



RF

Why 2014 hasn't been the year of the pay rise

The impact of the changing make-up of the workforce on wages

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Summary

1. Slowing wage growth and conflicting data
2. The importance of changes in the workforce
3. The overall impact of compositional changes
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Annex: Methodology and bibliography

1. Slowing wage growth and conflicting data

- While employment has held up surprisingly well since the onset of the financial crisis in 2008 – and has rebounded much more rapidly than most expected in the last 12 months – pay growth has continued to disappoint. Annual increases in the regular pay measure captured in the ONS’ average weekly earnings (AWE) have consistently fallen below inflation, resulting in a six-year pay squeeze.
- Many economists believed that pay would turn the corner in 2014, starting the long road back to recovery. Instead, nominal pay growth has fallen to a new low of below 1 per cent. Although inflation has also fallen, the pay squeeze continues. We may yet achieve positive wage growth before the end of the year, but it appears very unlikely that 2014 as a whole will be considered to be a year of rising pay.
- Yet pay settlement data and some business surveys suggest that pay *is* increasing for some employees. The divergence between such measures and the official AWE data in part reflects the partial coverage of business surveys and the fact that they ask different questions. For example, survey data captures the balance of respondents who say they have increased pay, but not the magnitude of such increases. A given balance may therefore be associated with lower average pay growth than was the case before the crisis.

2. The importance of changes in the workforce

- But the divergence between these different measures also reflects the absence of any *compositional* account in the survey and settlement data. That is, only the AWE measure captures the impact on average pay of changes of the mix of workers and jobs in the UK labour market.
- While the ‘wage effect’ *within* different sectors and worker types accounts for the largest share of the overall slowdown in pay growth in recent years, the ‘employment effect’ associated with compositional change has played an important role. Such compositional changes can pull wages in opposite directions: some boost average pay, others act as a drag – and many will change the direction of their effect at different points in time.
- In this analysis we present a series of ‘shift–share’ analyses to consider the extent to which average wage growth has been affected in recent years by alterations in the industrial and occupational structure of the UK jobs market, changes in working patterns and variations in the age, job tenure, country of birth and qualification mix of employees.

3. The overall impact of compositional changes

- We use regression to control for overlaps across these factors in order to determine the overall impact of compositional change on average pay growth since 2006 and to assess which factors have played the most important roles.
- For most of the period the compositional impact was positive, helping to prop up wage growth. In 2014 however, the effect turned negative. Comparing the first half of 2014 with the first half of 2013, compositional changes reduced nominal pay growth by around 0.3 percentage points (ppts). Three factors were of particular importance:
 - **Occupational changes:** a sharp decline in employees in managerial roles alongside growth in lower-paying caring jobs and elementary occupations pulled down pay by around 0.4ppts
 - **The age mix:** a strong increase in employment among younger (20–29 year-old) workers helped reduce youth unemployment in 2014, but dragged on pay to the tune of 0.2ppts
 - **Job tenure:** as employment surged, the number of people in their job for less than a year grew strongly. These typically lower-paid employees pulled down average pay by around 0.2ppts
- The industrial mix and immigration also had small negative compositional effects in the same period, while changes in working hours, qualifications, sex, regions and the public/private sector mix acted in the opposite direction.

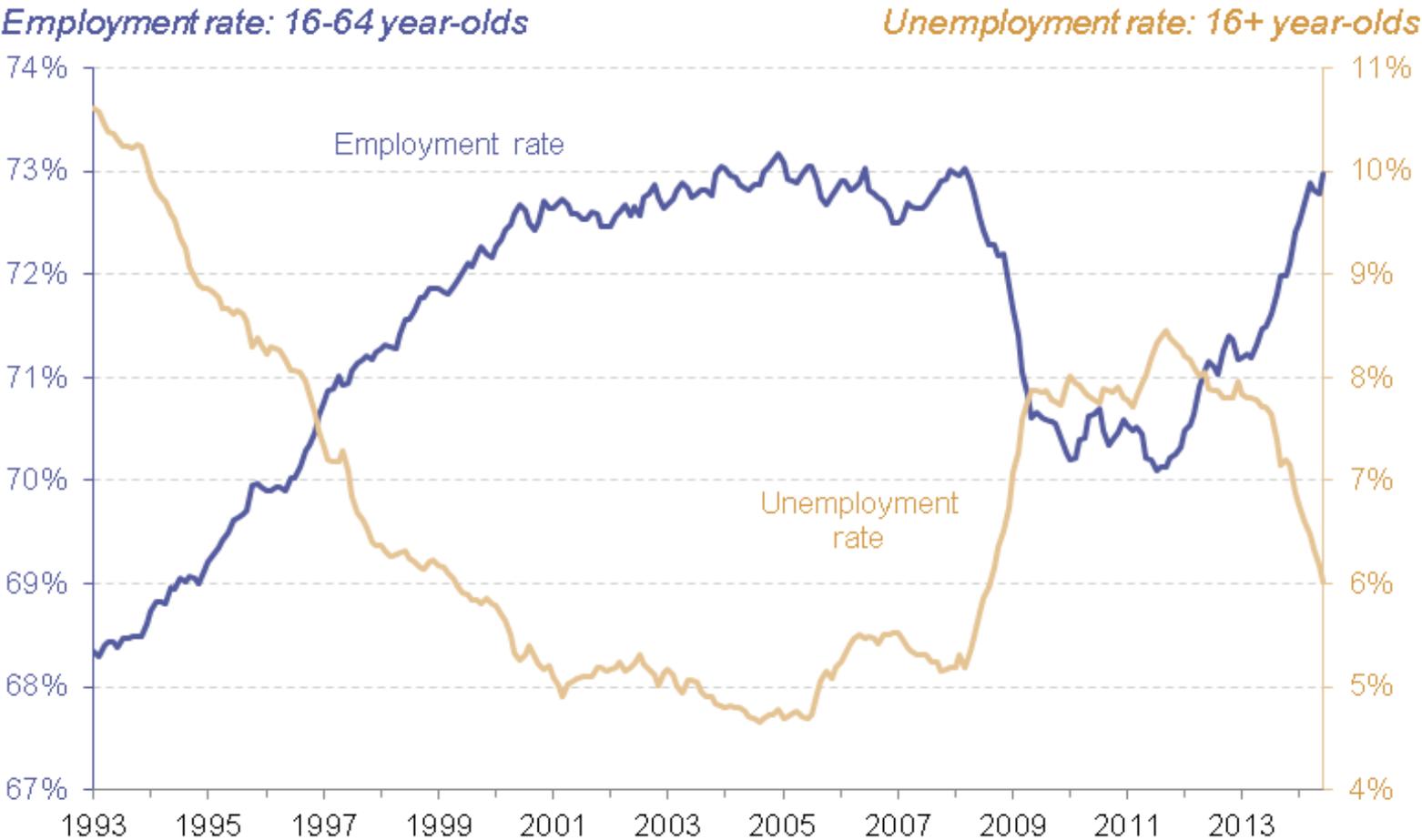


4. Prospects for 2015

- Stripping out the effects of compositional change in recent months, we find that average pay would already have grown in real-terms in 2014. With the one-off surge in employment among younger and less experienced workers dropping out of the year -on-year comparison in 2015, we might therefore expect the pay squeeze to come to an end next year.
- However, the real-terms pay growth that would exist in the absence of the recent compositional drag would be modest at best, and appears to have slowed over the course of the year.
- In addition, it is not yet clear whether the strong negative compositional effect of the changing occupational mix is a temporary phenomenon associated with rapid employment growth or whether it reflects a structural tendency towards lower-quality job creation. If it is the former, then it is likely that compositional changes will prove a boost to pay growth in 2015; if it is the latter, then the direction of the effect is harder to predict.
- Either way, the key to ending the pay squeeze in 2015 will be the willingness and ability among employers to return to above-inflation pay increases.

1. Slowing wage growth and conflicting data

The resilience of employment has been a surprising plus point during the downturn



The employment rate never fell below 70 per cent – well above the early-1990s level

Similarly, unemployment peaked well below the double-digit level experienced in previous recessions

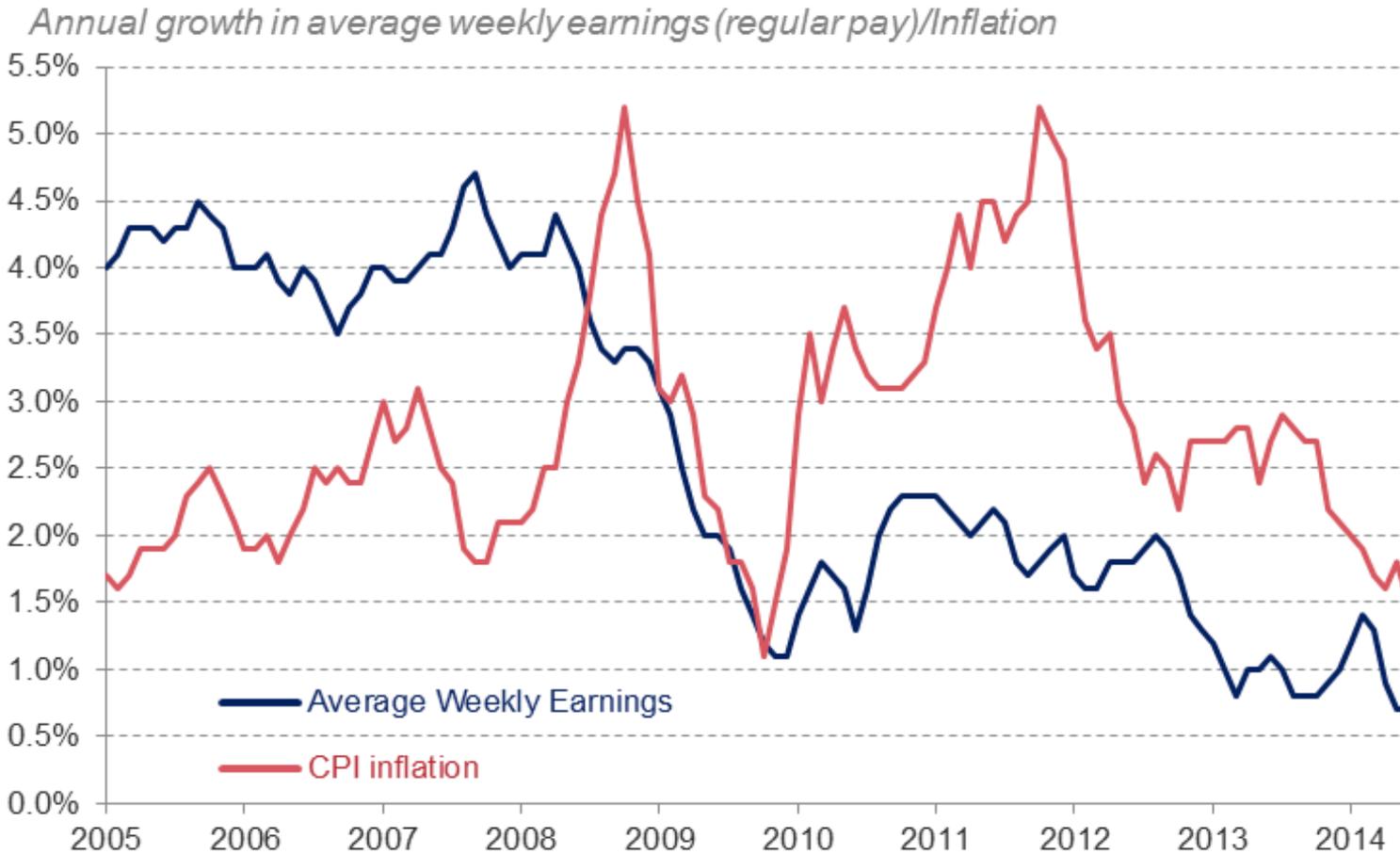
Source: RF analysis of ONS, Labour Market Statistics

But nominal pay growth (average weekly earnings, AWE) has slowed significantly



Having averaged 4 per cent before the downturn, nominal weekly earnings growth dropped to around 2 per cent in 2011 and 2012

But, as the economic recovery built in 2013 and 2014, so pay growth fell again – to just 1 per cent



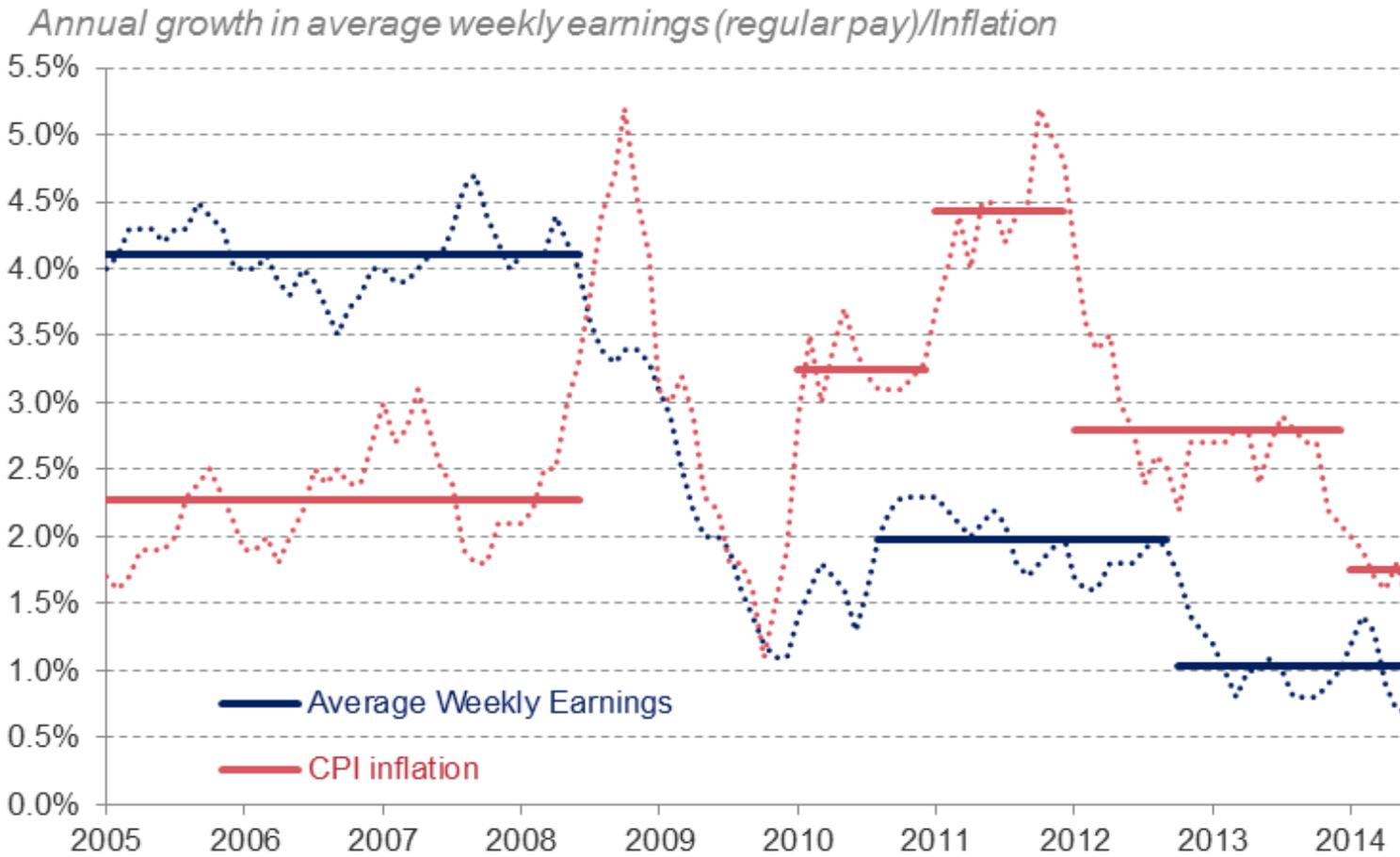
Source: RF analysis of ONS, Labour Market Statistics

Low inflation has moderated the pay squeeze in recent months, but is unlikely to be sustainable



The real-terms impact of very low nominal pay growth has been lessened by falling levels of inflation in recent months

But these falls are likely to reverse in 2015, with core inflation currently standing above the headline rate



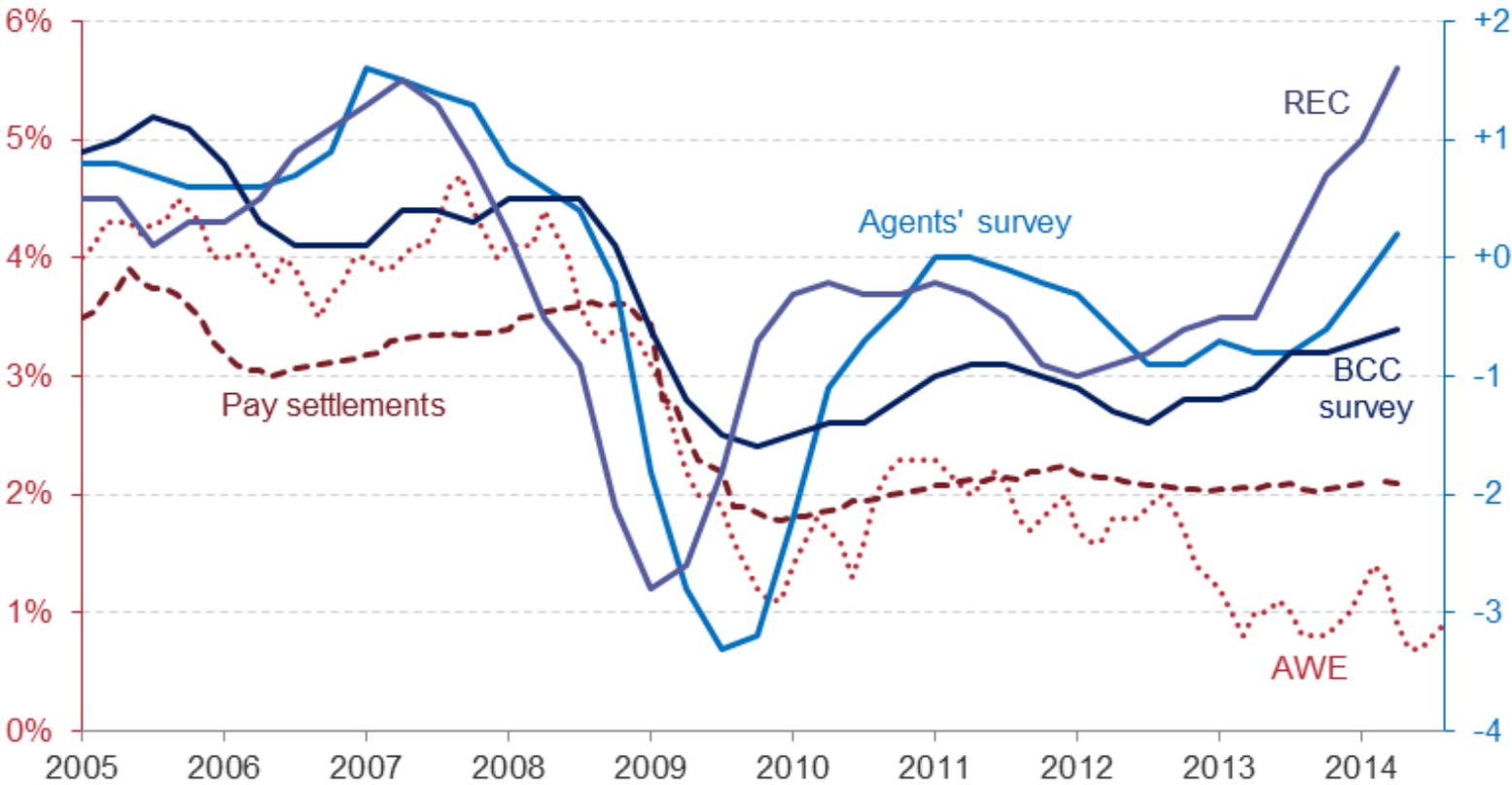
Source: RF analysis of ONS, Labour Market Statistics

Slowing AWE growth from 2013 is in contrast to pay settlement data and wage surveys



Year-on-year growth in pay (AWE & pay settlement data - rolling averages)

Differences from averages since 1998 (number of standard deviations)



Unlike AWE, pay settlement data suggests wages have continued to grow at 2% in recent months. And various surveys record a rising balance of firms reporting pay rises

But all of these measures are partial and take no account of compositional changes

Source: Bank of England Inflation Report, August 2014, Chart A. 'REC' = Recruitment & Employment Confederation survey of new employees' pay; 'BCC survey' = British Chambers of Commerce; 'Agents' survey' = Bank of England Agents.

2. The importance of changes in the workforce

We consider compositional effects on pay across a range of job and employee characteristics



- The unexpectedly poor performance of AWE in 2014 has caused much speculation about what is holding average pay growth back. Three studies in particular have looked at the role of compositional change:
 - **Bank of England** (September MPC minutes): concluded that compositional factors boosted average pay between 2009 and 2013 but dragged over the last 12 months.
 - **ONS** (UK Wage Progression): focused on job tenure and found that the pay differential between those moving out of work and those moving into work each year is dragging down average hourly pay.
 - **Incomes Data Services/TUC** (Earnings and Settlements): argued that a shift to lower-paying industries and part-time working may be putting downward pressure on AWE.
- We build on these analyses by looking at a range of compositional factors, including industry, occupation, hours, qualifications, age, job tenure, sex, country of birth, region and the private/public sector split.
- In this section, we look at a selection of these factors in turn, using a simple ‘shift-share’ analysis to better understand what has driven the positive and negative contributions that each has made to recent wage growth.

We consider compositional effects on pay across a range of job and employee characteristics

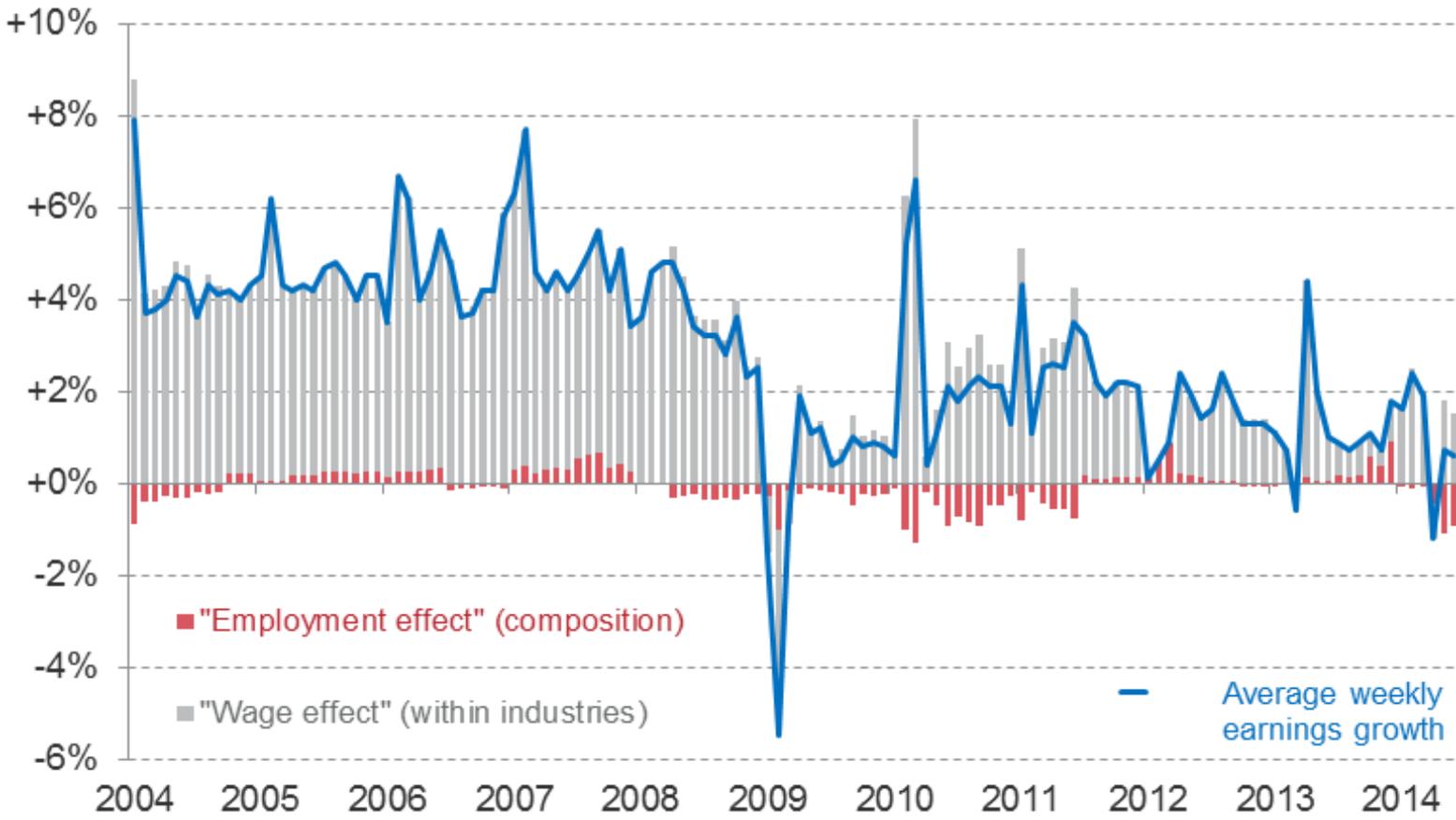


- In each instance, we calculate an ‘employment effect’ and a ‘wage effect’.
 - The ‘employment effect’ estimates the proportion of AWE growth accounted for by changes in the composition of the workforce *across* the relevant sector or employee characteristic (e.g. due to a changing share of younger or older employees in the workforce).
 - The ‘wage effect’ estimates the proportion of AWE growth accounted for by changes in average pay levels *within* the relevant sector or employee characteristic (e.g. due to changes in average pay among younger or older workers).
- Because we are using AWE (total pay), the analysis covers employees only, thereby excluding the growing number of self-employed workers that have played such an important role in driving overall employment growth in recent years.
- Note also, we make no attempt in this section to control for overlap between the different factors we model. For example, in showing the employment effect associated with job tenure, we do not account for changes in the age mix of the workforce. We instead account for these overlaps in Section 3, using regression analysis to determine the overall impact of compositional change on wage growth over the course of the downturn and the relative importance of each of factor.

Looking across INDUSTRIES, the changing mix has contributed to weak wage growth at times



Contributions to year-on-year growth in nominal wages



The changing industrial mix (red bars) had a minimal impact on pay growth pre-crisis, but was negative after 2008, compounding a generalised slowdown in wage growth within industries (grey bars)

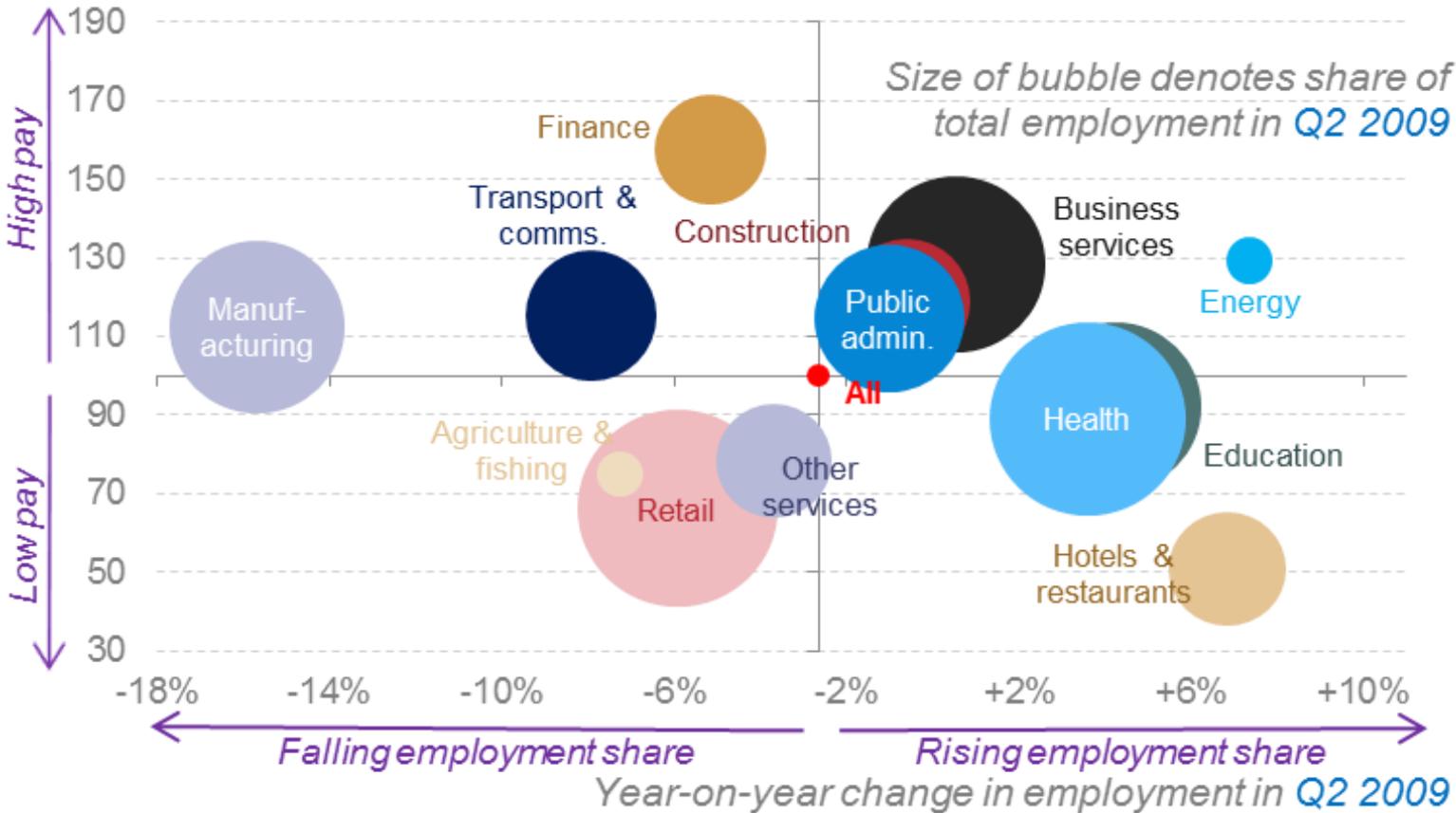
It dragged on growth again during 2014

Source: RF analysis of ONS. Decomposition analysis is based on Labour Force Survey data, but is applied to Average Weekly Earnings data to determine the magnitude of impact.

Compositional drag in 2009 reflected employment growth in lower-paying industries



Difference from economy-wide average pay in Q2 2009 (All = 100)



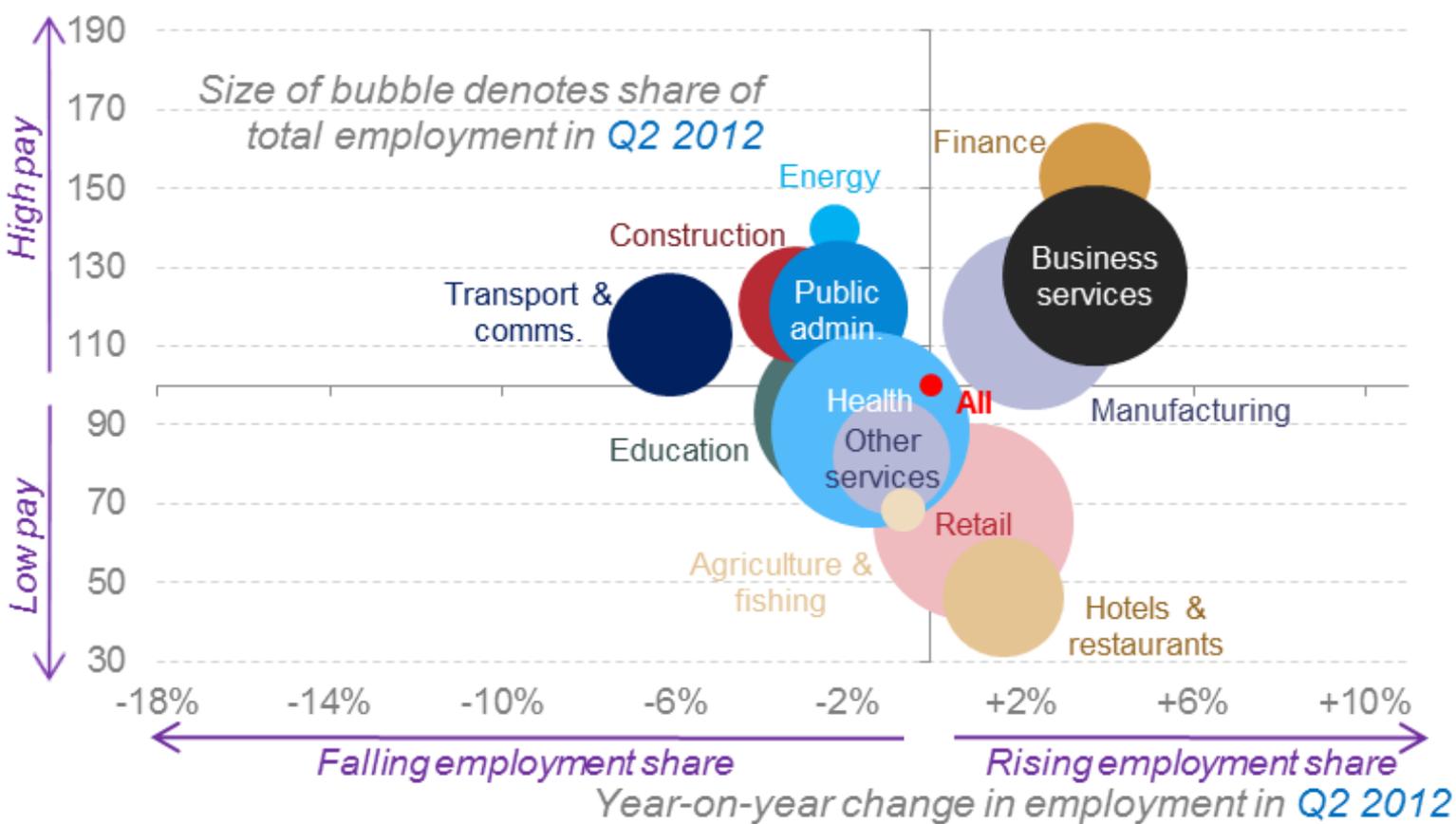
Employment increased in relatively high-paying business services, construction and energy sectors, but that was outweighed by contraction in other high-paying sectors and growth in lower-paying sectors such as health and hotels & restaurants

Source: RF analysis of ONS, Labour Force Survey. Vertical axis is centred at the average year-on-year change in employment across all employees.

Year-on-year changes in 2012 created a positive compositional effect



Difference from economy-wide average pay in Q2 2012 (All = 100)



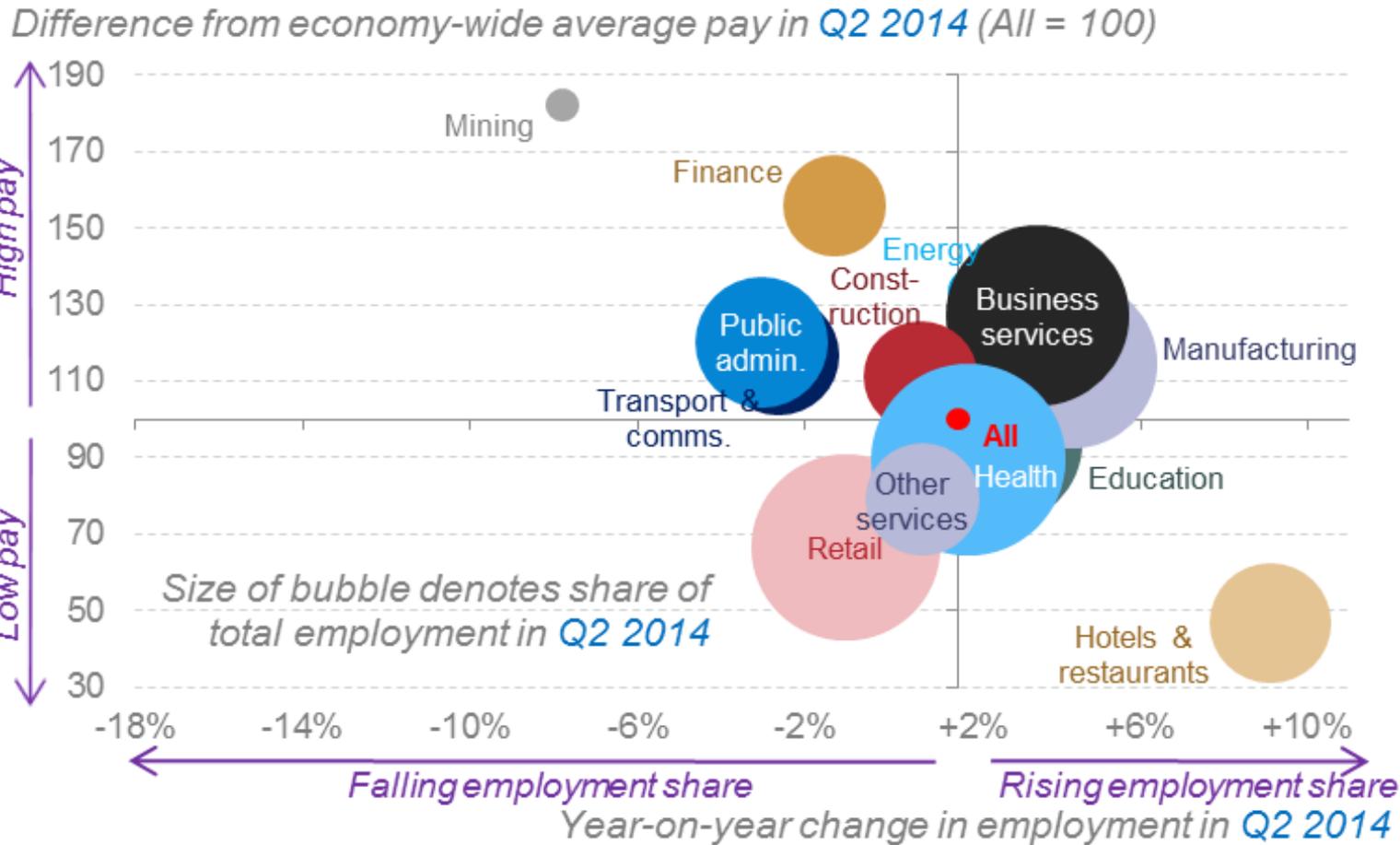
The year to Q2 2012 was characterised by rebounds in employment in finance and manufacturing. Combined with small reductions in employment in the relatively low paying health and education sectors, this provided a boost to average pay

Source: RF analysis of ONS, Labour Force Survey. Vertical axis is centred at the average year-on-year change in employment across all employees. Chart is truncated and excludes mining (which has a pay figure of 221 and an employment change of +18.5%).

But industrial change has again dragged on pay growth in 2014



There has been relatively little variation in employment changes in the latest 12 months, but strong growth in hotels & restaurants and contraction in public administration have helped to produce a negative compositional effect

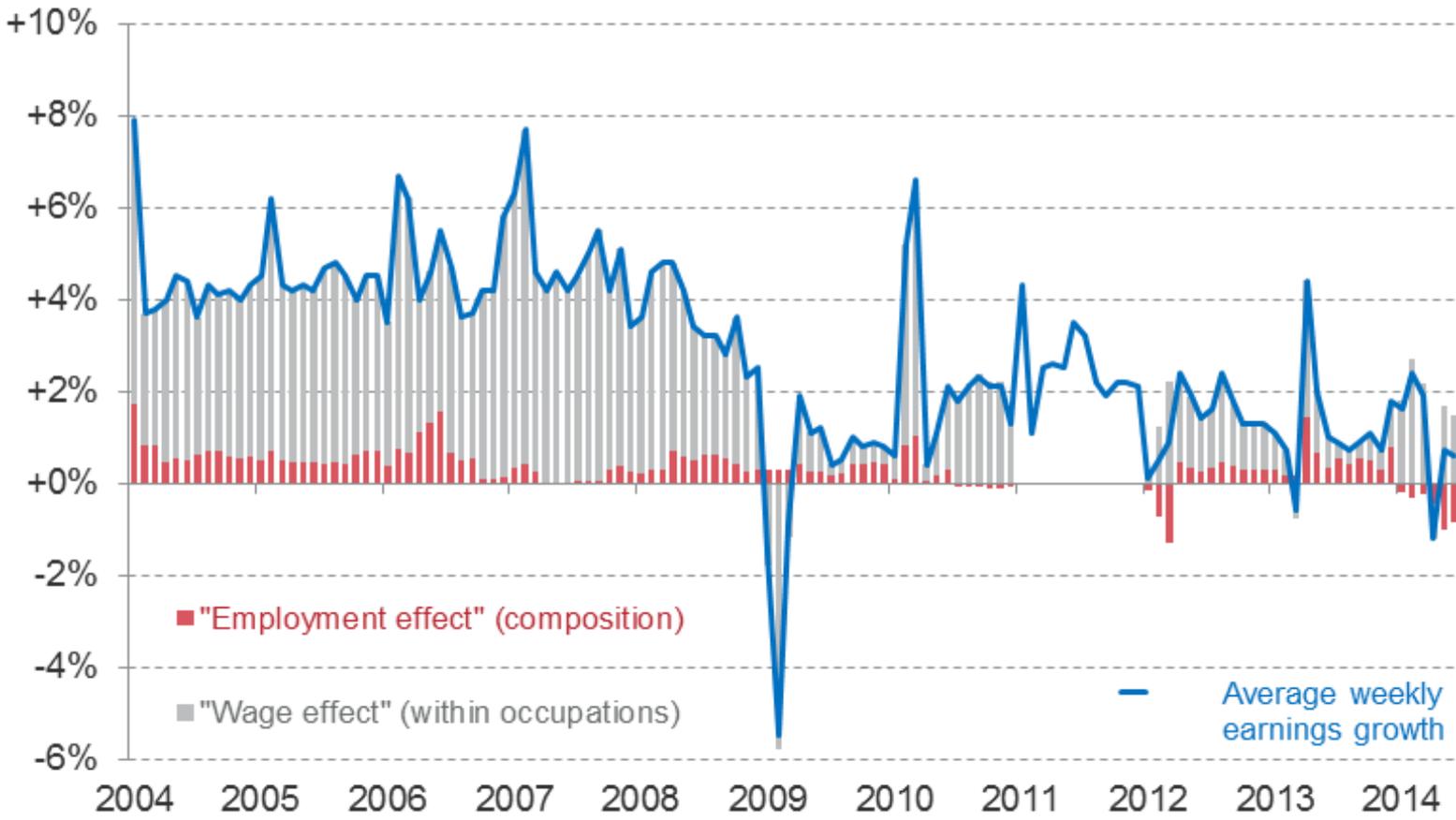


Source: RF analysis of ONS, Labour Force Survey. Vertical axis is centred at the average year-on-year change in employment across all employees. Chart is truncated and excludes agriculture and fishing (which has a pay figure of 81 and an employment change of +22.6%). @resfoundation

OCCUPATIONAL composition trends have produced a drag on pay growth in recent months



Contributions to year-on-year growth in nominal wages



Changes in the occupational mix of the labour market have tended to produce a consistently positive contribution to wage growth

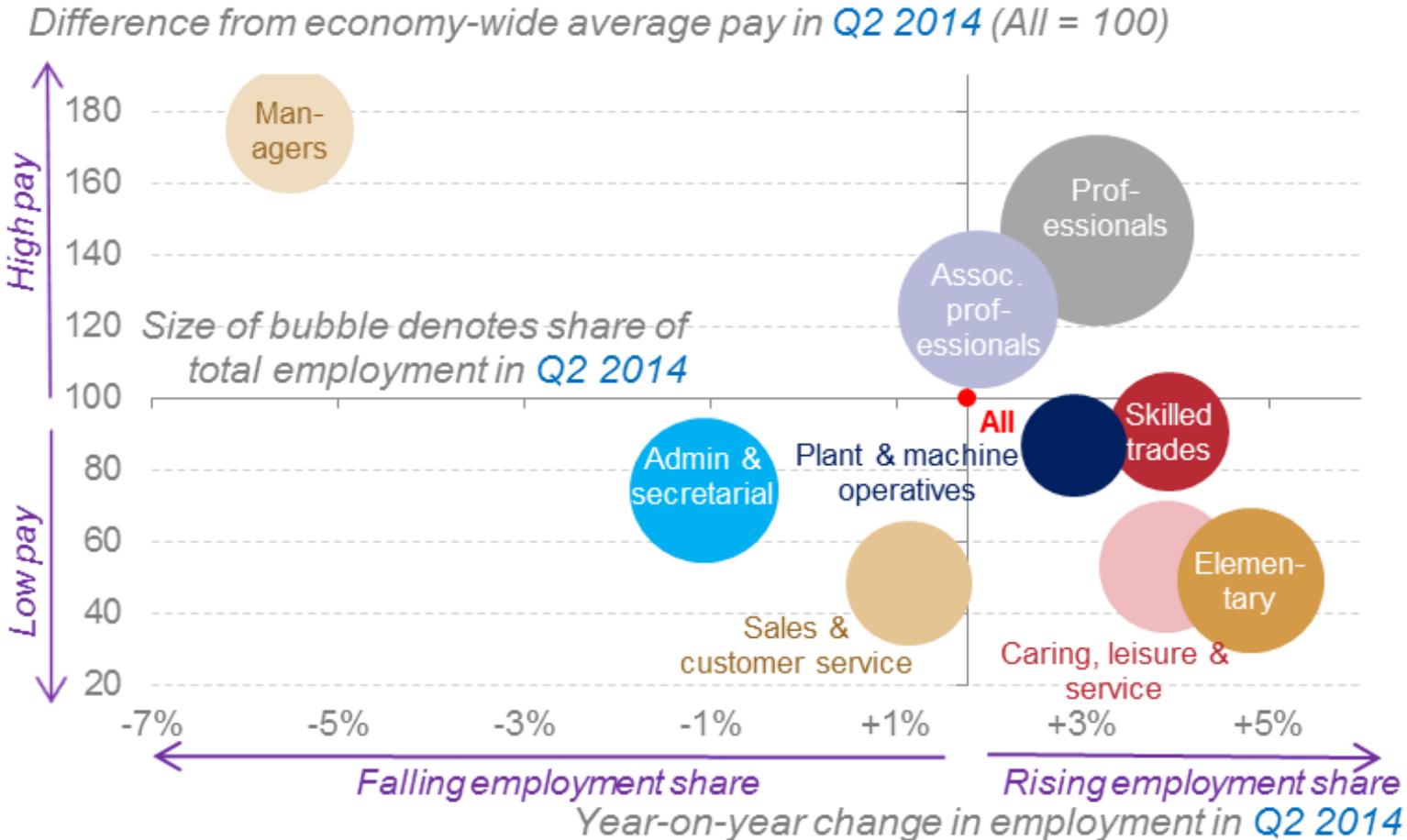
The recent negative contribution marks a significant change of direction

Source: RF analysis of ONS. Decomposition analysis is based on Labour Force Survey data, but is applied to Average Weekly Earnings data to determine the magnitude of impact. The gap in 2011 relates to a change in occupational codes.

Driven by a fall in managers and increases in lower-skilled and lower-paying occupations



In the latest 12 months, the number of employees who are managers has fallen sharply, but overall employment in the occupation hasn't – pointing to growth in self-employment

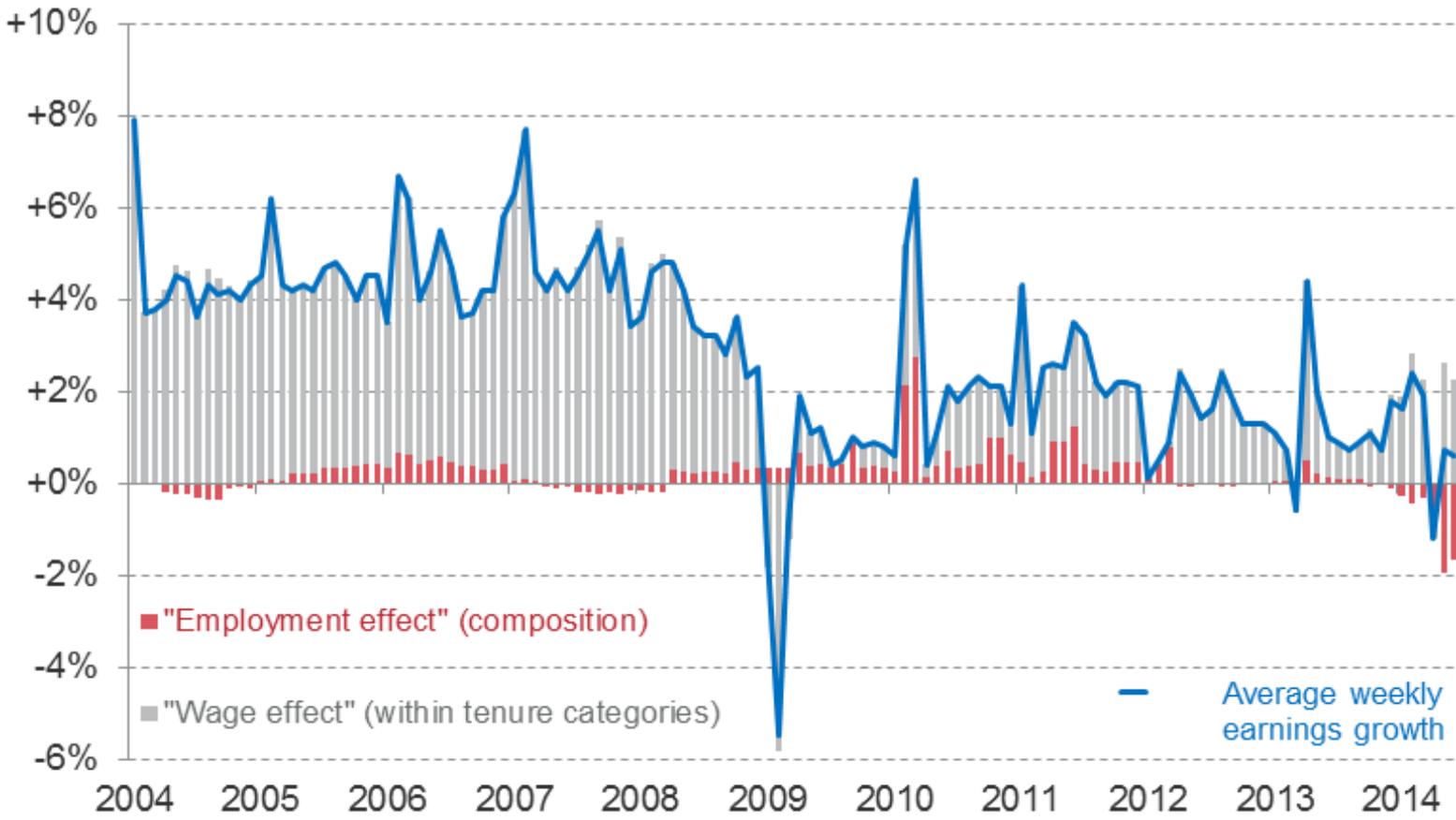


Source: RF analysis of ONS, Labour Force Survey. Vertical axis is centred at the average year-on-year change in employment across all employees. Comparison covers the year to Q2 2014 only due to definitional changes to occupation codes in 2011 that prevent earlier analysis on a consistent basis.

A change in the JOB TENURE mix has produced a sizeable negative pull on wage growth of late



Contributions to year-on-year growth in nominal wages



In the initial stages of the downturn, job losses among less experienced workers provided a compositional boost to pay growth

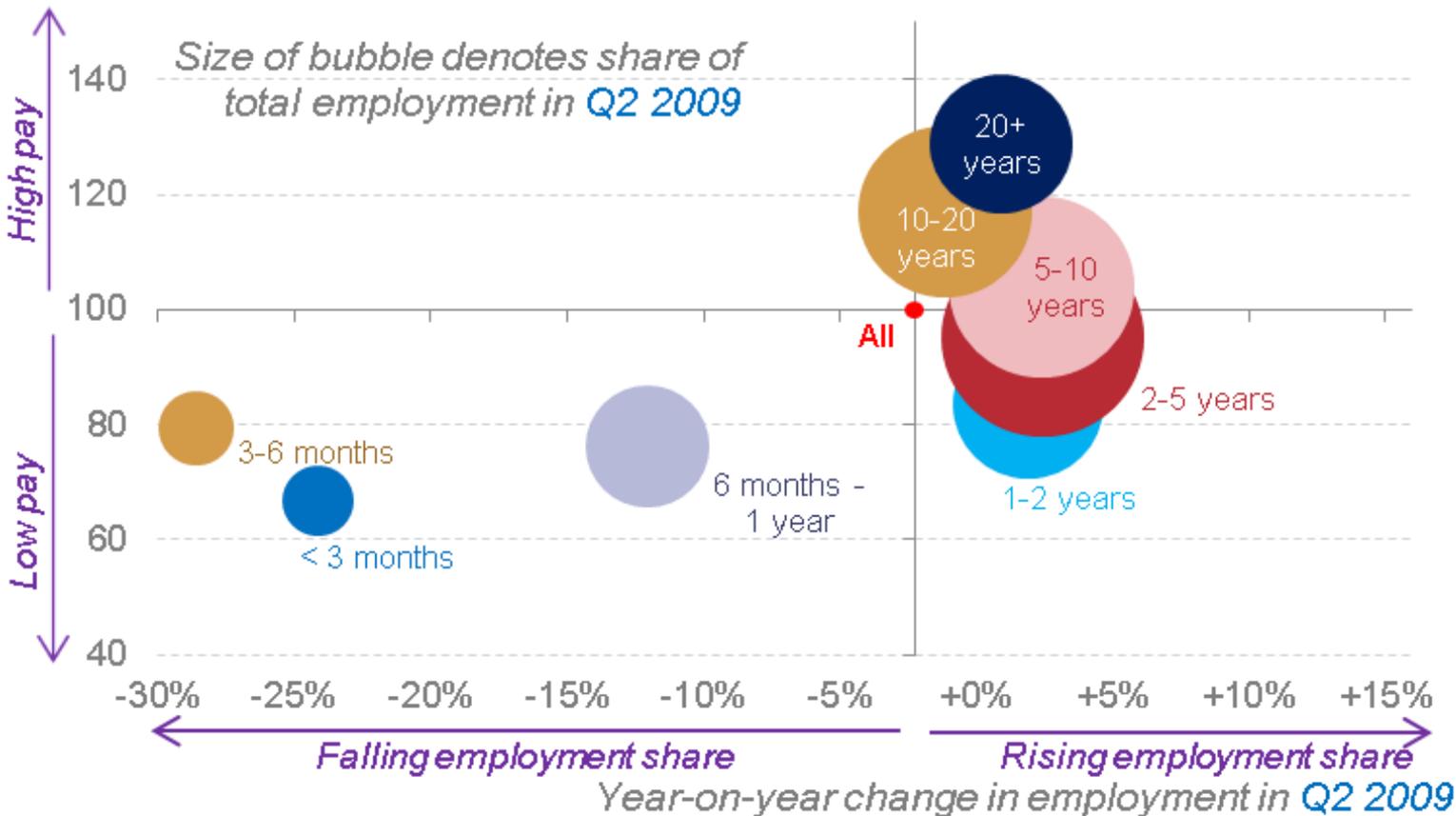
Recent sharp increases in employment have had the opposite effect

Source: RF analysis of ONS. Decomposition analysis is based on Labour Force Survey data, but is applied to Average Weekly Earnings data to determine the magnitude of impact.

The employment share of longer-serving workers rose early in the downturn, boosting average pay



Difference from economy-wide average pay in Q2 2009 (All = 100)



The number of people in their job for over ten years increased slightly in 2009, while newer jobs declined

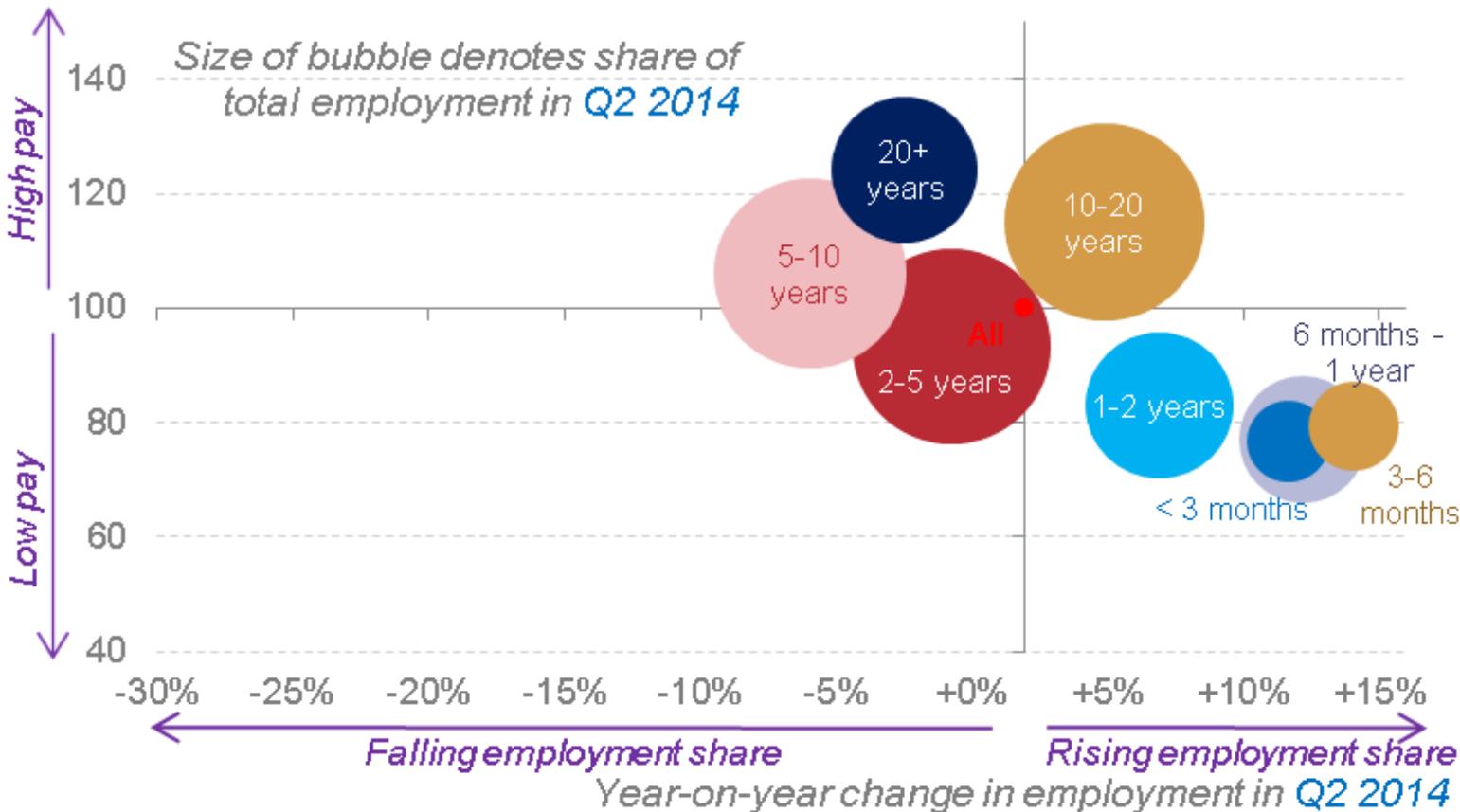
The distribution of pay across these groups means that these trends provided a positive impact on average wages

Source: RF analysis of ONS, Labour Force Survey. Vertical axis is centred at the average year-on-year change in employment across all employees.

But in the last 12 months, growth in newer jobs has reversed this trend



Difference from economy-wide average pay in Q2 2014 (All = 100)



Recent jobs growth means that increasing numbers have been in position for less than five years

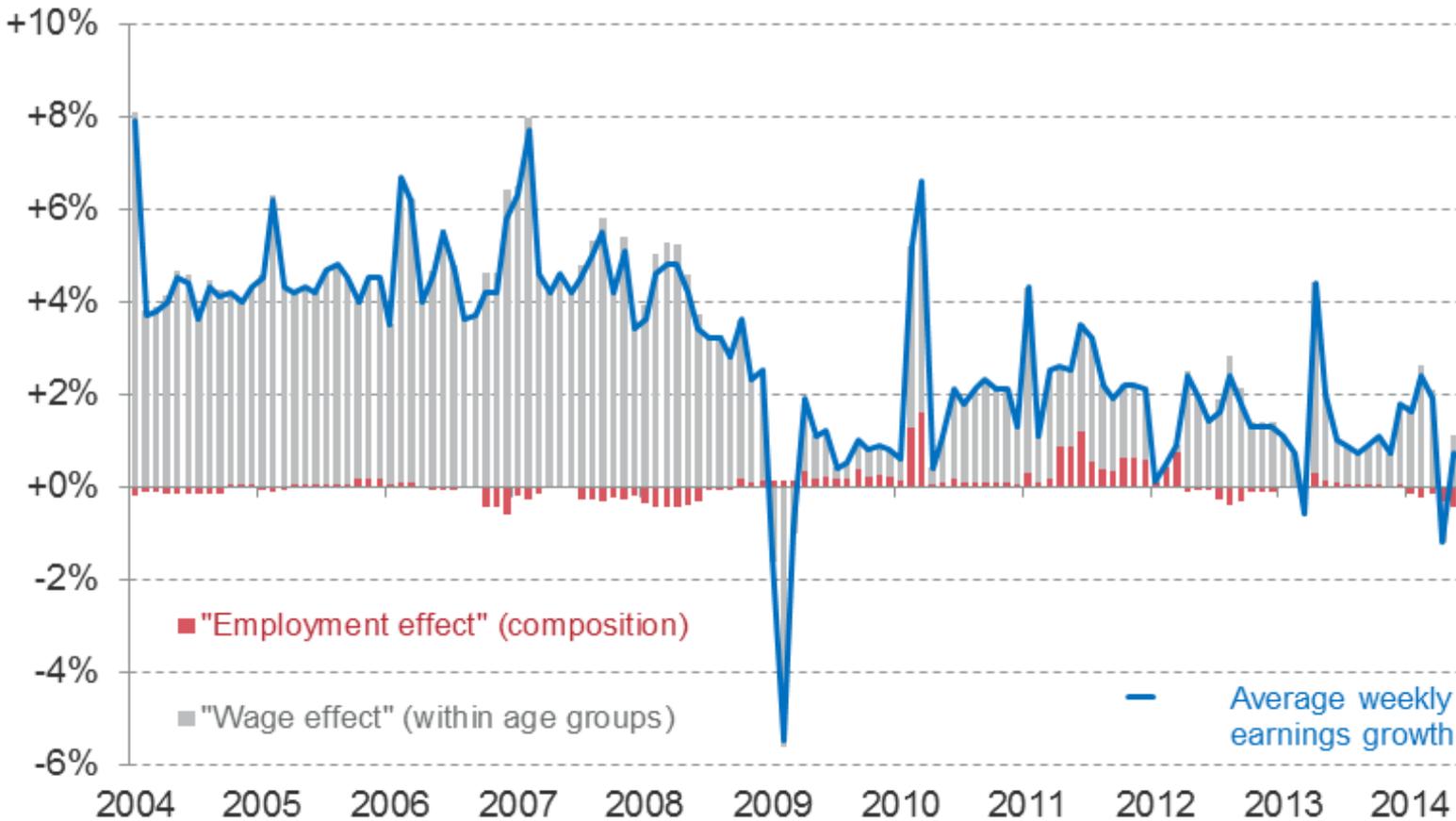
Pay trends differ among those in their job for shorter periods, with those coming from unemployment or inactivity paid less than those moving from another job

Source: RF analysis of ONS, Labour Force Survey. Vertical axis is centred at the average year-on-year change in employment across all employees.

Changes in the AGE composition have switched from boosting pay to dragging on it



Contributions to year-on-year growth in nominal wages



Changes in the age mix of UK employees slowed wage growth a little before the crisis, but helped boost growth thereafter

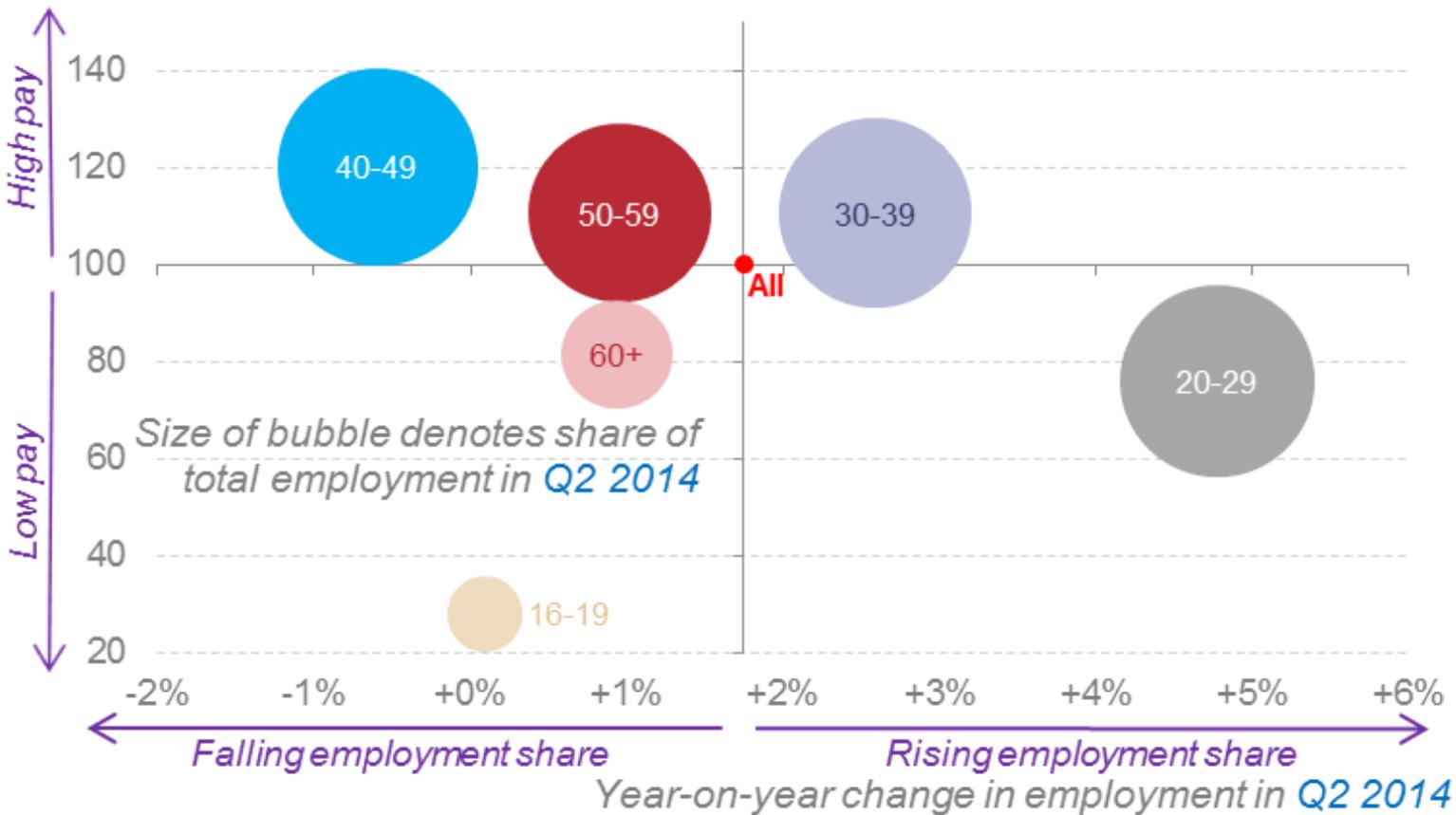
More recently, the compositional effect has become negative once more

Source: RF analysis of ONS. Decomposition analysis is based on Labour Force Survey data, but is applied to Average Weekly Earnings data to determine the magnitude of impact.

Due to strong employment growth among lower-paid younger workers in the last year



Difference from economy-wide average pay in Q2 2014 (All = 100)



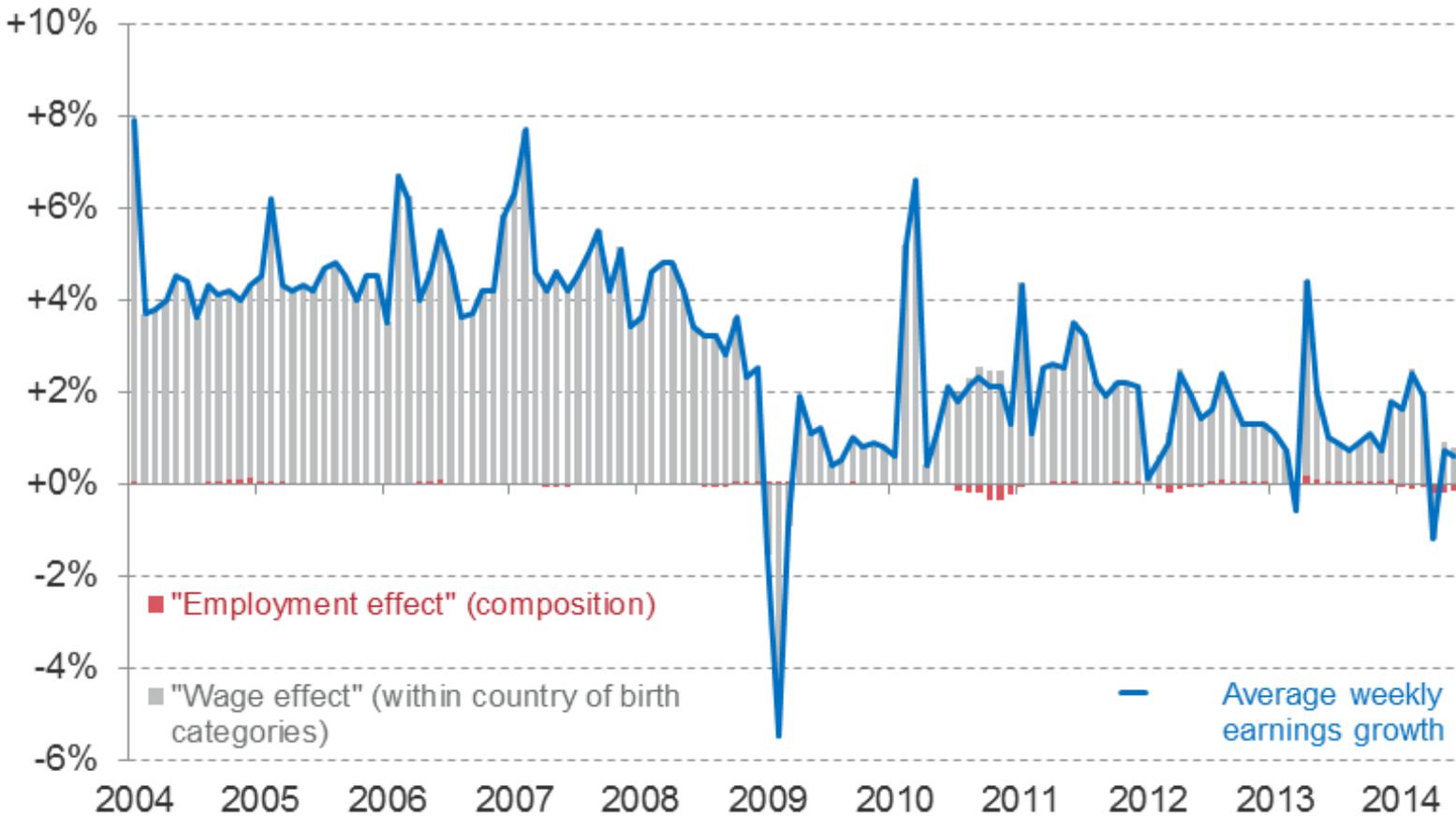
Employees in their 20s have played a particularly leading role in driving employment over the last year, explaining why the compositional effect of age has turned negative

Source: RF analysis of ONS, Labour Force Survey. Vertical axis is centred at the average year-on-year change in employment across all employees.

The compositional impact of COUNTRY OF BIRTH is usually negligible



Contributions to year-on-year growth in nominal wages



Compositional effects from country of birth have had very little impact over the period shown

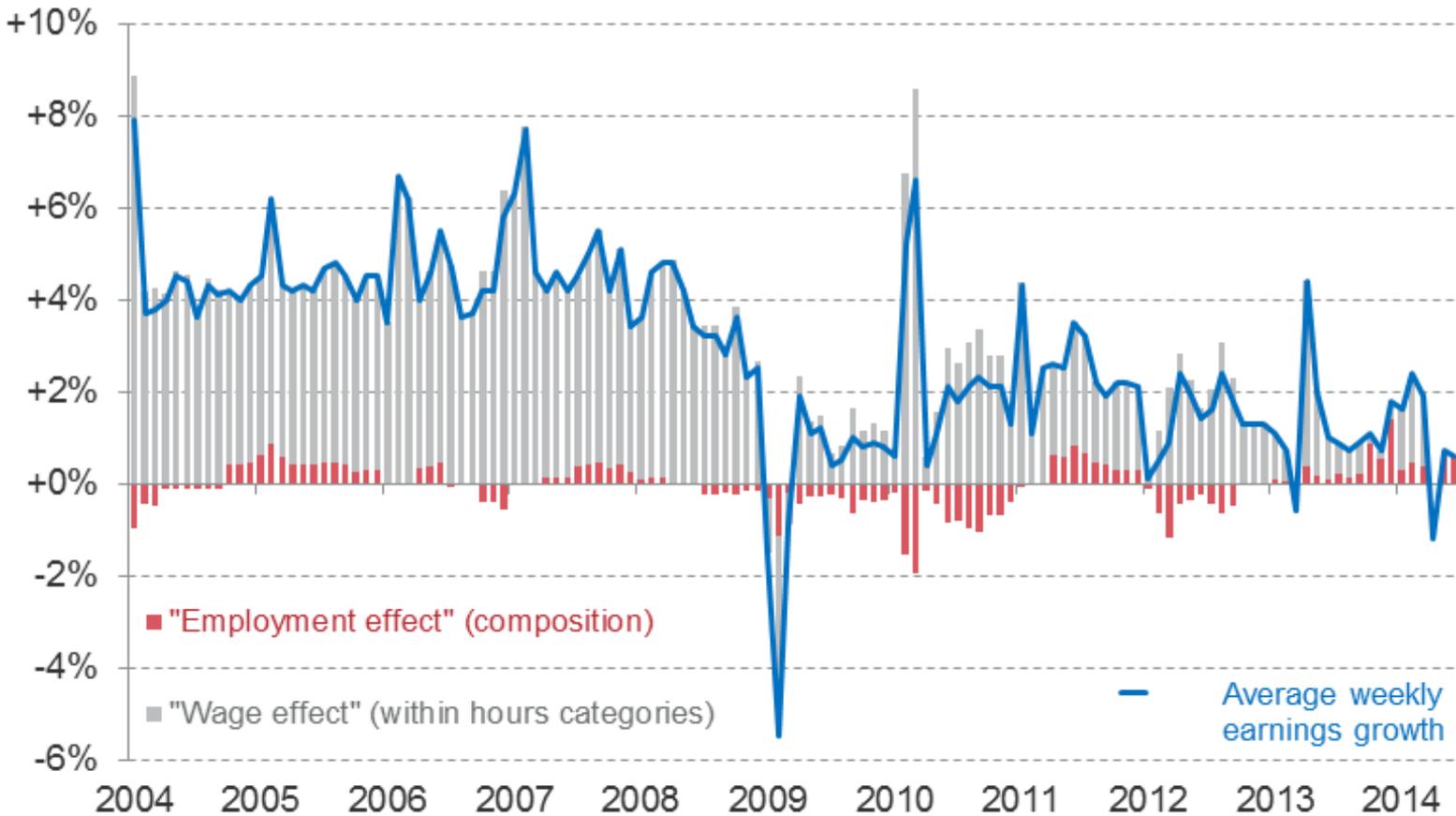
The very small wage drag apparent in 2014 was caused by strong employment growth among relatively low-paid EU accession migrants

Source: RF analysis of ONS. Decomposition analysis is based on Labour Force Survey data, but is applied to Average Weekly Earnings data to determine the magnitude of impact.

The impact of changes in the HOURS mix has been positive since 2013



Contributions to year-on-year growth in nominal wages



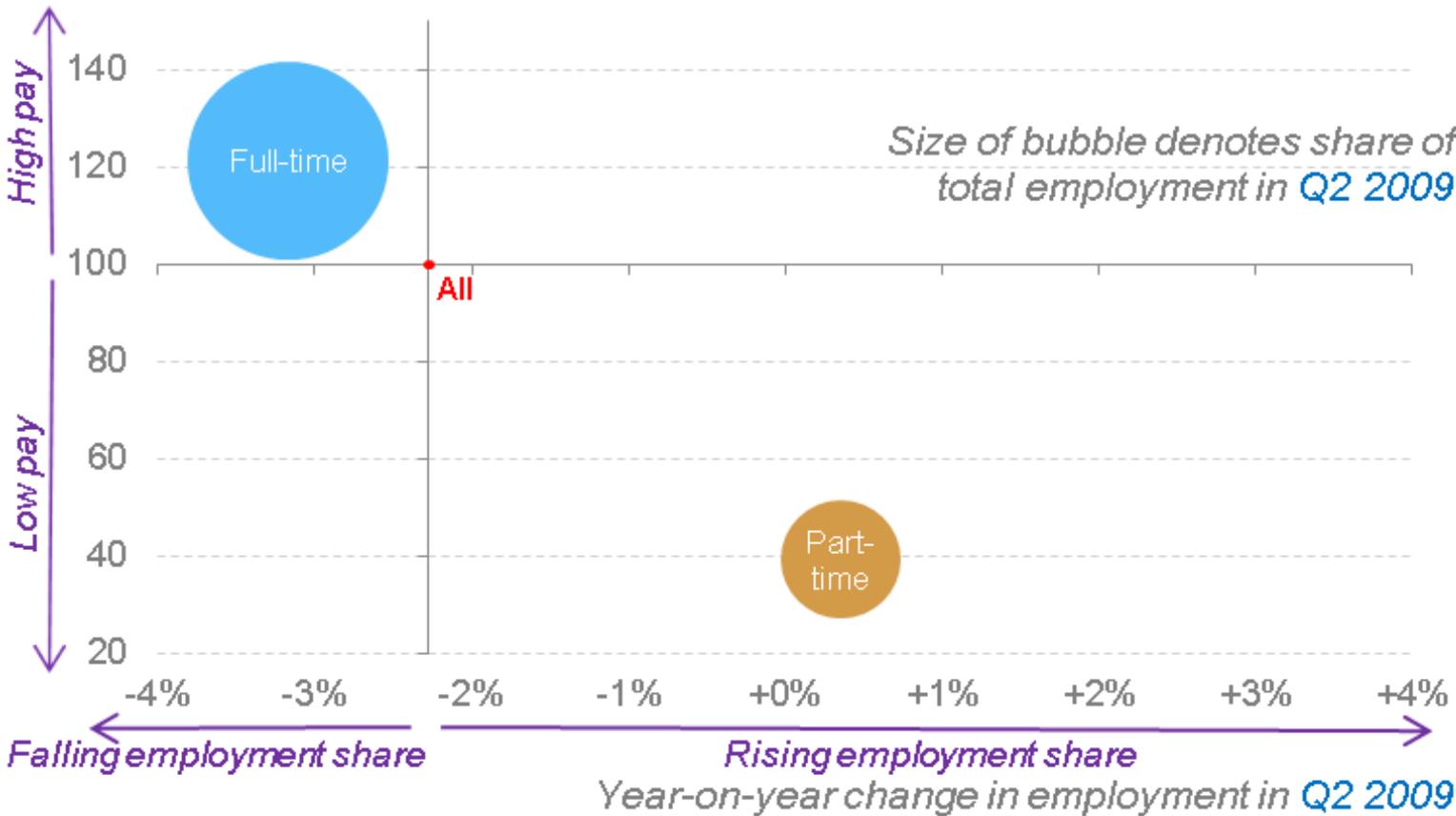
There's a clear distinction between the early part of the downturn when many people switched into part-time roles and faced under-employment, and the more recent period in which full-time employment growth has recovered strongly

Source: RF analysis of ONS. Decomposition analysis is based on Labour Force Survey data, but is applied to Average Weekly Earnings data to determine the magnitude of impact.

A significant switch to part-time work during the crisis pulled down on wage growth



Difference from economy-wide average pay in Q2 2009 (All = 100)



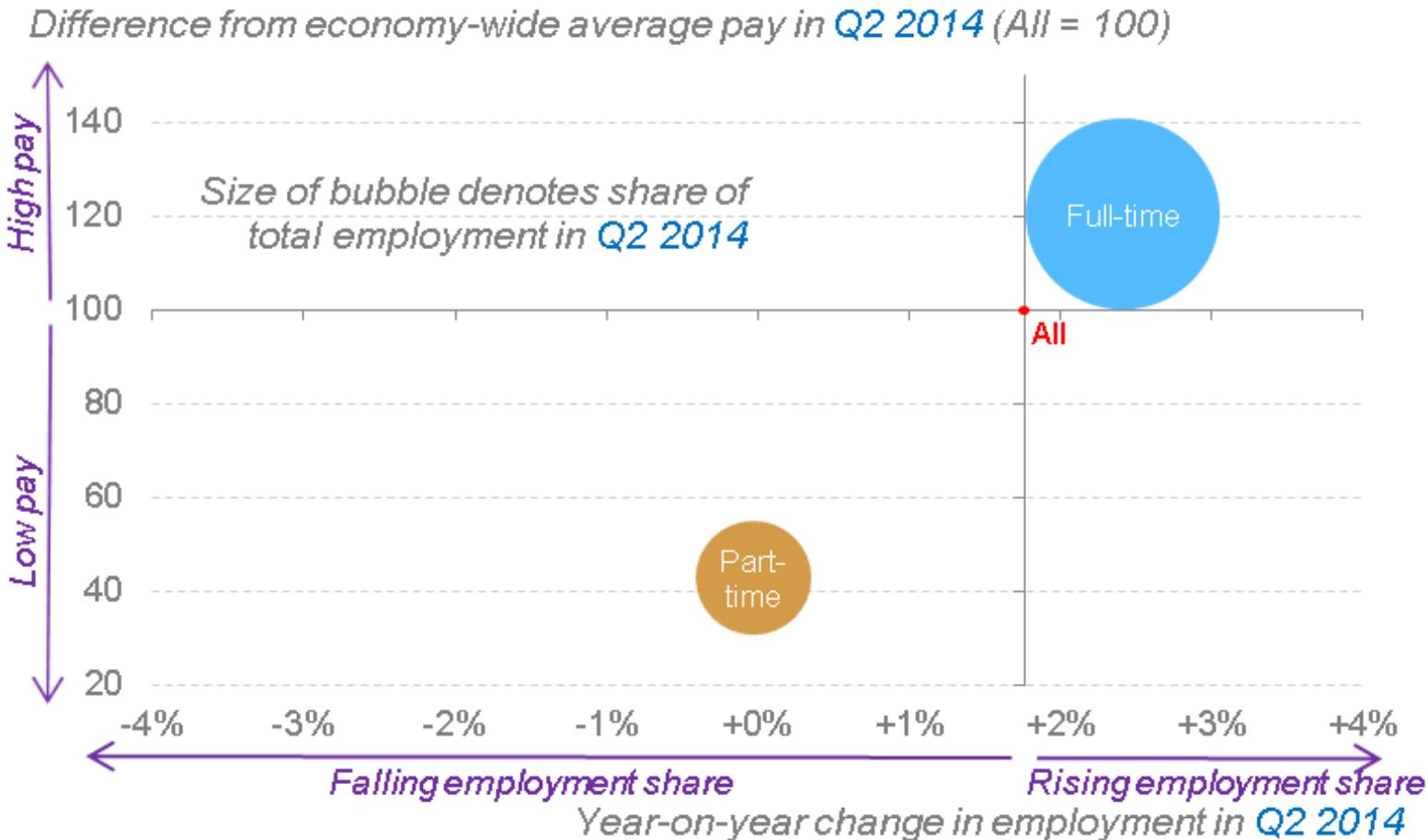
Part-time employment increased very slightly in 2009, in part down to existing employees reducing their hours. In contrast, better-paid full-time work fell

Source: RF analysis of ONS, Labour Force Survey. Vertical axis is centred at the average year-on-year change in employment across all employees.

But again, the picture has altered more recently, with strong full-time employment growth



Over the latest year, part-time employment has remained largely unchanged, while full-time employment has increased sharply

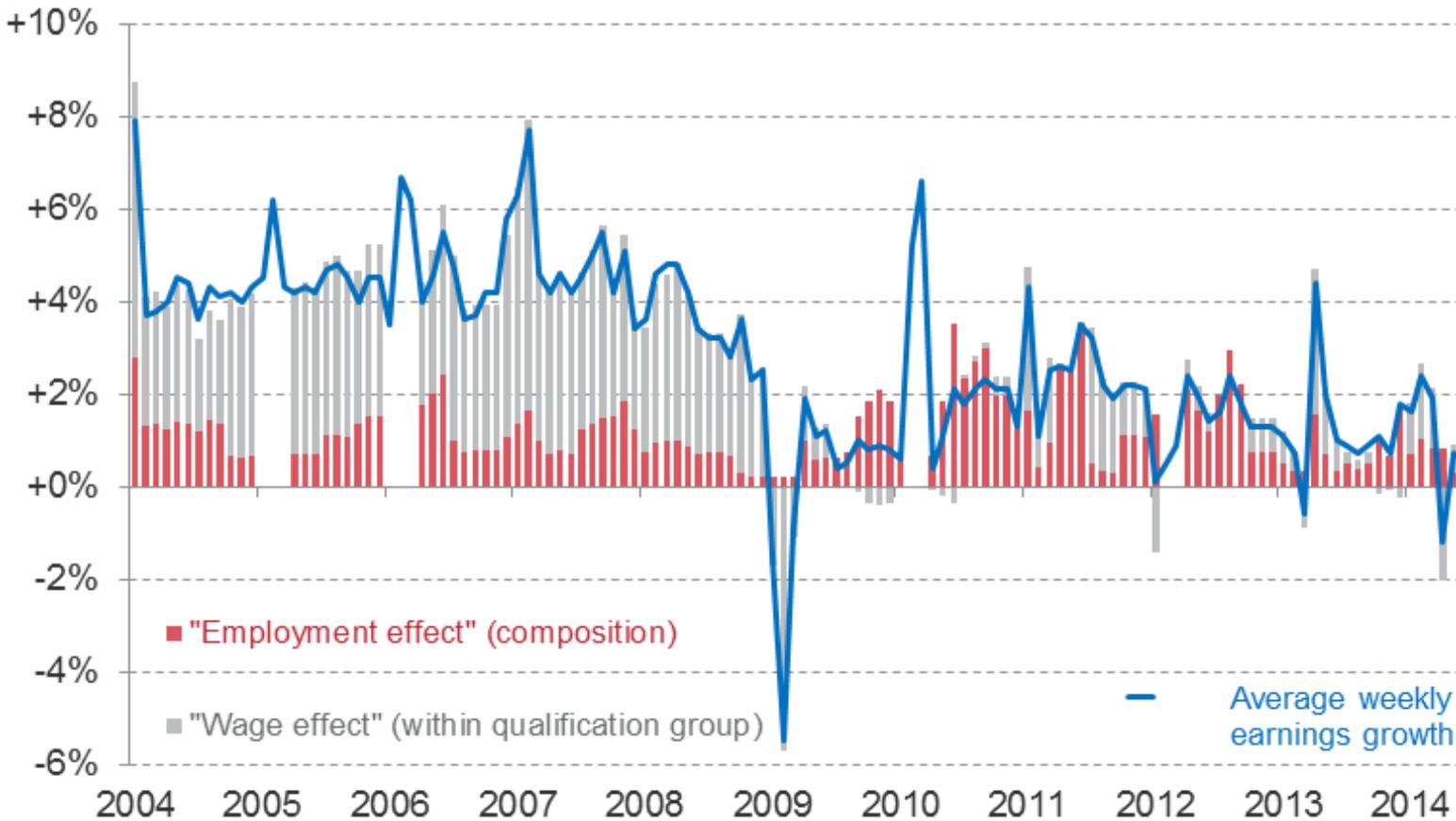


Source: RF analysis of ONS, Labour Force Survey. Vertical axis is centred at the average year-on-year change in employment across all employees.

The compositional impact of QUALIFICATIONS provides a consistently positive boost to pay



Contributions to year-on-year growth in nominal wages



The early downturn produced a very strong compositional boost to pay from qualifications, reflecting the distribution of job losses towards the lowest qualified

More recently the compositional impact has slowed, but it remains positive

Source: RF analysis of ONS. Decomposition analysis is based on Labour Force Survey data, but is applied to Average Weekly Earnings data to determine the magnitude of impact. Gaps relate to periods in which qualification definitions were altered.

3. The overall impact of compositional changes

Estimating the overall impact of changes in the workforce mix and the importance of each factor



- To control for overlaps across each of the compositional factors we consider, we run a regression analysis which produces wage function coefficients.
- We use these coefficients to predict wage growth in the period since 2006 based on the composition of the workforce in each relevant quarter. Where predicted wage growth differs from actual wage growth, we assume that the difference is due to a ‘wage effect’ apparent *within* the various sectors and employee types.
- Alongside the factors set out in Section 2 (industry, occupation, job tenure, age, country of birth, hours and qualifications), we also model region, sex and the public/private sector split.
- This approach allows us to estimate an overall compositional effect on wage growth. And, because we are controlling for each factor in turn, we can indicate the relative importance of each of the factors we consider.

Across ALL FACTORS, compositional change has dragged on pay in recent months



Contributions to year-on-year growth in nominal wages



While compositional shifts are usually positive in aggregate (because of rising qualifications across cohorts) negative effects have dominated more recently

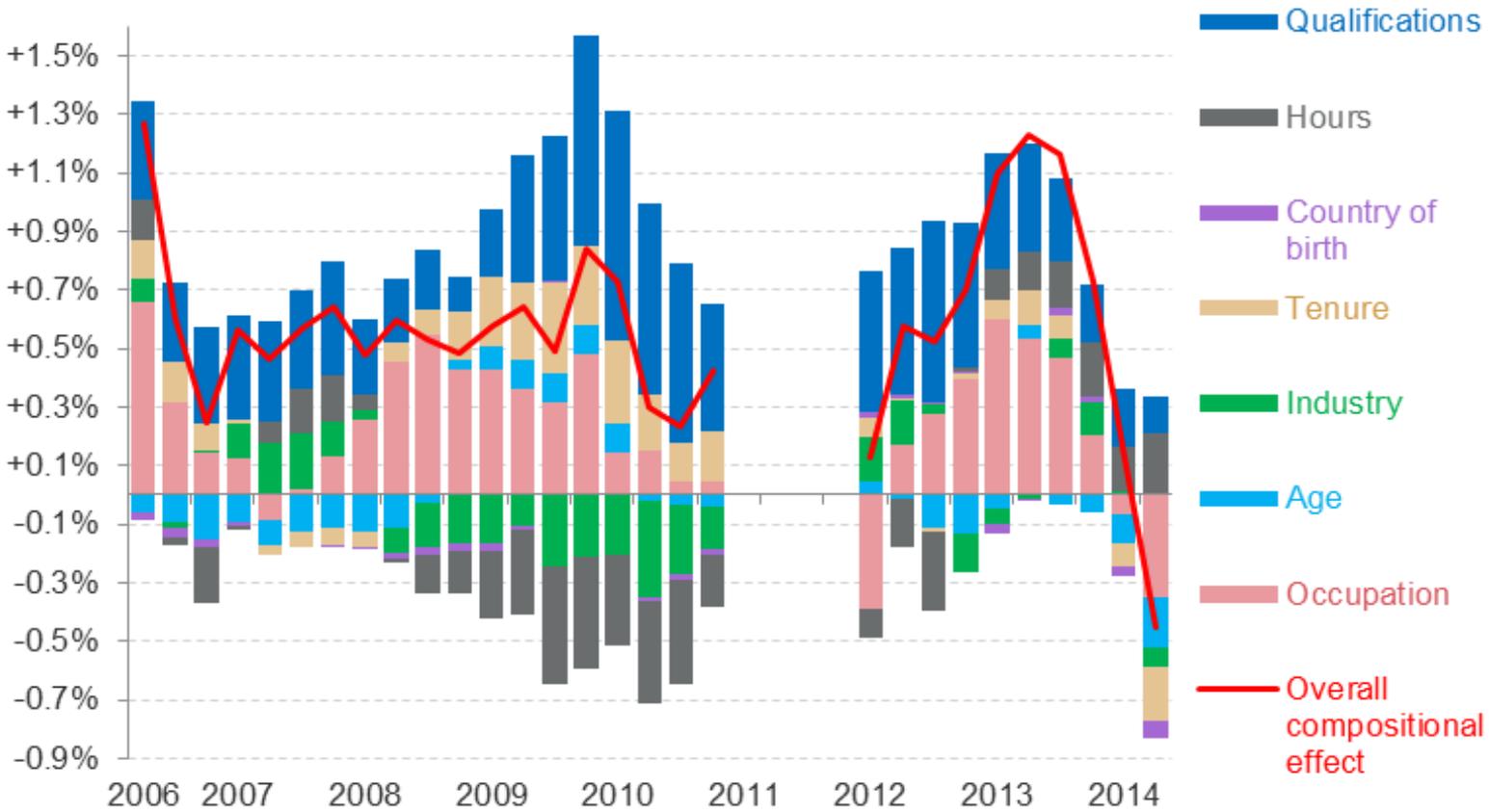
This has exacerbated a generalised post-crisis slow-down in pay growth within sectors and groups

Source: RF analysis of ONS. Regression analysis is based on Labour Force Survey data, but is applied to Average Weekly Earnings data to determine the magnitude of impact. The gap in 2011 relates to a change in occupational codes.

Occupation, job tenure, age, industry & country of birth have outweighed hours & qualifications



Compositional effect on annual changes in LFS average weekly pay (nominal)



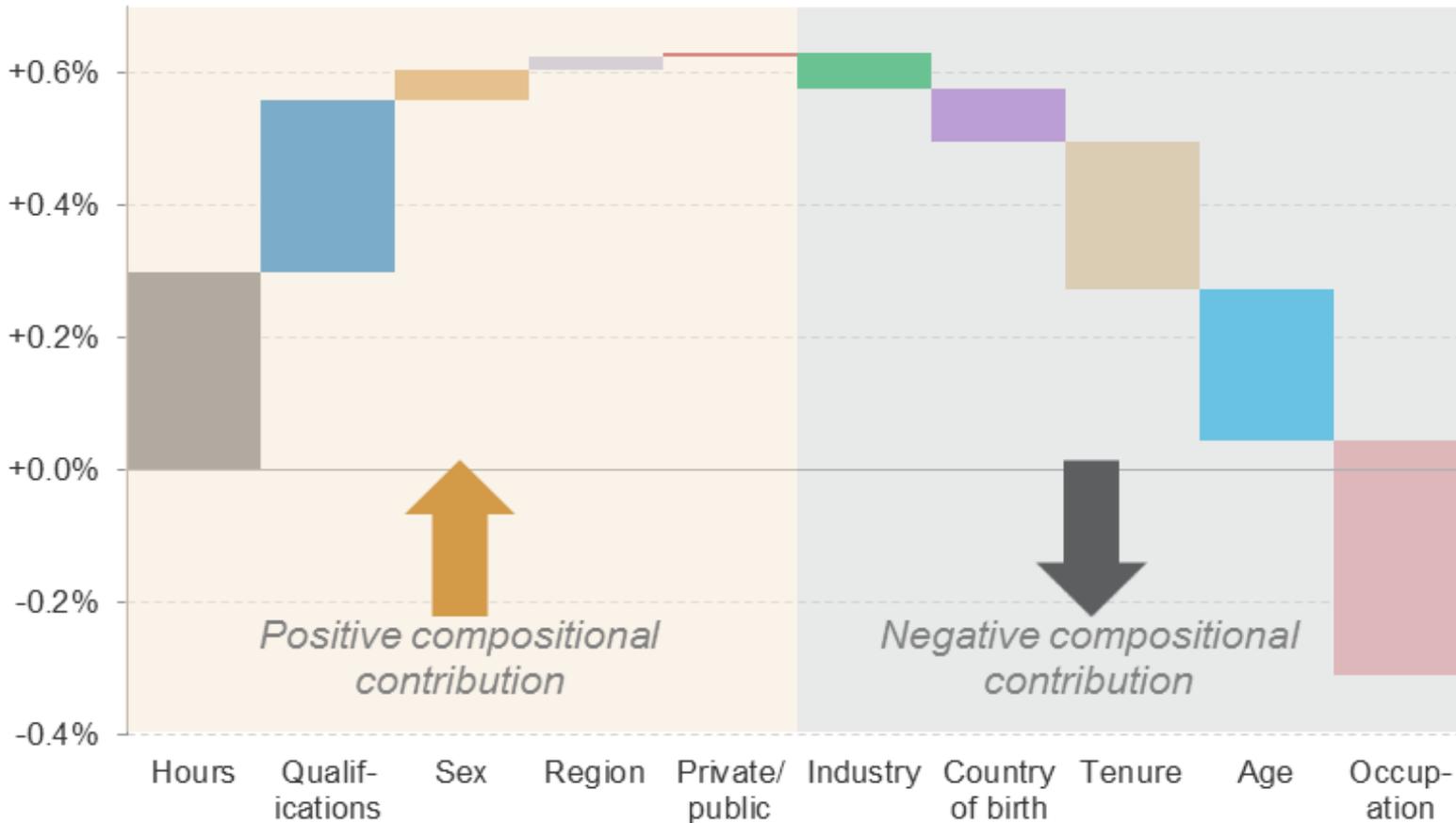
Those factors dragging on average pay were around double the size of those boosting average pay in the latest quarter

Source: RF analysis of ONS, Labour Force Survey. Factors with generally negligible impacts are excluded from this chart. The gap in 2011 relates to a change in occupational codes.

The impact of changes in the occupational mix was particularly marked in 2014



Compositional effects on annual changes in AWE: Jan-Jun 2014 (nominal)



The overall compositional drag in the first half of 2014 of 0.3ppts was driven by changes in the occupational mix (-0.4ppts), job tenure (-0.2ppts) and age (-0.2ppts)

These effects were only partially offset by boosts associated with hours and qualifications

Source: RF analysis of ONS. Regression analysis is based on Labour Force Survey data, but is applied to Average Weekly Earnings data to determine the magnitude of impact.

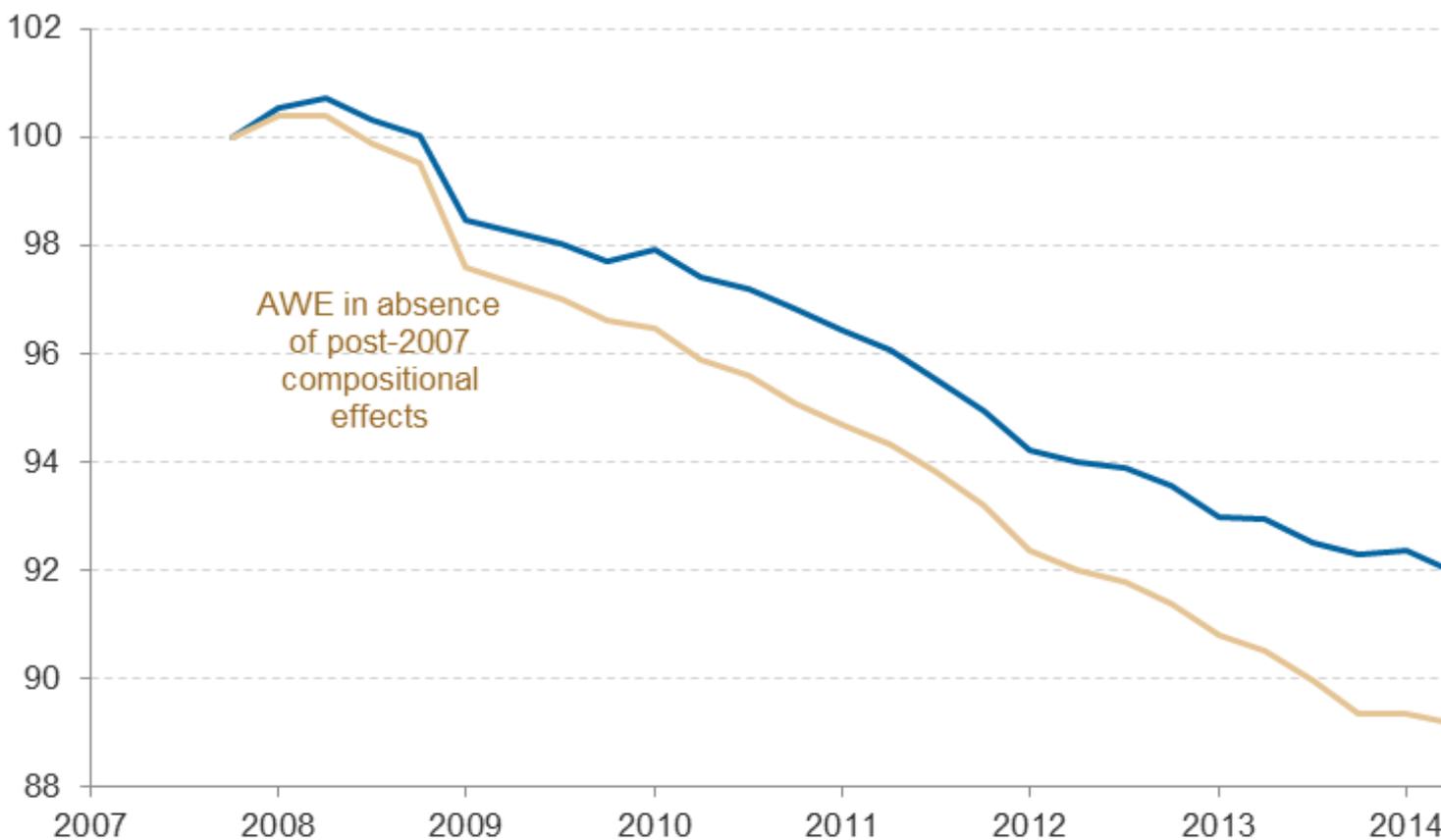
Without the long-run compositional boost, the wage squeeze might have been one third deeper



Compositional changes consistently boosted pay before 2014, mitigating the impact of the pay squeeze

Without these post-2007 compositional effects, real wages would have fallen by 10.8% by July 2013–June 2014, rather than the reported 8%

Index of real average weekly pay (CPI-adjusted, 2007=100, annual rolling average)



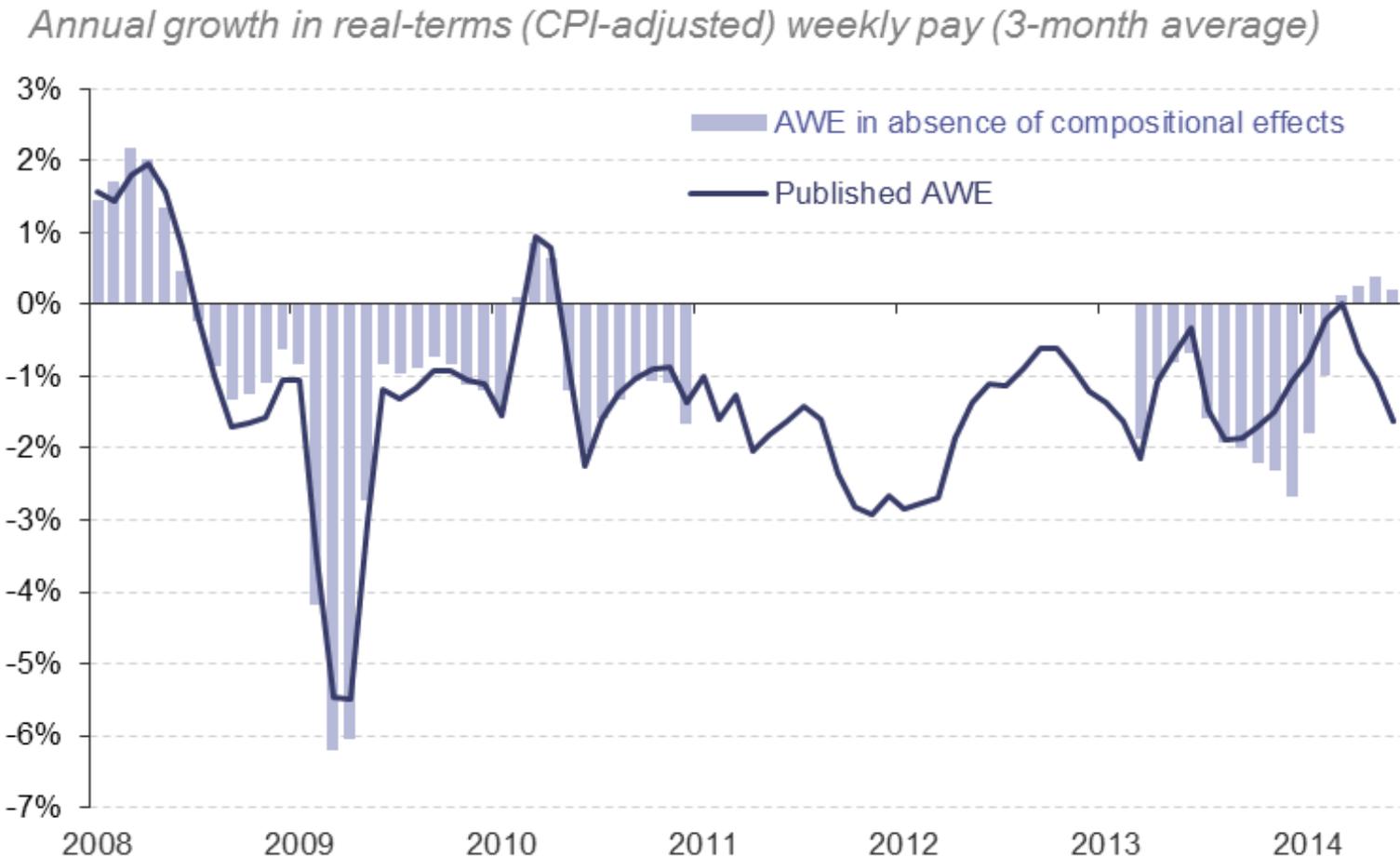
Source: RF analysis of ONS. It has not been possible to calculate compositional effects during 2011, so for this year we revert to overall real wage growth. This is likely to understate the size of the wage fall in the absence of compositional effects.

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But removing the 2014 reversal in compositional trends turns recent real pay growth positive



Accounting for the changing employment mix helps to explain why business surveys, which are less likely to be affected by compositional considerations, are reporting higher levels of wage growth than the official AWE measure



Source: RF analysis of ONS. The gap in 2011 and 2012 relates to a change in occupational codes. The recent positive real pay growth in the absence of compositional effects is not seen on the previous slide, as that displays annual averages.



4. Prospects for 2015

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Some concluding thoughts

- The resilience and subsequent recovery of employment has been a major plus. But pay has fallen sharply in real-terms. This decline is due in large part to weak pay growth *within* sectors and groups, with *compositional* factors tending to prop-up wages.
- In 2014 however, the compositional effect has turned negative, producing a new and important additional drag on average pay and helping to explain why nominal pay growth has fallen to a new low of less than 1 per cent.
- Strong growth in employment among younger and less-experienced workers in 2014 is good news, but has clearly played a significant role in subduing average wage growth. This is particularly the case when we note that younger workers have faced a 13 per cent reduction in real-terms pay since the onset of the financial crisis – making them the hardest hit age group.

Prospects for 2015

Some concluding thoughts



- We might expect these age- and tenure-related compositional effects to drop out of the year-on-year comparison in 2015, raising the prospect for a return to real-terms wage growth next year. However, we don't yet know whether the compositional drag associated with occupational shifts will similarly disappear in 2015.
- If the decline in managerial roles and the increase in elementary and caring occupations proves to be a temporary phenomenon, then we should expect the overall compositional effect to turn positive. But if it is symptomatic of a new structural trend towards lower-quality job creation, then the drag may persist.

Annex. Methodology and bibliography

Data used in this analysis: the Labour Force Survey and Average Weekly Earnings



- Both our ‘shift–share’ analyses of each employee and job characteristic in turn and our overall regression analysis are calculated using quarterly Labour Force Survey (LFS) microdata. Estimates of ‘wage effects’ and ‘employment effects’ derived from the LFS are then applied *proportionally* to the monthly Average Weekly Earnings (AWE) series (total pay).
- We are unable to run the regression in 2011 due to a change in occupational coding in that year in the LFS microdata, from SOC2000 to SOC2010.
- All analysis is conducted on LFS datasets prior to the 2014 re–weighting in light of the 2011 Census. This is because re–weighted datasets were not available for the whole of the time period in question at the time of publication. Among other changes, this re–weighting process includes upward revisions to the number of EU accession migrants in the late 2000s. This group of migrants are therefore likely to be under–counted in the version of the LFS datasets used in this analysis, which may have minor implications for our findings, particularly regarding country of birth.

'Shift-share' analyses: decomposing wage growth by each factor in turn



- Our shift-share analysis builds on methods used by the IFS (*Poverty and Inequality in Britain*) and ONS (*Examination of Falling Real Wages*).
- The approach disaggregates nominal pay growth (in the Labour Force Survey) into the part that is down to pay changes *within* groups (the 'wage effect'), and the part that is down to a shift in the proportion of employees *across* groups (the 'employment' effect), using the following formula:

$$\Delta \text{PAY} = \underbrace{\sum_{i=1}^I \left(\frac{w_{i,t-1} + w_{i,t}}{2} \times \Delta \text{pay}_{i,t} \right)}_{\text{wage effect}} + \underbrace{\sum_{i=1}^I \left(\frac{\text{pay}_{i,t-1} + \text{pay}_{i,t}}{2} \times \Delta w_{i,t} \right)}_{\text{compositional effect}}$$

- Where $\text{pay}_{i,t}$ represents the average wage for group (e.g. industry or age-group) i (with I groups in total) at time t , and $w_{i,t}$ represents the proportion of all employees that are in group i at time t .

Regression analysis: decomposing wage growth by all factors together



- We estimate a regression equation to determine the wage mark-up for various characteristics, using pooled Labour Force Survey data from 2003 Q1 to 2014 Q2, including a quarterly time dummy to capture time-specific effects:

$$\mathbf{wage}_i = \text{hours}_i + \text{qual}_i + \text{sex}_i + \text{region}_i + \text{priv/pub}_i + \text{c.o.birth}_i + \text{ind}_i + \text{age}_i + \text{tenure}_i + \text{occ}_i + \text{time}$$

- We then calculate the effects of compositional changes in the workforce by applying the estimated coefficients to the profile of employee characteristics each quarter. In other words, we apply the wage mark-ups to the employee mix to assess whether compositional changes are predicted to result in rising or falling average pay, controlling for *within-all-groups* effects (‘wage effects’) and time-specific effects
- Finally, we compare the estimated compositional effects to actual nominal pay growth in the Labour Force Survey data to derive the relative contribution of *wage* effects and *compositional* effects to overall pay growth. We then apply this contribution to official AWE growth.



- Bank of England, *MPC Minutes*, September 2014: <http://www.bankofengland.co.uk/publications/minutes/Documents/mpc/pdf/2014/mpc1409.pdf>
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