcomings of using a household survey (the LFS) to estimate employment in an industry with a heavy concentration of migrant workers. This evidence is not conclusive as manufacturing is indeed a very different

**Figure 9**  
**Manufacturing output**

Quarter on same quarter previous year change, seasonally adjusted, constant (2005) prices.



Source: Index of Production and Workforce Jobs series, ONS

industry. However, it does support the case for using an employer-based survey for employee jobs, especially when there is a high concentration of migrant workers. ONS is moving to an employer-based survey for measuring employee jobs in construction. This is outlined in the **Appendix**.

### Growth in the number of small businesses

Construction output is estimated from a sample of VAT registered construction businesses. ONS retrieves information about these businesses from the Inter-Departmental Business Register (IDBR) and then sends out forms to a sample of these businesses. The number of VAT registered construction businesses is approximately 213,000. The Department of Business, Innovation and Skills (BIS) estimates that the construction industry contains approximately 1 million businesses (2009). Although this is an estimate that is based on a combination of data sources (primarily the IDBR and the LFS)<sup>10</sup>, it does imply that there are approximately 800,000 small businesses in construction that are not registered for VAT and are thus excluded from ONS's sampling frame. This pool of unrecorded businesses includes approximately 40,000 businesses that are registered on the IDBR, but only for PAYE (a form of registration that has a lower threshold). The remaining 760,000 businesses however, are not registered for either PAYE or VAT, because they are small one-man businesses with no employees that are not required to register themselves. Although there is no record of these businesses, they are included in BIS's yearly estimate. Because the construction

output figures do not include unregistered businesses, while the owners and employees of such businesses are picked up by the LFS, the behaviour of small businesses could contribute to the divergence between output and employment. **Table 4** shows BIS estimates of the number of construction businesses and their estimated turnover versus the number of registrations and registered turnover. The figure in the bottom right corner refers to output rather than turnover, and is therefore considerably smaller as this measures the value of construction work.

The number of construction businesses that are not registered for either VAT or PAYE is relatively high. The difference in turnover however, is not as nearly as large. This difference can be explained by the average size of unregistered businesses, which is likely to be considerably smaller.

Although there is a significant difference between BIS's turnover estimate and registered turnover, this will only contribute to the divergence between output and employment if the unrecorded sector grows faster than the recorded sector. If this should be the case however, jobs growth would increase due to an increase in the number of businesses, while the increase in output due to these businesses would not be picked up.

Unfortunately, the BIS estimate of total number of businesses for 2009 will not be available until September 2010. To infer whether unrecorded output has grown faster than recorded output, we can look at the growth of VAT versus PAYE-registered businesses. **Figure 10** shows the growth rate of all the construction businesses in the IDBR, which includes PAYE registered businesses in addition to VAT registered businesses. It also shows the growth rate of VAT registered construction businesses on the IDBR, excluding businesses that are only registered for PAYE. The latter measure conforms approximately to the number of businesses on which the output measure is based, the main difference being that VAT registrations include businesses in Northern Ireland.

As registering for PAYE is compulsory for any business that pays its employees more than £5,000 a year as well as for the purposes of many tax deductions, it is a slightly broader measure than VAT registrations (see Table 4). In contrast, VAT registration is only compulsory above a certain turnover threshold. ONS only samples VAT registered businesses. The difference in growth rate between the two measures (VAT and PAYE) may provide some indication of the difference

**Table 4**  
**2008 estimates and registrations of construction businesses**

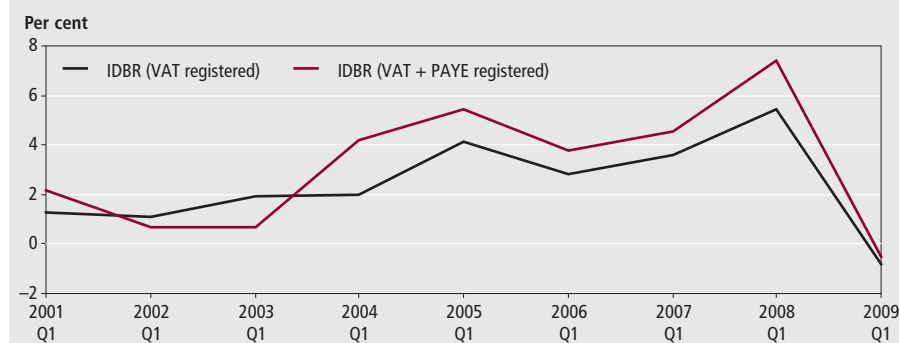
	Total estimated businesses (BIS)	VAT+PAYE registrations (IDBR)	VAT registrations (IDBR)
Nr. of businesses (thousands)	1,010	250	213
Turnover/output <sup>1</sup> (£ billion)	239	204	110 <sup>1</sup>

**Note:**

1 Output is not directly comparable to turnover. For more information see the section on 'measuring output'.

Source: Small and Medium Sized Enterprise Statistics (BIS), IDBR and Output in the Construction Industry (ONS)

**Figure 10**  
**Annual growth rates<sup>1</sup> for two measures of the number<sup>2</sup> of construction businesses**



**Notes:**

Source: UK Business: Activity, Size and Location. Also known as PA1003

1 Based on the first quarter of each year.

2 SIC 2007 was introduced in the IDBR in 2009. For continuity purposes, the above data uses SIC 2003 for all years. Publicly available IDBR data is taken from a snapshot in March.

in growth rates between recorded and unrecorded businesses. If the number of unrecorded businesses (PAYE registrations) is growing faster than recorded businesses, then there is a good chance that the much larger number of completely unregistered businesses is also growing more rapidly.

Note that there are limitations that apply when PAYE registrations are used as a proxy for small businesses. For instance, a growth in PAYE registrations can also occur without small businesses growing. Specifically, ONS has identified a recent trend towards incorporation (see ONS 2007 Annex B), which may have increased PAYE registrations. This is because the owner of a limited company can also be an employee of the same firm at the same time<sup>11</sup>. Taking the data limitations of estimating unrecorded businesses into account, the graph does show a clear trend. From 2004 to 2008 the broader measure of construction businesses (VAT + PAYE registrations) was growing faster than VAT registered businesses. This build up in the number of small businesses prior to a recession does not seem surprising. As the demand for construction, led by the booming housing market, reaches its peak just before the onset of a recession, it becomes increasingly attractive to set up a business to profit from strong demand and buoyant prices. In 2009 however, as the recession sets in, both indicators seem to be converging, which indicates that small construction entrepreneurs are struggling nearly as much as the larger firms.

It is therefore likely that some under-recording of the growth in the number of businesses, and therefore output growth may have occurred in the past. However, using the growth of PAYE registered businesses as a proxy for the growth of unrecorded businesses is not sufficiently

accurate to say anything about the magnitude of possible under-recording of growth. Furthermore, the fact that the difference between the two growth measures diminishes dramatically in 2009 suggests that the current divergence, which emerged in the third quarter of 2008 and reached its peak in the first quarter of 2009, may only to a limited degree be attributable to the under-recording of the growth of small businesses.

There are currently plans to broaden the number of businesses whose output is recorded by making use of PAYE as well as VAT registrations in the ONS sampling universe. This will increase the coverage by approximately 20 per cent, but will still leave the output of an estimated three-quarters of construction businesses unrecorded. It is unlikely that it will be possible to extend the coverage to these very small businesses in the near future.

### Conclusion

This article has noted that a lag between output and employment in the construction sector is not uncommon (a similar divergence also occurred in the 1980s), and it has examined various economic and statistical factors that may have contributed to the recent divergence between output and employment growth in the industry.

The UK construction industry is characterised by high levels of self-employment and small businesses which adds a degree of flexibility relative to other sectors. The industry is also seasonal and thus highly dependable on migrant workers (which helps the industry expand and reduce employment quickly when required), and existing statistical methods are unlikely to fully capture this section of the labour force. These factors make the

employment response harder to predict, and may contribute to the relatively mild adjustment in construction employment.

On the output side, ONS statistical methods used in the measurement of construction output do not pick up the output of very small businesses. Normally this can be assumed not to have a significant impact on output growth, as their growth rate tracks that of larger businesses. Given the high concentration of small businesses and evidence that suggests a growth in these businesses (which are largely unrecorded), it is possible that this may have contributed to the initial divergence between output and employment. Evidence of this is not conclusive at this stage, nor can we infer directly what happens to output from unrecorded firms when demand falls. It is therefore possible that there may be a bias in the construction output measure which relates to the cycle, but we do not know enough to be sure of its magnitude or direction.

Problems in estimating output and employment in an industry with the complexities of construction will always remain difficult. It is important to recognise that these are estimates and therefore will always include a margin of error. However, ONS's methods are continuously being reviewed and the appendix includes some of the proposed improvements to the measurement of migrant workers, construction output, and employment.

### Notes

1. The EU-15 consists of Belgium, Denmark, Germany, Greece, Spain, France, Ireland, Italy, Luxembourg, The Netherlands, Austria, Portugal, Finland, Sweden and The United Kingdom.
2. In 2000 the UK construction industry had the largest rate of self-employment in the EU. However, with the accession of Slovakia and The Czech Republic as part of the 2004 expansion of the EU, these countries respectively now hold the title of highest and second-highest proportion of self-employed workers in their respective construction industries (European Labour Force Survey).
3. Large businesses are always part of the sample, while a proportion of smaller businesses are sampled. The sampling ratio of smaller businesses depends on the employment size-band of the company in question. A higher proportion of the higher size-bands are sampled than those in the lower size-bands.
4. Construction output is measured

in Great Britain (GB) only (that is excluding Northern Ireland (NI)), while employment is measured for the whole of the UK. However, NI jobs and output make up approximately 3 per cent of total figures for construction (NI devolved administration). In addition, construction jobs in NI have been dropping faster compared to GB, implying that the buoyancy of employment figures discussed in this article can not be attributed to the inclusion of NI jobs.

5. WFJ is not equal to the number of people in employment, as WFJ is a measure of jobs, not people. In other words, it is possible to have more jobs than the number of people in employment, because some people might have more than one job.
6. Long-term trends in employee jobs are based partly on the employer-based ABI1, as the LFS is benchmarked against this survey regularly. In the short term however, employee jobs are based solely on the LFS. The latest benchmark currently dates from the third quarter of 2007.
7. False self-employment is seen as self-employment with characteristics that are not different from employee jobs. For specifics on the Government's view of false self-employment and how this has been dealt with in the past, see: HM Treasury and HMRC 2009.
8. Polish citizens are the third largest immigrant group arriving in the UK in 2008 after British and Indian citizens (ONS, 2009a).
9. The accession 8 (A8), is a group of 8 countries that acceded to the EU in 2004. The A8 includes: Estonia, Latvia, Lithuania, Poland, Czech Republic, Slovakia, Hungary and Slovenia.
10. For more information on the methodology of BIS, see <http://stats.berr.gov.uk/ed/sme/>
11. For more information on pay and financing under different ownership structures see chapters 3 and 4 of HM Treasury (2004).

## ACKNOWLEDGEMENTS

The authors would like to acknowledge input from our colleagues in the Labour Market, Construction and the IDBR teams. In

particular the input from Christopher Davies, Nick Barford and Tony Crook is noted. Of course, any omissions or errors remain the sole responsibility of the authors.

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## APPENDIX

## Changes to construction employment and output surveys and publications

### Employment

On 1 March 2008, the Office for National Statistics took over responsibility for the collection and publication of construction statistics from BERR (now BIS). ONS has continued to produce and publish most of the series using the existing BERR/BIS methodology, but new systems and methods are being developed in line with ONS's standard practices. Although the focus of the development has been on the output statistics, which will be published on the new basis from July 2010, the redeveloped survey will also collect employment data on a quarterly basis. Once the redeveloped survey has bedded-in, ONS will investigate using this employer survey as the measure of construction employee jobs in place of the LFS series that currently feeds Workforce Jobs. This would bring construction jobs in-line with the measurement of other industries. For more information contact Nick Barford (01633 456783).

### Output

There will be changes made to the current construction publications 'Output in the Construction Industry' and 'New Orders in the Construction Industry' in the near future. These will mainly include releasing the current quarterly output publication on a monthly basis and the current new orders publication on a quarterly basis. For more information see 'Response to public consultation on proposed changes to construction statistics publications'. Available at: [www.ons.gov.uk/about/consultations/consultation-on-construction-statistics/response-to-public-consultation-on-proposed-changes-to-construction-statistics-publications.pdf](http://www.ons.gov.uk/about/consultations/consultation-on-construction-statistics/response-to-public-consultation-on-proposed-changes-to-construction-statistics-publications.pdf)

### Migrant workers

Improvements in the measurement of migrant workers are being undertaken through the Migration Statistics Improvement Programme (MSIP). For more information see: [www.ons.gov.uk/about-statistics/methodology-and-quality/imps/index.html](http://www.ons.gov.uk/about-statistics/methodology-and-quality/imps/index.html)

## ARTICLE

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# Development of construction statistics

## SUMMARY

In March 2008, responsibility for the collection and publication of construction statistics passed to the Office for National Statistics (ONS) from the Department for Business, Enterprise and Regulatory Reform (now Department for Business, Innovation and Skills). A Construction Development Project was set up to develop new methods and processes for the transferred surveys, so as to bring them into line with existing ONS practise.

This article outlines the progress made and key changes to the future publication of construction output and new orders statistics. Construction output estimates will now be produced monthly, and by feeding into the National Accounts, will enable more robust Gross domestic product (GDP) estimates of construction activity. New orders in the construction industry will change from a monthly to a quarterly survey to reduce the administrative burden on businesses and government.

## Background

Responsibility for the collection and publication of construction statistics transferred from the Department for Business Enterprise and Regulatory Reform (BERR), now the Department for Business Innovation and Skills (BIS), to the ONS on 1 March 2008.

By 1 March 2009, the work previously carried out in BERR's Bristol and London offices was successfully transferred to the ONS office in Newport, using the same systems and processes. The Construction Development Project was set up to develop new methods and processes for the transferred surveys so that they would follow standard ONS methodology and systems.

Responsibility for six surveys were transferred to ONS, these are:

- Annual Inquiry (AI)
- Quarterly Inquiry of Activity for Construction and Allied Trades (CA and CA3)
- The Building and Civil Engineering Employment and Output Inquiry (DLO)
- Monthly Inquiry of Contracts and New Orders (NO)
- Quarterly Inquiry of Projects in Progress (PROBE)
- Key Performance Indicators (KPIs) data collection

In January 2009 ONS published details of the proposed changes and, following responses to the proposals, the results of

the public consultation were published in June 2009. (see link [www.ons.gov.uk/about/consultations/consultation-on-construction-statistics/index.html](http://www.ons.gov.uk/about/consultations/consultation-on-construction-statistics/index.html))

Throughout the development, ONS has consulted with the Consultative Committee for Construction Industry Statistics (CCCIS) and has liaised closely with BIS and ONS's National Accounts Directorate.

The KPI survey is voluntary. ONS is only responsible for data collection for this survey and passes collected data to BIS for ongoing analysis and publication. As the survey is not a National Statistic output, ONS decided to outsource the data collection and Glenigan has been awarded the contract.

## High level scope of changes

This section describes the high level changes which are being introduced in 2010.

## General

The sample frame for the current surveys is the Builders Address File (BAF). The BAF is unique to the computer system (CISTATS) which currently supports construction surveys. Included in the BAF are Local Authority Direct Labour Organisations (DLOs). The BAF will be replaced by the Inter Departmental Business Register (IDBR) which is used for all ONS business surveys. The IDBR offers wider coverage than the BAF and also has the benefit of including PAYE only businesses. DLOs will no longer be included in the output survey. The output from DLOs has been reducing

over the years and now contributes less than 2 per cent to the overall construction output. Furthermore, the output results currently include an estimate of output for those businesses that are not on the BAF – known as unrecorded output. This unrecorded output estimate will no longer form part of the output results. However its impact will be offset somewhat by the inclusion of PAYE only businesses in the IDBR. Businesses classified to Divisions 41–43 of industrial classification SIC(2007) will be eligible for selection for the construction surveys.

#### Annual Inquiry (AI)

This survey is currently a census of all construction business included in the Builders Address File (BAF) and is used to update register information. The Annual Inquiry will be replaced with ONS's Business Register and Employment Survey (BRES), which is a sample survey and is one of the surveys used to maintain the IDBR.

#### Output and employment (comprises CA, CA3 & DLO)

This survey will change from quarterly to monthly to satisfy the needs of National Accounts, Eurostat and other users. Changes will also be made to the sample design and to the methodology used to calculate output estimates.

#### New Orders (NO)

This survey will be changed from monthly to quarterly to reduce the administrative burden on businesses and government. The volatility of the monthly series meant that growths were previously measured by 3-month on 3-month movements. Similar sample design changes and methodological changes will also be made to New Orders.

#### PROBE

This survey will be discontinued. The survey was carried out to provide a list of completed projects for potential selection for the KPI survey. This list will now come

from Glenigan's own database of completed projects.

#### KPI

As mentioned in the background section, the data collection for this survey has been outsourced to Glenigan.

#### Detailed changes: construction output and employment

This section explains the differences between the current design and methodology, and the new designs which will be introduced in 2010. The changes are explained following the natural sequence of the Statistical Value Chain (SVC)

#### Collection design

The new questionnaire was tested on a sample of construction businesses, and revised several times before finalisation. This process was conducted with a range of businesses in the west of England and South Wales over a period of nine months.

Table 1

#### Changes to the collection design for construction output and employment

As is	To be	Comments
Businesses are asked to report quarterly output of:	Businesses are asked to report monthly output of:	Currently, for new work output, the split into the published sectors is modelled on estimates from New Orders. The output by sector estimates will be more accurate as businesses will answer these questions directly.
1 New work	1 Public housing new work	The R&M infrastructure question is new. There was a strong request from users that this question be added to the survey.
2 Repair and maintenance (R&M) public housing	2 Private housing new work	
3 R&M private housing	3 Infrastructure new work	
4 R&M public non-housing	4 Public non-housing new work	
5 R&M private non-housing	5 Private industrial new work	
	6 Private commercial new work	
	7 R&M public housing	
	8 R&M private housing	
	9 R&M infrastructure	
	10 R&M public non-housing	
	11 R&M private non-housing	
Businesses are asked to report quarterly employment by:	Businesses are asked to report quarterly employment numbers by:	This will bring Construction statistics in line with other ONS economic surveys.
1 Number of owners, managers, partners	1 Male employees working more than 30 hours per week	The breakdown of employees into operatives and technical will not be available from the construction output survey, but jobs by occupation types can be found in ONS's Annual Survey of Hours and Earnings (ASHE).
2 Number of administrative, professional, technical and clerical employees	2 Male employees working 30 hours or less per week	
3 Number of operatives (PAYE)	3 Female employees working more than 30 hours per week	
	4 Female employees working 30 hours or less per week	

Source: Office for National Statistics

Table 2

#### Changes to the sample design for construction output and employment

As is	To be	Comments
Quarterly survey	Monthly survey for output, remaining quarterly for employment.	To satisfy requirements of National Accounts, Eurostat and other users.
Until the end of 2009, BAF was based on businesses classified according to industrial classification SIC(2003)	From 2010 businesses will be classified according to industrial classification SIC(2007).	PAYE only businesses are included in the IDBR. SIC 41.1 (property developers) will NOT be included in the Output survey, but will be included in the quarterly employment survey.
Sample population is stratified by the employment size group of businesses (13 strata with businesses with register employment greater than 35 always being selected). Sample size is 12,000 per quarter.	Sample population is stratified by the employment size group and by industry (SIC) of businesses (57 strata with businesses with register employment greater than 100 always being selected). Sample size is 8,000 per month.	The impact on quality due to the reduction in sample size has been largely offset by the improvement in sample stratification.
There is no facility to exempt small businesses under Osmotherly <sup>1</sup> arrangements.	Osmotherly arrangements will be applied following selection from the IDBR.	This will share the burden on smaller businesses as an individual business is guaranteed a break from ONS surveys

#### Note:

- 1 For information on how ONS manages its contact with small businesses visit:  
[www.ons.gov.uk/about/surveys/small-businesses-and-the-survey-burden/the-ns-small-business-forum/procedures-in-government-departments/ons](http://www.ons.gov.uk/about/surveys/small-businesses-and-the-survey-burden/the-ns-small-business-forum/procedures-in-government-departments/ons)

Source: Office for National Statistics

Table 3

**Changes to weighting and estimation for construction output and employment**

As is	To be	Comments
New work output by sector (public and private housing, infrastructure and so on) is modelled from new orders.	New work output by each published sector will be from questions on the new survey.	Currently only value of output for total new work is asked for on the survey. This value is broken down into sectors using estimates from the new orders survey.
Businesses are identified as outliers if their response exceeds preset limits (for example. £85,000/person for size groups 0–2). These businesses are given a design weight equal to 1.	Winsorisation <sup>1</sup> methodology which attributes a weight (<1) to businesses identified as outliers is to be used.	
A design weight and a model weight are applied at cell level. Model weight is based on IDBR employment.	A design weight and a model weight are applied at cell level. Model weight is based on IDBR turnover.	Work by ONS's Methodological Branch has shown that using turnover as the auxiliary variable increases accuracy of results.

**Note:**

Source: Office for National Statistics

1 Winsorisation is a technique for reducing the effect of outlying observations on survey estimation. For an update on the use of winsorisation within ONS business surveys see [www.unece.org/stats/documents/1997/10/data\\_editing/33.e.pdf](http://www.unece.org/stats/documents/1997/10/data_editing/33.e.pdf)

Table 4

**Current construction output deflators**

Sector	Deflator
Public housing new work, England and Wales	Tender price index for social housing (TPISH) (BCIS)
Public housing new work, Scotland	Public house tender price index Scotland
Private housing new work	0.5*Index of house prices at mortgage approval stage (CLG) + 0.5 *TPISH
Public non-housing new work	Tender price index of public sector non-housing (PUBSEC) (BCIS)
Private industrial new work	Private industrial index (BCISPI) (BCIS)
Private commercial new work	Private commercial index (BCISPC) (BCIS)
Infrastructure new work roads	Road construction price index (RCPI) (BCIS)
Infrastructure new work other	0.7* RCPI + 0.2*PUBSEC + 0.1*BCISPI
Repair and maintenance	0.5* Materials R&M index (BIS) + 0.5 Contractors labour index (BCIS)

Source: Office for National Statistics

Table 5

**Sector splits of the published construction output estimates**

New work					
New housing		Infrastructure	Other new work – excluding infrastructure		
Public	Private		Public	Private industrial	Private commercial
Total new work					
Repair and Maintenance					
Public housing	Private housing	Infrastructure	Other public	Other private	
Total repair and maintenance					

Source: Office for National Statistics

**Table 1** highlights the changes made to the questionnaire.

**Sample design**

The aim of the new design was to reduce the sample size, and therefore the burden on businesses, whilst maintaining quality of estimates. **Table 2** outlines the main changes which are being introduced in the new survey.

**Editing and validation, derivation and coding**

Imputation for non-responding and first time non-responding businesses will follow ONS standard methodology. This ensures that imputed values for non-responding businesses are based on responses from businesses that, by virtue of their size and industrial classification, are most likely to behave in a similar manner.

**Weighting and estimation**

The methodology will follow standard ONS practice. Full details are set out in **Table 3**.

**Deflators**

ONS receives deflators from BIS, Building Cost Information Service (BCIS) and other government departments such as Communities and Local Government (CLG).

For construction output the current state of play is shown in **Table 4**.

ONS intends to use a separate appropriate deflator for each sector reported. ONS is in discussion with BIS and BCIS to develop more suitable deflators. At the time of writing this article these discussions are ongoing, with conclusions expected by the end of April 2010.

**Seasonal adjustment**

The constant price series will be seasonally adjusted using X12-ARIMA. Initially only the quarterly series will be seasonally adjusted. The monthly series will be seasonally adjusted when enough monthly estimates have been produced. Approximately three years worth of estimates will be required.

**Construction output publication content**

The revised surveys will continue to produce output estimates using the following price series:

- Constant price seasonally adjusted (KPSA) index (2005=100)
- KPSA (£ million)
- KP (£ million)
- Current price (CP) (£ million)

These will be applied at sector level. **Table 5** shows the sector splits of the published estimates sets. From 2010, ONS will be asking for value of output for repair and maintenance for infrastructure – all other sectors will be reported as now. However, the process by which the estimates are constructed will change. Currently the sector splits are modelled from the sector splits from the New Orders survey. From 2010 the sector splits will be requested directly from the questionnaire.

**Current price estimates by regions (new work and R&M)**

From 2010, estimates will be reported by the 11 Government Office Regions (GORs). Currently ONS publishes an additional two regions; 'Beds, Essex, Herts' and 'Berks, Bucks, Hants, Oxford'.

**Current price estimates by type of work**

**Table 6** shows the type of work splits that are currently published. These will continue to be published from 2010.

The current price estimates by regions (new work and R&M) and the current price estimates by type of work (Table 6) will be published one month later than the output results published in Table 5. This is because the breakdown of output into regions and into types of work is based on the (to be) quarterly new orders estimates, the results of which will be available one month after the publication of table 5.

Table 6  
Type of work splits by sector

New housing		Infrastructure	Public other	Private commercial	Private industrial
Public	Private	Water	Factories		Factories
	New housing	Sewerage	Warehouses		Warehouses
		Electricity	Oil, steel, coal		Oil, steel, coal
		Roads	School and colleges		
		Railways	Universities		
		Other (Gas, air and communications.)	Health		
			Offices		
			Entertainment		
			Garages, shops		
			Agriculture, miscellaneous		

Source: Office for National Statistics

### Detailed changes: construction new orders

This section sets out the detailed differences between the current design and methodology and the new designs which will be introduced in 2010.

### Collection design

The main aim of the new questionnaire design is to reduce the burden on businesses by reducing the number of questions, to bring the threshold value for classified contracts up to date, and to wherever possible, allow for automatic scanning of returned

Table 7  
Changes to weighting and estimation for construction output and employment

As is	To be	Comments
<b>Unclassified contracts</b> Businesses are asked to report the following detail for contracts < £25,000 1 Number of jobs 2 Total value of jobs 3 Nature of work of first and last job 4 Class of first and last jobs	<b>Unclassified contracts</b> Businesses are asked to report the following detail for contracts < £100,000 1 Number of jobs 2 Total value of jobs 3 Nature of work of first and last job 4 Class of first and last jobs	The threshold has been revised to take into account inflationary effects.
<b>Classified contracts</b> Businesses are asked to report the following detail for contracts > £25,000 1 Contract reference 2 Site address (free text) 3 Nature of work (free text from a list supplied) 4 Work type 5 Type of contract 6 Class 7 Duration 8 Total value of contract 9 Job extension 10 Fixed price 11 Client name (projects > £2M)	<b>Classified contracts</b> Businesses are asked to report the following detail for contracts > £100,000 1 Contract reference 2 Post code 3 Nature of work (2-digit number from a list supplied) 4 Class 5 Duration 6 Total value of contract 7 Job extension	A number of questions have been dropped, namely: ■ Work type ■ Type of contract ■ Fixed price ■ Client name  These questions are not used directly in producing new orders estimates. Whilst they have been used in the past to carry out ad-hoc analyses, it was considered that the burden on businesses in answering these questions outweighed the benefits.  New questionnaire has been designed so that all data can be scanned. Hence the change from free text site address to post code.
No electronic data collection	Data collection via SEFT being introduced for the largest responding companies initially. TDE available for nil returns.	

Source: Office for National Statistics

Table 8  
Changes to the sample design for construction new orders

As is	To be	Comments
Monthly survey	Quarterly survey	To reduce the burden on both business and government
BAF based on SIC(2003) Businesses with main contractor status.	IDBR based on SIC(2007)  1 For businesses with <20 Full Time Equivalent (FTE) employment sample frame is whole population 2 For businesses with ≥ 20 FTE employment, sample frame is businesses with main contractor status	PAYE only businesses are included in the IDBR. SIC 41.1 (property developers) will NOT be included in the New Orders survey.
Until the end of 2009, BAF was based on businesses classified according to industrial classification SIC(2003).	From 2010 businesses will be classified according to industrial classification SIC(2007).	
Sample population is businesses with 'main contractor' status stratified by annual value of new work that the business carried out as a main contractor. There are 7 such value group strata. The sample size is 5,500 per month.	Sample population is all businesses classified to construction with register employment less than 20 FTE. For businesses with register employment greater than or equal to 20 FTE the sample population is those businesses classified to construction with main contractor status. In both cases the sample is stratified further by register turnover and industrial classification. There are in total 35 strata. The sample size is 9,000 per quarter.	
There is no facility to exempt small businesses under Osmotherly arrangements	Osmotherly arrangements will be applied following selection from the IDBR	This will share the burden on smaller businesses as an individual business is guaranteed a break form ONS surveys.

Source: Office for National Statistics

Table 9

**Changes to the weighting and estimation for construction new orders**

As is	To be	Comments
BIS methodology for weighting, dealing with outliers and estimating results	ONS methodology for weighting, dealing with outliers and estimating results	This will bring construction in line with other ONS economic surveys.
Businesses are identified as outliers if their response exceeds preset limits. These businesses are moved to a higher value group for grossing purposes.	Winsorisation methodology which attributes a weight (<1) to businesses identified as outliers is to be used	This will bring construction statistics in line with other ONS surveys.
Contracts are grossed using the following weights 1 Design weight based on the value group of the returning business 2 Trade weight based on the SIC class of the returning business (either 1 or 0.96) 3 Job weight based on the value, class and nature of work of the contract (between 1 and 1.33)  All contracts in the current top strata are assigned a grossing factor of 1	Contracts are grossed using the following weights  1 Design weight based on the cell in which a business resides 2 Non response bias adjustment weight based on the proportion of the sample that are main contractors compared to the proportion in that cell's universe that are main contractors	

Source: Office for National Statistics

Table 10

**Current construction new orders deflators**

Sector	Deflator
Public housing new work, England and Wales	Tender price index for social housing (TPISH) (BCIS)
Public housing new work, Scotland	Public house tender price index Scotland
Private housing new work	0.5*Index of house prices at mortgage approval stage (CLG) + 0.25 *New housing material index (BIS) + 0.25* Contractors labour index (BCIS)
Public non-housing new work	Tender price index of public sector non-housing (PUBSEC) (BCIS)
Private industrial new work	Private industrial index (BCISPI) (BCIS)
Private commercial new work	Private commercial index (BCISPC) (BCIS)
Infrastructure new work	0.75* RCPI + 0.25*BCISPI

Source: Office for National Statistics

Table 11

**Construction new orders: content of Additional tables**

Activity	Summary of changes		Comments
	As is	To be	
<b>Additional Tables</b>	1 Monthly: Current price orders by sector by region 2 Quarterly: Current price total orders by county and quarterly orders by nature of work by region 3 Half-yearly: Current price orders by sector by local authority 4 Yearly: Update of half yearly tables and breakdown of contracts by region by sector by value range of contract	1 Half-yearly: Current price orders by sector by local authority 2 Yearly: Update of half yearly tables and breakdown of contracts by region by sector by value range of contract	
<b>Large Contracts</b>	Monthly: Several breakdowns by current price and constant price seasonally adjusted by size of contracts by sector and/or by region.	Quarterly: Several breakdowns by current price by size of contracts by sector and by region.	Constant price seasonally adjusted (KPSA) estimates will not be published in the large contracts publication

Source: Office for National Statistics

questionnaires (see **Table 7**). ONS has also taken the opportunity to increase the amount of data collection by electronic means by introducing Secure Electronic File Transfer (SEFT) for the largest responding businesses. This is a secure means of transmitting data using spreadsheets to capture the required data. Validation is also carried out at the point of entry to reduce the amount of follow-up contacts with businesses. Telephone Data Entry (TDE) is also being introduced for communicating nil returns.

**Sample design**

The biggest change in sample design has to do with the main contractor status

of businesses. In the current design, businesses with main contractor status only are available for selection. In the new design, all small businesses (<20 Full Time Equivalent (FTE)), are eligible for selection. This is because information regarding main contractor status will no longer come from a census survey, but from BRES, which is a sample survey. **Table 8** outlines the detailed sample design considerations.

**Weighting and estimation**

As with construction output survey, the new weighting and estimation design for new orders will follow ONS standard practice as shown in **Table 9**.

**Deflators**

The position for new orders deflators is the same as previously described for output. The current state of play for construction new orders deflators is shown in **Table 10**.

ONS intends to use a separate appropriate deflator for each sector reported.

**Seasonal adjustment**

The quarterly constant price estimates will be seasonally adjusted using X12-ARIMA.

**Construction new orders: publication content**

The sectors which are reported for output new work (see **Table 5**) will also be reported

Table 12

**Sources of discontinuity from the Construction Development Project**

Survey	Source of discontinuities
Output and employment	Periodicity – quarterly to monthly
	Questionnaire redesign, including new questions on sector breakdown
	Sampling frame – use of IDBR instead of BAF
	Sample design
	Weighting – use of turnover rather than employment as auxiliary variable
	Use of Winsorisation for identifying and weighting outliers
	Removal of unrecorded output
	Cessation of collection of output from DLOs
New orders	New deflators to calculate constant price series
	Periodicity – monthly to quarterly
	Questionnaire redesign
	Classified contracts - >£100k instead of > £25k
	Sampling frame – use of IDBR instead of BAF
	Use of BRES rather than Annual Inquiry to update main contractor status
	Introduction of model weight to account for proportion of main contractors in the sample
	Use of Winsorisation for identifying and weighting outliers
	New deflators to calculate constant price series

Source: Office for National Statistics

for new orders. This is the same as current practice. The same applies to the regional splits of the published estimates and to the CP, KP and KPSA series.

**Table 11** describes the content of 'Additional tables' which will be published at the same time as the main results.

**Discontinuities**

The Construction Development Project has introduced a substantial number of changes to the current questionnaires and methodologies. The sources of the discontinuities that will arise from the implementation of the new surveys and methodologies are summarised in **Table 12**.

The treatment of the discontinuities is a subject for additional analysis. Work is being carried out to identify the impact of the sampling frame and methodological changes on previously published estimates. It is ONS's intention to produce a back

series that is continuous at the total Output level and at the total level for New Work. There will be discontinuities at some lower level (such as sector) estimates.

**Benefits**

Collection of construction statistics is not a core activity for BIS to the same extent that it is for ONS. However, statisticians in BIS will continue to analyse and interpret construction estimates for policy colleagues within the department, and for industry customers. Although both departments incurred short term costs arising from the transfer, ONS is able to achieve gains by investing in system standardisation and making methodological improvements.

Staff savings of approximately 20 per cent of the operating costs of the construction surveys will be achieved as a result of the development as:

- the Annual Inquiry will be discontinued and included in the Business Register and Employment Survey (BRES) as a sample rather than a census
- Quarterly Inquiry of Projects in Progress (PROBE) and the Building and Civil Engineering Employment and Output Inquiry (DLO) questionnaires are being discontinued
- the Key Performance Indicators (KPI) survey is being outsourced to Glenigan, as this survey is voluntary and not a National Statistic.
- ONS will no longer have to pay for third party support of software for construction statistics
- ONS will have estimates of employment in the construction industry from a business survey. This will better complement the quarterly workforce jobs series than the existing source, the Labour Force Survey (LFS), since the industry classification of employment in the LFS is weaker than one obtained from the IDBR

In addition to direct ONS benefits, the following will also be derived as a result of the development:

- the burden on respondents will reduce as a result of the changes, by 20 per cent
- monthly output estimates will be fed into National Accounts to provide more robust GDP estimates of construction activity
- standardising the surveys using ONS systems provides flexibility of use of ONS staff, and the length of time it takes to learn the surveys
- the construction part of the Inter

Table 13

**Dates for the new construction output, new orders and additional tables publications in 2010/11**

Output 2010 (monthly business survey)												
	Jan <sup>1</sup>	Feb <sup>1</sup>	Mar <sup>1,2</sup>	Apr <sup>3</sup>	May <sup>3</sup>	Jun <sup>2</sup>	Jul <sup>3</sup>	Aug <sup>3</sup>	Sep <sup>2</sup>	Oct <sup>3</sup>	Nov <sup>3</sup>	Dec <sup>2</sup>
Publish	16/7	16/7	16/7	16/7	16/7	13/8	10/9	8/10	12/11	10/12	14/1	11/2
Quarterly survey of contracts and new orders 2010												
	Q1 2010	Q2 2010	Q3 2010	Q4 2010								
Publish	16/07/2010	03/09/2010	03/12/2010	04/03/2011								
Additional tables (output by TOW and region)												
	Q1 2010	Q2 2010	Q3 2010	Q4 2010								
Publish	16/07/2010	10/09/2010	10/12/2010	11/03/2011								

**Notes:**

- 1 Jan, Feb and Mar current price series will be published on 18 June 2010
- 2 Statistical Bulletins published in the third month of each quarter
- 3 Interim web releases published in the first and second months of each quarter, starting in April 2010

Source: Office for National Statistics

Departmental Business Register (IDBR) will become more fully integrated with the register as a whole

### Future key milestones

Besides the changes outlined in this article, future changes were also announced in the Q3 2009 Quarterly Output in the Construction Industry statistical bulletin and in the New Orders in the Construction Industry statistical bulletins from October 2009.

Full details of the changes were also communicated to attendees of the Consultative Committee on Construction Industry Statistics (CCCIS), at the meeting on 3 December 2009. This meeting is attended by key users of Construction Industry Statistics and has been used throughout the development project to communicate plans and seek input.

The last statistics based on BIS processes and systems for New Orders in the Construction Industry, corresponding to December 2009, were published on 11

February 2010. For Quarterly Output in the Construction Industry, the last statistics based on BIS processes and systems was the Q4 2009 statistical bulletin published on 5 March 2010. The first estimates to be produced, based on the new systems and methodology, will be the results of the January, February and March 2010 Output in the Construction Industry, at current price only. This will be published on 18 June 2010 and the publication will be accompanied by further details explaining the treatment of discontinuities. A launch event will take place shortly after publication to provide further information on the published estimates.

Further work will then be carried out to deflate and seasonally adjust the figures, and a full release of both Output in the Construction Industry and the Quarterly Survey of Contracts and New Orders will be published on 16 July 2010. An information pack will be available on the ONS website as part of this release to provide additional details regarding the published estimates.

Following the initial publications, the monthly output survey will be published on the second Friday of the month – two months after the reference period. New orders will be published on the first Friday of the month, three months after the end of the previous quarter.

For output, a full statistical bulletin will be published at the third month of each quarter. For all other months, the publication will be restricted to updated tables and a short summary (interim web release). Additional tables covering output by type of work (TOW) and region will be produced to coincide with the first interim web release of each quarter.

**Table 13** outlines the publication dates for 2010/11 for the new publications.

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## ARTICLE

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# Patterns of pay: results of the Annual Survey of Hours and Earnings 1997 to 2009

## SUMMARY

The Annual Survey of Hours and Earnings (ASHE) is the most detailed and comprehensive source of information on levels of earnings, make-up of total earnings and distribution of the earnings of individual employees.

The first few sections of this article present summary analyses (overall medians, the make up and distribution of earnings) from the results of the 2009 ASHE, comparing them with the 2008 results (and where relevant the 1997 to 2008 back series). While these figures are of interest, they can hide wide variations between different industries, occupations, regions and age groups. The concluding sections of the article give summary analyses of each of these factors.

## Key points

- In April 2009, median gross weekly earnings were £489 (for full-time UK employee jobs on adult rates whose earnings were not affected by absence), up 2.0 per cent from £479 in 2008.
- Between 2008 and 2009, the weekly earnings for full-time employees in the bottom decile grew by 3.2 per cent to £271, compared with a growth of 2.1 per cent for the top decile to £971.
- For the 2008/09 tax year, median gross annual earnings for full-time employees on adult rates who have been in the same job for at least 12 months were £25,800. For males, median gross annual earnings were £28,300 while the comparable figure for females was £22,200.
- In April 2009, median hourly earnings excluding overtime for full-time employees were £12.34, up 3.9 per cent from £11.88 in 2008. Women's hourly earnings were £11.39 while the comparable figure for men was £12.97.
- The stronger growth in women's hourly earnings excluding overtime compared with men's (4.3 per cent and 3.8 per cent respectively) has meant that the gender pay gap for full-time employees has decreased to 12.2 per cent from 12.6 per cent in 2008. For part-time employees, the negative gender pay difference narrowed to -2.0 per cent compared with -3.7 per cent in 2008. The gender pay comparison based on median hourly earnings excluding overtime for all employees, regardless

of whether they were working on a full-time or part-time basis, decreased to 22.0 per cent from 22.5 per cent in 2008.

## Introduction

The Annual Survey of Hours and Earnings (ASHE) is ONS's most detailed and comprehensive source of information on:

- levels of earnings (for both full-time and part-time employees and for gender)
- make-up of total earnings (split between basic pay and other components)
- distribution of earnings (the extent to which they are dispersed around the median)

ASHE focuses on estimates of the median rather than the mean. The median is the value below which 50 per cent of employees fall. The median is preferred to the mean for earnings as it is less affected by extreme values and the skewed distribution of earnings data. However, estimates of the mean are still available in the annually published results.

More details on the methodology for the survey were published in November 2004 on the National Statistics website at [www.statistics.gov.uk/ccl/article.asp?id=985](http://www.statistics.gov.uk/ccl/article.asp?id=985).

The first few sections of this article present summary analyses on overall medians, the make-up of earnings, the distribution of earnings and gender pay

differences for the 2009 ASHE, comparing the analysis with the 2008 results (and where relevant with the 1997 to 2008 back series). While these estimates are of interest, they can hide wide variations between different industries, occupations, regions and age groups. The concluding sections of the article give summary analyses of each of these breakdowns and the relevant gender pay differences.

For 2004, results are available that exclude supplementary information to be comparable with the back series generated by the imputation and weighting of the 1997 to 2003 New Earnings Survey (NES) data. From 2004 to 2006, results are available on the same basis (they all have the 2004, 2005 and 2006 changes incorporated into them). The methodological changes made in 2007 have also been taken back to 2006 so that 2006, 2007, 2008 and 2009 results are comparable. This means that by producing two versions of 2004 results and two versions of 2006 results ONS is able to produce a continuous series of growth rates over this period. The survey changes introduced since 2004 are detailed in the **Technical Note** at the end of the article.

Both sets of 2004 and 2006 results are included in the tables accompanying this article and can be found on the National Statistics website at [www.statistics.gov.uk/StatBase/Product.asp?vlnk=14123](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=14123). Discontinuities are represented by a broken line in the figures.

### Summary results for full-time employees

Median gross weekly earnings for full-time employees on adult rates of pay working a full week in April 2009 were £489 (see **Figure 1**). At £531, median gross weekly earnings of men on adult rates working on a full-time basis (whose pay for the pay period was not affected by absence) increased by 1.8 per cent over the year. This is compared with a 3.4 per cent rise for women to £426. Since 1997, median gross weekly earnings for women working full-time have increased significantly more than for men working full-time (60.8 per cent for women compared with 48.8 per cent for men).

Median gross annual earnings of all full-time employees on adult rates who have been in the same job for at least a year were £25,800 for the 2008/09 tax year. Median gross annual pay for men was £28,300, up 2.7 per cent from 2008 and for women was £22,200, up 3.1 per cent.

Median hourly earnings excluding overtime of all full-time employees were £12.34 in April 2009, representing an

increase of 3.9 per cent since April 2008. Female employees working full-time saw an increase in median hourly earnings of 0.5 percentage points more than that of men (4.3 per cent compared with 3.8 per cent).

Since 1997 there has been a slight fall in the mean total paid hours worked per week by employees in full-time employment and for whom weekly paid hours were reported (39.0 hours in 2009 compared with 40.0 hours in 1997). In April 2009, men worked 40.1 paid hours per week and women worked 37.4 paid hours per week.

### Summary results for part-time employees

Part-time employees earned a median hourly rate excluding overtime of £7.83 in April 2009, an increase of 4.4 per cent over the year. For men the increase was 6.3 per cent over the year to £7.71, while for women the increase was 4.6 per cent to £7.86. Since 1997, female employee hourly rates have remained above the levels for

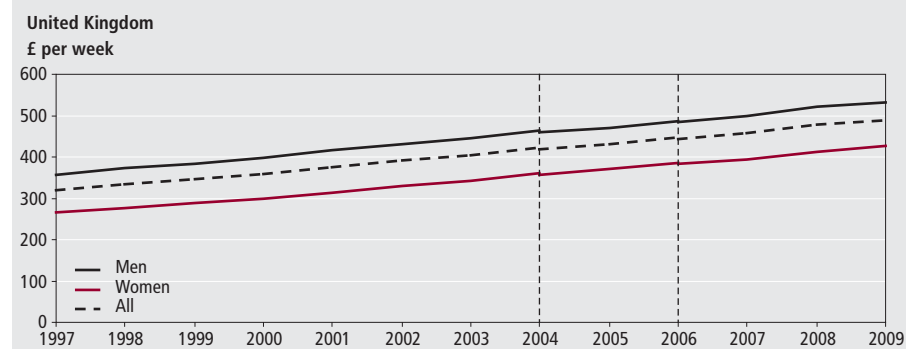
male employees (see **Figure 2**) with little change to the pay gap during this period.

There has been a slight increase in the ratio of part-time to full-time median hourly earnings excluding overtime since 1997. In 2009 median hourly earnings excluding overtime for part-time workers were 63.5 per cent of those for full-time workers (compared with 60.7 per cent in 1997). For men, part-time earnings were 59.4 per cent of full-time earnings (compared with 56.9 per cent in 1997) and for women the comparable figures were 69.0 per cent in 2009 and 68.4 per cent in 1997 (see **Figure 3**).

The proportion of male employees in the total workforce who worked part-time rose from 4.2 per cent to 5.7 per cent between 1997 and 2009. However, this figure is still well below the proportion of female employees working part-time, which fell from 21.2 per cent to 20.3 per cent of the total workforce over the same period. (Note that these figures are based on Labour Force

Figure 1

#### Median gross weekly earnings of full-time employees: by gender,<sup>1,2</sup> April 1997 to April 2009



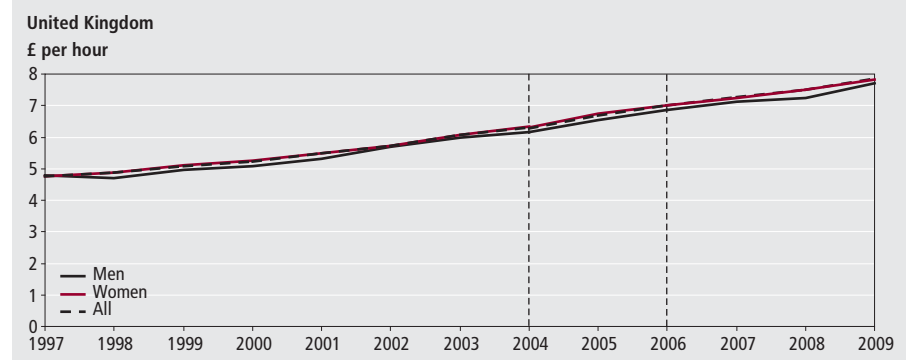
#### Notes:

- 1 Full-time employees, on adult rates whose pay for the survey period was unaffected by absence.
- 2 Broken vertical lines represent discontinuities in 2004 and 2006 ASHE results.

Source: Annual Survey of Hours and Earnings

Figure 2

#### Median hourly earnings of part-time employees: by gender,<sup>1,2</sup> April 1997 to April 2009

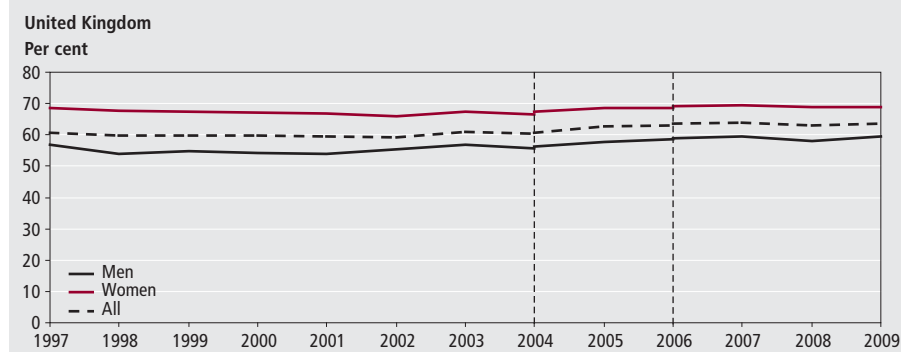


#### Notes:

- 1 Hourly earnings excluding overtime for part-time employees on adult rates whose pay for the survey period was unaffected by absence.
- 2 Broken vertical lines represent discontinuities in 2004 and 2006 ASHE results.

Source: Annual Survey of Hours and Earnings

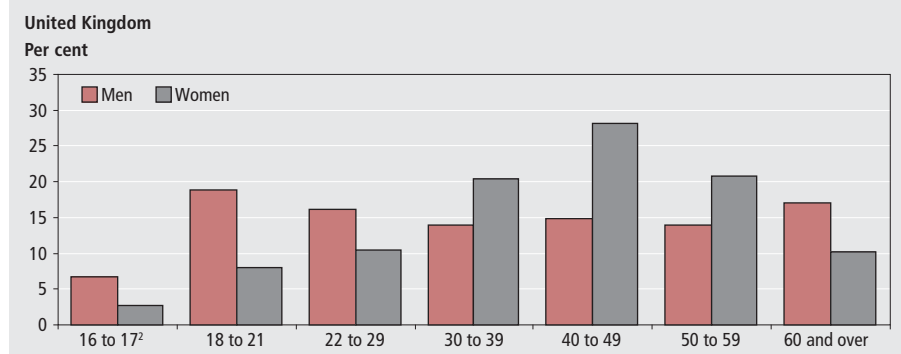
Figure 3

**Ratio of part-time to full-time median hourly earnings,<sup>1,2</sup> April 1997 to April 2009****Notes:**

Source: Annual Survey of Hours and Earnings

- 1 Hourly earnings, excluding overtime, for employees on adult rates, whose pay for the survey period was unaffected by absence.
- 2 Broken vertical lines represent discontinuities in 2004 and 2006 ASHE results.

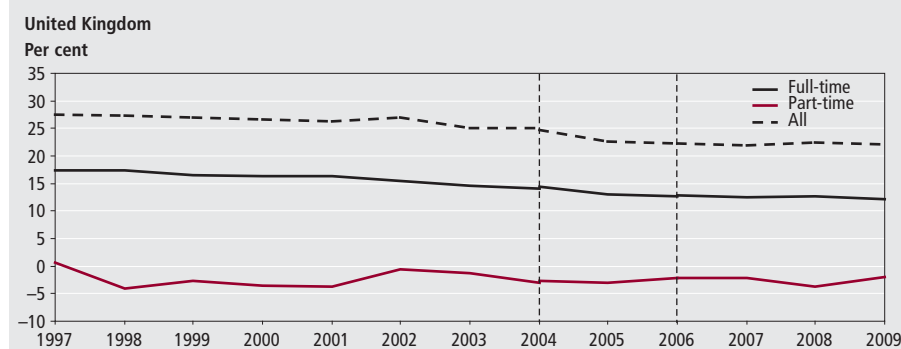
Figure 4

**Distribution of part-time employees: by gender and age group,<sup>1</sup> April 2009****Notes:**

Source: Annual Survey of Hours and Earnings

- 1 Part-time employees on adult rates whose pay for the survey period was unaffected by absence.
- 2 Results for 16 to 17-year-olds include employees not on adult rates of pay.

Figure 5

**Pay gap between women's and men's median hourly earnings,<sup>1,2</sup> April 1997 to April 2009****Notes:**

Source: Annual Survey of Hours and Earnings

- 1 Hourly earnings excluding overtime for employees on adult rates whose pay for the survey period was unaffected by absence.
- 2 Broken vertical lines represent discontinuities in 2004 and 2006 ASHE results.

Survey (LFS) estimates of the composition of the workforce for the period April to June 2009, and have replaced the ASHE estimates that were present in the 1997–2008 Patterns of Pay Article.)

Median hourly pay for female employees working part-time is higher than that of male employees, partly due to a higher proportion of females working part-time throughout their careers. **Figure 4** shows

the distribution of part-time employees by gender and by age. It illustrates a higher proportion of females working part-time in the higher income age groups (aged 30 to 39, 40 to 49 and 50 to 59). The proportion of males working part-time is higher in the younger age groups as well as the 60 and over age group.

**Pay differences between men and women**

ONS recently reviewed the way it presents gender pay statistics. The review concluded that there was no single measure which adequately dealt with the complex issue of measuring the differences in men's and women's pay. ONS now highlights the following measures:

- all female employees' median pay compared with all male employees' median pay
- female full-time employees' median pay compared with male full-time employees' median pay
- female part-time employees' median pay compared with male part-time employees' median pay

ONS prefers to use hourly earnings excluding overtime and focuses on estimates of the median. Including overtime can skew the results because men work relatively more overtime than women.

For full-time employees, hourly earnings excluding overtime were £11.39 for women (on adult rates whose pay for the pay period was unaffected by absence) and £12.97 for men. This has resulted in the gender pay gap narrowing in 2009 to 12.2 per cent, down from 12.6 per cent in 2008 (see **Figure 5**). The gender pay gap has therefore fallen by around five percentage points (from 17.4 per cent) for full-time employees from 1997 to 2009, meaning that the gender pay gap has narrowed by more than a quarter in the 12 years since 1997.

Median hourly earnings excluding overtime for women working part-time are higher than those of men working part-time. Men's hourly earnings were £7.71, up 6.3 per cent from £7.25 in 2008, compared with women's hourly earnings of £7.86, an increase of 4.6 per cent from £7.51 in the previous year. The negative gender pay difference for part-time employees has therefore narrowed to -2.0 per cent from -3.7 per cent in 2008.

The gender pay difference based on median hourly earnings for all employees decreased to 22.0 per cent from 22.5 per cent in 2008, meaning that the gender pay

gap has again narrowed by around five percentage points (from 27.5 per cent) for all employees between 1997 and 2009.

Although ONS's headline estimates of gender pay differences are based on median hourly earnings, mean hourly earnings provide a useful supplementary measure and as such are provided as a comparison to estimates of the median gender pay gap. The differences between median and mean gender pay gaps reflect the extent to which high earners skew the earnings distribution.

The gender pay difference for mean hourly earnings excluding overtime is wider than that for median earnings and has fallen from 20.7 per cent to 16.4 per cent for full-time employees between 1997 and 2009 (see **Figure 6**). Men's mean hourly earnings were £16.07, up 2.8 per cent from £15.63 in 2008. Women's mean hourly earnings increased by 4.0 per cent to £13.43 compared with £12.92 in 2008. The mean gender pay difference of 16.4 per cent for full-time employees was therefore at its narrowest in 2009 since the series was introduced in 1997.

In contrast with the median measure, mean hourly earnings for part-time employees' were lower for women than for men. Nevertheless, the gender pay gap based on mean hourly earnings also decreased to 13.2 per cent, down from 15.2 per cent in 2008.

The gender pay difference based on the mean for all employees also decreased in 2009 to 20.2 per cent from 21.3 per cent in the previous year.

Although median and mean hourly pay excluding overtime provide a useful comparison of men's and women's earnings, they do not reveal differences in rates of pay for comparable jobs. This is because such measures do not highlight the different employment characteristics of men and women, such as the proportion of each gender in different occupations and their length of time in jobs.

### The make-up of earnings

ASHE splits gross weekly earnings into four components: overtime payments, payments by results/incentive payments (such as bonuses), premium payments for shift work, and the residual – which includes basic pay and allowances. The first three components vary quite considerably by type of worker.

The 2005 ASHE questionnaire introduced a discontinuity in the make-up of gross weekly earnings regarding payments by results/incentive payments.

For comparability, this change was also applied to 2004 results. ASHE results for 2004 to 2009 include incentive payments paid and earned in the pay period, but exclude payments made less often than every pay period. As a result of this change in definition, there are a lower proportion of payments by results for these years than for earlier years. Because of this, the amount of payments by results earned in the pay period is understated. However, the estimates are improved because the new definition results in greater consistency, as the data reported will not depend on the return date of the questionnaire or when bonuses are paid, as in previous years.

The proportion of additional payments of mean gross weekly earnings for male employees working full-time was higher than that of their female counterparts over the period 1997 to 2009. In 2009 male employees earned £40 additional payments which accounted for 6.2 per cent of their

total pay, whereas women's additional payments (£16) accounted for just 3.2 per cent of their total pay.

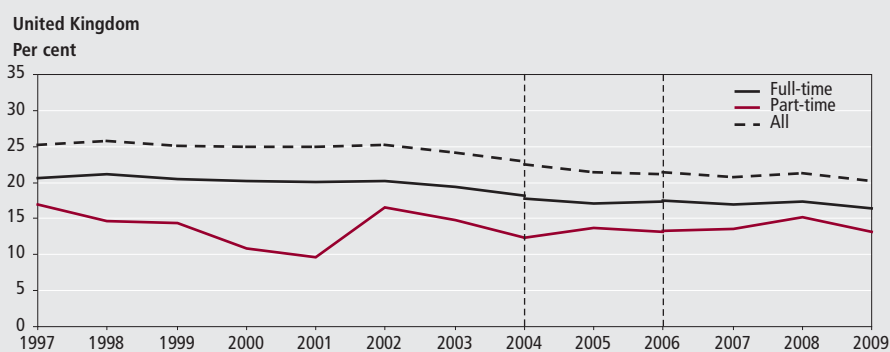
In 2009 mean overtime payments for full-time employees were £16.50 per week, down from £19.70 in 2008. Mean payments by results/incentive payments decreased from £10.80 in 2008 to £8.30 in 2009, the lowest since the introduction of this measurement in 2000.

Shift premium payments were £5.90 in 2009, down from £6.10 in the previous year. Historically, shift premium payments have fluctuated between £5.40 and £6.10 since 2000.

### The distribution of earnings

**Figure 7** displays the distribution of gross weekly earnings among full-time employees for the years 1997 to 2009. The median level of gross full-time weekly earnings in 2009 was £489 per week. This is lower than the mean (£587) since the latter is boosted by

**Figure 6**  
**Pay gap between women's and men's mean hourly earnings,<sup>1,2</sup>**  
**April 1997 to April 2009**

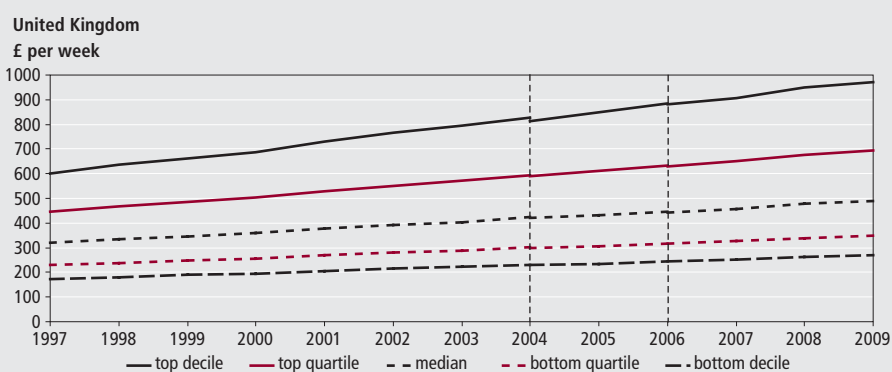


#### Notes:

- 1 Hourly earnings excluding overtime for employees on adult rates whose pay for the survey period was unaffected by absence.
- 2 Broken vertical lines represent discontinuities in 2004 and 2006 ASHE results.

Source: Annual Survey of Hours and Earnings

**Figure 7**  
**Distribution of gross weekly earnings for full-time employees,<sup>1,2</sup>**  
**April 1997 to April 2009**

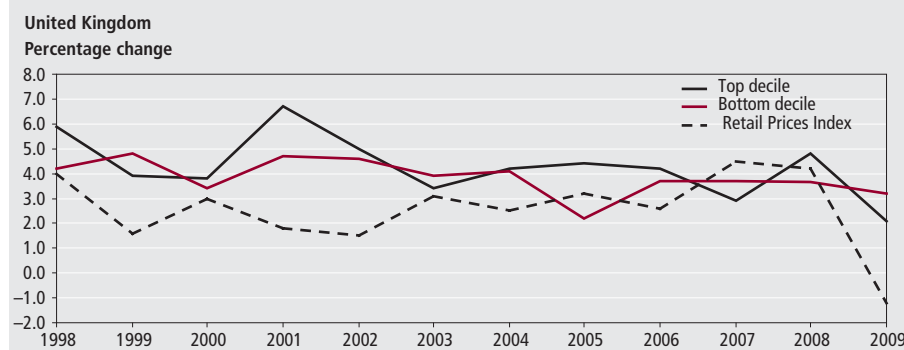


#### Notes:

- 1 Full-time employees on adult rates whose pay for the period was unaffected by absence.
- 2 Broken vertical lines represent discontinuities in 2004 and 2006 ASHE results.

Source: Annual Survey of Hours and Earnings

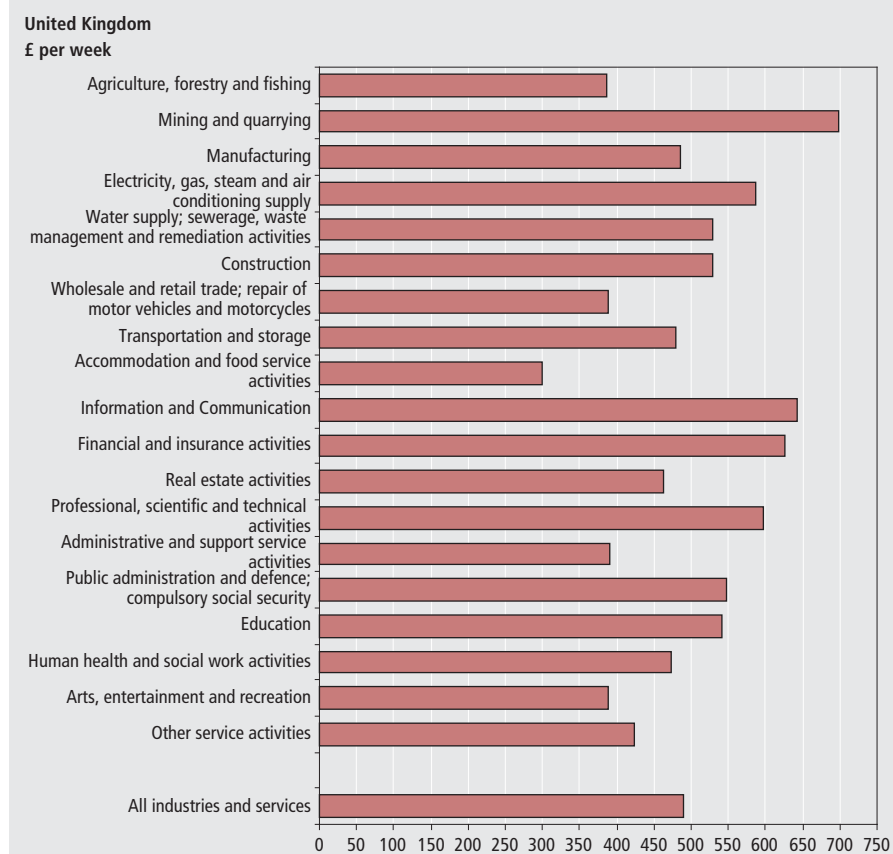
Figure 8

**Earnings growth in top and bottom deciles for full-time employees<sup>1</sup> and changes in RPI, April 1998 to April 2009****Note:**

Source: Annual Survey of Hours and Earnings

1 Full-time employees on adult rates whose pay for the survey period was unaffected by absence.

Figure 9

**Median gross weekly earnings: by industry<sup>1</sup>, April 2009****Note:**

Source: Annual Survey of Hours and Earnings

1 Median gross weekly earnings for full-time employees on adult rates whose pay for the survey period was unaffected by absence, by Standard Industrial Classification (SIC) 2007.

the number of people at the top end of the distribution with extremely high earnings. For 2009, at the bottom of the distribution, a tenth of full-time employees earned less than £271 per week, whereas at the other end of the scale a tenth earned more than £971 per week. The ratio of the highest to the lowest decile for gross weekly earnings (3.6 in April 2009) gives a measure of the distribution of weekly pay. This measure has

been almost unchanged since 1997, when it was 3.5.

In the year to April 2009 median gross weekly earnings of full-time employees in the bottom decile of the distribution grew faster than those in the top decile (3.2 per cent against 2.1 per cent respectively). Between 1998, the year before the introduction of the National Minimum Wage, and 2009, the top decile increased

by 52.8 per cent against a bottom decile increase of 49.8 per cent.

Figure 8 shows the patterns of growth in the top and bottom deciles of gross weekly earnings for full-time employees and for the Retail Prices Index (RPI) since 1997. The RPI is the most familiar general purpose domestic measure of inflation in the UK. Between April 2008 and April 2009 the rates of growth have fallen for all 3 series, but the RPI has shown negative growth of -1.2 per cent over this period. This differs from both the 2007 and 2008 results, where the growth in the RPI increased above the growth in the bottom decile of the earnings distribution.

**Results by industry**

For ASHE, the Standard Industrial Classification (SIC) 2007 has replaced the Standard Industrial Classification (SIC) 2003 as the classification used to present earnings statistics. The first year available on the new basis is 2008. From 2009 onwards the figures will be presented on the SIC 2007 basis only.

Median gross weekly earnings for full-time employees in April 2009 were highest in the mining and quarrying sector at £698 (see Figure 9). This was £54 per week more than the second highest, the information and communication sector. Over the period 1997 to 2009 financial and insurance activities has also featured as one of the highest median gross weekly earnings sectors (this was previously classified as the financial intermediation sector under SIC 2003). The weekly earnings for the mining and quarrying sector are boosted by longer paid hours worked by employees in these sectors relative to other sectors. The accommodation and food service activities sector has the lowest median gross weekly earnings. At £299, full-time employees' earnings were some £88 per week lower than the median for agriculture, forestry and fishing (the second lowest paid).

In 2009 median gross annual earnings of £35,600 for the mining and quarrying sector were more than double that of the accommodation and food service activities sector, which was the lowest paid with earnings of £15,900. The accommodation and food service activities sector contains the same industries that were previously categorised under the hotels and restaurants sector for SIC 2003. If mean annual earnings are considered instead of median, gross annual earnings for the financial and insurance activities sector were significantly higher than that of any other sector. This is

because of the skewed effect of extremely high earners on the earnings distribution.

The financial and insurance activities sector had the highest median hourly earnings excluding overtime for full-time employees (£17.38), followed by the information and communication sector (£16.73). Median hourly earnings excluding overtime for the accommodation and food service activities sector were £7.10, once again lower than the agricultural, forestry and fishing sector (£8.24).

Part-time median hourly earnings excluding overtime were highest in the financial and insurance activities sector (£10.73) and lowest in the accommodation and food service activities sector (£5.75). These are amongst the top and bottom earners for full-time employees.

The broad industrial groupings described above can hide substantial variation within the sectors. ASHE however, allows more detailed industrial analyses. For example, it is possible to identify the highest and lowest paid industry divisions (two-digit Standard Industrial Classification (SIC) 2007). Such analyses reveal that, in addition to those employees noted earlier within the mining and quarrying, financial and insurance activities, and information and communication sectors, full-time employees involved in the extraction of crude petroleum and natural gas, manufacture of coke and refined petroleum products and mining of coal and lignite, were among the highest paid per week in April 2009.

Various branches of the manufacturing and the retail sectors make up much of the ten lowest paid industries. Accommodation and food service activities was the lowest paid sector of all.

For full-time employees, the largest gender pay difference (based on median hourly earnings excluding overtime) was for the financial and insurance activities sector at 38.4 per cent. This was also the case for all employees, regardless of whether they worked on a full-time or part-time basis, where the gender pay comparison for the financial and insurance activities sector was 42.2 per cent. For part-time employees the gender pay gap was largest at 36.5 per cent in the education sector.

### Public and private sector earnings

The gap between private and public sector median earnings for full-time employees showed a slight increase in April 2009. Private sector median gross weekly earnings were £465, up 1.0 per cent from 2008. For

the public sector the comparable figure was £539, up 3.1 per cent (see **Figure 10**).

It is important to note that ASHE includes breakdowns by public and private sector according to the legal status of the employers. Between 2008 and 2009 Lloyds Banking Group, the Royal Bank of Scotland Group and HBOS PLC were reclassified from the private sector to the public sector. Interpretation of public / private sector movements is therefore more difficult between 2008 and 2009 than in previous years. If these banks were reclassified back into the private sector for 2009, the growth rates in the public and private sectors would be 2.7 per cent and 1.6 per cent respectively, resulting in a difference in growth rates between the sectors of 1.1 per cent rather than 2.1 per cent in 2009.

Public sector mean gross weekly earnings (at £605) were also higher than that of the private sector (at £581). As with gender pay, the difference in gross weekly earnings does not reveal differences in rates of pay for comparable jobs. This is due to the types of

occupations in the public and private sector being quite different.

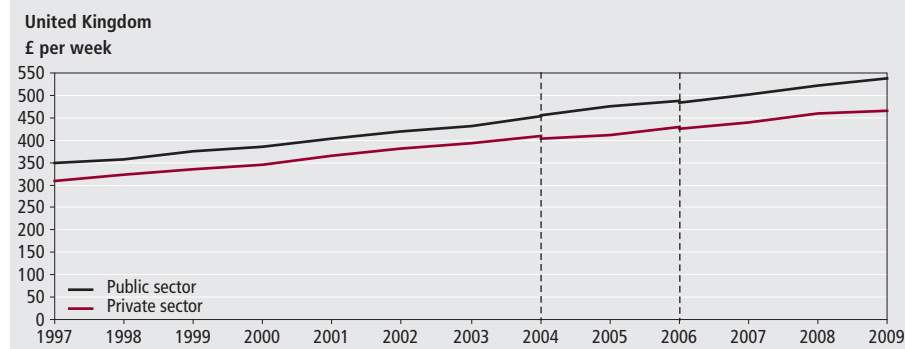
Gender pay differences vary between the public and private sectors, depending on whether the employee is in full-time or part-time employment (see **Figure 11**). For full-time employees the gender pay gap in the public sector (based on median hourly earnings excluding overtime) is 11.6 per cent. The comparable figure for the private sector is 20.8 per cent. When considering part-time employees, the gender pay differences in the public and private sectors are 18.3 per cent and 0.4 per cent respectively. Gender pay differences for all employees (regardless of whether they are full-time or part-time) are 21.0 per cent in the public sector and 28.8 per cent in the private sector.

### Results by occupation

ASHE 2009 data for occupation is coded to Standard Occupation Classification (SOC) 2000 which was introduced in 2002. Before then SOC 1990 was used.

**Figure 10**

**Median gross weekly earnings for full-time employees: by public/private sector,<sup>1,2</sup> April 1997 to April 2009**



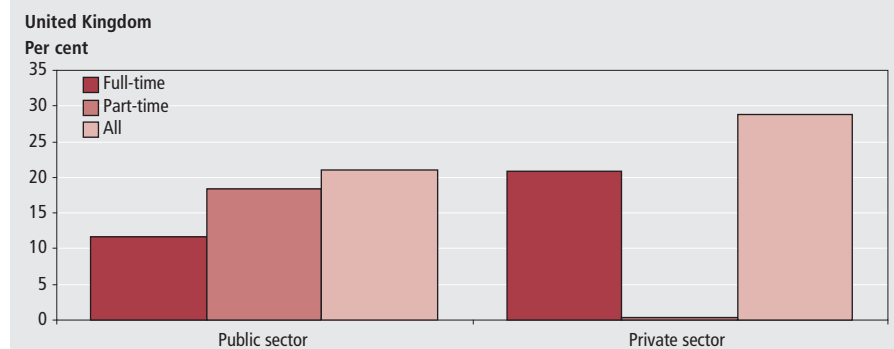
**Notes:**

- 1 Full-time employees on adult rates whose pay for the period was unaffected by absence.
- 2 Broken vertical lines represent discontinuities in 2004 and 2006 ASHE results.

Source: Annual Survey of Hours and Earnings

**Figure 11**

**Pay gap between women's and men's hourly earnings: by public/private sector,<sup>1</sup> April 2009**



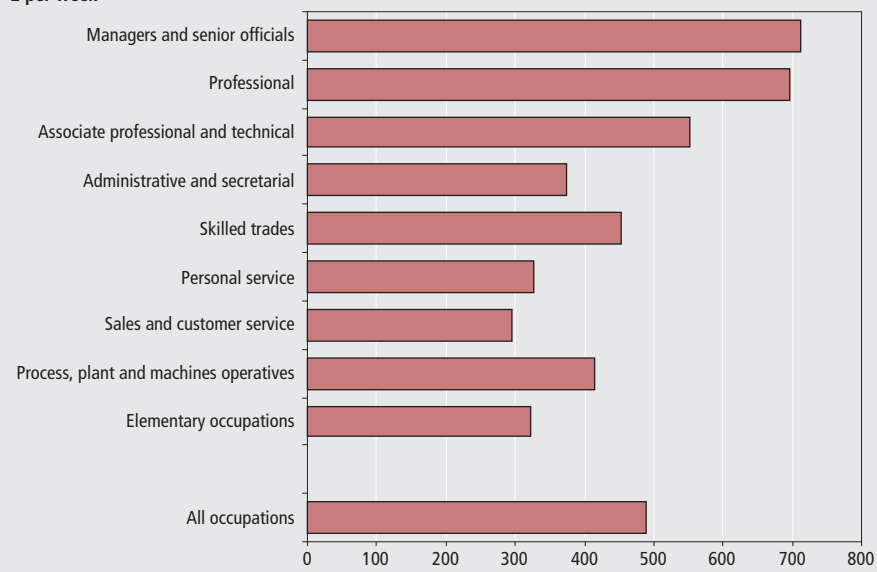
**Note:**

- 1 Hourly earnings excluding overtime for employees on adult rates whose pay for the survey period was unaffected by absence.

Source: Annual Survey of Hours and Earnings

**Figure 12**  
**Median gross weekly earnings by occupation,<sup>1</sup> April 2009**

United Kingdom  
£ per week



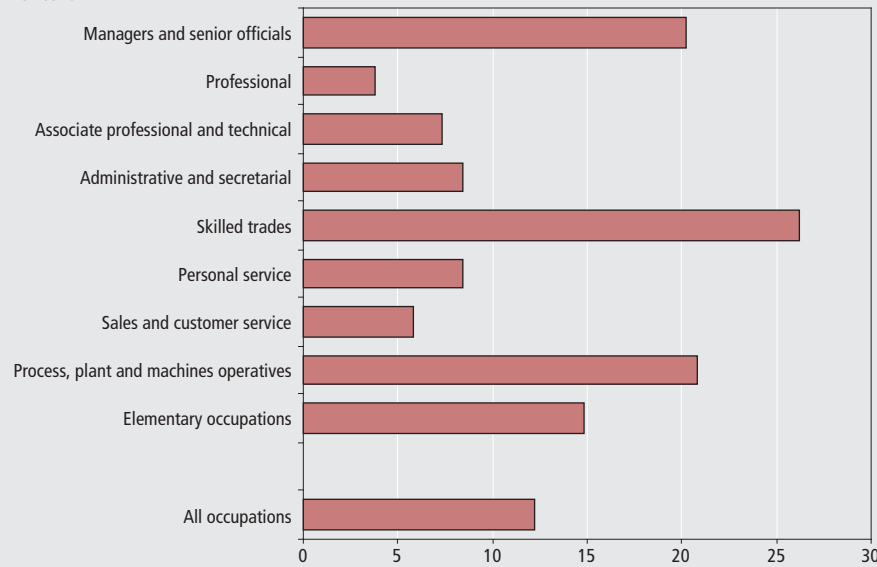
**Note:**

Source: Annual Survey of Hours and Earnings

- <sup>1</sup> Median gross weekly earnings for full-time employees on adult rates whose pay for the survey period was unaffected by absence by Standard Occupational Classification (SOC) 2000.

**Figure 13**  
**Pay gap between women's and men's median hourly earnings: by occupation,<sup>1</sup> April 2009**

United Kingdom  
Per cent



**Note:**

Source: Annual Survey of Hours and Earnings

- <sup>1</sup> Median hourly earnings excluding overtime for full-time employees on adult rates whose pay for the survey period was unaffected by absence by Standard Occupational Classification (SOC) 2000.

The occupational major group (as defined within SOC 2000) with the highest median gross weekly earnings for full-time employees was managers and senior officials at £713 (see **Figure 12**). Sales and customer service occupations were, as for the years since the introduction of SOC 2000, the lowest paid median gross weekly major group at £296 per week for

full-time employees. This major group includes occupations that are generally acknowledged to be low-paid such as retail cashiers and check-out operators, and market and street traders and assistants. In April 2009 the increase in median gross weekly earnings was highest for administrative and secretarial occupations (4.1 per cent). For process, plant and

machine operatives, median gross weekly earnings decreased by 0.3 per cent.

As for median gross weekly earnings, managers and senior officials had the highest median gross annual salary (£37,600) which was more than a thousand pounds higher than that for professional occupations. Similarly, sales and customer service occupations also had the lowest median gross annual salary at £15,300.

Apart from 2005, managers and senior officials had the highest median annual earnings and median gross weekly earnings since SOC 2000 was introduced in 2002. This can be explained because the managers and senior officials group receive higher annual incentives and also work longer paid hours per week than full-time employees in the professional occupations group, who had the highest median hourly earnings excluding overtime (£19.49). This was nearly a pound higher than the median for managers and senior officials (£18.64), the second most highly paid major group on an hourly basis. Professional occupations have had the highest median hourly earnings excluding overtime since the introduction of SOC 2000.

In the 2009 survey, the highest paid unit group occupation (four-digit Standard Occupation Classification 2000) for full-time employees was directors and chief executives of major organisations, with median gross weekly earnings of £1,831. The next highest paid occupation was aircraft pilots and flight engineers with median gross weekly earnings of £1,302 per week. With median gross weekly earnings of £237, waiters and waitresses were the lowest paid of all full-time employees on adult rates of pay.

With median hourly earnings excluding overtime of £37.55, medical practitioners were the highest paid part-time employees. The lowest at £5.73 were waiters and waitresses, bar staff and road sweepers. Interestingly, £5.73 is the national minimum rate for those aged 22 and over.

**Figure 13** shows the median gender pay differences for 2009 broken down by the Standard Occupation Classification (SOC) 2000 major occupation groups for full-time employees. The median gender pay gap (based on hourly earnings excluding overtime) for full-time employees is narrowest for professional occupations (3.8 per cent) and widest for skilled trades occupations (26.2 per cent).

There are large variations in the gender pay gap for part-time employees broken down by SOC 2000 major classification. In 2009, the median gender pay gap is

widest for skilled trades occupations (22.7 per cent). The gender pay difference for associate professional and technical occupations, administrative and secretarial occupations, and elementary occupations are negative (-6.5 per cent, -6.2 per cent and -3.0 per cent respectively), where women's hourly earnings excluding overtime are higher than those of men. For sales and customer service occupations the gender pay gap was 0.0 per cent.

For all employees, regardless of whether they work on a full-time or part-time basis, the gender pay difference is again widest for skilled trades occupations (31.2 per cent). The narrowest gap, as for full-time employees, is for professional occupations (2.4 per cent).

### Results by region

At £627, London tops the regional list in terms of median gross weekly earnings for full-time employees in April 2009. This was more than one hundred pounds above the next highest, the South East. London's high levels of pay are largely due to the fact that a high proportion of its labour force is employed in higher-paying industries and occupations, and also because many employees are entitled to allowances for working in the capital. The North East (with median full-time gross weekly earnings of £436) was at the bottom of the regional list with Northern Ireland (at £439) and Wales (at £441) only slightly higher. These figures can be compared with median gross weekly earnings for full-time employees at UK level, which were £489.

Employees in Northern Ireland received the largest increases in median gross weekly earnings (5.1 per cent to £439).

Since 1997 similar patterns were observed for median gross annual pay and median hourly pay excluding overtime, with London topping the list followed by the South East. The North East, Wales and Northern Ireland have the lowest pay levels across the regions.

It should be noted that earnings comparisons take no account of different price levels between regions and therefore do not indicate differences in the standard of living. Neither do they take account of the different mix of occupations and therefore cannot be used to claim that pay for like work is different. A region could have a lower level of median earnings than another if it has a higher proportion of employees in industries or occupations with relatively lower earnings.

In the UK, the gender pay gap (when measured using median hourly earnings

excluding overtime for full-time employees) was 12.2 per cent. The largest gender pay gap was 16.1 per cent in the South East region and the smallest in Northern Ireland at 3.5 per cent. Over the period 1997 to 2009, the largest reduction in the gender pay difference was in Northern Ireland (16.5 per cent to 3.5 per cent) and the smallest was in London (15.1 per cent to 13.3 per cent). **Figure 14** illustrates the gender pay gap for median hourly earnings excluding overtime for the four home countries.

### Results by age group

In 2009, median gross weekly earnings for full-time employees climbed steadily with age to reach a maximum of £551 for those aged 40 to 49 and declined thereafter. However, if the median earnings of men and women are considered separately, then women's earnings peaked earlier than those of men. This pattern is repeated over the period 1997 to 2009. Median gross weekly earnings of women working part-time

climbed with age to reach a maximum of £498 for those aged 30 to 39. Men's median gross weekly earnings for full-time employees reached their maximum of £606 for those aged 40 to 49 (see **Figure 15**).

The largest increase in median gross weekly earnings between April 2008 and April 2009 was recorded for full-time employees aged 18 to 21 and also aged 60 and over, whose weekly earnings both increased by 2.3 per cent to reach £278 and £447 respectively.

**Figure 16** shows the median gender pay differences by age group. The gender pay difference (based on median hourly earnings excluding overtime for full-time employees) was particularly small for employees in the 18 to 21 age group (1.7 per cent) and 22 to 29 age group (0.7 per cent) and was actually negative for 16 to 17-year-olds (-12.6 per cent). The gender pay gap then increased and peaked in those aged 40 to 49 (18.4 per cent) and remained at a high level in the 50 to 59 age group

Figure 14

#### Pay gap between women's and men's earnings: by country,<sup>1,2</sup> April 1997 to April 2009



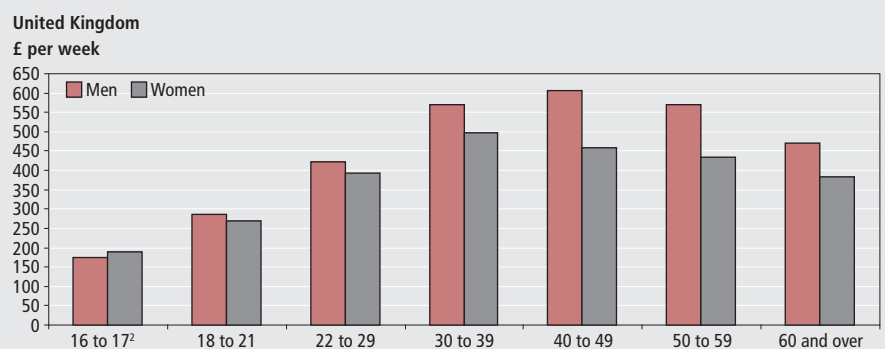
#### Notes:

Source: Annual Survey of Hours and Earnings

- 1 Median hourly earnings excluding overtime for full-time employees on adult rates whose pay for the survey period was unaffected by absence.
- 2 Broken vertical lines represent discontinuities in 2004 and 2006 ASHE results.

Figure 15

#### Median gross weekly earnings: by gender and by age group,<sup>1</sup> April 2009

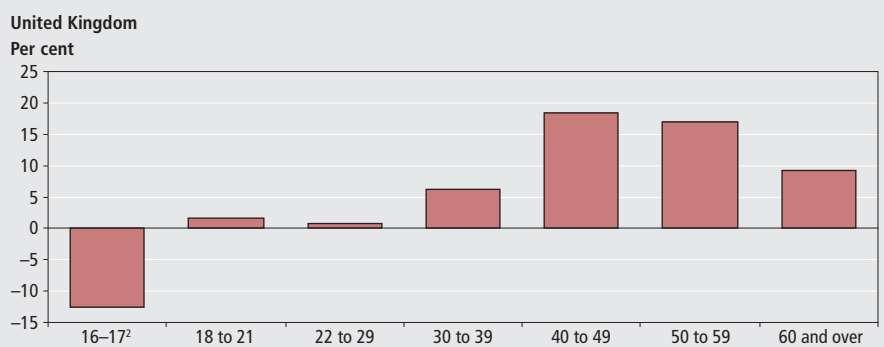


#### Notes:

Source: Annual Survey of Hours and Earnings

- 1 Full-time employees on adult rates whose pay for the survey period was unaffected by absence.
- 2 Results for 16 to 17-year-olds include employees not on adult rates of pay.

Figure 16

**Pay gap between women's and men's hourly earnings: by age,<sup>1</sup> April 2009****Notes:**Source: *Annual Survey of Hours and Earnings*

- 1 Hourly earnings excluding overtime for full-time employees on adult rates whose pay for the survey period was unaffected by absence
- 2 Results for 16 to 17-year-olds include employees not on adult rates of pay

(16.9 per cent). This can be explained by the fact that some female employees take a break from the labour market (for example to have children). When they then return to work, some of their male counterparts (those in the same age group) may have been promoted and as such could have progressed to a higher level of earnings.

Gender pay differences for part-time employees and all employees (regardless of whether they work on a full-time or part-time basis) are similar to the results for full-time employees with the gender pay gap being greatest in the 40 to 49 age group at 23.7 per cent and 29.5 per cent respectively.

**Comparisons with the Average Earnings Index and Average Weekly Earnings indicators**

Each month ONS also collects information on earnings from the Monthly Wages and Salaries Survey, used to construct the Average Earnings Index (AEI) and Average Weekly Earnings (AWE). This survey asks 9,000 employers to provide information about total pay and numbers of employees, but does not ask more detailed questions such as the gender and occupations of their staff. On 26 November 2009, the UK Statistics Authority accredited the Average Weekly Earnings (AWE) indicators as National Statistics. The AWE is now ONS's lead measure of short-term earnings, having replaced the AEI in

the Labour Market Statistical Bulletin from January 2010 onwards.

The AEI is used to provide an estimate of the growth in earnings per head, while the AWE is used to produce estimates of both growth and levels of pay.

The AWE, AEI and ASHE are therefore not directly comparable on all measures of earnings. The closest measure that can be derived and compared for these surveys is for mean gross weekly pay. From 2009 onwards comparisons will only be made between ASHE and AWE. In the year to April 2009, the ASHE estimate of mean gross weekly pay for all employees (regardless of whether they were full-time or part-time) was £481, up 1.6 per cent on the previous year. The comparable estimate from the AWE was £444, also up 1.6 per cent from April 2008. For the private sector, the ASHE estimate of mean gross weekly pay for all employees was £482, while the AWE estimate was £442. For the public sector, the estimates were £491 for ASHE and £450 for AWE.

**Low pay jobs**

In April 2009 the number of UK jobs paid below the national minimum wage was 242,000, accounting for 0.9 per cent of all jobs in the labour market. The estimate was produced using a methodology based solely on ASHE, which replaced NES.

There were three rates for the national minimum wage in April 2009: one for those aged 16 and 17 (£3.53 per hour), one for those aged 18 to 21 (£4.77 per hour) and one for those aged 22 and over (£5.73 per hour).

The number of jobs paid below the national minimum wage were:

- 14,000 jobs (4.1 per cent) held by those aged 16 to 17
- 44,000 jobs (2.6 per cent) held by those aged 18 to 21
- 184,000 jobs (0.8 per cent) held by those aged 22 and over

People in part-time work were more than twice as likely as people in full-time work to be paid less than the minimum wage, with 1.5 per cent of part-time jobs and 0.7 per cent of full-time jobs falling below the minimum wage. Jobs held by women were more likely to fall below the minimum wage than jobs held by men (1.1 per cent compared with 0.8 per cent). This was primarily due to the greater number of women in part-time jobs.

It is important to note that these estimates do not measure non-compliance with the National Minimum Wage legislation. ASHE does not indicate whether individuals fall into a category that is exempt from the legislation, such as apprentices or new trainees.

**SURVEY DETAILS**

Tables accompanying this article are available at  
[www.statistics.gov.uk/StatBase/Product.asp?vlnk=14123](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=14123)

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**TECHICAL NOTE****Survey details**

The Annual Survey of Hours and Earnings (ASHE) is based on a sample of employee jobs taken from HM Revenue & Customs PAYE records. Information on earnings and paid hours is obtained in confidence from employers. It does not cover the self-employed nor does it cover employees not paid during the reference period. In 2009, the information related to the pay period which included 22 April. The 2009 ASHE is based on approximately 177,000 returns.

ASHE replaced the New Earnings Survey (NES) as ONS's main source of information on the distribution of earnings. Articles describing the ASHE methodology and the impact of its introduction on 1997 to 2004 data are available on the National Statistics website at [www.statistics.gov.uk/StatBase/Product.asp?vlnk=13101](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=13101). The main differences between ASHE and NES are:

- ASHE results are weighted to the number of jobs given by the Labour Force Survey
- ASHE imputes for item non-response
- The coverage of employees for ASHE is greater than that of NES
- The median replaces the mean as the headline statistic. The median is the value below which 50 per cent of employees fall. It is preferred over the mean for earnings data as it is less influenced by extreme values and because of the skewed distribution of earnings

**Changes in 2004**

Since 2004, survey supplementary information has been collected to improve coverage and make the survey more representative. This includes employees who have either changed or started new jobs between sample selection from HM Revenue & Customs records and the survey reference period in April.

**Changes in 2005**

A new questionnaire was introduced for the 2005 survey. This questionnaire brings significant improvement to the quality of the results. More details on the impact of introducing the new questionnaire can be found at [www.statistics.gov.uk/cci/article.asp?id=1294](http://www.statistics.gov.uk/cci/article.asp?id=1294)

Changes to the wording and definitions mean that some of the information requested from respondents will differ from that supplied in past surveys. The introduction of the pay 'for other reasons' question has resulted in the inclusion of earnings information which may not have been collected in the past. Results for 2004 including supplementary information have been reworked to allow for this missing pay. For more details on the methodology involved in estimating pay for other reasons see the National Statistics website at [www.statistics.gov.uk/cci/article.asp?id=1299](http://www.statistics.gov.uk/cci/article.asp?id=1299)

Also the definition of incentive/bonus pay changed for 2005 to only include payments that were paid and earned in April. This brings the definition more in line with that used in the Average Earnings Index (AEI) and will result in greater consistency of ASHE results. Results for 2004 including supplementary information have been reworked to exclude irregular bonus/incentive payments to make them consistent with results from 2005 onwards. The adjustments made to the 2004 data in order to produce estimates comparable with the 2005 data also had an impact on the gap between public and private sector earnings. The changes on the questionnaire were the exclusion of incentive payments paid outside the pay period and the inclusion of pay for other reasons. The exclusion of incentive payments paid outside the pay period pulls down the private sector estimates more than the public sector estimates because private sector employees receive a higher proportion of incentive pay than public sector employees. Also, public sector employees receive greater proportions of pay for other reasons. Therefore, public sector estimates increased more than the private sector estimates when other pay was included.

**Changes in 2006**

In 2006 ASHE moved to the ONS standard for geographic areas using Output Areas (OAs) as the building block to higher level geographic breakdowns. Previously, ASHE geographies were created by matching returned postcode information against the Inter Departmental Business Register to give various levels of geographic information. The key points are:

- ASHE results for geographic areas are produced in line with the ONS standard and this allows further geographic analysis variables to be produced
- The quality of geographic results has improved

In addition, from 2006 the Labour Force Survey (LFS) has moved from using seasonal quarters to calendar quarters. As ASHE uses LFS data in the calculation of aggregation weights, it was necessary to move from using data taken from the LFS spring quarter to LFS quarter two.

The inclusion of supplementary information since 2004, the introduction of a new questionnaire in 2005, and the move to using new ONS geographies and LFS calendar quarters in 2006 has meant that the ASHE results are discontinuous in 2004. Therefore a consistent series which takes into account all of these identified changes has been produced going back to 2004. For 2004, results are also available that exclude supplementary information to be comparable with the back series generated by imputation and weighting of the 1997 to 2003 NES data.

### Changes in 2007

In March 2007, ONS released information on its statistical work priorities over the period 2007–8. ONS announced that the sample size of the ASHE was to be reduced by 20 per cent. ASHE results for 2007 are based on approximately 142,000 returns, down from 175,000 in 2006. The impact of this change was minimised by reducing the sample in an optimal way, with the largest sample reductions occurring in industries where earnings are least variable. The sample cut did not affect Northern Ireland, neither did it affect a number of organisations with an agreement to provide information electronically.

ONS also introduced a small number of methodological changes, which improved the quality of the results. These included changes to the sample design itself, as well as the introduction of an automatic occupation coding tool, ACTR.

The key benefits of moving to ACTR coding are:

- an improvement in the quality and consistency of ASHE results
- out-of-date codes will be updated annually
- ACTR provides ASHE and ONS with a standard tool for coding occupation

The methodological changes made in 2007 have been taken back to 2006, so that from 2006 to 2009 results are available on the same basis. For 2006, results are also available on the same basis as 2004 and 2005.

Further information can be found on the National Statistics website at [www.statistics.gov.uk/downloads/theme\\_labour/ASHE/ChangeInASHE07.pdf](http://www.statistics.gov.uk/downloads/theme_labour/ASHE/ChangeInASHE07.pdf)

### Changes in 2008

In May 2008 the LFS was re-weighted to the latest (2007/08) population estimates. Previously LFS results were based on population totals published in 2003. ASHE uses LFS to calculate aggregation weights. The revised LFS figures have been used for 2007 (revised) and 2008 ASHE results. The impact of the new weights on the ASHE results for 2007 is small.

### Changes in 2009

In 2009 the 1 per cent sample of employees whose employers had registered PAYE schemes was restored, following the two years in which the sample size was reduced by 20 per cent. ASHE results for 2009 are based on approximately 177,000 returns, up from 146,000 returns in 2008.

The Standard Industrial Classification (SIC) 2007 has replaced SIC 2003 as the classification used to present earnings statistics for ASHE. The first year available on the new basis is 2008. From 2009 onwards the figures will be presented on the SIC 2007 basis only.

It is also important to note that ASHE includes breakdowns by public and private sector according to the legal status of the employers. Between 2008 and 2009 Lloyds Banking Group, the Royal Bank of Scotland Group and HBOS PLC were reclassified from the private sector to the public sector. Interpretation of public / private sector movements is therefore more difficult between 2008 and 2009 than in previous years.

The proportion of part-time employees in the workforce has previously been calculated using ASHE estimates. While these estimates are suitable for indicative purposes the Labour Force Survey (LFS) provides a better measure of the composition of the workforce and as such the Patterns of Pay article will present workforce estimates based on LFS results from 2009 onwards. The supporting tables also present a back series of LFS estimates of the proportion of part-time employees in the workforce as a comparison.

### Definitions

The earnings information collected relates to gross pay before tax, National Insurance or other deductions, and generally excludes payments in kind. With the exception of annual earnings, the results are restricted to earnings relating to the survey pay period and so exclude payments of

arrears from another period made during the survey period. Any payments due as a result of a pay settlement but not yet paid at the time of the survey will also be excluded.

For particular groups of employees, changes in median earnings between successive surveys may be affected by changes in the timing of pay settlements, in some cases reflecting more than one settlement and in other cases no settlement at all.

Most of the published ASHE analyses relate to full-time employees on adult rates whose earnings for the survey pay period were not affected by absence. They do not include the earnings of those who did not work a full week, and those whose earnings were reduced because of sickness, short-time working, etc. Also they do not include the earnings of employees not on adult rates of pay, most of whom will be young people. Some more information on the earnings of young people and part-time employees is available in the detailed annual published ASHE results. Full-time employees are defined as those who work more than 30 paid hours per week or those in teaching professions who work more than 25 paid hours per week.

### Factors contributing to earnings growth

The increase in average earnings from one year to the next reflects several factors; pay settlements implemented between the April survey dates; changes in the amount of paid overtime and other payments relative to basic pay; and the structural effects of changes in the composition of the ASHE sample and the employed labour force.

### Revisions

In line with normal practice this article contains revised estimates from the 2008 survey results published on 14 November 2008. These take account of some corrections to the original 2008 data which were identified during the validation of the results for 2009, as well as late returns.

### Other earnings information

Average Weekly Earnings (AWE) and the Average Earnings Index (AEI), both based on the Monthly Wages and Salaries Survey of 9,000 employers, provide information on changes in mean earnings for broad industrial sectors. No information is available on occupation, paid hours worked, and other characteristics of the workforce.

The LFS collects information on the earnings and hours of about 15,000 households over each quarter. In addition it collects data on a wide range of personal characteristics, including education level and origin. This enables the preparation of statistics on levels and distribution of earnings similar to ASHE but with lower precision due to the much smaller sample size.

### Publication arrangements

National averages of earnings hide wide variations between different collective agreements, industries, occupations, regions and age groups. The published tables containing the detailed annual ASHE results for the UK include analyses of each of these and are now available on the National Statistics website at [www.statistics.gov.uk/StatBase/Product.asp?vlnk=13101](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=13101)

Low pay estimates show the number of jobs paid below the National Minimum Wage in the UK. The estimates were produced using a methodology based solely on ASHE. Further information on the low pay methodology and detailed results are now available on [www.statistics.gov.uk/StatBase/Product.asp?vlnk=5837](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=5837)

# Key time series

## 1 National accounts aggregates

Last updated: 26/02/10

Seasonally adjusted

	£ million		Indices (2005 = 100)						
	At current prices		Value indices at current prices		Chained volume indices			Implied deflators <sup>3</sup>	
	Gross domestic product (GDP) at market prices	Gross value added (GVA) at basic prices	GDP at market prices <sup>1</sup>	GVA at basic prices	Gross national disposable income at market prices <sup>2</sup>	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	1,448,391	1,298,795	115.5	116.3	106.9	106.1	106.2	108.9	109.6
2009	1,396,474	1,261,920	111.4	113.0		100.8	101.2	110.5	111.7
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	363,438	324,362	115.9	116.2	109.6	107.1	107.2	108.2	108.4
2008 Q2	363,981	324,596	116.1	116.3	107.9	107.0	107.1	108.5	108.6
2008 Q3	361,706	325,359	115.4	116.5	106.3	106.0	106.1	108.8	109.8
2008 Q4	359,266	324,478	114.6	116.2	103.9	104.1	104.2	110.1	111.6
2009 Q1	348,780	316,120	111.2	113.2	102.7	101.4	101.6	109.8	111.4
2009 Q2	346,032	312,721	110.4	112.0	101.0	100.7	101.1	109.6	110.8
2009 Q3	348,897	314,342	111.3	112.6	100.9	100.4	100.9	110.8	111.6
2009 Q4	352,765	318,737	112.5	114.2		100.7	101.2	111.7	112.8

### Percentage change, quarter on corresponding quarter of previous year

	IHYO	ABML <sup>4</sup>	YBGO <sup>4</sup>	IHYR	ABMM <sup>4</sup>	IHYU	ABML/ABMM <sup>4</sup>
2004 Q1	5.7	5.4	3.0	3.6	3.4	2.0	1.9
2004 Q2	5.6	5.3	3.4	3.2	3.2	2.3	2.1
2004 Q3	5.2	5.4	2.5	2.6	2.6	2.6	2.8
2004 Q4	5.7	5.9	3.0	2.4	2.4	3.1	3.4
2005 Q1	5.0	5.2	1.8	1.8	2.1	3.1	3.0
2005 Q2	4.8	5.0	3.2	2.0	2.2	2.8	2.7
2005 Q3	3.7	3.4	1.4	2.5	2.6	1.2	0.7
2005 Q4	3.5	3.6	0.0	2.4	2.6	1.1	1.0
2006 Q1	5.6	5.9	1.6	3.2	3.2	2.4	2.6
2006 Q2	4.6	4.5	0.4	2.8	2.9	1.7	1.5
2006 Q3	6.4	6.6	2.6	2.7	2.9	3.7	3.6
2006 Q4	6.2	6.1	2.3	2.8	2.9	3.3	3.1
2007 Q1	5.6	5.2	2.3	2.4	2.5	3.1	2.7
2007 Q2	6.2	6.1	3.1	2.7	2.7	3.4	3.3
2007 Q3	5.4	5.4	3.3	2.7	2.8	2.6	2.5
2007 Q4	4.9	5.2	5.6	2.4	2.6	2.5	2.6
2008 Q1	5.6	5.9	5.8	2.4	2.4	3.1	3.5
2008 Q2	4.6	4.8	3.1	1.7	1.6	2.9	3.2
2008 Q3	2.9	3.9	1.0	0.2	0.1	2.6	3.8
2008 Q4	1.2	2.4	-3.8	-2.1	-2.3	3.4	4.8
2009 Q1	-4.0	-2.5	-6.3	-5.4	-5.2	1.4	2.8
2009 Q2	-4.9	-3.7	-6.4	-5.9	-5.6	1.0	2.0
2009 Q3	-3.5	-3.4	-5.0	-5.3	-5.0	1.8	1.7
2009 Q4	-1.8	-1.8		-3.3	-2.9	1.5	1.1

#### Notes:

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.

Source: Office for National Statistics

## 2 Gross domestic product: by category of expenditure

Last updated: 26/02/10

£ million, chained volume measures, reference year 2005, seasonally adjusted

	Domestic expenditure on goods and services at market prices											
	Final consumption expenditure			Gross capital formation				Exports of goods and services	Gross final expenditure	less imports of goods and services	Statistical discrepancy (expenditure)	Gross domestic at product market prices
	Households	Non-profit institutions <sup>1</sup>	General government	Gross fixed capital formation	Changes in inventories <sup>2</sup>	Acquisitions less disposals of valuables	Total					
	ABJR	HAYO	NMRY	NPQT	CAFU	NPJR	YBIM	IKBK	ABMG	IKBL	GIXS	ABMI
2004	766,856	30,827	262,917	204,756	4,843	-39	1,270,173	306,582	1,576,497	348,894	0	1,227,387
2005	784,140	30,824	268,088	209,758	4,472	-377	1,296,905	330,794	1,627,699	373,641	0	1,254,058
2006	795,595	31,868	272,271	223,305	4,789	304	1,328,132	368,076	1,696,207	406,374	0	1,289,833
2007	815,157	30,040	275,488	240,613	6,646	562	1,368,506	357,677	1,726,183	403,341	0	1,322,842
2008	822,086	30,832	282,681	232,202	866	1,295	1,369,962	361,535	1,731,497	401,137	-271	1,330,088
2009	796,876	29,670	288,363	198,266	-15,190	1,233	1,299,218	321,987	1,621,205	352,526	-4,602	1,264,077
2004 Q1	189,235	7,875	65,615	50,706	515	-113	314,855	74,389	389,121	84,284	0	304,784
2004 Q2	191,672	7,737	65,323	51,680	294	65	316,727	76,058	392,705	86,139	0	306,510
2004 Q3	192,642	7,664	65,746	51,351	953	8	317,863	76,895	394,700	87,840	0	306,806
2004 Q4	193,307	7,551	66,233	51,019	3,081	1	320,728	79,240	399,971	90,631	0	309,287
2005 Q1	194,294	7,745	66,418	51,092	2,978	-45	322,029	77,762	399,757	89,398	0	310,313
2005 Q2	195,610	7,676	66,986	51,273	2,025	90	323,588	80,830	404,405	91,846	0	312,550
2005 Q3	196,450	7,687	67,265	53,964	-251	-292	325,046	84,250	409,304	94,834	0	314,490
2005 Q4	197,786	7,716	67,419	53,429	-280	-130	326,242	87,952	414,233	97,563	0	316,705
2006 Q1	197,278	7,941	67,862	53,372	2,346	106	328,906	95,835	424,741	104,616	0	320,125
2006 Q2	199,392	8,025	67,692	54,499	63	241	329,912	97,932	427,844	106,555	0	321,289
2006 Q3	198,692	8,012	68,232	56,780	1,679	-30	333,365	86,854	420,220	97,364	0	322,855
2006 Q4	200,233	7,890	68,485	58,654	701	-13	335,949	87,455	423,402	97,839	0	325,564
2007 Q1	202,299	7,447	68,394	59,659	928	76	338,804	88,279	427,083	99,211	0	327,872
2007 Q2	203,492	7,413	68,650	59,620	-12	348	339,510	88,650	428,160	98,193	0	329,967
2007 Q3	204,321	7,471	69,165	59,777	3,130	45	343,909	90,348	434,256	102,647	0	331,609
2007 Q4	205,045	7,709	69,279	61,557	2,600	93	346,283	90,400	436,684	103,290	0	333,394
2008 Q1	206,823	7,693	69,853	59,370	3,261	212	347,212	91,462	438,674	102,979	86	335,781
2008 Q2	206,278	7,789	70,423	59,512	1,529	436	345,968	91,727	437,696	102,201	17	335,511
2008 Q3	205,676	7,723	70,809	57,362	378	366	342,315	91,219	433,534	101,037	-104	332,393
2008 Q4	203,309	7,627	71,596	55,958	-4,302	281	334,467	87,127	421,593	94,920	-270	326,403
2009 Q1	200,301	7,556	71,346	51,941	-4,956	418	326,606	80,681	407,287	88,542	-965	317,779
2009 Q2	198,424	7,471	71,882	48,755	-3,238	244	323,538	79,390	402,928	86,032	-1,122	315,775
2009 Q3	198,702	7,355	72,134	49,544	-4,212	217	323,740	79,468	403,209	87,169	-1,228	314,811
2009 Q4	199,449	7,288	73,001	48,026	-2,784	354	325,334	82,448	407,781	90,783	-1,287	315,712

### Percentage change, quarter on corresponding quarter of previous year

	IHYY										
2004 Q1	3.4	1.6	4.7	3.8		4.4	0.2	3.5	3.3		3.6
2004 Q2	3.3	0.7	3.2	7.4		3.9	5.3	4.2	7.6		3.2
2004 Q3	3.2	-0.6	2.6	7.1		3.1	6.8	3.8	8.5		2.6
2004 Q4	3.0	-2.1	1.7	2.3		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	2.2	3.3	2.1	-0.5		2.5	3.6	2.7	3.8		2.4
2008 Q2	1.4	5.1	2.6	-0.2		1.9	3.5	2.2	4.1		1.7
2008 Q3	0.7	3.4	2.4	-4.0		-0.5	1.0	-0.2	-1.6		0.2
2008 Q4	-0.8	-1.1	3.3	-9.1		-3.4	-3.6	-3.5	-8.1		-2.1
2009 Q1	-3.2	-1.8	2.1	-12.5		-5.9	-11.8	-7.2	-14.0		-5.4
2009 Q2	-3.8	-4.1	2.1	-18.1		-6.5	-13.4	-7.9	-15.8		-5.9
2009 Q3	-3.4	-4.8	1.9	-13.6		-5.4	-12.9	-7.0	-13.7		-5.3
2009 Q4	-1.9	-4.4	2.0	-14.2		-2.7	-5.4	-3.3	-4.4		-3.3

#### Notes:

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

Source: Office for National Statistics

### 3 Labour market summary

Last updated: 17/02/10

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
<b>All persons</b>	MGSL	MGSF	MGRZ	MGSC	MGSI	MGWG	MGSR	MGSX	YBTC
Oct–Dec 2007	48,842	31,011	29,398	1,613	17,832	63.5	60.2	5.2	36.5
Oct–Dec 2008	49,228	31,342	29,333	2,009	17,886	63.7	59.6	6.4	36.3
Jan–Mar 2009	49,323	31,401	29,170	2,231	17,922	63.7	59.1	7.1	36.3
Apr–Jun 2009	49,418	31,356	28,925	2,431	18,062	63.5	58.5	7.8	36.5
Jul–Sep 2009	49,516	31,378	28,917	2,461	18,138	63.4	58.4	7.8	36.6
Oct–Dec 2009	49,613	31,363	28,905	2,457	18,251	63.2	58.3	7.8	36.8
<b>Male</b>	MGSM	MMSG	MGSA	MGSD	MGSJ	MGWH	MGSS	MGSY	YBTD
Oct–Dec 2007	23,758	16,817	15,897	920	6,942	70.8	66.9	5.5	29.2
Oct–Dec 2008	23,974	17,028	15,820	1,208	6,946	71.0	66.0	7.1	29.0
Jan–Mar 2009	24,026	17,035	15,685	1,350	6,991	70.9	65.3	7.9	29.1
Apr–Jun 2009	24,076	16,977	15,486	1,491	7,099	70.5	64.3	8.8	29.5
Jul–Sep 2009	24,129	16,945	15,425	1,521	7,184	70.2	63.9	9.0	29.8
Oct–Dec 2009	24,184	16,892	15,393	1,499	7,292	69.8	63.7	8.9	30.2
<b>Female</b>	MGSN	MGSH	MGSB	MGSE	MGSK	MGWI	MGST	MGSZ	YBTE
Oct–Dec 2007	25,084	14,194	13,501	692	10,890	56.6	53.8	4.9	43.4
Oct–Dec 2008	25,254	14,315	13,514	801	10,940	56.7	53.5	5.6	43.3
Jan–Mar 2009	25,298	14,367	13,486	881	10,931	56.8	53.3	6.1	43.2
Apr–Jun 2009	25,342	14,379	13,439	940	10,963	56.7	53.0	6.5	43.3
Jul–Sep 2009	25,386	14,432	13,492	940	10,954	56.9	53.1	6.5	43.1
Oct–Dec 2009	25,430	14,470	13,512	959	10,959	56.9	53.1	6.6	43.1
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
<b>All persons</b>	YBTF	YBSK	YBSE	YBSH	YBSN	MGSO	MGSU	YBTI	YBTL
Oct–Dec 2007	37,630	29,737	28,143	1,594	7,893	79.0	74.8	5.4	21.0
Oct–Dec 2008	37,806	29,969	27,992	1,977	7,837	79.3	74.0	6.6	20.7
Jan–Mar 2009	37,853	30,019	27,821	2,198	7,835	79.3	73.5	7.3	20.7
Apr–Jun 2009	37,900	29,949	27,554	2,396	7,951	79.0	72.7	8.0	21.0
Jul–Sep 2009	37,946	29,941	27,517	2,424	8,006	78.9	72.5	8.1	21.1
Oct–Dec 2009	37,991	29,914	27,495	2,418	8,077	78.7	72.4	8.1	21.3
<b>Male</b>	YBTG	YBSL	YBSF	YBSI	YBSO	MGSP	MGSV	YBTJ	YBTM
Oct–Dec 2007	19,607	16,401	15,488	913	3,207	83.6	79.0	5.6	16.4
Oct–Dec 2008	19,736	16,570	15,375	1,195	3,166	84.0	77.9	7.2	16.0
Jan–Mar 2009	19,766	16,586	15,250	1,336	3,180	83.9	77.2	8.1	16.1
Apr–Jun 2009	19,794	16,527	15,051	1,476	3,267	83.5	76.0	8.9	16.5
Jul–Sep 2009	19,821	16,479	14,976	1,503	3,342	83.1	75.6	9.1	16.9
Oct–Dec 2009	19,848	16,422	14,942	1,481	3,426	82.7	75.3	9.0	17.3
<b>Female</b>	YBTH	YBSM	YBSG	YBSJ	YBSP	MGSQ	MGSW	YBTK	YBTN
Oct–Dec 2007	18,023	13,336	12,655	681	4,687	74.0	70.2	5.1	26.0
Oct–Dec 2008	18,069	13,399	12,616	782	4,671	74.2	69.8	5.8	25.8
Jan–Mar 2009	18,088	13,433	12,571	862	4,655	74.3	69.5	6.4	25.7
Apr–Jun 2009	18,107	13,422	12,502	920	4,684	74.1	69.0	6.9	25.9
Jul–Sep 2009	18,125	13,462	12,541	921	4,663	74.3	69.2	6.8	25.7
Oct–Dec 2009	18,143	13,491	12,554	938	4,652	74.4	69.2	7.0	25.6

#### 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: 16/02/10

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) <sup>1</sup>	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) <sup>2</sup>	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	EL25	EAD6	CZBH	CDKQ	CBZX	PLLU <sup>3</sup>	PLLV <sup>3,4</sup>	RNNK <sup>3,4</sup>	RNNQ <sup>3,4</sup>
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	-5.8	2.6
2009 May	2.2	3.6	3.3	-1.1	1.6	2.6	-0.3	1.2	-8.8	0.2
2009 Jun	1.8	3.1	2.9	-1.6	1.0	1.9	-1.0	0.3	-12.0	-2.9
2009 Jul	1.8	3.1	2.8	-1.4	1.2	2.1	-1.3	0.2	-12.2	-3.4
2009 Aug	1.6	2.9	2.7	-1.3	1.4	2.3	-0.3	0.8	-7.7	-2.1
2009 Sep	1.1	2.2	2.1	-1.4	1.3	2.0	0.4	1.3	-6.2	-1.2
2009 Oct	1.5	2.6	2.5	-0.8	1.9	2.8	1.8	2.1	0.4	0.8
2009 Nov	1.9	3.0	2.9	0.3	2.7	3.5	2.9	2.0	4.0	0.7
2009 Dec	2.9	2.8	2.6	2.4	3.8	3.8	3.5	2.6	7.4	1.2
2010 Jan	3.5	1.9	1.7	3.7	4.6	3.3	3.8	2.5	8.4	1.8

### 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](http://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/03\\_10/data\\_page.asp](http://www.statistics.gov.uk/elmr/03_10/data_page.asp)

Title	Frequency of update
<b>UK economic accounts</b>	
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 <sup>1</sup>	Q
1.14 Private non-financial corporations: secondary distribution of income account and capital account <sup>1</sup>	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 weekly earnings – total pay	M
2.16A Average weekly earnings – bonus pay	M
2.17 Average weekly earnings – regular pay	M
2.18 Productivity and unit wage costs	M

**Weblink:** [www.statistics.gov.uk/elmr/03\\_10/data\\_page.asp](http://www.statistics.gov.uk/elmr/03_10/data_page.asp)

2.19	Regional labour market summary	M
2.20	International comparisons	M
2.21	Labour disputes	M
2.22	Vacancies	M
2.22A	Vacancies and unemployment	M
2.23	Vacancies by industry	M
2.24	Redundancies: levels and rates	M
2.25	Redundancies: by industry	Q
2.27	Employment levels by country of birth and nationality	M
2.28	Working age employment rates by country of birth and nationality	Q
2.29	Lone parent claimants of Jobseeker's Allowance by age of youngest child	M
2.30	Key out of work benefits	M
2.31	Production industry employee jobs	M
2.32	Public sector employment by industry	Q

## 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 <sup>1</sup>	M
4.04	Indicators of fixed investment in dwellings	M
4.05	Number of property transactions	M
4.06	Change in inventories <sup>1</sup>	Q
4.07	Inventory ratios <sup>1</sup>	Q
4.08	Retail sales, new registrations of cars and credit business	M
4.09	Inland energy consumption: primary fuel input basis <sup>1</sup>	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 <sup>1</sup>	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

**Weblink:** [www.statistics.gov.uk/elmr/03\\_10/data\\_page.asp](http://www.statistics.gov.uk/elmr/03_10/data_page.asp)

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
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](http://www.statistics.gov.uk/statbase/tsdintro.asp)

Subnational labour market data are available from [www.statistics.gov.uk/statbase/product.asp?vlnk=14160](http://www.statistics.gov.uk/statbase/product.asp?vlnk=14160) and [www.nomisweb.co.uk](http://www.nomisweb.co.uk)

Labour Force Survey tables are available from [www.statistics.gov.uk/statbase/product.asp?vlnk=14365](http://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](http://www.statistics.gov.uk/statbase/product.asp?vlnk=13101)

# Contact points

## Recorded announcement of latest RPI

☎ 01633 456961  
✉ rpi@ons.gsi.gov.uk

## Labour Market Statistics Helpline

☎ 01633 456901  
✉ labour.market@ons.gsi.gov.uk

## Earnings Customer Helpline

☎ 01633 819024  
✉ earnings@ons.gsi.gov.uk

## National Statistics Customer Contact Centre

☎ 0845 601 3034  
✉ info@statistics.gsi.gov.uk

## Skills and Education Network

☎ 024 7682 3439  
✉ senet@isc.gov.uk

## Department for Children, Schools and Families Public Enquiry Unit

☎ 0870 000 2288

## For statistical information on

### Average Earnings Index (monthly)

☎ 01633 819024

### Claimant count

☎ 01633 456901

### Consumer Prices Index

☎ 01633 456900  
✉ cpi@ons.gsi.gov.uk

### 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  
✉ labour.market@ons.gsi.gov.uk

### Economic activity and inactivity

☎ 01633 456901

### 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

2010 edition. Palgrave Macmillan, ISBN 978-0-230-52583-2. Price £47.50.

[www.statistics.gov.uk/StatBase/Product.asp?vlnk=4861](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=4861)

### Foreign Direct Investment (MA4)

2009 edition

[www.statistics.gov.uk/StatBase/Product.asp?vlnk=9614](http://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](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=7640)

### Business Enterprise Research and Development

2008 edition

[www.statistics.gov.uk/StatBase/Product.asp?vlnk=165](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=165)

### Share Ownership

2008 edition

[www.statistics.gov.uk/StatBase/Product.asp?vlnk=930](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=930)

### United Kingdom Balance of Payments (Pink Book)

2009 edition. Palgrave Macmillan, ISBN 978-0-230-57610-0. Price £52.00.

[www.statistics.gov.uk/StatBase/Product.asp?vlnk=1140](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=1140)

### United Kingdom National Accounts (Blue Book)

2009 edition. Palgrave Macmillan, ISBN 978-0-230-57611-7. Price £52.00.

[www.statistics.gov.uk/StatBase/Product.asp?vlnk=1143](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=1143)

## Statistical Bulletins

- 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 3

[www.statistics.gov.uk/StatBase/Product.asp?vlnk=242](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=242)

### United Kingdom Economic Accounts

2009 quarter 3. Palgrave Macmillan, ISBN 978-0-230-23488-8. Price £37.50.

[www.statistics.gov.uk/StatBase/Product.asp?vlnk=1904](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=1904)

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

2009 quarter 3

[www.statistics.gov.uk/StatBase/Product.asp?vlnk=731](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=731)

## Statistical Bulletins

- 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

February 2010. Palgrave Macmillan, ISBN 978-0-230-23602-8. Price £50.00.

[www.statistics.gov.uk/StatBase/Product.asp?vlnk=376](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=376)

### Focus on Consumer Price Indices

January 2010

[www.statistics.gov.uk/StatBase/Product.asp?vlnk=867](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=867)

### Monthly review of external trade statistics (MM24)

December 2009

[www.statistics.gov.uk/StatBase/Product.asp?vlnk=613](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=613)

### Producer Price Indices (MM22)

January 2010

[www.statistics.gov.uk/StatBase/Product.asp?vlnk=2208](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=2208)

## Statistical Bulletins

- 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](http://www.statistics.gov.uk/about/data/guides/productivity/default.asp)

### Labour Market Review

2009 edition. Palgrave Macmillan, ISBN 1-4039-9735-7. Price £40.

[www.statistics.gov.uk/StatBase/Product.asp?vlnk=14315](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=14315)

### National Accounts Concepts, Sources and Methods

[www.statistics.gov.uk/StatBase/Product.asp?vlnk=1144](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=1144)

### Sector classification guide (MA23)

[www.statistics.gov.uk/StatBase/Product.asp?vlnk=7163](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=7163)

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