Office for National Statistics

Compendium

Distribution of UK earnings analyses: 2017

Distribution of earnings analyses using Annual Survey of Hours and Earnings (ASHE) provisional 2017 data and previous ASHE datasets, including differences in earnings by age, sex, region, skill-level and working pattern.

Contact:
Ellys Monahan
economic.advice@ons.gov.uk
+44 (0)1633 455783

Release date:
2 November 2018

Next release:
To be announced

Chapters in this compendium

Compendium

Distribution of earnings in the UK: 2017

Distribution of earnings analysis using Annual Survey of Hours and Earnings (ASHE) provisional 2017 data and previous ASHE datasets, with a focus on earnings growth for those in employment between two consecutive years.

Contact:
Ellys Monahan
economic.advice@ons.gov.uk
+44 (0)1633 455783

Release date:
2 November 2018

Next release:
To be announced

Table of contents

1 . Main points

- In 2017, there was a continuation of the trend for a growing concentration of pay at the lower end of the UK' s earnings distribution, clustered around the National Living Wage (NLW) of £7.50 per hour.
- The 2017 earnings distribution was positively skewed and centred around the NLW, with a steadily-falling share of employees earning higher wages.
- In 2017, of all employees, 31.6% experienced less than or equal to 1.0% nominal earnings growth, partially reflecting the wage restraint for public sector employees.
- Fewer employees experienced a pay decrease in real terms in the year to April 2016 compared with 2011 and 2017.

2 . Introduction

In recent years, the UK has experienced falling unemployment and a tightening of the labour market. Unusually, this has been accompanied by weak earnings growth. To understand changes in earnings in the context of inflation, this analysis focusses on data adjusted using the Consumer Prices Index including owner occupiers' housing costs (CPIH). This gives a measure of the “real” value of earnings, with a decrease meaning that earnings growth is below inflation. The results from the Annual Survey of Hours and Earnings (ASHE) suggest that nominal median gross weekly earnings for full-time employees grew only 2.2% in 2017 . Although this was a joint highest nominal growth since the economic downturn of 2008, it represented a fall in real earnings of 0.4%. This is the first time since 2014 that there has been a fall in real earnings.

While this article focuses on the 2017 provisional data, the most recent ASHE data (containing revised 2017 data) were published on 25 October 2018 in Employee earnings in the UK: 2018. The fall in real earnings for 2017 was revised to 0.5%.

An analysis of the variation in the levels of earnings provides useful insight into distributional outcomes in the UK. It yields information about how much more or less one group earns relative to another. Additionally, the ASHE datasets can be used to examine the typical experience of earnings growth through time. Analysis of this sort can be used to address questions about the degree of inflationary pressure and the extent of spare capacity remaining in the UK labour market, which in turn may help economists understand wage pressures. By necessity, this work focuses on employees who reported being in employment in consecutive periods – which permits the calculation of earnings growth rates.

Throughout the analysis on earning growth rates, changes to the National Living Wage (NLW) and National Minimum Wage (NMW) are referred to. Wage stickiness (0.0% nominal growth) and the public sector wage restraint are also referred to throughout in the context of each characteristic discussed.

3 . Definitions

The analysis in this article uses hourly pay as the variable of interest. This variable includes basic pay, incentive pay, shift premiums and overtime pay for all hours worked. It reflects the actual gross earnings of UK employees, independent of the number of hours worked and enables full comparisons between groups in each time period to be made. Pensions and benefits in kind are excluded from this analysis for consistency with the previous release using 2016 provisional data.

The main statistical bulletin of UK employee earnings based on the Annual Survey of Hours and Earnings uses a standard filter (that is, employees on adult rates of pay whose earnings have not been affected by absence) that has not been applied here. This is due to hourly pay being less affected by loss of pay during the period than weekly pay.

All employees aged 16 years and over – with no upper age limit – are included in the analysis.

This analysis highlights the National Living Wage (NLW), which increased on the year by 4.2% in nominal terms and 1.5% in real terms on 1 April 2017 from £7.20 to £7.50, and applies to all those aged 25 years and over. The increases in the National Minimum Wage (NMW) on 1 April 2017 are also referenced. These were:

- to £7.05 for those aged 21 to 24 years
- to £5.60 for those aged 18 to 20 years
- to £4.05 for those aged under 18 years
- to £3.50 for apprentices aged under 19 years or in the first year of their apprenticeship

Growth analysis captures changes to the April of each year, particularly emphasising growth in the year to April 2011, April 2016, and April 2017. Between April 2015 and April 2016, the NLW was introduced and applied to many employees previously paid the NMW. This resulted in an increase in nominal terms of 10.8% and in real terms of 10.0%. Between April 2010 and April 2011, the NMW increased in nominal terms by 2.2%, but in real terms it fell by 1.5%.

Unlike previous nominal analysis, this analysis is based on real earnings data. The inflation rates applied are the average 12-month growth rate for April due to the ASHE data collection occurring in April. For 2017, the 12-month growth rate is 2.6%. Inflation data are available. For the distributional figures, all data are presented in constant prices (2017 prices), to compare earnings after inflation.

The statistics on the distribution of growth rates illustrate the distribution of hourly earnings growth across years. For example, April 2011 corresponds to employees in employment at the time of the survey in both 2010 and 2011, and April 2017 corresponds to employees in employment at the time of the survey in both 2016 and 2017.

For consistency over time, employees of those banks classified to the public sector in 2008 have been treated as if they were in the private sector throughout.

Caution should be taken when drawing any conclusion from comparisons across the time series because ASHE was the subject of a discontinuity in 2011 when new occupation codes were introduced.

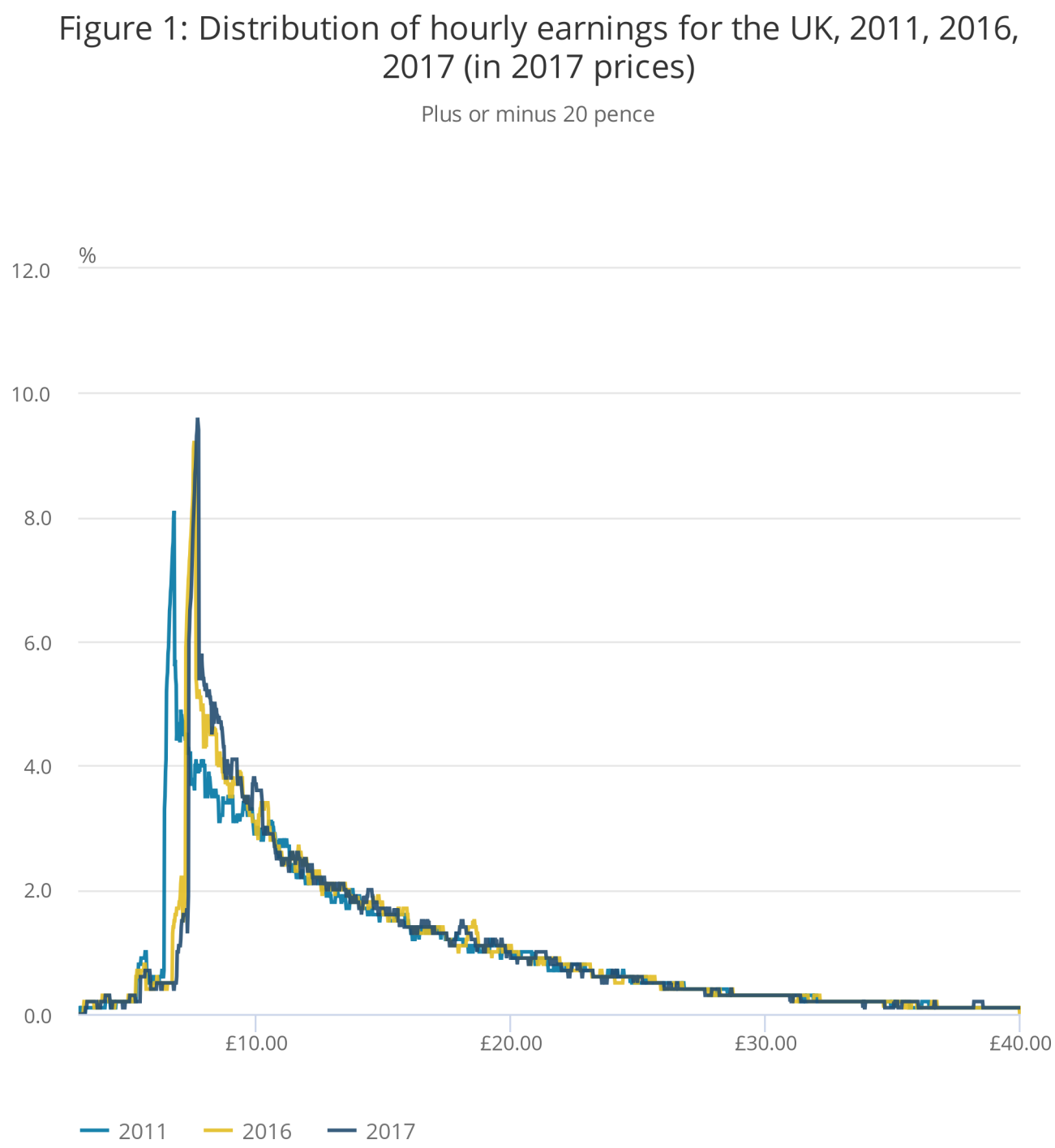
4 . UK earnings

Distribution

Figure 1 shows the distributions of hourly earnings in 2017 prices for all employees in 2011, 2016 and 2017. The distribution chart shows the density in percentage terms (y-axis) of jobs receiving within 20 pence of the hourly earnings (x-axis).

Figure 1: Distribution of hourly earnings for the UK, 2011, 2016, 2017 (in 2017 prices)

Plus or minus 20 pence



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. Each point on the x-axis represents a rolling sum of the density of jobs receiving greater than or equal to 20 pence below, and strictly less than 20 pence above, the stated hourly earnings.

3. As the density records the rolling sum of jobs paid within 20 pence of the stated amount at each point on the x-axis, jobs paid the April 2017 adult National Living Wage (£7.50) will appear between the x-axis values of £7.30 and £7.70.

4. The 2017 NLW refers to the April 2017 Adult National Living Wage of £7.50.

In 2011, the earnings distribution was positively skewed and centred around the April 2011 National Minimum Wage (NMW) rate of £6.56 an hour in 2017 prices (or £5.93 an hour in 2011 prices). The long, thinning right-hand tail of each distribution indicates the steadily falling share of employees earning higher wages. The left-hand tail suggests relatively few jobs were paid less than the NMW, and includes employees aged under 25 years and paid according to alternative NMWs.

By 2016, the spike of the distribution had shifted and was more defined around the 2016 National Living Wage (NLW) rate of £7.39 an hour in 2017 prices (or £7.20 in 2016 prices). Above this level of pay the density of the distribution was less affected but it shifted slightly to the right.

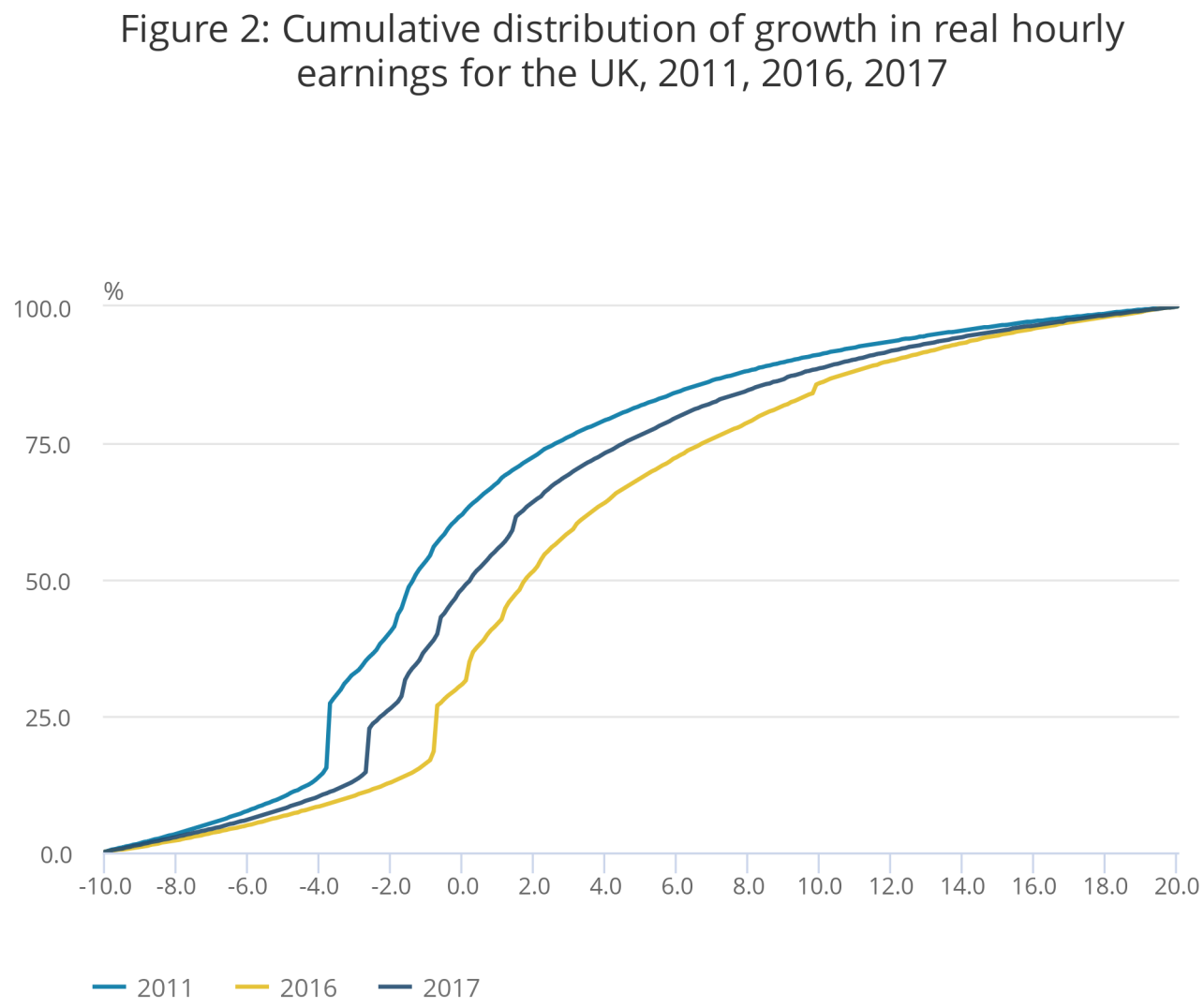
The 2017 earnings distribution mirrored that seen in 2016, with the spike centred again around the NLW rate of £7.50 an hour in 2017 prices. This was the NLW required to be paid for those employees who were aged 25 years and over, although there was a higher share of employees paid at this rate. Above this level of pay, the density again shifted slightly to the right.

Examining the distribution of earnings in this manner exposes several characteristics of the UK’s recent experience. The growing concentration of employees experiencing pay at the lower end of the UK’s earnings distribution can be observed, along with the increasing proportion of those earning the NLW. This growing concentration has implications for living standards. While in 2011 the modal rate of hourly pay was £6.76 in 2017 prices (or £6.11 in 2011 prices) and covered 8.1% of all jobs within its plus or minus 20 pence range, in 2017 the modal rate of hourly pay was £7.68 and covered 9.6% of all jobs within its plus or minus 20 pence range. Both modal rates of pay lie within range of the NLW.

Growth

Analysis of the growth of earnings provides further insight into the distributional outcomes for employees. Figure 2 presents the distributions of growth in real hourly earnings as a cumulative percentage frequency chart in 2011, 2016 and 2017.

Figure 2: Cumulative distribution of growth in real hourly earnings for the UK, 2011, 2016, 2017



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. For each growth rate on the horizontal axis, the curve indicates the proportion of employees who experienced earnings growth at that rate.

3. This figure uses individual level data from the Annual Survey of Hours and Earnings (ASHE) to calculate the growth of nominal weekly earnings for employees observed in pairs of years in 2010 and 2011, 2015 and 2016, and 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

4. This figure only looks at employees whose pay growth between 2016 and 2017 fell between negative 10% and positive 20%. As such, the proportion of employees on the y-axis should not be interpreted as the entire population of employees.

Figure 2 suggests fewer employees experienced a pay decrease or freeze in real terms in the year to April 2016 compared with 2011 and 2017. The year 2011 saw the fewest number of employees who experienced positive pay growth in real terms. The growth in earnings improved in 2016, represented by the curve shifting rightwards, and it worsened in 2017 with the curve shifting leftwards.

Figure 2 highlights wage stickiness (0.0% nominal growth) represented by spikes in the proportions of employees experiencing real growth of around negative 3.7% in 2011, negative 0.7% in 2016 and negative 2.5% in 2017. This is particularly prominent in 2011 with 27.3% of employees experiencing pay growth of less than or equal to negative 3.7%, as many public sector employees experienced the pay freeze announced in the 2010 Budget. Earnings growth in 2016 and 2017 responded weakly to changes in macroeconomic indicators such as the inflation rate.

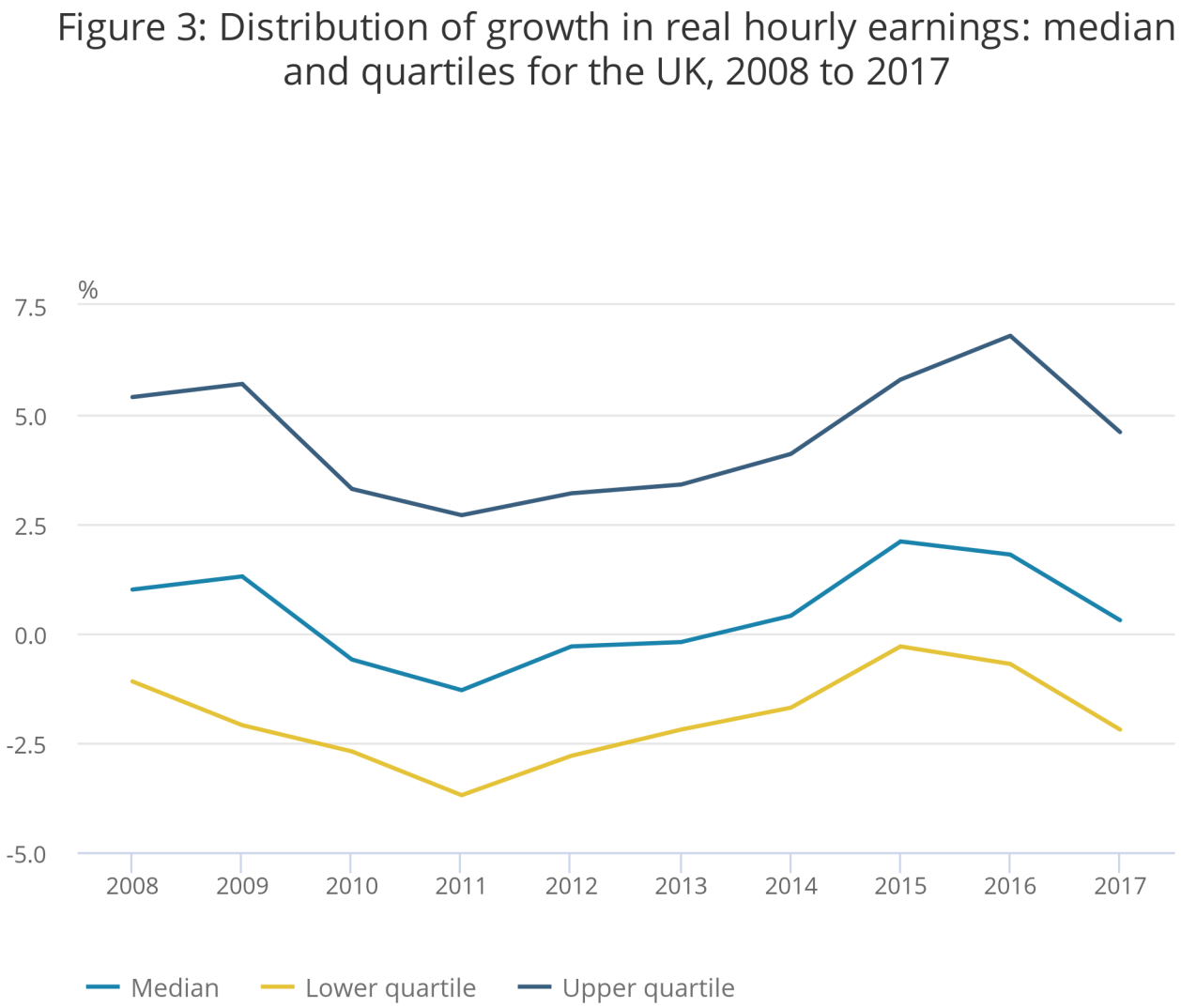
Pay growth of less than or equal to 1.0% in nominal terms partially reflects the wage restraint for public sector employees (excluding police and prison officers for whom the cap was lifted in September 2017), whose pay growth was capped at 1.0% from 2013 onwards. Figure 2 shows that in 2016, there were 36.7% of employees, and in 2017 there were 31.6% of employees experiencing less than or equal to 1.0% nominal earnings growth.

In 2017, the median real wage growth rate was 0.2%. Note this is different from the real growth rate for the median earner of negative 0.4% in 2017, representing the middle employee’s (ordered by earnings) earnings growth. The median real wage growth rate refers to the middle growth rate once ordered. This difference is partially due to sample differences and the distribution of growth rates not following the distribution of earnings.

The 2017 median real wage growth rate was higher than for 2011 and lower than for 2016.

The median, upper and lower quartile real wage growth rates over time are shown in Figure 3.

Figure 3: Distribution of growth in real hourly earnings: median and quartiles for the UK, 2008 to 2017



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.
2. Each line on the figure indicates the lower quartile, median and upper quartile growth rates over time.
3. This figure uses individual level data from ASHE to calculate the growth of nominal weekly earnings for employees observed in pairs of years. For example, in 2010 and 2011, 2011 and 2012, 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

Figure 3 shows that the lower and upper quartile real wage growth rates follow a similar trend to that of the median real wage growth rate. Real wage growth rates followed a decreasing trend throughout the economic downturn and until 2011, before increasing until 2015 (except the upper quartile, whose real wage growth rate increased until 2016). More recently, the real wage growth rates have followed a decreasing trend again.

The lower quartile real wage growth rate for all years was negative, where each year's earnings decreased on the year prior. The 25th percentile real wage growth rate was lowest at negative 3.7% in 2011, during stagnation in the economic downturn. The lowest annual decline of the lower quartile real wage growth rate was in 2015, at 0.3%.

Fluctuating between negative 2.0% and positive 2.1% growth, the median real wage growth rate follows a similar trend to the lower quartile real wage growth rate, though was only negative between 2010 and 2013. In 2017, the median real wage growth rate was 0.3%.

The upper quartile real wage growth rate is the most volatile of the growth rates presented, fluctuating between its trough of 2.7% in 2011 and its peak of 6.8% in 2016. For the upper quartile, the 2017 real wage growth rate of 4.6% was a decrease on the 2016 upper quartile real wage growth rate of 6.8%.

5 . Background information

The Annual Survey of Hours and Earnings (ASHE) is based on a 1% sample of employee jobs taken from HM Revenue and Customs pay as you earn (PAYE) records. Information on earnings and hours is obtained from employers and treated confidentially. ASHE does not cover the self-employed or employees not paid during the reference period. The information for 2017 pay period included 26 April 2016.

This article contains analysis of the provisional results from the 2017 survey and revised results from the series up to 2016. More detailed information is available.

We calculate our headline measure of "real" wage growth using the Consumer Prices Index including owner occupiers' housing costs (CPIH) to remove the effects of inflation. CPIH is our lead measure of inflation, which gives the best estimate of the changing costs of living as it measures the full range of price changes that affect households, including Council Tax and the costs associated with owning a home, which are a substantial proportion of household expenditure.

While the Consumer Prices Index (CPI) is a good, internationally comparable, measure of inflation, which is used by the Bank of England to target inflation, it does not contain either Council Tax nor an estimate of owner occupier housing costs. It is therefore not as comprehensive a measure of consumer inflation as CPIH. As such, this analysis calculates changes in real wages using CPIH.

6 . Quality and methodology

The Annual Survey of Hours and Earnings, Low Pay and Annual Survey of Hours and Earnings Pension Results Quality and Methodology Information report updated for the 2018 data contains important information on:

- the strengths and limitations of the data and how it compares with related data
- users and uses of the data
- how the output was created
- the quality of the output including the accuracy of the data

More specific information about our low pay methodology is also available.

Relevance

The earnings information presented relates to gross pay before tax, National Insurance or other deductions, and excludes payments in kind. The results are restricted to earnings relating to the survey pay period and so exclude payments of arrears from another period made during the survey period; any payments due as a result of a pay settlement but not yet paid at the time of the survey will also be excluded.

For particular groups of employees, changes in median earnings between successive surveys may be affected by changes in the timing of pay settlements, in some cases reflecting more than one settlement and, in others, no settlement at all.

Full-time employees are defined as those who work more than 30 paid hours per week or those in teaching professions working 25 paid hours or more per week.

Accuracy

Revisions

In line with normal practice this release contains revised estimates from the 2016 survey results, which were published on 26 October 2016. These results take account of some corrections to the original 2016 data that were identified during the validation of the results for 2017, as well as late returns. Both the 2017 Annual Survey of Hours and Earnings (ASHE) provisional results and the revised estimates for 2016 were made available from 26 October 2017.

Sampling error

ASHE aims to provide high quality statistics on the structure of earnings for various industrial, geographical, occupational and age-related breakdowns. However, the quality of these statistics varies depending on various sources of error.

Sampling error results from differences between a target population and a sample of that population. Sampling error varies partly according to the sample size for any particular breakdown or “domain”. Indications of the quality of ASHE estimates are provided in the form of coefficients of variation (CV). The coefficient of variation is the ratio of the standard error (SE) of an estimate to the estimate, expressed as a percentage. Generally, if all other factors are constant, the smaller the CV the higher the quality of the estimate. Tables of CVs corresponding to estimates are published alongside the estimates themselves.

It should be noted that at low levels of disaggregation high coefficients of variation imply estimates of low quality. For example, for an estimate of £400 with a CV of 10%, the true value is likely to lie between £321.60 and £478.40. This range is given by the estimate plus or minus 1.96*SE. Where these ranges for different estimates overlap, interpretation of differences between the relevant domains becomes more difficult.

Non-sampling error

ASHE statistics are also subject to non-sampling errors. For example, there are known differences between the coverage of the ASHE sample and the target population (that is, all employee jobs). Jobs that are not registered on Pay As You Earn (PAYE) schemes are not surveyed. These jobs are known to be different to the PAYE population in the sense that they typically have low levels of pay. Consequently, ASHE estimates of average pay are likely to be biased upwards with respect to the actual average pay of the employee population. Non-response bias may also affect ASHE estimates. This may happen if the jobs for which respondents do not provide information are different to the jobs for which respondents do provide information. For ASHE, this is likely to be a downward bias on earnings estimates since non-response is known to affect high-paying occupations more than low-paying occupations.

Finally, ASHE results tables do not account for differences in the composition of different “slices” of the employee workforce. For example, figures for the public and private sectors include all jobs in those sectors and are not adjusted to account for differences in the age, qualifications or seniority of the employees or the nature of their jobs, all factors that may affect how much employees earn.

Further information about the quality of ASHE, including a more detailed discussion of coverage and non-response errors, is available.

ASHE coverage change in 2014

The rules covering which employments employers were required to report via PAYE changed in April 2013, effectively extending the coverage of the ASHE sample to include employments that were not covered under the previous rules. The new reporting system is known as “Real Time Information” (or RTI).

Analysis on 2014 results showed that the composition of the ASHE sample was not substantially distorted as a consequence of the move to RTI. This is because the majority of the RTI-type jobs were already being reported through PAYE by employers in previous years. Consequently, we judge that the impact of the move to RTI on the estimates for ASHE is negligible.

7 . Authors

Ellys Monahan, James Wignall, and Aidan Beresford.

Compendium

Regional distribution of earnings in the UK: 2017

Regional analysis of the distribution of earnings using Annual Survey of Hours and Earnings (ASHE) provisional 2017 data and previous ASHE datasets, with a focus on earnings growth for those in employment between two consecutive years.

Contact:
Ellys Monahan
economic.advice@ons.gov.uk
+44 (0)1633 455783

Release date:
2 November 2018

Next release:
To be announced

Table of contents

1 . Main points

- In 2017, the largest difference in the proportion of employees earning around the National Living Wage (NLW) was between London (5.9%) and Northern Ireland (13.1%).
- Wage stickiness (0.0% nominal growth) was experienced by 14.2% of employees in London, 13.4% of employees in the North East, North West, and Yorkshire and The Humber, 13.8% of employees in the East and West Midlands and 13.4% of employees in the South East, South West and East of England in 2017.

2 . Introduction

The headline earnings distribution in Chapter 1 of the compendium shows some important characteristics of the experience of the UK as a whole, but there are notable differences across regions. This article uses the Annual Survey of Hours and Earnings (ASHE) to analyse the variation in earnings levels, earnings growth and distributional outcomes across regions and countries in the UK.

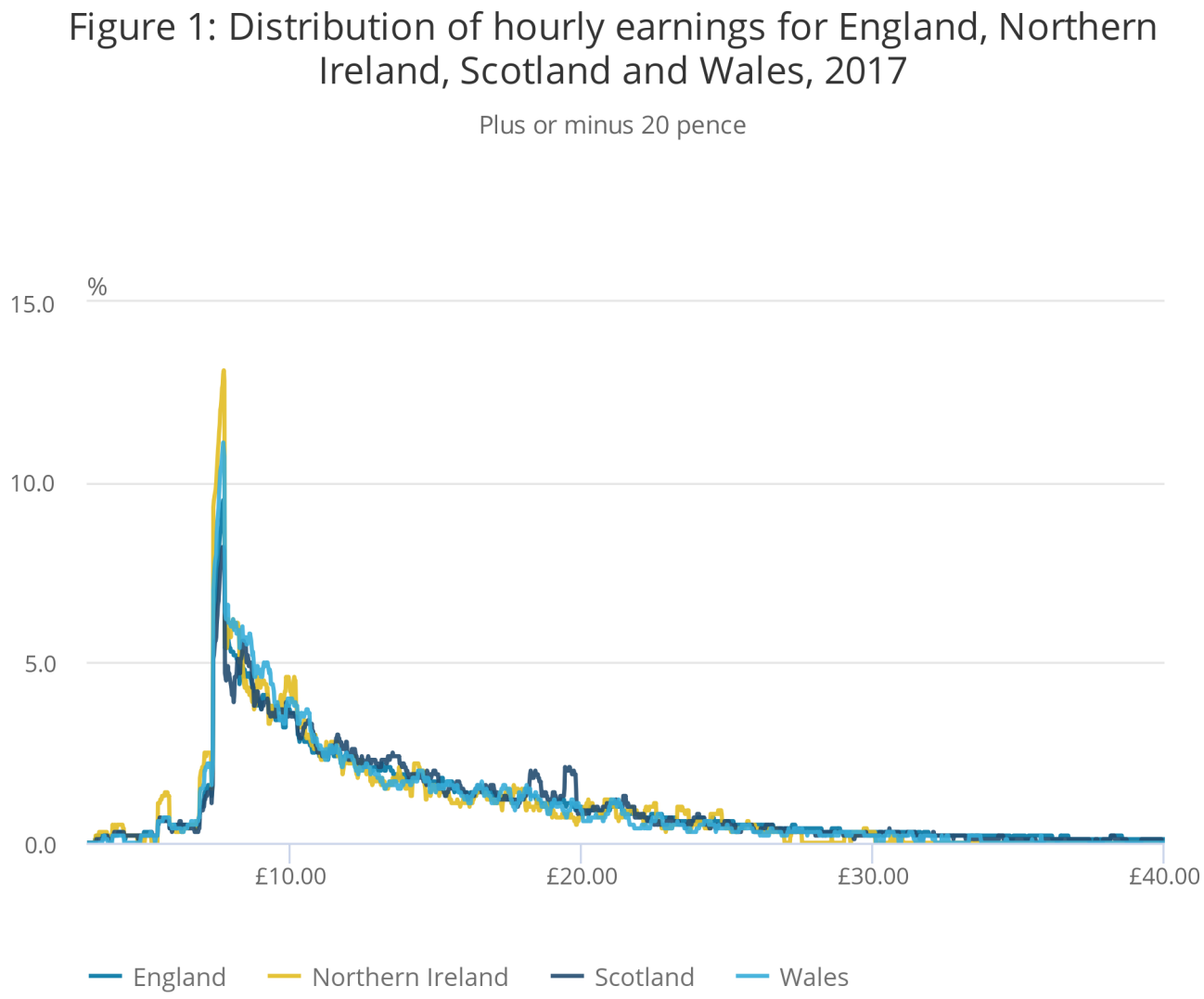
3 . Regional earnings

Distribution

The regional distributions of earnings are explored in Figures 1 to 4. For comparison purposes, London is included in each of the English regional charts as London diverges from the trend experienced by most regions.

Figure 1: Distribution of hourly earnings for England, Northern Ireland, Scotland and Wales, 2017

Plus or minus 20 pence



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. Each point on the x-axis represents a rolling sum of the density of jobs receiving greater than or equal to 20 pence below, and strictly less than 20 pence above, the stated hourly earnings.

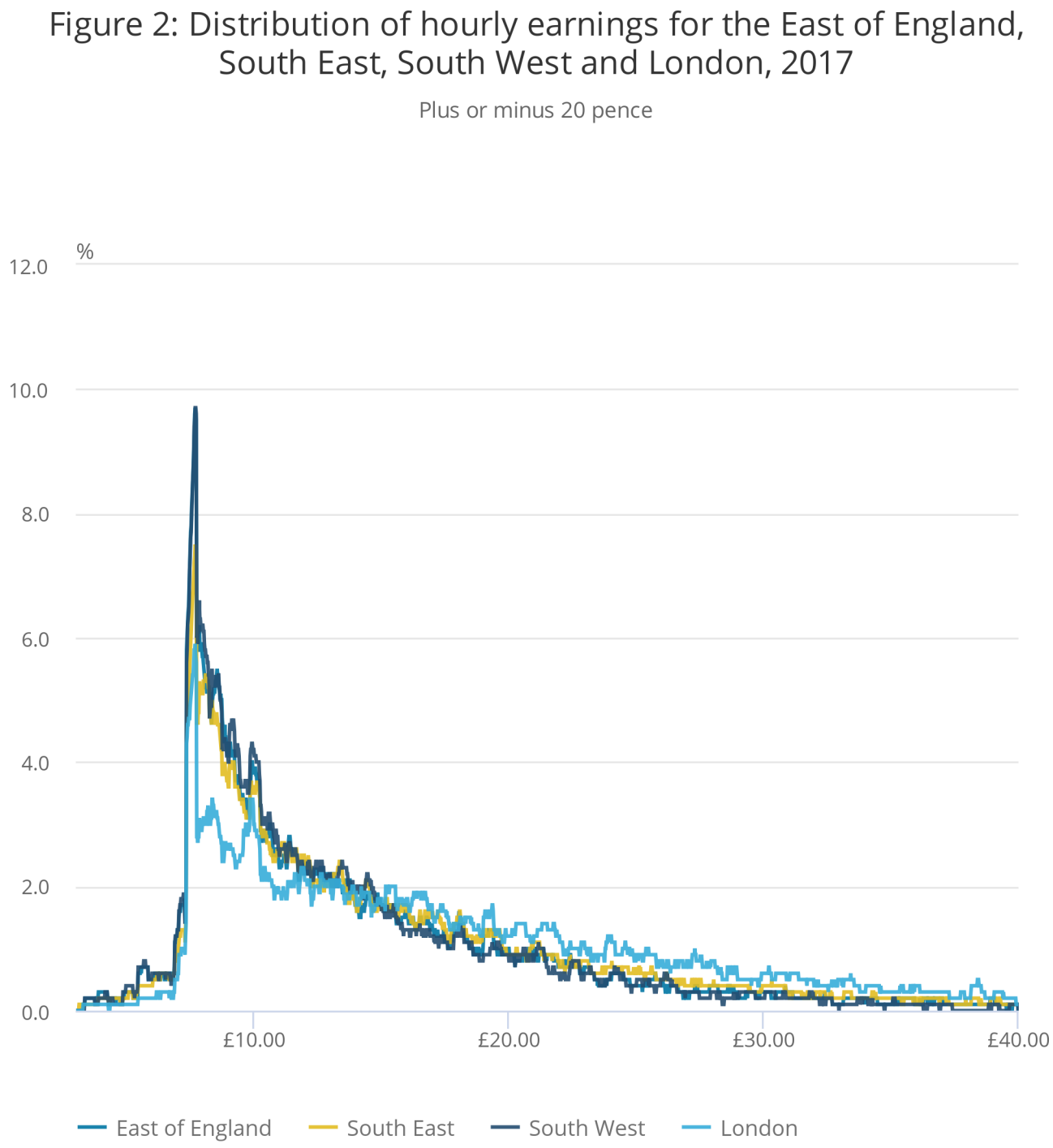
3. As the density records the rolling sum of jobs paid within 20 pence of the stated amount at each point on the x-axis, jobs paid the April 2017 adult National Living Wage (£7.50) will appear between the x-axis values of £7.30 and £7.70.

4. The 2017 NLW refers to the April 2017 Adult National Living Wage of £7.50.

Figure 1 provides insight into the earnings distributions for the constituent countries of the UK. Northern Ireland had a large spike of 13.1% of employees earning £7.70 (within plus or minus 20 pence of the National Living Wage (NLW)), higher than any other country or region of the UK in 2017. Scotland has the lowest density (8.2%) of employees that earn near the NLW compared with the other countries, but the density is not as low as that of London.

Figure 2: Distribution of hourly earnings for the East of England, South East, South West and London, 2017

Plus or minus 20 pence



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. Each point on the x-axis represents a rolling sum of the density of jobs receiving greater than or equal to 20 pence below, and strictly less than 20 pence above, the stated hourly earnings.

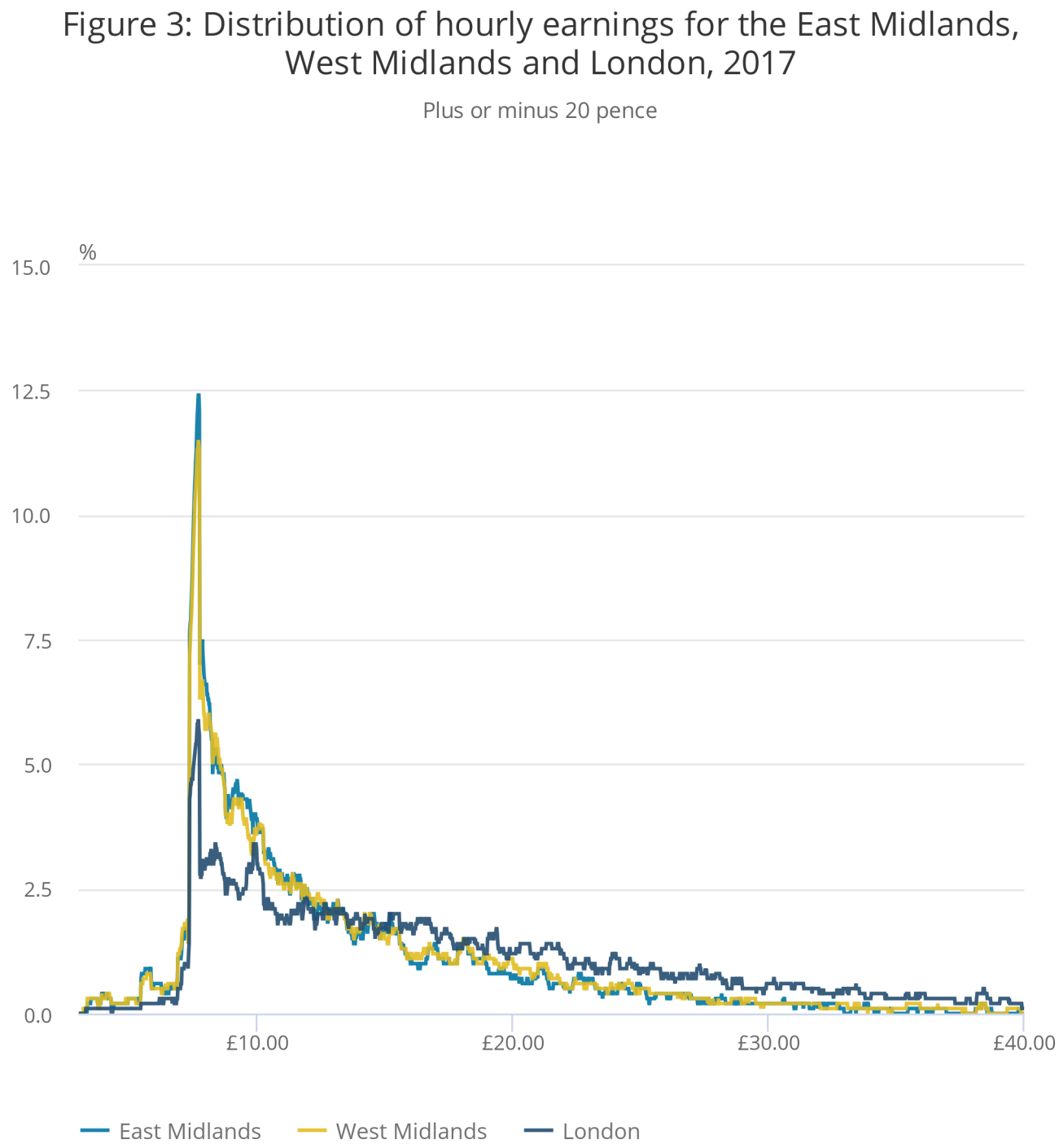
3. As the density records the rolling sum of jobs paid within 20 pence of the stated amount at each point on the x-axis, jobs paid the April 2017 adult National Living Wage (£7.50) will appear between the x-axis values of £7.30 and £7.70.

4. The 2017 NLW refers to the April 2017 Adult National Living Wage of £7.50.

Figure 2 shows the differences in the distributions of real hourly earnings between the selected regions of the UK. All distributions are clustered around the NLW in 2017, with a higher share of employees concentrated within 20 pence plus or minus NLW at £7.68 in the South West (9.7%) and East (9.7%) compared with the South East (7.5%) and London (5.9%). Generally, a lower proportion of employees earned higher wages (above £15.12 an hour) in the South West and the East of England than in London and the South East in 2017.

Figure 3: Distribution of hourly earnings for the East Midlands, West Midlands and London, 2017

Plus or minus 20 pence



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. Each point on the x-axis represents a rolling sum of the density of jobs receiving greater than or equal to 20 pence below, and strictly less than 20 pence above, the stated hourly earnings.

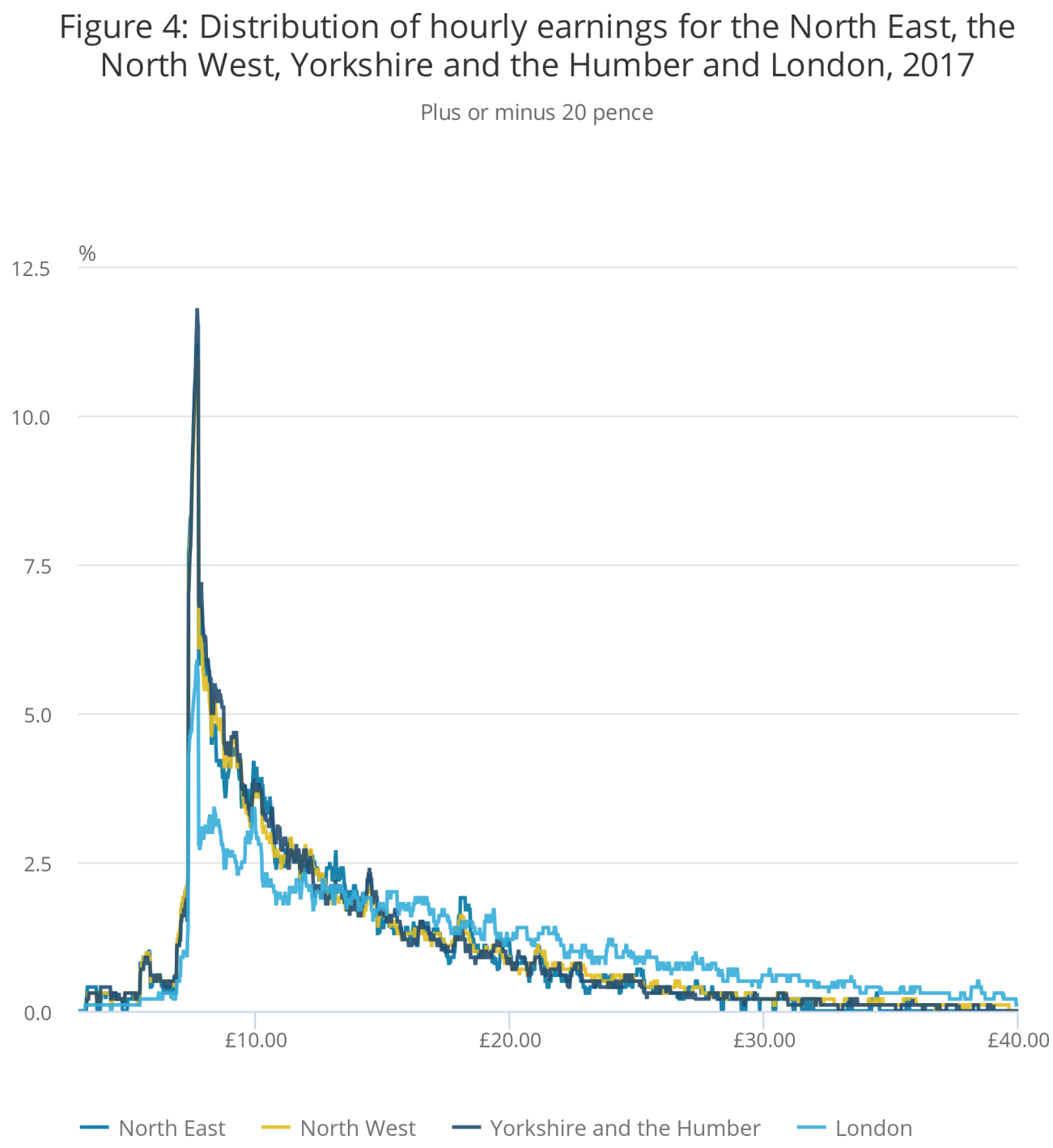
3. As the density records the rolling sum of jobs paid within 20 pence of the stated amount at each point on the x-axis, jobs paid the April 2017 adult National Living Wage (£7.50) will appear between the x-axis values of £7.30 and £7.70.

4. The 2017 NLW refers to the April 2017 Adult National Living Wage of £7.50.

Figure 3 shows a clear difference in the hourly earnings distributions of the Midlands and London in 2017. The proportion of employees earning the 2017 NLW of £7.50 differs with 5.9% of employees in London earning around the NLW (£7.68), compared with 12.4% of the employees in the East Midlands, and 11.5% of the employees in the West Midlands. The share of employees earning wages greater than the NLW declined rapidly in the Midlands, but remained steadier in London.

Figure 4: Distribution of hourly earnings for the North East, the North West, Yorkshire and the Humber and London, 2017

Plus or minus 20 pence



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. Each point on the x-axis represents a rolling sum of the density of jobs receiving greater than or equal to 20 pence below, and strictly less than 20 pence above, the stated hourly earnings.

3. As the density records the rolling sum of jobs paid within 20 pence of the stated amount at each point on the x-axis, jobs paid the April 2017 adult National Living Wage (£7.50) will appear between the x-axis values of £7.30 and £7.70.

4. The 2017 NLW refers to the April 2017 Adult National Living Wage of £7.50.

Figure 4 shows that the North followed a similar earnings distribution to other regions in the UK in 2017. The distribution of earnings in the North were concentrated around the NLW (within plus or minus 20 pence): 11.0% of the employees in the North West, 11.2% of the employees in the North East and 11.8% of the employees in Yorkshire and The Humber. Generally, a greater share of the employees in London earn approximately £14.82 and above when compared with northern regions.

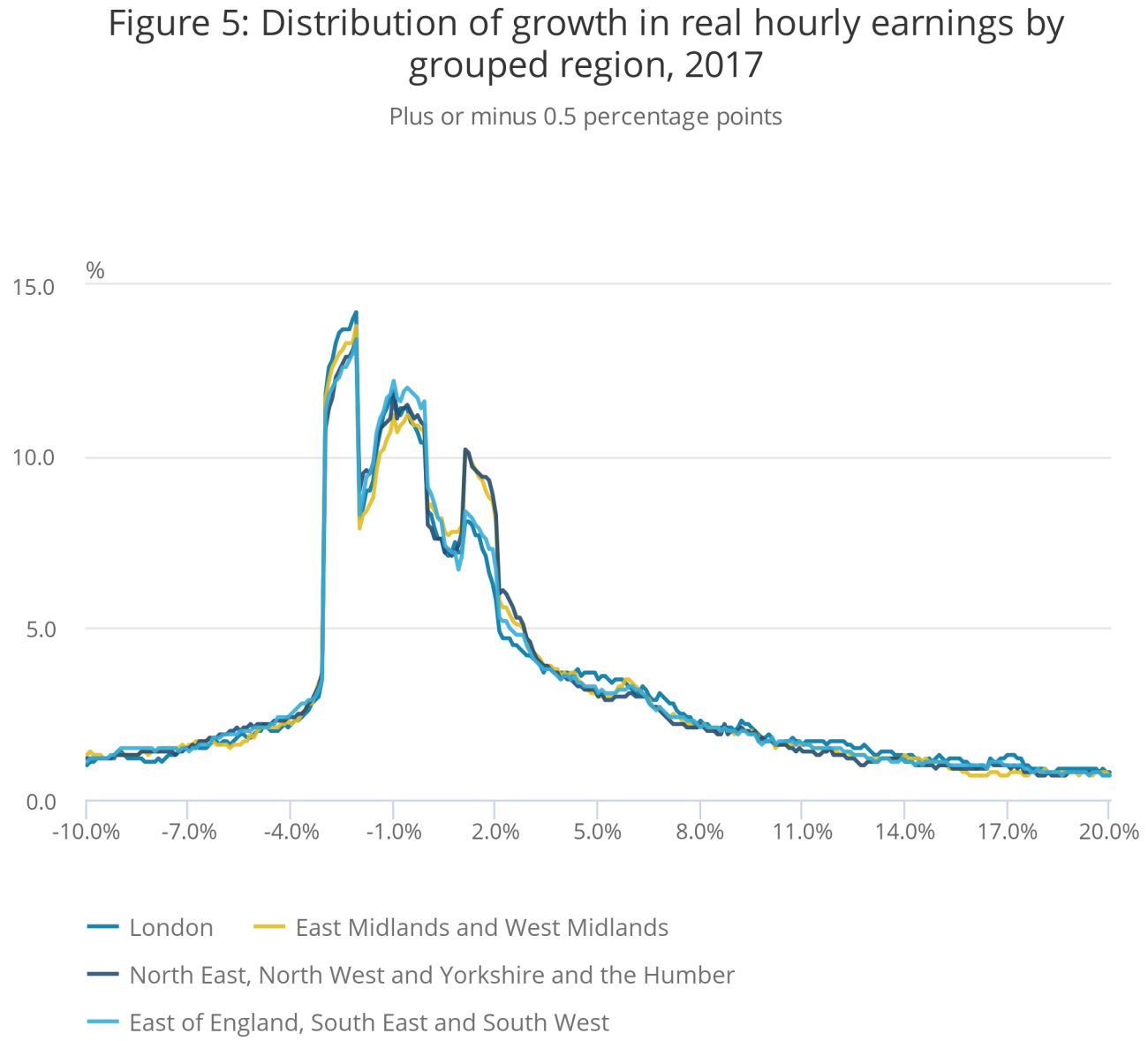
The earnings distribution for each of the regions shown in Figures 1 to 4 follow the characteristic trend introduced in Chapter 1 of the compendium: positively skewed and centred around the 2017 NLW rate of £7.50 an hour. The modal distribution for every region in 2017 was around the 2017 NLW of £7.50. However, the main difference between regions was the proportion of employees earning the modal wage. London is used in the English regional graphs for comparison purposes. It has a consistently higher proportion of employees earning higher wages and a lower proportion of employees earning around the NLW than other regions. The steadily falling share of employees earning higher wages is indicated by the long, thinning right-hand tail of each distribution. Relatively few jobs were paid less than the NLW (including employees aged under 25 years earning alternative minimum wages) as suggested by the left-hand tail.

Growth

Analysis of the growth of earnings across regions provides further insight into the distributional outcomes for employees. Figures 5 and 6 show the distributions of growth in real hourly earnings in 2017, grouping the areas presented in Figures 1 to 4 into larger regions.

Figure 5: Distribution of growth in real hourly earnings by grouped region, 2017

Plus or minus 0.5 percentage points



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. For each growth rate on the horizontal axis, the area under the curve indicates a portion of employees who experienced earnings growth within 0.5 percentage points of that rate.

3. This figure uses individual level data from the Annual Survey of Hours and Earnings (ASHE) to calculate the growth of nominal weekly earnings for employees observed in pairs of years in 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

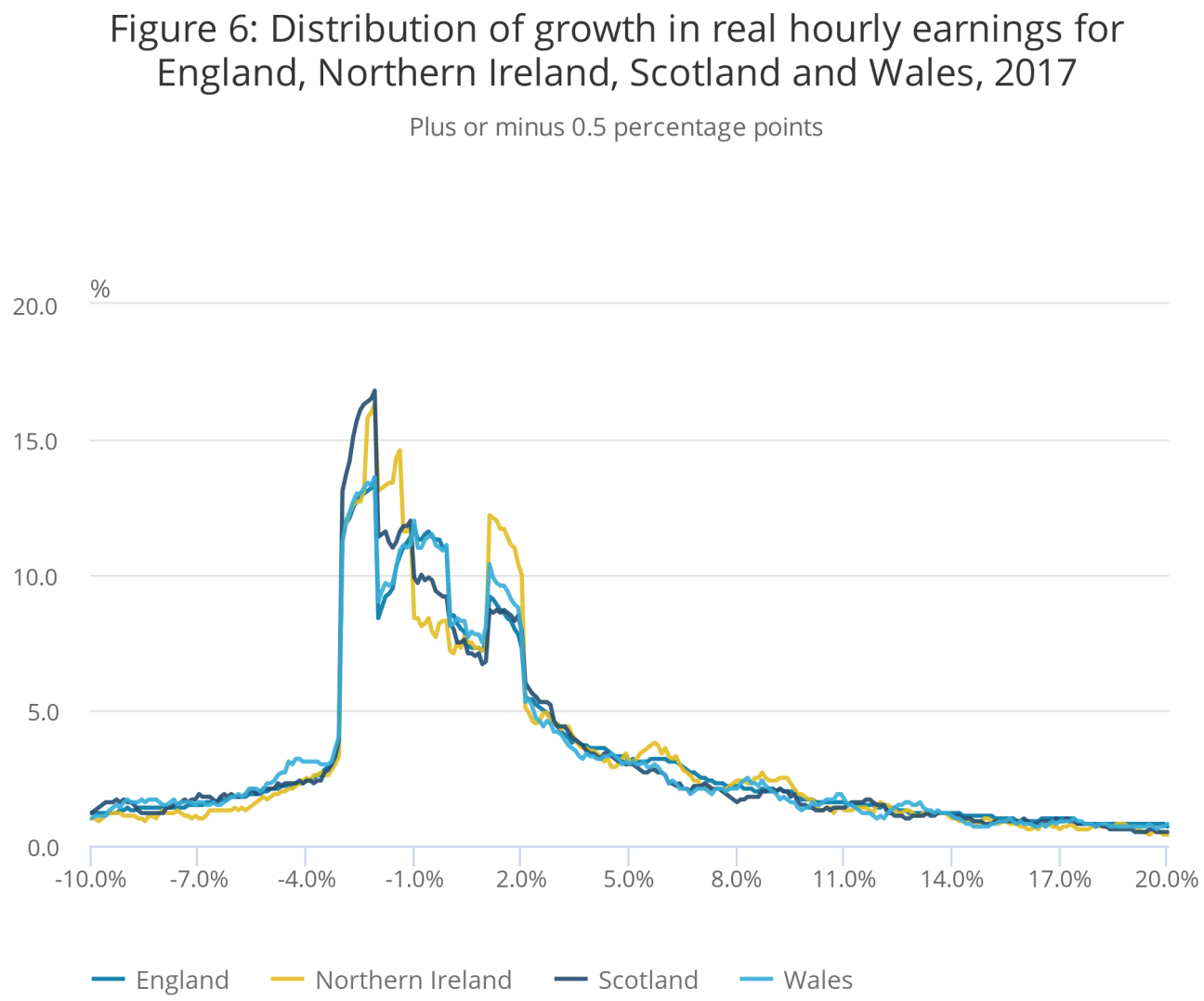
4. Note that the proportion of employees experiencing a pay growth of 4.2% may not reflect the proportion of employees on the National Living Wage in the earnings distribution in April 2017. This is because the growth analysis is focusing on employed employees in two consecutive periods and not just in April 2017.

Figure 5 shows that most regions of England had a similar trend in the growth distribution with the modal real wage growth rate at around negative 2.5% (0.0% nominal growth) in 2017. Wage stickiness was experienced by 14.2% of employees in London, 13.4% of employees in the North East, North West, and Yorkshire and The Humber, 13.8% of employees in the East and West Midlands and 13.4% of employees in the South East, South West and East of England in 2017, as wages had a delayed response to macroeconomic changes such as the inflation rate.

Figure 5 also shows the proportion of employees who received increases in their earnings in line with the 2017 NLW change of 1.5% in real terms. The proportion of employees who experienced the rate of increase was highest in the North East, North West, and Yorkshire and The Humber and the East and West Midlands, and lowest in London and the South East, South West and East of England. This is expected, given Figures 1 to 4 showed a higher proportion of employees earning the NLW were located in the the North East, North West, Yorkshire and The Humber, and the East and West Midlands and a lower proportion of the employees in the other regions.

Figure 6: Distribution of growth in real hourly earnings for England, Northern Ireland, Scotland and Wales, 2017

Plus or minus 0.5 percentage points



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. For each growth rate on the horizontal axis, the area under the curve indicates a portion of employees who experienced earnings growth within 0.5 percentage points of that rate.

3. This figure uses individual level data from the Annual Survey of Hours and Earnings (ASHE) to calculate the growth of nominal weekly earnings for employees observed in pairs of years in 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

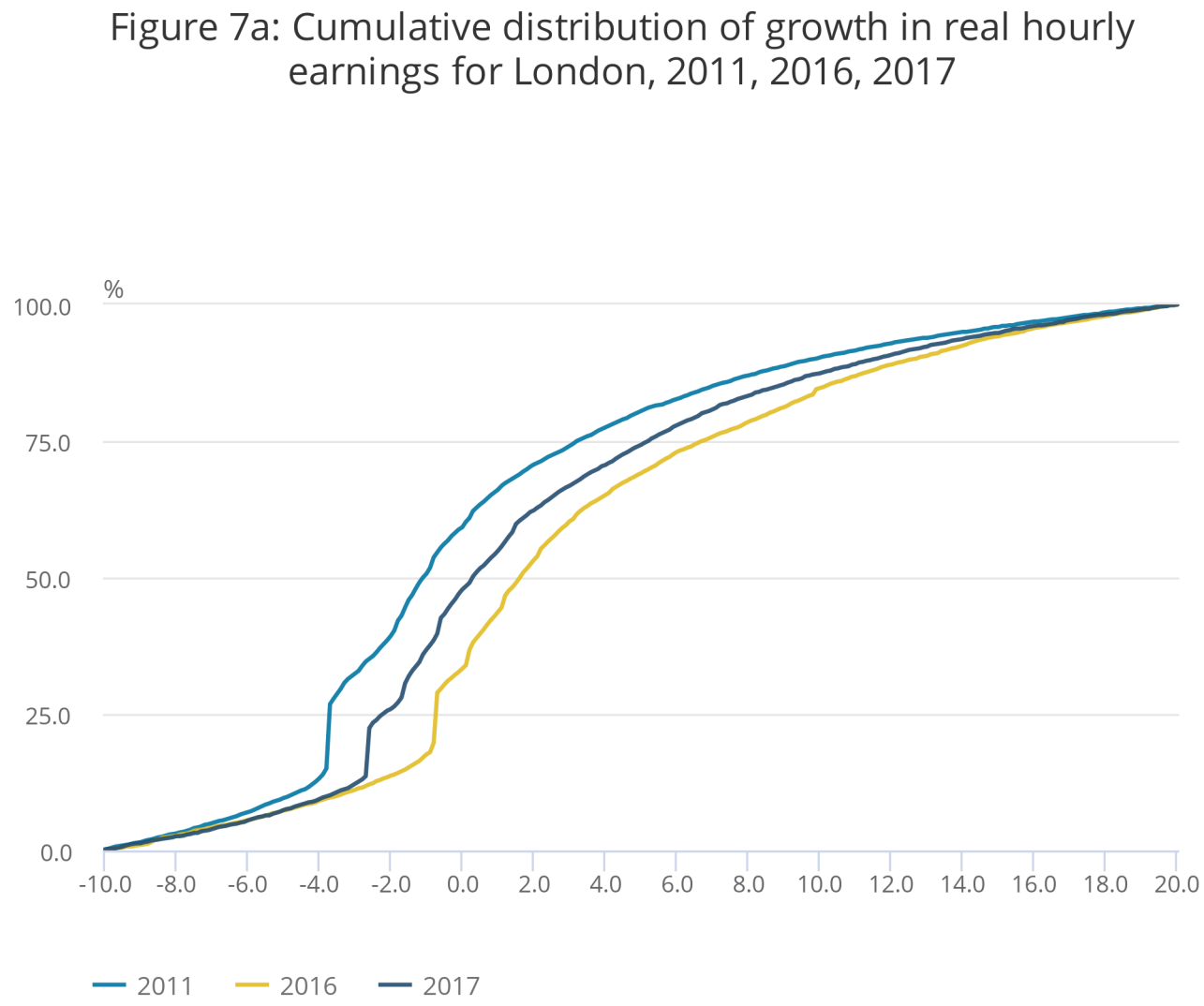
4. Note that the proportion of employees experiencing a pay growth of 4.2% may not reflect the proportion of employees on the National Living Wage in the earnings distribution in April 2017. This is because the growth analysis is focusing on employed employees in two consecutive periods and not just in April 2017.

Figure 6 shows variations in the distributions of earnings growth among the countries. Wage stickiness and the delayed response to macroeconomic changes are shown by the proportion of employees experiencing 0.0% nominal wage growth and negative 2.5% real growth. Around 13.0% of employees in Wales, 12.9% of employees in England, 16.1% of employees in Scotland and 12.7% of employees in Northern Ireland experienced stagnant wages in 2017.

Figure 6 also shows peaks in the proportions of those experiencing earnings growth in line with the 2017 NLW increase of 1.5%. Northern Ireland had the highest proportion of employees experiencing growth in line with the NLW increase at 11.7%, followed by Wales (9.6%), Scotland (8.7%) and England (8.6%). Given Figure 1 showed the region with the highest proportion of employees earning the NLW in 2017 to be Northern Ireland, it is expected that Northern Ireland would be the region with the highest proportion of employees experiencing growth in line with the NLW.

An alternative visualisation of the distribution of real earnings growth can be shown using cumulative percentage frequency charts. Figures 7a and 7b show the cumulative distributions of growth in real hourly earnings for employees in London and Northern Ireland in 2011, 2016 and 2017. These regions have been selected as they have the least and most employees earning the NLW respectively.

Figure 7a: Cumulative distribution of growth in real hourly earnings for London, 2011, 2016, 2017



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

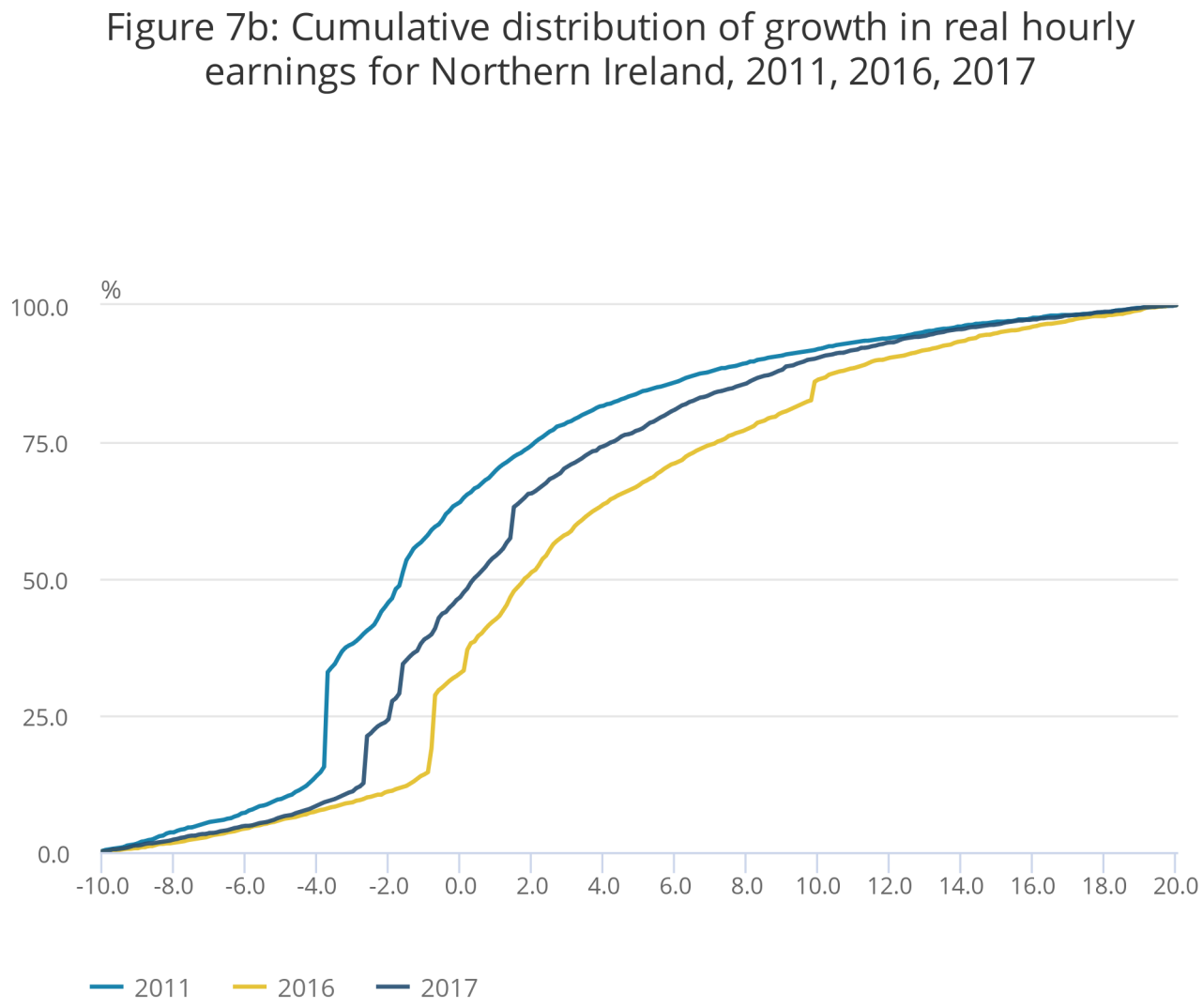
1. 2017 data are provisional.

2. For each growth rate on the horizontal axis, the curve indicates the proportion of employees who experienced earnings growth at that rate.

3. This figure uses individual level data from the Annual Survey of Hours and Earnings (ASHE) to calculate the growth of nominal weekly earnings for employees observed in pairs of years in 2010 and 2011, 2015 and 2016, and 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

4. This figure only looks at employees whose pay growth between 2016 and 2017 fell between negative 10% and positive 20%. As such, the proportion of employees on the y-axis should not be interpreted as the entire population of employees.

Figure 7b: Cumulative distribution of growth in real hourly earnings for Northern Ireland, 2011, 2016, 2017



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. For each growth rate on the horizontal axis, the curve indicates the proportion of employees who experienced earnings growth at that rate.

3. This figure uses individual level data from the Annual Survey of Hours and Earnings (ASHE) to calculate the growth of nominal weekly earnings for employees observed in pairs of years in 2010 and 2011, 2015 and 2016, and 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

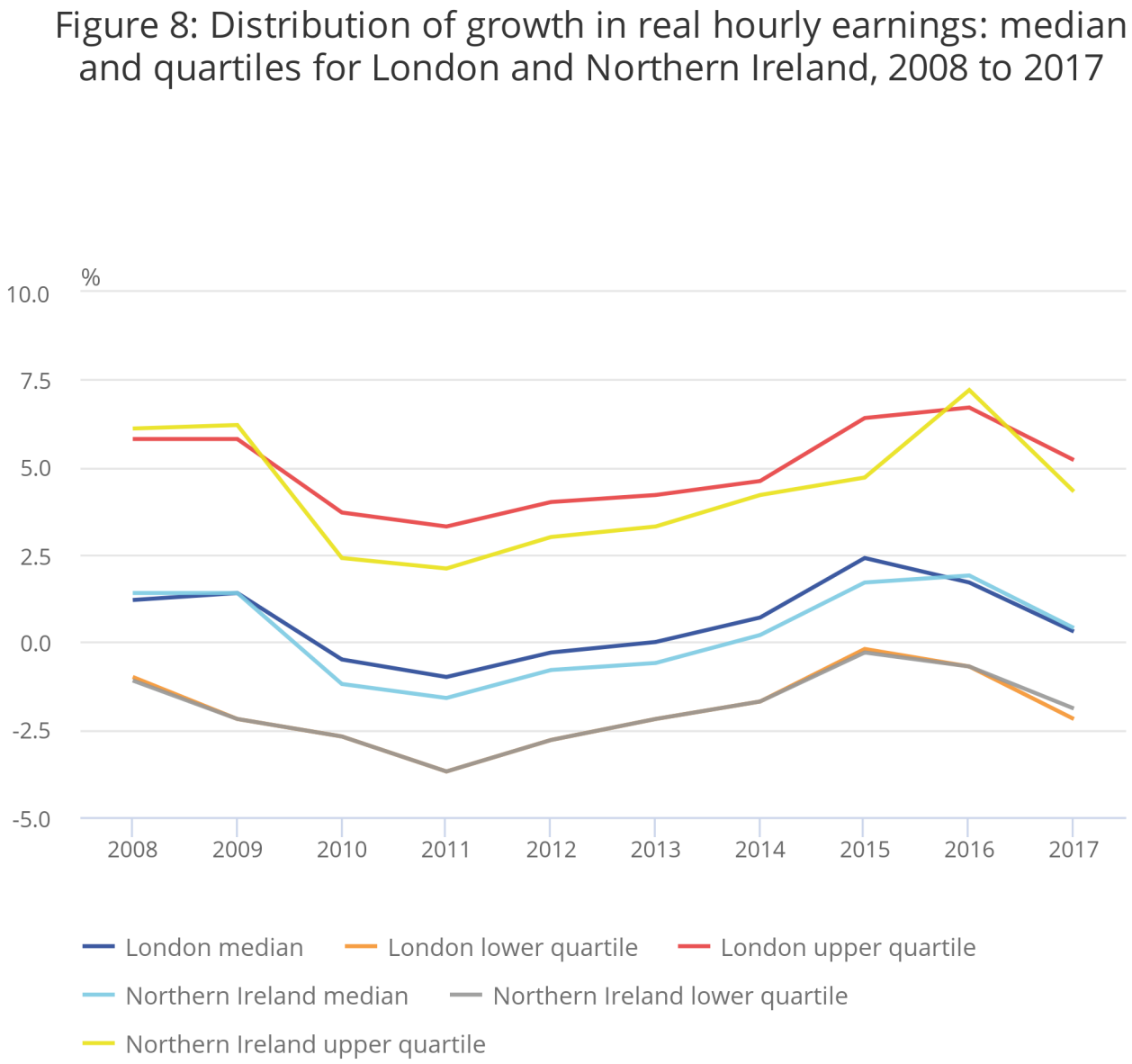
4. This figure only looks at employees whose pay growth between 2016 and 2017 fell between negative 10% and positive 20%. As such, the proportion of employees on the y-axis should not be interpreted as the entire population of employees.

Figures 7a and 7b show the characteristic trend introduced in Chapter 1 of the compendium, with fewer employees in both London and Northern Ireland experiencing a pay decrease or freeze in real terms in the year to April 2016, compared with the years 2011 and 2017. The year 2011 saw the fewest number of employees in either region experience positive pay growth in real terms. Figures 7a and 7b show that the growth in earnings improved to 2016 (as represented by the curve shifting rightwards), and worsened to 2017 (represented by the leftward shift of the curve).

The figures highlight wage stickiness as shown by the spikes in the proportions of those experiencing real wage growth of around negative 3.7% in 2011, negative 0.7% in 2016 and negative 2.5% in 2017. Wage stickiness in 2011 may be partially attributed to the pay freeze for public sector employees that was announced in the 2010 Budget. Figures 5 and 6 further illustrated the 2017 wage stickiness.

In 2011, the median real wage growth rate (note that this is a different concept to the growth in the median) for employees in London was negative 1.1%, which was 0.5 percentage points higher than the median real wage growth rate in Northern Ireland. Over time, the median real wage growth rates appear to converge. In 2016, the median real wage growth rates were 1.7% in London and 1.8% in Northern Ireland and in 2017, they were 0.4% in Northern Ireland and 0.3% in London.

Figure 8: Distribution of growth in real hourly earnings: median and quartiles for London and Northern Ireland, 2008 to 2017



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. Each line on the figure indicates the lower quartile, median and upper quartile growth rates over time.

3. This figure uses individual level data from ASHE to calculate the growth of nominal weekly earnings for employees observed in pairs of years. For example, in 2010 and 2011, 2011 and 2012, 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

Figure 8 shows that the lower and upper quartiles real wage growth rates followed a similar trend to the median real wage growth rate for the selected regions. As shown in Chapter 1 of the compendium, throughout the economic downturn and until 2011, real wage growth rates followed a decreasing trend, before increasing until 2015 (both lower quartiles and London median) and 2016 (both upper quartiles and Northern Ireland median). More recently the real wage growth rates have followed a decreasing trend again.

For both regions, the lower quartiles real wage growth rates are very similar and are negative each year as wages have been decreasing on the year prior. For both regions, the lower quartile real wage growth rate was lowest in 2011 during wage stagnation in the economic downturn and highest in 2015 post recovery.

The median real wage growth rate tracks the lower quartile real wage growth rate closely from 2010 onwards, and fluctuates between negative 2.0% and positive 2.4%.

The upper quartile shows the greatest divergence between real wage growth rates. For both regions, growth in the upper quartile was highest in 2016.

4 . Background information

Further analysis on the distribution of earnings by employment and employee characteristics using Annual Survey of Hours and Earnings (ASHE) data is contained in the compendium.

Survey details and basic quality information can be found in Chapter 1 of the compendium.

Compendium

Distribution of earnings by employee characteristics in the UK: 2017

Analysis of the distribution of earnings by employee characteristics including sex, age and working pattern level using Annual Survey of Hours and Earnings (ASHE) provisional 2017 data and previous ASHE datasets. Focuses on earnings growth for those in employment between two consecutive years.

Contact:
Ellys Monahan
economic.advice@ons.gov.uk
+44 (0)1633 455783

Release date:
2 November 2018

Next release:
To be announced

Table of contents

1 . Main points

- A greater proportion of women earned the National Living Wage (NLW) in 2017 than men, as shown by the modal peak (11.9% and 7.2% respectively).
- Wage stickiness was experienced more by men than by women in 2017.
- In 2017, nearly 1 in 5 part-time employees earned close to the NLW, while around 1 in 20 of full-time employees earned this wage.
- In 2017, the median real growth rate was 0.5 percentage points higher for part-time employees at 0.6%, compared with that for full-time employees (0.1%).
- A greater share of the employees in older age groups tended to dominate the higher end of the hourly earnings distribution when compared with younger age groups in 2017.
- A greater share of the employees in the older age groups faced stagnating wages, with less than a percentage point growth in 2017 when compared with the other age groups.

2 . Introduction

Chapter 1 of the compendium presented the headline earnings distribution analysis of the experience of the UK. Further analysis of earnings disaggregated by employees characteristics using the Annual Survey of Hours and Earnings (ASHE) is undertaken. Earnings levels, distributional outcomes and growth are analysed by working pattern, age and sex.

3 . Earnings by sex

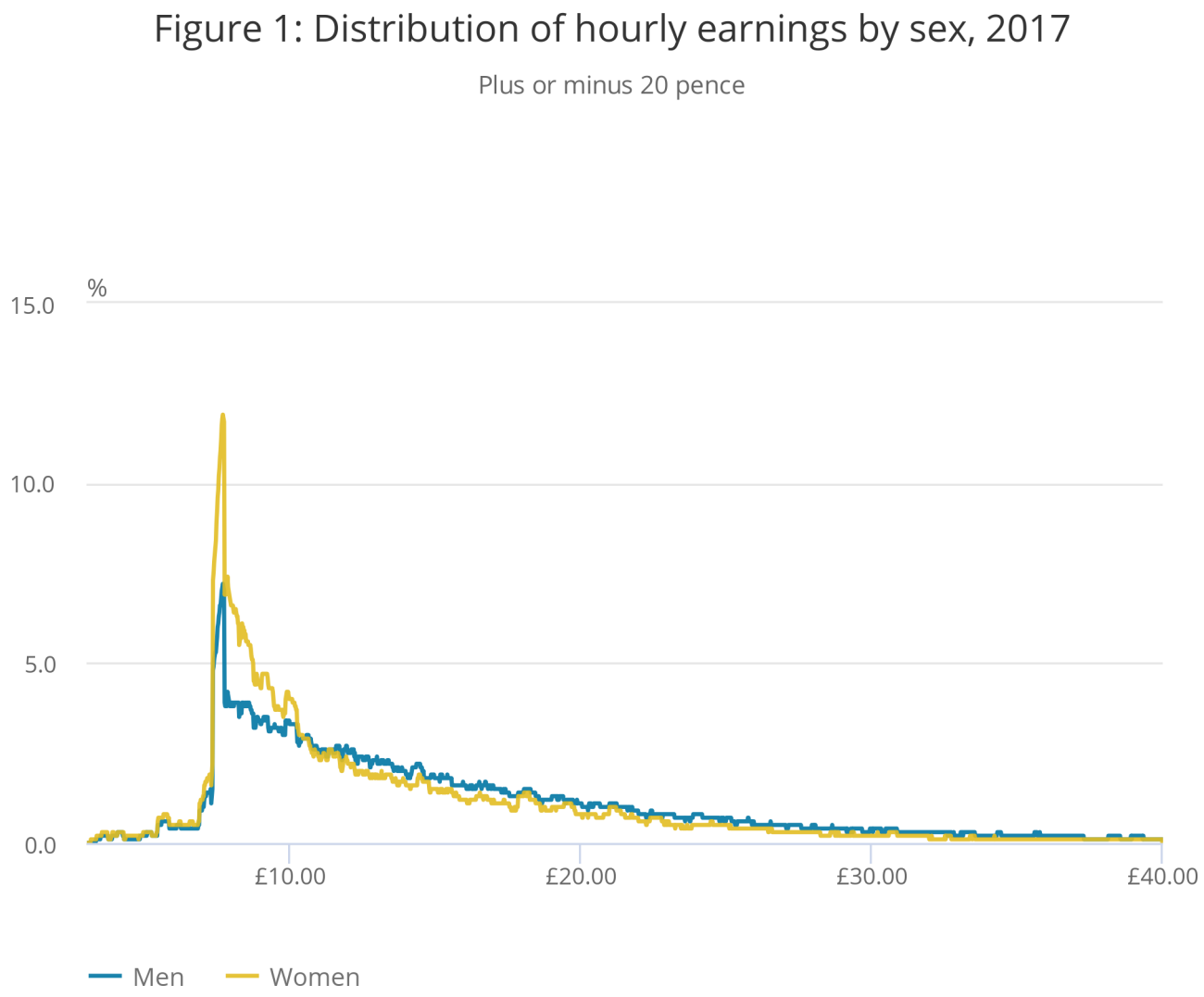
Distribution

Men and women tend to have different earnings profiles. The share of women earning close to the National Living Wage (NLW) is often higher than that of men, who are usually in higher hourly earnings pay brackets. Further analysis of the distribution of earnings by gender is covered in the article Understanding the gender pay gap in the UK.

Gender pay gap in the UK: 2018 contains the latest data on the percentage difference between men's and women’s median hourly earnings, across all jobs in the UK. This analysis helps to monitor progress towards global indicators 8.5.1 of the UN's Sustainable Development Goals.

Figure 1: Distribution of hourly earnings by sex, 2017

Plus or minus 20 pence



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. Each point on the x-axis represents a rolling sum of the density of jobs receiving greater than or equal to 20 pence below, and strictly less than 20 pence above, the stated hourly earnings.

3. As the density records the rolling sum of jobs paid within 20 pence of the stated amount at each point on the x-axis, jobs paid the April 2017 adult National Living Wage (£7.50) will appear between the x-axis values of £7.30 and £7.70.

4. The 2017 NLW refers to the April 2017 Adult National Living Wage of £7.50.

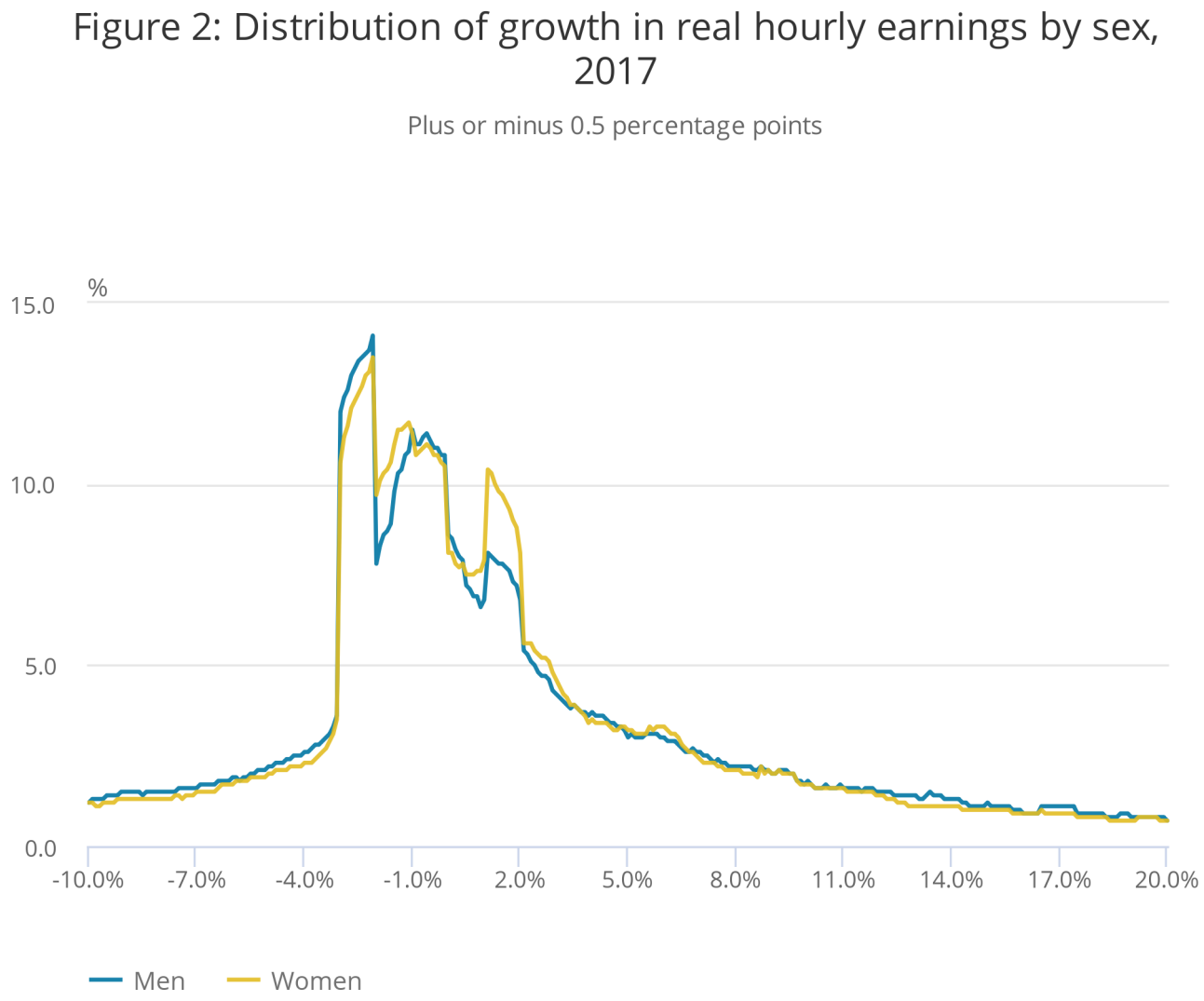
Figure 1 shows that for both men and women, the earnings distributions followed the characteristic trend introduced in Chapter 1 of the compendium: positively skewed and centred around the 2017 NLW rate of £7.50 an hour. A greater proportion of women earned the NLW in 2017, as shown by the modal peak experienced by 11.9% of women and 7.2% of men. Each distribution shows a long thinning right-hand tail representing the steadily falling share of employees earning higher wages. The left-hand tail suggests that relatively few jobs were paid less than the NLW (including employees under the age of 25 years earning alternative minimum wages). A greater share of men than women received hourly earnings of more than £12, although previous analysis suggested that the gap between the earnings profiles of men and women has declined substantially since 1997 .

Growth

Analysis of the growth of earnings by sex provides further understanding of the distributional outcomes for employees. Figure 2 presents the distributions of growth in real hourly earnings by sex in 2017.

Figure 2: Distribution of growth in real hourly earnings by sex, 2017

Plus or minus 0.5 percentage points



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. For each growth rate on the horizontal axis, the area under the curve indicates a portion of employees who experienced earnings growth within 0.5 percentage points of that rate.

3. This figure uses individual level data from the Annual Survey of Hours and Earnings (ASHE) to calculate the growth of nominal weekly earnings for employees observed in pairs of years in 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

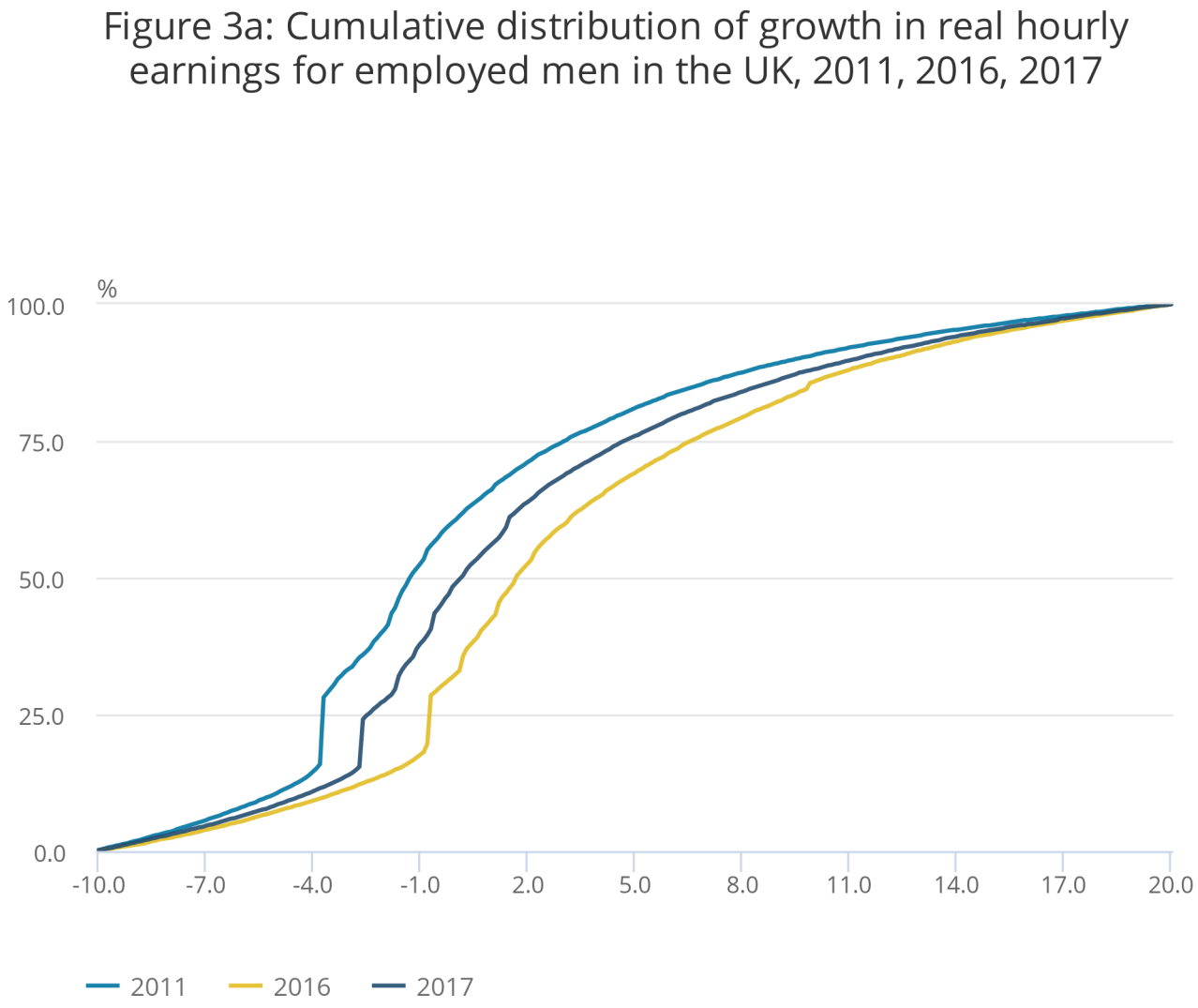
4. Note that the proportion of employees experiencing a pay growth of 4.2% may not reflect the proportion of employees on the National Living Wage in the earnings distribution in April 2017. This is because the growth analysis is focusing on employed employees in two consecutive periods and not just in April 2017.

Figure 2 highlights wage stickiness, where employees received a pay growth of 0.0% in nominal terms, and around negative 2.5% in real terms, as earnings failed to respond to macroeconomic conditions. Wage stickiness was experienced by a greater proportion of men than that of women.

The NLW increased by 1.5% in real terms in 2017, as shown by the peaks on the figure for both men and women. A higher proportion of women experienced this wage growth, which is expected, given that Figure 1 showed a higher proportion of women earning the NLW compared with men.

An alternative visualisation of the distribution of real earnings growth by sex can be shown using cumulative percentage frequency charts. Figures 3a and 3b show the cumulative distribution of growth in real hourly earnings for men and women.

Figure 3a: Cumulative distribution of growth in real hourly earnings for employed men in the UK, 2011, 2016, 2017



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

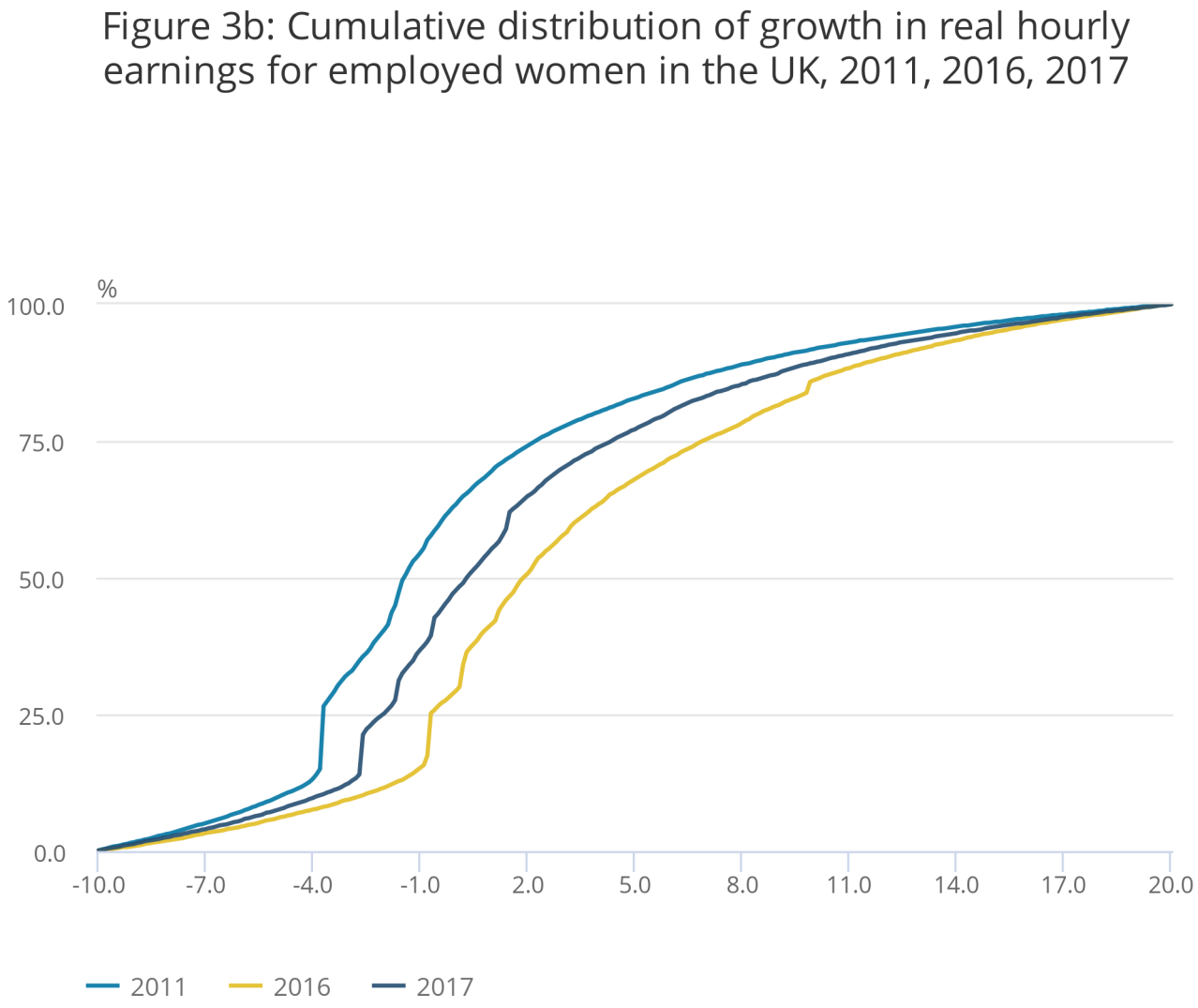
1. 2017 data are provisional.

2. For each growth rate on the horizontal axis, the curve indicates the proportion of employees who experienced earnings growth at that rate.

3. This figure uses individual level data from the Annual Survey of Hours and Earnings (ASHE) to calculate the growth of nominal weekly earnings for employees observed in pairs of years in 2010 and 2011, 2015 and 2016, and 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

4. This figure only looks at employees whose pay growth between 2016 and 2017 fell between negative 10% and positive 20%. As such, the proportion of employees on the y-axis should not be interpreted as the entire population of employees.

Figure 3b: Cumulative distribution of growth in real hourly earnings for employed women in the UK, 2011, 2016, 2017



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. For each growth rate on the horizontal axis, the curve indicates the proportion of employees who experienced earnings growth at that rate.

3. This figure uses individual level data from the Annual Survey of Hours and Earnings (ASHE) to calculate the growth of nominal weekly earnings for employees observed in pairs of years in 2010 and 2011, 2015 and 2016, and 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

4. This figure only looks at employees whose pay growth between 2016 and 2017 fell between negative 10% and positive 20%. As such, the proportion of employees on the y-axis should not be interpreted as the entire population of employees.

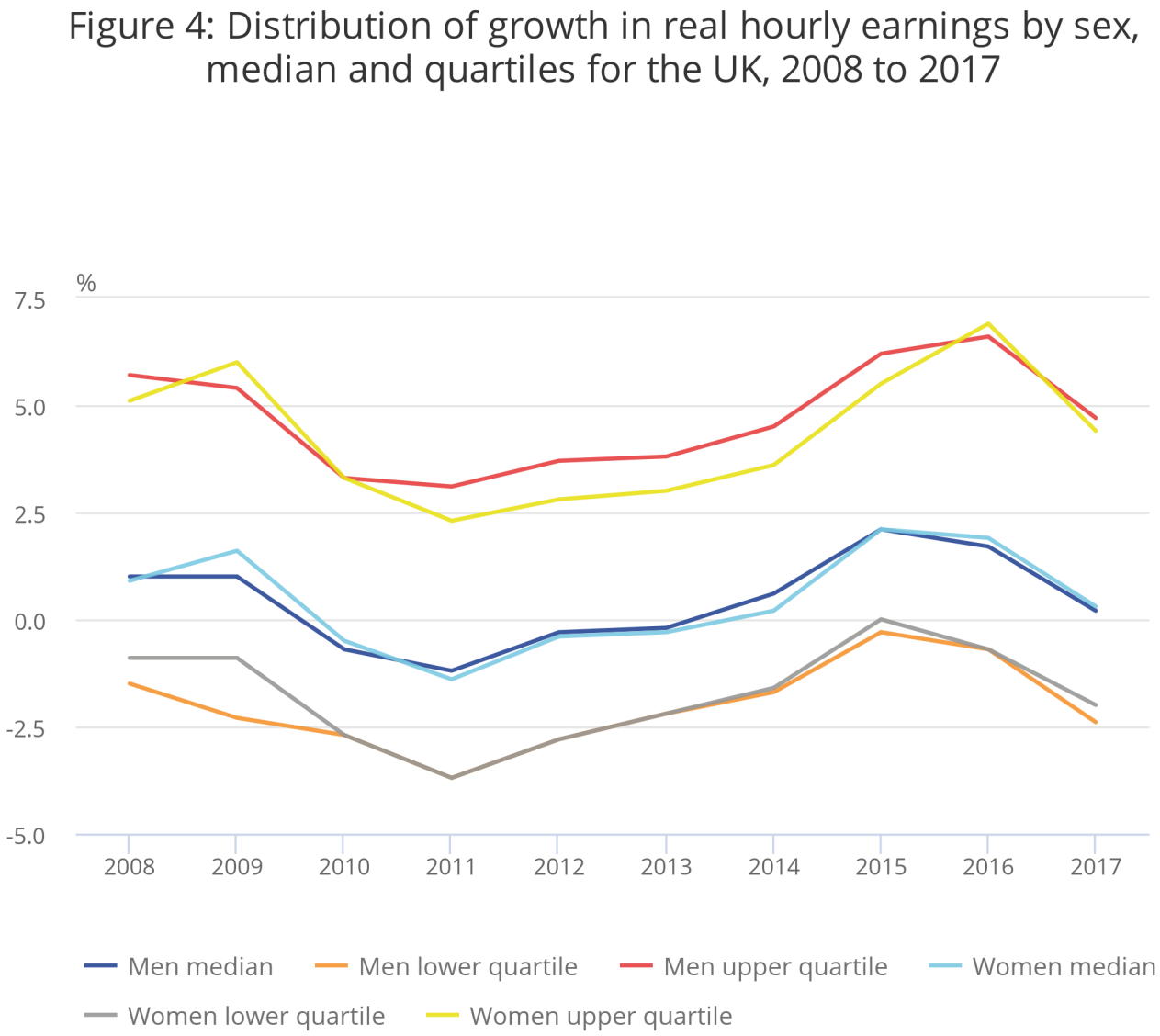
Figures 3a and 3b show the characteristic trend introduced in Chapter 1 of the compendium, with fewer men and women experiencing a pay decrease or freeze in real terms in the year to April 2016 compared with the years 2011 and 2017. The year 2011 saw the fewest number of men and women who experienced positive pay growth in real terms. Figures 3a and 3b show the growth in earnings improved to 2016, represented by the curves shifting rightwards, and in 2017 worsened with the curves shifting leftwards.

Wage stickiness (0.0% nominal growth) is shown by spikes in the proportions of those experiencing real wage growth of around negative 3.7% in 2011, negative 0.7% in 2016 and negative 2.5% in 2017 in Figures 3a and 3b. The spikes are more prominent for men than for women across all years. Wage stickiness in 2011 may be partially attributed to the pay freeze for public sector employees announced in the 2010 Budget.

In 2011, the median real wage growth rate (note that this is a different concept to the growth in the median) was 0.2% higher, at negative 1.3%, for men compared with that for women. This trend was reversed when the median real wage growth rate was 0.2% higher in both 2016 and 2017 for women, at 1.9% and 0.3% respectively.

Further analysis of the median, upper quartile and lower quartile real wage growth rates over time is shown in Figure 4

Figure 4: Distribution of growth in real hourly earnings by sex, median and quartiles for the UK, 2008 to 2017



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. Each line on the figure indicates the lower quartile, median and upper quartile growth rates over time.

3. This figure uses individual level data from ASHE to calculate the growth of nominal weekly earnings for employees observed in pairs of years. For example, in 2010 and 2011, 2011 and 2012, 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

Figure 4 shows that the lower quartile and upper quartile real wage growth rates follow a similar trend to the median real growth rate for both men and women. As shown in Chapter 1 of the compendium, throughout the economic downturn and until 2011, real wage growth rates followed a decreasing trend, before increasing until 2015 or 2016. More recently, the real wage growth rates have been on a decreasing trend.

The lower quartile real growth rate for all years (excluding women in 2015) was negative as each year wages have been decreasing on the year prior. Growth rates for men and women were most similar compared with the median and lower quartile growth rate. For both sexes, real wage growth for the median and lower quartile was highest in 2015, while 2016 saw the highest growth for the upper quartile.

The median real wage growth rate tracks the lower quartile real wage growth rate closely from 2010 onwards, with little difference in the growth rates.

The upper quartile real wage growth rate shows the most difference between sexes. From 2011, women experienced a lower growth rate than men, excluding 2016, when women experienced a higher growth rate. The difference between the two series was greatest in 2012, with a difference of 0.9 percentage points.

4 . Earnings by working pattern

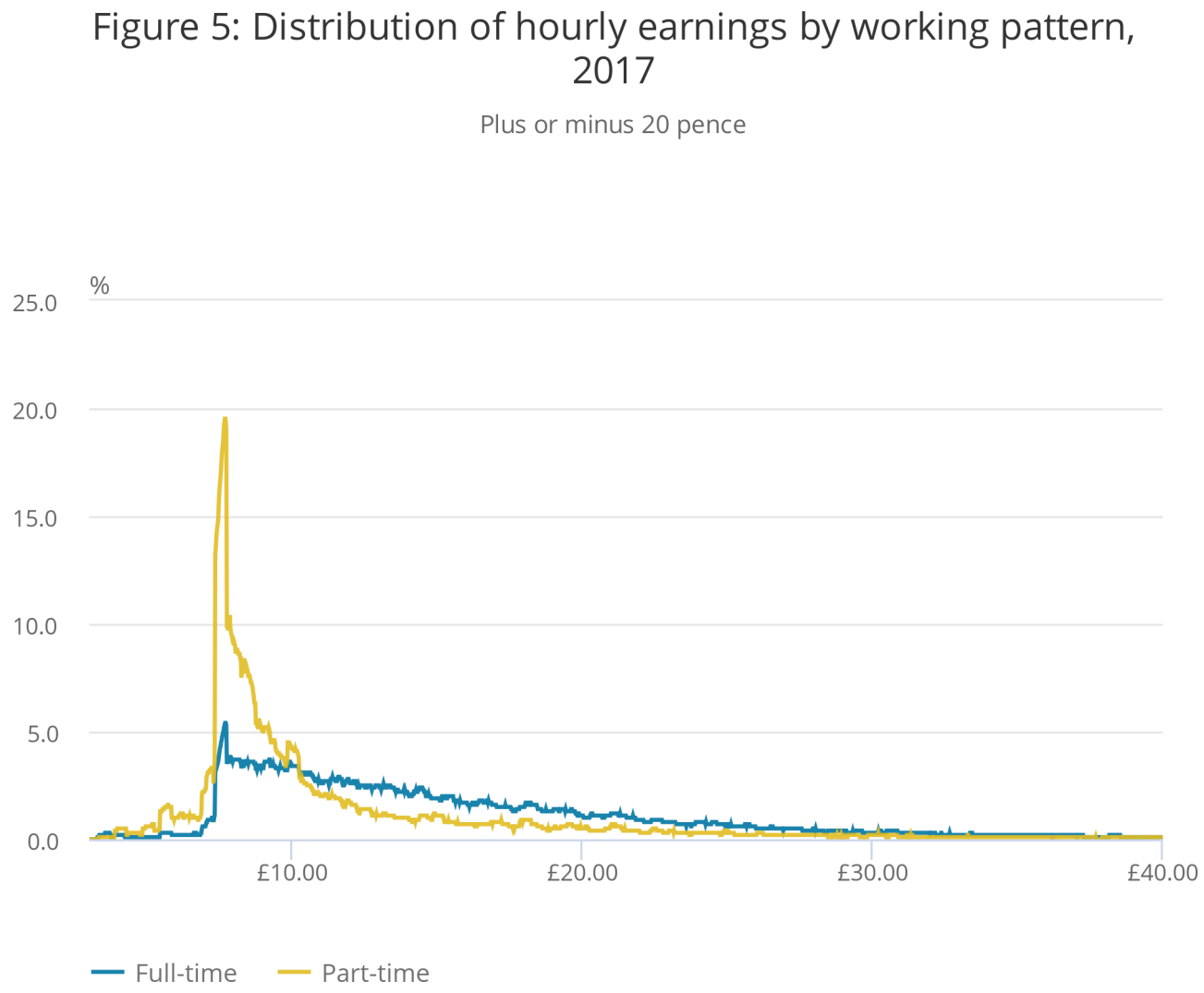
Distribution

The composition of working patterns can be an important factor in the analysis of the distribution of earnings.

Figure 5 shows the differences between full- and part-time employees’ hourly earnings distributions in 2017.

Figure 5: Distribution of hourly earnings by working pattern, 2017

Plus or minus 20 pence



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.
2. Each point on the x-axis represents a rolling sum of the density of jobs receiving greater than or equal to 20 pence below, and strictly less than 20 pence above, the stated hourly earnings.
3. As the density records the rolling sum of jobs paid within 20 pence of the stated amount at each point on the x-axis, jobs paid the April 2017 adult National Living Wage (£7.50) will appear between the x-axis values of £7.30 and £7.70.
4. The 2017 NLW refers to the April 2017 Adult National Living Wage of £7.50.
5. Full-time employees are defined as those working more than 30 paid hours per week (or 25 hours or more for the teaching professions).

The earnings distributions of both full-time and part-time employees followed the characteristic trend introduced in Chapter 1 of the compendium: positively skewed and centred around the 2017 National Living Wage (NLW) rate of £7.50 an hour. More part-time employees (19.6%) earned an hourly wage close to the NLW than full-time employees (5.4%) in 2017. The long thinning right-hand tail of each distribution indicates the falling share of employees earning higher wages. Full-time employees are characterised by a more varied earnings distribution with a greater proportion of full-time employees earning more than £10.24 an hour compared with part-time employees. The left-hand tail suggests that relatively few jobs were paid less than the NLW (including employees under the age of 25 years earning alternative minimum wages).

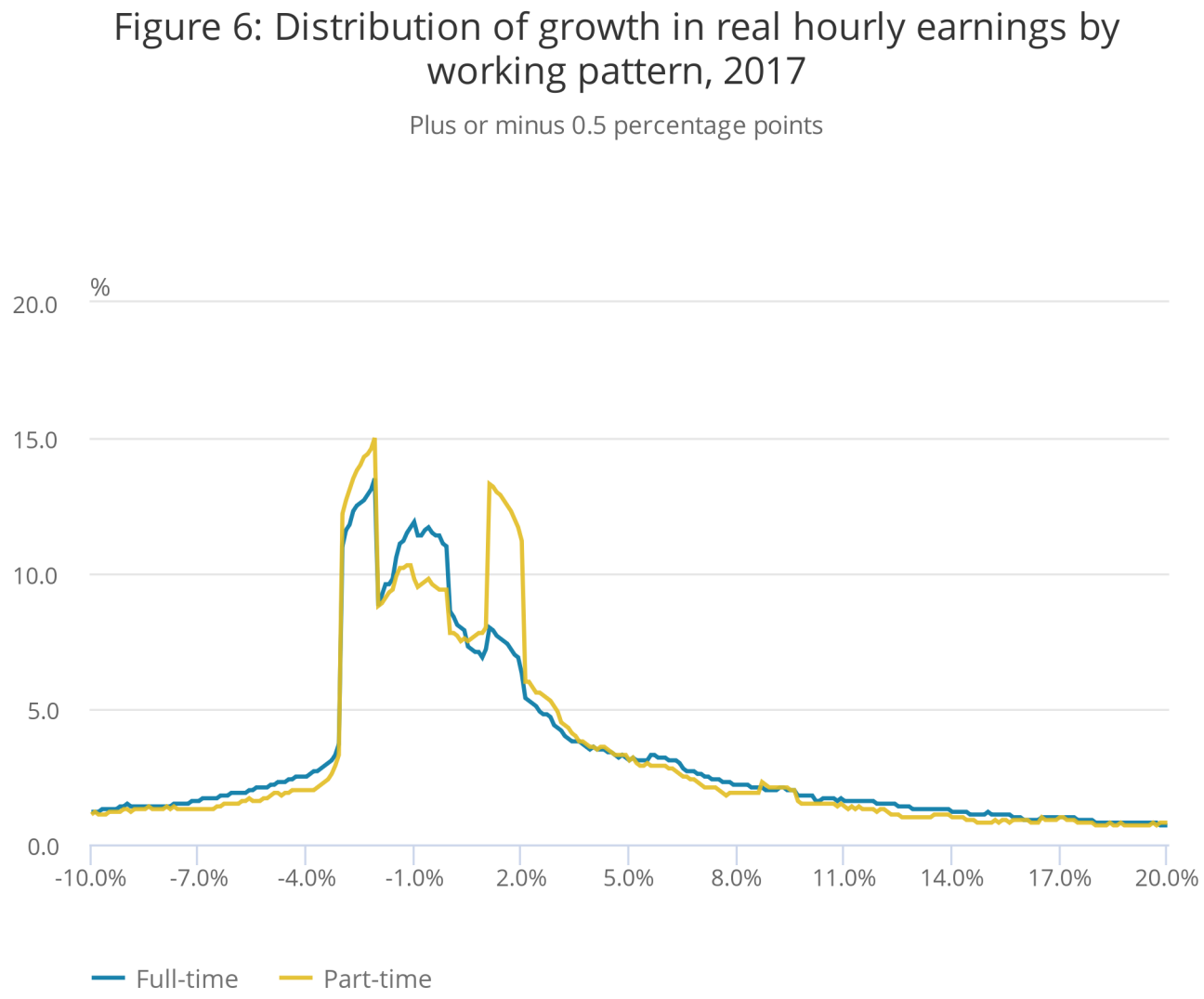
Given that more women and more part-time employees earned wages close to the NLW, it is interesting to explore the sex make-up of part-time and full-time employees. A greater proportion of part-time employees are women compared with men. A greater proportion of women work part-time compared with full-time.

Growth

Insight into the distributional outcomes for employees can be obtained by further analysis on the growth of earnings. Figure 6 presents the distributions of real hourly earnings growth in 2017 by working pattern.

Figure 6: Distribution of growth in real hourly earnings by working pattern, 2017

Plus or minus 0.5 percentage points



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. For each growth rate on the horizontal axis, the area under the curve indicates a portion of employees who experienced earnings growth within 0.5 percentage points of that rate.

3. This figure uses individual level data from the Annual Survey of Hours and Earnings (ASHE) to calculate the growth of nominal weekly earnings for employees observed in pairs of years in 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

4. Note that the proportion of employees experiencing a pay growth of 4.2% may not reflect the proportion of employees on the National Living Wage in the earnings distribution in April 2017. This is because the growth analysis is focusing on employed employees in two consecutive periods and not just in April 2017.

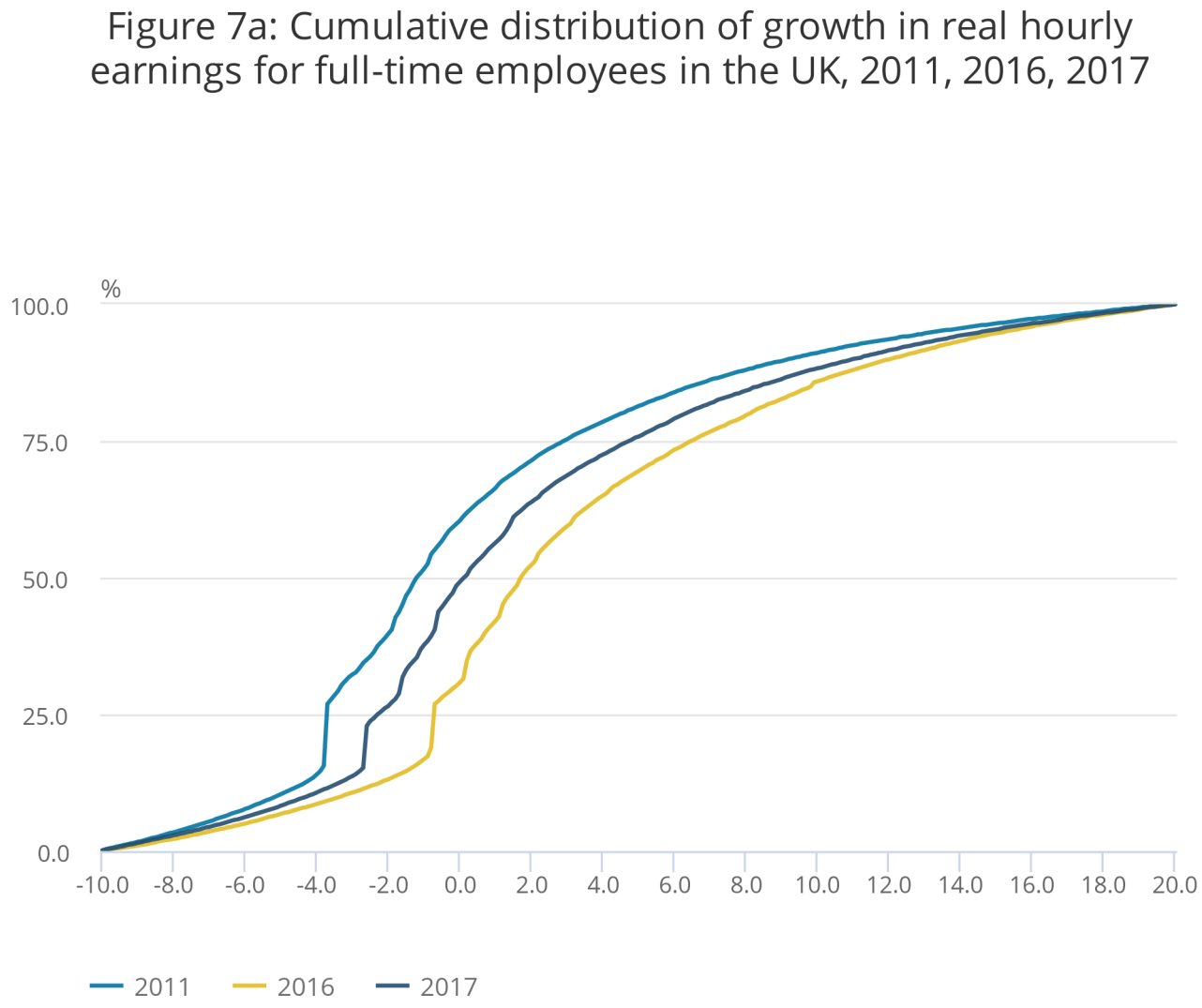
5. Full-time employees are defined as those working more than 30 paid hours per week (or 25 hours or more for the teaching professions).

Figure 6 highlights wage stickiness, where earnings are delayed in responding to changing macroeconomic conditions and employees received a zero-pay growth, a decline of around negative 2.5% in real terms. A greater proportion of part-time employees were shown to have experienced wage stickiness compared with full-time employees.

Figure 6 shows peaks in the proportions of those experiencing earnings growth in line with the 2017 NLW increase of 1.5%. A higher proportion of part-time employees compared with that of full-time employees experienced this wage growth as expected, given that Figure 6 showed a higher proportion of part-time employees earning the NLW when compared with full-time employees.

An alternative visualisation of the distribution of real earnings growth by working pattern can be presented using cumulative percentage frequency charts. Figures 7a and 7b show the cumulative distributions of growth in real hourly earnings for full-time and part-time employees.

Figure 7a: Cumulative distribution of growth in real hourly earnings for full-time employees in the UK, 2011, 2016, 2017



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

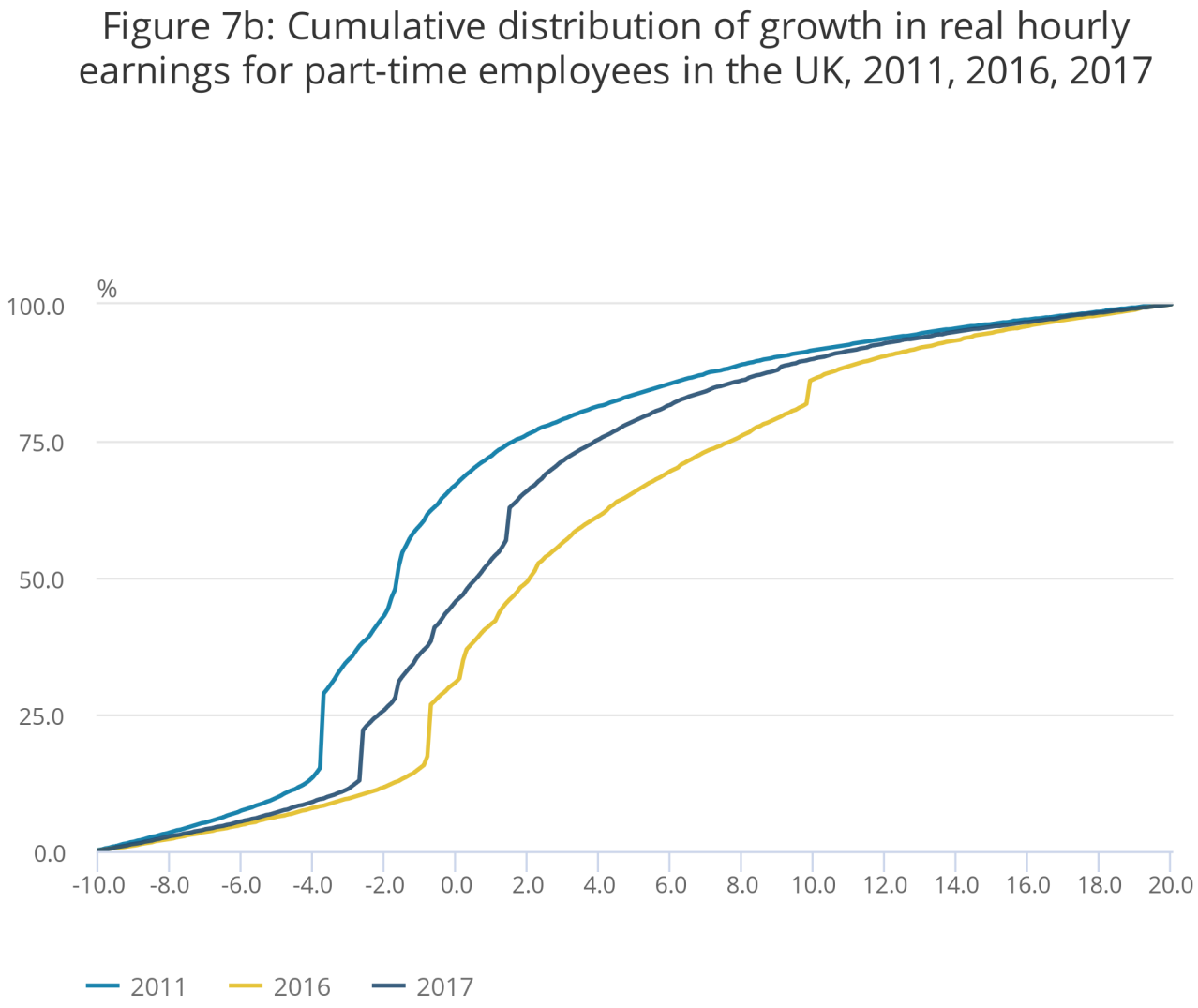
2. For each growth rate on the horizontal axis, the curve indicates the proportion of employees who experienced earnings growth at that rate.

3. This figure uses individual level data from the Annual Survey of Hours and Earnings (ASHE) to calculate the growth of nominal weekly earnings for employees observed in pairs of years in 2010 and 2011, 2015 and 2016, and 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

4. This figure only looks at employees whose pay growth between 2016 and 2017 fell between negative 10% and positive 20%. As such, the proportion of employees on the y-axis should not be interpreted as the entire population of employees.

5. Full-time employees are defined as those working more than 30 paid hours per week (or 25 hours or more for the teaching professions).

Figure 7b: Cumulative distribution of growth in real hourly earnings for part-time employees in the UK, 2011, 2016, 2017



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. For each growth rate on the horizontal axis, the curve indicates the proportion of employees who experienced earnings growth at that rate.

3. This figure uses individual level data from the Annual Survey of Hours and Earnings (ASHE) to calculate the growth of nominal weekly earnings for employees observed in pairs of years in 2010 and 2011, 2015 and 2016, and 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

4. This figure only looks at employees whose pay growth between 2016 and 2017 fell between negative 10% and positive 20%. As such, the proportion of employees on the y-axis should not be interpreted as the entire population of employees.

5. Full-time employees are defined as those working more than 30 paid hours per week (or 25 hours or more for the teaching professions).

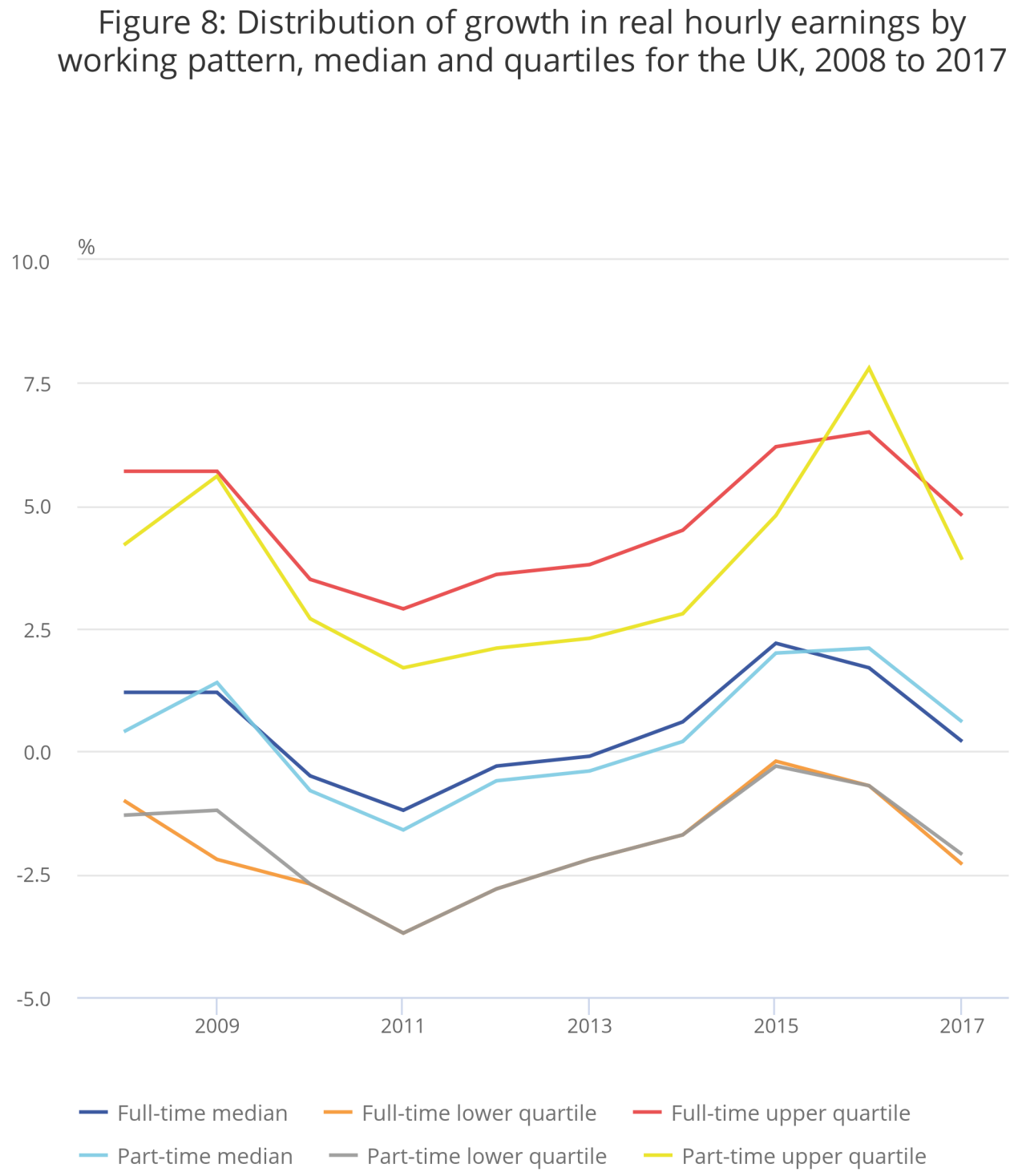
Figures 7a and 7b show similar earnings distributions for both working patterns. They show the characteristic trend introduced in Chapter 1 of the compendium with fewer full-time and part-time employees experiencing a pay decrease or freeze in real terms in the year to April 2016 compared with the years 2011 and 2017. The year 2011 saw the fewest number of employees who experienced positive pay growth in real terms. The figures show that earnings growth improved to 2016, represented by the curves shifting rightwards, and in 2017, the earnings growth worsened, with the curves shifting leftwards.

The figures highlight wage stickiness shown by spikes in the proportions of those experiencing real wage growth of around negative 3.7% in 2011, negative 0.7% in 2016 and negative 2.5% in 2017. Wage stickiness in 2011 may be partially attributed to the pay freeze for public sector employees announced in the 2010 Budget.

In 2011, the median real wage growth rate (note that this is a different concept to the growth in the median) for full-time employees was negative 1.2% and this was 0.4 percentage points higher than the median real wage growth rate for part-time employees. This trend was reversed in 2016 when the median real wage growth rate was 0.4 percentage points higher for part-time employees at 2.1%. In 2017, the median real wage growth rate was 0.5 percentage points higher for part-time employees at 0.6%.

Further analysis of the median, upper quartile and lower quartile real wage growth rates over time is shown in Figure 8.

Figure 8: Distribution of growth in real hourly earnings by working pattern, median and quartiles for the UK, 2008 to 2017



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. Each line on the figure indicates the lower quartile, median and upper quartile growth rates over time.

3. This figure uses individual level data from ASHE to calculate the growth of nominal weekly earnings for employees observed in pairs of years. For example, in 2010 and 2011, 2011 and 2012, 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

4. Full-time employees are defined as those working more than 30 paid hours per week (or 25 hours or more for the teaching professions).

Figure 8 shows that the real wage growth rates tended to follow a similar trend for both working patterns. As shown in Chapter 1 of the compendium, throughout the economic downturn and until 2011, real wage growth rates followed a decreasing trend, before increasing until 2015 or 2016. More recently, the real wage growth rates have followed a decreasing trend again.

The lower quartile real wage growth rate for all years was negative where each year's wages had been decreasing on the year prior. Growth rates for full-time and part-time employees were most similar compared with the median and upper quartile growth rate. For both working patterns, real wage growth for the 25th percentile was highest in 2015.

The median real wage growth rate tracks the lower quartile real wage growth rate closely from 2010 onwards, with little difference in the growth rates.

The upper quartile real wage growth rate shows the most difference between full-time and part-time employees. For all years other than 2016, part-time employees experienced a lower growth rate than full-time employees. The difference between the two series was greatest in 2014, with a difference of 1.7 percentage points.

5 . Earnings by age group

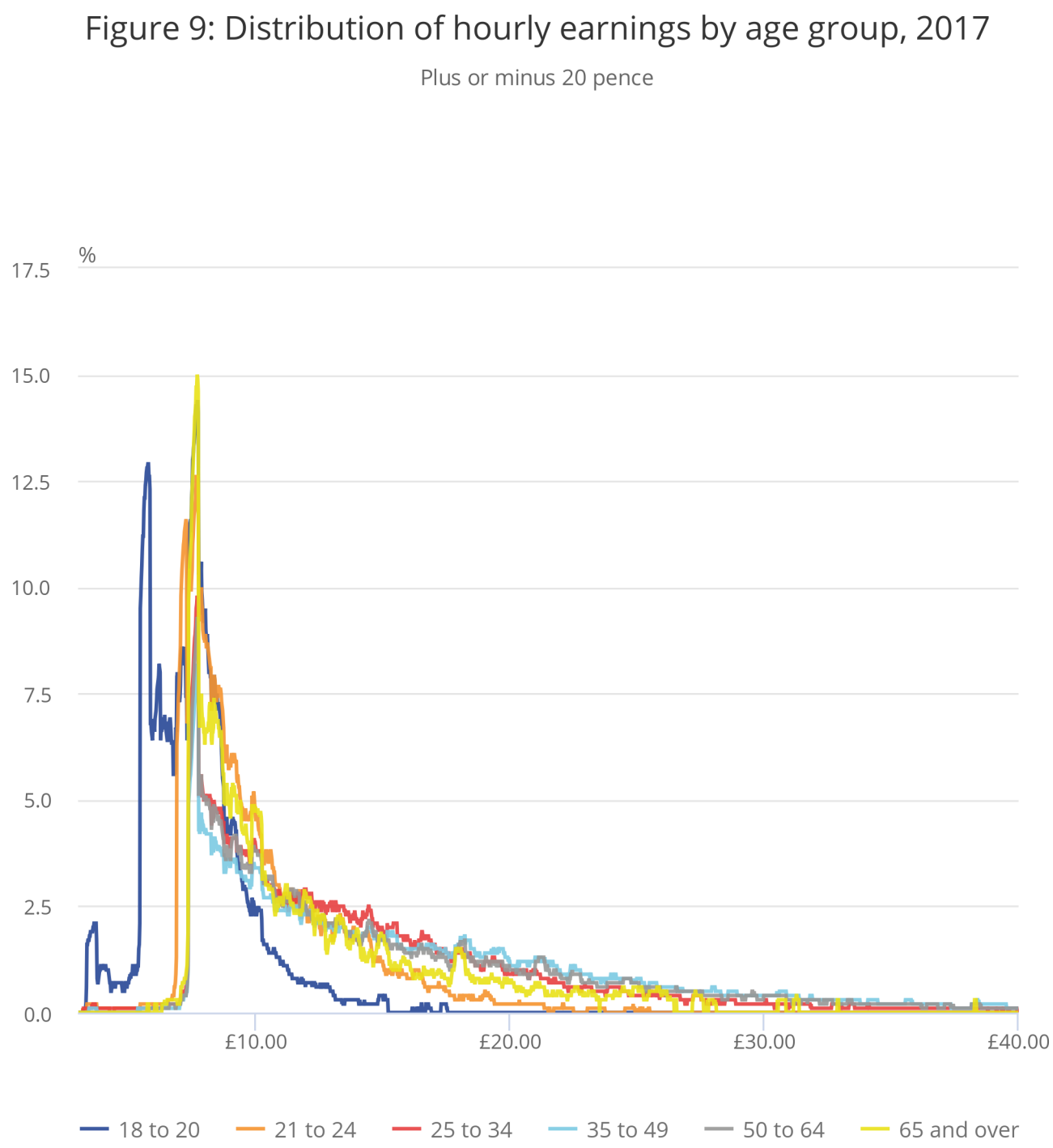
Distribution

Analysis by age groups offers insight into variations of the earnings distributions.

Figure 9 presents the hourly earnings distributions for those aged 18 to 20 years, aged 21 to 24 years, aged 25 to 34 years, aged 35 to 49 years, aged 50 to 64 years, and aged 65 years and above in 2017.

Figure 9: Distribution of hourly earnings by age group, 2017

Plus or minus 20 pence



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. Each point on the x-axis represents a rolling sum of the density of jobs receiving greater than or equal to 20 pence below, and strictly less than 20 pence above, the stated hourly earnings.

3. As the density records the rolling sum of jobs paid within 20 pence of the stated amount at each point on the x-axis, jobs paid the April 2017 adult National Living Wage (£7.50) will appear between the x-axis values of £7.30 and £7.70.

4. The 2017 NLW refers to the April 2017 Adult National Living Wage of £7.50.

Figure 9 shows that the earnings distributions for each age group tended to follow the characteristic trend introduced in Chapter 1 of the compendium: positively skewed and centred around the 2017 National Living Wage (NLW) rate of £7.50 an hour.

The proportion of those experiencing the NLW is highest for the age group 65 years and above, where it covered 15% of employees, whereas around 9.8% of those aged 25 to 34 years, 8.2% of those aged 35 to 49 years and 9.3% of employees aged 50 to 64 years experienced the NLW. The age group 18 to 20 years was centred around the National Minimum Wage (NMW) (for those aged 18 to 20 years) of £5.60. The NMW for those aged 21 to 24 years in 2017 was £7.05 and is represented by the spike at £7.24 (within the plus or minus 20 pence band of the minimum wage).

Interestingly, a greater proportion (12.6%) of employees within the age group 21 to 24 years are paid the NLW (only legally required to be paid to employees aged over 25 years), suggesting firms have adopted the NLW for younger employees. Relatively few jobs were paid less than the NLW, with the spike in the distribution of wages for those in the age group 18 to 20 years at £3.70, possibly reflecting the minimum wage for apprentices of £3.50 (within plus or minus 20 pence).

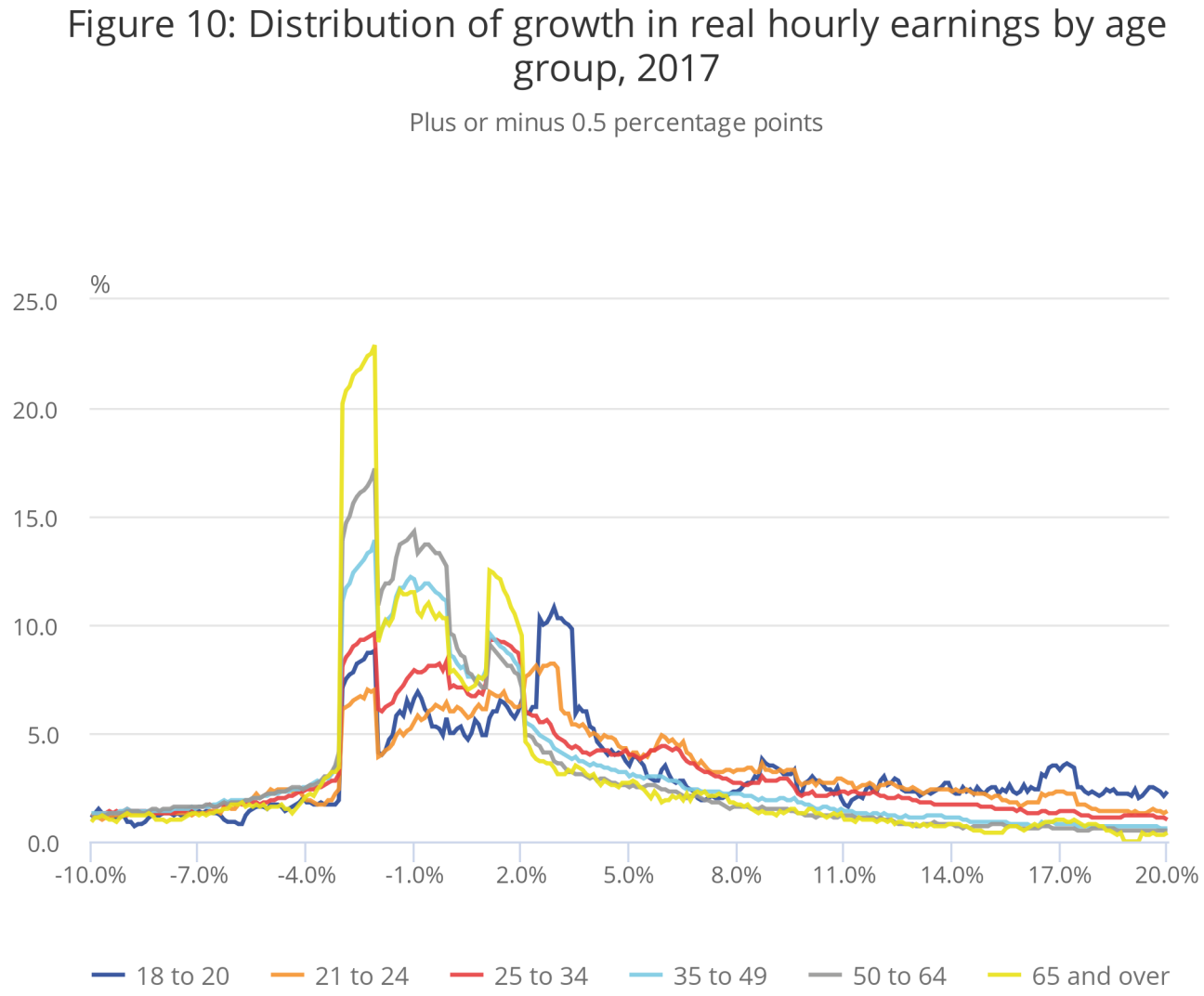
The steadily falling share of employees earning higher wages is indicated by the long, thinning right-hand tail of each distribution. A lower share of the employees aged 18 to 20 years earned a wage of £9.00 compared with every other age group. In the 21 to 24 years age group, the share of employees earning higher wages was substantially higher than in the 18 to 20 years age group, shown by the rightwards shift of the curve. There was a negligible difference between the earning distributions of the age groups 35 to 49 years and 50 to 64 years higher up the wage distribution and towards the right-hand tail.

Growth

Analysis of the growth of earnings by age provides greater insight into the distributional outcomes for employees. Figure 10 presents the distributions of growth in real hourly earnings in 2017 by age groups.

Figure 10: Distribution of growth in real hourly earnings by age group, 2017

Plus or minus 0.5 percentage points



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. For each growth rate on the horizontal axis, the area under the curve indicates a portion of employees who experienced earnings growth within 0.5 percentage points of that rate.

3. This figure uses individual level data from the Annual Survey of Hours and Earnings (ASHE) to calculate the growth of nominal weekly earnings for employees observed in pairs of years in 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

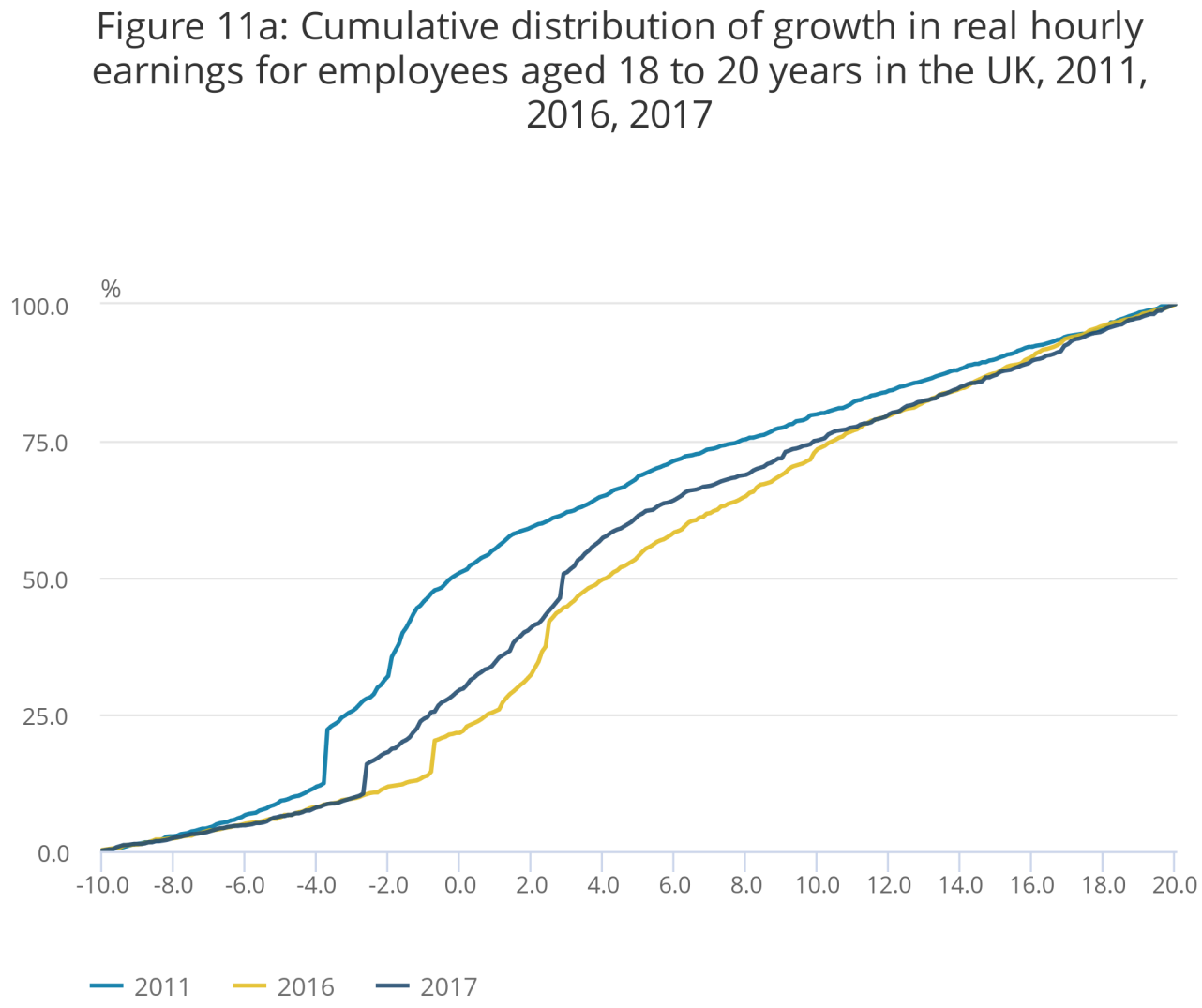
4. Note that the proportion of employees experiencing a pay growth of 4.2% may not reflect the proportion of employees on the National Living Wage in the earnings distribution in April 2017. This is because the growth analysis is focusing on employed employees in two consecutive periods and not just in April 2017.

Figure 10 shows the earnings growth experience to be varied across age groups. Wage stickiness (characterised by 0% nominal growth and negative 2.5% real earnings growth as wages fail to respond to macroeconomic changes) was experienced (within plus or minus 0.5%) by a higher proportion of the employees in the eldest age groups (22.9% of those aged 65 years and above), compared with a lower proportion of the employees in the youngest age groups (3.9% for those aged 21 to 24 years).

The figure shows the proportion of employees receiving wage increases in line with the 2017 NLW change of 1.5% in real terms. The four eldest age groups show peaks in line with the NLW growth, with the 65 years and above age group having the highest proportion of employees (11.6%) that experienced this growth. Similarly, peaks in the younger age groups corresponded to increases in the NMW for those aged 21 to 24 years, aged 18 to 20 years, and for apprentices.

Cumulative percentage frequency charts offer an alternative visualisation of the distribution of real earnings growth by age group. Figures 11a and 11b show the cumulative distribution of growth in real hourly earnings for employees aged 18 to 20 years and aged 35 to 49 years respectively. These age groups have been selected for comparison.

Figure 11a: Cumulative distribution of growth in real hourly earnings for employees aged 18 to 20 years in the UK, 2011, 2016, 2017



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

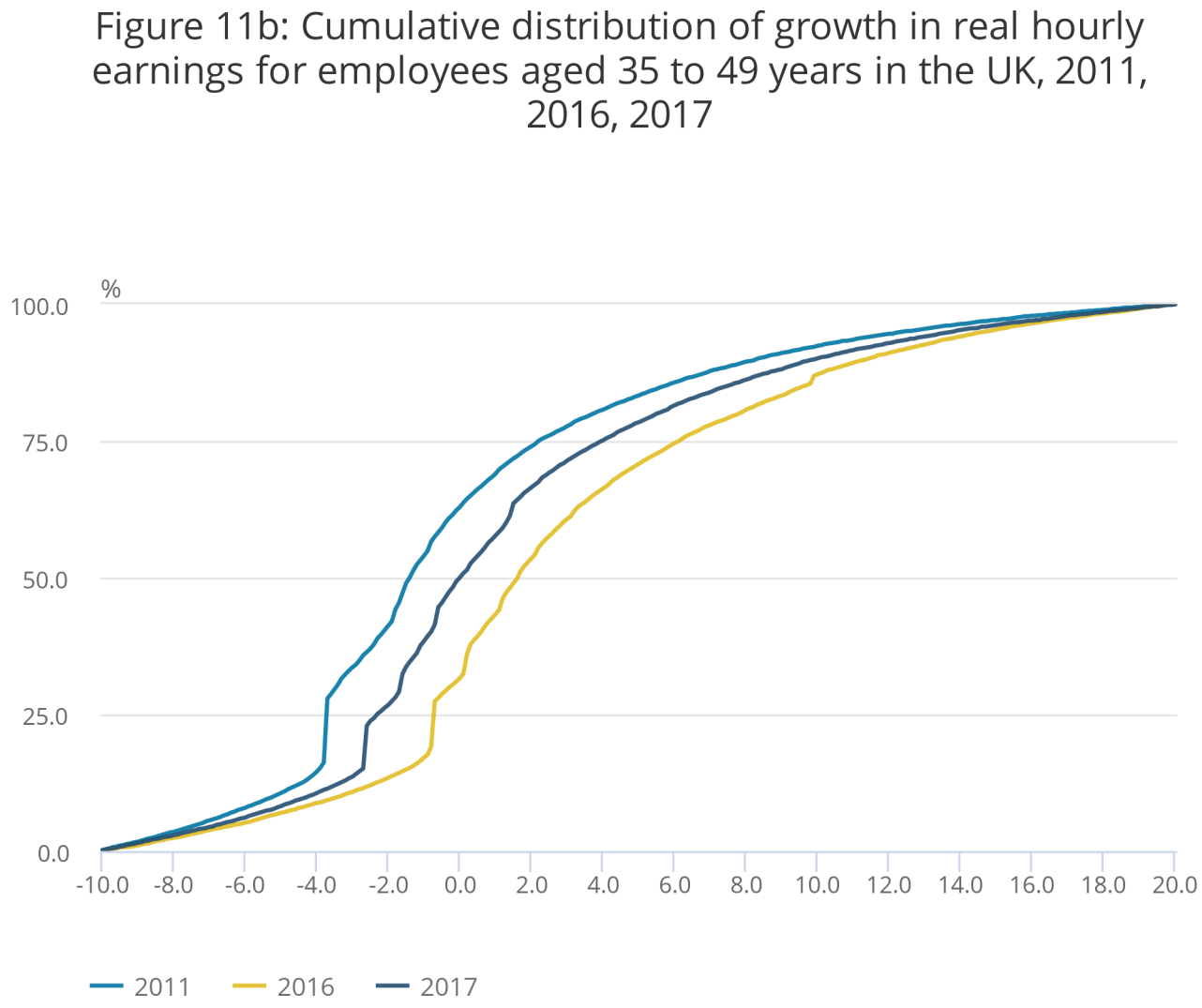
1. 2017 data are provisional.

2. For each growth rate on the horizontal axis, the curve indicates the proportion of employees who experienced earnings growth at that rate.

3. This figure uses individual level data from the Annual Survey of Hours and Earnings (ASHE) to calculate the growth of nominal weekly earnings for employees observed in pairs of years in 2010 and 2011, 2015 and 2016, and 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

4. This figure only looks at employees whose pay growth between 2016 and 2017 fell between negative 10% and positive 20%. As such, the proportion of employees on the y-axis should not be interpreted as the entire population of employees.

Figure 11b: Cumulative distribution of growth in real hourly earnings for employees aged 35 to 49 years in the UK, 2011, 2016, 2017



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. For each growth rate on the horizontal axis, the curve indicates the proportion of employees who experienced earnings growth at that rate.

3. This figure uses individual level data from the Annual Survey of Hours and Earnings (ASHE) to calculate the growth of nominal weekly earnings for employees observed in pairs of years in 2010 and 2011, 2015 and 2016, and 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

4. This figure only looks at employees whose pay growth between 2016 and 2017 fell between negative 10% and positive 20%. As such, the proportion of employees on the y-axis should not be interpreted as the entire population of employees.

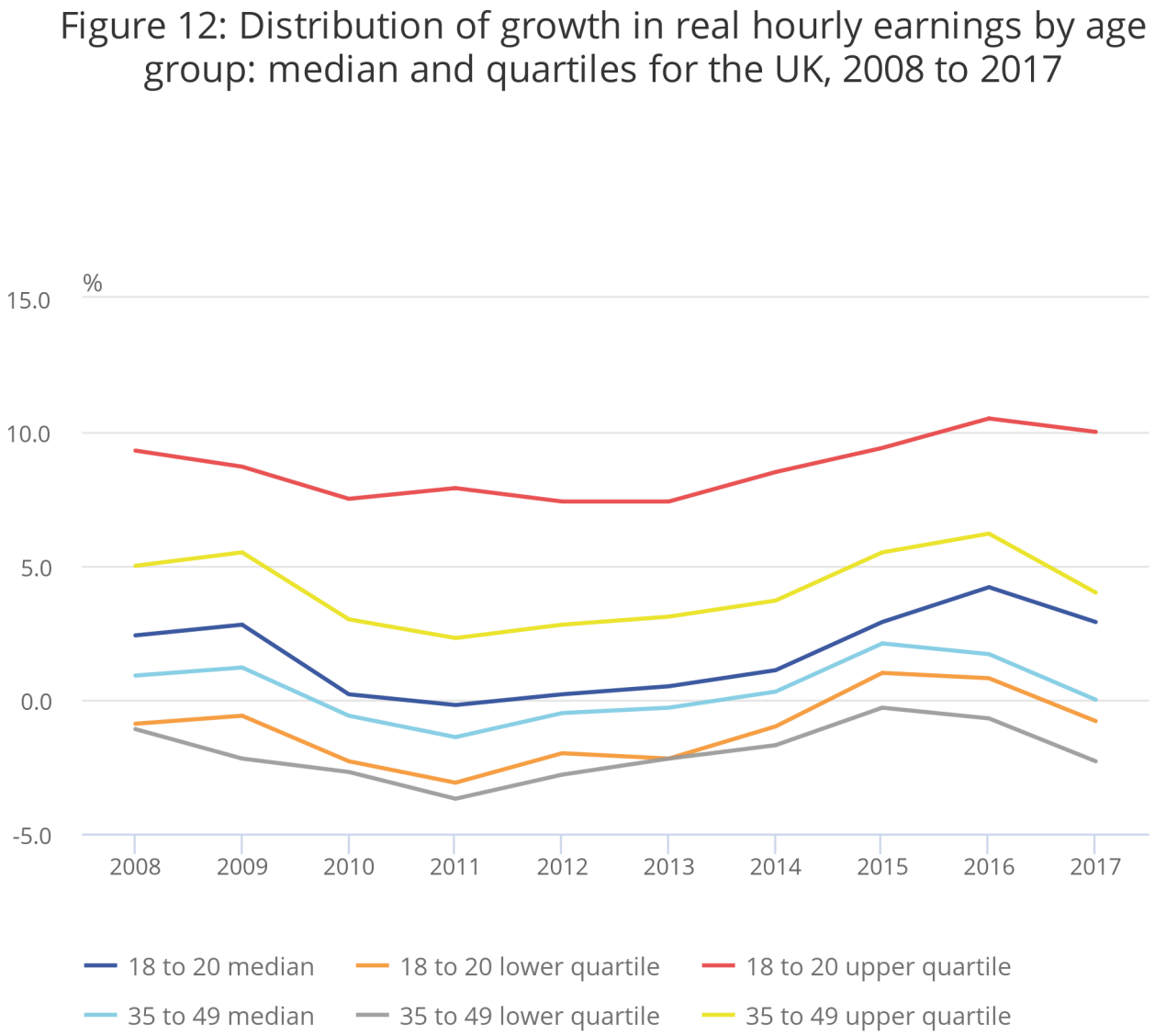
Figures 11a and 11b show the characteristic trend introduced in Chapter 1 of the compendium, with fewer employees in both age groups experiencing a pay decrease or freeze in real terms in the year to April 2016 compared with the years 2011 and 2017. The year 2011 saw the fewest number of the employees in either age group experience positive pay growth in real terms. Figures 11a and 11b showed the growth in earnings improved to 2016, represented by the curve shifting rightwards, and in 2017, this worsened as shown by the curve shifting leftwards.

The slight difference in Figure 11a compared with the other cumulative percentage frequency charts is likely to be due to the exclusion of those aged 18 to 20 years from the NLW. Instead, these employees are entitled to alternative (lower) NMWs. This age group is also likely to have many employees receiving the minimum wage for apprentices, further distorting the trend.

Wage stickiness (0.0% nominal growth) is shown by spikes in the proportions of those experiencing real wage growth of around negative 3.7% in 2011, negative 0.7% in 2016 and negative 2.5% in 2017. Across all selected years, the proportion of those experiencing wage stickiness was greater for those aged 35 to 49 years compared with those aged 18 to 20 years. Wage stickiness in 2011 may be partially attributed to the pay freeze for public sector employees announced in the 2010 Budget. In 2011, the median real wage growth rate (note that this is a different concept to the growth in the median) for employees aged 18 to 20 years was negative 0.2%; that is, 1.2 percentage points higher than the median real wage growth rate for employees aged 35 to 49 years. This trend continued with the median real wage growth rate being 2.5 percentage points higher in 2016 at 4.1%, and 2.9 percentage points higher in 2017 at 2.9% for those aged 18 to 20 years.

Further analysis of the median, upper quartile and lower quartile real wage growth rates over time is shown in Figure 12.

Figure 12: Distribution of growth in real hourly earnings by age group: median and quartiles for the UK, 2008 to 2017



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. Each line on the figure indicates the lower quartile, median and upper quartile growth rates over time.

3. This figure uses individual level data from ASHE to calculate the growth of nominal weekly earnings for employees observed in pairs of years. For example, in 2010 and 2011, 2011 and 2012, 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

Figure 12 shows that all real wage growth rates tended to follow similar trends across the age groups. As shown in Chapter 1 of the compendium, throughout the economic downturn and until 2011, real wage growth rates followed a decreasing trend, before increasing until 2015 for the lower quartile and median real wage growth rates, and until 2016 for the upper quartile real wage growth rate. More recently, the real wage growth rates have followed a decreasing trend again.

The lower quartile real wage growth rate appears to show the most similarity between age groups; being negative for all years and for both age groups (excluding 2015 and 2016 when the 18 to 20 years lower quartile real wage growth rate experienced positive growth, likely reflecting larger nominal percentage growth in the NMW compared with the years prior). The lower quartile and median real wage growth rate were lowest in 2011 during wage stagnation in the economic downturn.

The median real wage growth rate shows a similar trend for both age groups. The median real wage growth rate was highest for both age groups in 2016 and similarly lowest in 2011.

The upper quartile real wage growth rate shows the most divergence across the two age groups presented. The divergence may be partially attributed to the difference in minimum wages across the groups, and the characteristics of jobs that younger employees have.

6 . Background information

Further analysis on the distribution of earnings by employment and employee characteristics using Annual Survey of Hours and Earnings (ASHE) data is contained in the compendium.

Survey details and basic quality information can be found in Chapter 1 of the compendium.

Compendium

Distribution of earnings by employment characteristics in the UK: 2017

Analysis of the distribution of earnings by employment characteristics including sector, industry and skill-level using Annual Survey of Hours and Earnings (ASHE) provisional 2017 data and previous ASHE datasets. Focuses on earnings growth for those in employment between two consecutive years.

Contact:
Ellys Monahan
economic.advice@ons.gov.uk
+44 (0)1633 455783

Release date:
2 November 2018

Next release:
To be announced

Table of contents

5. Earnings by skill level

6. Background information

1 . Main points

- In 2017, the earnings distribution for the private sector was highly clustered around the National Living Wage (NLW), with 12.5% of employees in the private sector and 2.4% of employees in the public sector.
- A greater proportion of public sector employees, than that of private sector employees experienced nominal pay growth of 1.0% or less in 2017, partially reflecting the wage restraint for public sector employees.
- The 2017 earnings distributions for the wholesale and retail trade, repair of motor vehicles and motorcycles, and accommodation and food industry, and the education industry were positively skewed and centred around the 2017 NLW; the financial and insurance activities, and construction industries appeared less centred around the NLW.
- Of the industries analysed, the construction industry had the highest proportion of employees experiencing 0.0% nominal growth (wage stickiness) in 2017.
- Analysing the distributions of earnings by skill level shows that those working in “lower” skill occupations such as cleaning and basic administrative roles were strongly clustered around the £7.50 NLW rate in April 2017.
- The proportion of employees experiencing the 2017 NLW was highest for employees in the “lower” and “lower-middle” skill level groups.

2 . Introduction

Further to the headline earnings distribution in Chapter 1 of the compendium, this article presents analysis of the distribution and growth of earnings using the Annual Survey of Hours and Earnings (ASHE). Major employment characteristics including sector, industry and skill level of employment are analysed.

3 . Earnings by sector

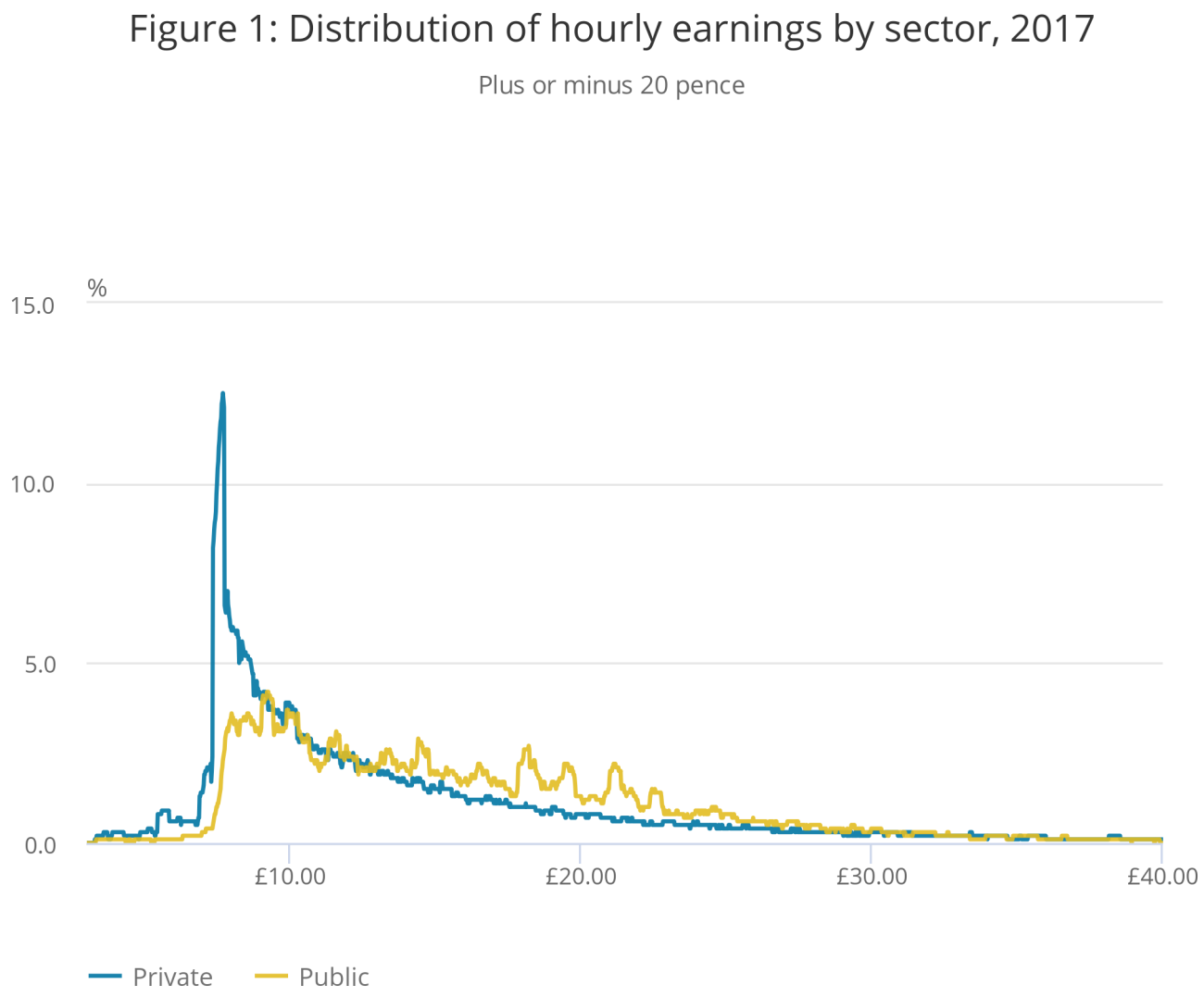
Distribution

The distribution of earnings can be analysed by the sector of employment. Additional analysis of Annual Survey of Hours and Earnings (ASHE) data, with focus on public sector and private sector earnings, is available in the article Analysis of factors affecting earnings using ASHE 2017. For consistency over time, employees of those banks classified to the public sector in 2008 have been treated as if they were in the private sector throughout.

Figure 1 compares the distributions of hourly earnings between the public sector and private sector.

Figure 1: Distribution of hourly earnings by sector, 2017

Plus or minus 20 pence



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. Each point on the x-axis represents a rolling sum of the density of jobs receiving greater than or equal to 20 pence below, and strictly less than 20 pence above, the stated hourly earnings.

3. As the density records the rolling sum of jobs paid within 20 pence of the stated amount at each point on the x-axis, jobs paid the April 2017 adult National Living Wage (£7.50) will appear between the x-axis values of £7.30 and £7.70.

4. The 2017 NLW refers to the April 2017 Adult National Living Wage of £7.50.

Figure 1 shows that the earnings distributions followed the characteristic trend introduced in Chapter 1 of the compendium: positively skewed and centred around the 2017 National Living Wage (NLW) rate of £7.50 an hour. In 2017, the earnings distribution for the private sector was highly concentrated around the NLW, with 12.5% of employees earning £7.68. In comparison, the public sector distribution was much more evenly spread, with a lesser proportion (2.4%) of employees earning £7.70.

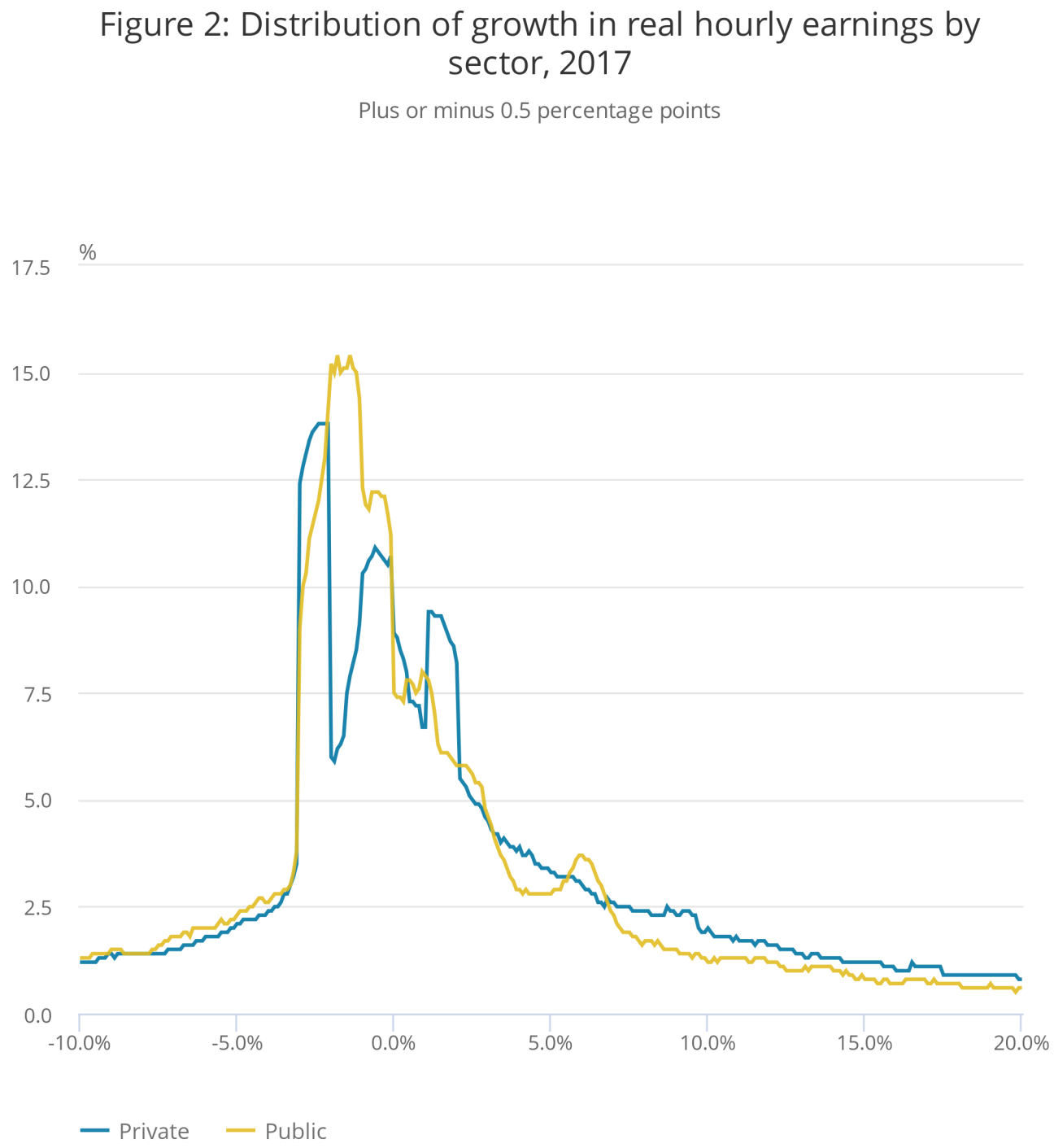
The steadily-falling share of employees earning higher wages is indicated in Figure 1 by the long thinning right-hand tail of each distribution. Comparing the two sectors in 2017, a greater share of public sector employees earned above £12.98 an hour. Above the pay bracket of £31.00 an hour, the shares of employees in the private sector and public sector were inseparable in 2017. Relatively few jobs were paid less than the NLW in 2017 (including employees aged under 25 years earning alternative minimum wages) as suggested by the left-hand tail.

Growth

Further insight into the distributional outcomes for employees can be obtained by analysing the growth of earnings by sector of employment. Figure 2 shows the distributions of growth in earnings in the public sector and private sector in 2017.

Figure 2: Distribution of growth in real hourly earnings by sector, 2017

Plus or minus 0.5 percentage points



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. For each growth rate on the horizontal axis, the area under the curve indicates a portion of employees who experienced earnings growth within 0.5 percentage points of that rate.

3. This figure uses individual level data from the Annual Survey of Hours and Earnings (ASHE) to calculate the growth of nominal weekly earnings for employees observed in pairs of years in 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

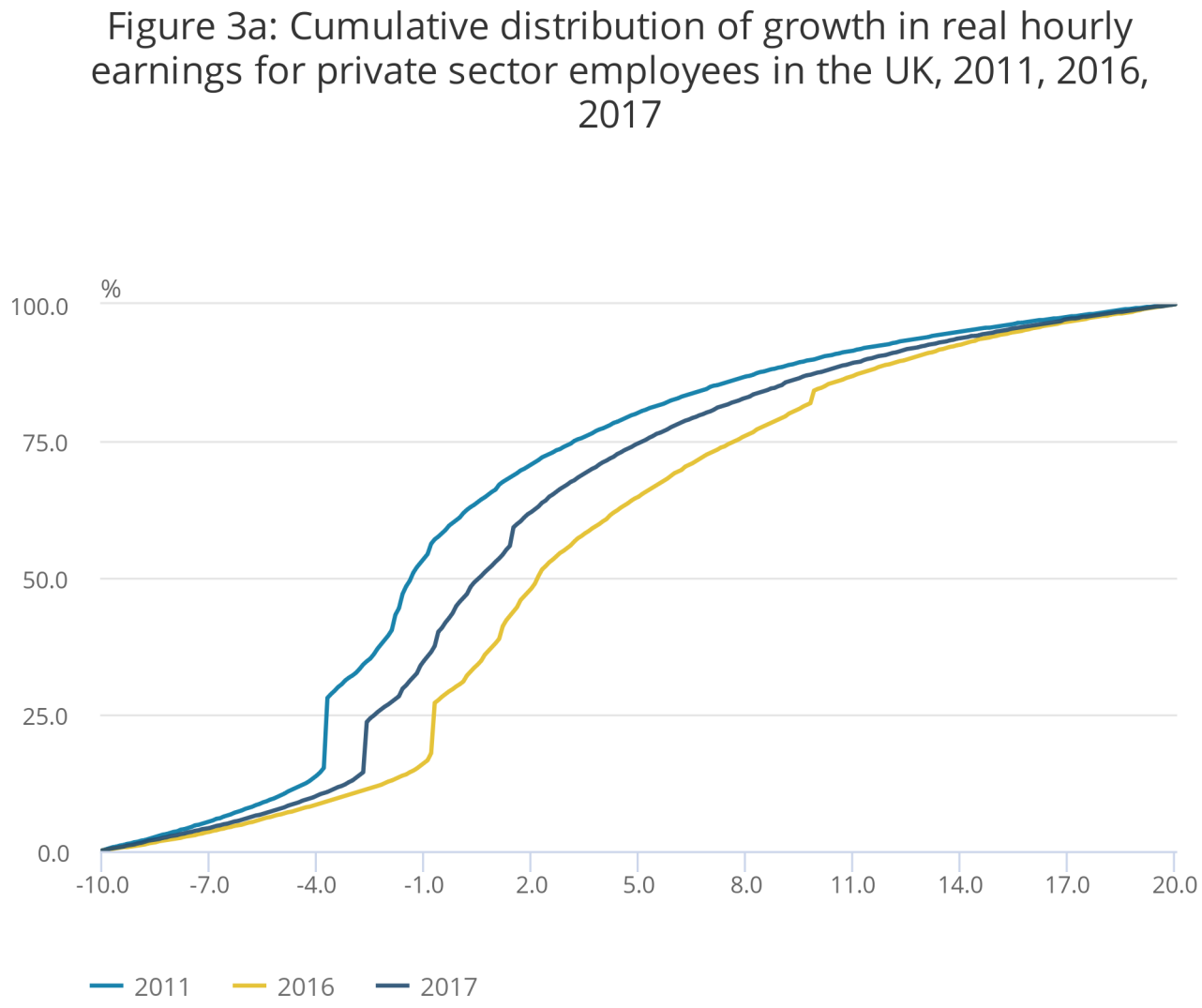
4. Note that the proportion of employees experiencing a pay growth of 4.2% may not reflect the proportion of employees on the National Living Wage in the earnings distribution in April 2017. This is because the growth analysis is focusing on employed employees in two consecutive periods and not just in April 2017.

Figure 2 highlights wage stickiness, where, in 2017, employees received a pay growth of 0.0% in nominal terms and in 2017 around negative 2.5% in real terms. Wage stickiness may occur when earnings do not respond to changing macroeconomic conditions. In 2017, a greater proportion of private sector employees was shown to have experienced wage stickiness than public sector employees.

The 1.5% increase in the NLW in 2017 is shown to have been experienced by employees in both sectors. A higher proportion of private sector employees experienced this earnings growth than public sector employees. This is expected, given that Figure 1 shows that a higher proportion of private sector employees earned the NLW in 2017 compared with public sector employees.

The distribution of real earnings growth by sector of employment can be presented alternatively as a cumulative percentage frequency chart. Figures 3a and 3b show the cumulative distributions of growth in real hourly earnings for private sector and public sector employees.

Figure 3a: Cumulative distribution of growth in real hourly earnings for private sector employees in the UK, 2011, 2016, 2017



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

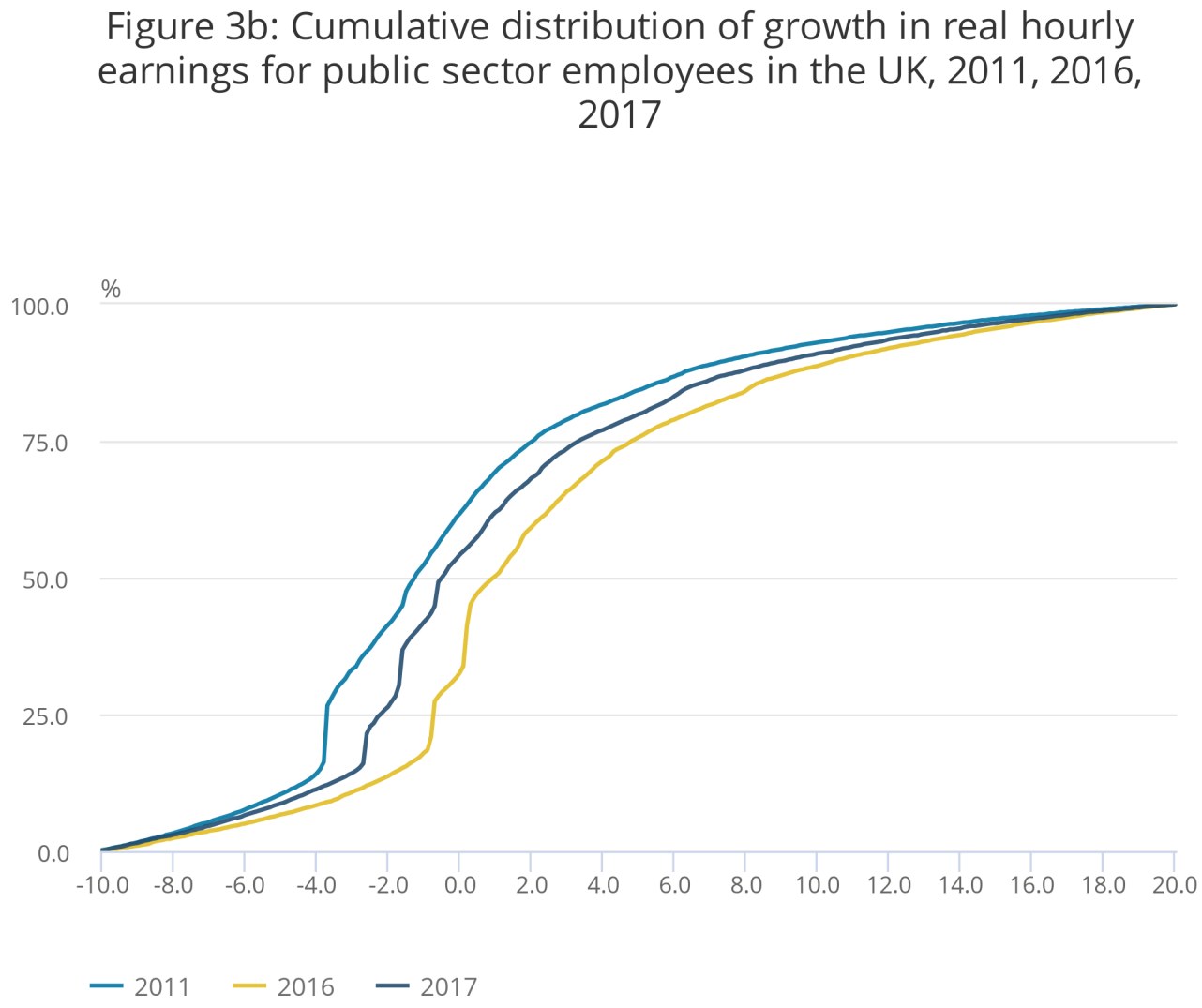
1. 2017 data are provisional.

2. For each growth rate on the horizontal axis, the curve indicates the proportion of employees who experienced earnings growth at that rate.

3. This figure uses individual level data from the Annual Survey of Hours and Earnings (ASHE) to calculate the growth of nominal weekly earnings for employees observed in pairs of years in 2010 and 2011, 2015 and 2016, and 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

4. This figure only looks at employees whose pay growth between 2016 and 2017 fell between negative 10% and positive 20%. As such, the proportion of employees on the y-axis should not be interpreted as the entire population of employees.

Figure 3b: Cumulative distribution of growth in real hourly earnings for public sector employees in the UK, 2011, 2016, 2017



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. For each growth rate on the horizontal axis, the curve indicates the proportion of employees who experienced earnings growth at that rate.

3. This figure uses individual level data from the Annual Survey of Hours and Earnings (ASHE) to calculate the growth of nominal weekly earnings for employees observed in pairs of years in 2010 and 2011, 2015 and 2016, and 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

4. This figure only looks at employees whose pay growth between 2016 and 2017 fell between negative 10% and positive 20%. As such, the proportion of employees on the y-axis should not be interpreted as the entire population of employees.

Figures 3a and 3b show the characteristic trends introduced in Chapter 1 of the compendium, with fewer employees in both sectors experiencing a pay decrease or freeze in real terms in the year to April 2016 compared with 2011 and 2017. In 2011, the fewest number of employees in both sectors experienced positive pay growth in real terms.

The figures show that the growth in earnings improved between 2011 and 2016 (represented by the curve shifting rightwards) and worsened in 2017 (shown by the curve shifting leftwards).

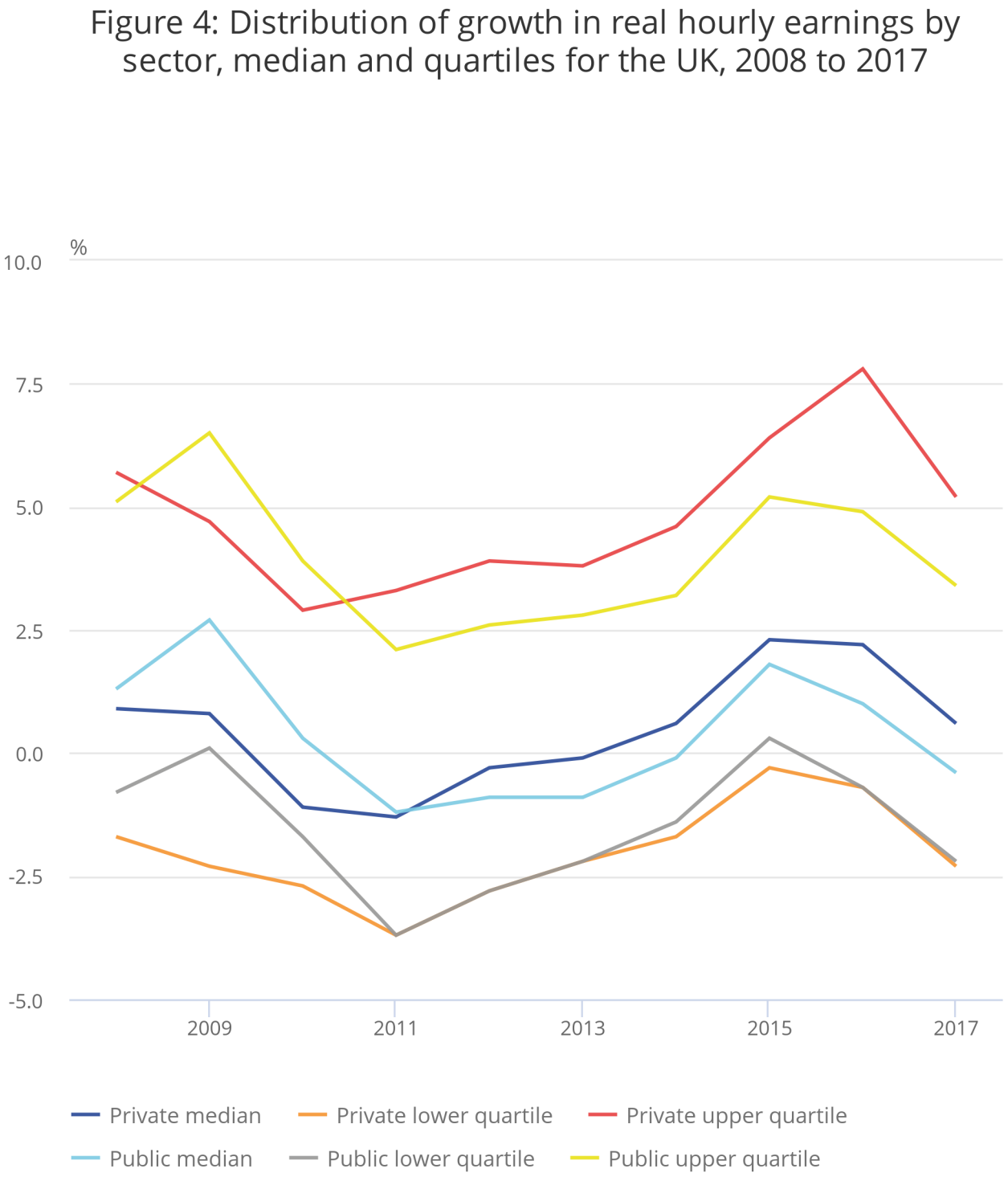
Figures 3a and 3b also indicate wage stickiness shown by spikes in the proportions of those experiencing real wage growth of around negative 3.7% in 2011, negative 0.7% in 2016 and negative 2.5% in 2017. Wage stickiness in 2011 may be partially attributed to the pay freeze for public sector employees announced in the 2010 Budget.

In 2016, there were 32.8% of private sector employees and 45.1% of public sector employees experiencing pay growth of less than or equal to 1.0% in nominal terms (0.3% in real terms). In 2017, this had decreased to 29.7% of private sector employees and 36.8% of public sector employees experiencing pay growth of less than or equal to 1.0% in nominal terms (negative 1.6% in real terms). This may reflect the wage restraint for public sector employees, with pay growth capped at 1.0% from 2013 onwards (excluding police and prison officers for whom the cap was lifted in September 2017). It is possible that public sector employees reported earnings increases of greater than 1% in 2016 and 2017 if they have gained a promotion or moved posts to a role with a greater wage, or received an uplift for experience.

In 2011, the median growth rates (note: as discussed in Chapter 1 of the compendium, this is a different concept to the growth in the median) for both sectors were similar. The median growth rates were negative 1.3% for the private sector and negative 1.2% for the public sector. Over time, the median growth rates have diverged, with the private sector being 1.2 percentage points higher in 2016 (at 2.2%) and 1.0 percentage point higher in 2017 (at 0.6%).

The median, upper and lower quartile real wage growth rates over time are shown in Figure 4.

Figure 4: Distribution of growth in real hourly earnings by sector, median and quartiles for the UK, 2008 to 2017



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. Each line on the figure indicates the lower quartile, median and upper quartile growth rates over time.

3. This figure uses individual level data from ASHE to calculate the growth of nominal weekly earnings for employees observed in pairs of years. For example, in 2010 and 2011, 2011 and 2012, 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

Figure 4 shows that the lower and upper quartile real wage growth rates followed a similar trend to the median real growth rate for employees in both sectors. As shown in Chapter 1 of the compendium, throughout the economic downturn and until 2011, real earnings growth rates followed a decreasing trend, before increasing from 2011 to 2015 or 2016. More recently, the real growth rates have followed a decreasing trend again. Prior to 2011, the quartile and median growth rates were higher for the public sector compared with the private sector. Since the economic downturn, the private sector has experienced equal or greater growth than the public sector, partially due to public sector wage restraints, except the lower quartile in 2015.

The lower quartile real wage growth rate for the private sector is negative in every year, as earnings have been decreasing on the year prior. However, the lower quartile real wage growth rate was positive in the public sector in 2009 and 2015, as real earnings increased on the year prior. For both sectors, real wage growth for the 25th percentile was highest in 2015.

The median real wage growth rate and upper quartile real wage growth rates show the greatest divergence between sectors, with the largest divergence in 2016.

The upper quartile real wage growth rate is the most volatile of the growth rates presented, fluctuating for both sectors between 2.0% and 8.0%.

4 . Earnings by industry

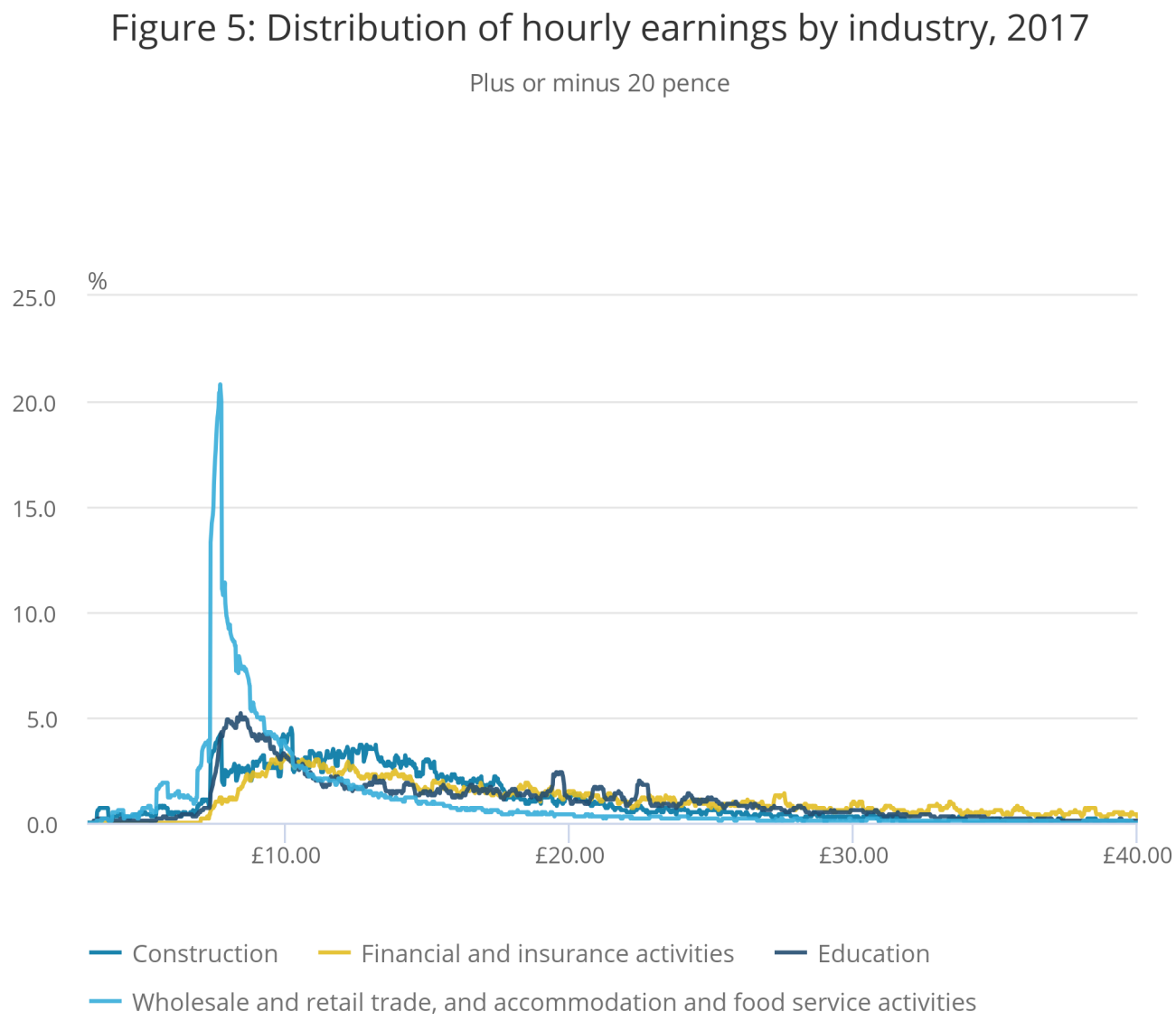
Distribution

The industry an employee works in can be a significant feature in the analysis of the distribution of earnings. Industries have been selected based on showing an interesting growth pattern.

Figure 5 presents variations in employees’ hourly earnings distributions by selected industry.

Figure 5: Distribution of hourly earnings by industry, 2017

Plus or minus 20 pence



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. Each point on the x-axis represents a rolling sum of the density of jobs receiving greater than or equal to 20 pence below, and strictly less than 20 pence above, the stated hourly earnings.

3. As the density records the rolling sum of jobs paid within 20 pence of the stated amount at each point on the x-axis, jobs paid the April 2017 adult National Living Wage (£7.50) will appear between the x-axis values of £7.30 and £7.70.

4. The 2017 NLW refers to the April 2017 Adult National Living Wage of £7.50.

5. Construction refers to the SIC codes 41 to 43. Education refers to the SIC code 85. Financial and insurance activities refer to the SIC codes 64 to 66. Wholesale and retail trade, repair of motor vehicles and motorcycles, and accommodation and food services refer to the SIC codes 45 to 47 and 55 to 56.

Figure 5 shows the 2017 distributions of real hourly earnings by industry using the Standard Industrial Classification code: SIC 2007. The earnings distributions for the wholesale and retail trade; repair of motor vehicles and motorcycles industry, and accommodation and food industry, and to a lesser extent the education industry, follow the characteristic trend introduced in Chapter 1 of the compendium: positively skewed and centred around the 2017 National Living Wage (NLW) rate of £7.50 an hour. Around 20.8% of employees in the wholesale and retail trade; repair of motor vehicles and motorcycles industry, and accommodation and food industry earned the NLW. The financial and insurance activities, and construction industries appeared less centred around the NLW.

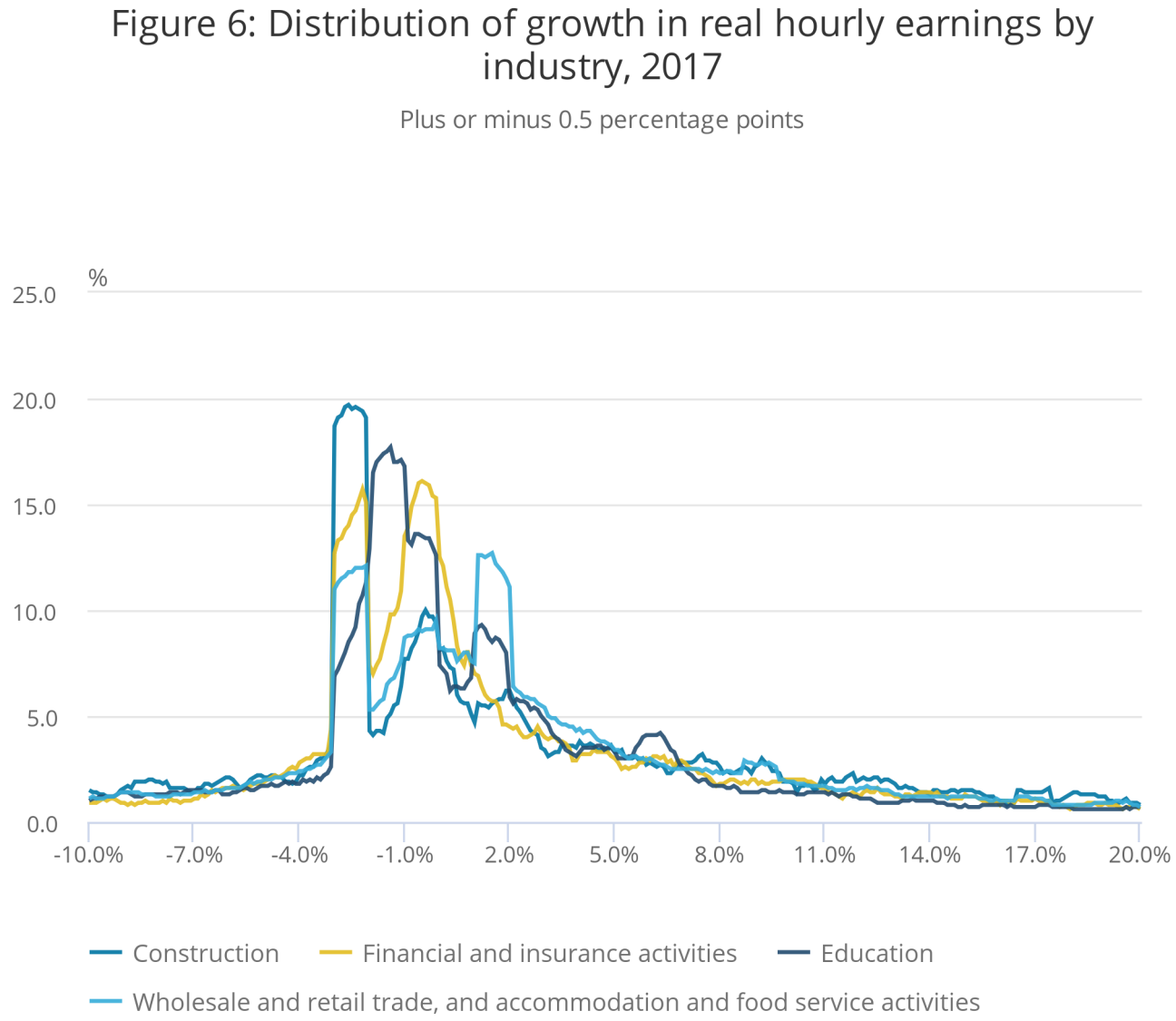
All the industries presented in Figure 5 show long thinning right-hand tails of the distribution indicating the steadily-falling share of employees earning higher wages. In 2017, a smaller share of employees in the wholesale and retail trade; repair of motor vehicles and motorcycles industry, and accommodation and food industry earned wages beyond £12.70 an hour, compared with the construction,financial and insurance activities, and education industries. Generally, a higher proportion of employees in the construction industry earned between £11.34 and £17.70 an hour, compared with the other industries shown in Figure 5. However, a higher share of employees working in the financial and insurance activities industry earned over £30 an hour compared with the other industries analysed. The small left-hand tail of each distribution suggests that relatively few jobs were paid less than the NLW (including employees aged under 25 years earning alternative minimum wages) in 2017.

Growth

The analysis of earnings growth by industry provides further insight into the distributional outcomes for employees. Figure 6 shows the distributions of growth in real hourly earnings by industry for the year 2017.

Figure 6: Distribution of growth in real hourly earnings by industry, 2017

Plus or minus 0.5 percentage points



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. For each growth rate on the horizontal axis, the area under the curve indicates a portion of employees who experienced earnings growth within 0.5 percentage points of that rate.

3. This figure uses individual level data from the Annual Survey of Hours and Earnings (ASHE) to calculate the growth of nominal weekly earnings for employees observed in pairs of years in 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

4. Note that the proportion of employees experiencing a pay growth of 4.2% may not reflect the proportion of employees on the National Living Wage in the earnings distribution in April 2017. This is because the growth analysis is focusing on employed employees in two consecutive periods and not just in April 2017.

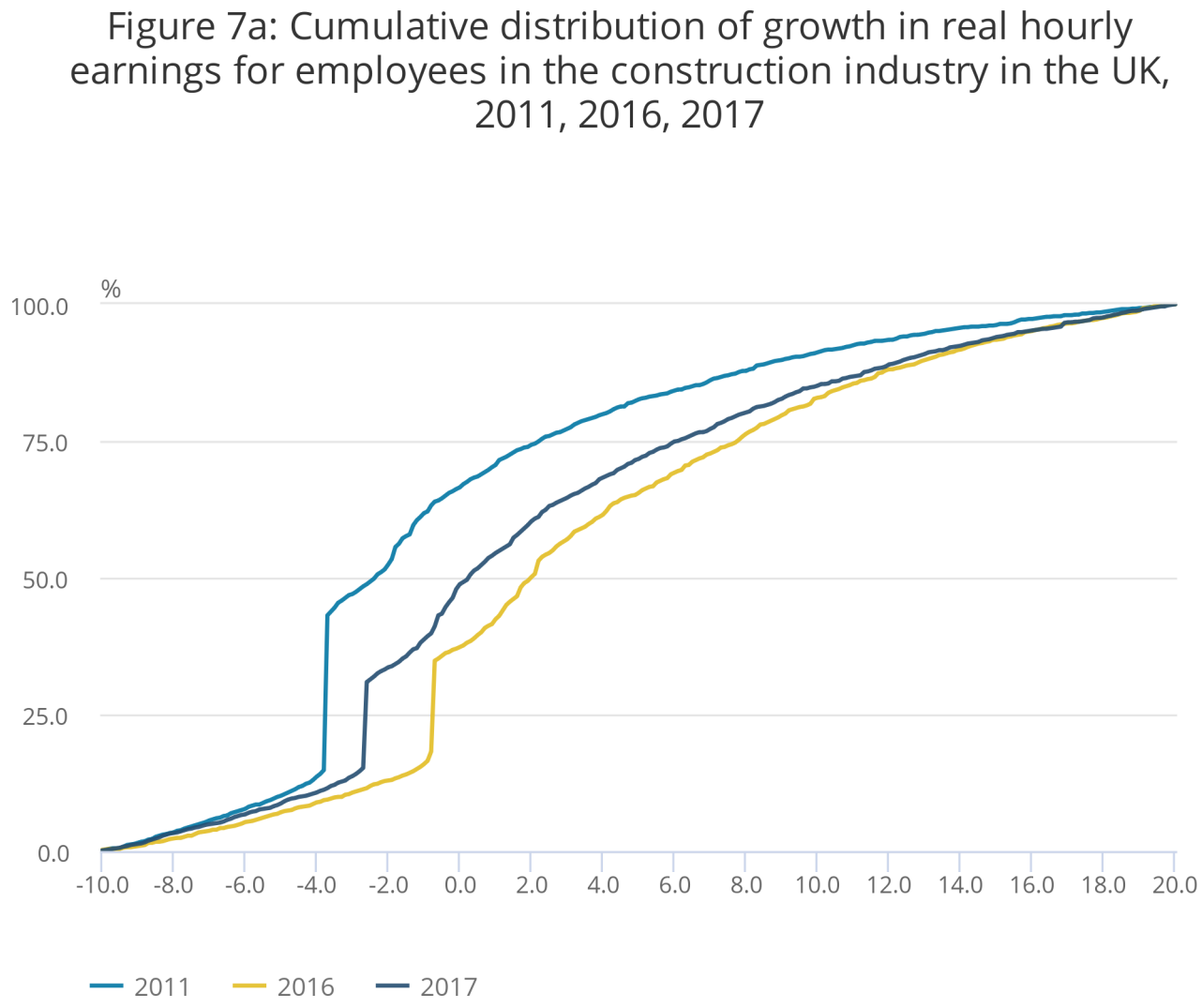
5. Construction refers to the SIC codes 41 to 43. Education refers to the SIC code 85. Financial and insurance activities refer to the SIC codes 64 to 66. Wholesale and retail trade, repair of motor vehicles and motorcycles, and accommodation and food services refer to the SIC codes 45 to 47 and 55 to 56.

Figure 6 shows the proportion of those experiencing wage stickiness (0.0% nominal growth) to be represented by peaks of negative 2.5% growth in real terms. The peaks are shown for all industries in 2017 excluding the education industry. The peak is highest in the construction industry, with 19.7% of employees experiencing a delay with their wages adjusting to changing macroeconomic conditions.

Figure 6 shows the proportion of employees receiving wage increases in line with the 1.5% increase to the NLW in 2017. Each industry (excluding the finance industry) shows peaks in the proportions of employees experiencing this growth. Following from Figure 5, the highest proportion of employees (20.8%) earning the NLW and as a result, whose earnings will grow in line with the NLW increase, worked in the wholesale and retail trade; repair of motor vehicles and motorcycles industry, and accommodation and food industry.

The cumulative percentage frequency charts offer an alternative visualisation of the distribution of real earnings growth by industry. Figures 7a and 7b show the cumulative distributions of growth in real hourly earnings for employees in the construction and education industries. These industries have been selected for comparison.

Figure 7a: Cumulative distribution of growth in real hourly earnings for employees in the construction industry in the UK, 2011, 2016, 2017

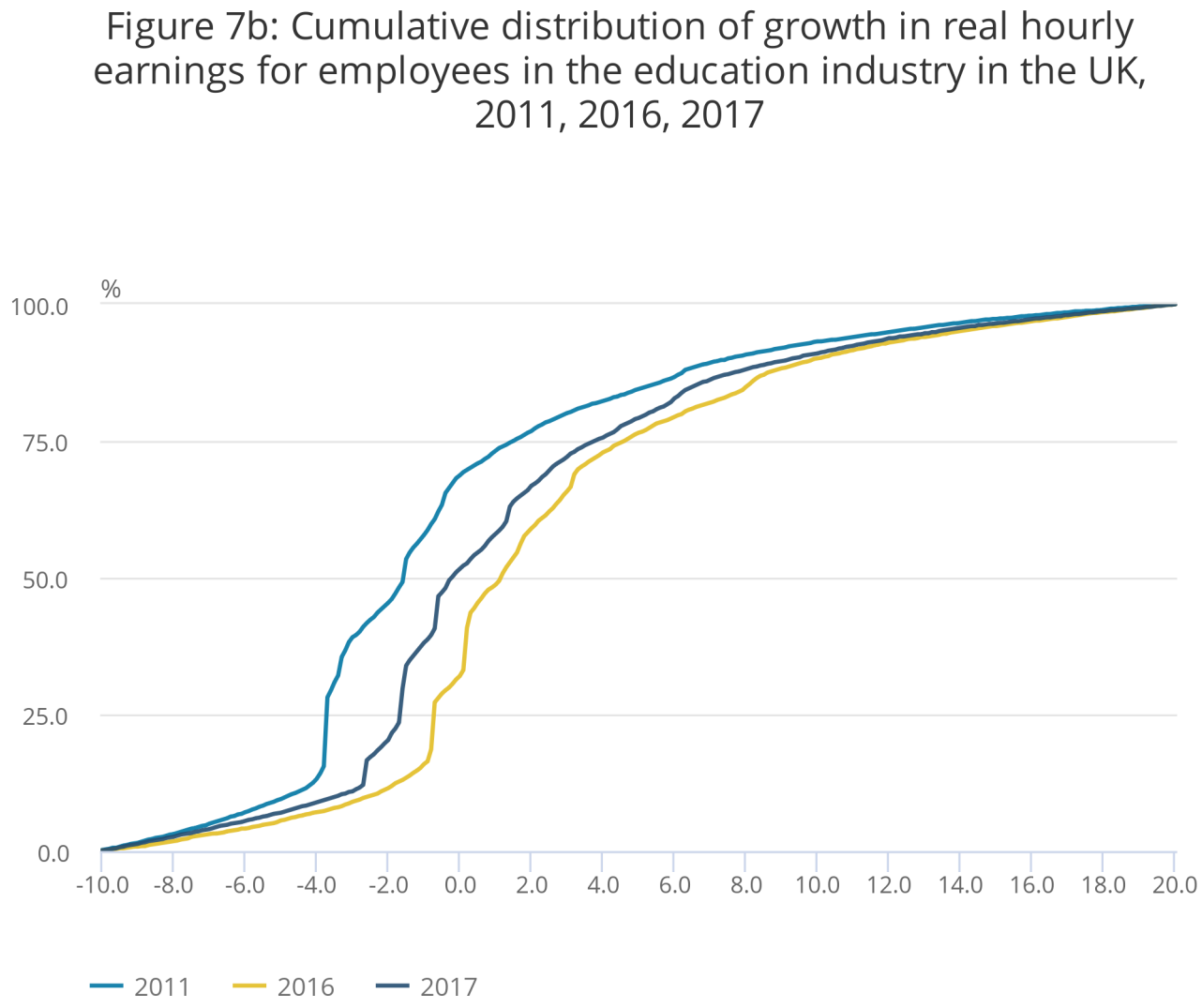


Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.
2. For each growth rate on the horizontal axis, the curve indicates the proportion of employees who experienced earnings growth at that rate.
3. This figure uses individual level data from the Annual Survey of Hours and Earnings (ASHE) to calculate the growth of nominal weekly earnings for employees observed in pairs of years in 2010 and 2011, 2015 and 2016, and 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.
4. This figure only looks at employees whose pay growth between 2016 and 2017 fell between negative 10% and positive 20%. As such, the proportion of employees on the y-axis should not be interpreted as the entire population of employees.
5. Construction refers to the SIC codes 41 to 43.

Figure 7b: Cumulative distribution of growth in real hourly earnings for employees in the education industry in the UK, 2011, 2016, 2017



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. For each growth rate on the horizontal axis, the curve indicates the proportion of employees who experienced earnings growth at that rate.

3. This figure uses individual level data from the Annual Survey of Hours and Earnings (ASHE) to calculate the growth of nominal weekly earnings for employees observed in pairs of years in 2010 and 2011, 2015 and 2016, and 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

4. This figure only looks at employees whose pay growth between 2016 and 2017 fell between negative 10% and positive 20%. As such, the proportion of employees on the y-axis should not be interpreted as the entire population of employees.

5. Education refers to the SIC code 85.

Figures 7a and 7b show similar earnings distributions and the same characteristic trends introduced in Chapter 1 of the compendium and referenced previously, with fewer employees in both the construction and education industries experiencing a pay decrease or freeze in real terms in the year to April 2016, compared with 2011 and 2017. The fewest number of employees in either industry experienced positive pay growth in real terms in 2011. Figures 7a and 7b show that the growth in earnings improved to 2016, represented by the curve shifting rightwards, and worsened in 2017, as shown by the curve shifting leftwards.

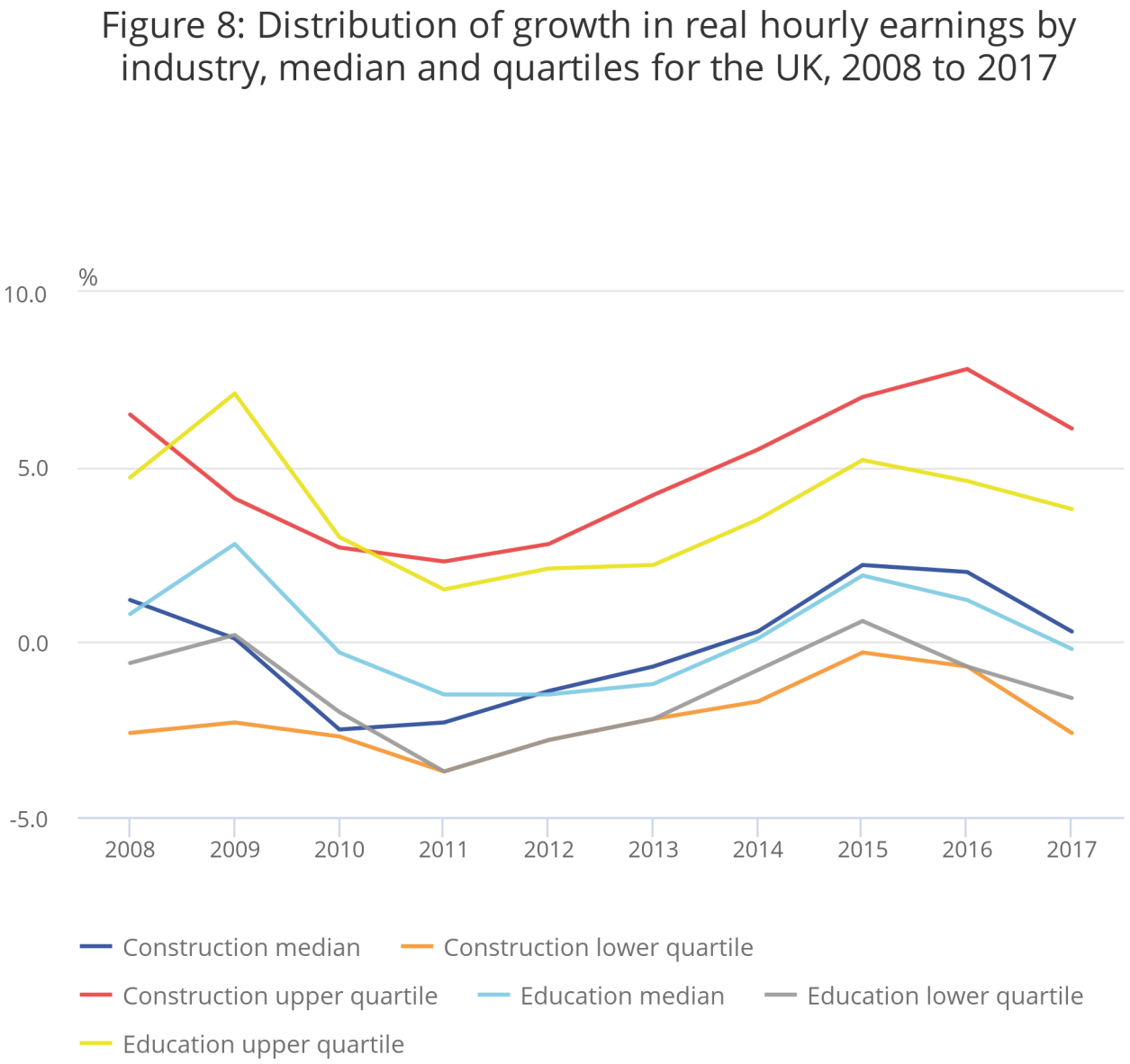
Wage stickiness (0.0% nominal growth) is shown by spikes in the proportions of those experiencing real wage growth of around negative 3.7% in 2011, negative 0.7% in 2016 and negative 2.5% in 2017. Figures 7a and 7b show the construction industry to have a higher proportion of employees experiencing wage stickiness in 2017 compared with the education industry. The wage stickiness in 2011 may be partially attributed to the pay freeze announced in the 2010 Budget for public sector employees.

Pay growth of less than or equal to 1.0% (in nominal terms) was experienced in 2016 by 38.4% of employees in the construction industry and 43.6% of employees in the education industry. In 2017, these had decreased to 35.2% of employees in the construction industry and 29.7% of employees in the education industry respectively. As 90.6% of employees in the education industry are employed in the public sector, this partially reflects the wage restraint for public sector employees, where pay growth was capped at 1.0% from 2013 onwards (excluding police and prison officers for whom the cap was lifted in September 2017).

In 2011, the median growth rate (note: as discussed in Chapter 1 of the compendium, this is a different concept to the growth in the median) was 0.8 percentage points higher, at negative 1.5%, for employees of the education industry compared with those of the construction industry. This trend was reversed in 2016, when employees of the construction industry had a median growth rate of 2.0%, which was 0.8 percentage points higher than the education industry's median growth rate. In 2017, the median growth rate of the construction industry was 0.3%, which was 0.5 percentage points higher than the education industry's median growth rate.

The median, upper and lower quartile real wage growth rates over time are shown in Figure 8.

Figure 8: Distribution of growth in real hourly earnings by industry, median and quartiles for the UK, 2008 to 2017



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. Each line on the figure indicates the lower quartile, median and upper quartile growth rates over time.

3. This figure uses individual level data from ASHE to calculate the growth of nominal weekly earnings for employees observed in pairs of years. For example, in 2010 and 2011, 2011 and 2012, 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

4. Construction refers to the SIC codes 41 to 43. Education refers to the SIC code 85.

Figure 8 shows that the two selected industries tend to follow a similar trend especially since the economic downturn. Figure 8 shows that throughout the economic downturn and until 2011, real earnings growth rates followed a decreasing trend, before increasing between 2011 and 2015 or 2016. More recently the real wage growth rates have followed a decreasing trend again.

The lower quartile real wage growth rate for all the years is negative for the construction industry, where each year's earnings decreased on the year prior. Earnings growth for the lower quartile is shown to be the same or higher in the education industry, with positive growth in 2009 and 2015.

The median real wage growth rate tracks the lower quartile real wage growth rate. While the construction industry saw positive median wage growth in 2017, the education industry experienced negative growth.

Since 2011, construction has had a higher upper quartile real wage growth than education. The two industries appear to be diverging, peaking at a divergence of 3.2 percentage points in 2016.

5 . Earnings by skill level

Distribution

A breakdown of earnings distribution by skill level also provides interesting analysis. The Standard Occupational Classification 2010: SOC 2010 separates the labour market into nine major groups based on criteria such as the qualifications, skills and experience associated with each job. These nine major groups can be combined further into four skill groups; levels 1 through 4. Level 1 indicates relatively low skill requirements and level 4 indicates relatively high skill requirements.

Table 1 presents the typical occupations and the skill level they refer to. The table also shows the proportion of employees classified to each skill level.

Table 1: SOC 2010 classification of skill level groups and share of employees by skill group

Skill level group	Proportion of employees, ASHE 2017	Typical occupations
1 ("lower")	11.9%	Labourers (for example, agriculture, construction), cleaners and basic admin employees
2 ("lower-mid")	37.0%	Secretaries, carers, hairdressers, cashiers, machine operatives and transport drivers
3 ("upper-mid")	24.0%	Skilled trade employees, associate professionals and technical occupations
4 ("upper")	27.2%	Professionals (for example, teachers, doctors, scientists, engineers, managers and directors)

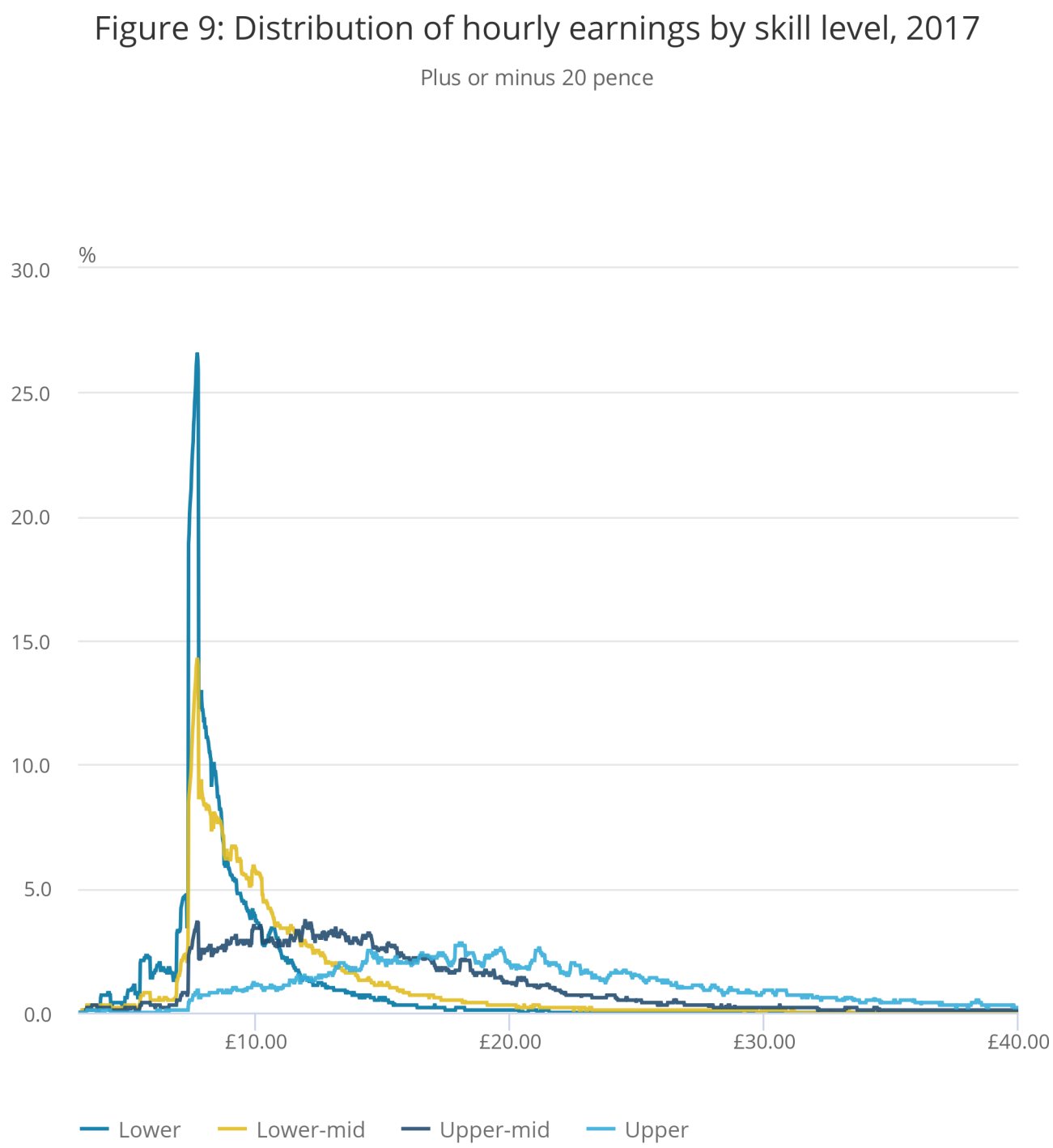
Source: Office for National Statistics, Annual Survey of Hours and Earnings

Table 1 shows that the "lower-mid" skill level has the highest proportion of employees, while the "lower" skilled level has the lowest proportion of employees.

Figure 9 demonstrates the earnings distributions by skill level.

Figure 9: Distribution of hourly earnings by skill level, 2017

Plus or minus 20 pence



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. Each point on the x-axis represents a rolling sum of the density of jobs receiving greater than or equal to 20 pence below, and strictly less than 20 pence above, the stated hourly earnings.

3. As the density records the rolling sum of jobs paid within 20 pence of the stated amount at each point on the x-axis, jobs paid the April 2017 adult National Living Wage (£7.50) will appear between the x-axis values of £7.30 and £7.70.

4. The 2017 NLW refers to the April 2017 Adult National Living Wage of £7.50.

As previously, the 2017 earnings distributions of “lower” and “lower-mid” skill levels follow the characteristic trend introduced in Chapter 1 of the compendium: positively skewed and centred around the 2017 National Living Wage (NLW) rate of £7.50 an hour. In 2017, there were 26.6% of “lower” skilled employees receiving the NLW. The “lower-mid” skilled employees are grouped similarly to those who are “lower” skilled, with a cluster around the NLW, peaking at 14.3%. “Upper” and “upper-mid” skill levels show less concentration around the NLW, with only 3.7% of “upper-mid” skilled employees earning around the NLW in 2017. The “upper” skill category shows a fairly even distribution across all wage levels.

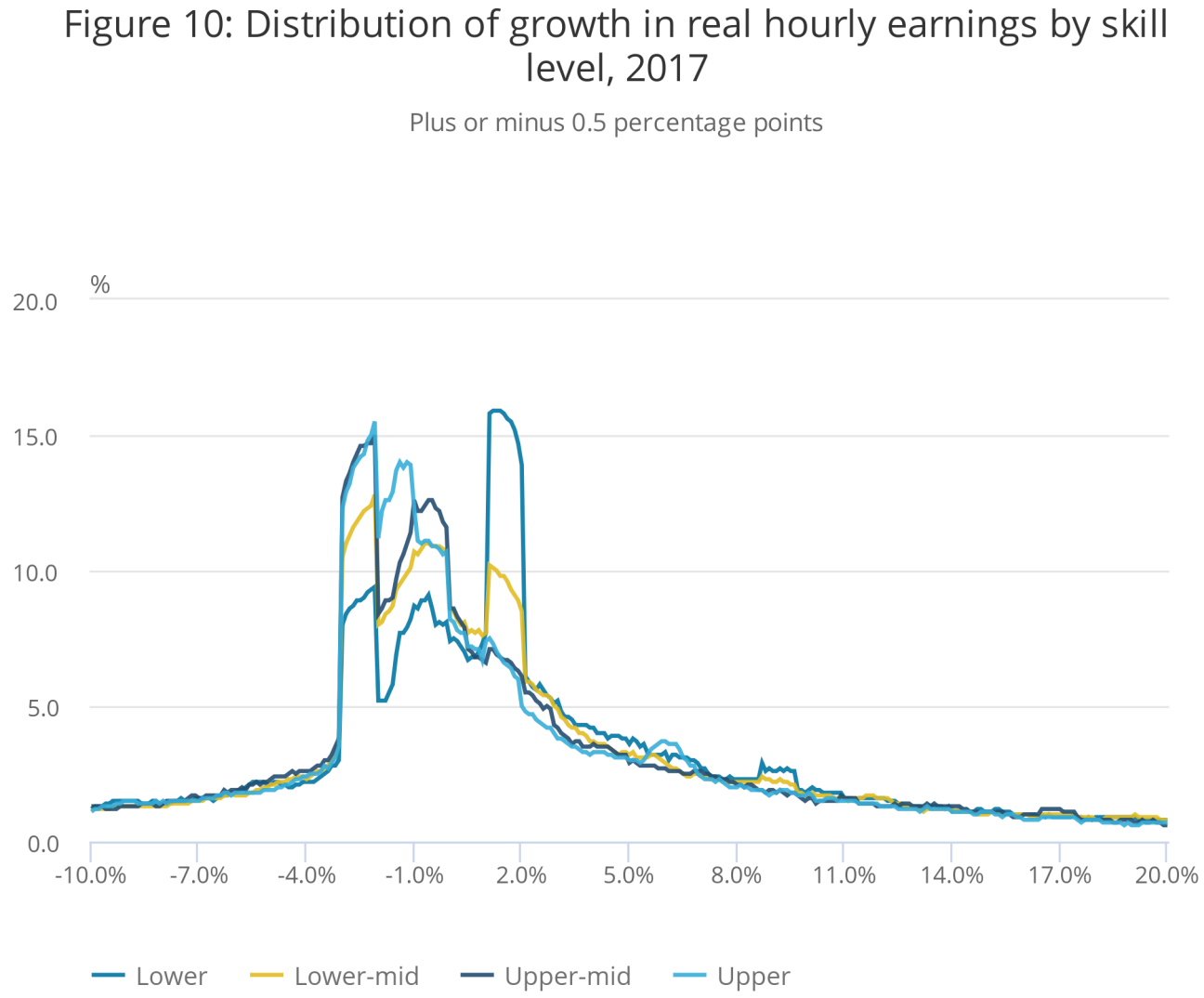
All skill levels showed evidence of a steadily-falling share of employees earning higher wages in 2017 as indicated by the long thinning right-hand tail of each distribution in Figure 9. The figure shows there to be a higher share of employees in the “lower-mid” skill category earning above £8.66 per hour, compared with the “lower” skilled category. A very small percentage of “lower” skilled employees earn above £15 an hour. For “upper” skill levels, this tail thins out at higher wages compared with the other skill levels. The tail of the “upper” skill level distribution extends similarly to the right as it does to the left; with 1.0% of high-skilled employees earning around £28.14 per hour and the same proportion earning around £9.70 per hour. Relatively few jobs were paid less than the NLW (including employees aged under 25 years earning alternative minimum wages) as suggested by the left-hand tail.

Growth

Analysing the growth of earnings by skill level offers further understanding of the distributional outcomes for employees. Figure 10 shows the 2017 distributions of growth in real hourly earnings by skill level.

Figure 10: Distribution of growth in real hourly earnings by skill level, 2017

Plus or minus 0.5 percentage points



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. For each growth rate on the horizontal axis, the area under the curve indicates a portion of employees who experienced earnings growth within 0.5 percentage points of that rate.

3. This figure uses individual level data from the Annual Survey of Hours and Earnings (ASHE) to calculate the growth of nominal weekly earnings for employees observed in pairs of years in 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

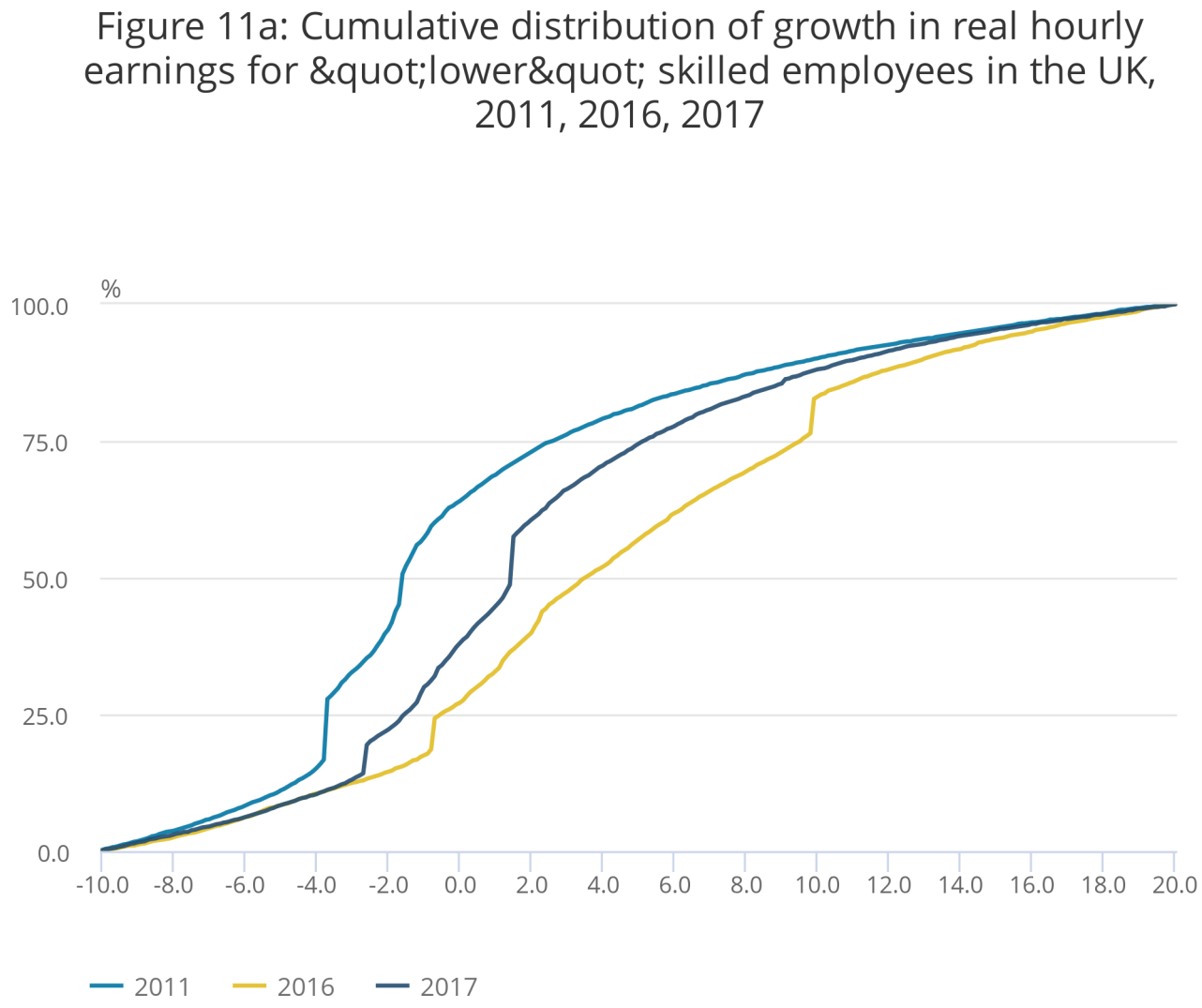
4. Note that the proportion of employees experiencing a pay growth of 4.2% may not reflect the proportion of employees on the National Living Wage in the earnings distribution in April 2017. This is because the growth analysis is focusing on employed employees in two consecutive periods and not just in April 2017.

Wage stickiness and the delay responding to macroeconomic changes are shown in Figure 10 by the proportion of employees experiencing 0.0% nominal earnings growth and negative 2.5% real growth. The proportion of employees experiencing within plus or minus 0.5 percentage points of wage stickiness is greater for higher-skilled employees, with 15.5% of those classified as “upper” skilled and 8.0% of those classified as “lower” skilled experiencing it in 2017.

Figure 10 also shows that all skill levels experienced peaks around 1.5% in real terms representing growth in the NLW in 2017. This growth is experienced by higher proportions of employees in the “lower” and “lower-mid” skill level groups, 15.9% and 10.2% respectively, compared with the “upper” and “upper-mid” skill level groups. Figure 9 also showed there to be a greater proportion of “lower” and “lower-mid” skilled employees earning the 2017 NLW.

The distribution of real earnings growth can alternatively be visualised using cumulative percentage frequency charts. Figures 11a and 11b show the cumulative distributions of growth in real hourly earnings for employees in the “upper” and “lower” skill level groups respectively. These skill level groups have been selected for comparison.

Figure 11a: Cumulative distribution of growth in real hourly earnings for "lower" skilled employees in the UK, 2011, 2016, 2017



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

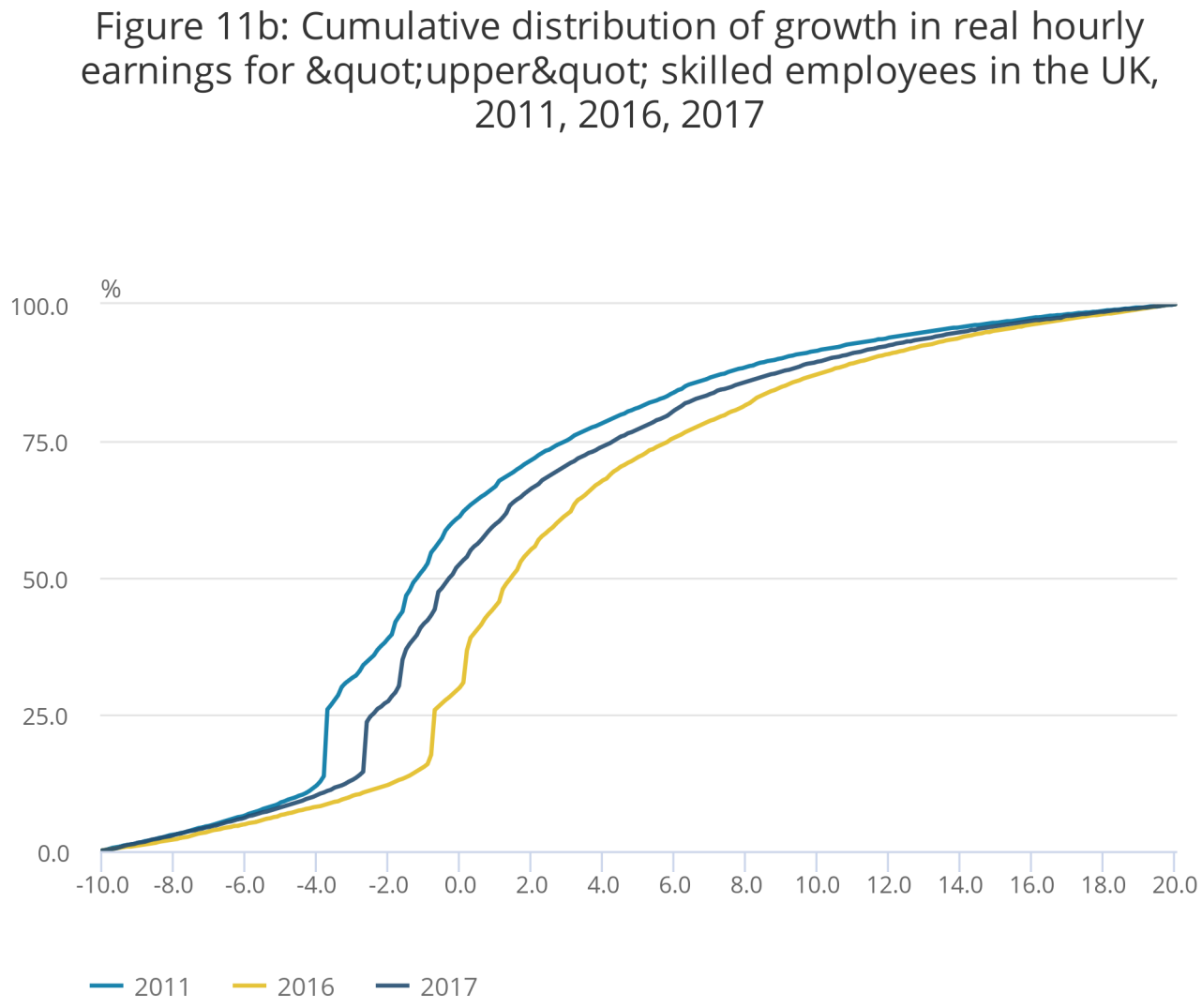
1. 2017 data are provisional.

2. For each growth rate on the horizontal axis, the curve indicates the proportion of employees who experienced earnings growth at that rate.

3. This figure uses individual level data from the Annual Survey of Hours and Earnings (ASHE) to calculate the growth of nominal weekly earnings for employees observed in pairs of years in 2010 and 2011, 2015 and 2016, and 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

4. This figure only looks at employees whose pay growth between 2016 and 2017 fell between negative 10% and positive 20%. As such, the proportion of employees on the y-axis should not be interpreted as the entire population of employees.

Figure 11b: Cumulative distribution of growth in real hourly earnings for "upper" skilled employees in the UK, 2011, 2016, 2017



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. For each growth rate on the horizontal axis, the curve indicates the proportion of employees who experienced earnings growth at that rate.

3. This figure uses individual level data from the Annual Survey of Hours and Earnings (ASHE) to calculate the growth of nominal weekly earnings for employees observed in pairs of years in 2010 and 2011, 2015 and 2016, and 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

4. This figure only looks at employees whose pay growth between 2016 and 2017 fell between negative 10% and positive 20%. As such, the proportion of employees on the y-axis should not be interpreted as the entire population of employees.

Figures 11a and 11b show similar earnings distributions for both skill levels and echo the characteristic trend introduced in Chapter 1 of the compendium, with fewer employees in each skill level experiencing a pay decrease or freeze in real terms in the year to April 2016 compared with 2011 and 2017. The year 2011 saw the fewest number of employees of each skill level experiencing positive pay growth in real terms. Figures 11a and 11b show the growth in earnings improved between 2011 and 2016 (represented by the curve shifting rightwards) and worsened in 2017 (represented by the curve shifting leftwards).

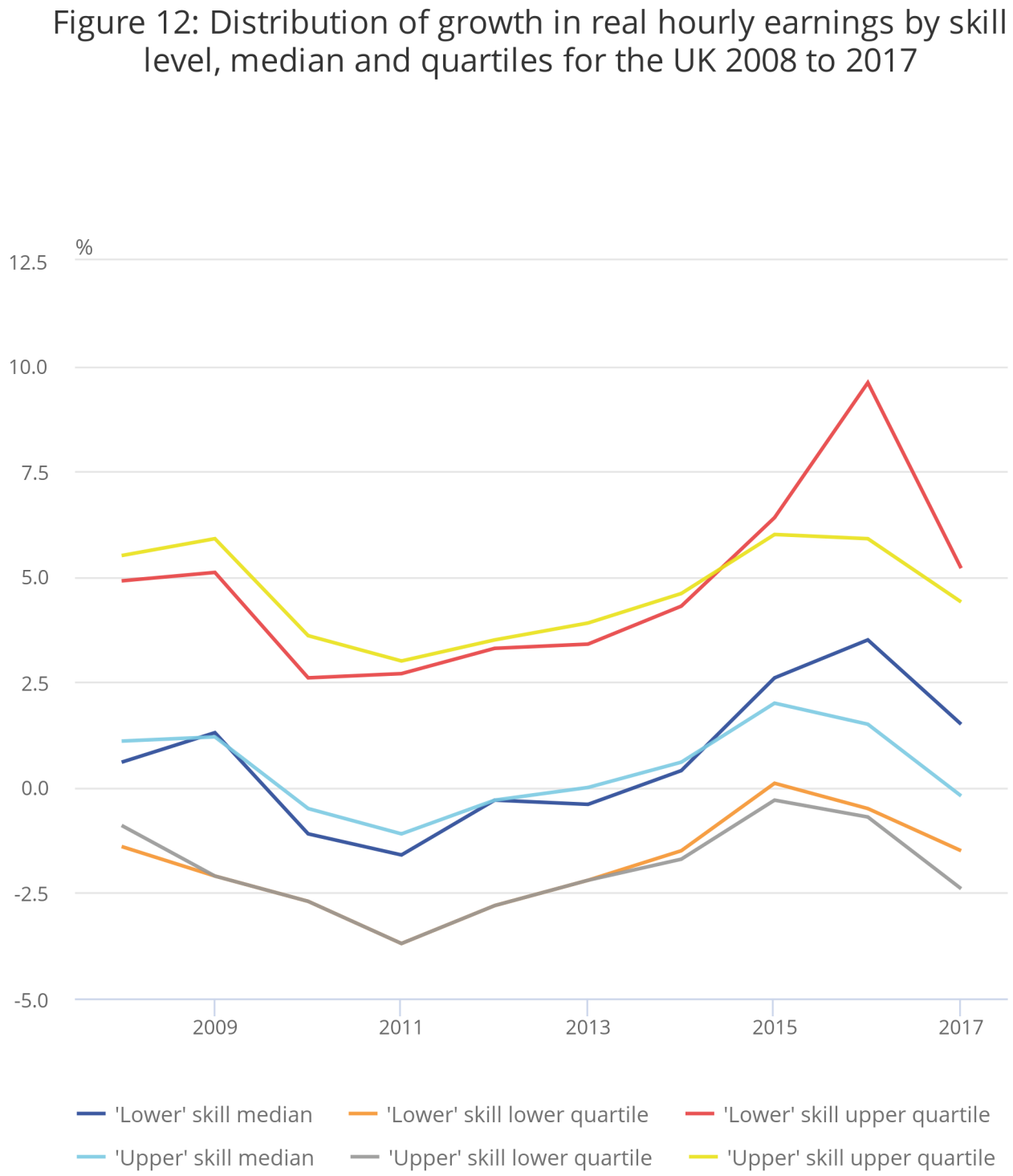
The figures highlight wage stickiness shown by spikes in the proportions of those experiencing real earnings growth of around negative 3.7% in 2011, negative 0.7% in 2016 and negative 2.5% in 2017. For both “lower” skilled and “upper” skilled employees, similar proportions experienced wage stickiness in 2011. Wage stickiness in 2011 may be partially attributed to the pay freeze for public sector employees announced in the 2010 Budget. In 2016 and 2017, a greater proportion of “upper” skilled employees compared with “lower” skilled employees experienced wage stickiness, as shown by the more prominent spikes in Figure 11b.

In 2016, there were 39.0% of “upper” skilled employees and 29.1% of “lower” skilled employees experiencing pay growth of less than or equal to 1% (in real terms). By 2017, this had decreased to 35.0% of “upper” skilled employees and 24.7% of “lower” skilled employees respectively. This may partially reflect the wage restraint for public sector employees, where pay growth was capped at 1.0% from 2013 onwards (excluding police and prison officers for whom the cap was lifted in September 2017).

In 2011, the median real wage growth rate (note: as discussed in Chapter 1 of the compendium, this is a different concept to the growth in the median) was 0.4 percentage points higher for “upper” skilled employees at negative 1.2% compared with “lower” skilled employees. This trend was reversed in 2016 when the median real wage growth rate was 2.1 percentage points higher for “lower” skilled employees at 3.5%. In 2017, the median real wage growth rate was 1.7 percentage points higher for “lower” skilled employees at 1.4%.

The median, upper and lower quartile real wage growth rates over time are shown in Figure 12.

Figure 12: Distribution of growth in real hourly earnings by skill level, median and quartiles for the UK 2008 to 2017



Source: Office for National Statistics, Annual Survey of Hours and Earnings

Notes:

1. 2017 data are provisional.

2. Each line on the figure indicates the lower quartile, median and upper quartile growth rates over time.

3. This figure uses individual level data from ASHE to calculate the growth of nominal weekly earnings for employees observed in pairs of years. For example, in 2010 and 2011, 2011 and 2012, 2016 and 2017. Note that the ASHE methodology is not specifically designed to model earnings growth for employees over time.

Figure 12 shows all growth rates follow similar trends across the skill levels. As shown in Chapter 1 of the compendium, throughout the economic downturn and until 2011, real earnings growth followed a decreasing trend. Real wage growth increased until 2015 for the lower quartile rate and median rate, and until 2016 for the upper quartile growth rate. More recently, the real growth rates have followed a decreasing trend again.

The lower quartile real wage growth rate appears to show the most similarity between skill levels: being negative for all years and both skill levels (excluding 2015 when the “lower” skill lower quartile experienced positive growth). The lower quartile and median real wage growth rates were lowest in 2011 during wage stagnation in the economic downturn.

The median real wage growth rate tracks the lower quartile real wage growth rate closely until 2015, when the median real wage growth rate for the “upper” skill level continued to track the lower quartile growth rate and the median real wage growth rate for the “lower” skill level diverged.

The upper quartile real wage growth rate shows the most divergence across skill levels, particularly in 2016.

6 . Background information

Further analysis on the distribution of earnings by employment and employee characteristics using Annual Survey of Hours and Earnings (ASHE) data is contained in the compendium.

Survey details and basic quality information can be found in Chapter 1 of the compendium.