

# Economic & Labour Market Review

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## In brief

### Change to female state pension age

Currently, headline employment and inactivity rates are based on working-age definitions and calculated on the basis of those aged 16 to 59 for women and 16 to 64 for men. This reflects the current school leaving age of 16 and the current state pension ages for men (65) and women (60). Headline employment rates are published every month in the *Labour Market Statistics First Release*.

The state pension age for women will gradually increase from 60 to 65 over a ten-year period from 2010 to 2020. The Office for National Statistics (ONS) is proposing to discontinue the current practice of using 'working age' terminology to describe the headline employment and inactivity rates in the *Labour Market Statistics First Release* from 2010. It is proposed to replace the current working-age employment and inactivity rates with rates based on the population aged 16 to 64 for both men and women. These 16 to 64 employment and inactivity rates would become the new headline rates. It is intended to make this change during 2010.

A public consultation on this issue, which contains further details of the proposals, has been published on the ONS website.

#### More information

*Labour Market Statistics First Release*  
[www.statistics.gov.uk/statbase/product.asp?vlnk=1944](http://www.statistics.gov.uk/statbase/product.asp?vlnk=1944)

*Public consultation*  
[www.ons.gov.uk/about/consultations/open-consultations/index.html](http://www.ons.gov.uk/about/consultations/open-consultations/index.html)

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### ONS Work and worklessness among households First Release review

The Office for National Statistics (ONS) Labour Market Division is undertaking a review of the 'Work and worklessness among households' First Release to ensure it meets customers' needs. The release is published in August of each year. It is a key source of statistics about workless households (and the adults and children living in them) by household type, region and ethnic group. The current source for the release is the Labour Force Survey (LFS) household data sets.

Annual Population Survey (APS) household data sets are now available. These benefit from a larger sample size than the LFS and an improved methodology. More information on APS household data sets can be found at the link below.

This review will cover which is the most appropriate data source, the suitability of the current tables, the layout and the timing of future releases.

It is essential that the views of users are considered; for that reason, there is a consultation with key stakeholders in progress. The review is to be completed by March 2009 so as not to delay the release timetable. If you would like to be involved in the consultation or have any feedback on the 'Work and worklessness among households' release, please contact Katherine Kent by 9 January 2009 using the contact details below.

Final recommendations will be published in a future *Economic & Labour Market Review* 'In brief', to make readers aware of any changes.

#### More information

*First Release*  
[www.statistics.gov.uk/statbase/product.asp?vlnk=8552](http://www.statistics.gov.uk/statbase/product.asp?vlnk=8552)

*Annual Population Survey household data sets*  
[www.statistics.gov.uk/cci/article.asp?id=2048](http://www.statistics.gov.uk/cci/article.asp?id=2048)

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### Launch of the services producer price index for financial intermediation (banks)

The banking services producer price index (SPPI) was introduced in February 2004. The index was developed by a joint working group with members from the Office for National Statistics (ONS), the Bank of England and the British Bankers' Association.

Following a quality review by ONS during 2006, the index was withdrawn from publication. As a result, the banking SPPI has been redeveloped and was introduced in quarter three this year (26 November). Under the redevelopment, data have been sourced from new data collections, processing has been improved and the number of products included in the index has increased.

As the majority of banks' services cannot be measured directly, the concept of 'financial intermediation services indirectly measured' (FISIM) has been used. The pricing method therefore uses interest rate differentials to estimate the value of services for which banks do not make an explicit charge. Previously, a small element of fees data, which could be explicitly measured, was also included in the FISIM calculations to obtain a final index. In the redevelopment, both the FISIM and fees element are calculated separately and aggregated at the final index construction stage.

The new index takes advantage of newer data collections by the Bank of England, which have allowed the index to expand to include more banking services. Services covered by the new index include loans, overdrafts, other advances, time deposits, interest-bearing sight deposits, and non-interest-bearing sight deposits (for both FISIM and fees). Additionally, loans and time deposits data are now broken down further into, for example, fixed rates and redeemable at notice products.

A more secure and efficient method has been introduced for receiving and processing data from the Bank. Once the data are received, the final index construction is carried out in the SPPI processing system.

The new index is not to be regarded

as a proxy for all banking or financial intermediation services, and will therefore be published as a separate index known as the 'SPPI for financial intermediation (banks)'.

#### More information

[www.statistics.gov.uk/downloads/experimental/sppi-release-2008-q3.pdf](http://www.statistics.gov.uk/downloads/experimental/sppi-release-2008-q3.pdf)

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## Environmental accounts

On 11 December 2008, the Office for National Statistics published the latest edition of *Environmental Accounts*.

Environmental accounts are 'satellite accounts' to the main National Accounts, meaning they are extensions to the Accounts which help analysis of the wider impact of economic change.

UK environmental accounts provide information on the demands that UK economic activity places on the environment (in particular in the form of emissions of pollutants) and on the importance of natural resources to the economy. Environmental accounts use similar concepts and classifications of industries to those employed in the National Accounts, and they reflect the recommended European Union and United Nations frameworks for developing such accounts. UK environmental accounts are used to inform sustainable development policy, to model impacts of fiscal or monetary measures and to evaluate the environmental performance of different industrial sectors.

Most data are provided in units of physical measurement (volume or mass), although some are in monetary units, where this is most relevant or the only available data.

The information has been separated into three dimensions:

- natural resource accounts
- physical flows, and
- monetary accounts

UK environmental accounts are used to inform sustainable development policy, to model impacts of fiscal or monetary measures and to evaluate the environmental impacts of different sectors of the economy. Most data are provided in units of physical

measurement (mass or volume), although some are in monetary units, where this is the most relevant or the only data available.

#### More information

[www.statistics.gov.uk/statbase/product.asp?vlnk=3698](http://www.statistics.gov.uk/statbase/product.asp?vlnk=3698)

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## ONS Monthly Production Inquiry (MPI) triennial review – survey of users

The Office for National Statistics (ONS) is carrying out a triennial review of the Monthly Production Inquiry (MPI) in accordance with standing instructions from the Prime Minister's Office. The Code of Practice requires ONS to ensure that the respondent burden will be managed by balancing the needs of the users with the demand on respondents. The triennial review addresses this and other protocols by seeking the views of both users and respondents and by quantifying the costs to both business and government.

As part of the review, ONS is seeking the view of users of the MPI, which produces turnover and employment statistics and feeds into the following outputs:

- Index of Production
- Gross Domestic Product (Output)
- Engineering Turnover and Orders release
- Workforce Job estimates, and
- Productivity estimates.

ONS wishes to invite users of any of the above outputs to contribute their views. Users of whom ONS is aware will be sent a short questionnaire to complete; however, there are likely to be many users who access the information directly from the website and other publications, of whom ONS is unaware, and it would like to assess if the statistics meet their requirements. If you would like to participate and receive a user questionnaire, please contact Clare Smith using the contact details below. The completed triennial review report will be published in October 2009.

#### Contact

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## Proposed changes to ELMR and time series data

Some minor changes are proposed to *Economic & Labour Market Review* (ELMR) from the January 2009 issue, as a result of a review of operations.

#### Hard copy

In the 'Directory of online tables' section, the last column labelled 'Updated since last month' will be dropped – all the tables are loaded onto the ONS website each month, so the latest up-to-date set is always available.

#### Online tables

An analysis of website 'hits' of the online tables indicates that some have received extremely limited numbers of visits since ELMR was launched in January 2007. Therefore, the following six tables in sections 1, 4 and 5 will no longer be available from January although, in most cases, their data are available from other sources:

- Table 1.13 Private non-financial corporations: allocation of primary income account
- Table 1.14 Private non-financial corporations: secondary distribution of income account and capital account
- Table 4.03 Motor vehicle and steel production (the motor vehicles series were last updated for July 2007)
- Table 4.06 Change in inventories
- Table 4.09 Inland energy consumption: primary fuel input basis
- Table 5.03 Counterparts to changes in money stock M4

#### Times series data

The old time series data set (ELMR: Economic) that is linked to all the tables in the former *Economic Trends* publication will no longer be updated. It is now two years since *Economic Trends* was last published, and some of the data sets accompanying its tables have become increasingly out of date. More comprehensive and timely data are available in the ELMR online Excel tables, which users are encouraged to access. A weblink is listed at the top of each page of the 'Directory of online tables' section.

**UPDATES**

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

5 November

**Index of production**

*Manufacturing: 1.3% three-monthly fall to September*

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

10 November

**Producer prices**

*Factory gate inflation falls to 6.8% in October*

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

11 November

**UK trade**

*Deficit narrowed to £3.9 billion in September*

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

12 November

**Average earnings**

*Pay growth slows in the year to September*

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

**Unemployment**

*Unemployment rate rises to 5.8% in three months to September*

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

14 November

**Earnings**

*Weekly pay up 4.6% to £479 in year to April 2008*

[www.statistics.gov.uk/cci/nugget.asp?id=285](http://www.statistics.gov.uk/cci/nugget.asp?id=285)

**Gender pay gap**

*Gender pay gap widens in year to April 2008*

[www.statistics.gov.uk/cci/nugget.asp?id=167](http://www.statistics.gov.uk/cci/nugget.asp?id=167)

**Low pay jobs**

*288,000 below the National Minimum Wage in the UK*

[www.statistics.gov.uk/cci/nugget.asp?id=591](http://www.statistics.gov.uk/cci/nugget.asp?id=591)

18 November

**Inflation**

*October: CPI down to 4.5%; RPI down to 4.2%*

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

20 November

**Public sector**

*October: £1.0 billion current budget surplus*

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

**Retail sales**

*Flat underlying growth in October*

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

25 November

**Business investment**

*0.2% down in third quarter of 2008*

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

26 November

**GDP growth**

*Economy contracts by 0.5% in Q3 2008*

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

**Index of services**

*0.4% three-monthly fall into September*

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

**Market sector GVA**

*0.7% fall in growth in Q3 2008*

[www.statistics.gov.uk/cci/nugget.asp?id=2021](http://www.statistics.gov.uk/cci/nugget.asp?id=2021)

**Service prices**

*SPPI inflation at 3.5% in Q3 2008*

[www.statistics.gov.uk/cci/nugget.asp?id=253](http://www.statistics.gov.uk/cci/nugget.asp?id=253)

28 November

**Business demography**

*Births and deaths increase between 2006 and 2007*

[www.statistics.gov.uk/cci/nugget.asp?id=2074](http://www.statistics.gov.uk/cci/nugget.asp?id=2074)

**FORTHCOMING RELEASES**

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

2 December

**Consumer credit business – October 2008****Mergers and acquisitions involving UK companies – Q3 2008**

5 December

**Output and employment in the construction industry – Q3 2008**

8 December

**Producer prices – November 2008**

9 December

**Index of production – October 2008****MM22: Producer prices – November 2008****UK trade – October 2008**

10 December

**International service transactions of the film and television industries – 2007****MM19: Aerospace and electronics cost indices – September 2008**

11 December

**Environmental accounts – Autumn 2008****Foreign direct investment – 2007****New construction orders – October 2008**

12 December

**Regional, sub-regional and local gross value added****Monthly review of external trade statistics – October 2008**

15 December

**MM17: Price Index Numbers for Current Cost Accounting – November 2008**

16 December

**Consumer price indices – November 2008****Digest of engineering turnover and orders – October 2008**

17 December

**Labour market statistics – December 2008****Public sector employment – Q3 2008**

18 December

**Public and private breakdown of labour disputes****Public sector finances – November 2008****Retail sales – November 2008****SDM28: Retail sales – November 2008**

19 December

**Business investment revised results – Q3 2008****Publication of Phase 2 ASHE 2008 tables**

22 December

**Average weekly earnings – October 2008****Focus on consumer prices – November 2008**

23 December

**Balance of payments – Q3 2008****Index of services – October 2008****Productivity – Q3 2008****Public sector finances: supplementary (quarterly) data****Market sector GVA****Quarterly national accounts – Q3 2008****United Kingdom Economic Accounts – Q3 2008 (web version)**

# Economic review

## December 2008

Anis Chowdhury

Office for National Statistics

### SUMMARY

GDP output contracted in 2008 quarter three - driven by negative growth in services, manufacturing and construction output. On the expenditure side, household spending and business investment showed a negative position in the third quarter. The current account deficit widened in quarter two; the goods trade deficit widened in quarter three. The labour market showed further signs of weakening in 2008 quarter three; average earnings remain relatively subdued. Public sector finances deteriorated in October 2008. Consumer price inflation eased in October 2008 but was still considerably above the Government's inflation target. Producer output and input price inflationary pressures persisted in quarter three but showed signs of easing in quarter four.

### GROSS DOMESTIC PRODUCT

## Growth contracts in third quarter

GDP growth for the third quarter of 2008 is estimated to have shrunk compared with flat growth in the previous quarter. Growth fell by 0.5 per cent, a weakening from zero per cent growth in quarter two. The initial estimate for the annual rate of growth deteriorated sharply growing by a subdued 0.3 per cent, down from 1.5 per cent growth in the previous quarter (Figure 1). The latest month two

GDP release for 2008 quarter three contains more information than that contained in the preliminary estimate. It gives first estimates for the main expenditure categories and more complete information on the output side. It is still, however, based on as yet incomplete information.

This contraction in the UK economy was largely due to a decline in growth in service sector output. Industrial production growth continued to display weakness for the fifth successive quarter, with a deeper deceleration in output in quarter three compared to the previous quarter. The

fragility in total production was broad based but was mainly driven by a sharp contraction in manufacturing output growth. The output of the electricity, gas and water supply and mining and quarrying (including oil and gas) industries also recorded negative growth. The slowdown in GDP growth was also led by a faster contraction in the output of the construction sector compared with the previous quarter.

### OTHER MAJOR ECONOMIES

## Global growth contracts in quarter three

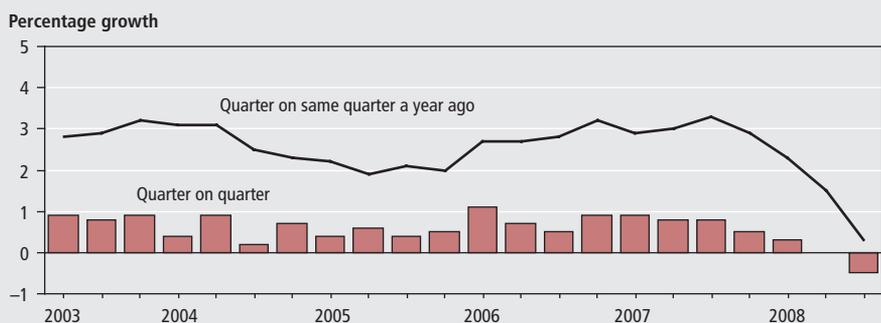
Preliminary data for 2008 quarter three for the other major OECD countries are now available. Data showed most of these major economies to be in recession.

US GDP growth decelerated in 2008 quarter three. Growth contracted by 0.1 per cent – the first contraction since the third quarter of 2001 – compared to an increase of 0.7 per cent in the second quarter. The slowdown in GDP growth was primarily led by a decline in domestic demand, particularly consumer spending. This could be put down to a number of factors: Firstly, the waning of the fiscal stimulus plan unveiled in the second quarter; second, higher unemployment; third, the continued impact of the credit crunch and fourth; continued weakness in the housing market. Fixed investment contracted in the third quarter, driven by eleventh consecutive negative growth in residential investment. This was offset by positive contributions from net exports and government spending.

Japan's economy entered recession in the latest quarter. Growth contracted by 0.1 per cent in quarter three, a lower rate of contraction compared to a decrease of 0.9 per cent in quarter two. There was a decrease in private investment and net exports; this was offset by a slight increase in private consumption.

Euro-zone growth also entered recession in the latest quarter. According to Eurostat's estimate euro area GDP growth contracted by 0.2 per cent, similar to the decrease in the previous quarter. Growth for the two big mainland EU economies – Germany, and Italy – showed negative growth for the second successive quarter. The French economy appears to have escaped recession.

Figure 1  
Gross Domestic Product



German GDP contracted by 0.5 per cent in 2008 quarter three. This follows a decrease 0.4 per cent in quarter two. The shrinkage in the latest quarter was largely driven by a large negative contribution from external demand, led by a strong rise in imports. The investment picture was stagnant. These downsides were offset by increases in private and public consumption.

French GDP growth showed a marginal increase of 0.1 per cent growth in quarter three after falling by 0.3 per cent in the previous quarter. This was in part due to a slight recovery in household consumption and in part due to a lesser contraction in total investment compared with the previous quarter. Net exports made a neutral contribution to growth in quarter three.

Italian GDP fell by 0.5 per cent in quarter three following a fall of 0.4 per cent in quarter two. The breakdown to the growth was not yet available at the time of writing this article.

## FINANCIAL MARKETS

### Share prices fall; pound depreciates

Equity performance has displayed volatility over the last couple of years. In 2008 quarter three, share prices fell back substantially into negative territory following positive growth in the previous quarter. In 2008 quarter three, the FTSE All-Share index decreased by around 10 per cent compared to a rise of around 2 per cent in quarter two. The fall was mainly driven by a sell-off in shares in the financial and banking sectors. The weakness in share prices may be attributed to global growth concerns particularly in terms of recessionary fears, brought on by continued financial sector liquidity problems and its negative impact on the real economy. In October, the FTSE All-Share index had fallen further by around 19 per cent.

In the currency markets, 2008 quarter three saw sterling's broad average value continuing to depreciate. The pound's value against the dollar fell by around 4 per cent compared to a depreciation of around 1 per cent in the previous quarter. In October 2008 the pound fell below the \$1.60 mark for the first time in five years. Against the euro, sterling's value was virtually flat in the third quarter, following depreciation of around 5 per cent in the previous quarter. Overall, the quarterly effective exchange rate depreciated by approximately 2 per cent in 2008 quarter three after depreciating by approximately 3 per cent in the previous quarter (Figure 2). In October, the pound depreciated by approximately 6 per cent against the dollar. Against the euro, the pound appreciated by around 1 per cent. The effective exchange rate depreciated by around 1 per cent.

The recent movements in the exchange rate might be linked to interest rate and growth factors. Exchange rate movements can be related to the perceptions of the relative strengths of the US, the euro and UK economy. The depreciation of the pound against the dollar in quarter three may have come in response to fears about lower growth and a possible recession in the UK economy, compared with the better outlook for the US and therefore the prospect of greater easing of interest rates in the UK to stimulate the economy. Indeed, the Bank of England reduced interest rates by 150 basis points in November 2008 and by a further 1 per cent in December to leave rates currently at 2 per cent. This together with earlier cut in UK interest rates may have made the pound less appealing to investors compared to other currencies, also in terms of the risk premiums associated with holding sterling assets. Another factor for the relative strength of the dollar against the pound may have been due to the recent fall in oil prices with lower oil prices seen as less of a drag on US growth and therefore increased confidence in the US economy

being reflected in a stronger dollar. US and euro-zone growth prospects were further reinforced with the Federal Reserve and the European Central Bank both cutting their rates by 50 basis points to 1 per cent and 3.25 respectively in November 2008.

## OUTPUT

### Negative growth from contraction in services, construction and industrial output

GDP growth in 2008 quarter three was estimated to have fallen by 0.5 per cent, a deceleration from zero per cent growth in the previous quarter. On an annual basis growth was 0.3 per cent, down markedly from 1.5 per cent growth in the previous quarter.

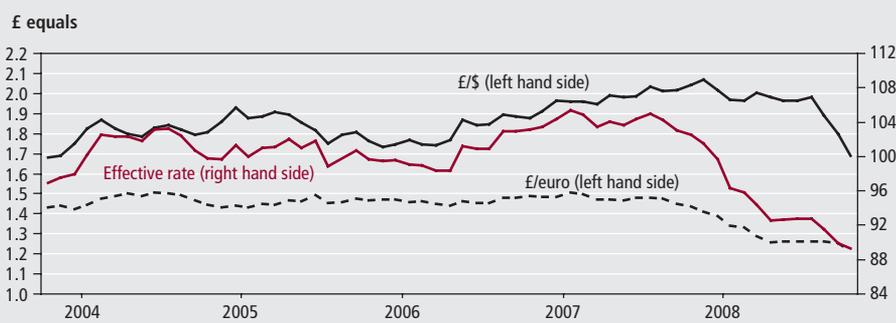
Construction activity weakened further in quarter three compared with the previous quarter. Construction output is estimated to have fallen by 0.7 per cent, following a fall of 0.5 per cent in the previous quarter. There were decreases in nearly all new work categories but the decline was driven primarily by falls in new private housing. Comparing the quarter on the same quarter a year ago, construction output slowed to growth of 0.8 per cent from 2 per cent growth in the previous quarter (Figure 3).

External surveys pointed to sharp declines in housing activity in quarter three – attributing this to a combination of a slowing housing market and lack of availability of debt finance. The CIPS/Markit UK construction PMI (Purchasing Managers Index) reported that total construction contracted at record pace in the third quarter to a headline balance of 38.7 from 42.9 in the second quarter. In October the index fell further to 35.1. The Royal Institute of Chartered Surveyors (RICS) construction survey for 2008 quarter three reported that construction workloads declined for the second successive quarter and at a faster pace – with the net balance falling to minus 38 from minus 19 in the previous quarter.

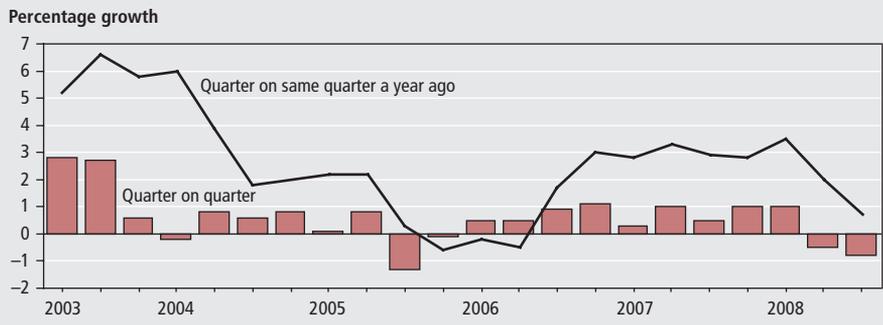
Total output from the production industries decelerated further in quarter three. Output fell by 1.1 per cent following a decrease of 0.7 per cent in quarter one. On an annual basis, output contracted by 2.1 per cent, compared to a contraction of 1.1 per cent in the previous quarter.

The weakness in total production was mainly driven by the deterioration in the output of the manufacturing industries. Manufacturing output fell by 1.3 per cent in

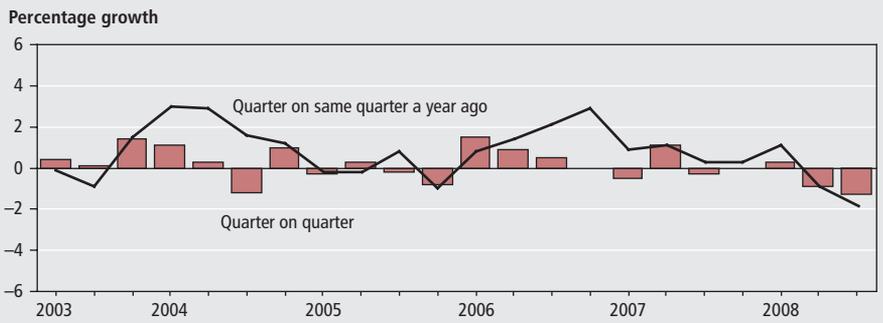
Figure 2  
Exchange rates



**Figure 3**  
**Construction output**



**Figure 4**  
**Manufacturing output**



the third quarter, a weakening from the 0.9 per cent contraction in the second quarter. On an annual basis, manufacturing output fell by 1.9 per cent, from a 0.9 per cent decrease in the second quarter (Figure 4).

The weakening in total production in quarter three compared with the previous quarter was also to a lesser extent driven by weakness in the output of the electricity, gas and water supply and mining and quarrying industries where output fell by 0.3 per cent and 0.6 per cent respectively. This compares with virtually flat growth recorded for both in the second quarter. On an annual basis, electricity, gas and water supply output registered stagnant growth following 2 per cent growth in the previous quarter. The output of the mining and quarrying industries contracted by 5.9 per cent, similar to the previous quarter.

Production growth has generally been weak in the last couple of years, mainly due to weakness in manufacturing for most of that period, and a contraction in mining and quarrying output, offset through some of this period by relatively strong electricity, gas and water supplies industry output. Manufacturing output has displayed volatility in the recent past. There was a modest pick up in manufacturing output in the first quarter of 2008 but this appears not to have been sustained in subsequent quarters.

The output of the agriculture, forestry

and fishing industries increased by 0.4 per cent in the latest quarter, unchanged from the previous quarter. On an annual basis growth was 2.6 per cent, up from 1.8 per cent growth in the previous quarter.

External surveys of manufacturing for 2008 quarter three showed a further deteriorating picture compared with the previous quarter with both weaker domestic and external demand cited as a major factors (Figure 5). In the past, it has not been unusual for the path of business indicators and official data to diverge over the short term. These differences happen partly because the series are not measuring exactly the same thing. External surveys measure the direction rather than the magnitude of a change in output and often inquire into expectations rather than actual activity.

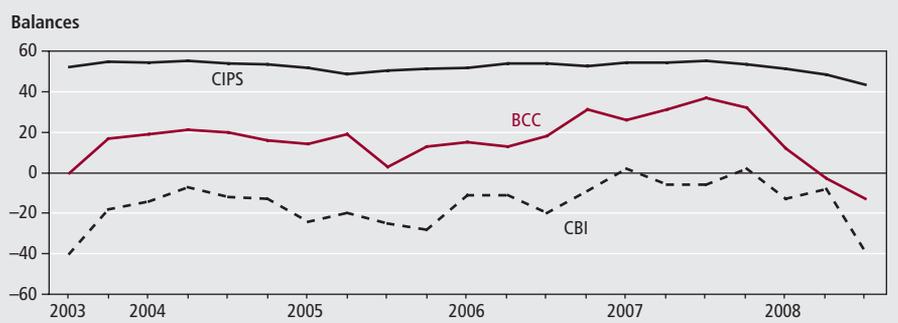
The CIPS/ Markit manufacturing PMI indicated a slight contraction in the latest quarter; the headline index fell further below the no change 50.0 mark to 43.5 from 48.5 in quarter two. In October 2008, the index was at 41.5. The CBI in its 2008 quarter three Industrial Trends survey reported a weakening in its total order books with the balance at minus 39 in the third quarter, compared with minus 8 in the second quarter. According to the October Survey, the total orders index stood at minus 39. The BCC in its 2008 quarter three survey reported alarming results with results pointing to the UK being in recession; the balances for home sales dropped by 10 points to minus 13 and the balance for home orders fell by 12 points to minus 17.

The service sector, the largest part of the UK economy, which has in the past driven UK economic expansion has made a negative contribution to growth in the latest quarter. Services output growth contracted in quarter three accelerating the slowdown of the earlier three quarters.

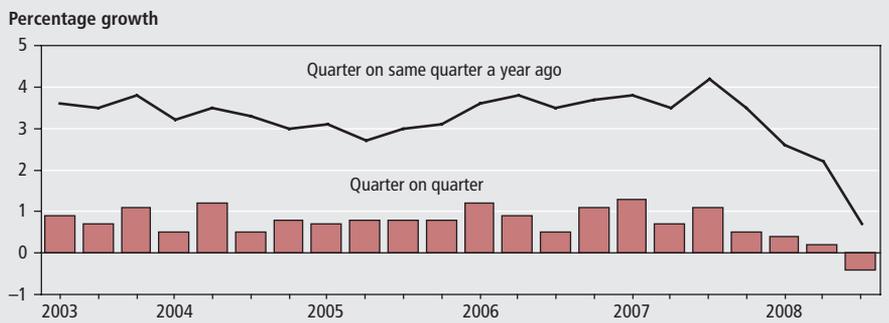
Services output declined by 0.4 per cent in 2008 quarter three, a deceleration from somewhat negligible growth of 0.2 per cent in the previous quarter but a marked slowdown from a recent high of 1.2 per cent recorded in 2007 quarter one (Figure 6). On an annual basis, services output expanded by 0.7 per cent, down from 2.2 per cent in the second quarter.

Declines in growth were recorded in most sectors. The largest contribution to the deceleration in services output in quarter three came from distribution, hotels and catering where output fell by 1.9 per cent following growth of 0.2 per cent in quarter two. On an annual basis, growth fell by 1.3 per cent following a rise of 1.2 per cent in the previous quarter. Output of the transport, storage and communication sector weakened with growth falling by 0.2 per cent after increasing by 1 per cent in quarter two. On an annual basis, growth

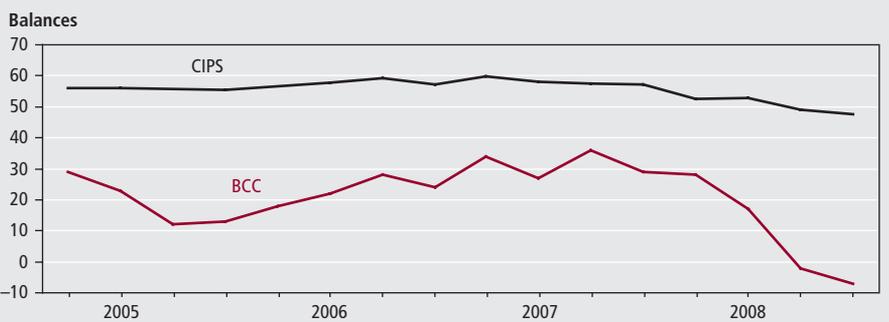
**Figure 5**  
**External manufacturing**



**Figure 6**  
**Services output**



**Figure 7**  
**External services**



rose by 1.6 per cent in quarter three, a slowdown from growth of 1.8 per cent in the previous quarter. Business services and finance output also decreased, by 0.4 per cent – the first decline since 2002 quarter one – from virtually flat growth in quarter two. On an annual basis, growth was 1 per cent, down significantly from 3.2 per cent growth in the second quarter. These decreases were offset by moderate growth in government and other services output of 0.5 per cent in quarter three, up from 0.2 per cent growth in the previous quarter. Growth was 1.3 per cent on the year, unchanged from quarter two.

The external surveys on services showed a bleak picture of service sector activity in 2008 quarter three. The CIPS/Markit services PMI survey pointed to a deteriorating picture of service sector activity. The average headline index in 2008 quarter three fell further to 47.5 from 49.1 in quarter two. In October 2008 the index fell further to 42.4. It should be noted that the CIPS survey has a narrow coverage of the distribution and government sectors.

The CBI and BCC also painted a generally weak picture of service sector activity (Figure 7). The latest CBI service sector survey in August reported that for consumer services, volume of business was broadly flat at plus 2 although an improvement from the minus 44 of the previous survey in June. In contrast,

volumes for business and professional services, deteriorated at a record pace with the balance reaching minus 31 from plus 10 in the previous survey. The BCC survey for 2008 quarter three recorded alarming declines. The net balance for home sales declined 5 points to minus 7 and the net balance for home orders dropped 6 points to minus 13.

#### EXPENDITURE

### Consumers' spending contracts

Household consumption expenditure contracted marginally further in quarter three compared with the previous quarter. Household spending fell by 0.2 per cent compared to a fall of 0.1 per cent in the previous quarter – but a marked

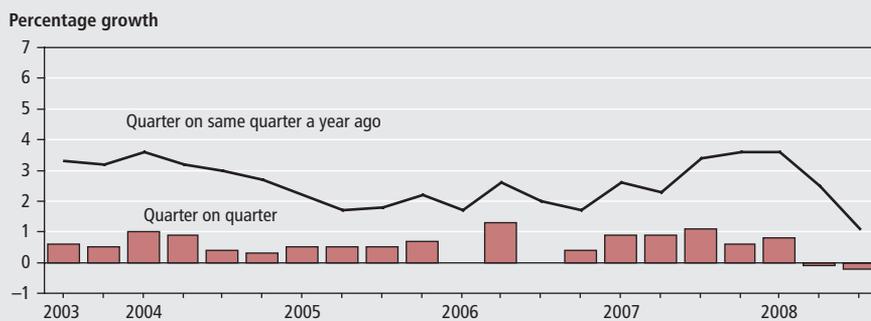
deceleration from 0.8 per cent growth seen in 2008 quarter one. Compared with the same quarter a year ago, growth slowed to 1.1 per cent, from 2.5 per cent in quarter two (Figure 8). Lower spending was primarily driven by a fall in durable and non-durable goods expenditure. This was offset by growth in semi-durable goods and services expenditure.

The continuing weakness in consumer expenditure in quarter three may mainly appear to reflect the continued impact of the financial turbulence and the credit crunch in the UK; coupled with pressures on real disposable income arising from modest wage growth and relatively high inflation. Weaker spending could also be a reflection of the looser labour market conditions and low level of consumer confidence in the UK economy.

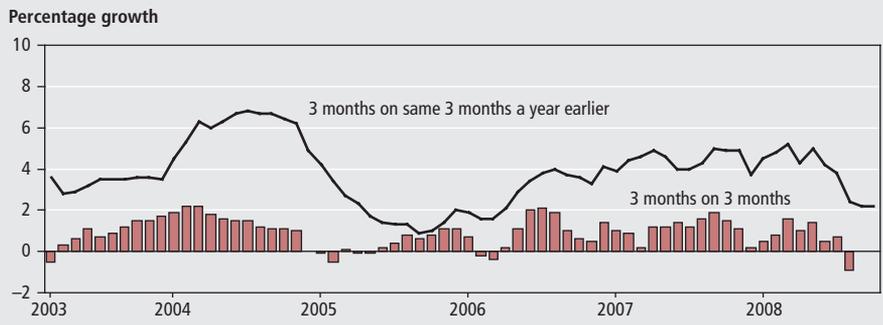
One key indicator of household expenditure is retail sales. Retail sales growth continued its slowdown in 2008 quarter three from the previous quarter with retail sales volume growing by a negligible 0.1 per cent, down from 0.5 per cent growth in quarter two. One reason perhaps for the slower growth in retail sales may have been due to the price deflator (that is, shop prices) where discounting appears not to be prevalent or widespread as was the case in quarter two. The price deflator rose on average by 1.2 per cent in quarter three compared with an average fall of 0.1 per cent in the previous quarter, further compounding the pressures on household disposable income.

Retail sales figures are published on a monthly basis and the latest available figures for October 2008 showed a stagnant picture (Figure 9). In the three months to October the volume of retail sales grew by zero per cent, similar to growth in the three months to September. On an annual basis in October, growth in the latest three months growth compared with the same three months a year ago was 2.2 per cent, unchanged from growth in September.

**Figure 8**  
**Household demand**



**Figure 9**  
**Retail sales**



Retail sales can be disaggregated into ‘predominantly food’ and ‘predominantly non-food’ sectors. In the three months to October 2008, the flat growth in retail sales was mainly driven by a slowdown in ‘predominantly non-food stores’ offset by a lower rate of contraction in ‘predominantly food stores’.

The ‘predominantly non-food stores’ sector showed stagnant growth in the three months to October compared with 0.4 per cent growth in the three months to September. The deceleration was driven by a decrease in ‘household good stores’ where growth fell by 1.3 per cent. Growth in ‘predominantly food stores’ fell by 0.7 per cent in October compared with a fall of 1 per cent in the three months to September.

It should be noted that household consumption accounts for a much broader range of spending than just retail sales. For instance, household purchases of services, motor vehicles and housing (imputed rents) are not included in retail sales. Since the beginning of 2006 quarter two, retail sales generally have grown faster than household consumption as a whole. However, the gap appears to have narrowed in 2008 quarter two and may conceivably be minimal in quarter three.

External surveys for retail sales presented a deteriorating picture of growth in 2008 quarter three compared to the previous quarter. The CBI reported an average balance of minus 32 in the latest quarter, from minus 16 in the previous quarter. According to the monthly distributive survey, the sales volume balance was at minus 27 in October. The BRC reported average growth of 1.4 per cent in 2008 quarter three, down from 2.6 per cent in 2008 quarter two on a total sales basis (Figure 10). In October the BRC reported total sales as flat.

Another indicator of household consumption expenditure is borrowing. Household consumption has risen faster than disposable income in recent years

as the household sector has become a considerable net borrower and therefore accumulated high debt levels. Bank of England data on stocks of household debt outstanding to banks and building societies shows household debt at unprecedented levels relative to disposable income. Until recently, this borrowing has fuelled consumption, but indicators appear to suggest this to be less so in the latest two quarters.

There are two channels of borrowing available to households: i) secured lending, usually on homes; and ii) unsecured lending, for example on credit cards. The impact of the credit squeeze continued to have a substantial impact in quarter three. According to the Bank of England’s Credit Conditions Survey, lending conditions were tightened further in quarter three, that is, by applying stringent credit-scoring criteria and by decreasing maximum loan-to-value (LTV) ratios – with lenders reporting that they had reduced the availability of both secured and unsecured lending to households. The tightening was driven by concerns about the economic outlook and falling collateral values.

Another indicator highlighting the downside risks to consumer expenditure is described by Bank of England lending figures. There were signs of further slowdown with total lending growing by approximately £7 billion in the third

quarter, down from around £16 billion in the second quarter. Over the same period, lending secured on dwellings fell to around £5 billion from around £12 billion in the second quarter. Unsecured lending grew roughly by £2 billion, down from £3 billion in the second quarter.

The slowdown in secured lending may have impacted on house prices in terms of lower growth. Nationwide and Halifax both reported house prices falling in quarter three by around 5 per cent, broadly unchanged from the previous quarter. The housing market plays a major influence on consumer expenditure patterns. Firstly, as a barometer of confidence in the economy and therefore a willingness to spend; secondly, in terms of demand it creates for household goods via house purchases; and thirdly, household expenditure may be linked to household equity withdrawal (HEW) – slower house price growth can signify lower equity growth and therefore decreasing purchasing power. The recent slowdown in house prices and the housing market generally may have affected all three of the above, compounded by the credit squeeze, rising unemployment and lower household income.

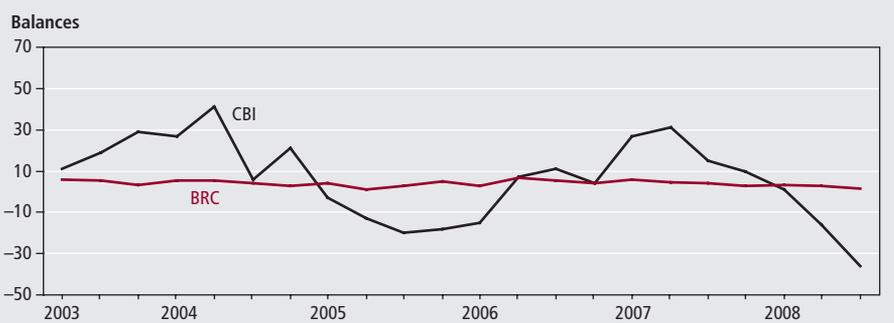
**BUSINESS DEMAND**

**Business investment continues to be weak**

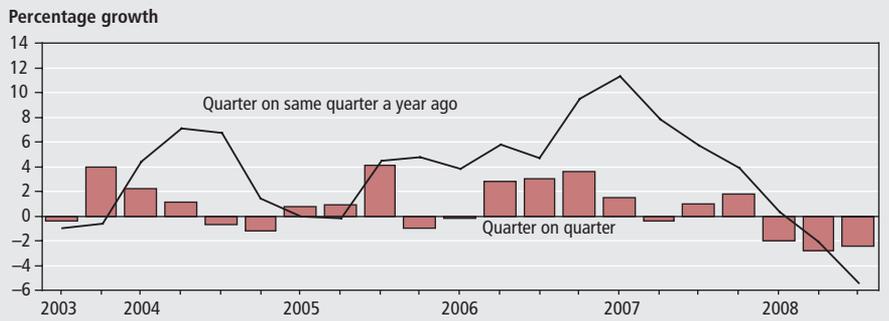
Total investment fell by 2.4 per cent in 2008 quarter three compared with a fall of 2.8 per cent in the previous quarter. On an annual basis, total investment fell by 5.4 per cent, a deeper contraction compared with the 2.1 per cent fall in quarter two. The decrease in total investment was due to both business and dwelling investment falling over the quarter (Figure 11).

Business investment continued to contract in the latest quarter, although it showed signs of improvement compared to

**Figure 10**  
**External retailing**



**Figure 11**  
**Total fixed investment**



the previous quarter. Business investment decreased by 0.2 per cent in the latest quarter, compared with a 1 per cent contraction in quarter two. On an annual basis, business investment fell by 0.5 per cent, reversing growth of 1.2 per cent in quarter two.

Business investment could have remained weak for a number of reasons. Firstly, increased uncertainty and pessimism in regards to global and domestic demand, may have deterred investment; secondly, the downturn in investment could have come on the back of lower corporate profits; thirdly, the weakness in the equity market in recent quarters may have constrained revenue generation and hence investment; and last but not least, the general weakness in the property market in terms of lower price growth may have inhibited investment spending.

Evidence on investment intentions from the latest BCC and CBI surveys painted a picture of weakness. According to the latest quarterly BCC survey, the balance of manufacturing firms planning to increase investment in plant and machinery dropped by 6 points to minus 4. The CBI's Quarterly Industrial Survey in 2008 quarter three also reported a bleaker investment picture, with the investment balance of plant and machinery weakening to minus 38 from minus 24 in the previous quarter.

#### GOVERNMENT DEMAND

### Government expenditure strengthens

Government final consumption expenditure increased in 2008 quarter three. Growth rose by 1 per cent, up from 0.5 per cent in quarter two. On an annual basis, government expenditure expanded by 2.7 per cent, up from 2.1 per cent in quarter two (Figure 12).

### Public sector finances deteriorate

The latest figures on the public sector finances to October 2008 illustrated a weakening position. The figures showed a higher current budget deficit together with an increased net borrowing situation – reflecting government expenditure continuing to exceed tax revenues. In the financial year 2008/09 to date, the current budget was in deficit by £23.3 billion; this compares with a budget deficit of £9.5 billion in the same period of 2007/08. Public sector net borrowing in the financial year 2008/09 to date was £37.0 billion; this compares with net borrowing of £20.1 billion in the same period of 2007/08. Slower growths in current receipts were exceeded by a larger increase in the rate of

current expenditure, particularly on capital projects – resulting in both a higher budget deficit and net borrowing.

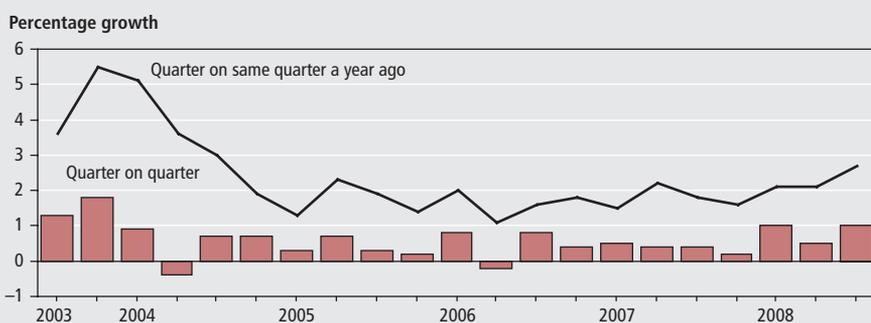
Since net borrowing became positive in 2002, following the current budget moving from surplus into deficit, net debt as a proportion of annual GDP has risen steadily. Public sector net debt in October 2008 was 42.9 per cent of GDP, slightly up from 42.6 per cent in October 2007. In the full financial year 2007/08, net debt as a percentage of GDP was 42.8 per cent.

#### TRADE AND THE BALANCE OF PAYMENTS

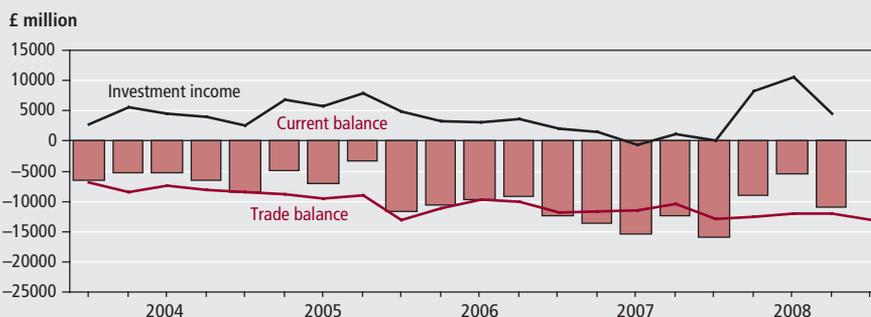
### Current account deficit widens; goods trade deficit widens in quarter three

The publication of the latest quarterly Balance of Payments figures shows that the current account deficit widened in 2008 quarter two to £11.0 billion, from a revised deficit of £5.5 billion in the previous quarter (Figure 13). As a proportion of GDP, the deficit increased to 3 per cent of GDP from 1.5 per cent in 2008 quarter one. The widening in the current account deficit in 2008 quarter two was due to a lower surplus on income, partially offset by a fall in the deficit in current transfers. The surplus on income decreased by £6.0 billion to £4.5 billion and the deficit

**Figure 12**  
**Government spending**



**Figure 13**  
**Balance of payments**



in current transfers fell by £0.4 billion to £3.5 billion. The lower surplus on income was mainly due to higher interest payments from UK securities dealers combined with lower losses recorded by foreign banks with UK operations.

The run of current account deficits since 1998 reflects the sustained deterioration in the trade balance. The UK has traditionally run a surplus on the trade in services, complemented by a surplus in investment income, but this has been more than offset by the growing deficit in trade in goods partly due to the UK's appetite for cheaper imports.

The figures in 2008 quarter three showed a continuation in the goods trade deficit. In the third quarter, the deficit on trade in goods and services widened to £13.1 billion, from a £12 billion deficit in the previous quarter. Over the quarter in terms of growth, total exports fell by 0.3 per cent while total imports increased by 0.1 per cent. Exports of goods grew by 0.3 per cent while goods imports rose by 0.6 per cent. Services exports fell by 1.2 per cent and services imports decreased by 1.3 per cent.

External surveys on exports reported a weakening picture in quarter three. The BCC reported that the export sales net balance dropped 25 points to plus 3. The CBI quarterly survey reported the order books balance at minus 32. In the monthly Industrial Trends Survey in October the balance was still at minus 32.

## LABOUR MARKET

### Labour market activity slowdown accelerates

The labour market in the latest reference period showed further signs of deterioration. In recent months there has been a broader weakening in indicators of the labour market suggesting the lagged effect of the slowdown in the economy which began in the fourth quarter of 2007 and which has markedly deteriorated in subsequent quarters beginning to make a deeper negative impact on labour market activity.

The latest figures from the Labour Force Survey (LFS) pertain to the three-month period up to September 2008. Most indicators appear on the downside. There was a fall in both the number of people in employment and the employment rate. The number of unemployed people and the unemployment rate increased. The number of inactive people of working age increased but the inactivity rate was unchanged. Vacancies fell. Growth in average earnings

(excluding bonuses) was unchanged but average earning (including bonuses) fell; overall, average earnings remain subdued with weak real-wage growth.

Near record levels of employment continue despite the sharp fall in employment in the current period, compared with the previous quarter. The number of people in employment decreased by 99,000 in the three months to September but rose 134,000 on a year earlier. The current working-age employment rate was 74.4 per cent in the three months to September 2008, down 0.4 percentage points from the three months to June 2008 and down 0.2 percentage points from a year earlier – leaving the employment level at 29.41 million. Unemployment levels on the other hand rose and for the seventh month in a row. The number of unemployed people increased by 140,000 in the three months to September 2008 and up 182,000 from a year earlier, leaving the unemployment level at 1.82 million. The unemployment rate also rose, to 5.8 per cent in the three months to September 2008, up 0.4 percentage points from the three months to June 2008 and up from 0.5 percentage points a year earlier (Figure 14).

Looking at a detailed level, the decrease in the employment level was mainly driven by self-employment and to a lesser extent by employees. The self-employed decreased by 44,000 while employees fell by 33,000. In terms of full and part-time workers, the numbers of people in full-time employment fell by 106,000 while the number of people in part-time employment increased by 7,000.

### Workforce jobs increases

According to employer surveys' there were 31.68 million workforce jobs in June 2008, up 26,000 over the quarter and up 142,000 on a year earlier. The largest quarterly contribution to the increase came from education, health and public admin (up 27,000), followed by agriculture, forestry

and fishing (up 15,000). This was offset by decreases across a number of sectors with the largest decrease in distribution, hotels and restaurants (down 11,000) followed by manufacturing (down 10,000). The largest contribution to the increase over the year came from education, health and public administration (up 43,000) followed by finance and business services (up, 40,000), partially offset by manufacturing (down 47,000).

### Claimant count increases further

The claimant count measures the number of people claiming the Jobseeker's Allowance. The latest figures for October 2008 showed the claimant count level rose by 36,500 – the ninth consecutive monthly increase. On a year earlier the claimant count level increased by 154,800 to reach a level of 980,900. The claimant count rate in October 2008 was 3.0 per cent, up 0.1 percentage point from the previous month and up 0.5 percentage points from a year earlier.

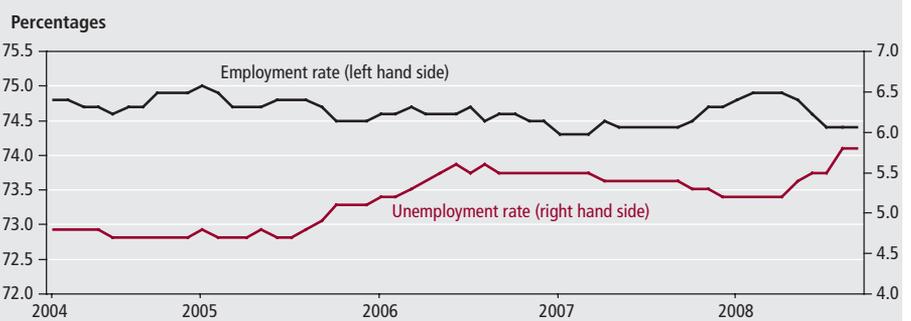
### Vacancies continue to fall

The number of vacancies fell further compared to the previous quarter reflecting weakening demand conditions in the UK economy. Job vacancies fell by 40,000 from the three months to July 2008 and were down 83,000 from a year earlier reaching a level of 589,000 vacancies in the three months to October 2008.

### Inactivity level increases

In level terms, the number of economically inactive people of working age increased by 15,000 over the quarter but fell by 54,000 over the year to reach 7.89 million in the three months to September 2008. The largest rise in level of inactivity was recorded for those categorised as

Figure 14  
Employment and unemployment



'long-term sick' (up 63,000) followed by the 'student' category (up 26,000). This was partially offset by a number of decreases, with the largest fall in inactivity amongst those categorised as 'looking after family/home' (down 46,000). The working-age inactivity rate was 20.9 per cent in the three months to September 2008, unchanged on the three months to June 2008 but down 0.2 percentage points from a year earlier

## Average earnings growth subdued

Growth in whole-economy average earnings showed a relatively muted picture in the three months to September 2008. Average earnings (including bonuses) increased by 3.3 per cent, down 0.1 percentage point from the previous month. Average earnings (excluding bonuses) rose by 3.6 per cent, unchanged from the previous period. Public and private sector earnings grew modestly in the latest month. In terms of the public and private sector split, the gap in average earnings (excluding bonuses) widened in the latest month. Public sector earnings growth was 3.9 per cent, up 0.2 percentage points from the previous month. Private sector earnings were unchanged from the previous month, growing by 3.6 per cent.

Overall, the numbers still point to a fairly buoyant labour market, with employment at high levels and unemployment at a fairly stable level. However, the slowing economy is starting to show a deeper turning point in labour market activity, particularly in terms of declining employment growth and larger increases in unemployment levels. Average earnings show stable but fairly modest growth, consistent with softening in labour market activity and increase in supply in the labour force.

### PRICES

## Producer output and input price pressures persist in quarter three but shows signs of easing in quarter four

Industrial input and output prices are an indication of inflationary pressures in the economy. During the third quarter of 2008, output and input prices continued to remain elevated and broadly unchanged from the second quarter – a sign that the rise in world

commodity prices was continuing to exert considerable influence in generating UK inflation through higher product prices. In the latest quarter, there appeared signs of easing in input price growth compared to marginally faster growth in output price inflation – which possibly suggests that firms were intent on maintaining their profit margins by passing on the relatively high input costs to customers.

Input prices on average rose by 28.2 per cent in 2008 quarter three. This compares with 29.8 per cent in 2008 quarter two. On the core measure, which strips out the effect of food, beverages, tobacco and petroleum prices, input prices on average rose by 20.7 per cent in 2008 quarter three (12 month non-seasonally adjusted growth), an acceleration from growth of 18.8 per cent in the previous quarter. The strength in input prices continued to be generated mainly by fuel and imported food materials prices which rose on average by 40 per cent and 25 per cent respectively in quarter three. According to the latest monthly figures, input prices rose by 13.8 per cent in the twelve months to October 2008, a slow-down from 24 per cent growth in September. Growth was mainly driven by a 23.8 per cent increase in imported food material prices and a 24 per cent rise in fuel prices.

Output prices grew on average by 9.2 per cent in 2008 quarter three, a marginal increase from growth of 8.8 per cent in the previous quarter. The underlying picture also suggests inflationary pressures. On the core measure which excludes food, beverages, tobacco and petroleum, producer output prices rose by 5.7 per cent in 2008 quarter three, up from 5.2 per cent in the previous quarter. The main contributions to the increase in output prices were provided by rises in petroleum products and food prices which grew on average by 31.2 per cent and 13.2 per cent respectively

in quarter three. According to the latest figures, output prices rose by 6.8 per cent in the twelve months to October, an easing from 8.5 per cent growth in September. Growth was driven mainly by a 15.2 per cent increase in petroleum products prices.

## Consumer prices fall but still above target

Growth in the consumer prices index (CPI) – the Government's target measure of inflation – fell in October to 4.5 per cent, down from 5.2 per cent in September but still considerably above the Government's 2 per cent inflation target (Figure 15).

The largest downward pressure on the CPI annual rate came from transport costs where the price of fuels and lubricants fell this year but rose last year. The decrease this year was triggered by a sharp fall in the price of crude oil. The average price of petrol fell by 7.1 pence per litre between September and October this year, to stand at 104.5 pence, compared with a rise of 2.7 pence last year. Diesel prices fell by 7.0 pence per litre this year, to stand at 116.3 pence. There was also a fall in the price of both air transport and sea transport. The effect from air fares came mainly from the cost of European flights.

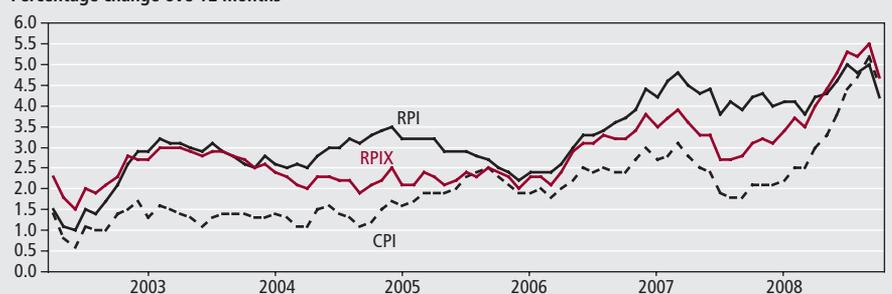
There was another large downward contribution from food and non-alcoholic beverages. The effect came largely from the price of meat, which fell this year compared with a rise last year. Prices fell for a range of pork products and beef prices fell, with discounting in supermarkets. There was a small downward effect from biscuits and a partially offsetting upward effect from the price of milk.

There were further large downward contributions from:

- recreation and culture, where the effect came mainly from pre-recorded DVDs and computer games

Figure 15  
Inflation

Percentage change over 12 months



- miscellaneous goods and services where, overall, bank charges decreased and home delivery charges rose by less than last year
- education services where the upward effect from increased tuition fees is less than the previous year

Retail Prices Index (RPI) inflation slowed to 4.2 per cent in October, down from 5.0 per cent in September. The main factors affecting the CPI also affected the RPI.

Additionally, there was a large downward contribution from housing with the main effect coming from house depreciation, which is excluded from the CPI.

RPIX inflation – the all items RPI excluding mortgage interest payments – was 4.7 per cent in October, down from 5.5 per cent in September.

# Independent forecasts

## November 2008

### 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 2008 and 2009 and are extracted from HM Treasury's Forecasts for the UK Economy.

#### 2008

	Average	Lowest	Highest
GDP growth (per cent)	0.9	0.7	1.1
Inflation rate (Q4, per cent)			
CPI	4.5	3.7	5.0
RPI	4.2	3.1	5.5
Claimant count (Q4, million)	1.01	0.93	1.10
Current account (£ billion)	-39.0	-57.0	-21.4
Public Sector Net Borrowing (2007-08, £ billion)	64.6	52.0	90.0

#### 2009

	Average	Lowest	Highest
GDP growth (per cent)	-0.9	-2.1	0.4
Inflation rate (Q4, per cent)			
CPI	1.7	0.7	2.6
RPI	1.2	-0.2	2.8
Claimant count (Q4, million)	1.44	1.10	2.20
Current account (£ billion)	-38.0	-72.9	-15.4
Public Sector Net Borrowing (2009-10, £ billion)	87.9	52.0	120.0

#### Notes

Forecast for the UK economy gives more detailed forecasts, and is published monthly by HM Treasury. It is available on the Treasury's website at: [www.hm-treasury.gov.uk/economic\\_data\\_and\\_tools/data\\_index.cfm](http://www.hm-treasury.gov.uk/economic_data_and_tools/data_index.cfm)

### Selected world forecasts

The tables below supplement the Economic Review by providing a forward-looking view of the world economy. The tables show forecasts for a range of economic indicators taken from *Economic Outlook* (June 2008), published by OECD (Organisation for Economic Co-operation and Development).

#### 2008

	US	Japan	Euro area	Total OECD
Real GDP growth (per cent)	1.2	1.7	1.7	1.8
Consumer price (percentage change from previous year)	3.2	0.9	3.4	3.0
Unemployment rate (per cent of the labour force)	5.4	3.8	7.2	5.7
Current account (as a percentage of GDP)	-5.0	4.4	0.1	-1.3
Fiscal balance (as a percentage of GDP)	-5.2	-1.6	-1.0	-2.8

#### 2009

	US	Japan	Euro area	Total OECD
Real GDP growth (per cent)	1.1	1.5	1.4	1.7
Consumer price (percentage change from previous year)	2.0	0.4	2.4	2.1
Unemployment rate (per cent of the labour force)	6.1	3.8	7.4	6.0
Current account (as a percentage of GDP)	-4.4	4.4	0.0	-1.1
Fiscal balance (as a percentage of GDP)	-4.4	-2.5	-0.8	-2.5

#### 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	2006	2007	2008 Q1	2008 Q2	2008 Q3	2008 Aug	2008 Sep	2008 Oct
<b>GDP growth – chained volume measures (CVM)</b>									
Gross domestic product at market prices	ABMI	2.8	3.0	0.3	0.0	-0.5	..	..	..
<b>Output growth – chained volume measures (CVM)</b>									
Gross value added (GVA) at basic prices	ABMM	2.9	3.0	0.3	0.0	-0.5	..	..	..
Industrial production	CKYW	0.7	0.4	-0.5	-0.7	-1.1	-0.7	-0.2	..
Manufacturing	CKYY	1.8	0.7	0.3	-0.9	-1.3	-0.6	-0.8	..
Construction	GDQB	1.0	2.9	1.0	-0.5	-0.8	..	..	..
Services	GDQS	3.7	3.7	0.4	0.2	-0.3	..	..	..
Oil and gas extraction	CKZO	-8.9	-2.5	-3.6	-0.1	-0.4	-0.6	9.3	..
Electricity, gas and water supply	CKYZ	-0.6	1.2	-2.1	-0.1	-0.4	-1.3	-1.5	..
Business services and finance	GDQN	5.9	5.9	0.6	0.2	-0.4	..	..	..
<b>Household demand</b>									
Retail sales volume growth	EAPS	3.2	4.3	1.5	0.5	0.0	1.1	-0.6	-0.1
Household final consumption expenditure growth (CVM)	ABJR	2.0	3.0	0.8	-0.1	-0.2	..	..	..
GB new registrations of cars (thousands) <sup>1</sup>	BCGT	2,340	2,390	675	557	542	63	329	128
<b>Labour market<sup>2,3</sup></b>									
Employment: 16 and over (thousands)	MGRZ	29,030	29,222	29,499	29,505	29,407	29,407	..	..
Employment rate: working age (%)	MGSU	74.6	74.6	74.8	74.7	74.4	74.4	..	..
Workforce jobs (thousands)	DYDC	31,294	31,536	31,652	31,678	..	..	..	..
Total actual weekly hours of work: all workers (millions)	YBUS	928.5	936.6	948.1	939.9	940.9	940.9	..	..
Unemployment: 16 and over (thousands)	MGSC	1,669	1,653	1,624	1,685	1,825	1,825	..	..
Unemployment rate: 16 and over (%)	MGSX	5.4	5.3	5.2	5.4	5.8	5.8	..	..
Claimant count (thousands)	BCJD	944.7	863.3	796.5	826.5	908.3	908.1	944.4	980.9
Economically active: 16 and over (thousands)	MGSF	30,698	30,875	31,123	31,190	31,232	31,232	..	..
Economic activity rate: working age (%)	MGSO	78.9	78.9	79.1	79.1	79.1	79.1	..	..
Economically inactive: working age (thousands)	YBSN	7,859	7,940	7,871	7,872	7,887	7,887	..	..
Economic inactivity rate: working age (%)	YBTL	21.0	21.1	20.9	20.9	20.9	20.9	..	..
Vacancies (thousands)	AP2Y	597	658	687	649	605	613	605	589
Redundancies (thousands)	BEAO	138	127	111	127	156	156	..	..
<b>Productivity and earnings annual growth</b>									
GB average earnings (including bonuses) <sup>3</sup>	LNNC	..	..	4.0	3.5	3.3	3.4	3.3	..
GB average earnings (excluding bonuses) <sup>3</sup>	JQDY	..	..	3.8	3.7	3.6	3.6	3.6	..
Whole economy productivity (output per worker)	A4YN	..	..	0.7	0.2	..	..	..	..
Manufacturing productivity (output per job)	LOUV	..	..	..	..	..	0.2	0.2	..
Unit wage costs: whole economy	LOJE	..	..	1.8	2.4	..	..	..	..
Unit wage costs: manufacturing	LOJF	..	..	..	..	..	2.6	2.7	..
<b>Business demand</b>									
Business investment growth (CVM)	NPEL	-7.2	9.8	-1.9	-1.0	-0.2	..	..	..
<b>Government demand</b>									
Government final consumption expenditure growth	NMRY	1.6	1.8	1.0	0.5	1.0	..	..	..
<b>Prices (12-monthly percentage change – except oil prices)<sup>1</sup></b>									
Consumer prices index	D7G7	2.3	2.3	2.4	3.4	4.8	4.7	5.2	4.5
Retail prices index	CZBH	3.2	4.3	4.0	4.4	5.0	4.8	5.0	4.2
Retail prices index (excluding mortgage interest payments)	CDKQ	2.9	3.2	3.5	4.4	5.3	5.2	5.5	4.7
Producer output prices (excluding FBTP) <sup>4,5</sup>	PLLV	1.8	1.9	2.9	5.2	5.8	5.6	5.5	4.9
Producer input prices <sup>5</sup>	RNNK	9.5	3.0	20.7	29.9	28.1	29.0	24.0	13.8
Oil price: sterling (£ per barrel)	ETXR	35.93	36.11	48.72	62.35	61.64	61.11	56.15	43.45
Oil price: dollars (\$ per barrel)	ETXQ	66.11	72.44	96.47	122.87	116.89	115.23	100.92	73.68

	Source CDID	Seasonally adjusted unless otherwise stated							
		2006	2007	2008 Q1	2008 Q2	2008 Q3	2008 Aug	2008 Sep	2008 Oct
<b>Financial markets<sup>1</sup></b>									
Sterling ERI (January 2005=100)	BK67	101.2	103.5	95.6	92.9	91.6	91.6	89.9	89.3
Average exchange rate /US\$	AUSS	1.8429	2.0018	1.9789	1.9705	1.8918	1.8889	1.7986	1.6900
Average exchange rate /Euro	THAP	1.4670	1.4619	1.3212	1.2615	1.2586	1.2614	1.2531	1.2718
Three-month inter-bank rate	HSAJ	5.26	5.95	5.95	5.88	6.15	5.70	6.15	5.85
Selected retail banks: base rate	ZCMG						5.00	5.00	3.00
Three-month interest rate on US Treasury bills	LUST	4.89	3.29	1.36	1.87	0.90	1.69	0.90	..
<b>Trade and the balance of payments</b>									
UK balance on trade in goods (£m)	BOKI	-76,312	-89,252	-23,197	-23,140	-23,713	-8,026	-7,482	..
Exports of services (£m)	IKBB	132,749	147,634	39,828	40,065	40,187	12,977	12,963	..
Non-EU balance on trade in goods (£m)	LGDT	-44,921	-47,788	-12,361	-13,165	-14,522	-5,236	-4,508	..
Non-EU exports of goods (excl oil & erratics) <sup>6</sup>	SHDJ	118.0	116.5	125.7	127.8	125.8	122.2	122.9	..
Non-EU imports of goods (excl oil & erratics) <sup>6</sup>	SHED	124.4	131.6	133.0	132.4	133.4	136.9	129.0	..
Non-EU import and price index (excl oil) <sup>6</sup>	LKWQ	103.9	104.2	109.9	113.4	115.7	115.5	118.0	..
Non-EU export and price index (excl oil) <sup>6</sup>	LKVX	101.5	102.5	106.4	108.1	109.8	109.9	111.3	..
<b>Monetary conditions/government finances</b>									
Narrow money: notes and coin (year on year percentage growth) <sup>7</sup>	VQUU	5.1	5.8	6.7	5.7	5.1	5.1	5.1	5.9
M4 (year on year percentage growth)	VQJW	13.0	12.7	11.7	11.4	12.2	11.3	12.2	15.3
Public sector net borrowing (£m)	-ANNX	30,411	36,575	-2,114	22,743	12,889	9,699	7,913	1,382
Net lending to consumers (£m)	RLMH	13,267	13,197	4,151	3,235	2,366	1,126	345	844

## External indicators – non-ONS statistics

		2008 Apr	2008 May	2008 Jun	2008 Jul	2008 Aug	2008 Sep	2008 Oct	2008 Nov
<b>Activity and expectations</b>									
CBI output expectations balance <sup>1</sup>	ETCU	0	0	2	-7	-13	-16	-31	-42
CBI optimism balance <sup>1</sup>	ETBV	-23			-40			-60	
CBI price expectations balance	ETDQ	23	29	29	39	31	27	12	..

### 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.

## FEATURE

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Office for National Statistics

# The distribution of household income 1977 to 2006/07

## SUMMARY

This article describes how the distribution of household income in the UK has changed over the last 30 years. It draws mainly on data published each year in the Office for National Statistics' (ONS) annual analysis 'The effects of taxes and benefits on household income' which is also known as the Redistribution of Income (ROI) analysis. Whereas the annual ROI article focuses primarily on the latest year's data, this article provides a more detailed analysis of the way in which the income distribution has changed over time. A companion article 'The redistribution of household income 1977 to 2006/07' focuses on changes in the way that the tax and benefit systems redistributed income, and how this affected the income distribution. This second article is available on the ONS website at: [www.statistics.gov.uk/cci/article.asp?id=2083](http://www.statistics.gov.uk/cci/article.asp?id=2083) and will be appearing in the January 2009 edition of *Economic & Labour Market Review*.

The 30 years between 1977 and 2007 can be subdivided almost exactly into two halves: a period of substantial change to the income distribution (1977 to 1991), and a period of relative stability (1992 to 2007). Those changes which did take place in the latter of these two periods should be understood in the context of the more substantial changes which took place in the earlier period. The changes which took place between 1977 and 1991 are of continued relevance, since the current income distribution is, to a large extent, the product of those years.

During the 1980s there was a substantial increase in income inequality caused by increased inequality in the distribution of income from wages and salaries. Between 1977 and 1991 the share of total disposable income received by the top fifth of households (or quintile group) increased from 36 to 42 per cent. The shares received by each of the lower three quintile groups fell, in the case of the bottom quintile group from 10 to 7 per cent.

In comparison, the changes which took place between 1992 and 2006/07 were much smaller, with relatively little overall change in the income shares of each quintile group over this period. Income inequality narrowed slightly in the early 1990s, widening again in the late 1990s. It narrowed again between 2001/02 and 2004/05, only to widen once more between 2004/05 and 2006/07.

Between 1977 and 1996/97 the proportion of retired households in the bottom income quintile group decreased,

while the proportion of children living in households in the bottom quintile group increased. From 1996/97 to 2006/07 the proportion of retired households in the bottom quintile group remained largely unchanged, and there was some decline in the proportion of children in the bottom quintile group.

There was a large increase in income inequality among both retired and non-retired households during the 1980s. Between 1990 and 2006/07 there were periods of rising and falling inequality for both groups. However, whereas the level of inequality among non-retired households in 2006/07, was very similar to the level in 1990, among retired households there was a small reduction in inequality over this period.

## The Redistribution of Income (ROI) analysis

Most of the data presented here are drawn from the ONS's analysis 'The effects of taxes and benefits on household income', which is also known as the Redistribution of Income (ROI) analysis. The ROI is published annually in *Economic & Labour Market Review*, and previously in *Economic Trends*. It presents an analysis of the income distribution which is focused particularly on the way in which government intervention, through taxes and benefits, redistributes income among households.

The ROI analysis uses household income and expenditure data collected through the Expenditure and Food Survey (EFS) (or the Family Expenditure Survey (FES)

before 2001/02). It has employed a broadly consistent methodology since 1987 and, by recalculating estimates for the period between 1977 and 1986, a consistent dataset has been produced to allow analysis of changes to the distribution and redistribution of household income over the last 30 years. The estimates presented here are for calendar years up until 1992, and for financial years from 1993/94 onwards.

The income distribution in the ROI analysis is based on a ranking of households by equivalised disposable household income. Disposable income includes income from employment and self-employment, state benefits, occupational pensions and investment income less payments of income tax, national insurance contributions and council tax. Incomes are equivalised to adjust for differences in household size and composition. The ROI uses the McClements scale (see Jones 2008). Estimates presented in the annual ROI analysis are in current prices, although here, where the main focus is on change over time, income estimates are adjusted to remove the effects of inflation using the implied deflator for Household Final Consumption Expenditure from the UK National Accounts.

### Households Below Average Income (HBAI)

There is some overlap between results presented here and the Households Below Average Income (HBAI) statistics produced by the Department for Work and Pensions (DWP). Since 1994/95, HBAI has been based on the Family Resources Survey (FRS) (for years before 1994/95, it too was based on the FES). The HBAI and ROI analyses provide complementary statistics on the income distribution. The ROI concentrates on redistribution through taxes and benefits, while HBAI focuses more on individuals in low income households. Due to the larger sample size of the FRS, the HBAI measures of the income distribution tend to be regarded as definitive. Nevertheless, the ROI's detailed breakdown of taxes, benefits and other income sources provides additional insights which make it possible to explain changes to the income distribution.

In the first section of this article, which summarises changes to the income distribution, some key results from the ROI analysis are shown alongside the closest equivalent HBAI series for comparison. The intention of the comparison is to show that the main messages from the two data sources are broadly consistent, rather than

to focus on what relatively small differences there might be.

The HBAI series used for comparison comprise data published by the DWP for the years from 1994/95 onwards, and data provided by the Institute for Fiscal Studies (IFS) for the years before 1994/95. The IFS data for these years are based on the FES but were calculated using a methodology similar to HBAI. The series are all BHC (before housing costs).

In addition to being based on different surveys (at least since 1994/95) there are some further methodological differences between the ROI and HBAI. One of the most important is that for the ROI the unit of analysis is the household, while for HBAI the primary unit of analysis is the person. So the income distribution appearing in HBAI is not, like in the ROI, a distribution of households, but rather a distribution of people according to the income of the household in which they live. HBAI also uses a different equivalence scale, the modified OECD scale, and for years before 2002/03 estimates are for Great Britain rather than the UK.

Both the ROI and HBAI (at least the main HBAI results) are based on repeated cross-sectional surveys rather than a panel or longitudinal survey. They show how the income distribution, and its structure, changes over time, not how the incomes of individual households change over time.

The following sections of the article describe how the distribution of household income in the UK changed over the last 30 years. They look at inequality of household income, and the way in which different sources of income contributed to changes in the income distribution. They also show where different types of households are concentrated in the income distribution, and how their positions have changed

over time. The article looks separately at incomes and inequality among retired and non-retired households. All of the results presented here are based on data from the ROI analysis unless otherwise stated.

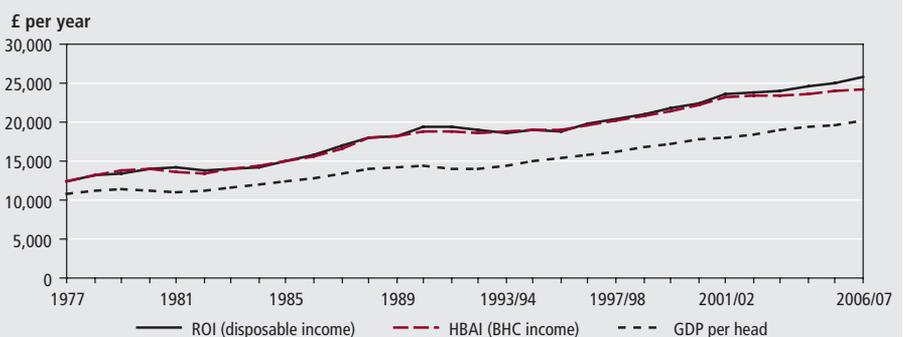
### The distribution of household income

Average household disposable income, adjusted for inflation, doubled over the period between 1977 and 2006/07 (Figure 1). However, this growth in income was faster during some periods than others, and there were periods when household income fell in real terms. There was lower growth in real household income (including some years of negative growth) in both the first half of the 1980s and 1990s. This was due to the economic recessions of the early 1980s and early 1990s – in each period household income growth fell shortly after the onset of recession and remained low for four to five years. Growth was more rapid in both the late 1980s and late 1990s. With continuous growth in gross domestic product per head between 1992 and 2006/07, real household income also increased year on year from the mid-1990s onwards. However, whereas incomes grew at an average of 4 per cent per year between 1996/97 and 2001/02, the rate of growth fell to 2 per cent per year between 2001/02 and 2006/07.

Income from employment (including self-employment) is the major source of household income, accounting for at least 70 per cent of pre-tax income throughout the last 30 years. It is therefore not surprising that the most important factors behind these changes in the rate of income growth were changes in the rate of earnings growth and rates of employment (Table 1). Both the late 1980s and the late 1990s saw faster growth in earnings and rising rates of

Figure 1

### Average equivalised household income in 2006/07 prices and real gross domestic product<sup>1</sup> per head



#### Note:

1 Chained volume measure (reference year 2003).

**Table 1**  
**Selected economic indicators**

	Percentages							
	GDP growth <sup>1</sup>	Average earnings growth <sup>2</sup>	Inflation rate <sup>3</sup>	Male employment rate <sup>4</sup>	Female employment rate <sup>4</sup>	Claimant count rate <sup>5</sup>	Banks' base rates <sup>6</sup>	Growth in real household disposable income per head <sup>7</sup>
1977	2.4	9.4	15.8	88.0	59.0	4.2	8.9	-2.0
1978	3.2	13.1	8.3	87.4	59.3	4.1	9.1	7.3
1979	2.7	15.2	13.4	87.1	59.9	3.8	13.7	5.8
1980	-2.1	20.6	18.0	85.2	59.9	4.8	16.3	1.5
1981	-1.3	12.7	11.9	81.5	58.8	7.6	13.3	-0.5
1982	2.1	9.4	8.6	79.1	58.0	9.0	11.9	-0.2
1983	3.6	8.6	4.6	77.7	57.8	9.9	9.8	2.0
1984	2.7	6.0	5.0	78.2	59.4	10.1	9.7	3.6
1985	3.6	8.5	6.1	78.3	60.6	10.3	12.2	3.2
1986	4.0	8.0	3.4	77.9	61.5	10.5	10.9	3.9
1987	4.6	7.7	4.2	78.7	62.9	9.4	9.7	3.5
1988	5.0	8.7	4.9	80.8	64.9	7.5	10.1	5.3
1989	2.3	9.2	7.8	82.3	66.5	5.9	13.9	4.4
1990	0.8	9.8	9.5	82.1	67.0	5.5	14.8	3.1
1991	-1.4	7.6	5.9	79.0	66.0	7.6	11.7	1.7
1992	0.1	5.9	3.7	76.2	65.3	9.2	9.6	2.6
1993	2.2	2.9	1.6	75.1	65.1	9.7	6.0	2.4
1994	4.3	3.7	2.4	75.7	65.4	8.8	5.5	1.2
1995	3.0	3.1	3.5	76.3	66.0	7.6	6.7	2.3
1996	2.9	3.6	2.4	76.7	66.8	6.9	6.0	2.1
1997	3.3	4.2	3.1	77.9	67.5	5.3	6.6	3.5
1998	3.6	5.2	3.4	78.4	68.1	4.5	7.2	1.2
1999	3.5	4.8	1.5	78.8	68.8	4.1	5.3	2.4
2000	3.9	4.5	3.0	79.2	69.3	3.6	6.0	4.1
2001	2.5	4.4	1.8	79.3	69.3	3.1	5.1	3.9
2002	2.1	3.5	1.7	79.0	69.6	3.1	4.0	1.4
2003	2.8	3.3	2.9	79.2	69.7	3.0	3.7	2.0
2004	2.8	4.5	3.0	79.3	69.9	2.7	4.4	1.2
2005	2.1	4.0	2.8	79.0	70.0	2.7	4.7	2.3
2006	2.8	4.1	3.2	78.8	70.0	2.9	4.6	0.3
2007	3.0	4.0	4.3	78.8	69.9	2.7	5.5	1.5

**Notes:**

- 1 Annual growth in GDP at market prices (chained volume index).
- 2 Average earnings index; whole economy including bonuses.
- 3 Growth in the annual average of the retail prices index.
- 4 Employment rates for males aged 16 to 64 and for females aged 16 to 59.
- 5 Annual average of seasonally adjusted series.
- 6 Annual average of four UK banks' base rates; Bank of England.
- 7 Series IHXZ; UK National Accounts.

Source: Office for National Statistics, Bank of England

employment compared with slower growth in earnings and falling employment in the early parts of those decades. Employment rates levelled off in the early 2000s and this, combined with lower real growth in earnings, led to the slower rate of income growth in the early 2000s.

The growth in real household income between 1977 and 1991 was not equally shared across the income distribution (Figure 2). Average disposable income of the top fifth of households, or the top quintile group, increased 1.8 times in real terms between 1977 and 1991. This compares with 1.6 times for the fourth quintile group, 1.5 for the third and 1.3 for

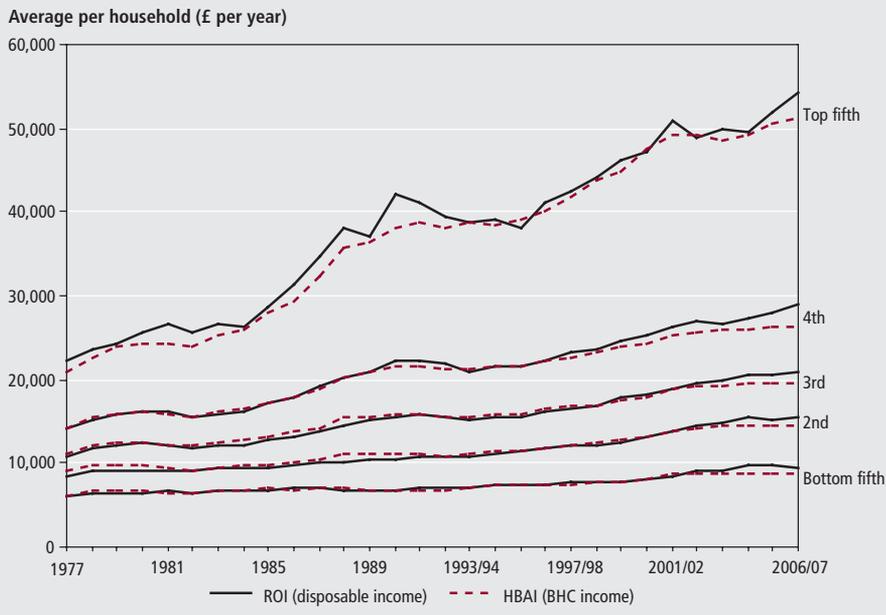
the second, while the income of the bottom quintile group increased by 1.2 times.

Over the period between 1992 and 2006/07 income growth was much more equally shared. The income of the top quintile group increased by 1.4 times in real terms, compared with 1.3 times for the fourth quintile group, and 1.4 times for each of the lower three quintile groups. It should be stressed that these figures are measures of how the income distribution changed over this period, rather than how the incomes of any particular households might have changed. Individual households, for example, may have moved between quintile groups.

The top quintile group was the most affected by cyclical variations in the rate of income growth. The second and third quintile groups were also affected, although less than the top quintile group. The bottom two quintile groups appear to have been relatively unaffected. Households in higher quintile groups contain a much higher proportion of economically active adults compared with those in lower quintile groups. Changes in employment and earnings therefore have a much greater impact on the higher quintile groups.

On the other hand, the bottom two quintile groups contain substantially more households for whom the primary source

**Figure 2**  
**Equivalent household income by quintile group in 2006/07 prices**



of income is state benefits, both retired households and other economically inactive households. These households would be unaffected by any downturn in earnings or employment. Even in low income households where adults are in work, they are likely to be in lower paid jobs where the differential between employment income and benefit income is lower.

Income growth for the bottom two quintile groups was slow for much of the 1980s and 1990s, although there was a period of faster growth starting in the very late 1990s and continuing until 2004/05. Average disposable income for the bottom quintile group grew by 1 per cent per year in real terms between 1980 and 1999/2000. It grew by 5 per cent per year between 1999/2000 and 2004/05, but then fell by 1 per cent in both 2005/06 and 2006/07. Income of the second quintile group grew by 2 per cent per year between 1977 and 1998/99. It grew by 4 per cent per year between 1998/99 and 2004/05, but then was effectively unchanged between 2004/05 and 2006/07.

There was a decline in the number of people living in workless households in the late 1990s which would have contributed to income growth in the lower part of the income distribution. In addition, government policies during the period between 2001/02 and 2004/05, such as the real increases to the national minimum wage, tax credits, the basic state pension, and pension credit, certainly led to real increases in income for some low income households during this period. However, between 2004/05 and 2006/07 there was

little real increase in income from benefits, and no real growth in the incomes of the bottom two quintile groups.

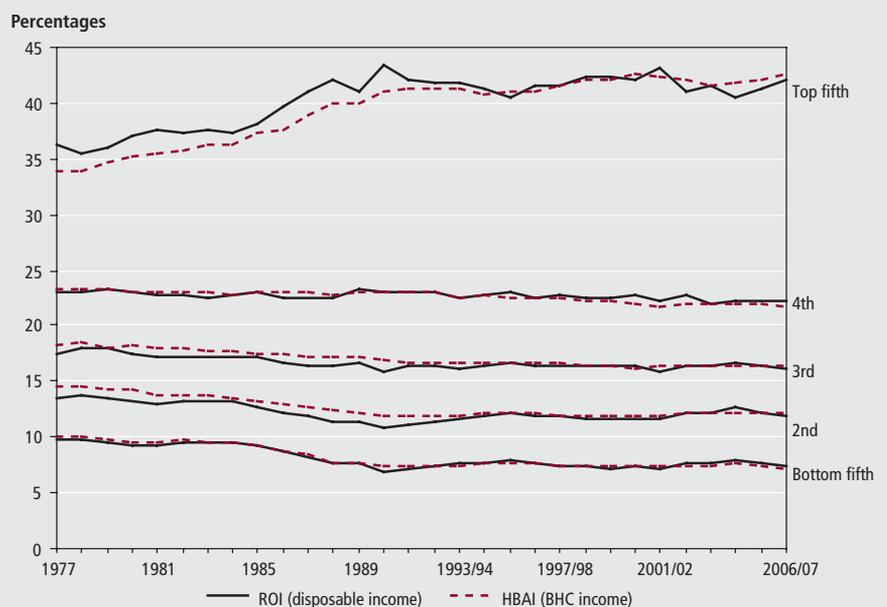
There was little, or no, real growth in average disposable income of the top quintile group between 2001/02 and 2004/05, then relatively fast growth between 2004/05 and 2006/07. Incomes for people employed in the financial sector could provide part of the explanation for this. These two periods, of first low growth and then higher growth for the top quintile group, correspond quite closely to the bursting of the 'dot-com bubble' and the subsequent recovery of equity prices (see also Brewer *et al* 2008).

Taken together, these trends mean that between 1977 and 2006/07 only the top quintile group increased its share of total income, from 36 to 42 per cent (Figure 3). The share of each of the other quintile groups declined, in the case of the bottom quintile group from 10 to 7 per cent. Most of the change to the income shares of the top and the lower three quintile groups took place between 1977 and 1990, and during the mid and late 1980s especially. The income share of the fourth quintile group declined slightly but steadily over the entire period.

Some cyclical variation is apparent in the shares of total income for the bottom two quintile groups. This is because the bottom two quintile groups experienced little benefit from stronger growth in average incomes in both the second half of the 1980s and the second half of the 1990s. Consequently, their shares of total income declined during these years, catching up somewhat during periods of slower income growth such as the early 1990s and 2000s. The third and fourth quintile groups did benefit from the stronger growth in incomes during these periods, but in a way which fairly closely mirrored average incomes, and therefore is not reflected in any change in their share of income.

Between 2001/02 and 2004/05 slower income growth for the higher quintile groups was combined with increased growth for the bottom two quintile groups. Consequently there was some limited narrowing of the gap between the top and bottom of the income distribution. Income growth for the top quintile group then

**Figure 3**  
**Shares of total equivalent household income by quintile group**



recovered between 2004/05 and 2006/07, while that for the bottom two quintile groups stalled, and any limited narrowing of the gap between 2001/02 and 2004/05 was reversed between 2004/05 and 2006/07.

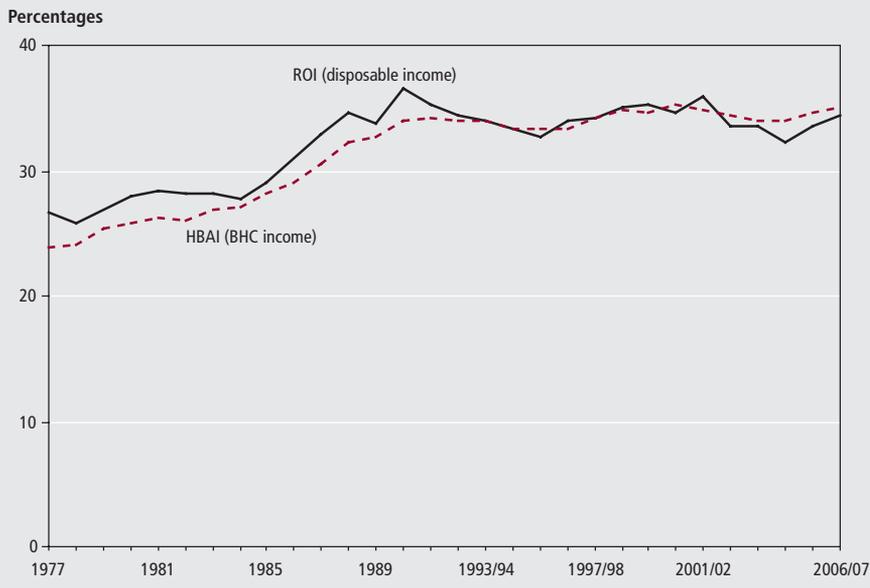
While income quintile groups summarise in a useful way changes to the income distribution, it should be remembered that there can be substantial variation within these groups. This is most true of the top and bottom quintile groups. The increased share of income received by the top quintile group in fact went primarily to the highest income households within this group. The share of total income received by the top decile group increased from 22 to 27 per cent between 1977 and 2006/07 (Figure 4). The share of income received by the ninth decile group increased slightly, while that for each of the other decile groups decreased.

Research shows that the share of total income received by individuals and households in the very highest part of the income distribution, for example in the top one per cent of households, increased most rapidly of all (Atkinson and Piketty 2007, Brewer *et al* 2008, and Toynbee and Walker 2008). The share of total income received by these households continued to increase during the 1990s. Statistics on very high incomes are generally based on tax records rather than household surveys.

### Income inequality

The extent of inequality within an income distribution is commonly measured by the Gini coefficient (see technical note 5). On the basis of this measure, inequality increased substantially between 1977 and 1990, with the most rapid increase taking place in the mid and late 1980s (Figure 5). Since 1990 the Gini coefficient has fluctuated, but the level of inequality

**Figure 5**  
**Gini coefficients<sup>1</sup>**



**Note:**

1 See technical note 5 for an explanation of the Gini coefficient.

has not returned to the levels seen in the late 1970s and early 1980s.

The Gini coefficient increased more rapidly during periods of faster growth in income from employment (the late 1980s and late 1990s) and either increased more slowly, or fell, during periods of slower growth in employment income (the early 1980s and early 1990s). As described above, the households which benefit from growth in income from employment are predominantly in the middle and upper part of the income distribution. Consequently, in periods of rapid growth in employment income, these households ‘pull away’, while during periods of low or falling employment income other households, those predominantly reliant on benefit and pension income, have a chance to ‘catch up’. The Gini coefficients also reflect the

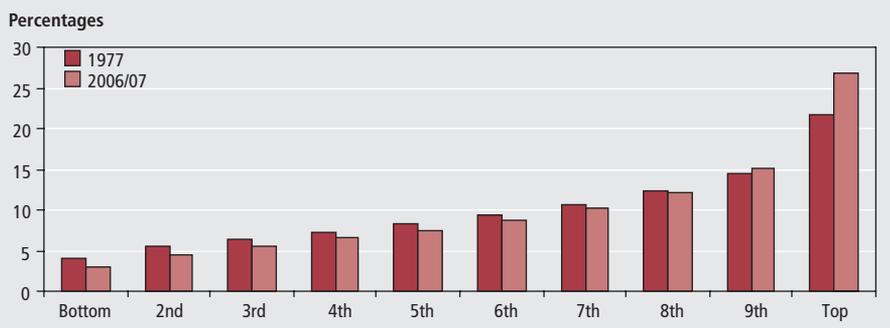
fall in income inequality between 2001/02 and 2004/05, and the subsequent increase between 2004/05 and 2006/07 described above.

While the Gini coefficient is the most commonly used measure of income inequality, alternatives can sometimes provide additional insights. The ROI analysis includes two alternative measures of inequality – the P90/P10 ratio and the P75/P25 ratio. The P90/P10 ratio is the ratio between the 90th and the 10th percentile in the distribution of equivalised disposable income. Over this period, the P90/P10 ratio moved in a broadly similar way to the Gini coefficient (Figure 6).

The P75/P25 ratio in contrast increased much less. This is because much of the increase in inequality was due to income growth at the top of the income distribution, in other words, well above the 75th percentile. The P75/P25 ratio increased a little in the late 1980s, due to the relative decline of incomes in the lower part of the distribution. However, with the continued decline in the income share of the fourth quintile group through the 1990s and early 2000s, the P75/P25 ratio was only slightly higher in 2006/07 than it had been in 1977.

Income inequality is relatively high in the UK compared with many other European countries. In 2006, among the 27 member states of the European Union, the UK had the ninth (strictly the equal ninth) highest income inequality as measured by the Gini coefficient (Figure 7). Based on the 2005 data, the UK was equal fifth (there are a number of countries that have a very similar

**Figure 4**  
**Shares of total equivalised disposable income by decile group,<sup>1</sup> 1977 and 2006/07**

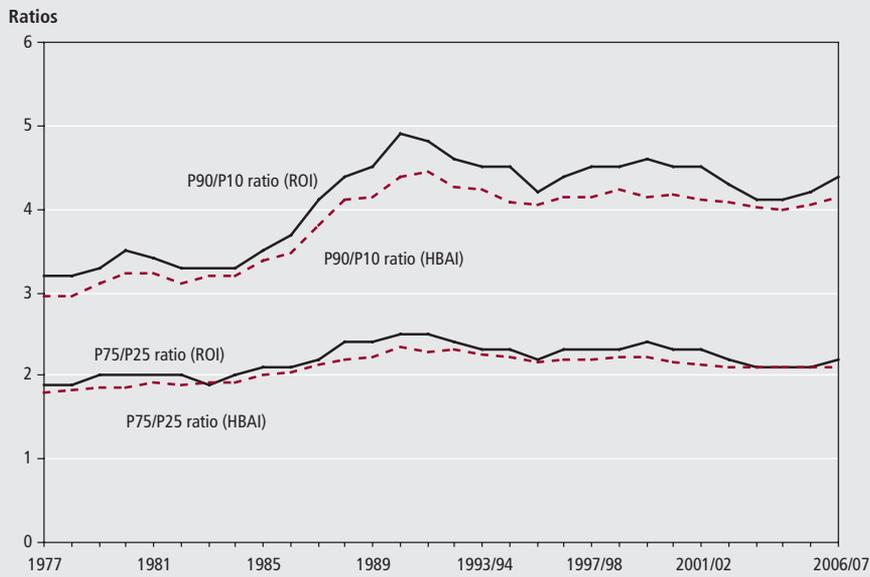


**Note:**

1 Households are ranked by equivalised disposable income.

Source: ROI

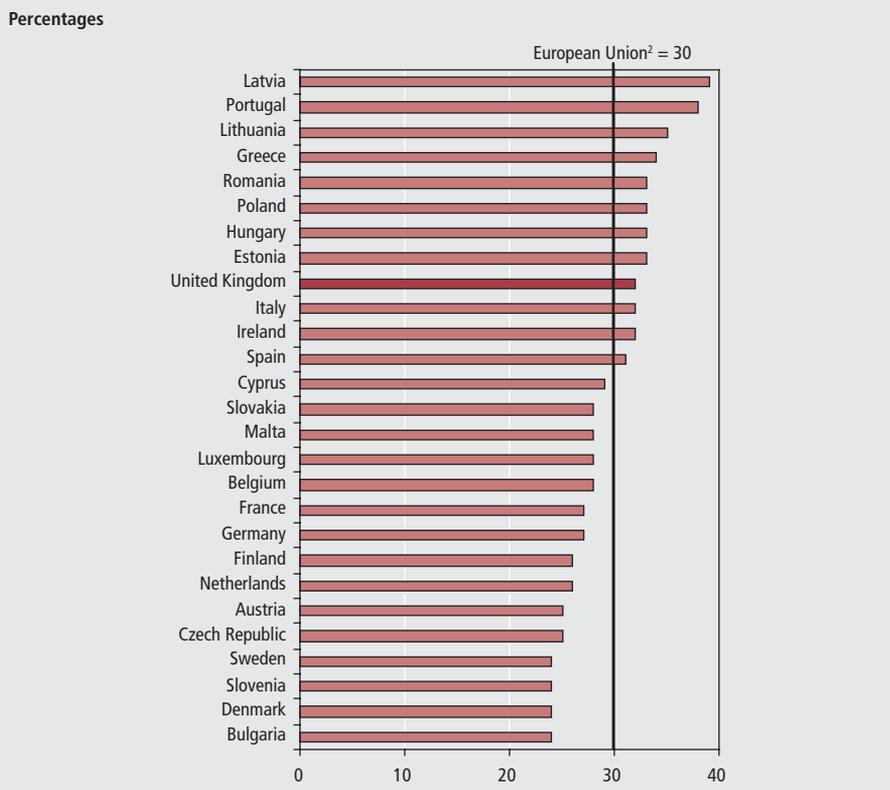
**Figure 6**  
**P90/P10 and P75/P25 ratios<sup>1</sup>**



**Note:**

<sup>1</sup> The HBAI estimates are those provided by the IFS for all years.

**Figure 7**  
**Gini coefficients<sup>1</sup> for European Union countries, 2006**



**Notes:**

- <sup>1</sup> See technical note 5 for an explanation of the Gini coefficient.  
<sup>2</sup> The Gini coefficient for the European Union as a whole.

Source: EU-SILC, Eurostat

level of inequality to the UK, so small changes in values can produce relatively large year to year variation in the ranking).

Income inequality in the UK is closer to that in southern European countries, such as Spain, Italy and Greece, than it is to northern European countries such

as France, Germany or the Scandinavian countries. However, income inequality in the UK is lower than that in the United States. Developing countries also tend to have higher levels of inequality (World Bank 2007). The Gini coefficient is of course a single summary measure of inequality

– countries can have a similar Gini coefficient, but that does not necessarily mean that their income distributions are the same shape.

**Sources of household income**

Income from employment (including self-employment) is the major source of household income and over the last 30 years accounted for between 71 and 81 per cent of total gross household income (income before payment of taxes) (Figure 8).

The second largest source of income is cash benefits from government. Cash benefits include the state retirement pension, incapacity benefit, income support, housing benefit, child benefit and tax credits. Cash benefits represented a similar proportion of gross income in 2006/07 (13.2 per cent) as they did in 1977 (12.7 per cent). However, this proportion varied over time, with income from cash benefits tending to increase when income from employment fell.

Income from occupational pensions grew more rapidly than other sources of income. In 1977 occupational pensions and annuities accounted for just 2.6 per cent of gross household income, but by 2006/07 this proportion had increased to 7.0 per cent.

The majority of income from employment comes from wages and salaries (Table 2). Inequality in the distribution of income from wages and salaries increased substantially between 1977 and the mid-1990s. In 1977, 37 per cent of total income from wages and salaries was received by the top quintile group, compared with 3.3 per cent received by the bottom quintile group. By 1992, these proportions were 47 per cent and 1.6 per cent respectively. The share of total income from wages and salaries received by the second and third quintile groups declined, while that for the fourth quintile group remained roughly constant. This increase in inequality of income from wages and salaries between 1977 and the early 1990s was the overwhelming reason for the increase in inequality in the distribution of disposable income illustrated in Figures 2 to 5.

Between 1992 and 2006/07 this increased inequality persisted, and the share of income from wages and salaries received by the top quintile group remained around 47 or 48 per cent. However, there was a small increase in the share of income from wages and salaries received by the bottom two quintile groups at the expense of the third and fourth.

In the early 1980s self-employment

**Table 2**  
**Income<sup>1</sup> by quintile group and source of income for all households**

	Income quintile groups of all households <sup>2</sup>					All households	Percentages
	Bottom	2nd	3rd	4th	Top		Average per household (£ per year, 2006/07 prices)
<b>Income from wages and salaries<sup>3</sup></b>							
1977	3.3	10.9	20.7	28.2	36.9	100	13,934
1981	2.7	9.2	19.5	28.3	40.3	100	14,933
1986	2.0	6.8	17.9	29.2	44.2	100	14,792
1992	1.6	6.0	16.9	28.6	46.8	100	16,147
1996/97	1.9	6.5	16.2	28.1	47.3	100	16,785
2001/02	2.1	6.6	15.6	26.9	48.8	100	21,691
2006/07	2.6	7.3	15.4	26.6	48.0	100	23,325
<b>Income from self-employment</b>							
1977	5.4	6.8	12.3	13.7	61.7	100	1,373
1981	4.7	8.6	12.9	19.6	54.1	100	1,518
1986	4.3	5.2	13.5	15.5	61.6	100	2,010
1992	3.5	7.5	14.8	22.0	52.2	100	2,253
1996/97	3.9	6.3	12.5	17.1	60.3	100	2,604
2001/02	3.3	6.8	8.2	15.5	66.2	100	2,605
2006/07	4.2	5.1	10.9	16.2	63.6	100	3,036
<b>Occupational pensions and annuities</b>							
1977	6.6	18.9	17.2	22.5	34.7	100	488
1981	5.6	15.7	20.5	23.7	34.6	100	694
1986	4.7	12.8	19.5	25.2	37.8	100	1,025
1992	4.2	12.9	20.9	24.7	37.2	100	1,395
1996/97	4.0	12.3	20.1	25.8	37.8	100	1,671
2001/02	5.7	14.2	23.9	26.6	29.7	100	2,071
2006/07	6.3	14.6	21.3	25.5	32.3	100	2,431
<b>Investment and other income</b>							
1977	7.3	11.4	14.2	19.8	47.3	100	775
1981	6.1	10.0	13.0	20.0	50.9	100	1,065
1986	5.8	8.5	14.5	19.9	51.2	100	1,224
1992	5.0	8.6	14.8	21.3	50.4	100	1,790
1996/97	5.5	8.2	13.6	20.3	52.5	100	1,397
2001/02	6.7	9.0	11.1	18.5	54.6	100	1,361
2006/07	7.0	7.0	12.7	21.7	51.5	100	1,287
<b>Income from cash benefits</b>							
1977	35.3	27.3	18.0	11.9	7.6	100	2,402
1981	34.1	28.0	17.7	12.6	7.5	100	3,018
1986	31.9	29.0	18.9	12.5	7.7	100	3,594
1992	31.5	29.8	19.8	11.5	7.4	100	3,756
1996/97	29.8	30.0	21.1	12.3	6.8	100	3,882
2001/02	29.6	30.6	21.6	12.0	6.2	100	4,092
2006/07	28.1	30.7	20.9	12.9	7.3	100	4,580
<b>less Direct taxes</b>							
1977	6.0	11.3	19.0	26.2	37.6	100	4,346
1981	4.7	9.5	18.1	26.6	41.0	100	4,626
1986	4.6	7.7	16.2	26.4	45.2	100	4,831
1992	4.4	7.2	15.7	25.4	47.4	100	4,906
1996/97	3.4	6.7	14.8	25.2	49.9	100	5,214
2001/02	3.5	7.0	14.1	24.4	51.0	100	6,571
2006/07	3.4	6.9	14.2	24.9	50.6	100	7,290
<b>Total disposable income</b>							
1977	8.3	13.4	19.5	24.1	34.7	100	14,631
1981	8.4	12.8	18.6	24.4	35.8	100	16,602
1986	8.1	11.3	17.9	24.2	38.6	100	17,814
1992	7.1	11.0	17.6	24.6	39.7	100	20,436
1996/97	7.3	11.3	17.1	23.9	40.4	100	21,125
2001/02	6.9	11.1	16.6	23.5	41.9	100	25,249
2006/07	7.4	11.7	16.6	23.3	41.0	100	27,370

**Notes:**

- 1 Unequalised income.
- 2 Households are ranked by equalised disposable income.
- 3 Including imputed income for company cars from 1992 onwards.

**Figure 8**  
**Gross income<sup>1</sup> by source in 2006/07 prices**



**Notes:**

- 1 Income before tax, unequivalised.
- 2 Including self-employment income.

income represented about 7 per cent of total gross income, increasing to around 9 per cent from the late 1980s onwards. Since self-employment income is very unequally distributed, being concentrated among higher income households, this may have made a small contribution to increasing income inequality, although self-employment income itself did not appear to become any more unequally distributed.

The steadily increasing income from occupational pensions would have had a downward effect on inequality by increasing incomes for some retired households, thereby moving them out of the lowest income decile groups.

Cash benefits are the one major source of income received predominantly by households in lower quintile groups. Throughout this period around 60 per cent of total income from cash benefits was received by households in the bottom two quintile groups.

Direct taxes include income tax, national insurance contributions and council tax. Over the period 1977 to 2006/07 there were some changes to the way in which direct taxes fell upon different parts of the income distribution. Changes in the impact of both cash benefits and direct taxes on the income distribution, and on income inequality, are discussed in more detail in the companion article 'The redistribution of household income 1977 to 2006/07'. However, in summary, compared with the effect of changing patterns of income from employment, the role played by cash benefits and direct taxes was relatively small.

The major reasons for the increase in inequality in the distribution of income from employment between 1977 and the early 1990s were discussed by Goodman and Shephard (2002). Skills-biased technological change and a decline in the role of trade unions led to an increase in the gap between wages for skilled and unskilled

workers. In addition, the rate of male participation in the labour market fell, often in households where there was no other earner. Conversely there was increased female participation among those with working partners. This led to an increased polarisation between two-earner and zero-earner households.

Between the early 1990s and 2006/07 inequality of earnings continued to increase, although more slowly than during the 1980s. The Annual Survey of Hours and Earnings (ASHE), and its predecessor the New Earnings Survey, produce an earnings rather than an income distribution. The P90/P10 ratio for the distribution of weekly earnings among male employees increased from 2.3 in 1977, to 3.2 in 1992, and then to 3.7 in 2007. Inequality of earnings also increased for women, although not by quite as much as it did for men – the corresponding figures for females were 2.4, 3.0 and 3.2.

Since the mid-1990s there has been a fall in the proportion of people living in workless households. Between 1994 and 2001 the proportion of working age people in workless households (in Great Britain)

fell from 14 to 12 per cent, while the proportion of children fell from 20 to 16 per cent (Labour Force Survey, ONS). These rates were largely unchanged between 2001 and 2006/07.

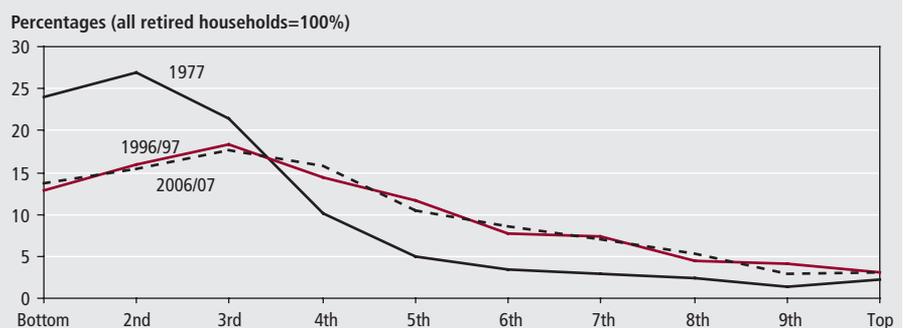
While it is not possible to quantify the impact of these two factors on income inequality within the constraints of the ROI analysis, the slower increase in inequality of earnings, and the reduction in worklessness, would certainly work in opposite directions. This would at least contribute to the more stable distribution of income from wages and salaries, and hence income itself, between the mid-1990s and 2006/07.

**The composition of the income distribution**

The largest change in the composition of the income distribution over the last 30 years has been in the position of retired households. Retired households represent about a quarter of all households – 22 per cent in 1977, increasing to about 26 per cent from the mid-1980s onwards. In 1977 retired households were largely concentrated in the lowest three income decile groups (Figure 9). However, over the subsequent 20 years, a gradual increase in income from occupational pensions for some retired households meant that by the mid-1990s there were many more retired households in higher decile groups. However, this trend stopped in the mid-1990s, and the position of retired households in the income distribution remained very similar up to 2006/07.

In 1977 retired households made up 56 per cent of the bottom quintile group, but by 1996/97 this proportion had fallen to 39 per cent (Table 3). Over the same period there was an increase in one adult households and one adult households with children (both non-retired) in the bottom quintile group. In 1977 one adult

**Figure 9**  
**Retired households<sup>1</sup> by income decile group<sup>2</sup>**



**Notes:**

- 1 See technical note 4 for a definition of retired households.
- 2 Households are ranked by equivalised disposable income.

**Table 3**  
**Composition of income quintile groups by household type**

	Income quintile groups of all households <sup>1</sup>					Percentages
	Bottom	2nd	3rd	4th	Top	All households
<b>Retired households<sup>2</sup></b>						
1977	56	35	9	5	4	22
1981	54	38	12	7	5	24
1986	46	47	16	10	7	25
1991	51	43	21	13	8	27
1996/97	39	43	25	14	9	26
2001/02	40	44	25	13	7	26
2006/07	38	44	25	16	8	26
<b>Non-retired households</b>						
<b>One-adult households</b>						
1977	5	5	7	9	13	8
1981	5	5	7	9	14	8
1986	9	7	10	11	16	11
1991	11	10	9	14	20	13
1996/97	14	10	12	16	20	14
2001/02	14	11	13	14	21	15
2006/07	13	10	15	14	21	15
<b>Two-adult households</b>						
1977	7	14	20	28	43	22
1981	6	10	20	27	42	21
1986	8	10	21	27	40	21
1991	7	11	20	27	41	21
1996/97	10	11	21	26	39	21
2001/02	11	12	18	29	38	21
2006/07	10	10	19	28	38	21
<b>One adult with children</b>						
1977	7	3	2	1	1	3
1981	7	4	2	2	1	3
1986	9	6	3	1	1	4
1991	10	6	3	1	1	4
1996/97	12	8	3	1	1	5
2001/02	12	6	5	3	1	5
2006/07	12	8	4	3	2	6
<b>Two adults with children</b>						
1977	21	32	39	32	20	28
1981	23	30	40	28	19	28
1986	22	22	32	28	20	24
1991	15	21	31	26	20	23
1996/97	20	18	24	24	19	21
2001/02	15	18	24	23	20	20
2006/07	15	19	21	23	19	19
<b>Three or more adults (with or without children)</b>						
1977	5	11	23	24	20	17
1981	7	13	19	27	18	16
1986	6	9	17	23	17	14
1991	6	10	16	19	11	12
1996/97	6	9	15	19	12	12
2001/02	9	9	15	18	13	13
2006/07	11	10	15	15	12	13

**Notes:**

- 1 Households are ranked by equivalised disposable income.
- 2 See technical note 4 for a definition of retired households.

households made up 5 per cent of the bottom quintile group compared with 14 per cent in 1996/97. The proportion of one adult households with children increased from 7 to 12 per cent.

Between 1977 and 2006/07 the proportion of one adult non-retired households (without children) in the population nearly doubled, from 8 to 15 per cent of all households. This increase was reflected across all quintile groups. One adult households are more likely than average to be in higher income quintile groups, although the extent to which this is true has diminished. This is likely to be, at least in part, due to the increase in two earner households which, taking into account the respective equivalisation factors, would tend to lead to a relative worsening of the position of single person households in the income distribution, compared with two adult households.

There was also a substantial increase in the total number of one adult non-retired households with children. In 2006/07 they represented 6 per cent of all households compared with 3 per cent in 1977. Along with retired households, one adult households with children are the other main group of households that are highly concentrated in the lower part of the income distribution. The combination of low employment income, and the presence of children, results in low equivalised incomes. The increase in one adult households with children in the bottom quintile group was simply due to the increase in their number, rather than any change in their overall position in the income distribution.

Two adult households with children (non-retired) formed a declining proportion of households, down from 28 per cent in 1977 to 19 per cent in 2006/07, mainly due to the increasing numbers of one adult (non-retired) households with and without children, and of retired households. Two adult households with children are slightly more likely to be found in higher income quintile groups than was the case in the past, probably due to an increase in the proportion of these households which are two earner households. In particular, the presence of two adult households with children has declined in the second and third quintile group. Their place was taken primarily by retired households, and to a lesser extent single adult households.

There was an increase in the proportion of children living in households in the lowest two decile groups between 1977 and the mid-

1990s, although this was reversed to some extent between the mid-1990s and 2006/07. The proportion of children in the lowest two decile groups increased from 19 per cent in 1977 to 29 per cent in 1996/97, mainly due to the increase in single parent households (Figure 10). There were corresponding falls in the proportions of children in the fourth to the seventh decile groups.

However, between 1996/97 and 2006/07 the proportion of children in the bottom two decile groups decreased from 29 to 25 per cent while there were increases in the proportion of children in decile groups three and four and in some of the upper decile groups. Over this period there were real increases in cash benefits for households with children, for example through tax credits. The fall in the number of children living in workless households during the late 1990s would also have contributed to this improvement in the position of children in the income distribution. Comparing the overall position of children in 2006/07 with that in 1977, there was a smaller proportion of children in the middle decile groups, but a higher proportion in both the upper and lower decile groups.

### Incomes of retired and non-retired households

In the ROI analysis a household is defined as retired when more than 50 per cent of the household income is received by retired members of the household (an individual is defined as retired either if they describe themselves as 'retired', or they are over state pension age and either 'unoccupied' or 'sick or injured but not intending to seek work'). The incomes of retired and non-retired households differ substantially in terms of their level, distribution and composition. Since non-retired households represent three quarters of all households, many of the results for

non-retired households are quite similar to those for all households as discussed in the previous sections. Therefore, this section focuses on retired households, presenting results for non-retired households mainly for comparison only.

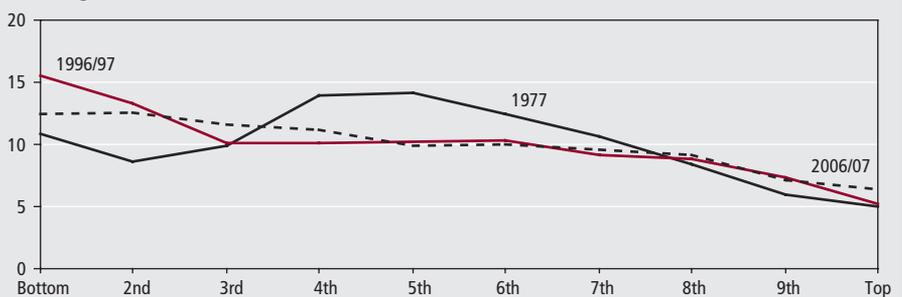
Average disposable income of retired households is substantially lower than that of non-retired households. Since income from pensions generally does not fluctuate from year to year and is often uprated in line with inflation, incomes of retired households have grown more steadily than those of non-retired households – the cyclical variations in average household income result almost entirely from fluctuations in the incomes of non-retired households (Figure 11).

There has been an improvement in the position of retired households compared with non-retired households. Between 1977 and 1991 the income of retired households was, on average, 61 per cent of the income for non-retired households. For the period between 1992 and 2006/07 this increased to 65 per cent (Figure 12). In the late 1980s, growth in earnings was significantly above the rate of inflation (Table 1) and therefore pension incomes, generally uprated in line with inflation, fell behind earned incomes. In the late 1990s and early 2000s, the gap between earnings and price inflation was lower and so the incomes of retired households did not fall as far behind those of non-retired households. Increased income from occupational pensions and the earnings-related component of the state pension further helped to maintain the incomes of retired households relative to non-retired households.

The state retirement pension formed the largest source of income for retired households until the 2000s (Figure 13). In 1977, income from occupational pensions accounted for just 18 per cent of the gross income of retired households,

Figure 10  
Children by income decile group<sup>1</sup>

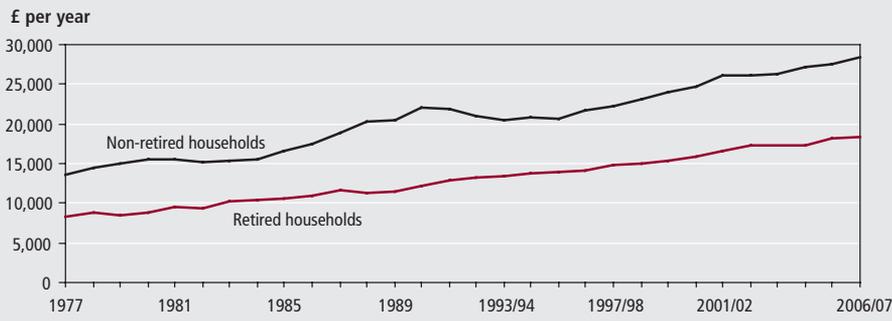
Percentages (all children=100%)



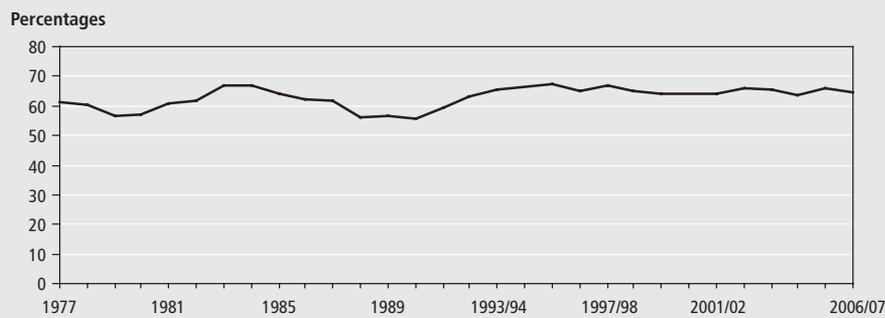
Note:

1 Households are ranked by equivalised disposable income.

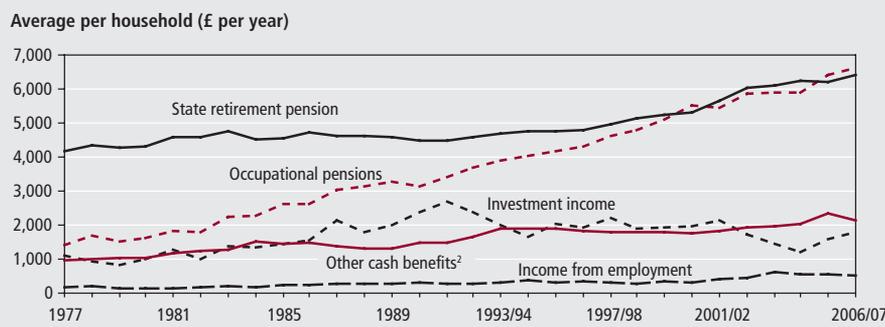
**Figure 11**  
Average equivalised disposable income for retired and non-retired households in 2006/07 prices



**Figure 12**  
Average equivalised income for retired households as a proportion of income for non-retired households



**Figure 13**  
Income<sup>1</sup> by source for retired households in 2006/07 prices



**Notes:**  
1 Income before tax, unequivalised.  
2 Includes pension credit.

compared with 53 per cent from the state retirement pension. However, income from occupational pensions increased almost continuously over the last 30 years. From around 2000 onwards occupational pensions and the state retirement pension contributed about equally to the total gross income of retired households, although incomes from these sources were distributed in very different ways among households.

There was an increase in the proportion of pensioners receiving income from occupational schemes, which was most rapid in the period from 1979 to 1996/97

(Department for Work and Pensions 2008). This was due to the major expansion of occupational pension schemes which took place during the 1950s and the 1960s. In addition, pensioners that retired in the 1990s and early 2000s were also likely to have had longer contribution records, and higher final salaries (on which pension income may be based), than those who retired in the 1970s and 1980s.

While income from occupational pensions increased year on year, because the basic state retirement pension was updated in line with prices, income from the state retirement pension barely increased

in real terms through the 1980s and the early 1990s. Between 1996/97 and 2006/07 there was faster growth in income from the state retirement pension which was mainly due to the maturing of the earnings-related component of the state pension (SERPS, replaced in 2002 by the state second pension) (Department for Work and Pensions 2008). Above inflation increases in the basic state pension in 2001/02 and 2002/03 also contributed to the real growth in state pension income.

Income from investments is also an important source of income for retired households. The level of investment income depends on the level of savings and financial assets of retired households, and the real rate of return on those savings and assets. After the high inflation rates of the late 1970s and early 1980s, which eroded savings, interest rates (adjusted for inflation) were at their highest around 1990 (Table 1). Since 1990, returns on investments have been somewhat lower and fell particularly during the early 2000s, recovering to some extent between 2004/05 and 2006/07.

Income from other cash benefits (that is, cash benefits other than the state retirement pension) doubled in real terms between 1977 and 1993/94. The largest increases were in housing, invalidity, disability and carer's benefits. Income from other cash benefits remained at a similar level for the remainder of the 1990s, then increased between 2000/01 and 2006/07. There were real increases in income from pension credit after its introduction in 2003/04.

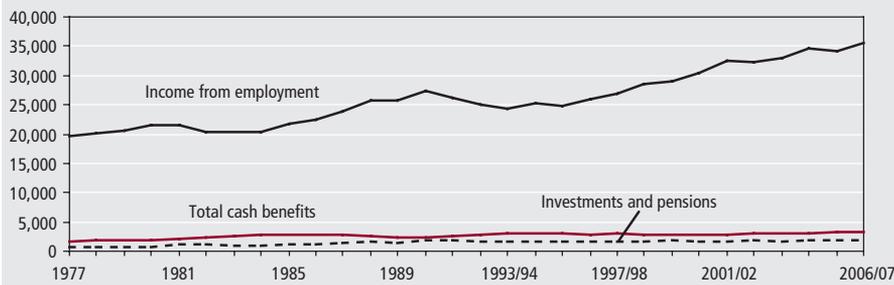
In contrast to retired households, around 85 per cent of the income of non-retired households comes from employment (including self-employment). In recent years, cash benefits have accounted for around 8 per cent of the income of non-retired households, although over the last 30 years this figure has varied between 7 and 11 per cent. Since the start of the 1980s, investments and pensions have tended to account for around 4 or 5 per cent of gross income (Figure 14).

**Income inequality among retired and non-retired households**

The distribution of income among retired households is more equal than that among non-retired households. However, changes in the level of inequality among retired households were quite similar to those for non-retired households, even though the sources of income for these two groups are very different.

**Figure 14**  
**Income<sup>1</sup> by source for non-retired households in 2006/07 prices**

Average per household (£ per year)



**Note:**

1 Income before tax, unequivalised.

Between 1977 and 1990 the top quintile group of retired households increased its share of total income (of retired households) at the expense of the lowest three quintile groups (Figure 15). Over the same period, the Gini coefficient for retired households increased by 10 points – exactly the same increase as for non-retired households (Figure 16). Among non-retired households, increased inequality was due to increased inequality of income from employment. Among retired households, it was the absence of real growth in income from the state retirement pension, combined with strong growth in income from occupational pensions and investments, which led to increased inequality.

Income from the state retirement pension is distributed relatively evenly across the quintile groups of retired households and this pattern remained stable over time (Table 4). Income from occupational pensions and investment income, on the other hand, are distributed much more unequally than income from the state pension. Between 1977 and 1991 the top quintile group generally received over 70 per cent of total income from occupational pensions and investments. It was the increase in income from occupational pensions and investment income (which are unequally distributed), relative to income from the state pension (which is equally distributed), which explains the increase in inequality among retired households between 1977 and 1991.

Between 1991 and 2006/07 the trends in the Gini coefficients for retired and non-retired households continued to follow a similar path. Changes in the level of investment income had a major influence on the share of total income of the top quintile group of retired households, and therefore on income inequality. The falls in income inequality among retired

households in both the early 1990s, and again from 2001/02 to 2004/05, were in part due to lower levels of investment income. This latter fall was to some extent reversed between 2004/05 and 2006/07 as investment income increased again.

Taking the period between 1990 and 2006/07 as a whole, the share of total disposable income of the top quintile group of retired households fell from 41 to 37 per cent, while those for the third and fourth quintile groups increased from 16 to 17 per cent and from 20 to 22 per cent respectively. The Gini coefficient for retired households also fell over this period, although it still remained much higher than in the late 1970s and early 1980s.

In addition to the effect of investment

income, other factors contributed to this small reduction in inequality. While income from occupational pensions continued to increase in real terms through the 1990s and early 2000s, there was increasing real growth in income from the state retirement pension, mainly due to the maturing of the earnings-related component of the state pension.

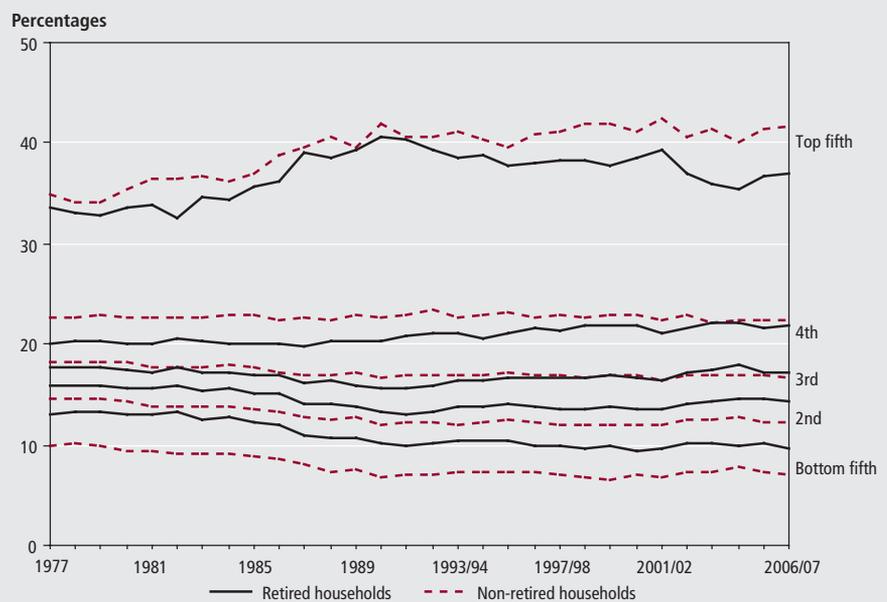
In addition, there was a gradual increase in income from occupational pensions for households other than those in the top quintile group. The increasing number of retired households with income from occupational pensions, and the increasing size of those pension incomes, meant that from about 1990 onwards occupational pensions became an important source of income for a greater number of households in lower quintile groups, particularly the third and fourth quintile groups.

Whereas there was some fall in inequality among retired households between 1990 and 2006/07, inequality among non-retired households in 2006/07 was at the same level as at the start of the 1990s.

### Datasets

The data appearing in figures and tables in this article, and also the underlying datasets upon which the analysis is based, are available for download from: [www.statistics.gov.uk/StatBase/Product.asp?vlnk=10336](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=10336)

**Figure 15**  
**Shares of total equivalised disposable income by quintile group<sup>1</sup> for retired and non-retired households**



**Note:**

1 Households are ranked by equivalised disposable income.

Table 4

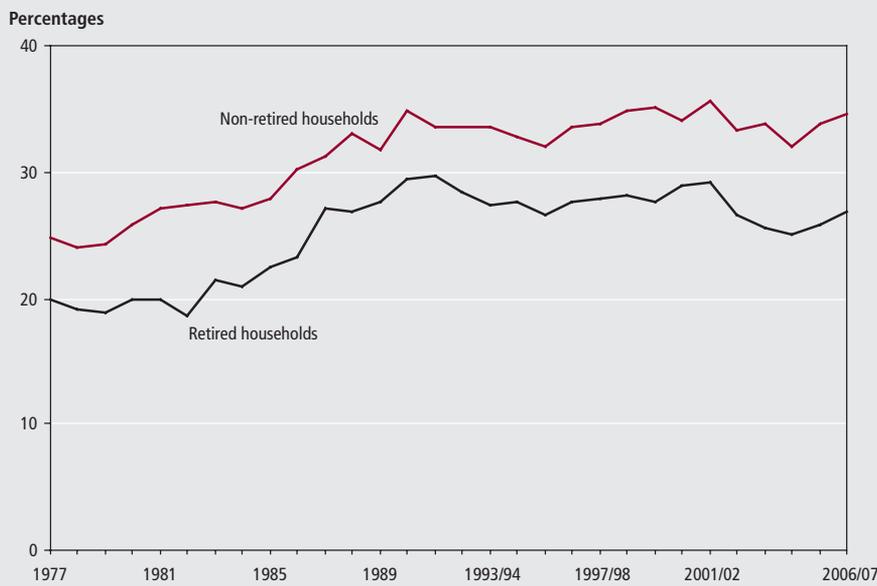
Percentage shares of income<sup>1</sup> by income quintile group and source of income for retired households

	Income quintile groups of retired households <sup>2</sup>					All households	Percentages
	Bottom	2nd	3rd	4th	Top		Average per retired household (£ per year, 2006/07 prices)
<b>Occupational pensions and annuities</b>							
1977	1.9	3.7	7.3	16.3	70.7	100	1,423
1981	1.9	4.0	7.9	15.5	70.8	100	1,836
1986	2.2	4.8	6.4	17.5	69.1	100	2,636
1991	2.6	4.3	3.6	15.0	74.5	100	3,408
1996/97	2.2	5.6	9.8	21.0	61.4	100	4,306
2001/02	3.3	7.0	9.7	23.4	56.6	100	5,433
2006/07	4.3	7.9	11.6	22.3	53.9	100	6,629
<b>Investment income</b>							
1977	4.2	4.3	4.6	8.4	78.4	100	1,115
1981	4.6	5.2	5.3	11.5	73.4	100	1,270
1986	3.7	4.3	5.5	12.9	73.5	100	1,549
1991	2.9	2.9	5.6	14.7	73.8	100	2,676
1996/97	4.4	4.5	6.6	15.7	68.8	100	1,920
2001/02	3.5	4.4	7.0	9.9	75.2	100	2,150
2006/07	4.6	4.6	5.2	12.0	73.5	100	1,788
<b>Income from employment and other income</b>							
1977	8.0	6.5	5.7	19.8	60.0	100	250
1981	6.6	7.2	9.9	20.5	55.7	100	197
1986	6.2	5.1	5.0	21.7	61.9	100	272
1991	3.9	4.8	11.9	21.4	58.0	100	411
1996/97	2.7	7.5	10.3	26.1	53.4	100	409
2001/02	3.1	10.7	10.5	18.8	56.9	100	530
2006/07	3.5	8.1	10.0	25.1	53.3	100	582
<b>State retirement pension</b>							
1977	18.3	20.6	19.8	20.2	21.0	100	4,169
1981	19.4	19.6	20.0	20.2	20.8	100	4,598
1986	18.9	21.4	19.3	20.2	20.2	100	4,740
1991	18.9	21.1	20.3	20.8	18.9	100	4,475
1996/97	18.7	20.7	19.6	20.8	20.2	100	4,809
2001/02	18.3	21.3	19.9	21.0	19.5	100	5,640
2006/07	16.1	21.1	20.5	20.8	21.4	100	6,409
<b>Other cash benefits</b>							
1977	11.6	18.6	23.7	26.9	19.2	100	955
1981	12.5	20.8	20.7	26.3	19.6	100	1,178
1986	11.9	18.8	23.7	25.5	20.1	100	1,469
1991	10.4	21.7	23.8	26.7	17.4	100	1,482
1996/97	9.1	18.1	24.9	28.6	19.3	100	1,838
2001/02	10.0	19.0	27.2	26.2	17.6	100	1,829
2006/07	12.8	16.7	24.9	28.1	17.5	100	2,141
<b>less Direct taxes</b>							
1977	10.5	8.2	9.3	13.3	58.7	100	1,181
1981	9.8	9.0	10.4	14.7	56.2	100	1,285
1986	10.2	9.3	10.2	16.1	54.2	100	1,741
1991	9.1	8.4	9.7	15.8	57.1	100	1,859
1996/97	7.4	7.7	9.8	18.4	56.7	100	1,715
2001/02	8.8	9.5	10.2	19.0	52.5	100	2,070
2006/07	8.9	9.4	11.0	19.5	51.2	100	2,340
<b>Total disposable income</b>							
1977	12.5	15.7	16.5	19.6	35.6	100	6,731
1981	13.1	15.2	16.2	19.5	36.0	100	7,795
1986	11.5	15.0	15.2	19.9	38.5	100	8,923
1991	9.5	12.6	14.6	21.0	42.3	100	10,594
1996/97	9.8	13.5	15.7	21.8	39.2	100	11,568
2001/02	9.6	14.0	15.9	21.1	39.4	100	13,513
2006/07	9.8	14.1	16.5	21.8	37.8	100	15,209

**Notes:**

- 1 Unequalised income.
- 2 Households are ranked by equalised disposable income.

Figure 16

**Gini coefficients<sup>1</sup> for equivalised disposable income for retired and non-retired households****Note:**

1 See technical note 5 for an explanation of the Gini coefficient.

**ACKNOWLEDGEMENTS**

The authors gratefully acknowledge the work done for this study by Jenny Church, Edward Franklyn, and in addition, the many people who have worked on the ROI analysis over the years, whose work has provided such a valuable source of information on the UK income distribution.

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**TECHNICAL NOTE**

- The main data source for the ROI analysis is the Expenditure and Food Survey (EFS). Prior to 2001/02 the analysis was based on the Family Expenditure Survey (FES) which was the predecessor of the EFS. The EFS (and previously the FES) covers all private households in the UK (that is, not people living in institutions such as prisons, retirement homes or in student accommodation). It provides information about how income and expenditure patterns differ across different types of households. For further details see Family Spending at: [www.statistics.gov.uk/familyspending](http://www.statistics.gov.uk/familyspending)
- From 1996/97 ROI estimates are based on a sample weighted to adjust for differential rates of non-response. Prior to this date, estimates were based on an unweighted sample of responding households.
- Company cars were included in the ROI definition of income from 1990. The effect of this change was to increase the Gini coefficient for equivalised disposable income by 0.5 percentage points (based on data for 1990). Until 2001/02 water charges were treated as a direct tax, whereas from 2002/03 they were regarded as expenditure. This change resulted in a small reduction in inequality of disposable income.
- A household is deemed to be retired when more than 50 per cent of the household income is received by retired members of the household (an individual is deemed to be retired either if they describe themselves as 'retired', or they are over state pension age and either 'unoccupied' or 'sick or injured but not intending to seek work').
- The Gini coefficient is a measure of income inequality taking values between 0 and 100, with higher values denoting higher levels of inequality. A value of 0 indicates complete equality in the distribution of household income (all households have the same equivalised income). A value of 100 indicates complete inequality (one household has all the income, and the others have none). For further details see: [www.statistics.gov.uk/about/methodology\\_by\\_theme/gini/default.asp](http://www.statistics.gov.uk/about/methodology_by_theme/gini/default.asp)

## FEATURE

William Barnes, Geoff Bright  
and Colin Hewat

Office for National Statistics

# Making sense of Labour Force Survey response rates

## SUMMARY

The Labour Force Survey (LFS) is the largest continuous household survey in the UK. It is the source of key labour market indicators, such as employment, unemployment, economic activity and hours worked, as well as numerous related measures. Each quarter, more than 80,000 households are randomly selected; households and individuals are interviewed in a series of five quarterly waves. However, a proportion of these households and individuals either cannot be contacted or refuse to cooperate with the survey, so the results are derived from about 50,000 households and 120,000 individuals each quarter. These responses are weighted on the basis of age, gender and geography in order to produce a representative picture of the whole population.

This article presents and analyses LFS response rates and trends and examines the detail of response and non-response. Further research required and potential interventions are also discussed.

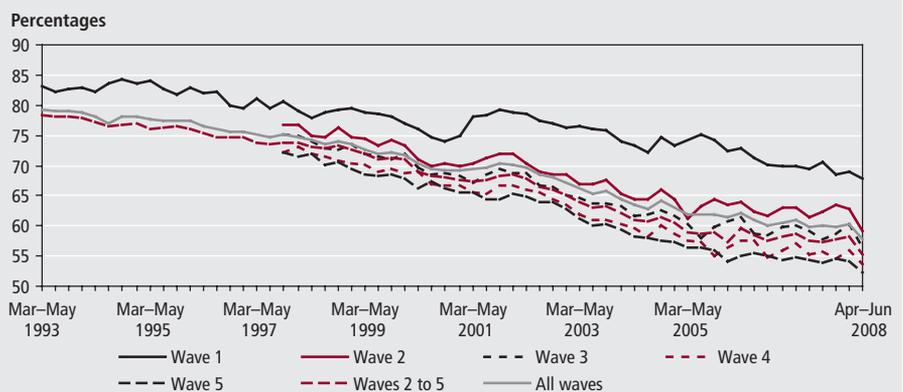
Response rates in the Labour Force Survey (LFS) have shown a downward trend, falling from just under 80 per cent in the early 1990s to less than 60 per cent today. Declining response rates can have a negative impact on the quality of the data and need to be understood so that measures can be taken to arrest the decline and, where evidence of this is found, targeted to counter non-response bias.

The clear downward trend for Great Britain response rates between 1993 and 2008 is shown in **Figure 1** (and in Appendix **Table A1**). Response rates for 'all waves' fell from 79 per cent in 1993 to about 58 per cent in 2008, a decline of 21 percentage points. Response rates for the first wave of interviews (wave 1) fell from 83 per cent to below 68 per cent over the same period, a

fall of 15 percentage points. Thus, based on all waves, response rates have been falling by 1.4 percentage points per year.

There have, however, been two noticeable shifts within the response rates across all waves, but most pronounced in the wave 1 data. Following an unusually large drop in response rates between March 1998 and November 2000, there was an even steeper rise between December 2000 and November 2001, marking an upward shift of some 7 per cent. There was a similar, but smaller, shift between September 2004 and August 2005. Since these shifts were more pronounced for wave 1, the gap between this and other waves, which was about 5 per cent, expanded to 7 per cent and then nearly 10 per cent, before moving back to about 7 per cent more recently.

**Figure 1**  
LFS response rates, 1993 to 2008

**Note:**

Separate data on waves 2 to 5 are not available before 1997.

Apart from these major shifts, which may have been largely the result of organisational changes, the less marked movements in response may be the result of a variety of factors such as interviewer training, incentives (such as the free stamps issued in the summer of 2007), media publicity concerning data losses, as well as holidays, weather and even sporting events.

Overall, response rates are influenced, not only by the initial success in making contact and gaining cooperation at wave 1, but also by the attrition to subsequent waves of people who had responded previously. **Figure 2** shows, for the period 1997 to 2008, the rate of attrition between waves. Although attrition between waves 2 and 5 rose only slowly, attrition between wave 1 and 2 increased erratically, but

dramatically until 2005, when it began to narrow somewhat. The latter may have been the result of the increased management emphasis on 'agreement to recall' (respondent agreeing to be contacted in the following wave) which has occurred since that time. In 1997, there were only about 4 percentage points between the wave 1 and wave 2 response rates, but by 2008 this had increased to nearly 10 per cent. So, not only have response rates fallen, but respondents who do take part in wave 1 interviews are now less likely to remain responders through waves 2 to 5. The highest rate of attrition occurs between waves 1 and 2. This is generally to be expected since, having done the survey once, respondents then know the length of time involved and the subject matter of the

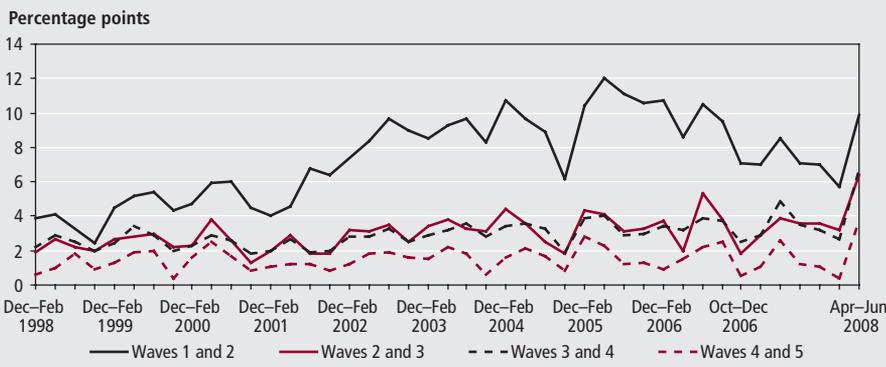
questions, which may put them off taking part in subsequent waves. Respondents may also decide that taking part once fulfils their social obligation and do not see the value in repeating the process every three months. For respondents who do take part in waves 2 to 5, the subsequent attrition is much less. Those who are happy to take part twice are more likely to keep taking part.

**Table 1** shows the attrition and retention rates by Government Office Region for a single cohort between wave 1 in April to June 2007 and wave 5 in April to June 2008. The response pattern reflects the tendency for rural and sub-urban areas to exhibit relatively high response, and more highly urbanised areas to show low response (Hopper 2008). Focusing on specific regions, most noticeable is Inner London which, despite having the lowest wave 1 response rate, also has the lowest level of attrition; response rates only fall by 5 percentage points between waves 1 and 5. Thus, in Inner London, more potential respondents refuse to take part in the survey, but the respondents who do take part are the most likely to stay within the sample for all five waves, compared with the other regions. However, because Inner London starts with a much lower response rate, its retention rate (the proportion of the wave 1 respondents still within the sample at wave 5) appears less significant; the South West, South East and the Rest of Yorkshire and Humberside all have similar retention rates. Table 1 also highlights the fact that there are two general groups of non-responders: those who refuse at wave 1 and never take part in the survey and those who take part at wave 1 but refuse at one of the subsequent waves (attrition cases). The data suggest that wave 1 non-response is highest in Inner and Outer London and in the West Midlands Metropolitan area, whereas attrition is highest, and the retention rate lowest, in Merseyside, Tyne and Wear, East Midlands, Strathclyde and Greater Manchester.

### Non-response

The trend for falling response rates means there is an increase in non-response, which consists of non-contacts and refusals to interview. Refusals to interview can be further broken down into refusals to re-interview, refusals to headquarters,<sup>1</sup> outright refusals<sup>2</sup> and circumstantial refusals.<sup>3</sup> **Figure 3** shows the composition of non-response for the April to June quarters for 2006 to 2008. This shows that all categories, except 'refusal to re-interview', have risen as a proportion of the total,

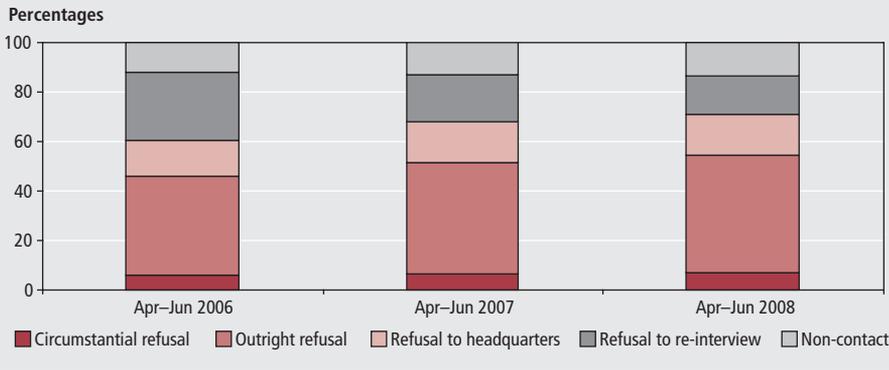
**Figure 2**  
**Attrition rates between waves, 1997 to 2008**



**Table 1**  
**Attrition and retention rates: by Government Office Region**

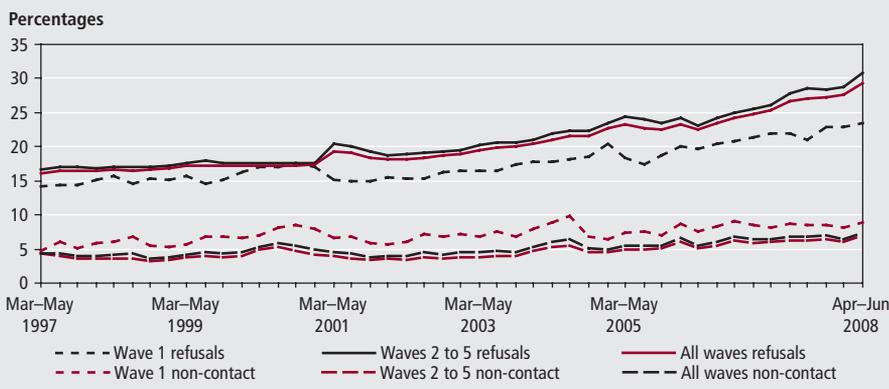
Government Office Region	Wave 1 in Apr-Jun 2007 (per cent)	Wave 5 in Apr-Jun 2008 (per cent)	Attrition (percentage points)	Retention rate (per cent)
Inner London	53.2	48.6	4.7	91.2
South West	73.3	65.2	8.1	88.9
South East	69.2	61.0	8.3	88.1
Rest of Yorkshire and Humberside	71.7	62.6	9.1	87.3
Outer London	59.4	49.4	10.0	83.1
Rest of Scotland	68.9	58.8	10.1	85.4
West Midlands Metropolitan Council	60.7	50.6	10.1	83.3
Rest of North East	71.5	60.2	11.3	84.2
Rest of North West	71.6	60.3	11.3	84.2
Rest of West Midlands	70.2	58.7	11.5	83.6
South Yorkshire	76.6	64.5	12.0	84.3
West Yorkshire	77.2	64.8	12.4	84.0
East of England	70.7	58.3	12.4	82.4
Merseyside	69.3	55.2	14.1	79.6
Tyne and Wear	77.1	62.7	14.4	81.3
East Midlands	75.2	60.4	14.7	80.4
Strathclyde	72.1	56.8	15.3	78.8
Greater Manchester	70.0	54.1	15.8	77.4
England	69.2	58.5	10.7	84.5
Wales	72.5	61.8	10.7	85.2
Scotland	70.3	57.9	12.3	82.5

**Figure 3**  
**Composition of non-response (excluding imputed households)**



**Note:**  
The outcome codes referred to here are peculiar to the LFS and do not currently conform to internationally agreed definitions.

**Figure 4**  
**LFS refusal and non-contact rates, 1997 to 2008**



which has itself been rising as response rates have fallen. Outright refusals now amount to almost half of the non-response cases and refusal to headquarters 17 per cent, while refusal to re-interview has fallen from more than a quarter to only 15 per cent of the total. The latter may be related to the increased emphasis on agreement to recall mentioned above, as well as the introduction of ‘avoiding refusal training’ (ART), although there may be other factors giving rise to such a substantial decline.

**Non-contact**

Non-contact is recorded when interviewers are unable to make contact with any eligible members of the household during the sample period, either for face-to-face or telephone interviews, which are the predominant interview methods for waves 1 and waves 2 to 5, respectively. As Figure 3 shows, non-contact accounted for about one in seven non-response cases in April to June 2008. Figure 4 shows the trends for LFS non-contacts and refusals from 1997 to 2008. Although wave 1 non-contact rates have risen as a proportion of total non-

response, from less than 5 per cent at the start of the period, they have tended to hover just above 8 per cent for the past three years. As contact continues to be attempted for cases where it failed in the previous wave, non-contact rates tend to decline for each wave, as some fresh attempts will be successful. Thus, in April to June 2008, non-contact ranged from 8.8 per cent for wave 1 cases to 6.3 per cent for wave 5 cases, averaging 7.4 per cent across all waves. Since, for most wave 1 cases, a different mode to subsequent waves (face-to-face rather than by telephone) is employed, and later waves are ‘sweeping up’ unsuccessful cases from earlier waves, the reasons for non-contact may differ and should be looked at separately.

Despite recent wave 1 non-contact rates being close to 8 per cent, a record proportion of non-contacts were reported in the summer of 2004, when figures rose to 9.8 per cent. Other waves also went up significantly during this quarter and response fell. For all waves, non-contact usually appears to peak around summer but fall in the autumn and sometimes in the winter quarters.

**Type of non-contact**

Non-contact can take a number of forms: no contact at all or contact but with a person who is either not a member of the household (a neighbour, for instance) or is not a responsible resident (that is, a child). Table 2 illustrates the importance of the different forms of non-contact by geography, type of accommodation and type of household.

London shows the highest proportions of non-contacts where some contact was made, either with non-household members (7.8 per cent) or with non-responsible household members (1.2 per cent) and exhibits by far the greatest overall non-contact rate. At the other extreme, in Wales, in the relatively small proportion of cases where no contact was made, this was predominantly because no contact could be made with anyone.

The overall non-contact rate is lowest for houses and bungalows and highest for ‘other’, converted flats and maisonettes and ‘mobile’ accommodation. For detached houses and ‘some other kind of accommodation’, a relatively high proportion of non-contacts involved some contact but only with a child or other resident not deemed to be responsible, whereas flats, maisonettes and, to a smaller extent, terraced houses showed a relatively high proportion of contacts with non-household persons – near neighbours or babysitters, perhaps.

It is often not possible for non-contacts to be assigned a type of household. However, of those households where interviewers could classify a type, single-person, non-retired households had by far the highest non-contact rate, while all other categories ranged between 0.7 and 1.6 per cent. Higher proportions of non-contact with anyone at the address seem to be common with household types having no children and where potential respondents would be likely to be working or elderly. Multi-person households have a particularly high proportion of contacts with non-household persons, while households with couples and children or lone parents are more likely to have contact made with a non-responsible household member.

**Reasons for non-contact**

If an interviewer is unable to make contact with a sampled household during the interview period, they are asked to record the main reason for non-contact. Table 3 and Table 4 show data for the last three years concerning the main reasons for non-contact by face-to-face and telephone interviewers, respectively.

Table 2

**Types of non-contact: by country, accommodation and household type, April to June 2008**

		Percentages			
		Household non-	No contact	Contact only with	Contact only with
		contact rate	made	non-household	non-responsive
				non-household	household
				member	member
Country	England (excluding London)	8.0	92.8	5.5	1.7
	London	18.2	91.0	7.8	1.2
	Scotland	7.7	92.2	7.0	0.8
	Wales	6.0	94.5	4.9	0.6
Type of accommodation	House/bungalow – detached	0.8	52.4	19.0	28.6
	House/bungalow – semi-detached	1.4	71.7	17.4	10.9
	Terraced, end of terrace	1.8	63.8	24.1	12.1
	Flat/maisonette – purpose built	2.9	72.3	27.7	0.0
	Flat/maisonette – part house/converted house/other	5.2	59.1	40.9	0.0
	Mobile home, caravan or houseboat	3.7	0.0	0.0	0.0
	Some other kind of accommodation	10.6	60.0	0.0	40.0
Type of household	Single-person household, not retired	5.6	65.4	30.8	3.8
	Elderly/retired household	0.9	68.4	26.3	5.3
	Lone parent	0.9	60.0	0.0	40.0
	Couple – one or both working age (with children)	0.7	45.8	20.8	33.3
	Couple – one or both working age (no children or not sure about dependants)	1.4	80.6	12.9	6.5
	Multi-person household (students, sharers)	1.6	33.3	50.0	16.7
	Other	0.7	100.0	0.0	0.0
	Not known/uncertain	33.9	88.4	9.7	1.9

Table 3

**Main reason for non-contact by face-to-face interviewer**

Main reason for non-contact (face to face)	Percentages		
	Apr–Jun 2006	Apr–Jun 2007	Apr–Jun 2008
Rarely there/unconfirmed second residence	27.3	24.8	28.5
Would not answer door	15.8	16.9	17.6
Ran out of field time	14.6	16.8	13.7
Away all survey period/on holiday	14.0	10.2	11.5
Other	11.4	14.6	10.8
Shift worker/works odd hours	8.7	7.0	9.5
Probably vacant but unable to confirm	5.5	6.5	5.0
Telephone not answered	1.0	0.9	1.4
No reply to answer phone message	0.7	0.9	0.8
Communal phone	0.1	0.3	0.4
Number unobtainable	0.3	0.5	0.4
Could not find the address	0.3	0.3	0.2
Wrong number	0.2	0.4	0.1
Spare telephone line	0.0	0.1	0.0

Table 4

**Main reason for non-contact by telephone interviewer**

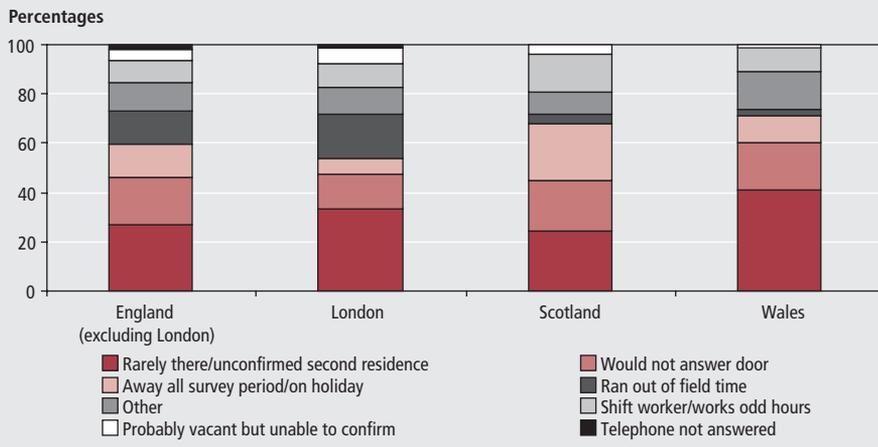
Main reason for non-contact (telephone)	Percentages		
	Apr–Jun 2006	Apr–Jun 2007	Apr–Jun 2008
No reply to answer phone message	23.6	34.9	39.7
Telephone not answered	24.1	21.7	23.6
Number unobtainable	29.7	27.5	21.9
Wrong number	9.3	5.9	8.7
Spare telephone line	4.6	2.8	1.8
Away all survey period/on holiday	1.6	1.1	0.9
Probably vacant but unable to confirm	1.4	0.9	0.8
Rarely there/unconfirmed second residence	0.9	0.5	0.7
Ran out of field time	1.6	1.3	0.7
Other	2.4	2.2	0.6
Shift worker/works odd hours	0.1	0.3	0.3
Would not answer door	0.7	0.6	0.2
Could not find the address	0.0	0.1	0.0
Communal phone	0.0	0.1	0.0

For field interviewers, Table 3 shows that the main reason for non-contact in the field is that the interviewer was unable to find a respondent at home when they visited the address. In fact, if reasons are grouped, the data show that more than one third of non-contacts are because the property was vacant or the resident rarely there, with another fifth where the respondent is away for a sustained period or working at the times when the interviewer attempts to make contact. Even when someone is present in the household, an increasing proportion of potential respondents are unwilling to answer the door. One other sizeable category relates to the interviewer running out of field time and being unable to make any further contact attempts, although this reason is likely to be mainly as a consequence of the difficulty of finding anyone at home.

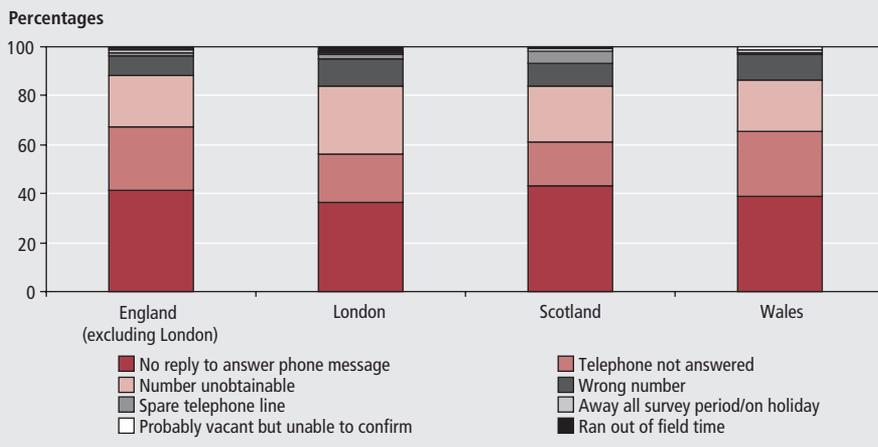
The main reasons for non-contact by the telephone unit are obviously related to that mode of communication: almost two-thirds relate to the telephone not being answered and a further third to the telephone number being wrong or unobtainable. The single main reason, 'no reply to an answerphone message' has risen substantially over the short period, to almost two-fifths.

To highlight any regional variations, **Figure 5** shows the reasons for non-contact (by face-to-face interviewers), with figures for England excluding London, with London shown separately. Dwellings in London and Wales were the most likely to have householders rarely there or to be a second residence, although the distribution

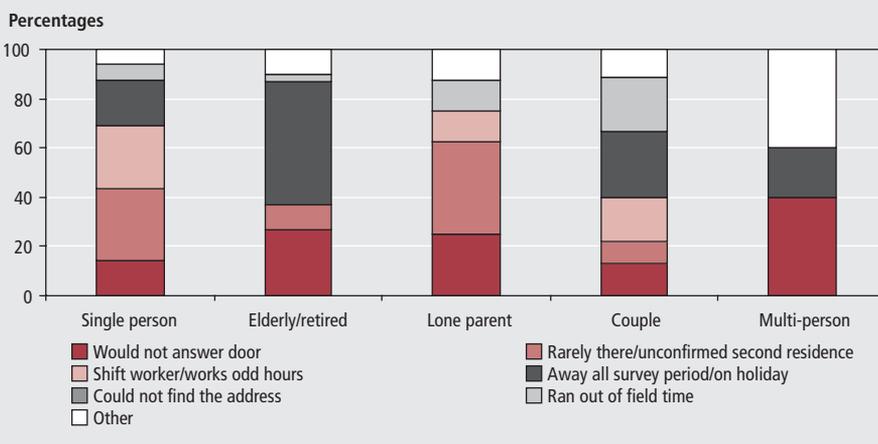
**Figure 5**  
Reasons for non-contact by face-to-face interviewer: by country, April to June 2008



**Figure 6**  
Reasons for non-contact by telephone unit: by country, April to June 2008



**Figure 7**  
Reason for non-contact by face-to-face interviewer: by household type, April to June 2008



between those two reasons would be likely to differ between the two regions. London and the rest of England had the largest percentage shares of 'ran out of field time' as the main reason for non-contact, reflecting the particular difficulty interviewers face in

making contact in certain areas. Scotland had a relatively high proportion reporting 'shift worker or works odd hours' or 'away all survey period'.

Figure 6 shows the reasons for non-contact (by the telephone unit) by country,

but with separate figures for London again. Sampled households in London were the most likely to have a wrong or unobtainable number, while Wales and the rest of England had the greatest proportions not answering the telephone.

Figure 7 and Figure 8 present the reasons for non-contact by face-to-face interviewers, by household and by dwelling type. This information is not available for telephone interviews and, for the majority of non-contacts, the data do not contain detailed information on household type as, in most cases, the interviewers do not feel able to make a judgement on this, since no contact has been made.

Figure 7 suggests that the main reason the elderly or retired were not contacted was because they were away for the whole of the survey period, perhaps reflecting ill health, whereas for lone parents and single-person households, rarely being there (or unconfirmed second residence) was the main reason. Being unwilling to answer the door was relatively prominent among the elderly and lone parents but particularly frequent for multi-person households.

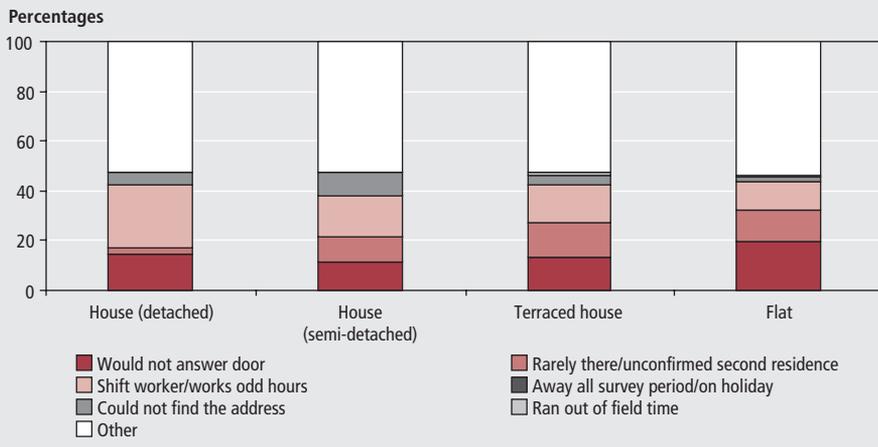
The main reasons for non-contact (by face-to-face interviewers) by dwelling type are shown in Figure 8. 'Other' accounted for over 50 per cent for each dwelling type. Apart from this category, a refusal to answer the door was most common for flats, while working shifts or odd hours was most common for detached houses. Interviewers only reported running out of time, to any notable extent, with flats and terraced houses.

The majority of interviewers do not face any reportable physical impediments when attempting to contact potential respondents. However, for those who do, the major impediments that appear persistently to be a problem are gaining access to the address through an entryphone or intercom (Figure 9). This is particularly true in Scotland, possibly due to the substantial number of tenement buildings there. A locked common entrance was next in importance, particularly in many areas of England. London had the most interviewers reporting 'security staff, concierge' as the reason for non-contact, which may be due to the concentration of blocks of flats with door staff.

### Refusals

Refusals account for a much larger proportion of the non-response figures than non-contacts: Figure 3 shows that refusals accounted for nearly 87 per cent of non-response figures in April to June

**Figure 8**  
Reason for non-contact by face-to-face interviewer: by dwelling type, April to June 2008



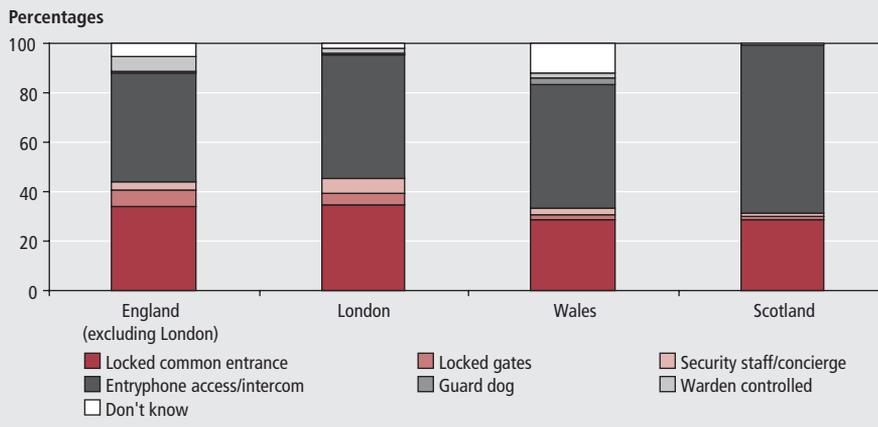
On a geographical basis, as with non-contact, London shows the highest refusal rate, at about 20 per cent, although it does not stand out to the same degree – other areas have rates of 15 to 17 per cent. Similarly, when refusal rates are viewed by accommodation type, ‘converted’, ‘mobile’ and ‘other’ accommodation do show the highest refusal rates (15 to 19 per cent) and houses and bungalows the lowest (9 to 11 per cent), the difference not being nearly so wide. The same narrow variation occurs for refusal by type of household: most household types have refusal rates ranging between 11 and 13 per cent; only ‘other’ and ‘lone parent’ households diverge, with rates around 7 to 8 per cent.

**Reasons for refusal**

The relative importance of particular reasons for refusal tends to differ between wave 1 and the subsequent waves; **Table 5** takes account of this. If reasons are grouped then, at wave 1, about one-third of refusals relate to a dislike of the survey, of government, and of revealing personal information. Another quarter relate to the respondent’s time available or ability to complete the interview. For later waves, although busyness and capability reasons remain almost as strong, the anti-survey reasons diminish, while broken appointments rise around fourfold from the wave 1 level of about 10 per cent, reflecting the general change of mode from face-to-face to the telephone unit.

**Figure 12** shows that, on a geographical basis, dislike of surveys, government and revealing information seem to be strongest in the rest of England while busyness and broken appointments are most frequent in London. Wales has the highest proportions of ‘too old/infirm’ and ‘about to go away’, while Scotland leads in terms of the catch-all category of ‘cannot be bothered’.

**Figure 9**  
Impediments to gaining access: by country, April to June 2008



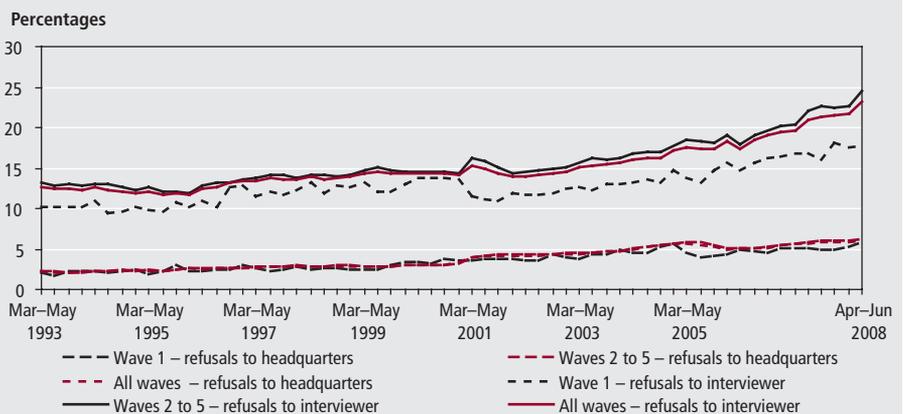
2008, while **Figure 4** shows the general rising trend for refusals, which have risen from around 16 per cent in 1997 to about 29 per cent in 2008. Refusals may take various forms including refusal in response to the letter from headquarters, outright refusals and circumstantial refusals.

**Figure 10** shows ‘refusals to headquarters’ and ‘refusals to interviewer’ (‘refusals to interviewer’ combine outright refusals and circumstantial refusals); **Figure 11** shows outright refusals and circumstantial refusals.

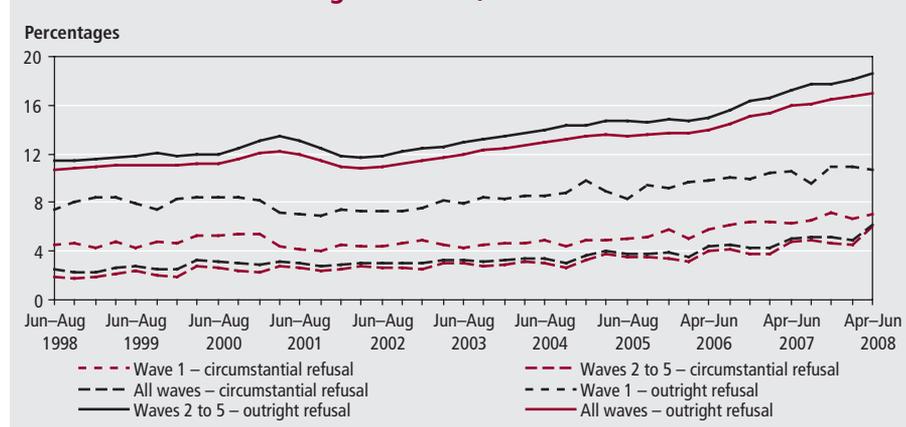
All refusal categories have risen considerably, as reflected in the falling response rate, with outright refusals (**Figure 11**) being consistently the most common and reaching around 17 per cent in 2008 for all waves. Although ‘refusal to interviewer’ and ‘outright refusal’ have increased by the greatest absolute proportion (about 9 and 7 per cent, respectively), ‘refusal to headquarters’ (as a response to the initial letter or leaflet) has shown by far the most substantial proportionate increase, rising almost threefold over the period.

Although all refusal categories have risen over the period, around 2001 there does appear to have been a downward shift for three of the four categories (not refusal to headquarters), and a smaller downward shift, particularly for wave 1, in another three (not circumstantial refusals), both of which are reflected in the response rates discussed earlier.

**Figure 10**  
Refusal rates to headquarters and interviewer, 1993 to 2008



**Figure 11**  
Circumstantial and outright refusals, 1998 to 2008



**Table 5**  
Reasons for refusal to wave 1 and waves 2 to 5 interviews

Refusal reason	Percentages					
	Mar-May 2003		Apr-Jun 2006		Apr-Jun 2008	
	Wave 1	Waves 2 to 5	Wave 1	Waves 2 to 5	Wave 1	Waves 2 to 5
Genuinely too busy	9.0	11.8	11.5	11.8	12.1	9.8
Cannot be bothered (used if no more precise reason)	8.8	7.3	13.0	9.1	11.2	8.1
Other	12.5	8.8	9.8	6.9	10.6	6.4
Respondent does not believe in surveys	13.6	5.3	12.2	3.6	10.2	3.2
Invasion of privacy	11.9	4.5	9.4	4.4	10.1	3.2
Broken appointment	6.9	26.3	9.5	36.0	10.0	42.5
Temporarily too busy	7.6	5.3	6.8	5.3	6.9	5.1
Respondent is anti-government	5.7	1.4	5.7	1.0	6.0	1.1
Personal problems	6.0	9.5	6.0	8.0	5.4	6.8
About to go away	2.3	5.5	3.8	6.5	4.6	5.5
Too old/infirm	5.0	1.2	3.9	1.3	3.5	1.1
Concerns about confidentiality	2.7	0.9	1.7	0.6	3.5	1.3
Not capable	1.1	0.5	1.5	0.6	1.4	0.6
Respondent dislikes survey subject matter	2.1	1.3	1.9	0.9	1.2	0.8
Language difficulties	1.0	1.2	0.8	0.8	0.7	0.4
Respondent has had bad experience with other surveys	0.7	0.5	1.0	0.5	0.7	0.5
Late contact – insufficient field time	1.2	2.6	0.9	0.5	0.6	0.5
Respondent reports already refused another interviewer	0.3	2.7	0.2	1.3	0.5	1.0
Refusal to HQ after interviewers visit	0.4	0.3	0.2	0.2	0.4	0.1
Survey takes/took too long	1.3	2.8	0.2	0.7	0.2	1.6
Put off by record keeping	0.1	0.2	0.1	0.3	0.0	0.3

**Note:**  
Percentages exclude imputed data. Waves 2 to 5 normally telephone interview.

**Who is refusing?**

Although it does not take account of the groups' proportions of the population, **Figure 13** does reveal that the bulk of refusals are accounted for by four categories of household, namely single (retired and non-retired) and couples (with or without children), with the largest numbers being among elderly people and couples with children.

Some information as to which households tend to fall out after the wave 1 face-to-face interview may be gleaned from information regarding recall interviews. At the end of the survey, the main respondent is asked by the interviewer if he or she

would agree to recall – meaning, take part in the survey again. This information differs from that above, in that the earlier set relates to refusal at any wave, while the recall information relates to refusal for the subsequent wave, voiced at the end of the current interview.

**Figure 14** suggests that households who do not agree to recall are most likely to be described as 'other' or 'elderly/retired'. Close to 15 per cent of 'elderly/retired' households interviewed in wave 1 declined to take part in the second wave at the end of the first interview. Lone parents were the group least likely to refuse to recall, with only around 8 per cent doing so.

Refusal to recall by type of dwelling percentages is shown in **Figure 15**. Those refusing to recall are proportionately highest in dwellings described as 'other' or 'mobile home'. For all other dwelling types, the percentage declining to take part in wave 2 interviews is around 10 per cent.

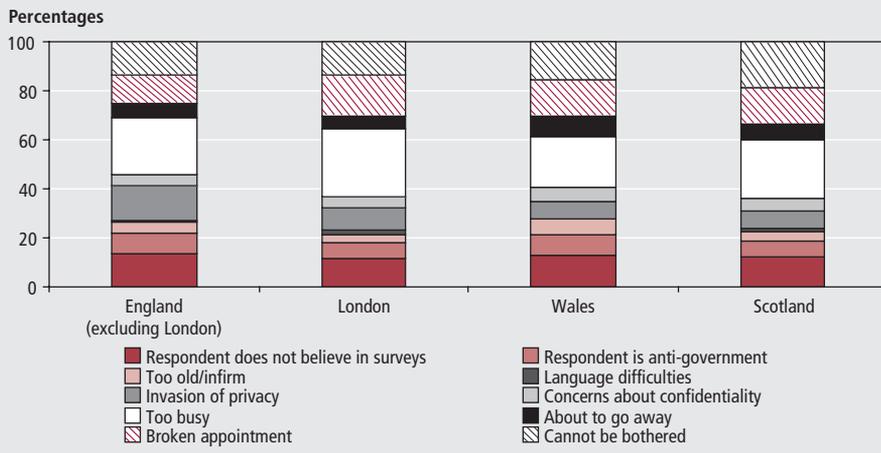
**Figure 16** shows that, since 1992, the proportion of respondents declining to take part in the next wave of the survey (not agreeing to recall) tended to rise until June 2005 (peaking at 13.5 per cent for refusals to recall at the end of the wave 1 interview) since when it has fallen to the current (wave 1) level of around 6 per cent. All waves have followed the same pattern although, throughout the period, refusal to recall at the end of wave 1 has been markedly higher than at subsequent waves, as is attrition more generally. The recent apparent improvement in agreement to recall may again be due to the increased management emphasis on this over recent years.

The survey does not currently ask those who do not agree to a recall at the end of their interview to give a reason for this, which would give an insight into why respondents who had been willing to take part decided not to do so next time. However, there are moves to add such questions to the survey (Smith and Robertshaw 2006).

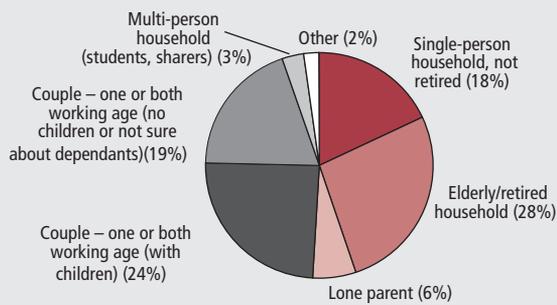
Interview length may be expected to influence recall willingness, although there is some debate as to its effects (Groves and Couper 1999). **Table 6** presents data on the average LFS interview length, in minutes, for each quarter over the past three years. As most wave 1 interviews are conducted face-to-face and most waves 2 to 5 interviews by the telephone unit, these figures have been highlighted. Face-to-face interviews tend to be longer than waves 2 to 5 interviews, as there are many questions only asked at the wave 1 interview. Wave 1 interviews seem to be increasing in length, now exceeding 30 minutes per person in quarter 2, which has tended to have the greatest number of questions. Although there is wide variation around the average, with the majority below this, this average interview length nevertheless equates to over one hour for the whole household.

Waves 2 to 5 interviews also appear to have increased in length, but average 7 to 10 minutes less than those at wave 1, currently ranging from about 19 to 24 minutes per person. The overall increases in interview times may be too small to influence response rates at the margin, although the overall length of time might

**Figure 12**  
**Ten main reasons for refusal: by country, April to June 2008**

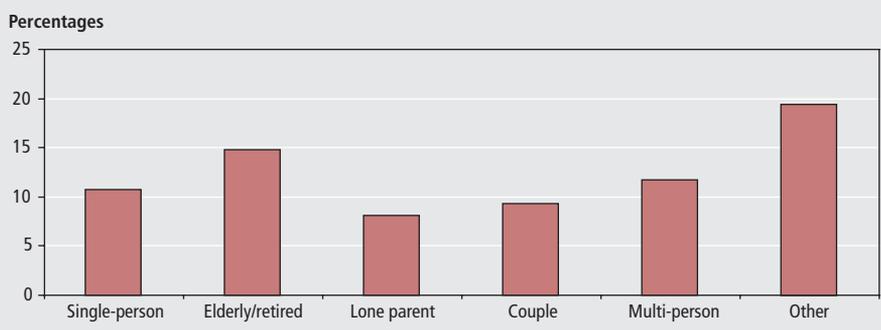


**Figure 13**  
**Percentage of refusals: by household type, April to June 2008**



**Note:**  
 The large proportion recorded as 'not known' has been removed.

**Figure 14**  
**Percentage of household types not agreeing to recall, April to June 2008**



**Note:**  
 Data exclude households for which interviewers are unable to indicate type.

be considered too great a burden for some respondents. As Table 5 shows, although it is not proportionately large, the length of the interview is cited as the main reason for refusal to waves 2 to 5 interviews much more than for wave 1 interviews.

**Discussion**

As has been shown in the above analysis, non-response is a very complex issue, with no single cause and certainly no single

cure. Numerous factors may influence response, including: public attitudes, media representation, data collection methodology, the weather, sporting events, staff training and political issues. These are to name but a few and it can be considered that almost everything can affect response rates in some way. While it is not possible to discuss all the potential factors affecting response rates here, or to propose interventions that could respond to all of

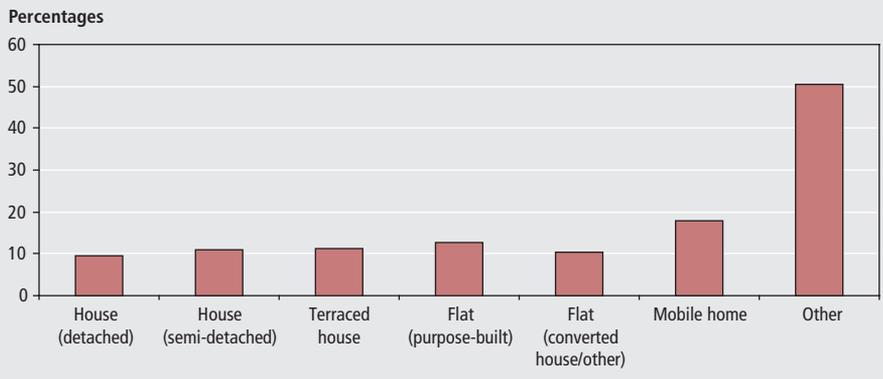
these factors, it is worth expanding on the data presented above to encourage further debate about the current and sustained falling response rates to the LFS.

The response rates for social surveys in general, but especially for the LFS as the UK's largest continuous survey, may well be suffering from widespread apathy and mistrust from the British public. The data presented above detail how a large and increasing proportion of non-response is due to potential respondents not believing in surveys, not trusting the government and generally not being bothered. There appears to be an increasing lack of support from the public and measures to prevent the falling response rates may have to look further than changing how the respondents are approached and targeted. Raising the profile and public awareness of the LFS through a variety of media may be one way to effect a significant change in the public's attitudes towards taking part in social surveys. Communicating the value of social surveys like the LFS through television programmes, advertisements and articles may be a tall order, but gaining the widespread awareness and the support of the public is worth considering as a way to make an impact on reversing the falling response rates.

It is also worth comparing the UK situation with that of other European countries. Table 7 shows response rate data from 2005 for other European countries which conduct a quarterly LFS; the figures may not be directly comparable and should therefore be treated with the utmost caution. These figures suggest that the UK is performing worse than most other European countries: only Denmark had a worse response rate in 2005. Some European countries have made their LFS participation compulsory; Table 7 also shows the division between those countries that have made participation in their LFS voluntary and those that have made it compulsory. The average response rate for the compulsory surveys is higher, as would be expected, although many of the other European countries conducting their survey with voluntary participation still have higher response rates than those with compulsory participation. The UK might learn from how these countries conduct their surveys. These data could also be used to argue that the UK LFS should be made compulsory as one potential solution to the declining response rates.

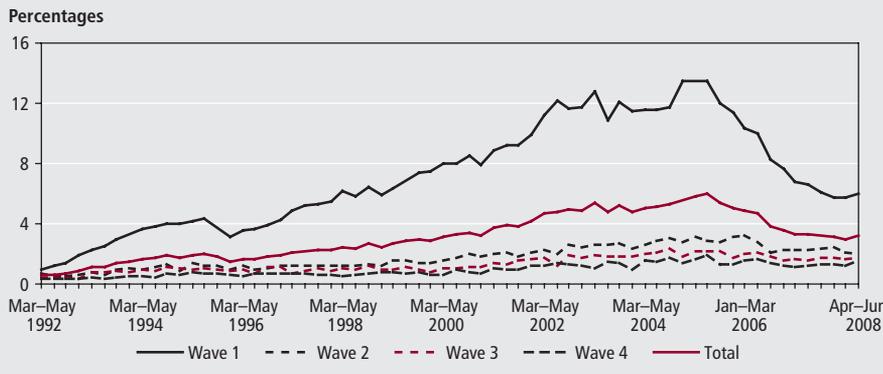
Reducing the burden on the respondent may also be one way to reduce the level of non-response. It might be possible to reduce the number of waves or increase

**Figure 15**  
**Percentage of dwelling types not agreeing to recall, April to June 2008**



**Note:**  
 Data exclude households for which interviewers are unable to indicate type.

**Figure 16**  
**Proportion of respondents not agreeing to recall interviews, 1992 to 2008**



the period between interviews, although this may have implications for the sample size and interviewer effort. Shortening the interview is another way of reducing the burden and non-response, but this is not easily achievable. Cutting out a few questions would not be likely to have a major impact on response rates; either the reduction in the number of questions would

have to be drastic or a radical change to how the data are collected would have to be made.

One key feature of the results is the wide variation in response, non-contact and refusal and the reasons cited, on the basis of geography, household and dwelling type, and other studies (Hopper 2008, Bright *et al* 2008) suggest variation by other

characteristics too. Some areas and groups exhibit very high non-contact and refusal rates while others have relatively high response rates. This suggests that, apart from the general policy measures discussed above, a set of targeted interventions focusing on high non-contact and high refusal groups, and taking account of the reasons for these, could be fruitful.

**Conclusions**

The LFS all-wave response rate has followed the widely-experienced prolonged decline and much activity is now being carried out within ONS to both gauge and ameliorate its effects. Furthermore, there is wide variation in response, non-contact and refusal and the reasons given for this geographically, by wave, mode, household and dwelling type. This suggests that the research and interventions required will need to be tailored to suit this variation.

Although a good deal of information is being collected regarding distribution of, and reasons for, non-response, ONS is currently exploring what more can be done. Extra information needs to be gathered by interviewers regarding features of non-contactable and refusing households and dwellings and reasons for these, and a deeper insight might be gained by specially surveying non-responders. Further analysis should also be carried out to derive determinants of the various types of non-response among the different areas and groups.

Work is necessary to determine the effects of falling response on quality of estimates; this will inform the decisions on interventions and adjustments. Current work at ONS is considering, among other things, the characteristics of high and low responders, the effects of response rate on standard errors and the non-response bias.

**Table 6**  
**Average interview times**

		Minutes											
		Quarter 1 (Jan-Mar)			Quarter 2 (Apr-Jun)			Quarter 3 (Jul-Sep)			Quarter 4 (Oct-Dec)		
		2006	2007	2008	2006	2007	2008	2006	2007	2008	2006	2007	2008
Face-to-face	Wave 1	26.83	27.92	29.29	29.98	29.60	30.56	27.45	27.07	..	28.44	28.85	..
	Waves 2 to 5	17.75	20.77	20.38	20.39	22.36	22.00	18.26	19.73	..	20.14	21.54	..
	All waves	23.94	25.67	26.59	26.82	27.41	27.97	24.51	24.84	..	25.75	26.59	..
Telephone unit	Wave 1	31.40	31.97	30.20	31.05	32.31	34.95	25.64	27.51	..	31.31	28.31	..
	Waves 2 to 5	17.84	19.38	19.60	22.10	21.42	23.79	17.52	18.22	..	19.12	21.47	..
	All waves	17.87	19.4	19.62	22.12	21.44	23.80	17.54	18.23	..	19.14	21.48	..
Total	Wave 1	26.85	27.93	29.30	29.98	29.61	30.57	27.44	27.07	..	28.46	28.84	..
	Waves 2 to 5	17.83	19.58	19.71	21.82	21.55	23.53	17.64	18.44	..	19.28	21.48	..
	All waves	20.14	21.59	22.08	23.86	23.56	25.29	20.16	20.66	..	21.63	23.31	..

**Note:**  
 Average times by wave and excludes interviews of less than five minutes.

**Table 7**  
**Response rates for European countries conducting a quarterly labour force survey**

		Percentages	
Countries with voluntary labour force surveys	2005 response rate	Countries with compulsory labour force surveys	2005 response rate
Bulgaria	83.3	Belgium	79.3
Czech Republic	80.2	Germany	95.6
Denmark	63.4	Spain	80.4
Estonia	74.9	France	80.9
Ireland	90.9	Italy	90.6
Latvia	78.6	Cyprus	97.2
Lithuania	87.6	Malta	82.0
Hungary	87.5	Austria	89.3
Netherlands	86.6	Portugal	87.4
Poland	78.8	Slovakia	93.1
Romania	96.0	Turkey	85.1
Slovenia	83.8	Norway	88.0
United Kingdom	65.9		
Iceland	82.1		
<b>Average</b>	<b>81.4</b>	<b>Average</b>	<b>87.4</b>

Source: Eurostat 2007

Given the variation in response and non-response and the reasons given, interventions targeted according to these could have a greater impact than a blanket approach. Nevertheless, certain general policies, such as ART, improving the survey content and interview length, and improving the image of the ONS in general and the LFS in particular, and even consideration of making the survey compulsory, should also be pursued. However, it is important that interventions should be considered in the context of a holistic approach in which they are seen as part of a complete system and all aspects are included within the process.

### Notes

- 1 A refusal to headquarters denotes a household which contacts the field office to refuse to participate in the survey in response to the advance letter.
- 2 An outright refusal is a household which refuses to respond to the survey, and the interviewer feels that there is no chance of an interview at the current or in any future wave.
- 3 Circumstantial refusal occurs where a respondent refuses to take part in the survey in a particular wave because of a temporary circumstance. It enables the interviewer to call back at the next wave.

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## APPENDIX

Table A1  
Response rates, 1993 to 2008

							Percentages	
	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Waves 2 to 5	All waves	
Mar–May 1993	83.1	..	..	..	..	78.4	79.3	
Jun–Aug 1993	82.2	..	..	..	..	78.2	79.0	
Sep–Nov 1993	82.7	..	..	..	..	78.1	79.1	
Dec 1993–Feb 1994	83.0	..	..	..	..	77.9	78.9	
Mar–May 1994	82.3	..	..	..	..	77.1	78.1	
Jun–Aug 1994	83.5	..	..	..	..	76.6	77.0	
Sep–Nov 1994	84.2	..	..	..	..	76.7	78.2	
Dec 1994–Feb 1995	83.7	..	..	..	..	76.9	78.2	
Mar–May 1995	84.0	..	..	..	..	76.1	77.6	
Jun–Aug 1995	82.6	..	..	..	..	76.2	77.5	
Sep–Nov 1995	81.7	..	..	..	..	76.4	77.4	
Dec 1995–Feb 1996	82.9	..	..	..	..	76.0	77.4	
Mar–May 1996	82.1	..	..	..	..	75.3	76.6	
Jun–Aug 1996	82.2	..	..	..	..	74.6	76.1	
Sep–Nov 1996	79.9	..	..	..	..	74.7	75.7	
Dec 1996–Feb 1997	79.5	..	..	..	..	74.7	75.6	
Mar–May 1997	81.0	..	..	..	..	73.8	75.2	
Jun–Aug 1997	79.6	..	..	..	..	73.6	74.8	
Sep–Nov 1997	80.6	76.8	75.2	72.1	72.2	73.7	75.1	
Dec 1997–Feb 1998	79.1	76.7	74.9	73.0	71.5	73.7	74.7	
Mar–May 1998	78.0	75.0	74.0	72.0	72.0	73.2	74.2	
Jun–Aug 1998	78.7	74.7	72.8	71.5	70.2	72.9	73.5	
Sep–Nov 1998	79.2	76.3	72.7	70.8	70.6	73.3	73.9	
Dec 1998–Feb 1999	79.6	74.7	73.6	70.3	69.5	72.7	73.5	
Mar–May 1999	78.7	74.4	71.9	70.2	68.4	71.9	72.7	
Jun–Aug 1999	78.5	73.3	71.4	69.0	68.2	71.0	72.0	
Sep–Nov 1999	78.1	74.2	71.1	69.4	68.6	71.3	72.2	
Dec 1999–Feb 2000	76.9	73.4	71.9	68.8	67.8	71.0	71.8	
Mar–May 2000	76.0	71.0	69.6	69.0	66.3	69.0	70.4	
Jun–Aug 2000	74.8	70.0	68.4	67.0	67.3	68.2	69.5	
Sep–Nov 2000	74.0	70.3	68.7	66.6	66.2	68.0	69.1	
Dec 2000–Feb 2001	75.0	70.0	68.3	66.7	65.5	67.6	69.1	
Mar–May 2001	78.1	70.4	67.1	65.6	65.5	67.4	69.4	
Jun–Aug 2001	78.3	71.3	68.6	65.2	64.4	67.6	69.6	
Sep–Nov 2001	79.3	71.9	69.5	66.6	64.4	68.4	70.3	
Dec 2001–Feb 2002	78.7	71.9	68.7	66.7	65.4	68.4	70.2	
Mar–May 2002	78.6	70.3	68.8	65.9	64.9	67.7	69.7	
Jun–Aug 2002	77.4	68.9	66.8	65.5	64.0	66.6	68.5	
Sep–Nov 2002	76.9	68.4	66.4	64.3	63.9	66.0	68.0	
Dec 2002–Feb 2003	76.3	68.4	65.0	63.5	62.8	65.1	67.2	
Mar–May 2003	76.6	67.0	64.6	61.8	61.3	64.0	66.2	
Jun–Aug 2003	76.0	66.9	63.7	61.0	60.0	63.1	65.4	
Sep–Nov 2003	75.9	67.7	63.8	60.9	60.4	63.3	65.7	
Dec 2003–Feb 2004	74.1	65.2	63.3	60.4	59.3	62.1	64.4	
Mar–May 2004	73.3	64.4	61.6	59.7	58.3	61.0	63.4	
Jun–Aug 2004	72.1	64.4	61.9	58.3	58.0	60.6	62.9	
Sep–Nov 2004	74.7	65.9	62.6	60.0	57.5	61.5	64.1	
Dec 2004–Feb 2005	73.2	64.3	61.6	58.7	57.2	60.4	63.0	
Mar–May 2005	74.3	61.2	60.2	57.6	56.4	58.8	61.9	
Jun–Aug 2005	75.1	63.2	58.1	57.3	56.4	58.6	62.0	
Sep–Nov 2005	74.2	64.5	59.9	55.1	56.0	58.9	61.9	
Dec 2005–Feb 2006	72.5	63.5	60.8	56.5	54.2	57.4	61.4	
Jan–Mar 2006	72.8	63.9	61.5	57.6	55.0	59.5	62.1	
Apr–Jun 2006	71.2	62.3	58.6	57.6	55.4	58.5	61.0	
Jul–Sep 2006	70.1	61.7	58.5	54.9	55.1	57.5	60.0	
Oct–Dec 2006	70.0	63.0	59.9	56.0	54.4	58.3	60.6	
Jan–Mar 2007	69.9	63.0	60.1	57.0	54.9	58.7	60.9	
Apr–Jun 2007	69.4	61.4	59.1	55.2	54.4	57.5	59.9	
Jul–Sep 2007	70.5	62.3	57.8	55.6	54.0	57.4	60.0	
Oct–Dec 2007	68.5	63.5	58.7	54.6	54.5	57.8	59.9	
Jan–Mar 2008	69.0	62.8	60.3	56.0	54.2	58.3	60.4	
Apr–Jun 2008	67.8	59.1	56.4	53.6	52.3	55.3	57.8	

**Note:**

Data do not include imputed cases.

## FEATURE

Joe Robjohns

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# How similar are ONS's annual and monthly business inquiries?

## SUMMARY

This article supports the Office for National Statistics' monthly and annual surveys reconciliation programme. It presents an analysis of the coherence of business survey returns between the Monthly Inquiry into the Distribution and Service Sector (MIDSS) and Monthly Production Inquiry (MPI) compared with the Annual Business Inquiry. A two-stage methodology is employed: firstly, analysing the aggregate data and secondly, using microdata sets matching individual business responses from the monthly and annual surveys. This analysis is reported in terms of levels and growth rates for both an unadjusted and an adjusted MPI/MIDSS series.

The Office for National Statistics (ONS) is responsible for producing different vintage estimates of gross domestic product (GDP).<sup>1</sup> ONS publishes four revised estimates of GDP; the first estimate of GDP output is published around 25 days after the end of the quarter (Robinson 2005) while the second estimate is published four and a half weeks later. The Monthly Production Inquiry (MPI) and Monthly Inquiry into the Distribution and Service Sector (MIDSS) are used in the production of the preliminary estimates of GDP, before the Annual Business Inquiry (ABI) is incorporated in the third estimate. The fourth estimate and first benchmark of GDP is published in the National Accounts *Blue Book* after a lag of approximately 18 months, although this estimate can be revised through stalled revisions or methodological changes (Mahajan 1997).

In order to ensure the quality of the GDP estimates and the data sources that go into producing them, ONS has implemented a programme of analysis to explore whether the data are subject to any bias. This article adds to the growing literature by comparing results from the MPI and MIDSS monthly surveys with the ABI annual survey. The article supports ONS's monthly and annual surveys' reconciliation programme started in 2000 and which was last completed for the release of the *Blue Book 2005*.

## Analysis methodology

In order to assess the coherence between the monthly surveys and ABI turnover, a two-stage methodology was employed.

Firstly, an analysis of ONS's final aggregated estimate of monthly data was compared with the ABI annual series. This analysis is reported in levels and growth rates for both an unadjusted (raw data) series and an adjusted MPI/MIDSS series. Adjustments are in the main applied to manage survey design issues such as sample rotation and large reclassifications; this is done to help preserve a continuous time series of growth (Duff and Morgan 2007). The second stage uses ONS's Virtual Microdata Laboratory<sup>2</sup> to analyse a business unit's monthly response with the same unit's annual response. The microdata sets were produced using a matching technique such that businesses are only maintained in the overlap if they represent a full year of monthly data that correspond to the same period recorded in the ABI. For example, a business reporting from April to March in the ABI but only from April to December in the monthly surveys would be dropped from the overlap. The results are presented using identical methodologies, but are reported for the MPI and MIDSS separately – a full description of MPI and MIDSS sectors with their corresponding Standard Industrial Classification (SIC) codes is listed in Appendix **Table A1** and **Table A2**.

## MPI results

### Aggregate analysis

In this analysis, the published aggregate ABI data are used as the benchmark. The analysis is restricted to the years 1999 to 2005, as there were major differences in the sampling regime for the ABI before

then (Jones 2000). The aggregate analysis explores the issue of bias in ABI and MPI turnover in terms of nominal levels and growth rates.

**Nominal values**

**Table 1** records aggregate annual turnover for both the ABI and MPI and includes a ratio of MPI to ABI turnover. A ratio of less than one indicates that the ABI turnover is higher than that for the MPI.

A key finding here is that there is a consistent underestimation of annual turnover in the MPI series compared with the ABI. This under-reporting is estimated to be more than 10 per cent of turnover in all of the seven years – 73 per cent of this difference is attributed to two industries, ‘food products, beverages’ (SIC 15) and ‘coke, refined petroleum products and nuclear fuel’ (23). Of the two MPI series, adjusted MPI turnover is closer in terms of level of expenditure to the ABI series.

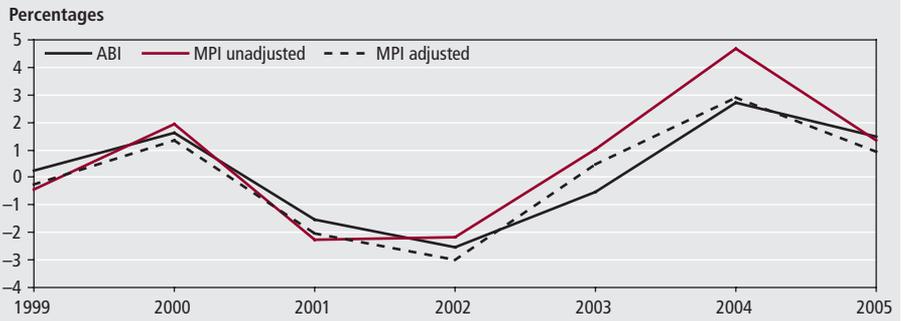
**Growth rates**

The level of turnover is important inasmuch as it provides a view of the economy at a particular point of time. However, of more importance is the growth rate, as it determines the long-term trend and indicates the strength within the sector as a whole. **Figure 1** shows the growth rates of ABI and MPI turnover.

The MPI growth rates are closely aligned to those of the ABI for all data points. This suggests that the MPI shares the same statistical signal as the ABI and is unbiased. In five of the seven data points, the MPI adjusted growth rate is more closely aligned to the ABI series than the adjusted growth rate, although in three of these data points the difference is only marginal.

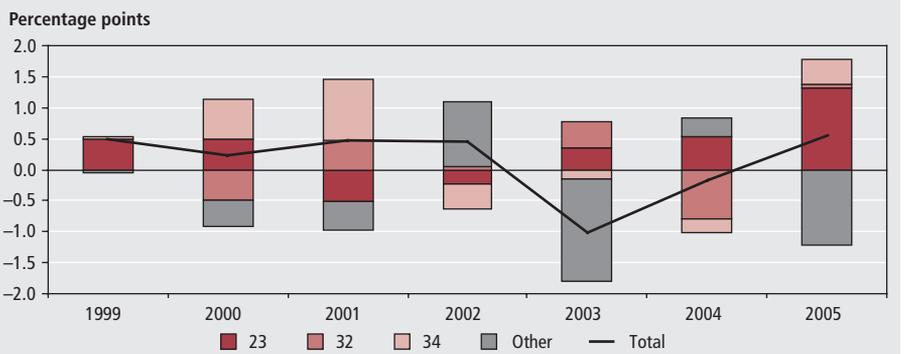
To assess the impact of individual industries on the aggregate position, **Figure 2** decomposes the differences in the ABI and adjusted MPI turnover growth rate at the industrial level.

**Figure 1**  
MPI and ABI annual turnover growth rates



Source: Office for National Statistics

**Figure 2**  
Contributions to differences in ABI and adjusted MPI turnover growth rates



Source: Office for National Statistics

There is no evidence of a systematic bias in any single industry. Figure 2 reports a counterbalancing effect: an inflated growth rate in one industry is offset by a deflated growth rate in another. ‘Coke, refined petroleum products and nuclear fuel’ (SIC 23) and ‘motor vehicles, trailers and semi-trailers’ (34) have the largest single differences of all the industries – they are the fifth and third largest industries in terms of output.

**Noise-to-signal ratio**

**Table 2** expands the analysis of the congruence by comparing the unadjusted

and adjusted noise-to-signal ratio. This is calculated by comparing the difference in the variation of MPI and ABI turnover growth rates with the variation of ABI turnover growth rates (see below) – the closer the ratio to zero, the greater the statistical signal.

**MPI noise-to-signal ratio**

$$= \frac{\text{var}\left(\frac{MPI^t - MPI^{t-1}}{MPI^{t-1}}\right) - \text{var}\left(\frac{ABI^t - ABI^{t-1}}{ABI^{t-1}}\right)}{\text{var}\left(\frac{ABI^t - ABI^{t-1}}{ABI^{t-1}}\right)}$$

- var variance
- MPI MPI turnover
- ABI ABI turnover
- t time (year)

The ratios report a stronger signal in the adjusted series in terms of the manufacturing sector as a whole and also in the majority of two-digit SIC industries. The overall difference in variation is 0.54 points; however, this is considerably affected by the relatively poor performing industries of ‘pulp, paper and paper products’ (two-digit SIC20) and ‘recycling’ (37). At an industrial level, the adjusted series outperforms the unadjusted series in 12 of the 23 two-digit

**Table 1**  
ABI and MPI aggregate turnover

	Turnover (£ million)			Ratio (MPI/ABI)	
	ABI	MPI unadjusted	MPI adjusted	MPI unadjusted	MPI adjusted
1999	461,771	395,350	412,066	0.86	0.89
2000	469,146	403,011	417,700	0.86	0.89
2001	461,898	393,911	409,270	0.85	0.89
2002	450,090	385,362	396,924	0.86	0.88
2003	447,637	389,232	398,825	0.87	0.89
2004	459,880	407,495	410,437	0.89	0.89
2005	466,731	413,013	414,269	0.88	0.89

Source: Author's calculation on ONS sources

Table 2

### Noise-to-signal ratio between the adjusted and unadjusted MPI time series and ABI growth rates, 1999 to 2005

SIC2	Unadjusted	Adjusted
15	4.25	1.19
16	0.94	1.04
17	4.04	1.59
18	1.83	1.78
19	-0.12	-0.65
20	9.46	1.97
21	-0.67	-0.83
22	-0.66	-0.79
23	0.58	1.55
24	-0.45	0.59
25	0.79	-0.46
26	-0.88	-0.79
27	-0.14	-0.46
28	3.30	0.89
29	0.68	0.28
30	-0.20	-0.48
31	0.81	0.03
32	0.11	0.42
33	0.49	0.07
34	2.54	3.13
35	0.61	1.10
36	3.08	-0.57
37	23.36	1.39
All industries	0.70	0.16

Source: Office for National Statistics

SIC industries; in six of the industries (15, 17, 20, 28, 36 and 37), the absolute differences are over two points. In 11 of the 23 two-digit SIC industrial categories, the unadjusted series outperforms the adjusted series. These 11 industries account for over 50 per cent of manufacturing turnover. In four of the industries (19, 23, 34 and 35), the unadjusted data outperforms the adjusted series by 0.5 or more points.

Overall, the results indicate that the adjusted series are more closely aligned to the ABI series in nominal levels, growth rates and the noise-to-signal ratio. However, the unadjusted series performs better in terms of turnover growth rates in two of the seven years and contains a greater statistical signal for 11 two-digit SIC industries which, combined, account for over 50 per cent of manufacturing output. This is an important finding of the research – if the ABI is taken as the benchmark, then the noise-to-signal ratio results suggest that adjusting the figures in themselves may not add value for certain industries.

As a result of ONS's research programme, a decision was recently made to revamp the Index of Production – ONS has now moved considerably away from adjustments, with

most of the historical adjustments actually being removed. The findings from this article provide support for this change of approach, particularly at the industrial level.

The following analysis uses microdata to further explore the relationship between ABI and MPI returns, by analysing individual business responses.

### Microdata analysis

This section considers the degree of fit between the reported turnover of the MPI and ABI surveys from individual businesses. The analysis uses formal measures of correlation and regression analysis. All analysis was completed using natural logarithms to 'normalise' the data, and hence improve its statistical properties.

**Table 3** details the number of businesses that completed 12 months' worth of MPI returns and a matched annual ABI return, from 1999 to 2005. Just 2 per cent (150,000) of all manufacturing businesses, but one-third (7,500) of all businesses included in the overall MPI sample, are included within the ABI/MPI matched sample. The 'moving target' nature of the MPI survey means that companies are only included in the matched sample if their monthly MPI returns directly correspond with the exact period of their ABI return.

As a deliberate part of the sampling strategy, the ABI and MPI samples are individually skewed towards large employers. **Table 4** shows that a relatively low proportion of businesses are included in the sample, although they contribute a high percentage of total employment and, more often than not, turnover. With a relatively high proportion of sector employment included within the sample, it is possible to make inferences for the overall trend.

The coverage varies widely across industries. The largest two industries in terms of turnover, 'food products, beverages' (SIC 15) and 'chemical and chemical products' (24), are generally well covered in terms of both business count and employment. 'Fabricated metal products, except machinery and equipment' (28), which provides nearly 6 per cent of manufacturing output, however, is only covered in 1 per cent of businesses and 15 per cent of employment.

The ratios in **Table 5** show that even when business units are matched directly, there is a consistent tendency to underestimate MPI turnover compared with ABI by over 15 per cent on average (2005 is an outlier attributable to 'coke, refined petroleum products and nuclear

Table 3

### Frequencies of matched businesses in the overlap microdata set

	Frequency (number)	Percentages
1999	3,417	2.0
2000	3,290	2.0
2001	3,227	2.0
2002	3,060	1.9
2003	2,909	1.9
2004	2,938	1.9
2005	2,696	1.8
Total	18,009	

Source: Office for National Statistics

Table 4

### Percentage of total business and employment contained in the overlap data set, 1999 to 2005

SIC2	Percentages	
	Firm count	Employment
15	5	38
16	23	53
17	3	29
18	*	21
19	*	29
20	*	16
21	5	38
22	1	30
23	2	42
24	8	55
25	3	32
26	3	46
27	5	25
28	1	15
29	2	33
30	*	39
31	3	35
32	4	53
33	2	35
34	5	25
35	4	56
36	1	25
37	*	23

Note: Source: Office for National Statistics

\* Removed due to ONS rules on disclosure.

Table 5

### Ratio of MPI to ABI turnover

	Ratio MPI/ABI
1999	0.82
2000	0.83
2001	0.84
2002	0.85
2003	0.83
2004	0.85
2005	0.76

Source: Office for National Statistics

fuel' (23)). This is consistent with the key finding at an aggregate level, and supports the view that the lower recording of turnover in the MPI is a feature of the unit-level results, rather than associated with sampling or grossing methodology.

At an industrial level, 'food products, beverages' (SIC 15), 'coke, refined petroleum products and nuclear fuel' (23) and 'motor vehicles, trailers and semi-trailers' (34) are all systematically under-reported in nominal terms. Together, these industries account for over 74 per cent of the total difference.

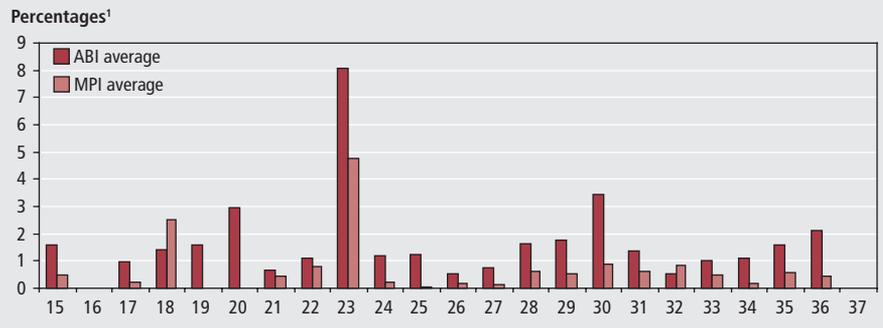
**Correlation and regression analysis**

It is possible to test formally the relationship between log ABI turnover and log MPI turnover by calculating a correlation coefficient. The Kendall tau rank correlation coefficient<sup>3</sup> is used to measure the degree to which two variables are linearly related. A positive value indicates that the variables move in the same direction and a negative one in the opposite direction. A correlation coefficient of +1 or -1 means that there is a perfect positive/negative linear relationship; 0 indicates that there is no correlation.

The results of the correlations are presented in **Table 6**. The table shows that

**Figure 3**

**Percentage of businesses that are ABI or MPI dominant outliers, 1999 to 2005**



**Note:**

1 Observations with log ratio >0.5 or <-0.5.

Source: Office for National Statistics

MPI turnover is highly correlated for all manufacturing industries and is generally improving over time. As such, MPI turnover can be said to be a valid predictor of ABI turnover.

Quantile regressions were also used as a pseudo-correlation test to test the robustness of the correlations and further evaluate the extent to which two variables are similar. The full results are shown in **Appendix Table A3**. They confirm that the MPI is generally a good predictor of the ABI and demonstrate that the centre of the distributions of both ABI and MPI returns are unbiased.

**Sensitivity analysis**

In order to explore which industries were most severely affected by individual companies reporting the largest difference in ABI and MPI returns, and the extent to which the results were affected by extreme values, MPI and ABI dominant outliers were constructed. Initially, a log ratio of MPI and ABI turnover was calculated; **Figure 3** plots the proportion of observations that had a log ratio of greater than 0.5 or less than -0.5 (a 50 per cent difference between the two). A ratio of greater than 0.5 indicates an ABI dominant outlier and a ratio of less than -0.5 identifies an MPI dominant outlier.

There are more ABI-dominant outliers in the majority of industries. These outliers are partially responsible for the evident discrepancy in the levels of the ABI and MPI at the aggregate level. At an industrial level, 'coke, refined petroleum products and nuclear fuel' (SIC 23) had proportionately the largest number of ABI and MPI dominant outliers.

The following analysis looks at the impact of the outliers between the two surveys on the aggregate growth series. For this analysis, a simple weighted methodology is used to produce an MPI-equivalent time series from the microdata.<sup>4</sup> The same firms are then subtracted from the MPI and ABI samples and weighted up to examine the aggregate effect of the subtraction of outliers at the 1, 5 and 10 per cent tails of the distribution. These aggregates are then compared to observe what difference eliminating outliers has on the aggregate growth rates.

**Figure 4** and **Figure 5**, respectively, chart the difference in the growth rates for the MPI and ABI microdata excluding outliers. The graphs plot the difference by taking the overall growth rate including all observations and subtracting the growth

**Table 6**

**Kendall tau rank correlation coefficient for MPI and ABI turnover returns**

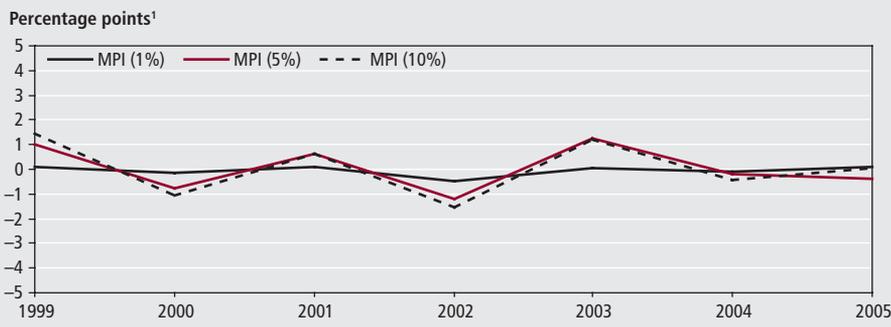
SIC2	1999	2000	2001	2002	2003	2004	2005
15	0.87	0.87	0.88	0.90	0.89	0.88	0.89
16	*	*	*	*	*	*	*
17	0.81	0.81	0.79	0.82	0.83	0.86	0.87
18	0.83	0.79	0.81	0.83	0.79	0.84	0.85
19	0.72	0.76	0.75	0.83	0.80	0.81	0.84
20	0.86	0.80	0.78	0.82	0.82	0.88	0.87
21	0.89	0.88	0.88	0.89	0.88	0.87	0.87
22	0.82	0.85	0.85	0.85	0.87	0.84	0.87
23	*	*	*	*	*	*	*
24	0.88	0.87	0.88	0.88	0.89	0.90	0.87
25	0.87	0.86	0.86	0.87	0.87	0.86	0.88
26	0.88	0.90	0.90	0.90	0.91	0.91	0.91
27	0.87	0.88	0.88	0.90	0.88	0.89	0.90
28	0.85	0.86	0.84	0.85	0.86	0.85	0.86
29	0.81	0.82	0.81	0.82	0.83	0.85	0.84
30	0.85	0.89	0.85	0.83	0.83	0.82	0.80
31	0.80	0.80	0.81	0.85	0.84	0.84	0.85
32	0.88	0.88	0.85	0.84	0.85	0.83	0.87
33	0.78	0.81	0.81	0.84	0.83	0.83	0.84
34	0.83	0.82	0.83	0.84	0.84	0.86	0.84
35	0.82	0.83	0.80	0.84	0.84	0.87	0.88
36	0.78	0.81	0.81	0.80	0.80	0.84	0.84
37	0.80	0.76	0.82	0.77	0.83	0.78	0.79

**Note:**

\* Removed due to ONS rules on disclosure.

Source: Office for National Statistics

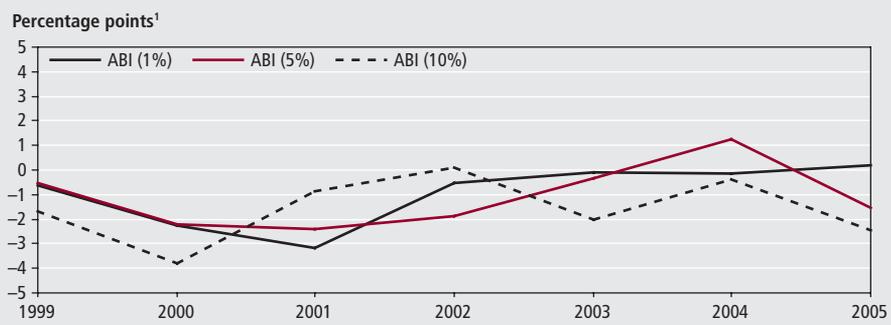
**Figure 4**  
**Percentage difference in MPI microdata turnover annual growth rates after excluding outliers**

**Note:**

Source: Office for National Statistics

1 Difference from overall growth rate.

**Figure 5**  
**Percentage difference in ABI microdata turnover annual growth rates after excluding outliers**

**Note:**

Source: Office for National Statistics

1 Difference from overall growth rate.

rate generated after excluding outliers from the 1, 5 and 10 per cent tails. For example, if the difference is zero, this means that omitting outliers has no effect on the overall growth rate.

By comparing Figure 4 and Figure 5, it is clear that the ABI data set was more affected by omitting outliers. Overall, however, omitting outliers from both data sets had relatively little impact on estimating growth rates. In both the MPI and ABI series, there is no evidence of any bias. This suggests that, although some companies may report considerably different turnover values in their MPI and ABI returns, they have relatively little impact on growth rates.

## MIDSS results

### Aggregate analysis

The first strand of the aggregate analysis is to examine whether any bias exists in the levels and growth rates of the total series in both the MIDSS and ABI turnover.

### Nominal values

Table 7 compares the grossed total turnover implied by the MIDSS and ABI aggregate series. It is evident that the ABI produces

slightly higher levels than both the adjusted and the unadjusted MIDSS series but, unlike the MPI, it is consistently closer to the unadjusted figures. While the levels are of interest, it is the growth rates of these series which determine long-term trends.

### Growth rates

The growth rates of total turnover are presented in Figure 6. An important point to note from this chart is that there is no evidence of bias in these growth rates between either of the MIDSS series and the ABI. It is also evident from these averages

that the unadjusted MIDSS series is closer to the ABI growth rate than the adjusted one.

Figure 7 graphs the difference decomposed into two-digit SICs. The MIDSS industries not explicitly referred to are captured as 'Other'.

The contributions depicted in Figure 7 demonstrate that there is no consistent direction of bias in any industry. SIC 51 (wholesale trade) contributes the largest difference to the ABI and MIDSS growth rate. The wholesale trade data can be considerably influenced by single large companies, particularly those working in commodities such as oil. These companies are generally multinational in nature and as such are exposed to changes in exchange rates. These changes can considerably affect the valuation of output over time.

### Noise-to-signal ratio

As with the MPI analysis, an additional way of quantifying the congruence of two series is the noise-to-signal ratio. Table 8 presents the noise-to-signal ratios for both unadjusted and adjusted growth rates compared with those from the ABI. As described previously, the closer the ratio is to zero, the stronger the statistical signal.

Table 8 shows that the unadjusted MIDSS growth rates contain stronger statistical signals than the adjusted – this is true for the service sector as a whole and the majority of two-digit SIC industries. It is consistent with the aggregate and growth rate analysis reported in Table 7 and Figure 7, respectively, which showed that the unadjusted MIDSS data were better at tracking the ABI series. This is also supported from the finding in the MPI section, which reported an improved signal for certain two-digit SIC industries: together, these industries accounted for more than 50 per cent of turnover.

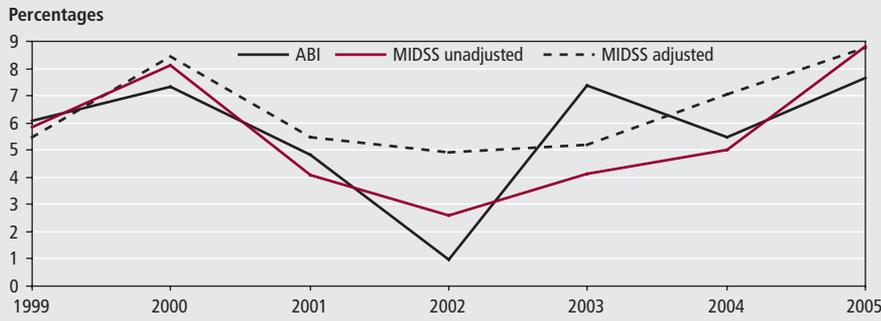
This is an important finding of the article and adds support to ONS's recent

**Table 7**  
**ABI and MIDSS aggregate turnover**

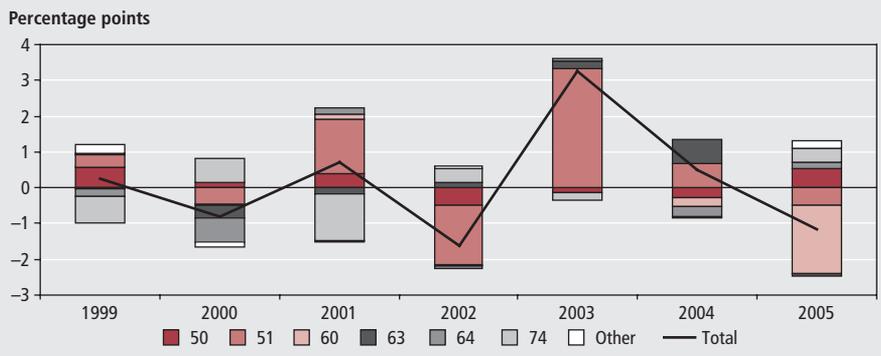
	Turnover (£ million)			Ratio (MIDSS/ABI)	
	ABI	MIDSS unadjusted	MIDSS adjusted	MIDSS unadjusted	MIDSS adjusted
1999	862,281	842,494	782,246	0.98	0.91
2000	925,482	911,030	848,135	0.98	0.92
2001	970,158	948,385	894,417	0.98	0.92
2002	979,605	973,123	938,329	0.99	0.96
2003	1,051,876	1,013,367	987,251	0.96	0.94
2004	1,109,666	1,064,147	1,056,823	0.96	0.95
2005	1,194,590	1,157,803	1,149,570	0.97	0.96

Source: Office for National Statistics

**Figure 6**  
**MIDSS and ABI annual turnover growth rates**



**Figure 7**  
**Contributions to differences in ABI and unadjusted MIDSS turnover growth rates**



**Table 8**  
**Noise-to-signal ratio between the adjusted and unadjusted MIDSS time series and ABI growth rates, 1999 to 2005**

SIC2	Unadjusted	Adjusted
50	1.60	2.23
51	0.20	0.41
55	-0.64	-0.49
60	-0.98	-0.99
63	-0.87	-0.83
64	0.10	0.86
71	-0.60	-0.58
72	-0.14	-0.58
73	-0.40	-0.29
74	0.03	-0.61
90	0.19	-0.35
92	-0.20	0.16
93	0.96	-0.53
Total	0.37	0.50

Source: Office for National Statistics

decision to substantially remove the MIDSS adjustments for the Index of Services data used in the compilation of the *Blue Book 2008*.

The next section uses business microdata to further investigate the relationship between ABI and MIDSS returns by analysing individual business responses.

**Microdata analysis**

This section examines individual businesses reporting turnover in the MIDSS and ABI surveys, using both correlation and regression analysis. As with the MPI micro results, all analysis was undertaken using natural logarithms.

For the MIDSS survey, there were fewer companies matched in the microdata set in the years before 2001. This is because new industries were added to the MIDSS survey in recent years. For example, in 2001, there was an improvement in the match between the ABI and MIDSS data sets when SIC 50, 55, 92 and 93 were introduced. As such, it is only possible to make robust comparisons for the microdata relating to the period 2001 to 2005.

**Table 9** details the frequencies of businesses in the overlap data set in each year. The matched sample accounts for less than 1 per cent of all MIDSS businesses but approximately 15 per cent of all businesses included in the overall matched sample.

Perhaps more important than the business counts, in terms of the sufficiency of the overlap data set for supporting overall conclusions, is the proportion of total employment covered by the matched businesses. **Table 10** gives the percentage of employment: this is presented by year, there being some change on an annual basis as the survey changed structure.

**Table 9**  
**Frequencies of matched businesses in the overlap microdata set**

	Frequency (number)	Percentages
2001	4,453	0.5
2002	4,541	0.5
2003	4,538	0.5
2004	4,439	0.5
2005	4,414	0.4
Total	28,473	0.4

Source: Office for National Statistics

Although the matched sample has low business coverage, the total employment coverage ranges between 29 and 37 per cent. This is indicative of the fact that it is predominantly larger businesses that are matched between the MIDSS and ABI surveys. The fact that roughly one-third of total employment is covered by the overlap means that inferences about overall trends are possible from this microdata analysis.

**Correlation and regression analysis**

**Table 11** presents the correlation coefficients. It is evident that businesses in most industries seem to report broadly similar turnover in both surveys. The biggest industries, 51 and 74, have coefficients of around 0.95. Industries 63 and 73 are the only industries with coefficients consistently under 0.9, but these represent two of the smaller industries in terms of employment.

Quantile regressions were used to test, and subsequently confirmed, the robustness of the correlation results. The full regression results are reported in Appendix **Table A4**.

**Sensitivity analysis**

This section examines which industries are most affected by companies reporting the largest differences between the two surveys. **Figure 8** shows the percentage of businesses that are classed as severe outliers.

**Figure 8** shows that there is a predominance of larger discrepancies for returns in industries 63, 73 and 92. SIC 73 'Research and development' and 92 'Recreational and sporting activities' also performed poorly in the regression analysis. Industry 63 'Supporting and auxiliary transport activities' performed poorly in the correlation analysis. In general, there are more ABI dominant outliers in most industries, again partially explaining the discrepancy in the levels of ABI and MIDSS at the aggregate level.

The following analysis examines the effect

**Table 10**  
**Percentage of total employment contained in the overlap data set**

SIC2	Percentages				
	2001	2002	2003	2004	2005
50	23	25	28	30	31
51	30	28	31	34	34
55	16	38	32	33	36
60	49	45	47	47	48
63	45	43	43	54	58
64	59	62	63	64	74
71	38	34	32	31	35
72	23	27	25	28	33
73	40	33	30	45	42
74	30	31	34	34	35
90	50	46	61	57	49
92	27	34	38	35	25
93	17	19	18	18	17
Total	29	34	34	36	37

Source: Office for National Statistics

**Table 11**  
**Kendall tau rank correlation coefficients for MIDSS and ABI turnover returns**

SIC2	2001	2002	2003	2004	2005
50	0.94	0.92	0.95	0.95	0.95
51	0.94	0.95	0.94	0.95	0.96
55	0.92	0.94	0.94	0.95	0.96
60	0.94	0.96	0.98	0.96	0.95
63	0.73	0.76	0.76	0.73	0.77
64	0.95	0.94	0.94	0.97	0.95
71	0.96	0.92	0.97	0.92	0.94
72	0.90	0.92	0.92	0.93	0.93
73	0.81	0.74	0.84	0.84	0.87
74	0.94	0.94	0.95	0.95	0.95
90	0.97	0.93	0.96	0.96	0.97
92	0.83	0.90	0.91	0.85	0.89
93	0.97	0.95	0.96	0.94	0.95

Source: Office for National Statistics

Figure 10, it is evident that the ABI data set is more affected by omitting outliers, at least in two of the four data points. However, in general, for both series, there is little change to the aggregate growth rates from taking out the businesses with large outliers. This supports the results of the MPI analysis and implies that, while there may be some businesses reporting very different turnover figures on the two surveys, this has little impact on the growth rates generated from the data.

**Conclusion**

For the MPI, the following conclusions can be drawn:

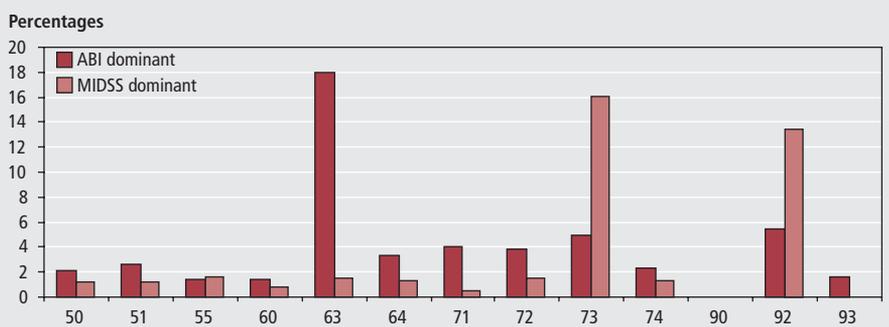
- nominal turnover is consistently under-reported in MPI monthly surveys compared with the ABI annual survey. The finding is consistent in both the aggregate and micro analysis
- MPI annual growth rates are closely aligned to ABI annual growth rates in all years – this is evident in both for the aggregate and microanalysis
- the evidence from the microdata suggests that MPI unadjusted data in a number of industries have greater statistical signal than the adjusted data – therefore it may be more appropriate to use the raw data in a number of cases. This finding will help to inform the nature of the adjustment regime, to ensure that it does not inadvertently introduce bias at the aggregate level

For the MIDSS, the following conclusions can be drawn:

- both MIDSS adjusted and unadjusted time series demonstrate a lower level of turnover than the ABI. The unadjusted series produces a slightly closer level than that including the adjustments
- the MIDSS growth rates are moderately close to the ABI growth rates for the equivalent service sector industries. There is no consistent bias in either the adjusted or unadjusted series evident in these growth rates
- the stronger statistical signal suggests that the unadjusted MIDSS series is a better indicator of ABI growth rates than the unadjusted series
- while some businesses report very different turnover figures to the MIDSS and ABI surveys, this has little impact on the growth rates generated from the data

The following joint conclusions can be drawn from the MPI and MIDSS:

**Figure 8**  
**Percentage of businesses that are ABI or MIDSS dominant outliers, 1999 to 2005**



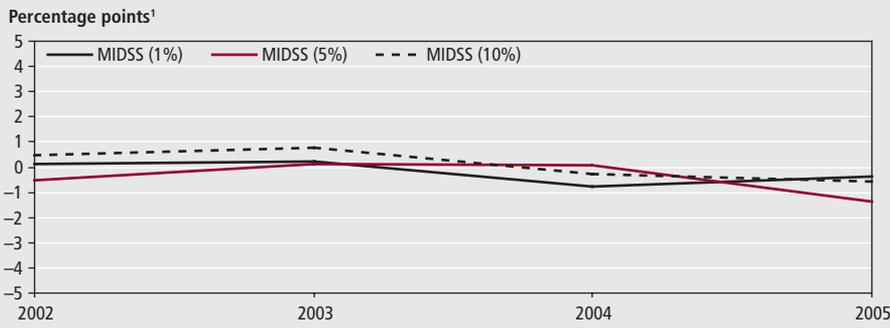
**Note:** Results for SIC90 have been removed due to ONS rules on disclosure. Source: Office for National Statistics

of the outliers between the two surveys on the aggregate series by constructing a time series from the microdata. **Figure 9** and **Figure 10** record the difference between the growth rate for the full matched sample and the growth rate after removing the top 1, 5

and 10 per cent of the tails. Figure 9 shows the difference in MIDSS growth rates as the businesses are subtracted; Figure 10 does the same for the ABI.

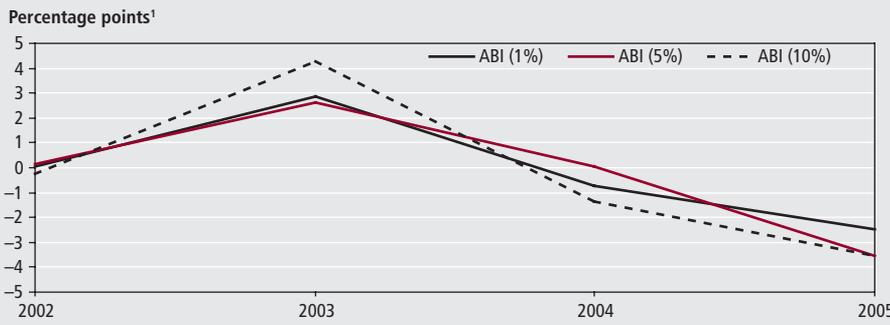
There is no evidence of any bias in either of the series. By comparing Figure 9 and

**Figure 9**  
**Percentage difference in MIDSS microdata turnover annual growth rates after excluding outliers**



**Note:** Source: Office for National Statistics  
 1 Difference from overall growth rate.

**Figure 10**  
**Percentage difference in ABI microdata turnover annual growth rates after excluding outliers**



**Note:** Source: Office for National Statistics  
 1 Difference from overall growth rate.

- matching businesses between monthly and annual surveys is feasible and produces a reasonable match, although almost entirely for larger businesses
- both MPI and MIDSS aggregate series do not produce biased growth rates when compared with ABI turnover. However, highlighted industries have been responsible for much of the difference
- businesses are generally good at reporting monthly and annual turnover consistently. There are examples of where this is not the case, but the aggregate impact would appear to be negligible

**Notes**

- 1 GDP can be measured using three separate approaches: production (GVA), income (GDP(I)) and expenditure (GDP(E)). GDP(O) is purely an output-based measure, which acts as a proxy for the production approach (GVA) in order to estimate quarterly GDP.
- 2 The Virtual Microdata Laboratory (VML) is a facility within the Office

for National Statistics (ONS) which enables access to restricted microdata for research purposes. Researchers from government and academia use the VML to undertake research on ONS surveys and other confidential data sets.

- 3 The Kendall tau rank correlation coefficient is a non-parametric statistic used to measure the degree of correspondence between two rankings and assess the significance of this correspondence.
- 4 A simple weighted aggregate is constructed by multiplying the turnover by the a-weight and the g-weight. The a-weight is the inverse of the sample fraction and is constructed at the level of 'year, two-digit SIC and sizeband'. The g-weight is a model weight calculated in order to account for differences in size of employment of those in and out of the sample.

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## APPENDIX

Table A1

**MPI industries**

<b>Manufacturing industry SIC (2003)</b>	<b>SIC</b>
Food products, beverages	15
Tobacco	16
Textiles	17
Wearing apparel; dressing and dyeing of fur	18
Tanning and dressing of leather	19
Wood and of products of wood and cork, except furniture	20
Pulp, paper and paper products	21
Publishing, printing and reproduction of recorded media	22
Coke, refined petroleum products and nuclear fuel	23
Chemicals and chemical products	24
Rubber and plastic products	25
Other non-metallic mineral products	26
Basic metals	27
Fabricated metal products, except machinery and equipment	28
Machinery and equipment not elsewhere classified	29
Office machinery and computers	30
Electrical machinery and apparatus not elsewhere classified	31
Radio, television and communication equipment not elsewhere classified	32
Medical, precision and optical instruments, watches and clocks	33
Motor vehicles, trailers and semi-trailers	34
Other transport equipment	35
Manufacturing not elsewhere classified	36
Recycling	37

Table A2

**MIDSS industries**

<b>Distribution and service sectors</b>	<b>SIC</b>
Sale, maintenance and repair of motor vehicles	50
Wholesale trade and commission trade	51
Hotels and restaurants	55
Land transport; transport via pipelines	60
Supporting and auxiliary transport activities	63
Post and telecommunications	64
Renting of machinery and equipment	71
Computer and related activities	72
Research and development	73
Other business activities	74
Sewage and refuse disposal	90
Recreational, cultural and sporting activities	92
Extra-territorial organisations and bodies	93

### Regression

A regression of a dependent variable upon an identical explanatory variable will yield the result of an intercept term equal to zero and a slope coefficient of one. Consequently, regressing ABI turnover against MPI/MIDSS turnover will produce coefficients close to these values if they are congruent variables. Cells marked with \* in Table A3 denote that the values were not equal at a 5 per cent significant level.

Table A3

#### ABI and MPI median regressions where the joint-hypothesis test can be rejected at the 5 per cent significance level

SIC2	1999	2000	2001	2002	2003	2004	2005
15							
17							
18							*
19							
20							
21							
22							
24	*	*					
25	*	*					
26			*				
27							
28							
29						*	
30							
31		*		*			
32			*				
33							
34							
35			*				
36							
37							

Source: Office for National Statistics

Table A4

#### ABI and MIDSS median regressions where the joint-hypothesis test can be rejected at the 5 per cent significance level

SIC2	2001	2002	2003	2004	2005
50					
51			*		
55	*	*	*	*	*
60	*	*			*
63	*				
64					*
71					
72					
73	*		*	*	*
74		*	*	*	
90		*		*	
92	*	*	*	*	*
93					

Source: Office for National Statistics

## FEATURE

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# Introducing the new business demography statistics

## SUMMARY

A new National Statistics series was published on 28 November 2008 by the Office for National Statistics (ONS), providing data on business births, deaths and survival rates, called *Business Demography: Enterprise Births and Deaths*. The Department for Business, Enterprise & Regulatory Reform (BERR) also published its series *Business start-ups and closures: VAT registrations and de-registrations in 2007* on the same day. The year 2008 is the final update to the BERR series; from 2009, users will be directed to the new, more comprehensive, ONS statistics for information on business births, deaths and survival rates. This article explains the key methodological differences between the new series and the existing BERR National Statistic.

A new European Commission Structural Business Statistics Regulation came into force in February 2008, requiring National Statistical Institutes to produce statistics on business births, deaths and survival rates. These statistics will be produced using common definitions and methodology, which will ensure greater comparability across the EU.<sup>1</sup> The new Office for National Statistics (ONS) *Business Demography: Enterprise Births and Deaths* publication was released for the first time on 28 November 2008, using this common methodology. The Department for Business, Enterprise & Regulatory Reform (BERR) National Statistics publication *Business start-ups and closures: VAT registrations and de-registrations* was released for the final time on the same day.

In summary, the key difference between the BERR statistics and the new ONS business demography publication is the inclusion of PAYE-registered units.<sup>2</sup> Therefore, the new statistics will

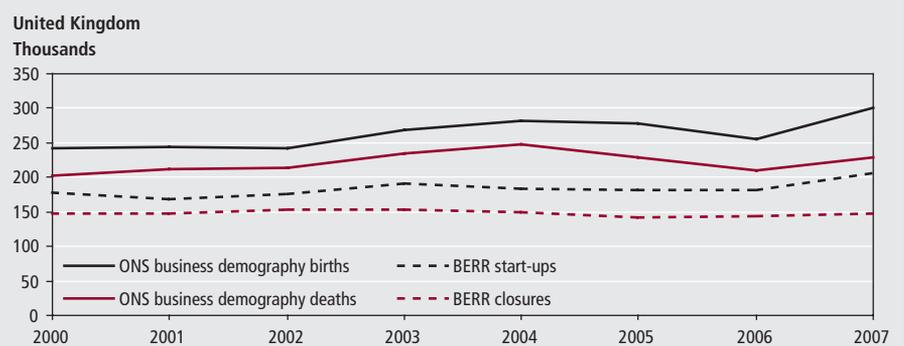
additionally include the births and deaths of employing businesses, which are not VAT-registered, providing a more comprehensive view of business start-up activity.

## Comparison of trends in ONS business demography and BERR business start-ups and closures series

Overall, the ONS business demography series shows higher numbers of business births and deaths than the BERR VAT-based statistics (**Figure 1**). The main reason for the difference is the inclusion of PAYE-registered enterprises in the business demography series, which means that, for the first time, businesses with employees who are not registered for VAT will be included in the enterprise births and deaths series. A full description of the differences between the two series is included later.

The same pattern is observed in the rates of enterprise birth and death (**Figure 2**). The ONS enterprise birth rate (as a proportion of active enterprises) was 13.1 per cent in 2007,

**Figure 1**  
Business births and deaths



compared with 10.1 per cent in the BERR VAT-based series. The ONS enterprise death rate (as a proportion of active enterprises) was 9.9 per cent in 2007, compared with 7.3 per cent in the BERR VAT-based series.

It is also noticeable that, although the volume and rate of births and deaths in both series follow broadly the same trend, there appears to be a small difference between the series in the timing of the peaks, which occur slightly earlier in the BERR series.

While there are differences between the volumes and rates in the two series, both the ONS and BERR publications show the highest birth and death rates to be in London and the lowest rates to be in Northern Ireland (Table 1).

The differences observed in these comparison tables and charts in the levels of births and deaths are attributable to the reasons outlined in Table 2. It is not possible to decompose the difference into these categories, but the largest contribution to the difference is caused by the inclusion of PAYE-based enterprises in the business demography publication.

## ONS business demography methodology

A joint Eurostat/OECD Manual on Business Demography has been produced which defines and sets out the broad methodology that should be used to produce business demography data.

The starting point for demography is the concept of a population of active businesses in a reference year. These are defined as businesses that had either turnover or employment at any time during the reference period. Births and deaths are then identified by comparing active populations for different years.

### Births

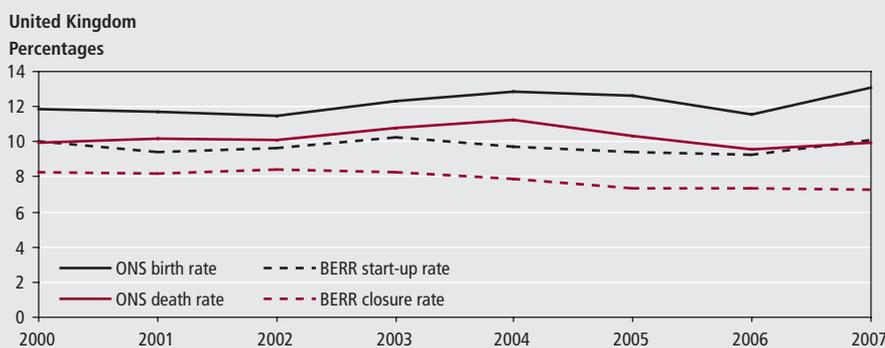
A birth is defined as a business that was present in year  $t$ , but did not exist in year  $t-1$  or  $t-2$ . Births are identified by making a comparison of annual active population files and identifying those present in the latest file, but not the two previous ones.

Births do not include entry into the population as a result of mergers, break-ups, split-offs or other restructuring.

### Deaths

A death is defined as a business that was on the active file in year  $t$  but was no longer present on the active file in year  $t+1$  or  $t+2$ . In order to produce more timely statistics, the UK method diverges from the Eurostat manual at this point. The Eurostat manual requires a check to be made against the two years following a death to identify and remove any reactivations (that is, following the Eurostat methodology would mean a

Figure 2  
Business birth and death rates<sup>1</sup>



#### Note:

1 These are calculated as births or deaths as a proportion of the active stock of enterprises in each year.

Table 1  
Business births and deaths: by region

#### ONS Business Demography: Enterprise Births and Deaths

	Active 2007 (thousands)	Births 2007		Deaths 2007	
		Number of births (thousands)	Birth rate (per cent)	Number of deaths (thousands)	Death rate (per cent)
North East	62.3	9.0	14.5	6.0	9.6
North West	232.9	31.4	13.5	23.6	10.1
Yorkshire and The Humber	166.4	21.2	12.7	17.0	10.2
East Midlands	157.3	19.2	12.2	14.9	9.5
West Midlands	191.4	24.0	12.6	19.2	10.0
East of England	233.4	28.8	12.3	22.2	9.5
London	388.6	63.9	16.5	45.7	11.8
South East	369.2	44.9	12.1	35.5	9.6
South West	205.6	23.7	11.5	19.0	9.2
Wales	91.0	10.1	11.1	8.7	9.5
Scotland	145.4	19.3	13.3	12.4	8.5
Northern Ireland	57.7	6.0	10.3	4.0	6.9
Total	2,301.2	301.6	13.1	228.2	9.9

#### BERR Business start-ups and closures: VAT registrations and de-registrations

	Active at start of 2008 (thousands)	Start-ups 2007		Closures 2007	
		Number of start-ups (thousands)	Start-up rate (per cent)	Number of closures (thousands)	Closure rate (per cent)
North East	52.3	5.8	11.1	3.7	7.1
North West	194.7	20.6	10.6	14.7	7.5
Yorkshire and The Humber	145.2	14.5	10.0	10.8	7.4
Scotland	141.9	14.6	10.3	9.6	6.8
West Midlands	167.1	15.7	9.4	12.1	7.2
East of England	204.7	19.7	9.6	14.7	7.2
London	321.6	41.3	12.8	27.7	8.6
South East	319.9	32.0	10.0	23.2	7.2
South West	191.1	17.0	8.9	12.5	6.6
Wales	87.3	6.8	7.8	5.7	6.5
East Midlands	139.1	13.3	9.5	9.5	6.9
Northern Ireland	66.2	4.4	6.7	3.7	5.6
Total	2,031.1	205.7	10.1	147.8	7.3

delay of up to three years to allow checks to be made before publishing business death data). The UK business demography publication contains a preliminary death indicator,

which includes an adjustment for estimated reactivations. This estimate is subject to revision. Inclusion of this adjustment allows UK users access to more timely data.

Table 2

**Key methodological differences between main business population publications**

	<b>ONS <i>Business Demography: Enterprise Births and Deaths</i></b>	<b>BERR <i>Business start-ups and closures: VAT registrations and de-registrations</i></b>	<b>ONS <i>UK Business: Activity, Size and Location</i></b>
Coverage	VAT- and/or PAYE-registered businesses	VAT-registered businesses only	VAT- and/or PAYE-registered businesses (from 2008 onwards) excluding unmatched non-corporate PAYE businesses
Stock	Recognises activity occurring at any point during the year	Live units at a point in time	Live units at a point in time
Timeliness	Annual publication: first publication with 2007 data published on 28 November 2008	Annual publication: final publication with 2007 data published on 28 November 2008	Annual publication: 2008 data published in September 2008
Geography	UK with country, region, unitary authority, county and district breakdowns	UK – including regional, local authority and parliamentary constituency breakdowns	UK – including regional, local authority and parliamentary constituency breakdowns
Legal status	Company, sole proprietor, partnership, public corporation and non-profit organisations	All	All
Industry	SIC 2003, excluding agriculture (divisions 01, 02 and 05), holding companies (SIC class 7415) and public administration (division 75)	SIC 2003 divisions 01–93 (private households and extra-territorial activities excluded)	SIC 2003 divisions 01–99
Exclusions	Excludes managed service companies, although these are included in the data published by Eurostat	Excludes managed service companies and official receivers	Excludes managed service companies
Adjustments	Adjustments are made to the latest two years' deaths to allow for re-activations (see section on deaths for more detail)	Registrations and deregistrations are adjusted (back to 1996) to produce estimates of the final volume of start-ups and closures once late registrations and deregistrations have been received or reactivations have occurred	None

Reactivations occur where a business becomes dormant for a period of less than two years, then recommences activity in a manner which complies with a definition of continuity. If the definition of continuity is not met, for example, when a business recommences activity but at a different location and with a different activity, this would be considered as a death followed by a birth. There are a number of reasons why a business may be dormant for a period reflecting the underlying administrative processes.

Reactivations also occur due to lags in the administrative sources (VAT/PAYE), which mean it is possible that a business which is continuing to trade can appear to die on the Inter-departmental Business Register (IDBR). If an existing VAT scheme is deregistered, and there is a delay in the birthing and/or matching of the new VAT scheme, it can leave the enterprise without a live administrative source, which will result in it being assumed dead. Additionally, VAT-based businesses where turnover drops to zero are automatically assumed to be dead on the IDBR, but will rebirth if turnover is then reported in a later period.

The deaths data exclude losses to the population as a result of mergers, break-ups, split-offs or other restructuring.

**Survivals**

A business is deemed to have survived if, having been a birth in year  $t$  or having survived to year  $t$ , it is active in terms of employment and/or turnover in any part of year  $t+1$ . A business is considered to have survived if it is active in any part of the survival year under consideration. Survival data are presented for businesses that have survived for up to five years.

It is important to note that a business active in year  $t$  could also have been a birth in year  $t$ .

**Comparison of methodological differences**

Table 2 outlines the key methodological differences between the new ONS business demography publication, the existing BERR business start-ups and closures statistics and, for completeness, the other ONS publication relating to the business stock *UK Business: Activity, Size and Location*.

The main difference between the ONS business demography and the BERR VAT-based publication is the inclusion of PAYE-only records. Therefore, for the first time, businesses with employees who are not registered for VAT will be included in the enterprise births and deaths series.

The new business demography data set also has a higher number of active businesses than both the BERR VAT-based series and the expanded *UK Business: Activity Size and Location* publication. This is because the business demography methodology takes into account businesses that were active at any time during the reference year, whereas the BERR series calculates stock by adding registrations and subtracting deregistrations from the previous year's stock; the *UK Business: Activity Size and Location* publication is based on a snapshot taken from the IDBR at a point in time in March.

Additionally, business demography includes a group of non-corporate PAYE businesses, which are excluded from *UK Business: Activity, Size and Location* due to a small risk of duplication. The scope of this publication will be reviewed and may be broadened to include these businesses in the next year.

**Notes**

- 1 For full details of the methodology, see Eurostat-OECD Manual on Business Demography Statistics 2007 at [www.oecd.org/document/34/0,3343,en\\_2649\\_34233\\_39913698\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/34/0,3343,en_2649_34233_39913698_1_1_1_1,00.html)
- 2 The existing BERR *Business start-up and closures: VAT registrations and de-registrations* publication identifies births through their VAT registration, but they can remain in the survival population if they cease to be VAT registered, but have an active PAYE registration. But, for practical purposes, the publication was described in terms of VAT registrations.

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Department for Business, Enterprise & Regulatory Reform (2008) *Business start-ups and closures: VAT registrations and de-registrations 2007* at <http://stats.berr.gov.uk/UKSA/ed/sa20081128.htm>

Office for National Statistics *Business Demography: Enterprise Births and Deaths* at [www.statistics.gov.uk/statbase/product.asp?vlnk=15186](http://www.statistics.gov.uk/statbase/product.asp?vlnk=15186)

## FEATURE

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# The impact of Labour Force Survey and Annual Population Survey reweighting

## SUMMARY

Reweighted Labour Force Survey (LFS) and Annual Population Survey (APS) microdata were published by the Office for National Statistics (ONS) in May 2008. The underlying weighting methodology and the statistical tool used for weighting the LFS were also changed for the reweighting programme and for subsequent LFS weighting (although not for the APS, as this already used the new methodology and tool).

This article outlines the background to the LFS and APS reweighting programme, briefly describes the changes to the weighting tool and methodology in the LFS, and presents some results of the impact of reweighting on population estimates at unitary authority/local authority district level, using APS microdata.

On 14 May 2008, reweighted Labour Force Survey (LFS) and Annual Population Survey (APS) microdata were published by the Office for National Statistics (ONS). The reweighted LFS and APS microdata are weighted to population estimates which are based on mid-year estimates up to 2006, in line with the revised 2001 Census data released in late 2003, and the projections from the mid-year estimates. The datasets they replaced had been weighted to population estimates which were based on mid-year estimates up to 2003, in line with 2001 Census data released in early 2003, and the projections from the mid-year estimates. Analysis of the reweighted microdata produces aggregates at the UK level which, by 2007, are approximately 800,000 above the estimates produced from the unweighted microdata for the 16+ population (900,000 for the total population). However, due to the interim reweighting which ONS carries out to adjust aggregate LFS data to the latest population estimates prior to publication, the reweighting has not resulted in any change to the published aggregates. It is only when LFS and APS microdata are used to generate aggregates (which have not been interim reweighted), that the changes in population estimates due to reweighting become apparent.

When analysis is conducted at lower levels of geography, for example, unitary authority (UA)/local authority district (LAD) level, the largest changes, as may be expected, can be seen for estimates for UA/LADs that experienced the largest

revisions to their population totals with reweighting. The differences are greatest for estimates of levels, that is, the actual number of people in a particular subpopulation. There has been less of an impact on rates and proportions (as revisions to population estimates produced changes in the numerator and denominator for these calculations). Differences may also be larger where the underlying base numbers in a particular subgroup are small, reflecting the larger sampling error for such estimates. Another factor to be aware of is that the underlying weighting methodology and the statistical tool used for weighting the LFS were changed for the reweighting programme and subsequent LFS weighting (but not the APS, as the APS already used the new methodology and tool). The changes to the LFS weighting methodology and tool are outlined in **Box 1**.

## Use of APS microdata

The APS is a continuous survey of households in the United Kingdom, which is produced quarterly and contains annual data. Each dataset (known as a quarterly rolling annual dataset) consists of wave one and wave five of the quarterly LFS, and additional boost cases in England, Wales and Scotland, which are added to ensure that a minimum of 875 interviews are conducted with economically active people in each local education authority. Each APS dataset contains approximately 170,000 households and 360,000 individuals. The primary purpose of the APS is to provide estimates for labour market and socio-

**Box 1****Methodological improvements to LFS weighting**

The methodology for weighting LFS data was changed for the reweighting exercise from raking ratio estimation to calibration weighting within a generalised regression (GREG) framework, using the Statistics Canada Generalised Estimation System. The raking ratio method of weighting entailed using multistage iterative weighting in which the design-weighted sample was raked to known population totals. Each stage of the procedure corrected for a different cause of LFS non-response. Stage one corrected for non-response at local authority level. Stage two corrected for non-response by age-group and sex. Stage three corrected for non-response by region, age group and sex. The weights were deemed to have converged according to any of three separate criteria. The first was that the weighted sample met the set constraints within a specified tolerance. The second was that consecutive iterations did not differ by more than a given tolerance. The third was that a preset number of iterations had been completed. The advantage of the old methodology was that weights were always positive when given positive constraints, but the disadvantages were that the methodology was not supported by mature theory, although convergence appeared to be practically assured. Also, definitive variance estimates could not be produced (although assumptions were

made in order to produce variance estimates), and there was no control over the variance within the assumed model. Full details of the three-stage iterative weighting procedure can be found in the LFS User Guide Volume 1, Section 10.<sup>1</sup>

The new LFS weighting tool, and the methodology it uses, carry out calibration weighting in a single process to the same population groups as the old weighting, and are both more efficient and statistically robust. The tool also facilitates the identification and correction of data quality issues. The new weighting methodology has a number of advantages over the old one in terms of a well-developed theoretical base and the capacity to produce good variance estimates, and parameters within GREG allow for modelling of the variance within the assumed model. The new methodology was not expected to result in much change to LFS estimates at higher levels of geography, due to the large sample size, although it was expected that there were likely to be some changes within small domains, for example, when examining gender or ethnicity at UA/LAD level. However, while the LFS provides robust estimates at UK level, the APS, which also uses the GREG framework, is the preferred source for analysis at subnational level.

economic analyses at subnational level, and the APS is the recommended source of statistical information for analysis at UA/LAD level. Some analysis has been conducted of the change in population estimates at UA/LAD level as a result of reweighting the APS, using January to December 2006 APS microdata. The changes observed are reported below.

**Change in APS population estimates following reweighting**

The data reported have been generated from a comparison of estimates by UA/LAD using un-reweighted APS data and reweighted APS data, using January to December 2006 APS microdata. Data are provided on the percentage change in the estimates for people aged 16+ in the population and in employment for the total 16+ population and the UK born and non-UK born population subgroups (note that non-UK born include those from the Republic of Ireland, and that Northern Ireland is included as a single UA/LAD in the analysis). Most of the data included in the analysis meet the ONS criteria for statistical robustness, as outlined in **Box 2**. The exceptions to this rule are for estimates of non-UK born population and employment in some UA/LADs, due to the small sample sizes of this subgroup at this level of analysis.

**Figure 1** shows the percentage change in the population aged 16+ at UA/LAD

level as a result of reweighting, for the total population and for UK born and non-UK born population subgroups. While the changes due to reweighting range between +22 and -6 per cent, most of the UA/LADs experienced a change within the range +5 to -5 per cent for the total population and for the UK born and non-UK born subgroups.

**Figure 2** shows the banded percentage change in the 16+ population at UA/LAD level for the total population. As a result of reweighting, the majority (68.2 per cent) of UA/LADs experienced an increase in the 16+ population of between 0 and 5 per cent, a further 5.5 per cent experienced an increase of between 5 and 10 per cent, and 24.4 per cent experienced a decrease of between 0 and 5 per cent.

**Figure 3** shows the banded percentage change in the 16+ population at UA/LAD level for the UK born population. The results are similar to those produced for the total population, with 67.2 per cent of UA/LADs experiencing an increase of between 0 and 5 per cent, a further 5.5 per cent experiencing an increase of between 5 and 10 per cent, and 25.9 per cent of UA/LADs experiencing a decrease of between 0 and 5 per cent.

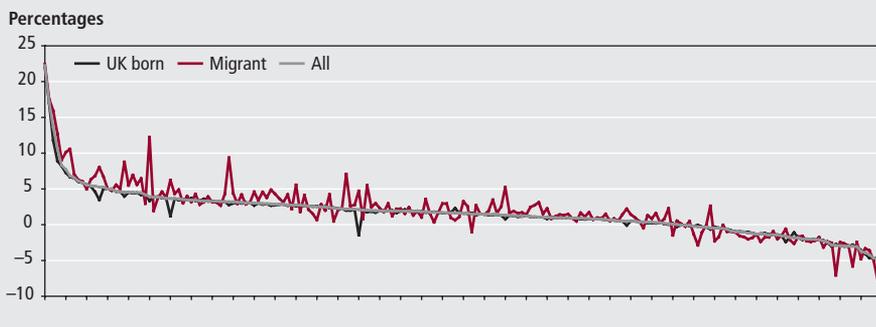
**Figure 4** shows the banded percentage change in the 16+ population at UA/LAD level for the non-UK born population. The percentage of UA/LADs experiencing an increase of between 0 and 5 per cent for the non-UK born 16+ population (61.7 per cent) was lower than for the UK born population, but was still the most common

**Box 2****Sampling variability**

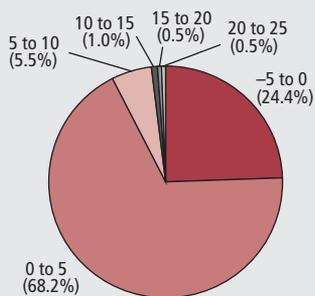
As is the case with all sample surveys, estimates from the APS are subject to sampling variability. The larger the population whose size is being estimated, the more precise the estimate is (that is, the higher the quality), and vice versa. One estimate of the variability of the estimates from all possible samples is the coefficient of variation (CV). The CV provides a measure of dispersion, and a higher CV indicates greater dispersion (or margin of error). As the CV increases, the estimate itself becomes less reliable, and vice-versa. ONS publishes and categorises all APS estimates according to their statistical robustness, which are shown below.

0≤CV<5	Estimates are considered precise
5≤CV<10	Estimates are considered reasonably precise
10≤CV<20	Estimates are considered acceptable
CV≥20	Estimates are considered too unreliable for practical purposes

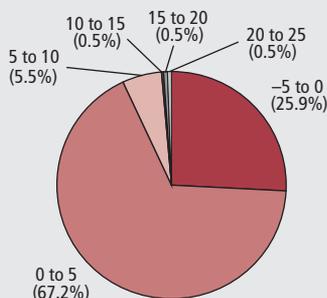
**Figure 1**  
**Percentage change in 16+ population due to reweighting: by unitary authority/local authority district**



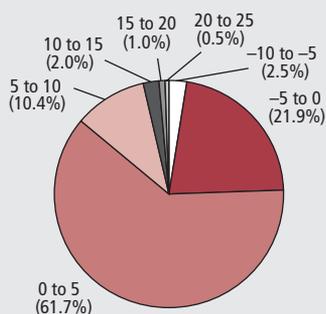
**Figure 2**  
**Percentage change in total 16+ population due to reweighting**



**Figure 3**  
**Percentage change in UK born 16+ population due to reweighting**



**Figure 4**  
**Percentage change in non-UK born 16+ population due to reweighting**



change. Consequently, the percentage of UA/LADs with an increase of between 5 and 10 per cent was higher (10.4 per cent), while 21.9 per cent experienced a decrease of between 0 and 5 per cent, as a result of reweighting.

**Figure 5** shows the percentage change in employment levels at UA/LAD level as a result of reweighting, for the total population and for UK born and non-UK born subgroups. While the range of the percentage change in employment levels varies between +23 and -6 per cent, the majority of UA/LADs experienced a change of between +5 and -5 per cent.

**Figure 6** shows the banded percentage change in employment levels at UA/LAD level for the total population. While 62.7 per cent of UA/LADs experienced an increase of between 0 and 5 per cent, a further 10.4 per cent experienced an increase of between 5 and 10 per cent, and 21.9 per cent experienced a decrease of between 0 and 5 per cent, as a result of reweighting.

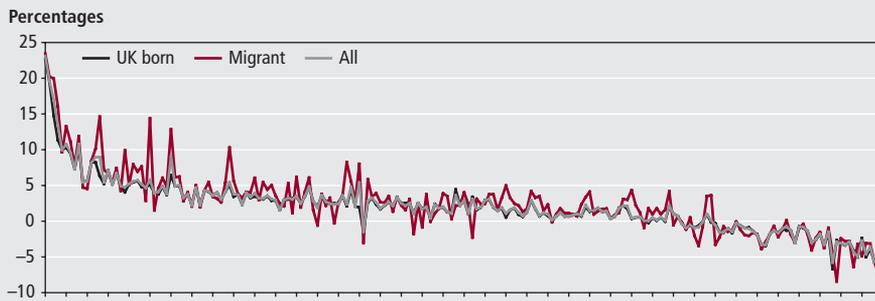
**Figure 7** shows the banded percentage change in employment levels at UA/LAD level for the UK born population. The data are very similar to that for the total population, with 62.7 per cent of UA/LADs experiencing an increase of between 0 and 5 per cent, a further 8.5 per cent experiencing an increase of between 5 and 10 per cent, and 22.4 per cent experiencing a decrease of between 0 and -5 per cent.

**Figure 8** shows the banded percentage change in employment levels at UA/LAD level for the non-UK born population. Reweighting resulted in an increase in employment levels of between 0 and 5 per cent for 52.2 per cent of UA/LADs, an increase of between 5 and 10 per cent for a further 14.4 per cent, and a reduction of between 0 and 5 per cent for 24.9 per cent of UA/LADs.

**Conclusion**

The LFS and APS reweighting programme that was conducted between 2007 and early 2008 culminated in the release by ONS of reweighted LFS and APS microdata on 14 May 2008, bringing LFS microdata in line with published LFS aggregates. This article has outlined the background to the reweighting programme, the changes to the weighting methodology and tool used for LFS weighting, and the impact of reweighting on population estimates at UA/LAD level using APS microdata. Analysis of APS microdata, which is the recommended source for estimates at UA/LAD level, revealed that the majority of UA/LADs experienced a change of

**Figure 5**  
**Percentage change in employment levels due to reweighting: by unitary authority/local authority district**



between +5 and -5 per cent in the 16+ population and employment levels, for the total population and for the UK born and non-UK born population subgroups. ONS is currently planning the next LFS and APS reweighting programme, and full details will be announced when the plans have been finalised.

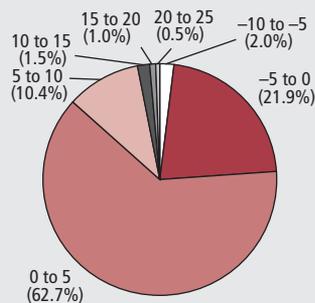
**Notes**

- 1 See [www.statistics.gov.uk/statbase/product.asp?vlnk=1537](http://www.statistics.gov.uk/statbase/product.asp?vlnk=1537)

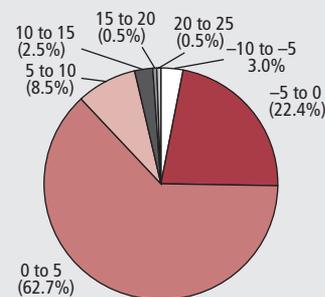
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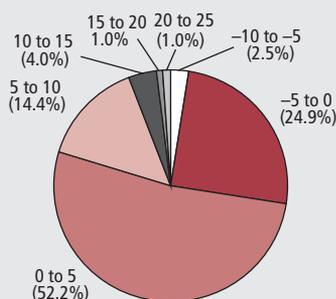
**Figure 6**  
**Percentage change in total population employment levels due to reweighting**



**Figure 7**  
**Percentage change in UK born population employment levels due to reweighting**



**Figure 8**  
**Percentage change in non-UK born population employment levels due to reweighting**



## APPENDIX

Table A1

## Annual Population Survey, UK 16+ population and employment levels: by unitary authority/local authority district, January to December 2006

Local authority	Numbers and percentages							
	Unweighted (PWT03)			Reweighted (PWT07)			Difference in 16+ population (per cent)	Difference in employment levels (per cent)
	16+ population	Employment levels	Coefficient of variation	16+ population	Employment levels	Coefficient of variation		
Westminster	171,166	95,495	7.80	209,257	117,543	7.77	22.25	23.09
Manchester	309,115	169,415	5.46	362,108	202,708	5.40	17.14	19.65
Southwark	190,991	109,901	8.23	216,925	128,503	8.11	13.58	16.93
Camden	167,985	99,403	7.68	185,837	112,700	7.59	10.63	13.38
Bristol, City of UA	313,008	194,371	5.69	338,956	213,741	5.65	8.29	9.97
Nottingham UA	219,232	116,158	5.56	236,199	128,652	5.48	7.74	10.76
Kingston Upon Hull, City of UA	193,103	101,882	5.87	206,292	111,643	5.80	6.83	9.58
Middlesbrough UA	101,978	55,083	5.52	108,644	59,104	5.50	6.54	7.30
Lambeth	205,478	115,776	8.41	218,025	128,280	8.23	6.11	10.80
North Somerset UA	152,993	96,353	5.28	161,954	101,601	5.29	5.86	5.45
Stockton-on-Tees UA	139,882	82,964	5.73	147,649	87,641	5.72	5.55	5.64
Southampton UA	178,477	104,104	5.74	188,202	112,660	5.67	5.45	8.22
Wandsworth	222,116	137,777	8.42	234,126	150,088	8.28	5.41	8.94
Islington	143,101	84,440	7.90	150,631	92,026	7.76	5.26	8.98
Newcastle Upon Tyne	205,877	110,654	5.49	216,645	116,659	5.48	5.23	5.43
York UA	151,599	95,170	5.49	159,169	101,893	5.43	4.99	7.06
Derby UA	179,653	101,585	5.43	188,589	106,841	5.42	4.97	5.17
North East Lincolnshire UA	119,358	67,924	5.71	124,922	72,485	5.65	4.66	6.71
Halton UA	89,618	50,285	5.74	93,759	52,762	5.73	4.62	4.93
Edinburgh, City of	370,529	231,725	5.41	387,317	242,747	5.41	4.53	4.76
Eilean Siar, Orkney & Shetland	52,334	33,607	6.34	54,704	35,354	6.32	4.53	5.20
Highland	164,882	103,311	6.10	172,315	109,054	6.07	4.51	5.56
North Lincolnshire UA	121,018	71,345	5.81	126,456	75,433	5.78	4.49	5.73
Leeds	578,830	368,652	4.52	604,732	387,638	4.51	4.47	5.15
Newport	105,371	61,013	5.36	109,775	63,856	5.35	4.18	4.66
Aberdeen City	164,822	108,760	5.52	171,281	115,060	5.48	3.92	5.79
Knowsley	114,203	61,661	5.29	118,622	64,085	5.29	3.87	3.93
Hounslow	165,768	106,174	7.38	172,136	110,546	7.37	3.84	4.12
Salford	167,862	96,405	5.08	174,241	101,146	5.05	3.80	4.92
Bradford	367,946	208,060	5.74	381,433	215,996	5.74	3.67	3.81
Tower Hamlets	162,241	74,707	8.58	168,182	81,477	8.36	3.66	9.06
Perth and Kinross	108,147	65,319	4.94	112,107	68,545	4.91	3.66	4.94
Cardiff	245,789	138,148	5.51	254,699	145,117	5.47	3.63	5.04
Gwynedd	91,725	51,618	5.36	94,954	53,307	5.37	3.52	3.27
Merthyr Tydfil	42,751	21,042	7.71	44,229	21,830	7.69	3.46	3.74
Kensington and Chelsea	144,747	82,194	8.24	149,709	84,003	8.29	3.43	2.20
Plymouth UA	191,484	111,021	5.76	198,017	116,228	5.73	3.41	4.69
Anglesey, Isle of	53,682	28,418	6.15	55,484	29,048	6.18	3.36	2.22
Brent	205,057	116,327	8.98	211,891	121,297	8.94	3.33	4.27
North Tyneside	155,110	89,998	5.50	160,210	93,747	5.48	3.29	4.17
Bridgend	102,184	55,764	5.48	105,542	57,768	5.47	3.29	3.59
Neath Port Talbot	106,880	53,773	5.39	110,392	55,914	5.37	3.29	3.98
Carmarthenshire	138,372	73,220	5.38	142,871	75,447	5.38	3.25	3.04
Rhondda, Cynon, Taff	179,950	96,786	5.55	185,742	100,817	5.52	3.22	4.16
Dundee City	112,994	62,356	5.28	116,627	65,752	5.22	3.22	5.45
Sandwell	215,011	115,186	5.71	221,902	119,540	5.69	3.20	3.78
Durham	389,259	220,538	5.42	401,475	228,701	5.40	3.14	3.70
Glasgow City	461,816	247,528	5.47	476,123	253,440	5.49	3.10	2.39
Northamptonshire	507,586	335,831	4.74	523,134	349,217	4.72	3.06	3.99
Birmingham	749,977	391,955	4.61	772,947	405,252	4.60	3.06	3.39

Table A1 continued

Local authority	Numbers and percentages							
	Unweighted (PWT03)			Reweighted (PWT07)			Difference in 16+ population (per cent)	Difference in employment levels (per cent)
	16+ population	Employment levels	Coefficient of variation	16+ population	Employment levels	Coefficient of variation		
Peterborough UA	121,918	76,306	5.48	125,584	79,270	5.46	3.01	3.88
Hartlepool UA	70,399	36,279	5.69	72,511	37,452	5.68	3.00	3.23
Calderdale	150,520	91,731	5.70	154,974	94,647	5.70	2.96	3.18
Portsmouth UA	150,729	96,314	5.67	155,167	99,762	5.65	2.94	3.58
Sheffield	409,092	223,909	5.61	421,042	230,837	5.60	2.92	3.09
Bath and North East Somerset UA	139,181	82,710	5.67	143,147	85,152	5.66	2.85	2.95
Powys	102,739	61,313	5.43	105,663	62,279	5.46	2.85	1.58
Barnsley	174,026	94,473	5.59	178,971	97,277	5.58	2.84	2.97
Suffolk	542,946	326,442	4.77	558,056	336,919	4.76	2.78	3.21
Aberdeenshire	181,805	120,831	5.22	186,798	124,564	5.21	2.75	3.09
Nottinghamshire	598,209	357,875	4.51	614,624	370,447	4.49	2.74	3.51
St. Helens	139,402	77,081	5.26	143,191	78,985	5.27	2.72	2.47
Sunderland	220,626	119,646	5.73	226,531	123,819	5.70	2.68	3.49
Clackmannanshire	37,637	21,016	9.17	38,610	22,034	9.07	2.59	4.84
Blaenau Gwent	53,848	27,115	6.91	55,215	27,871	6.90	2.54	2.79
Angus	85,273	53,197	4.91	87,417	54,192	4.93	2.51	1.87
Isle of Wight UA	104,827	58,187	5.45	107,441	60,296	5.42	2.49	3.62
Liverpool	337,432	175,921	5.48	345,826	180,733	5.47	2.49	2.74
Rotherham	198,144	112,297	5.48	202,930	115,054	5.48	2.42	2.46
Darlington UA	77,670	46,074	5.51	79,456	47,153	5.51	2.30	2.34
East Riding of Yorkshire UA	259,338	155,053	5.22	265,206	158,836	5.21	2.26	2.44
Leicester UA	220,145	127,046	5.18	225,051	131,605	5.14	2.23	3.59
Wakefield	252,054	151,718	5.76	257,608	155,325	5.75	2.20	2.38
Waltham Forest	171,007	97,219	8.35	174,775	101,899	8.24	2.20	4.81
Walsall	197,878	102,316	5.96	202,159	104,483	5.96	2.16	2.12
Newham	188,272	93,685	8.07	192,243	98,750	7.95	2.11	5.41
Rutland UA	30,014	18,729	9.08	30,627	18,453	9.24	2.04	-1.47
Swansea	180,595	97,429	5.49	184,211	100,195	5.47	2.00	2.84
Greenwich	169,997	99,829	7.95	173,374	103,071	7.90	1.99	3.25
Coventry	240,767	141,455	5.47	245,500	145,148	5.45	1.97	2.61
Havering	181,390	108,171	7.92	184,925	110,089	7.93	1.95	1.77
Milton Keynes UA	166,305	115,669	5.91	169,541	118,248	5.90	1.95	2.23
Cornwall and The Isles of Scilly	421,281	235,966	5.57	429,450	242,349	5.55	1.94	2.71
Lancashire	910,438	532,665	3.81	928,013	544,142	3.81	1.93	2.15
Lewisham	201,424	124,122	7.77	205,281	128,231	7.71	1.91	3.31
Kent	1,072,446	637,456	3.48	1,092,946	653,552	3.47	1.91	2.53
Merton	156,406	100,443	7.25	159,394	102,611	7.24	1.91	2.16
Devon	585,663	343,177	4.95	596,779	351,811	4.94	1.90	2.52
West Dunbartonshire	72,441	42,729	5.14	73,792	43,162	5.16	1.86	1.01
Blackburn with Darwen UA	102,521	57,117	5.24	104,429	58,559	5.22	1.86	2.52
South Ayrshire	89,648	50,173	5.32	91,291	51,023	5.33	1.83	1.69
Norfolk	664,031	387,677	4.47	676,108	395,308	4.46	1.82	1.97
Wirral	244,005	132,739	6.02	248,202	133,296	6.06	1.72	0.42
Leicestershire	505,369	327,154	4.78	514,043	334,754	4.76	1.72	2.32
Redbridge	193,555	110,572	8.48	196,867	112,569	8.48	1.71	1.81
Doncaster	228,434	124,435	5.71	232,313	126,959	5.70	1.70	2.03
Wigan	240,070	140,064	6.19	244,078	141,938	6.20	1.67	1.34
South Lanarkshire	242,356	150,203	5.39	246,397	151,814	5.40	1.67	1.07
Haringey	178,830	106,660	7.66	181,787	110,517	7.59	1.65	3.62
Essex	1,070,822	650,999	3.58	1,088,049	665,667	3.57	1.61	2.25
Falkirk	117,631	72,372	5.30	119,522	74,456	5.27	1.61	2.88
Torfaen	71,051	38,860	5.40	72,186	39,275	5.41	1.60	1.07
Moray	68,214	41,883	4.73	69,230	43,169	4.69	1.49	3.07
Bedfordshire	314,234	198,910	6.23	318,902	202,349	6.23	1.49	1.73
Redcar and Cleveland UA	109,732	59,851	5.50	111,358	61,009	5.49	1.48	1.93

Table A1 continued

Local authority	Numbers and percentages							
	Unweighted (PWT03)			Reweighted (PWT07)			Difference in 16+ population (per cent)	Difference in employment levels (per cent)
	16+ population	Employment levels	Coefficient of variation	16+ population	Employment levels	Coefficient of variation		
Lincolnshire	544,524	315,647	4.96	552,540	324,785	4.92	1.47	2.90
Wolverhampton	185,404	99,015	5.87	188,084	102,082	5.82	1.45	3.10
Renfrewshire	134,609	82,213	5.29	136,542	83,855	5.28	1.44	2.00
Solihull	160,601	98,698	5.55	162,900	100,116	5.55	1.43	1.44
North Yorkshire	462,901	278,519	5.33	469,292	283,806	5.31	1.38	1.90
Oxfordshire	488,599	329,086	4.86	495,179	332,657	4.87	1.35	1.09
Staffordshire	650,012	397,985	4.68	658,334	404,288	4.68	1.28	1.58
Stoke-on-Trent UA	189,617	104,876	5.61	192,032	106,845	5.59	1.27	1.88
Kingston upon Thames	123,382	80,955	7.46	124,924	81,944	7.46	1.25	1.22
Sutton	143,011	94,935	8.30	144,795	95,635	8.32	1.25	0.74
Cumbria	395,791	232,300	5.73	400,631	235,249	5.73	1.22	1.27
Dumfries and Galloway	118,916	69,940	5.34	120,275	71,991	5.30	1.14	2.93
South Tyneside	119,735	61,181	5.73	121,092	62,281	5.71	1.13	1.80
Gateshead	152,762	85,798	5.34	154,424	86,463	5.35	1.09	0.78
Kirklees	305,765	185,938	5.56	309,089	188,128	5.56	1.09	1.18
Cambridgeshire	466,506	296,730	5.21	471,260	299,542	5.21	1.02	0.95
Windsor and Maidenhead UA	107,142	70,842	5.18	108,208	70,973	5.20	0.99	0.18
Derbyshire	596,463	368,087	4.51	602,337	370,636	4.51	0.98	0.69
Northern Ireland	1,324,363	749,954	2.78	1,337,318	759,237	2.77	0.98	1.24
Inverclyde	65,052	36,959	5.75	65,678	37,208	5.76	0.96	0.67
Tameside	169,234	101,348	5.34	170,856	102,055	5.35	0.96	0.70
North Ayrshire	107,869	59,329	5.31	108,877	59,824	5.32	0.93	0.83
Shropshire	229,395	134,568	5.80	231,486	135,950	5.80	0.91	1.03
Oldham	165,975	95,833	5.72	167,461	96,615	5.72	0.90	0.82
Luton UA	142,548	82,295	5.99	143,775	84,171	5.95	0.86	2.28
Somerset	407,951	237,271	5.90	411,391	240,761	5.88	0.84	1.47
Torbay	105,163	58,011	5.60	106,015	58,878	5.58	0.81	1.49
North Lanarkshire	255,054	149,881	5.30	257,067	152,609	5.27	0.79	1.82
Gloucestershire	459,179	288,198	5.14	462,674	292,069	5.13	0.76	1.34
Fife	287,621	172,994	5.42	289,623	175,403	5.40	0.70	1.39
Sefton	222,249	118,499	5.63	223,766	118,886	5.64	0.68	0.33
Surrey	854,088	552,222	3.82	859,583	556,110	3.82	0.64	0.70
Swindon	147,233	95,938	5.78	148,031	97,651	5.75	0.54	1.79
East Ayrshire	95,232	53,619	5.44	95,715	54,784	5.39	0.51	2.17
Barking and Dagenham	124,812	64,788	8.19	125,442	66,151	8.12	0.50	2.10
Northumberland	250,366	140,915	5.77	251,625	141,495	5.78	0.50	0.41
Cheshire	546,717	334,413	5.07	549,429	336,390	5.06	0.50	0.59
Warwickshire	413,933	261,940	4.90	415,608	263,474	4.90	0.40	0.59
Blackpool UA	110,681	59,278	5.66	111,075	59,324	5.67	0.36	0.08
Bexley	174,155	107,922	7.61	174,770	107,955	7.62	0.35	0.03
Hertfordshire	828,881	529,190	3.84	831,702	531,819	3.84	0.34	0.50
Dudley	240,781	142,078	5.69	241,493	142,332	5.69	0.30	0.18
Trafford	167,543	105,874	5.40	168,030	106,467	5.39	0.29	0.56
Rochdale	159,316	94,444	5.58	159,605	94,534	5.58	0.18	0.10
Scot Borders, The	88,793	52,877	5.38	88,908	54,036	5.33	0.13	2.19
Worcestershire	443,846	282,141	5.15	444,254	284,932	5.13	0.09	0.99
Enfield	217,648	133,619	7.96	217,698	134,564	7.93	0.02	0.71
Bolton	208,193	120,790	5.61	208,085	120,350	5.62	-0.05	-0.36
Pembrokeshire	93,288	51,767	5.47	93,223	51,277	5.50	-0.07	-0.95
Bury	144,273	86,003	5.54	144,138	85,512	5.55	-0.09	-0.57
Flintshire	120,464	76,560	5.21	120,200	75,835	5.23	-0.22	-0.95
Stirling	69,980	42,250	6.03	69,782	41,888	6.05	-0.28	-0.86
Wrexham	104,985	62,498	5.74	104,642	62,443	5.73	-0.33	-0.09
Argyll & Bute	72,290	43,471	5.41	72,049	43,917	5.37	-0.33	1.03
South Gloucestershire UA	199,160	136,514	5.18	198,303	136,643	5.17	-0.43	0.09

Table A1 continued

Local authority							Numbers and percentages	
	Unweighted (PWT03)			Reweighted (PWT07)			Difference in 16+ population (per cent)	Difference in employment levels (per cent)
	16+ population	Employment levels	Coefficient of variation	16+ population	Employment levels	Coefficient of variation		
Wiltshire	350,511	226,045	5.92	348,862	224,711	5.93	-0.47	-0.59
Monmouthshire	70,196	42,797	5.50	69,856	42,128	5.53	-0.48	-1.56
West Berkshire UA	119,317	81,299	5.71	118,662	80,068	5.74	-0.55	-1.51
East Sussex	406,254	232,619	5.67	403,681	230,221	5.68	-0.63	-1.03
Ealing	242,686	151,943	7.23	240,531	149,698	7.25	-0.89	-1.48
Medway UA	194,804	124,150	5.57	192,905	123,835	5.55	-0.97	-0.25
Warrington UA	155,038	97,223	5.35	153,507	96,610	5.34	-0.99	-0.63
Conwy	90,382	47,872	5.45	89,462	47,396	5.44	-1.02	-0.99
Bromley	241,939	147,726	7.57	239,111	146,168	7.57	-1.17	-1.05
West Sussex	621,457	374,099	4.45	613,848	368,824	4.46	-1.22	-1.41
Buckinghamshire	395,429	254,434	5.52	390,258	249,499	5.54	-1.31	-1.94
Dorset	334,867	191,979	5.96	330,487	185,651	6.02	-1.31	-3.30
Hillingdon	201,241	122,339	7.77	198,552	118,266	7.85	-1.34	-3.33
Hampshire	1,022,070	664,776	3.37	1,007,801	652,867	3.38	-1.40	-1.79
Caerphilly	137,135	76,155	5.43	135,218	75,181	5.42	-1.40	-1.28
Stockport	227,543	145,452	5.64	224,265	143,054	5.65	-1.44	-1.65
Brighton and Hove UA	210,967	130,570	5.28	207,705	129,207	5.27	-1.55	-1.04
Hackney	161,056	85,081	8.02	158,437	84,468	7.98	-1.63	-0.72
Herefordshire, County of UA	148,175	90,014	5.42	145,532	88,855	5.40	-1.78	-1.29
Harrow	176,808	108,423	8.17	173,595	105,153	8.22	-1.82	-3.02
Thurrock UA	117,581	73,431	5.65	115,434	72,855	5.62	-1.83	-0.78
Reading UA	116,990	80,229	5.54	114,676	79,573	5.51	-1.98	-0.82
Telford and Wrekin	128,165	79,346	5.94	125,604	78,251	5.92	-2.00	-1.38
East Lothian	74,877	46,862	5.32	73,351	45,444	5.35	-2.04	-3.03
Croydon	271,900	170,161	7.23	266,315	165,881	7.25	-2.05	-2.52
Wokingham UA	123,624	84,521	5.30	121,033	82,961	5.29	-2.10	-1.85
West Lothian	133,045	87,861	5.45	130,047	84,977	5.48	-2.25	-3.28
Slough UA	95,390	60,921	5.33	93,055	60,027	5.30	-2.45	-1.47
Barnet	276,289	164,287	7.89	268,414	154,786	8.01	-2.85	-5.78
East Dunbartonshire	87,067	55,751	4.91	84,541	54,145	4.91	-2.90	-2.88
Denbighshire	78,816	42,868	5.90	76,512	41,537	5.91	-2.92	-3.10
Bracknell Forest UA	90,620	63,514	5.04	87,916	61,418	5.05	-2.98	-3.30
Vale of Glamorgan, The	100,037	58,549	5.48	97,019	56,866	5.48	-3.02	-2.87
Southend-on-Sea UA	129,509	78,490	5.49	125,585	75,143	5.53	-3.03	-4.26
Midlothian	64,627	42,414	6.14	62,644	40,296	6.20	-3.07	-4.99
Bournemouth UA	133,099	78,763	5.44	128,175	76,622	5.41	-3.70	-2.72
Richmond upon Thames	149,716	98,784	7.05	143,862	94,228	7.08	-3.91	-4.61
Hammersmith and Fulham	146,477	91,987	7.42	140,313	88,700	7.39	-4.21	-3.57
Ceredigion	67,603	34,879	6.02	64,459	32,880	6.05	-4.65	-5.73
East Renfrewshire	73,785	46,135	5.52	70,292	43,393	5.55	-4.73	-5.94
Poole UA	113,947	68,889	5.48	108,315	64,628	5.52	-4.94	-6.19
<b>Total</b>	<b>47,452,934</b>	<b>28,277,079</b>		<b>48,257,081</b>	<b>28,849,553</b>		<b>1.69</b>	<b>2.02</b>

**Note:**

1 Key data for UK born and non-UK born population subgroups are available on request.

## FEATURE

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# Rebasing the services producer price index

## SUMMARY

The experimental services producer price index (SPPI) was rebased as of 26 November 2008, an exercise that has re-referenced the index to 2005=100 from its previous base of 2000=100. The weighting patterns have also been updated to reflect market shares in the new base year. This article briefly describes the development of the SPPI, construction of the index, the methodology employed and weighting patterns calculations and compares growth in both the net and gross sector indices on both bases.

The experimental services producer price index (SPPI), formerly the corporate services price index (CSPI), renamed in 2006 for consistency with the more established producer price indices (PPIs), has recently been rebased. The rebasing exercise has re-referenced the index to the year 2005=100 from its previous base of 2000=100 and updated the weighting patterns, to reflect market shares in the new base year. The top-level SPPI is published on both a net sector and a gross sector basis, with growth being generally greater in the case of the net sector index.

Since the previous rebasing project, new indices for computer services and advertising placement have been introduced; a redeveloped index for financial intermediation – formerly the banking index – has also been introduced (the banking index was suspended in August 2007 due to quality concerns). This redeveloped index will be published in its own right but will not be included as part of the top-level SPPI indices.

## Overview of the SPPI

A more complete background and history of the SPPI (under its previous title of CSPI) is available in *Economic Trends* articles by Palmer (2000), Skipper (1998) and Price (1996). Briefly:

- the SPPI is an index compiled quarterly to measure the changes in price of a range of service products provided by UK businesses to other UK businesses and to local and central government. Service

products provided to private individuals and to companies operating outside the UK are beyond the scope of the SPPI

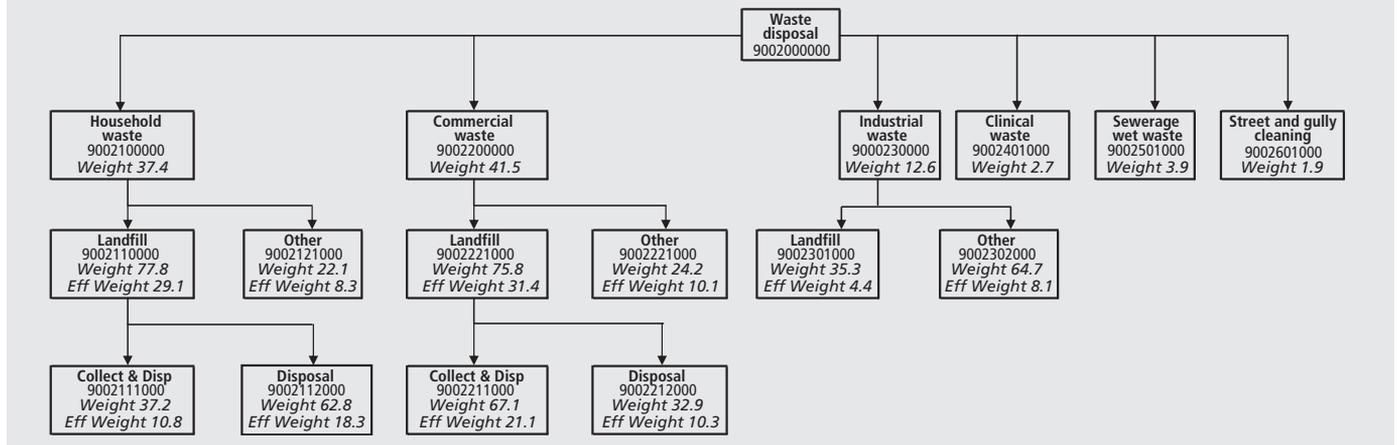
- SPPI development began in 1990 with the aim of creating a services price index to supplement the (manufacturing) producer price indices
- the SPPI has been gradually expanded and currently covers the activities of 32 separate industries aggregated to produce the top-level indices. Work is ongoing to further increase the coverage of the SPPI, developing indices for industries not currently included, for example, freight carriage by air
- the majority of the individual industry-level SPPIs are currently used within the UK National Accounts division. They are used as price deflators in the compilation of the experimental monthly index of services and quarterly Gross Domestic Product (GDP) by the output method

## Index construction

Industry-level indices are currently the lowest level of aggregation to be published. These indices are weighted together to produce the top-level SPPI, which is published on both a net sector and gross sector basis.

The net sector SPPI represents transactions made by businesses from the service sector with UK businesses outside the service sector and with general government. The gross sector SPPI represents transactions made by businesses from the service sector with all UK businesses and with general government.

**Figure 1**  
**Waste disposal family tree**



In order to model the pricing structure of a particular service industry, its activities are arranged into a hierarchical structure of product groups, subproducts and items. Within each industry is a range of product groups, each of which is assigned an index number. These are the product group indices and each is given a percentage weight calculated as the market share attributable to that product group. Market share is calculated from information gathered via the SPPI turnover inquiry and is the sum of respondent market share and an estimate of market share for other non-sampled businesses engaged in similar activity.

For the purpose of the index structure, each product group can be made up of a number of subproducts, each of which is assigned an index number and a weight in similar fashion to the product group indices. In turn, these subproducts could be made up of further subproducts, again with index numbers and weights of their own.

Figure 1 shows how the industry level index for waste disposal (SIC 90020) is constructed.

The product group or subproduct indices at the bottom of this 'family tree' are known as stage one indices. Each stage one index is made up of a collection of specific items, also assigned index numbers and weights, for which prices are collected from a number of respondents. These items can be considered as the foundation on which all of the upper level indices are built.

Figure 2 shows an example of one collection of items feeding index 9002501000 from Figure 1.

### Methodology

Rebasing is currently carried out on a five-yearly cycle, so this is the second time since its inception that the SPPI has been rebased,

to update base prices and index weights. The exercise is necessary since, over time, the relative volumes of service commodities consumed, and prices charged for them, will change. It is important, therefore, that base prices and weighting patterns employed in the construction of the indices are updated at regular intervals to reflect these changes. All weights have been updated to reflect the market shares of each of the products in the year 2005.

As stated, weighting patterns calculated at each level below industry level are based on turnover information collected on each of the products, subproducts or items within that level. Industry-level weighting patterns are calculated using information from three separate sources and, as stated, the methodology employed has been reviewed and improvements made since the previous rebasing project.

### Industry-level weighting patterns calculations

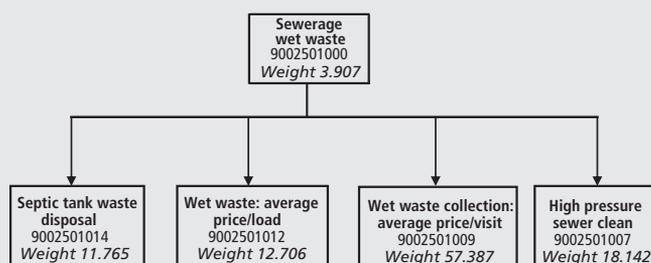
During the current rebasing exercise, improvements have been made to the methodology for calculating the industry-level weighting patterns. These are used to aggregate the individual industry indices into the top-level net sector and gross sector headline indices. The term weighting pattern indicates the proportion

of the turnover of each industry within the SPPI relative to the turnover of all other industries within the index.

At the time of the previous rebasing project, data from Office for National Statistics (ONS) business surveys were primarily used to calculate the weighting patterns. In a number of cases, these data were supplemented with information from external bodies, such as trade associations and industry regulators. For the current rebasing exercise it was decided to base the calculations primarily on data taken from the National Accounts Supply-Use Tables (SUT) (turnover information across all sectors of the economy is collected by broad industry category and presented in the SUT). Some disaggregation of these data was necessary and this was achieved using data from more detailed business surveys, namely, the Annual Business Inquiry and the SPPI turnover inquiry. In each case, the most up-to-date information available in relation to the base year was used. Using only ONS business survey data avoided the need for any supplementary information.

The reason behind the decision to change the methodology was twofold. Firstly, much of the supplementary information received, albeit based on expert opinion, was likely in some cases to be no more than conjecture. Secondly, and perhaps more pertinent, it

**Figure 2**  
**Sewerage wet waste family tree**



was unlikely that similar information could be collected from the same sources for the current exercise. This was due, in the main, to a lack of any sufficient audit trail.

### Changes to the weights

It is apparent from **Table 1** that, in general, there has not been a great deal of relative change to the weights. At the time of the previous rebasing, six industries carried weights greater than 5 per cent under the net sector and gross sector calculations. Combined, they accounted for more than 55 per cent of the net sector weight and almost 60 per cent of the gross sector weight. Those same six industries now account for around 60 per cent of the net and gross sector weights.

### Growth

**Figure 3** compares the top-level SPPI net and gross sector indices on both the 2000 and 2005 bases. **Figure 4** illustrates that the growth trend in the net sector index before and after rebasing is very similar up until early 2006, with growth in the rebased index running at about 0.5 per cent lower than previously. By mid-2006, the level of growth associated with the rebased index has overtaken previous growth levels and for the next year or so runs at about 0.25 per cent higher. From mid-2007, the levels of growth continue in almost identical fashion.

The story of the trend in the growth is very similar in the case of the gross sector indices. Up until early 2006, the growth in the rebased index is around 0.75 per cent less than previously. By the middle of 2006, the rebased growth is on a par with previous growth and both follow an almost identical path thereafter.

#### CONTACT

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Table 1

### Comparison of 2000- and 2005-based SPPI weights

	Percentages			
	Net sector		Gross sector	
	2005	2000	2005	2000
Maintenance and repair of motor vehicles	3.62	1.98	3.35	2.62
Hotels	1.54	3.89	1.26	3.30
Canteens and catering	1.71	3.20	1.40	2.71
Business rail fares	0.58	0.16	0.55	0.28
Rail freight	0.23	0.98	0.22	0.56
Bus and coach hire	0.81	0.18	0.39	0.11
Freight transport by road	14.73	20.12	7.05	11.38
Commercial vehicle ferries	0.18	0.35	0.15	0.26
Sea and coastal water freight	1.07	0.87	0.86	0.85
Business airfares	0.21	1.51	0.33	2.93
Freight forwarding	7.68	5.90	7.70	6.69
National post	1.07	1.72	1.70	3.11
Courier services	1.30	1.20	2.06	2.16
Telecommunications	3.62	5.13	6.51	10.59
Property rentals	22.23	11.72	11.43	7.04
Estate agent activities	0.25	1.48	0.50	3.32
Construction plant hire	3.84	5.41	2.30	2.13
Computer services	7.47	6.80	11.24	11.26
Market research	2.59	0.94	3.18	1.02
Technical testing	0.97	0.92	1.04	0.69
Advertising	6.39	1.46	5.99	1.56
Employment agencies	8.05	6.27	14.74	12.68
Security services	1.60	2.36	2.94	1.76
Industrial cleaning	1.68	2.25	3.07	2.10
Commercial film processing	0.03	0.18	0.05	0.14
Contract packaging	0.22	1.26	0.41	0.53
Secretarial services	0.06	0.32	0.11	0.30
Translation services	0.05	0.04	0.10	0.04
Adult education	1.06	1.46	4.83	1.36
Sewerage services	2.45	3.80	1.72	2.03
Waste disposal	2.36	2.39	1.65	1.29
Commercial washing and dry cleaning	0.35	0.64	1.17	0.60

Figure 3

### Comparison of 2000- and 2005-based top-level SPPI indices

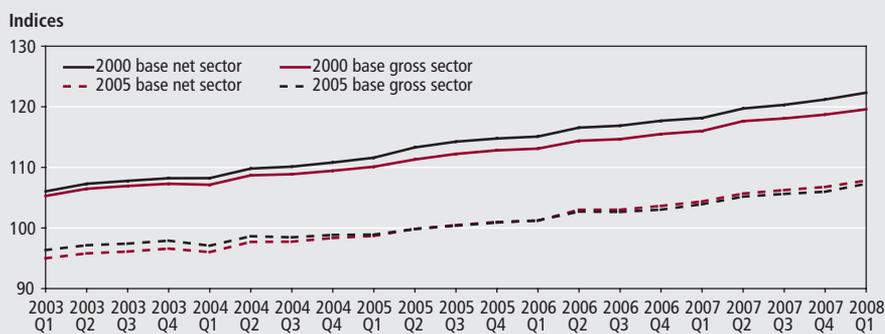
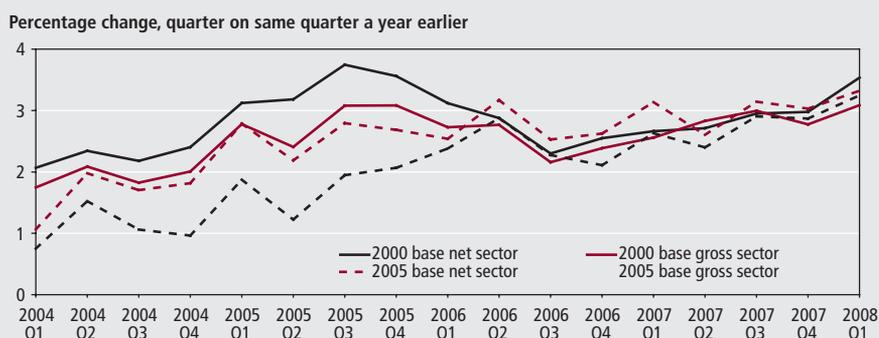


Figure 4

### Top-level SPPI: comparison of growth rates



# Methods explained

Methods explained is a quarterly series of short articles explaining statistical issues and methodologies relevant to ONS and other data. As well as defining the topic areas, the notes explain why and how these methodologies are used. Where relevant, the reader is also pointed to further sources of information.

## Cost-benefit analysis

Barry Williams

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### SUMMARY

The concept of cost-benefit analysis (CBA) originated in the United States in the 1930s where it was used to create a solution to problems of water provision. The process arrived in the UK in the 1960s for use in the transportation sector, where it was applied to the construction of the M1 motorway and the Victoria Line on the London Underground. In recent years, CBA has found a new home in environmental policy, where there is increasing pressure to make informed policy decisions which take account of long-term costs and benefits. This article aims to explain the principles and methods behind CBA in a concise, introductory manner.

Cost-benefit analysis (CBA) sets out all the costs and benefits associated with a given project in money terms, in order to weigh up whether a project brings a net gain to society and to be able to compare multiple options for limited government resources. It is the most comprehensive method for comparing projects because it creates a common measurement for all costs and benefits; unfortunately, this also makes CBA difficult to perform.

A well-planned CBA can tell a policy maker everything they need to know about a project, breaking down the relevant costs and benefits in such a way as to give the decision maker the most comprehensive set of information. Sometimes, CBA is not the most appropriate tool for government. There are two main alternatives, the first of which is cost-effectiveness analysis. This technique is used for deciding between projects with a common goal, for example, which option is the best treatment for heart attack patients. A second choice is cost-utility analysis, where it is possible to generate cost in monetary terms but benefits are measured in a non-monetary frame. This is most commonly used in health economics, where the benefits are measured in terms of quality-adjusted life years. These techniques will not be expanded upon here but will be covered in a separate follow-up article at a later date.

The *Green Book* is the most comprehensive guide for government economists who carry out CBA on a regular and professional basis; it

sets out key guidance both in terms of structuring a robust CBA and dealing with various issues that can occur. The *Green Book* should always be the main guide for a government economist; a website link to the full document can be found in the references at the end of this article.

### Identification of costs and benefits

The starting point and crucial stage in CBA is to appropriately identify the relevant costs and benefits to be measured. A certain degree of judgement will always be required, but there are some underlying principles which can help identify which information should and should not be included.

Firstly, it is essential to include incremental costs and benefits only, that is, those which would be foregone if the project was not implemented. All resource and opportunity costs (see **Box 1**) should also be included within the analysis, as well as technological effects which may be a result of the project. More specifically, the changes in the use of resources brought about by the technological effects are of interest. It is essential for a social CBA to include costs and benefits accruing to all members of society. This is an area of potential difficulty in practice, as aggregating individual effects up to the relevant population can be an issue. The final principle of inclusion is to consider costs and benefits over a sufficiently long time-horizon. The difficulty of appropriately discounting these figures into present values is widely recognised and different discount rates can materially change the result of a CBA. The techniques for tackling future costs and benefits are covered below.

When setting out costs and benefits, it is essential not to include sunk costs, that is, costs and benefits which would occur even if the project was not implemented. It is important to identify areas where resources have already been committed, and as such are beyond the scope of analysis.

### Measurement techniques in CBA

To measure a cost or benefit, the assessor must assign a price to the variable; theory would suggest that the market price should be used

#### Box 1

##### Opportunity cost

Within society, people will be unable to consume or produce everything they would want to. Choice will inevitably involve sacrifice, whether an individual chooses to spend their income on one product or another or a firm chooses to produce one product instead of another. As such, there is an 'opportunity

cost', separate from the monetary cost, of any choice that is made. This opportunity cost is defined as the sacrifice that has to be made when choosing to do one thing over another, that is, it is the next best thing that could have been done instead of the option chosen.

for this purpose. This is a reasonable starting point, but would only apply perfectly in a competitive market; the market price will be the best option in most cases, but sometimes a correction may be useful. When markets are distorted, for example through government intervention or monopoly market structures, the given price may be inappropriate. As such, the price used in a CBA could be the price given after adjusting for this distortion, also known as the 'shadow price' of the cost (benefit). A second issue is that many of the costs and benefits of a project will not be sold within the market and as such there will be no market price (however imperfect) on which to base valuation. In this instance, economists have four principle valuation methods at their disposal:

- averted costs
- human capital
- implicit valuation, and
- explicit valuation

The main features, strengths and weaknesses of these methods are covered below. Each is useful for different areas of interest and a good CBA will often utilise more than one of them where appropriate.

### Averted costs

If a benefit is non-marketed and, as such, has no price associated with it, then averted costs can be considered to at least partially value that benefit. Consider, for example, a project which is designed to reduce the incidence of road traffic accidents through speed reduction. One of the benefits from reducing the number of accidents would be the costs avoided through not having to send emergency services to the scene. Thus, while there is no market price for road traffic accidents, the wages of personnel and the costs of equipment used at the scene can be obtained as a potential proxy for at least one component of the benefit gained from reducing accidents. This method has the advantage of simplicity; it can be applied to a wide variety of areas and is generated using actual costs. However, it can only ever measure some aspects of a cost (benefit) and will be subject to the issues discussed above with regard to imperfect market prices.

### Human capital

The argument for this method is that some part of the benefit being considered comes in the form of saving time, or gaining time in the case of reducing traffic accidents considered above. If an individual avoids being involved in a road traffic accident because of a traffic calming measure, they will gain the time they would have lost as a result of the accident to produce output in the economy. If labour markets work effectively, that person will be paid their marginal product (or their value), and the benefit to society of this time gain can be valued in terms of their market wage. As with averted costs, this method effectively segments the gains (losses) from a project in order to find a suitable market price for some element of a benefit (cost). It has the same string of advantages and disadvantages as the averted costs method discussed above.

### Explicit valuation

An obvious method for assigning a price to society's willingness to pay for a benefit (willingness to accept a cost) where a market does not exist is to ask individuals. The explicit valuation technique (also known as stated preference, experimental survey and contingent

valuation methods) does just this.

The most common form of explicit valuation is the contingent valuation method (CVM), which allows the individual to frame a question/set of questions in such a way as to measure the exact concept required. A good CVM will capture the correct concepts with a minimum of bias and aggregate the sample results to a relevant population.

A framework for carrying out a typical CVM exercise is given below (taken from Hanley and Spash 1993):

- setting up the hypothetical market
- obtaining bids
- calculating average willingness to pay/accept
- estimating bid curves
- aggregating the data
- evaluating the exercise (sensitivity analysis)

Setting up the hypothetical market means designing the questionnaire, explaining what is trying to be valued in a clear manner, explaining why it needs paying for, and explaining how money will be raised. If the survey is not designed correctly, the respondents' understanding of the benefit may not be accurate and, as such, their response will not reflect their true valuation of the cost (benefit).

Obtaining the bids is the next key stage of the process and is the area where potential bias can creep into the technique. It is important to survey a representative sample and to administer the monetary components of the survey in such a way as to obtain an unbiased response. Once a complete set of responses has been gathered, an average set of willingness to pay (accept) must be produced, at which point a sensible treatment of outliers should be followed and estimation of a confidence interval around the estimates may be produced.

If the survey sample is large enough, this stage of the CBA can also be used to estimate bid curves, and the variable can be regressed on a number of characteristics (for example, sex, age and education) to build up a picture of how the response may differ by societal characteristics; this can be potentially useful in the aggregation stage.

The evaluation of the exercise can be carried out in a number of ways, from the simple test of repeating the process and comparing results through to implementation of the results on a small scale to see if these hypothetical responses are reliable when people actually have to pay. The evaluation process becomes even more important when a long time-horizon is involved (see below for discussion around this).

### Implicit valuation

This method uses an individual's actual behaviour in related markets in order to value their willingness to pay for a benefit or their willingness to accept a cost associated with a project. This is the preferred method, where possible, when compared with the explicit valuation method, as it is less subject to potential error and moral hazard on the part of the individual when stating their preferences. This valuation technique offers a range of methods which infer values for non-marketed costs and benefits from different kinds of actual choices. This article

considers only one of these methods: the basic methodology of hedonic pricing. However, a good CBA textbook will cover a wider range of options (see Boardman *et al* 2006). Hedonic pricing is useful because of its wide applicability; a value can be generated for a variety of benefits (costs) using data from related markets. Markets typically used for this purpose include:

- the housing market
- the labour market
- transport markets

A simple example of the hedonic method would be to compare two houses which have the exact same characteristics, except that one of the houses is located near a disamenity, for example a polluting factory. The difference in value of the two houses represents the cost of living near the disamenity. In a more complex case, with many differences in house characteristics, a multiple regression technique can be applied to estimate the price effect of various benefits and costs.

This method has certain weaknesses: it can rely on some fairly heavy data requirements, and the complexity of econometrics involved in order to obtain a robust estimate may be off-putting to some. The method also assumes that consumers are well informed about the characteristics prevailing within the hedonic market. Nevertheless, the implicit valuation method can be of great use within certain areas: it can measure the right concept and is not subject to some of the bias associated with explicit evaluation methods.

## Time, decisions and sensitivity

### Time matters

Time is an issue when trying to put a value on things. If a project brings in £10 in a year's time, this is obviously not as valuable as £10 today. A simple reason for this is the return that could be achieved by putting £10 in the bank today and leaving it there for a year: it would be worth £10 plus the accumulated interest. More basic to this is the fact that individuals are impatient: they have a time preference for receiving things today rather than in the future. The same is true for society as a whole: people like to gain benefits from a project as soon as possible and worry less about costs in the distant future. The rate of discount which should be applied to these future costs and benefits is a grey area.

Consider a discount factor ( $r$ ), where the general formula for the present value ( $PV$ ) of costs ( $C$ ) and benefits ( $B$ ) is:

$$PV(B) = \sum_{t=0}^{t=n} \frac{B_t}{(1+r)^t}$$

$$PV(C) = \sum_{t=0}^{t=n} \frac{C_t}{(1+r)^t}$$

and where  $t$  = the time period when the cost (benefit) occurs and for the current period  $t = 0$ .

### Decisions, decisions

The decision process for a CBA can be taken in a number of ways, the most obvious being the net present value (NPV) rule, where  $PV(C)$  is simply subtracted from  $PV(B)$  and a result of more than zero leads to a 'yes' decision. An equivalent technique would be the division of  $PV(B)$  by  $PV(C)$  to obtain a benefit/cost ratio: if this ratio

is greater than 1, then the project is worthwhile; if it is less than 1, the costs outweigh the benefits.

A third option for the user is the internal rate of return rule (IRR), which tackles the NPV decision from a slightly different tack. Instead of applying a discount rate and calculating NPV, the user sets  $PV(B)$  equal to  $PV(C)$  and solves for the discount rate:

$$\sum_{t=0}^{t=n} \frac{B_t}{(1+i)^t} = \sum_{t=0}^{t=n} \frac{C_t}{(1+i)^t}$$

Once the value of  $i$  has been calculated, the decision can be made: if  $i >$  social discount rate ( $r$ ) then the project is worthwhile; if  $i < r$  then the project is not worth carrying out. The benefit of this rule is that it gives the turning point for conventional projects whose costs accrue in the present and whose benefits accrue in the future; the decision maker knows exactly what rate of discount would make the project worthwhile without having to carry out the whole valuation process numerous times. It is worth noting that, for some unconventional projects, the stream of benefits and costs may be such that net benefits may be negative, then positive for a period, then negative again. In this case, there will be more than one value for IRR and the NPV rule is preferable. In general, the NPV rule will be the best choice for the decision maker and is the rule promoted by the *Green Book* (which gives the discount rate for government economists).

### Sensitivity analysis

The government *Green Book* offers the main guidelines for carrying out a CBA and annexes 4 to 6 offer rules for dealing with risk and uncertainty, distributional (equity) issues and a set of discount tables for the official discount rates for government projects. This is a far more detailed and useful guide than could be offered here. Instead, this article will outline the need for this type of analysis in a brief fashion.

A good case study for CBA is the ongoing debate surrounding climate change (see Stern 2006 for detailed analysis). Much of the debate in this area concerns the probability of certain events unfolding at a future date. One way of making an analysis robust to this uncertainty is to attach probabilities to different outcomes, thereby weighting the costs and benefits associated with them. If the probabilities are then allowed to vary, an upper and lower band can be obtained for each world outcome. For instance, if a project is only worth doing in the most optimistic set of outcomes, then the weighted NPV taking into account the uncertainty of that outcome may end up being negative.

Sensitivity analysis should also take into account how the value of a project changes if its costs and benefits are weighted differently when considering equity issues. If a government policy maker places more weight on the impact on poor communities than wealthy ones, would the policy decision change? This kind of information is useful to have.

A good CBA should also recognise the limitations of its valuations: there are bound to be intangible elements of a project which cannot be measured. The user should ask whether the excluded variables are likely to compromise, or are they likely to reinforce, the decision made. Secondly, are the excluded considerations likely to be large enough to materially effect the decision made?

CBA reports are only as good as the sensitivity analysis surrounding them; if a report does not include some allowance for

uncertainty, then its recommendation can become very fragile for the decision maker.

## Conclusion

This article gives an outline of the processes involved in performing a robust CBA. It does not give the reader all the tools required to carry out a CBA, but highlights some of the techniques available and also the uncertainty a good CBA must strive to deal with along the way to making a useful policy recommendation.

## CONTACT

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## Key time series

## 1 National accounts aggregates

Last updated: 26/11/08

Seasonally adjusted

	£ million		Indices (2003 = 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
2002	1,075,564	957,094	94.4	94.3	97.1	97.3	97.2	97.0	97.0
2003	1,139,746	1,015,008	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2004	1,200,595	1,068,574	105.3	105.3	102.8	102.8	102.7	102.5	102.5
2005	1,252,505	1,115,121	109.9	109.9	104.2	104.9	104.9	104.8	104.7
2006	1,321,860	1,177,232	116.0	116.0	106.1	107.8	107.9	107.5	107.5
2007	1,401,042	1,247,721	122.9	122.9	109.6	111.1	111.1	110.6	110.6
2002 Q1	263,968	234,651	92.6	92.5	96.1	96.5	96.5	96.0	95.8
2002 Q2	267,473	238,071	93.9	93.8	96.2	96.9	96.8	96.9	96.9
2002 Q3	270,655	240,922	95.0	94.9	98.2	97.5	97.5	97.4	97.4
2002 Q4	273,468	243,450	96.0	95.9	98.1	98.1	98.1	97.8	97.8
2003 Q1	278,207	247,866	97.6	97.7	99.4	98.7	98.7	98.9	98.9
2003 Q2	283,305	252,613	99.4	99.6	99.2	99.6	99.6	99.8	99.9
2003 Q3	287,130	255,626	100.8	100.7	99.8	100.4	100.3	100.4	100.4
2003 Q4	291,104	258,903	102.2	102.0	101.6	101.3	101.3	100.8	100.7
2004 Q1	293,234	260,813	102.9	102.8	101.8	101.8	101.7	101.1	101.1
2004 Q2	299,120	266,134	105.0	104.9	102.5	102.7	102.7	102.2	102.1
2004 Q3	301,608	268,390	105.9	105.8	102.2	102.9	102.9	102.8	102.8
2004 Q4	306,633	273,237	107.6	107.7	104.5	103.6	103.6	103.9	103.9
2005 Q1	308,895	274,979	108.4	108.4	104.2	104.0	104.0	104.2	104.2
2005 Q2	313,126	278,928	109.9	109.9	105.6	104.7	104.7	105.0	104.9
2005 Q3	313,026	278,181	109.9	109.6	103.3	105.1	105.1	104.5	104.3
2005 Q4	317,458	283,033	111.4	111.5	103.9	105.6	105.7	105.5	105.5
2006 Q1	324,523	289,466	113.9	114.1	105.2	106.8	106.9	106.6	106.7
2006 Q2	326,609	290,681	114.6	114.6	106.1	107.6	107.7	106.6	106.4
2006 Q3	332,954	296,264	116.9	116.8	106.4	108.0	108.1	108.2	108.0
2006 Q4	337,774	300,821	118.5	118.5	106.9	109.0	109.0	108.8	108.7
2007 Q1	342,597	304,405	120.2	120.0	107.5	109.9	110.0	109.4	109.1
2007 Q2	348,439	310,094	122.3	122.2	108.9	110.8	110.8	110.4	110.3
2007 Q3	353,386	314,835	124.0	124.1	109.6	111.6	111.7	111.1	111.1
2007 Q4	356,620	318,387	125.2	125.5	112.5	112.2	112.2	111.6	111.9
2008 Q1	362,212	323,349	127.1	127.4	113.6	112.5	112.5	113.0	113.3
2008 Q2	363,719	324,403	127.6	127.8	111.9	112.5	112.5	113.5	113.6
2008 Q3	364,037	326,635	127.8	128.7		111.9	112.0	114.2	114.9

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

	IHYO	ABML <sup>4</sup>	IHYO	ABML <sup>4</sup>	YBGO <sup>4</sup>	IHYR	ABMM <sup>4</sup>	IHYU	ABML/ABMM <sup>4</sup>
2002 Q1	4.4	4.5	4.4	4.5	2.9	1.8	1.4	2.5	3.1
2002 Q2	5.1	5.5	5.1	5.5	2.7	2.0	1.5	3.1	3.8
2002 Q3	5.9	6.0	5.9	6.0	3.9	2.2	1.9	3.6	4.1
2002 Q4	5.7	5.8	5.7	5.8	4.1	2.4	2.4	3.2	3.3
2003 Q1	5.4	5.6	5.4	5.6	3.5	2.3	2.3	3.0	3.3
2003 Q2	5.9	6.1	5.9	6.1	3.1	2.8	2.9	3.0	3.1
2003 Q3	6.1	6.1	6.1	6.1	1.7	2.9	2.9	3.1	3.1
2003 Q4	6.4	6.3	6.4	6.3	3.6	3.2	3.3	3.1	3.0
2004 Q1	5.4	5.2	5.4	5.2	2.5	3.1	3.0	2.2	2.2
2004 Q2	5.6	5.4	5.6	5.4	3.4	3.1	3.1	2.4	2.2
2004 Q3	5.0	5.0	5.0	5.0	2.4	2.5	2.6	2.4	2.4
2004 Q4	5.3	5.5	5.3	5.5	2.9	2.3	2.3	3.0	3.2
2005 Q1	5.3	5.4	5.3	5.4	2.3	2.2	2.3	3.0	3.1
2005 Q2	4.7	4.8	4.7	4.8	3.0	1.9	2.0	2.7	2.7
2005 Q3	3.8	3.6	3.8	3.6	1.1	2.1	2.2	1.6	1.4
2005 Q4	3.5	3.6	3.5	3.6	-0.6	2.0	2.0	1.5	1.5
2006 Q1	5.1	5.3	5.1	5.3	1.0	2.7	2.8	2.3	2.4
2006 Q2	4.3	4.2	4.3	4.2	0.5	2.7	2.8	1.5	1.4
2006 Q3	6.4	6.5	6.4	6.5	3.0	2.8	2.8	3.5	3.6
2006 Q4	6.4	6.3	6.4	6.3	2.9	3.2	3.1	3.1	3.0
2007 Q1	5.6	5.2	5.6	5.2	2.2	2.9	2.8	2.6	2.3
2007 Q2	6.7	6.7	6.7	6.7	2.7	3.0	2.9	3.6	3.7
2007 Q3	6.1	6.3	6.1	6.3	2.9	3.3	3.3	2.7	2.9
2007 Q4	5.6	5.8	5.6	5.8	5.2	2.9	2.9	2.6	2.9
2008 Q1	5.7	6.2	5.7	6.2	5.7	2.3	2.3	3.3	3.8
2008 Q2	4.4	4.6	4.4	4.6	2.7	1.5	1.6	2.8	3.0
2008 Q3	3.0	3.7	3.0	3.7		0.3	0.3	2.7	3.4

## 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: 26/11/08

£ million, chained volume measures, reference year 2003, 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		
2002	693,124	27,576	224,973	184,701	2,289	183	1,133,077	285,433	1,418,531	309,982	0	1,108,508	
2003	714,608	27,668	232,819	186,700	3,983	-37	1,165,741	290,677	1,456,418	316,672	0	1,139,746	
2004	736,857	27,198	240,672	195,782	4,371	-42	1,204,838	304,699	1,509,537	338,359	0	1,171,178	
2005	751,288	27,212	244,850	200,187	4,814	-354	1,227,997	329,491	1,557,487	362,211	0	1,195,276	
2006	766,378	28,289	248,776	212,146	4,575	290	1,260,454	365,818	1,626,272	397,076	0	1,229,196	
2007	789,163	29,269	253,200	227,188	6,849	535	1,306,204	349,290	1,655,493	389,724	628	1,266,397	
2002 Q1	171,546	6,871	55,781	44,562	1,372	66	280,217	70,659	350,877	76,009	0	274,918	
2002 Q2	172,790	6,867	56,313	45,610	367	48	282,005	72,740	354,783	78,682	0	276,010	
2002 Q3	173,839	6,907	56,455	46,422	287	62	284,033	72,259	356,315	78,344	0	277,923	
2002 Q4	174,949	6,931	56,424	48,107	263	7	286,822	69,775	356,556	76,947	0	279,657	
2003 Q1	176,080	6,949	57,130	46,805	-647	-8	286,469	73,942	360,416	79,207	0	281,208	
2003 Q2	178,451	6,889	57,711	46,131	190	94	289,609	71,934	361,538	77,711	0	283,851	
2003 Q3	179,545	6,913	58,472	45,964	2,065	-68	292,894	71,671	364,561	78,577	0	285,990	
2003 Q4	180,532	6,917	59,506	47,800	2,375	-55	296,769	73,130	369,903	81,177	0	288,697	
2004 Q1	182,394	6,950	60,023	48,869	-684	112	297,664	74,062	371,726	81,742	0	289,984	
2004 Q2	184,099	6,823	59,806	49,385	603	-90	300,625	75,645	376,270	83,564	0	292,706	
2004 Q3	184,893	6,760	60,210	49,061	936	-96	301,763	76,739	378,502	85,230	0	293,272	
2004 Q4	185,471	6,665	60,633	48,467	3,516	32	304,786	78,253	383,039	87,823	0	295,216	
2005 Q1	186,342	6,867	60,787	48,845	3,151	-158	305,833	77,173	383,006	86,553	0	296,453	
2005 Q2	187,191	6,806	61,208	49,264	1,895	86	306,448	80,809	387,257	88,955	0	298,302	
2005 Q3	188,172	6,784	61,370	51,286	187	-201	307,597	84,033	391,629	92,100	0	299,529	
2005 Q4	189,583	6,755	61,485	50,792	-419	-81	308,119	87,476	395,595	94,603	0	300,992	
2006 Q1	189,581	6,945	61,989	50,715	1,593	101	310,924	96,005	406,929	102,518	0	304,412	
2006 Q2	192,015	7,037	61,854	52,139	-153	229	313,121	98,339	411,460	105,003	0	306,456	
2006 Q3	191,988	7,120	62,329	53,681	1,844	-28	316,934	85,722	402,656	94,804	0	307,853	
2006 Q4	192,794	7,187	62,604	55,611	1,291	-12	319,475	85,752	405,227	94,751	0	310,475	
2007 Q1	194,532	7,243	62,927	56,457	1,449	73	322,682	86,055	408,737	95,628	122	313,232	
2007 Q2	196,339	7,260	63,193	56,209	623	329	323,953	86,847	410,800	95,360	151	315,591	
2007 Q3	198,538	7,314	63,468	56,764	2,744	44	328,872	88,508	417,380	99,549	173	318,004	
2007 Q4	199,754	7,452	63,612	57,758	2,033	89	330,697	87,880	418,576	99,187	182	319,570	
2008 Q1	201,446	7,602	64,227	56,609	485	205	330,573	88,535	419,108	98,860	203	320,452	
2008 Q2	201,195	7,728	64,544	55,031	1,163	429	330,089	88,493	418,583	98,333	203	320,453	
2008 Q3	200,821	7,815	65,173	53,715	925	331	328,779	88,217	416,996	98,399	280	318,877	

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

	IHYR										
2002 Q1	4.0	-1.4	4.0	0.9		3.3	-2.6	2.0	2.6		1.8
2002 Q2	4.1	-0.4	4.4	1.6		2.8	3.1	2.9	6.0		2.0
2002 Q3	3.4	0.6	3.3	3.1		2.8	4.5	3.2	6.5		2.2
2002 Q4	3.2	1.4	2.1	9.0		3.9	-0.8	2.9	4.5		2.4
2003 Q1	2.6	1.1	2.4	5.0		2.2	4.6	2.7	4.2		2.3
2003 Q2	3.3	0.3	2.5	1.1		2.7	-1.1	1.9	-1.2		2.8
2003 Q3	3.3	0.1	3.6	-1.0		3.1	-0.8	2.3	0.3		2.9
2003 Q4	3.2	-0.2	5.5	-0.6		3.5	4.8	3.7	5.5		3.2
2004 Q1	3.6	0.0	5.1	4.4		3.9	0.2	3.1	3.2		3.1
2004 Q2	3.2	-1.0	3.6	7.1		3.8	5.2	4.1	7.5		3.1
2004 Q3	3.0	-2.2	3.0	6.7		3.0	7.1	3.8	8.5		2.5
2004 Q4	2.7	-3.6	1.9	1.4		2.7	7.0	3.6	8.2		2.3
2005 Q1	2.2	-1.2	1.3	0.0		2.7	4.2	3.0	5.9		2.2
2005 Q2	1.7	-0.2	2.3	-0.2		1.9	6.8	2.9	6.5		1.9
2005 Q3	1.8	0.4	1.9	4.5		1.9	9.5	3.5	8.1		2.1
2005 Q4	2.2	1.4	1.4	4.8		1.1	11.8	3.3	7.7		2.0
2006 Q1	1.7	1.1	2.0	3.8		1.7	24.4	6.2	18.4		2.7
2006 Q2	2.6	3.4	1.1	5.8		2.2	21.7	6.2	18.0		2.7
2006 Q3	2.0	5.0	1.6	4.7		3.0	2.0	2.8	2.9		2.8
2006 Q4	1.7	6.4	1.8	9.5		3.7	-2.0	2.4	0.2		3.2
2007 Q1	2.6	4.3	1.5	11.3		3.8	-10.4	0.4	-6.7		2.9
2007 Q2	2.3	3.2	2.2	7.8		3.5	-11.7	-0.2	-9.2		3.0
2007 Q3	3.4	2.7	1.8	5.7		3.8	3.3	3.7	5.0		3.3
2007 Q4	3.6	3.7	1.6	3.9		3.5	2.5	3.3	4.7		2.9
2008 Q1	3.6	5.0	2.1	0.3		2.4	2.9	2.5	3.4		2.3
2008 Q2	2.5	6.4	2.1	-2.1		1.9	1.9	1.9	3.1		1.5
2008 Q3	1.1	6.8	2.7	-5.4		0.0	-0.3	-0.1	-1.2		0.3

#### 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: 12/11/08

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
Jul-Sep 2006	48,317	30,767	29,077	1,690	17,551	63.7	60.2	5.5	36.3
Jul-Sep 2007	48,718	30,915	29,272	1,643	17,803	63.5	60.1	5.3	36.5
Oct-Dec 2007	48,814	31,000	29,398	1,602	17,814	63.5	60.2	5.2	36.5
Jan-Mar 2008	48,911	31,123	29,499	1,624	17,788	63.6	60.3	5.2	36.4
Apr-Jun 2008	49,007	31,190	29,505	1,685	17,816	63.6	60.2	5.4	36.4
Jul-Sep 2008	49,107	31,232	29,407	1,825	17,876	63.6	59.9	5.8	36.4
<b>Male</b>	MGSM	MGSG	MGSA	MGSD	MGSJ	MGWH	MGSS	MGSY	YBTD
Jul-Sep 2006	23,466	16,693	15,714	978	6,774	71.1	67.0	5.9	28.9
Jul-Sep 2007	23,697	16,779	15,844	935	6,917	70.8	66.9	5.6	29.2
Oct-Dec 2007	23,752	16,804	15,891	913	6,947	70.8	66.9	5.4	29.2
Jan-Mar 2008	23,807	16,890	15,948	942	6,917	70.9	67.0	5.6	29.1
Apr-Jun 2008	23,862	16,928	15,938	990	6,934	70.9	66.8	5.8	29.1
Jul-Sep 2008	23,919	16,937	15,862	1,075	6,982	70.8	66.3	6.3	29.2
<b>Female</b>	MGSN	MGSN	MGSB	MGSE	MGSK	MGWI	MGST	MGSZ	YBTE
Jul-Sep 2006	24,851	14,074	13,362	712	10,777	56.6	53.8	5.1	43.4
Jul-Sep 2007	25,022	14,136	13,428	708	10,886	56.5	53.7	5.0	43.5
Oct-Dec 2007	25,063	14,196	13,507	689	10,867	56.6	53.9	4.9	43.4
Jan-Mar 2008	25,104	14,233	13,552	681	10,870	56.7	54.0	4.8	43.3
Apr-Jun 2008	25,144	14,262	13,568	695	10,882	56.7	54.0	4.9	43.3
Jul-Sep 2008	25,188	14,295	13,545	750	10,894	56.8	53.8	5.2	43.2

#### All aged 16 to 59/64

	All	Total economically active	Total in employment	Unemployed	Economically inactive	Economic activity rate (%)	Employment rate (%)	Unemployment rate (%)	Economic inactivity rate (%)
	10	11	12	13	14	15	16	17	18
<b>All persons</b>	YBTF	YBSK	YBSE	YBSH	YBSN	MGSO	MGSU	YBTI	YBTL
Jul-Sep 2006	37,398	29,554	27,892	1,662	7,845	79.0	74.6	5.6	21.0
Jul-Sep 2007	37,588	29,648	28,029	1,619	7,941	78.9	74.6	5.5	21.1
Oct-Dec 2007	37,631	29,725	28,141	1,584	7,906	79.0	74.8	5.3	21.0
Jan-Mar 2008	37,674	29,802	28,199	1,604	7,871	79.1	74.8	5.4	20.9
Apr-Jun 2008	37,716	29,844	28,182	1,662	7,872	79.1	74.7	5.6	20.9
Jul-Sep 2008	37,765	29,878	28,082	1,796	7,887	79.1	74.4	6.0	20.9
<b>Male</b>	YBTG	YBSL	YBSF	YBSI	YBSO	MGSP	MGSV	YBTJ	YBTM
Jul-Sep 2006	19,402	16,285	15,320	965	3,117	83.9	79.0	5.9	16.1
Jul-Sep 2007	19,570	16,351	15,425	927	3,218	83.6	78.8	5.7	16.4
Oct-Dec 2007	19,604	16,387	15,480	907	3,216	83.6	79.0	5.5	16.4
Jan-Mar 2008	19,638	16,441	15,508	933	3,197	83.7	79.0	5.7	16.3
Apr-Jun 2008	19,672	16,472	15,492	980	3,200	83.7	78.8	5.9	16.3
Jul-Sep 2008	19,705	16,484	15,424	1,060	3,221	83.7	78.3	6.4	16.3
<b>Female</b>	YBTH	YBSM	YBSG	YBSJ	YBSP	MGSQ	MGSW	YBTK	YBTN
Jul-Sep 2006	17,996	13,268	12,571	697	4,728	73.7	69.9	5.3	26.3
Jul-Sep 2007	18,019	13,297	12,604	693	4,722	73.8	70.0	5.2	26.2
Oct-Dec 2007	18,027	13,338	12,661	677	4,689	74.0	70.2	5.1	26.0
Jan-Mar 2008	18,036	13,362	12,690	671	4,674	74.1	70.4	5.0	25.9
Apr-Jun 2008	18,044	13,372	12,690	683	4,672	74.1	70.3	5.1	25.9
Jul-Sep 2008	18,060	13,394	12,658	736	4,665	74.2	70.1	5.5	25.8

#### 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: 18/11/08

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>
2004 Jan	1.4	1.5	1.3	2.6	2.4	2.0	0.7	0.1	-1.9	-1.6
2004 Feb	1.3	1.3	1.1	2.5	2.3	1.9	0.6	0.2	-3.5	-2.8
2004 Mar	1.1	1.1	1.0	2.6	2.1	1.7	0.3	0.2	-1.4	-2.2
2004 Apr	1.1	1.1	1.0	2.5	2.0	1.8	0.7	0.1	1.7	-1.0
2004 May	1.5	1.4	1.3	2.8	2.3	2.2	1.3	0.0	4.1	0.2
2004 Jun	1.6	1.5	1.4	3.0	2.3	2.3	1.4	0.1	2.1	0.0
2004 Jul	1.4	1.4	1.2	3.0	2.2	2.0	1.6	0.4	2.0	0.1
2004 Aug	1.3	1.3	1.1	3.2	2.2	2.0	1.7	0.8	3.3	1.3
2004 Sep	1.1	1.0	0.9	3.1	1.9	1.7	2.0	0.9	6.3	3.0
2004 Oct	1.2	1.2	1.1	3.3	2.1	2.0	2.5	1.3	7.5	3.9
2004 Nov	1.5	1.4	1.4	3.4	2.2	2.2	2.5	1.4	4.8	3.3
2004 Dec	1.7	1.7	1.6	3.5	2.5	2.5	1.8	0.8	2.7	2.8
2005 Jan	1.6	1.7	1.5	3.2	2.1	2.0	1.4	0.9	7.6	5.4
2005 Feb	1.7	1.7	1.6	3.2	2.1	2.0	1.6	0.9	9.0	6.3
2005 Mar	1.9	2.0	1.8	3.2	2.4	2.3	1.8	1.0	9.3	5.8
2005 Apr	1.9	2.0	1.9	3.2	2.3	2.3	2.3	1.1	8.6	5.4
2005 May	1.9	2.0	1.8	2.9	2.1	2.2	1.6	1.0	6.2	4.6
2005 Jun	2.0	2.2	1.9	2.9	2.2	2.2	1.5	0.8	10.6	5.9
2005 Jul	2.3	2.5	2.3	2.9	2.4	2.5	2.0	1.0	13.3	7.6
2005 Aug	2.4	2.6	2.3	2.8	2.3	2.3	2.1	0.9	12.1	6.7
2005 Sep	2.5	2.6	2.4	2.7	2.5	2.5	2.3	0.9	9.3	4.9
2005 Oct	2.3	2.5	2.3	2.5	2.4	2.3	1.8	0.5	8.2	5.6
2005 Nov	2.1	2.3	2.1	2.4	2.3	2.3	1.5	0.5	13.6	8.8
2005 Dec	1.9	2.1	1.8	2.2	2.0	2.0	1.9	1.1	18.0	11.4
2006 Jan	1.9	2.1	1.9	2.4	2.3	2.3	2.5	1.4	15.8	10.1
2006 Feb	2.0	2.1	2.0	2.4	2.3	2.3	2.3	1.4	15.2	10.1
2006 Mar	1.8	1.9	1.7	2.4	2.1	2.2	2.2	1.5	13.1	9.2
2006 Apr	2.0	2.1	2.0	2.6	2.4	2.3	2.3	1.9	15.6	9.8
2006 May	2.2	2.3	2.2	3.0	2.9	2.8	2.9	2.0	13.7	8.4
2006 Jun	2.5	2.6	2.4	3.3	3.1	3.2	3.1	2.5	11.3	8.1
2006 Jul	2.4	2.4	2.3	3.3	3.1	3.2	2.6	2.1	10.6	7.7
2006 Aug	2.5	2.6	2.4	3.4	3.3	3.4	2.3	1.7	8.4	6.7
2006 Sep	2.4	2.6	2.3	3.6	3.2	3.3	1.6	1.7	5.4	5.5
2006 Oct	2.4	2.7	2.3	3.7	3.2	3.3	1.3	2.0	3.9	4.5
2006 Nov	2.7	3.0	2.6	3.9	3.4	3.6	1.4	1.9	2.3	2.8
2006 Dec	3.0	3.2	2.9	4.4	3.8	3.9	1.7	1.6	1.7	1.5
2007 Jan	2.7	2.9	2.6	4.2	3.5	3.7	1.5	1.6	-3.4	-0.5
2007 Feb	2.8	2.9	2.6	4.6	3.7	3.9	1.9	2.0	-2.1	-0.2
2007 Mar	3.1	3.1	2.9	4.8	3.9	4.0	2.2	2.2	-0.3	1.0
2007 Apr	2.8	2.9	2.6	4.5	3.6	3.7	1.8	1.8	-1.5	0.0
2007 May	2.5	2.6	2.3	4.3	3.3	3.4	1.9	1.9	0.6	1.9
2007 Jun	2.4	2.5	2.2	4.4	3.3	3.3	1.9	1.7	1.7	2.2
2007 Jul	1.9	2.0	1.7	3.8	2.7	2.6	2.0	1.8	0.3	0.6
2007 Aug	1.8	1.9	1.6	4.1	2.7	2.6	2.1	2.0	-0.2	1.0
2007 Sep	1.8	1.7	1.6	3.9	2.8	2.8	2.6	1.9	6.0	3.6
2007 Oct	2.1	1.9	1.8	4.2	3.1	3.0	3.6	1.8	9.4	4.6
2007 Nov	2.1	1.9	1.8	4.3	3.2	3.0	4.5	1.9	12.1	5.6
2007 Dec	2.1	2.0	1.9	4.0	3.1	3.1	4.7	2.2	13.2	6.9
2008 Jan	2.2	2.1	2.0	4.1	3.4	3.3	5.7	3.0	20.4	11.0
2008 Feb	2.5	2.5	2.3	4.1	3.7	3.6	5.7	2.8	20.9	11.9
2008 Mar	2.5	2.6	2.3	3.8	3.5	3.6	6.2	2.9	20.8	12.7
2008 Apr	3.0	3.0	2.7	4.2	4.0	3.9	7.4	4.1	25.3	16.6
2008 May	3.3	3.3	3.1	4.3	4.4	4.4	9.1	5.6	30.2	18.9
2008 Jun	3.8	3.9	3.6	4.6	4.8	4.9	9.8	5.9	34.1	21.1
2008 Jul	4.4	4.5	4.2	5.0	5.3	5.4	9.9	6.2	31.3	21.4
2008 Aug	4.7	4.9	4.5	4.8	5.2	5.4	9.0	5.6	29.0	20.8
2008 Sep	5.2	5.4	5.0	5.0	5.5	5.6	8.5	5.5	24.0	19.6
2008 Oct	4.5	4.7	4.3	4.2	4.7	4.9	6.8	4.9	13.8	14.5

## 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 who:

- were not in employment during the reference week, and
- reported that they had been made redundant in the month of, or the two calendar months prior to, the reference week

plus the number of people who:

- were in employment during the reference week, and
- started their job in the same calendar month as, or the two calendar months prior to, the reference week, and
- reported that they had been made redundant in the month of, or the two calendar months prior to, the reference week

**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 old *Economic Trends* tables and 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.

**Weblink:** [www.statistics.gov.uk/elmr/12\\_08/data\\_page.asp](http://www.statistics.gov.uk/elmr/12_08/data_page.asp)

Title	Frequency of update	Updated since last month
<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	Q	•
1.14 Private non-financial corporations: secondary distribution of income account and capital account	Q	•
1.15 Balance of payments: current account	M	✓
1.16 Trade in goods (on a balance of payments basis)	M	✓
1.17 Measures of variability of selected economic series	Q	•
1.18 Index of services	M	✓

### Selected labour market statistics

2.01 Summary of Labour Force Survey data	M	✓
2.02 Employment by age	M	✓
2.03 Full-time, part-time and temporary workers	M	✓
2.04 Public and private sector employment	Q	•
2.05 Workforce jobs	Q	•
2.06 Workforce jobs by industry	Q	✓
2.07 Actual weekly hours of work	M	✓
2.08 Usual weekly hours of work	M	✓
2.09 Unemployment by age and duration	M	✓
2.10 Claimant count levels and rates	M	✓
2.11 Claimant count by age and duration	M	✓
2.12 Economic activity by age	M	✓
2.13 Economic inactivity by age	M	✓
2.14 Economic inactivity: reasons	M	✓
2.15 Educational status, economic activity and inactivity of young people	M	✓
2.16 Average earnings – including bonuses	M	✓
2.17 Average earnings – excluding bonuses	M	✓
2.18 Productivity and unit wage costs	M	✓
2.19 Regional labour market summary	M	✓

**Weblink:** [www.statistics.gov.uk/elmr/12\\_08/data\\_page.asp](http://www.statistics.gov.uk/elmr/12_08/data_page.asp)

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

## Prices

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

## Selected output and demand indicators

4.01	Output of the production industries	M	✓
4.02	Engineering and construction: output and orders	M	✓
4.03	Motor vehicle and steel production	M	✓
4.04	Indicators of fixed investment in dwellings	M	✓
4.05	Number of property transactions	M	✓
4.06	Change in inventories	Q	✓
4.08	Retail sales, new registrations of cars and credit business	M	✓
4.09	Inland energy consumption: primary fuel input basis	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	M	✓
5.04	Public sector receipts and expenditure	Q	.
5.05	Public sector key fiscal indicators	M	✓
5.06	Consumer credit and other household sector borrowing	M	✓
5.07	Analysis of bank lending to UK residents	M	✓
5.08	Interest rates and yields	M	✓
5.09	A selection of asset prices	M	✓

## Further labour market statistics

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

**Weblink:** [www.statistics.gov.uk/elmr/12\\_08/data\\_page.asp](http://www.statistics.gov.uk/elmr/12_08/data_page.asp)

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

#### Notes

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@lsc.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

2008 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)

2006 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)

### Research and development in UK businesses (MA14)

2006 edition

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

### Share Ownership

2006 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)

2008 edition. Palgrave Macmillan, ISBN 978-0-230-54565-6. Price £49.50.

[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)

2008 edition. Palgrave Macmillan, ISBN 978-0-230-54566-3. Price £49.50.

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

### First releases

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

## QUARTERLY

### Consumer Trends

2008 quarter 2

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

### United Kingdom Economic Accounts

2008 quarter 2. Palgrave Macmillan, ISBN 978-0-23-0-52618-1. Price £35.

[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)

2008 quarter 2

[www.statistics.gov.uk/StatBase/Product.asp?vlnk=731](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=731)

## First releases

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

## MONTHLY

### Financial Statistics

December 2008. Palgrave Macmillan, ISBN 978-0-230-2-1762-1. Price £47.50.

[www.statistics.gov.uk/StatBase/Product.asp?vlnk=376](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=376)

### Focus on Consumer Price Indices

October 2008

[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)

September 2008

[www.statistics.gov.uk/StatBase/Product.asp?vlnk=613](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=613)

### Producer Price Indices (MM22)

October 2008

[www.statistics.gov.uk/StatBase/Product.asp?vlnk=2208](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=2208)

## First releases

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

## OTHER

### The ONS Productivity Handbook: a statistical overview and guide

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

[www.statistics.gov.uk/about/data/guides/productivity/default.asp](http://www.statistics.gov.uk/about/data/guides/productivity/default.asp)

### Labour Market Review

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

[www.statistics.gov.uk/StatBase/Product.asp?vlnk=14315](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)

## Recent articles

### JUNE 2008

Labour disputes in 2007  
*Dominic Hale*

Modernisation of the UK's National Accounts: progress and plans for Blue Book and Pink Book 2008  
*Simon Humphries*

Labour Force Survey: reweighting and seasonal adjustment review 2008  
*Nicholas Palmer and Matthew Hughes*

Impact of methodological changes to the Index of Production  
*Andrew Walton, Robin Youll and Chris Hunt*

Review of Labour Statistics for the United Nations Statistical Commission  
*Catherine Barham*

Methods explained: the GDP implied deflator  
*Anis Chowdhury*

### JULY 2008

Employment of foreign workers in the UK: 1997 to 2008  
*Gareth Clancy*

Regional analysis of public sector employment  
*Andrew Barnard*

The effects of taxes and benefits on household income, 2006/07  
*Francis Jones*

Dealing with potential bias in early estimates of GDP  
*Robin Youll*

Recent trends in corporate net lending  
*Graeme Chamberlin*

Measuring inflation  
*Rob Pike*

Services producer price index (experimental) – first quarter 2008  
*Ian Richardson*

### AUGUST 2008

Modelling the gender pay gap in the UK: 1998 to 2006  
*Andrew Barnard*

Inventories: a cross-country comparison of behaviour and methodology  
*Barry Williams*

Regional gross disposable household income  
*Eddie Holmes*

SIC 2007: implementation in ONS  
*John C Hughes*

Measuring the quality of the producer price index – an update  
*Joanna Woods*

Regional economic indicators, August 2008, with a focus on household income  
*Birgit Wosnitza and Martin Walker*

### SEPTEMBER 2008

Measuring UK inflation  
*Rob Pike, Catherine Marks and Darren Morgan*

Command GDP: the purchasing power of UK output  
*Graeme Chamberlin*

The impact of the 2006 National Minimum Wage rise on employment  
*Ian Mulheirn*

The preliminary R&D satellite account for the UK: a sensitivity analysis  
*Peter Evans, Michael Hatcher and Damian Whittard*

Job separations in the UK  
*Katherine Kent*

Methods explained: perpetual inventory method  
*Sumit Dey-Chowdhury*

### OCTOBER 2008

Measuring the UK economy 2008: the National Statistician's perspective  
*Karen Dunnell*

The effect of bonuses on earnings growth in 2008  
*Harry Duff*

Overview of UK National Accounts and Balance of Payments: Blue Book and Pink Book 2008  
*Ross Meader and Geoff Tily*

Annual Population Survey household data sets  
*Kathryn Ashton and Katherine Kent*

Supply-side estimates of UK investment  
*Graeme Chamberlin*

Services producer price index (experimental) – second quarter 2008  
*Ian Richardson*

### NOVEMBER 2008

Sickness absence from work in the UK  
*Debra Leaker*

Analysis of international trade and productivity, using the EUKLEMS database  
*Peter Goodridge*

Producer price index rebasing to 2005=100  
*Rob Luckwell*

Labour Force Survey: interim reweighting 2008  
*Nick Palmer and Mark Chandler*

Experimental estimates of rural-urban productivity  
*Sumit Dey-Chowdhury and Pippa Gibson*

Regional economic indicators, November 2008, with a focus on skills  
*Birgit Wosnitza, Peggy Causer and Jonathan Knight*

## Future articles

List is provisional and subject to change.

### JANUARY 2009

Article on regional economies  
The redistribution of household income, 1977 to 2006/07  
Quality-adjusted labour input: estimates for 1997 to 2007  
Volume of capital services: estimates for 1950 to 2007  
Characteristics of low pay workers  
Measuring defence in the UK National Accounts

