Resolution Foundation

Trends in wages & incomes: 2003-08

Alex Hurrell

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E: info@resolutionfoundation.org T: 020 3372 2960 F: 020 3372 2999

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1. Introduction

1.1. Purpose of this note

Recent Resolution Foundation research has drawn attention to the fact that wages and household incomes had stagnated even before the 2008 recession hit. Prior to the crash the economy was growing steadily, with real GDP per capita growth of 7.0 per cent between 2003 and 2008, equivalent to an average annual growth rate of 1.4 per cent.[1] Yet the benefits of this relatively strong economic performance did not filter down to the average worker; after accounting for inflation, median wages were essentially the same in 2008 as they were in 2003. The stagnation in wages over this period in turn contributed to a significant squeeze on household incomes and living standards.

However, there have been challenges to this account of wage and income stagnation. These challenges have highlighted in particular the specificity of the measures used: for example, the key wage stagnation charts in the Resolution Foundation 2012 audit of low to middle income households (LMIs) are based on median gross weekly wage income for full-time employees, split by sex and adjusted for inflation using the Retail Prices Index (RPI).[2]

It is true that the wage trend measures that have been presented in previous Resolution Foundation outputs have been based on quite specific measures, and it is also true that different approaches can produce variations in findings. However, the choice of measurement options underpinning the standard Resolution Foundation wage stagnation analysis are not accidental, rather they reflect both explicit decisions to take specific analytical approaches as well as pragmatic responses to existing data limitations. Therefore, the purpose of this briefing note is to systematically review a range of alternative measurement options, assessing each distinction in turn and its consequences in terms of the wage stagnation story. In each instance, the reason why the Resolution Foundation takes the standard approach it does is explained.

The alternative measurement options reviewed relate to:

1. Inflation measurement
2. Earnings
    a. Weekly and annual wage earnings
    b. Full-time and part-time employees
    c. Male and female employees
    d. Employed and self-employed workers
    e. Individual and household and earnings
    f. Variation across the earnings distribution: mean , median and p25
3. Income
    a. Equivalisation
    b. Gross and net income

[1] GDP growth figures calculated using official GDP measures from ONS, *Blue Book 2011* (ONS series ABMI for GDP and IHXW for GDP per capita). Over the same period real GDP increased by 10.4%, equivalent to an average annual growth rate of 2.0%.

[2] Resolution Foundation, *Squeezed Britain, The annual audit of low to middle income households*, 2012. Figures 2.1 and 2.2, pages 15-16. These charts also relate to Great Britain (GB) rather than the United Kingdom (UK) as a whole.

c. Working age and retired households
d. Variation across the income distribution: mean, median and p25

The note is structured in line with this list of issues affecting the measurement of wage and income trends: a discussion of inflation measurement issues is provided in section 2; the alternative earnings measurement options are reviewed in turn in section 3; the alternative income measurement options are reviewed in section 4; finally, section 5 concludes.

1.2. The Resolution Foundation account of wage stagnation

Before systematically assessing alternative measures of trends in wage earnings, it is useful to set out and explain the rationale behind the measurement options underpinning the standard Resolution Foundation account of wage earnings stagnation that occurred between 2003 and 2008. Figure 1.1 below corresponds to one of the key wage stagnation charts from the 2012 LMI Audit.[3] It is not exactly identical to this Audit report chart as it pulls out just the trends in median male and female wage earnings and overlays the trend in real GDP per capita over the period. The variations in trends are made clearer by presenting all three series in the form of an index.

The figure shows that male and female median wages tracked the growth of the economy up to around 1990. From 1990 to 2000 median female wage growth outstripped the economy, as women were closing the gap on men. From about 1994 onwards median male wage growth consistently lagged behind the growth of the economy overall.[4] However, from 2003 there was a marked slowdown in median wage growth for both male and female employees. Specifically, between 1977 and 2002 average annual growth for the median wage was 2.5 and 1.8 per cent for females and males respectively, falling to 0.3 and -0.2 per cent in the period 2003 to 2008. Crucially this slowdown in wages occurred despite real per capita GDP increasing 7.0 per cent from 2003 to 2008, equivalent to an average annual growth rate of 1.4 per cent.[5]

The key purpose of the chart is to set out the trend in wages over a relatively long period (just over 30 years) and to contrast the pattern of wage growth in different periods.[6] However, there are some limitations to this longer term data: it relates to gross weekly wages for full-time employees only and to Great Britain rather than the United Kingdom as a whole. It is also not possible to disaggregate the data to analyse wage trends for particular sub-groups (for example by employee age). There is a trade-off between the scope of the

[3] Resolution Foundation, *Squeezed Britain, The annual audit of low to middle income households*, 2012. See Figure 2.2, page 15.

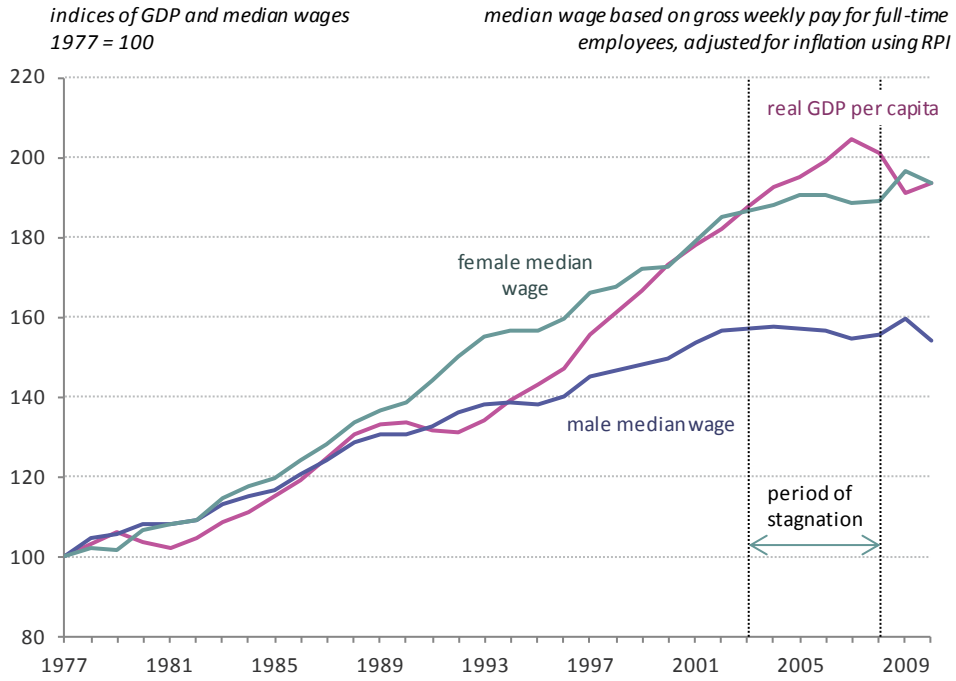
[4] See other Resolution Foundation work for various accounts of the factors underlying this decoupling of GDP and median wage growth: "Decoupling of Wage Growth and Productivity Growth? Myth and Reality", J. Pessoa and J. Van Reenen, January 2012; "Missing Out", M. Whittaker, 2011; "Painful Separation", J. Bailey, October 2011.

[5] Over the same period real GDP increased 10.4 per cent, equivalent to an average annual growth rate of 2.0%.

[6] The annual time series of median gross weekly wages for male and female full-time employees used for Figure 1.1 is based on the Office of National Statistics (ONS) Annual Survey of Hours and Earnings (ASHE) and New Earnings Survey (NES) data. Although this data actually goes back on an annual basis to 1970, the analysis presented in the Audit report focuses on 1977 as the base year because this is consistent with the base year for other key time series analysed in that report.

available earnings data, particularly in terms of coverage, representativeness and the degree to which it can be disaggregated, and how far back in time the data spans.

Figure 1.1: Long-term trends in median wages and real GDP per capita: 1977 - 2010



Notes: There are two methodological breaks in the median wage series, in 2004 and in 2006. Wage data relates to GB only, GDP data to all UK.

Source: ONS, *Blue Book 2011* (IHXW series). ONS, Annual Survey of Hours and Earnings (ASHE) and New Earnings Survey.

2. Inflation measurement

We start by considering the importance of the inflation measure used to adjust nominal wage and income measures into real terms (i.e. inflation-adjusted). Most Resolution Foundation analysis uses the Retail Prices Index (RPI) but in recent years the government has moved towards the use of the Consumer Price Index (CPI), most notably for uprating benefits and tax thresholds. The move to CPI has been justified partly on the basis that the calculation method for RPI does not allow for consumers to substitute between alternative products in response to price changes, creating a 'formula effect' that overstates inflation.[7] On the other hand, CPI has downsides which stem from the fact that it is intended primarily as a measure of macroeconomic inflation pressures rather than the costs faced by households. The CPI excludes, for example, the costs of owner occupied housing, because it must comply with a set methodology specified by the EU to ensure comparability across countries.[8]

Figure 2.1 shows the impact of using different measures of inflation to calculate wage growth over time.[9] Adjusting for inflation using CPI measures, median gross weekly wages grew 5.4 per cent over the period, compared to -0.2 per cent using RPI-based inflation adjustment, although this still represents a significant slowdown in growth of CPI-adjusted wages compared to the period prior to 2003.[10] On balance, due to the more comprehensive basket of goods that it covers, RPI is used as the preferred inflation adjustment measure for the rest of the analysis presented in this paper.[11] In general, under CPI-adjustment, wages, earnings and incomes have exhibited a slowdown in growth, but stagnation under RPI.[12]

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[7] See 'RPI versus CPI - The Definitive Account', Significance Magazine (www.significancemagazine.org). Jill Leyland, Vice President, Royal Statistical Society and Chair, RSS National Statistics Working Party, August 2011.

[8] Note that the ONS are in the process of producing a variant of the CPI (CPIH) which will include housing costs. The ONS are also, in collaboration with the Royal Statistical Society, undertaking a review of variations between RPI and CPI stemming from differences in how they are calculated (the formula effect). The Royal Statistical Society are in addition reviewing the scope for producing multiple cost of living indices that reflect the variation in consumption patterns at different points in the income distribution.

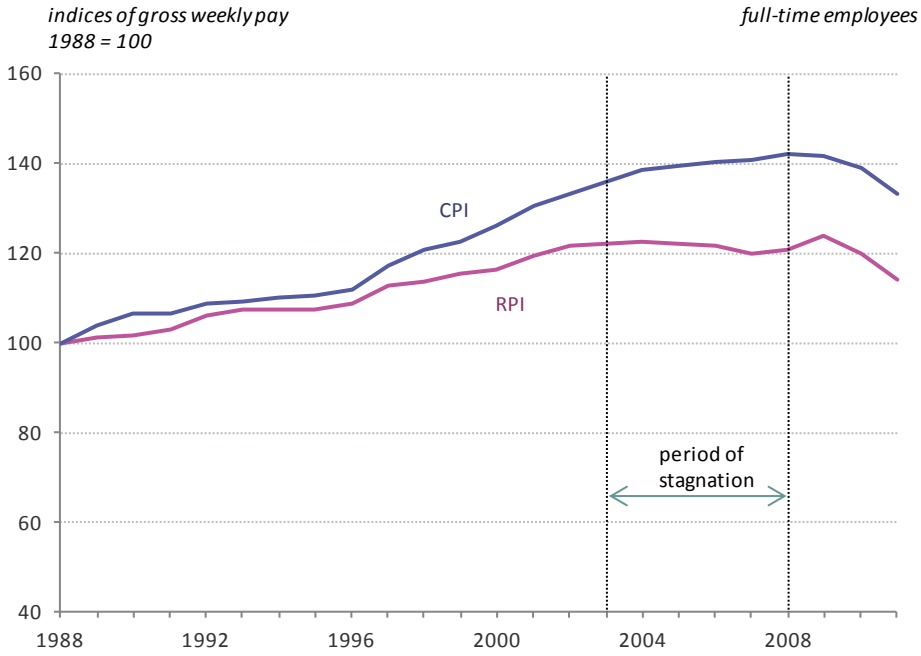
[9] The figure plots the time series back to 1988 because this is the first year for which the CPI is available. The data relates to GB only because UK-wide data on median weekly wages for full-time employees is only available from 1997 onwards.

[10] The -0.2 per cent figure differs from the 0.1 per cent figure quoted in the next section (and also in the second row of the Annex table) because the former applies to Great Britain and the latter to the UK overall.

[11] One possible alternative would be to use the GDP deflator. However, this is not an appropriate measure of price changes faced by consumers. In any case, Pessoa and Van Reenan (2012) show that while the RPI and GDP deflator are not exactly equal, the divergence between them is trivial.

[12] Note that net incomes, both before housing costs (BHC) and after housing costs (AHC), have been inflation-adjusted using two different modified RPI series. The index used to deflate BHC income is the all items RPI excluding council tax. The index used to deflate AHC income is the Rossi index – defined as the all items RPI excluding council tax and housing costs.

Figure 2.1: Indices of median wages under alternative inflation measures: GB 1988 - 2011



Notes: There are two methodological breaks in the median wage series, in 2004 and in 2006.
Source: ONS, Annual Survey of Hours and Earnings (ASHE) and New Earnings Survey.

3. Wage stagnation: alternative measures

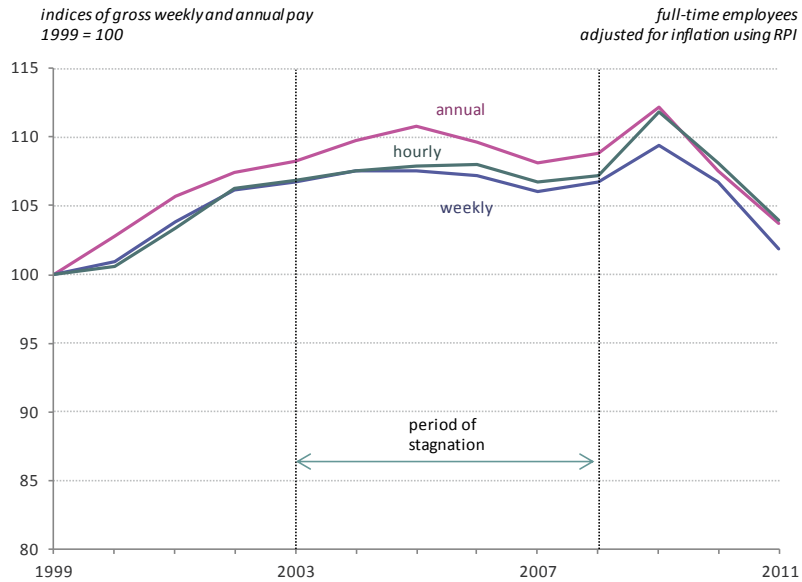
This chapter compares a range of different measures of earnings, including hourly, weekly and annual; full-time and part-time; male and female; younger and older workers; self-employed and employed; individuals and households; and variation across the earnings distribution.

3.1.Hourly, weekly and annual wage earnings

The largest and most reliable survey of employee wages is the Annual Survey of Earnings and Hours (ASHE). ASHE collects pay information for a random sample of employees each year. The information is collected directly from employers and covers a variety of alternative pay measures, including gross hourly, weekly and annual wages which are the focus here. These data are available disaggregated by sex and employment status (i.e. for all employees and for full-time only). While hourly and weekly wages are supposed to include any annual bonuses and other performance incentive salary components, in practise since bonus payments are generally irregular many employers find it hard to accurately provide an hourly or weekly wage figure which incorporates any bonus payments on a pro rata basis. Therefore, in terms of capturing total wage remuneration, annual rather than hourly or weekly wage measures are more accurate. However, the limitation with annual wages is that a consistent time series is only available back to 1999. This is why the standard Resolution Foundation long-term wage trends chart relates to weekly rather than annual measures. For the remainder of this paper all wage figures presented relate to annual rather than weekly wages. In some cases annual wage has been adjusted to be specified in weekly terms to enable easy comparison with weekly earnings and income measures.

Figure 3.1 shows that stagnation is apparent whichever wage measure – annual, weekly or hourly – is used. Median gross annual wages increased just 0.5 per cent over the period, compared to a rise of 0.1 per cent and 0.4 per cent for weekly and hourly wages respectively.[13]

Figure 3.1: Indices of median gross weekly and annual wages: UK 1999 - 2011



[13] The reason for the difference between the 0.1 per cent increase in median gross weekly wages and the -0.2 per cent figure quoted in the previous section is that the former relates to the UK and the latter to Great Britain.

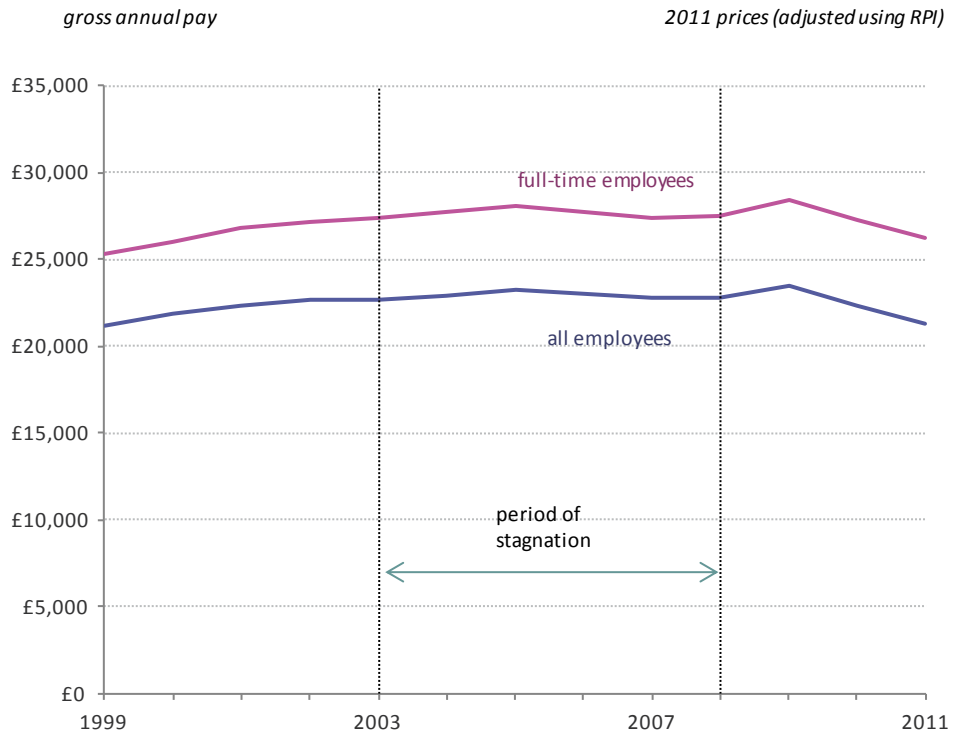
Notes: There are two methodological breaks in the median wage series, in 2004 and in 2006.
Source: ONS, Annual Survey of Hours and Earnings (ASHE) and New Earnings Survey.

3.2.Full-time and part-time employees

The second distinction considered relates to differences across working hours. Focusing on full-time employees ignores the growth of part-time work, as well as the variability in number of hours worked across part-time workers. However, the drawback of considering all employees combined is that changes in average wages can be caused either by shifts in the balance of full-time and part-time workers (since part-time workers will earn less in absolute terms), or by changes in wage rates. Since the focus here is on stagnation of wage rates, the full-time wage measures are most appropriate.

Figure 3.2 below compares trends in median gross annual wages for full-time employees and all employees (i.e. both full- and part-time combined). The trend for all employees is very similar to those for full-time workers only, with median annual wages having increased by 0.3 and 0.5 per cent respectively under each of these alternative measures.

Figure 3.2: Trends in median gross annual wages for full-time and all employees: UK 1999 – 2011

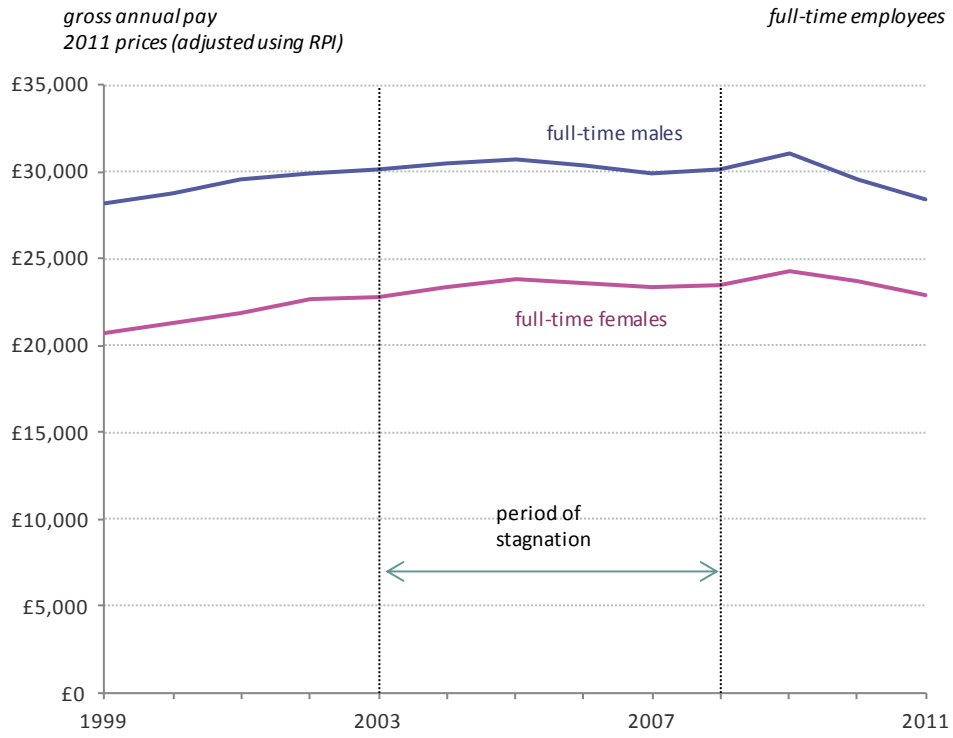


Notes: There are two methodological breaks in the median wage series, in 2004 and in 2006.
Source: ONS, Annual Survey of Hours and Earnings (ASHE) and New Earnings Survey.

3.3.Male and female employees

The next distinction considered is differences across genders. As Figure 1.1 in section 1.2 shows, both males and females experienced a relative slowdown in wage growth from 2003, with stagnation particularly marked for males. Figure 3.3 below shows that this finding extends to the UK as a whole and when considering annual rather than weekly wages. This finding also applies when all employees are considered, i.e. full- and part-time combined (see Annex table).

Figure 3.3: Trends in median gross annual wages for male and female employees: UK 1999 – 2011



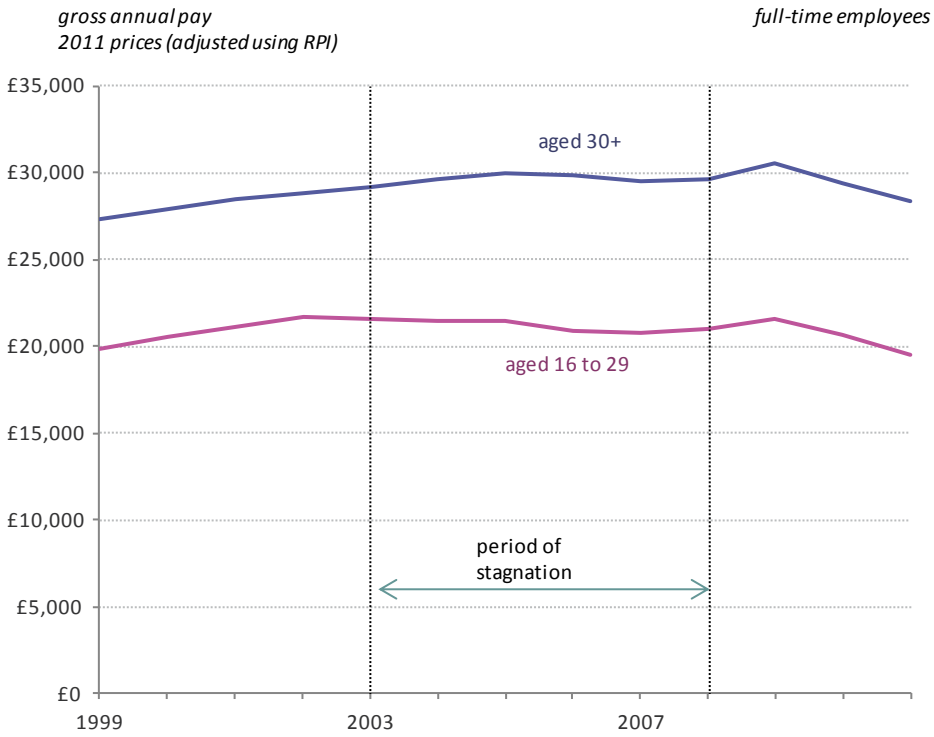
Notes: There are two methodological breaks in the median wage series, in 2004 and in 2006.
Source: ONS, Annual Survey of Hours and Earnings (ASHE) and New Earnings Survey.

3.4.Younger and older workers

The next distinction considered is differences across younger and older workers. Here younger workers are classified as those aged between 16 and 29, while older workers are those aged 30 and over.

Figure 3.4 below shows that stagnation in wages among full-time workers was driven by younger workers, with median wages having decreased by 2.7% for those aged 16-29 compared to an increase of 1.5% for full-time workers aged 30 and over. This finding also applies when considering all employees (i.e. full- and part-time combined) rather than just full-time employees (see Annex table).

Figure 3.4: Trends in median gross annual wages by age group: UK 1999 – 2011



Notes: There are two methodological breaks in the median wage series, in 2004 and in 2006.
Source: ONS, Annual Survey of Hours and Earnings (ASHE) and New Earnings Survey.

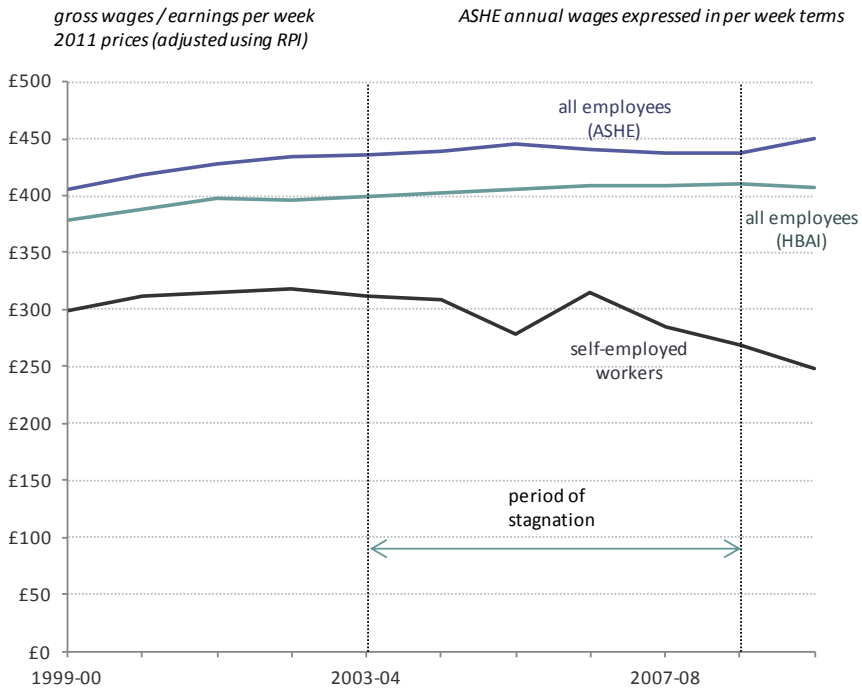
3.5.Employed and self-employed workers

The fifth distinction considered is between employed and self-employed workers. Since ASHE only captures wage data for employees it is necessary to use earnings information from Households Below Average Income (HBAI) data, a modified version of the Family Resources Survey (FRS) data. It is important to note that the HBAI earnings information is less reliable because it is self-reported by households rather than collected directly from employers. Self-employment earnings in particular are often inaccurately reported.

Figure 3.5 shows the trends in median wages for employed and self-employed workers.[14] Two alternative measures of median wages for all employees (i.e. full- and part-time employees combined) are shown, one based on ASHE and the other on HBAI employment earnings data. The ASHE wage measure is consistently higher than the HBAI figure, suggesting HBAI earnings information may indeed be somewhat under-reported. However, the two alternative measures are clearly comparable and the trends are broadly the same, with wage stagnation still apparent under the HBAI-based employment earnings measure.

While wages have stagnated, the figure shows that self-employment earnings have actually fallen considerably (-11.2 per cent) over the period 2003-08. Understanding what might be driving this fall in self-employment earnings warrants further investigation, but is beyond the scope of this paper.

Figure 3.5: Trends in median gross weekly earnings for employed and self-employed workers: UK 1999-00 – 2009-10



Notes: The time period covered by each round of the HBAI and ASHE data is different. ASHE data relates to calendar years while HBAI data is derived from FRS and spans each financial year (April to March). To ease exposition ASHE data has been plotted onto the financial years time axis, e.g. for ASHE the 2003-04 data plot corresponds to 2003 data. There are two methodological breaks in the ASHE median wage series, in 2004 and in 2006.

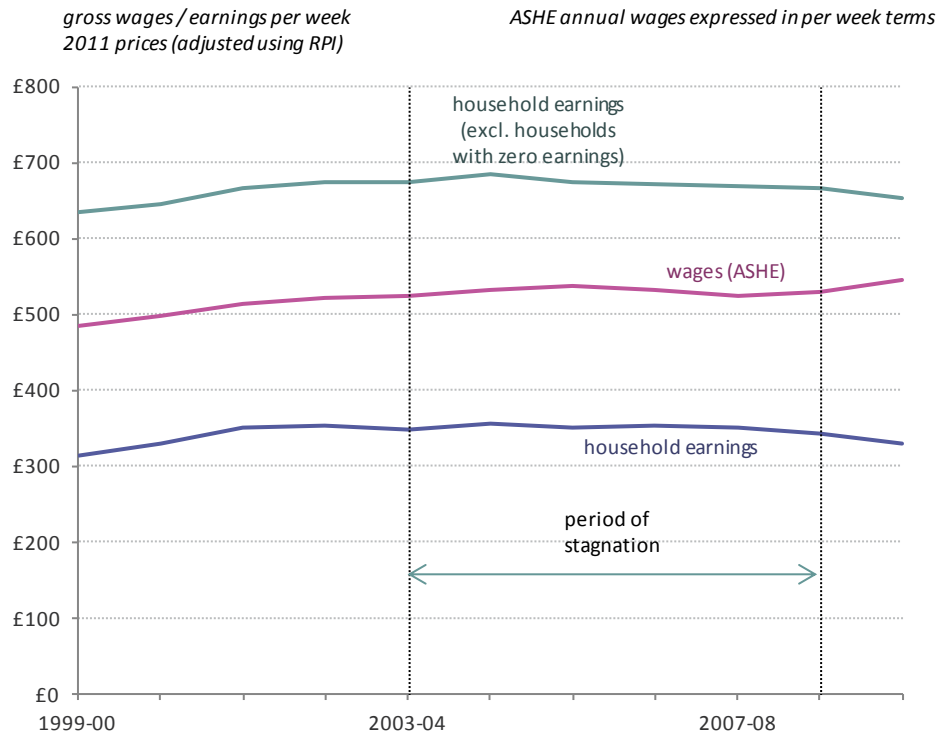
[14] The HBAI median figures are derived from family-level employment/self-employment earnings, adjusted by number of employed/self-employed workers per family.

Source: ONS, Annual Survey of Hours and Earnings (ASHE) and New Earnings Survey. DWP, Households Below Average Income (HBAI).

3.6.Individual and household earnings

The next distinction considered is between individual and household earnings. Up to this point all the earnings information has related to individual wages, but stagnating wages need not necessarily feed through to stagnation in total household earnings if, for example, households are responding to stagnating wages by increasing their labour supply. However, Figure 3.6 below shows that median total household earnings have not just stagnated but have actually fallen over the period 2003-4 to 2008-09. Among households with some employment income, median total earnings fell -1.4 per cent, while across all households (including those with zero employment income) it dropped -1.7 per cent. The previous section showed that, with employment earnings essentially static, this decrease in median household earnings was driven by self-employment earnings.[15]

Figure 3.6: Trends in median gross wages and total household earnings: UK 1999-00 to 2009-10



Notes: The time period covered by each round of the HBAI and ASHE data is different. ASHE data relates to calendar years while HBAI data is derived from FRS and spans each financial year (April to March). To ease exposition ASHE data has been plotted onto the financial years time axis, e.g. for ASHE the 2003-04 data plot corresponds to 2003 data. There are two methodological breaks in the ASHE median wage series, in 2004 and in 2006.

Source: ONS, Annual Survey of Hours and Earnings (ASHE) and New Earnings Survey. DWP, Households Below Average Income (HBAI).

[15] A fall in median household earnings could potentially also be driven by households shifting from wage employment to self-employment work, since the latter is associated with lower weekly earnings on average. However, analysis of the HBAI data reveals that between 2003-04 and 2008-09 the proportion of households containing at least one self-employed adult did not change significantly: 10.5 per cent in 2003-04 compared to 11.0 per cent in 2008-09. Similarly the proportion of households containing at least one employed adult was essentially static: 59.5per cent in 2003-04 compared to 59.6 per cent in 2008-09. Therefore it is clear there was in fact no significant shift towards self-employment which might have helped explain falling median household employment earnings over this period.

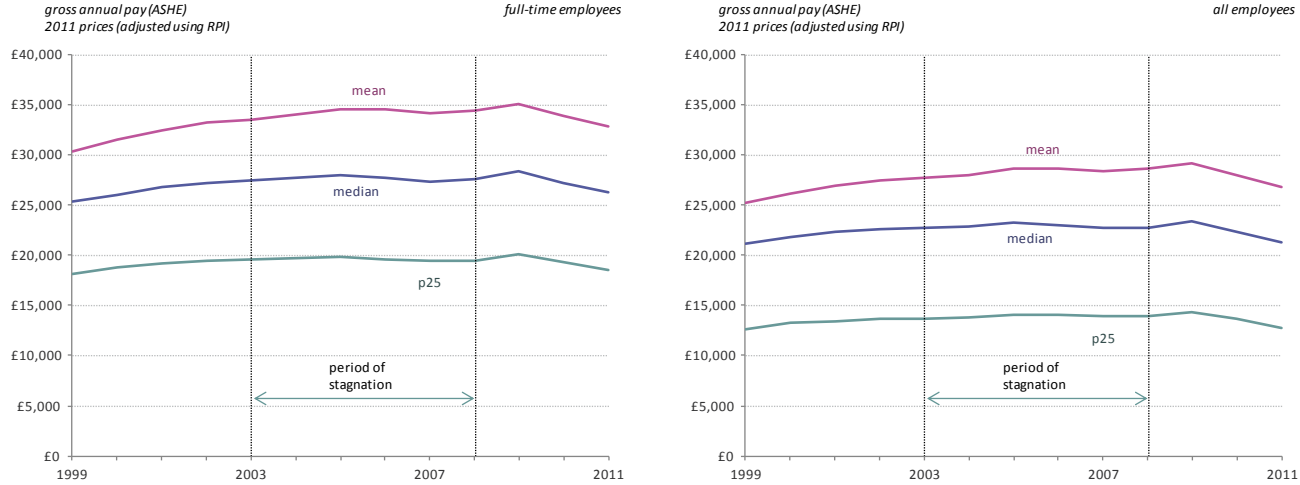
3.7. Variation across the earnings distribution: mean, median and 25th percentile

The final distinction considered in relation to wage earnings measures is how wage trends vary at different point in the earnings distribution. All the analysis presented in this paper up to this point has focussed on median wages and earnings. In other words, the analysis has centred on the situation of the worker or household situated exactly half way up the earnings distribution. An alternative approach is to consider trends in mean wages. The mean wage reflects total aggregate wage earnings divided by the number of earners. It therefore captures aggregate wages relative to the number of employees, but not distributional changes. This is important because, for example, overall mean wages can be rising even while the majority of workers are experiencing falling wages if those at the top end of the earnings distribution are receiving substantial wage increases.

Figure 3.7 below shows the trends in mean, median and 25th percentile (p25) gross annual pay over the period 1999 to 2011, for both full-time employees and all employees (i.e. full- and part-time combined). The 25th percentile corresponds to the wage earned by the worker situated 25 per cent up the earnings distribution. It is important to note that these trends are not tracking the experience of specific individuals over time: it is not necessarily the case that a person on median wages in one particular year would remain at the median in subsequent years, and similarly for workers earning mean or p25 wages.

The chart shows that while both median and p25 wages have stagnated, mean wages have increased (by 2.9 and 3.4 per cent for full-time and all employees respectively). So it is not that all workers have lost out, rather that wage growth has been increasingly concentrated in the hands of very top earners.

Figure 3.7: Trends at key points in the annual wage distribution: UK 1999 - 2011



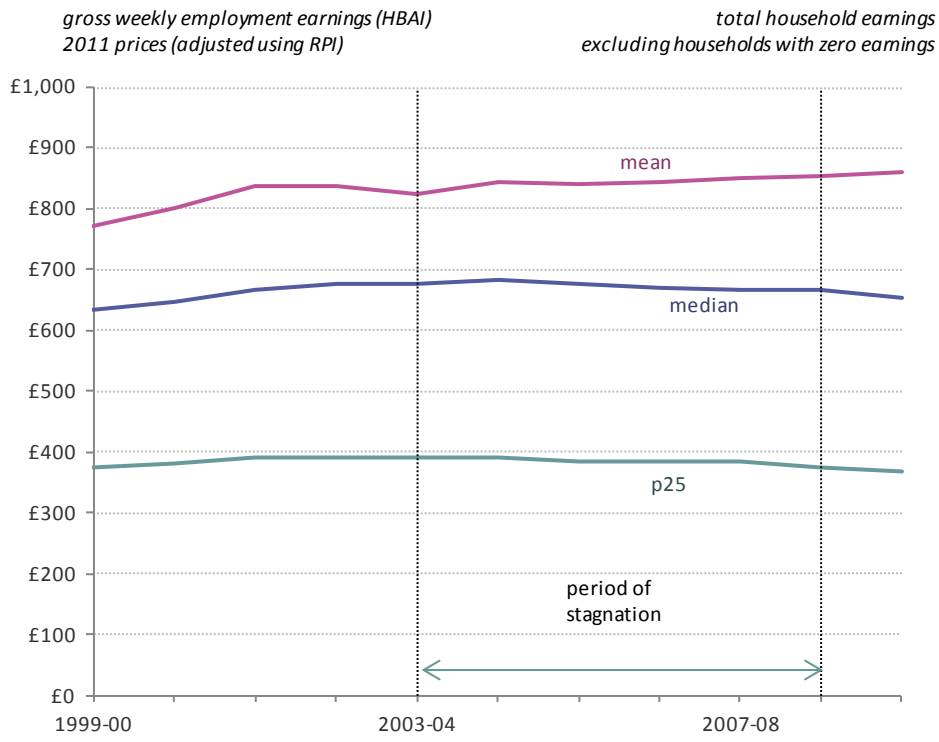
Notes: There are two methodological breaks in the median wage series, in 2004 and in 2006.
Source: ONS, Annual Survey of Hours and Earnings (ASHE) and New Earnings Survey.

Figure 3.8 below shows the same mean, median and p25 trend lines but for total household earnings.[16] Despite both median and p25 wages falling (by -1.4 and -4.3 per cent respectively), mean wages have risen

[16] Note that mean household earnings figures based on HBAI data need to be interpreted with caution. The HBAI income data are adjusted at the very top of the income distribution using the SPI, because like many surveys the FRS is known to substantially underreport top incomes. But the income components, including earnings, are not adjusted.

by 3.5 per cent. As shown above, the fall in median household earnings was driven by decreases in self-employment earnings, and the same is true for the fall in p25 earnings.

Figure 3.8: Trends at key points in the household earnings distribution: UK 1999-00 to 2009-10



Source: DWP, Households Below Average Income (HBAI).

Mean earnings is of course very sensitive to high earnings, so mean HBAI earnings estimates are likely to be understated.

4. The income squeeze: alternative measures

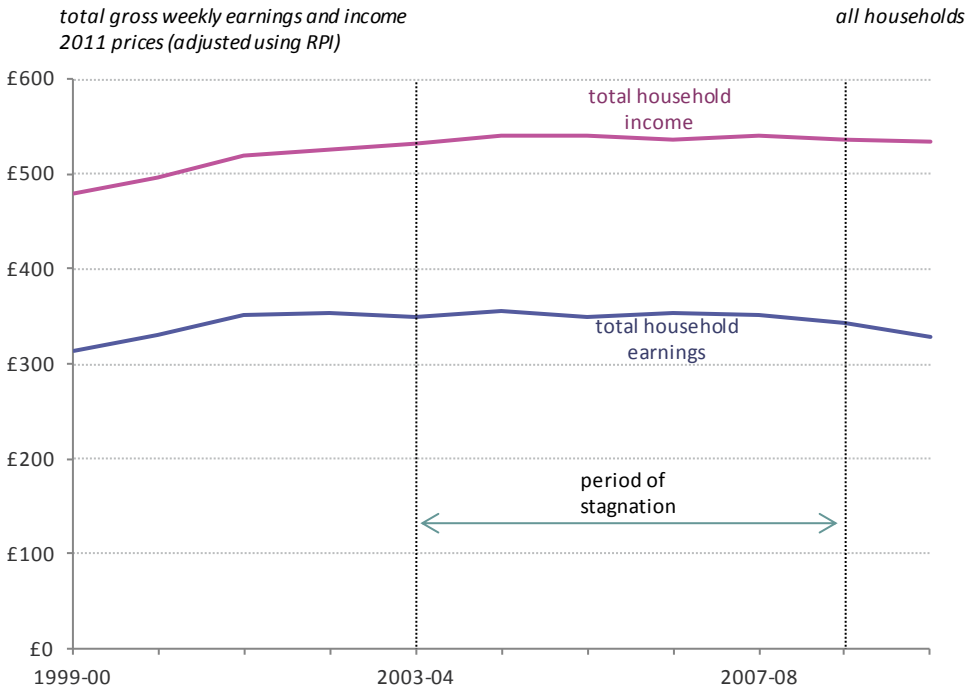
This chapter turns from a focus on earnings – that is, money earned through employment – to a focus on incomes – that is, the amount of money taken home after an individual or household interacts with the tax and benefit system and adds on other income sources of like investment income.

4.1. From earnings to income

Before reviewing alternative income measures, it is useful to understand how household income relates to household employment earnings. The income measures used here (and below), are all drawn from HBAI data. The household income data is based on detailed information covering all possible household income streams captured in the DWP Family Resources Survey (from which the HBAI data is derived), including all social security benefits and tax credits.

Figure 1.1 below shows trends in median household earnings and income over the period 1999-00 to 2009-10. While median total employment earnings fell -1.7 per cent over the period, total household income increased 1.0 per cent. This indicates that the decline in employment earnings (which, as shown above, was driven by falling self-employment earnings) is being compensated by other sources of household income.

Figure 4.1: Trends in median household earnings and income: UK 1999-00 to 2009-10



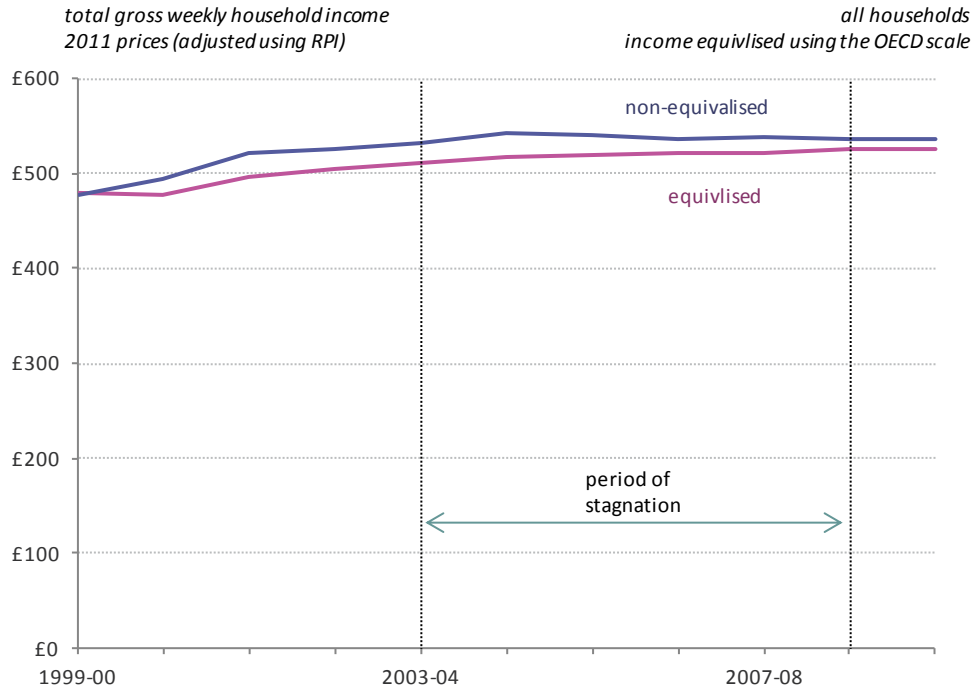
Notes: Gross income includes all sources of household income including all social security benefits and tax credits.
Source: DWP, Households Below Average Income (HBAI).

4.2. Income equivalisation

It is standard practice to adjust household income measures to take into account variations in household size and composition. A larger household would require a higher income to sustain the same standard of living as a small household, since household living costs will increase with household size. However, there are some living costs, such as housing, food and other shared resources, which do not rise in exact proportion to the number of people contained in household, so-called economies of scale within the household. Furthermore, children will require lower individual expenditure for many types of living costs.

Therefore the first distinction in income measures considered relates to equivalisation. So Figure 4.2 compares the trends in median equivalised and non-equivalised total household income over the period UK 1999-00 to 2009-10. The two trends are clearly very similar, but equivalised income grew slightly more over the period (2.9 compared to 1.0 per cent).

Figure 4.2: Trends in median equivalised and non-equivalised total household income: UK 1999-00 to 2009-10



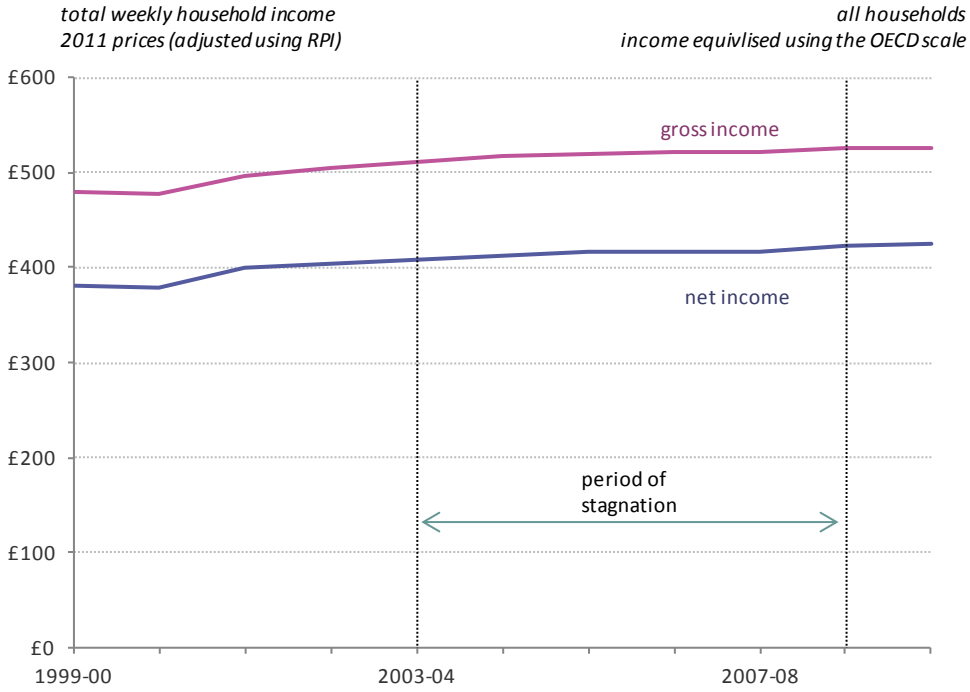
Notes: Gross income includes all sources of household income including all social security benefits and tax credits.
Source: DWP, Households Below Average Income (HBAI).

4.3. Gross and net income

The next distinction considered is between gross and net household income. As described above, gross income covers all household income sources, including all social security benefits and tax credits. Net household income (before housing costs) is net of all taxes and national insurance contributions (NICs), pension contributions, maintenance & child support payments, parental support of students and student loan repayments.

Figure 4.3 below compares the trends in median gross and net total household income over the period UK 1999-00 to 2009-10. While median gross household income has grown at a relatively modest 2.9 per cent over the period, net BHC income increased by 4.1 per cent, indicating that (at least for households in the middle of the income distribution) the net impact of the tax system mitigated to some extent the stagnation of employment earnings.

Figure 4.3: Trends in median gross and net total household income: UK 1999-00 to 2009-10



Notes: Gross income includes all sources of household income including all social security benefits and tax credits. Net income (before housing costs) is net of all taxes and national insurance contributions (NICs), pension contributions, maintenance & child support payments, parental support of students and student loan repayments. Net BHC incomes have been inflation-adjusted using a modified RPI series that excludes council tax.

Source: DWP, Households Below Average Income (HBAI).

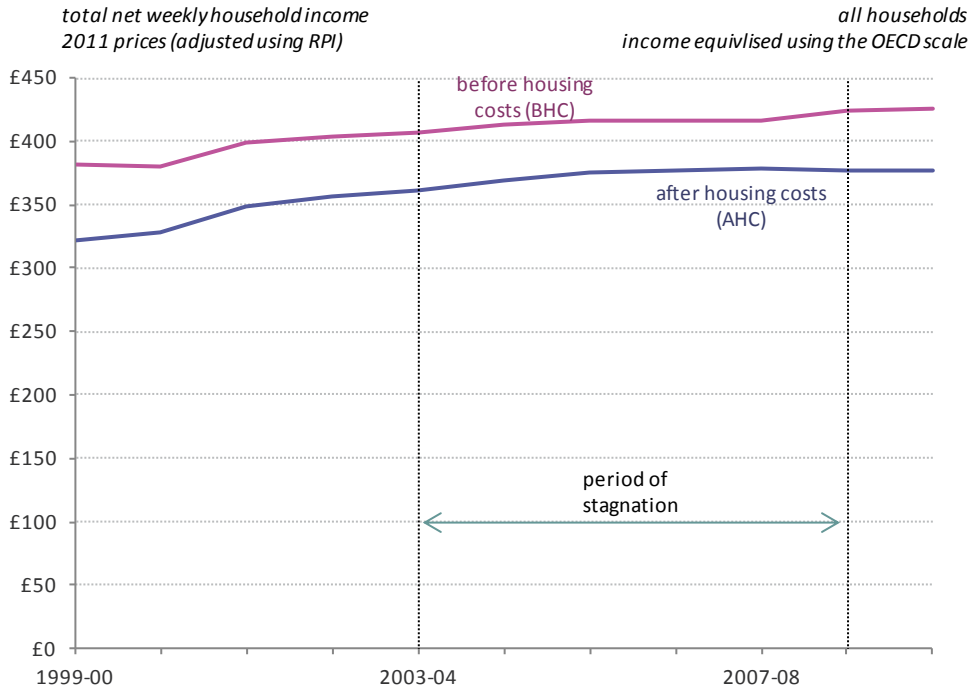
4.4. Income before and after housing costs

The third distinction considered is between net income *before* housing costs (BHC) and *after* housing costs (AHC). Net AHC income is equal to net BHC income measure minus rent (gross of housing benefit), rates & charges, mortgage interest payments, structural insurance, ground rent and service charges.

Figure 4.3 below shows trends in median net total household income before and after housing costs for the period 1999-00 to 2009-10. Net BHC income increased by 4.1 per cent over the period, while once housing costs are taken into account net AHC income increased by 4.5 per cent.

For the purposes of this paper the net BHC income measure is preferred to net AHC income and is therefore used in the remainder of the report. Although adjusting for housing costs gives a measure of material living standards allowing for the fact that these costs can vary drastically geographically, the drawback of not including these costs is that higher housing costs will also reflect better quality or more desirable housing.

Figure 4.4: Trends in median total net household income before and after housing costs: UK 1999-00 to 2009-10



Notes: Net income before housing costs (BHC) is equal to gross income net of all taxes and national insurance contributions (NICs), pension contributions, maintenance & child support payments, parental support of students and student loan repayments. Gross income includes all sources of household income including all social security benefits and tax credits. Net income after housing costs (AHC) is equal to net BHC income measure minus rent (gross of housing benefit), rates & charges, mortgage interest payments, structural insurance, ground rent and service charges. Net BHC and AHC incomes have been inflation-adjusted using modified RPI series. The index used to deflate BHC income is the all items RPI excluding council tax. The index used to deflate AHC income is the Rossi index – defined as the all items RPI excluding council tax and housing costs.

Source: DWP, Households Below Average Income (HBAI).

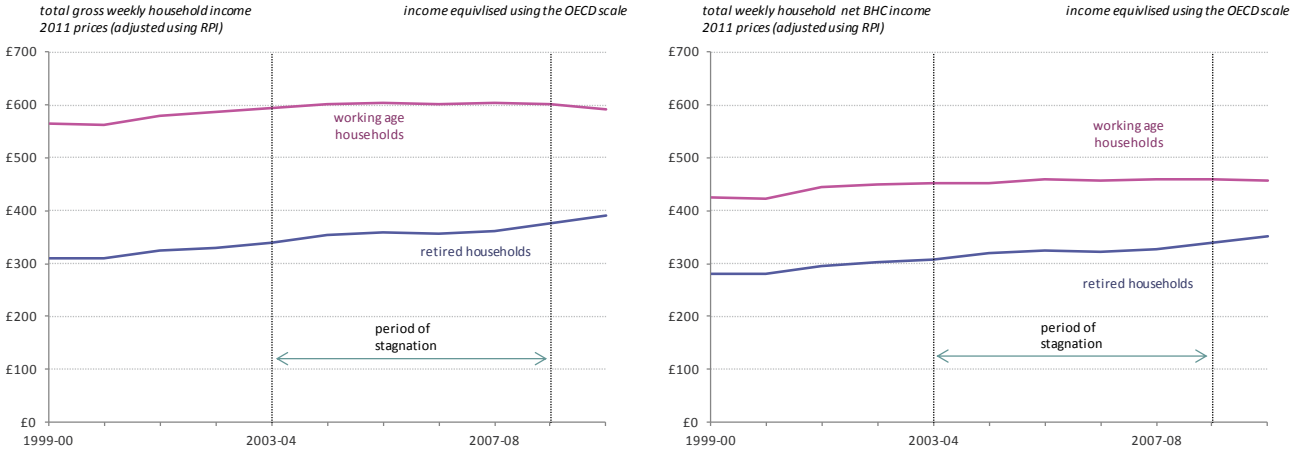
4.5. Working age and retired households

The next distinction considered is between working age and retired households. Here retired households are defined as those with at least one retired adult in household. Conversely, working-age households are those in which no adults in the household are retired.

Figure 4.5 below shows trends in median total gross and net household income for working age and retired households over the period 1999-00 to 2009-10. It is clear that the stagnation in both gross and net income noted above was driven non-retired households. Retired households experienced significant growth in both gross and net income (10.4 and 9.8 per cent respectively), while those of non-retired households stagnated (1.3 and 2.0 per cent gross and net income growth respectively).

It should be noted, however, that while retired households have seen continued growth in their incomes, on average their incomes are still lower than non-retired households, although the gap in net AHC income (not shown) is narrowing.

Figure 4.5: Trends in median total gross and net household income for working-age and retired households: UK 1999-00 to 2009-10



Notes: Net income before housing costs (BHC) is equal to gross income net of all taxes and national insurance contributions (NICs), pension contributions, maintenance & child support payments, parental support of students and student loan repayments. Gross income includes all sources of household income including all social security benefits and tax credits. Net BHC incomes have been inflation-adjusted using a modified RPI series that excludes council tax.

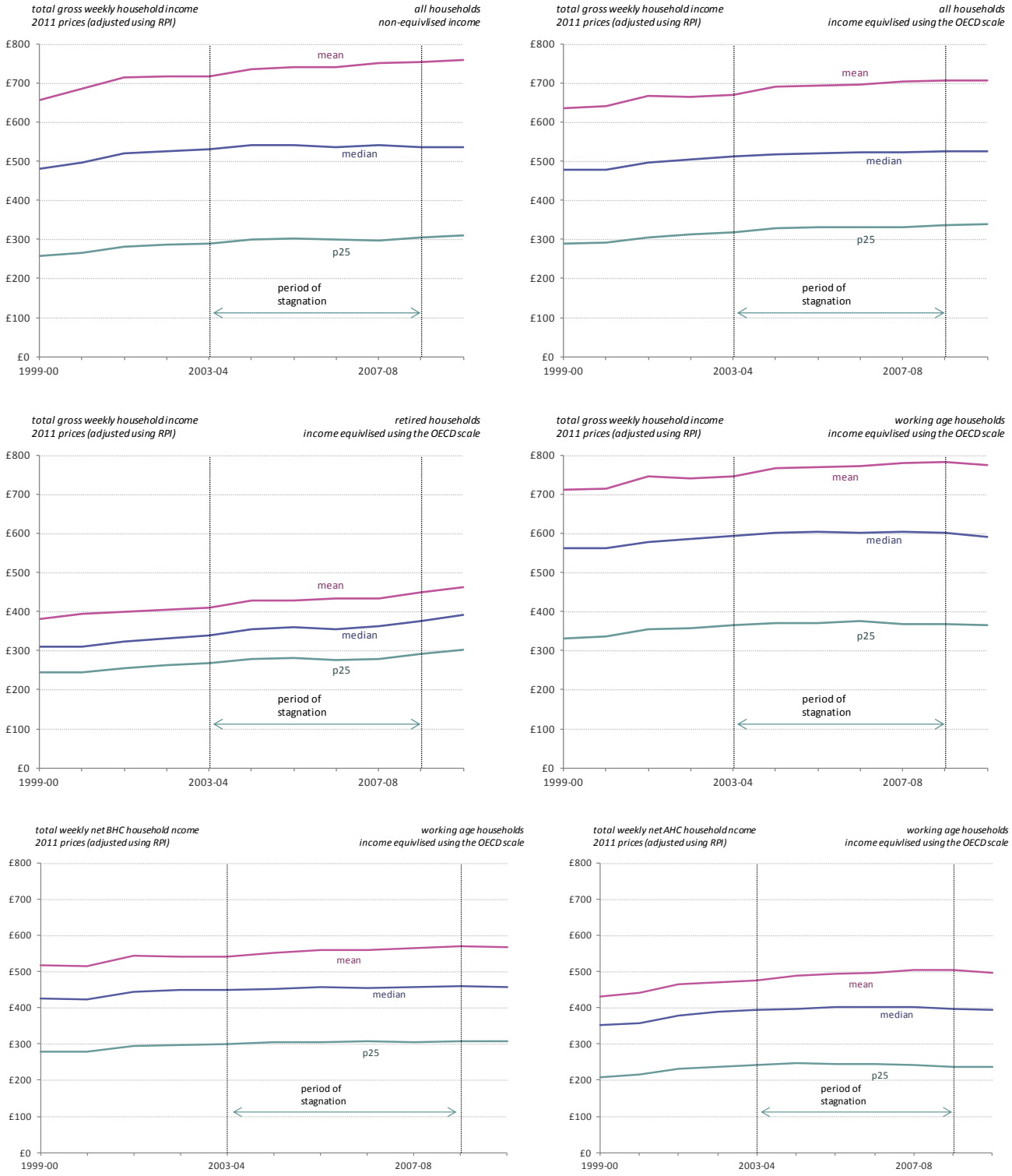
Source: DWP, Households Below Average Income (HBAI).

4.6. Variation across the income distribution: mean, median and 25th percentile

The final distinction considered in relation to income measures relates to how income trends vary at different points in the income distribution. All the analysis presented so far in Section 3 has focussed on median income measures. Figure 4.6 below shows trends in the mean, median and 25th percentile for various different income measures and household types over the period 1999-00 to 2009-10 (see Section 3.7 for explanation of the distinction between mean, median and p25 measures).

For all measures and household types shown, the mean has increased more than the median over the period, indicating increasing inequality. However, the growth at the 25th percentile was in some cases higher than the median, indicating compression in the lower half of the income distribution. The most striking result is the decline (-1.7 per cent) among working age households in net income after housing costs (AHC) at the 25th percentile, which contrasts with a slight rise (2.4 per cent) in the equivalent measure for net income before housing costs (BHC). This indicates deteriorating material living standards among poorer households despite steady economic growth between 2003 and 2008, driven by rising housing costs relative to incomes which were not fully off-set by rises in tax credits or housing benefit over the period.

Figure 4.6: Trends at key points in the income distribution by income measure and household type: UK 1999-00 to 2009-10



Notes: Net income before housing costs (BHC) is equal to gross income net of all taxes and national insurance contributions (NICs), pension contributions, maintenance & child support payments, parental support of students and student loan repayments. Net income after housing costs (AHC) is equal to net BHC income measure minus rent (gross of housing benefit), rates & charges, mortgage interest payments, structural insurance, ground rent and service charges. Gross income includes all sources of household income including all social security benefits and tax credits. Net BHC and AHC incomes have been inflation-adjusted using modified

RPI series. The index used to deflate BHC income is the all items RPI excluding council tax. The index used to deflate AHC income is the Rossi index – defined as the all items RPI excluding council tax and housing costs.

Source: DWP, Households Below Average Income (HBAI).

5. Summary and conclusions

The purpose of this briefing note was to systematically review a range of alternative measurement options for analysing wage and income trends, assessing each distinction in turn. The Resolution Foundation's choices of data sources and measures reflect both explicit analytical choices and pragmatic responses to data limitations. There is a trade-off between the scope of the available earnings data, particularly in terms of coverage, representativeness and the degree to which it can be disaggregated, and how far back in time the data spans. This paper has highlighted a number of specific issues:

- Accounting appropriately for inflation is key to the analysis of trends in measures such as wages and incomes over time. For this paper two alternative measures were considered, RPI and CPI. Under RPI, our preferred measure for inflation-adjustment, a starker slowdown in wage growth is seen from the early 2000s than under CPI, though a CPI measure still shows a significant slowdown in wage growth in this period.

- The ASHE wage data reveals that the stagnation in median wages over the period 2003 to 2008 was driven principally by male employees and those aged below 30. This finding applies to both full-time employees and all employees (i.e. full-time and part-time). Over the same period there was some increase in mean wages, indicating increasing wage inequality.

- Employment earnings data from HBAI show a fall in median total household earnings over the period, driven by driven by a large decrease in self-employment earnings over the period. This warrants further investigation.

- HBAI income data reveals stagnation in median gross household income, driven by non-retired households. Once taxes and housing costs are taken into account income stagnation is even more pronounced, suggesting that on average households experienced stagnation in their living standards despite steady economic growth over the period. Even more worrying is the finding of deteriorating material living standards among households at the 25th percentile over the period, driven by rising housing costs relative to incomes.

Annex

Comparison of median, mean & p25 for alternative wage, earnings and income measures (UK)

Measure	Source	Percentage change between 2003 and 2008		
		Median	Mean	p25
Gross hourly wage - full-time employees	*ASHE*	0.4%	-0.2%	-0.7%
Gross weekly wage - full-time employees	*ASHE*	0.1%	-0.3%	-0.7%
Gross annual wage - full-time employees	*ASHE*	0.5%	2.9%	-0.5%
Gross annual wage - all employees	*ASHE*	0.3%	3.4%	1.5%
Gross annual wage - full-time females	*ASHE*	3.3%	3.7%	1.9%
Gross annual wage - full-time males	*ASHE*	-0.2%	3.6%	-1.7%
Gross annual wage - all female employees	*ASHE*	5.6%	6.5%	8.8%
Gross annual wage - all male employees	*ASHE*	-1.1%	2.5%	-3.6%
Gross annual wage - full-time employees aged 16-29	*ASHE*	-2.7%	-2.2%	-2.1%
Gross annual wage - full-time employees aged 30+	*ASHE*	1.5%	3.5%	0.4%
Gross annual wage - all employees aged 16-29	*ASHE*	-2.3%	-1.6%	-1.9%
Gross annual wage - all employees aged 30+	*ASHE*	1.4%	4.1%	2.6%
Employment earnings per employed adult household member	*HBAI*	2.7%	4.9%	2.0%
Self-employment earnings per self-employed adult household member	*HBAI*	-11.2%	-4.3%	-14.0%
Total household employment earnings (weekly) - all households (incl. those with zero earnings)	*HBAI*	-1.7%	4.7%	n/a
Total household employment earnings (weekly) - for households with some earnings	*HBAI*	-1.4%	3.5%	-4.3%
Gross household income - All households	*HBAI*	1.0%	4.8%	5.4%
Gross household income - Non-retired households	*HBAI*	0.2%	4.3%	0.8%
Gross household income - Retired households	*HBAI*	9.8%	8.8%	7.3%
Gross equivalised household income - All households	*HBAI*	2.9%	5.5%	6.2%
Gross equivalised household income - Non-retired households	*HBAI*	1.3%	4.9%	1.1%
Gross equivalised household income - Retired households	*HBAI*	10.4%	9.6%	8.1%
Net equivalised household income before housing costs (BHC) - All households	*HBAI*	4.1%	5.9%	4.1%
Net equivalised household income before housing costs (BHC) - Non-retired households	*HBAI*	2.0%	5.2%	2.4%
Net equivalised household income before housing costs (BHC) - Retired households	*HBAI*	9.8%	9.6%	7.5%
Net equivalised household income after housing costs (AHC) - All households	*HBAI*	4.5%	7.1%	4.5%
Net equivalised household income after housing costs (AHC) - Non-retired households	*HBAI*	0.9%	5.7%	-1.7%
Net equivalised household income after housing costs (AHC) - Retired households	*HBAI*	16.1%	14.2%	11.3%

Source: ONS, Annual Survey of Hours and Earnings (ASHE) and New Earnings Survey. DWP, Households Below Average Income (HBAI).

Notes: (1) All estimates relate to UK and are based on inflation adjustments using RPI. Net incomes, both before housing costs (BHC) and after housing costs (AHC), have been inflation-adjusted using two different modified RPI series. The index used to deflate BHC income is the all items RPI excluding council tax. The index used to deflate AHC income is the Rossi index – defined as the all items RPI excluding council tax and housing costs.. (2) Highlighted cells correspond to growth of less than 0.5% over the 2003-08 period.

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The Resolution Foundation is an independent research and policy organisation. Our goal is to improve the lives of people with low to middle incomes by delivering change in areas where they are currently disadvantaged. We do this by:

- undertaking research and economic analysis to understand the challenges facing people on a low to middle income;
- developing practical and effective policy proposals; and
- engaging with policy makers and stakeholders to influence decision-making and bring about change.

For more information on this Briefing Note contact:

Alex Hurrell
Senior Analyst
alex.hurrell@resolutionfoundation.org
020 3372 2958