ESSENTIAL READING

Key Issues Meeting 2: The outlook for wages

(SEAD) (CAPD)[1]

At Key Issues 2, we plan to outline our preferred explanations of the weakness of wages and the risks around our forecast for wage growth. As we will take you through at Key Issues 1, our central assumption is that slack in the labour market has substantially reduced over the past few years, but a challenge to that is the persistent weakness in wages. To cross-check our slack judgement we will present evidence for what we think are more likely explanations of the weakness in wages. We will also discuss the risks around these judgements, and ask whether you would like to incorporate a different profile for wages into the central projection or change the balance of risks around the inflation fan.

Key points:

- Wage growth since mid-2013 has been weak. Over that period, year on year wage growth has averaged 1.1%, with ULC growth of 0.3% and UWC growth of 0.7%, even though the unemployment gap has fallen by 1.3pp and productivity growth in heads has averaged 0.9% per annum.
- This is not the first time we have faced the challenge of explaining weak wages: in August 2014 we partly rationalised the weakness of wages with a judgement to revise up labour supply. Since then, however, data revisions, in particular to productivity, have re-opened the question, while evidence from our supply stocktake has led us to unwind some of the judgements made in August 2014. This note therefore considers a number of candidate explanations for the weakness in wages.
- The stocktake on labour supply identified substantial risks around our estimates of potential labour supply, so it is possible that more labour market slack could explain at least some of the weakness in wages. But labour market slack would need to be 1-2pp larger than currently assumed to explain <u>all</u> of the weakness in wages. While a combination of scenarios could potentially give this much slack, such a combination is unlikely. And the timing of the weakness means this extra slack would have to arise just as the unemployment rate started falling rapidly. That leads us to consider other possible explanations.
- We find little evidence to suggest that weak wages could have been caused by pent-up wage deflation, or factors driving a price wedge between the consumption and product wage.
- But we think some candidate explanations provide a more convincing explanation. Labour force compositional effects on pay and productivity can account for some of the absolute weakness in wages – though importantly, not for all of it. Models with non-linear Phillips curves, reflecting nominal wage rigidities, can better account for the weakness of wages over the past few years. And while we think low inflation expectations are unlikely to account for a large part of the weakness in wages, there are signs that employees' wage expectations have drifted down.
- These explanations seem broadly consistent with the current profile of wages in the Benchmark forecast. But we think they point to a downward skew to the balance of risks to wages, and hence inflation, to the extent that we think these drivers of weak wages may be more persistent than currently projected.
- Although it is hard to identify distinct upside risks to wages, our suite of wage models would unwind the current weakness more quickly, and that would push inflation somewhat further above target at the end of the forecast.

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[1] With thanks t

Section 1: The inflation narrative and the weakness of wages

The March Open Letter said that ⅔ (1pp) of the deviation of inflation from target was accounted for by unusually low contributions from movements in energy, food and other goods prices and ⅓ (0.5pp) by more generalised subdued inflationary pressure resulting from weak growth in domestic costs, including subdued growth in wages. Since the letter was written, inflation has fallen back a further 0.5pp to 0%. But it is still the case that around 0.5pp of the deviation of inflation from target appears attributable to weak domestic costs.

As was discussed in the February forecast round, wage growth has been weak for some time. Since mid-2013, year-on-year wage growth has averaged 1.1%, with ULC growth of 0.3% and UWC growth of 0.7% (**Chart 1**). In part, the weakness of wages reflects weak productivity growth and the impact of slack on wages. Over the same period the unemployment gap has been positive, but has fallen by 1.3pp, whilst productivity growth in heads has averaged 0.9% (**Chart 2**). Average hours have risen strongly over the period so growth in productivity in hours (at 0.5%) has been weaker than growth in productivity in heads.

Chart 1: Wages and labour costs

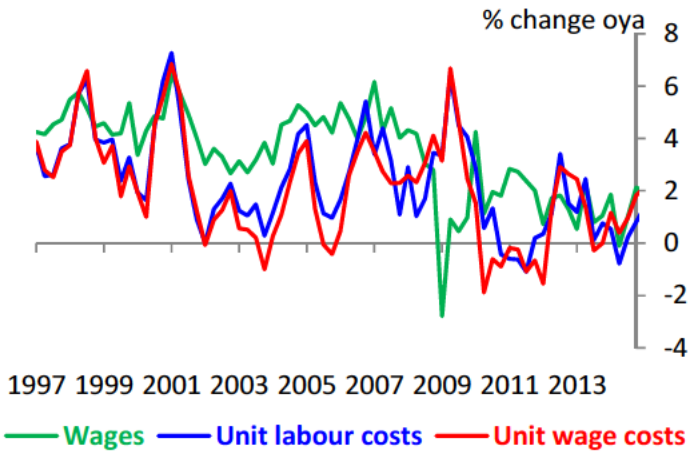
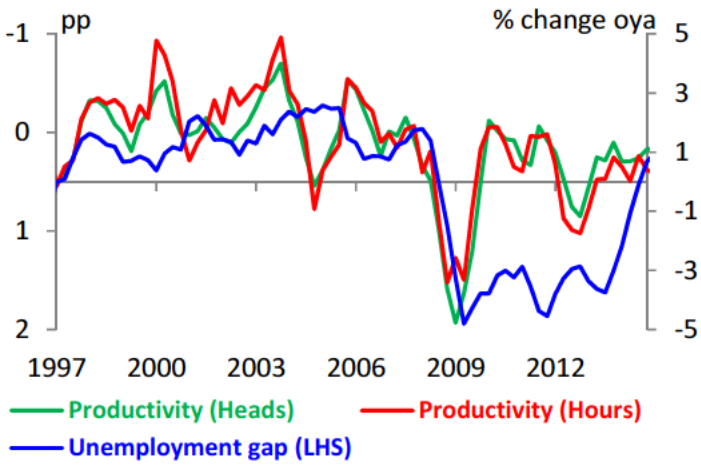


Chart 2: Productivity and labour market slack



The fact that wage growth has been weak is not in itself that surprising. And given the range (and scale) of the shocks hitting the economy during the crisis and since, it is probably not that surprising that we cannot explain the precise path of wages using simple models. There are likely to be many factors influencing wages at the moment. Even so the recent weakness of wages presents a challenge of explanation. We can't just rely on simple relationships between wages, slack and productivity. This note tries to help improve our understanding of the drivers of wage growth and what they might imply for wage growth in the future.

According to SEAD's simple suite of linear wage equations, which relate private sector wage growth to productivity, labour market slack and market sector prices, average annual wage growth 'should' have been between **1.5% and 3% higher** over the period from 2013Q3 to 2014Q4, given the outturns of the model inputs over that period. These wage residuals are evident across models that include the labour share in the estimation, and those with a simple Phillips curve relationship excluding a labour share term. The errors are also evident if the total hours gap is used to measure labour market slack rather than the unemployment gap (**Chart 3**). Persistent negative wage growth residuals of the magnitude that we have observed would be highly unlikely in the absence of autocorrelation in the residuals, even though individually the 'errors' are generally within the range of uncertainty we might expect from the models (**Chart 4**). That indicates we may be missing something in the wage equations that is persistent.

Chart 3: Wage suite conditional forecast errors since 2013Q2

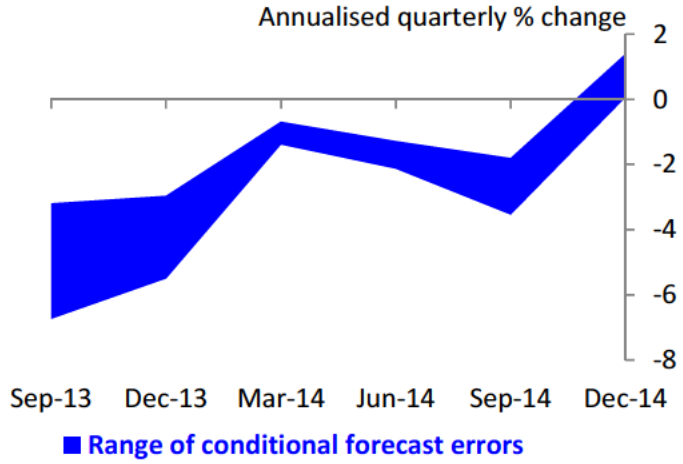
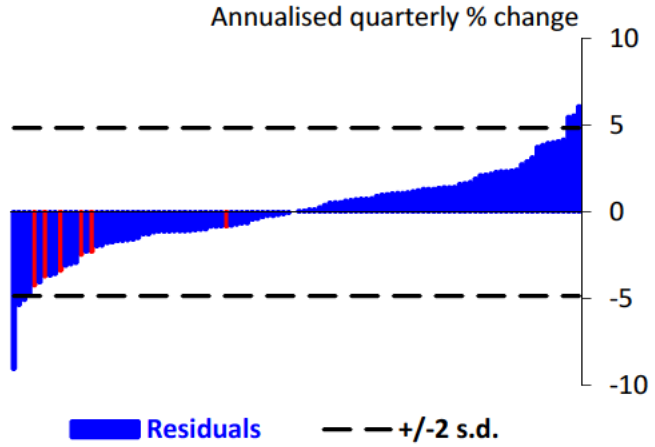


Chart 4: Distribution of residuals from a wage suite model (2013Q3-2014Q4 in red)



This is not the first time we have faced this issue. In August 2014, the MPC took a signal from the persistent weakness in wages (averaging around 1¼% weaker on an annualised basis over 2013Q3-2014Q1) that led the MPC to revise the estimate of the output gap wider: that removed around ⅔ of the residuals in simple wage equations.[2] Since then, however, private sector productivity in heads over the period has been revised up because of revisions to GDP in the 2014 Blue Book. And, given the supply stocktake work presented in KI1, the staff view is that the labour participation gap should, if anything, be revised lower over the recent past. To reconcile the wage residuals, the output gap would now have to have been between 1pp and 2pp wider on average over 2013Q3-2014Q3, with the mean across models being 1½pp.

Finally, we should note that there are some measurement issues around wages at the moment that are worth bearing in mind. We do not think, however, that these are likely to be the main explanations for the weakness.

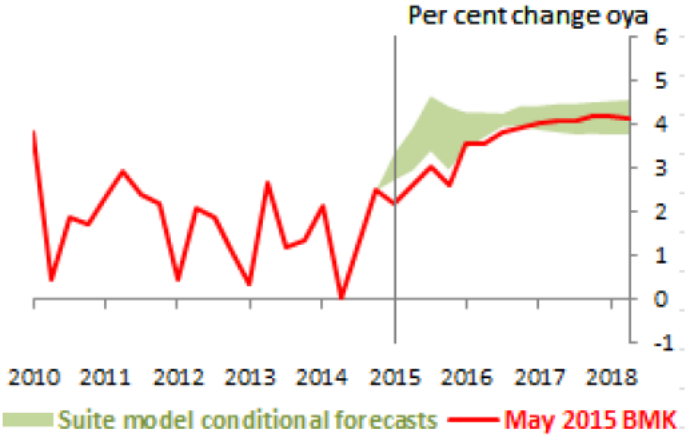
- One issue is that the annual growth of wages and salaries per head incorporated in the unit wage cost data is around 1pp stronger than AWE total pay growth in 2014Q4. That reflects a boost to wages and salaries in 2014Q1 due to a balancing adjustment to align the income measure of GDP with the other measures. According to the ONS, however, the AWE data are likely to give the better steer and so UWC and ULC growth rates are probably weaker than shown here.
- The weakness of wages might be slightly more pronounced once data from the most recent ASHE survey for employees of very small companies[3] are incorporated into the AWE data (which does not capture such firms). The growth in pay for these employees was much weaker than for those in larger companies and will reduce annual pay growth in 2014. The precise scale of the revision is uncertain but an upper bound is 0.4pp. This revision is likely to take place in the summer.
- It's also worth noting that the 2014Q4 year on year wage growth outturn of 2.1% was broadly in line with what the wage suite predicted given the model inputs (**Chart 3**). But we think that particular wage growth outturn is likely to be overstated due to an erratic bonus effect which we do not expect to persist: regular pay growth was 1.7%. Consistent with that, data that we have seen so far suggests that Q1 wage growth is once again likely to be weak – for instance the February AWE outturn was 1.7%, a little less than expected. The base effect that this bonus erratic might then generate poses a communications challenge, though, as the table in the Inflation Report will show a revision to the 2015Q4 wage forecast from 3 ½% in the February IR to 2 ½% now, which is likely to draw some attention.

[3] Very small companies are those with fewer than 20 employees.

The profile for wages and inflation in the forecast

The wage suite models predict slightly faster growth rates of AWE over the forecast horizon than the Benchmark projection, although the model residuals narrow over the forecast (**Chart 5**). In the suite models that contain an error correction term to capture the long-run relationship between wages, productivity and output prices, wage growth is forecast to be higher to make up for the past weakness in wages.

Chart 5: Wage suite and benchmark AWE forecasts



In the Benchmark forecast, a pick-up in wage growth is underpinned initially by further falls in labour market slack, and throughout by steady (though historically weak) growth in productivity. Year-on-year wage growth picks up gradually from around 2.1% in 2014Q4 to around 4% from 2017Q1 onwards; that is around 0.3pp below its 1997Q1-2007Q2 average. Growth in ULCs picks up from around 1.2% at the start of the forecast to reach 2.7% at Year 3, whilst UWC growth picks up from 1.5% to 2.5% at Year 3 (**Chart 6**). With non-fuel import prices broadly flat at the end of the forecast and energy contributing 0.3pp per year to inflation, annual unit labour cost growth well above 2% is required to maintain aggregate cost growth and hence inflation at 2%. The output gap closes in the second half of this year and remains closed over the remainder of the forecast, and productivity growth in heads averages 1.6% over the forecast, whilst growth in productivity in hours picks up gradually from around 0.5% at the start of the forecast to 1.8% at Year 3 (**Chart 7**).[4]

Chart 6: Wages, labour costs and inflation over the forecast

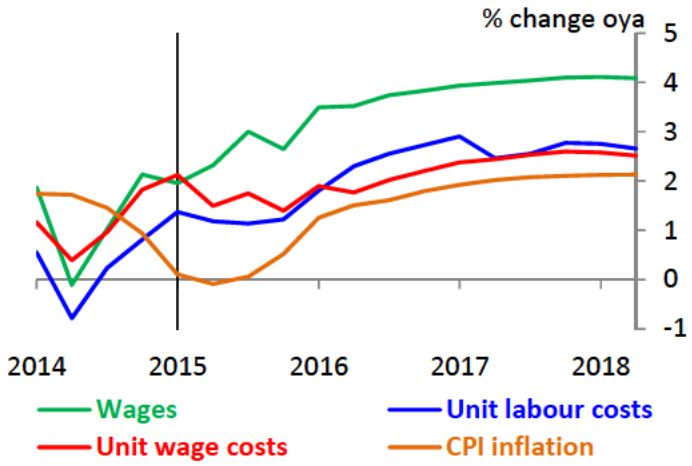
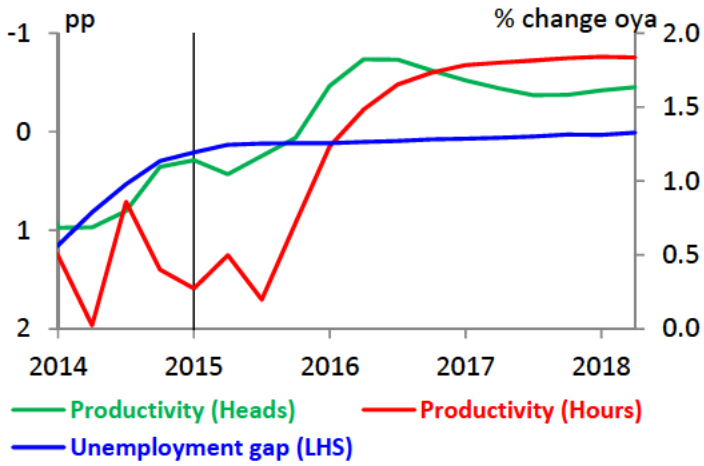
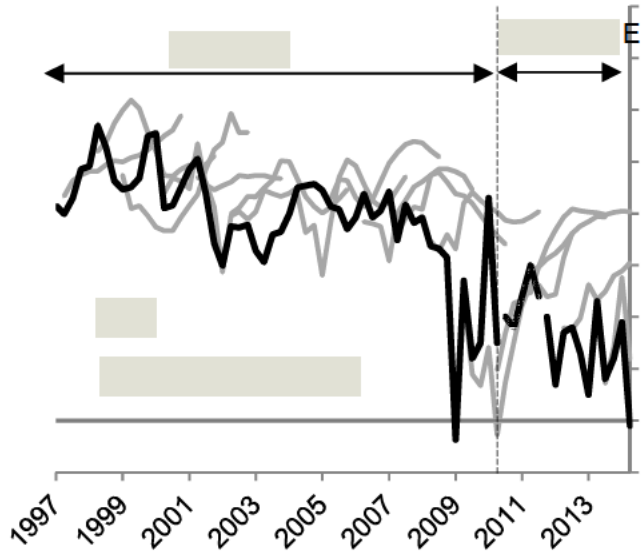


Chart 7: Productivity and labour market slack over the forecast



The outlook for wages is, of course, crucially important for the inflation projection. In particular, as the MPC has said that it intends to return inflation to target within two years, and that is currently the case in the Benchmark projection, a different central case for the wage profile would, all else equal, cause inflation to deviate from target at Year 2.

[4] Productivity in heads does not pick up even though productivity in hours does, as the growth rate of average hours slows over the forecast.



This note examines the question of why wages are weak in more detail to inform views on the most likely explanation for the current weakness of wages and the subsequent implications of that for the outlook for wages and inflation. The next section presents evidence on a number of candidate explanations for the weakness in wages, and the final section sets out potential risks to the inflation forecast in either direction depending on what weight is placed on the different explanations.

Section 2: What might be causing the weakness of wages?

This section sets out what we think are the most plausible set of candidate explanations for weak wages. We then provide a range of evidence, summarised in **Table 1**, to help us reach a view on which of these may be the most likely explanations, before turning in the subsequent section to consider which explanations are consistent with the Benchmark forecast profile and the forecast implications of alternative explanations.

Table 1: Potential explanations for the weakness of wages

Explanation	Evidence	How likely do we think this explanation is?	Implications for wages and inflation
Compositional effects – the changing face of the workforce	Data on the composition of the workforce suggest this has dragged on wage growth. Residuals from a wage suite using data stripping out compositional effects from pay and productivity are less than 2/3rds those of the standard suite.	High	Consistent with Benchmark, but risk that drag is more persistent; even then, no impact on inflation
Different Phillips Curves	Time-varying parameter model points to some steepening in the Phillips curve, although it is unclear why. Assuming a convex Phillips curve, which could be consistent with nominal wage rigidities, reduces wage equation residuals.	Medium	Consistent with Benchmark.
Expectations: inflation, wages or productivity	Inflation: does little in our equations, and fall-off in expectations is too late to explain the residuals in simple wage equations. Wages: survey measures of expectations have fallen back, though time-varying parameter model is not supportive. Productivity: evidence on sensitivity is mixed. Low expectations of productivity could be dragging, but timing is hard to square.	Medium	Risk of a larger near-term drag, particularly from wage expectations; bigger (but unlikely) downside risks if expectations de-anchor more fully
More slack than we've assumed	Supply stocktake found little evidence of an extra 1-2pp increase in labour supply required to explain all the weakness in wages. The timing of the required extra slack is also difficult to explain. But extra slack could plausibly account for some of the weakness in wages.	Medium	More persistent drag on wage growth and inflation
Unusually long lags from slack	Rolling regressions do not indicate longer lags have become more statistically significant. Some other explanations (expectations, different Phillips curves) could appear observationally equivalent to longer lags.	Low	Consistent with Benchmark; upside risk if weakness unwinds faster than expected.
Wages still need to reach steady state labour share (pent up wage deflation)	Real wages have more than adjusted to weak productivity, even as slack has fallen back, so labour share is below average. It is hard to confirm or rule out the possibility that the equilibrium labour share could have fallen. Long run UK data do not point to a downward trend, but weight of international evidence suggests we should consider the possibility.	Low	Continued drag until adjustment is complete.
Wedge effects	Falling import prices could in principle make it easier for wage growth to remain subdued, but such wedge effects are not statistically significant in our wage equations.	Low	Temporary drag on wage growth and inflation.

Compositional effects – the changing face of the workforce

As we have discussed in the past, the absolute weakness in wage growth may reflect compositional changes in the workforce. Over the past 20 years, compositional effects have pushed up on annual wage growth (and productivity5) by an average of ½pp, largely accounted for by improvements in qualifications and the shift to more skilled occupations. Over the recession the contribution of compositional effects rose to a peak of about 1½pp (about 1pp more than normal – **Chart 9**). A large proportion of this reflected stronger than usual contributions from qualifications and occupation as lower-skilled workers and jobs were cut. Tenure and age also pushed up by much more than usual during the recession (probably reflecting low hiring/job-to-job moves and low hiring of young workers). But as the economy has recovered and employment risen, compositional effects have weakened. In the year to 2014Q4, compositional effects dragged by ½pp – that's about 1pp more than normal (**Chart 9**). This reflected

[5] May 2015 Key Issues Meeting 1: Key risks around the supply judgement).

more lower-skilled workers and lower skilled occupations, and probably younger workers getting jobs for the first time (ie the unwinding of the cyclical effects during the recession).

Chart 9: Compositional effects on wage growth relative to normal

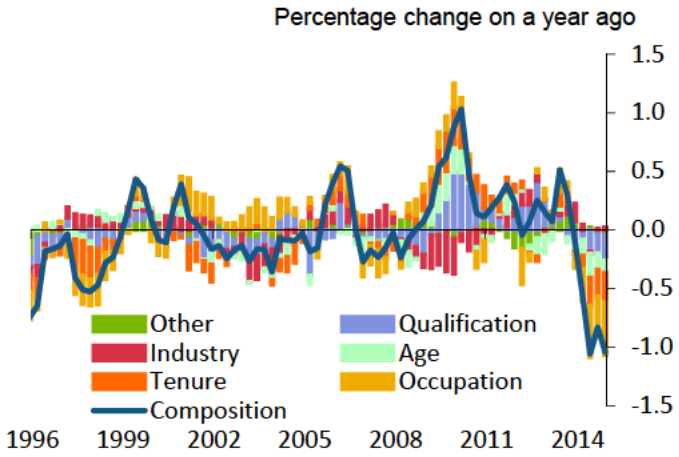
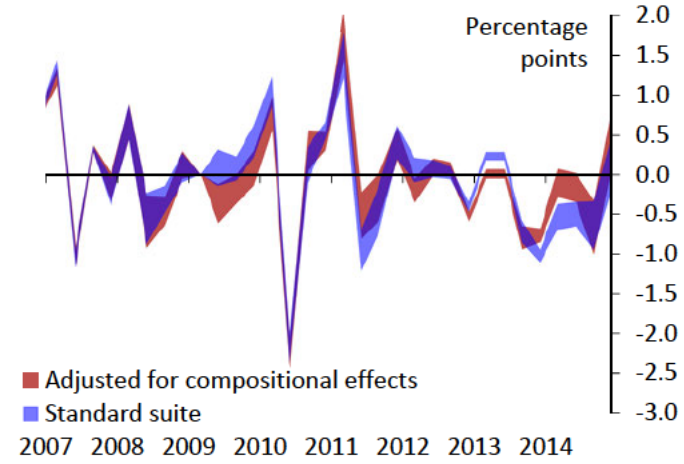


Chart 10: Residuals from wage suite with and without adjustment for compositional effects



Aside from explaining the absolute weakness in wages, compositional effects may also explain a little over a third of the recent unexplained weakness in wages. Changes in the composition of the workforce will have a simultaneous effect on both wages and productivity – this means that the effect on unit labour costs is limited. But it is also means that the impact of changes in the compositional effects on productivity feed through to wages more quickly than other shocks to productivity. For example a technology shock would quickly feed through to lower measured productivity, but would take time to feed through to wages. Our wage equations are based on the average of all shocks to productivity, so they may under-estimate the drag on wages from weak productivity when it is being driven by compositional effects. It is possible to assess the contribution of compositional effects to the relative weakness in wages by adjusting both wages and productivity for these effects and then re-estimating the standard suite wage equations. These re-estimated equations point to smaller residuals in simple wage equations, suggesting compositional effects can explain over a third of the weakness in wages (**Chart 10**). Accounting for compositional effects also reduces the positive residuals in the wages suite in 2009/10 when compositional effects were pushing up on pay.

Compositional effects are unlikely to continue to drag on wages and productivity indefinitely – this suggests that productivity growth should pick up – consistent with the Benchmark – and the weakness in wages will unwind. The recent drag from compositional effects relative to normal unwinds much of the unusually large boost to pay seen from 2008 to 2013: the remaining net cumulative contribution to the level of pay is around ¾pp (**Chart 11**). If all this variation reflects cyclical changes in the mix of the workforce (as lower-skilled workers are the first to be made redundant in a recession and the last to be re-hired) then this suggests there is relatively little drag still to come, and the Benchmark is consistent with a rapid easing of the drag from compositional effects over the course of 2015. But there are risks around this. Compositional effects could continue to pull down on the average labour quality (and hence wage growth) if there are other structural changes to the composition of the workforce that will persist. On the other hand some of the current drag from compositional effects reflects the increase in the number of workers with short-tenure in their current job – to the extent this reflects recent high job creation rates, this effect should unwind (pushing up on wage growth) as employment growth slows and workers gain more experience in their current job.

Chart 11: Cumulative contribution of compositional effects to pay since 2008Q1 (relative to normal)

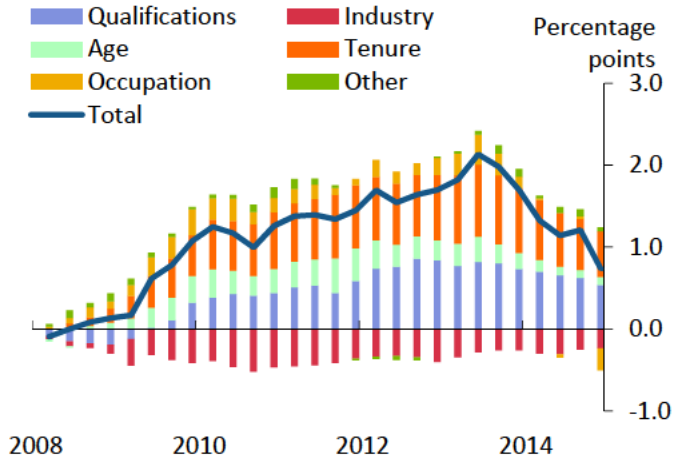
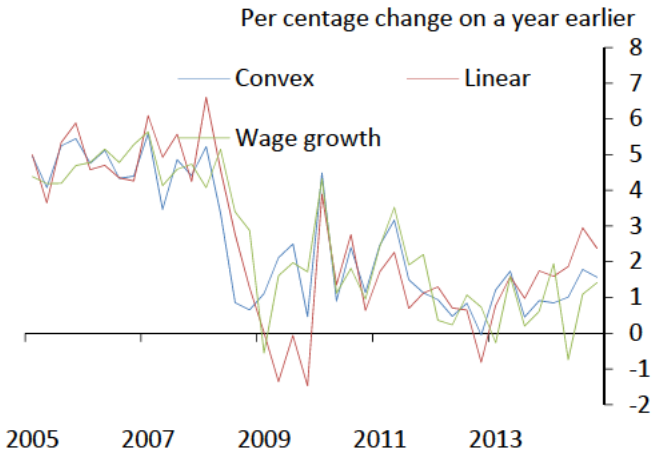


Chart 12: Convex Phillips curve estimation



Different Phillips Curves

Most models of wages assume a fixed or linear wage Phillips curve - but alternative specifications can account for more of the weakness in wages.

There are clear theoretical justifications for assuming convexity in the inflation-unemployment trade-off. Daly and Hobijn (2014)[6] have recently shown how the presence of downward nominal wage rigidity bends the Phillips curve, as it limits the ability of wages to fall sharply in response to a large output gap. Work by Srđan Tatomir shows that while the extent of downward real wage rigidity may have fallen in the recent recession, there was no evidence of a reduction in downward nominal wage rigidity.[7] The original Phillips (1958)[8] article also stated in the opening paragraph that '[t]he relation between unemployment and the rate of change of wage rates is [...] likely to be highly non-linear...'. A model with a convex Phillips Curve (described in detail in Working Paper 519,) can account for much of the weakness in wages over the past few years (**Chart 12**). In this framework, the effects of the large increase in unemployment were muted by the convexity of the Phillips curve, so that even as the unemployment gap narrowed the reduction in the drag from slack was also muted. With unemployment now close to trend levels, the effects of any non-linearity are likely to be limited so the pickup in wages should be similar to that expected in the Benchmark.

An alternative explanation for the weakness in wages is that wages have become more sensitive to labour market slack over the past few years for some other reason. Work by Ivan Petrella to estimate a time varying parameter model of wages as a function of unemployment, productivity and inflation expectations suggest that wages have become more sensitive to slack. But while this suggests that the Phillips Curve has steepened, with the amount of slack in the labour market diminishing, the effect of slack on wages is broadly similar to that in our main suite of equations, so this would point to a wage forecast similar to Benchmark.

[6] Daly, M. and B. Hobijn (2014) .Downward Nominal Wage Rigidities Bend the Phillips Curve., Federal Reserve Bank of San Francisco Working Paper Series, No. 2013-08.

[7]

[8] Phillips, A. W. (1958). The Relation Between Unemployment and the Rate of Change of Money Wages in the United Kingdom, 1861-1957., Economica, November.

Low inflation expectations or more of a drag from expected productivity weakness

Expectations about inflation, wages and productivity might explain some of the weakness in wages.

Weakness in household inflation expectations can only account for a small proportion of the weakness in wages in our suite of wage equations. Household 2-year ahead inflation expectations are statistically significant in some specifications of wage equations, and can account for some of the unexplained residuals in the wage equations, but the estimated effect on wage growth is currently small and the residuals from this model look similar to those in the rest of the wage suite (**Chart 13**). And the timing is wrong: the weakness of wages predates the fall in inflation expectations measures. Nevertheless, low inflation expectations could drag on wage growth over the forecast.

Evidence on wage expectations is more limited than that on inflation expectations. Survey measures suggest that employee wage expectations are drifting down (**Chart 14**), perhaps reflecting a gradual adjustment in expectations to the persistent weakness in wages. That may have enabled companies to keep pay increases relatively low. But estimates of trend wage growth from the time-varying parameter model of wages described above have drifted down only slightly.

Chart 13: Residuals from wage equations

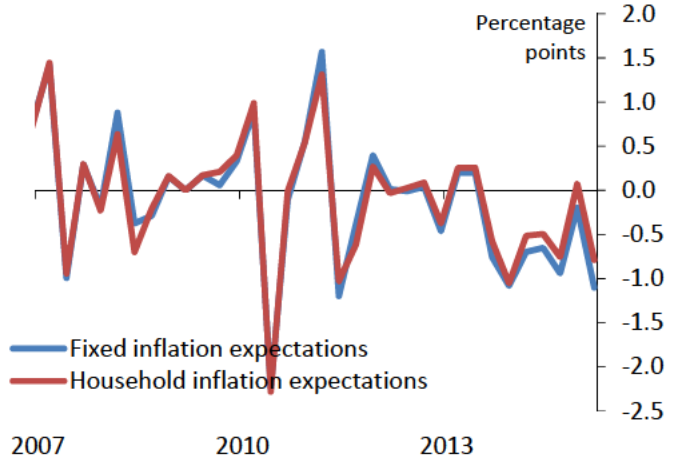
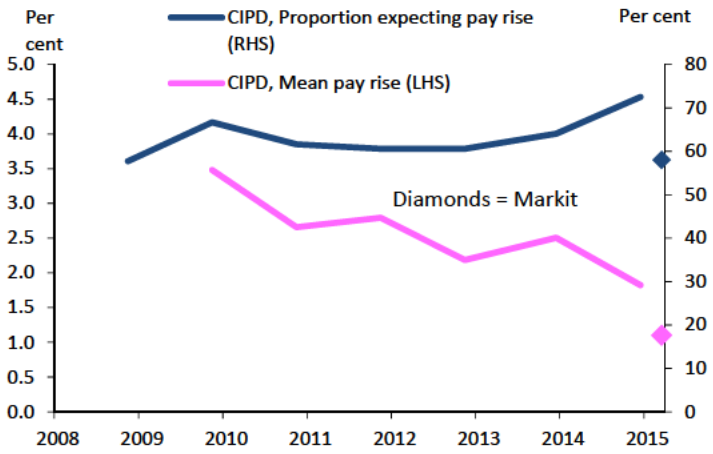


Chart 14: Wage expectations of employees



One suggestion for the weakness in wages is that wages have become more sensitive to productivity. But the time varying parameter model of wages described above suggests that wages have become, if anything, less sensitive to movements in productivity. However, if expectations of productivity growth have fallen this could account for the recent weakness in wages – with sticky wages we would expect current wages to reflect expectations of productivity over the next few years as well as current rates of productivity. But with productivity having been weak for many years it is unclear why this should have a larger impact on wages from mid-2013. If expectations of productivity have fallen, this would lead to weak pay growth in the near-term, but would be expected to unwind as workers observe an actual increase in productivity and demand higher pay.

There is more slack in the labour market than currently assumed

The stocktake on labour supply identified substantial risks around our estimates of potential labour supply[9], so it is possible that more labour market slack could explain at least some of the weakness in wages. But as discussed above, labour market slack would need to be 1-2pp larger than currently assumed to explain all of the weakness in wages. While a combination of scenarios could potentially give this much slack, such a combination is unlikely.[10]

[9] Labour supply stocktake - summary note

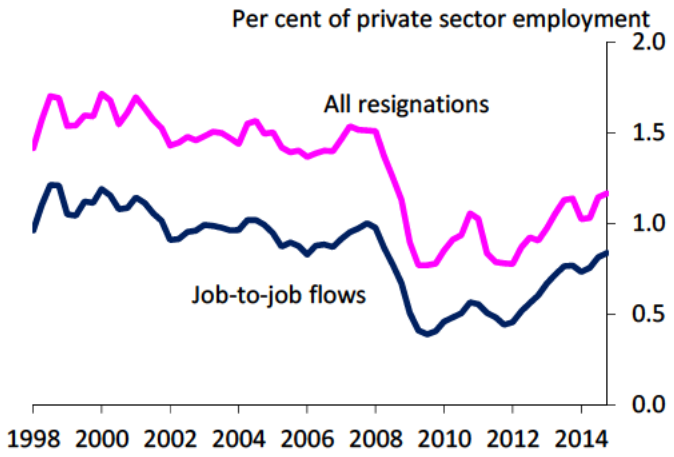
[10] May 2015 Key Issues Meeting 1: Key risks around the supply judgement

There is also a timing issue: the weakness in wages has occurred as labour market slack has fallen sharply over the past two years. It is not obvious what might explain the necessary offsetting increase in labour supply over this period to account for all the weakness in wages. While it is possible to identify risks around the general level of potential labour supply it is harder to identify reasons why labour supply might have increased over the past two years to offset the fall in unemployment and rise in average hours. One potential source of additional labour market slack would be from an increase in potential migrants to the UK. Estimates of the number of foreign workers searching for jobs in the UK have picked up in recent years, but these estimates suggest they can only account for a tenth of a percentage point of labour supply.[11] The wedge between our estimate of trend average hours and the Bell & Blanchflower measure of desired hours has also widened in recent years, but the timing is not fully consistent with the weakness in wages.

Unusually long lags from slack

It could just be that the erosion of slack is taking longer to feed through to pay than usual. In the past we have noted that job-to-job flows are weak (**Chart 15**), which would imply that firms are having fewer retention problems and that fewer workers are willing to seek pay rises by moving to other firms. But a lack of comparable data for past recessions means that it is hard to tell how unusual the current weakness in job-to-job flows is. And wage regressions using a rolling sample period do not provide evidence that lagged slack has become more important for wages; if anything longer lags have a declining role in wage determination. But some of the alternative explanations for the weakness in wages described above might generate a profile that looks similar to longer lags from slack to wages. For example, the weakness in wages generated by changes in expectations may delay the response of wages to changes in slack. The Agents' impression is that the crisis has affected firms' behaviour in ways that may take a while to reverse – for instance they report a much tighter focus on cost control than before the crisis, so may be more cautious about awarding pay rises as the economy recovers.

Chart 15: Private sector job-to-job flows



Wages still need to reach steady state labour share (pent up wage deflation)

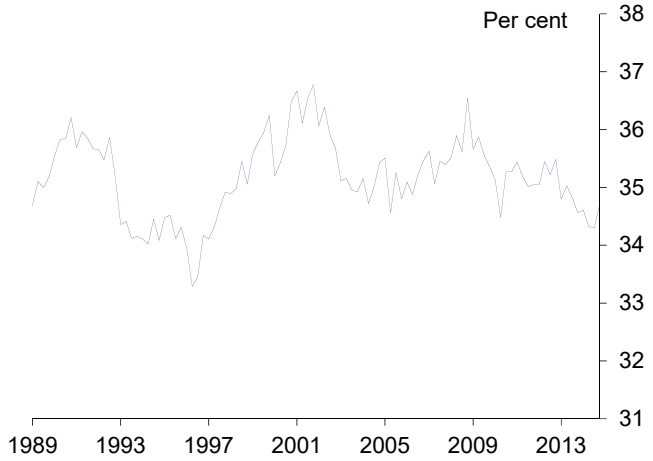
Nominal wage rigidities could mean that during the recession wages did not fall as much as necessary following the weakness in productivity: this could then act to drag on wage growth even as productivity starts to recover.

In the UK there was some evidence that nominal wage rigidities did slow the adjustment of real wages to weak productivity in the immediate aftermath of the recession, but it is not clear that there is still pent up wage deflation in the UK. Initially, real product wages didn't fall in line with the weakness in productivity. But over recent years real wages have more than caught up with the weakness in productivity: the labour share is now below its 20-year average (**Chart 16**), and those wage equations that include an ECM term therefore indicate that wages have overshot the warranted wage.

On the other hand if the steady state labour share has declined in the UK over recent years then wages would have to fall by more than the weakness in productivity, and our suite equation ECM terms, would imply. Models of wages that do not include an adjustment to a warranted wage have smaller, but still substantial, residuals. This might imply that we are wrong to assume that wages have over-adjusted to the weakness of productivity. A VAR of productivity growth, unemployment and the labour share conditioned on the May Benchmark indicates that the labour share should be expected to rise, with the historical joint dynamics of these three variables pointing to a similar pickup in the labour share to that in the Benchmark.

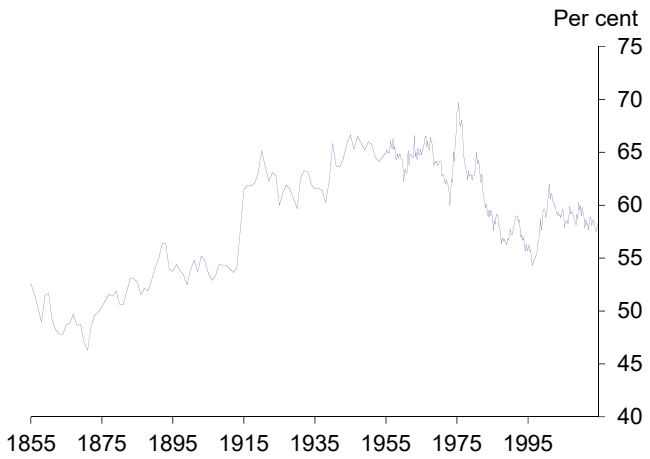
Looking at data for the UK, the labour share in the UK appears to be stable over the long-term. **Chart 16** shows that the UK labour share used in our suite of wage equations has been fairly stationary for the past couple of decades, and that is true regardless of whether you look at the whole economy or private sector measure. But there have been substantial fluctuations over the sample, with the labour share ranging from 52% to 58% in the private sector. In the more recent data during the 2000s, the labour share has declined, although adjustment is lumpy and it is difficult to discern a trend. Taking the longer perspective in **Chart 17**, however, it might seem that the labour share has declined substantially during the post-war period. But given the relative stability in the labour share over the past twenty years, the fall over the post-war period appears to reflect an adjustment in the early 1980s rather than a steady trend. And an even longer-run picture provides evidence that the UK labour share is, if anything, higher than it was in the late 19th and early 20th century (**Chart 17**).

Chart 16: Private sector labour share used in the wage suite[(a)]



(a) The labour share calculated on the basis of the Average Weekly Earnings (AWE) data, is the term that enters into our wage suite equations. It only includes wage income, excluding non-wage costs such as pensions and employer national insurance contributions.

Chart 17: Labour share from National Accounts data[(a)]



(a) Compensation of employees divided by nominal GDP at factor cost.

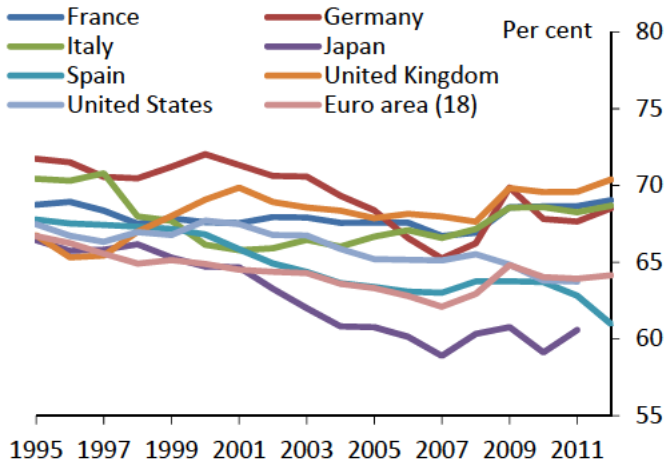
Assuming a stable UK labour share would be unusual in an international context – where the labour share has fallen in many countries. OECD data on the labour share for a variety of countries indicate that the UK went from having the lowest labour share in the late 90s to the highest labour share by 2012 (**Chart 18**). The median decline in the labour share in the OECD was around 4.5pp from the early 90s to the late 2000s.

It is also possible that there may be structural factors that mean there is a downward trend in the labour share, rather than a stationary steady state, and that could imply more weakness in wages still to come. But finding firm evidence on these is hard. Karabarbounis and Neiman (2013)[12] suggest the international decline in the labour share is driven by a decrease in the relative price of investment goods since the 1980s, and the OECD's 2012 Employment Outlook found that capital deepening and globalisation were significant factors in accounting for the decline in

[12] Karabarbounis, Loukas and Brent Neiman (2014), The Global Decline of the Labor Share, Quarterly Journal of Economics, pp. 61-103

labour's share – although this finding relies heavily on an elasticity of substitution greater than one between capital and labour, which is an unusual finding. Another recent study by Elsby et al. (2013)[13] comes to the conclusion that the significant decline in the US labour share is attributable to off-shoring of labour intensive procedures. Furthermore, and consistent with Elsby et al. (2013), the majority of the fall in labour's share is accounted for by within-industry declines, rather than across industry compositional effects. This suggests that there are several interesting avenues for research into factors affecting the labour share, but at this stage there is little to suggest that the labour share should be persistently weaker in the UK.

Chart 18: Labour's share in OECD countries



It is also hard to say definitively what effect, if any, a structural decline in the labour share should have on inflation. Even if there were a trend decline in the labour share, its effect on inflation in the long run would be neutral and in the short term would be ambiguous. All one can say is that, by definition, the pace of unit labour cost growth associated with a given rate of inflation would be lower. Whether, in the short run, that would come about via lower ULC growth or higher inflation would depend on the economic circumstances of the time and the response of monetary policy.

Wedge effects

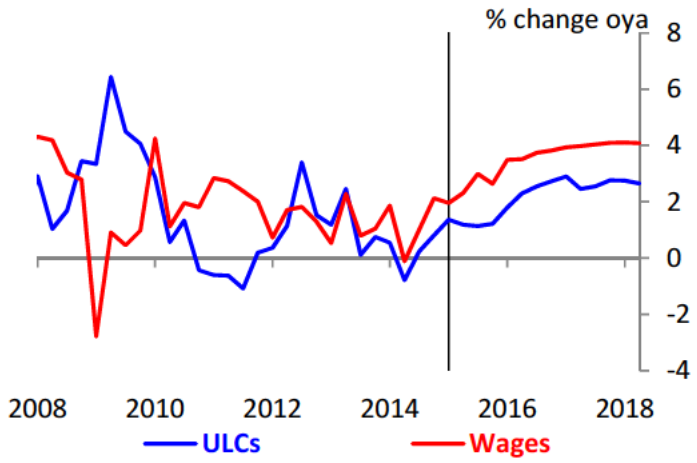
The adjustment of wages to the weakness in productivity during the recession was exacerbated by movements in energy and import prices that created a wedge between consumer and producer prices. The recent movements in imports and energy prices may mean that workers are willing to take smaller pay rises than would otherwise be the case, and Agents' contacts have started to report that this is the case. This is equivalent to the real wage resistance that might be expected following the rise in the price wedge following the depreciation of sterling and rise in oil prices in the late 2000s, but in the opposite direction. In other words, the NAIRU may have fallen. Changes in taxation, which have increased the take-home pay of lower paid workers, may have also eased the pressure on pay growth. But, in estimated wage equations, wedge effects are generally not statistically significant – suggesting that these effects are not a significant driver of pay growth.

[13] Elsby, Michael, Bart Hobijn and Aysegul Sahin (2013), The Decline of the US Labor Share, Brookings Papers of Economic Activity, Fall.

Section 3: Risks to the wage forecast and implications for inflation

This section examines what the different explanations set out above would imply for the profile of wages over the forecast, and which of them are consistent with our current forecast. At Key Issues 2 we will ask you which of these explanations you would put most weight on, and whether in light of that you are happy with the current forecast profile for wages and inflation and the balance of risks around those profiles.

Chart 19: Wages and ULCs over the forecast



Annual wage growth in the May Benchmark forecast picks up quickly, reaching 3½% within a year. In quarterly space this is perhaps even more striking: looking through near term volatility, quarterly wage growth reaches 0.9% by the end of the year, and the growth rate remains around 1% for the rest of the forecast. Part of this pickup reflects the relatively quick pickup in productivity growth, which you will have a chance to discuss at Key Issues 1. But the pickup in ULC growth is equally fast, with annual growth reaching 2¼% by Y1 and 2¾% by the end of the forecast.[14] (**Chart 19**). And the labour share rises by roughly 2pp over the forecast.

Despite the speed of this recovery, the Benchmark forecast for wage growth still picks up less quickly than the suite model would suggest (**Chart 5**). That reflects a judgement to aim below the suite model forecast, effectively building in a bit of persistence in the weakness of wage growth. But the forecasts for wage growth are in line in the second half of the forecast, implying that by that point wage dynamics have returned to normal. Given that, and the fact that the forecast assumes that there is little slack left in the labour market, we think the Benchmark forecast must primarily embody those explanations for wage weakness which do not drag persistently on the growth rate of wages, and those that are observationally consistent with longer lags from slack to wages:

- We are relatively confident that **compositional effects** are playing a part. We do not have a strong reason to expect these to either unwind or continue to drag persistently on growth rates over the forecast, and therefore assume that their effect on the level of wages persists.
- The pickup in wage growth in the Benchmark forecast is broadly consistent with what the model with a **convex Phillips curve** would predict, given the relatively small fall in unemployment over the forecast. In that model, the fact that we have moved back on to a steeper part of the Phillips curve means that the drag fades away once slack is completely used up, so that wage growth picks up quite quickly in line with the Benchmark.
- We think **weaker expectations**, either of wage growth, inflation or of productivity, could have had some effect on wages over the past.
    - The fact that surveys of expected wages for next year have fallen back would suggest that this effect could persist into the first year of the forecast. But to be consistent with the pickup in the Benchmark forecast you would have to believe that weaker expectations had not become entrenched. If you thought that the weakness in wages would unwind once expectations corrected themselves, and that this would come through higher nominal wages rather than weaker prices, then you might even expect growth to be higher than the Benchmark in the later years of the forecast.

[14] Part of the rise in ULC growth reflects the impact of changes to NICs and auto-enrolment that we discussed in the February round. But stripping this out, UWC growth also recovers quickly, reaching 1¾% by Y1 and 2½% by the end of the forecast.

  - Similarly, if wages continued to adjust downwards in anticipation of weaker productivity then this effect could continue to drag at first. But we would expect no further effect once wages had fully adjusted down towards productivity expectations.
- **Wedge effects** and **pent-up wage deflation** could also be consistent with the Benchmark forecast, although we don't find strong evidence for either of them.
- And of course if you thought there was **more slack in the labour market** than we have assumed, then that could also rationalise some of the weakness in wages, although this would lead to more persistent weakness in wages and/or a different path for output than in the Benchmark.

The fact we have already built in a little bit of persistence from these effects would be consistent with having assumed some further drag from compositional effects or expectations. Nevertheless we think the main risks to the forecast are likely to be that these effects drag more than we have built in, leaving the profile for wage growth a little below the current forecast profile in the near term.

Scenarios

Taking this interpretation of the Benchmark forecast for wages as given, as well as our starting estimate of slack, we think the risks around the central projection can be organised into three broad categories. This section presents three alternative scenarios for the central projection, one for each of these categories:

- **Scenario 1: the weakness in wages unwinds faster than we have assumed.** Although wage growth recovers quite quickly in the Benchmark forecast, you could make a case that the recovery should be even faster. The fact that our forecast lies below the swathe of wage suite forecasts provides some evidence for this view.
- **Scenario 2: continued but temporary weakness in wages**. To believe this scenario you would need to put weight on a more persistent drag from factors like weaker expectations or wedge effects, but also think that their impact on the level of wages would unwind as the more fundamental drivers of wages took over.
- **Scenario 3: there will be a more persistent drag on the level or growth of wages.** This could be motivated either by putting more weight on a very persistent drag on wages, for instance from very entrenched weakness in expectations; or by putting weight on a lower steady state labour share than we have implicitly assumed in the forecast, either based on a view that the labour share was structurally declining or just on a view that it need not necessarily trend back towards a particular level.

The impact on **wages** (**Chart 20**) has been calibrated using versions of the wage suite models discussed earlier in this note; we have then used COMPASS simulations to obtain the effects on other forecast variables. The wage profile in Scenario 1 is calibrated using the average forecast from the different models in the suite; the profile in Scenario 2 is calibrated by locking in the residuals from one of the wage suite models for a further four quarters and then letting COMPASS unwind the shocks; and the profile in Scenario 3 is calibrated in the same way as Scenario 2, but forcing the impact on wage growth to unwind more slowly over the forecast and never go above the Benchmark forecast.

The effects of each scenario on **inflation** (**Chart 21**) are straightforward to understand. Since productivity is held fixed in all the scenarios, as are other costs, the change in wages flows directly into unit labour costs and then into inflation. In Scenario 1, the faster pickup in wages means that inflation reaches 2% in 2016Q4, remaining above target thereafter and ending the forecast at 2.3%. Conversely in Scenario 2 slower wage growth means inflation reaches 2% in 2017Q4, two quarters later than in the Benchmark, though the pickup in wages later on in the scenario means it still ends the forecast at 2.1%. Finally inflation in Scenario 3 never reaches 2%: it ends the forecast at 1.7%.

Relative to their effects on nominal variables, these scenarios have little impact on the real side of the economy. Because households expect the changes in wages to eventually be passed through to prices, they view the real income effect of the wage change as temporary and largely smooth through it; the effect on domestic demand is

further offset by the response of net trade to the change in relative prices. So the impact of all three scenarios on the **output gap (Chart 22)**, and hence any associated indirect effects on inflation, is very small.

One risk not captured in any of these scenarios is the risk that **compositional effects** continue to weigh on wages. That is because while we think that these effects have mattered for wages and productivity in the past, we also think that, unlike typical productivity shocks which take a while to feed through to wages, changes in the composition of the labour force should in principle be reflected at once and by the same amount in productivity and wages. As a result, **we think their impact on labour costs and inflation is essentially zero**, although of course productivity and GDP growth would be a little weaker.

Chart 20: Alternative scenarios for wages

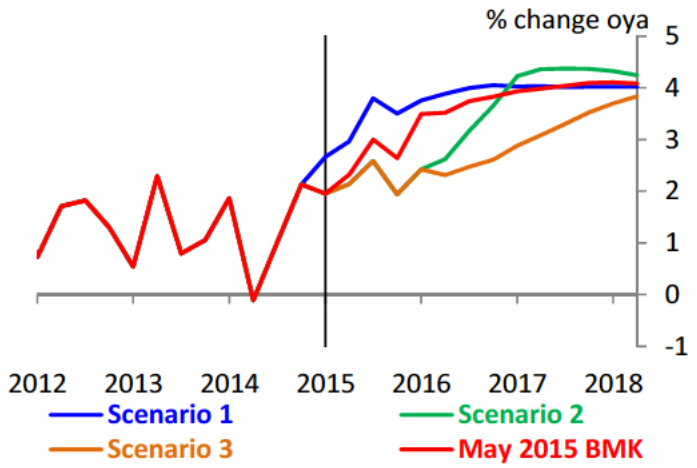


Chart 21: Inflation in the wage scenarios

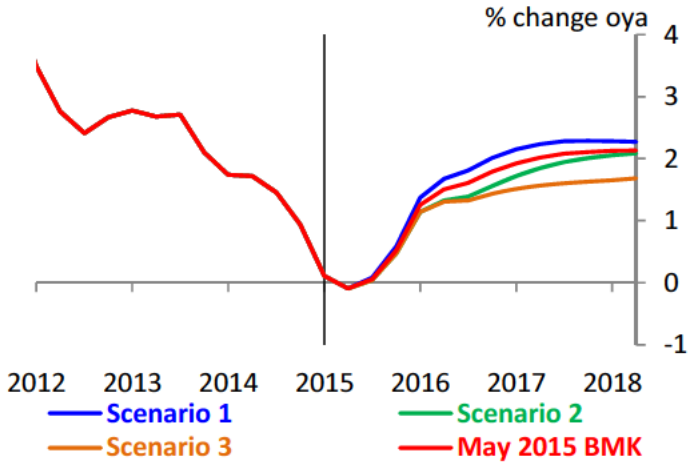
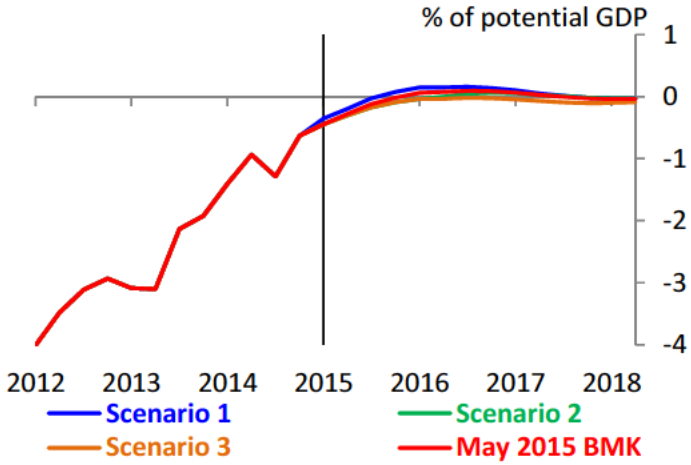


Chart 22: The output gap in the wage scenarios



Conclusion

Wage and unit labour cost growth has been weak for some time despite the speed with which the output gap has closed. That poses a challenge to our view that there is not much slack left in the labour market, and could indicate that there is still more slack than we have assumed. Alternative explanations that we would put weight on include compositional effects, non-linearity in the Phillips curve, and lower wage expectations. We think the Benchmark forecast for wages is broadly consistent with these, although if anything the risks lie slightly to the downside.