Office for National Statistics

Economic & Labour Market Review

Contents

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The Office for National Statistics (ONS) is the executive office of the UK Statistics Authority, a non-ministerial department which reports directly to Parliament. ONS is the UK government's single largest statistical producer. It compiles information about the UK's society and economy which provides evidence for policy and decision-making and in the allocation of resources.

The Director of ONS is also the National Statistician.

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Contacts

This publication

For information about this publication, contact the Editor, David Harper, tel: 020 7014 2036, email: elmr@ons.gsi.gov.uk

Other customer and media enquiries

ONS Customer Contact Centre
Tel: 0845 601 3034
International: +44 (0)845 601 3034
Minicom: 01633 812399
Email: info@statistics.gsi.gov.uk
Fax: 01633 652747
Post: Room 1015, Government Buildings,
Cardiff Road, Newport, South Wales NP10 8XG

www.statistics.gov.uk

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In brief

Annual Population Survey household data sets

The Office for National Statistics (ONS) has developed a version of the Annual Population Survey (APS) data sets that is specially designed for producing family and household labour market statistics at the subnational level. The new APS household data sets will provide local area statistics on, for example:

- workless households and the people living in them
- couples where both partners are working, one partner is working, neither is working
- employment rates for lone parents and couple parents with dependent children, and for people without dependent children
- children by the economic activity status of their parent(s)

The data sets cover January to December of each year. They contain results from four consecutive quarters of the Labour Force Survey (LFS) and include information from Wave 1 and Wave 5 interviews only. They also include results from the annual local area LFS boosts. Each data set contains information from a sample of around 160,000 households, whereas the existing LFS household data sets are based on a sample of around 53,000 households.

Unlike the main (person-level) APS data sets, people with unknown economic activity status are included. They are given the same weight as other members of their household and their economic activity status is imputed using a 'donor imputation method'. The APS household data sets include all of the variables found on the main APS data sets, except for the earnings variables. They also include additional derived variables for analysing the combined economic activity status of family and household members.

The first APS household data set (for January to December 2007) is due to be released in summer 2008, with a back series covering 2004, 2005 and 2006. An article giving further information about the data sets will be published later this year. ONS plans to publish APS-based family and household statistics for local areas on a regular basis thereafter, depending on customer requirements. Customers will be able to commission bespoke tabulations from the LFS Data Service and to obtain access to the data sets, subject to protocols governing access to survey microdata. Guidance on how to produce family and household analyses will also be available.

Contact

Annette Walling
01633 455840
annette.walling@ons.gsi.gov.uk

Task Force on the quality of the Labour Force Survey

As previously reported in the September 2007 edition of *Economic & Labour Market Review*, the Office for National Statistics (ONS) is participating in a Eurostat (Statistical Office of the European Community) Task Force on the quality of the Labour Force Survey (LFS). The Task Force was set up in spring 2007 and is expected to run for two years, producing a final report around summer 2009. In addition to the UK, experts from Germany, Greece, Spain, France, Italy, the Netherlands, Poland and Portugal are taking part. Non-participating EU countries receive progress reports at the six-monthly Labour Market Statistics Working Groups held at Eurostat, Luxembourg.

The Task Force's remit is to examine issues relating to the quality of the LFS, particularly the estimates of employment and unemployment, with regard to accuracy, coherence and comparability. It is therefore orientated towards examining the practices and methods employed in conducting and compiling the survey across Member States.

The first meeting held in October 2007 concentrated on accuracy, and the sources of error that can arise in survey estimates due to both sampling error and non-sampling error. A wide range of issues and possible solutions were discussed. A key theme emerging was that the experiences of each Member State can be rather different and so prescribing generic solutions across European Union (EU) countries would not necessarily be helpful. Rather, suggestions for best practice would be appropriate. The difficulties with conducting surveys in smaller EU countries as opposed to larger Member States can be very different. Similarly, use of different survey collection modes (face to face interviewing, telephone or internet) generates different degrees of bias across countries, and across regions within Member States, and in part was determined by the rural-urban balance.

The second meeting was held on 6–7 March 2008. It concluded discussions on accuracy, and held initial discussions on the topic of coherence between labour market and national accounts estimates, with ONS presenting its drivers for improving coherence, and experience to date in this area. The next meeting will be held in September 2008.

Contact

Debra Prestwood
01633 455882
debra.prestwood@ons.gsi.gov.uk

Labour Force Survey, reweighting and seasonal adjustment review 2008

The Office for National Statistics (ONS) monthly Labour Market Statistics First Release of 14 May 2008 will contain Labour Force Survey (LFS) aggregate results that are consistent with reweighted LFS microdata. Both the published LFS aggregates and the reweighted LFS microdata, used for detailed analyses, will be in line with the most recently published official population estimates.

Aggregate results in the UK and regional First Releases are key labour market indicators, for example, the levels and rates of employment and unemployment. They are derived from the LFS microdata and are calculated for any period of three consecutive months. These are referred to as three-month rolling averages – averages for January to March, February to April, and so on. The aggregate results are seasonally adjusted.

LFS microdata are quarterly data sets containing all survey questions. They are made publicly available as databases for external users to access and produce their own analyses. They enable more detailed analysis but are published for calendar quarters only and are not seasonally adjusted.

The current microdata sets have been weighted using population estimates published in 2003. Regular updates to these estimates have meant that the LFS microdata have become increasingly out of date. Reweighting of the microdata using the latest population estimates for all calendar quarters back to 1992 is now

complete. This work incorporated small methodological improvements to the weighting method.

Since 2003, the LFS aggregate results have been interim reweighted every year. Interim reweighting applies adjustments to the aggregate results to reflect how the latest available official population estimates compare with those used for calculating the microdata. This amounts to an approximation of the effect that a full reweighting of the microdata would have. The aggregates were last interim reweighted in October 2007 and reflect the current population estimates.

Since all LFS aggregates have been revised for all periods back to 1992, a large scale evaluation of the seasonality of the aggregates has been conducted, to ensure the most appropriate methods are used in the seasonal adjustment.

From 14 May 2008, reweighted microdata will feed through directly to the published aggregate results. Interim reweighting will not be required until the population estimates are next updated. ONS will publish an article on 14 May 2008 on the National Statistics website which will also appear in the July 2008 edition of *Economic & Labour Market Review*. The article will compare the reweighted microdata with the current microdata, and will also describe the extent to which the aggregate results have been revised due to both reweighting and the seasonal adjustment review.

More information

www.statistics.gov.uk/cci/article.asp?id=1992

Contact

Nicholas Palmer
01633 455839
nicholas.palmer@ons.gsi.gov.uk

Matthew Hughes
01633 455827
matthew.hughes@ons.gsi.gov.uk

18th International Conference of Labour Statisticians: Geneva, November 2008

The International Conference of Labour Statisticians takes place every five years and the next one (the 18th) will be held in Geneva between 24 November and 5 December 2008. The Conference will discuss and adopt international statistical standards on two topics, Child Labour and Working Time. The proposal for Working Time has been developed by the 'Paris

Group' (one of a number of 'city groups' set up by the United Nations Statistical Commission) on which the Office for National Statistics (ONS) has been actively represented. An article discussing some of the issues entitled 'Measuring Working Time arrangements' was published in the January 2004 of *Labour Market Trends*.

The Conference will also discuss and provide guidelines for future international work on the measurement of decent work, indicators of labour underutilisation and statistics on volunteer work. In addition, the Conference will examine its functions, organisation and frequency in response to the recent UN Programme Review of Labour Statistics. This Review, which was undertaken by ONS, recommended that the International Labour Organisation should work with the UN Statistics Division, OECD and Eurostat to improve the process of setting international standards by, for example, reviewing the frequency, duration and agenda setting of International Conference of Labour Statisticians meetings, and extending the use of expert groups to work on topical issues.

More information

www.ilo.org/global/What_we_do/Statistics/events/icls/lang--en/index.htm

www.ilo.org/global/What_we_do/Statistics/events/icls/lang--en/docName--WCMS_092024/index.htm

www.statistics.gov.uk/cci/article.asp?id=683

http://unstats.un.org/unsd/statcom/doc08/2008-2-employment-e.pdf

Contact

Graeme Walker
01633 455824
graeme.walker@ons.gsi.gov.uk

National Minimum Wage

On 5 March 2008, the Government accepted the Low Pay Commission's recommendations that the adult National Minimum Wage (NMW) rate should rise from £5.52 to £5.73 per hour with effect from October 2008. The youth development rate (for 18 to 21 year olds) will rise from £4.60 to £4.77 per hour and the minimum wage for 16 and 17 year olds from £3.40 to £3.53 per hour.

The Low Pay Commission Report 2008 provides further details on these recommendations, including analysis of the impact of the NMW, its effect on different groups of workers, compliance and enforcement and how the wage rates were

set. The report is available to download from the Low Pay Commission's website.

The Office for National Statistics (ONS) publishes estimates of the number of low-paid jobs, and specifically those paying below the NMW from the Annual Survey of Hours and Earnings in November each year. In spring 2007, 292,000 jobs paid below the NMW rates that were applicable at the time, amounting to 1.2 per cent of all the jobs in the labour market. Further information on low pay estimates is available from the ONS website.

More information

www.lowpay.gov.uk

www.statistics.gov.uk/statbase/product.asp?vlnk=5837

Contact

Stephen Hicks
01633 456899
stephen.hicks@ons.gsi.gov.uk

UPDATES

Updates to statistics on www.statistics.gov.uk

9 April

Index of production

Manufacturing: 0.3% three-monthly rise to February
www.statistics.gov.uk/cci/nugget.asp?id=198

10 April

UK trade

Deficit narrowed to £4.4 billion in February
www.statistics.gov.uk/cci/nugget.asp?id=199

14 April

Producer prices

Factory gate inflation rises to 6.2% in March
www.statistics.gov.uk/cci/nugget.asp?id=248

15 April

Inflation

March: CPI at 2.5%; RPI down to 3.8%
www.statistics.gov.uk/cci/nugget.asp?id=19

16 April

Average earnings

Pay growth steady in year to February
www.statistics.gov.uk/cci/nugget.asp?id=10

Employment

Rate increases to 74.9% in three months to April
www.statistics.gov.uk/cci/nugget.asp?id=12

18 April

Public sector

March: £3.6 billion current budget deficit
www.statistics.gov.uk/cci/nugget.asp?id=206

24 April

Retail sales

Food sector drives underlying growth in three months to March
www.statistics.gov.uk/cci/nugget.asp?id=256

25 April

GDP growth

UK economy rose by 0.4% in Q1 2008
www.statistics.gov.uk/cci/nugget.asp?id=192

Index of services

0.3% three-monthly rise into February
www.statistics.gov.uk/cci/nugget.asp?id=558

30 April

Local employment

Highest rate outside London of 89.8% in the Shetland Islands
www.statistics.gov.uk/cci/nugget.asp?id=252

Local inactivity

Lowest rate of 8.2% in Surrey Heath
www.statistics.gov.uk/cci/nugget.
asp?id=1013

Local unemployment

Lowest rate of 2.5% in Ribble Valley
www.statistics.gov.uk/cci/nugget.
asp?id=1606

FORTHCOMING RELEASES

Future statistical releases on www.statistics.gov.uk

1 May

New construction orders – March 2008

7 May

Index of production – March 2008

9 May

Regional gross disposable household income (NUTS1, 2 and 3)

12 May

Producer prices – April 2008

UK trade – March 2008

13 May

Consumer price indices – April 2008

MM22: Producer prices – April 2008

14 May

Labour market statistics – May 2008

MM19: Aerospace and electronics cost indices – February 2008

16 May

MM17: Price Index Numbers for Current Cost Accounting (PINCCA) – April 2008

19 May

Focus on consumer price indices – April 2008

21 May

Average weekly earnings – May 2008

Public sector finances – April 2008

22 May

Business investment provisional results – Q1 2008

Retail sales – April 2008

SDM28: Retail sales – April 2008

23 May

Index of services – March 2008

UK output, income and expenditure – Q1 2008

27 May

Public sector finances: supplementary (quarterly) data

28 May

Services producer price index (experimental) – Q1 2008

Economic review

May 2008

Anis Chowdhury
Office for National Statistics

SUMMARY

Gross Domestic Product output slowed modestly in 2008 quarter one compared with the previous quarter. Growth was driven by slower service sector output, offset by virtually flat total production growth. Manufacturing output returned to positive growth in the latest quarter. On the expenditure side, household spending and business investment weakened in quarter four in comparison with quarter three. The current account deficit narrowed in quarter four; the goods trade deficit was unchanged in quarter four and contributed negatively to growth. The labour market continues to be buoyant in 2008 quarter one although average earnings remain relatively subdued. The public sector finance position deteriorated in March 2008. Consumer price inflation was unchanged in March 2008 and was above the Government's inflation target. Producer output and input price inflation accelerated in 2008 quarter one.   .

GROSS DOMESTIC PRODUCT

First quarter growth of 0.4 per cent

The preliminary estimate of Gross Domestic Product (GDP) growth for the first quarter of 2008 is now available. GDP growth for the first quarter of 2008 is estimated to have slowed compared with the previous quarter. Growth was a modest 0.4 per cent, a deceleration from 0.6 per cent growth in the previous quarter. The initial estimate

for the annual rate of growth was 2.5 per cent, down from 2.8 per cent growth in the previous quarter. It should be noted that these estimates are based on the output approach to measuring GDP. The headline figure will be firmed up later as more data becomes available (**Figure 1**).

The growth rate in the UK economy in quarter one continued to be driven by relatively strong service sector output, although this was slower when compared with the previous quarter. Industrial production growth continued to display weakness for the third successive quarter,

with output decelerating in the latest quarter. Within total production, there was a fall in the output of the mining & quarrying (including oil & gas) as well as the electricity, gas and water supply industries. This was offset by a modest upturn in manufacturing output. The construction sector continued to grow fairly strongly.

OTHER MAJOR ECONOMIES

Global growth weakens in quarter four

Data for 2008 quarter one was not yet available for the other major OECD countries at the time of writing. Data for 2007 quarter four reported a mixed but a broadly weakening picture of global growth, reversing the generally strong picture of growth recorded in the previous quarter.

US GDP data for the fourth quarter of 2007 showed a sharp deceleration compared with quarter three. Growth was just 0.2 per cent on a quarter on quarter basis compared to 1.2 per cent growth in the previous quarter. The marked slowdown in growth was primarily due to a contraction in inventories, which occurred after positive growth was shown in the previous quarter. There was a slowdown in net exports, although it still contributed positively to growth, with exports exceeding imports. Consumption growth decreased. Residential investment also contributed to lower growth with continued contraction in this sector.

Japan's GDP growth showed a marked acceleration in 2007 quarter four. Growth was 0.9 per cent compared with 0.3 per cent in the previous quarter. Growth was mainly driven by an increase in business investment and net exports. Government expenditure also added to growth, though to a lesser extent. This was offset by continued contraction in residential investment growth. Private consumption made a relatively subdued contribution to growth.

Data for Italy was not available for 2007 quarter four as it is in the process of revising its methodology for measuring GDP. Data will be available with the next quarterly release (23 May). Growth for the other two big mainland EU economies – Germany and France – showed a weakening in 2007

Figure 1
Gross domestic product

Percentage growth
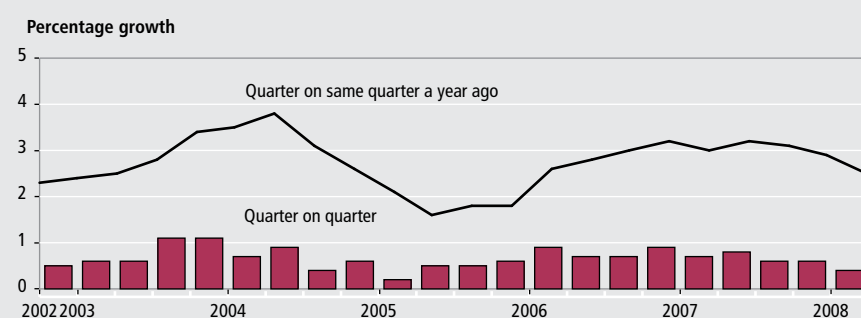
quarter four compared with the previous quarter. According to Eurostat's estimate, euro area GDP decelerated to 0.4 per cent in 2007 quarter four compared with the strong 0.8 per cent growth in quarter three.

German GDP grew by only 0.3 per cent in 2007 quarter four, a marked slowdown from growth of 0.7 per cent in quarter three. The breakdown to the growth was not available at the time of the headline release; indications are that the slowdown in growth was likely to be led by lower private consumption growth.

French GDP growth decelerated to 0.3 per cent in 2007 quarter four, from 0.8 per cent growth in the previous quarter. The weakening in growth was mainly due to a marked slowing in private consumption growth and decelerating inventories. This was offset by solid investment growth and a positive net trade picture.

FINANCIAL MARKETS

Share prices weaken; pound depreciates

Equity performance has displayed volatility in the last couple of years. In recent quarters, equity growth has been particularly weak. In the latest quarter, the FTSE All–Share index fell substantially, by around 9 per cent. This follows growth of just 0.5 per cent in the previous quarter. The weakness in equity growth can mainly be attributed to global growth concerns, particularly regarding the US economy, brought on by financial uncertainty and continued problems regarding the credit squeeze, attributable to the US housing and the sub-prime mortgage market.

In the currency markets, 2008 quarter one saw sterling's broad average value depreciating markedly compared with the previous quarter. The pound's value against the dollar fell by around 3 per cent compared to appreciation of around 1 per cent in the previous quarter. Against the euro, sterling's value depreciated by approximately 7 per cent, a further depreciation from around 4 per cent in 2007 quarter four. Overall, the quarterly effective exchange rate depreciated by approximately 6 per cent in 2008 quarter one, following depreciation of around 3 per cent in the previous quarter (**Figure 2**).

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 both the dollar and euro in quarter one may have come in response to fears about lower growth in the UK economy and the resulting prospect of lower interest rates to stimulate the economy. Indeed, the Bank of England reduced interest rates by 25 basis points in April 2008 to 5 per cent, the third cut in interest rates since December 2007, and this action came mainly in response to the effects of the sub-prime crisis in terms of downward risks to growth and inflation. These interest rate reductions may have made the pound less appealing to investors compared to other currencies.

Also, the depreciation of the pound against the dollar may have occurred because of expectations amongst investors of further rate reductions in the UK compared with the US. US interest rates were lowered by a further 0.75 basis points in March 2008 to 2.25 per cent following a 0.75 basis points reduction in January – driven by the same growth concerns as the UK.

In contrast, in the euro area, the further depreciation of the pound against the euro in the first quarter of 2008 may have come in response to continued stability in interest rates in the euro-zone – with the likelihood that interest rates are unlikely to be cut in the medium term. The euro-zone interest rate is currently at 4 per cent, having been maintained there since the 0.25 basis point increase in June 2007, partly in response to concerns about inflationary pressures.

OUTPUT

Services sector slows but continues to drive economic growth

GDP growth in 2008 quarter one was estimated to have grown at 0.4 per cent, a deceleration from 0.6 per cent in the previous quarter. On an annual basis it was 2.5 per cent, down from 2.8 per cent in the previous quarter.

Construction activity weakened in the latest quarter but still grew modestly. Construction output is estimated to have grown by 0.5 per cent, down from 1.1 per cent growth in the previous quarter. Comparing the quarter on the same quarter a year ago, construction output rose by 2.8 per cent, up from 2.5 per cent growth in the previous quarter (**Figure 3**).

External surveys also signalled weakening activity, which has been attributed in part to the slowing housing market. The Chartered Institute of Purchasing and Supply (CIPS) survey average headline index declined to 51.2 from 55.9 in the previous quarter, but
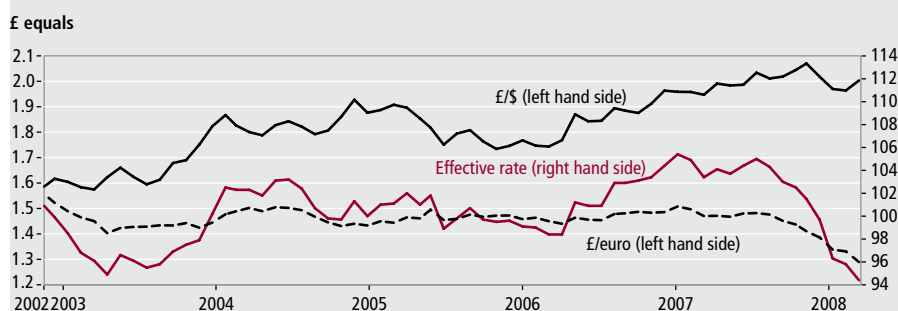
Figure 2
Exchange rates

£ equals

Figure 3
Construction output

Percentage growth

still indicative of fairly buoyant growth. The Royal Institute of Chartered Surveyors (RICS) construction survey for 2008 quarter one reported a sharp fall in the growth of construction workloads with the balance at plus 1, down from plus 16 in the previous quarter.

Total output from the production industries weakened in the latest quarter, reversing the subdued upturn in the previous quarter. Growth fell by 0.1 per cent following growth of just 0.2 per cent in 2007 quarter four. On an annual basis output grew by 0.7 per cent, similar to the rate in the previous quarter.

The weakness in total production was driven by a contraction in the output of the mining and quarrying industries, which fell by 5.2 per cent compared with the virtually flat growth in the previous quarter. On an annual basis, output contracted by 5.1 per cent compared with growth of 1.8 per cent in the previous quarter. Weaker total production growth was also partly led by a fall in the output of the electricity, gas and water supply industries which decreased by 1.2 per cent after output increased by 2.8 per cent in the previous quarter. On an annual basis, growth was 1.7 per cent, down from 4.6 per cent growth in the previous quarter.

Manufacturing output in contrast showed a modest revival. Output grew by 0.5 per cent compared with flat growth in the previous quarter. On an annual basis, manufacturing output grew by 1.2 per cent, up from 0.2 per cent growth in the previous quarter (**Figure 4**).

Production growth has generally been slow since the second quarter of 2006 due to weakness in mining and quarrying and utilities output, offset through most of this period by relatively strong manufacturing output. There was a pick up in production in 2007 quarter two, but this appears not to have been sustained in the following two quarters due to weak manufacturing output growth. Manufacturing output has displayed volatility in the recent past. In the latest quarter there appears to be some sort of reversal with manufacturing output showing a modest upturn – but it remains to be seen whether this can be sustained.

The output of the agriculture, forestry and fishing industries weakened in the latest quarter with output increasing by 0.6 per cent, decelerating from growth of 2.1 per cent in the previous quarter. On an annual basis growth was 2.3 per cent, down from 2.8 per cent growth in the previous quarter.

External surveys of manufacturing for

Figure 4
Manufacturing output

Percentage growth
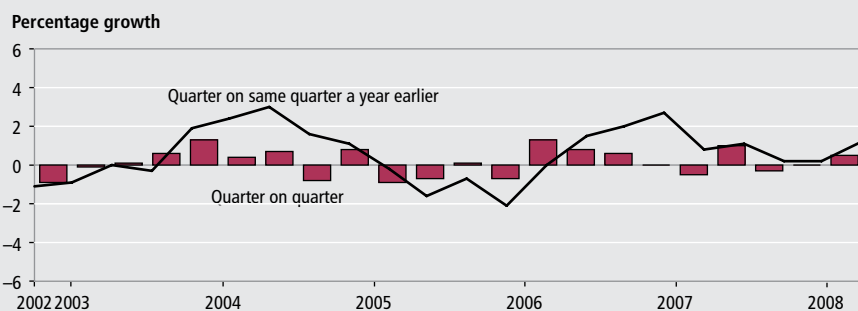
2008 quarter one showed a deteriorating picture compared with the previous quarter (**Figure 5**). In the past, it has not been unusual for the path of business indicators and official data to diverge over the short term. These differences happen partly because the series are not measuring exactly the 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 Chartered Institute of Purchasing and Supply (CIPS) average headline index for manufacturing painted a fairly robust picture in the latest quarter, despite indicating a slowdown. The headline index was 51.1, down from 53.0 in the

previous quarter. The Confederation of British Industry (CBI) in its 2008 quarter one Industrial Trends survey reported a weakening in its total order books, with the balance dropping to minus 13 from plus two in the previous quarter. In its 2008 quarter one survey, the British Chamber of Commerce (BCC) also reported a weakening picture of manufacturing activity. The home sales balance dropped to plus 12 from plus 32 in the previous quarter – the lowest since 2005 quarter three.

Overall the service sector, the largest part of the UK economy, continues to be the main driver of UK economic growth. Growth continued to be fairly buoyant despite easing in the latest quarter

Figure 5
External manufacturing

Balances
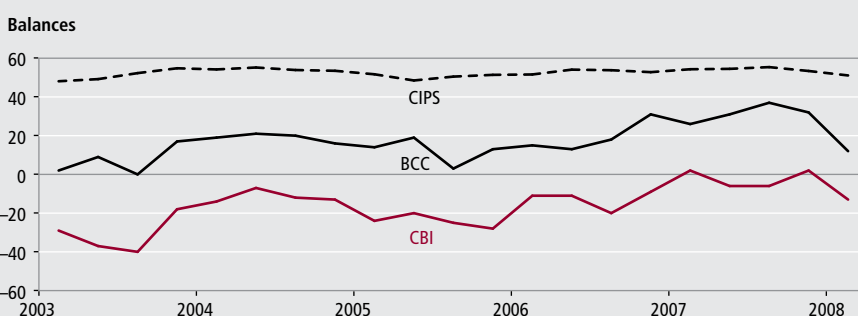
Figure 6
Services output

Percentage growth
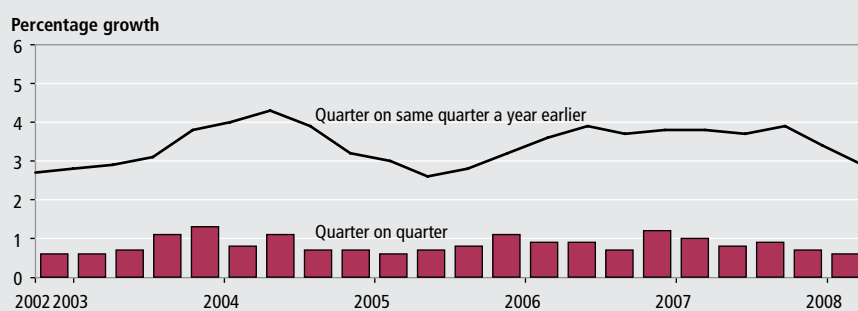
compared with the previous quarter.

Services output grew by 0.6 per cent in 2008 quarter one, a slight reduction from 0.7 per cent growth in the previous quarter and a further slowdown from growth of 0.9 per cent recorded in 2007 quarter three (**Figure 6**). On an annual basis services output expanded by 2.9 per cent, down from 3.4 per cent in the previous quarter.

Growth was recorded in varying degrees across all four broad sectors, though there was a slowdown overall. The main contribution to the decline in services output growth came from businesses services and finance, where output decelerated to 0.4 per cent from 0.6 per cent in the previous quarter. On an annual basis growth was 3.9 per cent, down from 4.4 per cent in the previous quarter. The output of the transport, storage and communication industries also decelerated with growth of 1 per cent, down from 1.7 per cent in the previous quarter. On an annual basis growth was 3.2 per cent, down from 3.9 per cent in the previous quarter.

There was also a weakening in the output of government and other services, which grew by 0.4 per cent, down from 0.7 per cent in the previous quarter. On an annual basis growth was 1.8 per cent, down from 2.1 per cent in 2007 quarter. This was partially offset by stronger growth in the output of the distribution, hotels and catering industries. Growth accelerated to 0.9 per cent from 0.2 per cent in the previous quarter. On an annual basis, growth was 2.6 per cent, down from 3 per cent in the previous quarter.

The external surveys on services showed a mixed picture of service sector activity in 2008 quarter one. The CIPS survey pointed to a stable but still healthy picture of service sector activity. The average headline index in 2008 one was 52.9, up from 52.5 in the previous quarter. It should be noted that the CIPS survey has a narrow coverage of the distribution and government sectors.

The CBI and BCC reported a generally weakening picture of service sector activity (**Figure 7**). The CBI service sector survey for February 2008 reported falling sentiment and business volumes for the business and professional services sector and the consumer service sector compared to the previous quarter. The consumer services volume balance was at minus seven down from plus four in the previous quarter. For business and professional services, the balance was at plus six, down from plus 26 in the previous quarter. The BCC survey for 2008 quarter one reported a

Figure 7
External services
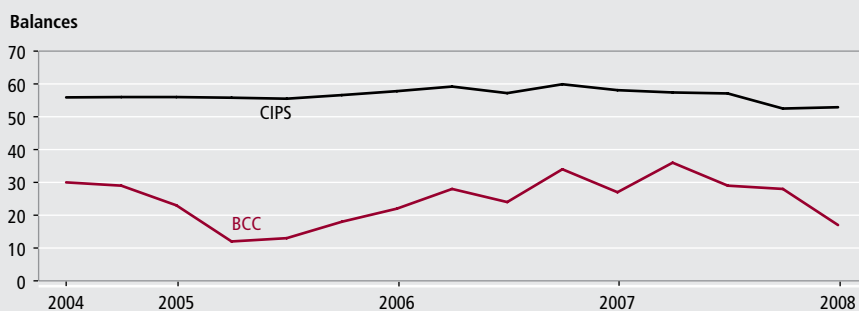
Balances

Figure 8
Household demand

Percentage growth
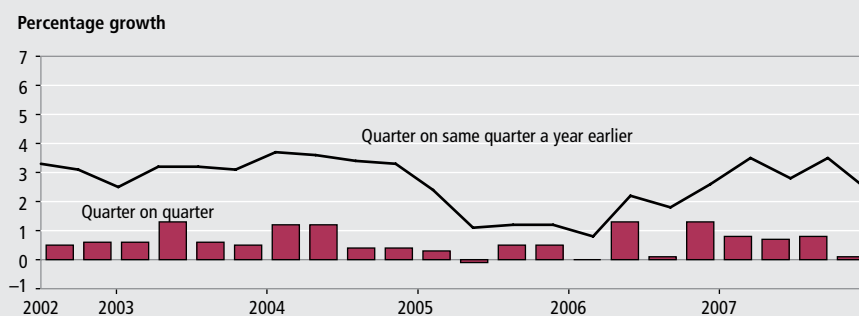
weakening picture of service sector activity, but overall balances for home orders and sales remained positive at plus 14 and plus 17 from plus 18 and plus 28 respectively.

EXPENDITURE

Consumers' spending weakens

Household consumption expenditure decelerated in 2007 four compared with the previous quarter. Growth was just 0.1 per cent, down markedly from that of 0.8 per cent in quarter three. Compared with the same quarter a year ago, growth was 2.4 per cent, down from 3.5 per cent in quarter three (**Figure 8**). Lower spending was primarily driven by a fall in durable goods expenditure and slower growth in semi-durables and non-durable goods expenditure. There was fairly buoyant growth in services expenditure.

Indications for consumer expenditure in 2008 quarter one appear to be mixed. Primary amongst them is the extent of the impact of the credit crisis and past interest rate rises feeding through to spending decisions. Both these factors may have contributed to some extent towards spending weakening in 2007 quarter four and may be factors again in the latest

quarter. In particular, the Bank of England's 2008 quarter one Credit Conditions Survey (CCS) highlighted lenders reducing their credit both on secured and unsecured lending, mainly due to an uncertain macroeconomic outlook and a reduction to risk exposure. The recent decreases in interest rates may offset some of that credit constraint, although it is worth noting that interest rate changes work on a lagged effect.

One key indicator of household expenditure is retail sales. Retail sales strengthened in 2008 quarter one compared with the previous quarter. Retail sales volumes grew by 2.0 per cent in quarter one, an acceleration from growth of 0.6 per cent in 2007 quarter four. The robustness in retail sales in the latest quarter may be partly attributed to continued, widespread discounting which is reflected in the price deflator (i.e. shop prices). This fell on average by 0.9 per cent in 2008 quarter one.

Retail sales figures are published on a monthly basis and the latest available figures for March 2008 showed a robust picture (**Figure 9**). In the three months to March the volume of retail sales increased by 2 per cent compared with an increase of 1.2 per cent increase in the three months to February. On an annual basis in March, the

latest three months growth compared with the same three months a year ago recorded strong growth of 5.6 per cent, up from 5.1 per cent in February.

In the latest month, discounting seems to be playing a greater part in retail sales growth compared with the previous month. The price deflator fell by 1.2 per cent in March 2008 compared with a fall of 0.6 per cent in February.

Retail sales can be disaggregated into 'predominantly food' and 'predominantly non-food' sectors. In the three months to March 2008 retail sales growth was mainly driven by the 'predominantly food stores' sector which recorded growth of 1.7 per cent, accelerating from 0.9 per cent growth in the three months to February. The 'predominantly non-food stores' sector also registered strong growth of 1.8 per cent, up from 0.9 per cent in the previous month. Within this sector 'non-store retailing and repair stores' grew by 5.5 per cent, followed by growth in 'other stores' with growth of 5.2 per cent. The 'household goods stores' sector in contrast showed weakness, with growth falling by 0.1 per cent.

External surveys for retail sales presented a subdued picture of growth in March 2008. The CBI's monthly Distributive Trades survey for March reported a balance of plus one, although there was an improvement

from minus three in February. The British Retail Consortium (BRC) reported a decrease of 1.6 per cent in retail sales on a like-for-like basis in March 2008, reversing the increase of 1.5 per cent in the previous month (**Figure 10**).

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.

There are two channels of borrowing available to households: i) secured lending, usually on homes; and ii) unsecured lending, for example on credit cards. On a general level, an increase in interest rates increases debt servicing costs, may discourage borrowing and displace consumer expenditure on certain goods in the process.

Latest Bank of England data showed lending secured on dwellings was £7.4 billion in March, well below the previous six month average. Mortgage approvals also fell in February to 73,000 from 74,000 in January – nearly 40 per cent lower than

a year earlier. However, there was a jump in unsecured credit of £2.4 billion from £0.9 billion in January. This may suggest that households could be resorting to this type of finance for re-mortgaging or for spending purposes. Another explanation is that some of this increase could be accounted for by student loans.

The slowdown in secured lending could be primarily attributed to the credit squeeze. This may have manifested itself in banks and building societies adopting tight lending criteria, particularly towards first-time buyers and those considered higher risk. There may also be an impact in the form of higher interest rates charged by banks for customers who have borrowed on variable interest rate mortgages in the short term, and in the longer term, there may be an impact on those who took out fixed rate mortgages. On a general level, there has been an increase in the cost of mortgage credit due mainly to tight funding in the wholesale market. The higher cost of borrowing from the wholesale markets has led to some banks and building societies increasing interest rates on some of their lending products to customers.

The slowdown in secured lending may have impacted on house prices in terms of lower growth. 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. Both Nationwide and Halifax report an easing in growth in house prices in 2008 quarter one. Halifax reported annual house price growth of 1.1 per cent in the latest quarter, down from annual growth of 5.2 per cent in 2007 quarter four. According to the Nationwide, annual house price growth in 2008 quarter one was also 1.1 per cent, down from 6.9 per cent growth in the previous quarter.

The savings ratio is also a determinant of household expenditure. In 2007 quarter four, there appeared to be signs of retrenchment amongst consumers in light of ongoing economic uncertainty as a result of the credit crisis. The savings ratio in 2007 quarter four was 3.3 per cent, up from 2.6

Figure 9
Retail sales

Percentage growth
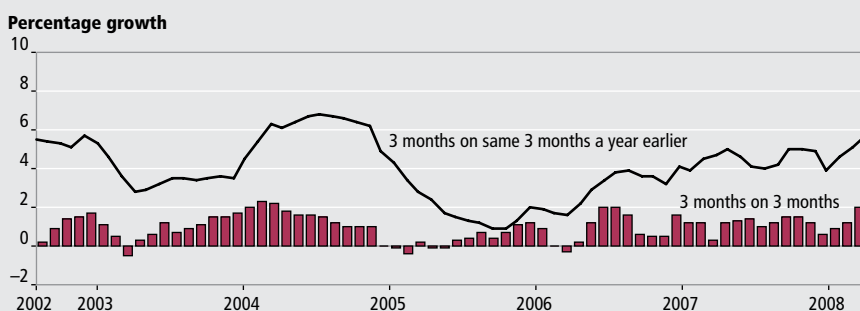
Figure 10
External retailing

Balances
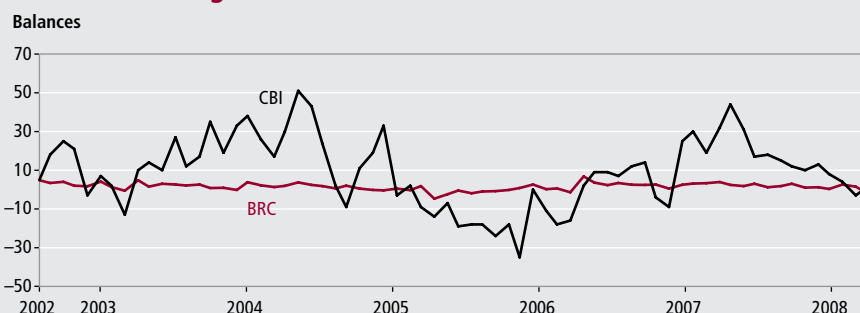
per cent in the previous quarter. This curtailment in expenditure could continue and possibly tighten further in the latest quarter.

An alternative measure of expenditure also showed a weakening picture. M4 (a broad money aggregate of UK money supply) fell to £4.9 billion in February compared with £24.3 billion in January. M4 lending also fell, to £16.4 billion in February from £21.4 billion in the previous month.

Finally, pressures on current disposable income, together with uncertainty regarding future projection of incomes, may be continuing factors that affect consumption expenditure in 2008 quarter one.

BUSINESS DEMAND

Business investment buoyant

Total investment grew by 1.8 per cent in quarter four compared to growth of 2.7 per cent in the previous quarter. On an annual basis, total investment by 4.1 per cent, a slowdown from 5.1 per cent growth in the previous quarter. The growth in total investment was primarily due to an increase in machinery and capital equipment investment (**Figure 11**).

Business investment grew relatively strongly in the latest quarter although it slowed compared with the previous quarter. Business investment recorded robust growth of 1.8 per cent in 2007 quarter four, a deceleration from growth of 2.7 per cent in quarter three. On an annual basis, business investment grew by 5.3 per cent, down from 7.8 per cent in the previous quarter.

Business investment could have slowed for a number of reasons. Firstly, increased uncertainty and pessimism, particularly with regards to global 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; last by 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 weak picture. According to the latest quarterly BCC survey, the balance of manufacturing firms planning to increase investment in plant and machinery fell by nine points to plus 12, the lowest since 2005

Figure 11
Total fixed investment

Percentage growth
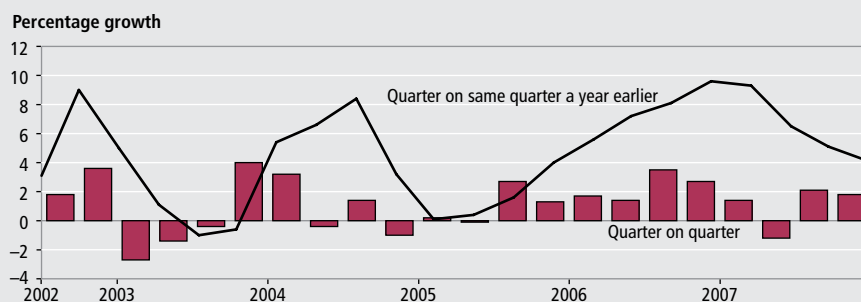
Figure 12
Government spending

Percentage growth
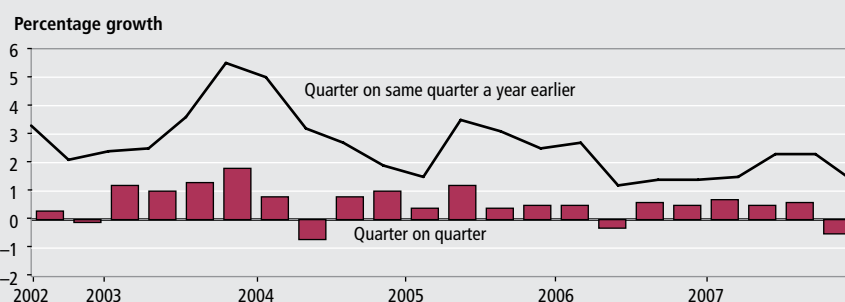
quarter four. The CBI's Quarterly Industrial Survey in 2008 quarter one report also portrayed a bleaker investment picture, with the investment balance of plant and machinery weakening to minus 18 from minus 12 in the previous quarter.

GOVERNMENT DEMAND

Government expenditure falls

Government final consumption expenditure contracted in the latest quarter. Growth fell by 0.5 per cent following an increase of 0.6 per cent in the previous quarter. On an annual basis, growth was 1.3 percent, down from 2.3 per cent in the previous quarter (**Figure 12**).

Public sector finances deteriorate

The latest figures on the public sector finances reported a deterioration in the current financial year to March 2008 compared with the last financial year. They also showed a higher current budget deficit and a higher level of net borrowing. Overall, the Government continued to operate a financial deficit, with government expenditure continuing to exceed revenues, partly to fund capital spending. In the

financial year April to March 2007/08, the current budget deficit was £7.6 billion; this compares with a deficit of £4.3 billion in the financial year to April to March 2006/07. In the financial year April to March 2007/08 net borrowing was £35.6 billion; this compares with net borrowing of £30.1 billion in the financial year April to March 2006/07. Although corporation, income tax and VAT receipts rose on a calendar basis, this was outweighed by a larger increase in total current expenditure, particularly on capital projects by central government, leading to the higher current budget deficit together with the higher 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 March 2008 was 36.7 per cent of GDP, up from 36.0 in February. In the financial year 2006/07, net debt as a percentage of GDP was 36.6 per cent.

Figure 13
Balance of payments
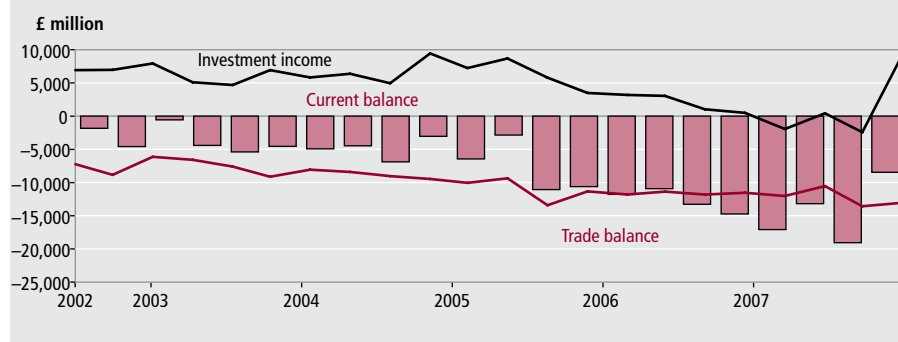
Figure 14
Employment and unemployment

Current account deficit narrows; goods deficit unchanged

The publication of the latest quarterly Balance of Payments figures shows that the current account deficit narrowed in 2007 quarter four to £8.5 billion, from a deficit of £19.1 billion in the previous quarter (**Figure 13**). As a proportion of GDP, the deficit fell to 2.4 per cent of GDP from 5.5 per cent in 2007 quarter three. The narrowing in the current account deficit in 2007 quarter four was due to a switch from a deficit on income to a surplus on income, together with a higher surplus on services. The surplus on income stood at £9.3 billion and the surplus on trade in services widened to £10.1 billion. The deficit on trade in goods was unchanged at £23.2 billion compared with the previous quarter.

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.

Data for 2007 quarter four recorded a continuation of the large trade deficit in goods. Exports of goods fell but imports of goods fell by a lesser amount, resulting in the wide trade deficit. The goods trade deficit was £23.2 billion in the fourth quarter, unchanged from the previous quarter. In terms of growth, exports of goods fell by 0.9 per cent while goods imports fell by 0.6 per cent. Services exports fell by 0.2 per cent and services imports fell by 2.7 per cent. Over the quarter, total trade contracted by 1.0 per cent following growth of 4.3 per cent in the previous quarter.

According to the latest trade figures, in the three months ended February 2008, the deficit on trade in goods and services narrowed to £13.6 billion, from a £13.7 billion deficit in the previous three months. The deficit on the trade in goods narrowed to £22.9 billion in the three months to February compared with £23.8 billion in the previous three months. The surplus on the trade in services narrowed to £9.3 billion compared with £10.1 billion in the previous three months.

However, these figures are distorted by volatility in VAT Missing Trader Intra–Community (MTIC) fraud and therefore need to be treated with caution. According to the latest figures, the level of trade in goods excluding trade associated with

MTIC fraud is estimated to be £0.1 billion in February 2008 and was £0.2 billion in the fourth quarter of 2007.

External surveys on exports reported a subdued picture for the latest quarter. The BCC reported that the export sales net balance fell by six points to plus 16, the lowest position since 2005 quarter four. The latest CBI quarterly survey also reported a weaker picture. The export orders balance was minus 12 in 2008 quarter one, deteriorating from minus four in the previous quarter.

Labour market activity buoyant

The labour market in the latest reference period illustrated a continued strong picture - with high levels of employment and low levels of unemployment as seen throughout 2006 and in 2007. The robust labour market continues to be a reflection of relatively strong demand conditions in the UK economy.

The latest figure from the Labour Force Survey (LFS) pertains to the three-month period up to February 2008. The number of people in employment and the employment rate rose. The number of unemployed people and the unemployment rate fell. The claimant count fell. The inactivity rate and the number of inactive people of working age have both fallen. The number of vacancies rose. Average earnings including bonuses fell while excluding bonuses increased. Overall average earnings remain subdued with weak real wage growth.

Taking a detailed look, the increase in the employment level was mainly driven by employees and full-time employment. The current working age employment rate was 74.9 per cent in the three months to February 2008, up 0.2 percentage points from the three months to November 2007 and up 0.6 percentage points from a year earlier. The number of people in employment rose by 152,000 in the three months to February 2008 compared to the previous quarter to an employment level of 29.51 million - the highest since records began in 1971. The unemployment rate was 5.2 per cent in the three months to February 2008, down 0.1 percentage point from the three months to November 2007 and down 0.4 percentage points from a year earlier (**Figure 14**). The number of unemployed people decreased by 39,000 in the three months to February 2008 and was

down 90,000 from a year earlier, leaving the current level of unemployment at 1.61 million.

According to the LFS, in the period December to February 2008, the number of people in employment rose by 152,000. The increase was led by a rise in employees of 98,000 and a 42,000 rise in self-employment. In terms of full- and part-time workers, the numbers of people in full-time employment rose by 99,000 while the number of people in part-time employment increased by 54,000.

Workforce jobs increases

According to employer surveys, there was an increase of 13,000 jobs in the three months to December 2007. The largest quarterly contribution to the increase came from distribution, hotels and restaurants (up 43,000), followed by transport and communication (up 18,000), and education, health and public administration (up 10,000). This was offset by decreases across a number of sectors with the largest decrease in manufacturing (down 29,000), followed by construction (down 19,000) and other services (down 13,000). Over the year, total workforce jobs increased by 208,000. Of the total, the largest contribution to the increase over the year came from finance and business services (up 149,000) followed by distribution, hotels and restaurants (up 103,000) and education, health and public administration (up 23,000). The manufacturing sector, in contrast, lost the largest number of jobs on the year (down 53,000), followed by other services (down 12,000).

Claimant count level continues to fall

The claimant count measures the number of people claiming the Jobseeker's Allowance. The latest figures for March 2008 showed the claimant count level at 794,300, the lowest level since 1975. The claimant level was down 1,200 on the previous month and down 110,600 on a year earlier. The claimant count rate in March 2008 was 2.5 per cent, unchanged from the previous month but down 0.3 percentage points from a year earlier.

Vacancies rise

The number of vacancies created in the UK continued to show a healthy demand position for the economy. There were 687,600 job vacancies in the three months to March 2008, up 12,000 from the previous three months and up 52,000 from the same period a year earlier.

Inactivity level falls

The working age inactivity rate was 20.9 per cent in the three months to February 2008, down 0.1 percentage point on the three months to November 2007 and down 0.3 percentage point from a year earlier. In level terms, the number of economically inactive people of working age was down 36,000 over the quarter and by 71,000 over the year to reach a level of 7.87 million in the three months to February 2008. Inactivity falls in level terms were recorded across most groups. The largest level fall in inactivity was recorded for those categorised as 'looking after family/home' (down 39,000). This was offset by increases in a couple of categories, with the largest increase in inactivity amongst the student category (up 42,000).

Average earnings subdued

Growth in whole economy average earnings showed a mixed picture in the three months to February 2008, but overall remains relatively subdued. Average earnings including bonuses increased by 3.7 per cent in the three months to February 2008, down 0.2 percentage points from the previous month. Average earnings excluding bonuses rose by 3.8 per cent, up 0.1 percentage point from the previous month. In terms of the public and private sector split, the gap in average earnings (excluding bonuses) was eradicated in February 2008. Both public and private sector wage grew in parity, at 3.8 per cent.

Overall, the numbers still point to a fairly buoyant labour market, with employment at high levels and unemployment at a stable level. This is consistent with higher workforce participation rates, underpinned by robust GDP growth. Average earnings show stable but fairly modest growth, consistent with increased supply in the labour force.

PRICES

Producer output prices and input prices accelerate

Industrial input and output prices are an indication of inflationary pressures in the economy. During the first quarter of 2008, output prices exhibited further signs of an acceleration of growth from quarter four 2007, and therefore provided signs of continued inflationary pressures. Input prices also accelerated in the first quarter of 2008 compared with quarter four 2007. This suggests that firms were attempting to maintain their profit margins by passing on the higher costs of inputs to customers. However, the slower rate of growth of output inflation in the latest quarter compared to faster input price growth may suggest that firms have been tempered in part in passing higher input price rises to customers, due to spending pressures faced by households – with possible impact on firms profits.

Input prices on average rose by around 20 per cent in 2008 quarter one. This compares with around 11 per cent in 2007 quarter four. The core input price index, excluding food, beverages, tobacco and petroleum, rose by an average of around 9 per cent in

Figure 15
Inflation

Percentage change over 12 months
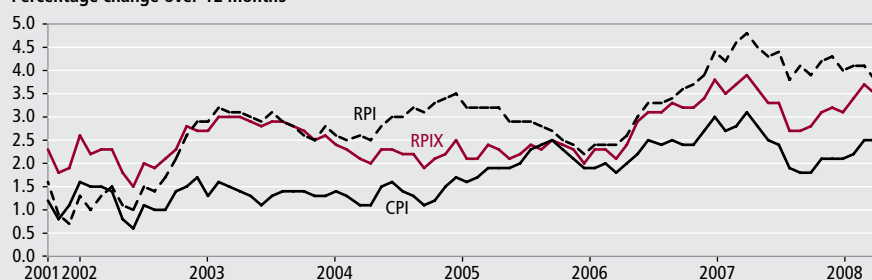
2008 quarter one (12 month non-seasonally adjusted growth), an acceleration from growth of around 3 per cent in the previous quarter. The sharp rise in input prices came mainly on the back of rising crude oil and home food materials prices. According to the latest monthly figures, the annual rate of input price inflation rose by 20.6 per cent in the 12 months to March 2008, driven by a 62.5 per cent increase in the price of crude oil in the year.

Output prices grew on average by around 6 per cent in 2008 quarter four, an acceleration from growth of around 4.5 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 on average by around 3 per cent in 2008 quarter one, up from 2.3 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. According to the latest monthly figures, annual output price inflation rose by 6.2 per cent in the 12 months to March, mainly driven by petroleum products which rose 25 per cent on the year.

Consumer prices unchanged but still above target

Growth in the consumer prices index (CPI) – the Government's target measure of inflation – was 2.5 per cent in March 2008, unchanged from February. This is lower than the peak in March 2007 when inflation reached 3.1 per cent, but above the Government's 2 per cent inflation target (**Figure 15**).

The largest downward contribution to the change in the CPI annual rate came from furniture, household equipment and maintenance where the price of furniture and furnishings rose by less than a year ago. A further large downward contribution came from recreation and culture, principally from games, toys and hobbies where the prices of computer games and pre-school activity toys in particular fell this year but rose a year ago.

The largest upward contribution to the change in the CPI annual rate came from transport costs. This was principally due to passenger air travel on European and,

to a lesser extent, long-haul routes, with fares rising this year compared with falls a year ago. There was also a large upward contribution from housing and household services due to changes in the price of heating oil and gas. The price of heating oil rose by more than a year ago while gas bills were unchanged this year but fell a year ago.

Retail Prices Index (RPI) inflation fell to 3.8 per cent in March, down from 4.1 per cent in February. The main factors affecting the CPI also affected the RPI. Additionally, there was a large downward contribution from housing. The effect came mainly from mortgage interest payments as lenders passed on February's quarter point decrease in the bank rate and, to a lesser extent, from house depreciation which fell this year but rose a year ago. Both mortgage interest payments and depreciation are excluded from the CPI.

RPIX inflation – the all items RPI excluding mortgage interest payments – was 3.5 per cent in March, down from 3.7 per cent in February.

Independent forecasts

April 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)	*1.7*	*–0.1*	*3.0*
Inflation rate (Q4, per cent)			
CPI	*2.5*	*1.7*	*3.2*
RPI	*2.8*	*1.5*	*4.2*
Claimant count (Q4, million)	0.91	0.76	1.23
Current account (£ billion)	–57.3	–89.4	–29.5
Public Sector Net Borrowing (2007–08, £ billion)	42.0	30.6	48.9

2009

	Average	Lowest	Highest
GDP growth (per cent)	*1.8*	*-1.3*	*3.0*
Inflation rate (Q4, per cent)			
CPI	*2.0*	*1.3*	*3.3*
RPI	*2.5*	*1.1*	*3.9*
Claimant count (Q4, million)	0.99	0.72	1.31
Current account (£ billion)	–51.3	–89.1	–17.1
Public Sector Net Borrowing (2008–09, £ billion)	42.7	31.7	51.3

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

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 (Dec 2007), published by OECD (Organisation for Economic Co-operation and Development).

2007

	US	Japan	Euro area	Total OECD
Real GDP growth (per cent)	*2.2*	*1.9*	*2.6*	*2.7*
Consumer price (percentage change from previous year)	*2.8*	*0.0*	*2.1*	*4.5*
Unemployment rate (per cent of the labour force)	*4.6*	*3.8*	*6.8*	*5.4*
Current account (as a percentage of GDP)	*–5.6*	*4.7*	*0.2*	*–1.4*
Fiscal balance (as a percentage of GDP)	*–2.8*	*–3.4*	*–0.7*	*–1.6*

2008

	US	Japan	Euro area	Total OECD
Real GDP growth (per cent)	*2.0*	*1.6*	*1.9*	*2.3*
Consumer price (percentage change from previous year)	*2.7*	*0.3*	*2.5*	*4.2*
Unemployment rate (per cent of the labour force)	*5.0*	*3.7*	*6.4*	*5.4*
Current account (as a percentage of GDP)	*–5.4*	*4.8*	*–0.1*	*–1.4*
Fiscal balance (as a percentage of GDP)	*–3.4*	*–3.8*	*–0.7*	*–2.0*

Notes

The OECD *Economic Outlook* is published bi-annually. Further information about this publication can be found at 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	2007 Q2	2007 Q3	2007 Q4	2008 Jan	2008 Feb	2008 Mar
GDP growth - chained volume measures (CVM)									
Gross domestic product at market prices	ABMI	2.9	3.0	0.8	0.6	0.6	..	..	..
Output growth - chained volume measures (CVM)									
Gross value added (GVA) at basic prices	ABMM	3.0	2.9	0.8	0.6	0.6	..	..	..
Industrial production	CKYW	0.3	0.3	0.9	−0.3	0.2	−0.1	0.3	..
Manufacturing	CKYY	1.6	0.6	1.0	−0.3	0.0	0.5	0.4	..
Construction	GDQB	1.0	2.3	0.8	0.5	1.1	..	..	..
Services	GDQS	3.6	3.8	0.8	0.9	0.7	..	..	..
Oil and gas extraction	CKZO	−9.4	−2.6	0.4	−1.6	1.0	−2.9	−1.6	..
Electricity, gas and water supply	CKYZ	−2.0	0.0	−0.4	0.7	2.7	−1.7	−0.7	..
Business services and finance	GDQN	5.4	4.8	1.5	1.3	0.7	..	..	..
Household demand									
Retail sales volume growth	EAPS	3.2	4.3	1.3	1.6	0.6	1.5	1.1	−0.4
Household final consumption expenditure growth (CVM)	ABJR	1.9	3.0	0.7	0.8	0.1	..	..	..
GB new registrations of cars (thousands)[1]	BCGT	2,340	2,390	573	671	468	..	..	..
Labour market[2,3]									
Employment: 16 and over (thousands)	MGRZ	28,947	29,152	29,153	29,223	29,398	29,508	..	..
Employment rate: working age (%)	MGSU	74.6	74.5	74.4	74.4	74.7	74.9	..	..
Workforce jobs (thousands)	DYDC	31,294	31,536	31,536	31,607	31,620	..	..	..
Total actual weekly hours of work: all workers (millions)	YBUS	925.4	932.8	937.6	937.9	935.6	939.6	..	..
Unemployment: 16 and over (thousands)	MGSC	1,660	1,666	1,661	1,667	1,606	1,610	..	..
Unemployment rate: 16 and over (%)	MGSX	5.4	5.4	5.4	5.4	5.2	5.2	..	..
Claimant count (thousands)	BCJD	944.7	863.3	876.4	845.8	816.1	794.9	795.5	794.3
Economically active: 16 and over (thousands)	MGSF	30,607	30,818	30,814	30,890	31,004	31,118	..	..
Economic activity rate: working age (%)	MGSO	78.9	78.8	78.8	78.8	79.0	79.1	..	..
Economically inactive: working age (thousands)	YBSN	7,851	7,946	7,965	7,973	7,919	7,873	..	..
Economic inactivity rate: working age (%)	YBTL	21.1	21.2	21.2	21.2	21.0	20.9	..	..
Vacancies (thousands)	AP2Y	597.1	655.9	646.5	668.0	675.6	677.5	680.0	687.6
Redundancies (thousands)	BEAO	145	2,882	120	134	111	106	..	..
Productivity and earnings annual growth									
GB average earnings (including bonuses)[3]	LNNC	..	..	3.4	4.1	3.8	3.9	3.7	..
GB average earnings (excluding bonuses)[3]	JQDY	..	..	3.4	3.7	3.7	3.7	3.8	..
Whole economy productivity (output per worker)	A4YN	..	..	2.5	2.3	1.7	..	..	..
Manufacturing productivity (output per job)	LOUV	..	..	..	..	..	2.4	3.0	..
Unit wage costs: whole economy	LOJE	..	..	1.4	1.8	2.7	..	..	..
Unit wage costs: manufacturing	LOJF	..	..	..	..	..	1.5	0.8	..
Business demand									
Business investment growth (CVM)	NPEL	−4.6	7.9	0.5	2.7	1.8	..	..	..
Government demand									
Government final consumption expenditure growth	NMRY	1.7	1.9	0.5	0.6	−0.5	..	..	..
Prices (12-monthly percentage change – except oil prices)									
Consumer prices index[1]	D7G7	2.3	2.3	2.6	1.8	2.1	2.2	2.5	2.5
Retail prices index[1]	CZBH	3.2	4.3	4.4	3.9	4.2	4.1	4.1	3.8
Retail prices index (excluding mortgage interest payments)	CDKQ	2.9	3.2	3.4	2.7	3.1	3.4	3.7	3.5
Producer output prices (excluding FBTP)[4]	EUAA	2.3	2.4	2.2	2.3	2.4	3.2	3.0	3.0
Producer input prices	EUAB	9.7	3.4	0.9	3.0	11.4	19.4	19.9	20.4
Oil price: sterling (£ per barrel)	ETXR	35.93	36.11	34.05	36.93	43.51	46.63	48.17	51.34
Oil price: dollars ($ per barrel)	ETXQ	66.11	72.44	67.64	74.67	88.91	91.89	94.66	102.85

	Source CDID	2006	2007	2007 Q2	2007 Q3	2007 Q4	2008 Jan	2008 Feb	2008 Mar
							Seasonally adjusted unless otherwise stated		
Financial markets									
Sterling ERI (January 2005=100)	BK67	101.2	103.5	104.1	104.1	101.2	96.3	95.8	94.4
Average exchange rate /US$	AUSS	1.8429	2.0021	1.9869	2.0212	2.0456	1.9698	1.9638	2.0032
Average exchange rate /Euro	THAP	1.4670	1.4619	1.4732	1.4705	1.4129	1.3883	1.3316	1.2897
3-month inter-bank rate	HSAJ	5.26	5.95	5.93	6.18	5.95	5.50	5.68	5.95
Selected retail banks: base rate	ZCMG						5.50	5.25	5.25
3-month interest rate on US Treasury bills	LUST	4.89	3.29	4.68	3.62	3.29	1.92	1.81	1.31
Trade and the balance of payments									
UK balance on trade in goods (£m)	BOKI	−77,555	−87,649	−20,173	−23,169	−23,191	−7,924	−7,487	..
Exports of services (£m)	IKBB	127,157	138,424	34,547	34,805	35,271	11,640	11,601	..
Non-EU balance on trade in goods (£m)	LGDT	−45,468	−47,285	−9,922	−12,948	−12,869	−4,274	−4,023	..
Non-EU exports of goods (excl oil & erratics)[5]	SHDJ	118.0	116.5	115.9	119.2	115.5	121.4	126.4	..
Non-EU imports of goods (excl oil & erratics)[5]	SHED	124.5	131.6	128.8	135.5	134.6	129.5	132.5	..
Non-EU import and price index (excl oil)[5]	LKWQ	103.9	104.2	104.5	103.5	104.1	108.0	109.5	..
Non-EU export and price index (excl oil)[5]	LKVX	101.5	102.5	101.9	102.2	104.0	105.5	105.8	..
Monetary conditions/government finances									
Narrow money: notes and coin (year on year percentage growth)[6]	VQUU	5.1	5.8	4.8	5.4	5.8	6.3	6.6	6.8
M4 (year on year percentage growth)	VQJW	13.0	12.8	13.0	13.0	12.5	13.3	12.4	11.9
Public sector net borrowing (£m)	−ANNX	29,118	37,239	15,823	6,949	16,713	−14,334	247	10,158
Net lending to consumers (£m)	RLMH	13,104	12,234	2,572	3,586	3,747	879	2,353	..

External indicators – non-ONS statistics

		2007 Sep	2007 Oct	2007 Nov	2007 Dec	2008 Jan	2008 Feb	2008 Mar	2008 Apr
Activity and expectations									
CBI output expectations balance	ETCU	17	10	9	3	9	11	18	0
CBI optimism balance	ETBV		−13			−18			−23
CBI price expectations balance	ETDQ	20	15	22	17	14	19	21	22

Notes:

1 Not seasonally adjusted.
2 Annual data are for April except for workforce jobs (June), claimant count (average of the 12 months) and vacancies (average of the four quarters).
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 Volumes, 2003 = 100.
6 Replacement for series M0 which has ceased publication.

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

FEATURE

Richard Clegg
Office for National Statistics

Comparisons between unemployment and the claimant count: 1971 to 2007

SUMMARY

The number of unemployed people is currently more than twice as high as the claimant count, which measures the number of people claiming unemployment-related benefits. This article explains the conceptual differences between unemployment and the claimant count.

The article also examines the differences between the two measures by gender. The gap between unemployment and the claimant count is larger for women than for men, with female unemployment being consistently higher than the female claimant count throughout the period 1971 to 2007. However, for men, throughout the 1980s and early 1990s, the claimant count exceeded unemployment. Since the late 1990s, however, male unemployment has exceeded the male claimant count and the gap is widening. For men, but not for women, the gap between the claimant count and unemployment seems to be significantly affected by the economic cycle as the male claimant count has exceeded male unemployment during periods of high unemployment.

This article examines the differences between unemployment and the claimant count from the start of the series in 1971 up to 2007. Differences between unemployment and the claimant count from 1980 to 2003 are described in Machin (2004). Estimates of unemployment and the claimant count are published every month in the Labour Market Statistics First Release. The figures quoted in this article are consistent with the March 2008 First Release. The number of unemployed people is currently more than twice as high as the claimant count.

Definition of unemployment

The unemployment figures follow the internationally agreed definition recommended by the International Labour Organisation (ILO). This definition specifies that 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
- out of work, have found a job and are waiting to start it in the next two weeks

Not all people out of work are classified as unemployed. Out of work people who have not actively sought work in the last four weeks and/or are not available to start work in the next two weeks are classified as economically inactive, rather than unemployed, in accordance with ILO guidelines.

Estimates of unemployment on a consistent basis commence in 1971. Estimates from 1992 onwards are sourced from the continuous Labour Force Survey (LFS). Estimates from 1979 to 1991 are sourced from annual LFS data adjusted for discontinuities, and estimates for 1971 to 1979 have been estimated by modelling back in time using an econometric model. For further details see Lindsay (2005).

Definition of the claimant count

Estimates of the claimant count on a consistent basis also commence in 1971. Claimant count data are sourced from JobCentre Plus administrative data. The claimant count measures the number of people claiming unemployment-related benefits; since October 1996 this has been the number of people claiming Jobseeker's Allowance (JSA). Claimant count data prior to October 1996 have been estimated on a basis consistent with the current benefits regime. Claimant count figures for the 1970s and 1980s are therefore estimates of how many people would have claimed benefits based on the current benefits regime, rather than the number of people who actually claimed unemployment-related benefits at the time.

People who are out of work or working less than 16 hours a week on average may be eligible to claim JSA if they are:

- capable of working
- available for work
- actively seeking work
- below state pension age (currently 65 for men and 60 for women)

However, people whose partners are in work, full-time students and people who have left employment voluntarily would not usually be eligible to claim.

The claimant count should not be regarded as an alternative measure of unemployment as it simply measures the number of benefit claimants and does not follow the internationally agreed definition of unemployment.

The differences between the measures

In this article, claimant count estimates are compared with estimates of unemployment which exclude unemployed people who are above state pension age (65+ for men and 60+ for women). This is a more meaningful comparison than comparing total unemployment with the total claimant count as people over state pension age are not eligible to claim JSA. All

references to unemployment figures in the remainder of this article therefore relate to unemployment among people of working age.

Figure 1 shows unemployment and claimant count estimates from the start of the series in 1971 up to 2007. Unemployment has been higher than the claimant count throughout this period, although the gap between the two series narrowed substantially in the mid-1980s and the early 1990s. The gap between unemployment and the claimant count has widened since the mid-1990s and by 2007 unemployment (at 1.6 million) was almost twice as large as the claimant count (at 0.9 million).

There are a number of possible reasons why the claimant count and unemployment may differ. While most recipients of JSA would be classified as unemployed, some would fall into the 'employed' or 'economically inactive' categories. For

example, people working less than 16 hours a week can be eligible to claim JSA but would be classified as being in employment. While in principle all claimants should be seeking work and available to start work, in practice, some claimants may not be actively seeking work and would therefore be classified as 'economically inactive'.

The main factors affecting the gap between unemployment and the claimant count are shown in **Table 1**.

Analyses of differences

Figure 2 and **Figure 3** show unemployment and claimant count estimates for men and women, respectively, from 1971 to 2007 while **Figure 4** shows the differences between unemployment and the claimant count for people, men and women. These charts show that the difference between the claimant count and unemployment is mainly accounted for by women. Figure 3 shows that, for women, unemployment and the claimant count have moved in broadly the same direction throughout the period, with the gap between the two measures being broadly flat.

For men, however, the picture is very different, as shown in Figure 2. While unemployment and the claimant count for men have broadly moved in the same direction throughout the period, the claimant count generally exceeded unemployment until the mid-1990s, with the gap between the two measures peaking in the mid-1980s and early 1990s. From the mid-1990s onwards, unemployment has exceeded the claimant count and this gap has been widening.

Figure 4 shows that the gap between unemployment and the claimant count is higher for women than for men, with female unemployment, on average, consistently exceeding the female claimant count by around 350,000 to 400,000. This reflects the tendency for unemployed women to be ineligible for JSA more often than unemployed men. For example, unemployed people with a partner in work are not entitled to claim income-based JSA. While they may claim on the strength of their own previous National Insurance contributions, contribution-based JSA will normally cease after six months. The gap for women does not seem to be substantially affected by the economic cycle, as the gap is fairly flat throughout the period from 1971 to 2007, as shown by Figure 4.

The picture is very different for men as shown by Figure 2. Throughout the 1970s, the gap between the claimant count and unemployment for men was very

Figure 1
Unemployment (working age) and claimant count

Millions
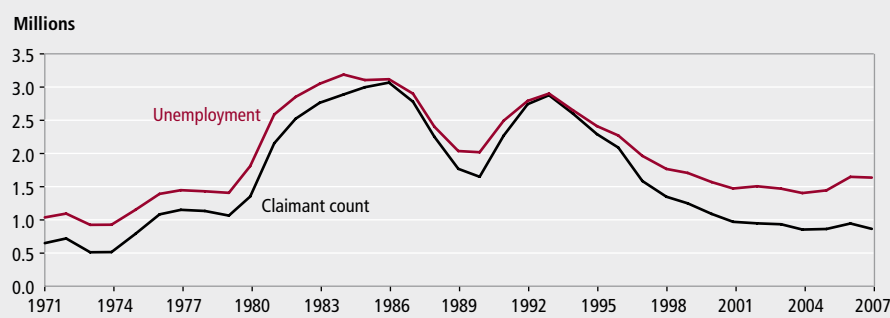
Table 1
Summary of main factors affecting the gap between unemployment and the claimant count

Factors widening the gap (for example, unemployment rising faster than the claimant count)	Factors narrowing the gap (for example, unemployment falling faster than the claimant count)
Inactive people who are not claiming JSA (and thus not in the claimant count) starting to look for work and becoming unemployed – perhaps when they see the job market improve.	Unemployed people who are not claiming JSA moving into education, retirement etc. or just ceasing to look for work (perhaps when they perceive few jobs are available).
People becoming unemployed but not eligible for, or choosing not to claim, JSA. For example, people with enough money, a partner at work and those leaving their job voluntarily.	Unemployed people who are not claiming JSA finding work.
Existing JSA claimants beginning to seek work. While JSA claimants should actively seek work, some may not do so and would not count as being unemployed.	Existing JSA claimants ceasing to seek work.
Claimants employed for a few hours (not enough to lose JSA entitlement) becoming unemployed.	Unemployed JSA claimants finding work for less than 16 hours a week but still being eligible to claim JSA.
Employed claimants working a few hours a week finding more substantial work and thus becoming ineligible for JSA.	

small. Throughout the 1980s and the early 1990s, the male claimant count exceeded unemployment, with the gap between the two measures peaking in 1986 and 1993 and coinciding with peaks in the claimant count level itself. The total claimant count reached a record high of 3.1 million in 1986 before falling to 1.6 million by 1990, as shown by Figure 1. It then increased again, reaching a peak of 2.9 million in 1993. When the labour market worsens, some existing unemployed people may become discouraged and stop actively looking for work while still claiming benefits. They would therefore move from unemployment to economic inactivity but would still be recorded in the claimant count. When the labour market improves, however, people who have previously felt that few jobs were available may start to actively look

for work thereby moving from inactivity to unemployment. The gap between the claimant count and unemployment for men seems to be substantially affected by the economic cycle, as the claimant count exceeded unemployment during periods of high unemployment, with the gap between the two measures being largest when the claimant count was at its highest. From the mid-1990s onwards, as the labour market improved, male unemployment exceeded the claimant count.

In 1996, the male claimant count exceeded unemployment by over 100,000, while in 1997 male unemployment was marginally higher than the claimant count. This turnaround in the gap between the two measures in 1996 and 1997 is partly due to the introduction of JSA in October 1996. A range of measures were introduced to

encourage more successful job search, and checks to ensure claimants were fulfilling the eligibility criteria were increased. It has been estimated that the introduction of JSA led to the removal of around 100,000 to 200,000 claimants from the count compared with what was expected at that point in the labour market cycle. However, only 15,000 to 20,000 of the fall was identified as arising directly from a change in benefit rules and, as such, was taken into account when revising the claimant count estimates to maintain a consistent time series. For further details see Sweeney and McMahon (1998). Since 1997, the gap between the two measures has widened and by 2007 male unemployment exceeded the claimant count by over 300,000.

CONTACT

✉ elmr@ons.gsi.gov.uk

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Machin A (2004) 'Comparisons between unemployment and the claimant count', *Labour Market Trends* 112(2), pp 59–62.

Sweeney K and McMahon D (1998) 'The effect of Jobseeker's Allowance on the Claimant Count', *Labour Market Trends* 106(4),pp 195–203.

Figure 2
Male unemployment (working age) and male claimant count
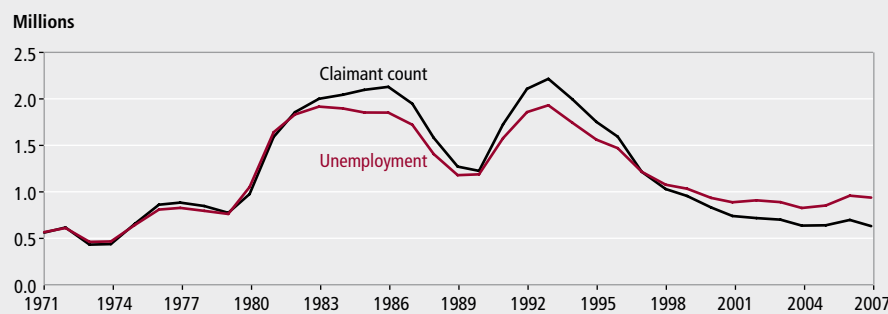
Figure 3
Female unemployment (working age) and female claimant count
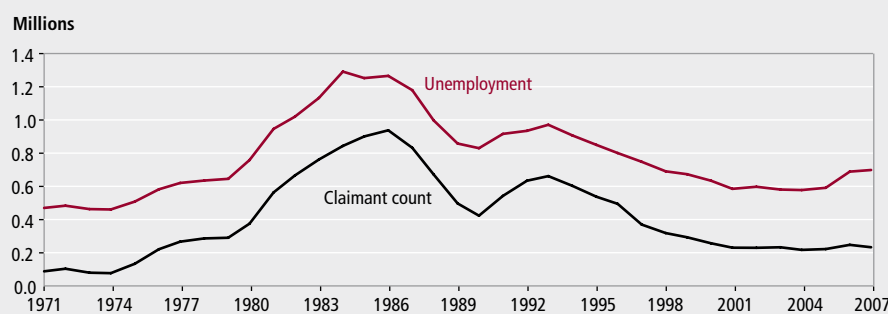
Figure 4
Unemployment (working age) minus claimant count
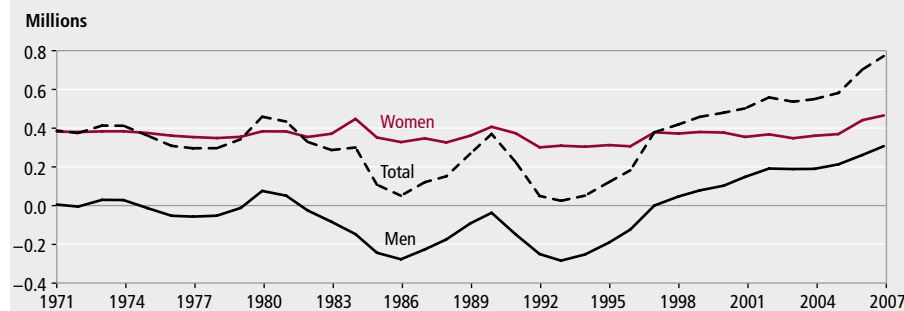
FEATURE

Martin Kellaway
Office for National Statistics

Private Finance Initiative and public debt

SUMMARY

The introduction of International Financial Reporting Standards in accounting for Private Finance Initiative (PFI) assets has led to media comment about the impact on the Government's debt measure and how this will affect PFI procurement in the future. The author of this article, who recently gave evidence to the Treasury Committee on this subject, sets the record straight and describes some of the work taking place in this area.

In July last year, an influential British newspaper ran a front page report explaining the prospects for spending for public sector infrastructure projects. It concluded that the implementation of International Financial Reporting Standards (IFRS) in government financial reporting, which it anticipated would bring assets on balance sheet, would lead to the Government breaking one of its fiscal rules. The sustainable investment rule limits public sector net debt to 40 per cent of gross domestic product (GDP) and the report indicated that bringing on 'as much as £30 billion in off-balance sheet leases' would break this rule.

However, the introduction of IFRS will not lead to any changes in public sector net debt. This is a complicated area, which is not widely understood, and the newspaper was far from alone in drawing the conclusions it had. This article explains what is happening.

First of all it is necessary to appreciate that National Accounts, which are produced by the Office for National Statistics (ONS), and the commercial accounting profession use different accounting standards, which are designed and used for different purposes. The National Accounts present a historic record of activities in an economy, showing transactions between sectors of the economy when they happen, or accrue, with every transaction generating an equal and opposite entry for the parties involved. They do not attempt to show the financial position or income generation of single entities, nor to show future uncertain events such as provisions and contingent liabilities.

Despite the differences, one area where UK generally accepted accounting principles (GAAP) and the National Accounts system do have a similar approach is in deciding whether a lease is operating or financial – an important factor when accounting for Public Private Partnership (PPP) and Private Finance Initiative (PFI) type deals.

Consequently, ONS took advantage of this similarity in designing a pragmatic approach to produce its first public sector finance lease statistics for inclusion in public sector net debt. This pragmatic approach relies on the accounting judgements taken by the public sector entities involved, in conjunction with their auditors and according to the financial reporting standards they use, to determine whether an asset should be on or off the public sector balance sheet. Generally, an on balance sheet deal is recorded as a public sector finance lease and an off balance sheet deal is not – it is recorded as an operating lease.

With over 700 PPP/PFI deals in the UK, there was little alternative to this pragmatic approach if a long delay in producing estimates was to be avoided.

The approach was based on two assumptions: that it would produce consistent results across the economy (that is, there should be consistent recording in the National Accounts for both partners) and that it was compliant with European Union (EU) statistical rules for reporting government debt. The EU guidance here

states that a GAAP approach is likely to produce similar results to the statistical approach.

In 2006, ONS produced its first estimates of imputed public sector finance leasing debt for inclusion in public sector net debt. The first estimates added almost £5 billion onto public sector net debt as at end-March 2006, equivalent to 0.4 per cent of GDP at that time. The black line in **Figure 1** shows how this has been rising over time.

The finance leasing debt is, however, not the only contribution that PPP/PFI makes to public sector net debt. In two of the largest schemes, the London Underground PPP and the Channel Tunnel Rail Link, the privately-owned companies are subject to sufficient controls that ONS classifies them in the public sector for National Accounts purposes. The red line in Figure 1 shows the contribution to public sector net debt when the liabilities of these companies are included, which is substantially higher. The steep increase from 2002/03 reflects debt raised to finance both of these projects. The unitary payments for off balance sheet deals will also have an impact on public sector net debt at the time the cash is paid, but as this is a secondary effect, it has not been included in the graph.

The next phase of ONS's work in this area will revisit the pragmatic approach and test both the assumptions used in it. There are known to be examples of both off-off recording (where neither partners' accountants record the asset on their entity's balance sheet) and on-on recording (where both partners do). Neither of these is an acceptable outcome for a statistical system that requires recognition of just one such asset within the economy. The ONS work will be the most comprehensive investigation taken yet into the extent of this issue. Additionally, some PFI deals will be analysed using the European statistical rules in order to test the second assumption.

A new dimension that has been introduced is the transition to IFRS in government financial reporting. As IFRS implementation will involve public sector accountants using a different standard to that currently used, in particular if the International Financial Reporting Interpretations Committee (IFRIC)12 interpretation is applied to the public sector partner in PPP/PFI deals, it could lead to different results in the financial statements of public sector entities. It is too early to judge what effect, if any, IFRS will have. One member of the Government's Financial Reporting Advisory Board is quoted as saying 'While it remains anyone's guess how much will be on the balance sheet, there is a pretty strong expectation that it is going to be a lot – most of it'. Others have suggested there will be little effect.

However, the important message here is that public sector net debt is a statistic that is derived from the National Accounts framework and not from IFRS. The European statistical rules, which concentrate on an evaluation of risks, have a different approach to IFRIC12, which focuses on control of the asset during the concession period, regulation of services, and what happens at the end of the concession period. Hence, any impact from IFRS in the financial statements of public sector entities will not automatically transfer into public sector net debt.

One possible implication of the move to IFRS for ONS is that, should the assumptions in the current pragmatic approach be confirmed as acceptable and if IFRS as implemented in the public sector produced different results, it would result in the loss of ONS's data source as the public sector reporting would have moved onto an incompatible basis.

CONTACT

✉ elmr@ons.gsi.gov.uk

Figure 1
Contribution of PFI/PPP to public sector net debt

£ billion
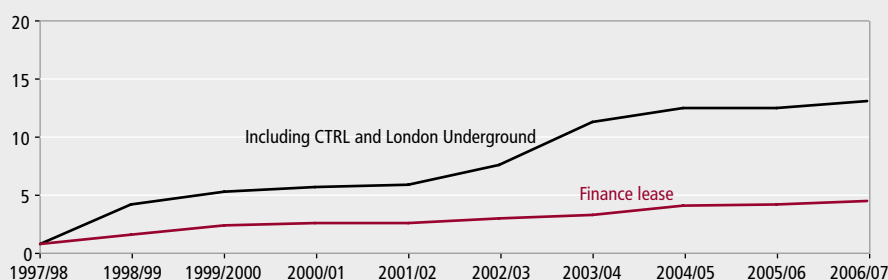
FEATURE

Graeme Chamberlin
Office for National Statistics

Monitoring the coherence of ONS and Purchasing Managers' Index data

SUMMARY

This article outlines a methodology for monitoring the coherence between official data published by the Office for National Statistics and business survey data in the form of Purchasing Managers' Indices (PMI). PMI data, particularly relating to the services sector, are being increasingly used by policy-makers and analysts in forming their view of current economic trends. The article demonstrates that what may sometimes appear as significant divergence between the two sources can often be accounted for by differences between their coverage and that the underlying signals in the two approaches are generally coherent.

Although the Office for National Statistics (ONS) is the official supplier of data on the UK economy, a number of other organisations and trade associations conduct surveys of economic activity. These tend to be more qualitative and based on smaller samples but are still regarded by many as useful and timely indicators. The most prominent and widely used is Purchasing Managers' Index (PMI) data. These are surveys of the UK private sector manufacturing, construction and services industries administered by NTC Economics on behalf of the Chartered Institute of Purchasing and Supply (CIPS). See www.ntceconomics.com for further details relating to the coverage and methodology of PMI data.

Recently, policy-makers and analysts are placing some emphasis on PMI data in forming their short-term view of the economy. Although later vintages of ONS data are recognised as the best data set, preliminary or early estimates of the economy are treated more cautiously. This is primarily due to the uncertainty created by expected revisions as ONS incorporates new information from annual data sources and makes methodological improvements in the way it measures the economy.

The Bank of England (BoE) has gone the furthest down this road. Ashley *et al* (2005) describes how early ONS estimates might be combined with PMI survey balances to form better short-run forecasts of the UK economy. This is part of an ongoing programme of work into dealing with what BoE have coined as 'Data Uncertainty' (see

Cunningham and Jeffery 2007). Although BoE is at the forefront of the international research agenda, the analysis of real time data for the purposes of policy-making has gathered strong momentum in recent years. It is therefore possible that variants of the techniques being developed by BoE will be applied elsewhere.

Monitoring coherence between ONS and PMI data is therefore a useful exercise, regardless of the finding. If the two sources paint the same picture, then data users may have enhanced confidence in their reading of the statistics. A reporting of divergent trends, though, could have the opposite effect. In such cases, the official data may be scrutinised more heavily and there might be greater expectations of future revisions. A recent article by Meader and Tily (2008), published in *Economic & Labour Market Review*, describes how ONS continuously monitors the quality of its data, including in the appendix how coherence against external data is assessed. The purpose of this article is to outline in more detail how this is done.

However, it must be accepted that, even if ONS and PMI data are telling a coherent story, it does not rule out future revisions to official statistics. In fact, the correlation between PMI and preliminary estimates is usually greater than the correlation between PMI and later data vintages. Neither is it the case that incoherence necessarily implies future revisions. Often, revisions can work in the opposite direction, leading to greater divergence between the two data sources.

The next section outlines a basic

methodology and discusses some of the issues involved in statistically testing for coherence. The underlying premise is that, although both do it imperfectly, each survey is designed to capture the same underlying economic activity. Therefore, coherence tests are based on a comparison of the signals in the data. Once the methodology has been outlined, it will be used in assessments of UK private sector manufacturing, services and total output.

Measuring coherence

This section outlines a five-step approach to monitoring coherence between ONS and PMI and discusses some of the issues involved.

Adjustments to 'like for like' basis

Although the industry coverage of the manufacturing and construction industries is broadly similar, the same cannot be said for the services sector. It will be shown that the coverage of the PMI Report on Services is more limited than the ONS Index of Services (IoS). This is a critical issue when assessing the coherence of the data. Divergent trends may simply reflect movements in industries that ONS captures in its data, but the PMI does not. For the purpose of monitoring coherence, ONS data should be adjusted so that their coverage is the same as PMI.

Investigate correlation

There are a number of reasons to believe that the correlation coefficient of ONS data is greater with lags of the PMI. First, ONS data are usually reported as a three-month on three-month growth rate whereas the PMI reports a monthly balance. Therefore, the ONS data are based on a six-month period, whereas the PMI covers just one month. Second, early vintages of ONS data have a relatively low data content (see Skipper 2005), with missing data replaced by forecasts based on extrapolating past trends. Finally, responses to the PMI survey may be influenced by confidence factors and responses to prospective questions in the survey, and hence incorporates a forward-looking element.

Standardise the data

The main problem in comparing ONS and PMI data is that they measure the economy in different units. Headline ONS data provide a point estimate of output growth on a three-month on three-month basis. PMI survey data, though, ask respondents to simply state whether output or activity has gone 'up', remained 'unchanged' or

gone 'down' during the latest month. The survey is published as the weighted balance between the percentages of 'up' and 'down' responses and normalised so that a statistic of 50 corresponds to aggregate 'no change'.

Comparing the data requires each to be expressed in a common metric. Therefore, one of two possible actions is required. Either one data series is transformed in terms of the other, or both are mapped into standardised units. The normal practice has been to map survey data onto official data using either the regression approach (Pesaran 1984) or the similar probability approach (Carlson and Parkin 1975). There is now a substantive and increasingly sophisticated literature on these methods (see Nardo 2003 for an assessment).

Transforming both series into standardised units is a simple process. For a time series Y_t, standardised data can be found by subtracting the mean and dividing by the standard deviation.

$$Y_t^s = (Y_t - mean(Y)) / sd(Y)$$

The resulting data series Y_t^s has a mean of zero and a standard deviation and variance of unity. For comparison purposes, this will remove any long-term bias and map changes in the data onto the same scale.

Although far less technical than the regression-based approaches, there is an intuitively appealing characteristic of the result as both series are now viewed in terms of their own history. As the purpose of this article is simply to monitor coherence rather than form estimates of economic activity, the ease of this approach is appealing.

Signal extraction

As both data sources are published at a high frequency, they tend to be volatile, which makes it hard to judge when they have diverged in a significant and sustained way. PMI reports on manufacturing, construction and services are published monthly, as is the ONS Index of Production and IoS. When looking at the raw monthly data, there will be lots of instances where there are large unique differences but this often reflects the inherent volatility in higher frequency data and is not sustained. A comparison of high-frequency data is also likely to be affected by the treatment of seasonal variation and trading-day effects. There is little information on how, and the extent to which, these are corrected in PMI data.

These factors suggest that a clearer view of the data can be achieved by either using

lower-frequency data or by smoothing. Once the data have been standardised, the signal in the data can be extracted using a simple state-space model estimated by the Kalman filter. This enables the user to ascertain whether the signals in the two data series are in fact different. For the purposes of measuring coherence, this is more illuminating; the question being asked is simply whether the two data sources share an underlying trend.

A standard signal extraction problem can be explored using the Kalman filter. This consists of two parts.

The measurement equation states that the standardised data from above consist of a signal (S_t) and an error component ($e_{1,t}$), where the signal is the component of interest, but is unobserved.

$$Y_t^s = S_t + e_{1,t} \qquad e_{1,t} \sim (0,1)$$

The state equation defines a law of motion for the unobserved signal. Given that the data are stationary (I(0)), it is assumed that a local trend model is appropriate, although almost any form of linear model could be used.

$$S_t = S_{t-1} + e_{2,t} \qquad e_{2,t} \sim (0,var(e_2))$$

Here, the estimate of the unobserved signal in the data can be interpreted as a trend or smoothed version of the actual data. The degree of smoothing is implied by the variance var(e_2), which dictates the signal-to-noise ratio, that is, the relative variance of the signal and error component, and can be estimated freely using maximum likelihood. As the signal-to-noise ratio increases, more of the variance in the measured data is regarded as a signal, so S_t tracks the measured data Y_t^s more closely. As the signal-to-noise ratio falls, more of the variance in the measured series is allocated to the noise component $e_{1,t}$, hence the resulting signal estimates become smoother.

Testing divergence

Once signals have been extracted from the ONS and PMI data, they can be plotted for comparison purposes. Because the data have been standardised and much of the volatility removed, this plot can be used to informally judge coherence. A standard t-test with T-1 degrees of freedom can then be used to formally assess when the divergence, measured as $D_t = S_t^{ONS} - S_t^{PMI}$, is greater than zero at the 5 per cent significance level. This corresponds to where the differenced series (D_t) moves

outside a 95 per cent confidence interval centred around zero.

However, care must be taken in interpreting the outcome of this test. The width of the confidence intervals depends largely on the variance of the past deviations. Hence, if it is fairly common for two series to diverge in a large way, the confidence interval will be wide, so only the largest of the deviations will be judged as statistically significant. Likewise, if two series are closely aligned, then small deviations may be judged as significantly different from zero. This implies that measuring coherence is a relative proposition based on the past history of the data and that a strong role for judgement remains.

Further issues

Divergence often results from unsynchronised movements in the data. For example, both series may report an acceleration in activity or output, but if one series reacts slightly before the other, then a deviation will arise even though the data are generally reporting the same story. The same would be true concerning turning points; a short lag in one survey can lead to fairly large divergence in the data.

Although both data sets can be transformed into common units, there is no reason to expect exact coherence due to the different methodologies applied in each case. Therefore, some incoherence should not be surprising and necessarily alarming for official statisticians. There are a number of reasons that might account for differences between the two data

sources, which reflects how the statistics are produced rather than their interpretation of economic activity.

Firms can respond to the ONS survey in a continuous way, meaning that any point estimate of output can be recorded. The response to the PMI survey, though, is discrete; only one of three possible answers can be given. As a result, the PMI survey is limited because respondents have little ability to report an order of magnitude to output movements.

For example, suppose the majority of firms in the survey reported a small decline in output over the period. This could generate a large number of 'down' responses and an overall plunge in the reported balance. As a result, the survey could report a strong contraction even though in actuality there is just a strong consensus that the contraction is relatively minor. Suppose, though, that there was an equally strong consensus that the fall in output had been severe. As firms can only respond with a 'down' answer, the reported balance statistic would be similar. The same balance statistic can then arise for very different output movements.

There is also little reported information on how firms generally respond to qualitative surveys. Are firms influenced by subjective expectations about the future or confidence when compiling their answers? Is there possible endogeneity between PMI and ONS data, in that well-publicised and reported official data might determine the responses firms give to business surveys? Finally, is there inertia in firm responses with a tendency to report what was reported last time?

Coherence of ONS and PMI data

In this section, the methodology outlined above is used to monitor coherence of ONS and PMI private sector output data for the manufacturing and services sectors and for the whole economy.

Manufacturing

A one-month lag of the PMI data shares the highest correlation with ONS Index of Manufacturing (IoM). A comparison of the raw data is shown in **Figure 1**. **Figure 2** plots the signals extracted from both time series after the data have been standardised, and **Figure 3** shows the results of the t-test for divergence.

Three significant periods of incoherence are evident from Figure 3. These are in 1993, 1998–99 and 2007, where the official data are, respectively, weaker, stronger

Figure 1
Index of Manufacturing and the PMI Report on Manufacturing
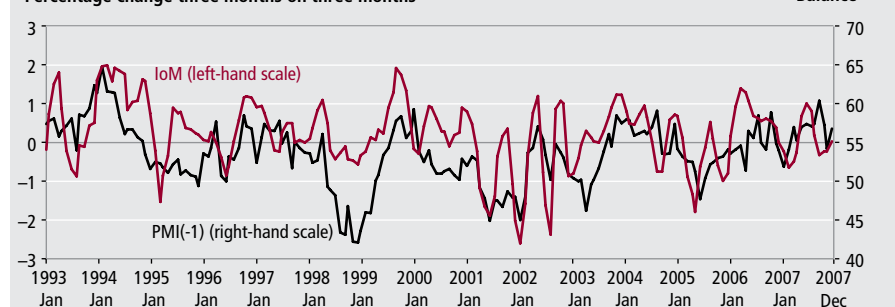
Figure 2
Signal extracted data for UK manufacturing output
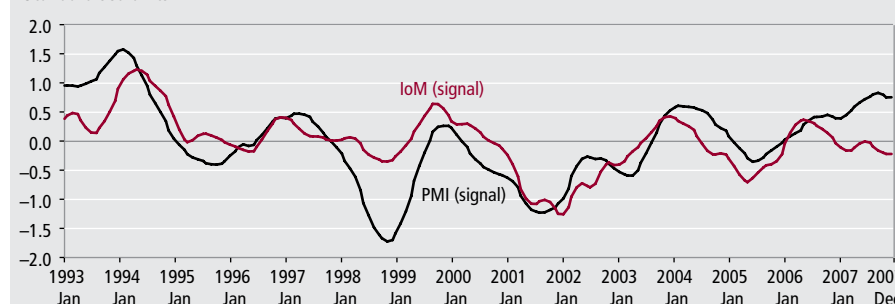
Figure 3
t-test for divergence between latest ONS and PMI signal extracted data on manufacturing
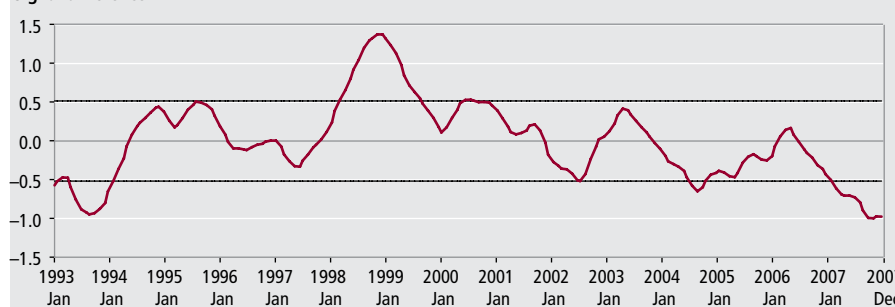
and weaker than the corresponding PMI measure. The first of these appears to reflect a synchronisation issue in how quickly the sector recovered from the recession in the early 1990s, with the official data lagging the PMI. The second period is more of a curiosity, and reflects a genuine disagreement on the strength of the economy at the time. PMI balances in late 1998 were close to where they were in 1991, but the official data would imply that the later slowdown was modest in comparison with the previous one. Nor is it likely that this incoherence will be corrected by revisions to the National Accounts, which have actually worked in the opposite direction, widening the gap between the two time series. Throughout 2007, ONS data on manufacturing output appear to have been weaker than their PMI counterpart. It is not yet known whether

or how future revisions will alter this perception.

Services

It is the service sector where most interest on the coherence of ONS and PMI data has focused. Not only is it the largest component of private sector output and GDP, it has also been subject to greater revision than the IoM, so early or preliminary estimates have been treated cautiously. Ashley *et al* (2005) reports that BoE attaches a fairly low weight to early ONS estimates of the IoS relative to the corresponding PMI data. Without any 'real-time' and 'out-of-sample' testing, it is difficult to validate BoE's findings, but these results were of concern to ONS.

Despite criticisms, ONS is actually at the forefront among National Statistics Institutions throughout the world in

measuring what is typically a difficult part of the economy to measure. Tily (2006) outlines in some detail these challenges, recent improvements made by ONS to the monthly IoS, and discusses the programme of methodological improvements to deliver further improvements in the future. At present, the UK is the only country in the world to have developed a monthly indicator for the whole of the service sector based on internationally accepted methodologies.

Following Butler (2005), it is recognised that the coverage of the PMI data for the UK service sector is a subset of the official data, and this is a critical factor is assessing coherence. Most significantly, the public and distribution sectors are excluded which, according to 2003 weights, account for approximately 40 per cent of the IoS. Another important difference is the treatment of the financial services industry.

Presently, an adjustment is made to official statistics which takes into account that much of the output of the financial sector is just the intermediate consumption of other parts of the economy. For example, banking, insurance and financing costs incurred by businesses are simply treated as inputs into production, so the rationale for excluding them is to avoid double counting in much the same way as the output of the steel industry would not be added to the shipbuilding industry. This financial services adjustment (FSA) is made by allocating part of the output of the industry to a separate category which is subtracted from the overall IoS.

Table 1 shows how the coverage of the IoS relates to the PMI data on services. For the purpose of judging coherence, an adjusted IoS is formed and is plotted with the third lag of the PMI data in **Figure 4**.

Using the methodology described in the previous section, the signal view can be extracted from each series and is plotted for comparison in **Figure 5**. From first glance, the data look to be fairly consistent over the last two years. However, official data were relatively strong in 1998–99, but weaker in 2004. This is confirmed in **Figure 6** which plots the results from a t-test on the divergence of the signals.

Figure 7 presents the signal extracted views of different measures of the IoS and shows the importance of the like-for-like adjustment. For example, in 2001–02, the relative strength of the distribution and government sectors meant that the unadjusted IoS was relatively more buoyant than the adjusted series. However, since 2006, the adjusted IoS has been above

Table 1
Coverage of IoS and services PMI data

Component	IoS weight (2003)	Included in PMI data (Y/N)
Motor trades	28	N
Wholesale	59	N
Retail	77	N
Hotels and restaurants	42	Y
Land transport	29	Y
Air transport	8	Y
Supporting and auxiliary transport services	24	Y
Post and telecommunications	40	Y
Financial intermediation	70	Y
Financial services adjustment	-62	N
Real estate	34	Y
Computer and related activities	39	Y
Other business activities	129	Y
Public administration, defence and compulsory social security	70	N
Letting of dwellings	106	Y
Education	79	N
Health and social work	96	N
Sewage and refuse disposal	9	N
Activities of membership organisations	8	Y
Recreation, cultural and sporting activities	39	Y
Other service activities	8	Y
Private households with employed persons	7	N
Total weight	**1,000**	**576**

Figure 4
Adjusted Index of Services and the PMI Report on Services

Percentage change three months on three months   Balance
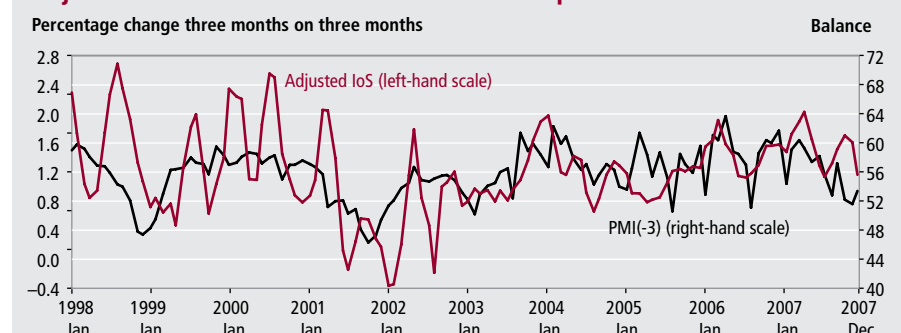
Figure 5
Signal extracted data for UK service sector output

Standardised units

Figure 6
t-test for divergence between latest ONS and PMI signal extracted data on services

Signal difference

Figure 7
Alternative signal views of the Index of Services

Standardised units

Figure 8
GDP* and aggregate PMI data

Percentage growth three months on three months   **Balance**
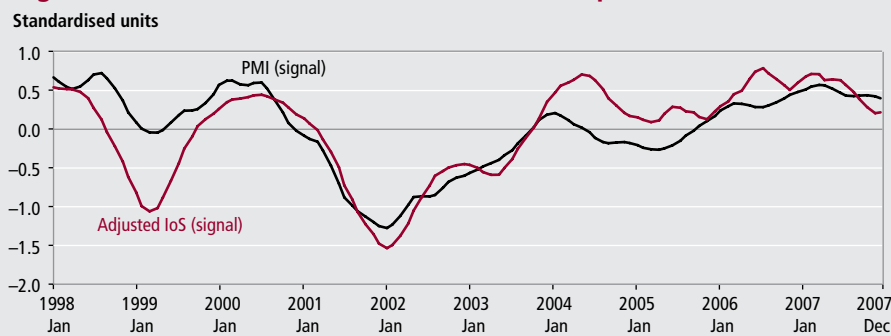
its recent average, whereas the IoS and the adjusted IoS including the FSA have been closer to their averages. This reflects the impact of the relatively fast-growing financial services industry on the index during this period, which is implicitly given a higher weight in the PMI.

Private sector output (GDP*)

Butler (2005) describes GDP* as the measure of GDP consistent with the industries covered in the PMIs for manufacturing, construction and services. The missing components are agriculture, mining and extraction, water and energy supply, and the distribution, public sector and financial services adjustment parts of services sector. Altogether, these account for approximately 40 per cent of the UK economy.

Testing coherence requires construction of a measure of GDP* and a combined PMI of economic activity. GDP* can be calculated on a monthly basis by using the monthly IoM, the adjusted monthly IoS from Figure 4 and by interpolating and extrapolating quarterly data on construction output. This, and a one-period lag of the PMI data are plotted in **Figure 8**. In both cases, the sector data have been combined using the latest official weights.

After using the stated methodology, **Figure 9** and **Figure 10** would imply that ONS and PMI data are, for the most part, relatively coherent. The two periods of significant divergence are in 1998–99, when PMI data are much weaker, and in 2004-05, when PMI data were stronger than official data.

It has already been stated that PMI balances for manufacturing were similar in 1998 to the levels recorded in 1991. Although the PMI for services has only been published since 1996, backcasting using another business survey on the service sector, published by the British Chambers of Commerce, also suggests that it might have been close to 1991 levels had the survey existed at this time. The evidence suggests that because respondents cannot attach an order of magnitude to their stated output movements, it is possible that the strong negative balances in 1998 just reflect a strong consensus of a relatively mild downturn.

Preliminary estimates of service sector output also pointed to weaker growth, but have since been revised significantly upwards. Here, revisions have actually generated rather than corrected the incoherence between the surveys.
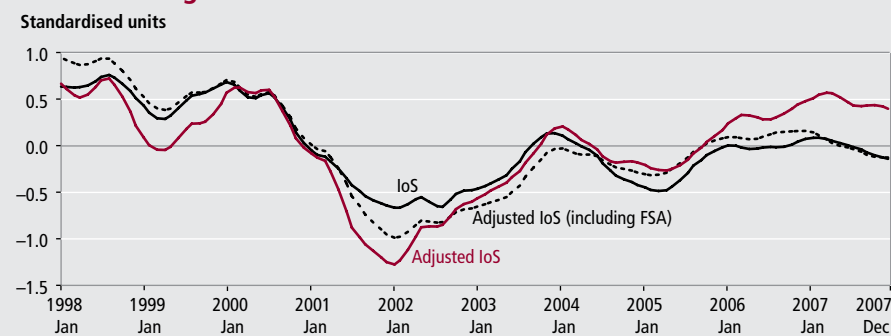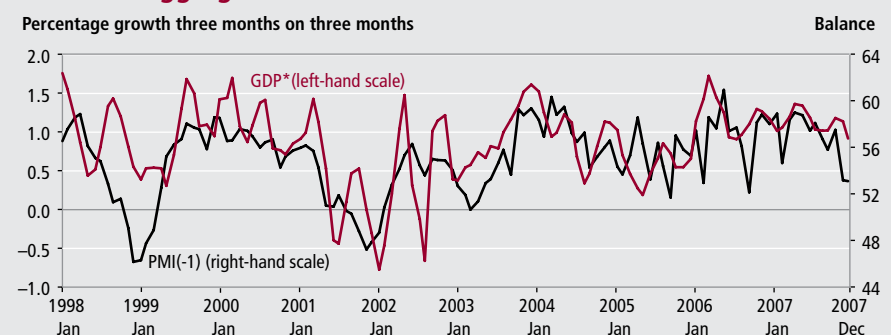
Economic news was certainly pessimistic in this period. The Asian financial crisis, the near collapse of Long-Term Capital Management, and weak global growth indicated that the UK economy might be constrained by a global recession, all of which dented business confidence.

However, it has since emerged that consumer spending in the UK was more resilient than early estimates suggested, growing at rates above its long-term average since 1975 throughout 1996–99. Between October 1998 and June 1999, monetary policy was loosened considerably, with interest rates falling from 7.25 per cent to 5 per cent, including three 0.5 percentage point monthly reductions.

Whether the finding of incoherence in the 2004–05 period will be altered by future revisions is not so clear cut. During the 2006 *Blue Book*, economic growth for the second half of 2004 and first half of 2005 was actually revised downwards. However, due to the reduced scope of the 2007 *Blue Book* as ONS undertakes the re-engineering of the National Accounts, these data are yet to pass through their second *Blue Book*. Hence it is possible, but not guaranteed,

that the extent to which the economy softened will be revised.

Conclusions

This article has attempted to measure coherence between ONS and PMI data. If it is accepted that both data sources attempt to measure similar economic activity, albeit imperfectly and with measurement errors, then both should be driven by similar underlying trends. Therefore, extracting and comparing the signals in the data forms the methodology for monitoring or assessing data coherence. The key issue appears to be adjusting ONS data so that their coverage reflects that of the PMI data with which they are compared. Once this is done, coherence between the two measures of economic activity is found to improve.

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Figure 9
Signal extracted data for PMI and GDP*

Standardised units
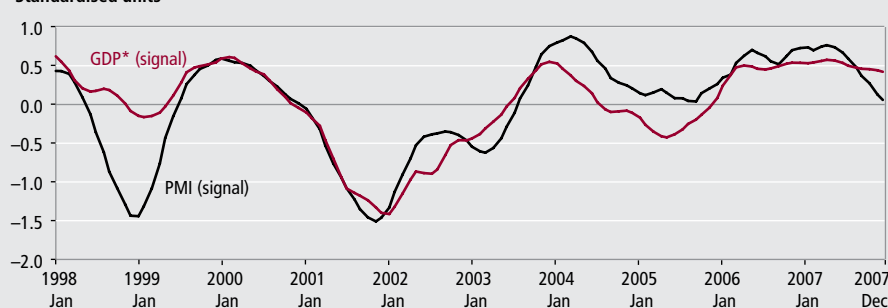
Figure 10
t-test for divergence between ONS and PMI signal extracted data on private sector output

Signal difference
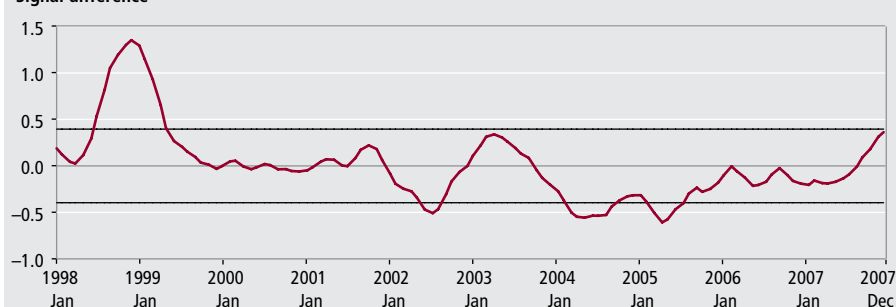
FEATURE

Felix Ritchie
Office for National Statistics

Secure access to confidential microdata: four years of the Virtual Microdata Laboratory

SUMMARY

This article explains how the Virtual Microdata Laboratory (VML) has become the Office for National Statistics' solution to providing access to sensitive microdata while maintaining the confidentiality and security of the data. In the four years since it was set up, the VML has gone from almost nothing to becoming a major resource for UK academic researchers. The VML has enabled both more detailed and wider research, and has influenced policy making at all levels. Looking ahead, the VML faces significant challenges and a bright future.

The Virtual Microdata Laboratory (VML) was first launched by the Office for National Statistics (ONS) in January 2004 to provide secure access to confidential business survey data for research purposes. From small beginnings, the VML has grown to become a key element of ONS's data access strategy. It is now, in practice, the default secure solution for data access across the Office and, increasingly, a major player in cross-government access, helping transform the research culture in ONS.

This article describes how and why the VML was designed and grew, where it is now, and the prospective opportunities that lie ahead.

The rationale for the VML

ONS collects a large amount of data on individuals and businesses and uses this to produce statistics about all aspects of the economy and society. Most of this information is presented in a highly aggregated form, to maintain the confidentiality of those supplying the data. However, the underlying microdata used to create these aggregate tables are a major research resource for the UK. Meeting the needs of researchers while strictly maintaining confidentiality is a priority for ONS.

For social data, this is addressed by 'anonymising' the data and placing the resulting data set in the UK Data Archive (see www.ukda.ac.uk) or, for files with less anonymisation, releasing the files under a 'special licence' to limited groups of researchers.

This is rarely feasible for health and business data because the distribution of characteristics for these types of data means that anonymisation tends to destroy all of the data of interest for statistical research purposes. Hence, such data are often only available, unidentified but without anonymisation, in research data centres (RDCs). Although ONS and the Economic and Social Research Council (ESRC) did set up an RDC for health data in the 1980s, there was no equivalent for business data. This is because RDCs tend to be costly, in time and money, for both researchers and data providers, and so of limited appeal.

In the late 1990s, a number of academic researchers starting looking into the business data collected by ONS. The ONS business data are unique within the UK in the scope and detail of their information and the potential for research is enormous. However, the legal status of the data made access difficult and the lack of prior record-level analysis meant that the data were often not organised usefully for research.

At the end of 2002, ONS began to formulate a considered strategy to resolve this. The first stage was to develop a security model (see **Box 1**) and to resolve legal issues surrounding access to data. A pilot VML using 'thin-client' technology (see **Box 2**) began operation in January 2004, and ONS had a generic solution for providing secure

access to confidential microdata.

Conceptually, the VML is similar to a well-guarded physical laboratory where visitors are searched on entry and exit and allowed no communication with the outside world from inside the laboratory. This is how the balance between confidentiality and usage is managed. Because the locks on the 'virtual door' are strong, ONS can give access to sensitive data and allow more freedom to researchers inside the safe environment. The VML (and similar facilities in other countries) does this through software, allowing a much more flexible deployment; this is why the

thin-client model has come to be seen as international best practice in recent years.

Growth and development

In this section, developments in four areas are considered: users, data, projects and outputs.

Users

In January 2004, the VML was providing access to a total of ten academic researchers, in four research groups, and no government or ONS researchers. Four years on, and the VML supports around ten users a day from all areas of government and academia, and

has trained around 400 researchers in the use of confidential data.

Figure 1 shows the number of researchers attending the VML training course, which is compulsory for all VML users. This can only give an impression of the cumulative use of the VML: the training course is not compulsory for researchers who do not need to visit the site, and the course is also used by the VML team as a way of demonstrating the security of procedures to potential data depositors. However, it is clear even from this rough approximation that both the number and range of users of the VML has expanded remarkably over the period. While academics still make up 55 per cent of the attendees, over 30 per cent are researchers in other government departments, at levels ranging from junior economist to Chief Statistician.

Figure 2 shows the daily usage. In terms of regular daily use of the VML, internal ONS demand has generally kept pace with that of external visitors, but in the last 18 months, ONS use has accelerated. It is difficult to establish exactly the amount of internal ONS usage, but a new monitoring system being introduced in 2008 will allow a much more accurate assessment of both internal and external use.

Data sources

The VML was originally set up to provide access to business data and relied heavily on early work by academic researchers[1] to create workable microdata sets from ONS's archives. Ritchie (2004) describes the early work of these researchers and the problems encountered in trying to make data collected for one purpose usable for another.

The most important of these early data sets was the Annual Respondents Database (see Barnes and Martin 2002 and Robjohns 2006). A longitudinal database of firm-level survey responses, it was constructed from the structural business surveys used to generate a substantial part of the UK's annual GDP and related National Accounts estimates. For the production sector this was available back to 1973 – although much of the pre-1996 data are still labelled 'unknown'. These data have now been extended to include the services sector, and responses to ONS business surveys on employees, R&D, e-commerce, capital expenditure, prices and so on. These are mostly available from the late 1990s onwards.

One crucial factor in the development of the business data sources has been ONS's Inter-Departmental Business Register

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Box 1

The VML security model

The VML security model recognises that no single solution can be expected to provide an absolute guarantee of security at a reasonable cost (see Ritchie 2006). Hence, the VML embraces a series of interlocking security controls for 'safe' access to confidential data:

- safe projects – access needs to be for a valid statistical purpose
- safe people – researchers can be trusted to use data appropriately and follow procedures
- safe data – the data itself are inherently non-disclosive
- safe settings – the technical controls surrounding access prevent the unauthorised removal of data
- safe outputs – the statistical results produced do not contain any disclosive results

For the VML, 'safe' data are included for completeness, but for planning purposes it is always assumed that the data are inherently unsafe.

Safe projects, safe people and safe settings are designed to protect the data from deliberate misuse; safe settings (again) and safe outputs are designed to prevent accidental releases of data. Hence, the VML security model is designed to ensure that there are overlapping controls for each identified risk.

Box 2

Thin-client research data centres

Thirty years ago, all access to computers was 'thin client': massively powerful central computers would do the processing for IT specialists working over a network. With the advent of PCs, having all the processing power needed on one's desktop became the norm. This was true for research data centres too: they involved bringing the researcher to the data, often in physically controlled spaces.

However, recent developments in technology, particularly for Windows™ computers, have caused thin-client computing to be re-evaluated. For RDCs in particular, there are significant advantages. First, the security of thin-client systems is far more easily controlled: for example, the VML has been using strong encryption for all data traffic since its inception, something which has only become a wider requirement for government IT systems in the last year. Second, thin-client systems means that data can be managed centrally, a great advantage when data are being linked and updated regularly. Third, thin clients mean that the user no longer needs to be physically close to the data store; researchers can access the VML from any ONS site without loss of performance.

When the VML was set up, Denmark was the only other country in Europe using this technology. In the four years since, use of this technology has grown considerably, and thin-client solutions are now widely considered best practice.

(IDBR). The IDBR covers 99 per cent of all non-governmental economic activity, and is used to provide the sampling frame for all ONS business surveys. As all surveys contain IDBR reference numbers, this enables, for example, information on a company's productivity from one survey to be linked to information on R&D from another survey, or to administrative and survey information from other sources, particularly other government departments.

This enables analyses to be carried out where collecting the data from a single source would have proved an intolerable burden on respondents, or where the data were collected for a different purpose. This is extremely useful in terms of extracting the most value from the data set: data can now be used repeatedly to address new questions without the requirement to collect further information.

The IDBR is a remarkable source of information whose analytical potential is still being discovered. One step forward is the construction by the VML team of the Business Structure Database, a firm-level longitudinal data set created from the IDBR which derives indicators for demographic events such as takeovers and mergers (see Hellebrandt and Davies 2007). Although only created in 2006 and moved into the regular research area in 2007, this is likely to increase its significance as more and more of the IDBR information is tied into it.

Although business data still accounts for 80 per cent of VML research, the VML has become the de facto secure data facility for ONS and increasingly holds non-business data. In most cases, the VML has been called upon when ONS wishes to allow research on a more confidential version of a data set that is already available in

anonymised form. For example, the VML is used to provide access to more detailed census data than is available on CD (albeit still strongly anonymised) through the Controlled Access Microdata Samples (see www.statistics.gov.uk/census2001/sar_cams.asp).

Projects

As was noted, the VML started in 2004 with around six live research projects of external researchers. At the beginning of 2008, the VML had 89 live projects, of which 45 had commenced in the previous seven months.

Table 1 shows the growth in projects over the past four years. As well as more new projects, it is clear that much of the increase is due to projects being carried over from one year to the next and extended. However, this is partly a consequence of the general growth in projects. Generally, around three-quarters of projects in any one year (old and new) carry over into the next financial year.

The table includes work sponsored by other government departments (OGDs). The single biggest direct sponsor of VML research is the Department for Business, Enterprise and Regulatory Reform (BERR, previously the Department of Trade and Industry). Indirectly, the biggest sponsor is HM Treasury, particularly of productivity studies. Other departments commissioning academics or using the VML directly include UK Trade and Investment; the Health and Safety Executive; the Low Pay Commission; the Office of Fair Trading; the Department of Health; the Department for Work and Pensions; and the Department for Culture, Media and Sport.

This table does not include internal projects. ONS research staff use the VML as part of their regular business-as-usual activity, and so separate research projects are not identified. However, five broad work programmes and their start dates can be identified:

- the microeconomics of productivity (2003)
- methodological studies (2004)
- research in low pay and earnings data (2005)
- intangible investment (2005), and
- analysis of price data (2006)

The scope of projects has changed along with the data sources. Initially, all research was on the microeconomics of productivity, but this is no longer the main area of interest.

Figure 1
Trained researchers, 2004 to 2007
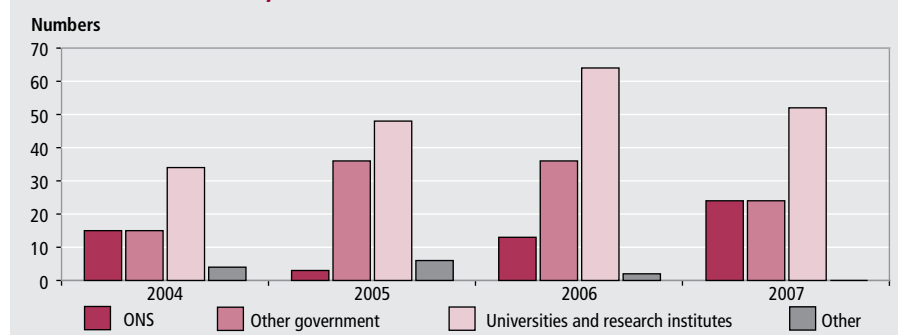
Figure 2
Days in the VML
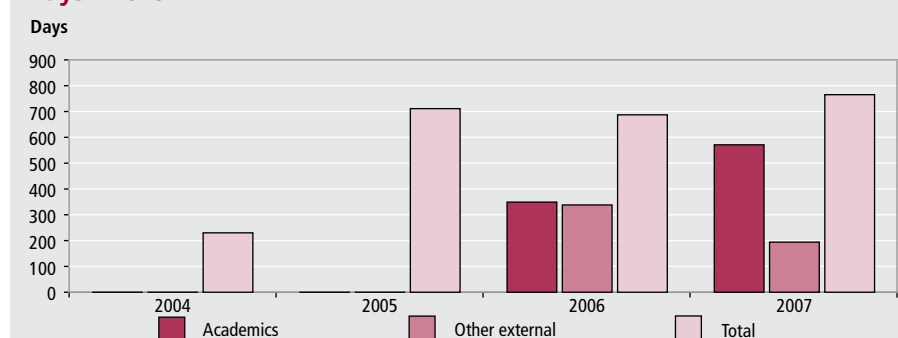
Table 1
VML projects, 2003 to 2007

	September 2003 to March 2004	April 2004 to March 2005	April 2005 to March 2006	April 2006 to March 2007	April 2007 to December 2007
New projects	20	27	42	76	45
Continuing projects	0	6	27	27	72
Total projects	20	33	69	103	117
Completed within year	14	6	42	31	28
Running at year end	6	27	27	72	89
Percentage continuing	30	82	39	70	76

Table 2
Project theme ranks

Subject	Ranking by main theme only	Ranking by all themes	Ranking by all themes, weighted
Earnings	1	3	1
Employment and labour markets	2	3	2
Skills and productivity	3	1	3
Capital and investment	3	6	5
Globalisation, outsourcing, international	5	2	4
Energy and environment	5	7	7
Industry studies – manufacturing	7	7	8
R&D, innovation	8	3	6
Entrepreneurship	9	9	9
Business demography	9	10	10

Note:

Other themes also identified: programme evaluation, regional studies, macro-micro linkages, ICT and the new economy, finance, and service industry studies.

Table 2 shows the most popular themes for the 47 project applications received in April to December 2007, researchers selecting up to four topics from a list of 16. The themes are ranked by popularity as the major theme; by the inclusion in any of the four topics; and by the inclusion but where the first mentioned topic has a higher weight. Currently, the most popular issue concerns the UK labour market. This may be a temporary phenomenon: in late 2007, the VML team managed to link successfully the most popular earnings data source (Annual Survey of Hours and Earnings) to a widely used study of workplaces (Workplace Employment Relations Survey). Nevertheless, it is clear that a wide range of economic issues are being studied.

Outputs

One obvious measure of growth of the VML is the number of outputs produced by researchers. However, this is not an easy figure to assess.

VML researchers are isolated from the world outside; they have no access to email or the internet, and statistical results can only be released from the VML by VML staff. The VML operates a two-stage level of clearance. Researchers working in the VML may ask for results to be checked for confidentiality issues and released so that they may discuss with colleagues and write up results; these are called intermediate results. When results have been written up, researchers need to resubmit these results to the VML team where a tighter confidentiality regime is applied. Results approved here are given final clearance and can be released to the research community. These are not necessarily finished papers, but would also include, for example, a table to be included in a conference presentation.

Figure 3 and **Figure 4** show the number of intermediate and final results cleared by the VML team. Several features can be observed.

First, although there has been a general increase in outputs over time, this is less pronounced than the growth in projects or users. Partly this reflects the maturing level of research. As the VML data sets become better known, and researchers build more on earlier studies, there is less exploratory work and more analysis. Longer-term users tend to produce a lower volume of output. In addition, internal ONS staff using the VML rarely request outputs, as they have permanent access to the VML through their desktops. Outputs only tend to be collected when, for example, reports are being prepared for an external audience.

Second, the volume of outputs can vary considerably over the course of the year. This may be driven by particular events (such as a conference deadline) but often it reflects the academic year. Intermediate outputs, for example, tend to fall in August; final outputs tend to peak around June, possibly reflecting the start of the conference season.

Third, it is hard to predict in advance when the demand will arise. Although general patterns of demand can be drawn, in any one month there can be considerable variation in the need to clear outputs. As all outputs must be cleared by at least one member of the VML staff, this can make the allocation of VML resources more difficult.

Impact

Part of the reason for the VML's success is that it was designed as a general-purpose data research facility. The following sections look at the impact on academia, government departments and ONS.

Academic impact

That there was a significant pent-up demand for the data resources of ONS is evident from academic output in recent years. For example:

- in 2004, HM Treasury's fifth Productivity Report contained macroeconomic analyses of the

Figure 3
Intermediate clearances
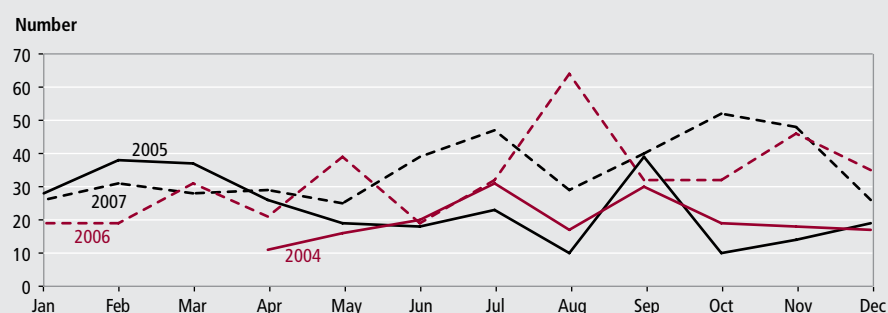
Figure 4
Final clearances
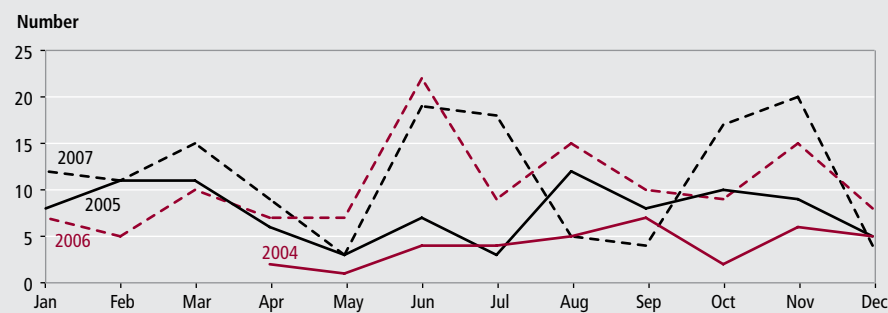
UK economy, and international comparative studies, but relatively few microeconomic analyses of the UK economy. The sixth report in 2005 took evidence from a range of UK microeconomic studies, most based on VML research

■ the two-yearly Comparative Analysis of Enterprise Microdata (CAED) conference, the main international gathering for microeconomic analysis of business data, was organised by ONS in 2003. Only six papers out of 78 were VML projects, with only ten relating to UK data; ONS presented a special session on procedural issues. ONS also hosted the conference in 2005: 26 papers out of 61 used ONS data, of which 21 were VML research projects; ONS itself presented six papers on technical subjects

■ in 2007, over 40 per cent of research projects had been of sufficient quality to attract competitive ESRC funding. A conservative estimate of academic daily charge-out rates would suggest that VML research projects are currently worth at least £200,000 per year to the academic community

■ the ESRC is currently in the process of setting up an academic equivalent of the VML, to be run in a similar manner but with access direct from universities, to provide an additional route for access to less restricted data

Of course, these examples reflect the skills of the UK academic community, as well as the concurrent development of ONS's integrated vision of processes for microdata access. However, the role played by the VML in facilitating this research has been considerable.

Government research
Government departments were legally allowed access to much of ONS's business data resources for statistical purposes, but made little use of this opportunity. There may be many reasons for this, but four stand out:

■ there was little consideration of what could be done with the ONS data

■ there was limited awareness of who could work with the data, in-house or with contractors

■ there was no mechanism for advising OGDs on how their data could be combined with ONS data, and

■ there was concern about perceptions that the data could be used for non-statistical purposes

Creating a virtuous circle is important, by supporting OGDs in both the commissioning of research and hands-on analysis. The team regularly visits OGDs and microdata researchers (economists, statisticians, social researchers) who are encouraged to discuss data queries with the VML team. Users can receive advice on the feasibility and practicality of data linking, allowing them to develop skills in ONS and other microdata. This leads to further questions about how data can be used, and the research community is strengthened. For example, BERR chairs a cross-government user group on research use of microdata, which grew out of the VML government user group.

At every stage along the way, the VML team helps to bring together expert academic researchers with policy analysts. Here, the early role of HM Treasury and BERR was crucial in leading by example, with support for research and a willingness to consider innovative uses of data.

The VML does now have a presence in government as a central contact point for microdata research. As well as organising workshops and conferences, the VML publicises other research events, circulates invitations to tender, and carries out a number of networking activities. Again, much of this is 'facilitating' rather than 'doing', but there is a clear demand for an expert unit to take on this role.

ONS
The VML has influenced many areas of ONS operations. Five examples are listed here.

First, the VML has helped increase ONS's visibility in, and contacts with, the academic community, so enhancing its own research. Economic analysts in ONS in particular have used these contacts to build up an enviable reputation for supporting innovative research; and they have taken a lead in a number of collaborative international research projects. For example, ONS is at the forefront of research into the capitalisation of R&D in National Accounts (see Galindo-Rueda 2007). The VML has contributed to this by, inter alia, arranging expert workshops.

Second, the ONS data collection units have been able to use both in-house and external expertise to study data in a range of new ways. Much of the impact comes from taking an analytical perspective on data, rather than the traditional population-estimation focus of ONS. For example:

■ Ormerod and Ritchie (2007) showed how the level of the National Minimum Wage influences the accuracy of its measurement. As a result of this paper, new instructions to survey interviewers have been introduced

■ a 2006 workshop on innovation and research showed that the two key ONS surveys in this area collected data from different parts of the same business; the sampling schemes for the surveys are now under review

■ Ormerod (2007) highlighted inconsistencies in data on self-employment collected across three different surveys

■ Hellebrandt and Davies (2007) investigated how standard National Accounts company classifications may be hiding the changing industrial structure of the UK

■ Jenkins (2008) studied the possibility of linking census and earnings data; while only a feasibility study, this has far-reaching implications for the use of social data

■ analysis-led reviews of data sources, typically undertaken at the request of the data managers, have informed reviews of variables, sampling frames, and forecasting

Third, the VML has affected ONS key outputs directly. The programme of work on how investment in intangibles (software, patents, branding) should be measured has already led to a revision of GDP estimates and a new experimental National Statistic (see Chamberlin, Clayton and Farooqui 2007 for a summary). This work was the result of a major project carried out by ONS's Economic Analysis Division in conjunction with academics and HM Treasury; the existence of the VML meant that the project could concentrate on the research and ignore issues of data collection, storage and management of external researchers.

Fourth, the VML has played a notable role in the development of ONS's data strategies. In recent years, ONS has been developing an access strategy for microdata which provides users with a range of options, tailored to the purpose, the user and the confidentiality of the data (see www.statistics.gov.uk/about/ns_ons/ons_microdata_releases.asp). The UK's integrated access strategy, developed in collaboration with the ESRC, has been identified by international bodies as an exemplar of how to effectively and safely support research on confidential data.

The VML is a key part of the data access spectrum, acting as the last link in the chain of possibilities.

Fifth, the VML was set up as an isolated system designed to meet unusual research requirements. As such, it has supported other ONS divisions, either as a short-term solution to a specific problem, or in a more methodical way. For example, the VML is now used by the Methodology Group for testing software and methods in a secure, isolated environment before authorisation for production use.

The last five years have seen a revival of interest in RDCs, using new technology to provide both better access to, and more security for, data. Along with technical developments, much of the practice of running RDCs has been under review. The VML was set up early on in this revival and took a leading role in discussions about the purpose and management of RDCs (see, for example, Ritchie 2007, 2008). As a result, ONS remains in the vanguard of international developments in this area, and was praised by the OECD in 2005 as 'one of the most innovative research efforts in the public sector across the 30 OECD member countries'.

The future

2008 will see the first major review of the VML since it was set up. This is driven by five main factors.

First, the VML has a plethora of information about how it could and should operate.

Second, since April 2008, the VML has been used to deliver the ONS Longitudinal Study (see www.statistics.gov.uk/about/data/methodology/specific/population/LS) and the VML team will become responsible for managing the user support (mainly provided by Celsius, a team of academics from the London School of Hygiene and Tropical Medicine; see www.celsius.lshtm.ac.uk). The ONS Longitudinal Study is a confidential data set containing census and health data, and is available for research under similar principles to those of the VML but with a different operating and funding model. It seems likely that there are many synergies to be exploited by combining the two research services. In the medium term, the aim is to provide a single seamless solution for all on-site access to confidential ONS data.

Third, ONS is piloting access to the VML from a small number of government offices around the country. This will address a criticism of the VML that researchers currently have to travel to ONS offices

to use the VML. The pilot is due to be completed in summer 2008 and will report on the feasibility of allowing access from a wider group of offices, with the aim that 95 per cent of UK researchers should have less than one hour's travel to their local VML access centre. However, such a move would have financial, statistical and ethical implications. These need to be reviewed before any further development takes place.

Fourth, under an arrangement with the ESRC, academics engaged in research on their own account have the charges for accessing the VML paid directly by the ESRC. This arrangement runs out in March 2009, and so there is a need to review the funding model.

Finally, in April 2008 the Statistics and Registration Act came into force. This simplifies the legal framework for VML activities, but is likely to require some changes in operation.

Bringing these five elements together, in summer 2008 the VML will carry out a major review of its activities, in consultation with other parts of ONS, OGDs, the ESRC, IT specialists, and academia. The aim will be to put the VML on a secure footing for the next five to ten years by having:

- an overarching vision of how and why the VML exists
- a 'one-stop data shop' approach to supporting the research community
- best-practice security procedures
- flexible, efficient administrative procedures continuing the VML's tradition of being one of the most cost-effective RDCs in the world.

Overall, the prospects for the future of research into confidential data look bright.

Notes

1   Principally the Institute for Fiscal Studies, Queen Mary College London, the London School of Economics, and Newcastle University.

CONTACT

✉ elmr@ons.gsi.gov.uk

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FEATURE

Richard McCrae, Craig H McLaren,
John Wood and Robin Youll
Office for National Statistics

Decomposing the Retail Sales Index implied price deflator and the CPI

SUMMARY

This article examines the relationship between the implied price deflator derived from the Retail Sales Index and the change in prices calculated from a comparable price index constructed using components of the consumer prices index. A decomposition approach is used to highlight the contribution of different products to the difference in growth rates over time.

The consumer prices index (CPI) and the retail prices index (RPI) are price indicators derived for the purpose of measuring price change experienced by private households (see ONS 2004, 2008a). Alternative measures of price can be derived using the relationship that price is equal to value divided by volume. This is known as an implied price deflator (IPD). Outputs from the Retail Sales Inquiry (RSI) (see ONS 2008b) can be used to derive an IPD. The scope of the RSI is, by definition, limited to businesses that sell goods directly to the public, but may also include non-identifiable sales from business to non-households, sales to non-residents and also households which have been excluded from the CPI. In general, there are a range of scope, timing, coverage and definition differences between the CPI, RPI and the IPD (RSI) that ensure that there are differences between the three measures.

Figure 1 shows the IPD (RSI) for the all retailing sector plotted against the CPI (all goods excluding cars and energy) and against the RPI (all goods excluding cars and petrol). The year-on-year change has been calculated. The IPD (RSI), CPI and RPI all show similar movements, but at different levels, which in part reflect the difference in scope, coverage and index construction methodology. Figure 1 suggests that the price change for the all retailing sector (IPD (RSI)) has been larger than normal in recent periods, and that since September 2006 there has been an increased difference when compared with the CPI and RPI. The most recent time period for February 2008 shows a reduction in the difference.

A decomposition approach is used to help understand the contributions that different products have on the difference shown in Figure 1.

Calculating different deflators

Comparisons between different deflator measures are only appropriate when the

Figure 1
Year-on-year change in prices

Month on a year earlier growth rate

scope, coverage and methodology are conceptually similar. The commodity level deflators used in the compilation of the RSI are broadly consistent with the CPI and RPI. However, even though the underlying source data are the same, different methodologies will lead to differences between the published CPI, RPI and IPD (RSI). Differences are expected, as shown in Figure 1, due to the following reasons:

- the different deflator measures have been constructed to answer specific questions. For example, the CPI and RPI answer the question: 'How much would it cost in the current time period, relative to the base time period, to purchase the same quantities of goods and services as purchased in the base period?' This is different from the IPD (RSI), which effectively answers the question: 'How much would it have cost in the base time period, relative to the current time period, to purchase the same quantities of goods and services as purchased in the current time period?' This means that the weights used within the CPI and RPI compared with the IPD (RSI) will be different because they are fundamentally answering different questions

- the RSI estimates retail turnover within the retail industry. To provide accurate estimates of the volume of retail sales, some unique commodity series need to be specified to exclude service elements. For example, within the RSI, the telephone and telefax equipment product explicitly removes items such as subscriptions to the internet and mobile phones which are actually included within the CPI. This leads to differences in coverage between the indicators

- the compilation of the RSI uses time series of commodities based on the Classification of Individual

Consumption by Purpose (COICOP) classification system. The RSI commodity price indicators are calculated using an arithmetic mean across products. The published RPI is also calculated using an arithmetic mean, but using the RPI Advisory Committee classification system. The CPI uses COICOP classifications and geometric mean. There will be differences between the three series based on these methodological differences

- to ensure consistency within the RSI, commodity deflators are re-referenced to a base year of 2000=100. This is due to some constructed series using a different base period. The reference period for the RPI is January 1987=100, and for the CPI is 2005=100

- the RSI commodity deflators undergo further processing, as the RSI results are published using the Standard Industrial Classification. Broadly, the commodity deflators for the RSI are aggregated across industries using weights based on the value of sales from the Annual Business Inquiry (ABI) from the year 2000, using a harmonic mean

- the aggregate level IPD (RSI) may be influenced by the level of sales in an individual sub-industry. For example, within the household goods sector, very strong sales of personal electrical goods during December mean the electrical stores implied price deflator, which has a different downward trend compared to that for the other two component sub-sectors, has an impact on the overall implied price deflator for December

- chain-linking is used for the CPI and RPI, but is not currently used within the RSI. For example, higher-level CPI and RPI aggregates (above the basic item level) are constructed by weighting together unlinked components and then re-referencing the aggregates

Further information about the construction and the relationship between the CPI and RPI can be found in ONS (2004).

To ensure comparability, a version of the CPI has been calculated using an arithmetic mean of detailed COICOP commodity deflators as used within the IPD (RSI). This is referred to in this article as the CPIa and will help remove one aspect of difference between the different deflator measures.

Figure 2 shows the CPIa series over recent periods. The CPIa still displays an increase in difference against the IPD (RSI) deflator over recent time periods, particularly from September 2006. The difference between the IPD (RSI) and CPIa at September 2007 is 2.58 percentage points. This difference can be decomposed into contributions from each individual product deflator.

Decomposing deflators into contributions from individual products

Decomposition of the percentage movements of the deflators by product allows the contribution of individual products to be assessed, and also how this contribution of each product changes over time.

Let $I_t^{R,D}$ be the IPD (RSI) at time t. The percentage change in the IPD (RSI) between two time periods, t and t_0, can be shown to be

$$\Delta I_{t,t_0}^{R,D} = 100 \times \left\{ \sum_i \left(\frac{\omega_i^{R,t_0} - \omega_i^{R,t}}{I_i^{C,t_0} \sum_j \frac{\omega_j^{R,t}}{I_j^{C,t}}} \right) \right.$$
$$\left. + \sum_i \frac{\frac{\omega_i^{R,t}}{I_i^{C,t}}}{\sum_j \frac{\omega_j^{R,t}}{I_j^{C,t}}} \left(\frac{I_i^{C,t}}{I_i^{C,t_0}} - 1 \right) \right\} \quad (1)$$

where $\omega_i^{R,t}$ is the current weight of product i at time t for the RSI (these weights can also be expressed in terms of the RSI weights based on sales for each industry and the RSI weight within each industry for each product), $I_i^{C,t}$ is the CPI for product i at time t, where $i = 1,...,44$ and $j = 1,...,44$.

Similarly, let I_t^C be the CPI at time t. The percentage change in the CPI between two time periods, t and t_0, can then be shown to be

$$\Delta I_{t,t_0}^C = 100 \times \left\{ \sum_i \frac{I_i^{C,t}}{I_i^{C,t_0}} \left(w_i^{C,t} - w_i^{C,t_0} \right) \right.$$
$$\left. + \sum_i \frac{I_i^{C,t_0} w_i^{C,t_0}}{\sum_j I_j^{C,t_0} w_j^{C,t_0}} \left(\frac{I_i^{C,t}}{I_i^{C,t_0}} - 1 \right) \right\} \quad (2)$$

Figure 2
Year-on-year change in prices

Month on a year earlier growth rate
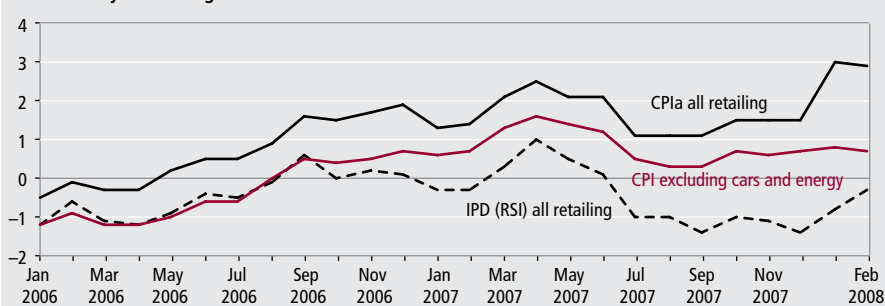
where $w_i^{C,t}$ is the CPI product weight (based on expenditure) for product i at time t, $i = 1,..., 44$ and $j = 1,...,44$.

Full details of the derivation of (1) and (2) are given in McCrae *et al* (2008).

Equations (1) and (2) can then be used to decompose the contributions of the products between given time points. This can be used to show which product had the greatest, or least, contribution to the index point difference between the IPD (RSI) and CPI over different time periods. Rounding may have an impact between the estimates used in this article and published estimates.

In particular, the decomposition method can be used to identify three separate causes of differences between the CPIa and IPD (RSI):

- changes in the CPI weights over time. These differences emerge because the broad commodity level indices in the CPIa are chain-linked. For example, the weight of other goods is around 0.23 per cent of the total weight in the aggregate CPIa in 2007 and 0.33 per cent in 2006. This difference leads to a contribution to the difference between the aggregate IPD (RSI) and the CPIa of around −0.17 points

- changes over time in the effective retail sales product current value weights in the IPD (RSI). For example, the weight of alcoholic beverages in 2006 was 4.3 per cent, and in 2007 was 4.2 per cent. This difference leads to a contribution to the difference between the aggregate IPD (RSI) and the CPIa of around

+0.13 points. In practice though, this source makes little contribution to the aggregate difference between the IPD (RSI) and the CPIa, and

- the difference between the deflated current weight of products in the RSI (expressed in base year prices but current period quantities) and the CPIa weights for the same product. For example, the weight of bakery products and cereals in the RSI is 3.1 per cent in 2007 and in the CPIa is 3.4 per cent. This difference leads to a contribution to the difference between the aggregate IPD (RSI) and the CPIa of around +0.02 points

Comparison between implied deflators for the RSI and a derived CPI

Table 1 summarises the largest contributions to the percentage difference in the annual growth rate of the IPD (RSI) for all retailing and the CPIa at September 2007. **Table 2** presents a similar summary for the annual growth rates at September 2006. The data used in both tables were available as published in December 2007. Subsequent revisions to the original estimates may change the deflator estimates slightly, although this will not impact on the conclusions.

Table 1 shows that the information processing equipment product had the greatest contribution to the difference in the annual growth rates for the IPD (RSI) and CPIa at September 2007. Column 1 shows that this product contributed +1.52 per cent of the +2.58 per cent difference between the IPD (RSI) and the CPIa (compare with Figure 1). Other products to have a significant positive contribution to the increased difference include garments, audio and visual equipment, non-alcoholic beverages and fruit. Some products had negative contributions to the difference, although these were offset by greater positive contributions. Overall, 32 products contributed positively to the percentage difference, while only 12 products contributed negatively. The full decomposition and contributions by all products is given in McCrae *et al* (2008).

Table 2 shows that the furniture and furnishings product had the greatest contribution to the difference between the IPD (RSI) and CPIa between September 2005 and September 2006. This is a significant change from the difference between September 2006 and September 2007 where it had the largest negative contribution to the percentage difference.

Table 1
Largest contributions to the percentage point difference between the annual growth rates of the IPD (RSI) and CPIa, September 2007

Product	Using 2000 deflator weights	Using 2005 deflator weights
Top five		
Information processing equipment	1.52	1.53
Garments	0.43	0.38
Audio and visual equipment	0.36	0.47
Non-alcoholic beverages	0.33	0.31
Fruit	0.33	0.33
Bottom five		
Telephone and telefax equipment	−0.19	−0.14
Travel goods and other personal effects	−0.19	−0.19
Games, toys and hobbies	−0.21	−0.20
Other goods	−0.24	−0.18
Furniture and furnishings	−0.63	−0.61
Percentage difference in deflators	2.58	2.73
Percentage growth: CPIa	*1.12*	*1.12*
Percentage growth: IPD (RSI)	*−1.46*	*−1.61*

Table 2
Largest contributions to the percentage point difference between the annual growth rates of the IPD (RSI) and CPIa, September 2006

Product	Using 2000 deflator weights	Using 2005 deflator weights
Top five		
Furniture and furnishings	1.53	1.51
Other items for personal care	0.64	0.61
Games, toys and hobbies	0.39	0.39
Carpets and other floor coverings	0.30	0.31
Information processing equipment	0.27	0.23
Bottom five		
Pharmaceutical products	−0.31	−0.27
Decorating and DIY supplies	−0.31	−0.30
Stationery and drawing materials, etc.	−0.34	−0.34
Alcoholic beverages	−0.44	−0.42
Meat	−0.56	−0.56
Percentage difference in deflators	0.96	0.78
Percentage growth: CPIa	*1.58*	*1.58*
Percentage growth: IPD (RSI)	*0.62*	*0.80*

Figure 3
Year-on-year change in prices

Month on a year earlier growth rate

Table 3
Largest contributions to the percentage point difference between annual growth in 2007 and 2006 of the IPD (RSI) and CPIa

Product	Using 2000 deflator weights	Using 2005 deflator weights
Top five		
Information processing equipment	1.25	1.29
Meat	0.74	0.73
Non-alcoholic beverages	0.53	0.53
Alcoholic beverages	0.43	0.41
Sugar, jam, honey, syrups, chocolate, etc.	0.37	0.35
Bottom five		
Travel goods and other personal effects	−0.41	−0.40
Carpets and other floor coverings	−0.47	−0.46
Games, toys and hobbies	−0.60	−0.59
Other items for personal care	−0.62	−0.58
Furniture and furnishings	−2.16	−2.13
Percentage difference in growth	1.62	1.95
Percentage difference in growth: CPIa	−0.46	−0.46
Percentage difference in growth: IPD (RSI)	−2.08	−2.42

Table 4
Largest contributions to the percentage point difference between the annual growth rates of the IPD (RSI) for household goods and the equivalent CPIa, September 2007

Product	Using 2000 deflator weights
Top five	
Information processing equipment	4.89
Audio and visual equipment	1.86
Recording media	0.49
Sugar, jam, honey, syrups, chocolate, etc.	0.34
Books	0.26
Bottom five	
Other goods	−0.26
Travel goods and other personal effects	−0.27
Carpets and other floor coverings	−0.33
Decorating and DIY supplies	−0.38
Furniture and furnishings	−1.61
Percentage difference in deflators	5.83
Percentage growth: CPIa	−0.52
Percentage growth: IPD (RSI)	−6.35

The information processing equipment product again had a positive contribution to the percentage difference between these two time periods.

The change of impact for the furniture and furnishings product between September 2005 to September 2006, and September 2006 to September 2007 is due to the change in the weights used within the CPI for these years.

Comparing columns 1 and 2 in both Table 1 and Table 2 shows that there is little impact if the deflator weights used by the IPD (RSI) were updated to 2005 information from the ABI, rather than deflator weights based on 2000 information from the ABI. This suggests that the difference between the IPD (RSI) and CPIa arises from more fundamental differences in methodology than simply from the RSI using base year 2000 weights.

Table 3 gives the difference in annual growth rates between 2006 and 2007 (difference between the expanded Table 1 and Table 2). The information processing equipment product had the largest positive contribution, while the furniture and furnishings product had the largest negative contribution to the change over this period. Again, there was little impact if the deflators were updated to 2005 information from the ABI (column 2 in Table 3).

An example of a specific sector comparison: household goods

The decomposition approach can also be used for the decomposition of products within different industry sectors. For example, the household goods stores sector comprises three sub-sectors:

- furniture, lighting and household articles not elsewhere classified
- electrical household appliances and radio and television goods, and
- hardware, paints and glass

Figure 3 shows the IPD (RSI) for household goods and the equivalent CPIa for household goods as well as the CPIa for all retailing. This shows that there is an increase in the divergence between the deflators over the recent periods.

Table 4 gives a summary of the percentage point contributions to the difference in these deflators. In this case, the difference is primarily driven by the information processing equipment product, which has a large positive contribution to the difference in the annual growth rate at September 2007. However, there is a large negative contribution in recent years from

the furniture and furnishings product.

Table 5 gives a summary between September 2005 and September 2006. The main difference occurs for the furniture and furnishings product which now contributes the largest positive contribution to the percentage difference. The information and processing equipment product also contributes significantly.

Table 6 gives the difference in annual growth rates between 2006 and 2007 (difference between expanded Table 4 and Table 5). The results are similar to Table 3. The information processing equipment product had the largest positive contribution, while the furniture and furnishings product had the largest negative contribution to the change over this period.

The magnitude of impact is roughly similar, although in the opposite direction.

Detailed decomposition analysis of the products and their contribution to the percentage difference for household goods is given in McCrae *et al* (2008). Similar comparisons can be made for other sectors.

Future work

The analysis set out in this article is based on an initial investigation into the reasons for differences between the CPIa and IPD (RSI). It identifies a number of potential reasons for the differences, and explores in detail their impact using a decomposition method which provides more detail on where differences occur.

This article does not consider whether

these differences are desirable in terms of the target variables being measured. However, it does open up a number of areas for further investigation in ONS into the methods use to compile these series. In particular, the next stages of investigation will involve consideration of the impact of chain-linking on the RSI. This is planned for implementation during 2008, along with re-referencing the index to a base year of 2005. Differences in the source data used for weights in both CPIa and the RSI also need to be examined in more detail, to establish if these represent conceptual differences or estimation error (for example, sampling error). Once complete, ONS will publish a further article setting out the findings of this research.

CONTACT

✉ elmr@ons.gsi.gov.uk

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Table 5

Largest contributions to the percentage point difference between the annual growth rates of the IPD (RSI) for household goods and the equivalent CPIa, September 2006

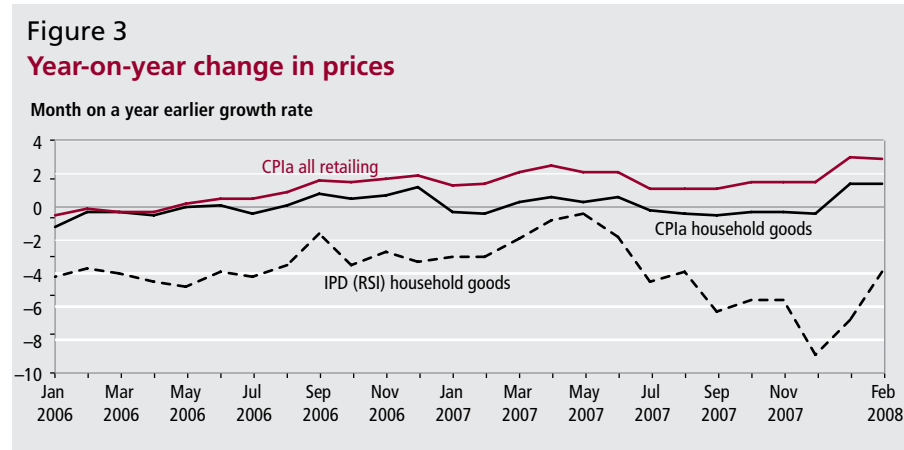| Product	Using 2000 deflator weights
Top five	
Furniture and furnishings	1.89
Information processing equipment	1.17
Audio and visual equipment	1.05
Other items for personal care	0.97
Games, toys and hobbies	0.33
Bottom five	
Garments	–0.42
Natural or artificial plants and flowers	–0.43
Glassware, tableware and household utensils	–0.43
Stationery and drawing materials etc.	–0.45
Decorating and DIY supplies	–0.91
Percentage difference in deflators	2.42
Percentage growth: CPIa	*0.85*
Percentage growth: IPD (RSI)	*–1.57*

Table 6

Largest contributions to the percentage point difference between annual growth in 2007 and 2006 of the IPD (RSI) for household goods and the equivalent CPIa

Product	Using 2000 deflator weights
Top five	
Information processing equipment	3.72
Audio and visual equipment	0.81
Sugar, jam, honey, syrups, chocolate, etc	0.76
Works of art and antiques	0.54
Natural or artificial plants and flowers	0.53
Bottom five	
Games, toys and hobbies	–0.57
Travel goods and other personal effects	–0.58
Carpets and other floor coverings	–0.65
Other items for personal care	–0.83
Furniture and furnishings	–3.50
Percentage difference in growth	3.41
Percentage difference in growth: CPIa	–1.37
Percentage difference in growth: IPD (RSI)	–4.78

Birgit Wosnitza and Martin Walker
Office for National Statistics

Regional economic indicators

May 2008
with a focus on differences in sub-regional economic performances

SUMMARY

This quarter, the regional economic indicators (REI) article focuses on explaining the differences in sub-regional Gross Value Added (GVA) per head and the development of these differences in recent years. This time series analysis decomposes the differences into four explanatory factors: productivity, employment rate, commuting rate and activity rate. The regular part of the article then gives an overview of the economic activity of UK regions in terms of their GVA, their GVA per head and their labour productivity. This is followed by a presentation of headline indicators of regional welfare and of various drivers of regional productivity. At the end of this article labour market data are presented. The indicators cover the nine Government Office Regions of England and the devolved administrations of Northern Ireland, Scotland and Wales. These 12 areas comprise level 1 of the European Nomenclature of Units for Territorial Statistics (NUTS level 1) for the UK. The term 'region' is used to describe this level of geography for convenience in the rest of this article.

Focus on differences in sub-regional economic performances

The regional economic indicators shed light on the economic performance of the 12 NUTS1 regions of the UK. This analysis can be taken further to a lower level by examining performance within regions and comparing these sub-regions with each other. The focus section of this article looks at NUTS level 2 and NUTS level 3 sub-regions and evaluates their performance in terms of their Gross Value Added (GVA) per head. The NUTS level 2 geography is important because of its direct relevance to the Cohesion objective of the EU's Structural Funds. Looking at the lower NUTS 3 level enables identification of those smaller areas which are slowing down or accelerating the economic performance of the NUTS2 sub-regions.

GVA per head can be decomposed into four explanatory factors, as has already been done in the analysis in last year's August article:

- productivity (per filled job)
- employment rate
- commuting rate
- activity rate

While the analysis in the August 2007 article looked at this decomposition in 2004, the current analysis examines a time-series of these four components from 2001 to 2005. The analysis is done by applying a methodology developed by the Organisation for Economic Co-operation and Development (OECD),

which is explained in Technical Note A at the end of this article. The underlying data come from various sources, in some cases different from those used in the regional analysis. Residence-based employment and unemployment were retrieved from the Annual Population Survey, while sub-regional workplace-based employment data were compiled using, among others data from the Annual Business Inquiry (ABI) and the Labour Force Survey (LFS). Revisions to LFS data, which include re-weighting of the latest population estimates, will be published on 14 May 2008. In order to ensure consistency, the data series were constrained to their regional totals where necessary. Additionally, the data have been smoothed using a five-period moving average (see Technical Note B).

The analysis in this edition looks at a four component breakdown at NUTS2 and NUTS3 level, where average labour productivity is defined as GVA per filled job. A five component breakdown of GVA per head, which incorporates the preferred productivity indicator of GVA per hour worked and the effect of 'hours worked per job' is possible and current work concentrates on the compilation of a compatible sub-regional NUTS2 data series, which is planned to be published in August.

Figure 1 shows all 37 NUTS2 sub-regions, ranked by their GVA per head performance in 2005 (consistent with the Regional Accounts estimates published in December 2007). On the basis of this ranking, their performance against the UK average is examined from 2001 to 2005,

Figure 1

Explaining the differences in GVA per head from the UK average in all NUTS2 areas, 2001–2005[1]

Percentage difference from UK average
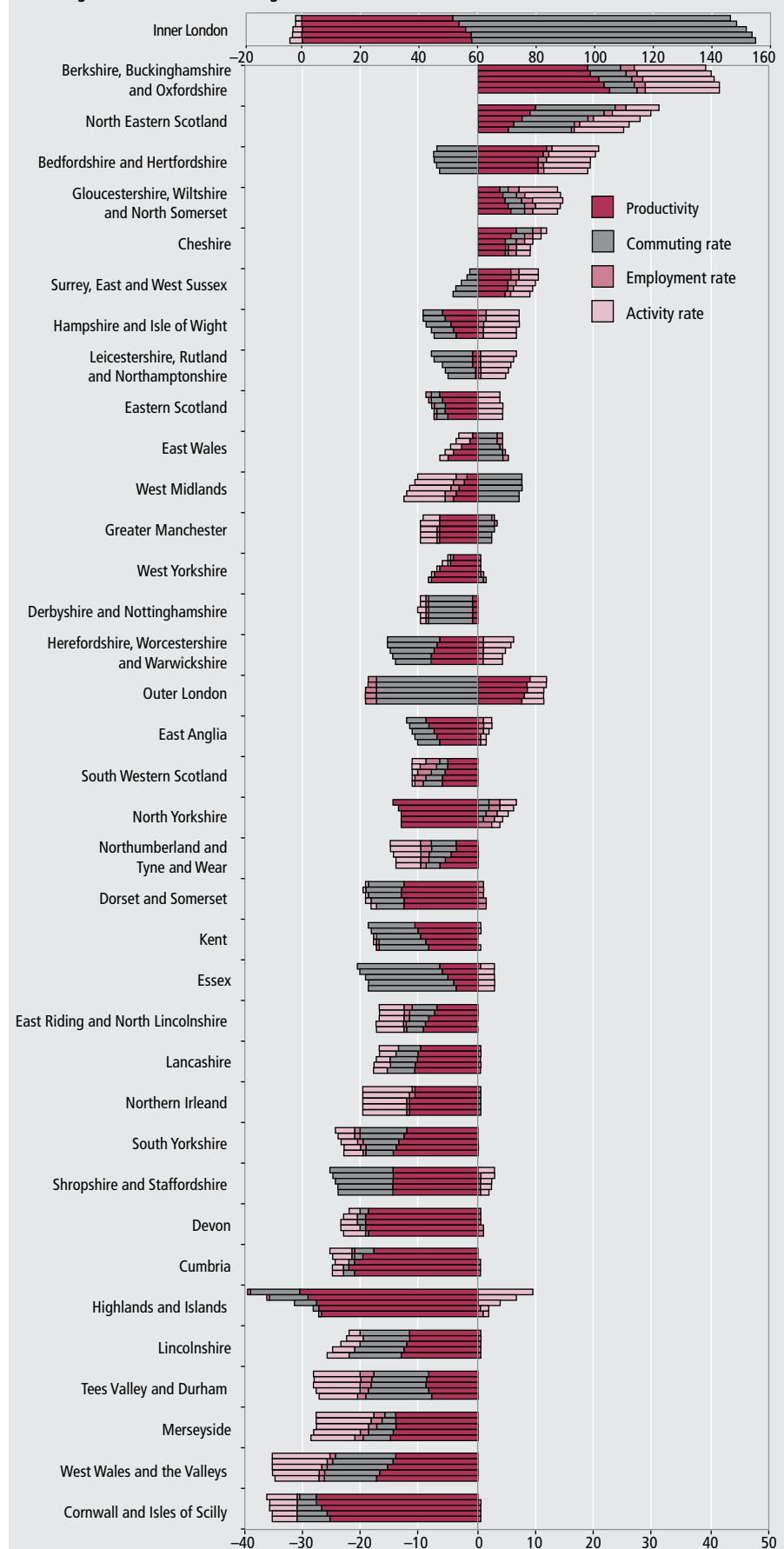
Note:

1 Top bars represent 2001; bottom bars represent 2005.

Source: Office for National Statistics

where the top bars represent 2001 and the bottom bars 2005. The UK average is represented by the vertical axis at zero, implying that those components that contribute negatively to the GVA per head of a sub-region are displayed to the left of the vertical axis, while those factors that increase sub-regional economic performance are shown to its right.

Figure 1 shows that the relatively high GVA per head of the seven best NUTS2 performers is largely explained by above average productivity performance. However, only three of these areas: Inner London; Berkshire, Buckinghamshire and Oxfordshire; and Gloucestershire, Wiltshire and North Somerset – have experienced an increase in productivity since 2001, thereby increasing their gap to the UK average. All other NUTS2 sub-regions, except for Outer London, which is ranked in the middle of the GVA per head scale, had below-average productivity from 2001 to 2005. Productivity in Outer London remains in the top five NUTS2 regions in the UK, although it has been decreasing since 2001, whereas this sub-region is ranked 17th in terms of GVA per head due to high levels of outward commuting into Inner London.

Concerning the NUTS2 sub-regions at the bottom of the GVA per head performance scale, it is clear that most of these display a combination of low productivity and high outward commuting, which explains low GVA per head of resident population. In addition, below average activity rates added significantly (by more than 20 per cent) to the low performance of: West Wales and the Valleys; Merseyside; Tees Valley and Durham; and Northern Ireland. Out of those NUTS2 sub-regions that received EU funds under Objective 1 (now the Cohesion Objective) over the period covered – namely Cornwall and the Isles of Scilly; West Wales and the Valleys; Merseyside; Highlands and Islands; and South Yorkshire – only Cornwall and the Isles of Scilly and Highlands and Islands experienced an increase in relative productivity between 2001 and 2005. The other three sub-regions showed declining relative productivity.

The commuting rate is another significant factor in explaining GVA per head differences. Here it is defined as the workplace based labour force as a proportion of the residence based labour force. Therefore, high inward commuting takes place when the workplace-based labour force is larger than the residence-based labour force. Outward commuting is the case when the workplace-based labour

force is smaller than the residence-based labour force.

The strongest inward commuting took place in Inner London. This explained more than half of the area's high GVA per head performance compared with the UK average, while the remainder was mostly explained by high productivity. Other NUTS2 sub-regions at the upper end of the GVA per head scale that experienced significant inward commuting were: Berkshire, Buckinghamshire and Oxfordshire; North Eastern Scotland; East Wales; and West Midlands. Most other NUTS2 sub-regions experienced outward commuting or a commuting rate only slightly above or below the UK average. The commuting rates at the other end of the economic performance scale showed large increases in out-commuting in: Cornwall and Isles of Scilly; Merseyside; and Tees Valley and Durham, while especially

Highlands and Islands and South Yorkshire experienced large declines in their out-commuting rates, thereby improving their GVA per head performances.

The employment rate is defined as workplace-based employment as a proportion of the workforce. While high relative employment rates suggest relatively low unemployment, below average employment rates are likely to occur in areas where GVA per head is low against the UK average. For most of the top GVA per head performers the employment rates were above the UK average from 2001 to 2005, underlining these regions' good economic performances. However, their impact compared to the impact of other components remained relatively small. At the bottom of the economic performance scale, the employment rate added positively to the GVA per head of certain NUTS2 sub-regions like: Dorset and Somerset;

Shropshire and Staffordshire; and Devon. Furthermore, several NUTS2 sub-regions that had below average employment rates in 2001 had improved against the UK average by 2005.

The activity rate had a significant impact on most NUTS2 sub-regions, whether they were at the top or the bottom of the economic performance scale. The activity rate measures the proportion of the population that is participating in the labour force. By looking at the top ten NUTS2 sub-regions, all except Inner London had an above average activity rate, which has been increasing significantly from 2001 to 2005 in Cheshire (by 82 per cent) and North Eastern Scotland (by 43 per cent). The activity rate of Inner London has been further declining below the average since 2001 (by 75 per cent).

The importance of an area's activity rate on its economic performance also becomes clear at the other end of the economic performance scale. Generally, low participation rates in the labour force contributed negatively to economic performance. Relatively high activity rates that contributed positively to GVA per head were evident in only two of the ten bottom NUTS2 sub-regions, Highlands and Islands and Shropshire and Staffordshire. However, both show strong declines since 2001, thereby converging to the UK average. Also Cumbria reduced its activity rate gap with the UK average. Lincolnshire and Devon on the other hand experienced a widening of the gap with a falling activity rate since 2001.

Having looked at the decomposed GVA per head performance of the NUTS2 sub-regions, it is worthwhile examining NUTS3 areas within these sub-regions where the variations can be just as large if not greater. The following elaborates on some outstanding performers in terms of productivity, employment, commuting and activity rates. Firstly, three NUTS2 areas at the top, and then three at the bottom of the GVA per head scale are discussed.

Figure 2 part(a) displays the economic performance of the NUTS2 sub-region of Hampshire, and the contrasts between the NUTS3 areas within Hampshire. The positive influence of the performance of Portsmouth and Southampton, which both have significant inward commuting and activity rates, was partly offset by Hampshire CC, which also experienced a high above average and increasing activity rate, but was slowed down in its GVA per head performance by strong outward commuting. The commuting

Figure 2
Explaining the differences within selected NUTS2 sub-regions, 2001–2005[1]

(a) Hampshire
Percentage difference from UK average
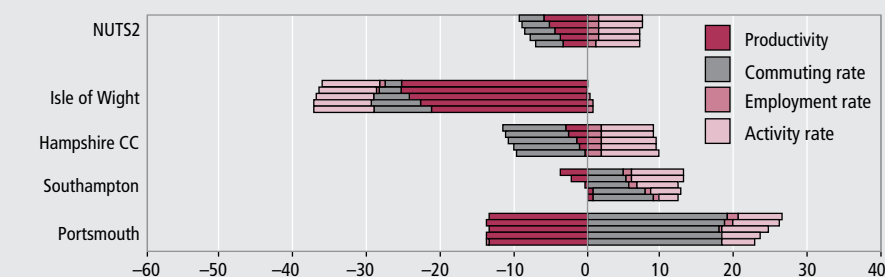
(b) Surrey, East and West Sussex
Percentage difference from UK average
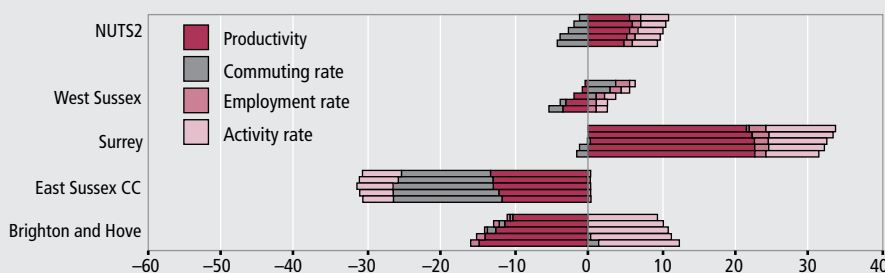
(c) Inner London
Percentage difference from UK average
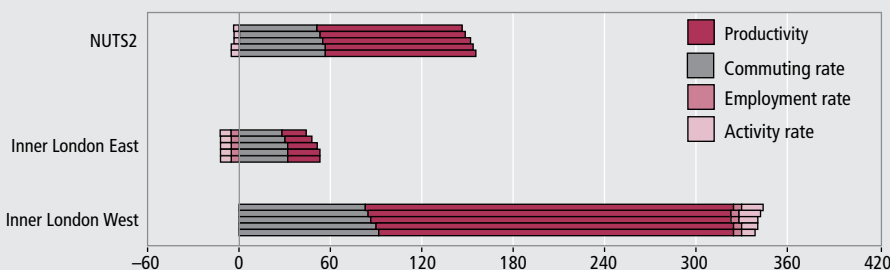
Note:

1 Top bars represent 2001; bottom bars represent 2005.

Source: Office for National Statistics

rate for Southampton has been increasing since 2001 while its activity rate has been declining. Productivity was below the UK average in each NUTS3 area, but, with the exception of Portsmouth, productivity rates did improve. The Isle of Wight demonstrated the largest negative divergence in productivity from the UK average and large increases in outward commuting.

The above average GVA per head performance of Surrey, East and West Sussex is mainly driven by the economic performance of Surrey, which had an increasing and high above average productivity, while all other NUTS3 areas had low productivity compared with the UK average (part(b)). Productivity in Brighton and Hove worsened significantly from 2001 to 2005. East Sussex CC is the area that experienced the lowest GVA per head, which was mainly due to its relatively strong

and increasing outward commuting. Even though Surrey was the best performing NUTS3 area in terms of GVA per head, this performance has been deteriorating since 2001, especially due to declines in its activity and employment rates and an increase in outward commuting.

Inner London, which was by far the highest GVA per head performer at 151 percentage points above the UK average, shows a divide at the NUTS3 level between Inner London East and Inner London West (part(c)). Inner London West, which includes the City of London, contributed most to the high performance of Inner London. In 2005 it was 340 percentage points above the UK average. This high GVA per head was mainly caused by the area's large inward commuting. However, since 2001, inward commuting has been decreasing while productivity has been increasing continuously. The employment

rate remained around 5 percentage points above the UK average, while the activity rate in this NUTS3 area dropped significantly. Inner London East is also performing above the UK average but at a much lower level. Its net inward commuting is relatively low, though it has been increasing since 2001. Productivity has been increasing since 2001 with a slight decline in 2005. The employment and activity rates of Inner London East are both negative, implying that this part of Inner London is performing below the UK average in these two aspects.

Figure 3 part(a) shows the decomposed GVA per head of Merseyside and its four NUTS3 areas. The low GVA per head of Merseyside was driven by the low GVA per head of Sefton, Wirral and East Merseyside, which are among the lowest NUTS3 GVA per head performers in England. Liverpool, on the other hand, performed close to the UK average in terms of GVA per head with strong inward commuting. This high and stable commuting rate coincided with large out-commuting in the neighbouring NUTS3 areas. Sefton and Wirral also experienced large decreases in their productivity since 2001.

Part(b) shows the NUTS2 area of Cumbria, which experienced a worsening of its productivity at NUTS2 level. At the NUTS3 level it is revealed that this decline is mainly due to a strong decrease in West Cumbria's productivity. West Cumbria also experienced an increase in outward commuting, which further decreased its GVA per head. Even though East Cumbria's GVA per head was also below the UK average the area had strong and increasing inward commuting and an above average and increasing employment rate. Its productivity has also been improving since 2003, thereby reducing the gap with the UK average.

In South Yorkshire, Sheffield's GVA per head was close to the UK average (part(c)). Even though Sheffield experienced a worsening of its productivity from 2001 to 2005, it had an increasing commuting rate above average. The GVA per head performance of Barnsley, Doncaster and Rotherham, which form the other NUTS3 area within South Yorkshire, caused South Yorkshire to have a low GVA per head as productivity declined and the sub-region experienced large but declining out-commuting. Its below average activity rate is converging towards the UK average.

This analysis has shown the importance of identifying differences in economic performance at a sub-regional level.

Figure 3
Explaining the differences within selected NUTS2 sub-regions, 2001–2005[1]

(a) Merseyside
Percentage difference from UK average

(b) Cumbria
Percentage difference from UK average

(c) South Yorkshire
Percentage difference from UK average

Note:
1 Top bars represent 2001; bottom bars represent 2005.
Source: Office for National Statistics

By decomposing GVA per head into four explanatory factors – productivity, employment rate, commuting rate and activity rate – this analysis has identified the economic performance of NUTS2 sub-regions and then shown the differences in the performance of NUTS3 areas within the NUTS2 sub-regions. The results have shown that larger geographical areas can hide remarkable differences at lower scales due to specific characteristics of the respective areas.

Regional overview

Key figures on a regional basis indicate that:

- in 2006, London was the region with the highest GVA per hour worked, 23.1 percentage points above the UK average. Northern Ireland had the lowest GVA per hour worked index measure, at 83.9 per cent of the UK average

- London and the South East had the highest levels of gross disposable household income (GDHI) per head in 2005, at £15,885 and £14,941, respectively, but among the lowest annual percentage growth rates, at 3.2 per cent and 3.6 per cent, respectively. The North East (£11,356), Northern Ireland (£11,564) and Wales (£11,851) had the lowest GDHI per head. GDHI figures up to 2006 will be published in May 2008

- the South West had the highest employment rate in the fourth quarter of 2007, at 79.3 per cent; Northern had the lowest rate, at 69.8 per cent, compared with the UK employment rate of 74.7 per cent

Headline indicators

This section presents a selection of regional economic indicators that provide an overview of the economic activity of UK regions. Firstly, absolute GVA, as a measure of regional economic performance, and GVA per head, as a measure of regional productivity, are presented. Subsequently, two further labour productivity indicators, GVA per filled job and GVA per hour worked, are discussed. Due to large upward revisions to the regional GVA estimates, revisions to the population estimates and two methodological changes that were introduced in the February edition of this article, the three regional productivity indicators have been updated. The first methodological change caused the GVA per head series to now be presented on a workplace basis, rather than the previous residence-based measure. Secondly, the previously smoothed GVA series was replaced by an unsmoothed GVA series for the output measure used in the calculation of all the regional productivity series. More details on these changes can be found in the February article.

Regional performance

The February edition presented the latest data on economic performance in terms of workplace-based nominal GVA and GVA per head for all UK regions and devolved administrations (the article stated that the data in Table 1 and 2 were headline values; the data was however unsmoothed). It should be noted that these nominal figures do not take account of inflation or regional differences in prices. The data demonstrated that the regional breakdown of GVA changed little in 2006. London and the South East remained the regions with the largest share of UK GVA (19.2 per cent and 14.9 per cent, respectively) while Northern Ireland (2.4 per cent) and the North East (3.4 per cent) had the smallest.

Table 1 shows that all regions experienced annual nominal growth in GVA and GVA per head in 2006. Compared with 2005, annual nominal growth in GVA was considerably higher for every UK region except for London, where the growth rate further declined. However, the 2006 growth rates were still below their 2004 levels for ten of the 12 regions. Only the East Midlands and the South East had higher growth rates in 2006 compared with 2004. In 2006, overall UK growth in nominal GVA was 5.1 per cent compared with 4.1 per cent in 2005 and 6.0 per cent in 2004. The East Midlands, the South East, Northern Ireland and Wales had the highest annual percentage growth (above 6.0 per cent) in 2006. While Northern Ireland and the North East had the smallest absolute values of GVA, their annual nominal growth in 2006 was higher than the growth of the region that had by far the largest value of GVA (London).

Due to the wide variations in geographical size among the UK regions, comparisons are generally expressed in terms of GVA per head of population, rather than absolute values. The February edition of this article demonstrated that in 2006, GVA per head for the UK was £18,631. London was the region with the highest GVA per head in 2006 at £28,813, well above (by 55 per cent) the UK average. GVA per head for the South East was also above the UK average (by 10 per cent), at £20,452 per head. Wales, the North East and Northern Ireland had the lowest GVA per head, at £14,462, £15,181 and £15,320, respectively. Despite these figures being less than 85 per cent of the UK average, Table 1 shows that annual nominal growth in these regions was high, at 5.7, 4.9 and 5.1 per cent, respectively. The East Midlands (5.8 per cent), Wales (5.7 per cent), the South East (5.6 per cent) and Scotland (5.4 per cent) were the best performers in terms of GVA per head growth rates in 2006.

Table 1

Annual nominal growth of workplace-based gross value added and gross value added per head: by NUTS1 region

Percentages

		United Kingdom[1]	North East	North West	Yorkshire and The Humber	East Midlands	West Midlands	East of England	London	South East	South West	Wales	Scotland	Northern Ireland
GVA annual percentage growth	2004	6.0	8.2	6.5	6.6	5.1	5.2	6.7	5.9	4.6	6.4	6.7	6.1	6.4
	2005	4.1	4.6	2.9	2.3	3.5	3.5	3.4	5.7	4.5	4.6	2.1	4.7	5.5
	2006	5.1	5.2	3.6	4.6	6.7	4.8	4.6	4.4	6.3	5.1	6.1	5.9	6.2
GVA per head annual percentage growth	2006	4.5	4.9	3.4	3.9	5.8	4.5	3.7	3.6	5.6	4.3	5.7	5.4	5.1

Notes:
1 UK less Extra-regio.
2 Provisional.

Source: Regional Accounts, Office for National Statistics

Figure 4

Comparison of regional economic indicators: by NUTS1 region, 2006

Indices (UK[1] =100)

Note:

1   UK less Extra-regio and statistical discrepancy.

Source: Office for National Statistics

Figure 5

GVA per hour worked: by NUTS1 region

Indices (UK[1] =100)

Note:

1   UK less Extra-regio and statistical discrepancy.

Source: Office for National Statistics

Labour productivity

Labour productivity indicators provide the most effective comparisons of regional economic performance. As mentioned above, since February 2008 the GVA per head measure is presented on a workplace basis instead of the previous residence basis. This switch mainly affects the estimates for London, the South East and the East of England as these regions experience significant levels of net commuting. Figure 4 compares estimates for GVA per head, GVA per filled job and GVA per hour worked for 2006. While GVA per head looks at the entire regional workplace-based population and GVA per filled job looks at regional workforce jobs, GVA per hour worked additionally takes into account any variations in labour market structures across regions, such as the proportions of full- and part-time workers or job share availability. Due to these reasons, GVA per hour worked is the preferred indicator of productivity. **Figure 4** shows that GVA per hour worked exhibits fewer and smaller differences in regional economic performance when compared to the other two indicators.

Figure 5 shows the regional GVA per hour worked productivity index on a time series basis. The regions that improved their productivity relative to the UK average between 2002 and 2006 were London, the South East, the South West, East of England and Scotland. The chart suggests that, since 2002, there has been some widening in the regional productivity differences between the highest and lowest performing regions. Productivity in London was the highest in all years and by 2006 was above the UK average by 4.2 percentage points more than it was in 2002. The opposite occurred in Wales, where productivity was among the lowest in 2006. In terms of the annual change in the GVA per hour worked indicator, six regions experienced declining productivity against the UK average in 2006: the East of England, the North East, Wales, the North West, Scotland and the West Midlands.

Welfare

Gross disposable household income (GDHI) by region gives an indication of

regional welfare. While the latest available regional GDHI estimates go up to 2005, new estimates up to 2006 will be published on 9 May 2008 and discussed in the August edition of this article. The regional GDHI data are available at www.statistics.gov.uk/statbase/Product.asp?vlnk=14651. GDHI estimates are published at current basic prices and so do not take inflation effects or regional price differences into account. In order to make reliable comparisons of regional income levels, the analysis needs to take account of the population distribution both within and across regions. Therefore, GDHI per head, which is a residence-based measure, is used as an indicator of the welfare of people living in a region.

Table 2 shows GDHI estimates from 2000 to 2005. In 2005, London (£15,885), the South East (£14,941) and the East of England (£14,198) were the only regions where GDHI per head was greater than the UK average. However, Table 2 also shows that London and the South East were the regions which had the lowest percentage growth of this indicator between 2000 and 2005 (18.2 and 19.4 per cent, respectively). The three regions that had a level of GDHI lower than £12,000 per head (the North East, Northern Ireland and Wales) had among the largest improvements over this five-year period (at 22.6, 24.7 and 25.6 per cent growth, respectively). Also, the East Midlands saw large growth in its GDHI per head indicator between 2000 and 2005 (at 25.6 per cent).

Gross median weekly earnings represent another indicator for regional welfare. The latest estimates have been published in November 2007. These estimates take account of a small number of methodological changes which improve the quality of results. These include changes to the sample design itself, as well as the introduction of an automatic occupation coding tool, called ACTR.

Figure 6 shows the 2007 gross median weekly pay for all full-time employees and a breakdown into its gender components, female and male full-time employees, in each region. These three bars for each region can be compared to the UK average gross median weekly pay. Figure 6 shows that in terms of all employees, only London and the South East had a gross median weekly pay above the UK average of £456.7. However, when looking at male full-time employees, the gross median weekly pay was higher than the UK average in nine of the 12 NUTS1 regions. The gross median weekly pay for female full-time employees

Table 2
Headline gross disposable household income per head at current basic prices: by NUTS1 region

£ per head and percentages

	United Kingdom[1]	North East	North West	Yorkshire and The Humber	East Midlands	West Midlands	East of England	London	South East	South West	Wales	Scotland	Northern Ireland
2000	10,906	9,261	9,979	9,964	9,972	9,949	11,681	13,439	12,509	10,806	9,433	10,168	9,270
2001	11,588	9,810	10,560	10,514	10,628	10,547	12,509	14,223	13,320	11,508	10,070	10,800	9,819
2002	11,930	10,147	10,874	10,834	11,008	10,854	12,909	14,495	13,652	11,868	10,456	11,199	10,176
2003	12,409	10,576	11,304	11,306	11,559	11,303	13,376	15,039	14,104	12,367	10,932	11,682	10,668
2004	12,773	10,920	11,673	11,687	11,993	11,670	13,722	15,396	14,424	12,718	11,322	12,047	11,086
2005[2]	13,279	11,356	12,186	12,197	12,522	12,133	14,198	15,885	14,941	13,258	11,851	12,554	11,564
Percentage change													
2000 to 2005	21.8	22.6	22.1	22.4	25.6	22.0	21.5	18.2	19.4	22.7	25.6	23.5	24.7

Notes:

1 UK less Extra-regio.
2 Provisional.

Source: Office for National Statistics

Figure 6
Gross median weekly pay of full-time employees: by NUTS1 region, 2007
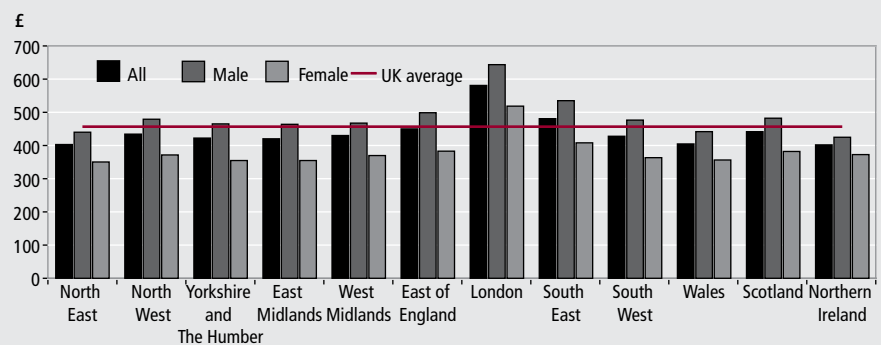
Source: Annual Survey of Hours and Earnings, Office for National Statistics

was only above the UK average in London and substantially below it in all other regions. Concerning the gross median weekly pay for all full-time employees, Northern Ireland (£401.9), the North East (£402.9) and Wales (£404.7) showed the lowest earnings in 2007.

Drivers of productivity

The following indicators represent the drivers of productivity as identified by HM Treasury and Business, Enterprise and Regulatory Reform (BERR). These drivers include innovation, enterprise, competition and skills. Investment, which influences the physical capital stock and consequently the quantity that can be produced by one unit of labour, is another driver of productivity. However, due to quality concerns regarding the regional allocations of investment (net capital expenditure), this variable is not included.

Innovation is measured by business expenditure on Research and Development (R&D); the enterprise driver is measured by net change of VAT registrations and de-registrations and business survival rates; competition is measured in terms of UK regional trade in goods, and the qualifications of the current working age population and those of young people provide an indicator for the skills driver.

Innovation

Innovation is a necessary, although not sufficient, condition for economic success and is therefore recognised as an important driver of productivity. Innovation can imply the development of new technologies that increase efficiency and new, more valuable goods and services. It also includes intangibles such as new methods of working and improvements to services.

R&D is one of the determinants to the innovation process and defined by the OECD as 'creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society and the use of the stock of knowledge to devise new applications'. Statistics on Business Expenditure on Research and Development (BERD), consistent with these internationally agreed standards, were published in November 2007 and provide estimates of business expenditure on R&D for NUTS1 regions up to 2006.

Table 3 presents expenditure on R&D performed in UK businesses by region in

Table 3
Expenditure on research and development performed in UK businesses: by NUTS1 region

£ million and percentages

	United Kingdom	North East	North West	Yorkshire and The Humber	East Midlands	West Midlands	East of England	London	South East	South West	Wales	Scotland	Northern Ireland
2006	14,306	293	1,627	386	977	933	3,570	980	3,279	1,316	222	579	145
2006 percentage growth[1]	7.5	1.4	-14.0	12.2	−2.4	29.8	8.6	82.2	8.0	5.4	−4.7	−1.2	6.6

Note:

1 Year-on-year.

Source: Office for National Statistics

2006. It also shows the percentage growth from the previous year. The East of England and the South East had the highest business expenditure on R&D in 2006 and were the only regions to have expenditures higher than £3 billion. Northern Ireland, Wales and the North East remained the regions with the lowest R&D expenditure. London had the highest annual percentage growth in 2006, at 82.2 per cent. The West Midlands and Yorkshire and The Humber were the regions with the second highest growth in 2006, at 29.8 and 12.2 per cent, respectively, despite being ranked low when comparing their absolute expenditure on R&D with other regions and the UK average. R&D expenditure declined in the North West, Wales, the East Midlands and Scotland. The greatest decline of 14.0 per cent took place in the North West.

Analysing R&D as a percentage of GVA is a measure commonly used in international comparisons and can further explain the above trends. **Figure 7** shows that since 2001 the East of England has been the region with the highest share of R&D expenditure in terms of GVA, with 3.6

per cent in 2006. London had the lowest share in 2006 (0.45 per cent) followed by Yorkshire and The Humber (0.47 per cent), Wales (0.52 per cent) and Northern Ireland (0.54 per cent). The very low share for London may not be suggestive of low levels of innovation but could reflect how regional industry composition affects R&D as an indicator of innovation. London has a large concentration of service industries, but service industries may not be R&D intensive (within the OECD definition) if, for example, they rely heavily on human capital. If innovation occurs in other forms it may not be captured by the R&D measure.

The large increase in R&D expenditure in London and the West Midlands in 2006 (identified in Table 3) is also reflected when R&D expenditure is analysed as a percentage of GVA, with these regions' percentage shares both increasing by 0.2 percentage points in 2006. Despite this increase, London remains the region with the lowest business expenditure on R&D as a percentage of GVA as pointed out above.

Enterprise

Enterprise is a driver of productivity as it stands for the presence of a positive entrepreneurial culture; for the ease of starting-up and overcoming the barriers to enterprise; for a sustainable stock of enterprise activity in an economy and the ability of firms to grow. VAT registrations and de-registrations are the best official guide to the pattern of business start-ups and closures. They are an indicator of the level of entrepreneurship and of the health of the business population. Many factors influence the pattern of business start-ups. Among these, the most important is economic growth, which encourages new ventures and creates demand for business. **Figure 8** shows the net changes in VAT registered businesses for UK regions in the years 2002 to 2006. Estimates for 2006 and revisions to previous years were published in November 2007 by BERR.

Figure 8 shows positive net changes in VAT registrations and de-registrations from 2002 to 2006 for all UK NUTS1 regions, meaning that more enterprises were registered than de-registered during that period. All regions exhibited an increasing, positive net change from 2002 onwards, except Northern Ireland which had a declining but still positive net change since 2002. London and the South East had the highest net change in 2006, with 7,250 and 6,015, respectively. The lowest net change in 2006 was experienced by Northern Ireland, the North East and Wales (575, 1,155 and 1,305, respectively).

Half of the regions (East of England, Northern Ireland, the West Midlands, Wales, the North East and the North West) saw a smaller net increase in 2006 compared with 2005. However, the other half experienced a larger net increase in 2006 than in 2005, leaving the UK average with a larger net increase of 935 in 2006 than in 2005.

It should be noted that regions with high registration rates tend to also have high de-registration rates. Part of the reason for this is, of course, the sheer difference in the sizes of the regions – regions with larger populations and economies would be expected to have higher absolute numbers of registrations and de-registrations if all other factors were equal. However, this could also be due to the effects of market sorting (when competitive entrants push the unproductive ones out of a market) being more significant in some regions than others. This could also partly be due to the industrial mix in each region, with some sectors prone to higher rates of turnover

Figure 7
Business expenditure on R&D as a percentage of headline workplace based GVA: by NUTS1 region
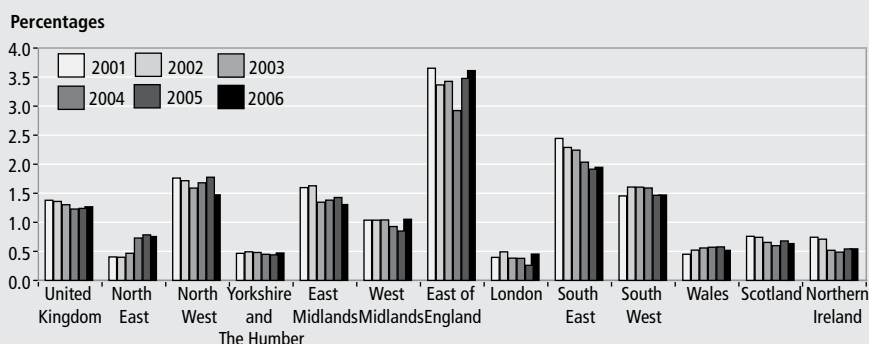
Source: Office for National Statistics

Figure 8
Net change[1] in VAT registrations and de-registrations: by NUTS1 region
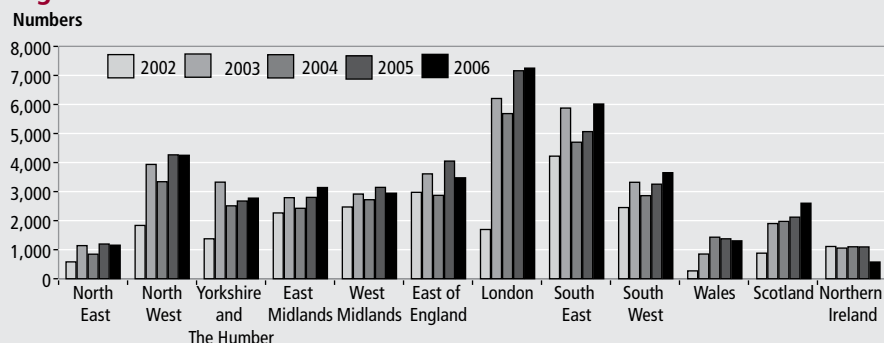
Note:
1 Net change is the net gain or loss in the stock of registered enterprises each year – equal to registrations less deregistrations.
Source: Department for Business, Enterprise and Regulatory Reform

than others.

The regional variations were linked geographically in that five of the six regions with a net change over 3,000 are situated next to each other (London, East of England, East Midlands, South East and South West), with the exception (the North West) interestingly being situated next to the North East – the region with the lowest net change in England.

Business survival rates data on the proportion of businesses that remain registered for VAT three years after their initial registration have not been updated since the last article. These estimates may be updated again around February 2009. Although there has been a general increase in business survival rates since 1995, these rates vary greatly between regions. Northern Ireland had the highest survival rate (78.5 per cent) for businesses registered in 2002 and London had the lowest (66.9 per cent).

Competition

Vigorous competition enhances productivity by encouraging firms to strive for efficiency gains. According to the HM Treasury's definition, trade in goods and services as a percentage of GDP serves as an indicator for competition.

HM Revenue & Customs (HMRC) publishes regional trade statistics on export trade in goods to the European Union (EU) and non-EU by statistical value. Trade in goods by definition excludes intangibles and services. The statistical value of export trade is calculated as the value of the goods plus the cost of movement to the country's border. New estimates for the fourth quarter of 2007 were published in March 2007, presented here in **Table 4**.

The total value of UK exports for 2007 dropped by 10.2 per cent compared with 2006. The value of UK exports to the EU decreased by 16.9 per cent over this period. The only UK region that increased its exports to the EU was Northern Ireland, with a 3.7 per cent increase. The value of UK exports to countries outside the EU increased slightly by 0.7 per cent. Exports to non-EU destinations from seven UK regions decreased in 2007 compared with 2006. The regions that increased their exports to non-European destinations were the North East (by 38.2 per cent), Scotland (by 18.3 per cent), Yorkshire and The Humber (by 20.5 per cent), Northern

Ireland (by 11.0 per cent) and the South East (by 1.3 per cent).

In terms of the latest quarter estimates (2007 Q4) compared with the previous quarter, only London and Wales saw a decline in their value of exports to the EU, while all other regions had an increase in their EU exports, with the North East having the strongest increase of 16.2 per cent.

The value of exports to countries outside the EU in quarter four of 2007 increased for all regions, except Scotland, which saw a decline of 0.5 per cent. In the North East and Yorkshire and The Humber, the value of exports in the fourth quarter of 2007 increased by more than 20 per cent. Also, the West Midlands, the South East and Northern Ireland saw strong increases in their value of exports of over 10 per cent.

Figure 9 shows the value of export goods as a percentage of headline workplace-based regional GVA. This basis of interpreting the results is more useful than looking at the absolute numbers because it takes into account the differing sizes of regional economies. In 2006, exports from the East Midlands accounted for the highest percentage of GVA (23.9 per cent), which

Table 4

UK regional trade in goods – statistical value of exports: by NUTS1 region

£ million

	United Kingdom	North East	North West	Yorkshire and The Humber	East Midlands	West Midlands	East of England	London	South East	South West	Wales	Scotland	Northern Ireland
EU[1] exports													
2006 Q1	42,239	1,363	3,480	2,138	2,877	2,740	3,367	4,344	5,347	1,785	1,482	1,701	782
2006 Q2	46,100	1,449	4,774	2,292	3,248	3,652	3,510	5,576	5,185	1,748	1,517	1,858	814
2006 Q3	31,854	1,285	3,063	1,580	2,483	2,677	2,647	2,181	4,295	1,587	1,368	1,709	804
2006 Q4	31,086	1,398	2,566	1,694	2,152	2,171	2,793	2,164	4,708	1,641	1,307	1,694	835
Total 2006	151,279	5,495	13,883	7,704	10,759	11,241	12,318	14,266	19,536	6,762	5,674	6,962	3,235
2007 Q1[2]	31,655	1,299	2,780	1,755	2,289	2,251	3,150	2,216	4,583	1,719	1,433	1,568	841
2007 Q2[2]	31,192	1,281	2,931	1,696	2,030	2,313	3,002	2,031	4,574	1,576	1,402	1,627	843
2007 Q3[2]	30,518	1,324	2,756	1,632	2,032	2,029	2,867	2,143	4,448	1,653	1,306	1,363	827
2007 Q4[2]	32,319	1,539	2,805	1,667	2,038	2,248	3,121	2,078	4,776	1,709	1,299	1,460	843
Total 2007	125,684	5,444	11,273	6,749	8,389	8,841	12,140	8,468	18,382	6,658	5,439	6,019	3,355
Non-EU exports													
2006 Q1	22,745	703	2,502	1,145	1,788	1,803	1,999	3,846	3,570	939	865	1,613	431
2006 Q2	24,312	701	2,633	1,247	1,830	1,797	2,058	4,147	3,965	1,071	952	1,766	483
2006 Q3	21,910	713	2,301	1,254	1,742	1,534	1,826	3,137	3,655	1,074	981	1,624	460
2006 Q4	23,575	848	2,421	1,313	1,791	1,579	2,022	3,939	3,531	1,113	947	1,495	505
Total 2006	92,542	2,965	9,857	4,959	7,151	6,712	7,905	15,069	14,721	4,197	3,745	6,498	1,880
2007 Q1[2]	21,194	807	2,261	1,247	1,622	1,479	1,777	3,484	3,112	917	839	1,683	469
2007 Q2[2]	23,925	1,009	2,484	1,564	1,654	1,607	2,004	3,458	4,003	992	957	1,991	521
2007 Q3[2]	22,969	1,021	2,417	1,402	1,685	1,595	1,843	3,402	3,667	1,100	851	2,012	520
2007 Q4[2]	25147	1261	2449	1763	1784	1798	2001	3594	4125	1156	931	2002	577
Total 2007	93,235	4,098	9,610	5,975	6,745	6,479	7,626	13,938	14,907	4,165	3,578	7,688	2,087

Notes:
1 EU data refer to EU25 up to 2006 Q4 and EU27 from 2007 Q1.
2 Provisional.

Source: UK Regional Trade in Goods Statistics, HM Revenue & Customs

marks a steady increase since 2004. The region where exports accounted for the smallest percentage of GVA (12.2 per cent) in 2006 was the South West, although the percentage has been rising continuously since 2002. The most significant drop was in Scotland, where exports in 2006 accounted for 6.3 percentage points less in terms of GVA than they did in 2002.

Skills

The skills of workers are important to productivity as they define the capabilities that the labour force can put into the production process. It is useful to be able to analyse skills from two perspectives: the qualifications of the current working age population and the qualifications of young people representing the future capabilities of the labour force.

The latest estimates on the highest qualifications (degree or equivalent) of the working age population (males aged 16 to 64 and females aged 16 to 59) are based on the second quarter 2007 LFS estimates. However, the characteristics of the local economies will dictate what labour skills are required and thus affect the comparability of these estimates. Therefore, it is best to look at the percentage of the working age population which has no qualification. **Figure 10** compares these proportions of each region against the UK average. Northern Ireland had the highest proportion with no qualifications (8.2 percentage points above the UK average), whereas the opposite was the case in the South East and the South West (3.9 and 3.8 percentage points lower than the UK average). This does not necessarily mean that these regions have the most qualified working age population, but does indicate where there is a larger proportion of the working population with no qualifications. This may be due to the skill requirements dictated by the regional economies; it could mean that a significant number of those with qualifications have migrated out of these regions; and it may also reflect a higher proportion of those who have migrated into these regions having no qualifications.

In order to assess the future capabilities of the labour force data on the percentage of pupils achieving five or more grades A* to C at GCSE level or equivalent in each English region in 2006/07 are illustrated in **Figure 11**. Equivalent level qualifications are defined in Notes and Definitions on the ONS Regional Snapshot web pages. The regional breakdown for these data in England is only available for pupils at Local Authority maintained schools, although information for the devolved administrations is based on all schools. Given this, it is possible to calculate two averages for all English regions: one based on just Local Authority maintained schools and one for all schools, as is presented in Figure 11. This shows that the average was higher when calculated on all schools, reflecting the higher results obtained by pupils in non-Local Authority establishments. Within Local Authority maintained schools in English regions, the South East, the East of England, London, the North East and the North West performed above the England average for these schools, while Yorkshire and The Humber was the lowest performing region in England.

The labour market

Table 5 shows the seasonally adjusted employment rate, the number of people of working age in employment, expressed as a

Figure 9
Value of total export goods as a percentage of headline workplace-based GVA: by NUTS1 region
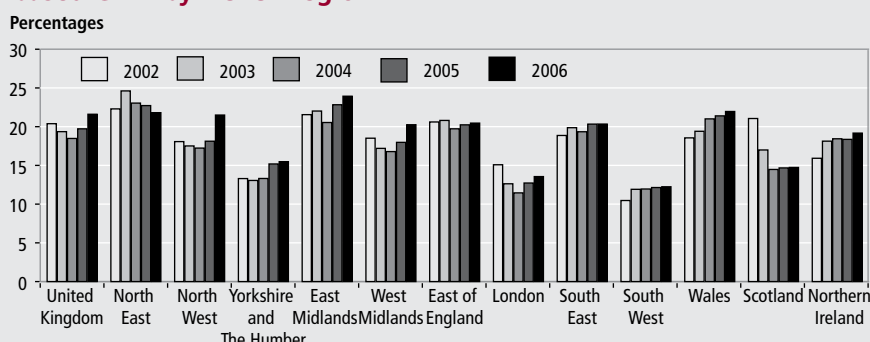
Source: HM Revenue & Customs, Regional Trade Statistics and Office for National Statistics

Figure 10
Working age population with no qualifications: by NUTS1 region, second quarter 2007

Source: Department for Innovation, Universities and Skills; Labour Force Survey, Office for National Statistics

Figure 11
Pupils achieving five or more grades A* to C at GCSE level or equivalent: by NUTS1 region, 2006/07[1]
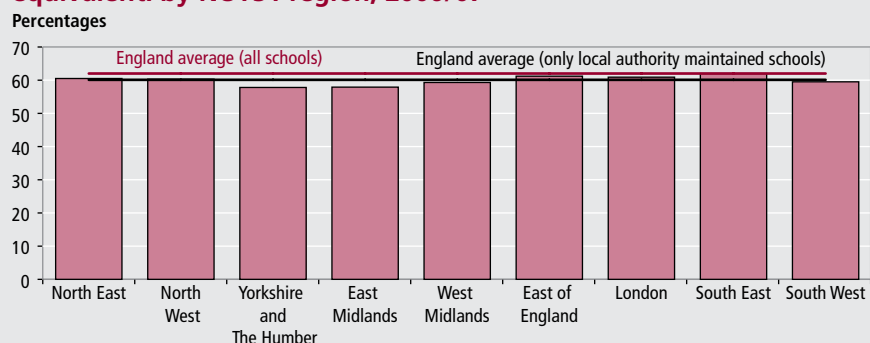
Note:
1 Revised data, includes attempts and achievements by these pupils in previous academic years.
Source: Department for Children, Schools and Families

proportion of the population, from the LFS.

In quarter four (October to December) of 2007, the UK employment rate was 74.7 per cent, up 0.2 percentage points from a year ago and up 0.3 percentage points from quarter three (July to September) of 2007. Regional rates varied from 79.3 per cent in the South West to 69.8 per cent in Northern Ireland.

Eight regions had an increase in the employment rate over the year. The East of England had a rise of 1.0 percentage points and the rate for the South West increased by 0.9 percentage points. Four regions experienced falls in the employment rate. The East Midlands had an annual fall of 0.8

percentage points and Wales decreased by 0.3 percentage points.

Table 6 shows the unemployment rate (according to the internationally-consistent International Labour Organisation definition) for persons aged 16 and over from the LFS. The UK rate in the fourth quarter of 2007 was 5.3 per cent, down 0.2 percentage points from the previous quarter and down 0.3 percentage points on a year earlier. Regionally, the rates ranged from 6.8 per cent in London to 3.8 per cent in the South West.

Over the year, the unemployment rate had decreased in nine regions. Five regions had a fall of 0.5 percentage points or more:

London, down 1.2 percentage points, and the North East and West Midlands, down 0.8 percentage points. The unemployment rate rose in two regions. The North West had the largest increase of 0.6 percentage points.

Table 7 shows economic inactivity rates for persons of working age from the LFS. The UK rate in the fourth quarter of 2007 was 21.0 per cent, down 0.2 percentage points from the previous quarter and unchanged on a year earlier. Across the regions, rates varied from 17.2 per cent in the South East to 27.1 per cent in Northern Ireland.

Compared with a year earlier, six

Table 5
Employment[1] rates for persons of working age: by NUTS1 region

Percentages, seasonally adjusted

		United Kingdom	North East	North West	Yorkshire and The Humber	East Midlands	West Midlands	East of England	London	South East	South West	England	Wales	Scotland	Northern Ireland
2004	Oct–Dec	74.9	69.9	74.1	74.4	76.1	74.9	78.8	69.4	79.1	78.7	75.2	72.2	75.1	69.2
2005	Jan–Mar	74.9	70.3	73.3	74.4	76.3	74.7	78.8	70.0	78.9	78.8	75.2	71.7	75.3	68.8
	Apr–Jun	74.7	70.2	73.3	74.2	76.5	74.4	78.7	69.4	79.0	78.8	75.0	71.4	75.0	68.5
	Jul–Sep	74.8	69.7	73.5	74.7	77.2	74.1	78.5	69.7	78.8	78.3	75.1	72.3	75.2	69.8
	Oct–Dec	74.5	70.1	72.9	74.4	77.1	73.4	77.5	69.5	78.8	77.8	74.7	71.8	75.4	68.7
2006	Jan–Mar	74.6	70.9	73.4	74.2	77.0	73.8	77.4	70.0	78.8	78.1	74.9	71.5	75.3	69.5
	Apr–Jun	74.6	71.7	73.3	74.1	76.9	73.8	76.9	69.6	79.0	78.4	74.9	71.5	74.8	70.1
	Jul–Sep	74.5	70.9	73.5	73.5	77.1	73.9	77.0	69.7	78.9	77.8	74.8	72.1	75.2	69.0
	Oct–Dec	74.5	71.2	73.0	73.9	76.5	73.2	77.1	69.8	78.7	78.4	74.7	71.8	76.1	69.5
2007	Jan–Mar	74.3	70.9	72.5	72.7	76.0	72.7	77.4	70.1	78.2	78.0	74.3	71.7	76.6	70.5
	Apr–Jun	74.4	71.2	72.6	73.1	75.9	72.6	77.2	69.9	78.5	78.0	74.4	72.2	77.1	70.6
	Jul–Sep	74.4	72.0	72.2	73.2	75.7	72.9	77.0	70.6	78.7	78.5	74.6	71.2	76.5	69.9
	Oct–Dec	74.7	71.9	72.9	73.6	75.7	73.3	78.1	70.2	78.9	79.3	74.9	71.5	76.5	69.8

Note:

1 Includes employees, self-employed, participants on government-supported training schemes and unpaid family workers.

Source: Labour Force Survey, Office for National Statistics

Table 6
Unemployment rates for persons aged 16 and over: by NUTS1 region

Percentages, seasonally adjusted

		United Kingdom	North East	North West	Yorkshire and The Humber	East Midlands	West Midlands	East of England	London	South East	South West	England	Wales	Scotland	Northern Ireland
2004	Oct–Dec	4.8	6.5	4.7	4.8	4.3	4.8	3.9	7.3	3.6	3.3	4.7	4.3	5.8	4.7
2005	Jan–Mar	4.8	5.8	4.8	4.5	4.4	4.8	3.9	6.8	3.8	3.7	4.7	4.8	5.7	4.9
	Apr–Jun	4.9	6.8	4.5	4.9	4.3	4.8	4.0	7.3	3.9	3.3	4.8	4.7	5.5	5.1
	Jul–Sep	4.9	6.7	4.6	4.7	4.5	4.8	4.3	6.8	4.1	3.8	4.8	4.7	5.6	4.4
	Oct–Dec	5.3	6.6	5.0	5.6	4.8	5.5	4.7	7.4	4.3	4.1	5.3	5.0	5.3	4.6
2006	Jan–Mar	5.4	6.7	5.0	5.6	5.1	5.4	4.9	7.8	4.5	3.7	5.4	4.9	5.4	4.5
	Apr–Jun	5.6	6.2	5.4	5.9	5.5	5.9	5.2	8.0	4.7	3.8	5.7	5.9	5.5	4.4
	Jul–Sep	5.7	7.0	5.7	6.2	5.5	6.2	5.1	8.1	4.6	4.0	5.8	5.6	5.2	4.9
	Oct–Dec	5.6	6.6	5.5	6.2	5.9	6.7	4.7	8.0	4.4	4.0	5.7	5.4	5.3	4.3
2007	Jan–Mar	5.7	6.9	6.0	6.4	5.6	6.6	5.0	7.4	4.7	4.1	5.8	5.7	5.0	4.3
	Apr–Jun	5.5	6.6	6.0	5.7	5.1	7.1	4.8	7.5	4.3	4.1	5.7	5.8	4.6	3.8
	Jul–Sep	5.5	6.4	6.2	5.7	5.9	6.7	5.3	6.3	4.7	4.2	5.6	5.6	5.0	3.9
	Oct–Dec	5.3	5.8	6.1	5.5	5.4	5.9	4.6	6.8	4.7	3.8	5.4	5.3	5.0	4.3

Source: Labour Force Survey, Office for National Statistics

regions had a decrease in the inactivity rate, and thus a corresponding increase in the working-age activity rate. The East of England and the South West had the largest annual fall of 0.9 percentage points. Five regions had an increase in the economic inactivity rate over the year. The largest annual rise was in the East Midlands with 1.3 percentage points.

Table 8 shows the number of employee jobs, not seasonally adjusted, from the Employers Surveys. The number of UK employee jobs was 27,321,000, an increase of 186,000 over the year since December 2006. In percentage terms, this was a 0.7 per cent increase.

There were annual increases in ten regions. The largest percentage rises were in Northern Ireland (1.8 per cent).

Table 9 shows the claimant count rate (referring to people claiming Jobseeker's

Allowance benefits as a proportion of the workforce). The UK rate was 2.5 per cent in March 2008, unchanged from February 2008, but 0.4 percentage points down on a year earlier. This national rate masks large variations between regions and component countries of the UK. For March 2008, the North East had the highest claimant count rate in the UK at 3.9 per cent. The North East was followed by the West Midlands (3.4 per cent), the North West (3.0 per cent) and Yorkshire and The Humber (2.9 per cent). The lowest claimant counts were measured in the South East (1.4 per cent) and the South West (1.4 per cent). The claimant count rate was 2.5 per cent in Scotland, 2.7 per cent in Wales and 2.8 percent in Northern Ireland.

Compared with a year earlier, all regions had a lower claimant count rate. The largest decrease was 0.5 percentage points, which

occurred in London.

CONTACT

✉ elmr@ons.gsi.gov.uk

Table 7
Economic inactivity rates for persons of working age: by NUTS1 region

Percentages, seasonally adjusted

		United Kingdom	North East	North West	Yorkshire and The Humber	East Midlands	West Midlands	East of England	London	South East	South West	England	Wales	Scotland	Northern Ireland
2004	Oct–Dec	21.3	25.3	22.3	21.9	20.5	21.3	18.0	25.2	17.9	18.6	21.1	24.5	20.2	27.4
2005	Jan–Mar	21.4	25.3	23.0	22.1	20.2	21.6	18.0	24.9	18.0	18.2	21.1	24.7	20.1	27.6
	Apr–Jun	21.4	24.6	23.2	21.9	20.1	21.8	18.1	25.1	17.8	18.5	21.2	25.1	20.6	27.8
	Jul–Sep	21.3	25.2	22.9	21.6	19.2	22.2	18.0	25.2	17.8	18.6	21.1	24.1	20.4	26.9
	Oct–Dec	21.4	24.9	23.3	21.2	19.0	22.4	18.7	25.0	17.7	18.9	21.1	24.4	20.4	27.9
2006	Jan–Mar	21.1	23.9	22.7	21.5	18.8	22.0	18.6	24.1	17.5	18.9	20.8	24.8	20.4	27.3
	Apr–Jun	21.0	23.5	22.5	21.2	18.6	21.6	18.9	24.3	17.1	18.4	20.6	24.0	20.8	26.7
	Jul–Sep	21.0	23.8	22.0	21.6	18.5	21.2	18.9	24.1	17.4	18.9	20.6	23.6	20.8	27.5
	Oct–Dec	21.0	23.7	22.8	21.3	18.7	21.6	19.1	24.1	17.7	18.4	20.8	24.1	19.7	27.4
2007	Jan–Mar	21.2	23.8	22.9	22.3	19.5	22.2	18.6	24.3	18.0	18.6	21.1	23.9	19.3	26.3
	Apr–Jun	21.2	23.8	22.7	22.4	20.1	21.9	18.9	24.5	17.9	18.6	21.1	23.3	19.1	26.6
	Jul–Sep	21.2	23.1	23.0	22.4	19.5	21.9	18.6	24.7	17.5	18.1	21.0	24.5	19.5	27.3
	Oct–Dec	21.0	23.7	22.4	22.1	20.0	22.1	18.2	24.7	17.2	17.5	20.8	24.6	19.5	27.1

Source: Labour Force Survey, Office for National Statistics

Table 8
Employee jobs[1]: by NUTS1 region

Thousands, not seasonally adjusted

	United Kingdom	North East	North West	Yorkshire and The Humber	East Midlands	West Midlands	East of England	London	South East	South West	England	Wales	Scotland	Northern Ireland
Dec 03	26,399	1,014	2,978	2,196	1,773	2,324	2,310	3,935	3,619	2,140	22,288	1,121	2,307	683
Dec 04	26,727	1,015	3,029	2,249	1,802	2,345	2,301	3,963	3,651	2,176	22,531	1,163	2,337	696
Dec 05	27,051	1,064	2,968	2,232	1,840	2,361	2,336	4,039	3,731	2,201	22,771	1,184	2,386	709
Dec 06	27,135	1,059	3,012	2,233	1,865	2,378	2,385	4,024	3,672	2,219	22,847	1,191	2,384	714
Mar 07	26,881	1,047	2,986	2,223	1,839	2,358	2,347	3,998	3,631	2,195	22,624	1,182	2,362	713
Jun 07	27,030	1,050	3,002	2,238	1,841	2,371	2,360	4,018	3,657	2,208	22,744	1,192	2,377	717
Sep 07[2]	27,106	1,053	3,002	2,237	1,859	2,375	2,373	4,027	3,664	2,222	22,813	1,195	2,380	717
Dec 07	27,321	1,068	3,028	2,247	1,864	2,389	2,397	4,077	3,706	2,232	23,007	1,188	2,400	727

Notes:

1 Employee jobs figures are of a measure of jobs rather than people. For example, if a person holds two jobs, each job will be counted in the employee jobs total. Employees jobs figures come from quarterly surveys of employers carried out by ONS and administrative sources.
2 Revised.

Source: Employer Surveys

Table 9

Claimant count rates[1]: by NUTS1 region

Percentages, seasonally adjusted

		United Kingdom	North East	North West	Yorkshire and The Humber	East Midlands	West Midlands	East of England	London	South East	South West	England	Wales	Scotland	Northern Ireland
2003		3.0	4.5	3.2	3.3	2.8	3.5	2.1	3.6	1.7	1.9	2.9	3.3	3.7	4.1
2004		2.7	4.0	2.8	2.8	2.5	3.3	2.0	3.5	1.6	1.6	2.6	3.0	3.4	3.6
2005		2.7	3.9	2.9	2.9	2.5	3.4	2.1	3.4	1.6	1.6	2.6	3.0	3.2	3.3
2006		2.9	4.1	3.3	3.3	2.8	3.9	2.3	3.4	1.8	1.8	2.9	3.1	3.1	3.2
2007		2.7	4.0	3.1	3.0	2.6	3.7	2.1	3.0	1.6	1.6	2.6	2.8	2.8	2.8
2007	Mar	2.9	4.1	3.2	3.2	2.8	3.8	2.2	3.2	1.7	1.7	2.8	2.9	2.9	2.9
	Apr	2.9	4.1	3.2	3.1	2.7	3.7	2.2	3.2	1.7	1.6	2.7	2.9	2.9	2.9
	May	2.8	4.0	3.1	3.1	2.7	3.7	2.2	3.1	1.6	1.6	2.7	2.8	2.8	2.9
	Jun	2.8	4.0	3.1	3.1	2.7	3.7	2.1	3.0	1.6	1.6	2.6	2.8	2.8	2.8
	Jul	2.8	4.0	3.1	3.0	2.6	3.6	2.1	3.0	1.6	1.6	2.6	2.8	2.7	2.7
	Aug	2.7	3.9	3.1	3.0	2.6	3.6	2.1	3.0	1.6	1.5	2.6	2.8	2.7	2.7
	Sep	2.7	3.9	3.1	3.0	2.6	3.6	2.0	2.9	1.5	1.5	2.6	2.8	2.7	2.7
	Oct	2.7	3.9	3.1	2.9	2.5	3.6	2.0	2.8	1.5	1.5	2.5	2.7	2.6	2.7
	Nov	2.6	3.9	3.0	2.9	2.5	3.5	2.0	2.8	1.5	1.4	2.5	2.7	2.6	2.7
	Dec	2.6	3.8	3.0	2.9	2.4	3.5	1.9	2.8	1.5	1.4	2.5	2.7	2.6	2.7
2008	Jan	2.6	3.8	3.0	2.8	2.4	3.4	1.9	2.7	1.5	1.4	2.4	2.7	2.5	2.7
	Feb	2.5	3.9	3.0	2.9	2.4	3.4	1.9	2.7	1.5	1.4	2.4	2.7	2.5	2.8
	Mar	2.5	3.9	3.0	2.9	2.4	3.4	1.9	2.7	1.4	1.4	2.4	2.7	2.5	2.8

Note:

1 Count of claimants of Jobseeker's Allowance expressed as a percentage of the total workforce – that is, workforce jobs plus claimants.

Source: Jobcentre Plus administrative system

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Technical Note A

Methodology for decomposing GVA per head

This methodology developed by the Organisation for Economic Co-operation and Development (OECD) decomposes Gross Value Added (GVA) per head into four components of average labour productivity, employment rates, activity rates and commuting rates.

$$\frac{GVA_i}{P_i} = \frac{GVA_i}{EW_i} * \frac{EW_i}{LFW_i} * \frac{LFW_i}{LFR_i} * \frac{LFR_i}{P_i} \qquad (1)$$

This multiplicative model can then be transformed into an additive model by taking logarithms of each term, which allows the above GVA per capita formula to be decomposed into the expression (2) below. Using an additive model enables the contributing effect of each component to be calculated, which means it is possible to identify what is determining a region's level of GVA per head.

$$\log\left(\frac{GVA_i}{P_i}\right) = \log\left(\frac{GVA_i}{EW_i}\right) + \log\left(\frac{EW_i}{LFW_i}\right) + \log\left(\frac{LFW_i}{LFR_i}\right) + \log\left(\frac{LFR_i}{P_i}\right) \quad (2)$$

This model is used to explain the estimate of GVA per head for a particular sub-region. However, it can also be extended to decompose the difference in GVA per head of each sub-region compared to the UK average. By definition, the logarithm of the difference between the GVA per head of a sub-region and the UK average will equal the sum of the logarithms of the difference of each component from the UK average. This is shown in (3).

$$\log\left(\frac{GVA_i}{P_i}\right) - \log\left(\frac{GVA_{UK}}{P_{UK}}\right) \qquad \text{where i denotes the sub-region}$$
$$\qquad\qquad\qquad\qquad\qquad\qquad\qquad (3)$$
$$= \left[\log\left(\frac{GVA_i}{EW_i}\right) - \log\left(\frac{GVA_{UK}}{EW_{UK}}\right)\right]$$
$$+ \left[\log\left(\frac{LFR_i}{P_i}\right) - \log\left(\frac{GVA_{UK}}{EW_{UK}}\right)\right]$$
$$+ \left[\log\left(\frac{LFW_i}{LFR_i}\right) - \log\left(\frac{LFW_{UK}}{LFR_{UK}}\right)\right]$$
$$+ \left[\log\left(\frac{LFR_i}{P_i}\right) - \log\left(\frac{LFR_{UK}}{P_{UK}}\right)\right]$$

Using these terms, it is then possible to decompose the differences in GVA per head for each of the sub-regions relative to the UK by looking at the differences in each of the four components. This shows the relative effect of each component in terms of what is driving the differences between a sub-region's estimate of GVA per head and the UK average.

Technical Note B

Smoothing of component estimates

To produce a five-period moving average, symmetric weights are applied to the underlying data (as used in Regional Accounts). The weights are designed so that they are centred on the value for the actual year meaning that this year is given more weight. Instead of forecasting (or backcasting) for end points of the time series, asymmetric weights are applied to the data.

Weights					
	2001	2002	2003	2004	2005
2001	11/27	11/27	5/27		
2002	7/27	10/27	7/27	3/27	
2003	1/9	2/9	3/9	2/9	1/9
2004		3/27	7/27	10/27	7/27
2005			5/27	11/27	11/27

Key time series

National accounts aggregates

Last updated: 25/04/08

Seasonally adjusted

	£ million		Indices (2003 = 100)						
	At current prices		Value indices at current prices		Chained volume indices			Implied deflators[3]	
	Gross domestic product (GDP) at market prices	Gross value added (GVA) at basic prices	GDP at market prices[1]	GVA at basic prices	Gross national disposable income at market prices[2]	GDP at market prices	GVA at basic prices	GDP at market prices	GVA at basic prices
	YBHA	ABML	YBEU	YBEX	YBFP	YBEZ	CGCE	YBGB	CGBV
2002	1,055,793	937,323	94.4	94.3	97.1	97.3	97.3	97.0	97.0
2003	1,118,245	993,507	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2004	1,184,296	1,051,934	105.9	105.9	103.4	103.3	103.3	102.6	102.5
2005	1,233,976	1,096,629	110.3	110.4	104.2	105.2	105.2	104.9	104.9
2006	1,303,915	1,159,257	116.6	116.7	105.7	108.2	108.4	107.7	107.7
2007	1,384,823	1,231,992	123.8	124.0	109.1	111.5	111.5	111.1	111.2
2002 Q1	259,054	229,737	92.7	92.5	95.9	96.4	96.5	96.1	95.9
2002 Q2	262,774	233,372	94.0	94.0	96.2	97.0	96.9	96.9	97.0
2002 Q3	265,836	236,103	95.1	95.1	98.3	97.7	97.6	97.4	97.4
2002 Q4	268,129	238,111	95.9	95.9	98.2	98.2	98.1	97.7	97.7
2003 Q1	272,953	242,612	97.6	97.7	99.4	98.8	98.8	98.9	98.9
2003 Q2	277,119	246,427	99.1	99.2	98.9	99.3	99.3	99.8	99.9
2003 Q3	281,996	250,492	100.9	100.9	100.0	100.4	100.4	100.4	100.5
2003 Q4	286,177	253,976	102.4	102.3	101.7	101.5	101.6	100.9	100.7
2004 Q1	288,912	256,106	103.3	103.1	101.9	102.2	102.2	101.1	100.9
2004 Q2	295,066	262,094	105.5	105.5	103.2	103.1	103.2	102.3	102.3
2004 Q3	297,941	264,732	106.6	106.6	103.0	103.5	103.5	102.9	103.0
2004 Q4	302,377	269,002	108.2	108.3	105.4	104.1	104.2	103.9	104.0
2005 Q1	303,996	270,082	108.7	108.7	104.2	104.4	104.4	104.2	104.1
2005 Q2	307,306	273,158	109.9	110.0	105.3	104.8	104.9	104.9	104.8
2005 Q3	308,515	273,676	110.4	110.2	103.4	105.4	105.4	104.7	104.5
2005 Q4	314,159	279,713	112.4	112.6	104.1	106.1	106.2	106.0	106.1
2006 Q1	319,265	284,197	114.2	114.4	104.6	107.1	107.2	106.7	106.7
2006 Q2	322,340	286,413	115.3	115.3	105.8	107.8	107.9	107.0	106.8
2006 Q3	329,094	292,535	117.7	117.8	106.2	108.6	108.7	108.4	108.4
2006 Q4	333,216	296,112	119.2	119.2	106.4	109.5	109.6	108.9	108.8
2007 Q1	337,717	299,676	120.8	120.7	106.8	110.3	110.3	109.6	109.4
2007 Q2	345,275	306,942	123.5	123.6	108.6	111.2	111.2	111.1	111.1
2007 Q3	348,812	310,385	124.8	125.0	108.4	111.9	111.9	111.5	111.6
2007 Q4	353,019	314,989	126.3	126.8	112.4	112.6	112.6	112.1	112.6
2008 Q1						113.1	113.1		

Percentage change, quarter on corresponding quarter of previous year[4]

2002 Q1	4.5	4.6	4.5	4.6	3.0	1.6	1.3	2.8	3.5
2002 Q2	5.3	5.6	5.3	5.7	3.0	2.1	1.7	3.1	4.0
2002 Q3	5.9	6.1	5.9	6.1	4.1	2.2	1.9	3.6	4.1
2002 Q4	5.2	5.3	5.3	5.4	4.4	2.4	2.2	2.8	3.0
2003 Q1	5.4	5.6	5.3	5.6	3.6	2.5	2.4	2.9	3.1
2003 Q2	5.5	5.6	5.4	5.5	2.8	2.4	2.5	3.0	3.0
2003 Q3	6.1	6.1	6.1	6.1	1.7	2.8	2.9	3.1	3.2
2003 Q4	6.7	6.7	6.8	6.7	3.6	3.4	3.6	3.3	3.1
2004 Q1	5.8	5.6	5.8	5.5	2.5	3.4	3.4	2.2	2.0
2004 Q2	6.5	6.4	6.5	6.4	4.3	3.8	3.9	2.5	2.4
2004 Q3	5.7	5.7	5.6	5.6	3.0	3.1	3.1	2.5	2.5
2004 Q4	5.7	5.9	5.7	5.9	3.6	2.6	2.6	3.0	3.3
2005 Q1	5.2	5.5	5.2	5.4	2.3	2.2	2.2	3.1	3.2
2005 Q2	4.1	4.2	4.2	4.3	2.0	1.6	1.6	2.5	2.4
2005 Q3	3.5	3.4	3.6	3.4	0.4	1.8	1.8	1.7	1.5
2005 Q4	3.9	4.0	3.9	4.0	−1.2	1.9	1.9	2.0	2.0
2006 Q1	5.0	5.2	5.1	5.2	0.4	2.6	2.7	2.4	2.5
2006 Q2	4.9	4.9	4.9	4.8	0.5	2.9	2.9	2.0	1.9
2006 Q3	6.7	6.9	6.6	6.9	2.7	3.0	3.1	3.5	3.7
2006 Q4	6.1	5.9	6.0	5.9	2.2	3.2	3.2	2.7	2.5
2007 Q1	5.8	5.4	5.8	5.5	2.1	3.0	2.9	2.7	2.5
2007 Q2	7.1	7.2	7.1	7.2	2.6	3.2	3.1	3.8	4.0
2007 Q3	6.0	6.1	6.0	6.1	2.1	3.0	2.9	2.9	3.0
2007 Q4	5.9	6.4	6.0	6.4	5.6	2.8	2.7	2.9	3.5
2008 Q1						2.5	2.5		

Source: Office for National Statistics

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 For index number series, these are derived from the rounded figures shown in the table.

Gross domestic product: by category of expenditure

Last updated: 25/04/08

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

	Domestic expenditure on goods and services at market prices											Gross domestic at product market prices
	Final consumption expenditure			Gross capital formation								
	Households	Non-profit institutions[1]	General government	Gross fixed capital formation	Changes in inventories[2]	Acquisitions less disposals of valuables	Total	Exports of goods and services	Gross final expenditure	less imports of goods and services	Statistical discrepancy (expenditure)	
	ABJR	HAYO	NMRY	NPQT	CAFU	NPJR	YBIM	IKBK	ABMG	IKBL	GIXS	ABMI
2002	676,833	27,130	224,868	184,701	2,289	183	1,116,239	280,593	1,396,862	308,706	0	1,088,108
2003	697,160	27,185	232,699	186,700	3,983	−37	1,147,690	285,397	1,433,087	314,842	0	1,118,245
2004	721,434	27,327	240,129	197,655	4,597	−42	1,191,099	299,289	1,490,388	335,703	0	1,154,685
2005	732,005	28,167	246,527	200,654	3,611	−354	1,210,610	323,749	1,534,359	359,626	1,183	1,175,916
2006	745,737	29,858	250,630	215,985	2,416	290	1,244,916	358,356	1,603,272	394,789	1,805	1,210,288
2007	768,397	31,079	255,315	229,423	6,522	525	1,291,262	339,434	1,630,697	383,162	−639	1,246,895
2002 Q1	167,588	6,762	55,756	44,562	1,059	66	275,814	69,440	345,256	75,709	0	269,595
2002 Q2	168,803	6,756	56,288	45,610	409	48	277,926	71,533	349,504	78,367	0	271,044
2002 Q3	169,715	6,793	56,429	46,422	520	62	280,004	71,056	351,089	78,006	0	273,034
2002 Q4	170,727	6,819	56,395	48,107	301	7	282,495	68,564	351,013	76,624	0	274,435
2003 Q1	171,828	6,843	57,099	46,805	−477	−8	282,249	72,662	354,921	78,836	0	276,082
2003 Q2	174,146	6,779	57,684	46,131	−635	94	284,342	70,610	354,945	77,283	0	277,686
2003 Q3	175,140	6,790	58,445	45,964	2,223	−68	288,498	70,334	358,825	78,089	0	280,743
2003 Q4	176,046	6,773	59,471	47,800	2,872	−55	292,601	71,791	364,396	80,634	0	283,734
2004 Q1	178,197	6,830	59,969	49,353	−439	112	294,023	73,389	367,412	81,648	0	285,764
2004 Q2	180,362	6,805	59,530	49,159	1,042	−90	296,808	74,861	371,670	83,313	0	288,357
2004 Q3	181,032	6,826	60,002	49,832	1,047	−96	298,644	75,097	373,741	84,300	0	289,441
2004 Q4	181,843	6,866	60,628	49,311	2,947	32	301,624	75,942	377,565	86,442	0	291,123
2005 Q1	182,466	7,005	60,858	49,393	1,894	−158	301,458	75,952	377,410	85,898	253	291,764
2005 Q2	182,306	6,987	61,613	49,334	797	86	301,122	79,576	380,698	87,920	300	293,078
2005 Q3	183,174	7,042	61,885	50,642	853	−201	303,394	82,357	385,751	91,483	320	294,588
2005 Q4	184,059	7,133	62,171	51,285	67	−81	304,636	85,864	390,500	94,325	310	296,486
2006 Q1	183,985	7,347	62,511	52,156	1,202	101	307,301	93,512	400,814	102,028	515	299,301
2006 Q2	186,369	7,428	62,342	52,872	564	229	309,804	95,747	405,551	104,683	503	301,371
2006 Q3	186,487	7,507	62,734	54,737	1,396	−28	312,833	84,334	397,167	94,116	445	303,495
2006 Q4	188,896	7,576	63,043	56,220	−746	−12	314,978	84,763	399,740	93,962	342	306,121
2007 Q1	190,336	7,651	63,476	57,023	320	67	318,873	83,940	402,813	94,520	−21	308,272
2007 Q2	191,607	7,738	63,791	56,331	600	321	320,388	84,512	404,900	93,872	−140	310,888
2007 Q3	193,086	7,804	64,175	57,517	2,660	48	325,290	85,701	410,991	97,869	−219	312,902
2007 Q4	193,368	7,886	63,873	58,552	2,942	89	326,711	85,281	411,993	96,901	−259	314,833
2008 Q1												316,092

Percentage change, quarter on corresponding quarter of previous year

2002 Q1	4.0	−1.6	4.0	0.9			3.1	−2.6	1.8	2.5		1.6
2002 Q2	4.0	−0.5	4.4	1.6			2.9	3.2	3.0	6.0		2.1
2002 Q3	3.3	0.5	3.3	3.1			2.8	4.6	3.2	6.4		2.2
2002 Q4	3.1	1.3	2.1	9.0			3.8	−0.8	2.8	4.5		2.3
2003 Q1	2.5	1.2	2.4	5.0			2.3	4.6	2.8	4.1		2.4
2003 Q2	3.2	0.3	2.5	1.1			2.3	−1.3	1.6	−1.4		2.5
2003 Q3	3.2	0.0	3.6	−1.0			3.0	−1.0	2.2	0.1		2.8
2003 Q4	3.1	−0.7	5.5	−0.6			3.6	4.7	3.8	5.2		3.4
2004 Q1	3.7	−0.2	5.0	5.4			4.2	1.0	3.5	3.6		3.5
2004 Q2	3.6	0.4	3.2	6.6			4.4	6.0	4.7	7.8		3.8
2004 Q3	3.4	0.5	2.7	8.4			3.5	6.8	4.2	8.0		3.1
2004 Q4	3.3	1.4	1.9	3.2			3.1	5.8	3.6	7.2		2.6
2005 Q1	2.4	2.6	1.5	0.1			2.5	3.5	2.7	5.2		2.1
2005 Q2	1.1	2.7	3.5	0.4			1.5	6.3	2.4	5.5		1.6
2005 Q3	1.2	3.2	3.1	1.6			1.6	9.7	3.2	8.5		1.8
2005 Q4	1.2	3.9	2.5	4.0			1.0	13.1	3.4	9.1		1.8
2006 Q1	0.8	4.9	2.7	5.6			1.9	23.1	6.2	18.8		2.6
2006 Q2	2.2	6.3	1.2	7.2			2.9	20.3	6.5	19.1		2.8
2006 Q3	1.8	6.6	1.4	8.1			3.1	2.4	3.0	2.9		3.0
2006 Q4	2.6	6.2	1.4	9.6			3.4	−1.3	2.4	−0.4		3.2
2007 Q1	3.5	4.1	1.5	9.3			3.8	−10.2	0.5	−7.4		3.0
2007 Q2	2.8	4.2	2.3	6.5			3.4	−11.7	−0.2	−10.3		3.2
2007 Q3	3.5	4.0	2.3	5.1			4.0	1.6	3.5	4.0		3.1
2007 Q4	2.4	4.1	1.3	4.1			3.7	0.6	3.1	3.1		2.8
2008 Q1												2.5

Notes:

Source: Office for National Statistics

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

Labour market summary

Last updated: 16/04/08

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
All persons	MGSL	MGSF	MGRZ	MGSC	MGSI	MGWG	MGSR	MGSX	YBTC
Dec–Feb 2006	48,055	30,460	28,883	1,577	17,595	63.4	60.1	5.2	36.6
Dec–Feb 2007	48,454	30,752	29,052	1,700	17,702	63.5	60.0	5.5	36.5
Mar–May 2007	48,556	30,818	29,152	1,666	17,738	63.5	60.0	5.4	36.5
Jun–Aug 2007	48,658	30,843	29,181	1,662	17,816	63.4	60.0	5.4	36.6
Sep–Nov 2007	48,767	31,004	29,355	1,649	17,762	63.6	60.2	5.3	36.4
Dec–Feb 2008	48,875	31,118	29,508	1,610	17,757	63.7	60.4	5.2	36.3
Male	MGSM	MGSG	MGSA	MGSD	MGSJ	MGWH	MGSS	MGSY	YBTD
Dec–Feb 2006	23,317	16,492	15,579	913	6,826	70.7	66.8	5.5	29.3
Dec–Feb 2007	23,542	16,682	15,709	973	6,860	70.9	66.7	5.8	29.1
Mar–May 2007	23,599	16,747	15,787	960	6,852	71.0	66.9	5.7	29.0
Jun–Aug 2007	23,657	16,738	15,786	952	6,918	70.8	66.7	5.7	29.2
Sep–Nov 2007	23,715	16,811	15,872	939	6,905	70.9	66.9	5.6	29.1
Dec–Feb 2008	23,774	16,852	15,922	930	6,923	70.9	67.0	5.5	29.1
Female	MGSN	MGSH	MGSB	MGSE	MGSK	MGWI	MGST	MGSZ	YBTE
Dec–Feb 2006	24,737	13,968	13,304	665	10,769	56.5	53.8	4.8	43.5
Dec–Feb 2007	24,912	14,070	13,343	726	10,842	56.5	53.6	5.2	43.5
Mar–May 2007	24,957	14,071	13,365	706	10,886	56.4	53.6	5.0	43.6
Jun–Aug 2007	25,002	14,104	13,395	710	10,897	56.4	53.6	5.0	43.6
Sep–Nov 2007	25,051	14,194	13,484	710	10,857	56.7	53.8	5.0	43.3
Dec–Feb 2008	25,100	14,266	13,586	680	10,834	56.8	54.1	4.8	43.2

All aged 16 to 59/64

	All	Total economically active	Total in employment	Unemployed	Economically inactive	Economic activity rate (%)	Employment rate (%)	Unemployment rate (%)	Economic inactivity rate (%)
	10	11	12	13	14	15	16	17	18
All persons	YBTF	YBSK	YBSE	YBSH	YBSN	MGSO	MGSU	YBTI	YBTL
Dec–Feb 2006	37,224	29,304	27,752	1,552	7,920	78.7	74.6	5.3	21.3
Dec–Feb 2007	37,470	29,526	27,850	1,676	7,944	78.8	74.3	5.7	21.2
Mar–May 2007	37,522	29,576	27,937	1,639	7,946	78.8	74.5	5.5	21.2
Jun–Aug 2007	37,574	29,584	27,948	1,636	7,990	78.7	74.4	5.5	21.3
Sep–Nov 2007	37,624	29,715	28,088	1,627	7,909	79.0	74.7	5.5	21.0
Dec–Feb 2008	37,674	29,801	28,211	1,590	7,873	79.1	74.9	5.3	20.9
Male	YBTG	YBSL	YBSF	YBSI	YBSO	MGSP	MGSV	YBTJ	YBTM
Dec–Feb 2006	19,282	16,100	15,197	903	3,183	83.5	78.8	5.6	16.5
Dec–Feb 2007	19,461	16,271	15,306	965	3,190	83.6	78.7	5.9	16.4
Mar–May 2007	19,505	16,332	15,384	949	3,173	83.7	78.9	5.8	16.3
Jun–Aug 2007	19,549	16,308	15,367	941	3,241	83.4	78.6	5.8	16.6
Sep–Nov 2007	19,584	16,385	15,454	931	3,199	83.7	78.9	5.7	16.3
Dec–Feb 2008	19,620	16,409	15,489	920	3,210	83.6	78.9	5.6	16.4
Female	YBTH	YBSM	YBSG	YBSJ	YBSP	MGSQ	MGSW	YBTK	YBTN
Dec–Feb 2006	17,942	13,204	12,555	649	4,738	73.6	70.0	4.9	26.4
Dec–Feb 2007	18,009	13,255	12,544	711	4,754	73.6	69.7	5.4	26.4
Mar–May 2007	18,017	13,244	12,554	690	4,773	73.5	69.7	5.2	26.5
Jun–Aug 2007	18,025	13,276	12,581	695	4,749	73.7	69.8	5.2	26.3
Sep–Nov 2007	18,040	13,330	12,633	697	4,710	73.9	70.0	5.2	26.1
Dec–Feb 2008	18,055	13,392	12,722	669	4,663	74.2	70.5	5.0	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

Prices

	Consumer prices						Producer prices			
	Consumer prices index (CPI)			Retail prices index (RPI)			Output prices		Input prices	
	All items	CPI excluding indirect taxes (CPIY)[1]	CPI at constant tax rates (CPI-CT)	All items	All items excluding mortgage interest payments (RPIX)	All items excluding mortgage interest payments and indirect taxes (RPIY)[2]	All manufactured products	Excluding food, beverages, tobacco and petroleum products	Materials and fuels purchased by manufacturing industry	Excluding food, beverages, tobacco and petroleum products
	D7G7	EL2S	EAD6	CZBH	CDKQ	CBZX	PLLU[3]	PLLW[3]	RNPE[3]	RNPF[3]
2004 Jan	1.4	1.5	1.3	2.6	2.4	2.0	1.6	1.4	−0.3	0.0
2004 Feb	1.3	1.3	1.1	2.5	2.3	1.9	1.6	1.5	−0.8	−0.4
2004 Mar	1.1	1.1	1.0	2.6	2.1	1.7	1.4	1.5	0.8	−0.1
2004 Apr	1.1	1.1	1.0	2.5	2.0	1.8	1.8	1.3	2.9	−0.1
2004 May	1.5	1.4	1.3	2.8	2.3	2.2	2.5	1.4	5.6	0.6
2004 Jun	1.6	1.5	1.4	3.0	2.3	2.3	2.6	1.4	3.8	1.3
2004 Jul	1.4	1.4	1.2	3.0	2.2	2.0	2.6	1.7	3.9	1.8
2004 Aug	1.3	1.3	1.1	3.2	2.2	2.0	2.8	2.2	4.6	2.4
2004 Sep	1.1	1.0	0.9	3.1	1.9	1.7	3.1	2.3	8.1	3.6
2004 Oct	1.2	1.2	1.1	3.3	2.1	2.0	3.5	2.9	9.0	4.6
2004 Nov	1.5	1.4	1.4	3.4	2.2	2.2	3.5	3.0	6.4	4.5
2004 Dec	1.7	1.7	1.6	3.5	2.5	2.5	2.9	2.5	4.0	4.0
2005 Jan	1.6	1.7	1.5	3.2	2.1	2.0	2.6	2.6	9.7	7.5
2005 Feb	1.7	1.7	1.6	3.2	2.1	2.0	2.7	2.5	11.0	8.2
2005 Mar	1.9	2.0	1.8	3.2	2.4	2.3	2.9	2.4	11.1	7.4
2005 Apr	1.9	2.0	1.9	3.2	2.3	2.3	3.3	2.6	10.1	7.0
2005 May	1.9	2.0	1.8	2.9	2.1	2.2	2.7	2.5	7.6	6.7
2005 Jun	2.0	2.2	1.9	2.9	2.2	2.2	2.5	2.2	11.8	7.4
2005 Jul	2.3	2.5	2.3	2.9	2.4	2.5	3.1	2.2	14.1	8.7
2005 Aug	2.4	2.6	2.3	2.8	2.3	2.3	3.0	1.9	13.0	7.6
2005 Sep	2.5	2.6	2.4	2.7	2.5	2.5	3.3	2.1	10.6	5.6
2005 Oct	2.3	2.5	2.3	2.5	2.4	2.3	2.6	1.4	8.8	7.0
2005 Nov	2.1	2.3	2.1	2.4	2.3	2.3	2.3	1.3	13.5	9.6
2005 Dec	1.9	2.1	1.8	2.2	2.0	2.0	2.4	1.8	17.9	12.0
2006 Jan	1.9	2.1	1.9	2.4	2.3	2.3	2.9	1.7	15.8	10.2
2006 Feb	2.0	2.1	2.0	2.4	2.3	2.3	2.9	1.7	15.0	10.6
2006 Mar	1.8	1.9	1.7	2.4	2.1	2.2	2.5	1.9	13.0	10.0
2006 Apr	2.0	2.1	2.0	2.6	2.4	2.3	2.5	2.2	15.3	10.0
2006 May	2.2	2.3	2.2	3.0	2.9	2.8	3.1	2.4	13.6	8.6
2006 Jun	2.5	2.6	2.4	3.3	3.1	3.2	3.4	2.9	11.1	8.7
2006 Jul	2.4	2.4	2.3	3.3	3.1	3.2	2.9	2.5	10.6	8.3
2006 Aug	2.5	2.6	2.4	3.4	3.3	3.4	2.7	2.3	8.0	7.9
2006 Sep	2.4	2.6	2.3	3.6	3.2	3.3	1.9	2.2	5.4	7.4
2006 Oct	2.4	2.7	2.3	3.7	3.2	3.3	1.6	2.6	4.6	6.3
2006 Nov	2.7	3.0	2.6	3.9	3.4	3.6	1.8	2.5	3.4	4.9
2006 Dec	3.0	3.2	2.9	4.4	3.8	3.9	2.2	2.4	2.1	3.0
2007 Jan	2.7	2.9	2.6	4.2	3.5	3.7	2.2	2.5	−2.8	1.5
2007 Feb	2.8	2.9	2.6	4.6	3.7	3.9	2.3	2.7	−1.7	1.0
2007 Mar	3.1	3.1	2.9	4.8	3.9	4.0	2.7	2.7	0.2	2.0
2007 Apr	2.8	2.9	2.6	4.5	3.6	3.7	2.4	2.4	−0.9	1.9
2007 May	2.5	2.6	2.3	4.3	3.3	3.4	2.4	2.2	1.2	3.6
2007 Jun	2.4	2.5	2.2	4.4	3.3	3.3	2.5	2.1	2.4	3.3
2007 Jul	1.9	2.0	1.7	3.8	2.7	2.6	2.5	2.2	0.6	1.5
2007 Aug	1.8	1.9	1.6	4.1	2.7	2.6	2.4	2.4	1.1	2.1
2007 Sep	1.8	1.7	1.6	3.9	2.8	2.8	2.9	2.3	7.5	3.7
2007 Oct	2.1	1.9	1.8	4.2	3.1	3.0	4.0	2.4	9.7	3.2
2007 Nov	2.1	1.9	1.8	4.3	3.2	3.0	4.7	2.4	11.5	2.7
2007 Dec	2.1	2.0	1.9	4.0	3.1	3.1	5.0	2.6	13.0	4.5
2008 Jan	2.2	2.1	2.0	4.1	3.4	3.3	5.7	3.2	19.4	7.3
2008 Feb	2.5	2.5	2.3	4.1	3.7	3.6	5.9	3.0	19.9	8.8
2008 Mar	2.5	2.6	2.3	3.8	3.5	3.6	6.2	3.0	20.4	9.6

Notes: *Source: Office for National Statistics*

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

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

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/05_08/data_page.asp

Title	Frequency of update	Updated since last month
UK economic accounts		
1.01 National accounts aggregates	M	✔
1.02 Gross domestic product and gross national income	M	✔
1.03 Gross domestic product, by category of expenditure	M	✔
1.04 Gross domestic product, by category of income	M	•
1.05 Gross domestic product and shares of income and expenditure	M	•
1.06 Income, product and spending per head	Q	•
1.07 Households' disposable income and consumption	M	•
1.08 Household final consumption expenditure	M	•
1.09 Gross fixed capital formation	M	•
1.10 Gross value added, by category of output	M	✔
1.11 Gross value added, by category of output: service industries	M	✔
1.12 Summary capital accounts and net lending/net borrowing	Q	•
1.13 Private non-financial corporations: allocation of primary income account	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/05_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	•
4.07	Inventory ratios (THIS TABLE IS NO LONGER BEING UPDATED)	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	•

Weblink: www.statistics.gov.uk/elmr/05_08/data_page.asp

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

Notes

A Annually
Q Quarterly
M Monthly

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

Contact points

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
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lfs.dataservice@ons.gsi.gov.uk

New Deal
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Productivity and unit wage costs
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General enquiries
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Source and methodology enquiries
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Qualifications (Department for Children, Schools and Families)
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Redundancy statistics
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Retail Prices Index
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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
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Annual employment statistics
annual.employment.figures@ons.gsi.gov.uk

Annual Population Survey, local area statistics
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Trade unions (BERR)
Employment relations
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Training
Adult learning – work-based training (DWP)
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Vacancy Survey: total stocks of vacancies
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www.statistics.gov.uk/products/p930.asp

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QUARTERLY

Consumer Trends

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2007 quarter 4. Palgrave Macmillan, ISBN 978-0-230-20894-0. Price £35.

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MONTHLY

Financial Statistics

April 2008. Palgrave Macmillan, ISBN 978-0-230-20891-9. Price £47.50.

www.statistics.gov.uk/products/p376.asp

Focus on Consumer Price Indices

March 2008

www.statistics.gov.uk/products/p867.asp

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OTHER

The ONS Productivity Handbook: a statistical overview and guide

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

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

Labour Market Review

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

www.statistics.gov.uk/products/p4315.asp

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