

Statistical bulletin

International Comparisons of Productivity - Final Estimates: 2011

Labour productivity across the G7 nations in terms of GDP per hour worked and per worker, and growth in GDP per hour worked.



Contact:
Prabhdeep Gill
productivity@ons.gsi.gov.uk

Release date:
13 February 2013

Next release:
20 February 2014

Table of contents

1. [Key points](#)
2. [About this release](#)
3. [Interpreting these statistics](#)
4. [Current price productivity](#)
5. [Constant price productivity](#)
6. [Comparisons with other countries](#)
7. [Revisions](#)
8. [Background notes](#)

1. Key points

- Output per hour in the UK was 16 percentage points below the average for the rest of the major industrialised economies in 2011, the widest productivity gap since 1993. On an output per worker basis, UK productivity was 21 percentage points lower than the rest of the G7 in 2011
- In 2011, UK output per hour grew roughly in line with the average of the rest of the G7, and faster than the US and Germany. UK output per worker was broadly unchanged between 2010 and 2011
- Since 2007, growth of UK output per hour and output per worker has trailed that of the US, Japan and Canada, but has been broadly similar to that of Germany and Italy. Thus the 'productivity conundrum' is not unique to the UK
- Outside the G7, UK output per hour in 2011 was significantly lower than in the Netherlands, Belgium and Ireland, and a little lower than Spain. Since 2007, growth of output per hour has been sluggish in Belgium and the Netherlands, but has recovered sharply in Spain and Ireland

2. About this release

This bulletin contains annual estimates of labour productivity for the [G7 developed countries](#) (Canada, France, Germany, Italy, Japan, UK and USA) up to 2011. Labour productivity measures the amount of economic output that is produced by a unit of labour input, and is a key measure of economic performance. Output is measured by gross domestic product (GDP). Labour input is measured in two ways – by total hours worked and by numbers of workers in employment. These two measures of labour input can yield different results, reflecting differences in working patterns across countries and compositional movements over time, such as a shift towards part-time working.

Comparability across countries is achieved by converting local currency based measures of GDP using purchasing power parity (PPP) exchange rates. PPP exchange rates (usually referred to simply as PPPs) attempt to equalise the cost of a representative basket of goods and services in countries with different national currencies. An ONS article explaining the [uses and limitations of PPPs \(246.1 Kb Pdf\)](#) is available on our website.

The estimates in this release update those published on [19 September 2012](#) and provide final estimates for 2011. This release cycle reflects the publication and revision cycles of the component data series.

What's new?

This release includes productivity comparisons with the UK for the Netherlands, Spain, Ireland and Belgium. Along with the G7, these economies account for over half of the UK's exports and imports.

3. Interpreting these statistics

The labour productivity measures in this bulletin are presented in terms of current and constant prices. Figures 1 and 2 use current prices and are suitable for comparisons across countries in a single year, so Tables 1 and 2 should only be read horizontally. Figures 4 and 5 use constant prices and so are suitable for analysis of a country's productivity performance over a number of years, so Tables 3 and 4 are best read vertically.

Current price productivity estimates are indexed to UK=100 for each year and show each country's productivity relative to that of the UK in that year. Since productivity is a key determinant of living standards, further explained in the '[Productivity Handbook \(145.6 Kb Pdf\)](#),' these estimates also provide an indication of living standards relative to the UK.

In interpreting these estimates users should bear in mind that PPPs provide only an approximate conversion from national currencies and may not fully reflect national differences in the composition of a representative basket of goods and services. The current price productivity estimates should not be used to analyse productivity trends over time. For example, an increase in UK productivity relative to another country could be due to UK productivity growing faster, or falling less, or due to changes in relative prices in the two countries, or some combination of these movements.

Constant price productivity estimates are indexed to a particular year. For each country, these estimates are almost identical to national labour productivity series (minor differences from national sources are described in the Background Notes to this bulletin). The index year is set at 2007 in order to focus on movements in labour productivity over the recession.

Constant price productivity estimates show the evolution of productivity for each country and for the G7 (and G7 excluding the UK) aggregates, and show productivity levels relative to 2007. They should not be used to compare productivity across countries at a point in time. Productivity growth can be decomposed into growth of output minus the growth of labour input, and these components can move in different directions within and across countries. This should be borne in mind in interpreting the constant price productivity estimates in this release.

More information on methodology and interpretation is available in the Background Notes to this bulletin. Additionally, the [Quality and Methodology paper](#) for this release provides information on the quality of the estimates as well as providing a summary of methods used in compiling the output.

4. Current price productivity

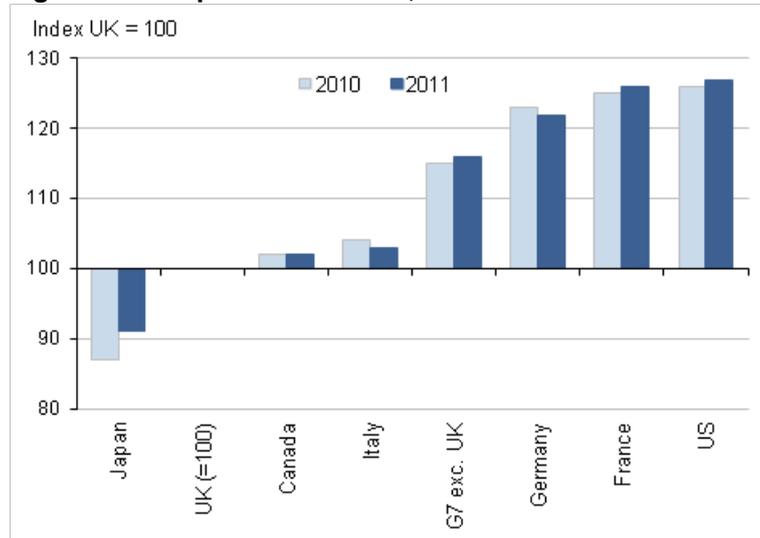
Current price productivity estimates allow for comparison of how much economic output, measured in common price terms, is produced by each worker and hour worked across countries in a particular year, relative to the UK=100.

[Table 1: GDP per hour worked \(105.5 Kb Excel sheet\)](#)

On this basis, UK productivity in 2011 was:

- above that of Japan
- slightly lower than that of Canada and Italy
- considerably lower than that of the remaining G7 countries

Figure 1: GDP per hour worked, G7 countries



Comparing 2011 with 2010, the UK productivity shortfalls relative to the US and France widened, and the UK's margin over Japan narrowed by 4 percentage points. The difference in productivity on this measure between the UK and the rest of the G7 widened to the greatest differential since 1993.

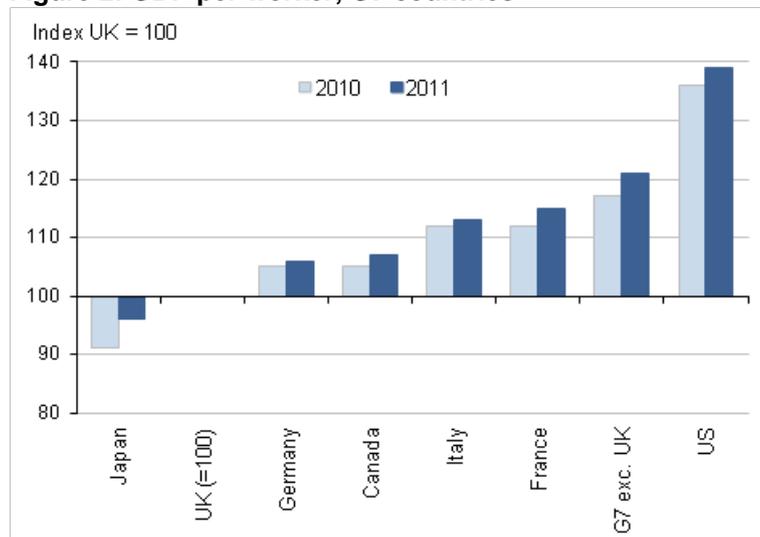
Compared to [First Estimates for 2011](#), changes in this measure of productivity were driven by changes in PPP exchange rates. Additionally, historical GDP data for Canada have been revised upwards by around 2%¹.

[Table 2: GDP per worker](#) (105.5 Kb Excel sheet)

Final estimates for 2011 showed that on an output per worker basis, the UK was:

- above that of Japan
- below that of the remaining G7
- lower than the US by the greatest margin since 1990, when this series begins

Figure 2: GDP per worker, G7 countries

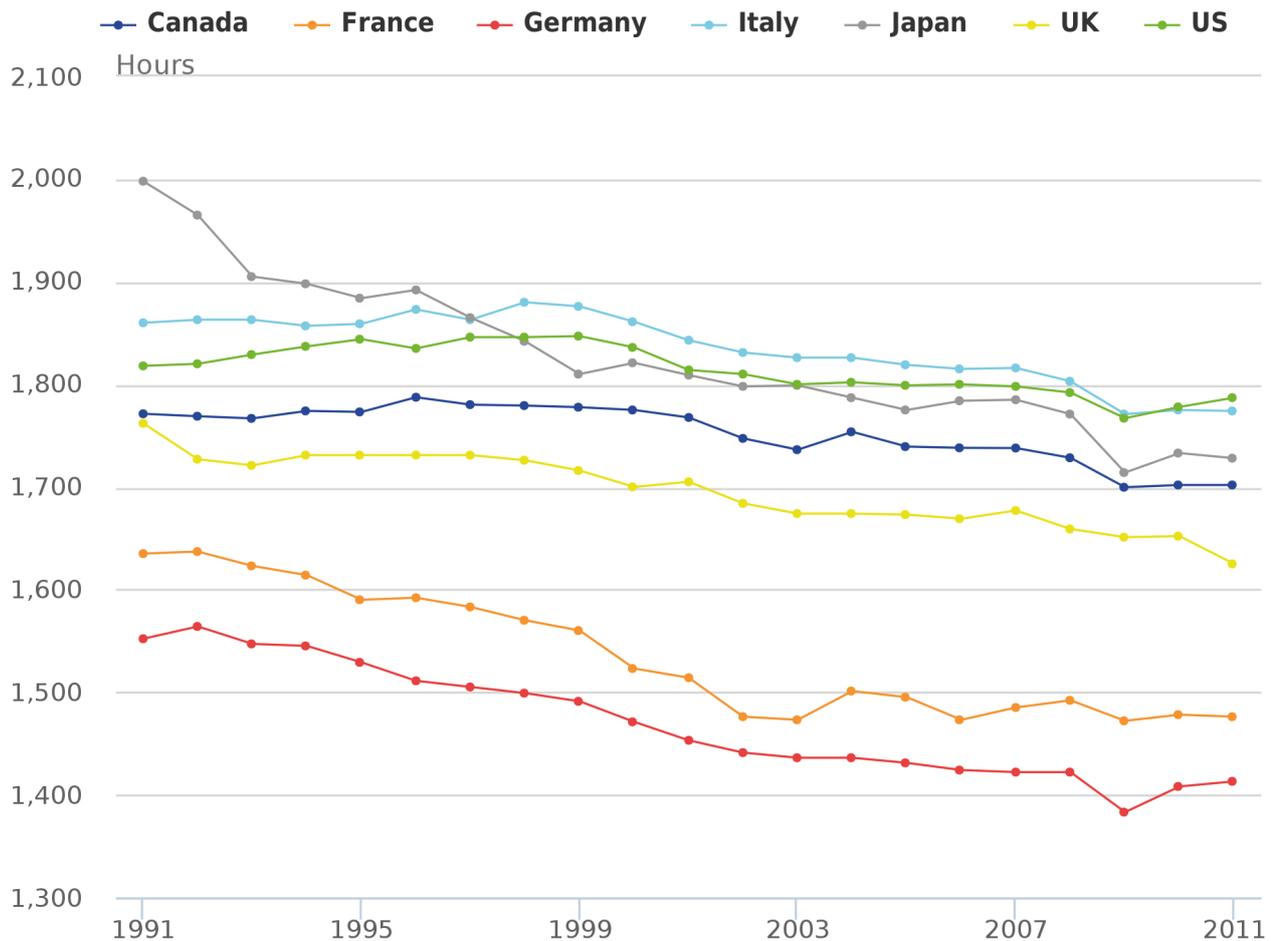


Comparing 2011 with 2010, the shortfall between output per worker in the UK and the rest of the G7 widened by 4 percentage points and was the widest since 1993, while the UK's lead over Japan on this measure narrowed to the smallest margin since 1996.

As illustrated in Figure 3, there are significant differences in average hours worked across the G7, reflecting cultural and compositional differences between economies. These differences account for differences in the patterns of productivity in Figures 1 and 2. Average hours fell sharply in 2009 in a number of countries including Japan, Germany, Italy and Canada.

Comparing 2011 with 2010, the largest change in average hours was in the UK, where average hours fell by around 1.5 percentage points, perhaps partly reflecting special factors such as the Royal Wedding in April 2011.

Figure 3: Average annual hours per worker, G7 countries



Source: Office for National Statistics

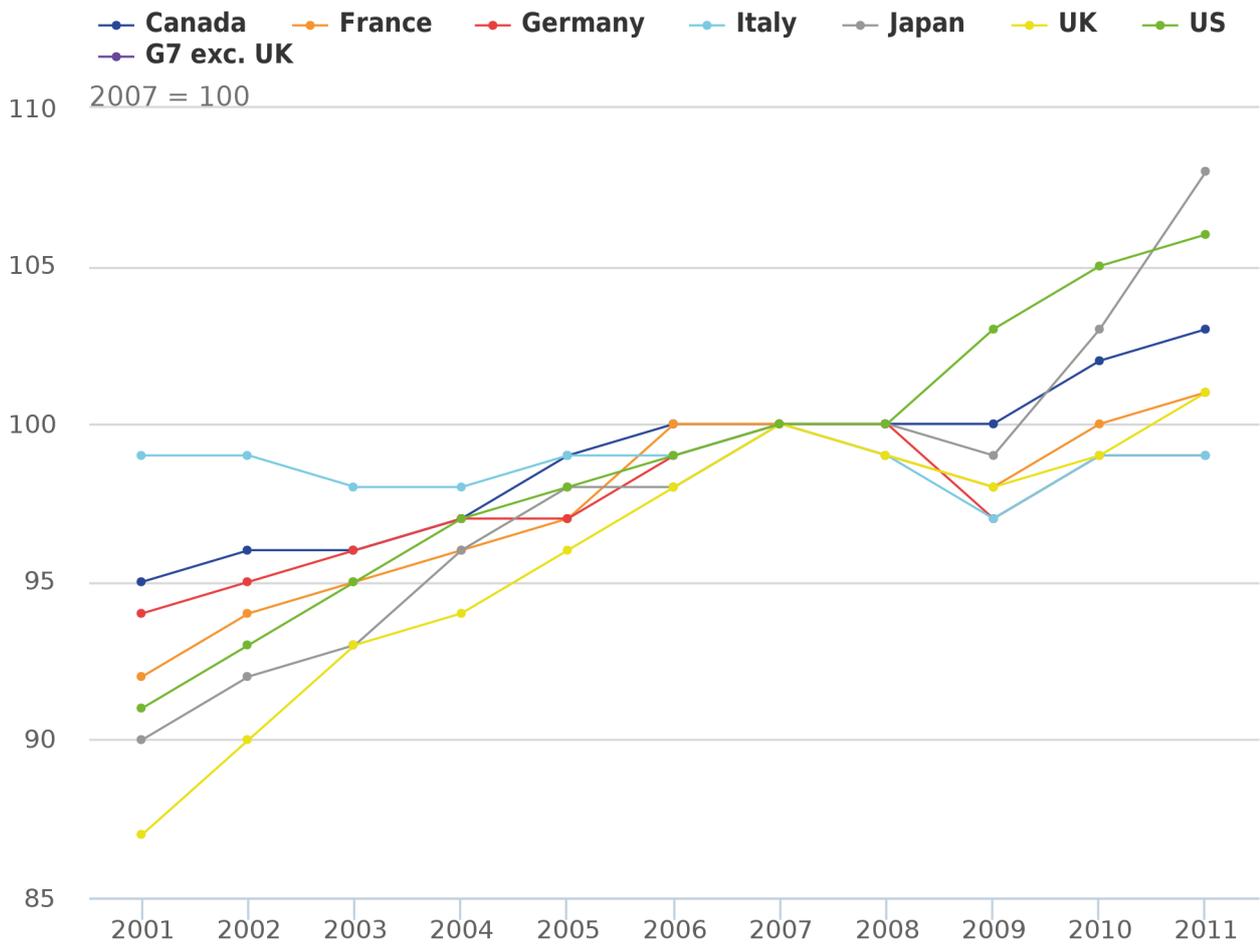
Notes for current price productivity

1. See Revisions section for more detail.

5. Constant price productivity

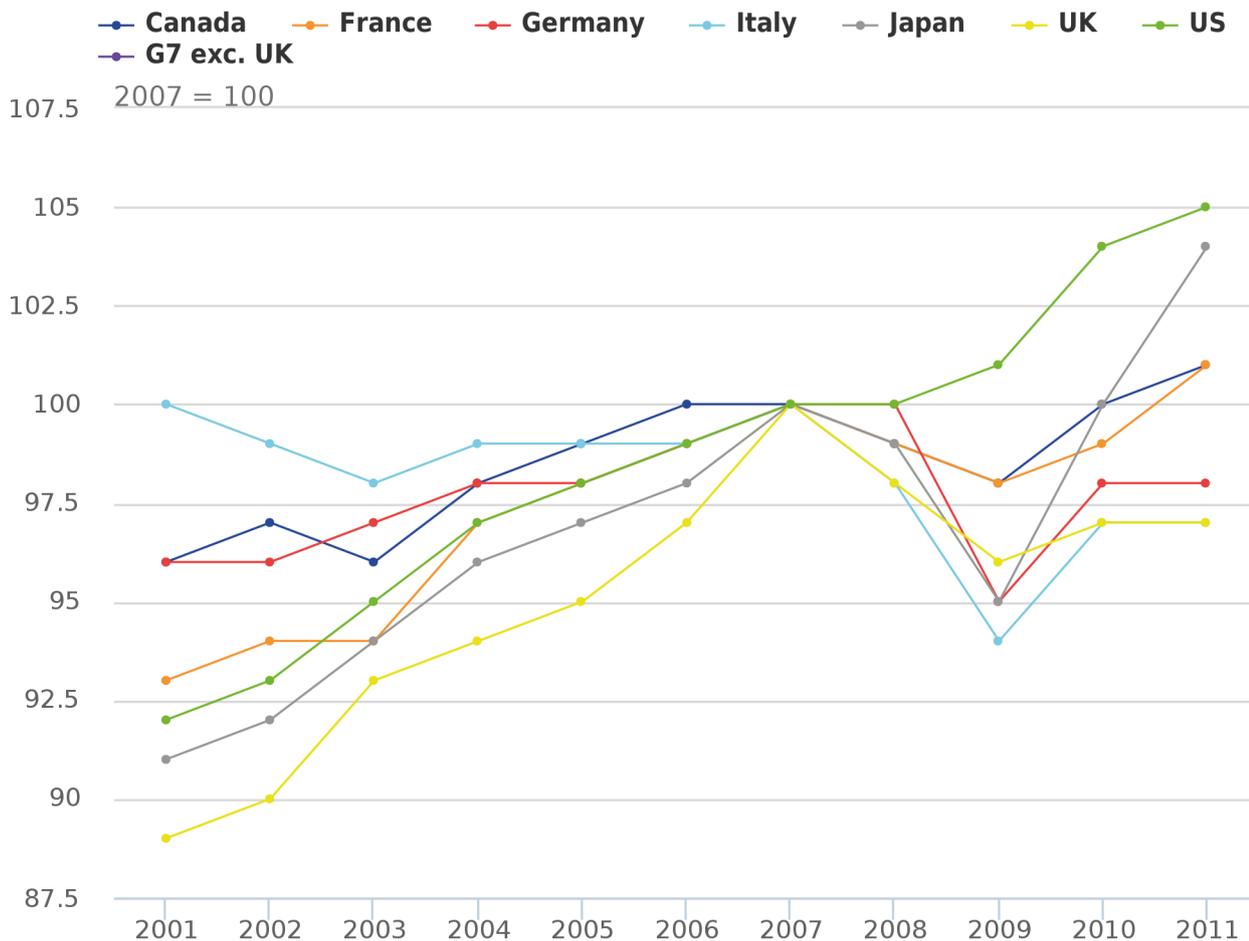
Constant price productivity estimates are indexed to 2007=100 and show the evolution of labour productivity for each country, the G7 and the G7 excluding the UK.

Figure 4: Constant price GDP per hour worked, G7 countries



Source: Office for National Statistics

Figure 5: Constant price GDP per worker, G7 countries



Source: Office for National Statistics

Figures 4 and 5 illustrate the difference in productivity trajectories over recent years between the weaker European economies and the rest of the G7. Output per hour fell sharply in most countries over the 2008-09 recession, but then rebounded equally sharply in the US, Japan and Canada, whereas the recovery in productivity has been much more muted for the main European economies.

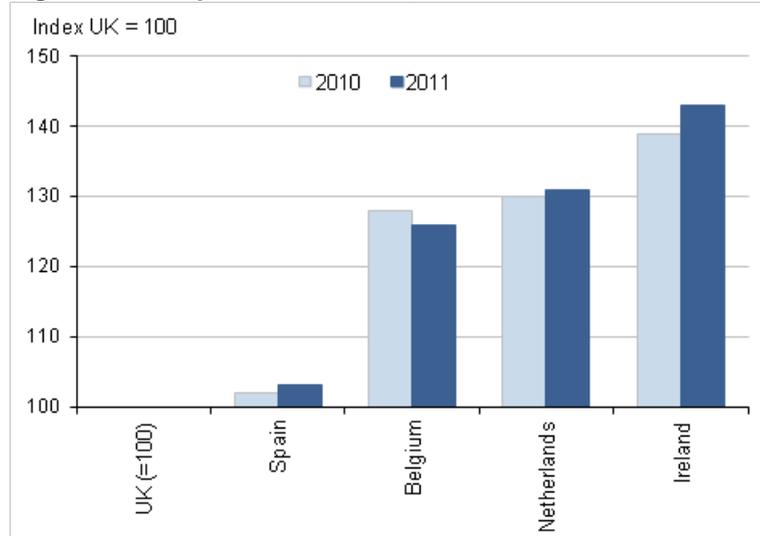
For the UK in particular, this contrasts with the pre-recession period when UK productivity growth was comparatively strong. The behaviour of UK productivity since 2009 has been referred to as the 'productivity conundrum' and is discussed further in articles published by ONS in [Grice, August 2012](#) and [Patterson, October 2012](#).

6. Comparisons with other countries

Looking at additional countries gives an interesting comparison to the UK and rest of the G7. These countries have been included as, along with the G7 countries, they account for over half of all UK imports and exports ¹.

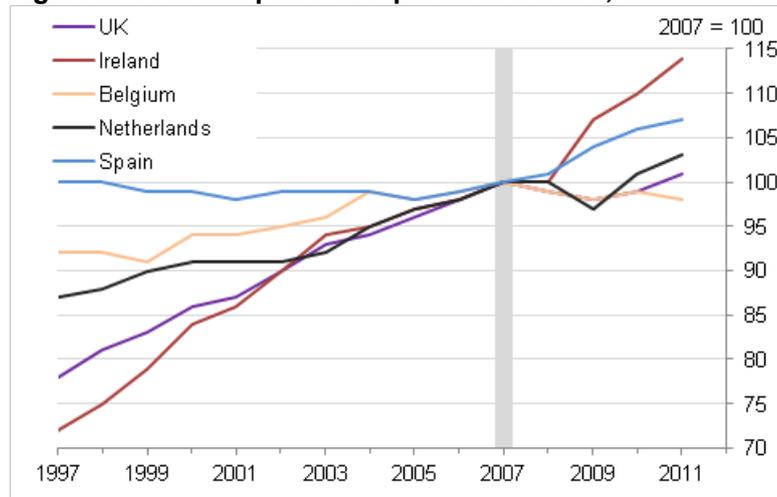
Figure 6 shows data for Spain, Belgium, the Netherlands and Ireland on a current price output per hour basis, comparable with the estimates in Figure 1 and Table 1. Figure 6 shows UK output per worker is slightly lower than Spain, but much larger shortfalls relative to Belgium, the Netherlands and especially Ireland, where the gap was some 43 percentage points in 2011. The productivity gap between the UK and Ireland has grown over time as the Irish economy grew very strongly from the mid 1990s up to the onset of the recession in 2008. But according to the OECD data on which these estimates are based, Irish output per hour was higher than that in the UK even in 1990.

Figure 6: GDP per hour worked, additional countries



Constant price growth trends for output per hour are shown in Figure 7 (these can be compared with estimates in Table 3 and Figure 4). Figure 7 shows that productivity growth since the trough of the recession in 2009 in Belgium and to a lesser degree the Netherlands has been fairly weak. By contrast, the recession seems to have had little impact on productivity growth in Ireland, and productivity growth in Spain has been stronger since the recession having been flat or falling over the pre-recession period. In both cases this reflects large-scale labour shedding as economic output fell. Between 2007 and 2011, total hours worked fell by around 19% in Ireland and 9% in Spain, compared with a fall of 3% in the UK, 2% in the Netherlands and an increase of 4% in Belgium.

Figure 7: Constant price GDP per hour worked, additional countries



Notes for comparisons with other countries

1. According to Overseas Trade Statistics data for November 2012.

7. Revisions

Historical data used in this publication are subject to revision between publications. Since the First Estimates for 2011 were published on September 19 2012, the main sources of revisions are as follows:

- Upward revisions to historical GDP data for Canada following implementation of the [System of National Accounts 2008](#). In 2011, current price GDP has been revised upwards by 2.4% and constant price GDP has been revised upwards by 2.9%.
- As part of a [regular revisions process](#), PPP exchange rates have been revised across all countries. Note that because Tables 1 and 2 are indexed to UK=100, revisions to the UK are zero by definition. Thus, revisions to other countries may represent a combination of revisions to UK data and other countries' data.

Tables R1 to R4 compare the latest estimates data with the data from the previous release on 19 September 2012. Revisions arise from a combination of factors outlined. Not surprisingly, the largest revisions in Tables R1 and R2 are to Canada, but as shown in Tables R3 and R4 there are no material changes to constant price productivity growth rates.

8. Background notes

1. This Statistical Bulletin

ONS publishes annual estimates of International Comparisons of Productivity twice a year. Initial estimates are published approximately nine months after the reference year, with final estimates published approximately five months later. Exact publication dates vary subject to the availability of the input datasets.

2. Quality and methodology

A revised and updated [Quality and Methodology Information paper \(123.8 Kb Pdf\)](#) for this release was published on 20 July 2012. This paper describes the intended uses of the statistics presented in this publication, their quality, and the sources and methods used to produce them. The paper also provides information on the uses and limitations of international comparisons of productivity.

For this release the base year for PPPs is 2008, which is the latest year for which the OECD PPP series have been benchmarked.

The output measure used here (GDP) differs from that used for the ONS headline measure of productivity (Gross Value Added (GVA)). The difference between these measures is that GDP uses market prices and GVA uses basic prices, which exclude taxes and subsidies on production and trade and transport costs. As the OECD does not produce output level series using basic prices over the necessary time period, and the rates of purchasing power parity (PPPs) are based on market prices, GDP is used in this bulletin.

3. Other data on productivity

ONS publishes a quarterly [Labour Productivity statistical bulletin](#). This provides much more detailed information regarding UK labour productivity than this ICP release.

ONS publishes annual [Multi-factor productivity estimates](#) for the UK, which decompose output growth into contributions due to changes in labour and capital inputs, and a residual component reflecting 'disembodied technical change'.

ONS also publishes a range of [public sector productivity measures](#) and related articles. These measures define productivity differently from that employed in the ONS Labour Productivity and MFP estimates. Further information can be found in [Phelps \(2010\) \(252.5 Kb Pdf\)](#).

More information on the range of ONS productivity estimates can be found in the [ONS Productivity Handbook](#).

The OECD also publishes growth of GDP per hour worked for the G7 and two other aggregates, the EU and OECD. These OECD estimates can be compared with the series in table 3 of this bulletin. The differences between the ONS and OECD series are not large. They can be explained by the different sources used for the component data. In particular, ONS estimates use employment data that are based on countries' labour force surveys, whereas the OECD estimates use the National Accounts as the main source of employment data for most countries. There are also slight differences in the GDP data, as the OECD estimates use the Annual National Accounts with results in national currency, whereas ONS uses the Quarterly National Accounts for GDP data.

More international data on productivity are available from the [OECD](#), [Eurostat](#), and the Conference Board.

4. User engagement

ONS is keen to develop a greater understanding of the use made of ICP statistics and is organising a Productivity Statistics User Group Workshop on 19th February 2013. If you are interested in attending please email Productivity@ons.gsi.gov.uk. To view notes from the 2012 workshop, visit [Summary of Productivity Statistics User Group Feb 2012 \(104.4 Kb Pdf\)](#).

If you have something to tell us, please use the [feedback form on ONS productivity statistics](#).

You can follow ONS on [Twitter](#) and [Facebook](#).

5. Details of the policy governing the release of new data are available by visiting www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html or from the Media Relations Office email: media.relations@ons.gsi.gov.uk

These National Statistics are produced to high professional standards and released according to the arrangements approved by the UK Statistics Authority.