Office for National Statistics

Economic & Labour Market Review

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Important change to Economic & Labour Market Review

The September 2010 edition of *Economic & Labour Market Review* (ELMR) will be the last to appear as a print publication. From October 2010, the journal will primarily be available as an online publication on the ONS website at www.statistics.gov.uk/elmr

The change will create new opportunities to develop and enhance the content and distribution of the publication while retaining its quality and values. ELMR will continue to contain in depth, peer reviewed topical articles analysing patterns and trends in the nation's economy and labour market using ONS data and describing related methodological developments.

ELMR's publisher Palgrave Macmillan will continue to provide on-demand printed copies to subscribers who prefer to receive the publication in that medium, as well as a value-added online subscription service to its content as part of their UK National Statistics Collection. More information on these services is available at www.palgrave.com/ons or email ons@palgrave.com

Feedback on any aspect of the new online publication would be greatly welcomed and should be sent to elmr@ons.gsi.gov.uk

In brief

Spotlight on e–Society

Social Trends Spotlight On: e-Society will be published on 22 September 2010. This article is the first Social Trends 'Spotlight On' publication and aims to give an overview of e-Society covering:

- Internet take up
- the issue of Internet exclusion
- uses of the Internet including social networking
- e-Commerce
- the use of the Internet by government

The new Spotlight On series has been developed following demand for more responsive social reporting. This first edition will be supplemented by a new Social Trends e-Society article which will be published on 11 November 2010 and contain more detailed information on access to the Internet and other digital technologies, Internet security and crime.

Further information

www.statistics.gov.uk/socialtrends

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social.trends@ons.gov.uk

Implementation of SIC 2007 in ONS: update on PPIs and SPPIs

Producer Prices (PPI) and Service Producer Prices (SPPI) will both implement the change to the Standard Industrial Classification 2007 (SIC 2007) in November 2010. As previously announced (ELMR 'in brief', April 2010) this is a change to the original implementation date(s) of June and August 2010. The move to SIC 2007 has been extremely challenging, with the delay in implementation being largely due to the fundamental changes that have been made to the classification of the PPI Trade surveys, Import Price Indices (IPI), and Export Price Indices (EPI). As part of the reclassification project the classification of these trade surveys will become compliant with Eurostat's Short Term Statistics Regulation. The collection of IPIs and EPIs will now be on an SIC basis, a switch from the Standard International Trade Classification (SITC), and Combined Nomenclature (CN) previously used. Whilst meeting the requirements of Eurostat, this change makes the classification method consistent for all PPI surveys.

The change of classification method for IPIs will have a direct impact on the framework structure of PPI's Input prices, as imports account for approximately 70 per cent of total Input prices. The most significant change to PPI's Output prices involves the reclassification of 'recovered secondary raw materials' (recycling), and 'publishing'. These will no longer be classified in the Manufacturing sector, but will now be classified under Services. In addition to this, a new SIC division, 'repair, installation and maintenance of machinery and equipment' has been created. Under SIC 2003 these activities were classified within the output of manufacturing, but only as part of the specific industries where this activity took place. For SPPI, apart from adopting 'recovered secondary raw materials', and 'publishing', changes resulting from the implementation of SIC 2007 will be largely cosmetic.

Further information on the changes and impact of the SIC 2007 on prices will be available in future ELMR articles.

Further information

www.statistics.gov.uk/cci/nugget.asp?id=248

Contact

ppi@ons.gov.uk

Local employment rates vary between 56.3 per cent and 85.9 per cent

The local authority with the lowest employment rate in Great Britain was Newham in London, with a rate of 56.3 per cent. In contrast, the local authority with the highest employment rate in Great Britain was Rushmoor in Hampshire, with a rate of 85.9 per cent. These were among the key results reported by ONS in the August 2010 *Local area labour markets: statistical indicators*, published on 31 August 2010. Differences in employment rates in local areas within regions are greater than differences between regions. In the 12 months ending December 2009, there were 8.8 percentage points between the region with the highest employment rate (75.0 per cent in the South East) and the lowest (66.2 per cent in the North East).

The region with the greatest contrast between local authorities was the East Midlands with 26.7 percentage points between the highest and lowest. This region contains High Peak at 83.5 per cent and Nottingham at 56.8 per cent. The region with the narrowest spread of employment rates was Wales, with 15.8 percentage points between Flintshire (73.9 per cent) and Blaenu Gwent (58.1 per cent).

Further information

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

Contact

labour.market@ons.gov.uk

9.2 million UK adults have never used the Internet

More than 9 million UK adults have never used the Internet, according to figures released by ONS on 27 August 2010 in the *Internet Access 2010* statistical bulletin. This compares with just over 38 million UK adults who were Internet users, and of those, just over 30 million accessed the Internet every day or almost every day. People who were more likely to have never used the Internet were the over 65s, the widowed, those on low incomes and those with no formal qualifications.

The Internet Access survey of households and individuals, which measures home access to the Internet and individuals' use of the Internet across the UK showed that in 2010:

- 19.2 million households (73 per cent) had Internet access, an increase of 0.9 million on the previous year and an increase of 5 million since 2006
- 31 per cent of Internet users connected via a mobile phone, up from 23 per cent in 2009
- 31 million people bought or ordered goods or services online in the last 12 months
- 98 per cent of people with an income over £41,600 had used the Internet. The rate of Internet use decreased in

line with income: 69 per cent of adults with an income of less than £10,399 had used the Internet
- 45 per cent of adults without any formal qualifications had used the Internet, compared with 97 per cent of those with a degree

Other findings in the survey showed that just over 17 million adults watched television or listened to radio over the Internet, with men more likely to do this at 52 per cent, compared with 39 per cent of women. Many of these used on-demand services such as BBC iPlayer or ITV Player. London was once again the region with the highest level of household Internet connections, at 83 per cent. The North East had the lowest at 59 per cent.

Further information

www.statistics.gov.uk/StatBase/Product.asp?vlnk=5672

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esociety@ons.gov.uk

UK worth £6.7 trillion

The total net worth of the United Kingdom at the end of 2009 was £6,669 billion in current prices, according to figures published by ONS in the *Capital stocks, capital consumption and non-financial balance sheets* statistical bulletin on 2 August 2010. This was £94 billion down on the previous year, a decrease of 1.4 per cent.

The figures show that 2009 was the second year running that the net worth of the UK fell, though the decline was smaller than the drop of 4.3 per cent, or £303 billion, in 2008. Prior to 2008 the net worth of the UK had been growing continuously for a number of years, the last time it declined being in 1992.

Households and non-profit institutions remained the sector with the highest net worth at end-2009 – in fact, at £7,244 billion it was actually bigger than the overall worth of the country. This was possible as several other sectors had negative net worth, the largest of these negative valuations being for central government at -£395 billion.

Housing remained the most valuable asset at £4,048 billion, or 61 per cent of the total net worth. This was up £126 billion, or 3.2 per cent, on the end-2008 value, although still below the £4,314 billion that the nation's housing stock was worth at the end of 2007. The value of housing stock belonging to households and non-profit organisations was £3,827 billion, about 57 per cent of the nation's wealth. The next most valuable category of tangible asset was civil engineering works at £725 billion, or 10.9 per cent of the total, followed by commercial, industrial and other buildings at £559 billion, or 8.4 per cent of total net worth.

Further information

www.statistics.gov.uk/StatBase/Product.asp?vlnk=10730

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UPDATES

Updates to statistics on www.statistics.gov.uk

6 August

Producer prices

Factory gate inflation rises 5.0%
www.statistics.gov.uk/cci/nugget.asp?id=248

Index of production

June shows 1.3% annual rise
www.statistics.gov.uk/cci/nugget.asp?id=198

10 August

UK Trade

Deficit narrowed to £3.3 billion in June
www.statistics.gov.uk/cci/nugget.asp?id=199

11 August

Average weekly earnings

Regular pay growth decreases
www.statistics.gov.uk/cci/nugget.asp?id=10

Employment

Employment rate up to 70.5%
www.statistics.gov.uk/cci/nugget.asp?id=12

12 August

Travel and tourism

Visits to and from the UK rise
www.statistics.gov.uk/cci/nugget.asp?id=352

17 August

Inflation

CPI inflation 3.1%, RPI inflation 4.8%
www.statistics.gov.uk/cci/nugget.asp?id=19

19 August

Retail sales

Mixed picture in July
www.statistics.gov.uk/cci/nugget.asp?id=256

Public sector

July: £3.8 billion net borrowing
www.statistics.gov.uk/cci/nugget.asp?id=206

25 August

Service producer prices

Aggregate SPPI inflation rises 1.9 per cent
www.statistics.gov.uk/cci/nugget.asp?id=253

27 August

GDP growth

Economy grows by 1.2% in Q2 2010
www.statistics.gov.uk/cci/nugget.asp?id=192

Index of services

1.4% annual rise into June
www.statistics.gov.uk/cci/nugget.asp?id=558

Business investment

1.6% down in second quarter 2010
www.statistics.gov.uk/cci/nugget.asp?id=258

Internet access

60% of adults access Internet every day in 2010
www.statistics.gov.uk/cci/nugget.asp?id=8

31 August

Local employment

Rates vary between 56.3% and 85.9%
www.statistics.gov.uk/cci/nugget.asp?id=252

FORTHCOMING RELEASES

Future statistical releases on www.statistics.gov.uk

3 September

New orders in the construction industry – Q2 2010

7 September

Mergers and acquisitions involving UK companies – Q2 2010

8 September

Index of production – July 2010

Work and worklessness among households – 2010

Households and families participation in the labour market – 2010

9 September

UK Trade – July 2010

Overseas travel and tourism – July 2010

10 September

Producer price index – August 2010

Output and employment in the construction industry – July 2010

Assets and liabilities of finance houses and other credit companies – Q2 2010

14 September

Consumer price indices – August 2010

15 September

Public sector employment – Q2 2010

Average weekly earnings – July 2010

Labour market statistics – September 2010

16 September

Retail sales – August 2010

17 September

Turnover and orders in production and services industries – July 2010

21 September

Public sector finance – August 2010

Wider measures of public sector net debt – update

22 September

Average earnings index – July 2010

24 September

Investment by insurance companies, pension funds and trusts – Q2 2010

27 September

UK business activity, size and location – 2010

28 September

Balance of payments – Q2 2010

Business investment – Q2 2010 revised results

Quarterly National Accounts – Q2 2010

Consumer Trends – Q2 2010

29 September

Productivity measures – Q2 2010

Index of services – July 2010

Pension Trends – September 2010 edition

6 October

Profitability of UK companies – Q2 2010

Economic review

September 2010

Graeme Chamberlin
Office for National Statistics

SUMMARY

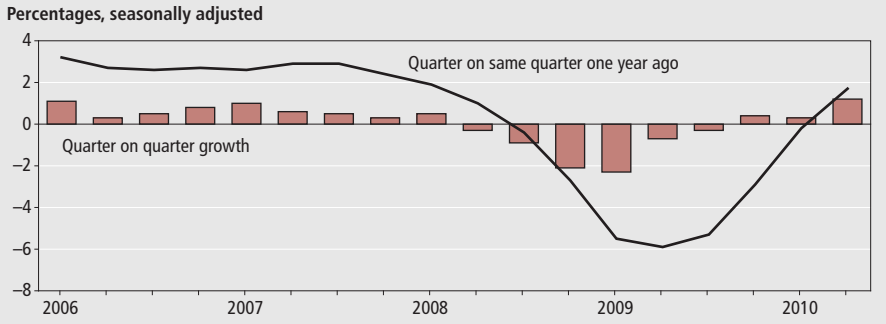
Gross Domestic Product rose by 1.2 per cent in the second quarter due to strong rebound in construction output from the weather-affected level in the first quarter, and a pick up in services sector growth. This is despite the negative impacts of the volcanic ash cloud and industrial action in the air transport sector. On the demand-side of the National Accounts, GDP growth was supported by a return to positive stockbuilding. Net trade though made a negligible contribution to growth, suggesting that sterling depreciation has not yet had a positive effect. In the labour market, employment rose in the second quarter of the year, but remains below pre-recession levels and rates. There is evidence of a strong rise in part-time employment through the recession, with self-employment also strengthening during 2009. Recent output increases have been partly delivered through higher labour productivity. Producer prices inflation continues to be driven by the recent trend in oil prices, even the services producer price index through the impact on freight transport.

Construction leads the pick up in second quarter growth

Latest data show that the UK economy grew by 1.2 per cent in the second quarter of the year, a slight upward revision of 0.1 percentage point from the first estimate published last month. The chain volume measure of Gross Domestic Product (GDP) has now grown for three successive quarters, with the latest quarter of growth being a marked pick up on the growth of 0.3 per cent recorded in the first quarter (**Figure 1**). However, the level of output still remains significantly below its pre-recession peak in 2008 Q1. Between 2008 Q1 and 2009 Q3, GDP fell by a total of 6.4 per cent. Despite the recent recovery, GDP still remains 4.5 per cent below its level in 2008 Q1.

The latest quarter of rapid growth was driven by the services and construction sectors (**Figure 2**). Total output of the services industries grew by 0.7 per cent in the second quarter, although as Figure 2 shows, growth was not uniform across all sub-sectors with the transport and communications sector recording a 2.2 per cent fall in output. Whilst it is unsurprising that the services sector, which accounts for around three-quarters of total valued-added in the UK, made an important contribution to second quarter growth, the contribution of the construction sector stood out. Like services, this contributed around 0.5 percentage points to growth in the quarter, but only accounts for around 6 per cent of total output based on 2006 weights. Its significant contribution resulted from very rapid growth of 8.5 per cent over the quarter.

Figure 1
Gross Domestic Product



Source: GDP Output, Income and Expenditure

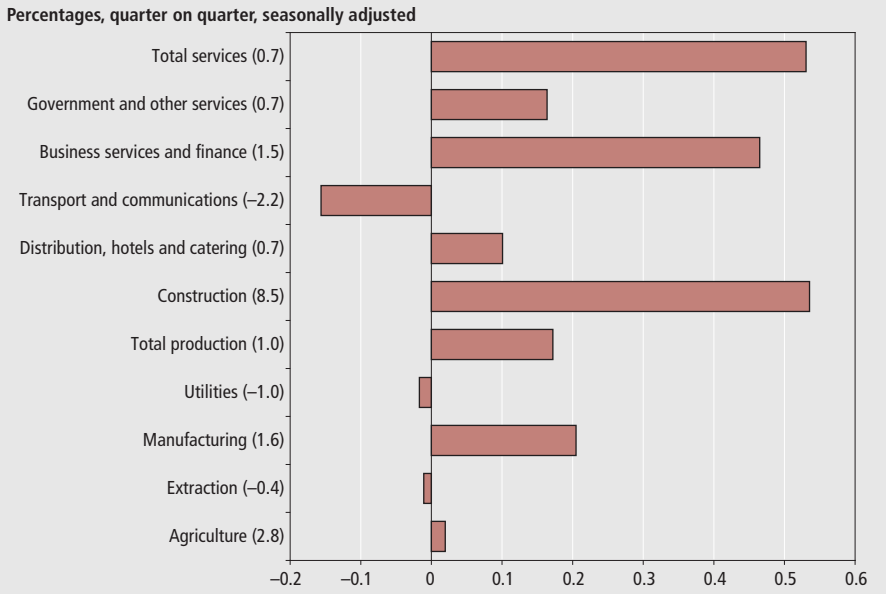
Production output rises for the third successive quarter

Figure 3a shows the contributions to total output growth in the production industries by main category of output. Clearly production output fell abruptly during the recession, driven in particular by the capital goods and intermediate goods producing industries. This reflects the strong fall in investment (and increased rates of de-stocking) as firms reduced capacity in line with falling demand and the uncertain economic outlook.

As the global economy begins to recover these trends would be expected to reverse. Total production has grown for three successive quarters since reaching a trough in 2009 Q3, expanding by a further 1.0 per cent in the second quarter of this year. Output in the capital goods producing industries grew by 2.0 per cent and output of the intermediate goods producing industries by 0.8 per cent, with both contributing around 0.4 percentage points to total production growth in 2010 Q2. In recent quarters the rate at which firms have been running down their inventories has slowed. Production output, which tends to be highly traded relative to services output, has also benefited from the improving global economy which has resulted in growing UK exports.

Production of consumer goods is a fairly small part of the UK economy. Durables and non-durables together

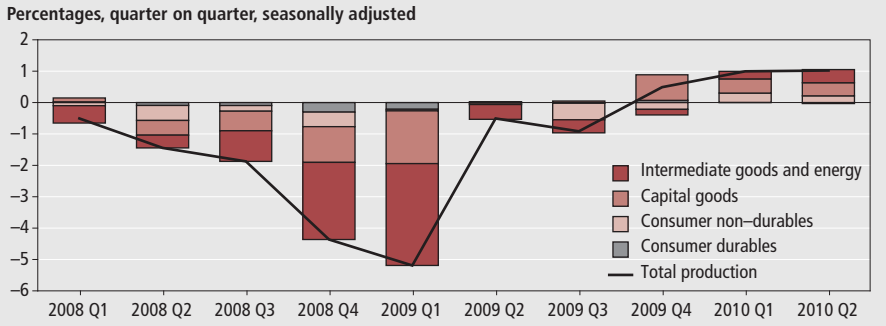
Figure 2
Contributions to GDP growth by industry,[1] 2010 Q2



Notes: *Source: GDP Output, Income and Expenditure*

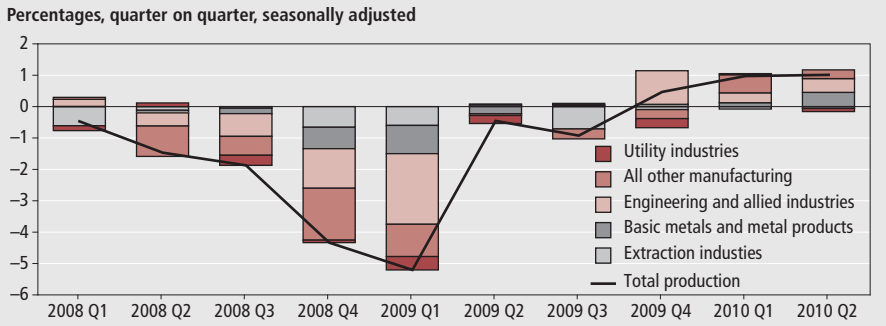
1 Quarter on quarter change in output by industry shown in brackets

Figure 3a
Contributions to growth in the production industries by category of output



Source: Index of Production

Figure 3b
Contributions to growth in the production industries by industry



Source: Index of Production

account for just over a quarter of total production output, which in itself accounts for less than 20 per cent of GDP. This is reflected by their relatively small contributions to production sector growth as shown in Figure 3a.

Figure 3b complements Figure 3a by showing the contributions to growth made by the main production industries. The engineering and allied industries primarily consist of capital goods producing industries, such as office equipment, machinery, transport equipment, scientific and optical apparatuses and so on, so it understandable why the contributions to growth in each quarter are similar to those of the capital goods producing industries in Figure 3a. In the latest quarter, output in these combined industries grew by 1.9 per cent contributing 0.4 percentage points to total output. Output in the other production industries largely represents those of the intermediate goods industries. For example the extraction industries largely reflect oil and gas output, the utilities industries reflect water, gas and electricity, and basic metals and metal products which tend to be an important input into other production and construction outputs. This final component of production sector output has also made an important contribution to the direction of growth in the last two years. In the latest quarter of published data, 2010 Q2, output grew strongly by 5.5 per cent contributing 0.5 percentage points to total production growth in the quarter.

Construction output grows by 8.5 per cent in 2010 Q2

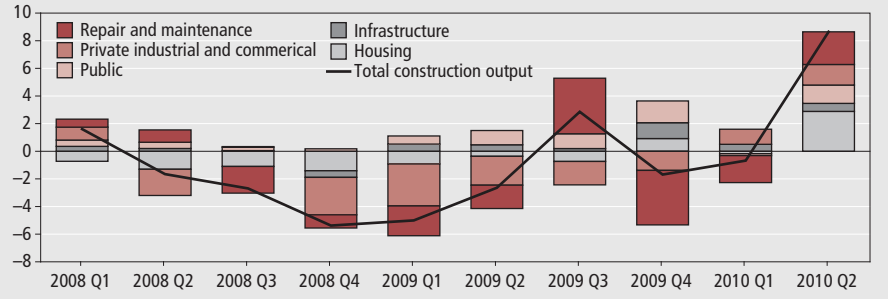
There was marked growth in construction output in the second quarter of the year. As **Figure 4** shows, the latest quarter of growth is in sharp contrast to the recent performance of the sector. While GDP as a whole has grown for three successive quarters since reaching a trough in the third quarter of 2009, until now the construction sector had not followed suit. Construction demand is likely to be particularly susceptible to uncertainty over the economic outlook and restrictions in the availability of credit. In fact, after contracting in both 2009 Q4 and 2010 Q1, construction output was in the first quarter of the year almost back at the level of the previous trough in 2009 Q2.

In the second quarter, the increase in output has been broad-based across the main categories of output. New work, which accounts for about three-fifths of total output expanded by 9.8 per cent in the quarter. Within this, there were notable contributions form new (private) housing work which grew by 22.1 per cent and public new works which grew by 10.4 per cent.

Repair and maintenance work is also an important part of construction sector output, accounting for about two-fifths of the total. This too had fallen during

Figure 4
Contributions to growth in construction output

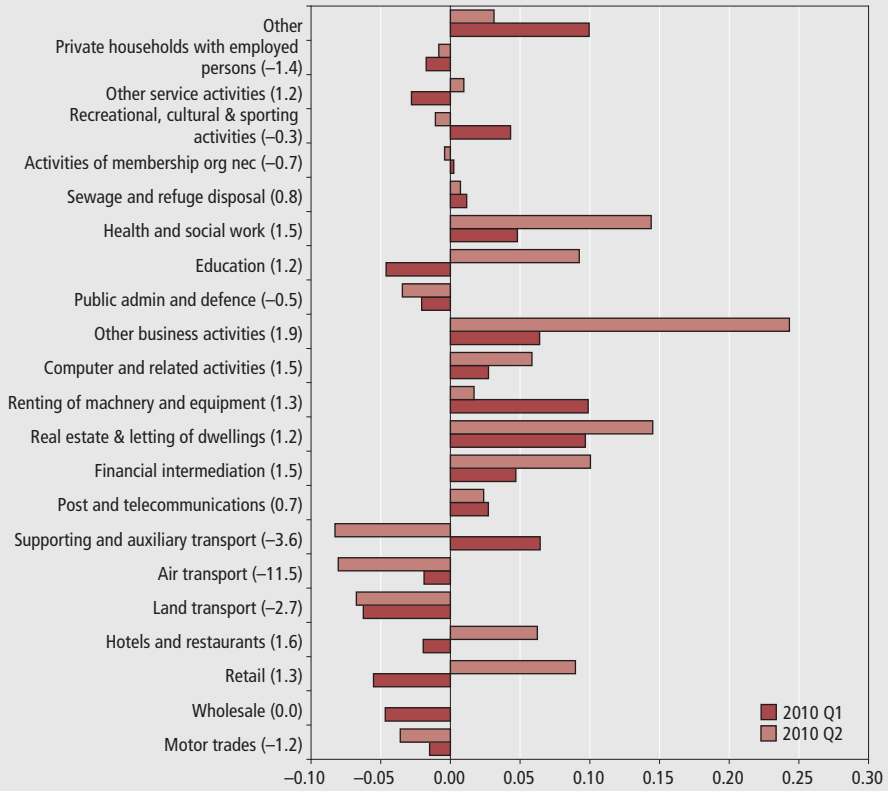
Percentages, quarter on quarter, seasonally adjusted



Source: Output in the construction industry

Figure 5
Contributions to growth in services output

Percentages, quarter on quarter, seasonally adjusted



Notes:

Source: Index of Services

1 2010 Q2 quarter on quarter growth rate for each industry in brackets

the downturn, particularly the non-housing component. In 2010 Q2 output recovered by 6.6 per cent, contributing 2.4 percentage points to growth.

The nature of construction output, which tends to be lumpy, means that large quarter on quarter movements are not uncommon. However, growth of 8.5 per cent in one quarter is towards the upper end of what has been experienced in the past, and much stronger than recent tepid activity. There are a number of possible factors that might explain this strong second quarter rebound. In particular, bad weather in January may have depressed output in the first quarter – therefore making second quarter output appear much stronger in comparison. Monthly figures (not seasonally adjusted) show that construction output in January was some 20 per cent lower than the monthly average in 2009 Q4. A related point is that, despite very strong growth in the second quarter, the level of output is still considerably below previous peaks, and up until now construction output had been lagging behind that in the production and services sectors of the economy and GDP overall – all of which returned to growth by the end of 2009. Therefore strong growth has been from a relatively low base. Second, new orders in the construction industry began to pick up towards the end of 2009, which until now have not been reflected in the output figures. These would be expected to eventually emerge in new work output, the main driver of second quarter growth. However, new orders fell back sharply in 2010 Q2.

Growth in business services and finance continues

Figure 2 presented the contributions to GDP growth made by the main categories of services output in the second quarter of the year. **Figure 5,** using the Index of Services, shows the contributions of individual services industries to growth in the last two quarters in greater detail.

Overall service sector growth accelerated from 0.3 per cent in Q1 2010 to 0.7 per cent in Q2 2010. Weaker growth in the first quarter of the year (noting that service sector output also grew by 0.7 per cent in Q4 2009) partly reflected the bad weather in January, where heavy snowfall appeared to have some negative impact on those industries where footfall and transport are important. The motor trades, wholesale, retail, hotels and restaurants and land transport industries reduced services growth by 0.2 percentage points over the quarter. The reversion in the rate of VAT from 15 per cent to 17.5 per cent may also have led to some consumption being brought forward to the final quarter of 2009, again impacting negatively on the output of these industries during the first quarter. With these in mind, stronger second quarter growth, especially in the retail and hotels and restaurants industries, may partly represent a rebound from the contraction in the first quarter.

The largest negative contributions to growth in the second quarter were from the land transport, air transport and auxiliary transport services divisions. Together they reduced total service sector growth by around 0.2 percentage points. Air transport, in particular, contracted sharply over the quarter, down by 11.5 per cent due to the effects of the Ash cloud and BA cabin crew strikes. In April 2010, a single month fall in output of 15.4 per cent was recorded. This clearly had a knock-on impact on supporting and auxiliary transport services.

Various parts of the services sector have shown robust growth through the first half the year. The important business services and finance sector, which accounts for around 40 per cent of total services output, and just over

30 per cent of GDP, grew by 1.5 per cent in the second quarter, continuing the momentum from the first quarter when the sector grew by 1.0 per cent. Data from the Index of Services further disaggregates the performance of the sector. This shows that growth was broad-based as each industry grew in excess of 1.0 per cent over the quarter. Financial intermediation output grew by 1.5 per cent, letting of dwellings and real estate activities by 1.2 per cent, renting of machinery and equipment by 1.3 per cent, computer and related activities by 1.5 per cent, and other business services, which consists of a manifold of activities including legal services, accountancy, management consultancy, architecture among others by 1.9 per cent over the quarter. The stronger performance of these primarily business-to-business activities may suggest growing optimism in the corporate sector.

Growth in education and health output also improved in the second quarter compared to the first, recording growth of 1.2 per cent and 1.5 per cent respectively and together contributing around a quarter percentage point to total service sector growth. Both of these industries, especially health, have exhibited fairly robust growth through the recession, likely due to the high proportion of public sector delivery which tends to be more immune to cyclical swings. However, both education and health output fell in January, indicating that they may also have been adversely affected by the weather disruptions during that month.

Total expenditure grows in quarter two as businesses start to restock

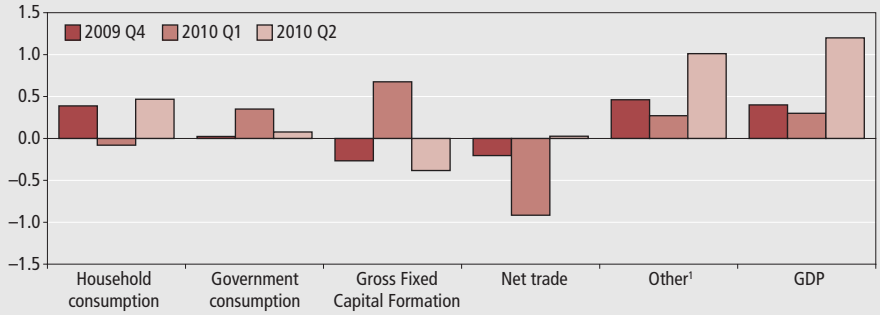
The *GDP Output, Income and Expenditure* release publishes the first estimates for the expenditure components of GDP for any quarter. **Figure 6** shows the contributions of each of these to GDP growth in each of the last three published quarters.

Compared to the first quarter of the year, larger positive contributions to growth in the second quarter were made by household consumption, net trade, and most significantly the 'other' category. In contrast, government consumption and gross fixed capital formation made smaller contributions than before.

Household consumption contracted in the first quarter of the year, before rebounding by 0.7 per cent in the second. As shown by output movements in some of the services industries over the same period, there is evidence that the reversion of VAT to the higher rate and bad weather, both in January, dampened spending in that quarter. Therefore, stronger growth in quarter two partly reflects a comparison with a weaker first quarter.

Figure 6
Contributions to GDP growth by main category of expenditure

Percentages, quarter on quarter, seasonally adjusted



Notes: *Source: GDP, Output, Income and Expenditure*

1 The 'Other' category consists of Non-profit institutions serving households (NPISH), valuables and inventories. Here it has been calculated as a residual.

The same argument applies to net trade, where export volumes were markedly down in the first month of the year – possibly a consequence of the heavy snowfall disrupting the movement of goods to ports. Imports were less affected, obviously relying less on UK land transport. The contribution of net trade to GDP growth, having been negative in 2009 Q4 and 2010 Q1, was negligible in 2010 Q2. This is despite the substantial depreciation in sterling in the second half of 2008 which does not appear to have had much effect in supporting net trade – although it is of course difficult to disprove the counterfactual that the trade contribution to GDP may have been even worse had it not been for the effect of sterling depreciation.

Fixed investment (GFCF) spending declined by 2.4 per cent on the quarter, following a big increase in the previous quarter, and government consumption spending growth fell to 0.3 per cent from 1.5 per cent previously. As yet the data do not support a sustained pick up in fixed investment spending.

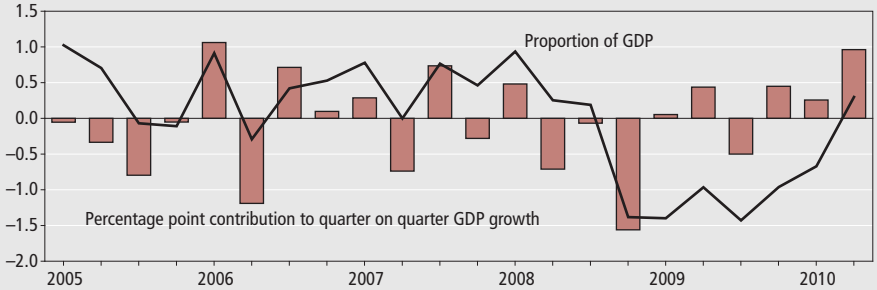
The largest expenditure contribution to quarter two GDP growth resulted from 'other' spending. This includes the consumption spending by non-profit institutions and also spending by businesses on valuables, but both of these are fairly small parts of the level of GDP (2.5 per cent and 0.1 per cent respectively) and tend to make minor contributions to quarterly growth. Inventories, or stockholdings represent the works in progress or stocks of intermediate and final goods held by businesses to meet expected future demand. These too are a negligible part in the level of GDP (usually below 1 per cent, 0.3 per cent in 2010 Q2), but can be very significant in explaining changes in the level of GDP. In recent quarters, the change in inventories has been making a positive contribution to growth as the rate at which firms were running down stocks decelerated. In quarter two, stockbuilding actually increased for the first time since the third quarter of 2008, making an even greater positive contribution to growth (Figure 6).

Figure 7 shows the change in inventories as a proportion of GDP and the contributions of changes in stockholdings to GDP in recent years. The fact that both fit on the same axes makes clear that inventories punch above their weight in determining GDP movements. Figure 7 shows that changes in inventories can be volatile in terms of the contribution to GDP growth, but because these movements tend to cancel each other out the effect on GDP over a longer period of time is slight. However, as the economy entered recession in the second half of 2008 a sustained fall in stockbuilding saw inventories fall as a proportion of GDP. In the last three quarters, inventories as a proportion of GDP have risen as the rate of destocking eased before restocking in quarter two was observed.

Cyclical movements in inventories, known as the stocks cycle, tend to amplify cyclical movements in output (GDP), especially in the production industries where stockbuilding is more important. In the downswing orders are increasing

Figure 7
Change in inventories as a proportion of GDP and contribution to changes in GDP

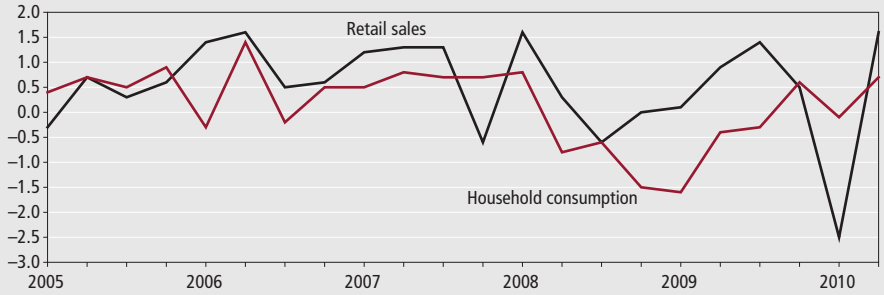
Percentages, seasonally adjusted



Source: GDP, Output, Income and Expenditure

Figure 8
Growth in retail sales and household consumption

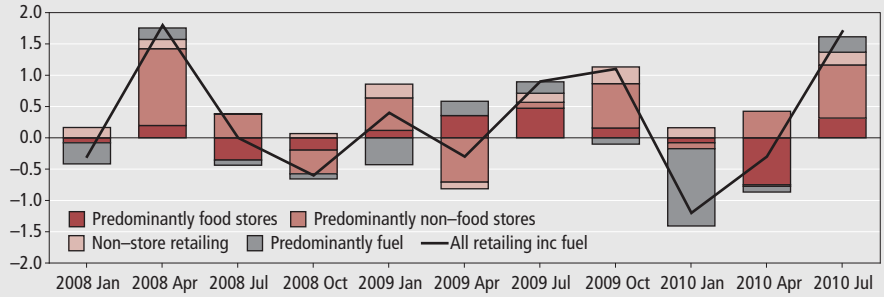
Percentages, quarter on quarter, seasonally adjusted



Source: Retail sales and GDP Output, Income and Expenditure

Figure 9
Contributions to retail sales growth

Percentages, three month on previous three months, seasonally adjusted



Source: Retail Sales

met from stocks, so output falls often abruptly. In the upswing, output rises faster to not only meet growing demand but to replenish stocks. Therefore, the recent contributions of changes in inventories to GDP are consistent with the observed pick up in production (manufacturing) output.

More detail on the expenditure components of GDP are made available in the *Quarterly National Accounts*, published next month, and which will give the third estimate of GDP for 2010 Q2. However, ONS has recently published statistics on retail sales, business investment and UK Trade which all provide views of current demand-side activity in the UK.

Strong retail sales growth in the three months to July 2010

Figure 8 shows recent trends in retail sales and household consumption. The two time series generally show a good positive correlation, although there are periods of differences. This is not unexpected. Retail sales only represent a proportion of total household consumption – specifically goods bought from retail establishments. Retail sales will also pick up spending by businesses from retail outlets.

There are two interesting observations from Figure 8. First, retail sales growth, despite slowing down in the recession, was more robust than household consumption as a whole. This suggests that spending on non-retail items, such as motor vehicles and a broad range of services, fell more sharply in the recession than spending on retail goods. Second, retail sales contracted sharply in the first quarter of the year before bouncing back strongly in the second quarter, whereas household consumption has been less volatile.

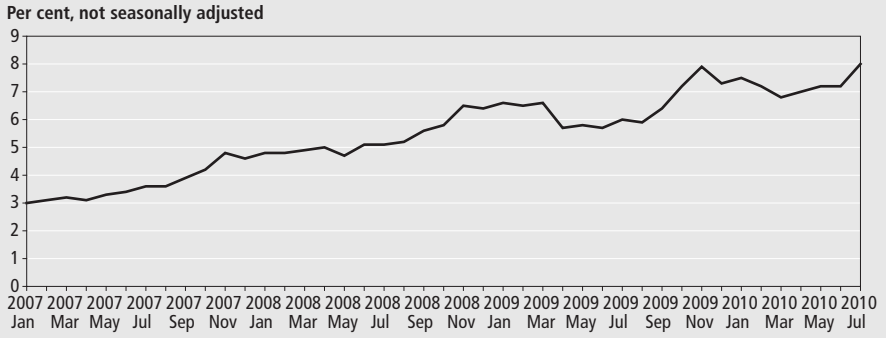
Figure 9 shows the contributions to retail sales using the most up to date published data – that is up until July 2010. Spending in predominantly food stores and in non-stores was fairly robust over the recession period. It is not a surprise that retail spending in food stores held up fairly well, being a less discretionary component of spending than most items of consumption. In fact, there may have even been some substitution towards predominantly food stores from hotels and restaurants, and predominantly non-food stores for items such as clothing and general household goods.

The upward trend in non-store retailing has been driven by a sustained increase in Internet spending (see **Figure 10**). Internet sales, despite exhibiting a slowdown through the recession, have generally grown faster than retail spending as a whole. As a result the share in total retail spending has risen from 3.0 per cent in January 2007 to 8.0 per cent in July 2010.

ONS has recently published the *Internet Access 2010* statistical bulletin which confirms the strong rise in household and individual Internet usage over the last four years – consistent with the sustained rise in retail sales over the Internet. For example, the percentage of adults accessing the Internet everyday has risen from 35 per cent (16.5 million) in 2006 to 60 per cent (30.1 million) in 2010. The flipside of this is that the percentage of adults who have never used the Internet fell over the same period to 18 per cent (9.2 million) from 35 per cent (16.7 million). Adults who purchased over the Internet in the last 12 months rose from 57 per cent in 2008 to 64 per cent in 2010 – with clothes, sports goods, films, music, household goods and books and magazines among the most popular items, along with non-retail services such as holiday accommodation, travel arrangements and tickets for events.

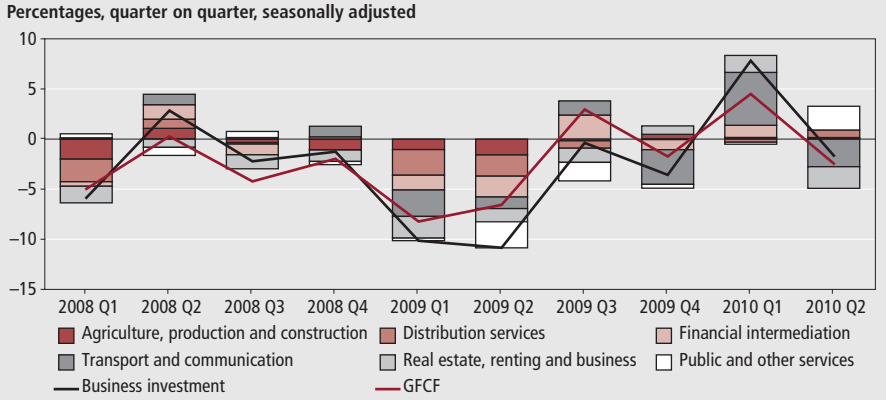
Retail spending in predominantly

Figure 10
Internet retail sales as a proportion of all retail sales



Source: Retail Sales

Figure 11
Gross fixed capital formation, business investment and contributions to business investment by sector



Source: GDP Output Income and Expenditure and Business Investment

automotive fuel establishments has only recently been classified to the retail sector (February 2010). Its impact has been to add some extra volatility in three-month on three-month sales growth, but for the most part there has not been a sustained effect in either direction on total sales. In the three months to January 2010, retail spending in predominantly automotive fuel fell by 13.5 per cent and reduced total retail sales growth by 1.2 percentage points. This included a 12.3 per cent fall in the month of January alone as heavy snow significantly reduced road transport and disrupted tanker deliveries of fuel to filling stations.

Retail spending in predominantly non-food stores slowed during the recession, but not by as much as widely expected or by household consumption as a whole. This is despite consisting of more discretionary items of spending at a time when consumer credit has been restricted, the labour market weakened and consumer confidence remains fragile. Here, volumes may have been supported by discounting, especially in the clothing and footwear category of spending.

In the three months to July 2010, retail sales volumes were 1.7 per cent higher than in the previous three-month period. This was due to a broad-based increase in spending across all the retail spending sub-categories, and particularly in the predominantly non-food stores sector.

Business investment down in the second quarter

Business investment accounts for a significant part of total gross fixed capital formation, of which the other main components are dwellings, transfer costs of fixed assets (such as land) and public sector investment. **Figure 11** shows the relationship between growth in business investment and total GFCF, and also the contributions to business investment growth by major type of industry. Business investment and total GFCF have generally moved in the same direction, and for the most part, the contributions by industries have been in the same direction.

Quarter on quarter movements in investment spending tend to be volatile, making it more difficult to discern the trend in recent data. However, as yet there does not appear to be a sustained pick up in business investment spending as the UK economy exits from recession. Business investment in 2010 Q2 was still 23.7 per cent below its pre-recession peak in 2007 Q4, and the cumulative fall has been large relative to previous recessions.

Weak investment is likely to reflect significant business uncertainty regarding the future economic outlook. The Bank of England's regional agents recently reported that investment remains focussed on improving efficiency, reducing costs and replacing assets rather than expanding capacity. Business survey data, such as surveys administered by the Confederation of Business Industry (CBI), point to the demand outlook and current spare capacity as being the main factors behind depressed investment intentions.

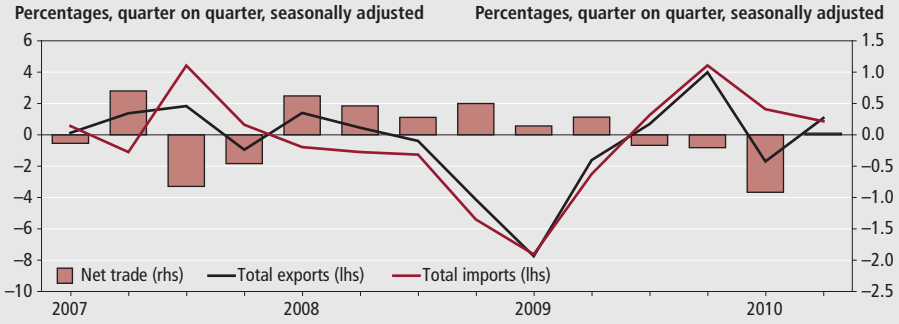
The availability of finance has therefore been a secondary constraint on investment spending. Although the cost and availability of external finance is more limited than in the years before the financial crisis, business survey respondents had cited an improvement since 2009. This constraint though may become more significant if the economy continues to recover and investment intentions rise.

Internal sources of finance have risen in recent years due to private non-financial corporations (PNFCs) running financial surpluses. These actually grew during the recession as stockbuilding and fixed investment spending fell faster than corporate disposable income (where falling operating profits and property income were also offset by lower tax and dividend payments). Firms may be building cash balances to act as a buffer against future shocks, such as to cover deficits in pension funds that have widened as bond yields and equity prices fell over the course of the downturn. It may also be the case that these cash balances, to some extent, arose automatically as the result of the decision to cut back on investment spending in line with more pessimistic views of future demand.

Exports of goods rebound in the second quarter of 2010

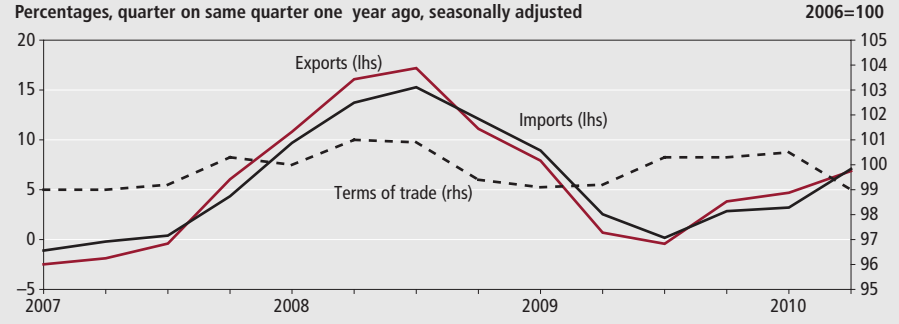
In 2010 Q2 net trade was broadly neutral in terms of its contribution to quarterly GDP growth, but this followed three successive quarters where the impact

Figure 12a
Exports and imports and the contribution of net-trade to GDP growth



Source: GDP Output Income and Expenditure and UK Trade

Figure 12b
Exports and imports goods inflation and the terms of trade



Source: UK Trade

was negative (**Figure 12a**). As the global economy has shown signs of recovery, UK imports have grown faster than UK exports. The effective sterling exchange rate has depreciated by around 25 per cent since the middle of 2008, yet this does not appear to have provided the boost to net trade that was anticipated, especially by those who have advocated a rebalancing of the economy away from domestic (consumption) to foreign (exports) demand.

This tends to suggest that demand effects have typically outweighed price or competitiveness effects in UK trade. UK imports may have been driven in the last year by the vehicle scrappage scheme and by the deceleration in the rate at which firms were destocking – leading to an increase in imports of vehicles and intermediate goods.

Figure 12b presents UK export and import goods prices inflation, and also the terms of trade which is basically the ratio of export to import prices. These figures are taken from *UK Trade* statistical bulletin. It is not shown in Figure 12a, but recent trends in UK total imports and exports growth have been driven by trade in goods, which make up the major part of trade, as opposed to trade in services. Figure 12a shows that UK exports and imports goods price inflation have generally moved in line with each other, and therefore there has been little effect on the UK terms of trade. One of the expected consequences of sterling depreciation would be that import price inflation exceeds that of exports, and the terms of trade fall to reflect an improvement in relative competitiveness.

After sterling exited from the European Exchange Rate Mechanism in 1992 its value also depreciated by around a quarter. This was reflected more strongly in the UK terms of trade, which fell by around four index points between 1993 and 1995. Net trade made a positive contribution to growth in these years as exports picked up strongly.

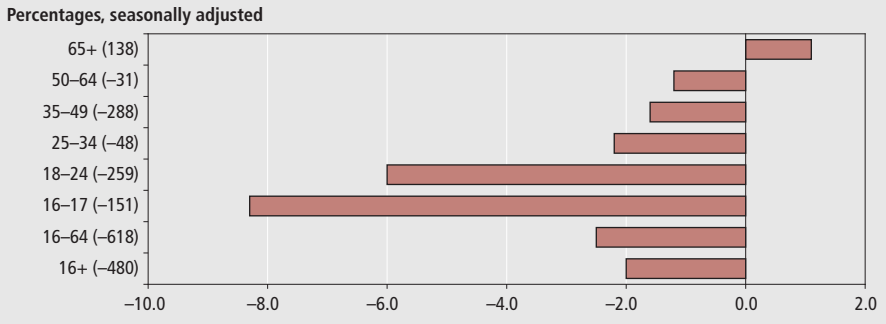
Exchange rate depreciation though is only expected to provide a fillip to net trade if imports and exports are relatively price elastic – that is demand is sensitive to price. It could be argued that UK exports are no longer as price sensitive as they were almost two decades ago. For example, the structure of UK trade has changed to higher quality goods such as pharmaceuticals and aerospace where quality is likely to be as important as price. As a result, and if UK exports are less price sensitive, exporters may have taken the opportunity to use sterling depreciation to increase margins instead of competitiveness. It may also be the case that foreign exporters to the UK have absorbed some of the effects of sterling depreciation into their own margins to remain competitive in the UK market. These types of *pricing to market* activities act to offset the impact of exchange rate movements on the terms of trade.

Larger falls in the employment rates of younger people since 2008 Q1

In the second quarter of the year (April to June 2010) the headline level of employment (all those aged 16 and over) rose by 184,000 to 29.02 million. The headline employment rate, relating to those aged 16 to 64, increased from 70.3 per cent in the first quarter to 70.5 per cent. However, as **Figure 13a** shows, employment rates remain considerably lower than before the recession. In 2008 Q1, the headline employment rate (16-64) was 2.5 percentage points higher at 73.0 per cent. Furthermore, there appears to be a distinct age profile in the change in employment rates between 2008 Q1 and 2010 Q2, with the larger falls concentrated in the younger age groups. This is also shown in **Figure 13b**. Here, the employment rates of the 25-34 and 35-49 have generally followed the same pattern. However, a comparison of the employment rates of the 18-24 and 50-64 age categories shows a marked reduction in the former and little change in the latter.

Younger generations in the workforce are more likely to be adversely affected by a slowdown in recruitment. Having fewer years of experience and years of service may also make redundancy relatively cheaper. This is even more the case now that pension fund deficits and new accountancy standards for the reporting of funded pension positions in company accounts makes early retirement as a means for trimming the labour force perhaps less attractive than in previous downturns. The economic consequences of falling employment in the younger generations are a concern – especially if a prolonged spell of unemployment at a young age causes scarring that harms younger people's longer-term prospects in the labour market.

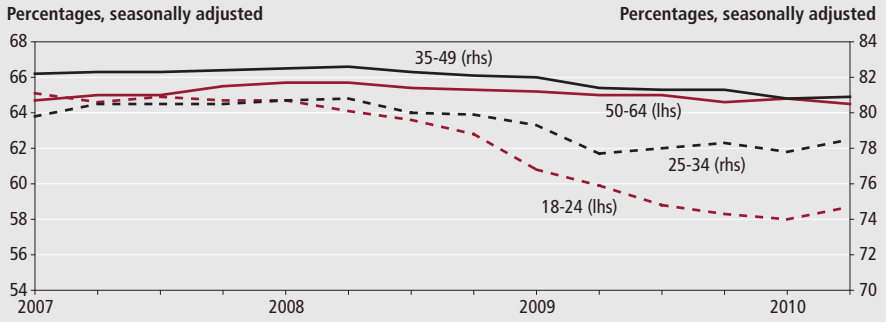
Figure 13a
Total change in employment rates by age, 2008 Q1 to 2010 Q2



Notes:
1 Changes in employment (thousands) are in brackets

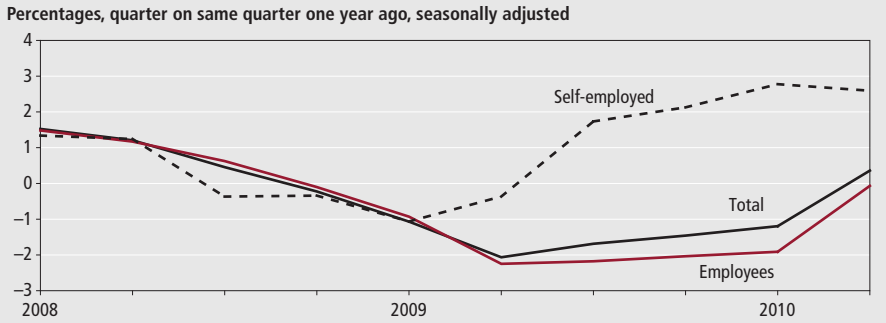
Source: Labour Market Statistics

Figure 13b
Trends in employment rates by age



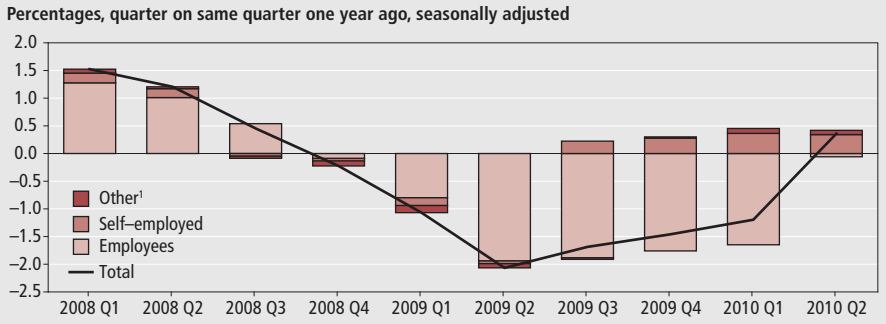
Source: Labour Market Statistics

Figure 14a
Change in total employment, employees and self employment



Source: Labour Market Statistics

Figure 14b
Contributions to the change in total employment



Notes:
1 Other includes unpaid family workers, government supported training and employment programmes

Source: Labour Market Statistics

Self-employment and part-time employment rises

Despite the general fall in employment levels and rates through the recession there have been increases in both self-employment levels and part-time employment levels. **Figure 14a** presents four-quarter growth rates of total employment, employees and self-employment. **Figure 14b** then shows the contributions to total employment growth since 2008 Q1.

Clearly, self employment picked up significantly through 2009. However, as the self-employed have typically only accounted for between 10-15 per cent of total employment, the contribution to total employment growth is smaller.

This rise in self-employment probably reflects the more limited employee opportunities. Small businesses are normally more capital constrained than larger firms with more collateral, so in some sense, it is surprising that self-employment has risen so quickly at a time when lending to small businesses has been constrained and the outlook for the housing market, which is often a source of collateral for self-employed people, has been increasingly uncertain. On the other hand, low mortgage rates following aggressive cuts in interest rates, may have created some financial freedom in which to start new businesses. It is also noticeable that a high proportion of the increase in self-employed people are women, so it may be the case that a partner in employment can provide some financial security to the household.

Part-time employment has also risen markedly through the recession (**Figure 15a**), and although this has been insufficient to offset fully the fall in full-time employment (**Figure 15b**), it has nonetheless meant that the fall in total employment through the recession was less than it might have otherwise been. The rise in part-time working could be considered an indicator of labour flexibility, where the labour market adjustment to falling demand results in lower hours rather than lower employment. **Figure 15c** decomposes the four-quarter growth in part-time employment by reason for working part-time, and clearly shows that the main driving factor has been the inability to find full-time work. This therefore points to a rise in underemployment, where workers are constrained to working fewer hours at

their existing wage rate than they would otherwise wish. Although this reduces the impact of the recession on total employment, growing underemployment still has similar, if less severe, implications for household income and labour market attachment.

Male employment falls faster than female employment through the recession

Not only has the fall in employment had a differential impact on people of different ages, it has also, so far, been more severe for men than women. As **Figure 16a** and **Figure 16b** show, the male contribution to the fall in total employment has been much greater. This largely reflects the differential impact of the recession on the industries where men and women work. In the manufacturing and construction sectors the concentration of male employment is substantially higher than female, particularly in construction where women account for a very low proportion of jobs. These industries experienced a much larger fall in output during the recession than the services sector as a whole – with the pass through into employment then affecting men more than women.

In contrast, women are more represented than men in the public services, most notably education and health. These services tend to be insulated from cyclical movements in the economy, in fact employment in the health service has actually increased since 2008 rather than fallen. Therefore female jobs tend to be more secure on average than male jobs, although female employment may therefore be more adversely affected by cuts to the public sector. For completeness it should be mentioned that in the services where the share of men and women are fairly equal, such as business services and finance, the fall in jobs between the sexes has been fairly similar.

Adjustment in hours lowers the impact of the recession on employment

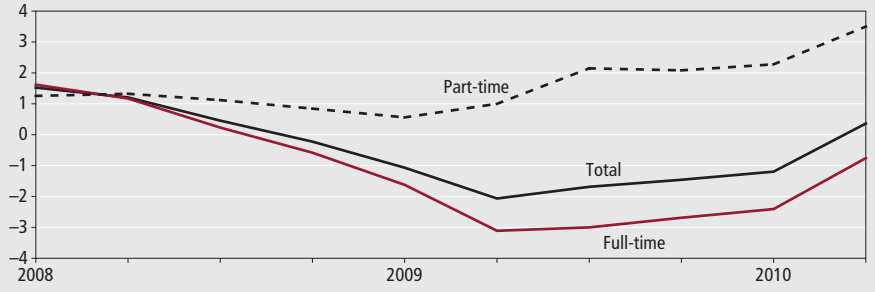
The rise in part-time working has reduced the impact of the recession on employment by transferring some of the effect of falling labour demand away from the number of people towards the number of hours. **Figure 17** breaks down the change in total hours each quarter into two parts: the change in the number of workers and the change in average actual hours worked.

Average actual weekly hours have drifted downwards from 32.2 hours in 2008 Q1 to 31.7 hours in 2010 Q2. Although this works out at around half an hour for each person in employment, when there are around 29 million people in employment this represents a total fall in hours of around 14.5 million – or the equivalent of about 450,000 people working 32.2 hours per week. This rough calculation highlights the importance of hours adjustment alongside employment adjustment in analysing the impact of the recession on the labour market.

As Figure 17 highlights, in some quarters the contribution of falling average hours has been more important than the employment contribution. For example, in 2009 Q1, a number of prominent car producers cut over time and extended the annual Christmas shut down by weeks in some cases and by months in others. The fall in average hours therefore is unlikely

Figure 15a
Change in total, full-time and part-time employment

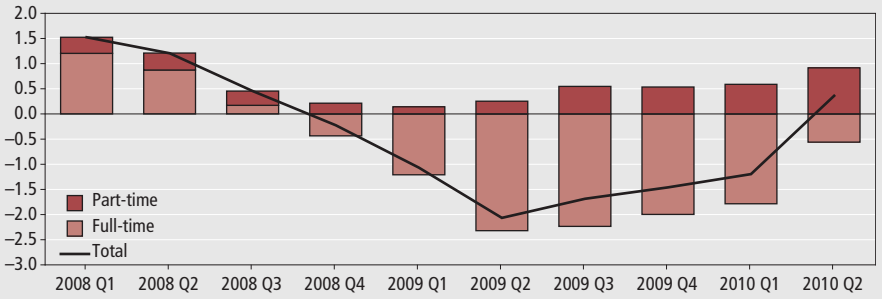
Percentages, quarter on same quarter one year ago, seasonally adjusted



Source: Labour Market Statistics

Figure 15b
Contributions to the change in total employment by full-time, part-time employment

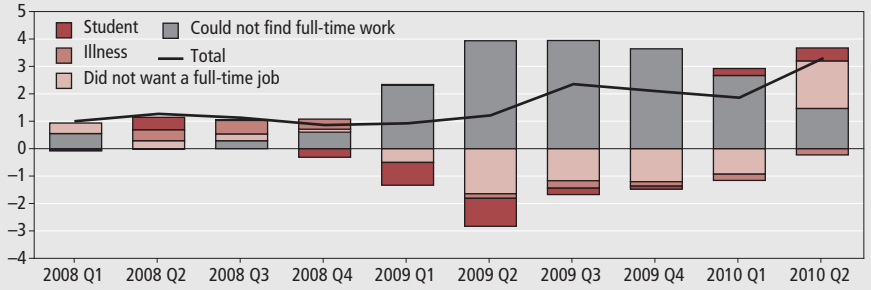
Percentages, quarter on same quarter one year ago, seasonally adjusted



Source: Labour Market Statistics

Figure 15c
Change in part-time employment by reason for working part-time

Percentages, quarter on same quarter one year ago, seasonally adjusted

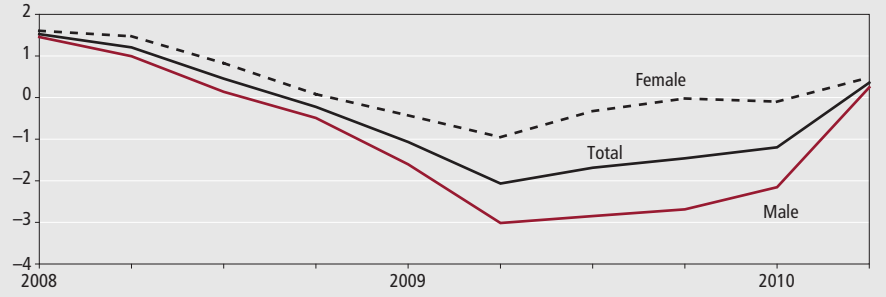


Notes: *Source: Labour Market Statistics*

1 Total includes those who did not give a reason for working part-time so total growth rates may differ from Figures 15a and 15b

Figure 16a
Change in total employment, male and female employment

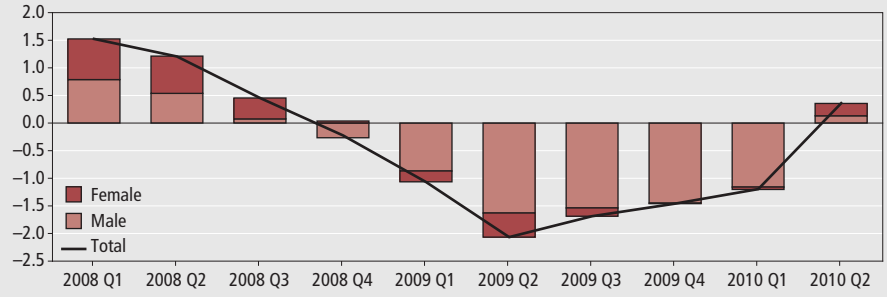
Percentages, quarter on same quarter one year ago, seasonally adjusted



Source: Labour Market Statistics

Figure 16b
Contributions to the change in total employment, male and female employment

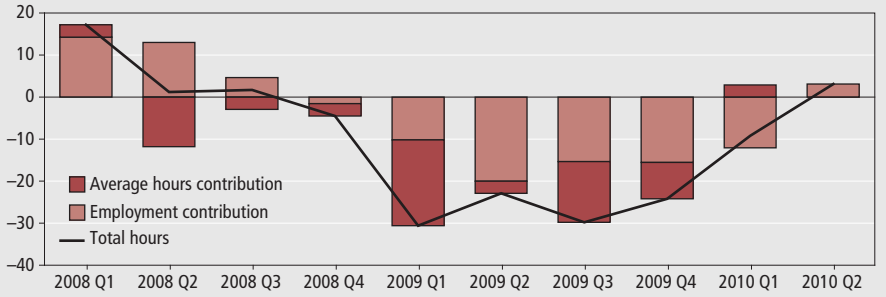
Percentages, quarter on same quarter one year ago, seasonally adjusted



Source: Labour Market Statistics

Figure 17
Change in total hours

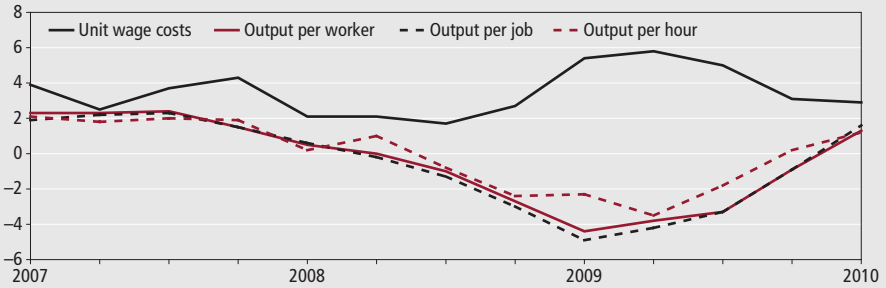
Hours (millions), quarter on quarter, seasonally adjusted



Source: Labour Market Statistics

Figure 18
Productivity and unit wage costs

Percentages, quarter on same quarter one year ago, seasonally adjusted



Source: Labour Market Statistics

to have been very evenly spread over the entire workforce. So on the one hand it again emphasises the value of preserving employment by reducing hours, but also points to a rise in underemployment and associated problems with that.

Labour productivity begins to improve as output recovers

It is widely accepted that firms face costs in adjusting the size of their workforce. Hiring new labour requires search costs and then training costs, firing labour requires at least statutory redundancy payments. Consequently, labour hoarding may be a rational response to a fall in demand if there is uncertainty over the future path of demand and that it may be costly to rehire and retrain staff when business conditions improve. Firms may therefore find it optimal to vary labour inputs through hours (for example the use of overtime or shorter working periods).

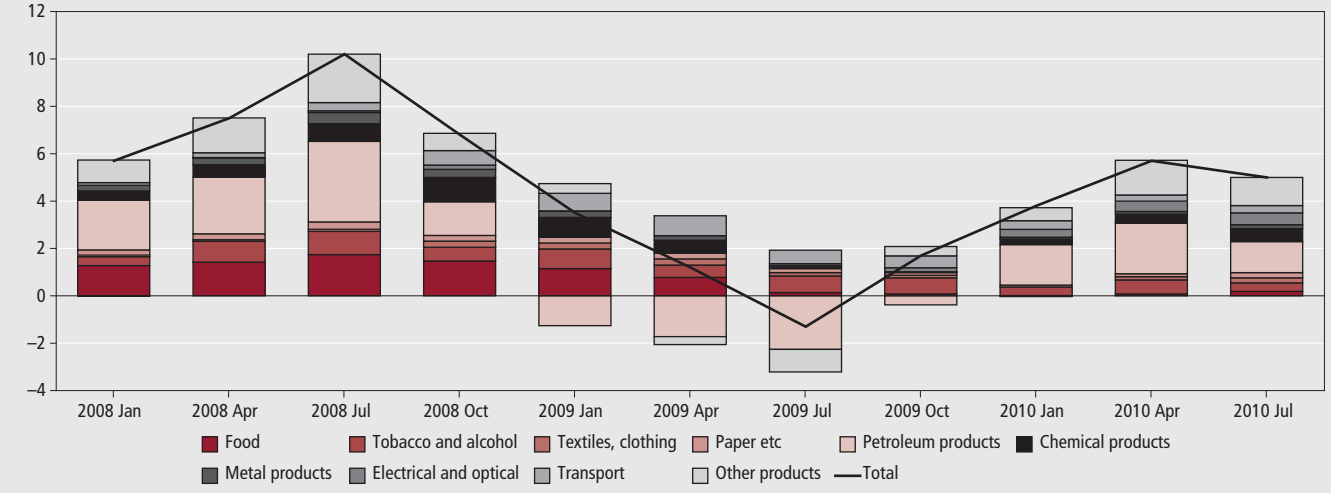
This has been reflected in various measures of labour productivity (see **Figure 18**). Output per worker and output per job fell to a greater extent than output per hour – reflecting that hours fell by more than jobs and workers in the downturn. Recently, labour productivity on all measures has started to improve as the economy recovers and output (GDP) begins to grow. In this case, and as expected, output per worker and output per job have grown faster than the output per hour measure – suggesting that with spare capacity available and underutilised labour businesses have been able to increase output by raising the productivity of the workers they retained through the recession. However, the logical repercussion of being able to produce more output through higher labour intensity is that employment need not rise immediately in line with GDP if increasing output can be achieved through higher labour productivity.

Producer price inflation continued to reflect movements in oil prices and import prices

In July 2010, the annual rate of producer prices output inflation, often referred to as factory gate prices inflation, was 5.0 per cent. This compares with 5.7 per cent three months earlier in April 2010, and -1.3 per cent a year earlier in July 2009

Figure 19a
Producer prices inflation: outputs

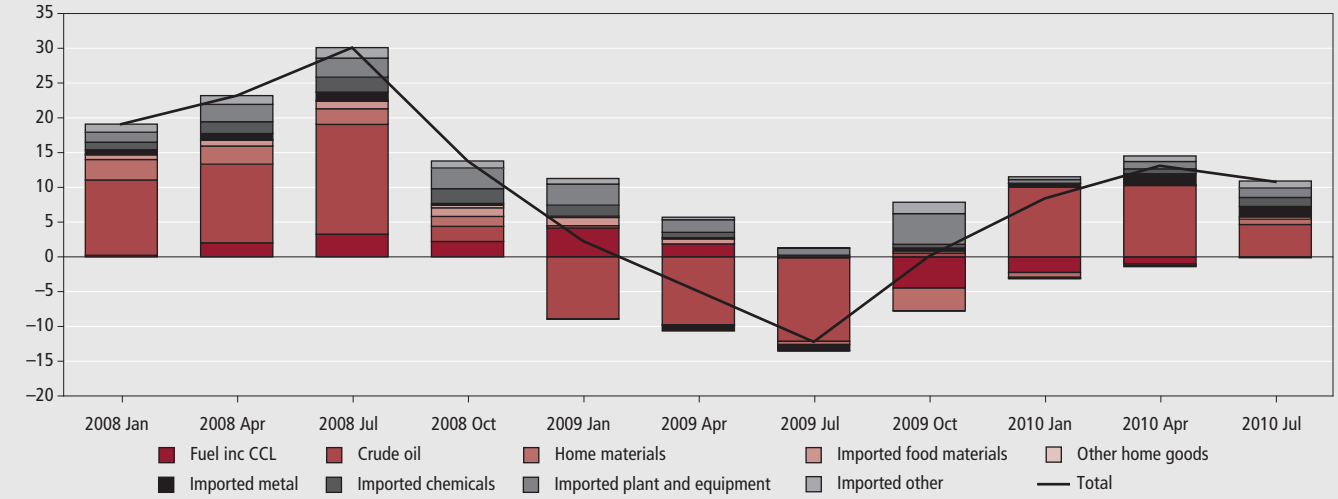
Percentages, three months on same three months one year ago, not seasonally adjusted



Source: Producer Prices

Figure 19b
Producer prices inflation: inputs

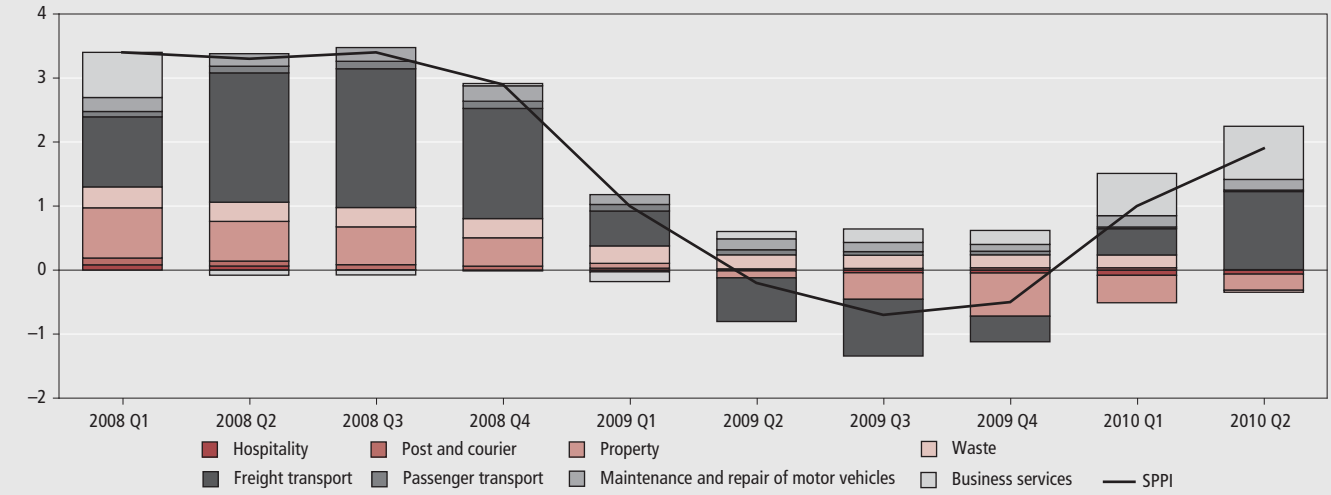
Percentages, three months on same three months one year ago, not seasonally adjusted



Source: Producer Prices

Figure 20
Services producer prices inflation

Percentages, quarter on same quarter one year ago, not seasonally adjusted



Source: Services Producer Prices

(**Figure 19a**). Producer prices inflation over the last year has tended to follow the path of oil prices. In July 2009 the oil price was $65.8 per barrel, prices then increased to a peak of $85.8 per barrel in April 2010. Since then the price has moderated a little, falling to $75.4 per barrel in July 2010.

The effect of oil prices on factory gate inflation is most easily observed in the direct impact on petroleum products, which as shown in Figure 19a, has had an important influence on movements in the overall producer price index (PPI). However, as **Figure 19b** shows, oil prices have had a significant impact on input price inflation – which then feeds through to output price inflation in a much broader range of commodities. In July 2009 the annual rate of PPI input inflation was -12.2 per cent, rising to 13.1 per cent in April 2010 before falling back to 10.8 per cent in July 2010. Crude oil has been an important driver of these movements. The oil price will also have had an indirect effect on input prices through fuels, chemicals (as a major source of hydrocarbons) and food materials (via the impact of oil prices on bio fuels and hence grain prices).

Figure 19b also shows the importance of imported goods as a source of PPI inflation. Although the price of imported materials will largely reflect global commodity prices, movements in the sterling exchange rate can also be important. Depreciation of sterling since the second half of 2008 would be expected to put upward pressure on import prices.

Services Producer Prices Index (SPPI) inflation increases to 1.9 per cent in 2010 Q2

Oil and other commodity prices also appear to have had an impact on SPPI inflation rates, albeit smaller than on PPI inflation rates. As **Figure 20** shows, freight forwarding has been an important recent determinant of annual SPPI inflation, and this is likely to be influenced by fuel costs. However, other components of the SPPI have tended to follow a cyclical pattern and have been less influenced by global commodity prices. Property is the most notably example, making a negative contribution to annual SPPI inflation through the recession as commercial rents fell as supply outstripped demand. The recent pick up in SPPI inflation, from -0.5 per cent in 2009 Q4 to 1.9 per cent in 2010 Q2, has also been driven by business services where margins and staff costs may have started to rise in line with the recovery in output and business confidence.

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Independent forecasts

August 2010

UK forecasts

The tables below supplement the Economic Review by providing a forward-looking view of the UK economy. The tables shows the average and range of independent forecasts for 2010 and 2011 and are extracted from HM Treasury's Forecasts for the UK Economy.

2010

	Average	Lowest	Highest
GDP growth (per cent)	*1.5*	*1.2*	*1.9*
Inflation rate (Q4, per cent)			
CPI	*2.7*	*1.8*	*3.4*
RPI	*3.9*	*2.5*	*5.3*
Claimant count (Q4, million)	1.52	1.33	1.65
Current account (£ billion)	–25.9	–41.6	–9.8
Public Sector Net Borrowing (2009–10, £ billion)	147.4	133.6	161.0

2011

	Average	Lowest	Highest
GDP growth (per cent)	*2.0*	*1.0*	*3.2*
Inflation rate (Q4, per cent)			
CPI	*2.4*	*1.2*	*3.7*
RPI	*3.5*	*2.2*	*5.4*
Claimant count (Q4, million)	1.58	1.20	1.90
Current account (£ billion)	–21.6	–46.4	1.0
Public Sector Net Borrowing (2010–11, £ billion)	119.8	89.1	151.4

Notes

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

Selected world forecasts

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

2010

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

2011

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

Notes

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

Key indicators

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

Seasonally adjusted unless otherwise stated

	Source CDID	2008	2009	2009 Q4	2010 Q1	2010 Q2	2010 May	2010 Jun	2010 Jul
GDP growth – chained volume measures (CVM)									
Gross domestic product at market prices	ABMI	–0.1	–4.9	0.4	0.3	1.2	..	..	..
Output growth – chained volume measures (CVM)									
Gross value added (GVA) at basic prices	ABMM	–0.1	–4.7	0.6	0.3	1.2	..	..	..
Industrial production	CKYW	–3.1	–10.2	0.5	1.0	1.0	0.7	–0.4	..
Manufacturing	CKYY	–2.9	–10.6	1.2	1.4	1.6	0.3	0.3	..
Construction	GDQB	–0.8	–11.0	–1.5	–1.7	8.5	..	..	..
Services	GDQS	0.5	–3.3	0.7	0.3	0.8	..	..	..
Oil and gas extraction	CKZO	–5.0	–7.3	–0.2	–1.3	–0.5	2.2	–5.9	..
Electricity, gas and water supply	CKYZ	0.1	–8.5	–2.9	0.3	–1.0	1.1	1.2	..
Business services and finance	GDQN	2.0	–4.5	0.6	1.1	1.5	..	..	..
Household demand									
Retail sales volume growth	EAPS	2.6	1.7	0.7	..	..	..	..	..
Household final consumption expenditure growth (CVM)	ABJR	0.6	–3.4	0.6	–0.1	0.7	..	..	..
Labour market[2,3]									
Employment: 16 and over (thousands)	MGRZ	29,440	28,978	28,903	28,839	29,023	29,023	..	..
Employment rate: working age (%)	MGSU	74.5	72.8	72.4	72.0	72.4	72.4	..	..
Workforce jobs (thousands)	DYDC	31,780	30,997	30,753	30,766	..	..	..	..
Total actual weekly hours of work: all workers (millions)	YBUS	940.1	913.3	908.6	909.4	918.0	918.0	..	..
Unemployment: 16 and over (thousands)	MGSC	1,780	2,394	2,452	2,506	2,457	2,457	..	..
Unemployment rate: 16 and over (%)	MGSX	5.7	7.7	7.8	8.0	7.8	7.8	..	..
Claimant count (thousands)	BCJD	905.8	1,528.5	1,615.9	1,579.2	1,486.0	1,480.9	1,465.0	1,461.2
Economically active: 16 and over (thousands)	MGSF	31,221	31,372	31,355	31,345	31,479	31,479	..	..
Economic activity rate: working age (%)	MGSO	79.2	79.0	78.7	78.5	78.7	78.7	..	..
Economically inactive: working age (thousands)	YBSN	7,863	7,967	8,077	8,166	8,095	8,095	..	..
Economic inactivity rate: working age (%)	YBTL	20.8	21.0	21.3	21.5	21.3	21.3	..	..
Vacancies (thousands)	AP2Y	636	451	465	475	490	481	490	481
Redundancies (thousands)	BEAO	164	235	168	161	155	152	..	..
Productivity and earnings annual growth									
GB average earnings (including bonuses)[3]	LNNC	..	..	1.5	4.3	1.5	3.0	1.5	..
GB average earnings (excluding bonuses)[3]	JQDY	..	..	1.4	1.7	1.4	1.6	1.4	..
Whole economy productivity (output per worker)	A4YN	..	..	–0.9	1.3	..	..	..	..
Manufacturing productivity (output per job)	LOUV	..	..	..	..	..	..	..	..
Unit wage costs: whole economy	LOJE	..	..	3.1	2.9	..	..	..	..
Unit wage costs: manufacturing	LOJF	..	..	..	..	..	..	..	..
Business demand									
Business investment growth (CVM)	NPEL	–1.1	–19.4	–3.6	7.8	–1.6	..	..	..
Government demand									
Government final consumption expenditure growth	NMRY	1.6	1.2	0.1	1.5	0.3	..	..	..
Prices (12-monthly percentage change – except oil prices)[1]									
Consumer prices index	D7G7	3.6	2.2	2.1	3.3	3.5	3.4	3.2	3.1
Retail prices index	CZBH	4.0	–0.5	0.6	4.0	5.1	5.1	5.0	4.8
Retail prices index (excluding mortgage interest payments)	CDKQ	4.3	2.0	2.8	4.5	5.1	5.1	5.0	4.8
Producer output prices (excluding FBTP)[4,5]	PLLV	4.7	1.9	2.2	3.2	4.6	4.4	5.0	4.7
Producer input prices[5]	RNNK	21.6	–3.5	4.0	8.7	11.7	11.7	10.7	10.8
Oil price: sterling (£ per barrel)	ETXR	52.10	39.34	45.53	46.63	53.30	52.54	51.43	49.25
Oil price: dollars ($ per barrel)	ETXQ	98.37	62.05	74.40	77.25	79.49	77.03	75.66	75.35

Seasonally adjusted unless otherwise stated

	Source CDID	2008	2009	2009 Q4	2010 Q1	2010 Q2	2010 May	2010 Jun	2010 Jul
Financial markets[1]									
Sterling ERI (January 2005=100)	BK67	90.8	80.2	80.0	79.3	79.6	79.0	80.8	81.2
Average exchange rate /US$	AUSS	1.8528	1.5651	1.6345	1.5610	1.4909	1.4627	1.4761	1.5299
Average exchange rate /Euro	THAP	1.2588	1.1233	1.1058	1.1269	1.1747	1.1685	1.2082	1.1959
3-month inter-bank rate	HSAJ	2.75	0.55	0.55	0.50	0.65	0.60	0.65	0.65
Selected retail banks: base rate	ZCMG						0.50	0.50	0.50
3-month interest rate on US Treasury bills	LUST	0.11	0.06	0.06	0.16	0.18	0.17	0.18	0.16
Trade and the balance of payments									
UK balance on trade in goods (£m)	BOKI	–93,116	–81,789	–21,039	–21,854	–22,864	–8,028	–7,401	..
Exports of services (£m)	IKBB	170,819	159,111	39,827	39,106	37,955	13,214	13,185	..
Non-EU balance on trade in goods (£m)	LGDT	–53,877	–44,701	–10,358	–12,256	–12,801	–4,492	–4,262	..
Non-EU exports of goods (excl oil & erratics)[6]	SHDJ	106.8	97.2	104.0	103.4	110.3	109.0	113.5	..
Non-EU imports of goods (excl oil & erratics)[6]	SHED	106.6	92.2	94.1	102.3	105.2	107.2	108.5	..
Non-EU import and price index (excl oil)[6]	LKWQ	112.7	123.4	121.4	125.0	129.6	130.6	130.5	..
Non-EU export and price index (excl oil)[6]	LKVX	108.9	117.8	117.0	120.7	123.6	124.6	123.9	..
Monetary conditions/government finances									
Narrow money: notes and coin (year on year percentage growth)[7]	VQUU	7.3	6.8	6.8	5.3	5.8	6.2	5.8	5.1
M4 (year on year percentage growth)	VQJW	12.5	12.3	6.6	3.3	3.0	2.7	3.1	2.3
Public sector net borrowing (£m)	–ANNX	61,296	139,912	41,983	27,600	39,442	17,751	13,925	3,173
Net lending to consumers (£m)	RLMH	11,198	–694	–274	753	224	368	–59	173

External indicators – non-ONS statistics

		2010 Jan	2010 Feb	2010 Mar	2010 Apr	2010 May	2010 Jun	2010 Jul	2010 Aug
Activity and expectations									
CCBI output expectations balance[1]	ETCU	4	7	5	14	17	15	6	10
CBI optimism balance[1]	ETBV	12			24			10	
CBI price expectations balance	ETDQ	7	10	15	17	11	9	8	5

Notes:

Source: Office for National Statistics

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

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

ARTICLE

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Office for National Statistics

Total reward: pay and pension contributions in the private and public sectors

SUMMARY

This article compares total reward, which is the sum of gross pay and employers' pension contributions, for the public and private sectors.

Total reward for full-time employees is higher in the public sector than the private sector, predominately due to the larger proportion of employees who do not belong to employer pension schemes (with zero pension contributions) in the private sector. A comparison of total reward on a like-for-like basis, comparing full-time employees with pensions in both sectors, shows that total reward is higher in the private sector than the public sector. Distributional analysis shows that the gap between private and public sector employees is particularly marked at the top end of the distribution.

Further analysis explores total reward for full-time employees with pensions by age, occupation, size of the organisation and industrial sector.

Introduction

In recent months, some commentators have argued that, taking account of pensions as well as pay, public sector employees in the UK receive better remuneration than their counterparts in the private sector. This article analyses the evidence from the Annual Survey of Hours and Earnings (ASHE) of the Office for National Statistics (ONS)[1], and finds that the answers are more complex than such claims suggest.

The analysis compares the gross pay, employer pension contributions and 'total reward' of full-time employees working in the public and private sectors. It does not include the self-employed, who are not covered by the ASHE dataset.

The concept of total reward means different things to different people. The broadest definitions add together gross pay and benefits, which range from additional money benefits to benefits in kind and even quality of life in the workplace. This may also be called the 'overall reward package'. In this article, however, a narrow definition of total reward is used, consisting of gross pay plus employer pension contributions.

Total reward can also be seen as the sum of current and deferred earnings, or earnings received now and earnings which accumulate to be paid as a pension when the employee retires. From this perspective, deferred earnings include both employer pension contributions (on top of gross pay) and employee pension contributions, which are deducted from gross pay.

When asked how much they earn, most people quote their gross pay rather than total reward. However, in many cases the employer pension contribution is a significant part of an employee's remuneration. It also represents a major cost to public and private sector employers. For these reasons, the Independent Public Service Pensions Commission chaired by John Hutton, which began work in June 2010[2], is interested in the question of total reward.

Strengths and weaknesses of the data

This article presents analysis based on the latest available ASHE, which relates to the employee's pay period (for example, a week or a month) that included 22 April 2009. The ASHE dataset is based on a 1 per cent sample of employee jobs taken from the PAYE records of HM Revenue & Customs. ASHE is a large-scale survey, and is regarded as the best source for estimating average earnings in the UK. However, low-paid workers earning below the PAYE threshold may be under-represented.

The standard presentation of average earnings estimates in ASHE is in the form of gross pay, which is pay before tax, National Insurance or other deductions, and excluding payments in kind. This article goes beyond this to analyse gross pay plus employer pension contributions. Although ASHE is considered the best source for such analysis, the following limitation of the dataset should be borne in mind.

The data for employer pension

Table 1
Gross pay and total reward: summary statistics,[1,2] April 2009

United Kingdom £ per week

	Gross pay				Total reward			
	Mean	1st quartile	Median	3rd quartile	Mean	1st quartile	Median	3rd quartile
Total	587	348	489	693	636	364	523	761
Men	643	379	531	753	695	394	565	825
Women	501	313	426	613	546	329	462	674
Private sector								
Total	581	330	465	677	614	335	479	718
Men	633	364	509	735	671	371	528	779
Women	466	282	373	543	488	287	383	573
Public sector								
Total	605	393	539	722	692	444	615	829
Men	679	433	591	791	780	492	680	917
Women	545	363	496	663	621	411	564	756

Notes: *Source: ASHE*

1 Results are for full-time employees on adult rates of pay whose earnings were not affected by absence.
2 Total reward is defined as gross pay plus employer pension contributions.

contributions includes lump sum payments, which are typically paid at the end of a financial year and may cover a period that is longer than the pay period in question. It is not always possible to distinguish such payments from regular pension contributions, so in a few cases at the top end of the earnings distribution, employer pension contributions (and therefore total reward) may be inflated. In the following analysis, this is likely to have an impact on the mean (average) and on the highest (10th) decile point in the distribution (decile points divide the distribution into 10 equal parts so that each part contains 10 per cent of the distribution). For this reason, the analysis focuses on the median (that is, the midpoint of the distribution), as the preferred measure of the average, and on the 9th rather than the 10th decile point.

Another limitation of ASHE and other sources of data on employer pension contributions is that they may underestimate the true cost to the employer of pension contributions. In recent months, some commentators have argued that this is particularly so for public sector schemes. However, it also applies to defined benefit (salary-based) schemes in the private sector, which may have to make up deficits in their pension funds with 'special contributions'. Special contributions from employers are not reported in the data for individual employees which is analysed in this article.

It should also be noted that an analysis of total reward (gross pay plus employer pension contributions) does not constitute a complete analysis of every aspect of pension provision in the public and private sectors. This is not possible using the ASHE dataset, nor is there a single source of data capable of doing this – although the ONS publication *Pension Trends*[3] brings together several sources to analyse various aspects of pension provision.

Some readers may be interested in a time series for the information presented in this article. It was decided not to present a time series for two reasons. First, ASHE has only collected information on employer pension contributions since 2005 so, at present, a long time series is unavailable. Second, between 2008 and 2009 Lloyds Banking Group, the Royal Bank of Scotland Group and HBOS PLC were reclassified from the private sector to the public sector, so between 2008 and 2009 there is a break in any time series comparing the public and private sectors.

Finally, it is worth bearing in mind that in April 2009, the UK economy was in recession. This depressed earnings growth in the private sector[4]. Therefore comparisons between pay in the public and private sectors in April 2009 may be more than usually favourable to the public sector.

The analytical approach

The evidence presented in the remainder of this article addresses the question, 'Is there a difference between public and private sector employees in terms of pay and pension contributions?'

The first part of the analysis compares the gross pay and total reward of all full-time employees in the public and private sectors in April 2009. The findings from this stage of the analysis suggest that public sector employees are better remunerated than their counterparts in the private sector. However, this is because only 43 per cent of full-time employees in the private sector belong to employer pension schemes (57 per cent have zero pension contributions), while in the public sector 90 per cent are members (10 per cent have zero pension contributions)[5].

In the second part of the analysis, total reward in the two sectors is compared on a like-for-like basis in terms of pension scheme participation, looking at full-time employees with pension contributions. On this basis (excluding those with zero pension contributions), the result is different: total reward is higher in the private sector than in the public sector.

Results – all employees

Table 1 shows the results of analysing gross pay and total reward for all full-time employees on adult rates of pay whose earnings were not affected by absence in the pay period in question. In April 2009, median total reward was £523 per week, compared with median gross pay of £489 per week. Comparing the public and private sectors, the summary statistics (mean, 1st quartile, median and 3rd quartile) for both gross pay and total reward show that full-time employees were better off in the public sector than in the private sector, and this result also held for breakdowns by sex.

It should be noted that this represents a simple comparison which does not take into account the different composition of the public and private sectors. In particular, jobs done in the private sector and the public sector may be quite dissimilar. Analysis of public and private sector pay differentials carried out by the Institute for Fiscal Studies (IFS) has found that 'pay levels in the public sector are probably not significantly out of line with those of similar workers in the private sector, once you take into account factors such as their age, education and qualifications'[6].

Results – employees with pensions

The total reward picture presented in the previous section is difficult to interpret because more than half of all employees in the private sector do not have a pension, compared with only one-tenth in the public sector. In some cases this lack of participation in the private sector may be due to lack of access to a pension scheme, while in others it may be due to employees choosing not to belong. This imbalance in pension participation rates between the public and private sectors makes it difficult to compare total reward (including employer pension contributions) in the two sectors.

Table 2
Gross pay and total reward for those with pensions: summary statistics,[1,2,3] April 2009

United Kingdom — £ per week

	Gross pay				Total reward			
	Mean	1st quartile	Median	3rd quartile	Mean	1st quartile	Median	3rd quartile
Total	679	423	581	792	767	474	656	899
Men	751	469	633	872	847	524	713	987
Women	575	373	510	687	651	422	578	778
Private sector								
Total	735	441	604	865	814	477	666	962
Men	786	479	649	920	873	522	712	1,025
Women	598	358	494	708	658	387	542	779
Public sector								
Total	621	405	555	736	718	466	644	852
Men	695	450	607	809	808	522	708	943
Women	560	376	513	675	645	436	589	776

Notes: *Source: ASHE*

1 Results are for full-time employees on adult rates of pay whose earnings were not affected by absence.
2 Total reward is defined as gross pay plus employer pension contributions.
3 Excludes those without current pensions, defined as those without employer or employee contributions.

Table 3
Total reward for those with contracted out pensions: summary statistics,[1,2,3,4] April 2009

United Kingdom — £ per week

	Mean	1st quartile	Median	3rd quartile
Total	761	489	669	895
Men	849	548	732	986
Women	658	439	595	790
Private sector				
Total	853	528	717	1,006
Men	906	572	760	1,059
Women	693	416	580	825
Public sector				
Total	719	468	645	853
Men	808	524	708	943
Women	645	437	589	776

Notes: *Source: ASHE*

1 Results are for full-time employees on adult rates of pay whose earnings were not affected by absence.
2 Total reward is defined as gross pay plus employer pension contributions.
3 Excludes those without current pensions, defined as those without employer or employee contributions.
4 Excludes those who are not contracted out of the State Second Pension.

Therefore, in this section a comparison of total reward in the public and private sectors is made by looking at full-time employees with pension contributions (either from the employee or from the employer). Those without pensions are excluded, allowing comparisons on a like-for-like basis in terms of pension scheme participation.

Table 2 shows the summary statistics for gross pay and total reward for full-time employees who had a current pension in April 2009. Comparing total reward in the public and private sectors, the results show that, overall, full-time employees were better off in the private sector than in the public sector. Median total reward was £666 per week in the private sector, compared with £644 per week in the public sector, while mean total reward was £814 per week in the private sector, compared with £718 per week in the public sector.

The picture differs for men and women. Men, particularly those at the upper end of the total reward distribution, were better off in the private sector – as shown by their advantage over counterparts in the public sector of 8 per cent at the mean and 9 per cent at the 3rd quartile. Women, particularly at the lower end of the total reward distribution, were better off in the public sector – as shown by their advantage over counterparts in the private sector of 9 per cent at the median and 12 per cent at the 1st quartile.

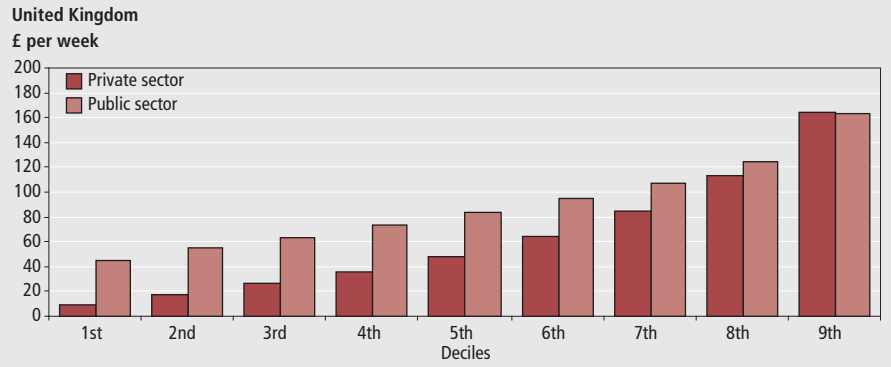
Table 2 also shows gross pay for full-time employees who had a current pension in April 2009. The picture for gross pay in this group is similar to that for total reward, suggesting that those who had a current pension in the private sector were also on higher wages or salaries than their counterparts without pensions. This is borne out by a comparison between private sector gross pay in Table 1 (all full-time employees) and Table 2 (those with pensions), those with pensions had median gross pay of £604 per week in April 2009, compared with £465 for all full-time employees.

It could be argued that in order to produce a comparison of total reward in the public and private sectors on a fully like-for-like basis, the analysis should take account of differences between employees in terms of their pension schemes' contracting out status[7]. Most public sector schemes are contracted out (94 per cent of our sample of full-time employees with pension schemes in the public sector were in contracted out schemes). On the other hand, the majority of private sector schemes are not contracted out (only 36 per cent of our sample of full-time employees with pension schemes in the private sector were in contracted out schemes).

Where schemes are not contracted out, employees receive part of their total reward in the form of employer National Insurance contributions towards a State Second Pension (S2P). However, the ASHE data on employer pension contributions presented in this article does not include these figures, so total reward is underestimated in Table 2, especially in the private sector. **Table 3** presents total reward results for members of contracted out schemes only, thus removing the cases where part of total reward is in the form of employer National Insurance contributions towards the S2P. This makes virtually no difference to the results for the public sector, but it increases the value of total reward in the private sector, thereby increasing the advantage of the private sector over the public sector. In Table 3, median total reward in April 2009 was £717 per week in the private sector, compared with £645 per week in the public sector, while mean total reward was £853 per week in the private sector, compared with £719 per week in the public sector.

Similarly, it could be argued that comparisons should be made for defined benefit (salary-based) schemes only because most public sector pension schemes are defined benefit, while schemes in the private sector are a mixture of defined

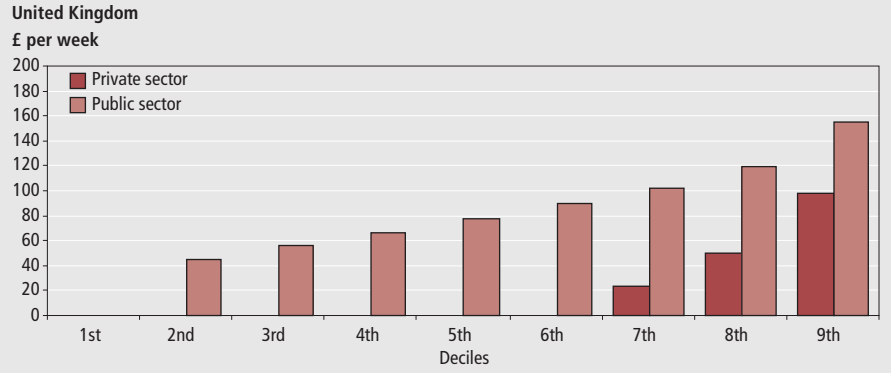
Figure 1
Employer pension contributions for those with pensions,[1,2] April 2009



Notes: *Source: ASHE*

1 Results are for full-time employees on adult rates of pay whose earnings were not affected by absence.
2 Excludes those without current pensions, defined as those without employer or employee contributions.

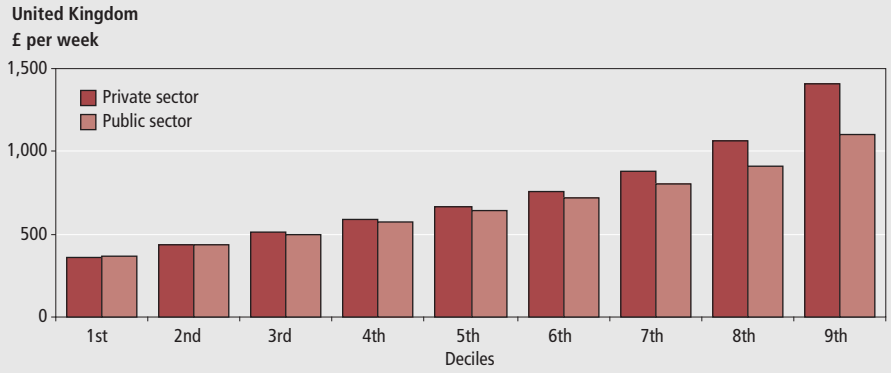
Figure 2
Employer pension contributions for all full-time employees,[1,2] April 2009



Notes: *Source: ASHE*

1 Results are for full-time employees on adult rates of pay whose earnings were not affected by absence.
2 Includes those without current pensions (zero pension contributions).

Figure 3
Total reward for those with pensions,[1,2,3] April 2009



Notes: *Source: ASHE*

1 Results are for full-time employees on adult rates of pay whose earnings were not affected by absence.
2 Total reward is defined as gross pay plus employer pension contributions.
3 Excludes those without current pensions, defined as those without employer or employee contributions.

benefit and defined contribution (money purchase) schemes. This comparison is not presented here but, as employer pension contributions in defined benefit schemes are, on average, higher than employer contributions in defined contribution schemes[8], a comparison excluding defined contribution schemes would again increase the advantage of private sector employees over public sector employees.

Distributional analysis

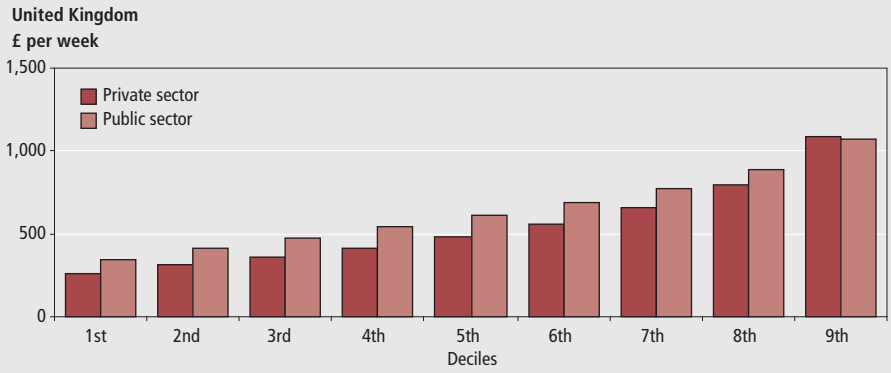
This section presents distributions of employer pension contributions and total reward. The charts show distributions based on decile points. The analysis divides the data, sorted in ascending order, into ten equal parts so that each part contains 10 per cent (one-tenth) of the distribution – from the lowest values to the highest values. The charts presented here do not include the top (10th) decile point, because in some cases (at the top end of the earnings distribution), employer pension contributions and total reward may be artificially inflated, as discussed earlier in the article.

First, the analysis looks at employer pension contributions. **Figure 1** shows, for full-time employees with current pensions, a comparison between the decile distributions for public and private sector employees. It shows that at all points except for the 9th decile point, employer pension contributions were higher in the public sector than in the private sector in April 2009. This gap is particularly marked at the lower end of the distribution.

Figure 2, which shows the distribution for all full-time employees, including those without current pensions, is included for comparison. This shows a far greater difference between the sectors because of the inclusion of full-time employees – mainly in the private sector – who did not belong to employer pension schemes in April 2009 (zero employer pension contributions).

Figure 3 shows the distribution of total reward for full-time employees with current pensions in the public and private sectors in April 2009. It shows that at all points except for the 1st decile point, total reward was higher for employees in the private sector than in the public sector. This was particularly the case at the upper end of the earnings distribution: total reward was 10 per cent higher in the private sector than in the public sector at the 7th decile point, rising to 28 per cent higher at the 9th decile point. The advantage of private sector employees with pensions over their public sector counterparts is not, for the

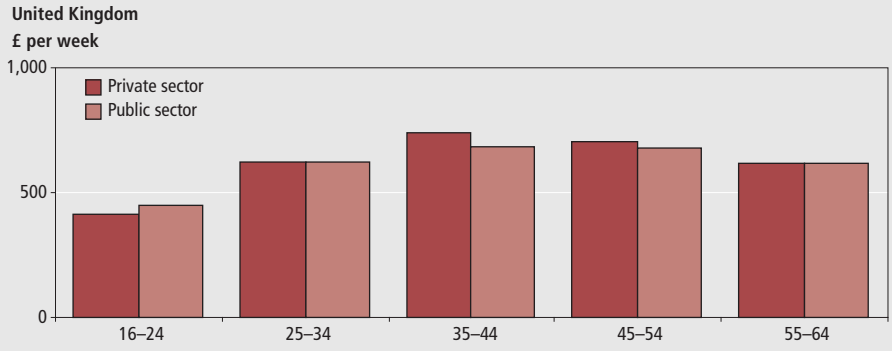
Figure 4
Total reward for all full-time employees,[1,2,3] April 2009



Notes: *Source: ASHE*

1 Results are for full-time employees on adult rates of pay whose earnings were not affected by absence.
2 Total reward is defined as gross pay plus employer pension contributions.
3 Includes those without current pensions (zero pension contributions).

Figure 5
Median total reward for those with pensions by age,[1,2,3] April 2009



Notes: *Source: ASHE*

1 Results are for full-time employees on adult rates of pay whose earnings were not affected by absence.
2 Total reward is defined as gross pay plus employer pension contributions.
3 Excludes those without current pensions, defined as those without employer or employee contributions.

most part, due to higher employer pension contributions (as demonstrated by Figure 1), but due to higher levels of gross pay.

Thus, in general, full-time private sector employees with pensions have higher absolute levels of total reward than those in the public sector and receive a greater proportion of this total reward in the form of pay while they are working. By contrast, full-time public sector employees with pensions have lower absolute levels of total reward, and a higher proportion is in the form of employer contributions to pensions which they will receive in retirement.

Figure 4 shows, for comparison, the distribution of total reward for all full-time employees in the public and private sectors in April 2009. It includes full-time employees, mainly in the private sector, who did not belong to employer pension schemes in April 2009. From this perspective, public sector employees have the advantage over their private sector counterparts (until the 9th decile).

Breakdowns by key characteristics

This section explores total reward for full-time employees with pensions in relation to two of their key characteristics: age and occupation. It also examines two important characteristics of the organisations they work for: size of the organisation and industrial sector. In future articles, it is planned to provide breakdowns for men and women and also to present results for part-time employees.

Figure 5 shows median total reward by age of employee for people of working age. The overall trends are similar for the public and private sectors, with median total reward at its lowest for those in the 16 to 24 age group, rising to its highest in the 35 to 44 age group and then falling somewhat for employees who are closer to retirement. It should be noted that the trends do not necessarily reflect the life cycles of individual employees; they may be the result of cohort effects, with younger employees experiencing different working environments from older employees.

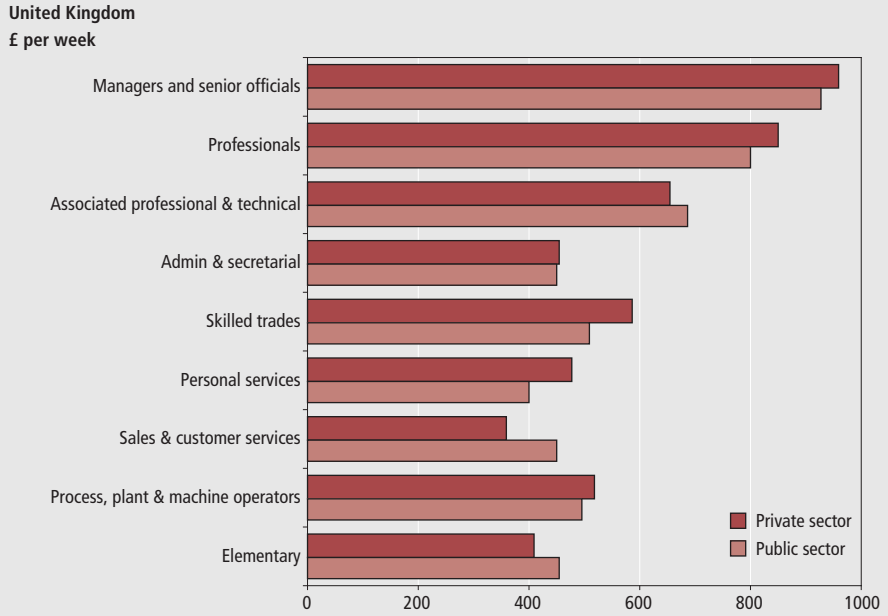
Figure 5 also shows that in April 2009 the median total reward of public sector employees in the 16 to 24 age group was higher than that of employees in the private sector (£451 per week and £413 per week respectively). By contrast, median total reward of employees aged 35 to 44 and 45 to 54 in the private sector was higher than that of their counterparts in the public sector. The largest difference can be seen for employees aged 35 to 44, where those in the private sector received £738 per week and those in the public sector received £684 per week in April 2009.

An examination of median total reward by occupation (see **Figure 6**) shows that 'management and senior officials' had the highest values in both the public and private sectors, with those in the private sector receiving £958 per week and those in the public sector receiving £927 in April 2009. For the majority of occupations, full-time employees in the private sector were better remunerated than their counterparts in the public sector, with the biggest gaps being in 'skilled trades' and 'personal services', where the difference between median total reward in the two sectors was £77 and £78 per week respectively. However, there were also some occupations where full-time employees in the public sector were better remunerated than their counterparts in the private sector, in particular 'sales and customer services' where employees in the public sector received median total reward of £93 per week more than in the private sector.

Figure 7 shows total reward by the size of the company or other organisation in which the employee works. People working full-time in small organisations in the public sector received higher total reward in April 2009 than in similar-sized companies in the private sector. This is most apparent in companies with 99 employees or fewer, where employees in the public sector received £668 per week, while employees in the private sector received £601 per week.

However, the pattern is reversed for organisations with 500 employees or more. In companies of this size or over in the private sector, employees had higher total reward than in a similar-sized organisations in the public sector. In April 2009, the gap was widest for organisations with 10,000 to

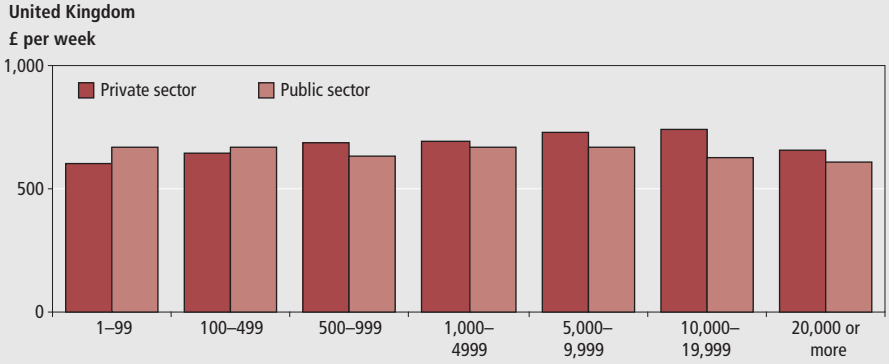
Figure 6
Median total reward for those with pensions by occupation,[1,2,3] April 2009



Notes: *Source: ASHE*

1 Results are for full-time employees on adult rates of pay whose earnings were not affected by absence.
2 Total reward is defined as gross pay plus employer pension contributions.
3 Excludes those without current pensions, defined as those without employer or employee contributions.

Figure 7
Median total reward for those with pensions by size of organisation,[1,2,3] April 2009



Notes: *Source: ASHE*

1 Results are for full-time employees on adult rates of pay whose earnings were not affected by absence.
2 Total reward is defined as gross pay plus employer pension contributions.
3 Excludes those without current pensions, defined as those without employer or employee contributions.

19,000 employees, where the difference in median total reward was £118 per week.

Figure 8 examines median total reward of full-time employees according to the industry sectors they work in. The sectors shown are not a full list: industry sectors are not shown if they do not exist in the public sector – and therefore cannot offer a comparison with the private sector – or if sample sizes are too small to present reliable estimates.

The employees who received the highest total reward in both public and private sectors in April 2009 were employed in the information and communications industry, where those in the public sector received £48 per week more than in the private sector. The industry with the largest difference in total reward was the manufacturing industry, where median total reward in the public sector was £216 per week higher than in the private sector. In 'human health and social work', employees in the public sector also did better, with a median total reward of £123 per week more than those in the private sector. On the other hand, employees in the private sector were better remunerated than their public sector counterparts in the transportation and storage, financial and insurance, real estate and professional, scientific and technical industries, and in education.

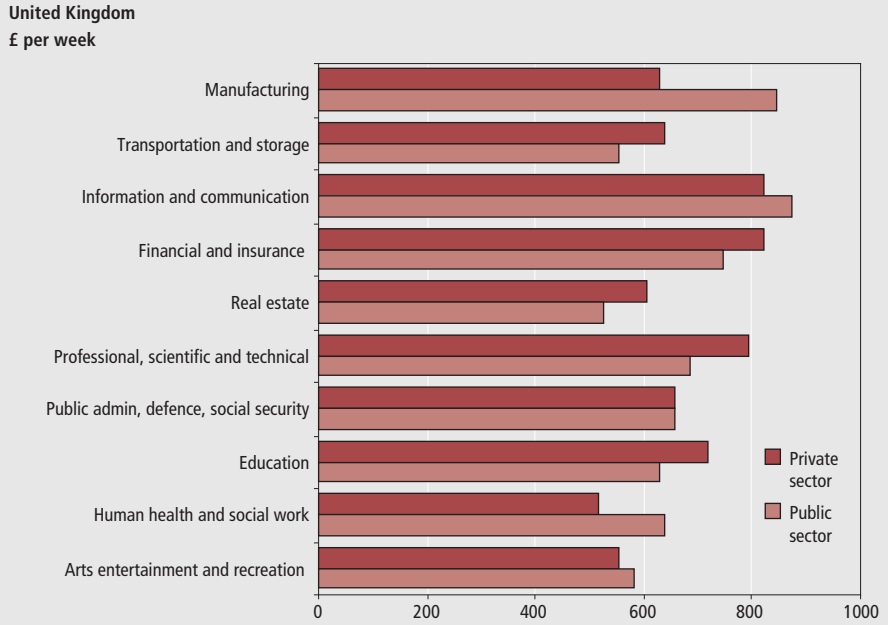
Caution is required when interpreting comparisons between industry sectors because the sub-sectors involved and the type of jobs done are often different in the public and private sectors. For instance manufacturing in the private sector is diverse, while in the public sector it is specialised, mainly involving defence-related industries. Another example is 'human health and social work'. It has been noted that in April 2009 median total reward for full-time public sector employees in human health and social work was £123 per week more than for those in the private sector. Some of this is because, for particular occupational groups, the public sector provides a higher total reward: the biggest gap is that 'doctors and other health professionals' had median total reward of £1,308 per week in the public sector but £1,091 per week in the private sector (£216 higher). Where other occupational groups can be compared, the gaps were smaller – for instance £34 for nurses and other health associate professionals (see **Figure 9**).

However, the occupational mix is different between the public and private sectors. In April 2009, 14 per cent of the public sector staff in human health and social work were 'doctors and other health professionals', but only 6 per cent of the private sector staff were in this highly paid group. At the lower paid end of the range, 8 per cent of private sector staff in this industry sector were 'care assistants or home carers', compared with only 2 per cent of public sector staff. These variations in the composition of the workforce are important in explaining the overall difference between the public and private sectors.

Conclusion

Total reward for full-time employees is higher in the public sector than the private sector if employees who do not belong to employer pension schemes (with zero pension contributions) are included in the analysis. This is because those without pensions (57 per cent of full-time employees in the private sector compared with 10 per cent in the public sector) reduce

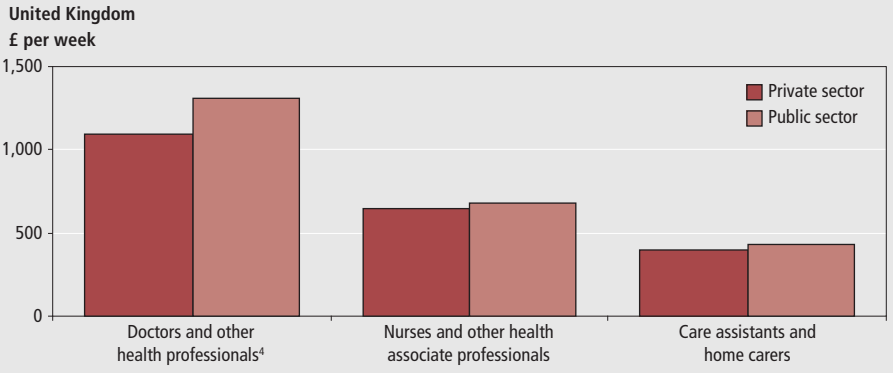
Figure 8
Median total reward for those with pensions by selected industry sector,[1,2,3,4] April 2009



Notes: *Source: ASHE*

1 Results are for full-time employees on adult rates of pay whose earnings were not affected by absence.
2 Total reward is defined as gross pay plus employer pension contributions.
3 Excludes those without current pensions, defined as those without employer or employee contributions.
4 Industries are grouped according to the Standard Industrial Classification (SIC) 2007.

Figure 9
Median total reward for those with pensions: selected occupations in the human health and social work sector,[1,2,3] April 2009



Notes: *Source: ASHE*

1 Results are for full-time employees on adult rates of pay whose earnings were not affected by absence.
2 Total reward is defined as gross pay plus employer pension contributions.
3 Excludes those without current pensions, defined as those without employer or employee contributions.
4 Readers should treat the result for 'doctors and other health professionals' in the private sector with caution as the sample size is small.

the private sector average figures more than those of the public sector.

A comparison of total reward on a like-for-like basis, comparing full-time employees with pensions in both sectors, produces a different result. On this basis, total reward is higher in the private sector than the public sector – even more so after excluding employees in schemes that are not contracted out of the State Second Pension. Distributional analysis shows that the gap between private and public sector employees is particularly marked at the top end of the distribution.

There are a few exceptions to the general rule that, for those with pensions, the private sector provides better overall remuneration. The main exception is those on low pay, especially women, who have higher levels of total reward in the public sector than in the private sector. Young employees (aged 16 to 24), those in some occupations such as sales and customer services, and people employed in small organisations and certain industrial sectors were also found to be better rewarded in the public sector than in the private sector. However in general, for full-time employees who are members of employer pension schemes, total reward is greatest in the private sector.

Notes

1. ASHE results and methodology are available at: www.statistics.gov.uk/StatBase/Product.asp?vlnk=15236
2. See the Commission's terms of reference at: www.hm-treasury.gov.uk/indreview_johnhutton_pensions.htm
3. *Pension Trends* is available at: www.statistics.gov.uk/pensiontrends/
4. See Jenkins J and Leaker D (2009) 'The labour market across the UK in the current recession' (November 2009) at: www.statistics.gov.uk/cci/article.asp?ID=2310 and the Average Weekly Earnings index at: www.statistics.gov.uk/downloads/theme_labour/AWE_Supplementary_tables.xls
5. For further analysis of pension scheme participation in the UK, including differences between sectors, see *Pension Trends* Chapters 6 and 7 at: www.statistics.gov.uk/pensiontrends/
6. Antoine Bozio and Paul Johnson 'Public sector pay and pensions' in Robert Chote, Carl Emmerson and Jonathan Shaw (eds) The IFS Green Budget: February 2010, available at: www.ifs.org.uk/publications/4732
7. If a scheme is 'contracted out' of the State Second Pension (S2P) it will have lower employer and employee National Insurance contributions than if it is 'not contracted out' and continues to pay National Insurance contributions at standard rates.
8. See *Pension Trends* Chapter 8 at: www.statistics.gov.uk/pensiontrends/

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ARTICLE

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There's more to life than GDP but how can we measure it?

SUMMARY

The report by the Commission on the Measurement of Economic Performance and Social Progress, led by Professors Stiglitz, Sen and Fitoussi, is widely seen as setting the agenda for measuring societal wellbeing, going beyond the established headline measure of economic performance, Gross Domestic Product (GDP).

In the 2010 Budget Report, it was noted (Box 1.2, page 10) that 'there is widespread acknowledgement that GDP is not the ideal measure of wellbeing'. The Budget Report continues 'the Government is committed to developing broader indicators of wellbeing and sustainability with work currently under way to review how the Stiglitz, Sen and Fitoussi report should affect the sustainability and wellbeing indicators collected by Defra (Department for Environment, Food and Rural Affairs), and with the Office for National Statistics (ONS) and the Cabinet Office leading work on taking forward the report's agenda across the UK.'

This article identifies relevant Government Statistical Service outputs and initiatives that support this broader societal wellbeing agenda. It follows the structure of the Stiglitz, Sen and Fitoussi report, addressing classical GDP issues, quality of life and sustainable development and the environment. All three are inter-connected and together provide the fullest picture of wellbeing. Measuring how these change over time gives the fullest picture of progress. The article concludes with an outline of next steps.

Introduction

There is increasing interest in wider measures of economic performance and social progress, including the impact on the environment and sustainability. The 2010 Budget Report notes (see Box 1.2, p. 10 in HM Treasury 2010) that 'there is widespread acknowledgement that Gross Domestic Product (GDP) is not the ideal measure of wellbeing'[1] and that 'the Government is committed to developing broader indicators of wellbeing and sustainability'.

This builds on the Conservative party commitment in their 2010 manifesto, 'Invitation to join the Government of Britain', to develop 'a measure of wellbeing that encapsulates the social value of state action' (p.38) and earlier calls for general wellbeing measures. (For example, one of the recommendations of the Conservative Quality of Life Policy Group's 1997 report[2] calls for a triad of economic, environmental and social indicators, as a framework for policy making that focuses on general wellbeing, not just on GDP). In February 2010, David Cameron addressed a Technology-Entertainment-Design (TED) conference on the next age of government[3]. He ended his presentation by referring to the Robert Kennedy speech about why GDP captures so little and said this is 'a dream more easily realisable now than 40 years ago'.

At an international level, the European Commission's 'GDP and beyond' project[4] and the Organisation for Economic Co-operation and Development (OECD)'s global project on 'measuring the progress of societies'[5] have been looking at this subject for some time and measuring societal progress was the theme for the second OECD World Forum on Statistics, Knowledge and Policy in 2007. From this forum emerged the 'Istanbul declaration'[6], which called for the production of 'high-quality facts-based information that can be used by all of society to form a shared view of societal wellbeing and its evolution over time'.

More recently, the need to look beyond GDP when evaluating societal progress was exemplified in a report in 2009 commissioned by President Sarkozy – the Commission on the Measurement of Economic Performance and Social Progress[7] (referred to as the Stiglitz Commission from this point forward after the chair Joseph Stiglitz of Columbia University). The Stiglitz Commission highlighted that both committing certain types of crime and buying petrol can lead to an increase in GDP but not lead to an increase in welfare, exemplifying why GDP is not an overall measure of progress. National statistical systems need to widen the focus from measuring market production towards more complete measures of societal wellbeing, including quality of life and sustainability.

The Stiglitz Commission and the economic downturn provide the stimulus to develop the measurement of wellbeing in the UK. Leading commentators and politicians are rethinking the emphasis on economic growth. From this and

other discussions should emerge a clearer specification for wider measures.

The framework and recommendations outlined by the Stiglitz Commission provide a firm foundation for the Government Statistical Service (GSS), the Government Economic Service (GES) and the Government Social Research Service (GSR), along with policy makers, to develop ways to measure social progress in the UK. ONS's general approach recognises that there are many existing statistical products to help meet the demand for wider measures. What is missing is a sense of coherence and how various constituent parts might add up to provide a more complete picture. This article summarises work across the GSS on the wider Stiglitz Commission agenda, which here is called measuring societal wellbeing (shorthand for measuring economic performance, social progress and environmental and sustainability issues).

Current status

Despite the renewed emphasis on wellbeing, this is not a new concept in the UK. There has been a long standing policy interest in alternative measures, for example HM Treasury has wellbeing listed in their Departmental Strategic Objectives[8] and the UK 2005 sustainable development strategy 'Securing the Future' revealed concern that government policy was targeted too much on increasing GDP and neglected wider Quality of Life issues[9] which predate the Stiglitz Commission report. Even earlier was the social indicator movement, from which outputs such as the UK *Social Trends*[10] were devised to present social measures alongside economic statistics (and, in the case of *Social Trends*, published annually for the past 40 years). Wellbeing has been one of ONS's analytical priorities[11] since 2007, when Allin (2007) summarised a number of pathways to measure wellbeing.

The UK has a wealth of relevant statistical data, analyses and outputs, but this is not presented or recognised as helping to understand societal wellbeing. For example, the National Accounts provide measures such as Net National Product (NNP) alongside GDP, but these are not highlighted or commented on as much as GDP. ONS has published a Household Satellite Account and regularly publishes Environmental Satellite Accounts. There are annual analyses of the distribution of household incomes[12] and a new report on wealth in Great Britain was published at the end of 2009[13].

The ONS website holds guidance on how to define and measure social capital. There is an established set of Sustainable Development Indicators for the UK produced by Defra[14] and established measures of personal wellbeing, which have been included since 2007. The UK is also breaking new ground in developing statistics to monitor equality in society, including through an Equality Measurement Framework[15], and to measure the outputs of government activity as well as the inputs. All of these contribute to the understanding of societal wellbeing.

There are also developments outside the Government Statistical Service (GSS). The Young Foundation is engaged with wellbeing initiatives at the local level, and has published guidance on local indicators[16]. The New Economics Foundation (NEF) has published a Happy Planet Index[17] and the National Accounts of Wellbeing[18]. There is also strong interest in happiness as an input to policy.

This list is not exhaustive but illustrates that there is much useful information already available to help measure societal wellbeing in the UK. What is not known is what it all adds up to. It will be seen that there are other developments – new sources, research and analysis – that could be made in light of the Stiglitz Commission report, if resources are available.

A framework

The Stiglitz Commission report is a useful starting point due to its widely accepted status and international recognition. As a framework ONS has adopted the three strands of the Stiglitz Commission report as the cornerstones:

- working through classical GDP issues for a fuller understanding of the economy, particularly the household sector
- measuring quality of life for better understanding of society, and
- tracking sustainable development and the environment as the third strand

All of these interact with one another.

The rest of this article will be structured around these three headings, identifying current work and potential developments within each area.

Classical GDP issues

National Accounts are a structured way of defining, presenting and measuring economic production. The accounts have statistical rigour, are internationally agreed and are underpinned by a firm conceptual basis. They do not cover, and do not claim to cover, all of the dimensions relevant to societal wellbeing.

The Stiglitz Commission report (p.11) suggested that 'before going beyond GDP and tackling the more difficult task of measuring wellbeing it is worth asking where existing measures of economic performance need improving.'

GDP is the most widely used measure of National Income but has often been criticised for being a poor indicator of a society's wellbeing[19], on the grounds that it does not measure some activities inside the production boundary well and excludes some welfare determinants outside the production boundary (see Allin (2007) for a discussion of these criticisms). As such, the Stiglitz Commission report indicates that alternative components of the National Accounts may be better measures of economic progress.

Current activities

ONS undertakes a number of activities that address the issues previously identified. For example, many of the alternative measures of National Income discussed in the Stiglitz Commission report are already published in the *Blue Book*[20]. ONS supplements National Accounts with income and consumption analyses (for example, quarterly *Consumer Trends*[21]) and produces a wide range of information on income and wealth of households and individuals[22]. ONS regularly publishes articles concerning households and the labour market using data from a wide variety of household surveys and the Wealth and Assets Survey published results for the first time in December 2009[13]. Further, ONS produces estimates of public service output[23] and has experience in producing environmental[24], and household[25] satellite accounts.

ONS's annual articles on the distribution of income[12] examine how taxes and benefits redistribute income between various groups of households in the UK. The work shows where different types of households and individuals are in the income distribution and looks at the changing levels of income inequality over time given a more accurate reflection of a household's disposable income.

ONS is developing measures of stocks which are not presented in the National Accounts, such as human capital, and exploring interest in other stocks, such as cultural capital, that have been pursued in other disciplines and policy areas. Experimental estimates of the stock of human capital will be published in the autumn.

The Stiglitz Commission report defined

a number of improvements that could be made within the existing National Accounts frameworks. These include highlighting other headline measures from the National Accounts, in addition to GDP such as Gross National Product (GNP) and Net National Product (NNP). This is investigated further in Chiripanhura (2010), which presents, explains and explores the wellbeing implications of other National Accounts aggregates.

Potential developments

These aggregates are economy-wide measures that say little about the distribution of income, and using median measures rather than the mean, to give a more reliable indication of income of the 'average' person as well as the extent of concentrations of high and low incomes. The Stiglitz Commission report also highlighted the necessity of expanding our measures of economic progress to include wealth and consumption. The National Accounts already contain several measures of household wealth and these are being improved. Additional work will be undertaken to establish more clearly the links between all of the forementioned products and the wellbeing agenda.

Table 1 matches the Stiglitz Commission's Classical GDP recommendations with current activities and the potential developments proposed in this article.

Quality of life

The second of the three categories addressed in the Stiglitz Commission report is quality of life. It highlights that economic resources are not all that matters for human wellbeing. The development of indicators for all determinants of wellbeing or the bringing together of existing information to provide a more complete picture is needed. The report stated that, 'quality of life is a broader concept than economic production and living standards. It includes the full range of factors that influences what we value in living, reaching beyond its material side.' (Stiglitz Commission report, p. 41).

More specifically, the Stiglitz Commission report indicated the importance of statistical offices providing the objective and subjective information needed to aggregate across quality of life dimensions. It did so highlighting the challenges such as a lack of indicators in a number of domains, in addition to the importance of linking measures across domains and to equalities work.

In the UK, there have been a number of initiatives concerned with measuring quality of life by ONS, other Government departments such as Defra, devolved governments, regional statisticians, local governments and think tanks. These have produced a number of relevant approaches and outputs such as the Young Foundation guidance on wellbeing at a local level[16] and NEF's *Happy Planet Index*[17] and the *National Accounts of Wellbeing*[18]. ONS has developed guidance on how to define and measure social capital[26]. The UK is also a world leader in developing equality statistics to monitor inequality in society via the *Equality Measurement Framework* project[15] which overlaps considerably with wellbeing developments.

In addition, the UK has an extensive range of social indicators regularly reported in *Social Trends* and included in the OECD

Table 1
The Stiglitz Commission's Classical GDP recommendations, existing ONS work and potential areas for development

Stiglitz Commission recommendation	Existing ONS work and potential areas for development
1. When evaluating material wellbeing, look at income and consumption rather than production	**Existing work:** ONS supplements summary National Accounts with income and consumption analyses (quarterly Consumer Trends publication). There is a programme of work improving the measurement of government provided services to help provide a fuller picture of peoples' living standards, including healthcare and education. ONS has published analyses that present, explain and explore other well established indicators in the National Accounts (such as Net National Product, Gross National Product and Net Domestic Product) alongside Gross Domestic Product. **Areas for development:** Explore what other outputs are available for the UK on the Classical GDP issues presented by the Stiglitz Commission. Explore potential for other wellbeing related issues to be investigated as part of wider work on measuring the value added by pubic services.
2. Emphasise the household perspective	**Existing work:** ONS has a rich source of household surveys including all (adult) members of the household, ONS publishes regular analyses of households and the labour market. **Areas for development:** Develop the links between the household survey analyses and the National Accounts outputs.
3. Consider income and consumption jointly with wealth	**Existing work:** ONS undertakes a range of analyses on wealth including the Social Trends chapters on Income, Wealth and Expenditure and the Wealth in Great Britain report published in December 2009, based on the Wealth & Assets Survey (see Daffin 2010). **Areas for development:** Develop Wealth Accounts to provide a comprehensive picture of wealth and indebtedness among the UK population. Improve the links between income, consumption and wealth outputs and the National Accounts outputs.
4. Give more prominence to the distribution of income, consumption and wealth	**Existing work:** ONS publishes an annual article on distribution of income, and how taxes and benefits redistribute income (see Barnard 2010). **Areas for development:** Ensure ONS outputs on income, wealth, expenditure and consumption use a variety of measures of central tendency (mean and median) in addition to focussing on distributions. An article on median income is due to be published in autumn 2010.
5. Broaden income measures to non-market activities	**Existing work:** ONS published experimental Household Satellite Accounts using data from the UK Time Use Survey. There is a programme of work improving the measurement of government provided services to help provide a fuller picture of peoples' living standards, including healthcare and education. **Areas for development:** Continue with the existing development work on household, human capital, and environmental satellite accounts[1].

Notes:

Source: Office for National Statistics

1 Satellite Accounts are a framework that enables attention to be focussed on a certain field or aspect of economic and social life. It can be used to present information from National Accounts in a different way; add new information to the core accounts; experiment with new concepts and methodologies and put a value on non-market outputs and inputs, such as unpaid work in households, or voluntary work.

Box 1

Domains to measure quality of life

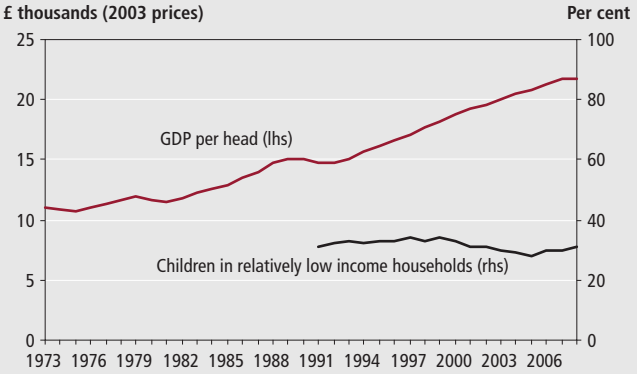
1. Material living standards
2. Health
3. Education
4. Personal activities including work
5. Political voice and governance
6. Social connections and relationships
7. Environmental conditions
8. Insecurity (economic and physical)
9. Overall life satisfaction

Box 2

Domains to measure quality of life

Figure A

GDP per head[1] and Children in relatively low income households[2,3,4]



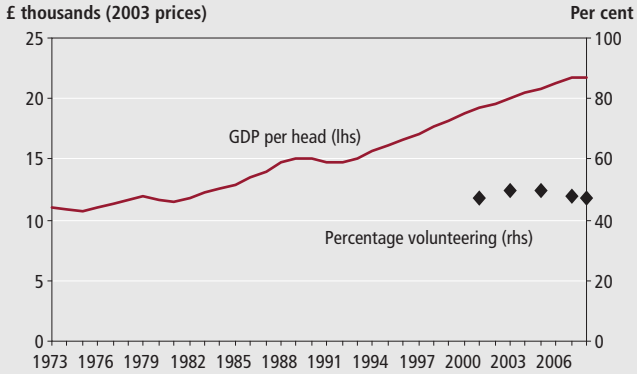
Notes:

1 United Kingdom.
2 United Kingdom prior to 1994–95, Great Britain from 1994–95.
3 Based on 60 per cent of median income relative income thresholds.
4 Data are for financial years.

Source: ONS Family Expenditure Survey (1979 to 1993–94, UK) and Family Resources Survey (1994–95 to 2007–08, GB)

Figure B

GDP per head[1] and those volunteering as a percentage of all people[2,3]



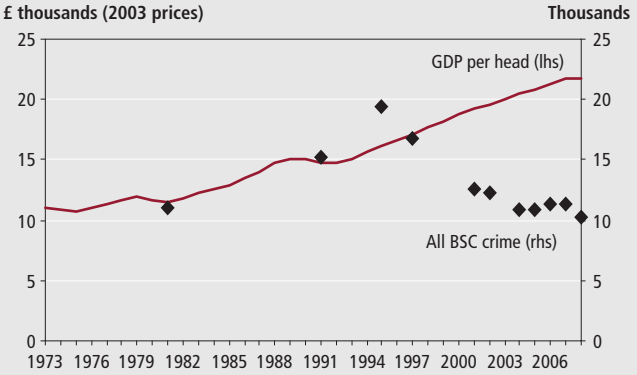
Notes:

1 United Kingdom.
2 England and Wales.
3 Data are for financial years.

Source: ONS, Home Office

Figure C

GDP per head[1] and all BSC crime[2,3]



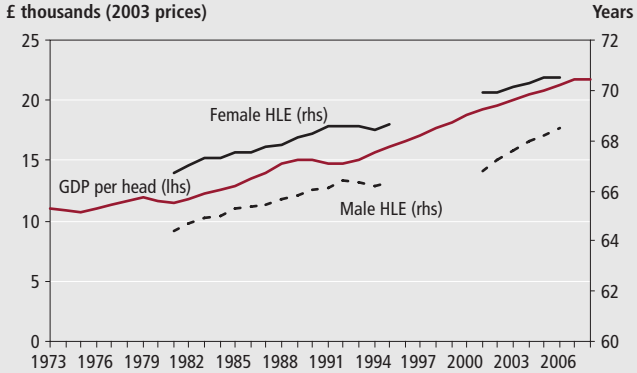
Notes:

1 United Kingdom.
2 British Crime Survey, England and Wales.
3 From 2001/02 data are for financial years.

Source: ONS, Home Office

Figure D

GDP per head[1] and Healthy Life Expectancy (HLE) at birth[2,3]



Notes:

1 United Kingdom.
2 Great Britain.
3 HLE estimates are based on a three-year moving average plotted on the central year. Data for 1996, 1998 and 2000 are unavailable because the General Household Survey was not carried out in 1997 or 1999.

Source: ONS

Social Indicator Set. A large number of Defra's *Sustainable Development Indicators*[14] are social indicators and the set includes wellbeing measures. ONS has made some headway in determining the extent of societal wellbeing domain and indictor coverage across the UK by undertaking a high level audit of available indicators and identifying suitable datasets.

To structure the work ONS is using the domains identified in Chapter 2 of the Stiglitz Commission report and taking overall subjective wellbeing, or self evaluated measures of satisfaction with life, as a further domain. **Box 1** shows the

nine domains that ONS has used to help structure actions and plans for the better measurement of quality of life.

Within this framework the first eight domains relate to predominantly objective measures (observable facts). They cover social, environmental and economic resources that are often measured using existing data sources. There is also scope to include subjective measures (such as fear of crime, alongside measures of crime). The ninth wellbeing domain aims to capture people's thoughts and feelings about their life overall.

Objective measures

Box 2 shows a small selection of all the available indicators just to give a flavour of the breadth of indicators produced across the GSS. The charts show that social indicators generally move differently to GDP per head over a length of time. The charts look at wider measures of social progress such as crime, healthy life expectancy and children living in poverty. They demonstrate that while GDP per head has been increasing the other measures show a more mixed story (although, interestingly, healthy life expectancy appears to track GDP per head fairly closely).

The challenge remains of how to summarise overall wellbeing using a set of indicators like this – what does it all add up to? That assumes that it makes sense to measure wellbeing (and changes in wellbeing, or progress) overall. It also leads to the question of whether a single index is required and, if so, how the various components within it would be weighted together. All of this needs further debate.

The analysis from the audit also echoes the findings in the Stiglitz Commission report that call for some improvements to be made across the domains. The health and insecurity domains have the best indicator coverage, while social connections and political voice need the most development work. Some domains are already on track for developments via different programmes of work. For example the Equality and Human Rights Commission is exploring measures of participation, influence and voice, and good relations.

Additional developments are also required within the personal activities including work domain. The Stiglitz Commission report suggests this includes paid work, unpaid work, commuting and leisure time (quantity and quality) and housing. The UK has robust employment and housing data. In addition, results from the Department for Culture Media and Sport (DCMS) Taking Part Survey[27] and from the earlier UK Time Use Surveys (2000–03)[28] are still being analysed. Time use and participation patterns generally change slowly, at least in terms of the broad categories of activities.

There are no current plans to conduct another Time Use survey in the UK, although other countries have done so, for example following the European model of harmonised time use surveys. However, more could be done to learn about and disseminate recent research into time, utility and national product (see Gershunny 2008, 2009) and to raise the profile of this work with policy makers (Krueger *et al* 2009). The Centre for Time Use Research[29] is undertaking work in this area. Prompted by the US work referenced here, one potential use is as a way of weighting the components of wellbeing into a summary index. The weights would reflect how people value the different aspects of wellbeing, ideally as a combination of the time they spend on, and the satisfaction they get from, each dimension.

Subjective measures

The Stiglitz Commission report suggests that statistical offices should incorporate questions to capture people's life evaluations, hedonic experiences and priorities into surveys. The point is that by asking people for their views and life experiences, the issue of paternalism, in the sense of defining what wellbeing is without consultation, is largely avoided. Much recent research indicates that measures of subjective wellbeing tend to correlate well with other people's views, behavioural data, brain activity and objective characteristics such as unemployment (see Layard 2005 for a useful review). It is outside the scope of this article, but it is noted there are a number of policy areas in which subjective wellbeing is being recognised.

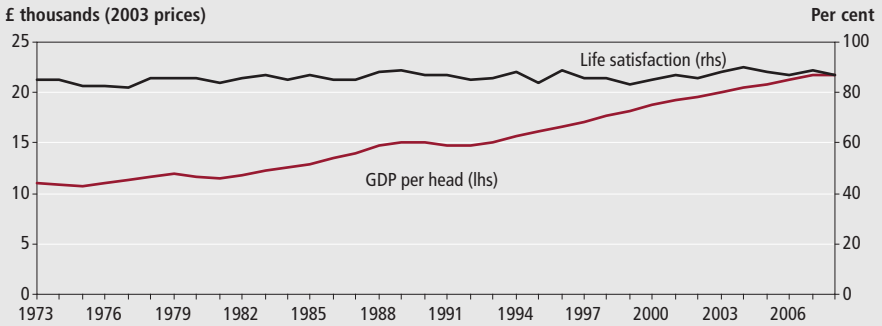
Over the last few years life satisfaction questions, through work led by Defra, have been included in several Government surveys in the UK, for example the Citizenship Survey, the British Crime Survey and Defra's Survey of Public Attitudes and Behaviours towards the Environment[14].

Figure 1 shows that the most commonly used measure of life satisfaction moves very differently to GDP. While GDP has gradually increased over the last 33 years, life satisfaction has stayed relatively stable with around 86 per cent of people being satisfied with their lives in any year.

However, there are a number of limitations in using subjective measures; these include the unavoidable use of bounded measures, the research finding that most people's subjective wellbeing tends to fluctuate around a 'set point', and difficulties determining cause and effect. For example, does volunteering make people happy or do happy people engage in volunteering?

Nonetheless, an encouraging literature is building towards the conclusion that subjective wellbeing is a valid construct that can be measured reliably. The evidence suggests that various social and economic factors affect self-reported quality of life so it **should** be possible to influence subjective wellbeing via policy. **Figure 2**, for example, reproduces some recent data collected by Defra indicating that self-reported life satisfaction differs according to socio-economic status. It appears that higher percentages of people in higher paid or intermediate jobs rate their life satisfaction at 7 or above out of 10.

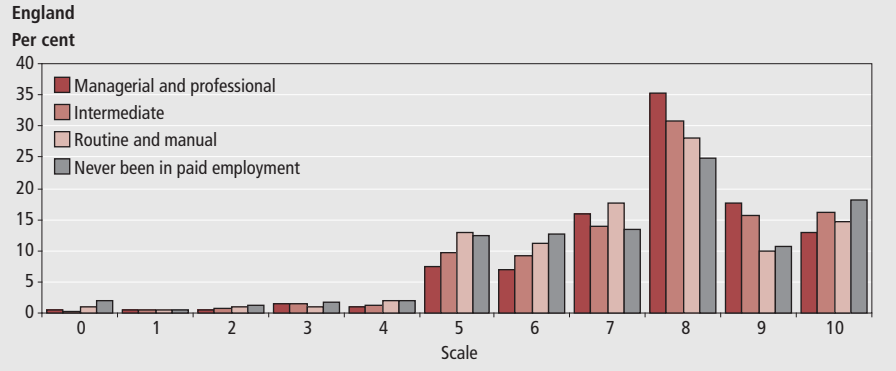
Figure 1
GDP per head[1] and life satisfaction[2]



Notes: *Source: Eurobarometer (from World Database of Happiness), ONS*

1 United Kingdom.
2 Life satisfaction data are as a proportion of Great Britain respondents who stated that they were fairly or very satisfied when answering the question: 'On the whole how satisfied are you with the life you lead?' – with the definitions 1) not at all satisfied; 2) not very satisfied; 3) fairly satisfied; 4) very satisfied.

Figure 2
Percentage of people reporting life satisfaction ratings, on a scale of 0 to 10, by social grade, 2010



Source: Defra

As part of its project on measuring societal wellbeing, ONS is evaluating how subjective wellbeing is currently being measured by other surveys in the UK external to ONS and how these data are (or could be) used to inform policy (Waldron 2010).

General challenges

ONS has also produced a paper which looked at data sources available to help measure wellbeing against a variety of relevant domains[30]. Whilst the domains differ to those used by the Stiglitz Commission report, the data sources identified offer a useful starting point for further work in this area. These data sources should provide a good starting point from which to select indicators, without the need to invent new ones.

ONS is conscious that domain and indicator selection are associated with a number of cross cutting challenges. These include the interrelationships between indicators, for example, the amount of daily exercise an individual undertakes has a direct impact on healthy life expectancy.

In addition, the focus on the individual as opposed to society as a whole, and relative positions of those individuals in society are critical factors in the measurement of wellbeing. As such there is a body of literature on relative income, social comparisons and wellbeing (Clark and Senik 2010 and Blanchflower and Oswald 2004) which indicates that, if an individual is on a low income, living in an area where everyone else is on a low income it would impact their wellbeing to a lesser extent than if the same individual was living in a high income area.

Another point to note about low incomes is that the cross sectional relationship between life satisfaction and income indicates that additional income has a considerably bigger wellbeing benefit for people at the bottom of the income distribution than elsewhere. Other factors such as weighting, compensation and

Table 2
Stiglitz Commission's quality of life dimensions with current activities and potential developments

Stiglitz Commission recommendation	Current activities and potential developments
6. Quality of life depends on people's objective conditions and capabilities. Steps should be taken to improve measures of people's health, education personal activities and environmental conditions. In particular, substantial effort should be devoted to developing and implementing robust, reliable measures of social connections, political voice, and insecurity that can be shown to predict life satisfaction	**Existing work:** Working papers to start to explore range of indicators. Social capital work. *Social Trends* . **Areas for development:** Continue to collaborate with stakeholders in the development of good relations, participation and influence and voice indicators.
7. Quality-of-life indicators in all of the dimensions covered should assess inequalities in a comprehensive way	**Existing work:** Equalities Data Review (EDR) 2007 including the Equality Measurement Framework. *Focus On* ... publications exploring dimensions of inequality (income, ethnicity, religion, gender, age). **Areas for development:** Continue to collaborate with stakeholders for equality related developments.
8. Surveys should be designed to assess the links between various quality-of-life domains for each person, and this information should be used when designing policies in various fields.	**Existing work:** Research drawing on the ONS Longitudinal Survey and the ESRC-funded birth cohort and other longitudinal studies. **Areas for development:** Investigate causality and conditions which determine the state of societal wellbeing. Develop Time Use data.
9. Statistical offices should provide the information needed to aggregate across quality-of-life dimensions, allowing the construction of different indexes	**Existing work:** GSS provides a wide range of social indicators. *Social Trends.* **Areas for development:** Map all quality of life indicators, sources and societal wellbeing measures as the basis for proposing greater coordination in development and use. Conduct an evaluation of existing measures (indicators and sources), identifying gaps and options for filling them. Investigate user requirements in the UK via a series of consultation events. Investigate ways of weighting, for example by what people value/spend time on, and produce experimental weights.
10. Measures of both objective and subjective wellbeing provide key information about people's quality-of-life. Statistical offices should incorporate questions to capture people's life evaluations, hedonic experiences and priorities in their own survey.	**Existing work:** Subjective wellbeing measured in survey used to compile one of the UK Sustainable Development Indicators (Defra) and measured in other Surveys (British Crime Survey and the Citizenship Survey). **Areas for development:** Include subjective wellbeing measures in core household surveys, with sample size large enough for local as well as national estimates. Evaluate life satisfaction measures across wellbeing domains.

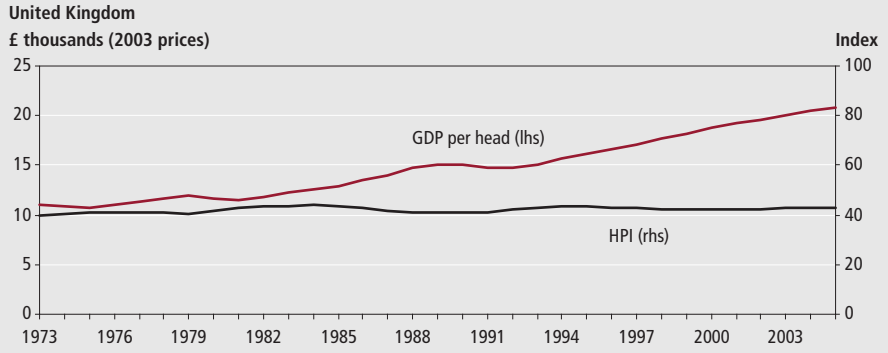
Source: Office for National Statistics

Table 3
Stiglitz Commission's quality of life dimensions with current activities and potential developments

Stiglitz Commission recommendation	Current activities and potential developments
11. Sustainability assessment requires a well-identified dashboard of indicators. The distinctive feature of the components of this dashboard should be that they are interpretable as variations of some underlying 'stocks'. A monetary index of sustainability has its place in such a dashboard but, under the current state of the art, it should remain essentially focused on economic aspects of sustainability.	**Existing work:** Defra's sustainable development indicator set is recognised as leading edge.
12. The environmental aspects of sustainability deserve a separate follow-up based on a well-chosen set of physical indicators. In particular there is a need for a clear indicator of our proximity to dangerous levels of environmental damage (such as associated with climate change or the depletion of fishing stocks).	**Existing work:** ONS regular publication of Environmental Accounts. **Areas for development.** Improve links between Environmental Accounts and measuring societal wellbeing work programme. Investigate what other measures relevant to societal wellbeing would be beneficial in the Environmental Accounts.

Source: Office for National Statistics

Figure 3
GDP per head and the Happy Planet Index



Source: ONS, New Economics Foundation

aggregation of indicators will also need to be considered in any robust approach to the measurement of societal wellbeing.

There are many sets of indicators that could be used to describe societal wellbeing in full or in part. However, none of these offer easy opportunities to produce a summary measure, for example by weighting indicators together or, for the statistical researcher, to undertake some kind of factor analysis.

Table 2 matches the Stiglitz Commission's quality of life dimensions with current activities and potential developments.

Sustainability and the environment

The Stiglitz Commission report highlights that the degradation of many natural resources such as emission of greenhouse gases is not included in the National Accounts. Rather, an increase in human wellbeing may have an adverse impact on the environment. For example, buying a car may make life for the consumer easier in the short term but what about the harmful emissions produced when the vehicle is in use? This coupled with the immediate concerns regarding environmental issues, particularly global warming, means that it is essential that sustainability and the environment are considered within the realm of societal wellbeing.

Figure 3 compares GDP in the UK with scores from the Happy Planet Index (HPI); an efficiency measure, showing wellbeing produced given units of resources used, based on life satisfaction, life expectancy and ecological footprint[17]. The HPI is designed as a simple indicator combining these three items, particularly to compare between countries. The chart shows that whilst GDP is increasing steadily the UK HPI score remains relatively stable over the same time period, perhaps indicating that GDP and other measures of progress move at different rates over time.

Significant developments have already been made in the identification of measures for sustainability and the environment, especially through Defra's set of 68 sustainable development indicators[14] (incorporating a wellbeing subset), through which to review progress. The indicators are updated annually. Each indicator is highlighted by a 'traffic light' that indicates the extent to which progress has been made.

In addition, ONS has been publishing Environmental Accounts since 2002[24]. Environmental Accounts are 'satellite accounts' to the main National Accounts. The Environmental Accounts provide data on the environmental impact of UK economic activity, on the use of resources from the environment in the economy, and on associated taxes and subsidies. They are being compiled according to emerging international standards and should provide a strong platform on which to build. The Stiglitz Commission report refers to Environmental Economic Accounts as 'vital building blocks' for any form of sustainability indicators. For example, the Defra sustainable development indicators on climate change, which present changes in greenhouse gas emissions from specific industry sectors in the context of growth in economic output, are based on the Environmental Accounts.

The consultation document published by ONS[31] in June 2010 outlines the strategy for strengthening the environmental accounts over the next three years and includes plans to strengthen the natural resource asset accounts.

Table 3 matches the Stiglitz Sustainability and the environment recommendations with current activities and potential developments.

Conclusion

Underpinning this article is the realisation that there is a host of useful information that already exists to help measure societal wellbeing in the UK. However, this is often not presented or recognised as helping to understand societal wellbeing. What is missing is a sense of coherence and how various constituent parts might 'add up' to a more complete measure. As a starting point ONS has developed a 'Wellbeing Knowledge Bank[32] which is a repository of links, information and plans, to bring understanding and clarity to this subject area.

With activities at all different levels of government, more strategic co-ordination across government should bring efficiency savings and reduce the burden on data providers, whilst recognising that decision making and resource allocation is the responsibility of designated authorities.

ONS has prepared an action plan, based on the Stiglitz Commission's recommendations, to identify those outputs where the recommendations are already, or could with relative ease, be met, all subject to resources being available. The plan sets out a way for ONS to progress the societal wellbeing agenda by working with others. ONS's general approach will be to exploit the wide range of existing outputs or planned developments (for example National Accounts and *Social Trends*) rather than developing extensive new outputs.

ONS, working with the rest of the GSS, has access to a wide array of data and statistical expertise and is well placed to take the societal wellbeing measurement agenda forward working with the Cabinet Office. ONS is also working with related developments on which the Government Economic Service and Government Social Research are leading, including the inclusion of social impacts in policy formulation, option appraisal and evaluation. Working with policy areas will ensure that requirements for better measures of wellbeing are soundly based.

We also aim to engage with a wide range of stakeholders and interested parties beyond central government, and with international organisations and other national statistical offices. For example, ONS will continue its international engagement with the OECD, UNECE and Eurostat work programmes. ONS is developing an engagement strategy that would look to exploit existing groups, networks and develop a programme of work via consultative events.

Notes

1. www.direct.gov.uk/en/Nl1/Newsroom/Budget/Budget2010/DG_188496
2. 'Blueprint for a Green Economy' http://www.zacgoldsmith.com/default.asp?contentID=29
3. www.ted.com/talks/lang/eng/david_cameron.html
4. www.beyond-gdp.eu/
5. www.oecd.org/document/13/0,3343,en_40033426_40037349_43005901_1_1_1_1,00.html
6. www.oecd.org/dataoecd/23/54/39558011.pdf
7. www.stiglitz-sen-fitoussi.fr/documents/rapport_anglais.pdf
8. www.hm-treasury.gov.uk/d/hmt_strategic_objectives_pu704.pdf
9. www.defra.gov.uk/sustainable/government/documents/Wellbeingresearchsynthesisreport.pdf
10. www.statistics.gov.uk/socialtrends/
11. www.statistics.gov.uk/pdfdir/wrk0307.pdf
12. www.statistics.gov.uk/StatBase/Product.asp?vlnk=10336
13. www.statistics.gov.uk/StatBase/Product.asp?vlnk=15074
14. www.defra.gov.uk/sustainable/government/progress/data-resources/sdiyp.htm
15. www.equalityhumanrights.com/fairer-britain/equality-measurement-framework/
16. www.youngfoundation.org/our-work/local-innovation/strands/wellbeing/wellbeing
17. www.happyplanetindex.org/
18. www.nationalaccountsofwellbeing.org/
19. This is despite GDP not being intended to be a measure of welfare. See for example Vanoli, 2005 for a discussion on the development of National Accounts.
20. www.statistics.gov.uk/statbase/product.asp?vlnk=1143
21. www.statistics.gov.uk/StatBase/Product.asp?vlnk=242
22. www.statistics.gov.uk/CCI/Nscl.asp?ID=8244
23. www.ons.gov.uk/about-statistics/ukcemga/index.html
24. www.statistics.gov.uk/STATBASE/Product.asp?vlnk=3698
25. www.statistics.gov.uk/hhsa/hhsa/index.html
26. www.ons.gov.uk/about-statistics/user-guidance/sc-guide/index.html
27. www.culture.gov.uk/reference_library/research_and_statistics/4828.aspx
28. www.statistics.gov.uk/statbase/Product.asp?vlnk=9326
29. www.timeuse.org/
30. www.statistics.gov.uk/downloads/theme_social/Measuring-Societal-Wellbeing.pdf
31. www.ons.gov.uk/about/consultations/consultation-on-the-strategy-for-the-uk-environmental-accounts/index.html
32. www.ons.gov.uk/about-statistics/measuring-equality/index.html

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ARTICLE

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Explaining exits from unemployment in the UK, 2006–09

SUMMARY

The duration of unemployment is an indicator of how efficient the labour market is at matching workers to jobs. Understanding the drivers of unemployment is of interest to policy makers, researchers and the public alike. Economic theory suggests that there will always be some measure of frictional unemployment in any economy, as it takes time for workers to search for and find appropriate jobs (ONS, 2008). This article analyses the effect that an individual's characteristics have on the length of their unemployment, and ultimately on their likelihood of becoming employed.

Introduction

Aggregate estimates of unemployment by duration, age and sex are published by the Office for National Statistics (ONS) in the Labour Market Statistical Bulletin[1]. These are derived from individual responses to the Labour Force Survey (LFS). In 2009 ONS published evidence and analysis on the relationship between the length of an individual's spell of unemployment and the associated probability of leaving unemployment (Long, 2009). The study uses the British Household Panel Survey (BHPS) to analyse the factors that affect the length of unemployment spells. It estimates the probability of exiting unemployment, finding that individuals are less likely to exit unemployment as the length of the spell increases (all other things being equal). Long (2009) also notes that the characteristics of the individual (such as education and housing situation) has a significant impact.

The objectives of this article are to test consistency between the LFS and BHPS data, to analyse the underlying factors which affect duration of unemployment, and to investigate the relationship between an individual's characteristics (including length of unemployment) and their employment prospects. This is achieved by using LFS data to model the probability of an individual having an unemployment spell. This model is extended to estimate the length of an individual's unemployment spell. Finally, the LFS model estimates the probability of finding employment, given the duration of unemployment and other characteristics. Another model is then estimated using BHPS data. This model estimates the probability of exiting unemployment to a specific destination, distinguishing between moving from unemployment to either employment or economic inactivity.

At the simplest level, job search theory states that an individual's probability of gaining employment is equal to their probability of receiving a job offer multiplied by their probability of accepting it. A combination of both demand and supply side factors will therefore determine their duration of unemployment. It is generally thought that if there are high levels of long-term unemployment in an economy then it may be an indicator that 'structural unemployment' is present. This implies that long-term unemployment may be interpreted as a sign that the labour market is not functioning efficiently in terms of matching individuals to jobs as a result of changes in the demand or supply of labour in the economy.

Policy makers, analysts and individuals may be interested in the results of analysis based on durations of unemployment because changes in economic conditions do not affect all individuals identically. Further to this, there are thought to be social costs to unemployment (for example, it may be that there is some relationship between rising unemployment and rising crime). Long (2009) finds that an individual is less likely to be re-employed as the length of an individual's

unemployment duration increases. This may be caused by a loss of attachment to the labour market and may be interpreted such that individuals should be encouraged to maintain contact with the labour market to increase their probability of finding employment.

Description of Labour Force Survey data

The first part of this article uses data from the LFS dataset. The LFS is a household survey which is weighted to provide information that is representative of the UK population. It collects information on a range of labour force characteristics and related topics. The LFS is collected on a quarterly basis and was originally designed to produce cross-sectional data to facilitate the production of official labour market statistics.

The LFS is conducted using rolling five quarter waves, with each sample household retained for five consecutive quarters, and a fifth of the sample replaced each quarter. The ability to track an individual across quarters produces a rich source of longitudinal data, so ONS made the LFS longitudinal dataset available to the public in 1992.

The sample used for this section of the article spans the period Q3 (July to September) 2006 to Q4 (October to December) 2009. This study has restricted the data to analyse respondents aged 18 to state pension age (59 for women and 64 for men for that time period). The model does not include 16 to 18 year olds because there are several economic and non-economic reasons why respondents in this age group may move in and out of economic activity (predominantly educational reasons) making modelling unreliable. Also education policies have changed over the sample timeframe meaning that consistency may be lost when trying to track these individuals' economic statuses over time.

The definitions of employment and unemployment for the first part of this article are consistent with those used by both ONS to calculate official UK rates and levels, and also with the International Labour Organisation (ILO) definitions of these indicators[2]. A person is considered to be unemployed if they:

- are without a job, want a job, have actively sought work in the last four weeks, and are able to start work within the next two weeks. **Or**
- are out of work, have found a job and are waiting to start it in the next two weeks

A person is considered to be employed if they:

- are in paid employment at work for at least one hour over the reference week (or temporarily not at work during the reference period but have a formal attachment to their job). **Or**
- are in self-employment at work for at least one hour over the reference week (or is a person with an enterprise who is temporarily not at work during the reference period for any specific reason)

Finally the economically inactive group consists of:

- those people who are out of work but who do not satisfy all of the ILO criteria for unemployment. This is often because they are either not seeking work or are unavailable to start work

In this section of the study an individual is identified as having a spell of unemployment in two instances: firstly, if they report being unemployed in their first interview upon entering the sample then they are asked '**Which week, month and year did you leave your last paid job?**'. By combining the responses of this question with the reference date of the interview, the length of time (in weeks) that the respondent has been unemployed for may be derived. Secondly, if a respondent is made unemployed during any of the remaining four quarters that they are in the sample, then they are given a spell which increases by three months for each subsequent quarter that they report being unemployed.

The economic destination from unemployment is calculated from respondents' reported statuses in the labour market. For example, if a respondent enters the sample unemployed and finds employment within the five quarter period of that sample then their spell is categorised as ending in employment (likewise with inactivity). If a respondent remains unemployed for the entire sample then they are categorised as not ending their spell.

Each observation in the longitudinal dataset has an associated weighting factor which serves two purposes. Firstly, the weights allow the sampled data to produce estimates for the level of the UK population. Secondly, they compensate for non-response and attrition bias. Thus, all results presented in this section of the article have been weighted using ONS weights (based to the 2009 population).

Modelling methods

When using econometric modelling to explain or predict phenomenon based on individuals, it is important to consider the structure of the sample. Taking unemployment as an example, an analyst may be interested in studying the effect that the duration of unemployment has on an individual's likelihood of returning to work. However, only a sub-sample of the sample will have a

Box 1

Descriptive statistics of LFS data

A preliminary overview of the data reveals that, in the period from Q3 2006 to Q4 2009, the weighted total count of respondents was 384,917,000. Twelve per cent of these either entered the sample unemployed or experienced unemployment during the five quarters that they were interviewed. This means that there were 44,805,000 individuals with a spell of unemployment. The mean length of such an unemployment spell was 8.8 months.

Of the 44,805,000 individuals found to have an unemployment spell:

- 17,426,000 (39 per cent) ended their spell into employment during the sample period
- 12,239,000 (27 per cent) ended their spell into inactivity during the sample period
- 15,526,000 (35 per cent) remained unemployed
- it should be noted that these figures do not add exactly up to 100 per cent. This is because a small number of individuals were found to have more than one spell

Table 1
Base categories for LFS modelling

Characteristic	Base category
Age	35 through 49
Sex	Female
Ethnicity	Not classified as an ethnic minority
Marital status	Unmarried with no dependent children
Education	Below GCSE
Housing	Renting privately
Region	'West Midlands Metropolitan County'
Previous occupation	'Elementary'

Source: Labour Force Survey

Table 2
Personal characteristics and the probability of having a spell of unemployment

	Marginal effect[1]	Statistical significance[2,3]
Age 18 through 24	4.5	***
Age 25 through 34	–1.1	***
Age 50 through 59	–2.0	***
Age 60 plus	–4.5	***
Male	3.2	***
Ethnic minority	4.6	***
Married	–5.5	***
Dependent child and female	2.2	***
GCSE	0.9	**

Notes: *Source: Authors' calculations*

1 Marginal effects may be interpreted as percentage point changes (relative to the reference category as set out in Table 1).
2 Only statistically significant results are shown. Please contact author for full outputs.
3 *** Denotes significance at the 1 per cent level, ** Denotes significance at the 5 per cent level, * Denotes significance at the 10 per cent level.

spell of unemployment at all. It would be incorrect to simply select the sub-sample of individuals who have a spell of unemployment and conduct analysis on them. The reason for this is that there may be some underlying characteristics that bias these individuals to be unemployed in the first place. Analysis must be conducted to investigate the likelihood of an individual being unemployed and any bias corrected.

The first half of this article, therefore, uses a 'Heckman selection' model introduced by Heckman (1976, 1979) (sometimes called the two-stage-method) which adjusts for any bias potentially introduced through the use of a sub-sample. An explanation of the Heckman selection model may be found in **Technical Note 1**.

Once the selection effects have been adjusted for, analysis may be run on the data to distinguish the characteristics which affect the duration of unemployment. Finally the model can estimate the effects of individual characteristics and the length of unemployment have on whether an individual finds employment.

Modelling the likelihood of having a spell of unemployment

Before modelling the effect that a spell of unemployment has on the probability of a individual entering employment, it is pertinent to consider if there are any characteristics that make the individual more (or less) likely to be unemployed in the first place. Using the Heckman approach outlined before, the selection model is a probit model that estimates the probability of having an unemployment spell. The probability is modelled as a function of:

- Age
- Sex
- Ethnicity
- Marital status
- Housing tenure
- Having dependent children in the household
- Education level
- Previous occupation
- Region
- Date of interview

When presenting the results of the selection model; marginal effects are shown. This means that the interpretation of the model is relatively simple. The marginal effect represents the percentage point change in the probability of having a spell of unemployment following a change in one of the explanatory variables. In this case they represent percentage point changes compared to the base category (as defined in **Table 1**).

For example, **Table 2** shows that an individual aged between 18 and 25 years old is 4.5 percentage points more likely to have an unemployment spell then an individual aged 35 to 49 years old. Similarly, a married individual is 5.5 percentage points less likely to experience a spell of unemployment than an individual who is not married.

Results – modelling the probability of having a spell of unemployment

Personal characteristics

Table 2 shows that age is found to have a varied effect on the probability of having an unemployment spell coming into the sample (or during the sample period). The age group found to have the highest probability of having an unemployment spell is the youngest group (aged 18 through 24). Second highest is the control group (35 through 49) with all other age groups reporting lower probabilities than these. All other things being held equal; men are 3.2 percentage points more likely to have an unemployment spell than women. There is no statistically significant impact attached to being male and having a dependent child, however women with one or more dependent children are 2.2 percentage points more likely to have an unemployment spell. Similarly, individuals who report belonging to an ethnic minority are more likely to have a spell of unemployment by 4.6 percentage points relative to the base category.

Education appears to have little effect on the probability of coming into the sample unemployed (or experiencing unemployment during the sample period). When compared to individuals who report 'below GCSE' levels of education, it is only those with GCSEs where any statistical significance is found. Perhaps unexpectedly, individuals with GCSEs are found to be more likely to have a spell of unemployment, albeit that the marginal effect is less than one percentage point. The small size of the coefficient suggests that this finding has relatively little impact

Table 3
Housing and the probability of having a spell of unemployment

	Marginal effect[1]	Statistical significance[2]
Rent-free	–3.9	***
Own home	–1.8	***
Mortgage	–2.2	***
Housing Association	3.4	***

Notes: *Source: Authors' calculations*

1 Marginal effects may be interpreted as percentage point changes (relative to the reference category 'Renting privately' – not shown).
2 *** Denotes significance at the 1 per cent level, ** Denotes significance at the 5 per cent level, * Denotes significance at the 10 per cent level.

Figure 1
Region and the probability of having a spell of unemployment[1,2]

Notes: *Source: Authors' calculations*

1 Marginal effects may be interpreted as percentage point changes (relative to the reference category 'West Midlands Metropolitan County' – not shown).
2 Only statistically significant results are shown. Please contact author for full outputs.

Table 4
Occupation and the probability of having a spell of unemployment

	Marginal effect[1]	Statistical significance[2]
Managers and senior officials	–7.0	***
Professional'	–7.8	***
Associate professional and technical	–6.9	***
Administrative and secretarial	–5.1	***
Skilled trades	–5.4	***
Personal service	–6.0	***
Sales and customer service	–4.0	***
Process, plant and machine	–3.9	***

Notes: *Source: Authors' calculations*

1 Marginal effects may be interpreted as percentage point changes (relative to the reference category 'Elementary' – not shown).
2 *** Denotes significance at the 1 per cent level, ** Denotes significance at the 5 per cent level, * Denotes significance at the 10 per cent level.

on the probability of having a spell of unemployment (despite the unexpected direction of the effect).

Housing and region

Table 3 shows that the housing tenure an individual reports to reside in has a statistically significant relationship with the probability of having an unemployment spell. Living in Housing Association owned accommodation is associated with being 3.4 percentage points more likely to be unemployed when entering the sample (or becoming unemployed during the five quarters of the sample) when compared to renting privately. Interpretation of this result must be conducted with caution. It is unlikely to be the case that living in Housing Association property impacts an individual's employment prospects. It is more likely that there is a characteristic which is systematically shared by individuals who tend to reside in Housing Association properties. If some unquantifiable characteristic is, indeed, shared by such individuals then the 'Housing Association' variable would inadvertently pick up this effect. All other housing situations are associated with lower probabilities of having a spell: Owning a home outright (1.8 percentage points less likely), owning a home with a mortgage (2.2 percentage points less likely) and living rent free (3.9 percentage points less likely).

Figure 1 presents the marginal effects associated with the region an individual resides in. It shows that individuals residing in the control region ('West Midlands Metropolitan County') are found to have the highest probability of having a spell of unemployment. When compared to other regions, individuals residing in 'West Midlands Metropolitan County' are up to 5.5 percentage points more likely to have an unemployment spell (in this example when compared to 'Northern Ireland'). Interpretation of regional dummies is complex as they may be picking up the effects of the macro economy. For example, it is possible that Northern Ireland saw strong growth over the period analysed. The model makes no attempt to distinguish between these macro factors and whether the labour market is structurally different to the control region.

Occupation

Individuals who report their previous occupation to be the control occupation ('Elementary') are found to have the highest probability of having a spell of unemployment.

Table 4 shows that, when compared to other occupations, individuals who are in the 'Elementary' group are up to 7.8 percentage points more likely to have an unemployment spell (in this example when compared to 'Professional').

Results – modelling the length of the unemployment spell

Results presented hereafter should always be interpreted with the findings of the selection model in mind. The first conditional model is an ordinary least squares (OLS) model which sets out to predict and model the length of the spell of unemployment given that a spell is experienced at all.

Table 5 summarises the statistically significant results of the OLS econometric model. It does not make any attempt to explain or predict the destination (in terms of economic status) from unemployment. A spell of unemployment is classified as

Table 5
Estimating the length of spell of unemployment (given that a spell is observed)

	Coefficient[1]	Statistical significance[2]
Constant	3.7	**
Age 18 through 24	–1.3	*
Age 50 through 59	2.1	**
Male	–1.6	***
Dependent child and male	1.6	***
Job Seekers Allowance	3.8	***
Administrative and secretarial	1.9	*
Skilled trades	2.3	**
Sales and customer service	2.9	**
Process, plant and machine	2.6	**

Notes: *Source: Authors' calculations*

1 Only statistically significant results are shown. Please contact author for full outputs.
2 *** Denotes significance at the 1 per cent level, ** Denotes significance at the 5 per cent level, * Denotes significance at the 10 per cent level.

ending, for the purposes of this model, if an individual moves from unemployment to employment or inactivity.

Personal characteristics

The constant reported in Table 5 may be interpreted as the expected length of unemployment spell for an individual in all of the base categories (defined in Table 1). To that end, once such an individual becomes unemployed the expected length of unemployment is 3.7 months. Age is found to affect the expected length of unemployment with individuals in the youngest age group (18 through 24) expecting 1.3 fewer months and individuals in the older age group (50 though 59) expecting an additional 2.1 months of unemployment on average.

Males, on average, can expect to experience spells of unemployment which are shorter by 1.6 months (although it should be remembered that males are more likely to have a spell in the first place). A male with a dependent child in the household may expect a longer spell of unemployment (1.6 months longer on average) when compared to a female with no dependent children. The model finds no significant effect attached to having a dependent child for women when estimating the length of unemployment spell (although it should be remembered that women with a dependent child are more likely to experience an unemployment spell in the first place).

Job Seekers Allowance

The LFS asks respondents whether they claim unemployment related benefits. In this study the Job Seekers Allowance (JSA) variable is defined such that individuals are classified as claiming JSA if they report to claim:

- Contributory JSA and/or
- Income based JSA and/or
- JSA (type not stated) and/or
- National Insurance credits

This variable is not included in the selection model because there is a very strong relationship between being unemployed and claiming JSA. Clancy and Stam (2010) explain the relationship between unemployment and unemployment related benefits. The JSA variable would suffer from high correlation with the selection variable, however it may be an interesting variable to consider when looking at the effects on the length of an unemployment spell.

Table 5 reveals that an individual who reports to be claiming JSA may expect a longer spell of unemployment (an average of 3.8 months longer) than an individual who is not claiming JSA (all other things being equal). This study will return to the JSA variable to consider its effect on probability of finding employment later.

Occupation

Individuals attached to 'Administrative and Secretarial' 'Skilled Trades' 'Sales and Customer Service' and 'Process, Plant and Machine' may expect longer spells of unemployment. Attachment to any other occupational group does not appear to have any significant effect on the length of an individual's unemployment spell.

Results – modelling the chance of finding employment

The two models presented thus far have attempted to explain the probability of an individual becoming unemployed. The second model has attempted to explain the relationships between the characteristics of respondents and the expected length of that spell of unemployment (given that they are unemployed in the first place). The final model in this section runs a Heckman probit model on the LFS respondents to examine the relationships between (amongst other things) the duration of unemployment and the probability of ending that spell into employment. The model calculates the probability of the spell ending in employment during the five quarters for which the respondent was in the longitudinal sample.

Duration of unemployment

Once appropriate considerations have been made for sample selection bias, the duration of unemployment is found to have a significant effect on the probability of ending the unemployment spell into employment. The base length of unemployment is 'six months or less'. Individuals who have a longer spell of unemployment than the base have a lower probability of moving into employment.

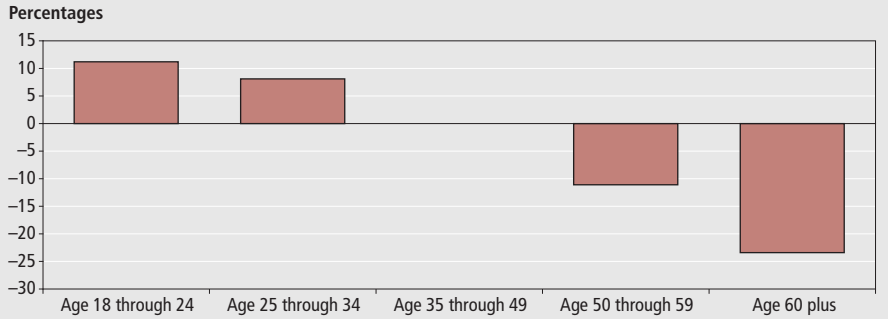
Table 6
Duration of unemployment and the probability of leaving unemployment spell into employment (given that a spell is observed)

Spell length (months)	Marginal effect[1]
6 or less	Base
7–12	– 17.7
13–18	– 27.2
19–24	– 11.3
25–30	– 21.0
37–42	– 12.1
49–54	– 24.3
60+	– 10.5

Notes: *Source: Authors' calculations*

1 Marginal effects may be interpreted as percentage point changes (relative to the reference category '6 or less').

Figure 2
Age and the probability of leaving unemployment spell into employment (given that a spell is observed)[1]



Notes: *Source: Authors' calculations*

1 Marginal effects may be interpreted as percentage point changes (relative to the reference category 'age 35 through 49' which therefore has a marginal effect equal to zero).

Table 7
Personal characteristics and the probability of leaving unemployment spell into employment (given that a spell is observed)

	Marginal effects[1]	Statistical significance[2,3]
Male	–3.7	*
Married	9.1	***
Dependent child and male	–1.7	*
Dependent child and female	–10.7	***
Job Seekers Allowance	19.2	*
GCSE	5.3	***
Further Education	13.6	***
Degree	12.1	***

Notes: *Source: Authors' calculations*

1 Marginal effects may be interpreted as percentage point changes (relative to the reference category as set out in Table 1).
2 Only statistically significant results are shown. Please contact author for full outputs.
3 *** Denotes significance at the 1 per cent level, ** Denotes significance at the 5 per cent level, * Denotes significance at the 10 per cent level.

Table 6 outlines the effect that of the duration of unemployment on the probability that the unemployment spell ends in employment.

For example, an individual with an unemployment spell of between seven and twelve months is (on average) 17.7 percentage points less likely to end their spell in employment during the sample period than an identical individual with six months or less in unemployment.

Table **6** shows that the individuals who have the shortest duration of unemployment (six or less months) are most likely to find such employment (as every other category reduces the probability of such an outcome).

Personal characteristics

Figure 2 shows the marginal effects that age has on the probability of an unemployed individual finding employment when compared to individuals aged 35 to 49. Age is found to have a negative effect on the probability of finding employment from a spell of unemployment. It can be seen that the youngest age group (age 18 to 25) are 34 percentage points more likely than the oldest age group (60 plus) to find employment during the sample period.

Table 7 summarises the effects of individual characteristics. All other things being held equal, unemployed men are 3.7 percentage points less likely to find employment in the sample period than unemployed women. Married individuals are 9.1 percentage points more likely than unmarried individuals to find employment.

Men with a dependent child in the household are 1.7 percentage points less likely to find employment when compared to women with no dependent children. Unemployed women with a dependent child are 11 percentage points less likely to find employment, compared to the same category.

Education appears to have a positive effect on the conditional probability of finding employment. When compared to individuals reporting a highest qualification of 'below GCSE', holding a GCSE or equivalent increases the probability of finding employment by 5.3 percentage points. This increases to 13 percentage points for individuals whose highest qualification is equivalent to a further education and to 12 percentage points for individuals with a degree. This is likely to be related to the demand for labour, that there is more demand from firms for higher skilled workers. This result alludes to a positive but diminishing effect in education's influence over the probability of finding re-employment.

Other characteristics

The JSA variable (as defined previously) is found again to be statistically significant. Individuals who report claiming JSA are 19 percentage points more likely to find employment during the sample period. There are several possible explanations for this, and competing theories around the effects of unemployment related benefits. It may be that the conditions connected with claiming JSA encourage unemployed individuals to remain 'attached' to the labour market. For example, to claim JSA an individual must attend an interview with a Jobcentre Plus adviser. Claimants of JSA have access to specialist help in finding vacancies, CV writing and interview skills and so on[3]. The positive effect associated with claiming JSA appears to support this view. Critics of unemployment benefit-related welfare programmes argue that such programmes provide disincentives for the unemployed to seek employment. It should be remembered from the previous model that individuals who claim JSA expect longer spells of unemployment by 3.8 months on average, perhaps lending support to such a hypothesis.

Housing and region

One housing category was found to be significantly related when modelling the conditional probability of finding employment. All other factors being equal, individuals who own a house with a mortgage are 6.3 percentage points more likely to find employment during the sample period (compared to individuals who rent privately). This may reflect a labour supply effect; that individuals who are committed to paying a mortgage may be more intensive in their job search and more willing to accept work in order to maintain mortgage payments.

It can be seen in **Figure 3** that the region an individual lives also influences the conditional probability of finding employment during the sample period, with each region having a positive effect

Figure 3
Region and the probability of leaving unemployment spell into employment (given that a spell is observed)[1,2]

Notes: *Source: Authors' calculations*

1 Marginal effects may be interpreted as percentage point changes (relative to the reference category 'West Midlands Metropolitan County' – not shown).
2 Only statistically significant results are shown. Please contact author for full outputs.

Table 8
Occupation and the probability of leaving unemployment spell into employment (given that a spell is observed)

	Marginal Effects[1]	Statistical Significance[2]
Managers and senior officials	10.3	***
Professional	12.4	***
Associate professional and technical	10.1	***
Administrative and secretarial	6.8	***
Skilled trades	7.4	***
Personal service	8.7	***
Sales and customer service	5.2	***
Process, plant and machine	5.1	***

Notes: *Source: Authors' calculations*

1 Marginal effects may be interpreted as percentage point changes (relative to the reference category 'Elementary' – not shown).
2 *** Denotes significance at the 1 per cent level, ** Denotes significance at the 5 per cent level, * Denotes significance at the 10 per cent level.

when compared to the base region ('West Midlands Metropolitan County').

Occupation

Table 8 shows that the base occupation ('Elementary') is found to have the lowest probability of finding employment. The occupation with the highest probability of finding employment from a spell of unemployment is 'Professional'. Individuals in this occupation are 12 percentage points more likely to find employment when compared to individuals in the 'Elementary' occupation (all other factors remaining equal). This occupation is closely followed by 'Managers and Senior Officials' and 'Associate Professional and Technical' both of which are both 10 percentage points more likely to find employment during the sample period when compared to the base category.

The Heckman probit analysis has been informative about factors affecting both the probability of entering unemployment and the probability of exiting unemployment into employment. However, it does not tell us anything about exiting to the state of inactivity. The remainder of this article develops a model which takes account of the conditional probability of exit to inactivity as well as employment.

The competing risks econometric model

To account for multiple destinations of exit from unemployment (that is, from movements into inactivity or employment), an independent competing risks model is estimated. A technical explanation of the competing risks model is given in **Technical Note 2**. To fit an OLS model to these data is not appropriate because the censored spells would cause bias. The duration model framework controls for such censoring. An unemployed person can either remain in unemployment, exit to employment or exit to inactivity. The competing risks model estimates the probability of an individual leaving unemployment at a specific time to a given destination, conditional on their elapsed duration of unemployment. This is different from the single risk approach that is used in Long (2009) because it takes account of the destination of exit.

The hazard function, which is assumed to take the proportional hazards form, calculates the probability of an individual exiting from the state of unemployment conditional on the elapsed duration of their unemployment spell. Due to the proportional hazards form, the estimated coefficients may be interpreted as the logged effect that a variable has upon the probability of exiting unemployment to employment (or unemployment to inactivity) relative to the reference category.

The single risk model of Long (2009) controls for unobserved differences between individuals (also known as unobserved heterogeneity). Lancaster (1979) shows that ignored unobserved heterogeneity can bias not only the pattern of duration dependence but also the estimated coefficients of the explanatory variables. However, generalisation of the treatment of unobserved heterogeneity to a competing risks framework requires strong assumptions about the correlation of the disturbance term across destination specific hazards. As Naredranathan and Stewart (1993) point out, the distortions which may arise from techniques to account for unobserved heterogeneity may actually be more severe than the bias resulting from ignored unobserved heterogeneity in the first place. To that end it is more appropriate for the competing risk model not to control for the unobserved heterogeneity.

To test whether the hazard of exit to the different destinations is behaviourally distinct, the likelihood ratio test of Naredranathan and Stewart (1991) is implemented. This test describes if it is appropriate to estimate a single risk model of the hazard of exit from unemployment, without distinguishing between different exit destinations. The null of incidental hazards of exit to employment and inactivity is strongly rejected at the 1 per cent significance level. Thus the competing risks estimation of exit probabilities (and results presented hereafter) is therefore valid and appropriate.

The British Household Panel Survey data

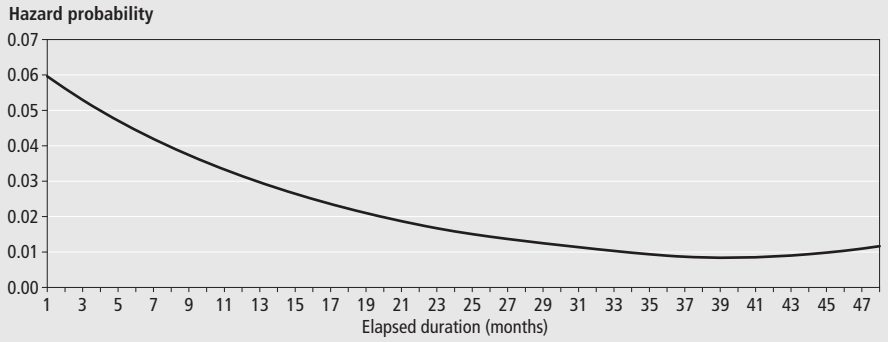
The data used in this analysis is a sub-sample of individuals drawn from the

Table 9
Base categories for BHPS modelling

Characteristic	Base category
Age	35 through 49
Sex	Male
Ethnicity	White
Marital status	Single with no children
Education	No qualifications
Housing	Privately rented accommodation
Region	South East of England

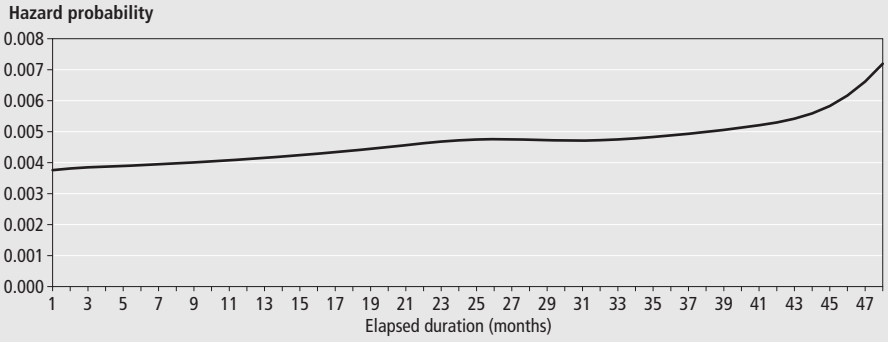
Source: British Household Panel Survey

Figure 4
Lowess smoothed estimates of the interval hazard of exit to employment



Source: Authors' calculations

Figure 5
Lowess smoothed estimates of the interval hazard of exit to inactivity



Source: Authors' calculations

British Household Panel Survey (BHPS)[4]. This is a nationally representative survey of approximately 10,000 households, comprising 17 waves of information at both the household and individual level. For more information on this survey see Taylor *et al* (2009). The sample used in this section comprises information on the unemployment spells of 1,836 individuals over the period April 2001 to 2006. The BHPS is a rich data source, however it is a survey and is therefore subject to the usual weaknesses of survey data such as recall and self classification error. It is also important to note that the definitions of unemployment and inactivity used in this study are not consistent with International Labour Organisation (ILO) definitions.

A flow sample selection is used, so that an individual enters the sample when they become unemployed and remain in the sample until they exit to employment, inactivity or leave the BHPS altogether. Similar to the Heckman analysis conducted in the first part of this article, the results should be interpreted by comparing the probabilities relative to a control individual. For the competing risk model the control individual has the characteristics outlined in **Table 9**.

Results – the underlying conditional probability of exiting unemployment

Duration of unemployment

Figure 4 plots a smoothed version of the estimated interval hazard of exit to employment[5]. The probability of an individual finding employment decreases as the length of their unemployment spell increases. This result is consistent with the idea of individuals losing skills and attachment with the labour market as their unemployment spells lengthen, or with employers attaching stigma to potential employees who have a longer unemployment spell.

Figure 5 plots a smoothed version of the estimated interval hazard of exit to inactivity[5]. It shows that the probability of an individual exiting unemployment into inactivity increases as the duration of unemployment increases. It can be seen, however, that the conditional probability of exit appears to be relatively constant for the first eighteen months of a spell and is increasing thereafter. This may suggest that there is some sort of threshold effect around a year and a half into an unemployment spell. This may be related to the benefit structure or to individuals becoming 'discouraged'. A discouraged worker is an individual who wants to work but is not looking for a job because of a perceived lack of demand.

Results – simulating the destination from unemployment

To get a clearer indication of the effect that each variable has on the hazard of exiting to unemployment or to inactivity, the probability of exit to each destination conditional on an exit occurring at a specific time is simulated. **Table 10** simulates the probabilities of an individual exiting unemployment after 3, 9, 15, and 21 months unemployment. It essentially presents the net effect of characteristics relative to the reference person.

Table 10 shows that age significantly affects the destination from unemployment. An individual in the youngest age group (18 to 24) is more likely to exit to inactivity. Being aged 25 to 34 increases the probability of exiting into employment (relative to an identical individual aged 34 to 49).

Being married is not found to have a significant effect on exit probabilities in the competing risks model. However, an individual with a spouse in employment

Table 10
Results of the simulation: probability of exit to employment or inactivity

Percentage change (relative to the control individual)

	Exit to inactivity after:				Exit to employment after:			
	3 months	9 months	15 months	21 months	3 months	9 months	15 months	21 months
Claiming JSA	29.1	26.9	25.7	22.6	–1.9	–3.9	–4.9	–7.3
Spouse in Employment	–26.0	–25.2	–24.6	–22.8	1.77	3.7	4.7	7.4
Owns Home with Mortgage	–11.8	–11.8	–11.6	–10.7	0.9	1.7	2.2	3.5
Aged 18 to 24	15.2	13.3	12.6	11.1	–1.0	–2.0	–2.4	–3.6
Age 25 to 34	–18.7	–17.8	–17.3	5.2	1.2	2.6	3.3	5.2
GCSE	–19.9	–19.4	–19.0	–17.5	1.3	2.8	3.6	5.7
A Level	–15.8	–15.6	–15.3	–14.1	1.1	2.3	2.9	4.6
Degree	–7.2	–7.9	–7.9	–7.4	0.5	1.2	1.5	2.4
Higher	–48.4	–47.2	–46.4	–43.9	3.2	6.9	8.9	14.2

Source: Authors' calculations

is more likely to exit into employment (relative to a single individual).

Owning a home with a mortgage is found to be significantly related to the probability of exit to employment, relative to an individual renting privately. The result is consistent with the LFS findings of the Heckman model presented earlier in this article and may reflect supply side forces acting on an individual's job search intensity. The competing risks model also suggests that there is a regional effect to re-employment prospects. An individual residing in Scotland, Wales or Northern Ireland is more likely to exit to inactivity than an identical individual residing in the South East of England, possibly reflecting regional disparities in labour force demand in the UK economy.

Claiming JSA appears to reduce an individual's probability of exit to employment, relative to the reference individual. This result is consistent with the negative replacement ratio effect found in Long (2009) using the same dataset, and alluded to in the Heckman model presented earlier in this article (which found that that LFS respondents who claim JSA tend to experience longer spells of unemployment).

Having GCSEs, 'A' Levels, a Higher Educational Qualification or a Degree increases an individual's probability of exiting unemployment into employment (relative to an identical individual with no qualifications). This is may reflect demand side factors, with employers preferring highly skilled employees to those with no qualifications. Interestingly, leaving aside the positive impact of having either a GCSE, 'A' Level, 'Higher Education' or Degree on exit to employment appears, again, to diminish with the level of education (supporting the results of the LFS Heckman probit model).

Conclusion

This article has studied the effects that the length of time an individual is unemployed for has on the expected exit from unemployment. It has taken two approaches; applying a Heckman two stage model to Labour Force Survey data and a competing risks model to the British Household Panel Survey. It set out to test consistency between the LFS and BHPS datasets and has presented results from both data sources which largely support each other, despite differences in methodologies.

The article has analysed how the length of an individual's spell of unemployment affects the probability of re-employment or entering inactivity. Both the LFS and BHPS models in this article broadly support the previous findings of Long (2009), that an individual is less likely to leave unemployment via employment as the length of the unemployment spell increases. This finding is ramified using the competing risks model, which indicates that an individual is actually more likely to leave unemployment via inactivity as the spell of unemployment lengthens.

The results of this article have found that there are identifiable characteristics which make people more or less likely to a) suffer from unemployment and b) experience longer spells of unemployment. Preliminary modelling on the LFS data suggests that men are more likely to experience unemployment than women. However, they can expect a shorter spell of unemployment (all other things being equal). The same model suggests that an individual living in Housing Association accommodation has a higher probability of experiencing unemployment (all other things being equal). This must be interpreted with caution as this indicator may be picking up some other (unquantifiable) characteristic systematically common amongst such individuals, rather than being evidence of a negative impact of Housing Association policy. Education has a positive, but diminishing, effect on the probability of moving from unemployment to employment. Finally, both models indicate that that owning your home with a mortgage is significantly related to the probability of finding employment after having a spell of unemployment.

Notes

1. The most recent Labour Market Statistical Bulletin can be found at: www.statistics.gov.uk/StatBase/Product.asp?vlnk=1944
2. For more information see: www.ilo.org/global/What_we_do/Statistics/topics/Employment/lang--en/index.htm
3. More information about the conditions of JSA can be found at: www.direct.gov.uk/en/MoneyTaxAndBenefits/BenefitsTaxCreditsAndOtherSupport
4. The data used in this section of the publication were made available through the ESRC Data Archive. The data were originally collected by the ESRC Research Centre on Micro-social Change at the University of Essex (now incorporated within the Institute for Social and Economic Research). Neither the original collectors of the data nor the Archive bear any responsibility for the analyses or interpretations presented here.
5. For more information on the Lowess smoothing technique used in Figure 4 and Figure 5 see the STATA technical bulletin: http://econpapers.repec.org/article/tsjstbull/y_3a1992_3av_3a1_3ai_3a3_3agr6.htm

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TECHNICAL NOTE 1

The Heckman selection model

This article makes use of the Heckman procedure (Heckman, 1976, 1979) to remove any sample selection bias. As explained in the main text of the article, if an analyst simply applied an Ordinary Least Squares (OLS) model on the data presented in this article it may result in biased parameter estimates. To simply regress y on $X\beta$ (where y is the length of unemployment spell and X is a matrix containing information on several explanatory variables, as discussed in the text) would take no account of the selection process. There essentially exists a missing variable:

$$\lambda(\frac{0-u}{\sigma})$$

It is necessary to take account of this by running the Heckman procedure. The procedure has two stages.

The first stage (selection model) estimates the probability of an individual having an unemployment spell, given the demographic (and other) characteristics. This is done using a variable (Z) which takes the value '1' if the individual becomes unemployed and '0' if they do not. A probit model is run to estimate the probability that Z = '1', $Z = w\delta + v$ (where w = the characteristics of the individual and v represents a term to take account of non-systematic errors in the model).

The results are used to calculate $\hat{\lambda}(\alpha_i)$ (the Inverse Mills Ratio) for each observation, which is then incorporated into the second stage equation (conditional model). The second stage equation is run on the selected sub-sample to make estimations of the specified explanatory variable.

$$y = X\beta + \rho\sigma\lambda(\frac{0-u_i}{\sigma}) \quad \text{or} \quad y = X\beta + \rho\sigma\hat{\lambda}$$

The conditional model counters any bias from the condition that not every individual has an unemployment spell at all.

TECHNICAL NOTE 2

Competing risks model

The overall discrete time interval hazard, denoted h(j), gives us the hazard of exit from unemployment to either employment or inactivity. This can be written as:

$$h(j) = \frac{S(a_{j-1}) - S(a_j)}{S(a_{j-1})}$$

where $S(a_j)$, the survivor function, denotes the probability of staying in unemployment until time j. The hazard is given by:

$$h(j) = 1 - \exp\left(-\int_{a_{j-1}}^{a_j} [\theta_A(t) + \theta_B(t)]dt\right)$$

where $\theta_A(t)$ and $\theta_B(t)$ represent the instantaneous hazard of exit to employment and inactivity, respectively. This equates to $h(j) = 1 - \left[(1-h_A(j))(1-h_B(j))\right]$ and implies that the overall survivor function is given by $S(j) = S_A(j)S_B(j)$

It follows from this that the destination specific interval hazards are given by

$$h_A(j) = 1 - \exp\left(-\int_{a_j-1}^{a_j} \theta_A(t)dt\right) \text{ and } h_B(j) = 1 - \exp\left(-\int_{a_j-1}^{a_j} \theta_B(t)dt\right)$$

For right censored cases the likelihood contribution is given by the probability of survival in both states until interval j which is simply:

$$L^C = S_A(j)S_B(j)$$

$$= \Pi_{k=1}^{J}[1-h_A(k)][1-h_B(k)]$$

The likelihood contribution for the case of exit to employment is given by:

$$L^A = \Pr\left(a_{j-1} < T_A \le a_j, T_B > T_A\right)$$

$$= \int_{a_{j-1}}^{a_j} \int_{u}^{\infty} f_A(u) f_B(v) dv du$$

If we assume transitions only occur at the interval boundaries, this simplifies to:

$$L^A = \int_{a_{j-1}}^{a_j} f_A(u) du \int_{a_j}^{\infty} f_B(v) dv$$

$$= \left[F_A(a_j) - F_A(a_{j-1}) \right] \left[1 - F_B(a_j) \right]$$

$$= \left[\frac{h_A(j)}{1 - h_A(j)} \right] S_A(j) S_B(j)$$

The likelihood contribution for the case of exit to inactivity follows from this and the overall likelihood function is therefore:

$$L = \left(L^A\right)^{\delta_A} + \left(L^B\right)^{\delta_B} + \left(L^C\right)^{1-\delta_A-\delta_B}$$

$$= \left[\frac{h_A(j)}{1 - h_A(j-1)} \right]^{\delta_A} S_A(j) + \left[\frac{h_B(j)}{1 - h_B(j-1)} \right]^{\delta_B} S_B(j)$$

This equates to an additive separability in the log likelihood into parameters which are a function of only destination specific hazards.

It should be noted that, as in Naredranathan and Stewart (1993), the hazard of exit to employment is of primary interest in this analysis (**Table A1**). The hazard of exit to inactivity is less precisely estimated (**Table A2**).

Table A1
Statistically significant estimation results for the latent hazard of exit to employment

	Coefficient[1]	Standard Error[2]
Elapsed Duration (months):		
Elapsed Duration < 7	0.059**	0.12
6 < Elapsed Duration < 13	0.029**	0.14
12 < Elapsed Duration < 19	0.021**	0.18
18 < Elapsed Duration < 25	0.015**	0.25
24 < Elapsed Duration < 31	0.012**	0.34
30 < Elapsed Duration < 37	0.012**	0.39
36 < Elapsed Duration < 43	0.007**	0.59
42 < Elapsed Duration < 49	0.004**	1.01
54 < Elapsed Duration < 61	0.036**	0.52
Aged 18 to 24	1.429**	0.09
Aged 25 to 34	1.220**	0.08
Claiming JSA	0.755**	0.08
Spouse Works	1.618**	0.08
Highest Educational Attainment: GCSE	1.547**	0.09
Highest Educational Attainment: A Level	1.621**	0.10
Highest Educational Attainment: Higher Education	1.923**	0.09
Highest Educational Attainment: Degree	1.950**	0.11
Owns Home Outright	1.489**	0.12
Owns Home with Mortgage	1.639**	0.09
Region of Residence: Wales	0.742**	0.12
Region of Residence: Scotland	0.730**	0.11
Region of Residence: Northern Ireland	0.345**	0.19

Notes: *Source: Authors' calculations*

1 Exponentiated coefficients are reported. ** Denotes significance at the 1% level, * Denotes significance at the 5% level.
2 Only statistically significant results are shown. Please contact the author for full outputs.

Table A2
Statistically significant estimation results for the latent hazard of exit to inactivity

	Coefficient[1]	Standard Error[2]
Elapsed Duration (months):		
Elapsed Duration < 7	0.004**	0.286
6 < Elapsed Duration < 13	0.004**	0.299
12 < Elapsed Duration < 19	0.004**	0.326
18 < Elapsed Duration < 25	0.005**	0.347
24 < Elapsed Duration < 31	0.005**	0.389
30 < Elapsed Duration < 37	0.006**	0.397
36 < Elapsed Duration < 43	0.002**	0.634
42 < Elapsed Duration < 49	0.007**	0.490
48 < Elapsed Duration < 55	0.002**	1.038
54 < Elapsed Duration < 61	0.004	0.286
Aged 18-24	1.644**	0.184
Female	1.917**	0.133
Member of Ethnic Minority	1.868*	0.254
Highest Education Attainment: Degree	0.937*	0.214
Region of Residence: Scotland	1.707*	0.253
Region of Residence: South West	1.966**	0.370

Notes: *Source: Authors' calculations*

1 Exponentiated coefficients are reported. ** Denotes significance at the 1% level, * Denotes significance at the 5% level.
2 Only statistically significant results are shown. Please contact author for full outputs.

ARTICLE

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The relationship between hours worked in the UK and the economy

SUMMARY

Hours of work are recognised by the Office for National Statistics (ONS) and the International Labour Organisation (ILO) as key indicators of the labour market. The difference between actual and usual hours worked may result from firms using overtime to meet increasing demand or reducing hours to control costs, and as such, could be considered an indicator of labour market flexibility.

The Monetary Policy Committee at the Bank of England pay close attention to the number of hours worked when considering monetary policy decisions as these may be more closely related to changes in demand and output than the level of employment. This is because firms might want to retain staff during periods of lower output growth, or conversely delay recruitment until the need for it is clearly established through a sustained increase in demand. This article describes the different measures of hours data in the UK and investigates how they may be used to analyse the UK labour market.

Introduction

Classical labour market theory focuses on the interaction between the demand and supply of labour. Labour supply reflects individual choices of how much labour to supply at each wage rate. Labour demand reflects the decisions by firms about how much they wish to employ at each wage rate. However, the prevailing wage rate in an economy may not necessarily reconcile labour demand and labour supply. For example, Tam (2010) examined trends in time-related underemployment and overemployment between 2001 and 2010 and found there are often mismatches between workers' actual and preferred number of hours worked. Furthermore, the extent of these mismatches may also be cyclical, as during the 2008–09 recession, underemployment began to rise sharply and overemployment fell.

This article finds that the number of hours worked is a more responsive measure of the state of the labour market than employment. Comparing the number of hours worked to indicators of the wider economy shows that it is likely to be demand from firms which is driving the number of hours, rather than supply from individuals. The analysis also shows that the UK appears to have developed a long working-hours culture relative to the rest of the European Union (EU).

Labour supply

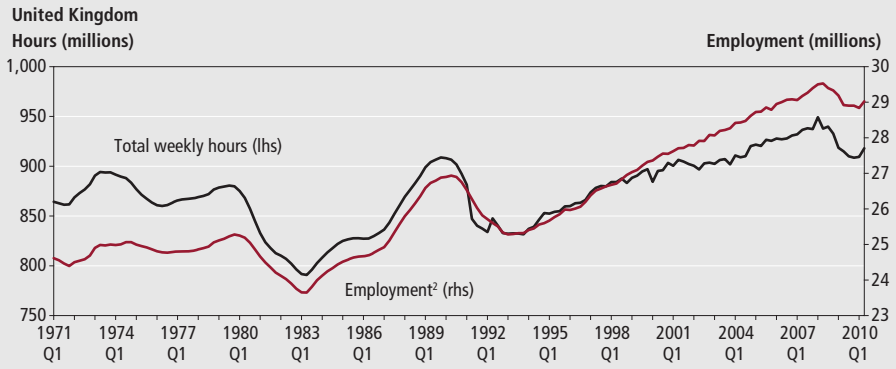
The standard theory of labour supply is based on the assumption that individuals choose their optimal number of working hours based on a choice of available hours and wages. In a practical sense, labour supply is more complex and is strongly influenced by a number of factors such as wage rates, employer preferences, non-labour income (like that of a spouse), family structure and individual characteristics (Böheim and Taylor, 2003; Antonazzo *et al*, 2003). According to Adam's 'equity theory', employees seek to maintain equity between the input they bring to a job (effort, skills, personal sacrifice) and the outcomes they receive (Adams, 1963). For example, a working mother may accept a lower wage in return for more flexible working hours.

Labour demand

Labour demand is conventionally treated as a 'derived' demand – that is, labour is not demanded by firms for itself but for the goods and services it produces. Therefore, employers' demand for labour is typically measured through jobs, vacancies and hours worked. The statistical picture of labour demand is complicated as employers may fill vacancies with people who have more than one job, either with them or with another employer, or with people who share the same job.

Firms are thought to vary their labour input in the short-term in line with changing demand. Other inputs, such as capital, are assumed to be fixed in the short-term and can only be varied through long-term changes in investment. Varying labour through recruitment or redundancy,

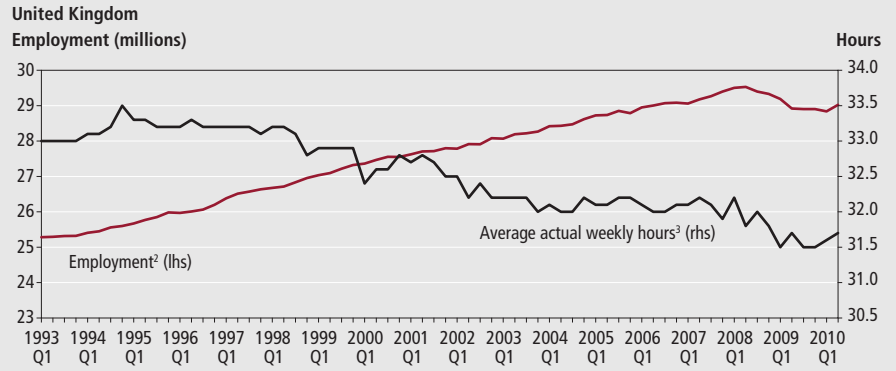
Figure 1
Total hours and employment level,[1] 1971 to 2010



Notes: *Source: Labour Force Survey*

1 Both time series are seasonally adjusted.
2 All aged 16 and over.

Figure 2
Average weekly hours of work and total number of people in full-time and part-time employment,[1] 1993 to 2010



Notes: *Source: Labour Force Survey*

1 Both time series are seasonally adjusted.
2 All aged 16 and over.
3 All workers.

though, does have some element of fixed cost, and as a result, may not be an efficient way for employers to react to changes in demand. Oi (1962) discusses the concept of labour being a quasi-fixed factor. Firms generally face costs in adjusting the size of their workforce, such as training, administration and search costs, which constitute an investment by the firm in its labour force (thereby introducing some element of capital in the use of their labour). In the presence of such investment, firms may find it more profitable to reduce hours of work rather than number of jobs (which would constitute a write-off in previous investment). This is sometimes known as labour hoarding and tends to occur when the cost of making staff redundant and then having to recruit later is thought to exceed the current cost of labour, making the decision to keep labour, despite a fall in demand, a rational one. In the short run, a firm is more likely to respond to a shock in the demand for its good or service by adjusting hours worked rather than the number of people employed.

Variation in hours worked is generally viewed as a more responsive indicator of labour demand compared to employment. For example, consider a firm that faces an unexpected increase in the demand for its product. In the short run, in order to meet this increased demand, it may request its workers to work overtime. Statistics on the number of jobs will not capture this change in labour demand, as the number of people employed has remained unchanged. Statistics on hours, however, may capture the change in labour demand by reporting an increase in total hours worked.

Total weekly hours: an overview

Figure 1 shows total weekly hours of work in the United Kingdom since 1971. This time series is available on a quarterly basis in the Labour Force Survey (LFS) from Q1 1992. Data before this have been estimated from annual data (hence the relatively smooth appearance of the plot when compared to later data). From Q1 (January to March) 1992 to Q1 2008 the total number of hours worked per week shows an upward trend from 833.9 million hours to a peak of 949.2 million hours. The next eight quarters of the time series saw predominantly negative quarter on quarter growth in the total level of hours worked each week, reaching a trough of 909 million hours in the final quarter of 2009, but in the first half of 2010 there was an increase in hours worked per week to stand at 918 million hours.

Figure 1 compares total hours and employment levels over time and shows that the two series are positively correlated. At first glance, the only notable deviation occurs between 2002 and 2007 when the employment level appears to increase faster than the total number of hours worked. However, the hours indicator is actually more responsive to economic downturns.

During the most recent recession, employment recorded a peak to trough fall of 2.3 per cent over the seven quarters between Q2 2008 and Q1 2010. Total hours peaked one quarter before employment in Q1 2008, and over the next seven quarters recorded a peak to trough fall of 4.3 per cent. Larger falls in hours than employment were also features of previous UK recessions in the early 1990s and early 1980s. The peak to trough fall in employment between Q2 1990 and Q1 1993 (11 quarters) was 6.1 per cent whilst the corresponding peak to trough fall in hours between Q4 1989 and Q3 1992 (11 quarters) was 7.5 per cent. Employment peaked in Q4 1979 before falling by 6.4 per cent over the next 14 quarters. Total hours peaked one quarter earlier in Q3 1979 and fell by a larger 10.1 per cent over the following 14 quarters.

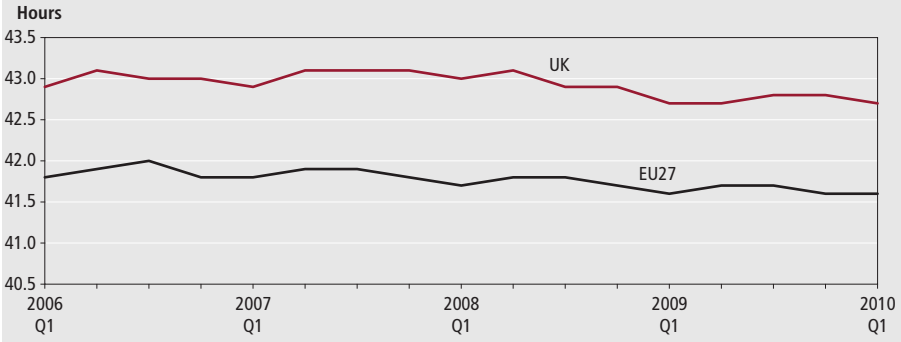
Average weekly hours: an overview

Changes in total hours are the combination of changes in average hours worked by individuals and changes in the number of people in employment.

Figure 2 shows that the average hours worked by individuals has generally seen a downward trend since 1993. This may reflect supply-side developments as people increasingly choose to work fewer hours and due to a rise in the level of part-time working over the timeframe analysed.

Figure 2 also shows that employment has generally trended upward over the period shown. This suggests that, in terms of the total hours worked in the UK economy,

Figure 3
Average number of usual weekly hours of work in main job[1] in the UK and EU27[2]



Notes: *Source: Eurostat[3]*

1 Full-time workers.
2 EU27 consists of Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom.
3 Eurostat statistics are available online from http://epp.eurostat.ec.europa.eu.

Table 1
Average weekly hours of work by head of household and partner, Q4 2009[1]

United Kingdom **Percentages**

	Average hours worked by head of household per week			
	0	1–30	31–40	41+
Proportion of partners who work zero hours per week	*47.7*	*18.6*	*9.8*	*10.9*
Proportion of partners who work 1–30 hours per week	*28.1*	*46.7*	*40.2*	*39.8*
Proportion of partners who work 31–40 hours per week	*16.0*	*24.1*	*37.4*	*30.7*
Proportion of partners who work 40+ hours per week	*8.2*	*10.6*	*12.6*	*14.8*

Notes: *Source: Labour Force Survey*

1 Household data are released biannually. Q4 2009 represents the most recent data at the time of writing.

rising employment has been the driver of total hours worked as opposed to average hours.

In 1998 the Working Time Regulation was implemented by the EU to limit working hours to a maximum of 48 hours a week, although individual countries may still choose to establish further limitation on working hours (for example, France has a statutory 35 hour working week). Despite the limitations imposed on working hours; some workers have experienced an increase in the average number of hours worked each week (Böheim and Taylor, 2003; Bishop, 2004). This may be because a proportion of workers choose to voluntarily opt-out of the 48 hour agreement, with approximately a quarter of the UK working population working more than 48 hours per week and nine per cent working more than 60 hours per week (Giga *et al*, 2008; Barnard *et al*, 2004).

Bishop (2004) argues that the UK has developed a long working-hours culture in comparison with other EU countries. In 2004, 40 per cent of the working labour force in the UK worked in excess of 40 hours a week compared with 10 per cent in Sweden, 16 per cent in France and 20 per cent in Denmark. This may reflect standardised working patterns in many EU countries with the majority of employees working 31 to 40 hours whilst the UK has far less standardised working patterns.

Figure 3 shows that the average number of hours worked in the UK by full-time workers has been consistently higher than the average for the EU. In Q1 2010 the average full-time week was 42.7 hours, compared to 41.6 averaged across the EU.

The relationship between hours worked and household structure

It is important to consider the household as a whole when analysing labour supply decisions. Antonazzo *et al* (2003) and Kodz *et al* (2003) promote the 'unitary' family supply model (which consists of two working age individuals who affect the decisions of each other). Dex *et al* (1995) studied the average number of working hours within households and found a correlation between the number of hours men worked and the number of hours their partners worked. They concluded that (in a household) if a man worked 'zero' or 'under 31' hours per week their partner commonly works 'zero' hours. Similarly if a man worked '31–40' or '41–60' hours per week, their partner commonly works part-time or standard hours ('31–40' per week). Finally, if a man worked '41 or more' hours per week 20 per cent of their partners worked '41 or more' hours per week and 31 per cent worked 'zero' hours.

Similar analysis may be conducted using the LFS household dataset. **Table 1** shows summary statistics on the proportion of partners who work the same number of hours as the head of household. When the head of the household works zero hours per week, 47.7 per cent of their partners also work zero hours. Similarly when the head of household works 1–30 hours per week, 46.7 per cent of their partners work a similar number of hours. This initially appears to support Dex *et al* (1995) in finding a positive relationship between the number of hours worked by other members of the household (particularly when considering households who work relatively few hours). As Dex *et al* (1995) suggest; the relationship may not be as strong as the number of hours worked by the head of the household increases beyond 31 hours per week. In fact when the head of household works 31–40 or 40+ hours per week their partner tends to work 1–30 hours, with 40.2 per cent and 39.8 percent of partners falling into this category respectively.

Forma (2008) reports that a high workload, problems with a superior and unfavourable work hours put pressure on the relationship between work and family and these factors may contribute to people choosing to withdraw from the workplace. Having children has a significant impact on a worker's decision to work full- or part-time rather than affecting the decision whether to work at all (Antonazzo *et al*, 2003). The expense of childcare can have a significant impact on labour supply choices, particularly for mothers. If additional hours require extra child care costs then parents may not be willing to work longer hours (Böheim and Taylor, 2003; Powell, 2000).

Kodz *et al* (2003) found that men with children were more likely to work long hours whilst women with children were more likely to work fewer.

Table 2 shows that this remains the case in the UK. In the four quarters up to and including Q2 2010, full-time males with dependent children tended to work 0.9 hours per week more than males with no

Table 2
Average weekly hours of work by sex and whether dependent child in household, 2009–10[1]

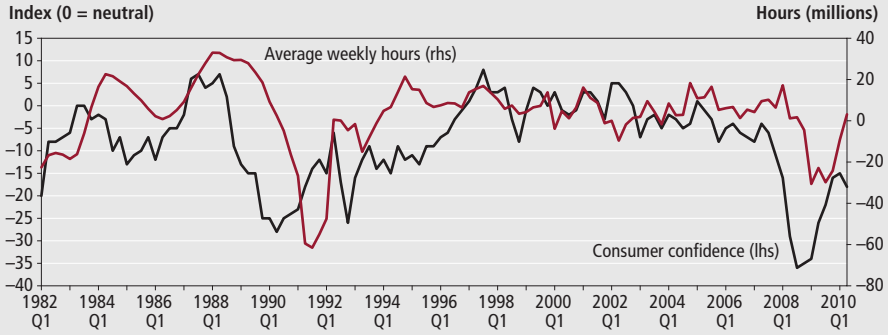
United Kingdom — Hours

		Average weekly hours of work	
		Full time	Part time
Male	Without dependent child	38.8	16.9
	With dependent child	39.6	15.9
Female	Without dependent child	35.2	16.5
	With dependent child	31.4	15.8

Notes: *Source: Labour Force Survey*

1 Four quarter average (Q3 2009–Q2 2010).

Figure 4
GfK Consumer Confidence index[1] and annual change in total average hours worked,[2] 1982–2010



Notes: *Source: Labour Force Survey and GfK Consumer Confidence Barometer*

1 GfK data are not seasonally adjusted.
2 LFS data are seasonally adjusted.

dependent children. Full-time working females with dependent children, however, tended to work 3.8 hours per week less than females with no dependent children. The story is not so apparent when considering part time workers who tend to work fewer hours per week if they have a dependent child in the household (regardless of sex).

The relationship between hours, consumer confidence and GDP

In the 2008–09 recession, employment did not fall as much as in previous recessions[1].

One explanation is that employers may have been able to reduce the volume of hours and increase the use of part-time working rather than make workers redundant (see Eurostat, 2009). Over the course of this latest recession, the actual number of hours worked across the EU fell. Across the 27 EU member countries, hours worked per week fell, on average, by 0.7 hours between Q2 2008 and Q2 2009. In the UK, actual hours worked fell by 0.4 hours to 40.8 hours a week (Eurostat, 2009).

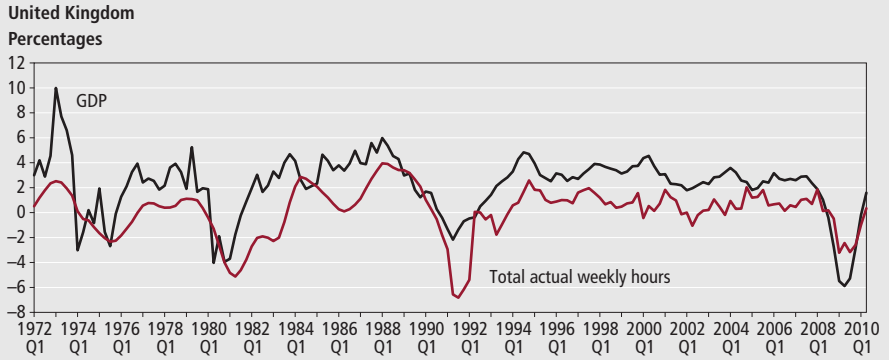
A weak labour market in times of recession typically results in less job security, greater fear of redundancy and reduced employment opportunities. As a result, it is possible that workers may wish to work more than their standard hours in order to increase savings to buffer against income shocks. This can be particularly true for workers on fixed term contracts or temporary jobs who may face even greater uncertainty about their future employment prospects (Böheim and Taylor, 2003). Parker *et al* (2005), find that labour supply is affected by uncertainty over future wages. This is corroborated by Flodén, (2005) who analyses the US self-employed labour market and confirms that people work longer hours in times of uncertainty.

Having said that, the number of hours an employee is expected to work may be constrained by the employer. If there are many jobs available, workers still have the opportunity to choose the job (or jobs) with the most desirable hours at a given wage. The more restricted the market is, the less choices a worker has (Dickens and Lundburg, 1993). This is the case in times of recession, when (due to labour demand constraints) employers may choose to reduce staff headcount, or reduce working hours. The combination of employees wishing to work longer hours and employers wishing to reduce hours can lead to workers becoming under-employed or even unemployed.

Figure 4 plots the annual change in total hours of work and the level of consumer confidence (as measured by GfK NOP Limited[2]). If workers prefer to work longer hours in times of uncertainty then an inverse relationship between the number of hours supplied by workers and the level of consumer confidence might be expected. This is not entirely supported by the data in Figure 4. The relationship between consumer confidence and the change in total hours is complex and largely inconclusive (showing periods of both positive and negative correlation). This may reflect the relevance of other theories arguing for pro-cyclical labour supply[3], and that lags between household confidence indicators and labour supply decisions make the relationship hard to identify.

As the demand for labour is derived from the goods and services produced

Figure 5
Year on year growth rates for output and total actual hours worked, 1972–2010[1]



Notes: *Source: Labour Force Survey and ONS Monthly Digest of Statistics*

1 Both series are seasonally adjusted.

by firms a positive relationship between output and labour inputs is expected. **Figure 5** plots year on year growth rates for total hours of work and UK gross domestic product (GDP) and shows changes in the level of hours worked in the UK follow a cyclical pattern. Total weekly hours worked are positively correlated (to a degree of 0.7) with the annual growth in GDP. Total weekly hours worked reached a peak in Q1 2008 at 949.2 million hours before falling consistently through the recession to 908.6 million hours in Q4 2009, the lowest number of total hours worked in the UK economy since 2003. The positive relationship between hours worked and the state of the economy shown in Figure 4 and Figure 5 suggests that the economy's influence on labour demand is stronger than its influence on labour supply.

Conclusion

The number of hours worked in the economy results from a combination of decisions by individuals about how many hours of labour to supply, and decisions by firms about how many hours of labour to demand. This article has shown that hours worked is an important indicator and is a more responsive measure of the state of the labour market than employment, both in terms of timeliness and variation. The article also presents some evidence of a long working-hours culture in the UK when compared to the average across the EU. This is despite a general falling trend in the average number of hours worked each week since 1992.

The decision to supply labour is found to be influenced by the composition of household. The number of hours worked is correlated with the number of hours an individual's partner works. This is especially true when the head of the household works no (zero) hours. When considering the prevailing state of the economy, it is likely to be labour demand (from firms) which influences the total number of hours worked. The analysis showed that during periods of recession the total actual weekly hours fell. The main cause of this is likely to be the reaction of firms to falling demand. Individuals may be willing to supply more labour to help protect against uncertainty but this influence is not found to be as strong as the cyclical impact on labour demand.

Notes

1. For a comparison of UK unemployment over recessions see www.statistics.gov.uk/cci/nugget.asp?id=2294
2. The GfK NOP Consumer Confidence Index is an overall measure of consumer confidence. Further information is available from www.gfknop.com/pressinfo/keysurveys/index.en.html
3. For example, Real Business Cycle theory argues that pro-cyclical movements in real wages induce the same pro-cyclical pattern in labour supply by encouraging individuals to substitute leisure for labour when the economy is strong and vice-versa when the economy is weak.

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ARTICLE

Regional Gross Disposable Household Income

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SUMMARY

This article presents analysis of Regional Gross Disposable Household Income (GDHI) at current basic prices, published in March 2010 by the Office for National Statistics (ONS). These data are published using the European Union Nomenclature of Units for Territorial Statistics (NUTS) regions.

Data are published for the NUTS1, NUTS2 and NUTS3 levels for the period 1995 to 2008. All values are at current prices which means that the effects of price inflation and regional price levels are not removed. UK values referred to within this article exclude Extra-Regio, defined as parts of the UK economic territory whose income cannot be assigned to any particular region.

An **Annex** to this article provides further information on definitions and methodology relating to GDHI.

Introduction

This analysis explores various aspects of Regional Gross Disposable Household Income (GDHI). The generation of GDHI by region, sub-region and local area is compared with national (UK) performance, in the context of £ million, £ per head and per head index variables. Analysis of GDHI components is also included along with an examination of variance within NUTS levels. The article focuses on regional performance but also considers changes over time.

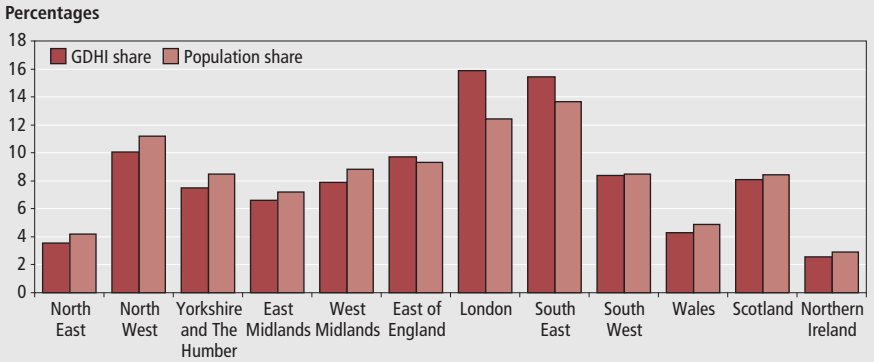
GDHI represents the amount of money left available within the household sector for spending or saving, after expenditure associated with income, for example, taxes and social contributions, property ownership and provision for future pension income. It is calculated gross of any deductions for capital consumption. The Annex outlines the methodology used to derive GDHI figures. The article concludes with ONS's future plans for regional accounts data.

NUTS1 (regional)

Table 1 shows GDHI per head of population for the UK as a whole was £14,872 in 2008. London had the highest GDHI per head at £19,038. The South East and East of England were also above the UK value at £16,792 and £15,509 respectively. All other regions had a GDHI per head below the UK value. The North East and Wales had the lowest GDHI per head, at £12,543 and £13,073 respectively (see **Map 1**).

Figure 1 shows that London and the South East had the largest shares of total GDHI in 2008, 15.9 per cent and 15.4 per cent respectively. Northern Ireland and the North East had the smallest shares, 2.6 per cent and 3.5 per cent respectively.

Figure 1
Share of UK GDHI and UK population: by NUTS1 region, 2008



Source: ONS, Regional GDHI, March 2010 and Mid Year Populaion Estimates, August 2010

Table 1
GDHI per head: by NUTS 1 region, 2008

Region	GDHI per head (£)	GDHI per head growth on 2007 (per cent)	GDHI per head index (UK=100)	Total GDHI[1] (£m)	Total GDHI growth on 2007 (per cent)	Share of UK total GDHI (per cent)
United Kingdom[2]	**14,872**	***3.9***	**100.0**	**912,907**	***4.6***	***100.0***
North East	12,543	*4.2*	84.3	32,305	*4.6*	*3.5*
North West	13,386	*4.0*	90.0	92,041	*4.2*	*10.1*
Yorkshire and The Humber	13,115	*3.1*	88.2	68,371	*3.8*	*7.5*
East Midlands	13,611	*3.3*	91.5	60,340	*4.1*	*6.6*
West Midlands	13,337	*3.8*	89.7	72,167	*4.4*	*7.9*
East of England	15,509	*3.0*	104.3	88,843	*4.2*	*9.7*
London	19,038	*4.5*	128.0	145,068	*5.3*	*15.9*
South East	16,792	*3.9*	112.9	140,720	*4.8*	*15.4*
South West	14,680	*3.7*	98.7	76,471	*4.3*	*8.4*
England	15,090	*3.8*	101.5	776,325	*4.5*	*85.0*
Wales	13,073	*4.1*	87.9	39,132	*4.5*	*4.3*
Scotland	14,301	*4.7*	96.2	73,914	*5.2*	*8.1*
Northern Ireland	13,260	*3.7*	89.2	23,536	*4.6*	*2.6*

Notes:

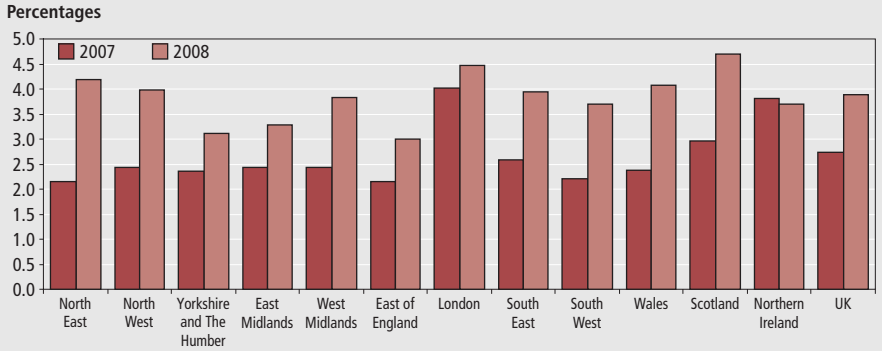
1 Figures may not sum to totals as a result of rounding.
2 Excludes Extra-Regio (please refer to Annex).

Source: ONS, Regional GDHI, March 2010

Figure 2
GDHI per head indices: by NUTS1 region, 1995 and 2008

Source: ONS, Regional GDHI, March 2010

Figure 3
GDHI per head growth: by NUTS1 region, 2007 and 2008



Source: ONS, Regional GDHI, March 2010

Population share exceeded GDHI share in every region except for London, the South East and East of England. The South East had the largest share of population with 13.7 per cent.

Between 1995 and 2008, London, the South East, Scotland and Northern Ireland were the only regions where per head indices increased. All other NUTS1 per head indices fell over this period. **Figure 2** shows London had the highest GDHI per head index in 2008, 28.0 points greater than the UK value, an increase of 7.3 points from 1995. The North East had the lowest index value, 15.7 points below the UK and a decrease of 2.9 points from 1995. This was followed by Wales and Yorkshire and The Humber, at 12.1 and 11.8 index points below the UK respectively.

Figure 3 shows annual growth in GDHI per head in 2007 and 2008. The rate of growth increased across all regions except Northern Ireland, where growth slowed slightly from 3.8 per cent in 2007 to 3.7 per cent in 2008. The largest increase in the rate of growth occurred in the North East, from 2.1 per cent in 2007 to 4.2 per cent in 2008. The strongest growth in 2007 was London at 4.0 per cent and Scotland had the strongest growth in 2008 at 4.7 per cent.

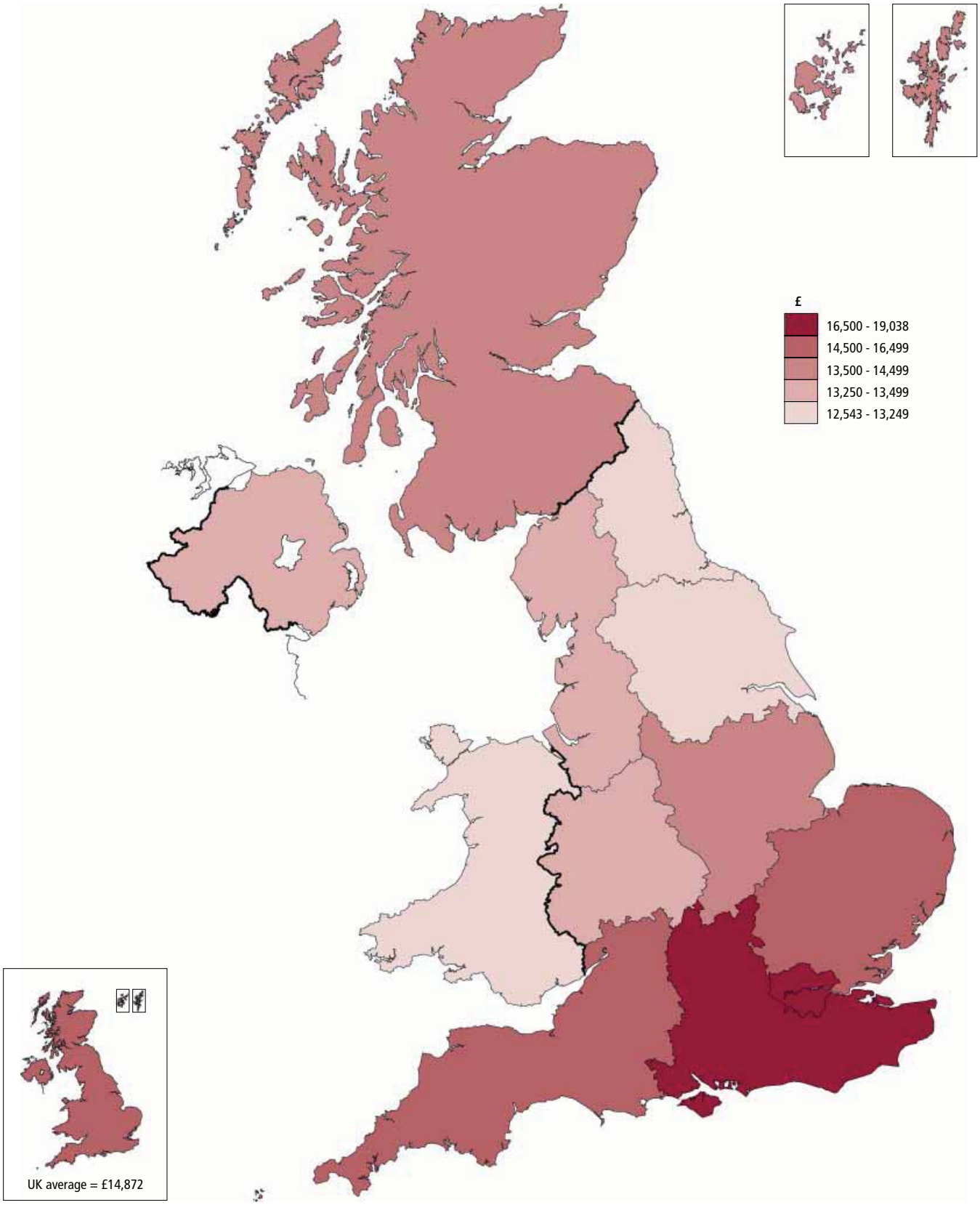
NUTS2 (sub-regional)

Table 2 shows Inner London had the highest household income per head at £22,135 in 2008, while the West Midlands had the lowest at £12,097. In 2008, 14 of the 37 NUTS2 sub-regions were above the UK level (see **Map 2**), including all those within London and the South East. All sub-regions within the North East, East Midlands, Wales and Northern Ireland were below the UK level.

Of the 37 NUTS2 sub-regions, Highlands and Islands showed the highest growth from 2007 in GDHI per head of 5.8 per cent. Lincolnshire showed the lowest growth in GDHI per head of 2.3 per cent.

Outer London had the largest share of total GDHI with 8.5 per cent followed by Inner London with 7.3 per cent. Highlands and Islands had the lowest share of total GDHI with 0.6 per cent.

Map 1
Gross Disposable Household Income per head: by NUTS 1 area, 2008



Source: ONS, Regional GDHI, March 2010

Table 2
GDHI per head, top five and bottom five: by NUTS2 sub-region, 2008

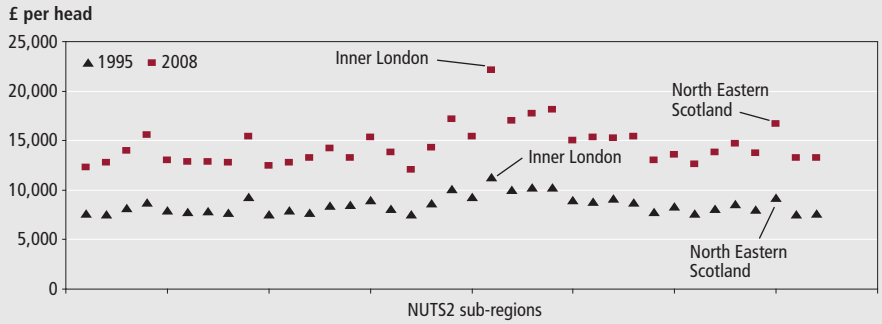
Sub-region	GDHI per head (£)	GDHI per head growth on 2007 (per cent)	GDHI per head index (UK=100)	Total GDHI[1] (£m)	Total GDHI growth on 2007 (per cent)	Share of UK total GDHI (per cent)
United Kingdom[2]	**14,872**	***3.9***	**100.0**	**912,907**	***4.6***	***100.0***
Top five GDHI per head						
Inner London	22,135	*5.3*	148.8	67,062	*6.3*	*7.3*
Surrey, East and West Sussex	18,168	*4.1*	122.2	48,284	*4.9*	*5.3*
Berks, Bucks and Oxon	17,710	*3.4*	119.1	38,991	*4.5*	*4.3*
Bedfordshire and Hertfordshire	17,212	*3.3*	115.7	28,930	*4.5*	*3.2*
Outer London	16,994	*3.8*	114.3	78,006	*4.6*	*8.5*
Bottom five GDHI per head						
Northumberland and Tyne and Wear	12,741	*4.3*	85.7	17,894	*4.7*	*2.0*
West Wales and The Valleys	12,656	*4.2*	85.1	24,023	*4.6*	*2.6*
South Yorkshire	12,482	*3.1*	83.9	16,301	*3.6*	*1.8*
Tees Valley and Durham	12,306	*4.0*	82.7	14,411	*4.6*	*1.6*
West Midlands	12,097	*3.9*	81.3	31,688	*4.6*	*3.5*

Notes:

1 Figures may not sum to totals as a result of rounding.
2 Excludes Extra-Regio (please refer to Annex).

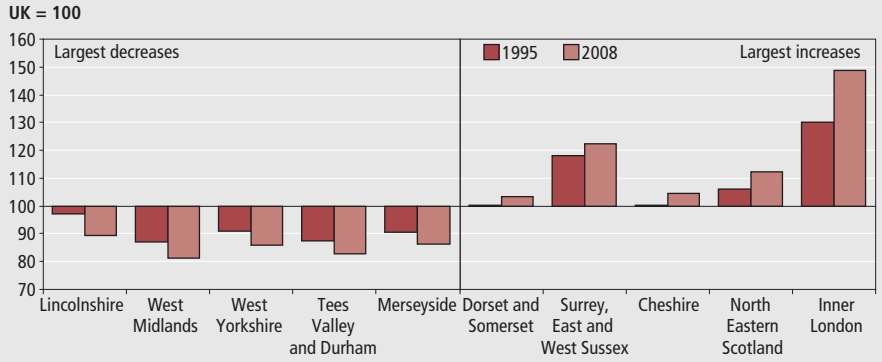
Source: ONS, Regional GDHI, March 2010

Figure 4
GDHI per head: by NUTS2 sub-region, 1995 and 2008



Source: ONS, Regional GDHI, March 2010

Figure 5
GDHI per head indices, five largest decreases and five largest increases: by NUTS2 sub-region, 1995–2008



Source: ONS, Regional GDHI, March 2010

Figure 4 compares sub-regional GDHI per head in 1995 with 2008 values. Each data point represents a NUTS2 sub-region.

In 1995, the GDHI per head of Inner London at £11,283 was similar to other sub-regions, but by 2008 the Inner London figure at £22,135 was significantly higher than the other sub-regions. Similarly, North Eastern Scotland has increased from £9,200 in 1995 to £16,684 in 2008.

Between 1995 and 2008, 12 of the 37 NUTS2 sub-regions increased their index value. **Figure 5** illustrates that Inner London had the largest increase of 18.6 points, followed by North Eastern Scotland with an increase of 6.0 points from 1995. Lincolnshire shows the largest decrease of 8.0 index points, followed by West Midlands which decreased by 5.8 points.

NUTS3 (local area)

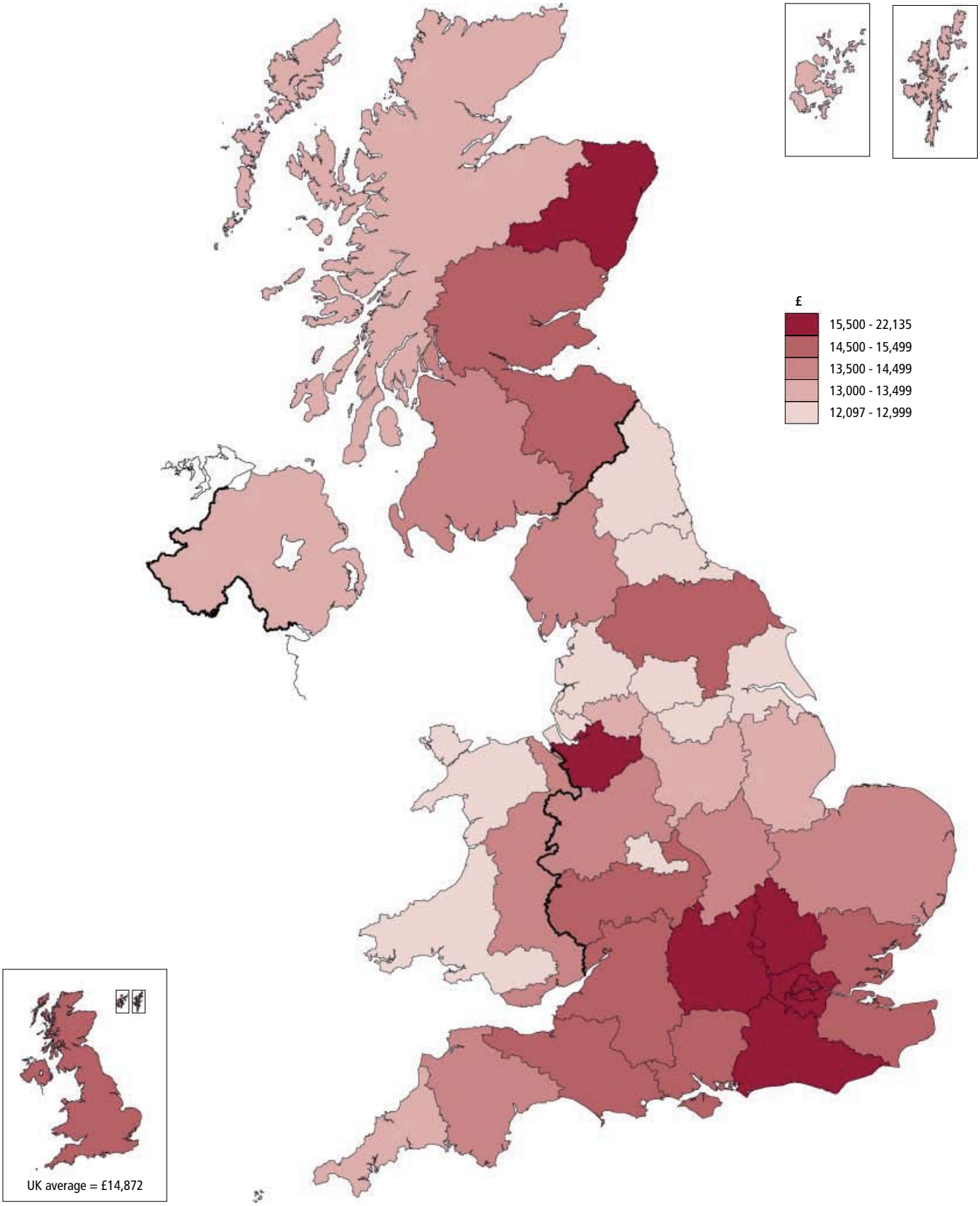
In 2008 of the 133 NUTS3 local areas, 38 were above the UK value at £14,872 per head (see **Map 3**). **Table 3** shows the highest GDHI per head in 2008 was Inner London – West at £30,672, followed by Surrey and Buckinghamshire CC at £20,960 and £20,168 respectively. Nottingham at £10,361 had the lowest GDHI per head, followed by City of Kingston upon Hull and Blackburn with Darwen at £10,553 and £10,880 respectively.

Of the 133 NUTS3 local areas, Orkney Islands showed the highest growth from 2007 in GDHI per head of 7.1 per cent. Swindon showed the lowest growth in GDHI per head of 1.9 per cent.

Figure 6 shows the five highest and five lowest increases in GDHI per head between 1995 and 2008. Over this period 49 of the 133 NUTS3 local areas exceeded the UK increase of 71.6 per cent. The North of Northern Ireland showed the highest increase at 99.0 per cent, followed by Inner London – West at 98.4 per cent. Sefton at 45.8 per cent showed the lowest increase over this period.

Between 1995 and 2008, 49 of the 133 NUTS3 sub-regions increased their index value. **Figure 7** illustrates that Inner London – West had the largest increase of

Map 2
Gross Disposable Household Income per head: by NUTS 2 area, 2008



Source: ONS, Regional GDHI, March 2010

Table 3
GDHI per head, top five and bottom five: by NUTS3 local area, 2008

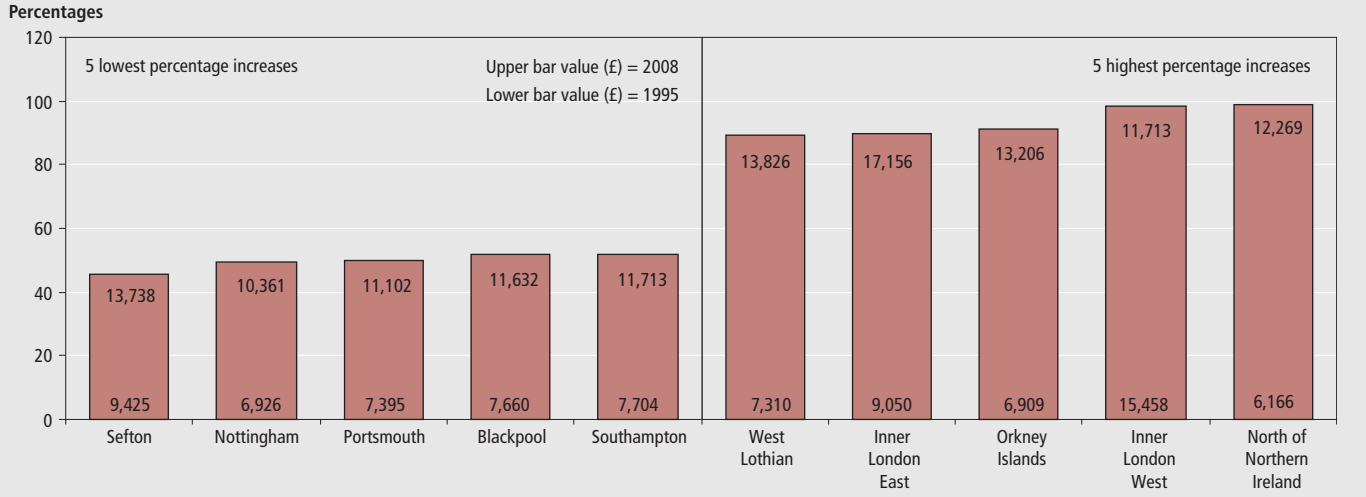
Local Area	GDHI per head (£)	GDHI per head growth on 2007 (per cent)	GDHI per head index (UK=100)	Total GDHI[1] (£m)	Total GDHI growth on 2007 (per cent)	Share of UK total GDHI (per cent)
United Kingdom[2]	**14,872**	***3.9***	**100.0**	**912,907**	***4.6***	***100.0***
Top five GDHI per head						
Inner London - West	30,672	*5.4*	206.2	34,235	*6.3*	*3.8*
Surrey	20,960	*3.7*	140.9	23,259	*4.8*	*2.5*
Buckinghamshire CC	20,168	*4.0*	135.6	9,948	*4.6*	*1.1*
Hertfordshire	18,752	*3.4*	126.1	20,222	*4.6*	*2.2*
Outer London - West and North West	18,175	*3.7*	122.2	32,409	*4.4*	*3.6*
Bottom five GDHI per head						
Leicester	11,217	*4.2*	75.4	3,306	*5.0*	*0.4*
Portsmouth	11,102	*3.3*	74.6	2,220	*4.5*	*0.2*
Blackburn with Darwen	10,880	*4.6*	73.2	1,531	*4.5*	*0.2*
Kingston upon Hull, City of	10,553	*2.9*	71.0	2,730	*3.6*	*0.3*
Nottingham	10,361	*2.8*	69.7	3,029	*4.1*	*0.3*

Notes:

1 Figures may not sum to totals as a result of rounding.
2 Excludes Extra-Regio (please refer to Annex).

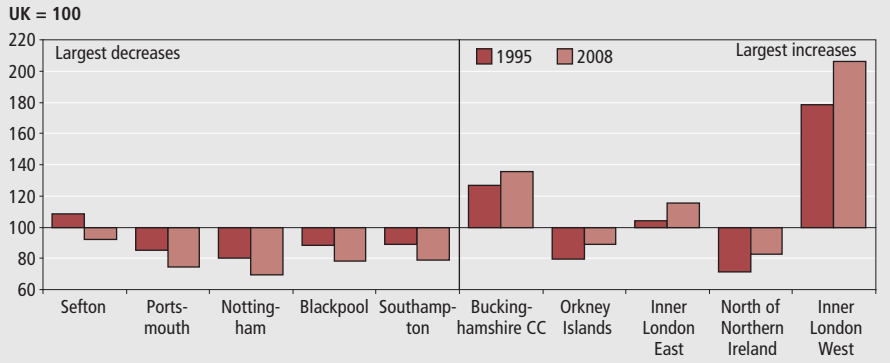
Source: ONS, Regional GDHI, March 2010

Figure 6
GDHI per head, five lowest and five highest percentage increases: by NUTS3 local area, 1995–2008



Source: ONS, Regional GDHI, March 2010

Figure 7
GDHI per head indices, five largest decreases and five largest increases: by NUTS3 local area, 1995–2008



Source: ONS, Regional GDHI, March 2010

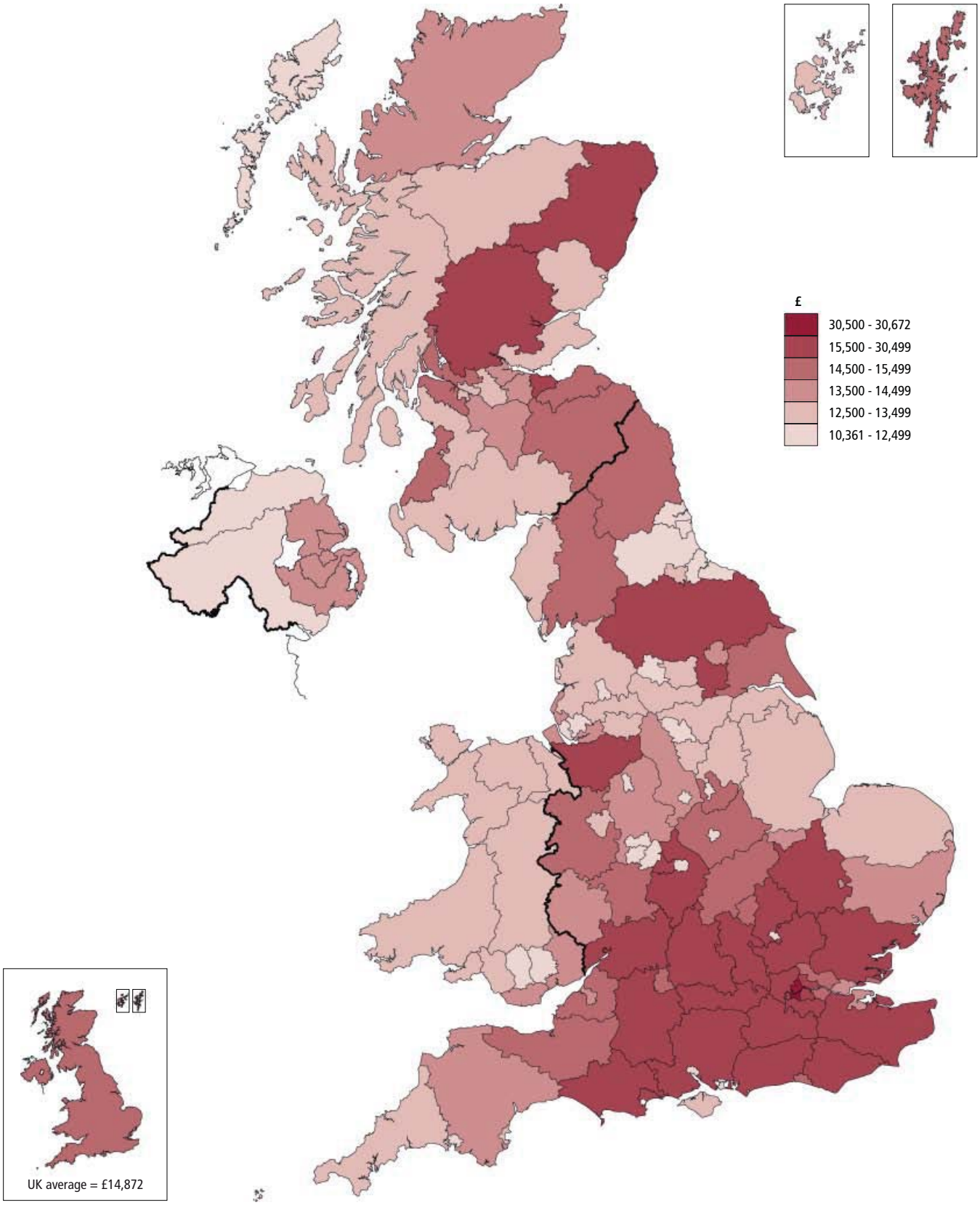
27.8 index points, followed by North of Northern Ireland at 11.3 points. Sefton had the largest decrease of 16.4 index points.

Component analysis (NUTS2) GDHI data

Compensation of employees (CoE) is the remuneration, in cash or kind, received by employees in the household sector. It is the largest component of the primary resource element of GDHI (see the aAnnex). **Figure 8** illustrates percentage changes in CoE per head.

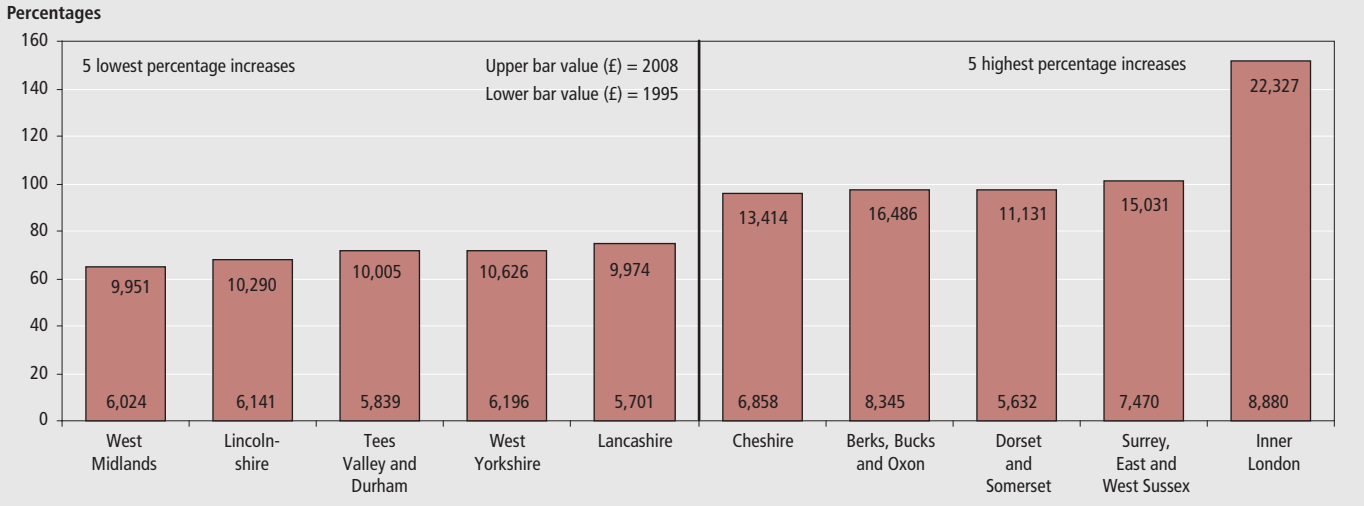
Between 1995 and 2008, the CoE per head of 14 of the 37 sub-regions increased at a rate of growth exceeding the UK growth rate of 84.3 per cent. Inner London had the highest

Map 3
Gross Disposable Household Income per head: by NUTS 3 area, 2008



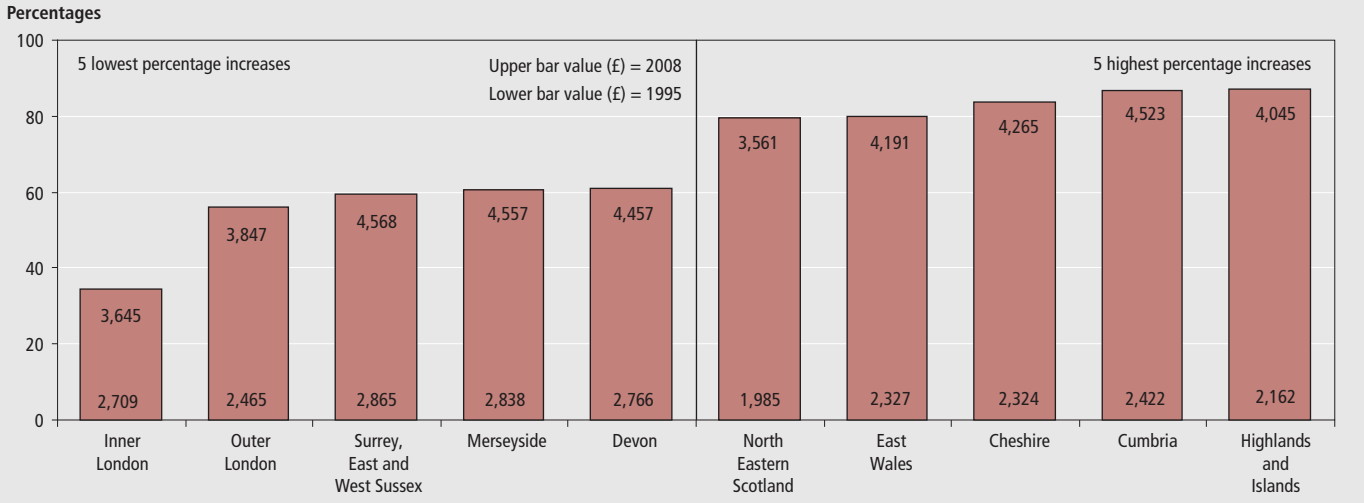
Source: ONS, Regional GDHI, March 2010

Figure 8
Compensation of employees (CoE) per head, five lowest and five highest percentage increases: by NUTS2 sub-region, 1995–2008



Source: ONS, Regional GDHI, March 2010

Figure 9
Social benefits per head, five lowest and five highest percentage increases: by NUTS2 sub-region, 1995–2008



Source: ONS, Regional GDHI, March 2010

increase of 151.4 per cent, while the West Midlands had the lowest of 65.2 per cent.

Social benefits are the main component of secondary resources (income for households following redistribution) and include social security benefits, privately funded benefits, unfunded social benefits and social assistance in cash. In 2008 social benefits worth £247 billion were distributed nationally.

Figure 9 illustrates the percentage change in social benefits per head between 1995 and 2008. Over this period 21 of the 37 NUTS2 sub-regions increased at a rate of growth exceeding the UK growth of 69.4 per cent. Highlands and Islands had the highest percentage increase at 87.1 per cent, while Inner London showed the lowest increase of 34.5 per cent.

This section highlights fluctuation in the contribution of CoE and social benefits to NUTS2 total resource between 1995 and 2008. The top and bottom five changes in CoE and social benefits as a share of sub-regional total resource are reflected in **Figure 10** and **Figure 11** respectively.

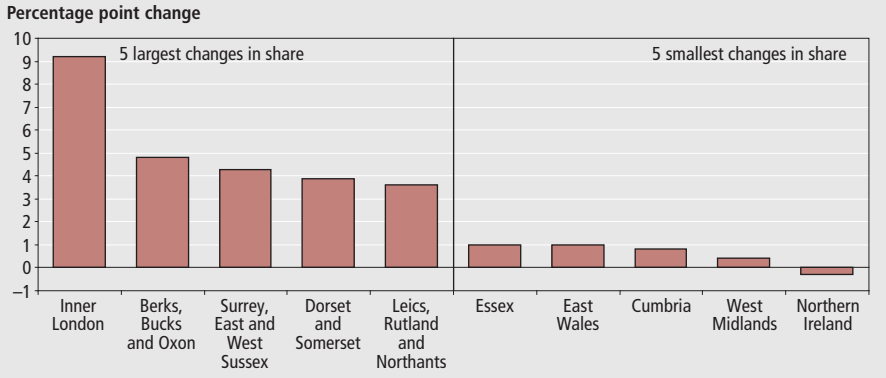
The largest fluctuation in the contribution of both CoE and social benefits to overall resource is apparent in Inner London, where CoE contributed 51.9 per cent towards total resource of this region in 1995 and 61.1 per cent in 2008. This is reflected in Figure 10, as an increased share of 9.2 percentage points. In contrast, social benefits contributed 15.9 per cent towards the total resource of Inner London in 1995 and 10.0 per cent in 2008. This is reflected in Figure 11 as a reduced share of 5.9 percentage points.

Variation within region, sub-region and local area

Figure 12 illustrates the variation to be found within regions. The range of NUTS3 local area GDHI per head within NUTS1 regions is shown for 2008. The highest and lowest GDHI per head values in each region are highlighted. London has the highest amount of variation, ranging from Outer London – East and North East at £15,191 to Inner London – West at £30,672. The region with the least variation is Northern Ireland, ranging between North of Northern Ireland at £12,269 and Outer Belfast at £14,322.

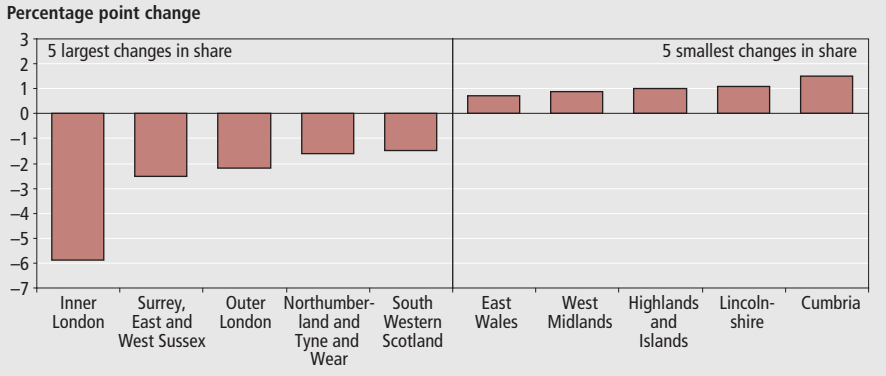
Over time there can be a general

Figure 10
CoE, five largest and five smallest changes in share of total resources: by NUTS2 sub-region, 1995–2008



Source: ONS, Regional GDHI, March 2010

Figure 11
Social benefits, five largest and five smallest changes in share of total resources: by NUTS2 sub-region, 1995–2008



Source: ONS, Regional GDHI, March 2010

divergence in household income between areas within the same NUTS region. **Figure 13** shows divergence in the rates of growth in GDHI per head of the two NUTS3 local areas within the North Yorkshire NUTS2 sub-region.

Between 1998 and 2002 the NUTS3 local areas converged as York experienced higher growth than North Yorkshire CC. Between 2002 and 2006 this trend reversed as both local areas diverged from the sub-regional rate of growth, primarily due to a slow down in the rate of growth for York in 2003 and 2004.

Revisions

The GDHI estimates published in March 2010 include some revisions to earlier published estimates for the period 1995 to 2007.

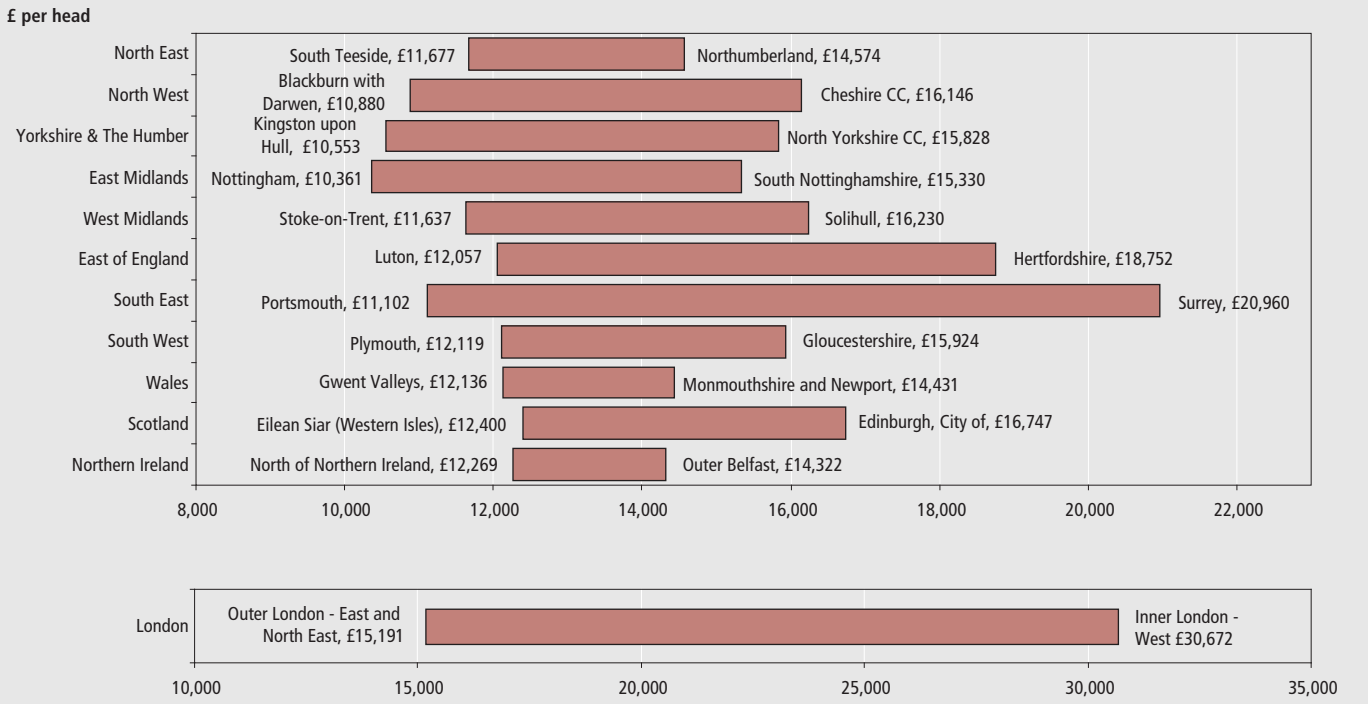
The main reasons for revisions are:

- revisions to the UK National Accounts (*Blue Book* 2009), which go back to 2004
- replacing provisional estimates with actual data

Future work plans

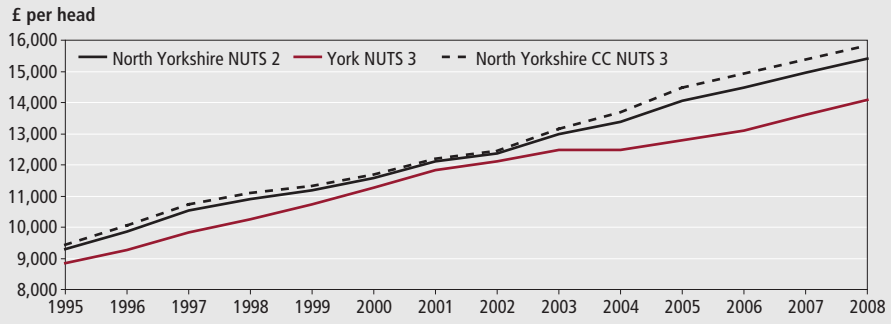
ONS plans to publish regional GVA for 1989 to 2009 at the NUTS1 level and 1995 to 2008 at NUTS2 and NUTS3 in December 2010. These data will be consistent with the National Accounts *Blue Book* 2010.

Figure 12
GDHI per head: NUTS3 variations within NUTS1 regions, 2008



Source: ONS, Regional GDHI, March 2010

Figure 13
GDHI per head: NUTS3 variation within NUTS2 sub-region, 1995–2008



Source: ONS, Regional GDHI, March 2010

It is also planned to publish regional GDHI estimates at the NUTS1, 2 and 3 levels from 1995 to 2009 (consistent with the National Accounts *Blue Book* 2010) in March 2011.

ONS is currently developing experimental estimates of real regional GVA (that is, with effects of inflation removed), using a production approach, at the NUTS1 level.

Notes

1. The full Regional Accounts Gross Disposable Household Income publication can be accessed on the ONS website at: www.statistics.gov.uk/statbase/product.asp?vlnk=14651
2. The full Regional Accounts Gross Value Added publication can be accessed on the ONS website at: www.statistics.gov.uk/statbase/product.asp?vlnk=14650

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ANNEX

Gross Disposable Household Income – definitions and methodology

Gross Disposable Household Income (GDHI) is the amount of money that the household sector has available for spending or saving, after expenditure associated with income.

The household sector covers people living in traditional households as well as those living in institutions (for example retirement homes and prisons). The sector also includes sole trader enterprises and non-profit institutions serving households (NPISH). Examples of the latter include charities and most universities.

It is calculated gross of any deductions for capital consumption. Consumption represents the amount of fixed assets used up (during the period under consideration) as a result of normal wear and tear and foreseeable obsolescence.

Calculating GDHI

GDHI = Balance of the primary income account + Balance of the secondary income account

The Primary Income Account

Primary incomes are those arising as part of the production process or through the ownership of assets required for production. The balance of primary income is the difference between total primary resources and uses.

Primary resources

Operating surplus & mixed income

The operating surplus in the household sector account relates to the sector's rental income from buildings, including the imputed rental of owner occupied dwellings. Mixed income of the household sector comprises income from self-employment.

Compensation of employees

The remuneration, in cash or in kind, received by employees (from employers) as payment for the services of labour. Within GDHI the CoE component includes wages and salaries paid to UK residents working abroad less wages and salaries paid to non-residents working in the UK. This differs from the calculation of CoE for GVA.

Property income received

Income from the ownership of financial assets and tangible non-produced assets. This includes interest receipts, distributed income of corporations, property income attributed to insurance policyholders and returns from the ownership of land (rent).

It specifically excludes income from the ownership of buildings (rental) – see operating surplus.

Primary uses

Property income paid

This comprises interest paid on mortgages and other borrowings and rent on land. The latter relates mainly to agricultural land.

The Secondary Distribution of Income Account

This account shows how primary incomes are redistributed through the payment of taxes, social contributions, benefits and net current transfers. The balance of secondary income is derived as the difference of total secondary resources less uses.

Secondary resources

Imputed social contributions

Contributions paid directly by employers to their current employees and/or former employees, as well as other eligible persons. These payments do not involve social security funds, insurance enterprises, autonomous pension funds or the like.

Social benefits other than social transfers in kind

These comprise of social security benefits in cash, privately funded benefits, unfunded social benefits and social assistance in cash. They exclude reimbursements from social security funds for households to purchase goods and services.

Other current transfers

These include non-life insurance claims, which correspond with net non-life insurance premiums on the uses side of the allocation of secondary income account. Miscellaneous current transfers consist of a variety of transfers to the household sector from the rest of the world (such as gifts), NPISH (such as grants) and central government.

Secondary uses

Current taxes on income and wealth

Compulsory, unrequited payments made by the household sector to the government sector. The main examples in the UK household sector are income tax, council tax and vehicle excise duty.

Social contributions/Social benefits

Social benefits paid and social contributions made by the household sector are grouped together. Social contributions are made by individuals to social insurance schemes and pensions, to make provisions for social benefits and retirement income. The payments may be made by employers on behalf of their employees, or by employees, the self-employed and the non-employed, on their own behalf.

Other current transfers

On the uses side of the secondary income account, these include non-life insurance premiums and miscellaneous current transfers. The former mainly cover property, motor vehicle and health insurance and are calculated net of the service charges for administering the scheme and separate from any employer or government scheme. Estimates correspond with net non-life insurance claims on the resources side of the secondary income account. Miscellaneous current transfers include payments of court fines, certain government fees and transfers to and from the rest of the world.

For comprehensive information about the individual components and their definitions please see the European System of Accounts 1995 (ESA95), available on the Eurostat website: http://epp.eurostat.ec.europa.eu

Regional classification

Regional GDHI estimates are produced at three geographical levels in the UK, based upon the Nomenclature of Units for Territorial Statistics (NUTS). This provides a uniform breakdown for the production of regional statistics for the European Union:

- NUTS1: the devolved administrations of Scotland, Wales and Northern Ireland and the Government Office Regions (GORs) of England
- NUTS2: 37 sub-regions – mainly groups of counties and unitary authorities
- NUTS3: 133 local areas – generally groups of unitary authorities or districts
- Extra-Regio GDHI is that which cannot be assigned to any region, such as the GDHI of embassies and UK armed forces stationed overseas.

GDHI production

Regional GDHI estimates are published annually for the period 1995 to t-2 years (t being the year of publication) and are consistent with the National Accounts *Blue Book*. Component estimates are published at the NUTS1 and NUTS2 levels and the balances of primary and secondary incomes are published for NUTS3 local areas.

Regional GDHI estimates are initially produced at NUTS3 level and aggregated up to obtain NUTS2 and NUTS1 estimates. These estimates are on a residence basis (incomes of individuals are allocated to the region in which they live rather than where they work).

The data referenced in this article are headline figures calculated using a five-period moving average. These adjusted figures remove some year-on-year volatility caused by sampling and non-sampling errors in the data sources.

Regional GDHI estimates are produced at current basic prices, so the effects of inflation and regional price levels are not removed from these data.

Per head data enable comparison of regions of different sizes. It takes account of the entire population of regions, sub-regions and local areas.

Data sources

The data are allocated at the regional level using the most appropriate indicators. The main datasets used to calculate regional GDHI are:

- HMRC wages and salaries
- HMRC self-assessment tax and Survey of Personal Incomes (SPI)
- Other HMRC taxes data
- Various benefit datasets

Data from these sources are used as indicators to apportion the National Accounts household accounts components using methods consistent with the guidance set out in the European System of Accounts 1995 (ESA95). All the input data are subject to a rigorous quality assurance process to ensure that they are the best indicators available.

ARTICLE

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Multi–factor productivity: estimates for 1994 to 2008

SUMMARY

This article presents multi–factor productivity (MFP) estimates using experimental measures of quality adjusted labour inputs and utilisation of capital services. Using a growth accounting framework, output growth can be split into the relative contributions of labour and capital inputs, and a residual component which is variously described as 'disembodied technical change', the 'Solow residual', total factor productivity or simply as MFP. This approach complements traditional measures of productivity, which focus only on one input, labour, and take account only of the volume of labour, measured in jobs or hours, and not on changes in the composition of labour over time. Estimates are produced at the market sector and whole economy levels.

The article develops the work of Turvey (2009) by extending the back data to 1994 (1995 for the market sector) and forward to 2008, and by providing estimates at an enhanced level of industrial disaggregation, consistent with parallel developments in measuring labour and capital inputs.

Introduction

Using a growth accounting framework, growth in output can be decomposed into contributions from growth in labour inputs (in terms of both its quantity and composition) and from growth in capital services. The residual output growth that cannot be accounted for by growth in labour and capital inputs is hence an estimate of multi-factor productivity (MFP). This term is sometimes referred to as the 'Solow residual' or total factor productivity (TFP). Whilst conceptually this MFP residual can be thought of as capturing technological progress, in practice it may also capture a number of other effects. These may be effects such as an improvement in the quality of the labour force not captured by the quality adjusted labour inputs; changes in management techniques or business processes, or returns from intangible assets such as research and development. Some element of MFP will also reflect adjustment costs, economies of scale and measurement error in inputs and outputs.

A distinctive feature of this analysis is its utilisation of estimates of quality–adjusted labour inputs, known as QALI. This allows for the contribution of labour inputs to be attributed to both an increase in the **volume** of labour, in terms of actual hours worked, and an increase in the **quality** of labour, in terms of the skill composition of the work force. The analysis also utilises estimates of volume indices of capital services, referred to as VICS. The VICS measure is analogous to QALI in capturing compositional changes in capital inputs more fully than alternative measures of capital input, such as changes in net capital stocks. For more information on QALI, see Turvey, Goodridge and Franklin (2010). For more on VICS, see Wallis, Long and Turvey (2010).

Growth accounting

The growth accounting framework, first developed by Solow (1957), attempts to measure the contribution of different factor inputs to economic growth. Any output growth not explained by growth in these factor inputs is known as multi-factor productivity growth (also referred to as total factor productivity (TFP) or the Solow residual). The specific methodology adopted in this analysis uses gross value added (GVA) as an output measure and VICS and QALI as its factor inputs. This approach to growth accounting is relatively undemanding in terms of data requirements[1]. The data necessary to produce quality-adjusted labour inputs and capital services can readily be found in the National Accounts and Labour Force Survey.

MFP estimates are often interpreted as measuring the effect of 'disembodied technical change' which are those advances in technology not embodied in capital. Examples of disembodied technical change include increased knowledge due to R&D, improved management techniques, changes in organisational structure or more efficient utilisation of ICT. It is important to note that improvements in the quality of capital are examples of 'embodied

technical change'. In principle, such quality changes are captured in the measurement of capital services (directly analogous to the measurement of labour quality changes) and are not included in MFP. MFP is linked, therefore, not to an increase in the quantity or quality of measured factor inputs but rather to how they are employed.

The growth accounting framework employed in this article is grounded in the current National Accounts framework, both in terms of the output measure (gross value added – consistent with *Blue Book* estimates) and input measures (QALI and VICS). In related work, the Office for National Statistics (ONS) is a partner in a research project for the NESTA Innovation Index (NESTA, 2009). This uses a similar growth accounting framework, but broadens the definition of capital inputs beyond that currently used in the National Accounts, to include a range of intangible assets, including employer-funded training, research & development, and design. This follows Corrado, Hulten and Sichel (2005) and is described further in Clayton, Dal Borgo and Haskel (2008).

Expanding the growth accounting framework is not simply a matter of adding intangible assets to the measurement of capital inputs. Where returns on intangible assets reflect real resource costs, identification of such assets affects the classification of intermediate consumption and hence the measurement of gross value added. An example of this effect is provided by a methodological change to the National Accounts in 2007, when firms' in-house software development activities were re-classified from intermediate consumption to gross capital formation. The effect was to raise the level of GDP by around one percentage point, and to revise annual growth rates upwards by around 0.1 per cent for all years since 1992 (Chesson and Chamberlin, 2006). Thus, the NESTA growth accounting estimates differ from those reported in this article on the output side as well as on the measurement of capital inputs.

Methodology

Following Solow (1957), the production function is assumed to take the following form:

$$Y = A(t)f(K,L)$$

Where $A(t)$ represents disembodied technical change, K denotes the volume of capital inputs (measured by VICS), L denotes the volume of labour inputs (measured by QALI) and Y denotes the volume of output, measured by gross value added. This production function embodies the assumption of neutral technical change, that is, the disembodied technological shift factor, $A(t)$, leaves the marginal rates of technical substitution of the labour and capital inputs unchanged. It is additionally assumed that factors are paid their marginal products. Given that all factor inputs are classified as either labour or capital, this implies constant returns to scale in the production function.

Taking the total differential with respect to time and dividing by output gives the proportionate growth in output (where dots denote time derivatives):

$$\frac{\dot{Y}}{Y} = \frac{\dot{A}}{A} + A\frac{\partial f}{\partial K}\frac{\dot{K}}{Y} + A\frac{\partial f}{\partial L}\frac{\dot{L}}{Y}$$

If the relative income shares of capital and labour are denoted as follows,

$$w_k = \frac{\partial Y}{\partial K}\frac{K}{Y} \quad \text{and} \quad w_l = \frac{\partial Y}{\partial L}\frac{L}{Y}$$

then (noting that $\partial Y/\partial K = A\partial f/\partial K$, and so on) growth in output can be expressed as an income share weighted sum of factor input growth and growth in disembodied technical change:

$$\frac{\dot{Y}}{Y} = \frac{\dot{A}}{A} + w_k\frac{\dot{K}}{K} + w_l\frac{\dot{L}}{L}$$

Here, the assumption of constant returns to scale implies that the capital share of income is equal to one minus the labour share of income, that is, $w_k = (1-w_l)$. This implies disembodied technical change as a residual can be recovered as a residual:

$$\Delta \ln Y(t) = \bar{s}_l(t)\Delta \ln L(t) + \left[1-\bar{s}_l(t)\right]\Delta \ln K(t) + \Delta \ln A(t)$$

Where $\bar{s}_l$ represents the average labour share of total income between the current and previous period. This states that the growth in log GVA is equal to growth in log labour input weighted by the labour income share plus growth in log capital input weighted by the capital income share plus growth of the disembodied technical change parameter (the MFP residual).

This framework can be adapted in order to obtain a decomposition of growth that includes the contribution of labour composition. Letting H denote unadjusted labour inputs (measured by hours), this equation can be re-written as:

$$\frac{\dot{Y}}{Y} - \frac{\dot{H}}{H} = \frac{\dot{A}}{A} + w_k\frac{\dot{K}}{K} + w_l\frac{\dot{L}}{L} - \frac{\dot{H}}{H}$$

which, after some re-arrangement, can be simplified to:

$$\frac{\dot{Y}}{Y} - \frac{\dot{H}}{H} = \frac{\dot{A}}{A} + w_k\left(\frac{\dot{K}}{K} - \frac{\dot{H}}{H}\right) + w_l\left(\frac{\dot{L}}{L} - \frac{\dot{H}}{H}\right)$$

In discrete time this can be further re-arranged and approximated as follows:

$$\Delta \ln\left[\frac{Y(t)}{H(t)}\right] = \bar{s}_l(t)\left[\Delta \ln L(t) - \Delta \ln H(t)\right] + \left[1-\bar{s}_l(t)\right]\left[\Delta \ln K(t) - \Delta \ln H(t)\right] + \Delta \ln A(t)$$

This states that growth in log GVA per hour of labour input (that is, labour productivity as conventionally measured, for example, in the ONS quarterly Productivity Statistical Bulletin) can be decomposed into the contributions of labour composition (the difference between the growth of quality adjusted and unadjusted labour inputs), capital deepening (defined as the weighted growth in capital inputs per hour worked) and MFP growth. The quality adjustment measure of labour input explicitly accounts for the heterogeneity of labour inputs by adjusting for changes in labour supply as reflected by education, experience, sex and industry of employment. This is in contrast to a standard aggregation of labour which treats each hour of labour input as homogeneous.

Source data

The labour input measure, QALI, is mainly derived from quarterly Labour Force Survey (LFS) data. This allows information on the educational, industrial, age and gender composition of the labour inputs to be gained. Making the assumption that factors are paid their marginal products, the hours worked by each compositional category are weighted by their share in total labour income. This quality adjustment procedure captures, at least partially, the contribution to output growth of changes in the skill level of the workforce rather than attributing this contribution to MFP growth. For more information on QALI and the latest estimates see Turvey, Goodridge and Franklin (2010). Unadjusted hours consistent with QALI are also used as an input to the MFP framework.

The capital input measure used in this MFP analysis is the volume index of capital services (VICS). This measures the flow of capital services to the production process in each period. Capital services differ from National Accounts capital stock measures as they weight together the growth in the net stock of assets using rental rather than purchase prices. This is conceptually more appropriate for use in growth accounting

analysis since, under the assumption that factors receive their marginal products, rental prices better reflect the marginal productivity of a given capital asset. Capital services estimates also provide a greater level of asset detail than the National Accounts net capital stock measures. The separate treatment of the short-lived ICT assets of computer hardware, purchased software and own-account software is a particular advantage of the VICS measure. Further information about VICS and the latest estimates can be found in Wallis, Long and Turvey (2010).

The output measure used in this MFP analysis is a chained volume index of GVA at basic prices, consistent with *Blue Book* 2009. The labour share of total income is calculated as the sum of Compensation of Employees (CoE) from the National Accounts and the labour compensation of the self employed as a proportion of total GVA. There is no National Accounts series for the labour income of the self employed. Instead the National Accounts 'mixed income' series includes the returns to both capital and labour of the self employed. In order to approximate the labour return component of mixed income, the ratio of compensation of employees to the sum of compensation of employees and gross operating surplus in the employed sector is applied to mixed income. The capital share in total income is simply one minus the labour share, due to the assumption that all factor inputs are either capital or labour.

Results

This section presents growth accounting results for 1994 to 2008 for the whole economy and ten industry groups (which are detailed in **Table 1**) and for the period 1995 to 2008 for the market sector. Due to the volatility of year-on-year MFP growth, the results are presented as averages over the periods.

Figure 1 decomposes the average growth in output from 1994 to 2008 into the contributions from capital and labour input growth, MFP growth and growth in the quality of the labour composition. At the whole economy level, average annual MFP growth is estimated to be 0.8 per cent, compared with average GVA growth of 2.8 per cent per annum over the period. The greatest contribution to growth came from capital inputs, which accounts for around two-fifths of GVA growth. Growth in the quality of labour composition accounted for a more modest 0.3 per cent per annum, or around one-tenth of the growth of GVA.

Turning to the industrial groupings, the strongest MFP growth over the period occurred in section I (Transport, storage and communication) with an annual average growth rate of 3.3 per cent. This accounts for nearly 57 per cent of total GVA growth in this section, reflecting rapid technical progress in communications in particular. Strong MFP growth also occurred in sections D (Manufacturing) and J (Financial intermediation).

Labour quality made a positive contribution to output growth in each of the ten industrial groups. This is indicative of increasing utilisation of high skilled labour in the economy. This is especially true of section J, Financial intermediation.

Notwithstanding rapid MFP growth in sections I and J, average annual MFP growth in the service sector as a whole (sections G to Q), lagged behind that of the production sector (sections A to F). This is consistent with the relative labour productivity growth of the production and services sectors over the period 1998–2007 using annual estimates from the ABI in Long (2010). A commonly cited explanation for the disparity in productivity between production and service activities is the Baumol Effect (Baumol, 1967). The theory behind the Baumol Effect is that the relative productivity underperformance of the services sector is due to its relative labour intensity. This makes it worse placed to benefit from productivity improvements arising from technological advances.

Additionally, the negative MFP contributions seen in sections LMN and OPQ may be explained by the fact that these activities are predominantly not within the market sector of the economy. They may, therefore, not face the competitive pressures to utilise their factor inputs efficiently in the same way that market sector industries do. It is also possible that the measures of non-market sector output are not fully capturing changes in quality. Work is currently ongoing within ONS to further improve these output measures[2].

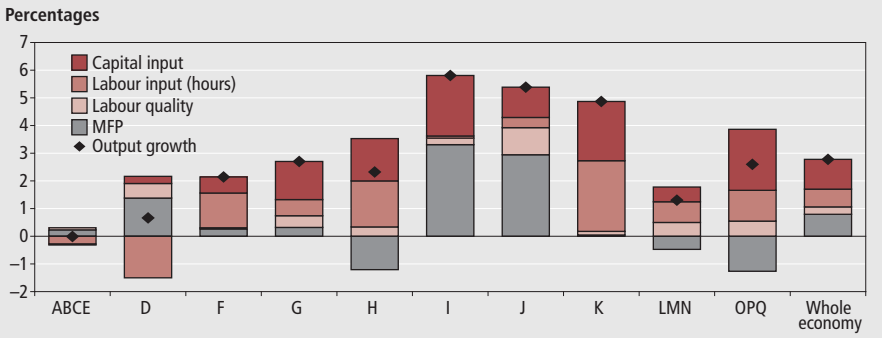
A QALI series is not available for the market sector until 1994 and consequently MFP estimates for the market sector can only be produced, in growth terms, for the period 1995 to 2008. These are plotted in **Figure 2** along with the whole economy and industrial group estimates over the same period. In the market sector, MFP growth was greater than at the whole economy level. With an average annual growth rate of approximately 1 per cent between 1995 and 2008, MFP represented just under a third of market sector output growth, compared with about a quarter for whole

Table 1
Industry description

Industry	Industry description
ABCE	Agriculture, hunting, forestry, fishing, mining quarrying, electricity, gas and water supply.
D	Manufacturing
F	Construction
G	Distribution
H	Hotels and restaurants
I	Transport, storage and communication.
J	Financial intermediation
K	Real estate, renting and business activities
LMN	Public administration and defence, education, health and social work.
OPQ	Other community, social and personal service activities, private households with employed persons and extraterritorial activities.

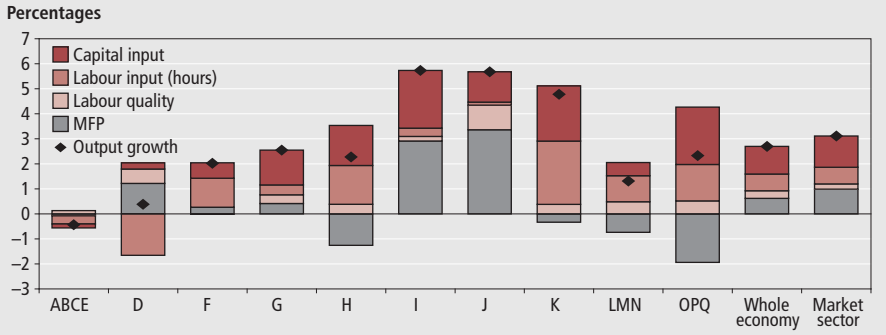
Source: Office for National Statistics

Figure 1
Decomposition of annual average output growth, 1994–2008



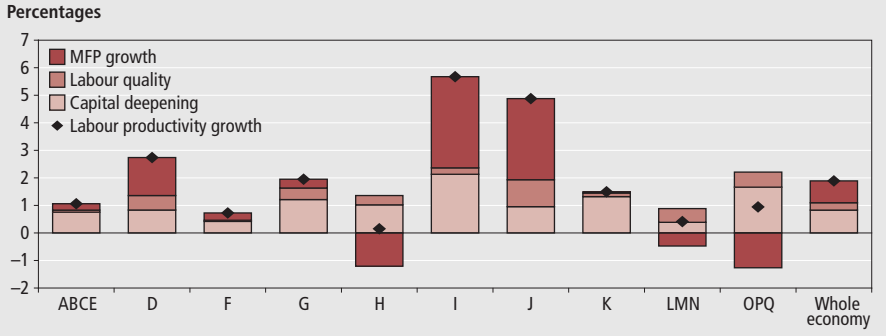
Source: Office for National Statistics

Figure 2
Decomposition of annual average output growth, 1995–2008



Source: Office for National Statistics

Figure 3
Decomposition of annual average labour productivity growth, 1994–2008



Source: Office for National Statistics

Figure 4
Decomposition of annual average labour productivity growth, 1995–2008

Source: Office for National Statistics

economy output growth. This disparity with the whole economy is driven by the strong negative MFP contribution in sections OPQ which contain a significant amount of non-market output. Other than MFP, the relative contribution of capital inputs accounts for around two-fifths of output growth in both the market sector and the whole economy. The contribution of both labour volumes and labour composition was proportionately less in the market sector than in the whole economy.

As discussed, a decomposition of labour productivity growth can be used to inform analysis of the drivers of growth in the headline productivity measures. **Figure 3** decomposes labour productivity growth into the contributions from labour composition, MFP and the amount of capital per worker hour (known as capital deepening).

At the whole economy level, capital deepening accounted for over 40 per cent of labour productivity growth over the period. In fact a positive contribution from capital deepening occurred in each of the industrial groupings. The industries with the greatest contribution from capital deepening are those in the service sector. This partly reflects rapid growth in ICT investment over the period. The contribution of labour quality was generally much more modest, at both the whole economy and industrial levels.

Figure 4 plots the contributions to labour productivity growth for the market sector, whole economy and industrial groupings for the period 1995 to 2008. As with output growth, the contribution of MFP to labour productivity is greater in the market sector than at the whole economy level. More specifically, MFP accounted for 46 per cent of labour productivity growth in the market sector compared to a corresponding figure of 35 per cent for the whole economy. The contribution of capital deepening was of similar magnitude at the market sector and whole economy level. However the contribution of labour quality as a percentage of total labour productivity growth was considerably higher at the whole economy level (17 per cent) than for the market sector (9 per cent).

To investigate this further, **Table 2** presents the annual growth in labour composition over the period 1995 to 2008. It should be noted that the data in Table 2 do not represent the contributions of labour composition as in Figure 4 because they are not weighted by income shares. On average over the period, labour composition growth was stronger at the whole economy level than for the market sector. This was driven by the high labour composition growth in sections OPQ which produce a significant amount of non-market sector output. However, the strongest average annual growth in labour composition occurred in section J (Financial intermediation). Labour composition also grew rapidly in section D (Manufacturing). In contrast section F (Construction) experienced modest negative growth in annual average labour composition, indicating deskilling in the composition of its workforce.

However, it is difficult to draw strong conclusions about the growth in labour composition due to the relatively short time period studied. Furthermore hours worked are used in the derivation of labour composition. These data are known to display a high degree of cyclicality as firms adjust to short term changes in demand by altering hours worked. If these alterations in hours affect workers from different skill groups differently then changes in labour composition due to cyclical factors may mask underlying structural trends.

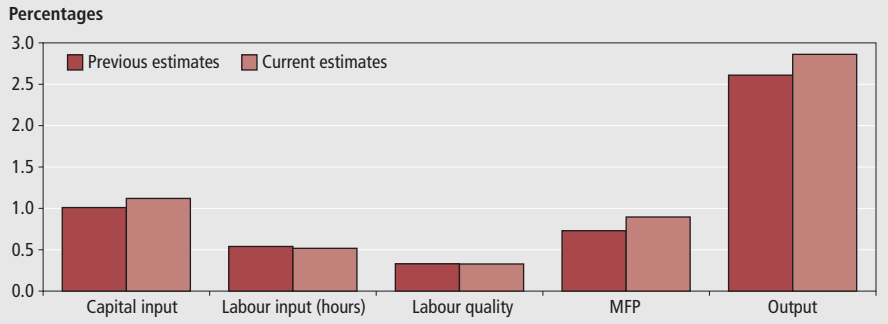
Table 2
Annual growth in labour composition

Percentages

	ABCE	D	F	G	H	I	J	K	LMN	OPQ	Whole economy	Market sector
1995	–0.68	0.37	0.64	0.86	–0.97	–0.60	2.83	–0.34	0.68	2.89	0.39	0.29
1996	3.89	1.09	–0.13	0.18	1.07	0.83	–0.87	0.98	0.38	0.70	1.08	1.23
1997	2.16	0.15	0.91	–0.16	1.33	–1.41	–1.30	1.53	0.42	–2.72	–0.22	–0.25
1998	–0.05	0.56	0.22	0.64	–3.31	1.08	2.35	–0.01	1.52	2.20	0.66	0.42
1999	–1.31	1.37	–0.27	–0.32	–3.16	1.25	0.60	1.20	1.07	1.90	0.57	0.47
2000	–0.76	1.59	–0.27	1.11	0.92	0.10	2.08	0.25	0.51	2.61	0.91	0.76
2001	2.06	0.36	0.15	1.22	3.31	–0.31	–0.57	0.73	–0.71	0.53	–0.25	–0.17
2002	1.25	0.43	–0.36	–0.43	–1.40	0.54	0.17	0.25	0.40	0.19	0.09	–0.20
2003	0.70	1.16	0.23	0.71	–0.87	0.00	1.87	1.03	1.29	–0.77	0.65	0.48
2004	4.58	1.16	0.24	–0.60	–0.23	0.38	2.74	1.36	0.12	0.53	0.12	–0.15
2005	–5.00	0.56	0.24	–0.13	3.79	0.26	0.75	–1.09	1.30	1.07	0.34	–0.04
2006	2.64	0.92	–1.07	2.80	1.58	0.46	1.10	1.00	0.58	0.42	0.86	0.90
2007	–0.37	0.88	–0.07	0.84	2.24	–0.09	4.31	0.33	0.24	0.95	0.57	0.68
2008	–2.47	0.62	–0.72	–0.44	3.08	1.75	2.37	–0.15	0.52	0.35	0.15	–0.17
Average	0.47	0.80	–0.02	0.45	0.53	0.30	1.32	0.50	0.59	0.78	0.42	0.30

Source: Office for National Statistics

Figure 5
Contributions to whole economy annual average output growth, 1998–2007: new and previous estimates



Source: Office for National Statistics

Revisions since previous release

Revisions to the MFP results since Turvey (2009) arise from revisions to the component series and can be categorised into three broad groups:

- revisions to the National Accounts data in *Blue Book 2009*
- revisions to QALI and labour input estimates
- revisions to VICS estimates

Revisions to National Accounts data affect the MFP estimates in a number of ways, including consequential impacts on the measurement of labour and capital inputs. There were few changes in the structure of the National Accounts in *Blue Book* 2009, although GVA was revised due to rebalancing of the accounts from 2004, with consequential revisions to the income shares of GDP.

Revisions to the QALI and labour input series are driven by revisions to National Accounts Compensation of Employees data and annual benchmarking of the LFS micro data. In addition, the compositional categories used in the calculation of QALI estimates have been changed to permit an enhanced level of industrial disaggregation, and closer concordance with the framework used in the EUKLEMS project. These revisions are described further in Turvey, Goodridge and Franklin (2010).

Revisions to the VICS estimates arise primarily from balancing revisions to the constant price plant and machinery series and new data on computer hardware investment. These revisions are described in more detail in Wallis, Long and Turvey (2010).

To give an indication of the drivers of revisions to output growth, **Figure 5** plots the average contributions at the whole economy level for the most recent and previous estimates. The data in Figure 5 cover the period 1998 to 2007, over which comparable data are available. Over this period, average output growth has been revised upwards by one-quarter of a percentage point per annum. Around two-fifths of this upward revision reflects an increase in the contribution of capital inputs, consistent with the upward revisions to VICS from 2004 as described in Wallis, Long and Turvey (2010). The contribution of labour inputs, in terms of unadjusted hours, has been revised very slightly downwards, and the skill profile of these inputs as measured by the quality adjustment process has remained unchanged. The contribution of MFP has been revised upwards by 0.17 percentage points per annum, equivalent to an increase of 23 per cent over the previous estimates.

Conclusion

This article has presented estimates of growth accounting for the period 1994 to 2008 for the whole economy and ten industrial groups and for the period 1995 to 2008 for the market sector. Whilst the market sector experienced greater MFP growth than the whole economy, labour quality growth for the whole economy outstripped that of the market sector. The role of capital continues to be important both in terms of the contribution of capital deepening to labour productivity and the contribution of capital services to output growth. Revisions from previous estimates are partly driven by upward revisions to estimates of capital inputs, and a proportionately large upward revision to the contribution of MFP.

Notes

1. An alternative approach to growth accounting is to use a gross output measure and calculate the contributions to growth not only from capital and labour inputs but from intermediate inputs as well, Phelps (2010). An example of this approach is the

EUKLEMS project (see www.euklems.com) which additionally apportions output growth to the intermediate inputs of energy, materials and services. Whilst this approach to growth accounting is conceptually preferred, its data requirements are much more onerous. In particular, constant price supply use tables, which are not currently published by ONS, represent a barrier to adoption of this approach.

2. See www.statistics.gov.uk/ukcemga for further information on this development.

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ARTICLE

Revisions to Workforce Jobs

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SUMMARY

This article explains the developments and revisions to the Workforce Jobs (WFJ) series, released by the Office for National Statistics (ONS) on 14 July 2010 in the Labour Market Statistical Bulletin.

The main changes are:

- conversion to Standard Industrial Classification 2007
- redesign and new estimation methods for Short Term Employer Surveys
- benchmarking of Employee Jobs to the Annual Business Inquiry and the removal of discontinuities from previous benchmarking exercises
- revisions to inputs including Public Sector Employment and the Labour Force Survey
- review of seasonal adjustment
- changes to WFJ publication tables

Introduction

Workforce Jobs (WFJ) is a quarterly measure of the number of jobs in the UK and is the preferred measure of the change in jobs by industry. It is a compound source that draws on a range of employer surveys, household surveys and administrative sources. WFJ is the sum of Employee Jobs (EJ) measured primarily by employer surveys, Self-Employment Jobs (SEJ) from the Labour Force Survey (LFS), and Government-Supported Trainees (GST) and Her Majesty's Forces (HMF) from administrative sources (see **Annex A**). A variety of outputs by industry, region, gender and full/part-time status are produced for a range of publications and users (see **Annex B**).

A fundamental redevelopment of WFJ sources, classifications, methods and systems has been undertaken. The main changes are:

- conversion to the new Standard Industrial Classification 2007 (SIC 2007) from the start of the industrial breakdown in 1978 Q2
- changes to the sample design, size, allocation and periodicity of the Short-Term Employer Surveys (STES) from 2010 Q1, used for quarterly GB private sector EJ
- new STES estimation methods and systems from 2008 Q3, including:
  - a new ratio estimator, replacing the non-standard 'matched-pairs' method
  - changes to the method for apportioning reporting units by their local units
  - direct estimation of regional estimates by Government Office Region (GOR), as opposed to conversion from the old Standard Statistical Regional basis (SSR)
- benchmarking Great Britain (GB) quarterly Employee Jobs series to the latest Annual Business Inquiry (ABI1) estimates for 2007 and 2008
- removal of benchmarking discontinuities, including the discontinuity between 2005 Q4 and 2006 Q3 caused by changes to ABI1 sources and methods
- revisions to Public Sector Employment (PSE) inputs, entailing more detailed and wider coverage by industry and region
- revisions to LFS inputs and systems from 1996 Q1 and the use of SEJ and GST estimates by region and industry to produce regional WFJ by industry for the first time
- a new time series system for compiling WFJ, utilising preferred benchmarking and seasonal adjustment methods
- a seasonal adjustment review, with more seasonally adjusted series now available by industry and region
- changes to the published tables

Conversion from SIC 2003 to SIC 2007

The move to SIC 2007 complies with European regulations and has been pre-announced by ONS in a series of articles

(see Hughes *et al* 2009). This is the first major revision of the classification since 1992 and is the outcome of a series of consultations across Europe since 2002. The move to SIC 2007 has provided the opportunity to implement other improvements to WFJ which are explained in this article.

All WFJ sources and outputs have been converted to SIC 2007, back to the start of the series, the earliest point being 1978 Q2 for GB Employee Jobs. Continuous time series are required for the comparability of estimates over time. Depending on the source and data availability, ONS has used different methods for different time spans, and linked them where possible to maintain comparability over time. These methods include a conversion matrix and domain estimation.

Conversion matrix

Industry series have been put through a conversion matrix from their respective start dates, the earliest being 1978 Q2 for GB Employee Jobs. This method apportions the SIC 2003 series to SIC 2007 using proportions derived from dual-coded employment data for local units from the Inter-Departmental Business Register (IDBR). The same IDBR proportions, as at April 2009 were applied to the entire length of the series. The IDBR only has dual codes for business on both SIC 2003 and SIC 2007 from the start of 2008, and by April 2009 the new basis has had time to stabilise. This aggregate level method was used by ONS at the last major classification change and is widely used by other National Statistics Institutes.

Domain estimation

From 2008 Q3 to 2009 Q4, a micro-method was used for estimates that feed from STES. The individual survey responses selected under the original SIC 2003 sample design were re-weighted and re-aggregated to form the estimates for SIC 2007 based domains (domain estimation). This micro method was deemed to give higher quality estimates than the cruder conversion matrix method. It was only applicable from 2008, when businesses were first dual-coded on the IDBR. More specifically this was only applied to STES from 2008 Q3, the latest point at which estimates were available from ABI1. STES estimates are benchmarked to ABI1 and this process provided an inherent method for linking the SIC 2007 series produced by the aggregate and micro methods. The benchmarking process is explained in more detail later in the article.

From 2010 Q1, STES were selected, weighted and aggregated based on new SIC 2007 designs. There are likely to be some discontinuities at this point, particularly for more detailed domains. The effect is difficult to measure and adjust for at this stage. The estimates cannot be linked on the series as there are no overlapping periods selected and produced on both the original and new survey designs. Also, the timing of this change coincides with the annual update of the IDBR (between Q4 and Q1), which causes changes to the classifications, structures and registered employment values of businesses. The survey redesign and the register update both increase the sample rotation, causing further volatility. Potential discontinuities will be assessed and treated if possible once a longer time series is available on the new design. The next section explains the redesign of these surveys in more detail.

Redesign of the Short Term Employer Surveys

EJ is by far the largest component of WFJ. Most of the EJ data comes from STES, a group of surveys that collect employment and also output information from businesses in Great Britain. The output information feeds the Short Term Output Indicators (Index of Production, Index of Services and Retail Sales Index). Both the employment and output series in turn feed National Accounts and productivity measures.

Until the end of 2009 STES comprised:

- the Monthly Production Inquiry (MPI)
- the Monthly Inquiry in to the Distribution and Service Sector (MIDSS)
- the Quarterly Inquiry in the Distribution and Service Sector (QIDSS)
- the Retail Sales Inquiry (RSI)

MPI collected employment information every month, whereas the other surveys collected employment once a quarter in March (Q1), June (Q2), September (Q3) and December (Q4). For a small number of production industries the MPI collected employment only. QIDSS collected only employment, covering the industries not covered by MPI, MIDSS and RSI (hence QIDSS was also known as 'Gaps'). The employment sample for MIDSS was a sub-sample of the output sample.

From 2010 Q1 these surveys have been restructured. The Monthly Business Survey (MBS) and the Quarterly Business Survey (QBS) have replaced MPI, MIDSS and QIDSS. In essence, MPI and MIDSS have been combined to create MBS, and QBS has replaced QIDSS with the inclusion of the MPI employment-only industries and additional industries previously covered by external sources, namely banks, private sector schools and landscape gardening. MBS collects output variables every month and employment variables once a quarter for a sub-sample of businesses. Thus the frequency of the employment information collected from the production sector has reduced from monthly to quarterly in line with all other sectors. RSI has remained a separate survey, although for consistency the questionnaire uses 'MBS' in its title, and similarly to MBS the employment variables are now collected for just a sub-sample of businesses that receive the output questions, giving a further reduction in the overall sample size of STES. These changes are illustrated in **Table 1**.

Like most of ONS's businesses surveys, STES are stratified by industry, as well as by size of business. Stratification gives greater control over coverage and makes more efficient use of the sample. The new industrial strata based on SIC 2007 have been chosen after consultation with users and consideration of quality, disclosure and business compliance issues. They reflect a balance of user requirements, survey resources and employment levels and trends. The most detailed breakdown of EJ by industry is available in Table 6.05 of *Economic & Labour Market Review* (ELMR)[1], which is on the new SIC 2007 basis from the August 2010 edition.

The size bands have also been reviewed in the context of each industry. In turn these changes have necessitated a re-allocation of the sample, ensuring most efficient use of the sample to meet user needs. Table 1 shows a reduction of 104,000 (52 per cent) to STES employment questionnaires per annum, reducing both the administrative burden on businesses and operational cost for government.

The gender and full/part-time employment variables are still collected. The decision to retain these variables was made following consultation with users. These variables are weighted using the same estimation weights calculated for the employment totals.

New estimation methods for the Short Term Employer Surveys

ONS has taken the opportunity provided by the move to SIC 2007 to change the

Table 1
Restructuring the Short Term Employer Surveys[1,2]

To 2009 Q4			From 2010 Q1		
Survey	**Variables**	**Sample size**	**Survey**	**Variables**	**Sample size**
MIDSS	monthly t/o & quarterly emp	23,000 t/o 17,000 emp sub-sample	**MBS**	monthly t/o & quarterly emp	30,000 t/o 17,000 emp sub-sample
MPI	monthly t/o & monthly emp	7,500			
	monthly emp only	200	**QBS**	quarterly emp only	5,000
QIDSS	Quarterly emp only	5,000			
RSI	monthly t/o & quarterly emp	5,000	**RSI**	monthly t/o & quarterly emp	5,000 t/o 2,100 emp sub-sample
Total employment sample			**Total employment sample**		
Quarter months		34,700	Quarter months		24,100
Non-quarter months		7,700	Non-quarter months		0
Annual total		200,400	Annual total		96,400

Notes:

Source: Office for National Statistics

1 t/o = turnover and refers to all output variables.
2 emp = employment variables.

STES estimation methods. This fulfils long-standing recommendations from the National Statistics Quality Review of Employment and Jobs Statistics (2006) and the Review of Workforce Jobs Benchmarking (2007). The new methods have been implemented from 2008 Q3 coinciding with the use of domain estimation described before. This avoids an additional discontinuity and makes further use of the domain estimation systems developed for the transition to SIC 2007.

The existing matched-pairs estimator has been replaced by a point-in-time ratio estimator, ONS's standard method. This change is aimed at removing the apparent bias caused by the matched-pairs method. The matched-pairs method tends to underestimate the change over time, as it excludes the births and deaths of businesses in the sample. In essence, only those businesses sampled in two consecutive periods are used to produce estimates of change. This bias causes large revisions when the STES series are benchmarked retrospectively to ABI1 estimates. ABI1 selects a larger sample and also uses a point-in-time ratio estimator. The new estimator includes all sampled businesses in each and every period, which reduces the bias over-time. The trade-off is an increase in volatility caused by the inclusion of the rotated part of the sample for small and medium sized businesses. Sample rotation spreads the administrative burden; ensuring businesses are selected for a limited number of periods.

The method for apportioning reporting units by their registered local units (LUs) has also changed. Businesses are sampled from the IDBR on a reporting unit (RU) basis. An RU is a register construct. Larger enterprises are often split into a number of RUs that report for different LUs. For example, an enterprise might have RUs for different regions or activities, each reporting for the local units, such as retail outlets or factories, in their region or activity. The returned employment data (or imputed data for non-responders) for the sampled RUs are apportioned by their LUs using the ratio of LU to RU employment data from the IDBR. This process produces more refined employment estimates by region and by industry. The local unit estimates are weighted to represent non-sampled units (again using data from the IDBR) and aggregated by industry and region. The LU apportionment now occurs at an earlier stage and so the calibration weights are calculated on an LU basis as opposed to an RU basis.

EJ estimates by Government Office Region (GOR) are now produced directly. Previously, EJ estimates were produced on the old Standard Statistical Regional basis (SSR) and then converted to GOR at the aggregate level using GOR to SSR ratios from ABI1. Most regions have the same geographic boundaries under GOR and SSR. More information on GOR and SSR is available at www.statistics.gov.uk/geography/gor.asp. The SSR series are being discontinued so EJ series will now be available by GOR only, starting in 1981 Q3.

Benchmarking GB Employee Jobs to the Annual Business Inquiry (ABI1)

Benchmarking is an annual process to align the quarterly GB EJ series to the latest estimates from ABI1. ABI1 is based on a sample of approximately 80,000 reporting units, a much larger sample than STES, and so generally produces more accurate and detailed estimates. ABI1 estimates refer to Q4 in each year up to 2005 and Q3 in subsequent years.

The benchmarking process was more intricate this year due to the move to SIC 2007 and other developments described in this article. In December 2009 ONS released ABI1 estimates for 2007 (revised) and 2008 (provisional) on both a SIC 2003 and a SIC 2007 basis. 2008 was the first year the ABI1 was selected and weighted on a SIC 2007 basis, but dual coding enabled estimates to be aggregated on both a SIC 2003 and a SIC 2007 basis. 2007 ABI1 was selected and weighted on a SIC 2003 basis, but again dual coding enabled estimates to be aggregated on both bases. The quarterly EJ series were benchmarked to SIC 2003 ABI1 estimates up to 2007 (provisional), before converting them from SIC 2003 to SIC 2007 (as explained before). The converted SIC 2007 series were then benchmarked to the SIC 2007 ABI1 estimates for 2007 (revised) and 2008 (provisional).

For some industries the SIC 2007 ABI1 estimates for 2007 (revised) have not been used as benchmarks due to the following two reasons:

- where analysis has shown significant misclassifications of businesses on SIC 2007 within ABI1 2007 estimates, which stem from the IDBR at a time when the dual codes were relatively new and unstable
- where the public sector source is already ONS's definitive Public Sector Employment (PSE) series. The public and private sector series were aggregated before the conversion from SIC 2003 to SIC 2007 and so the private sector components alone could not be benchmarked to SIC 2007 ABI1 estimates after the conversion process. Benchmarking the converted series to a combined public and private benchmark would have changed the public sector source from PSE to ABI1, a backwards step that would have caused discontinuities. Further information on PSE inputs are provided in a later section of this article

Removal of benchmarking discontinuities from GB Employee Jobs

ONS has taken the opportunity to remove discontinuities caused by previous benchmarking exercises and also remove the need for carrying forward various benchmarking adjustments each year.

Developments to ABI1 sources and methods in 2006 caused a discontinuity

between 2005 Q4 and 2006 Q3. The discontinuity was passed on to quarterly EJ estimates through the benchmarking process (Barford 2007). In December 2009 ONS released analysis and estimates of this discontinuity (Gough 2009). This has enabled the discontinuity to be removed from quarterly EJ series within WFJ. The detailed level series have been adjusted prior to 2006 Q3 to reflect the revised ABI1 methods. In total 2005 Q4 has been reduced by approximately 203,000 jobs. The adjustments were wedged forwards to 2006 Q3 and backwards to 1996 Q1, the start of the most detailed EJ series.

In 2005 the IDBR increased the scope of the survey universe by including 'unmatched PAYE units in VAT exempt industries'. This added around 0.3 per cent to the registered employment, largely concentrated in health and education. The published ABI1 2005 estimates included these additional units, but their effect was removed from the ABI1 estimates used for benchmarking (in total 77,000 jobs) to avoid a discontinuity in WFJ. A downward adjustment of 19,000 jobs was also made to the ABI1 2005 benchmarks to remove a discontinuity caused by the misreporting of employment agencies (SIC 2003 division 74.5). Similarly in 2004, a downward adjustment of 16,000 jobs was made in health (SIC 2003 division 85). These benchmark adjustments have been carried forward each year. To avoid this process in future and to improve coherence between published WFJ and ABI1 estimates, ONS has now removed these forward adjustments and instead applied adjustments backwards, wedging the discontinuities out of the back series to 1996 Q1.

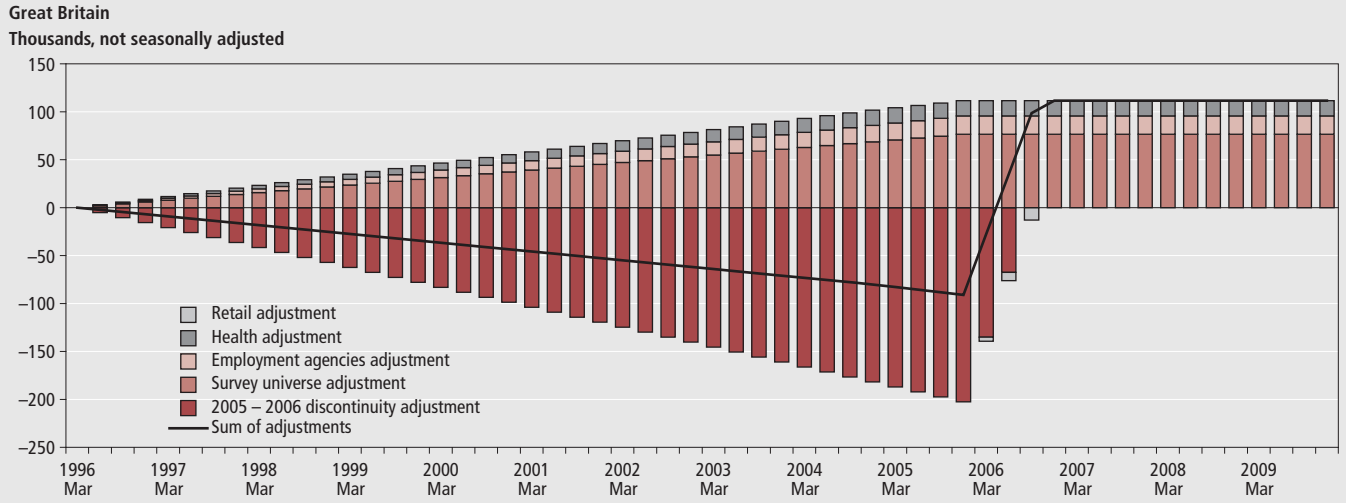
A downward adjustment of 13,000 in 2006 Q3 has also been made in retail (SIC 2004 division 45) due to misreporting in 2006 ABI1 estimates. This has been wedged back to the previous benchmark in 2005 Q4.

These adjustments had to be made to the SIC 2003 series, before the conversion to SIC 2007 described before. **Figure 1** illustrates these revisions to total GB Employee Jobs series (not seasonally adjusted). **Figure 2** compares the previously published and revised UK Employee Jobs series (not seasonally adjusted) from 1996 Q1.

Inputs from Public Sector Employment (PSE)

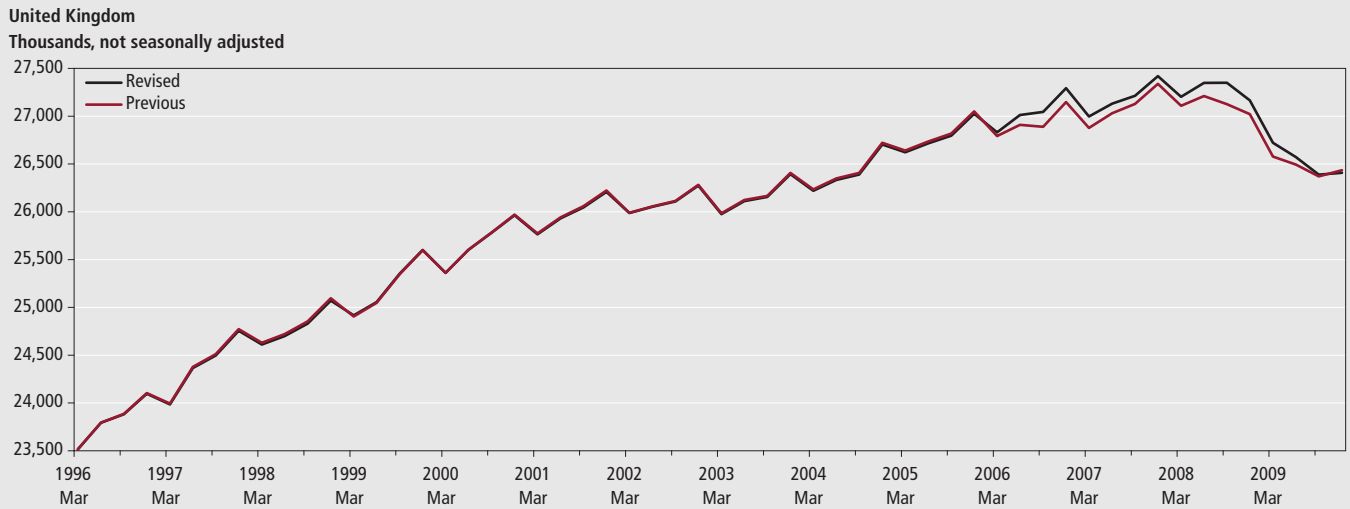
ONS's PSE estimates are deemed to be the definitive source for public sector

Figure 1
Revisions to NSA Employee Jobs due to benchmarking adjustments



Source: Employee Jobs

Figure 2
Previously published versus revised NSA Employee Jobs



Source: Employee Jobs

employment. The PSE sources form a census of the public sector as defined by National Accounts definitions. The bulk of PSE estimates are contained within public administration and defence, education, health and social work (SIC 2003 sections L, M and N or SIC 2007 sections O, P and Q). These PSE series, along with those for post and telecommunications and recreation, cultural and sporting activities (SIC 2003 divisions 64 and 92), were integrated in to the WFJ dataset in 2005 (see Barford 2005). For all other industries the public sector was covered by benchmarking the quarterly series to ABI1 estimates for both the public and private sectors.

PSE series have now been produced with a more detailed breakdown by industry (SIC 2007) and by region (GOR) from 2008 Q1. This has enabled PSE to be used as the source of GB public sector EJ for most industries within WFJ from 2008 Q4. This coincides with the start of the new GB private sector EJ series produced using the STES domain estimation methods described above, avoiding another discontinuity. The quarterly GB private sector EJ series are benchmarked to private sector ABI1 estimates for 2008 Q3 and then aggregated with the PSE series. In effect, the source of Public Sector Employment within WFJ has switched from ABI1 in 2008 Q3 to PSE in 2008 Q4 for those industries that were not previously covered by PSE. The effect of this is small because the estimates from PSE and ABI1 are similar.

For agriculture (section A) and construction (section F, not including 41.1) the LFS remains the WFJ source of quarterly EJ for both the public and private sectors and so these series are still benchmarked to ABI1 estimates for both public and private sectors.

Her Majesty's Forces (HMF) also feeds WFJ from the PSE dataset, which in turn come from Defence Analytical Services and Advice (DASA). The HMF series now feed WFJ by region from 1996 Q1, enabling regional WFJ series to be produced. Previously the regional WFJ series excluded HMF and were termed Civilian WFJ. HMF based overseas are included in the UK estimates and so the sum of the regional WFJ estimates is slightly less than UK WFJ.

Inputs from the Labour Force Survey (LFS)

The LFS provides WFJ with SEJ series, the industry breakdown for the GST series and EJ series for agriculture and construction. The LFS inputs have been revised as follows:

- the industry classification has changed from SIC 1992 (similar to SIC 2003) to SIC 2007. LFS variables were coded on the SIC 2007 basis from the start of 2009. Prior to 2009, weighted LFS estimates on the SIC 1992 basis have been mapped to SIC 2007 and re-aggregated
- the LFS is a monthly survey from which series of rolling three-month averages are produced. Ideally the averages centred on the last month of each quarter should be used for quarterly WFJ, for example February to April for Q1 and May to July for Q2 (rolling quarters). Previously the SEJ totals were based on rolling quarters. However the industry and regional breakdowns for SEJ were produced by apportioning the total series using industry and regional series based on calendar quarters (January to March for Q1). The GST series and the EJ series for agriculture and construction were also based on calendar quarters. This has now changed so that all of the LFS inputs to WFJ are based on rolling quarters from 2006 Q2. Prior to 2006 Q2 the LFS series based on SIC 2007 are only available for calendar quarters. The calendar quarters have been interpolated to produce monthly series, from which the rolling quarters are used for WFJ inputs
- the LFS inputs for SEJ and GST now feed WJF at a more detailed level, that is, by industry division by region. Previously, the LFS series were input by industry and separately by region, but not industry by region. This enables WFJ by region by industry series to be produced for the first time, and so the regional statistical bulletin tables are now produced with the same breakdowns and layouts as the national

Revisions to other sources

Small revisions have been taken on from administrative sources for Government Supported Trainees. Northern Ireland inputs from the Department of Enterprise, Trade and Investment in Northern Ireland (DETI NI) have also been revised slightly and are now based on SIC 2007.

Seasonal adjustment review

Seasonal adjustment is the process of identifying and removing the seasonal components from a series to leave the underlying trend and irregular components. The revised WFJ series have undergone a seasonal adjustment review causing revisions back to 1978 Q2.

The new WFJ system seasonally adjusts using X12 ARIMA. This is superior to X11 ARIMA which was used in the previous system.

The level at which seasonal adjustment is performed has also changed. Previously, only the following series were seasonally adjusted:

- GB and UK WFJ by component (EJ, SEJ, GST and HMF) by gender
- UK WFJ by broad section groups by gender
- UK EJ by broad section groups by gender
- EJ by region by gender

Constraining processes were used to ensure the WFJ components and broad sections added to the same total. The new system seasonally adjusts WFJ components by sections by regions and then aggregates the series through these three hierarchical dimensions. This bottom-up approach maintains additivity throughout the seasonally adjusted dataset without the need for constraining. It also provides more seasonally adjusted series by industry and by region and enables the regional statistical bulletin tables to be produced with the same breakdowns and layouts as the national. However, this approach increases the number of seasonal adjustment parameters to review each year. To counter this issue, the gender series are no longer being adjusted, although the non-seasonally adjusted series are still available to users.

Figure 3 compares the previously published and revised seasonally adjusted UK Workforce Jobs series from 1996 Q1.

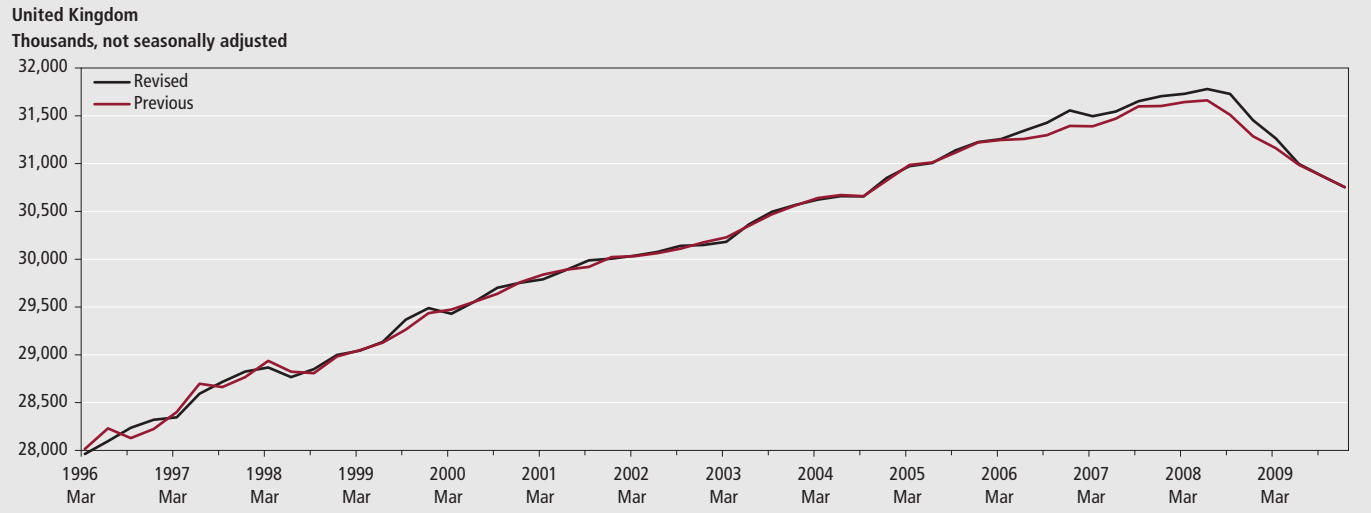
Changes to publication tables

ONS has made changes to the WFJ publication tables. The move to SIC 2007 required changes to reflect the new industry breakdown. At the same time ONS took the opportunity to implement other changes given the availability of data from the new WFJ systems, feedback from users and an internal review of all Labour Market statistical outputs.

The WFJ tables within UK Labour Market Statistical Bulletin have changed from the July 2010 edition as follows:

- Table 5(1) Workforce Jobs by component is now labelled Table 5
- Table 5(2) Workforce Jobs by industry is now labelled Table 6. The nine broad

Figure 3
Previously published versus revised SA Workforce Jobs



Source: Workforce Jobs

section groups on SIC 2003 have been replaced by 19 sections on SIC 2007. The gender breakdown has been removed given the additional industry detail and changes to the level of seasonal adjustment

- Table 6 Production industries Employee Jobs has been discontinued due to the change in frequency of the series from monthly to quarterly, which brings production in line with all others

Tables 4 and 5 of the Regional Labour Market Statistical Bulletins now have exactly the same breakdowns and layout as Table 5 and 6 of the UK Labour Market Statistical Bulletin.

Tables 2.05 and 2.06 in *Economic & Labour Market Review* (ELMR) provide longer time series for Table 5 and 6 of the UK Labour Market Statistical Bulletin. ELMR Tables 6.04, 6.05 and 6.06 provide more detail by region, industry, gender and full / part-time status. Their content and layout has changed to provide further detail and longer time series. These changes took effect from the August 2010 edition of ELMR.

WFJ data is also published on the Nomis website at www.nomisweb.co.uk. Series are now available for WFJ components by regions by industry sections; not seasonally adjusted and seasonally adjusted. Gender and full / part-time variables are also available; not seasonally adjusted.

Annex B provides a list of WFJ publication tables and their detail.

Notes

1. Monthly updates of labour market data are available from the *Economic & Labour Market Review* pages on the ONS website at: www.statistics.gov.uk/elmr

ABBREVIATIONS

ABI1	Annual Business Inquiry
EJ	Employee Jobs
GOR	Government Office Region
GST	Government-supported Trainees
HMF	Her Majesty's Forces
IDBR	Inter-Departmental Business Register
LFS	Labour Force Survey
LUs	Local Units
MBS	Monthly Business Survey
MIDSS	Monthly Inquiry into the Distribution and Service Sector
MPI	Monthly Production Inquiry
NSA	Not Seasonally Adjusted
PAYE	Pay As You Earn
PSE	Public Sector Employment
QBS	Quarterly Business Survey
QIDSS	Quarterly Inquiry in the Distribution and Service Sector
RSI	Retail Sales Inquiry
RU	Reporting Unit
SA	Seasonally Adjusted
SEJ	Self-employment Jobs
SIC	Standard Industrial Classification
SSR	Standard Statistical Region
STES	Short-Term Employer Surveys
WFJ	Workforce Jobs

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ANNEX A

Table A1
Workforce Jobs sources

Component		Source
Employee Jobs		
Great Britain	Private Sector	Short Term Employer Surveys (STES), benchmarked to Annual Business Inquiry (ABI1)
	Public Sector	Public Sector Employment (PSE) from Quarterly Public Sector Employment Surveys (QPSES) and administrative sources from other government departments and devolved administrations
	Agriculture	Labour Force Survey (LFS), benchmarked to Annual Business Inquiry (ABI1)
	Construction	Labour Force Survey (LFS), benchmarked to Annual Business Inquiry (ABI1)
	Air transport	Civil Aviation Authority (CAA), benchmarked to Annual Business Inquiry (ABI1)
Northern Ireland		Department of Enterprise, Trade and Investment Northern Ireland (DETI NI)
Self-Employed Jobs		Labour Force Survey (LFS) - main and second jobs by industry by region
Government Supported Trainees		
England		Department for Business, Innovation and Skills (BIS), split by industry using LFS
Wales		Welsh Assembly Government (WAG), split by industry using LFS
Scotland		Scottish Government (SG), split by industry using LFS
Northern Ireland		Department of Enterprise, Trade and Investment Northern Ireland (DETI NI), split by industry using LFS
Her Majesty's Forces		Defence Analytical Services and Advice (DASA)

Source: Office for National Statistics

ANNEX B

Table B1
Workforce Jobs publication tables

Publication	Release update	Table	Component	Region (lowest)	Industry (lowest)	Employment splits	Seasonally Adjusted	Start date / Time span	Periodicity
UK Labour Market Statistical Bulletin	Quarterly	5 Workforce Jobs	WFJ, EJ, SEJ, HMF, GST	UK	A-S	Total	SA	2 years	Quarterly
		6 Workforce Jobs by industry	WFJ	UK	Sections	Total	SA	2 years	Quarterly
Regional Labour Market Statistical Bulletins	Quarterly	4 Workforce Jobs	WFJ, EJ, SEJ, HMF, GST	GOR	A-S	Total	SA	2 years	Quarterly
		5 Workforce Jobs by industry	WFJ	GOR	Sections	Total	SA	2 years	Quarterly
		Regional summary 18(2)	WFJ	GOR	A-S	Total	SA	2 quarters	Quarterly
Economic & Labour Market Review (ELMR)	Quarterly	6.04 Workforce Jobs by industry	WFJ, EJ, SEJ	UK	Sections	Total	SA, NSA	1996Q1	Quarterly
		6.05 Employee Jobs by industry	EJ	UK, GB	Lowest level	Total, MFT, MPT, FFT, FPT	NSA	1996 Q1	Quarterly
		6.06 Workforce Jobs by region and industry	WFJ	GOR	Sections	Total	SA	1996 Q1	Quarterly
		2.05 Workforce Jobs	WFJ, EJ, SEJ, HMF, GST	UK	A-S	Total	SA	1978 Q2	Quarterly
		2.06 Workforce Jobs by industry	WFJ	UK	Sections	Total	SA	1978 Q2	Quarterly
Statbase	Quarterly	LMS1 Employee Jobs by industry	EJ	UK	Sections	Total	SA	1978 Q2	Quarterly
		LMS4 Workforce Jobs	WFJ, EJ, SEJ, HMF, GST	UK	A-S	Total	SA	1959	Quarterly
		LMS5 Workforce Jobs by industry	WFJ	UK	Sections	Total	SA	1978 Q2	Quarterly
Nomis	Quarterly	Workforce Jobs by industry SA	WFJ, EJ, SEJ, HMF, GST	GOR	Sections	Total	SA	1981 Q3	Quarterly
		Workforce Jobs by industry NSA	WFJ, EJ, SEJ, HMF, GST	GOR	Sections	Total, MFT, MPT, FFT, FPT	NSA	1981 Q3	Quarterly
Monthly Digest	Quarterly	3.2 Workforce Jobs	WFJ, EJ, SEJ, HMF, GST	UK	A-S	Total	SA	1996 Q1	Quarterly
		3.3 Workforce Jobs by industry	WFJ	UK	Sections	Total	SA	1996 Q1	Quarterly
Social Trends[1]	Annually (June)	D.08 Employee Jobs by industry	EJ	UK	Section groups	Total	NSA	30 years	Annual (Q2)
Regional Trends[1]	Annually (June)	9.4 Industrial composition of Employee Jobs	EJ	GOR	Section groups	Total	NSA	10 years	Annual (Q2)
Annual Abstract[1]	Annually (July)	7.4 Distribution of the workforce by sex	WFJ, SEJ, HMF	UK, GB	A-O	Total, Male, Female	SA	11 years	Annual (Q2)
			EJ		Section groups	Total, Male, Female	SA	12 years	Annual (Q2)
		7.5 Employee Jobs by industry	EJ	UK	Sections	Total	NSA	5 years	Annual (Q2)
				GB	Lowest level	Total	NSA	5 years	Annual (Q2)

Notes:

1 Subject to review under SIC 2007.

Source: Office for National Statistics

Key time series

1 National accounts aggregates

Last updated: 27/08/10

Seasonally adjusted

	£ million		Indices (2006 = 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
2005	1,254,058	1,116,648	94.4	94.3	98.3	97.3	97.2	97.0	97.1
2006	1,328,363	1,183,704	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2007	1,404,845	1,251,704	105.8	105.7	103.8	102.7	102.8	103.0	102.9
2008	1,445,580	1,295,663	108.8	109.5	104.3	102.6	102.7	106.0	106.6
2009	1,392,705	1,255,724	104.8	106.1	99.0	97.6	97.9	107.4	108.4
2005 Q1	308,723	274,756	93.0	92.8	97.9	96.3	96.2	96.6	96.6
2005 Q2	313,479	279,258	94.4	94.4	99.4	97.0	96.9	97.4	97.4
2005 Q3	313,378	278,669	94.4	94.2	97.5	97.6	97.4	96.7	96.6
2005 Q4	318,478	283,965	95.9	96.0	98.4	98.3	98.2	97.5	97.7
2006 Q1	325,441	290,247	98.0	98.1	99.5	99.3	99.3	98.7	98.8
2006 Q2	328,359	292,548	98.9	98.9	99.9	99.6	99.6	99.3	99.2
2006 Q3	334,828	298,407	100.8	100.8	100.1	100.1	100.1	100.7	100.7
2006 Q4	339,735	302,502	102.3	102.2	100.6	100.9	100.9	101.4	101.3
2007 Q1	345,283	306,935	104.0	103.7	102.2	101.9	101.9	102.0	101.7
2007 Q2	349,523	311,380	105.2	105.2	103.0	102.5	102.5	102.7	102.6
2007 Q3	352,830	314,503	106.2	106.3	103.5	103.0	103.2	103.1	103.0
2007 Q4	357,209	318,886	107.6	107.8	106.5	103.3	103.5	104.1	104.2
2008 Q1	362,002	322,934	109.0	109.1	107.1	103.8	104.0	105.0	104.9
2008 Q2	363,264	323,679	109.4	109.4	105.2	103.5	103.7	105.6	105.5
2008 Q3	361,466	325,041	108.8	109.8	103.8	102.6	102.6	106.1	107.1
2008 Q4	358,848	324,009	108.1	109.5	100.9	100.5	100.5	107.5	108.9
2009 Q1	349,356	316,459	105.2	106.9	99.7	98.1	98.3	107.2	108.8
2009 Q2	344,583	311,246	103.8	105.2	97.1	97.4	97.7	106.5	107.7
2009 Q3	347,413	312,607	104.6	105.6	98.8	97.2	97.5	107.6	108.3
2009 Q4	351,353	315,412	105.8	106.6	100.4	97.6	98.1	108.4	108.7
2010 Q1	358,649	319,942	108.0	108.1	98.8	97.9	98.4	110.3	109.9
2010 Q2	364,877	325,251	109.9	109.9		99.1	99.5	110.9	110.4

Percentage change, quarter on corresponding quarter of previous year

			IHYO	ABML[4]	YBGO[4]	IHYR	ABMM[4]	IHYU	ABML/ABMM[4]
2005 Q1	*5.0*	*5.2*	*5.0*	*5.2*	*1.8*	*1.8*	*2.1*	*3.1*	*3.0*
2005 Q2	*4.8*	*5.0*	*4.8*	*5.0*	*3.2*	*2.0*	*2.2*	*2.8*	*2.8*
2005 Q3	*3.7*	*3.4*	*3.7*	*3.4*	*1.4*	*2.5*	*2.6*	*1.2*	*0.7*
2005 Q4	*3.5*	*3.6*	*3.5*	*3.6*	*0.1*	*2.4*	*2.6*	*1.1*	*1.0*
2006 Q1	*5.4*	*5.6*	*5.3*	*5.6*	*1.6*	*3.2*	*3.2*	*2.1*	*2.4*
2006 Q2	*4.7*	*4.8*	*4.7*	*4.8*	*0.5*	*2.7*	*2.8*	*1.9*	*1.9*
2006 Q3	*6.8*	*7.1*	*6.9*	*7.1*	*2.6*	*2.6*	*2.8*	*4.2*	*4.2*
2006 Q4	*6.7*	*6.5*	*6.8*	*6.5*	*2.2*	*2.7*	*2.8*	*4.0*	*3.6*
2007 Q1	*6.1*	*5.7*	*6.1*	*5.7*	*2.8*	*2.6*	*2.7*	*3.4*	*3.0*
2007 Q2	*6.4*	*6.4*	*6.4*	*6.4*	*3.2*	*2.9*	*2.9*	*3.5*	*3.4*
2007 Q3	*5.4*	*5.4*	*5.4*	*5.4*	*3.4*	*2.9*	*3.0*	*2.4*	*2.3*
2007 Q4	*5.1*	*5.4*	*5.1*	*5.4*	*5.9*	*2.4*	*2.5*	*2.7*	*2.9*
2008 Q1	*4.8*	*5.2*	*4.8*	*5.2*	*4.8*	*1.9*	*2.0*	*2.9*	*3.1*
2008 Q2	*3.9*	*3.9*	*3.9*	*3.9*	*2.1*	*1.0*	*1.1*	*2.9*	*2.8*
2008 Q3	*2.4*	*3.4*	*2.4*	*3.4*	*0.3*	*–0.4*	*–0.6*	*2.9*	*4.0*
2008 Q4	*0.5*	*1.6*	*0.5*	*1.6*	*–5.2*	*–2.7*	*–2.8*	*3.3*	*4.6*
2009 Q1	*–3.5*	*–2.0*	*–3.5*	*–2.0*	*–6.9*	*–5.5*	*–5.5*	*2.1*	*3.7*
2009 Q2	*–5.1*	*–3.8*	*–5.1*	*–3.8*	*–7.8*	*–5.9*	*–5.8*	*0.8*	*2.1*
2009 Q3	*–3.9*	*–3.8*	*–3.9*	*–3.8*	*–4.8*	*–5.3*	*–4.9*	*1.5*	*1.1*
2009 Q4	*–2.1*	*–2.7*	*–2.1*	*–2.7*	*–0.5*	*–2.9*	*–2.4*	*0.8*	*–0.2*
2010 Q1	*2.7*	*1.1*	*2.7*	*1.1*	*–0.9*	*–0.2*	*0.0*	*2.9*	*1.1*
2010 Q2	*5.9*	*4.5*	*5.9*	*4.5*		*1.7*	*1.9*	*4.1*	*2.5*

Notes:

Source: Office for National Statistics

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

2 Gross domestic product: by category of expenditure

Last updated: 27/08/10

£ million, chained volume measures, reference year 2006, seasonally adjusted

	Domestic expenditure on goods and services at market prices											
	Final consumption expenditure			Gross capital formation								
	Households	Non-profit institutions[1]	General government	Gross fixed capital formation	Changes in inventories[2]	Acquisitions less disposals of valuables	Total	Exports of goods and services	Gross final expenditure	*less* imports of goods and services	Statistical discrepancy (expenditure)	Gross domestic at product market prices
	ABJR	HAYO	NMRY	NPQT	CAFU	NPJR	YBIM	IKBK	ABMG	IKBL	GIXS	ABMI
2005	805,273	31,376	281,331	213,576	4,963	–354	1,336,580	340,308	1,676,849	384,537	0	1,292,335
2006	819,610	32,408	285,151	227,234	5,212	285	1,369,900	378,026	1,747,926	419,563	0	1,328,363
2007	837,417	33,373	288,797	245,053	6,837	547	1,412,024	368,314	1,780,338	416,309	0	1,364,029
2008	842,174	32,338	293,464	232,777	130	1,290	1,402,173	372,104	1,774,277	411,138	0	1,363,139
2009	813,167	32,224	297,095	197,849	–15,411	1,222	1,326,146	332,672	1,658,818	360,188	–2,240	1,296,390
2005 Q1	199,359	7,879	69,678	52,022	3,275	–42	331,828	79,998	411,778	91,963	0	319,777
2005 Q2	200,701	7,809	70,273	52,206	2,269	84	333,432	83,154	416,562	94,479	0	322,081
2005 Q3	201,736	7,824	70,587	54,946	–222	–274	334,988	86,673	421,659	97,596	0	324,089
2005 Q4	203,477	7,864	70,793	54,402	–359	–122	336,332	90,483	426,850	100,499	0	326,388
2006 Q1	202,773	7,968	71,344	53,735	3,010	120	339,238	98,213	437,474	107,606	0	329,881
2006 Q2	205,540	8,048	71,047	56,179	–968	201	340,077	100,272	440,370	109,550	0	330,819
2006 Q3	205,116	8,136	71,279	58,090	1,396	–24	343,838	89,129	432,945	100,467	0	332,474
2006 Q4	206,181	8,256	71,481	59,230	1,774	–12	346,747	90,412	437,137	101,940	0	335,189
2007 Q1	207,128	8,286	71,529	60,775	2,634	72	350,424	90,528	440,952	102,512	0	338,439
2007 Q2	208,687	8,304	71,966	60,639	–1	353	349,949	91,770	441,718	101,383	0	340,335
2007 Q3	210,053	8,359	72,593	60,900	2,620	40	354,566	93,454	448,020	105,867	0	342,153
2007 Q4	211,549	8,424	72,709	62,738	1,584	82	357,085	92,562	449,648	106,547	0	343,102
2008 Q1	213,214	8,292	72,104	59,619	3,228	206	356,664	93,858	450,522	105,712	0	344,809
2008 Q2	211,525	8,183	73,334	59,779	872	440	354,134	94,284	448,418	104,550	0	343,868
2008 Q3	210,330	8,018	73,473	57,254	645	367	350,088	93,918	444,005	103,226	0	340,780
2008 Q4	207,105	7,845	74,553	56,125	–4,615	277	341,287	90,044	431,332	97,650	0	333,682
2009 Q1	203,894	8,125	74,088	51,504	–4,557	420	333,474	83,070	416,544	90,203	–454	325,887
2009 Q2	203,052	8,072	73,993	48,122	–3,125	239	330,354	81,730	412,084	87,942	–529	323,613
2009 Q3	202,485	8,029	74,470	49,542	–4,612	212	330,127	82,294	412,422	89,049	–596	322,776
2009 Q4	203,736	7,998	74,544	48,681	–3,117	351	332,191	85,578	417,768	92,994	–661	324,114
2010 Q1	203,474	7,981	75,681	50,870	–2,183	267	336,090	84,126	420,216	94,512	–515	325,189
2010 Q2	204,995	8,093	75,931	49,624	983	364	339,991	85,026	425,017	95,325	–563	329,129

Percentage change, quarter on corresponding quarter of previous year

										IHYR
2005 Q1	*2.6*	*–1.7*	*1.2*	*0.8*	*2.3*	*4.5*	*2.7*	*6.0*	*1.8*
2005 Q2	*2.0*	*–0.9*	*2.5*	*–0.8*	*2.1*	*6.3*	*3.0*	*6.6*	*2.0*
2005 Q3	*2.0*	*0.3*	*2.3*	*5.1*	*2.3*	*9.6*	*3.7*	*8.0*	*2.5*
2005 Q4	*2.5*	*2.3*	*1.9*	*4.7*	*1.8*	*11.0*	*3.6*	*7.8*	*2.4*
2006 Q1	*1.7*	*1.1*	*2.4*	*3.3*	*2.2*	*22.8*	*6.2*	*17.0*	*3.2*
2006 Q2	*2.4*	*3.1*	*1.1*	*7.6*	*2.0*	*20.6*	*5.7*	*16.0*	*2.7*
2006 Q3	*1.7*	*4.0*	*1.0*	*5.7*	*2.6*	*2.8*	*2.7*	*2.9*	*2.6*
2006 Q4	*1.3*	*5.0*	*1.0*	*8.9*	*3.1*	*–0.1*	*2.4*	*1.4*	*2.7*
2007 Q1	*2.1*	*4.0*	*0.3*	*13.1*	*3.3*	*–7.8*	*0.8*	*–4.7*	*2.6*
2007 Q2	*1.5*	*3.2*	*1.3*	*7.9*	*2.9*	*–8.5*	*0.3*	*–7.5*	*2.9*
2007 Q3	*2.4*	*2.7*	*1.8*	*4.8*	*3.1*	*4.9*	*3.5*	*5.4*	*2.9*
2007 Q4	*2.6*	*2.0*	*1.7*	*5.9*	*3.0*	*2.4*	*2.9*	*4.5*	*2.4*
2008 Q1	*2.9*	*0.1*	*0.8*	*–1.9*	*1.8*	*3.7*	*2.2*	*3.1*	*1.9*
2008 Q2	*1.4*	*–1.5*	*1.9*	*–1.4*	*1.2*	*2.7*	*1.5*	*3.1*	*1.0*
2008 Q3	*0.1*	*–4.1*	*1.2*	*–6.0*	*–1.3*	*0.5*	*–0.9*	*–2.5*	*–0.4*
2008 Q4	*–2.1*	*–6.9*	*2.5*	*–10.5*	*–4.4*	*–2.7*	*–4.1*	*–8.4*	*–2.7*
2009 Q1	*–4.4*	*–2.0*	*2.8*	*–13.6*	*–6.5*	*–11.5*	*–7.5*	*–14.7*	*–5.5*
2009 Q2	*–4.0*	*–1.4*	*0.9*	*–19.5*	*–6.7*	*–13.3*	*–8.1*	*–15.9*	*–5.9*
2009 Q3	*–3.7*	*0.1*	*1.4*	*–13.5*	*–5.7*	*–12.4*	*–7.1*	*–13.7*	*–5.3*
2009 Q4	*–1.6*	*2.0*	*0.0*	*–13.3*	*–2.7*	*–5.0*	*–3.1*	*–4.8*	*–2.9*
2010 Q1	*–0.2*	*–1.8*	*2.2*	*–1.2*	*0.8*	*1.3*	*0.9*	*4.8*	*–0.2*
2010 Q2	*1.0*	*0.3*	*2.6*	*3.1*	*2.9*	*4.0*	*3.1*	*8.4*	*1.7*

Notes:

Source: Office for National Statistics

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

3 Labour market summary

Last updated: 11/08/10

United Kingdom (thousands) seasonally adjusted

	LFS household population[1]		Headline indicators: Employment Level	Employment Rate[2]	Unemployment Level	Unemployment Rate[3]	Inactivity Level	Inactivity Rate[4]
	All aged 16 & over	All aged 16 to 64	All aged 16 & over	All aged 16 to 64	All aged 16 & over	All aged 16 to 64	All aged 16 & over	All aged 16 to 64
People	MGSL	LF2O	MGRZ	LF24	MGSC	MGSX	LF2M	LF2S
Apr–Jun 2008	49,037	39,559	29,529	72.9	1,668	5.3	9,069	22.9
Apr–Jun 2009	49,418	39,784	28,919	70.9	2,433	7.8	9,180	23.1
Jul–Sep 2009	49,516	39,837	28,903	70.7	2,465	7.9	9,246	23.2
Oct–Dec 2009	49,613	39,888	28,903	70.5	2,452	7.8	9,325	23.4
Jan–Mar 2010	49,711	39,938	28,839	70.3	2,506	8.0	9,401	23.5
Apr–Jun 2010	49,810	39,990	29,023	70.5	2,457	7.8	9,352	23.4
Change on quarter	99	52	184	0.3	–49	–0.2	–49	–0.2
Change %	0.2	0.1	0.6		–2.0		–0.5	
Change on year	392	206	104	–0.3	23	0.0	172	0.3
Change %	0.8	0.5	0.4		1.0		1.9	
Men	MGSM	YBTG	MGSA	MGSV	MGSD	MGSY	YBSO	YBTM
Apr–Jun 2008	23,871	19,677	15,957	78.8	980	5.8	3,199	16.3
Apr–Jun 2009	24,076	19,794	15,476	76.0	1,497	8.8	3,271	16.5
Jul–Sep 2009	24,129	19,821	15,415	75.5	1,526	9.0	3,347	16.9
Oct–Dec 2009	24,184	19,848	15,395	75.3	1,495	8.9	3,430	17.3
Jan–Mar 2010	24,238	19,875	15,360	74.9	1,542	9.1	3,463	17.4
Apr–Jun 2010	24,293	19,903	15,514	75.5	1,472	8.7	3,415	17.2
Change on quarter	55	28	153	0.6	–70	–0.5	–48	–0.3
Change %	0.2	0.1	1.0		–4.5		–1.4	
Change on year	217	109	38	–0.5	–25	–0.2	143	0.6
Change %	0.9	0.6	0.2		–1.7		4.4	
Women	MGSN	LF2P	MGSB	LF25	MGSE	MGSZ	LF2N	LF2T
Apr–Jun 2008	25,166	19,881	13,573	67.0	687	4.8	5,870	29.5
Apr–Jun 2009	25,342	19,990	13,444	65.8	936	6.5	5,909	29.6
Jul–Sep 2009	25,386	20,016	13,488	65.9	940	6.5	5,899	29.5
Oct–Dec 2009	25,430	20,039	13,508	65.8	957	6.6	5,895	29.4
Jan–Mar 2010	25,473	20,063	13,478	65.6	964	6.7	5,938	29.6
Apr–Jun 2010	25,517	20,087	13,509	65.6	985	6.8	5,937	29.6
Change on quarter	44	24	30	–0.1	21	0.1	–1	0.0
Change %	0.2	0.1	0.2		2.1		0.0	
Change on year	175	97	65	–0.2	49	0.3	29	0.0
Change %	0.7	0.5	0.5		5.2		0.5	

Notes:

Source: Labour Force Survey, Office for National Statistics

1 The Labour Force Survey (LFS) is a survey of the population of private households, student halls of residence and NHS accommodation.
2 The headline employment rate is the number of people aged 16 to 64 in employment divided by the population aged 16 to 64.
3 The headline unemployment rate is the number of unemployed people (aged 16+) divided by the economically active population (aged 16+). The economically active population is defined as those in employment plus those who are unemployed.
4 The headline inactivity rate is the number of people aged 16 to 64 divided by the population aged 16 to 64.

Note on headline employment, unemployment and inactivity rates

The headline employment and inactivity rates are based on the population aged 16 to 64 but the headline unemployment rate is based on the economically active population aged 16 and over. The employment and inactivity rates for those aged 16 and over are affected by the inclusion of the retired population in the denominators and are therefore less meaningful than the rates for those aged from 16 to 64. However, for the unemployment rate for those aged 16 and over, no such effect occurs as the denominator for the unemployment rate is the economically active population which only includes people in work or actively seeking and able to work.

Note on headline employment, unemployment and inactivity levels

The headline employment and unemployment levels are for those aged 16 and over; they measure all people in work or actively seeking and able to work. However, the headline inactivity level is for those aged 16 to 64. The inactivity level for those aged 16 and over is less meaningful as it includes elderly people who have retired from the labour force.

4 Prices

Last updated: 17/08/10

Percentage change over 12 months

Not seasonally adjusted

	Consumer prices						Producer prices			
	Consumer prices index (CPI)			Retail prices index (RPI)			Output prices		Input prices	
	All items	CPI excluding indirect taxes (CPIY)[1]	CPI at constant tax rates (CPI-CT)	All items	All items excluding mortgage interest payments (RPIX)	All items excluding mortgage interest payments and indirect taxes (RPIY)[2]	All manufactured products	Excluding food, beverages, tobacco and petroleum products	Materials and fuels purchased by manufacturing industry	Excluding food, beverages, tobacco and petroleum products
	D7G7	EL2S	EAD6	CZBH	CDKQ	CBZX	PLLU[3]	PLLV[3,4]	RNNK[3,4]	RNNQ[3,4]
2007 Jan	2.7	2.9	2.6	4.2	3.5	3.7	1.5	1.6	–3.4	–0.5
2007 Feb	2.8	2.9	2.6	4.6	3.7	3.9	1.9	2.0	–2.1	–0.2
2007 Mar	3.1	3.1	2.9	4.8	3.9	4.0	2.2	2.2	–0.3	1.0
2007 Apr	2.8	2.9	2.6	4.5	3.6	3.7	1.8	1.8	–1.5	0.0
2007 May	2.5	2.6	2.3	4.3	3.3	3.4	1.9	1.9	0.6	1.9
2007 Jun	2.4	2.5	2.2	4.4	3.3	3.3	1.9	1.7	1.7	2.2
2007 Jul	1.9	2.0	1.7	3.8	2.7	2.6	2.0	1.8	0.3	0.6
2007 Aug	1.8	1.9	1.6	4.1	2.7	2.6	2.1	2.0	–0.2	1.0
2007 Sep	1.8	1.7	1.6	3.9	2.8	2.8	2.6	1.9	6.0	3.6
2007 Oct	2.1	1.9	1.8	4.2	3.1	3.0	3.6	1.8	9.4	4.6
2007 Nov	2.1	1.9	1.8	4.3	3.2	3.0	4.5	1.9	12.1	5.6
2007 Dec	2.1	2.0	1.9	4.0	3.1	3.1	4.7	2.2	13.2	6.9
2008 Jan	2.2	2.1	2.0	4.1	3.4	3.3	5.7	3.0	20.4	11.0
2008 Feb	2.5	2.5	2.3	4.1	3.7	3.6	5.7	2.8	20.9	11.9
2008 Mar	2.5	2.6	2.3	3.8	3.5	3.6	6.2	2.9	20.8	12.7
2008 Apr	3.0	3.0	2.7	4.2	4.0	3.9	7.4	4.1	25.3	16.6
2008 May	3.3	3.3	3.1	4.3	4.4	4.4	9.1	5.6	30.2	18.9
2008 Jun	3.8	3.9	3.6	4.6	4.8	4.9	9.8	5.9	34.1	21.1
2008 Jul	4.4	4.5	4.2	5.0	5.3	5.4	10.0	6.3	31.3	21.3
2008 Aug	4.7	4.9	4.5	4.8	5.2	5.4	9.1	5.7	29.0	20.8
2008 Sep	5.2	5.4	5.0	5.0	5.5	5.6	8.5	5.6	24.1	19.5
2008 Oct	4.5	4.7	4.3	4.2	4.7	4.9	6.7	5.0	16.0	16.9
2008 Nov	4.1	4.3	3.9	3.0	3.9	3.9	5.0	5.0	8.1	14.1
2008 Dec	3.1	4.6	4.1	0.9	2.8	3.9	4.6	5.0	3.2	12.6
2009 Jan	3.0	4.5	4.1	0.1	2.4	3.4	3.5	4.0	1.7	10.8
2009 Feb	3.2	4.6	4.2	0.0	2.5	3.5	3.0	3.7	0.8	8.9
2009 Mar	2.9	4.3	3.9	–0.4	2.2	3.2	2.0	3.2	–0.4	7.5
2009 Apr	2.3	3.8	3.4	–1.2	1.7	2.7	1.3	2.5	–5.8	2.6
2009 May	2.2	3.6	3.3	–1.1	1.6	2.6	–0.3	1.2	–8.8	0.2
2009 Jun	1.8	3.1	2.9	–1.6	1.0	1.9	–1.0	0.3	–12.0	–2.9
2009 Jul	1.8	3.1	2.8	–1.4	1.2	2.1	–1.3	0.2	–12.2	–3.4
2009 Aug	1.6	2.9	2.7	–1.3	1.4	2.3	–0.3	0.8	–7.7	–2.1
2009 Sep	1.1	2.2	2.1	–1.4	1.3	2.0	0.4	1.3	–6.2	–1.2
2009 Oct	1.5	2.6	2.5	–0.8	1.9	2.8	1.8	2.1	0.5	0.9
2009 Nov	1.9	3.0	2.9	0.3	2.7	3.5	2.9	2.0	4.2	0.8
2009 Dec	2.9	2.8	2.6	2.4	3.8	3.8	3.5	2.5	7.4	1.1
2010 Jan	3.5	1.9	1.7	3.7	4.6	3.3	3.8	2.6	7.7	1.4
2010 Feb	3.0	1.4	1.2	3.7	4.2	2.9	4.2	3.0	7.8	2.4
2010 Mar	3.4	1.8	1.6	4.4	4.8	3.5	5.0	3.7	10.5	4.4
2010 Apr	3.7	2.0	1.9	5.3	5.4	3.9	5.9	4.5	12.9	6.3
2010 May	3.4	1.7	1.6	5.1	5.1	3.8	5.5	4.4	11.7	7.2
2010 Jun	3.2	1.6	1.5	5.0	5.0	3.8	5.1	5.0	10.7	7.3
2010 Jul	3.1	1.4	1.3	4.8	4.8	3.5	5.0	4.7	10.8	7.6

Notes:

Source: Office for National Statistics

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

NOTES TO TABLES

Identification (CDID) codes

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

Conventions

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

The following standard symbols are used:

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

CONCEPTS AND DEFINITIONS

Labour Force Survey 'monthly' estimates

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

Labour market summary

Economically active

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

Economically inactive

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

Employment and jobs

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

Unemployment

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

Unemployed people:

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

Other key indicators

Claimant count

The number of people claiming Jobseeker's Allowance benefits.

Earnings

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

Productivity

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

Redundancies

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

Unit wage costs

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

Vacancies

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

Directory of online tables

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

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

Weblink: www.statistics.gov.uk/elmr/09_10/data_page.asp

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

Weblink: www.statistics.gov.uk/elmr/09_10/data_page.asp

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

Prices

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

Selected output and demand indicators

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

Selected financial statistics

5.01	Sterling exchange rates and UK reserves	M
5.02	Monetary aggregates	M
5.03	Counterparts to changes in money stock M4[1]	M
5.04	Public sector receipts and expenditure	Q
5.05	Public sector key fiscal indicators	M
5.06	Consumer credit and other household sector borrowing	M
5.07	Analysis of Monetary Financial Institutions 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	Workforce jobs by industry	M
6.05	Employee jobs by industry	Q
6.06	Workforce jobs by region and industry	Q

Weblink: www.statistics.gov.uk/elmr/09_10/data_page.asp

6.07	Key productivity measures by industry	M
6.08	Total workforce hours worked per week	Q
6.09	Total workforce hours worked per week by region and industry group	Q
6.10	Job-related training received by employees	Q
6.11	Unemployment rates by previous occupation	Q
6.12	Average Earnings Index by industry: excluding and including bonuses	M
6.13	Average Earnings Index: effect of bonus payments by main industrial sector	M
6.14	Median earnings and hours by main industrial sector	A
6.15	Median earnings and hours by industry section	A
6.16	Index of wages per head: international comparisons	M
6.17	Regional Jobseeker's Allowance claimant count rates	M
6.18	Claimant count area statistics: counties, unitary and local authorities	M
6.19	Claimant count area statistics: UK parliamentary constituencies	M
6.20	Claimant count area statistics: constituencies of the Scottish Parliament	M
6.21	Jobseeker's Allowance claimant count flows	M
6.22	Number of previous Jobseeker's Allowance claims	Q
6.23	Interval between Jobseeker's Allowance claims	Q
6.24	Average duration of Jobseeker's Allowance claims by age	Q
6.25	Vacancies and unemployment	M
6.26	Redundancies: re-employment rates	Q
6.27	Redundancies by Government Office Region	Q
6.28	Redundancy rates by industry	Q
6.29	Labour disputes: summary	M
6.30	Labour disputes: stoppages in progress	M

Notes:

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

More information

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

Contact points

Recorded announcement of latest RPI
01633 456961
rpi@ons.gsi.gov.uk

Labour Market Statistics Helpline
0845 601 3034
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
0845 601 3034

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
0845 601 3034
labour.market@ons.gsi.gov.uk

Economic activity and inactivity
0845 601 3034

Employment
Labour Force Survey
0845 601 3034
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
0845 601 3034
labour.market@ons.gsi.gov.uk

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

New Deal
0114 209 8228

Productivity and unit wage costs
01633 456720

Public sector employment
General enquiries
01633 455889

Source and methodology enquiries
01633 812865

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

Redundancy statistics
0845 601 3034

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

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

Skill needs surveys and research into skill shortages
0870 001 0336

Small firms (BERR)
Enterprise Directorate
0114 279 4439

Subregional estimates
01633 812038

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

Annual Population Survey, local area statistics
01633 455070

Trade unions (BERR)
Employment relations
020 7215 5934

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

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

Travel-to-Work Areas
Composition and review
01329 813054

Unemployment
0845 601 3034

Vacancies
Vacancy Survey: total stocks of vacancies
01633 455070

ONS economic and labour market publications

ANNUAL

Financial Statistics Explanatory Handbook

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

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

Foreign Direct Investment (MA4)

2009 edition

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

Input-Output analyses for the United Kingdom

2006 edition

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

Business Enterprise Research and Development

2008 edition

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

Share Ownership

2008 edition

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

United Kingdom Balance of Payments (Pink Book)

2010 edition. Palgrave Macmillan, ISBN 978-0-230-57610-0. Price £52.00.

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

United Kingdom National Accounts (Blue Book)

2010 edition. Palgrave Macmillan, ISBN 978-0-230-57611-7. Price £52.00.

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

Statistical Bulletins

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

QUARTERLY

Consumer Trends

2010 quarter 1

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

United Kingdom Economic Accounts

2010 quarter 1. Palgrave Macmillan, ISBN 978-0-230-23488-8. Price £37.50.

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

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

2010 quarter 1

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

Statistical Bulletins

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

MONTHLY

Financial Statistics

August 2010. Palgrave Macmillan, ISBN 978-0-230-23602-8. Price £50.00.

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

Focus on Consumer Price Indices

July 2010

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

Monthly review of external trade statistics (MM24)

June 2010

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

Producer Price Indices (MM22)

July 2010

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

Statistical Bulletins

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

OTHER

The ONS Productivity Handbook: a statistical overview and guide

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

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

Labour Market Review

2009 edition. Palgrave Macmillan, ISBN 1-4039-9735-7. Price £40.

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

National Accounts Concepts, Sources and Methods

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

Sector classification guide (MA23)

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

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Sonia Carrera

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Stephanie Robson and Martin Kenchatt

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Nick Barford, Jonathan Knight and Bob Watson

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Mavis Anagboso and Yonathan van den Brink

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Tony Crook and Graham Sharp

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Ceri Holdsworth

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Gareth Clancy and Daniel Ker

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Melanie Jones

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Philip Gooding

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David Matthews and Andrew Taylor

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Simon Woodsford

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Christopher Davies, Valerie Fender and Barry Williams

Comparing different estimates of productivity produced by the Office for National Statistics
Mike G Phelps

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Katy Long

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Tullio Buccellato, Dominic Webber, Sean White, Felix Ritchie and Shadia Begum

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Sebnem Oguz and Jonathan Knight

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Ruth Barrett

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Bethan West

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Dominic Hale

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Paul Cullinane

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Cristina Penaloza

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Blessing Chiripanhura

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Kat Pegler, Tracy Jones and Chris Jenkins

Services Producer Price Indices – First quarter 2010
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AUGUST 2010

Impact of the recession on households
Steve Howell, Debra Leaker and Ruth Barrett

The labour market in the 1980s, 1990s and 2008/09 recessions
Jamie Jenkins

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Paul Gregg and Jonathan Wadsworth

Unemployment and inactivity in the 2008-2009 recession
Paul Gregg and Jonathan Wadsworth

Output and expenditure in the last three UK recessions
Graeme Chamberlin

The global recession and its impact on tourists' spending in the UK
Dominic Webber, Tullio Buccellato and Sean White

Regional economic indicators: A focus on regional gross value added using shift-share analysis
Sebnem Oguz and Jonathan Knight

Future articles

List is provisional and subject to change.

OCTOBER 2010

Measurement of human capital
Enhancing coverage of financial sector activity
Financial statistics for policy – update