SP Energy Networks 2015–2023 Business Plan

Updated March 2014

Annex

Real Price Effects 2014/15 to 2022/23

First Economics

January 2014

SP ENERGY NETWORKS

Real Price Effects, 2014/15 to 2022/23

Prepared for SP Energy Networks and SSE Power Distribution

FIRST ECONOMICS

www.first-economics.com

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1. Introduction

This paper contains First Economics' estimates of the real price effects (RPEs) that are likely to confront an efficient electricity DNO over the period 2014/15 to 2022/23. It is intended to be a contribution to the revised business plans that SP and SSE will be submitting to Ofgem in March 2014.

The paper is structured into two main parts:

- section 2 gives an update on our approach to this work, following comments made by Ofgem in November 2013 business plan assessment and by the Competition Commission (CC) in its provisional findings in the NIE price control inquiry; and
- sections 3 to 6 contain the input-by-input nominal inflation projections and our calculation of RPEs.

2. Methodology

Since we produced our last forecast in January 2013, we have seen Ofgem gives its assessment of our and other consultancies' RPE projections in its RIIO-ED1 fast-tracking decision document and we have also observed the approach that the CC took to forecasting RPEs in its NIE provisional price control determination.

A summary overview of the methodologies that are used in this body of work is given in the table.

Table 2.1: Methodologies for RPE forecasts

	First Economics	**Ofgem (preferred approach)**	**CC**
Overall methodology	Make forecasts of input price inflation in nominal terms Subtract separate forecast of RPI inflation to obtain RPEs	Make forecasts of RPEs in one step	Make forecasts of input price inflation in nominal terms Subtract separate forecast of RPI inflation to obtain RPEs
Preferred source of forecasts	Use OBR economic forecasts where possible	Use short-term consensus forecasts where possible	Use OBR economic forecasts where possible
Approach when third-party forecasts not available	Extrapolate from the historical increase in selected published indices over a relevant period of time	Extrapolate from the historical increase in selected published indices over a 20-year period	Extrapolate from the historical increase in selected published indices over the period 1996 to 2012

We explore further below the differences in approach.

Real vs nominal input price forecasts

This report, like all of First Economics' previous reports, produces each RPE forecast via a two-step calculation in which we first estimate the expected rate of nominal input inflation and then subtract the expected rate of RPI inflation. This is consistent with the approach that the CC used

in the NIE provisional determination. Ofgem, by contrast, prefers to focus from the outset on real price trends and makes forecasts of RPEs independently of the expected rate of RPI-measured inflation in any given year.

We have explained in previous reports why our approach is to be preferred to Ofgem's method. An important consideration for us in preparing this latest analysis has been that RPI has been volatile in recent times and is likely to exhibit further volatility in the future. This is partly a short-term consequence of the effects of recession, but it also reflects two factors that will cause CPI inflation and RPI inflation to drift apart over the forecast period:

- first, the 'formula effect' difference between RPI- and CPI-measured inflation has widened recently as a result of technical changes that the ONS has made to the way that it collects and averages price data for certain items in the inflation basket. This means that the government's 2% CPI inflation target probably now translates to RPI inflation of around 3.4% per annum, where previously most forecasters would have used a figure of around 2.8%; and
- second, there is an expectation that RPI inflation will give higher readings during the next five years as the Bank of England takes interest rates back up from their current historical lows. Because mortgage interest rates are not included in CPI, this will not affect readings of CPI inflation.

Given these unusual influences on RPI, it is not realistic to think that RPEs that are measured against RPI inflation will revert to some sort of pre-recession trend. It is much more tenable to suggest that nominal input price increases will revert to trend, with measured RPEs having no significance in their own right other than as the mathematical consequence of the contemporaneous path that RPI inflation takes over the forecast period.

For these reasons, we are clear that we should stick with our two-step approach.

Office for Budget Responsibility forecasts vs consensus forecasts

We have previously anchored our forecasts as closely as possible to the most recent Office of Budget Responsibility (OBR) economic forecasts. This is also consistent with the approach that the CC took in the NIE provisional findings, where it stated that:[1]

> We considered that the OBR's economic and fiscal outlook represented a coherent and independent forecast which covered the entire period of our forecast. We did not identify a better alternative to this forecast. We therefore decided that, wherever possible, we would use this as the basis for our RPE forecast.

Ofgem in its RIIO-GD1 and RIIO-T1 final proposals explicitly rejected this approach and preferred instead to refer to the latest HM Treasury round-up of independent, short-term economic forecasts. The principal reason that Ofgem gave for this stance was the better reliability it thought it would obtain through crowd-sourcing economic forecasts rather than relying on a single forecaster. Ofgem also faced a practical issue when preparing its RIIO-GD1/T1 final proposals in that the most recent OBR forecast at the time of publication was from March 2012 and felt increasingly out-of-date, whereas the most recent HM Treasury round-up was published in November 2012.

[1] Competition Commission (2013), Northern Ireland Electricity Limited price determination – a reference under Article 15 of the Electricity (Northern Ireland) Order 1992: provisional determination.

We do not think that the benefit from the first of these things should be over-stated. Although more data is usually to be preferred to less data, in this case the single forecast on which we rely comes from a very authoritative source. The OBR, unlike private forecasters, has more up-to-date visibility of economic data and government fiscal policy and is explicitly tasked with taking a coherent overall look at the UK economy's prospects. This informational advantage ought to be taken into consideration and given considerable weight.

On the second point, the OBR December 2013 forecast gives a very up-to-date anchor for these January 2014 estimates. The OBR also provides a richer data set – for example, financial year data and average earnings forecasts going out to 2018/19, as compared to calendar year data and forecasts for wages only up to 2014 in the case of the HM Treasury round-up. This makes the OBR forecast the practically more useful data at the time of writing.

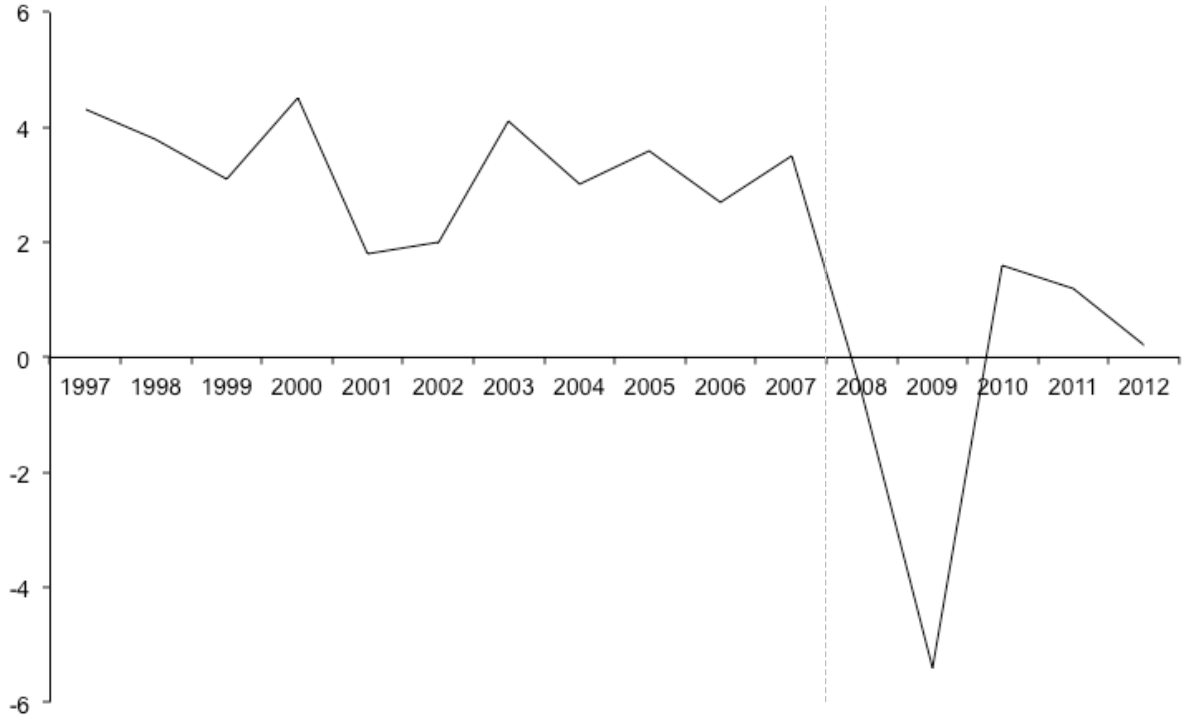
For these reasons, we do not see how Ofgem could justify rejecting forecasts of input prices or RPI-measured inflation as not being 'well justified' if they are taken from the OBR. Accordingly, our GDP, RPI and wage forecasts through to 2018/19 are taken directly from the OBR's December 2013 spreadsheets.

Extrapolation

All studies of this type extrapolate to some extent from historical data, especially when making input price inflation forecasts for the later years in the forecast period. We have previously employed quite a loose approach, in which we judge the most appropriate historical reference period on a case-by-case basis having regard to the characteristics of recent price movements. The CC, by contrast, looked more rigidly at average input price inflation over the period 1996 to 2012 in its NIE provisional determination. Ofgem in its RIIO-GD1/T1 final proposals stated it preferred to use historical averages over a 20-year period up to 2009/10.

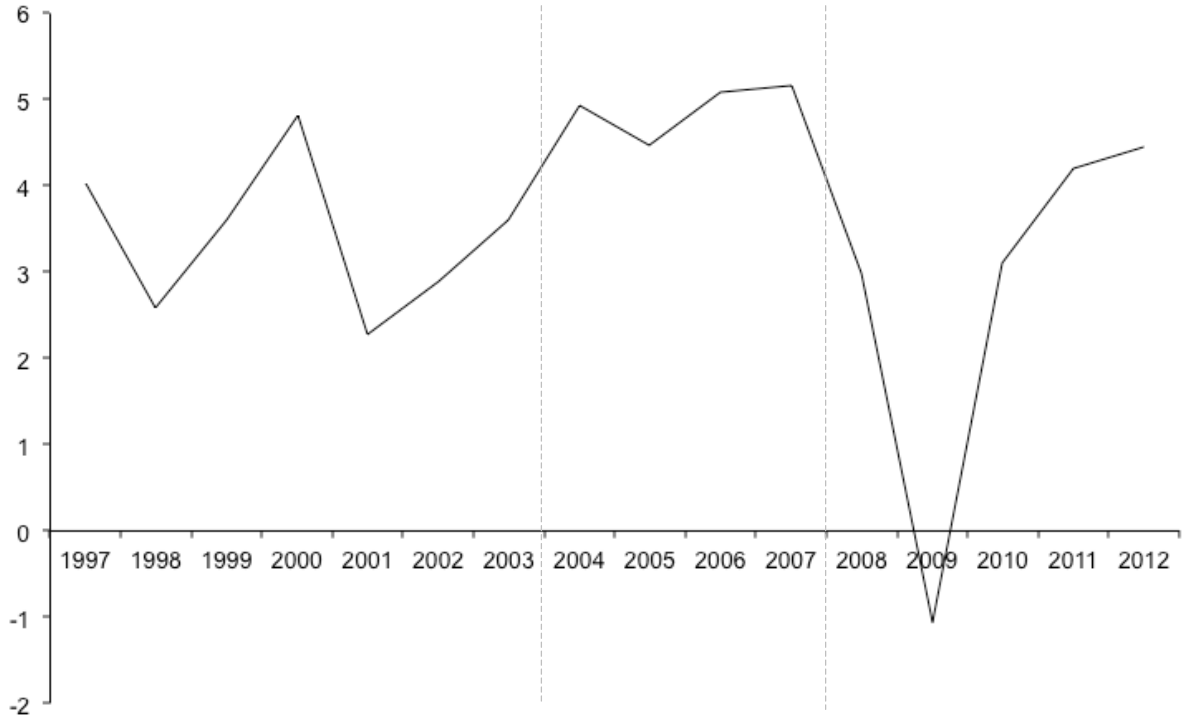
We are not at all convinced that the CC/Ofgem approach of looking at long-term historical averages is superior to our more flexible approach. We note, in particular, that UK and global GDP growth oscillated markedly over the historical periods that the CC and Ofgem have focused on. In the case of UK GDP growth, it is apparent from figure 2.1 that there is a clear structural break in 2008. In the case of global GDP growth, there seems in figure 2.2 overleaf to be three distinct sub-periods: pre-2004; 2004-07; and 2008 onwards.

Figure 2.2: UK GDP growth (constant prices)



Source: ONS.

Figure 2.3: Global GDP growth (constant prices)



Source: IMF.

When making RPE forecasts, we think it is best to extrapolate from rates of of price inflation seen during historical periods in which out-turn GDP growth most closely resembles the GDP growth

that we can expect in the future. As we explain in section 3, current UK GDP forecasts for the 2014/15 to 2022/23 period look similar to the out-turn rates of UK GDP growth observed prior to 2008 and quite dissimilar to UK GDP growth between 2008 and 2013. Current global GDP forecasts are most similar to out-turn global GDP growth between 2004 and 2008. This would seem to indicate the most obvious historical reference points for DNOs forecasting inflation, depending on whether an input type is traded nationally or internationally.

We recognise, however, that this is the one aspect of the analysis in which we are something a lone voice. To assist SP and SSE with the preparation of their business plans, we clearly identify long-term averages for each input type in the analysis that follows and we invite the companies to make the final call as to whether to extrapolate from these averages or our more nuanced reading of historical experience.

Choice of indices

At a very detailed level, there are choices to be made about benchmark indices. A summary of the selections that different parties have made is set out below.

Table 2.4: Reference indices

	First Economics	**Ofgem (electricity)**	**CC**
General labour	ONS: average weekly earnings	ONS: average weekly earnings	ONS: average weekly earnings
Specialist labour	ONS: average weekly earnings – electricity/gas/water sector BCIS: electrical labour BEAMA: electrical engineering labour	BEAMA: electrical engineering labour	–
Materials	BIS: resource cost of construction (non-housing) materials BIS: resource cost of infrastructure materials ONS: electric motors, generators and transformers; electricity distribution and control equipment ONS: electricity distribution and control apparatus BEAMA: basic electrical materials	BIS: resource cost of infrastructure materials BCIS: copper piping BEAMA: basic electrical materials	BIS: resource cost of construction (non-housing) materials BIS: resource cost of infrastructure materials ONS: electric motors, generators and transformers; electricity distribution and control equipment ONS: electricity distribution and control apparatus ONS: other electronic and electric wires and cables ONS: cold drawn wire
Plant and equipment	BCIS: plant and road vehicles	BCIS: plant and road vehicles ONS: machinery and equipment	BCIS: plant and road vehicles ONS: machinery and equipment

The table shows a reasonable correspondence between the reference indices, recognising that there is no such thing as a perfect benchmark. In the analysis that follows we retain the same core basket of indices that we have used previously, but we also expand the analysis to take in the additional indices that the CC has referred to in its recent work.

Summary

For the reasons set out above we have not changed our basic approach to calculating RPEs since we last produced forecasts for WPD in January 2013. We do, however, pay more attention than previously to long-term historical averages and to a small number of indices that we have not in the past referenced directly. We have also updated the forecasts for the latest economic developments, as set out below.

3. GDP Growth

3.1 Latest evidence

Our detailed January 2014 forecasts start with a brief summary of the current economic outlook.

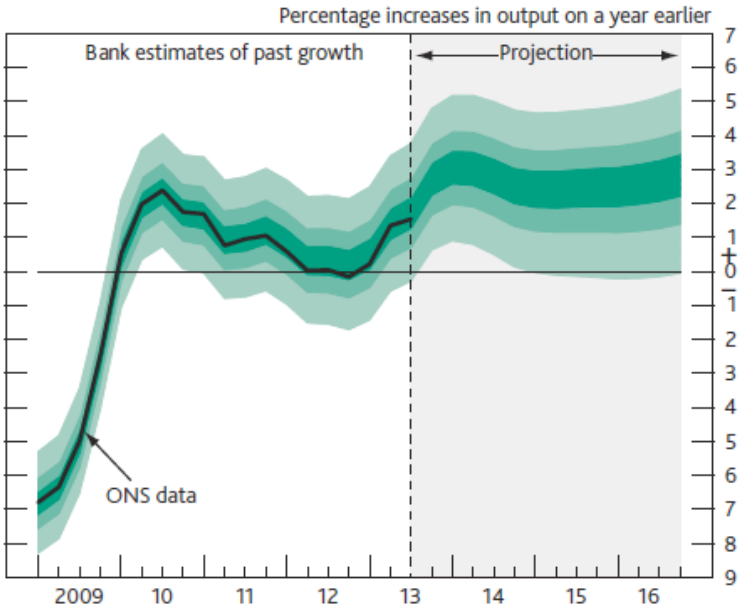
Table 3.1 and figure 3.2 reproduce figures that may be found in the OBR's December 2013 economic forecasts and the Bank of England's November 2013 Inflation Report.

Table 3.1: OBR's December 2013 forecasts of GDP growth

	Percentage change on a year earlier, unless otherwise stated						
	Outturn	Forecast					
	2012	2013	2014	2015	2016	2017	2018
UK economy							
Gross domestic product (GDP)	0.1	1.4	2.4	2.2	2.6	2.7	2.7
GDP level (2012=100)	100.0	101.4	103.9	106.2	108.9	111.8	114.8
Nominal GDP	1.8	3.6	4.6	3.8	4.3	4.5	4.5
Output gap (per cent of potential output)	-2.6	-2.3	-1.8	-1.6	-1.2	-0.7	-0.2
World economy							
World GDP at purchasing power parity	3.2	2.9	3.6	3.9	4.1	4.2	4.2
Euro area GDP	-0.6	-0.4	0.9	1.2	1.7	1.9	2.0
World trade in goods and services	2.4	2.8	5.4	5.8	6.0	6.1	6.1
UK export markets[5]	2.0	2.3	4.9	5.2	5.3	5.4	5.4

Source: OBR.

Figure 3.2: The Bank of England's November 2013 forecasts of GDP growth



Source: Bank of England.

The two sets of numbers tell a fairly consistent story about the path which the UK economy is set to follow. In both cases, there is a great deal of optimism that the UK has finally turned a corner and that recent quarterly GDP growth can be sustained into the medium term. The numbers still suggest that there will still be some headwinds this year and early next year, attributable mainly to the legacy of adjustment and repair left by the financial crisis. But thereafter the recovery gathers pace through 2015 and the economy starts to exhibit consistent growth of 2.5% to 3% per annum from late 2015 onwards.

The Bank of England helpfully identifies the key uncertainties around the central case. The main downside risk is around the challenges within the eurozone, but there are also continued concerns about household and government balance sheets. The key variable is productivity growth, insofar as a revival in productivity will permit the economy to grow without generating inflation and without triggering an early tightening of monetary policy, whereas weak productivity growth will inhibit the economy's ability to grow beyond the rates identified in the central forecasts.

As far as the global economy is concerned, the figures in table 3.1 show a strengthening in world GDP growth in 2014 as other western economies also go through a period of sustained recovery. Thereafter, GDP growth looks very healthy right through the forecast period.

Looked at side-by-side, the implication of these forecasts is that we need now to make forecasts of input price inflation during a period of strong economic growth.

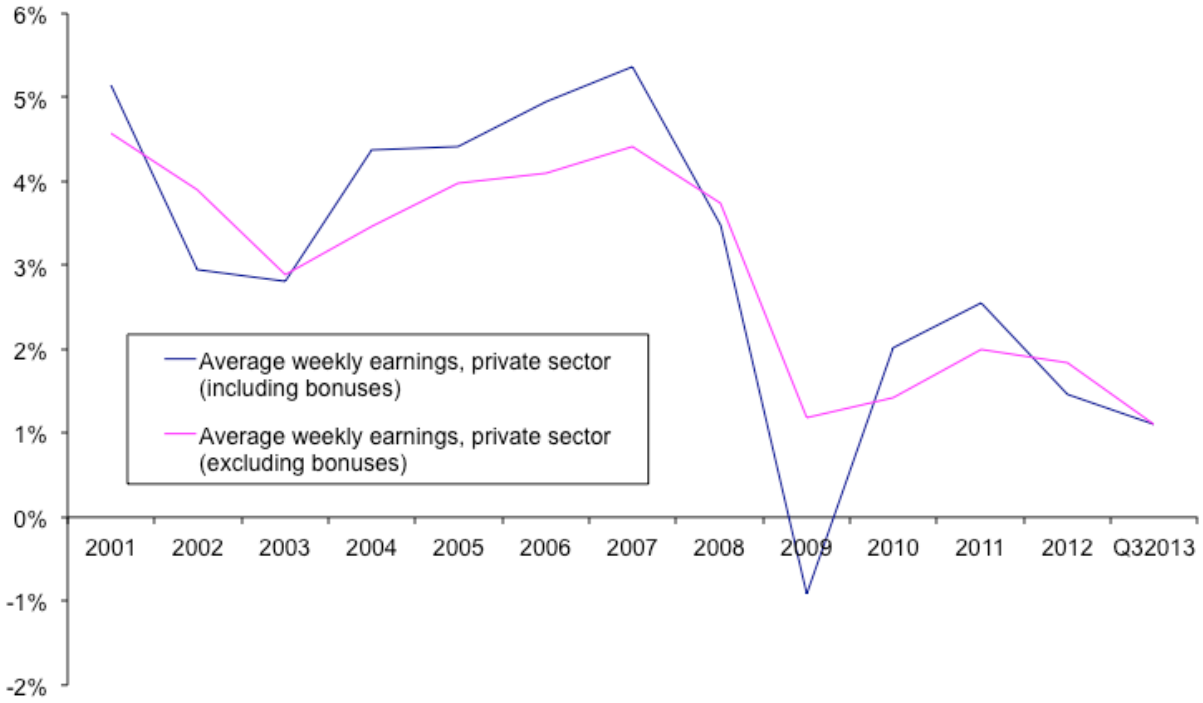
With this backdrop, we now set out our detailed projections for the 2014/15 to 2022/23 period.

4. Input price inflation

4.1 Wages – general

Our analysis of wage increases for the majority of people that regulated networks employ is based on the ONS average weekly earnings index for the private sector, including and excluding bonuses.

Figure 4.1: Private sector wage inflation



Source: ONS.
Note: this index goes back only to 2000.

The chart shows a marked shift in wage pressures due to recession. After growing at an average annual rate of just over 4% between 2000 and 2008, wages declined in absolute terms in 2009, after accounting for the effects of withdrawn bonuses, and have grown by only between 1% and 2% per annum since. The latest monthly data from Q3 2013 shows still very weak wage pressures, with annual private-sector wage growth at 1.1% on both of the above measures.

Going forward the expectation is one of accelerating, but still historically subdued wage growth for perhaps 2-3 years. This is based to a large extent on historical experience which shows that pay increases typically lag behind the growth in GDP by several quarters, mainly because recession creates a pool of unemployed workers who compete vigorously for jobs once economic activity picks up and firms resume hiring. Although this recession resulted in fewer redundancies than previous recessions, there are still as many as 1m more individuals than normal in unemployment and many more who have been forced onto part-time hours or into jobs that they might not otherwise have taken. This should mean that employers, including the electricity DNOs when they are looking to fill roles that do not have sector-specific features, will for a period find that they do not need to offer significant pay increases in order to attract and retain good staff.

The OBR's December 2013 report gives a sense of what sort of increases firms should expect to have to pay during the next five years.

Table 4.2: OBR December 2013 labour market forecasts

	Percentage change on a year earlier, unless otherwise stated						
	Outturn	Forecast					
	2012	2013	2014	2015	2016	2017	2018
Labour market							
Employment (millions)	29.5	29.9	30.2	30.4	30.7	30.9	31.2
Wages and salaries	2.8	2.9	3.7	3.9	4.4	4.7	4.7
Average earnings[4]	2.0	1.5	2.6	3.3	3.5	3.7	3.8
ILO unemployment (% rate)	7.9	7.6	7.1	7.0	6.6	6.1	5.6
Claimant count (millions)	1.59	1.43	1.27	1.23	1.18	1.13	1.10

Source: OBR.

We use the financial year equivalents of the OBR numbers as the best available estimates of the wage inflation for general workers employed by an electricity DNO in the period to 2018/19.

We also for the first time follow the CC's practice[2] of adjusting the OBR's figures to a measure of hourly earnings. In the forecast period, the OBR has hours worked per employee falling significantly as more workers take on part-time jobs. This brings down the OBR's measure of 'average earnings' growth, which is defined simply as the change in wages per employee. Our adjusted measure looks through this change in pattern of employment and gives a forecast of the average wage increase that will be paid to an employee working constant hours.

From 2019/20 onwards we think it is prudent for DNOs to allow for pay increases in line with the pre-recession 2000-07 growth of average weekly earnings including bonuses of 4.25% per annum.

Table 4.3: General wage inflation

	Average earnings growth
2014/15	2.8%
2015/16	3.7%
2016/17	4.3%
2017/18	4.5%
2018/19	4.4%
2019/20 and thereafter	4.25%

4.2 Wages – specialist

In previous reports we have argued that certain types of worker – most notably electrical engineers and labour with specialist infrastructure skills like civil engineers, project managers and surveyors – will be able to extract above-average wage increases. Our contention has been that the coincidence of the ramp up in expenditure and investment that is occurring simultaneously in the different infrastructure industries, and the continued existence of skills shortage in a number of the skilled professions, create a mismatch in supply and demand that gives significant bargaining power to the specialist labour that the networks require. Our January 2013 report assumed that this bargaining power would translate in to a premium of up to 1.25% per annum.

[2] See paragraph 11.53 in the CC's provisional determination document.

Data for the last five years seems to confirm the story that we told. Table 4.4 compares increases in indices tracking skilled infrastructure workers' wage increases with average earnings growth between 2007 and 2012. It shows that clearly that specialist wages have grown much more than average during and after the recession.

Table 4.4: Wage increases, 2012 vs 2007

Index	Growth
BEAMA: electrical engineering	14.7%
BCIS: electrical labour	15.6%
ONS: electricity, gas and water sector, incl. bonuses	11.1%
ONS: private-sector average earnings growth, incl. bonuses	8.8%
ONS: private-sector average earnings growth, excl. bonuses	10.6%

Source: ONS, BEAMA, BCIS.

Another source of evidence is the pay deals agreed between the electricity DNOs and trade unions. The CC's provisional determination for NIE reports that the average negotiated wage increase for the three years 2010, 2011 and 2012 was 10.7%.[3] This compares to average economy-wide earnings growth of 6% over the same period.

Finally, we noted in our January 2013 report that there was a slowdown in specialist wage inflation in 2011 and 2012 on all three of the skills-specific measures identified in table 4.4. However, the latest figures for Q3 2013 have all of the specialist indices running at least 1 percentage point per annum ahead of economy-wide earnings growth.

Taking these things together, we still consider that it is appropriate to allow for a differential between average and specialist wage inflation. Going forward, demand for specialist skills will remain high. We note, in particular, that step increases in transmission capex, continued high levels of investment in the water sector, a ramp up in Network Rail's expenditure, and a steady stream of other infrastructure projects will create considerable competition for the specialist skills that the electricity DNOs need. As a consequence, wage inflation for specialist labour is almost certain to go on outstripping average earnings growth.

Our reading of table 4.4 is that it remains prudent to add 1.25% to the base trend in average earnings for the specialist workers in the DNO input mix. This gives inflation expectations for this type of labour set out in the table below.

Table 4.5: Wage inflation for workers with specialist skills

	Specialist wage growth
2013/14	4.1%
2014/15	5.0%
2015/16	5.5%
2016/17	5.7%
2017/18	5.6%
2018/19 and thereafter	5.5%

[3] CC (2013), table 11.6, p.11-14.

4.3 Materials

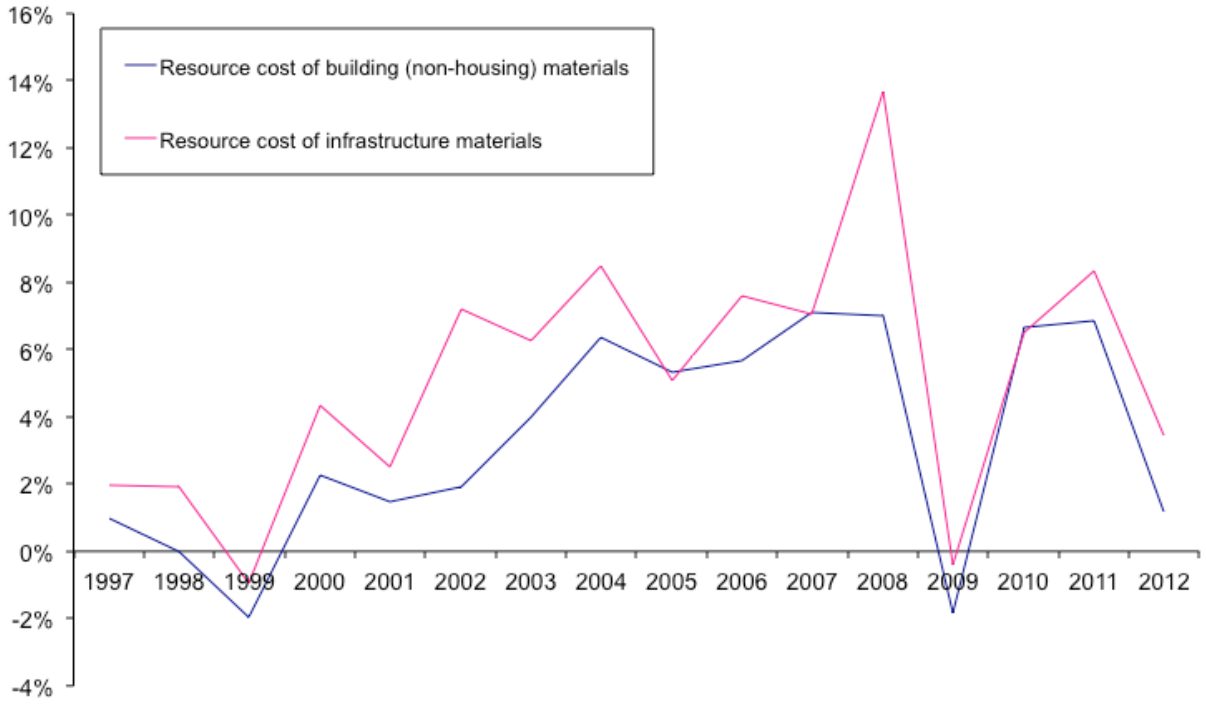
Materials have tended to be the hardest of all the items in the DNO input mix to forecast. Up until around ten years ago materials costs were typically flat or falling over time, just like the prices of most other physical goods. This picture then changed with the uptick in global GDP growth and the emergence of China and other developing economies as major consumers of raw commodities. Recession temporarily reined back most prices, but in the last 2-3 years companies have once again had to deal with significant price increases.

We consider the situation currently confronting the DNOs by looking at different material types in turn.

Materials – general/civils

Figure 4.6 plots the rate of increase in the BIS cost of infrastructure materials and cost of construction (non-housing) materials series over the period since 1996.

Table 4.6: Materials costs



Source: BIS.

The chart shows that 2009 and 2012 are the only years since 2002 in which the two indices did not register inflation of more than 4%. The average rates of inflation over the period 1996 to 2012 are 5.1% and 3.3% for the infrastructure and construction series respectively.

We recognise that there is a legitimate view that the price increases that companies have faced since 2005 cannot carry on forever. But at the same time, we do not think it is tenable to argue that price pressures will disappear. Ofgem, the CC and First Economics have all previously assumed that the rate of increase of general materials costs in steady state is around 4.5% and we continue to take the view that this is a reasonable medium-term benchmark to factor into forward-looking RPE calculations.

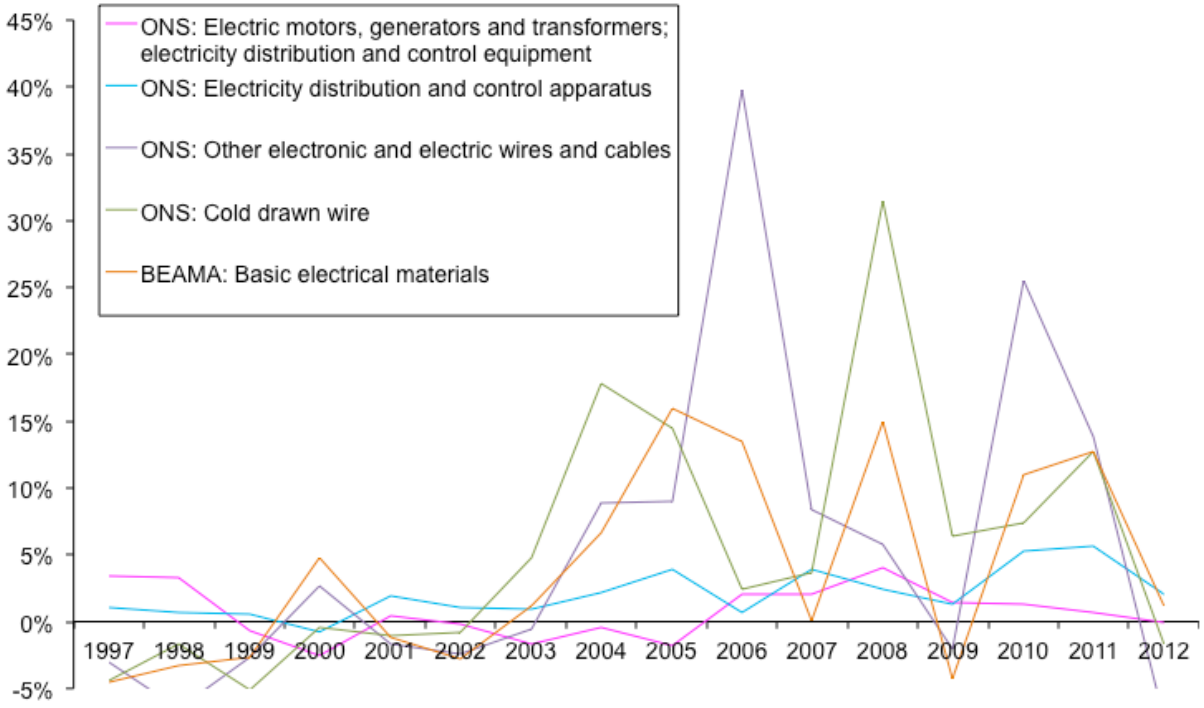
Table 4.7: Forecasts of general materials inflation

	Materials cost increases
2014/15 and thereafter	4.5%

Materials – electrical

It is possible to obtain a more precise reading of the inflation affecting the specialist electrical equipment that the DNOs are installing on their networks from the ONS PPI data set. Figure 4.8 plots the change in the value of selected indices since 1996. We also show the BEAMA basic electrical materials index, which is an aggregate of a wider basket of individual ONS PPI series with relevance to the electricity industry.

Figure 4.8: Electrical material cost increases



Sources: ONS; BEAMA.

The chart shows clearly that there is a structural break in the data somewhere around 2003 or 2004. Prior to this date, cost inflation was negligible. After 2004, stronger global GDP growth and increased demand from China and other newly industrialising countries have put significant upward pressure on commodity prices, which in turn has fed materials cost inflation in the electricity industry.

The average rate of cost increase across the four ONS indices and for the BEAMA index over the period 1996 to 2012 is around 3.5%. However, we do not think this figure is a particularly helpful benchmark, given the characteristics of the data. A more relevant average is the 2004 to 2012 average cost increase of around 6% and 8% on the ONS measures and BEAMA index respectively.

In forecasting what will happen to these indices in the coming months and years, one has to take account first and foremost of likely commodity price movements. Here the story for the foreseeable future remains one of growing demand from China and other developing countries

putting pressure on the supply of metals and driving prices up. Insofar as the outlook for global economic growth is one of strong expansion (as shown in the OBR forecasts in table 3.1 above), the likeliest or central scenario has to be one in which price increases are not dissimilar to the post-2004 rates of cost escalation.

We consider that it is prudent for the DNOs to factor equilibrium price increases of 5% per annum over the forecast period, consistent with our previous forecast.

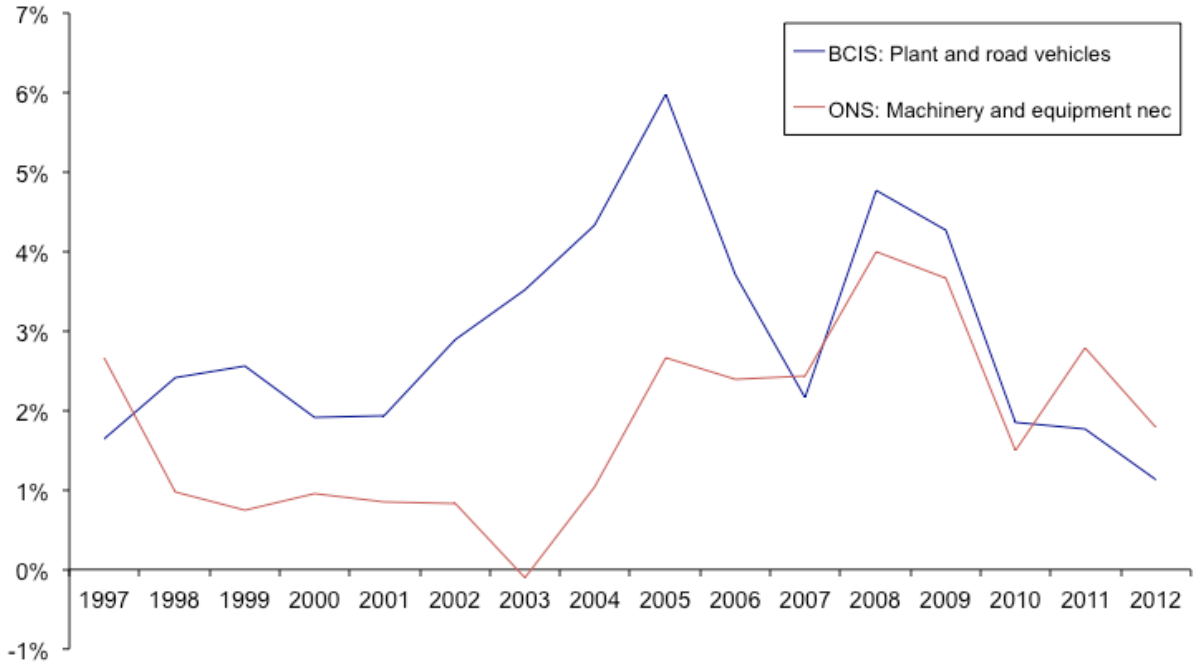
Table 4.9: Specialist electrical materials cost inflation

	Specialist electrical materials cost increases
2014/15 and thereafter	5%

4.4 Plant and equipment

The best indicator of the cost pressures impacting on the plant and equipment that the DNOs use to repair and extend their networks is the BCIS plant and road vehicles index. Figure 4.10 plots the annual change in this index in recent years, alongside the ONS PPI machinery and equipment (not elsewhere classified) series.

Figure 4.10: Plant and equipment cost increases



Source: BCIS; ONS.

The chart shows a discernible slowing of price pressures since 2009. This probably reflects redundancy in the construction sector generally, which has been of benefit to all purchasers/leasers of plant and equipment that is used for the purposes of transporting and installing materials.

The average rate of cost increase for the period 1996 to 2012 is 2.9% on the BCIS measure and 1.8% on the ONS measure.

We have suggested in previous reports that it is prudent to allow for comparable price increases of 4% per annum in the medium term. In light of recent experience, we now think it is appropriate to moderate this estimate so as not to give undue weight to relatively high readings of the BCIS measure in a handful of years (2004-05 and 2008-09). Our revised forecast is 2.5%.

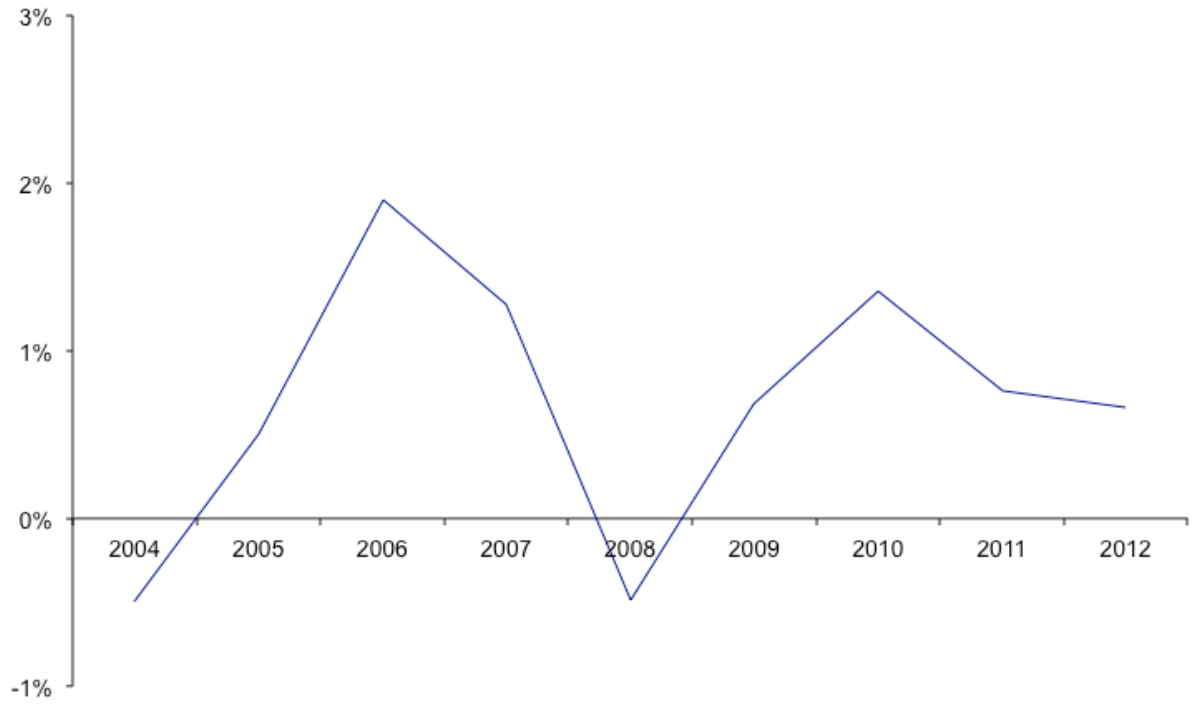
Table 4.11: Plant and equipment cost inflation

	Plant and equipment cost increases
2014/15 and thereafter	2.5%

4.5 IT

The prices of IT hardware and software can be difficult to track on a consistent, like-for-like basis. After suspending the publication of its corporate IT price indices in 1999, the ONS launched a new data series in 2005 as part of its experimental service producer price index. Figure 4.12 plots the data.

Figure 4.12: Business IT cost increases



Source: ONS.

Our reading of this chart is that we should provide for input price increases of 0.75% per annum going forwards.

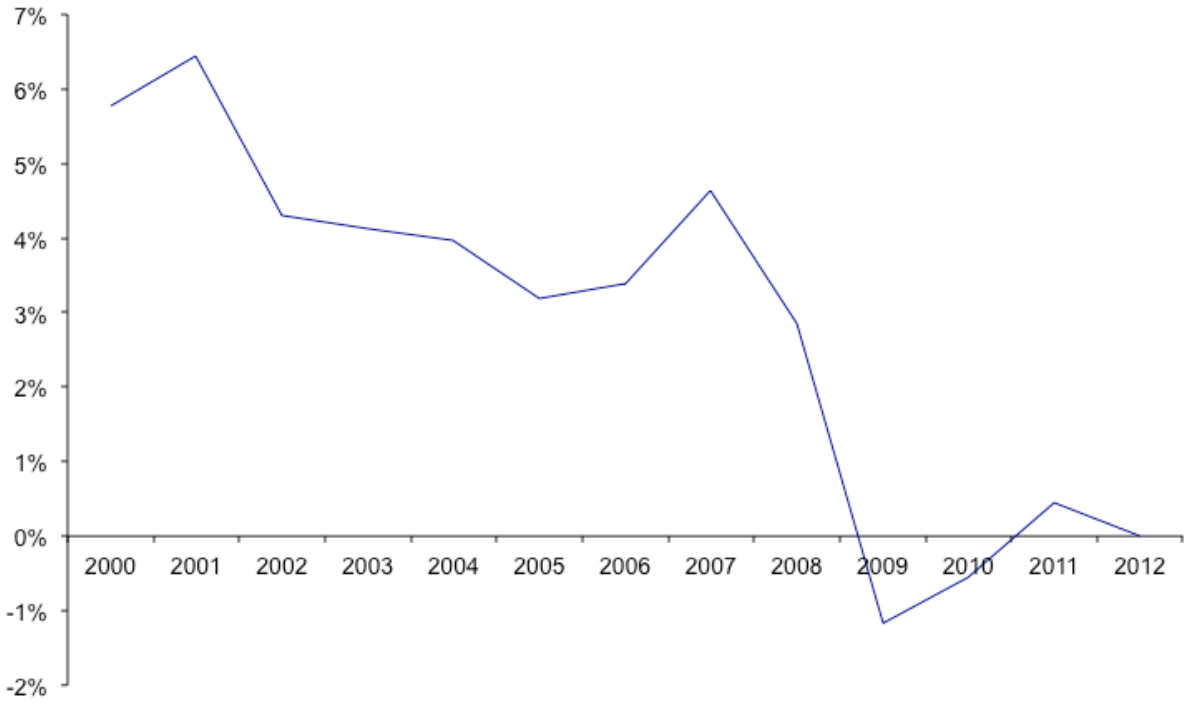
Table 4.13: IT cost inflation

	IT cost increases
2014/15 and thereafter	0.75%

4.6 Rents

There is also a series for property rentals within the ONS service producer price index.

Figure 4.14: Property rental increases



Source: ONS.

This chart shows a very clear relationship with GDP growth. Looking forwards, the expectation in most quarters is that national property prices and property rentals will begin to increase in the next two years ahead as the economy starts to grow again before reverting back to normal rates of growth thereafter.

The OBR in its forecasts has tended to assume that residential housing costs will move in line with average earnings growth. The residential and commercial sectors are very closely linked and it seems appropriate as a central case estimate to apply the same assumption to property rentals. We use the unadjusted OBR average earnings forecast in this calculation.

Table 4.15: Property rental inflation

	Property rental increases
2014/15	2.5%
2015/16	3.4%
2016/17	3.6%
2017/18	3.7%
2018/19	3.7%
2019/20 and thereafter	4.25%

4.7 Summary

Table 4.16 contains an overall summary of the estimates emerging from the above analysis.

Table 4.16: Input price inflation forecasts (%)

	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20 to 2022/23
Labour – general	2.8	3.7	4.3	4.5	4.4	4.25
Labour – specialist	4.1	5.0	5.5	5.7	5.6	5.5
Materials – general/civils	4.5	4.5	4.5	4.5	4.5	4.5
Materials – electrical	5.0	5.0	5.0	5.0	5.0	5.0
Plant and equipment	2.5	2.5	2.5	2.5	2.5	2.5
IT	0.75	0.75	0.75	0.75	0.75	0.75
Property rentals	2.5	3.4	3.6	3.7	3.7	4.25

5. RPI

Having opted to anchor our analysis to the GDP forecasts prepared by the OBR, it is logical that our forecasts of RPI-measured inflation are derived from the same sources. Table 5.1 gives the projections found in the OBR's December 2013 economic forecasts.

Table 5.1: OBR's December 2013 inflation forecasts

	Percentage change on a year earlier, unless otherwise stated						
	Outturn	Forecast					
	2012	2013	2014	2015	2016	2017	2018
Inflation							
CPI	2.8	2.6	2.3	2.1	2.0	2.0	2.0
RPI	3.2	3.1	2.9	3.3	3.6	3.7	4.0

Source: OBR.

As always with these forecasts, CPI-measured inflation is assumed to come more or less into line with the government's 2% target two years from now and stay at 2% thereafter. In the intervening 24 months, the forecast has CPI-measured inflation slightly above target.

The most interesting part of the numbers is the forecast of RPI-measured inflation that sits alongside the CPI numbers. Between 2012 and 2014 RPI-measured inflation moves in broadly the same way as CPI-measured inflation. Thereafter, a bigger wedge opens up between the RPI and CPI inflation rates. This surprisingly large gap is explained by the OBR to be a function of two main factors:

- a temporary divergence between the two measures of inflation caused by the upward movement in mortgage interest rates (which are included in the RPI basket but not the CPI basket) back to 'normal' levels; and
- a more permanent widening of the gap that naturally exists between CPI- and RPI-measured inflation from around 0.5 to 0.8 percentage points historically to around 1.4 percentage points going forward.

Box: The long-run gap between CPI- and RPI-measured inflation

In a working paper published alongside its November 2011 forecast document, the OBR explained that the government's 2% annual CPI inflation target is now best thought of as converting to annual RPI-measured inflation over the long term of 3.3% to 3.5% per annum. This is a noticeably higher number than anyone has ever talked of before. (In previous price reviews, Ofgem has typically converted the government's 2% CPI inflation target to RPI-measured inflation of 2.5% to 2.8% per annum.)

The 1.3 to 1.5 percentage point gap between the two measures of annual inflation is attributable to three factors. Two are linked to housing costs:

- the RPI measure of inflation includes the effects of rising house prices, but CPI does not. If one assumes that house prices in the long term rise with average earnings growth, and if average earnings go up by around 4% to 4.5% in normal economic conditions, this serves to pull RPI inflation up by around **0.35 percentage points** per annum; and
- the RPI measure also includes the effects of changes in mortgage interest payments. CPI does not. If mortgage interest rates can be assumed to be stable over long horizons, mortgage interest payments will move up in line with house prices. This is thought to add another **0.15 percentage points** per annum to RPI inflation.

The third driver of the difference between CPI- and RPI-measured inflation is something known as the 'formula effect'. This is a reference to the way in which the CPI measure of inflation collates the tens of thousands of different prices collected by the ONS statisticians using geometric averages, whereas the RPI measure of inflation makes use of arithmetic averages. As a mathematical fact, geometric averages of non-identical numbers will always be lower than arithmetic averages, meaning that CPI will always show lower increases than RPI even if the two measures are using exactly the same source data.

Historically, the so-called formula effect has been a very stable 0.5 percentage points per annum. However, in recent months the effect has been measured at around 1.0 percentage points per annum. The ONS attributes this increase to changes in the way that it is measuring certain prices, most notably the prices of clothing and footwear. Specifically, because the ONS is now using a much larger number of data points to track the price of clothes and shoes, the dispersion in the data set has grown and the gap between geometric and arithmetic averages has widened.

Now that the ONS has confirmed that it will not be making any remedial changes to the RPI calculation, it is not tenable to assume that the formula effect will be the historical 0.5 percentage points per annum. The OBR in its forecasts allows for a formula effect in the future of **0.8 to 1.0 percentage points** per annum.

Added to the two other factors identified above, the net result is that RPI-measured inflation will sit naturally 1.3 to 1.5 percentage points above CPI-measured inflation.

RPI-measured inflation of 3.4% per annum is a higher run rate than we included in our pre-2012 forecasts and means that any given nominal rate of input inflation will now convert to a lower rate of real input price inflation relative to RPI (but not, for the avoidance of doubt, to a higher rate of real input price inflation relative to CPI).

Our RPI forecasts follow the December 2013 OBR financial year projections as set out below.

Table 5.2: RPI-measured inflation forecasts

	RPI-measured inflation
2014/15	3.0%
2015/16	3.4%
2016/17	3.6%
2017/18	3.8%
2018/19	4.0%
2019/20 and thereafter	3.4%

6. Conclusions and Interpretation

Table 6.1 combines the numbers in sections 4 and 5 into overall calculations of RPEs.

Table 6.1: First Economics' RPE estimates

	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20 to 2022/23
Labour – general	(0.2)	0.3	0.7	0.7	0.4	0.85
Labour – specialist	1.1	1.6	1.9	1.9	1.6	2.1
Materials – general/civils	1.5	1.1	0.9	0.7	0.5	1.1
Materials – electrical	2.0	1.6	1.4	1.2	1.0	1.6
Plant and equipment	(0.5)	(0.9)	(1.1)	(1.3)	(1.5)	(0.9)
IT	(2.25)	(2.65)	(2.85)	(3.05)	(3.25)	(2.65)
Property rentals	(0.5)	0.0	0.0	(0.1)	(0.3)	0.85

The story that this table tells is broadly consistent with the forecast we made 12 months ago.

Compared to Ofgem's RIIO-T1 final proposals for NGET, we can observe that:

- both sets of forecasts converge to similar long-term trends; but
- our forecasts diverge slightly from Ofgem's numbers in the period 2014/15 to 2018/19, when we see lower RPEs than Ofgem provided for in its final proposals, primarily due to our baselining of RPEs against much more elevated RPI readings.

Compared to the CC's RPE calculations in the NIE price control inquiry:

- we have very similar numbers for general labour, materials and plant and equipment RPEs; but
- unlike the CC, we provide for a sector-specific/specialist labour premium for the reasons set out in section 4.

As ever, there is opportunity for anyone using this analysis to cherry-pick from the different pieces of work and to produce either much lower or much higher numbers than either we, Ofgem of the CC have calculated. We would caution against this and are happy to commend the estimates in table 6.1 as an intuitively sensible snapshot of likely RPEs over the next ten years.

First Economics

First Economics is an economic consultancy that advises regulators, companies and government bodies on a wide range of regulatory, economic and financial issues.

For further information, go to: www.first-economics.com