Wage & Employment Dynamics

THE WED PROJECT

POLICY PAPER

Interim Report: The Incidence of Low Pay is Falling In Britain, But Why – and Can We Trust the Figures?

Summary

Recent research indicates that the percentage of employees in Britain who are low paid – earning below two-thirds median hourly earnings – has been falling in the last 6-7 years. It points to the increased 'bite' of the adult National Minimum Wage (NMW) and its replacement in 2016 by the more generous National Living Wage (NLW) as a driver of this change, raising pay rates at the bottom end of the earnings distribution. However, new research from the ADR UK funded www.wagedynamics.com project, published for the first time today, revisits estimates of the incidence of low pay over the period 2004-2018 using new methods. The study indicates that the incidence of low pay among those aged 25 and above has been falling since 2013, predating an increase in the NMW/NLW bite. Although there are a number of reasons why low pay might be declining we show the decline appears to be driven by an increase in the probability of leaving low pay for higher pay, an increase that began in 2012/13. Ours is the first study to account for non-response and sample attrition in the key data set used by the Low Pay Commission and others to estimate the incidence of low pay. We show that the incidence of low pay is over-estimated and the decline in low pay under-estimated if one does not account for non-response.

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Acknowledgements: This work was produced using statistical data from the Office for National Statistics (ONS). The use of the ONS statistical data in this work does not imply the endorsement of the ONS in relation to the interpretation or analysis of the statistical data. This work uses research datasets which may not exactly reproduce National Statistics aggregates. We thank Administrative Data Research UK and the Economic and Social Research Council for funding support under Grant No. ES/T013877/1.

Contents

Summary

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Key takeaways

1. The incidence of low pay among the adult population of employees (aged 25 plus) in Britain has been falling since 2013. By 2018 it stood at 17.2 per cent (Figure 2).

2. The main reason for this decline appears to be an increase in the probability of leaving low pay for higher pay. This transition probability rose from 14.8 per cent in 2012 to 22.2 per cent between 2012 and 2017 (Figure 5 (c) based on attrition weighted data).

3. There is increased bunching in the earnings distribution between the NMW/NLW and the threshold for low pay of two-thirds median earnings (Figure 3). This may be because the increasing percentage leaving low pay are only experiencing wage growth that takes them a little above the low pay threshold (at least initially); some employees above the low pay threshold are finding it difficult to maintain their wage differentials relative to the lower paid; or a combination of the two.

4. Our findings differ from other recent studies, in part because we use new weights to account for both cross-sectional non-response and two-period attrition rates, both of which differentially affect those with experience of low pay. We show that once one accounts for non-response the incidence of low pay is lower than previously estimated, and the decline in low pay is steeper than previously believed.

1. Low Pay and the Role of Statutory Minimum Wages

Since the Great Recession of 2008 economies in much of the Western world have been characterised by real wage stagnation for a substantial proportion of all workers, in spite of low inflation for much of this period. The problem has been exacerbated recently due to substantial price inflation leading to declining real wages at a rate that has not been seen for over a Century.[1] Policy makers and others are particularly concerned about the welfare of low-earners towards the bottom of the earnings distribution who are struggling to make ends meet.

Nominal median earnings have been rising over time for employees aged 25 or over, such that the low pay threshold – calculated as two-thirds of that median – was £6.14 in 2004 and £8.58 in 2018 (Figure 1). This is an increase of 39.8%.[2]

The government has tried to tackle relative low earnings through the National Minimum Wage (NMW) and the National Living Wage (NLW) which came into being in 2016 to replace the NMW for employees aged 25 and over.[3] Recognising the difficulties workers face in achieving wage growth, government has set a target to ensure the minimum wage a 25-year-old can earn by 2024 is two-thirds of median hourly earnings. In meeting this target, the bite of the NLW has been rising as a proportion of median earnings (Figure 1), with government endorsing Low Pay Commission recommendations.

Figure 1 shows the bite of the adult minimum wage rose gradually in the early years, from 73% of 2/3 median earnings in 2004 to 76% of 2/3 median earnings by 2009. However, by 2015 it had risen still further to 82% of 2/3 median earnings. The advent of the NLW in 2016 saw it rise still further to 88% of 2/3 median earnings and again to 91% of 2/3 median earnings in 2018.[4,5]

Other things equal, by making it unlawful for employers to pay 25-year-olds below a minimum which is rising relative to the median, this policy brings employees at the bottom of the hourly wage distribution closer to those further up the distribution. However, this does not necessarily mean that the proportion of all employees who are low-paid falls. Assuming the NLW is rigorously enforced, those previously paid below the newly-set NLW may simply be pushed to the new minimum which is still currently below the 2/3 median target. It is also possible that those just above the low pay threshold are unable to maintain their wage differential relative to the 2/3 median threshold, such that they are drawn into low pay.

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[1] *Stagnation Nation: navigating a route to a fairer and more prosperous Britain* (2022), Resolution Foundation.
[2] These figures relate to the CSWEIGHT estimates in Figure 1 based on newly derived weights. For information on the derivation of these weights, see Stokes et al (2022) *Weighting for employer non-response in ASHE*, Methodology Paper, Wage and Employment Dynamics project: http://www.wagedynamics.com/wp-content/uploads/2022/06/Note-on-ASHE-cross-sectional-weights-May2022-final2.pdf
[3] In 2021 the age threshold for the NLW was reduced to age 23. It is set to fall to age 21 by 2024.
[4] Again, these figures relate to the CSWEIGHT estimates in Figure 1 based on newly derived weights.
[5] Note that until April 2016, uprating of the NMW took effect in October each year. After the introduction of the NLW in April 2016, uprating of the NLW has taken place in April each year. ASHE estimates of pay relate to the pay period including a specified date in April each year and our measure of the bite reflects the NMW/NLW that applied at the time of the survey.

Those flowing into and out of employment will also affect the incidence of low-pay among the employee population. Even though previous research suggests NLW up-ratings have come at little or no cost to net employment[6] it is possible that employees may enter or leave employment, either in response to changes in ambient wages, or for other reasons. If the NLW bite rises, some who are out of employment may enter minimum wage jobs because, at the margin, they are more attractive than previously when compared to remaining out of employment. This would raise the share of employees who are low paid.

It is also possible that as the NLW approaches 2/3 median earnings some employers may find it difficult to pay the new minimum, and may respond by letting some employees go, or reducing the hiring rate for new recruits. This would reduce the share of employees who are low paid, if employers' reactions are targeted on those workers, but some employers may respond by cutting posts elsewhere in their wage distribution if low paid roles are seen as critical to the production regime.

More broadly, changes in the number of employees on low-pay may vary with changes in the size and composition of the adult workforce arising from the size of birth cohorts, immigrant flows and macro-economic conditions.

It is therefore difficult, *a priori*, to determine the incidence of low-paid employment and changes to it over time. However, in accounting terms, we can expect changes in the stock of low-paid from one year to the next largely to be a function of the number of employees moving out of low pay due to wage progression, and the number of employees moving into low pay from higher up the earnings distribution.

We contribute to the literature estimating the incidence of low pay in Britain among employees aged 25 and over by devising a more accurate methodology than that used hitherto to account for flows into and out of low pay as captured in the *Annual Survey of Hours and Earnings (ASHE)*, which samples a random 1 percent sample of employees in Britain from payroll data.

Our methodology establishes why the stock of low paid has changed by estimating changes in flows out of and into low pay. We show how sensitive estimates of low pay are, and flows into and out of low pay, to measurement errors caused by cross-sectional and longitudinal non-response in the ASHE survey used to generate the estimates.

In our empirical analysis we explore changes in the incidence of low paid employees year on year among employees aged 25 or over in the period 2004-2018, provided their pay is unaffected by sickness absence. Throughout this period employees aged 25 or over were eligible for the full adult minimum wage. Between 2004 and 2015 this was the adult National Minimum Wage (NMW) but from 2016 onwards they were eligible for the new National Living Wage (NLW).[7]

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[6] *Low Pay Commission Report 2021* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1039488/LPC_Report_2021_web_version.pdf

[7] We plot the applicable rates of the NMW/NLW in Figure 1. The full set of statutory rates for both adults and youths between 2004 and 2018 is laid out in Low Pay Commission (2019) 20 years of the National Minimum

2. The Incidence of Low Pay Among Those Aged 25 and Over, 2004-2018

Using standard cross-sectional weights supplied by ONS, the incidence of low pay among employees aged 25 or more stood at 21.5% in 2004. It had fallen by around one percentage point by 2007 but remained roughly constant thereafter until 2014 when it was at 21.0%. It started to fall thereafter such that, by 2018 the percentage of those aged 25 or more in low pay was 18.8% (Figure 2, orange line).

However, when we account for measurement error associated with cross-sectional non-response in ASHE, we find the incidence of low pay is lower than it is using the standard weighting procedure (Figure 2, grey line). This difference is not significant through to 2012, but it becomes so thereafter with the incidence of low pay falling more rapidly than estimates which do not account as fully for non-response. Thus, the incidence of low pay was 20.4% in 2013 based on these adjusted estimates (half a percentage point lower than the estimates produced using the standard weights) and had fallen to 17.2% by 2018 – around 1.6 percentage points lower than the standard weighted estimates for that year.

The fact that the newly weighted estimates lie below the standard weighted estimates appears counterintuitive since, as we have shown elsewhere[8], the new weights account for differential non-response among employers in the survey, and this non-response is most apparent among employers who tend to pay lower wages. Thus, one might think that addressing this non-response bias would raise the incidence of low pay. However, under the new weights, median earnings fall, and so therefore does the low pay threshold based on 2/3 median hourly earnings (compare the orange and grey lines in Figure 1). In addition, the weights slightly compress the lower end of the earnings distribution (see Figure 3). This results in a lower percentage of employees being paid below 2/3 median hourly earnings, notwithstanding the up-weighting of low paying employers with the new weights.

3. Why is the Incidence of Low Pay Falling?

In seeking to understand why it is that the incidence of low pay has fallen we consider changes in the rate at which employees transition between states over adjacent years where the states are:

- L - Low pay: earning below 2/3 median hourly earnings in a given year
- H - Higher pay: earning at or above 2/3 median hourly earnings in a given year

Wage. A history of the UK minimum wage and its effects. Available at: https://www.gov.uk/government/publications/20-years-of-the-national-minimum-wage.

[8] Stokes, L., Forth, J., Ritchie, F., Singleton, C., Phan, V., Bryson, A., Whittard, D. and McKenzie, A. (2022) Weighting for employer non-response in ASHE, Methodology Paper, Wage and Employment Dynamics project: http://www.wagedynamics.com/wp-content/uploads/2022/06/Note-on-ASHE-cross-sectional-weights-May2022-final2.pdf

- O - Out of scope: workers who are aged under-25

Those 'out of scope' in year 1 may be 24 years, and thus enter the 25-plus population in the following year.

From these three states we derive seven two-period transitions. The first 3, which we term 'on diagonal', are those who remain in the same state for two consecutive years, namely LL, HH and OO. A further 4, which we term 'off diagonal', are transitions between two different states in consecutive years, namely LH, HL, OL, OH.[9]

When considering these transitions, it is important to recognise that someone moving from low pay (L) to higher pay (H) may only move a few pence above the low pay threshold. They may also fall back into low pay in a future period.

For both 'on diagonal' and 'off diagonal' transitions there are three alternative estimates using three different weighting regimes (Figure 4 and Figure 5). Those in panel (a) use the standard weights provided by ONS. Panel (b) uses the new WED-produced cross-sectional weights. Panel (c), which is only available currently from 2012, uses the two-period attrition weights devised by WED, a set of provisional weights developed to address non-random attrition in ASHE from one year to the next.[10]

Results are presented in Figure 4 for on-diagonal transitions and Figure 5 for off-diagonal transitions. What is striking is the increase in the transition rate off low pay into higher pay since 2012. The transition rate out of low pay rose from around 15-17% in 2012 to 22-25% (depending on the weighting scheme used) in 2017. This increase in transition out of low pay appears roughly linear since 2012, as can be seen more clearly in Figure 6 (a) which uses the same figures but indexes them such that 2012=100. The transition probability out of low pay has risen by 50 percent since 2012. This, together with the early point at which the transition rate changed, suggests that the bite of the NMW and the advent of the NLW, were not the main factors behind the change. Macro-economic factors could be a potential driver.

Between 2004 and 2012 the transition rate from low to high pay had been *falling* – from a transition rate of 21-22% in 2004 down to 15-17% (depending on the weighting schema used) in 2012. This has its analogue in a rise in the persistence of low pay, that is the small rise in the probability of low paid employees in year 1 remaining low paid in year 2 (as indicated by the orange lines in Figure 4 panels (a) and (b) and Figure 6 (f)).

Although the transition rate out of low pay has been rising, by 2017 it had only recovered to the rate of transition out of low pay seen in the early 2000s.

Other changes appear small in comparison. The transition rate from out of scope in the first period to entering high pay has risen by around 3 percentage points over the period. It is

[9] O is never a destination in year 2 for an employee who has been H or L in year 1 because a person cannot become younger!

[10] Further information on the attrition weights is available in: Forth, J., Phan, V., Stokes, L., Bryson, A., Ritchie, F., Whittard, D. and Singleton, C. (2022) *Longitudinal attrition in ASHE*, Methodology Paper. Available at: https://www.wagedynamics.com/wp-content/uploads/2022/10/Longitudinal-attrition-in-ASHE-Version-1b.pdf It is the intention of the WED team to extend the panel attrition weights back to 2004 shortly.

also notable that, although high pay is more persistent than low pay, this persistence does not change over the period.

4. Next steps

In taking this research forward, we will undertake a full decomposition of the change in the stock of low paid into its constituent flows and see how the results differ when using weights to adjust for cross-sectional non-response and two-period panel attrition. This work will include extending the attrition weights back to 2004.

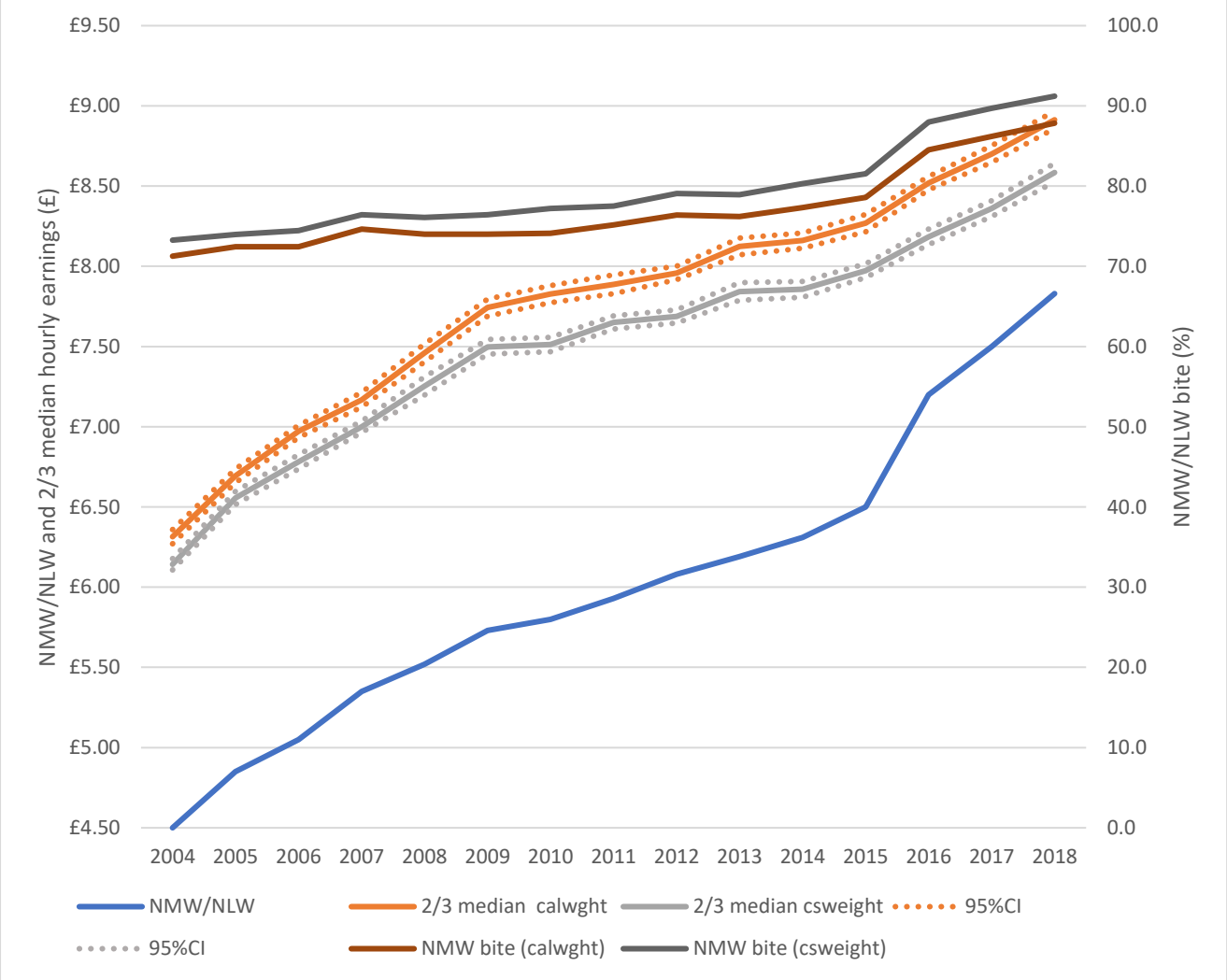
We will investigate why it is that the transition rate from low pay to high pay has risen since 2012, accounting for the nature of employees, their jobs, the employers they work for and macro-conditions.

Notes

1. This work was produced using statistical data from the Office for National Statistics (ONS). The use of the ONS statistical data in this work does not imply the endorsement of the ONS in relation to the interpretation or analysis of the statistical data. This work uses research datasets which may not exactly reproduce National Statistics aggregates.
2. We thank Administrative Data Research UK and the Economic and Social Research Council for funding support under Grant No. ES/T013877/1.
3. The research is part of a wider project on wage dynamics. More details can be found at www.wagedynamics.com.
4. Further information on the weights derived by the WED team can be found at: http://www.wagedynamics.com/training-information-events/wed-training-sessions-on-weights-in-the-ashe/.
5. This study focuses on employees aged 25 or over who appear in the Annual Survey of Hours and Earnings (ASHE) between 2004 and 2018 whose earnings are not affected by absence.
6. Respondents to ASHE are the sampled employers of the 1 percent sample of employees whose last 2-digits of their National Insurance number put them within scope of the survey.
7. Low pay is defined as being in receipt of hourly earnings falling below 2/3 median earnings in a given year. Our earnings metric is HRPAYX, a construct used by the Low Pay Commission measuring gross earnings (which incorporates basic pay, any bonus/incentive pay where applicable and pay received for other reasons). It excludes overtime and shift premium pay.

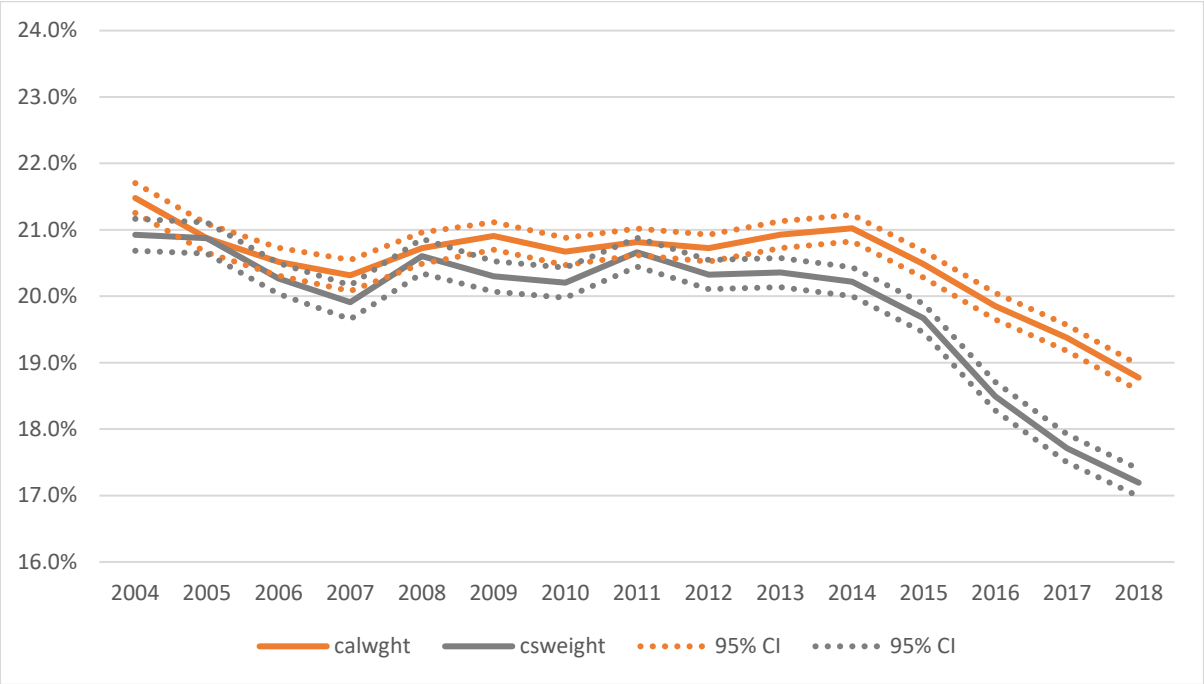
Figures

Figure 1: Two-thirds median hourly earnings for those aged 25 and above, the NMW/NLW Rate, and the Bite of the MNW/NLW, 2004 – 2018, standard weights (calwght) and WED weights (csweight)



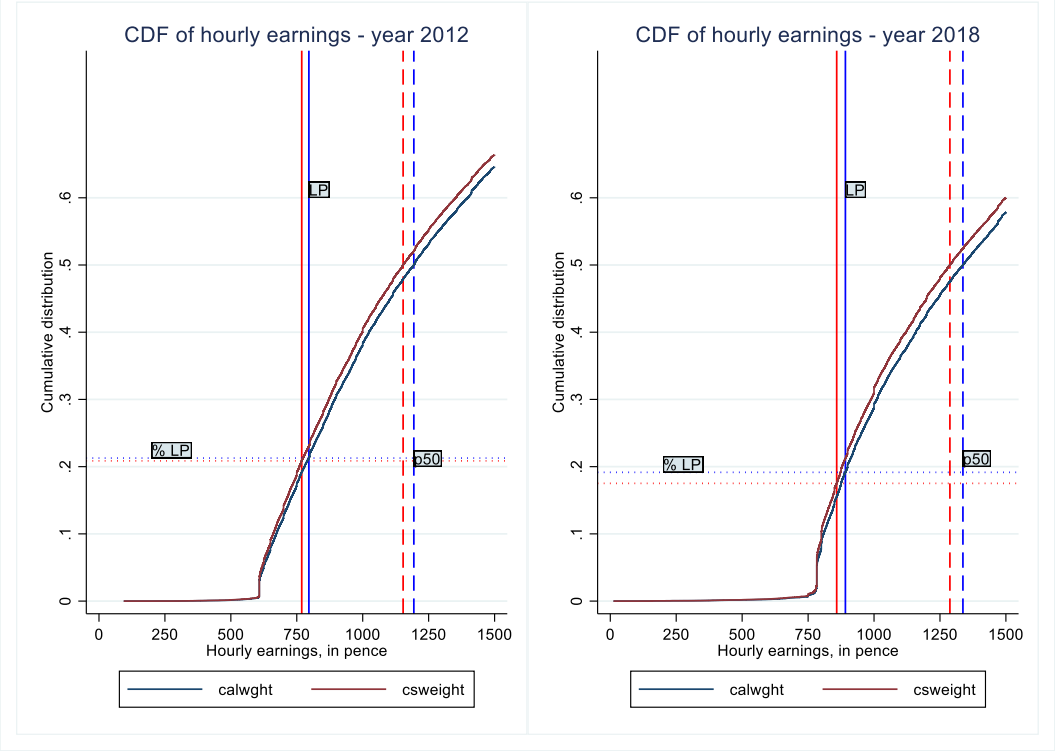
Note: employees aged 25 and above, earnings not affected by absence and on adult rates, based on all jobs. The hourly pay rates are in nominal prices.

Figure 2: Percent low paid (below 2/3 median), 25 and above, 2004 – 2018, standard weights (calwght) and WED weights (csweight)



Note: main job only, employees aged 25 and above, earnings not affected by absence and on adult rates.

Figure 3: Cumulative density function of hourly earnings in 2012 and 2018



Notes:

1. Figures show the cumulative distribution of hourly earnings (ASHE variable: hrpayx) for the subset of the distribution where hourly earnings are less than £15.00.
2. The dashed vertical lines identify median (p50) hourly earnings under different weighting schemes.
3. The solid vertical lines identify 2/3 median hourly earnings, i.e. the low pay threshold (LP).
4. The dashed horizontal lines identify the share of all workers with hourly earnings below the low pay threshold.

Figure 4: On-diagonal transition rates

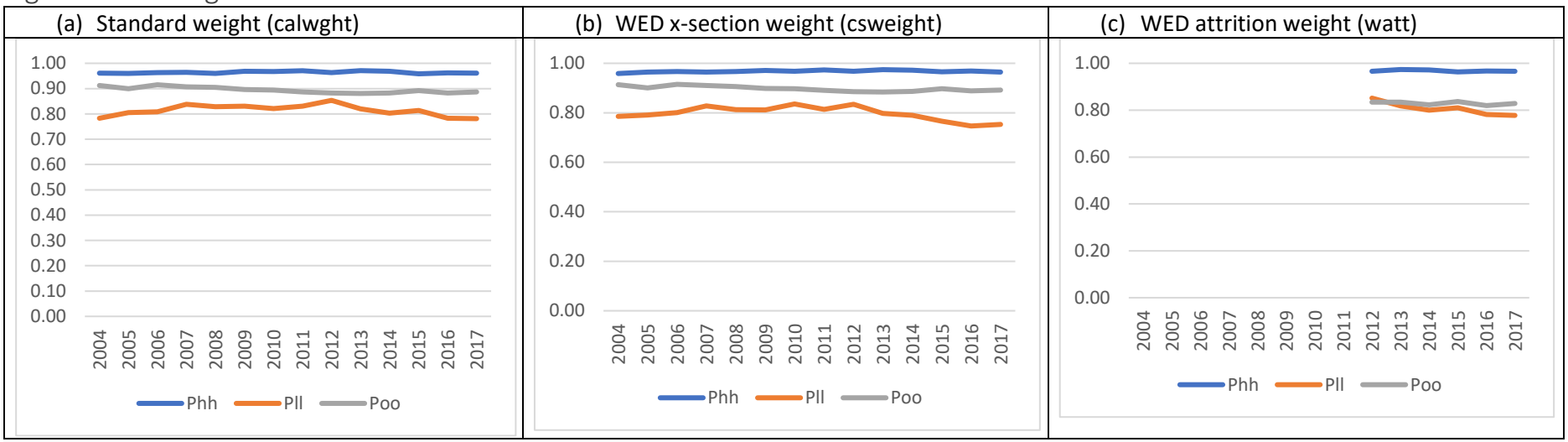


Figure 5: Off-diagonal transition rates

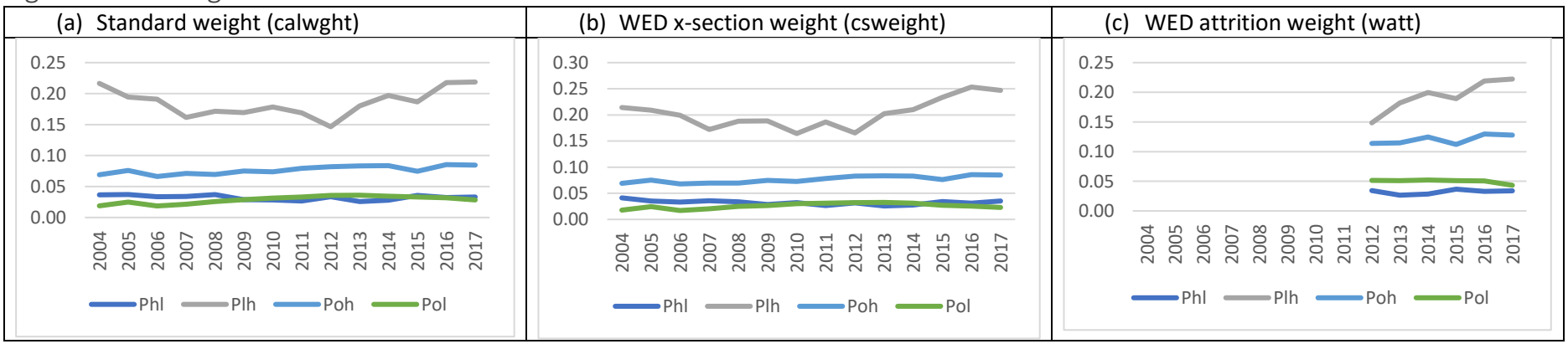
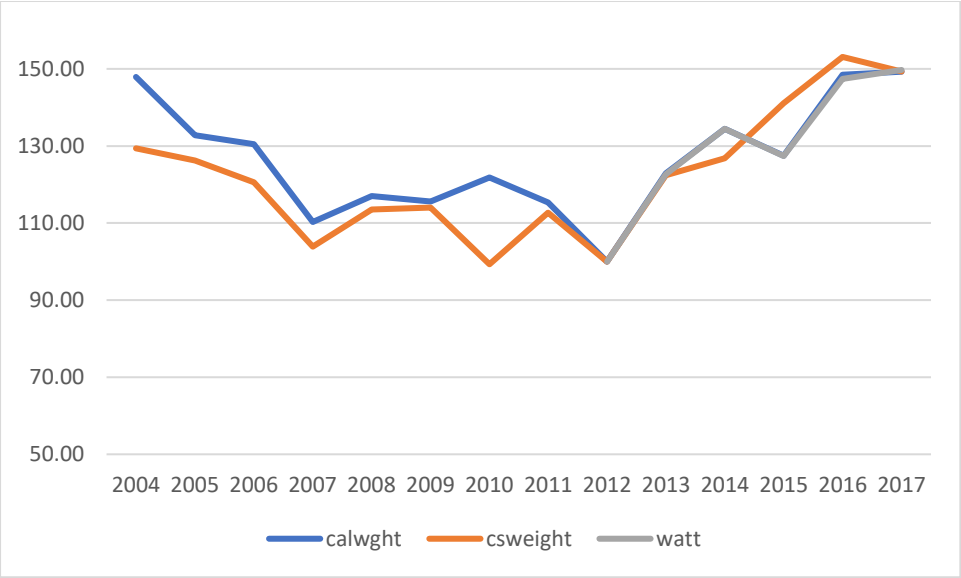
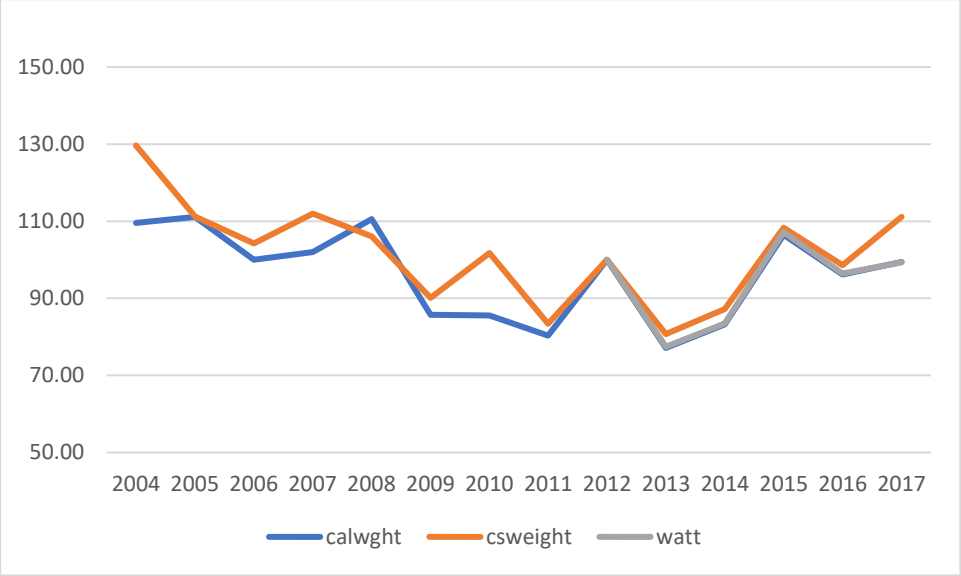


Figure 6: Transition rates, indexed 2012=100

(a) Probability: low to high (Plh)



(b) Probability: high to low (Phl)



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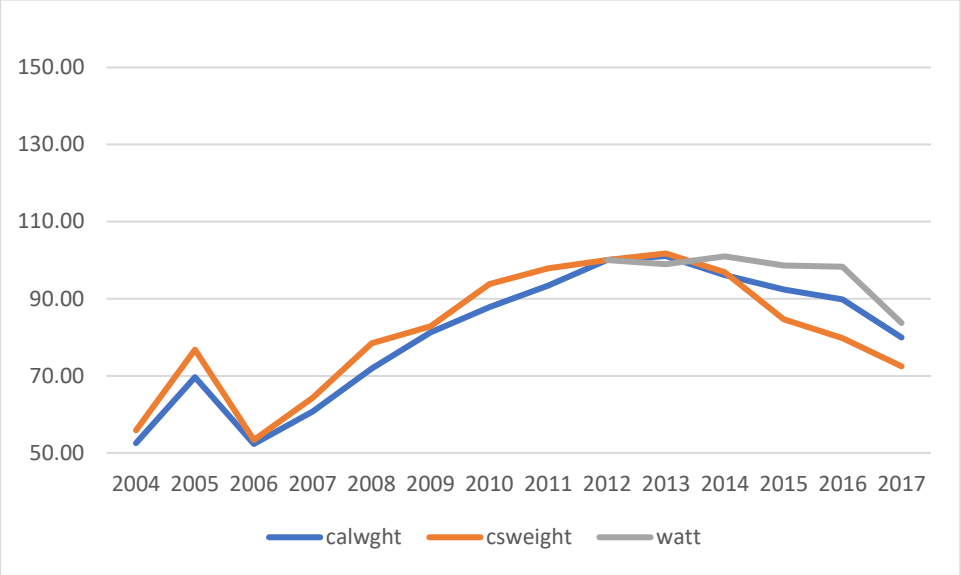
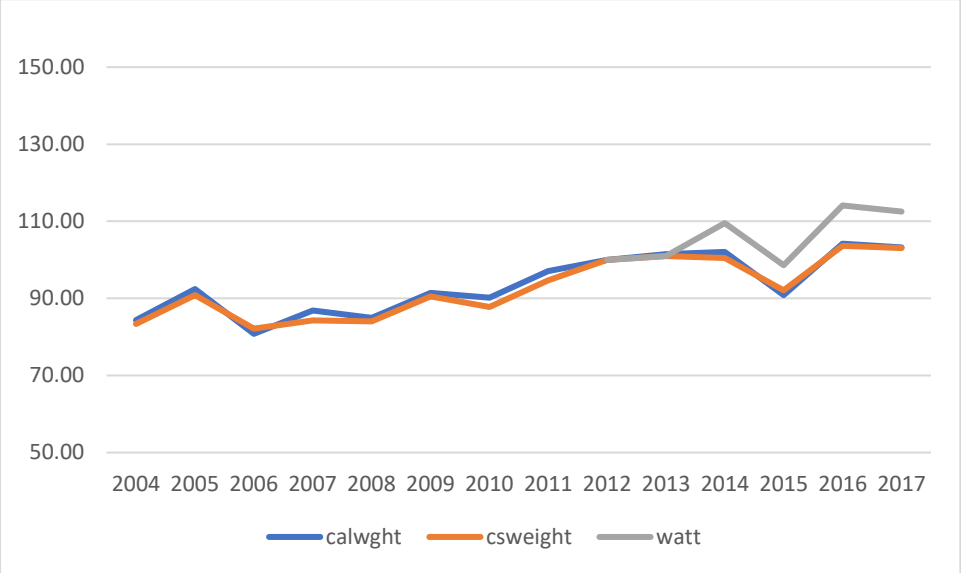
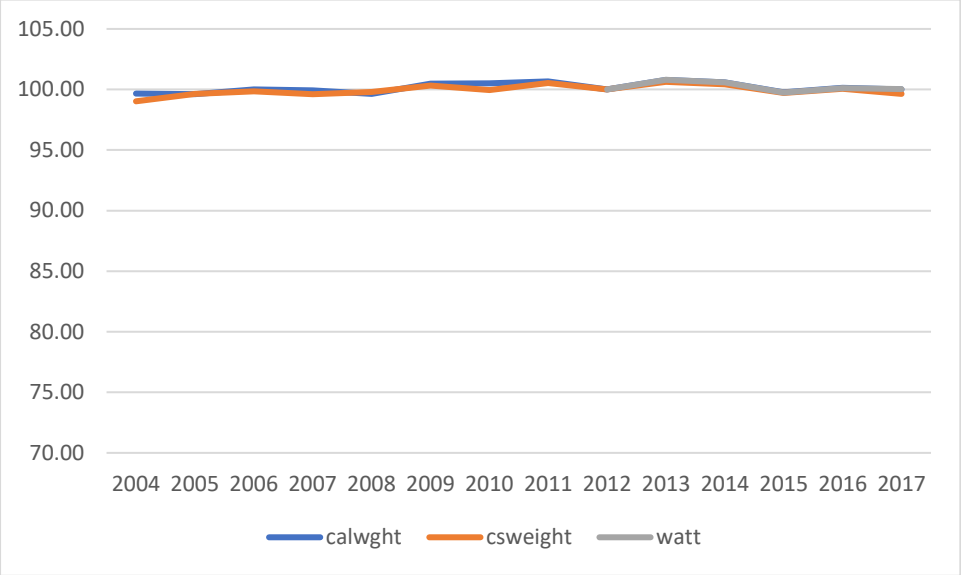
(c) Probability: other to low (Pol)



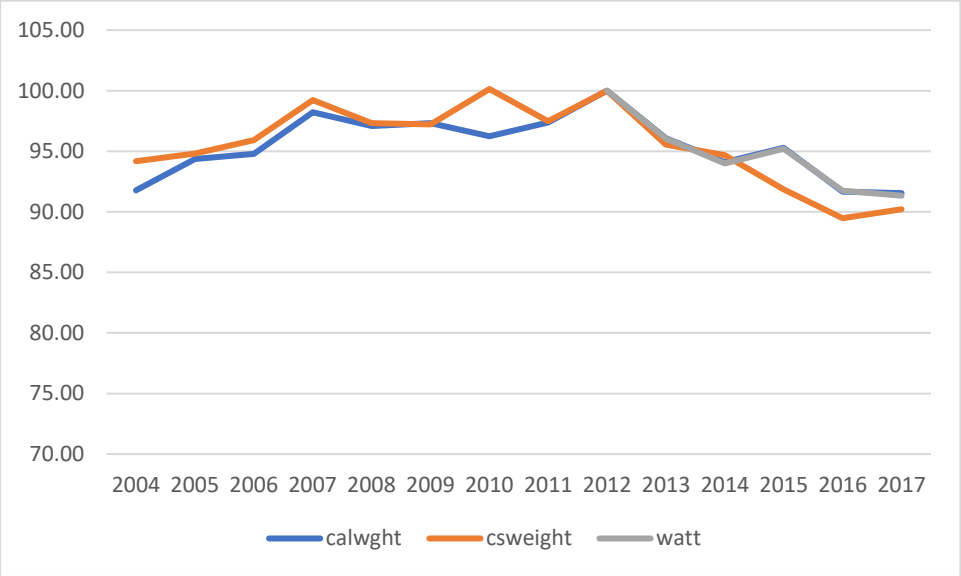
(d) Probability: other to high (Poh)



(e) Probability: high to high (Phh)



(f) Probability: low to low (Pll)



(g) Probability: other to other (Poo)