

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.

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# 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.

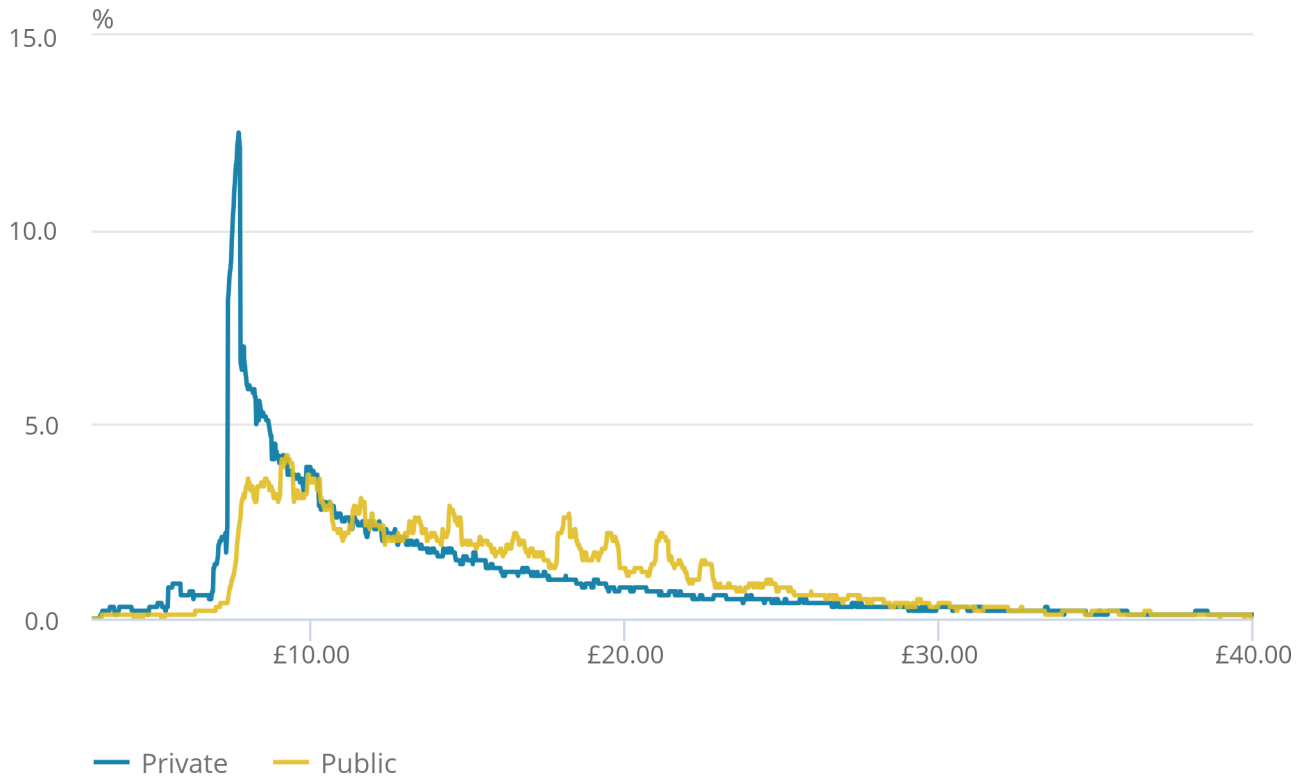
Figure 1 compares the distributions of hourly earnings between the public sector and private sector.

**Figure 1: Distribution of hourly earnings by sector, 2017**

Plus or minus 20 pence

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**

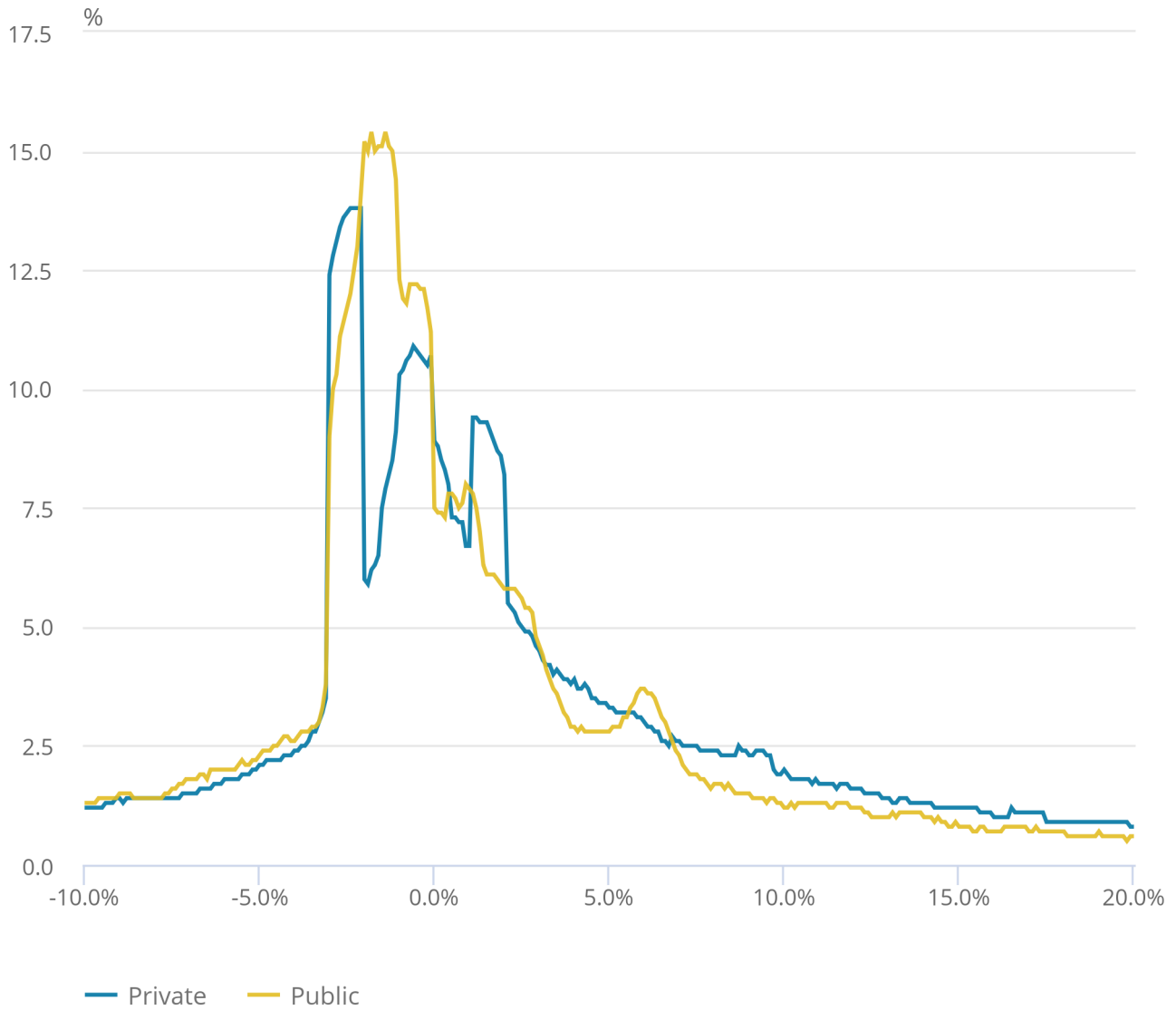
Further insight into the distributional outcomes for employees can be obtained by analysing the growth of earnings by sector of employment. Figure 2 shows the distributions of growth in earnings in the public sector and private sector in 2017.

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

Plus or minus 0.5 percentage points

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.

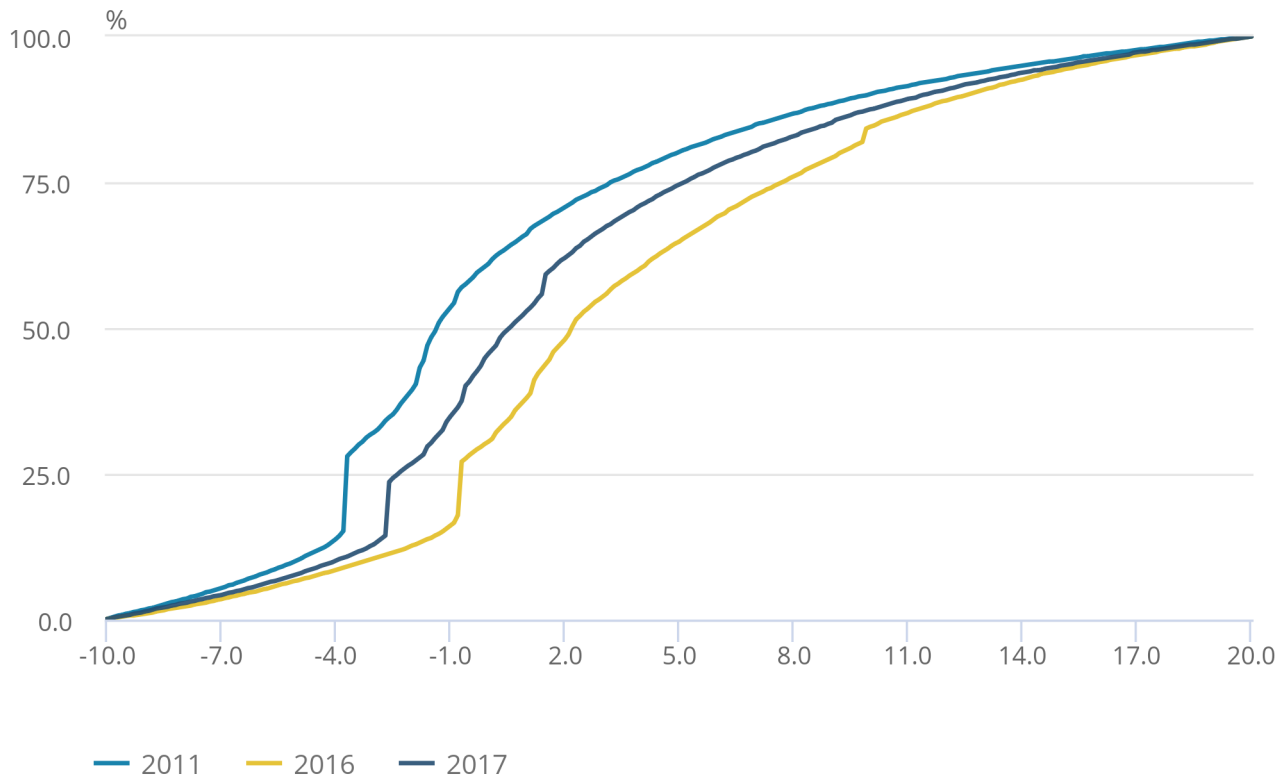
Figure 2 highlights wage stickiness, where, in 2017, employees received a pay growth of 0.0% in nominal terms and in 2017 around negative 2.5% in real terms. Wage stickiness may occur when earnings do not respond to changing macroeconomic conditions. In 2017, a greater proportion of private sector employees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

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



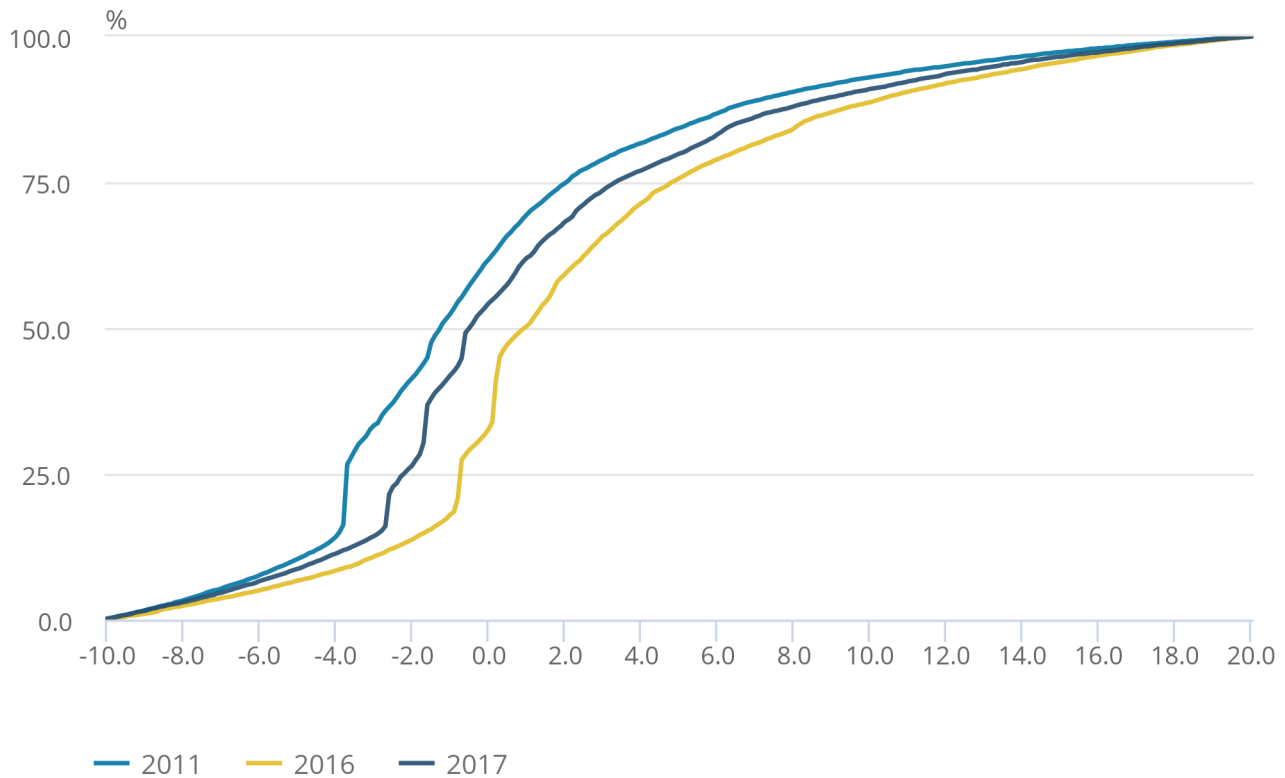
**Source: Office for National Statistics, Annual Survey of Hours and Earnings**

**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**

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**

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.

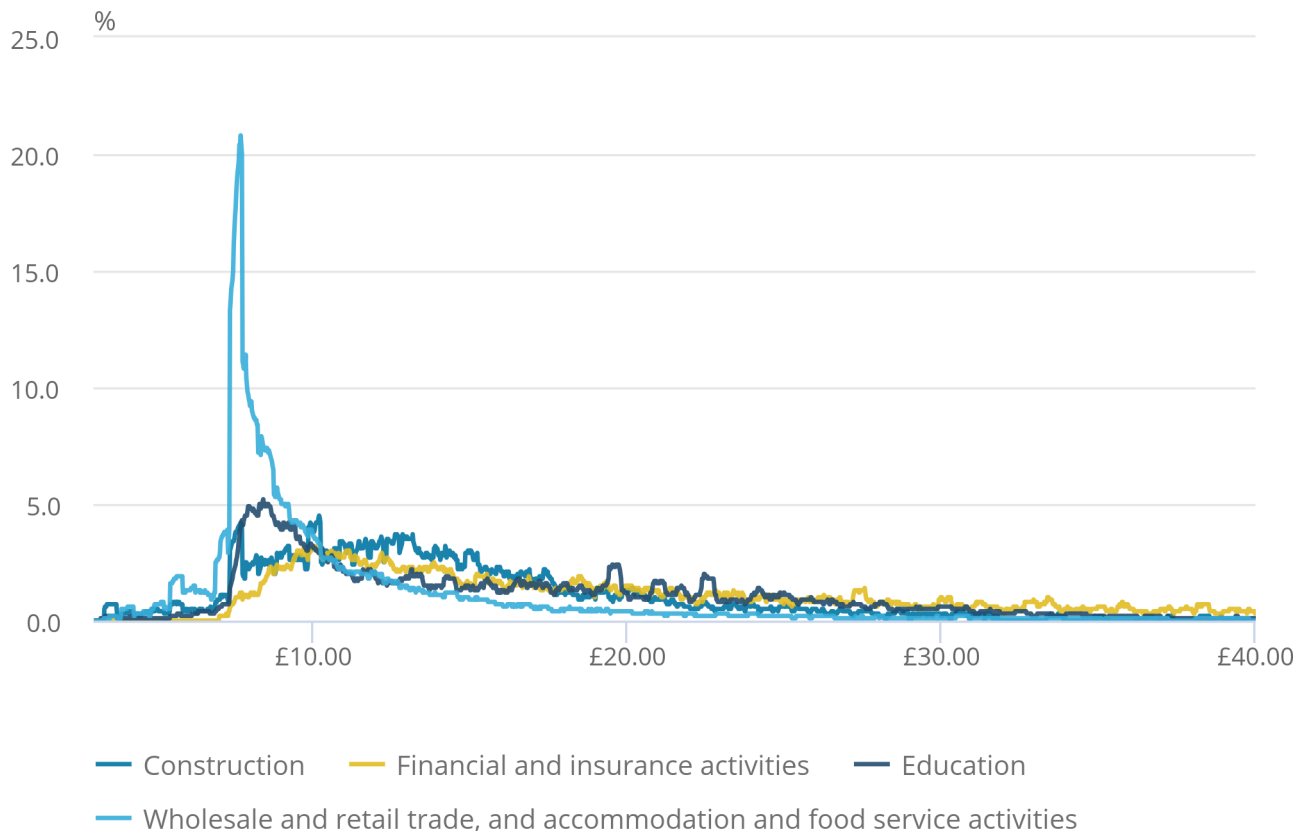
Figure 5 presents variations in employees' hourly earnings distributions by selected industry.

**Figure 5: Distribution of hourly earnings by industry, 2017**

Plus or minus 20 pence

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**

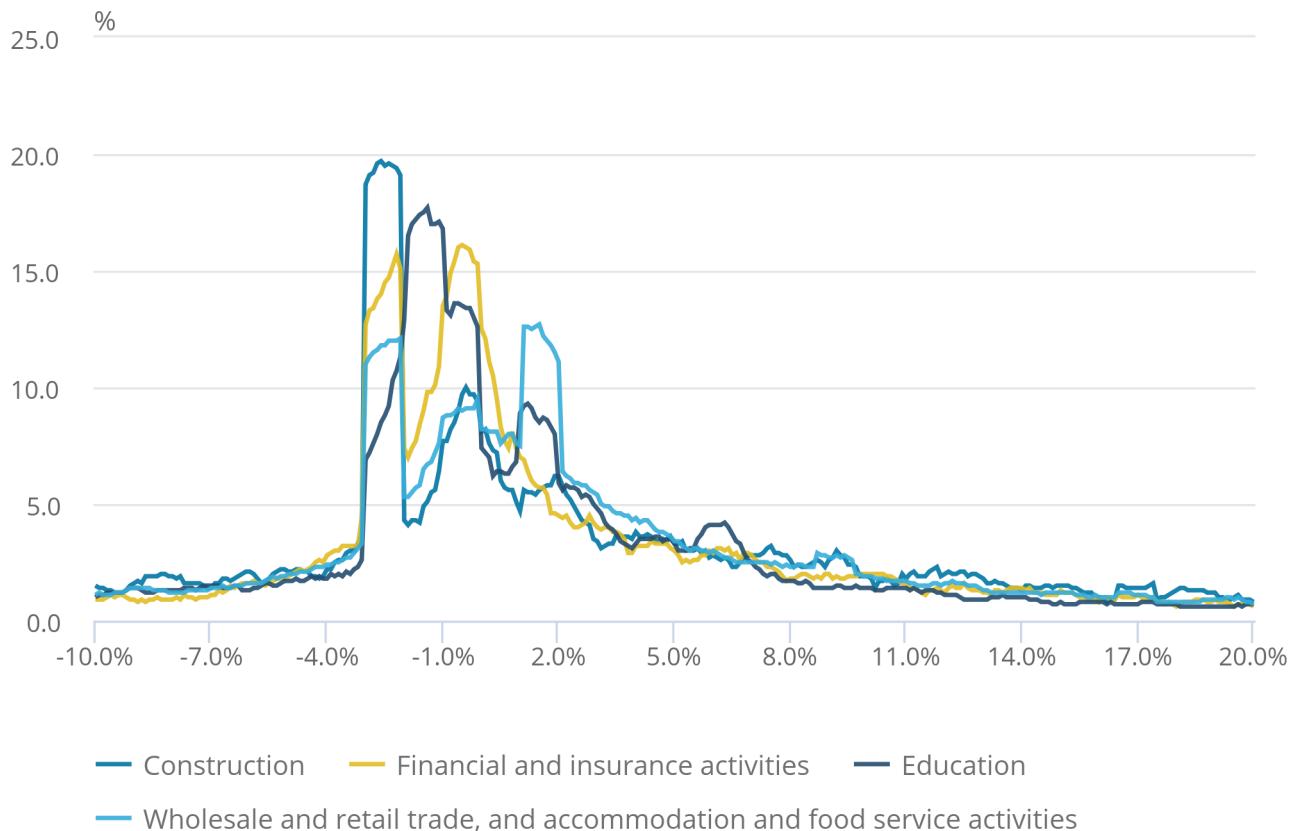
The analysis of earnings growth by industry provides further insight into the distributional outcomes for employees. Figure 6 shows the distributions of growth in real hourly earnings by industry for the year 2017.

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

Plus or minus 0.5 percentage points

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.

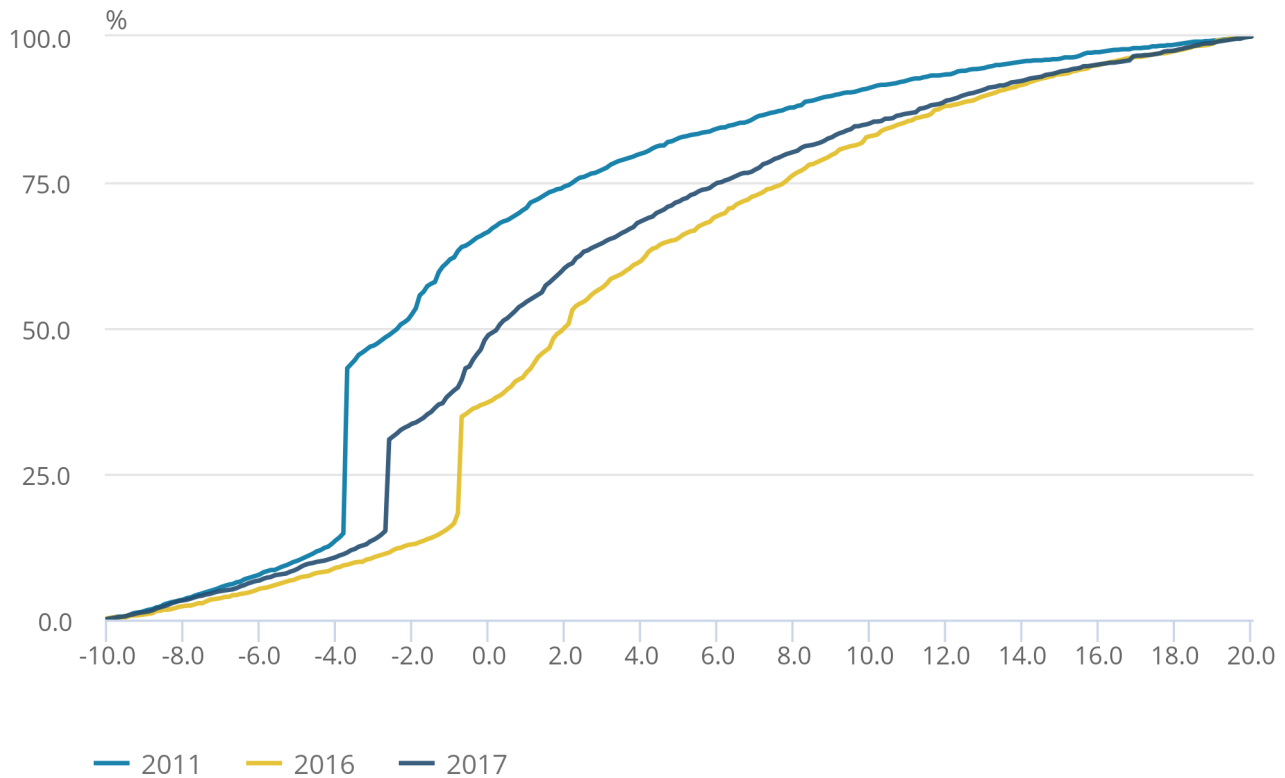
Figure 6 shows the proportion of those experiencing wage stickiness (0.0% nominal growth) to be represented by peaks of negative 2.5% growth in real terms. The peaks are shown for all industries in 2017 excluding the education industry. The peak is highest in the construction industry, with 19.7% of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

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**

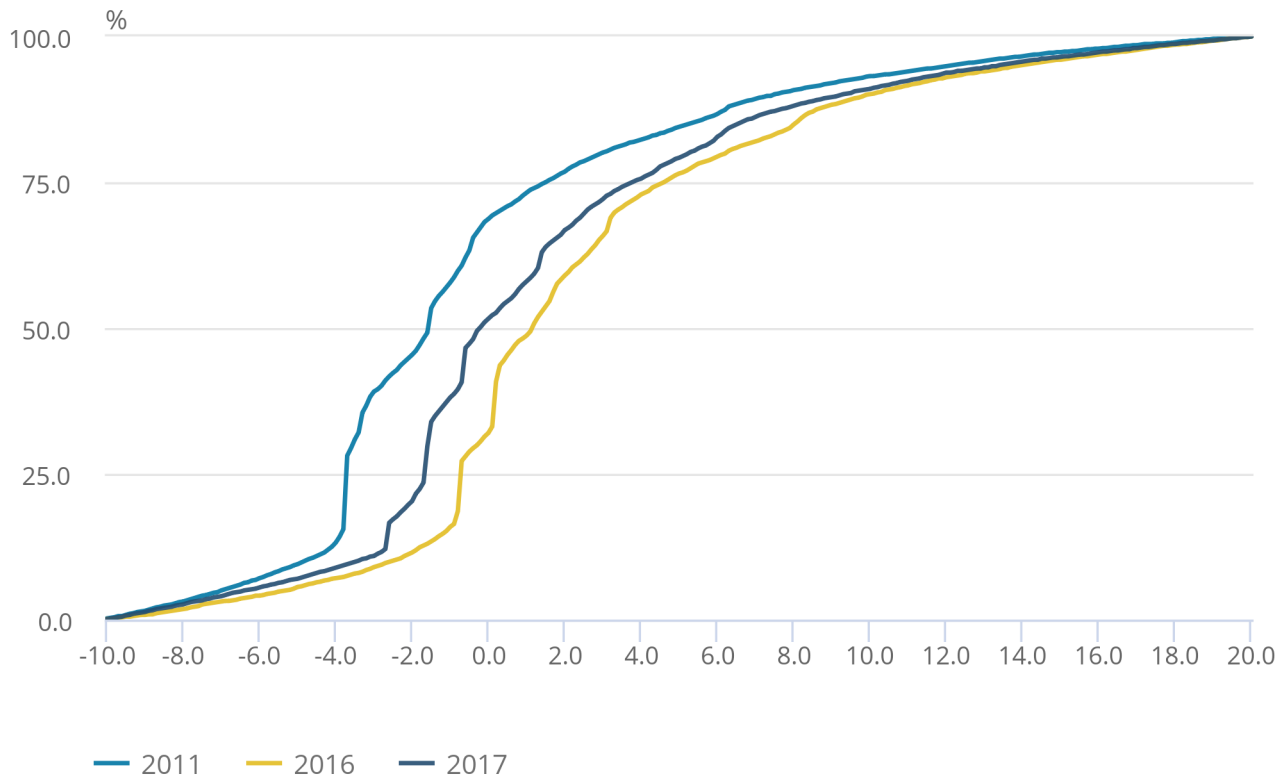
**Notes:**

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**

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.

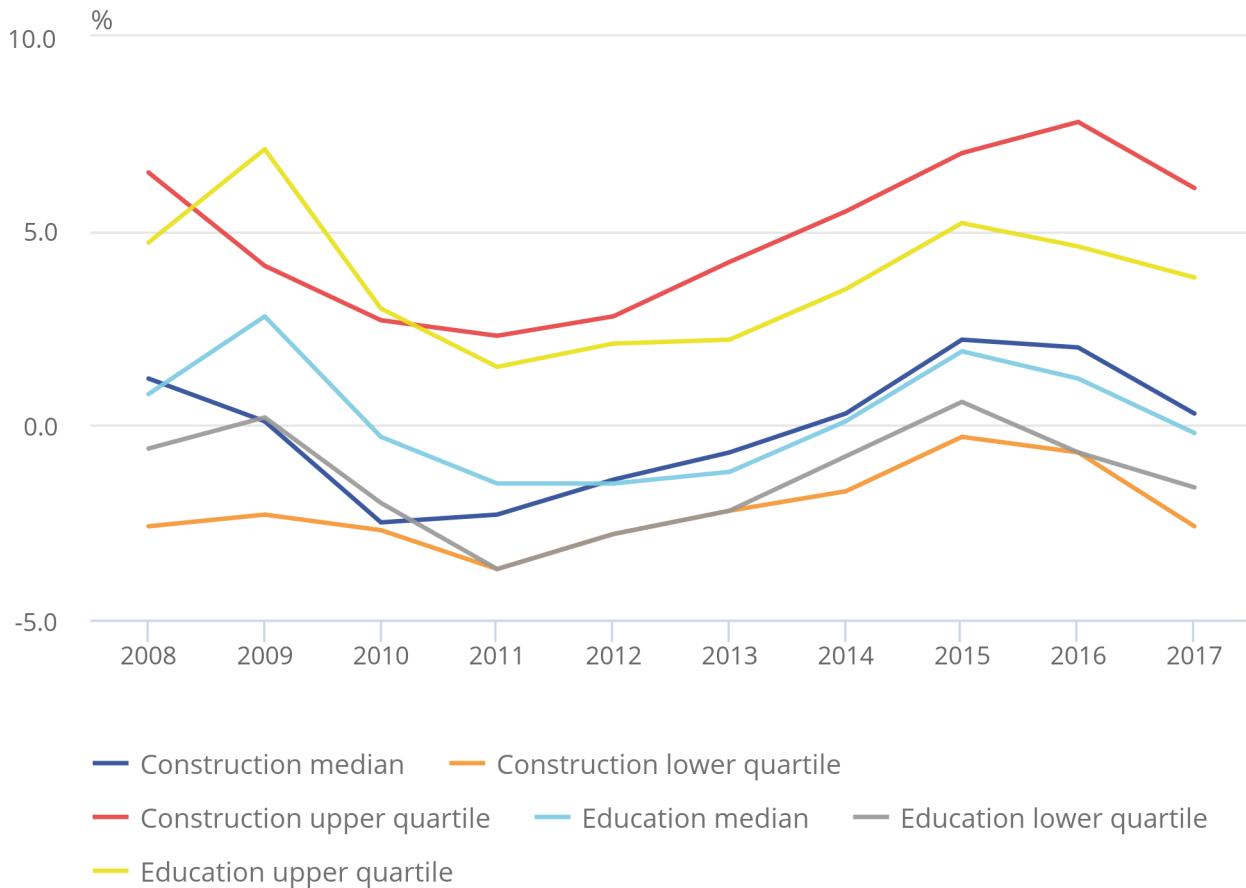
Pay growth of less than or equal to 1.0% (in nominal terms) was experienced in 2016 by 38.4% of employees in the construction industry and 43.6% of employees in the education industry. In 2017, these had decreased to 35.2% of employees in the construction industry and 29.7% of employees in the education 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**

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

<b>Skill level group</b>	<b>Proportion of employees, ASHE 2017</b>	<b>Typical occupations</b>
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.

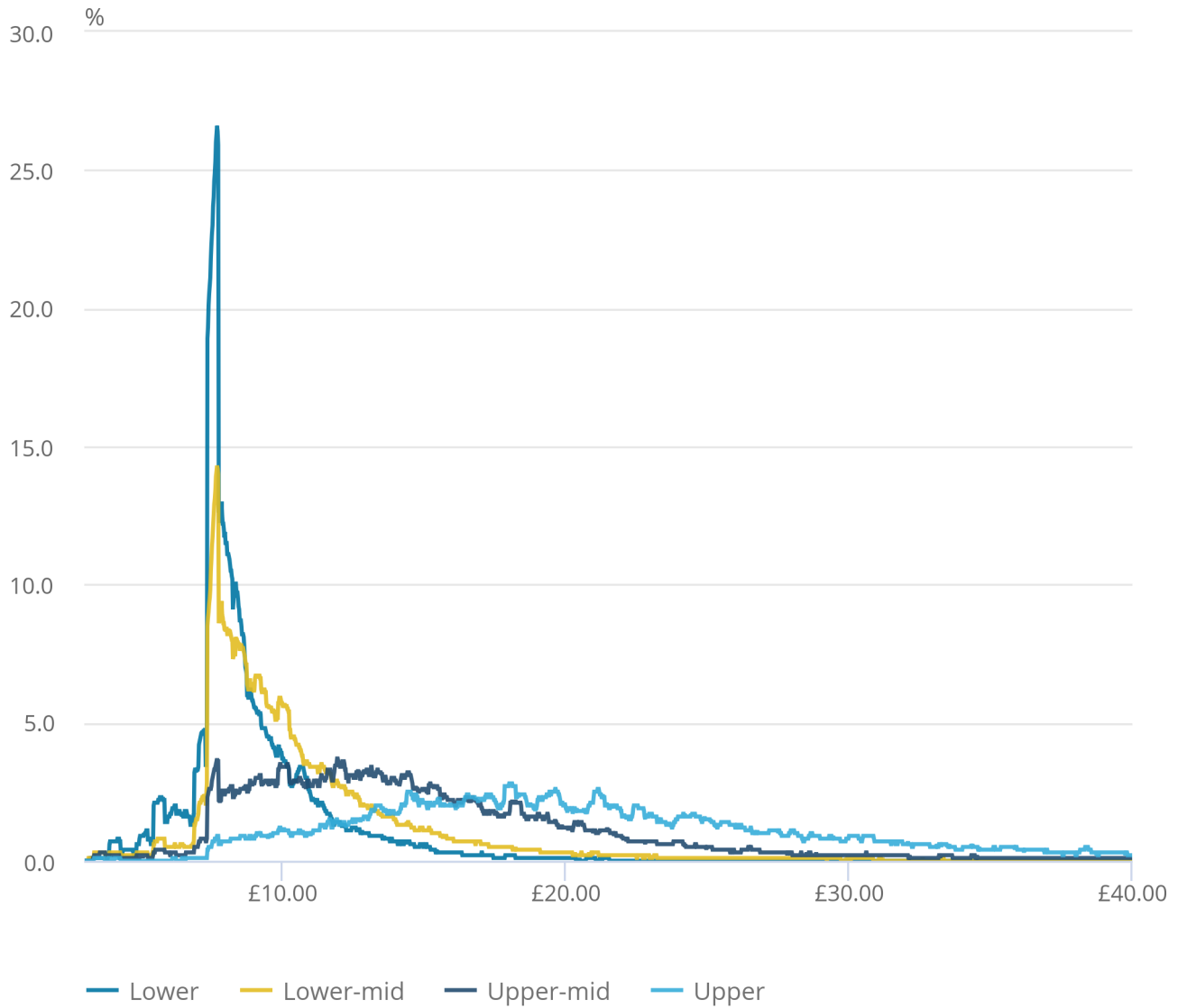
Figure 9 demonstrates the earnings distributions by skill level.

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

Plus or minus 20 pence

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**

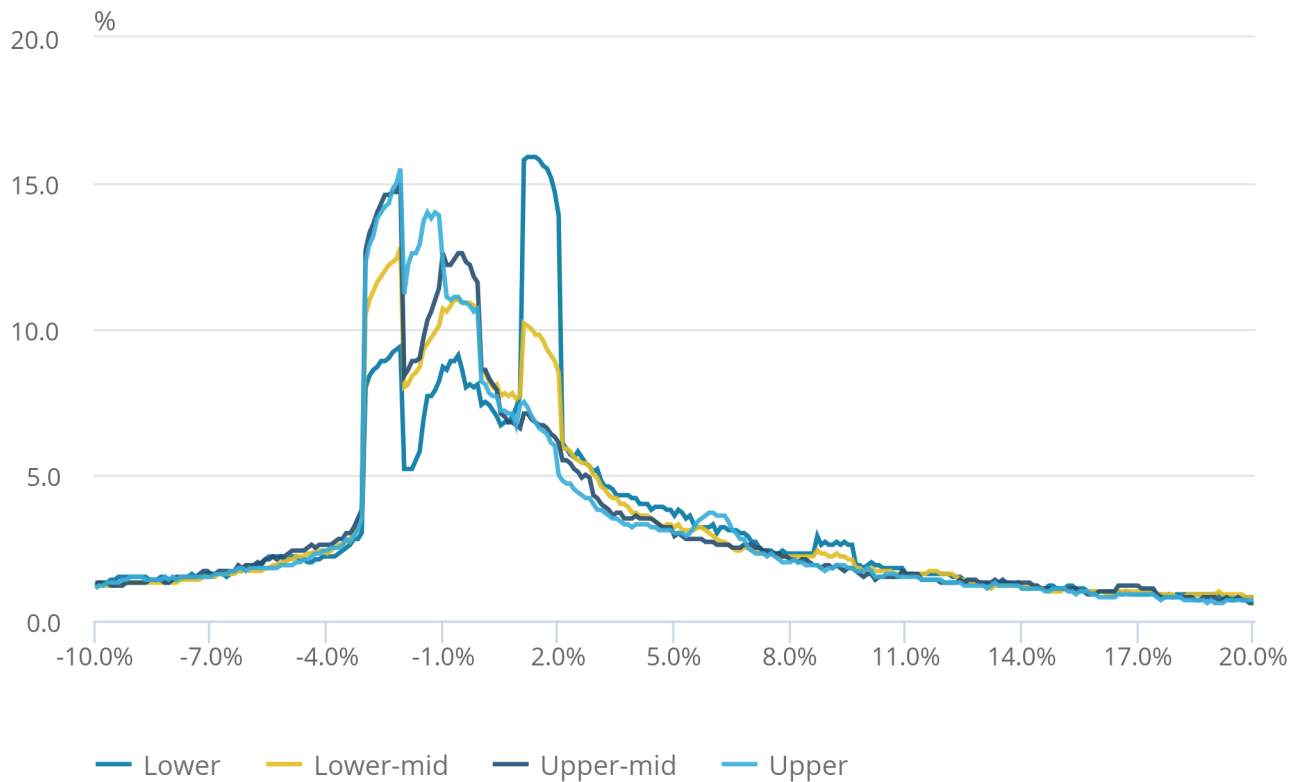
Analysing the growth of earnings by skill level offers further understanding of the distributional outcomes for employees. Figure 10 shows the 2017 distributions of growth in real hourly earnings by skill level.

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

Plus or minus 0.5 percentage points

**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.

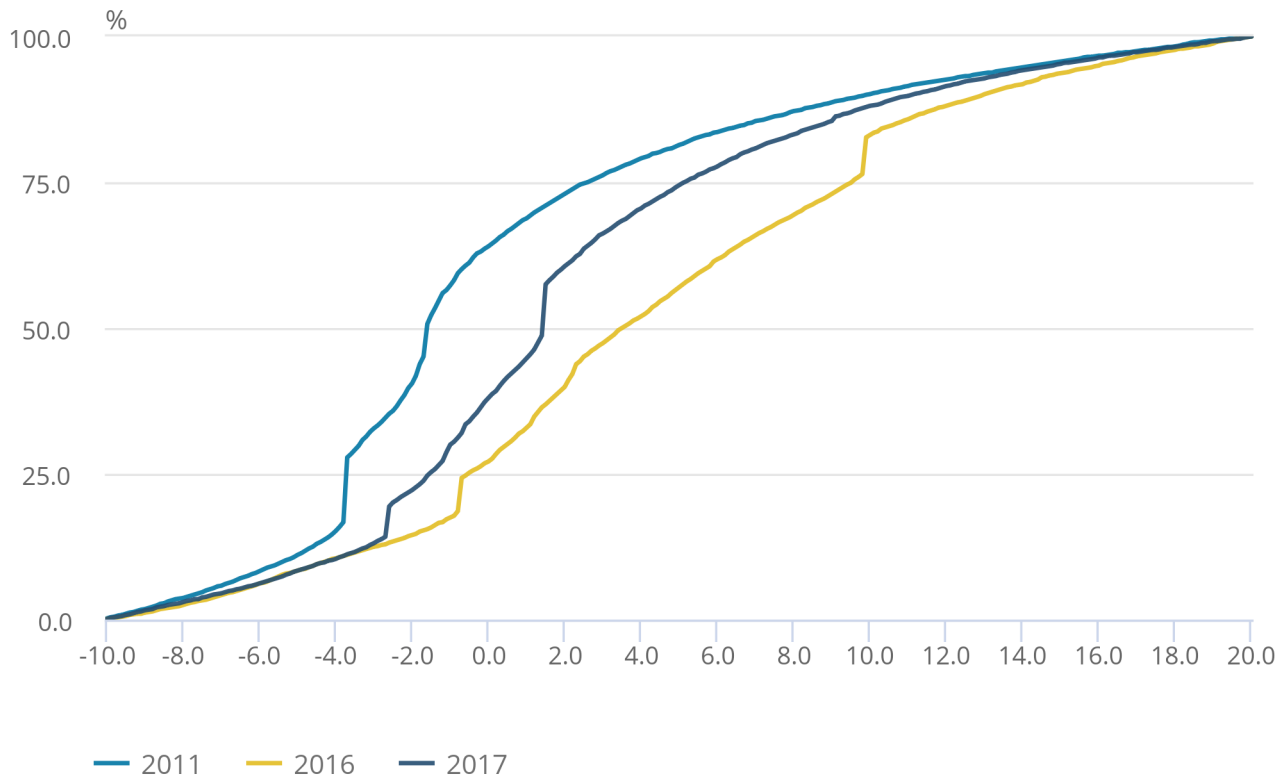
Figure 10 also shows that all skill levels experienced peaks around 1.5% in real terms representing growth in the NLW in 2017. This growth is experienced by higher proportions of employees in the “lower” and “lower-mid” skill level groups, 15.9% and 10.2% respectively, compared with the “upper” and “upper-mid”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

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



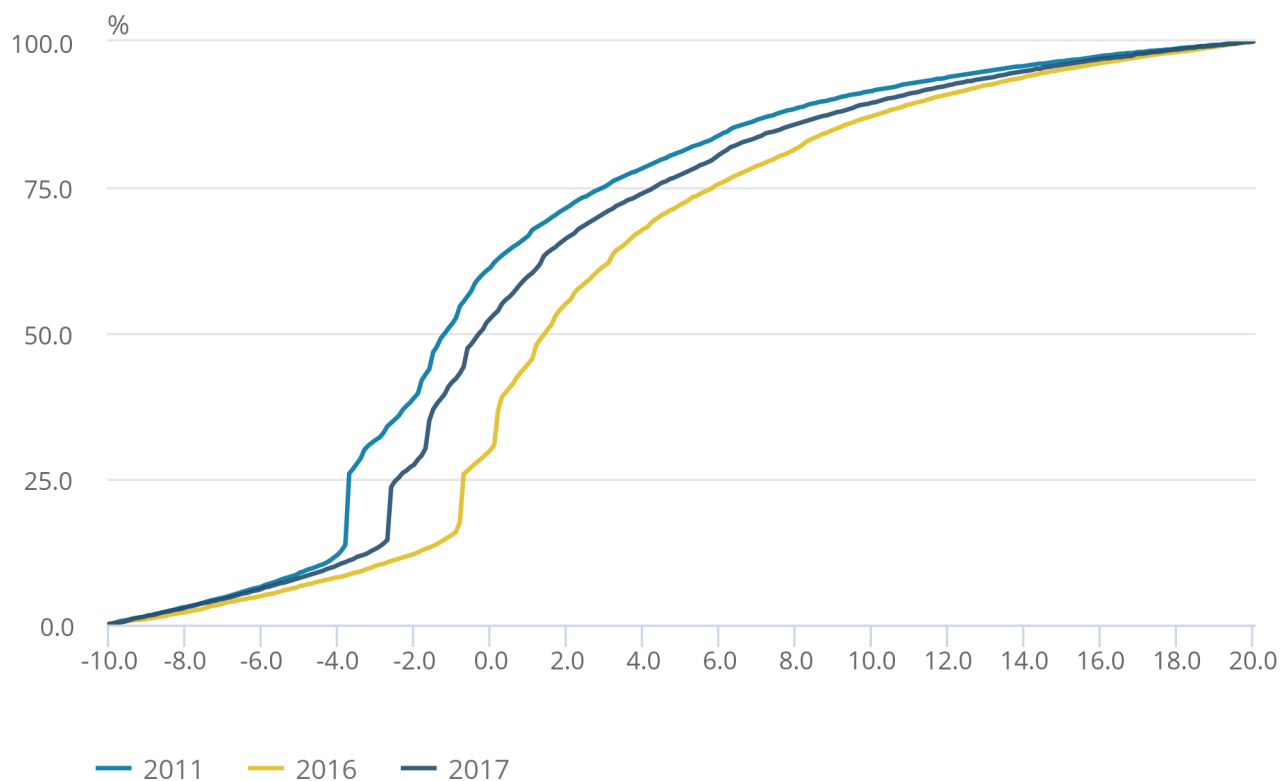
**Source: Office for National Statistics, Annual Survey of Hours and Earnings**

**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**

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.

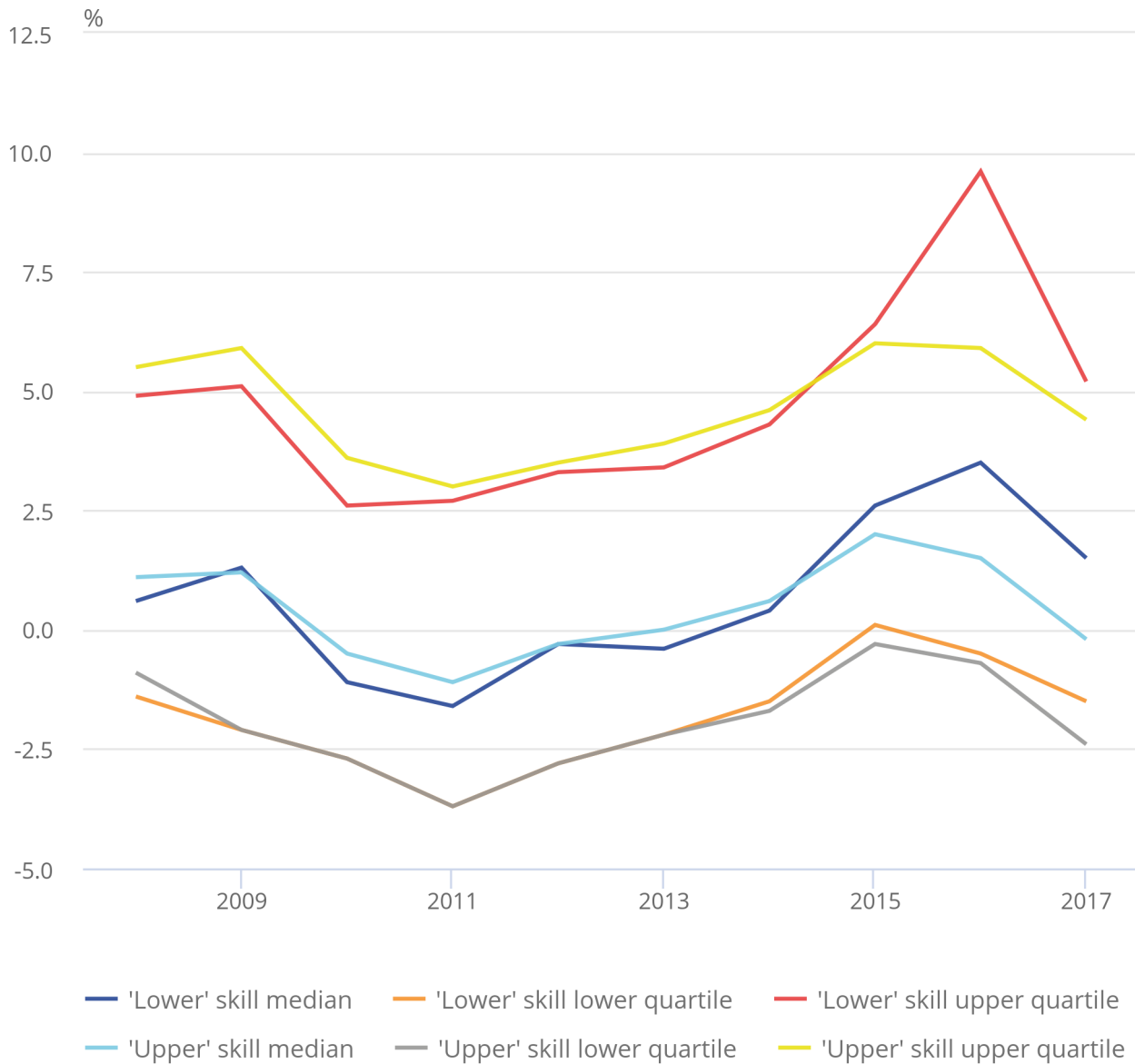
In 2016, there were 39.0% of “upper” skilled employees and 29.1% of “lower” skilled employees experiencing pay growth of less than or equal to 1% (in real terms). By 2017, this had decreased to 35.0% of “upper” skilled employees and 24.7% of “lower” skilled employees respectively. This may partially 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**

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](#).