



UNIVERSITY of STRATHCLYDE
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Implications of hours worked for inequality and poverty: Interim Report

An Interim Report for the Standard Life Foundation

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 Standard Life
FOUNDATION

Executive summary

The amount of time that people spend in paid work has a major influence on both individual earnings and household incomes. As such, differences in hours worked across different groups of worker or types of household can have a major influence on income inequality and poverty.

Weekly hours worked by men decreased in the period until 2010 but have remained unchanged since then. In contrast, female hours worked have increased slowly throughout the period. These changes over time reflect trends in real household income, and changing social norms around gender and work.

Changes in hours worked resulted in increased male earnings inequality before 2010. This is because the decline in hours worked was proportionately greater in low-paying jobs. The reasons for this remain slightly inconclusive. Reduced use of paid overtime by employers accounts for a limited part of the pattern. But we find no evidence that the pattern can be explained by labour supply decisions at the household level (i.e. it does not seem that the fall in male hours worked in low-paying jobs is associated with rising female employment in affected households). This doesn't mean that the trend for hours worked to decline more rapidly in low-paying jobs before 2010 is not the result of labour supply decisions, but that the role of demand and supply factors remains ambiguous.

In contrast, changes in hours worked have resulted in reduced female earnings inequality. The hours typically worked by women working part-time has increased relative to the hours of those working full-time; furthermore, the proportion of women working full-time has increased more in low-paying relative to high paying jobs.

Changes in hours worked have contributed to declining earnings inequality between men and women.

Workers who are underemployed are those who would like to work longer hours at their current basic pay, given the opportunity. Being underemployed is associated with higher rates of depression, unhappiness, and anxiousness. The underemployed are disproportionately likely to be young and low-paid.

But underemployment is likely to reflect dissatisfaction with pay and income rather than hours worked. Over time, the underemployment rate broadly mirrors the trend in pay (and household income) growth: it increased following the financial crisis, a time when real hourly pay declined but hours worked remained largely unchanged. Underemployment only began falling when real pay growth picked up again after 2014.

'Atypical' or 'precarious' forms of employment contract that provide work that is either temporary or uncertain, unpredictable and/or insecure from one week to the next. Precarious work can affect worker health and interfere with family schedules and parenting responsibilities.

Employees on temporary contracts and zero hours contracts are more likely to be employed in low-paying jobs, and work fewer hours, than employees not on those forms of contract. We also find that employees on temporary or zero hours contracts are significantly more likely to be underemployed, even after controlling for their pay and hours.

Workers in higher income households tend to work longer hours than those in lower income households. This relationship holds for both the main earner in a household, and non-main earners.

We also find that workers in households in poverty work significantly fewer hours per week than those not in poverty: weekly hours worked are a significant factor, alongside hourly pay, in influencing the probability of a household being in poverty. Future research for this project will focus on identifying the constraints that workers in low-income households face in increasing their hours – if that is what they want to do.

The Covid-19 pandemic has created an unprecedented labour market shock. During the ‘lockdown’ itself, total hours worked in the economy fell 16%, despite the employment rate remaining relatively resilient. This pattern reflects the impact of the government’s furlough scheme, which reimbursed employers from keeping their employees away from work.

How the labour market might respond to further economic restrictions in the coming months remains uncertain. There is also uncertainty over the extent to which adjustment will come largely from reduced employment or from reduced hours, with recent data indicating both a rise in redundancies and a reduction in hours worked.

The next phase of this research project will consider policy responses, both over the shorter and longer terms.

Standard Life Foundation has supported this project (reference 201911-GR000011) as part of its mission to contribute towards strategic change which improves financial well-being in the UK. The Foundation funds research, policy work and campaigning activities to tackle financial problems and improve living standards for people on low-to-middle incomes in the UK. It is an independent charitable foundation registered in Scotland (registered charity number: SC040877).

1. Introduction

The amount of time that people spend in paid work has a major influence on both individual earnings and household incomes. As such, differences in hours worked across different groups of worker or types of household can have a major influence on income inequality and poverty.

Changes in patterns of work over time have also been a major driver of trends in inequality within and between different groups of workers.

But what determines the patterns of working hours that we see today? And why has the distribution of hours worked changed over time? Does it reflect changes in the requirements of employers, or changing preferences of workers? And what are the implications for wellbeing, job satisfaction, inequality and poverty?

As well as changes in the number of hours that people work, recent decades have also seen changes, for some workers, in the extent to which working hours are stable and predictable from week to week. How does this increased flexibility affect hours worked, well-being and financial security?

The objectives of this project are to analyse changing patterns of working hours, consider what drives changes, examine how they affect inequality, poverty and wellbeing, and explore how policy might respond.

The project is being led by the Fraser of Allander Institute (FAI) and the Scottish Centre for Employment Research (SCER) at the University of Strathclyde, and is being generously funded by the Standard Life Foundation.

The anticipated outcomes are to raise understanding and awareness of the role that changing patterns of working hours play in determining poverty and inequality, and to equip policy makers – and business leaders – with a more in-depth understanding of the causes of those trends and the ways in which policy can and does influence those trends.

The research project, which runs throughout 2020, will involve three broad work phases. First, a rigorous analysis of several UK-wide socio-economic surveys that contain information on hours worked; second, an international comparative analysis reviewing trends and experiences in a selection of comparator countries; and third, in-depth qualitative research with employers and employees. These three work stages will be brought together to consider implications for policy.

This interim report summarises the key findings from the first work-stage, the analysis of hours trends in key UK-wide socio-economic surveys. The interim report sets out key trends in hours worked by different groups of workers, analyses what these changes mean for earnings inequality, examines the relationship between hours worked and underemployment, and considers how hours and underemployment are affected by characteristics of the employment contract, with a particular focus on forms of ‘insecure’ employment types. The report also considers how hours worked vary by household type (as well as across individual), and analyses the role that hours play in influencing household inequality and poverty.

During the remaining months of the project we will complement these emerging findings with qualitative research, analysis of trends and policy in other countries, and further examination of UK data, to consider the role for policy – in consultation with businesses, trade unions and policy-makers.

The project was conceived pre-Covid, at a time when the UK labour market was characterised by high employment rates and high levels of in-work poverty. Covid is having profound impacts on the labour market, although the nature of these in the medium and long terms remains highly uncertain. It would be a mistake however, to ignore the structural changes in the labour market prior to this period. The final section of this report does sketch out what we know so far about the impact of the 'lockdown' on hours worked. Our final report will consider how the pandemic may shift the assessment of the importance of hours worked for inequality and poverty – and what this might mean for the policy response.

2. Recent trends in hours worked

This chapter considers broad trends in weekly hours worked over the past 25 years. The trends are quite different for men and women, and trends have been different since the financial crisis than they were preceding it.

Key points

- Weekly hours typically worked by male employees fell between the mid-1990s and the immediate aftermath of the financial crisis in 2010. Median hours worked by full-time male employees declined from 43 to 40 over this period.
- The fall in male hours worked over this period was a continuation of a much longer trend. It is thought to reflect the desire to trade-off paid working time for more leisure time as pay and living standards improve, combined with changes in social norms and labour market institutions.
- Average weekly hours worked by females have increased very slightly since the mid-1990s, from 31 in 1992 to 32.5 in 2019. This increase in average hours is largely the result of an increase in the proportion of women working full-time, rather than a change in the hours typically worked by either full or part time females.
- The increase in female hours worked reflects changing social norms around gender and work, improvements in childcare provision, the falling gender pay gap, and increases both in women's educational attainment and service sector employment.
- Since 2010 the longrun trend for decline in male hours worked has stalled. Hours worked have remained stable, not just for males as a whole but for most subgroups (e.g. by hourly pay, occupation and family type). The rate of increase in female hours worked has been slightly faster since 2010 than it was prior to then.
- The stalling of the longrun decline in male hours worked in 2010, and the slight uptake in the rate of increase of female hours worked at the same time, is thought to reflect the stagnation of real wage growth and falls in real net household incomes. Workers sought to respond to falling incomes – and potentially feelings of insecurity more generally – to work longer or take fewer absences.
- But as we will see later in the report, the apparent ability of workers to exercise some flexibility in their working hours has not been enough to stem a significant rise of underemployment since 2010, signalling that workers on average have not been able to increase hours as much as they would have liked, particularly amongst low-paying occupations.

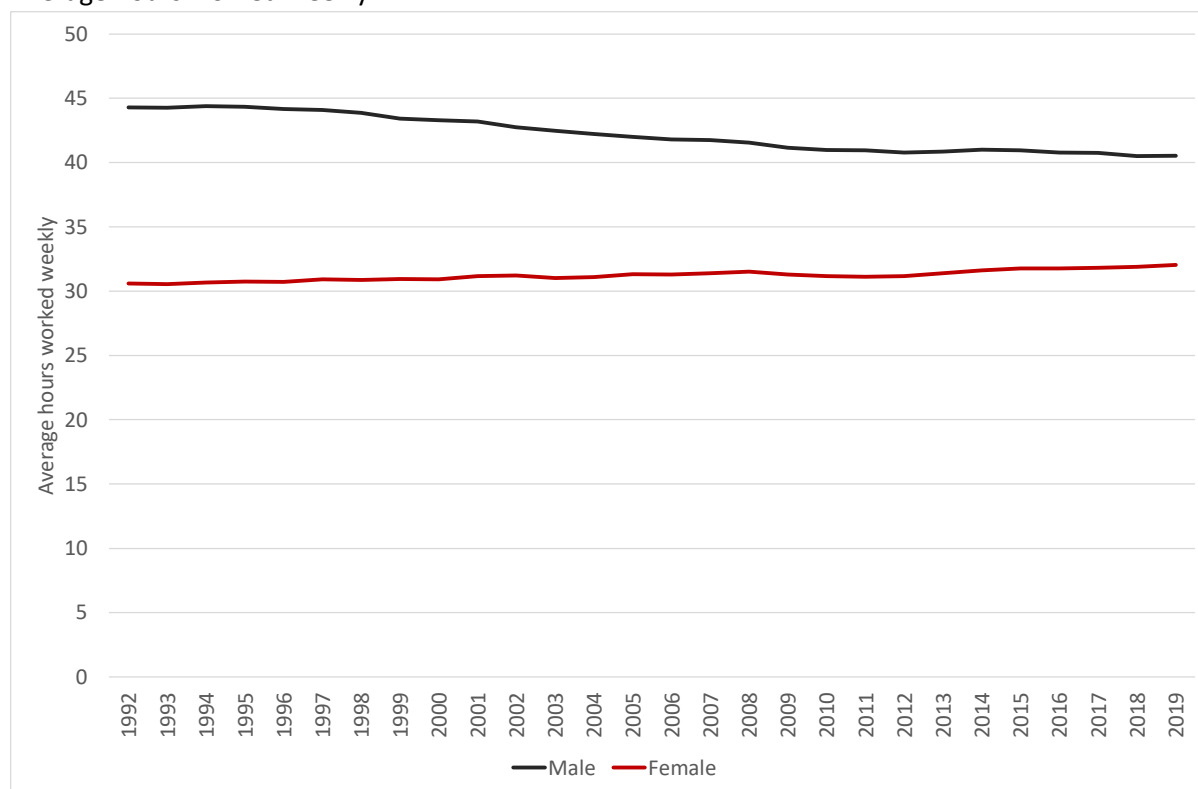
Hours worked by men and women are converging... slowly

The average weekly hours worked by men and women have followed different paths over the past 25 years or so. Average hours worked by male employees declined at a fairly consistent rate between 1992 and 2010 by over 7% (Chart 2.1). But since 2010 they have remained relatively stable.

Average hours worked by female employees have grown marginally but steadily (checked following the financial crisis) between 1992 and 2019. These trends in hours are broadly common across a range of sources (Box 2.1).

Chart 2.1: Hours worked by male and female employees have followed different trends

Average hours worked weekly



Source: FAI analysis of LFS

Box 2.1: Sources of data on hours worked

There are a number of largescale UK datasurveys that contain information on hours worked.

The Annual Survey of Hours and Earnings (ASHE) surveys approximately 1% of UK employees in April each year. Its advantage is its sample size (approximately 300,000 employees per year), and the fact that it is completed by employers based on official records (rather than employees' recall). It is recognised as being the most reliable source of employee earnings. However, its disadvantages are that it contains relatively little information on the background characteristics of employees (such as qualifications, marital/family status, and underemployment). Furthermore, the sample is drawn from HMRC's Pay as you Earn (PAYE) records, and therefore may not be representative of those with low earnings.

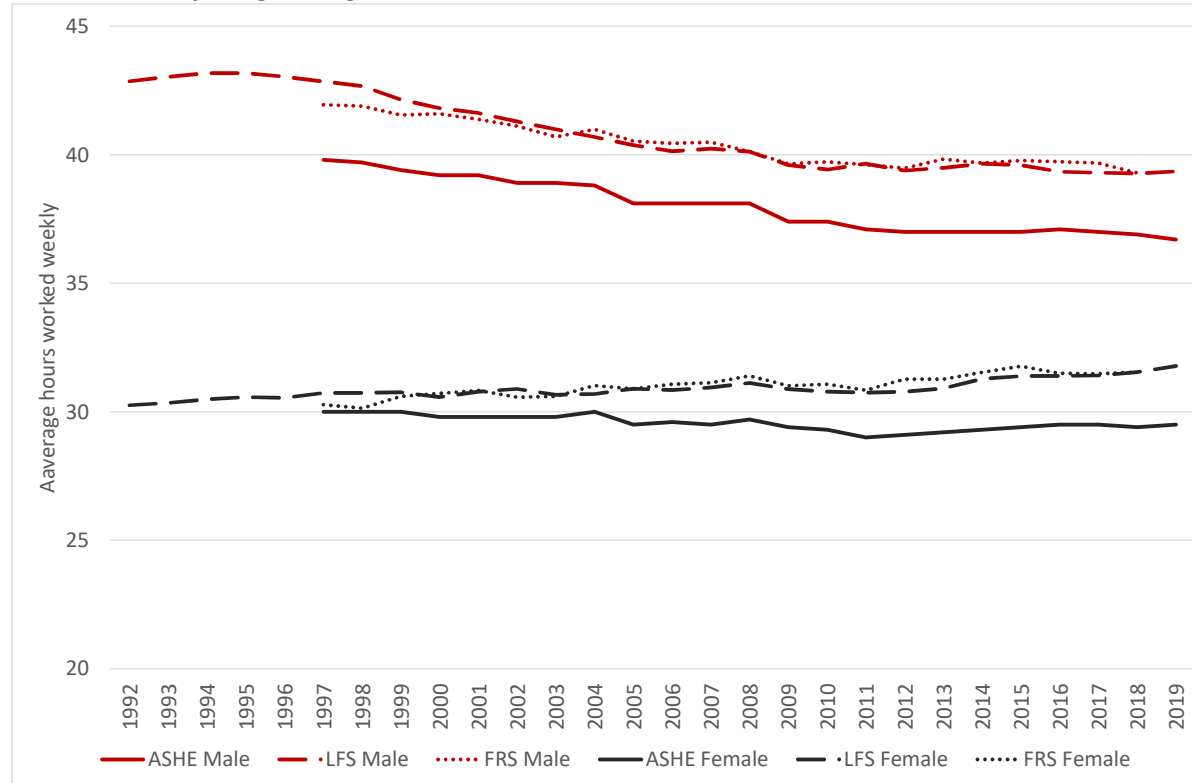
The Labour Force Survey (LFS) is a quarterly survey of approximately 70,000 individuals (including children and those not in work). Its principle advantage is that it contains rich information on individuals' characteristics, including underemployment and nature of employment contract. It also contains information on hours worked by the self-employed. It is also available on a timely basis, so it can be used to glean information on hours worked during the 'lockdown' phase of the pandemic. For these reasons, we rely most heavily on the LFS in undertaking analysis in this report.

The limitation of the LFS is that it does not contain very much information on the characteristics of the household of an individual worker. Given that an interest of this report is to understand how hours worked interact with factors such as household income, we also draw on information in the Family Resources Survey (FRS). The FRS contains self-reported information on hours worked and incomes, for employees and the self-employed. We merge this with data on net household incomes (from the Households Below Average Income dataset) to analyse these issues.

Throughout this report, we note where necessary any major divergence in the trends identified across these three main sources – ASHE, LFS and FRS.

Chart 2.2 shows average paid hours worked for male and female employees across the three sources. Results from LFS and FRS are almost identical. For ASHE, the male trend is similar to FRS/LFS, albeit somewhat lower. For females, the ASHE trend also differs somewhat from the LFS/FRS trend.

Chart 2.2: Comparing average hours worked across three data sources



Source: FAI analysis of ASHE, LFS and FRS

The decline in male hours is common to the median male employee

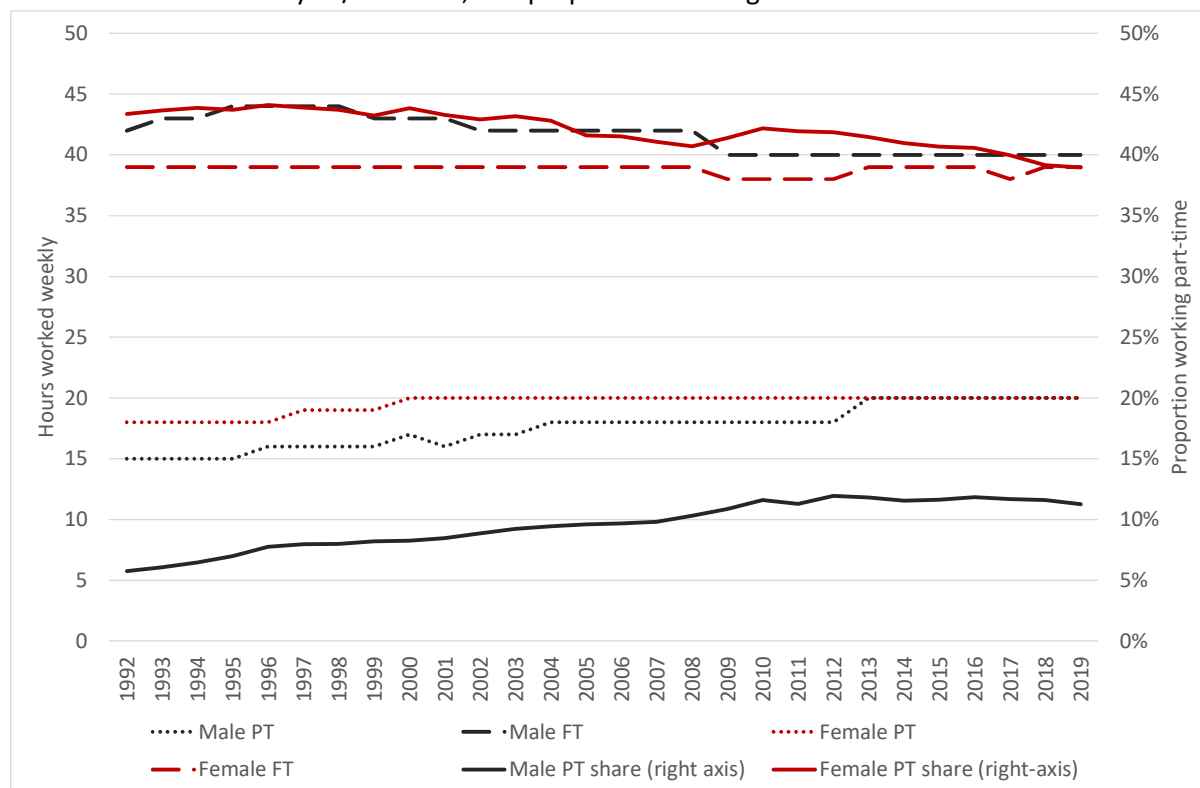
Of course, there is a risk that looking at a fairly aggregate measure of average hours worked might lead us to spurious conclusions about the trend for different types of worker, or even the typical worker. For example, a fall in average hours worked might come about because relatively fewer employees are working very long hours; or it might reflect an increase in the proportion of part-time work. But in either of these cases, a fall in average hours doesn't necessarily mean a fall in median hours.

In fact, for men, median hours of full-time workers fell from 43 in 1993 to 40 in 2010 and have remained unchanged since then (Chart 2.3). At the same time, there has been a rise in the proportion of men employed part-time, from 6% to 12% in 2010 and remaining largely unchanged since. But offsetting this, median hours of part-time men have increased from 15 to 18 between 1993-2010, and increased further to 20 by 2019.

For women, median hours worked by full-timers have remained unchanged at 39 since 1993, and unchanged at 20 for part-timers since 2000. The (slight growth) in average hours comes about largely because of a (slight) fall in the proportion of women working part-time.

Chart 2.3: Falls in male hours are due to falling full-time hours and rising part-time employment; increases in female hours largely reflect a falling proportion of part-time work

Median hours worked by FT/PT status, and proportion working PT



Source: FAI analysis of LFS

What about age? We find that the trends described above are common to 'prime age' employees aged from 25-54. But trends for older and younger workers are different.

Hours worked by under 25s declined relatively rapidly for males and females between 1992 and 2010 (by 14% and 12% respectively), but have recovered somewhat since. Hours worked by older male workers have declined less rapidly than for prime age males. Hours worked by older female workers have increased more rapidly than for prime age females. However, changes in the demographic composition of the workforce play only a very small role in explaining the broad changes outlined above.

Decreases in male hours worked prior to 2010 are likely to reflect rising household incomes

What might explain these trends? The decline in average hours worked by men shown in Chart 2.1 is a continuation of a much longer trend, dating back to the beginning of the 19th century if not before, and common to all developed countries. It is largely explained by the desire to trade-off time in paid work for more leisure as real pay, and living standards, improve. Increases in female labour market participation have supported the trend by raising household incomes. And changes to labour market institutions – such as the Working Time Directive – and changes in social norms – for example around the 2-day weekend – have also contributed (Bangham, 2020).

The rise in hours worked by females (and the more general increase in labour market participation) are thought to reflect some combination of changing social norms around gender and work (combined with improvements in childcare provision), the falling gender pay gap, and increases both in women's educational attainment and service sector employment (Bangham, 2020).

The post-2010 pay squeeze is likely to explain hours changes in the past decade

Why then did the long run fall in male hours stall in 2010, and why did women's hours increase more rapidly at that point?

Bell and Gardiner (2019) and Bangham (2020) posit that the key explanatory factor is likely to be the unprecedented stagnation in real wage growth that took place from 2009 to 2015. This line of argument is that workers sought longer hours (or to maintain existing hours) to offset the fall in living standards that they had experienced (falling real wages – partly the result of stalling productivity growth – may also have encouraged employers to demand more labour). In the face of economic uncertainty, some workers may have also sought longer hours (or taken less leave) to signal their 'commitment' to their employer (Bangham, 2020). Bangham (2020) also identifies a negative correlation across countries between hourly pay and hours worked between 2008 – 2018: countries that saw the largest falls in real pay saw increased hours worked, while countries seeing real pay increases tended to see decreases in hours worked.

Among females, hours increases have been most significant amongst those living in couples with and without children. For those with children, this may reflect the fact that this group is less likely to be able to reduce their costs – given reduced flexibility for housing and childcare – and thus more likely to seek to increase income by working more. Among females in couples without children, this may support the hypothesis that women's labour supply is responsive to the higher threat of job loss experienced by partners (Harkness and Evans, 2011), although this argument seems less persuasive in the later part of the 2010s when employment growth was high. Another argument put forward for stronger hours growth amongst females since 2010 is that wage growth has been relatively stronger amongst low-paying jobs (as a result of increases in the NMW), and as females are disproportionately represented in these jobs, it has incentivised longer hours among this group (Bell and Gardiner, 2019).

3. Hours worked and inequality

The previous chapter considered changes in hours worked in very broad terms. This chapter considers whether trends have been different for particular groups of workers, focussing in particular on whether hours changes have increased or decreased earnings inequalities.

Key points

- Broadly speaking, inequality in workers' earnings (weekly pay) can come about through three channels: variance in hourly pay; variance in hours worked; and the correlation between hourly pay and hours worked (in other words, do high paid jobs tend to go hand-in-hand with relatively high hours, accentuating earnings inequality, or lower hours, reducing inequality?)
- For men, variance in hourly pay accounts for the largest part of overall earnings inequality. But between the mid-1990s and 2010, hours worked by men in low paid jobs declined more quickly than among men working in higher paid jobs. The strengthening correlation between hourly pay and hours worked contributed to rising male earnings inequality over the period, although this trend has reversed slightly since 2010.
- It is not entirely clear why hours worked by men in low-paid jobs declined more than those in higher paid jobs until 2010. A decline in availability of overtime can explain some but not all of the trend. If the decline in hours worked was noticeably more marked in particular demographic groups or family types (e.g. households with or without a second earner) then this might provide suggestive evidence that some of the trend was the result of labour supply decisions. But we find no evidence of these sorts of effects – this doesn't rule out that the trend was driven by labour supply decisions, but doesn't provide strong evidence for it.
- Earnings inequality among women is higher than among men, and this is mainly because the variance of female hours worked is much greater (i.e. women are much less likely to work a standard 40-hour week than men). But female earnings inequality has been declining since the mid-1990s, partly due to a fall in inequality of hourly pay, but mainly because a narrowing of the dispersion of hours worked.

Hours changes increased earnings inequality among males until 2010

So far, we've been looking at changes in hours worked. But we are predominantly interested in how hours affect inequality and poverty. Addressing these issues requires us to study how hours vary for workers on different levels of pay.

We've seen that on average, hours worked by men declined until 2010. In itself, this doesn't tell us anything about how changes in hours worked might have affected earnings inequality among men. On the one hand, the simple fact that more men are working part-time might increase the dispersion of weekly earnings. But the extent to which hours changes influence weekly earnings depends also on whether trends in hours worked are systematically correlated with hourly pay.

If men working in relatively high paid jobs have seen larger reductions in hours than men working in less well-paid jobs, then hours changes are likely to contribute to decreasing inequality. On the other

hand, if hours reductions have been proportionately larger in less well-paid jobs, then hours changes are likely to increase earnings inequality.

A number of previous studies have in fact found that the decline in hours worked among men has been proportionately larger among men working in lower paid jobs than those in higher paid jobs (Belfield et al. 2017, Blundell et al. 2018, Clarke and Bangham, 2018).

Our analysis confirms this relationship, but only for the period until 2010. Since 2010 there is no clear systematic relationship between pay and hours changes – although if anything, hours have increased slightly more in less well-paid jobs than higher paid jobs (Chart 3.1).

This finding – that hours worked declined more in low-paying rather than high paying jobs until 2010, but reversed slightly after 2010 – is consistent across the three data sources, LFS, FRS and ASHE. It is illustrated graphically in chart 3.1 (the same pattern is observed when looking at all men, but Chart 3.1 focuses on men aged 25-54 so as to abstract from changes in labour market participation by younger and older workers).

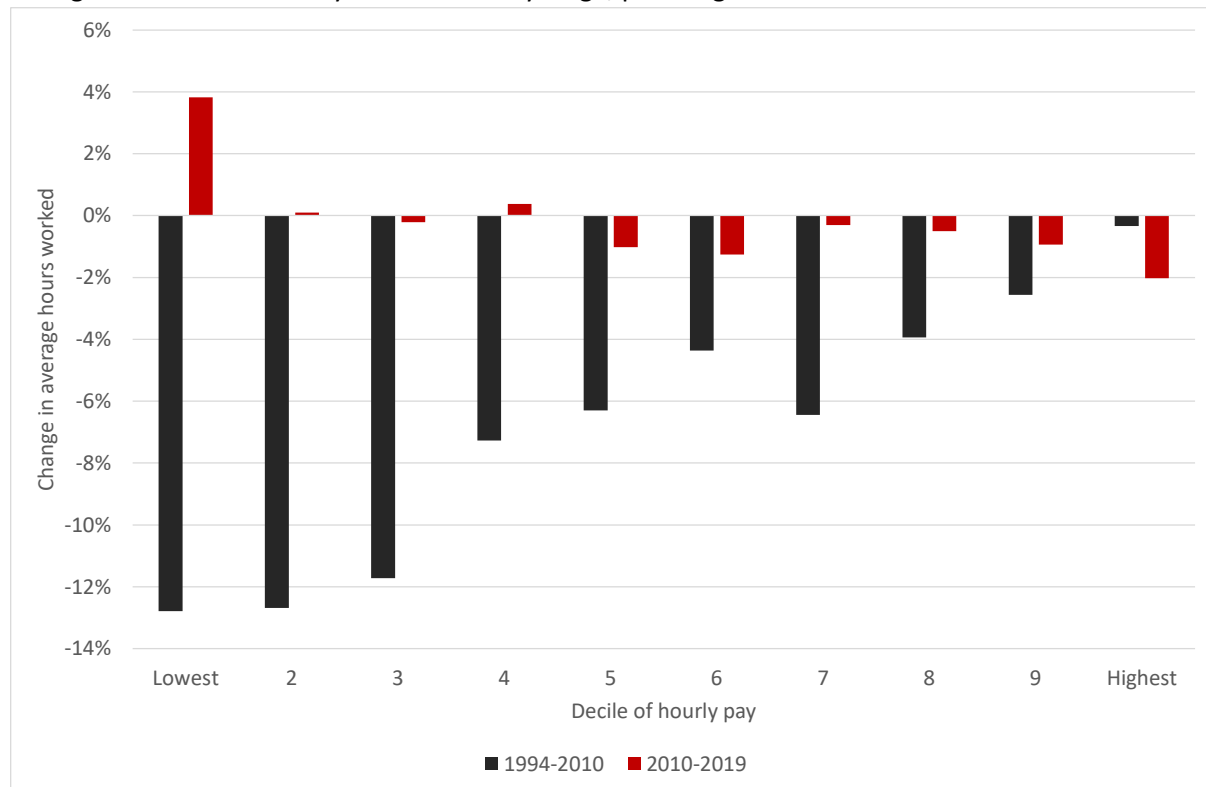
Between 1994 and 2010, average hours worked declined by over 11% amongst men working in the lowest paid third of the distribution of hourly wages, but around 5-6% of those in the middle of the distribution of hourly wages, and by less than 3% for those in the top two deciles.

Since 2010, the trend of the previous period has reversed somewhat, with average hours worked increasing most amongst the lowest paid and declining slightly amongst the higher paid.

Choosing 2010 as the break point for analysis could be criticised, as the trend might simply reveal a cyclical effect, with hours declining in low paid jobs following the recession. But the annual data clearly shows that the trend is fairly linear between 1994 and 2010; in fact, the shape of the chart is very similar even if 2007 is chosen as the cut off year.

Chart 3.1: Hours worked declined much more in low paid than higher paid jobs until 2010

Changes in hours worked by decile of hourly wage, prime age men



Notes: For each year, employees are allocated to deciles based on their hourly pay. We then calculate average hours worked in each decile of hourly pay. Source: FAI analysis of LFS

The contribution of these changes in hours to earnings inequality can be formalised. Box 3.1 explains how we can decompose the total change in earnings inequality into parts due variance in the level of hours worked, variance in hourly pay, and the correlation between pay and hours worked.

Box 3.1: Decomposing the change in earnings inequality

The variance of the log of weekly earnings can be decomposed into a part due to variance in hours (h), a part due to variance of wages (w), and a part due to covariance between wages and hours:

$$Var(\log(w*h)) = var(\log(w)) + var(\log(h)) + 2cov(\log(w),\log(h))$$

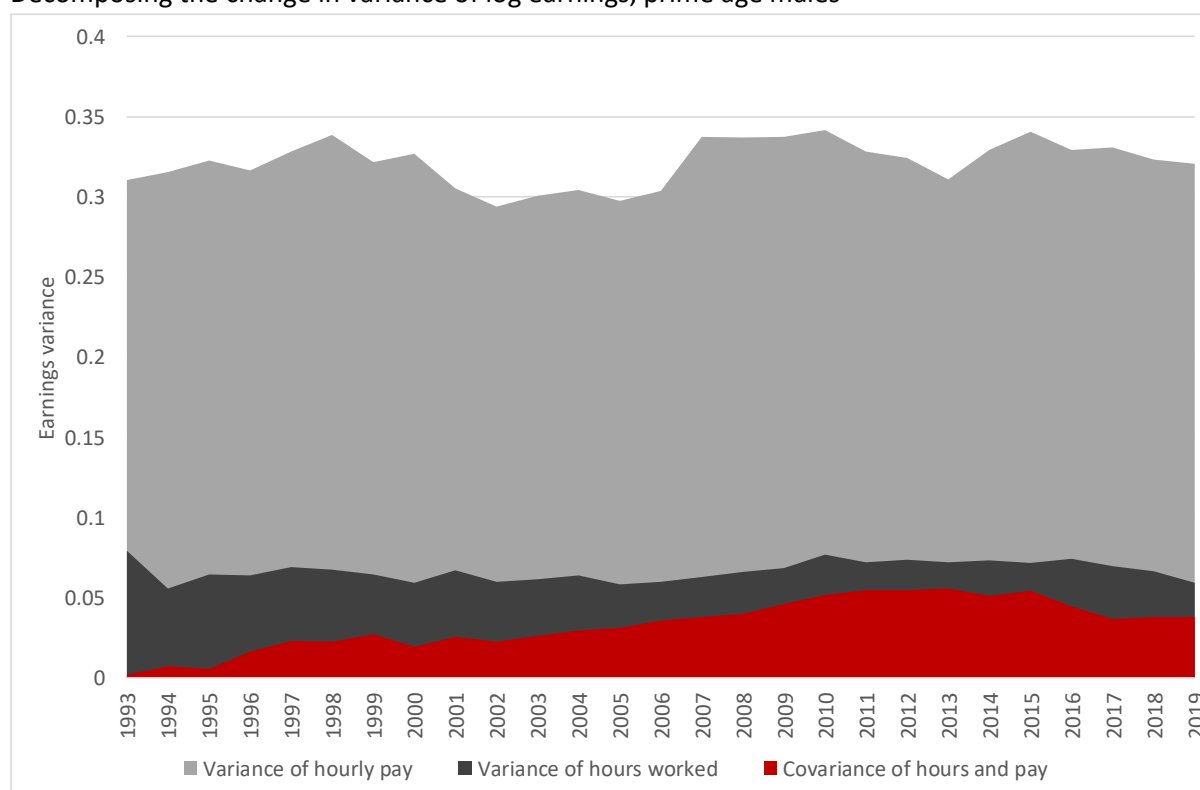
The first part of this equation recognises that variance in weekly earnings is partly a function of the variance in hourly wages, w (greater dispersion in wages will lead to greater dispersion in weekly earnings). The second term recognises that variance in weekly earnings is partly also a function of the variance in hours worked (greater variance in hours worked might be expected to increase variance in weekly earnings, even if it was uncorrelated with hourly pay). Finally, the third term recognises that the covariance of wages and hours is also important – this is the part of the identity which quantifies the contribution of the pattern shown in Chart 3.1 to overall earnings inequality.

Chart 3.2 shows the results of this decomposition. Most of the variance in male weekly earnings is due to variance in hourly pay. Variance in hours worked in itself contributes little to earnings variance, reflecting the fact that the majority of men continue to work full time. Variance of hours worked has actually fallen somewhat over the period, partly as a result of a fall in the proportion of men working very long hours.

But increasing covariance of hours and pay has acted to increase earnings variance. In 1993, covariance of hours and pay contributed nothing to inequality of earnings: low paid men worked similar hours to those on higher pay. By 2010, increased covariance between pay and hours, as a result of the larger falls in hours by low paid men, contributed 11% to the total variance in earnings, before declining somewhat.

Chart 3.2: Changes in the pattern of hours and pay acted to increase earnings inequality among men

Decomposing the change in variance of log earnings, prime age males



Source: FAI analysis of LFS

Hours changes have reduced earnings inequality among women

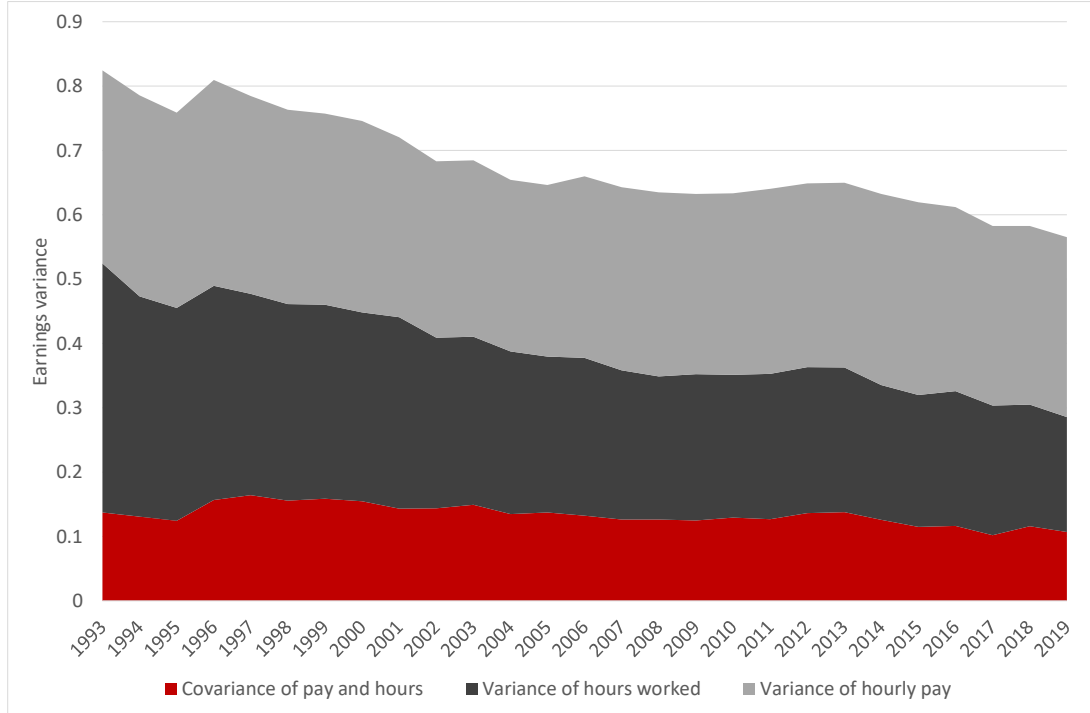
At the start of our research period in the mid-1990s, earnings inequality was much higher among women than among men (Chart 3.3). This reflected a much greater dispersion of total hours worked, and a higher covariance of pay and hours.

Earnings variance among women has fallen quite substantially in the subsequent years. This largely reflects a narrowing of the dispersion of hours worked – driven in part by an increase in hours worked by part-time females, narrowing the gap between part-time and full-time earnings. But variance of hourly pay has also declined, as has the covariance of pay and hours.

The reduction in covariance of hours and pay is illustrated further in Chart 3.4, which shows that hours worked have increased proportionately faster among low paid than higher paid jobs.

Chart 3.3: Earnings inequality has fallen among women, driven by a narrowing of the dispersion of hours

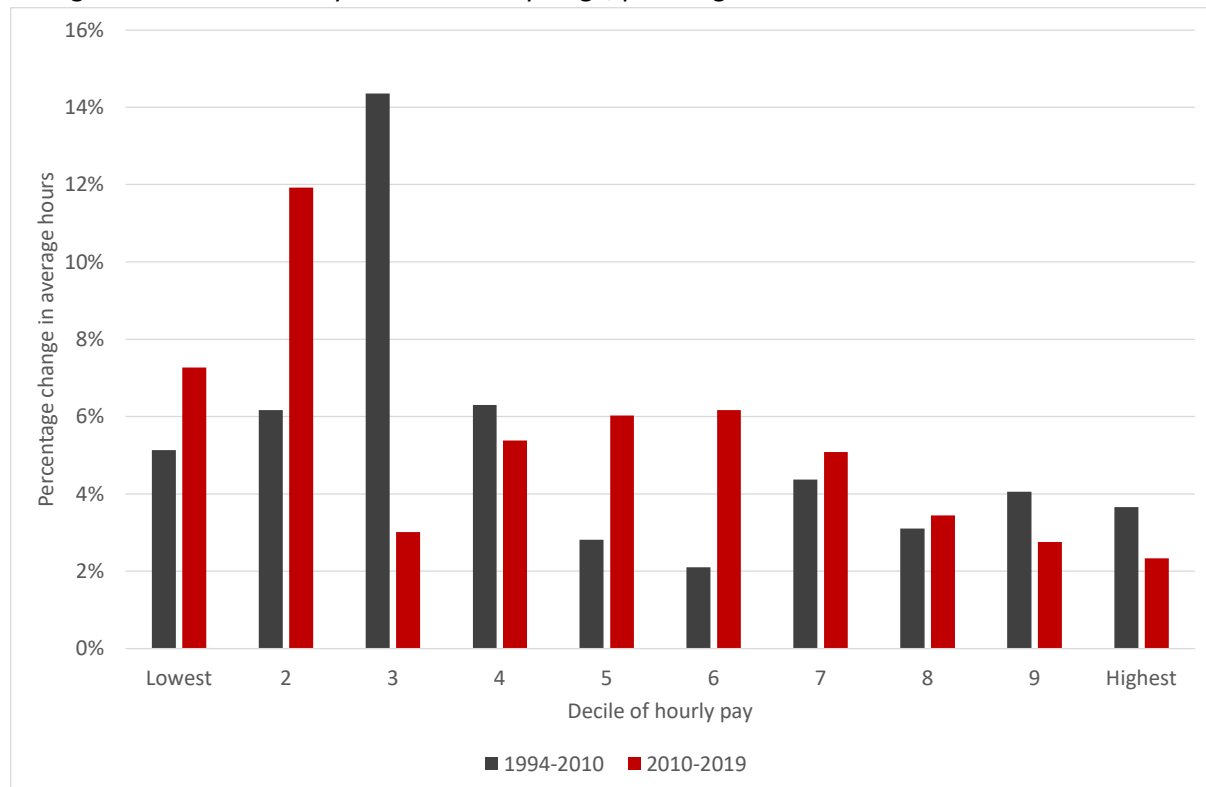
Changes in hours worked by decile of hourly wage, prime age females



Source: FAI analysis of LFS

Chart 3.4: For women, hours worked have increased relatively faster in low-paid jobs

Changes in hours worked by decile of hourly wage, prime age females



Source: FAI analysis of LFS

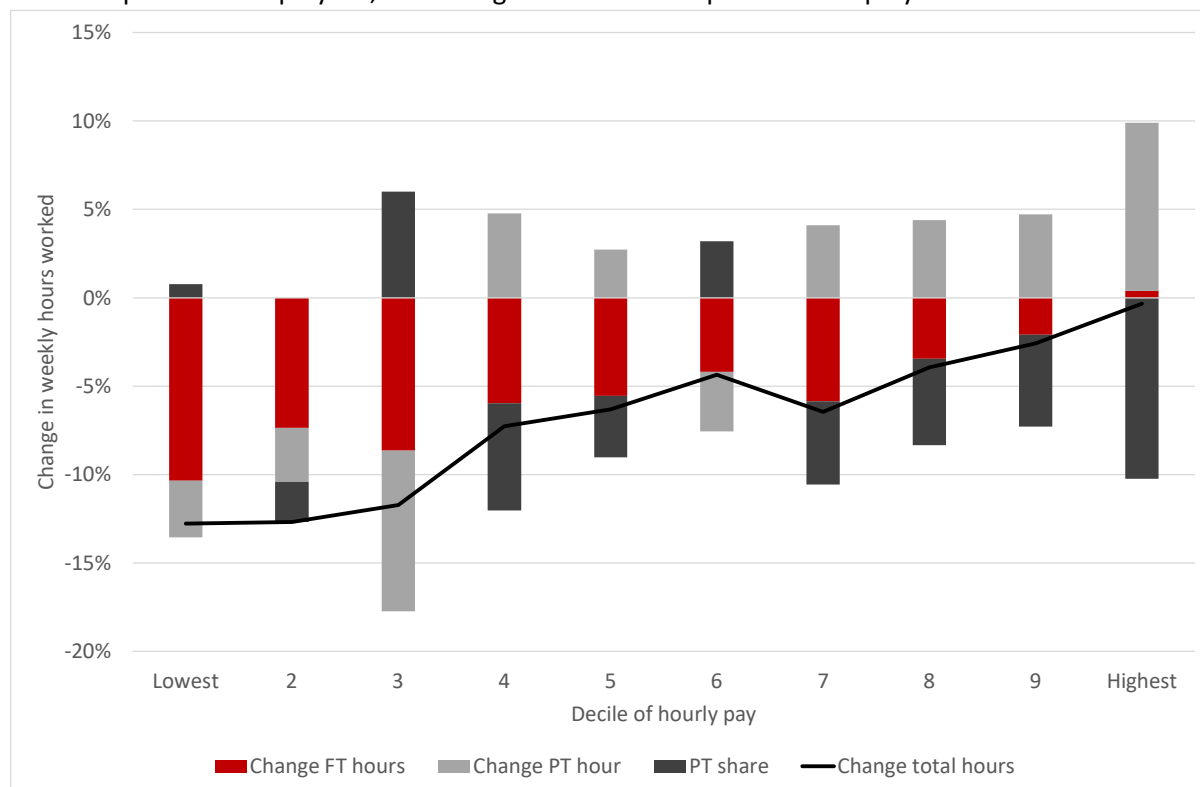
Falling full-time hours accounts for a significant part of the hours reduction among low-paid men

Why might male hours have fallen more amongst low-paid men than higher paid men in the period up until 2010? One way to begin to think about this is to decompose the hours changes by decile into parts due to changes in full-time hours, changes in part-time hours, and changes in the composition of full and part time work (Chart 3.5).

This indicates that the disproportionate fall in hours among low-paid jobs was largely due to larger falls in average hours of full-time workers (combined with increases in part-time hours in higher paid jobs).

Chart 3.5: male full-time hours fall disproportionately in low-paid jobs prior to 2010

Decomposing change in male hours worked between 1994-2010 into change in average hours of full time and part time employees, and change in the share of part-time employees



Falling overtime accounts for a significant share of the decline in male full-time hours worked, but not the distributional impact

The disproportionate fall in hours among low-paid jobs might have demand-side or supply-side explanations.

A potential supply-side explanation is that rising female employment in couple families might induce men to reduce their hours, either in response to the increase in household income, or, in families with children, due to the need for sharing of childcare commitments. If this explanation held, we might expect to see a proportionately faster decline in hours worked amongst coupled men compared to single men, in each decile of hourly pay. But there is no evidence of this in the LFS. Moreover, we also used the FRS to consider the relationship between men's hours and the employment status of the female in the couple. But there is no evidence that men's hours of work fell more amongst men in couples where the female is employed relative to men in couples where the female is not employed.

A potential demand-side explanation is a fall in availability of overtime. Bell and Hart (2019) document a substantial fall in the level of paid overtime in the UK, a fall which was concentrated amongst full-time men in the period up until 2010. Bell and Hart (2019) provide a variety of explanations for falling incidence and amounts of overtime, including firms' attempts to control costs, combined with a decline in collective bargaining.

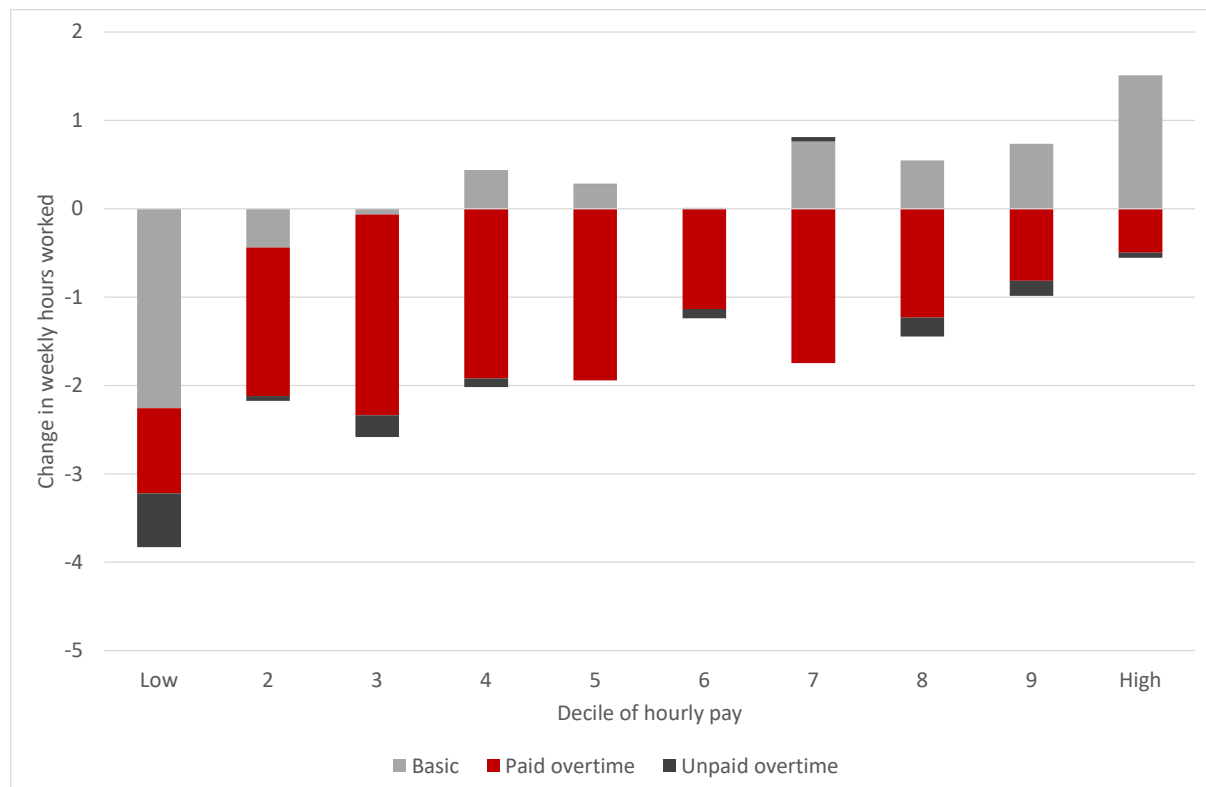
Indeed, when we decompose the changes in full-time hours by decile further – into a part due to falling basic hours and a part due to falling overtime – we find that falling overtime accounts for a

significant part of the fall in male full-time hours (Chart 3.6). However, in the lowest decile, it is the fall in basic hours that dominate; whilst in the top two deciles, increases in basic hours more than offset the fall in paid overtime. So, whilst trends in overtime can account for a significant part of the fall in male hours, they cannot really explain the variation in trend across the distribution.

The explanation as to why male hours declined proportionately more in low-paid relative to high-paid jobs in the period up to 2010 therefore remains somewhat unresolved: the trend is not obviously linked to males in older or younger demographic groups or to those in particular family types, which mitigates against obvious labour supply factors. On the other hand, as we will see below, the disproportionate fall in hours in low-paid jobs did not coincide with a disproportionate increase in underemployment.

Chart 3.6: Falling overtime accounts for a large part of the reduction in male full-time hours

Decomposing change in male hours worked by full-time males between 1994-2010 into change in basic hours and overtime



Source: FAI analysis of LFS

Hours changes have contributed to a narrowing of the gender earnings gap

The convergence in average hours worked by males and females is the main factor contributing to the narrowing of the gender earnings gap since 1994. In 1994, women's average weekly earnings were 45.2% less than men's, and by 2019 they were 36.1% less. Of this 9.2 percentage point narrowing in the earnings gap, 1.5 percentage points can be accounted for by a narrowing in the gap

in average hourly pay, and the remaining 7.7 percentage points is accounted for by the convergence in average hours worked¹.

¹ It is arguably more important to consider changes in median earnings between males and females, rather than the mean. Disaggregating the median is however much less straightforward, but is a piece of analysis we will undertake in the final report.

4. Underemployment

The previous chapter showed that there have been some quite significant changes in the number of hours worked by particular labour market groups. This chapter considers the extent to which these changes have been associated with changes in underemployment, a measure of dissatisfaction with hours worked.

Key points

- Economic theory argues that workers choose how many hours to work based on their preferences for income relative to leisure (or non-work) time. The observation that one group is working fewer hours than another, or fewer hours than it used to, is arguably only a concern for policy-makers where hours worked diverge significantly from desired hours.
- Underemployment is measured by asking those in employment how their desired hours differ from their usual hours of work. Specifically, workers are asked whether they would like to work longer hours at their current basic rate of pay, given the opportunity.
- Consistent with others' findings, we find that the underemployed are consistently more likely to be young, working in low-paid jobs, and less well qualified.
- Looking over time, the proportion of workers who are underemployed is not correlated in any way with changes in hours worked. Instead, the rate of underemployment seems to be driven by changes in real net income. The underemployment rate increased substantially in 2009/10 and increased to 2013/14, coinciding with falling real pay and household incomes but largely unchanging patterns of hours worked. Since 2014 underemployment has been falling gradually, coinciding with weak growth in real pay.
- This suggests that underemployment is really a proxy for a more general dissatisfaction with the level of income from work – or the security of that income. The trend for underemployment to rise substantially in the aftermath of the financial crisis – and for underemployment to remain elevated in 2019 relative to before the financial crisis – is common across the majority of European countries. However, there remains some questions around the extent to which relatively high underemployment is the result of weak wage growth, or whether underemployment is itself a cause of weak wage growth.
- In the next stage of our work we plan to investigate the role of household level factors in influencing trends in underemployment, considering how issues like the earnings status of household members and housing costs affect underemployment, which may help shed light on the preceding question.

Underemployment is associated with higher rates of depression and unhappiness

Analysing patterns of hours worked or changes in those patterns over time does not in itself tell us anything about how satisfied workers are with those hours. Economic theory would predict that workers choose how many hours to work based on their preferences for income relative to leisure (or non-work) time. In this sense, the observation that one group is working fewer hours than

another, or fewer hours than it used to, is not necessarily a cause for concern. Arguably, policy-makers should only be concerned about the welfare implications of hours where hours worked diverge significantly from desired hours.

Underemployment is measured by asking those in employment how their desired hours differ from their usual hours of work. Specifically, workers are asked whether they would like to work longer hours at their current basic rate of pay, given the opportunity².

Bell and Blanchflower (2019a) show that the underemployed are more likely to suffer from depression, and are more likely to be anxious and unhappy, compared to workers who are not underemployed. They point out however that these does not necessarily imply that underemployment is the cause of these associations: it may be that depression affects underemployment, or that other unobserved variables affect both depression and underemployment.

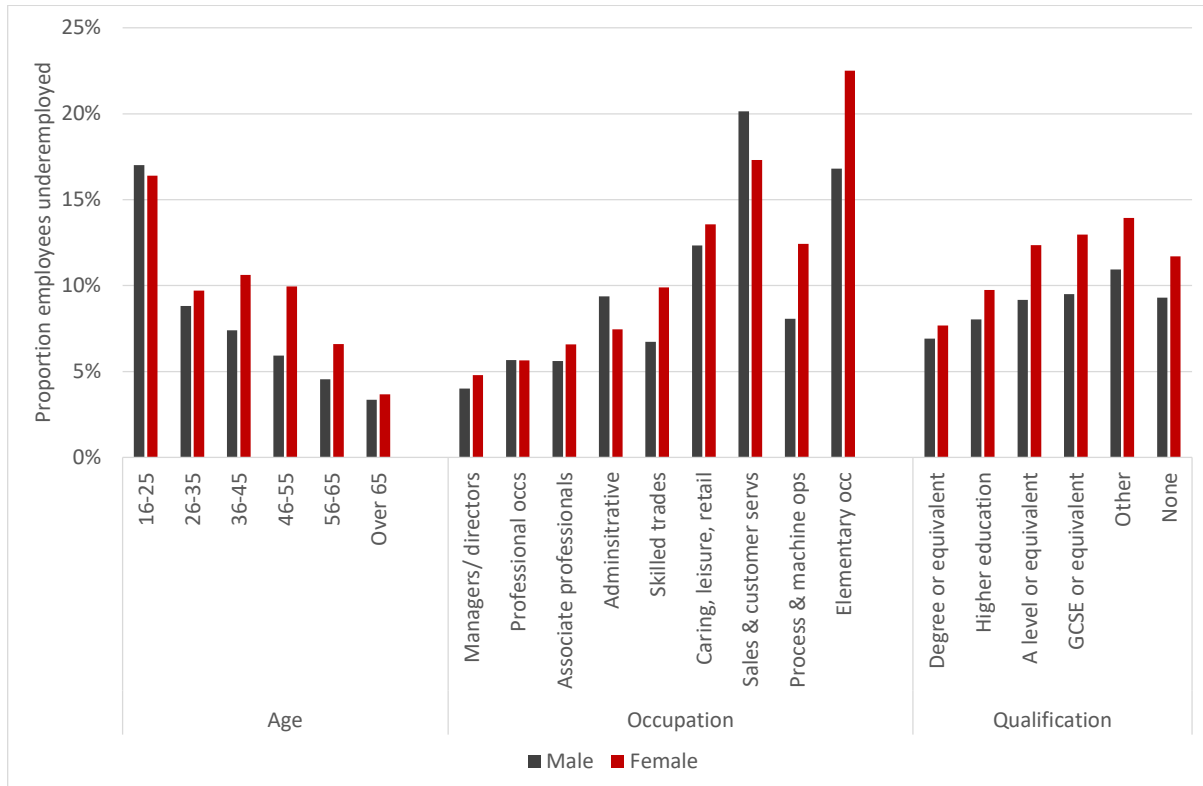
The underemployed are more likely to be young, less qualified, and low-paid

Who are the underemployed? Our analysis shows that underemployed workers – those who would like to work longer hours – are consistently more likely to be young, working in low-paid jobs, be less well qualified (Chart 4.1). These findings are very much in line with others (e.g. Bell and Blanchflower, 2013). As we show later, underemployment is also higher among those in various forms of insecure work.

² The measure of underemployment we use here should not be confused with skills underutilisation, which is sometimes also referred to as underemployment.

Chart 4.1: Underemployment is highest amongst the young and those working in low-paid occupations

Proportion of male and female employees who would work longer hours at current wage if given the opportunity, by age, occupation and highest qualification



Source: FAI analysis of LFS

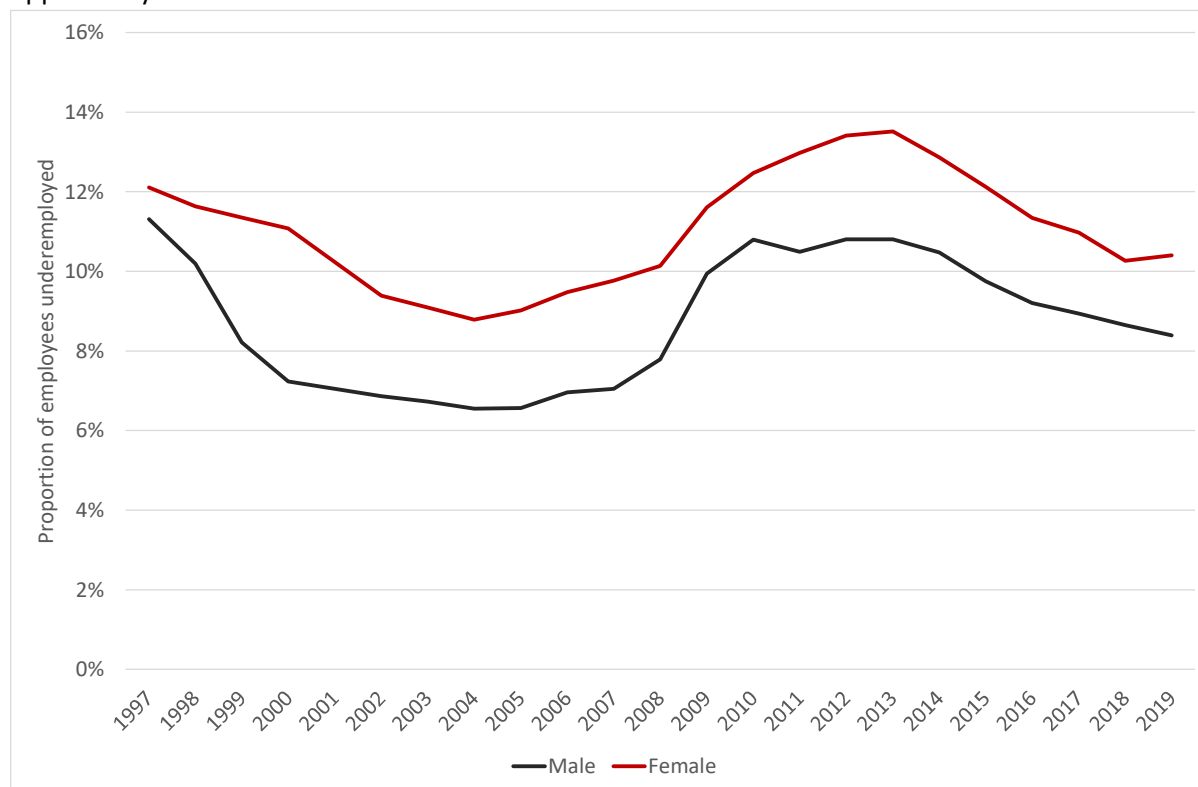
Underemployment peaked following the financial crisis, but remains elevated

What is perhaps more interesting is to consider trends in underemployment over time. For both men and women, underemployment rates declined from the late 1990s (when data on underemployment was first collected) to around 2004/5. It then began increasing gradually until 2008, before increasing substantially in 2009, and remaining elevated until 2014.

Underemployment has been declining since 2014, but only gradually. Strikingly, underemployment remains above its pre-recession levels (Chart 4.2).

Chart 4.2: Underemployment increased following the financial crisis

Proportion of male and female employees who would work longer hours at current wage if given the opportunity



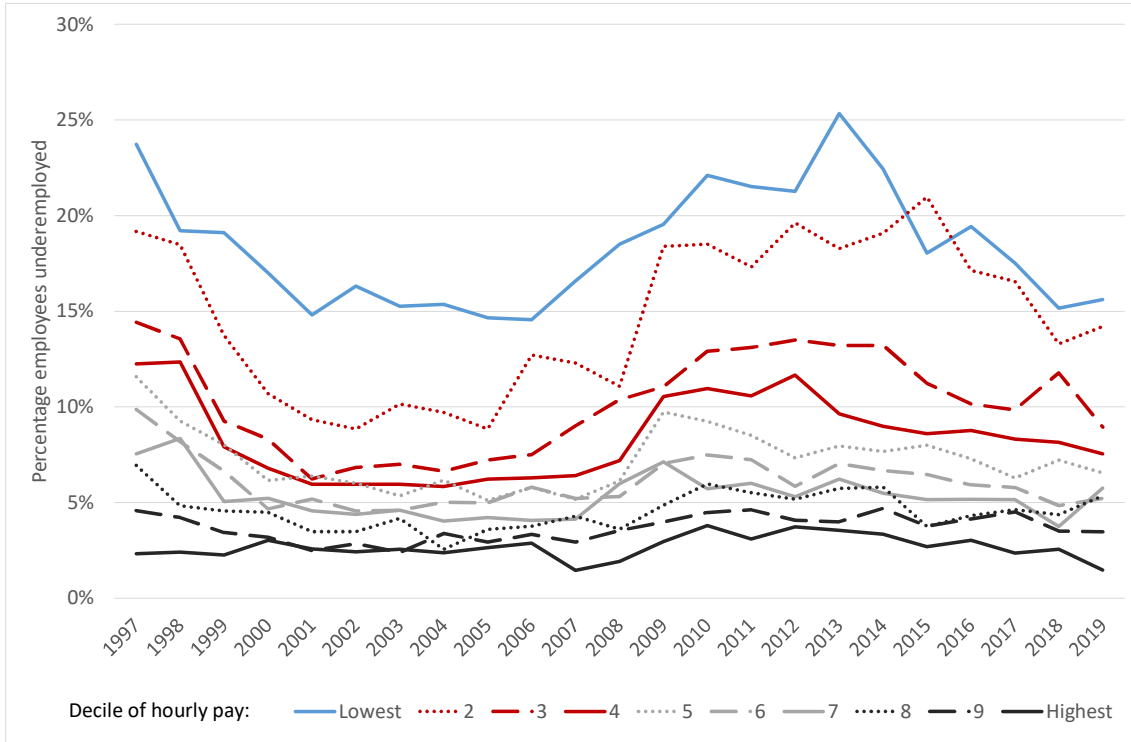
Source: FAI analysis of LFS

This trend in underemployment over time – falling until the mid-2000s, increasing gradually until 2008 before becoming particularly elevated between 2009 and 2014 – is common to all groups of worker: young and old, those with high levels of qualification or few qualifications, and those of different family type. The trend over time is also common across workers across the distribution of hourly pay (Chart 4.3). By 2019, underemployment remained higher than it was in the mid-2000s for most of the hourly pay deciles in the bottom half of the pay distribution. For those in jobs in the top half of the pay distribution, underemployment increased only slightly following the financial crisis, and has since returned to pre-crisis rates.

This suggests that, when we look over time (rather than at a particular point in time), the proportion of workers who are underemployed seems to have little relation to hours worked. Among men, underemployment was largely falling prior to 2010 – when hours were declining – and it increased significantly after then, when hours worked were stable. And in the pre-2010 period, male underemployment actually fell most amongst low-paid men, whose hours of work, as we saw earlier, declined relatively more than those in higher paid jobs.

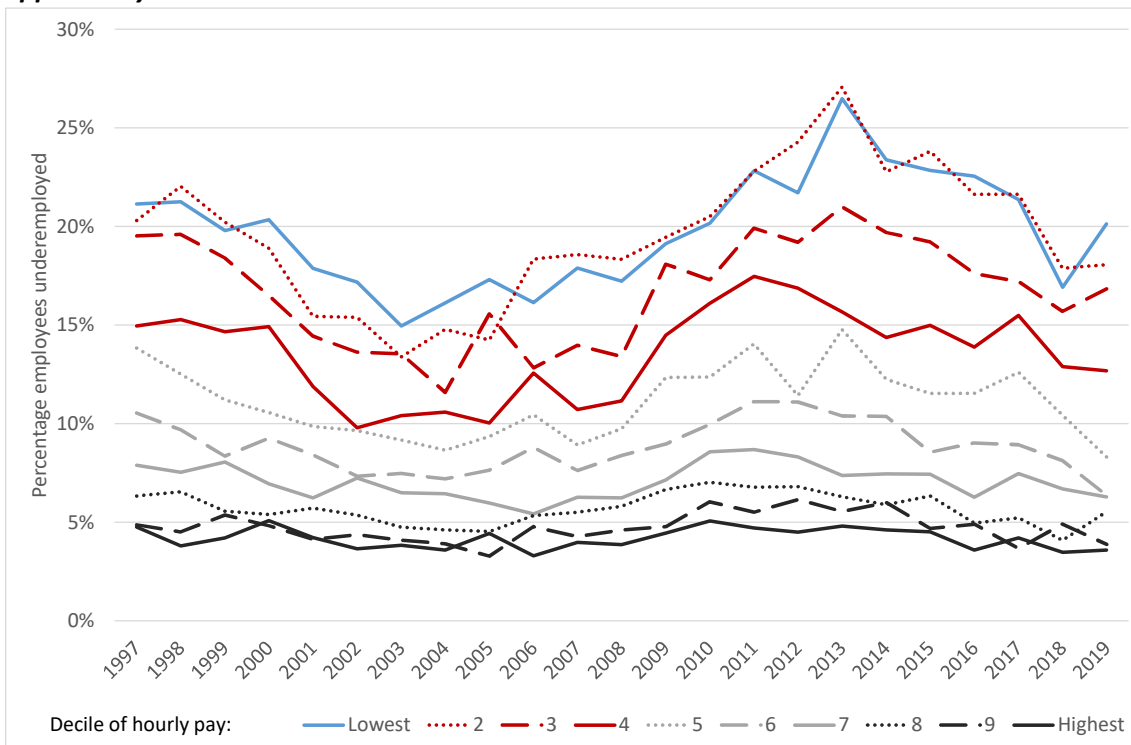
Similarly, for women, the big increase in underemployment coincided with an increase in hours worked.

Chart 4.3: Underemployment is consistently higher in lower-paying jobs
Proportion of male employees who would work longer hours at current wage if given the opportunity



Source: FAI analysis of LFS

Proportion of male employees who would work longer hours at current wage if given the opportunity



Source: FAI analysis of LFS

So underemployment seems to have fallen most when hours worked were falling, and increased in the post 2010 period when hours worked were static. The intuitive explanation is that underemployment is really a proxy for a more general dissatisfaction with the level of income from work. Indeed, Bangham (2020) shows that the initial uptick in underemployment coincided with a slowing of real wage growth, whilst the big increase in underemployment in 2009 coincided with the start of the 'real pay squeeze' (negative real wage growth), and that the underemployment rate only began falling in earnest in 2015 once real wage growth turned positive again.

The trend for underemployment to rise substantially in the aftermath of the financial crisis – and for underemployment to remain elevated in 2019 relative to before the financial crisis – is common across the majority of European countries (Bell and Blanchflower, 2019b). The hypothesis that this trend is due largely to trends in wage growth is persuasive. However, it remains unclear in which direction causation might travel. Bell and Blanchflower (2019b) argue that a high underemployment rate suppresses wage growth by creating slack in the labour market. Others argue that weak wage growth is likely due to other factors, such as weakening productivity, and high underemployment is the result of this weak real wage growth.

In reality, underemployment is most likely to reflect household net incomes (after taxes and benefit income, and essential costs such as housing) rather than gross hourly pay per se. This hypothesis is difficult to test, as none of the major household level surveys include data on underemployment. But in the next phase of our work, we will endeavour to investigate the relationship between household net incomes, poverty and underemployment.

5. Job insecurity, hours and underemployment

Up until now the report has considered trends in hours worked on the assumption that hours worked remain relatively stable throughout the year. But the regularity and predictability of hours matter too. This chapter considers trends in 'atypical' or 'precarious' forms of employment contract that provide work that is either temporary or uncertain, unpredictable and/or insecure from one week to the next.

Key points

- Precarious work can affect worker health and interfere with family schedules and parenting responsibilities.
- This report considers two specific types of 'atypical' work: temporary work and zero-hours contracts (ZHCs). We find that employees on temporary contracts and ZHCs are more likely to be employed in low-paying jobs, and work fewer hours.
- Specifically, workers on temporary contracts work on average eight hours less per week than those on permanent contracts, their typical hourly pay is 17% less, and they are much more likely to be underemployed: almost a fifth of workers on temporary contracts are underemployed (i.e. would like to work longer hours) compared to 8% of those on permanent contracts.
- The differences between those on zero hours contracts and not on zero hours contracts is even more stark. Workers on zero hours contracts work 13 hours fewer per week than those not on zero hours contracts, they are paid on average a third less, and 29% are underemployed.
- Perhaps more strikingly, we find that temporary contracts and zero hours contracts are associated with lower pay, fewer hours and higher underemployment, even after controlling for a wide range of job and individual characteristics.
- Specifically, we find that underemployment is significantly higher for workers on zero hours contracts and temporary contracts even after controlling for the fact that workers on these contracts are typically younger, less well paid and work fewer hours. This suggests that for a significant proportion of workers on these types of contract, any benefits of increased flexibility are offset by increased inconvenience and insecurity which manifests as a higher rate of underemployment.

Precarious forms of employment can affect health and wellbeing, but it is not clear whether insecurity is increasing

So far, we have simply considered hours worked. But the regularity and predictability of hours matter too. There has been much commentary and concern in recent years about the apparent growth in 'atypical' or 'precarious' forms of employment contract that provide work that is either temporary or uncertain, unpredictable and/or insecure from one week to the next. This is

sometimes referred to as the casualization of the labour market. Recent research found that 1.7 million UK workers were anxious that their working hours could change unexpectedly (Felstead et al. 2017).

Precarious work can affect worker health and interfere with family schedules and parenting responsibilities, putting strain on family relationships and jeopardizing children's well-being (Heymann, 2000; Presser, 2003; Henly et al., 2006; Johnson et al. 2010; McCrate, 2012; Henly and Lambert, 2014).

It is however difficult to find hard evidence of increasing job insecurity in labour survey data, considering factors such as turnover rates or tenure (Manning and Mazeine, 2020). Similarly, we have analysed the difference over time between workers 'usual' hours and 'actual' hours, when the reason given for variation between usual and actual hours is that hours worked do vary from week-to-week (usual and actual hours can differ for many reasons, most commonly if an employee takes leave or is ill in a given week). We find no evidence that this difference between usual and actual hours when hours vary – which could be a proxy for uncertainty about hours from one week to the next – has increased over time.

Given the comparative lack of evidence that job insecurity has increased, Manning and Mazeine (2020) consider whether employees' subjective measures of job insecurity have increased in the UK, Germany and the US. They find, somewhat counterintuitively, no evidence of any upward trend in job insecurity over time. Moreover, the authors find that, whilst *workers* on temporary or fixed-term contracts report less job security than those on permanent contracts, subjective job security for this group of workers has in fact risen over time in line with the security of workers in more traditional work settings, with this trend common across the UK, Germany and the US.

This report considers two specific types of 'atypical' work: temporary work and zero-hours contracts (ZHCs).

ZHCs are an employment contract under which a worker is not guaranteed any hours and is only paid for work carried out. ZHCs can offer flexibility to both the employer and the employee, and, as a result, some workers may prefer them to typical fixed hour employment contracts. Conversely, due to the lack of security and guaranteed income, they are unlikely to be suitable for many workers (Datta et al. 2018). ZHCs feature in many other countries' employment structures (Datta et al. 2018).

ONS analysis of the Labour Force Survey shows that the prevalence of zero-hours contracts rose from 0.5% of those in employment in the mid 2000s to 3% (974,000 jobs) by 2019. Women are more likely to be on a zero hours contract than men (3.6% of women v. 2.4% of men in 2019). The young and the old are much more likely to be on a zero-hours contract than those of prime age. Zero hours contracts are particularly prevalent amongst caring, leisure and other service operations, and elementary occupations.

Why might the prevalence of ZHCs have increased over time? On the one hand, it has been speculated that many low-paid workers entering such arrangements do so out of necessity rather than choice, given a lack of bargaining power to secure more stable contracts. On the other hand, ZHCs offer advantages to employers in reducing wage liabilities and coping with demand fluctuations.

Datta et al. (2018) find that increases in the UK minimum wage have resulted in an increased use of ZHCs in the social care sector, and in low wage sectors more generally, suggesting that firms exploit the flexibility of ZHCs in order to buffer the wage cost shock induced by the minimum wage increase.

This finding may have implications for policy proposals to establish a higher minimum wage for ZHC workers. In theory, a higher minimum wage may also mean that employees are more willing to work shorter hours, but whether it compensates them for both shorter hours and increased uncertainty for those hours is unclear, but probably doubtful (discussed further below).

Temporary work can include seasonal or casual work, being contracted for a fixed period or task, and undertaking work on behalf of an agency. There were 1.5 million temporary employees in the UK at the beginning of 2020. Females are consistently more likely to work temporary contracts than males. The proportion of males and females working on a temporary contract increased somewhat following the 2008 recession until around 2013 (to 4% and 5% of prime age males and females respectively), but since then has fallen back to the 2008 level.

Males and females on temporary contracts consistently work fewer hours than their counterparts on non-temporary contracts. But trends over time are very similar for those on temporary contracts: for males, average hours worked declined 6% between 2002 -2010 and have remained broadly stable since then. For women on temporary contracts, average hours increased slightly (2%) between 2002-10, and more significantly (5%) between 2010-19.

Employees on temporary contracts and ZHCs are more likely to be employed in low-paying jobs, and work fewer hours

Table 5.1 shows average hours worked, hourly pay and underemployment for workers on temporary contracts and zero-hours contracts, compared with workers not on those forms of contract.

Workers on temporary contracts work on average eight hours less per week than those on permanent contracts, their typical hourly pay is 17% less, and they are much more likely to be underemployed: almost a fifth of workers on temporary contracts are underemployed (i.e. would like to work longer hours) compared to 8% of those on permanent contracts. Furthermore, workers on temporary contracts who report being underemployed would like to work more additional hours than the underemployed on permanent contracts.

The differences between those on zero hours contracts and not on zero hours contracts is even more stark. Workers on zero hours contracts work 13 hours fewer per week than those not on zero hours contracts, they are paid on average a third less, and 29% are underemployed.

Table 5.1: Temporary contracts and ZHCs are associated with lower pay, fewer hours and higher underemployment

Hours worked, hourly pay, and underemployment for two types of 'atypical' work

	Temporary contract		Zero hours	
	Not temporary	Temporary	Not zero hours contract	Zero hours contract
Usual weekly hours worked	36.7	29.0	36.5	23.6
Hourly pay	£15.6	£13.0	£15.6	£10.3
Percentage underemployed	8%	19%	8%	29%
Additional hours desired by those underemployed	10.8	13.1	11.0	14.2

Notes: each analysis compares the hours/pay/underemployment status of employees with the contract in question to all other employees. This means that the 'not temporary' group may include some employees on zero hours contracts, whilst the 'not zero hours contract' group may include some employees on temporary contracts. Source: FAI analysis of LFS

Employees on temporary contracts and ZHCs are more likely to be underemployed, even after controlling for their pay and hours

Of course, it is likely that the types of worker who has a temporary or zero hours contract are systematically different from the 'average' worker. In this sense, it might be more instructive to consider how hours, pay and underemployment differ for these contract types for similar types of worker.

Table 5.2 shows average hours worked, hourly pay and underemployment for workers on temporary contracts and zero-hours contracts, compared with workers not on those forms of contract, after having controlled for workers' characteristics. The characteristics controlled for include age, sex, qualifications, region, family type (e.g. single/couple and with/without children), occupation, and for underemployment, hours worked and hourly pay.

Table 5.2: Temporary contracts and ZHCs are associated with lower pay and higher underemployment even after controlling for characteristics of the job and employee

Hours worked, hourly pay, and underemployment for two types of ‘atypical’ work, controlling for characteristics of job and employee

	Temporary contracts		Zero hours contracts	
	Raw differential	With controls	Raw differential	With controls
Hours	-7.7	-5.5	-12.6	-6.7
Log pay	-0.23	-0.08	-0.43	-0.10
Underemployment	10.0%	2.9%	19.8%	5.1%

Source: Labour Force Survey. N=78,000. Controls include sex, age, highest qualification (6 categories), occupation (9 categories), family type (4 categories), region (12 categories). The underemployment regression also controls for hours worked and hourly pay. The hours regression controls for hourly pay; the log pay regression controls for whether individual works full or part-time.

This analysis reveals that temporary contracts and zero hours contracts are associated with lower pay, fewer hours and higher underemployment, even after controlling for a wide range of individual characteristics.

The finding that underemployment is 3 percentage points higher amongst those on temporary contracts, and 5 percentage points higher amongst those on zero-hours contracts – even after controlling for hours worked and pay – suggests that these types of contract do impose constraints on hours.

The finding that underemployment is higher for workers on zero hours contracts mirrors the findings from Canada that hours worked are lower and underemployment is higher among workers on ‘unstable’ work schedules (McCrate et al. 2019). By using longitudinal data that enables them to track how hours and underemployment change when employees move from a ‘stable’ to an ‘unstable’ hours schedule, they conclude that ‘underemployment and hours worked are heavily influenced by employers’ labour flexibility practices that create unstable work hours, not just by employees’ characteristics and personal responsibilities’. The authors find no evidence that employers reward employees on ZHCs with more hours or higher pay – despite the fact that it is the employees who absorb the inconvenience and insecurity associated with unstable hours but the employers who benefit from the enhanced flexibility.

6. From individuals to households

Up until now the report has largely considered the hours worked by individuals. But household level measures of inequality and poverty are influenced by the ways in which hours worked are distributed across and within households. This chapter considers how hours worked are distributed across households, and how important hours worked are in influencing whether a working household is in relative poverty.

Key points

- Employees in the lower deciles of the household income distribution do tend to work fewer hours than those in the top half of the income distribution. This is true both for the main earner in a household and the second earner (where there is one).
- This indicates that hours worked is an important factor in influencing a household's position in the income distribution. But the gradient in hours worked across the household income distribution is not particularly steep. The implication is that factors other than hours are important in influencing household income.
- Workers in households in poverty work fewer hours than workers in similar households not in poverty. This observation holds across all household types. For example, single males in poverty work on average 34 hours per week, compared to 40 hours a week for single males not in poverty. In couples without children, the main earner works 39 hours on average in households not in poverty, compared to 34 hours in households in poverty. Average hours worked by a second earner are 35 and 30 for those not in poverty and in poverty respectively.
- Hours worked are therefore important in influencing whether or not a working household is in poverty. But our analysis shows that hours worked are not the most important factor, and working longer hours will often not in itself be enough to move a household out of poverty.
- In the next stage of our research we aim to explore in more detail the linkages between employment status and household income. For example, to what extent are workers on various forms of insecure employment contract at higher risk of household income poverty?

Up until now we have mainly considered patterns of hours worked at an individual level. But we are also interested in understanding how hours worked influence household incomes, and poverty.

When considering the distribution of household income, it is standard to look at income from all sources (including social security payments as well as earnings from work and income from other sources such as investments and pensions), and to consider income after (i.e. net of) direct taxes –

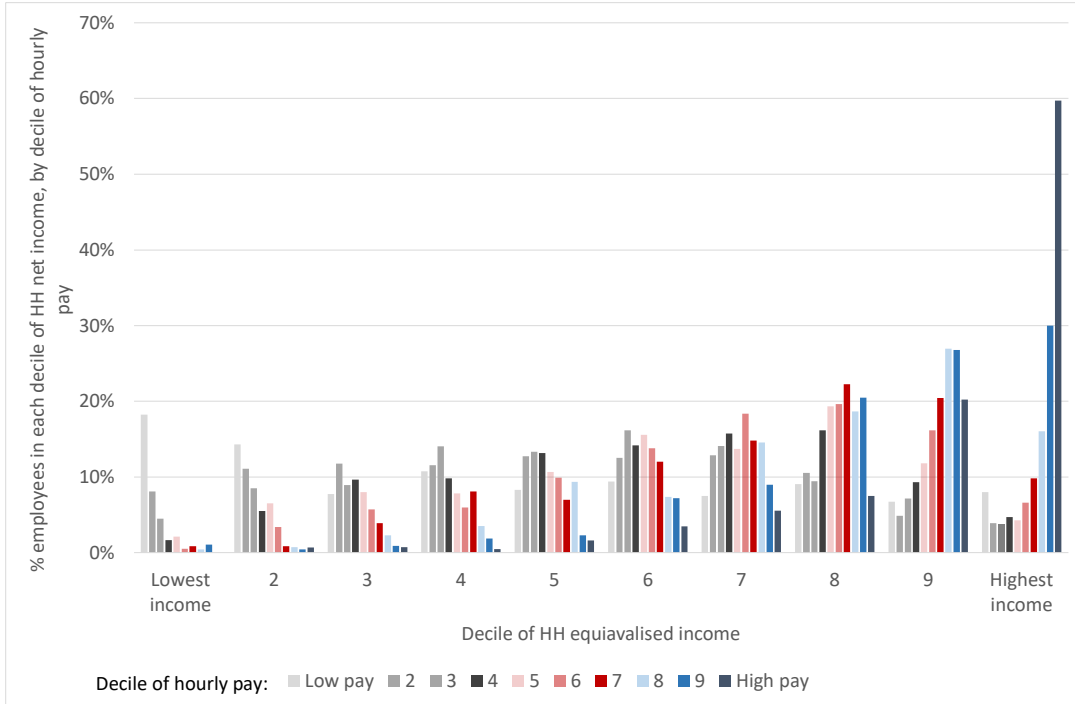
income tax, national insurance and council tax. It is also standard practice to equalise household incomes, in other words to adjust it for the composition of the household³.

The factors determining net equivalised household income are therefore quite complex. There is a relationship between an individual's hourly pay and the decile of net household income that the individual finds themselves in, but it is clearly not a perfect correlation. Chart 6.1 shows how workers in different deciles of the distribution of hourly pay are distributed across deciles of household net income. High wage workers are nearly always found towards the top of the distribution of household net income. But low-wage workers are much more evenly distributed. A reasonable proportion of low-wage employees live in households that are around the median of the household net income distribution. This reflects both that employment in the bottom deciles of household income is low (i.e. there are relatively fewer employees in these deciles than further up the distribution), and more importantly that low-wage workers are often not the primary earner in a household. In our following analysis of how hours worked vary across the distribution, we will distinguish between main earners and non-main earners.

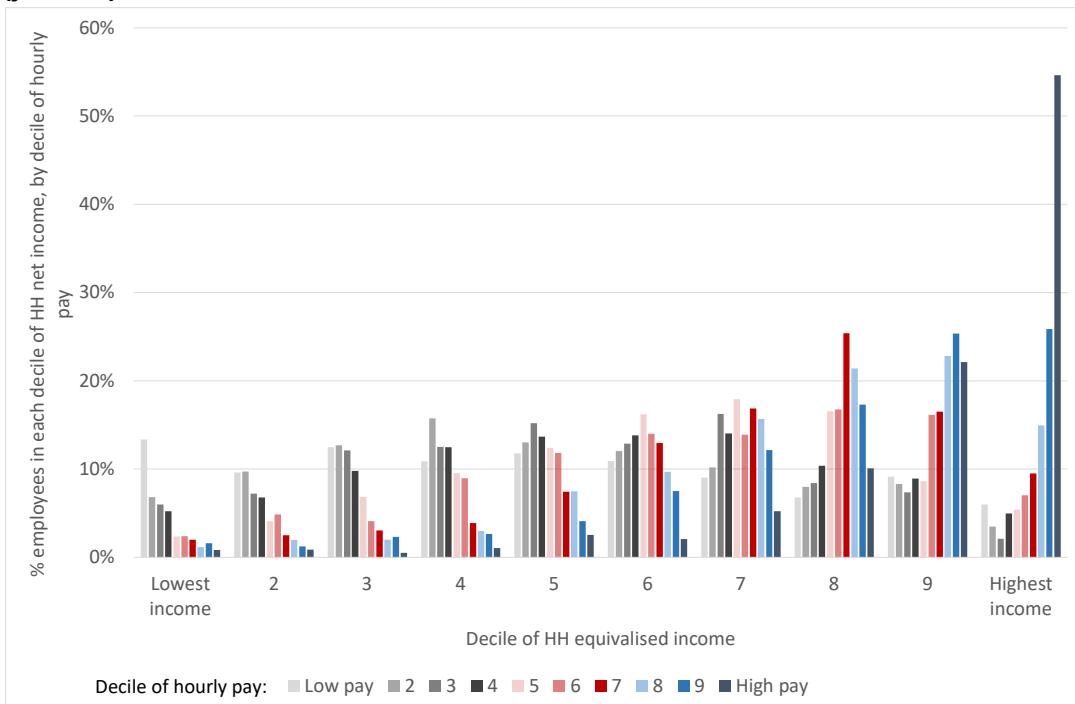
³ Equivalisation takes into account the fact that a weekly household income of say £400 'goes further' for a single person household than a 2-adult household, and further still than for a household with 2 adults and one or more children.

Chart 6.1: Low wage employees are found throughout the distribution of household net income

Distribution of employees, by decile of hourly pay, across deciles of household net income (males)



Distribution of employees, by decile of hourly pay, across deciles of household net income (females)



Source: FAI analysis of FRS/ HBAI

Higher income households tend to work longer hours

To begin shedding light on these issues, chart 6.2 shows how hours worked vary across the distribution of household net income, for both the main earner and the second earner (where there is one).

There is a clear correlation between the decile of household net income and average hours worked for the main earner. Average hours increase from 34 hours in the bottom decile to 40 hours in the seventh, and are around 40 hours per week for the top 30% of the distribution⁴.

Second earners' hours also increase throughout most of the distribution, from 25 per week in decile 3 to 36 in the top decile. Of course, the proportion of two or more adult households with at least two earners is also an increasing function of net income.

A slight puzzle is why second earners' hours appear relatively high in the bottom decile, and this needs further investigation (although there are in fact very few two earner households in the lowest income decile).

⁴ This doesn't mean that nobody works more than 40 hours; on the contrary, the average hours worked are around 40, implying some people work more than this and others work less than this.

Chart 6.2: Higher income households work longer hours

Average hours worked by main and second earners by decile of net HH income



Notes: All households (including working and non-working, working age and pensioner households) are divided into deciles according to net equivalised income. Chart 6.2 then calculates average hours worked by the main earner for all working households. The main earner is defined by identifying the individual in the household with the highest weekly earnings, including both income from self-employment and employee earnings. The x-axis also shows the average weekly equivalised income of each income decile.

Source: FAI analysis of FRS/ HBAI

Households in in-work poverty are characterised by shorter working hours

There has recently been much policy discussion about in-work poverty, defined as the proportion of people living in households with net equivalised income below 60% of the mean where someone is in work (Bourquin et al. 2019).

Why might working households be in poverty? Being employed in relatively low paying work is clearly one explanation, but hours worked matter too. The average weekly hours worked by the main earner in a working household in poverty is around 33, compared to 39 for households not in poverty (Chart 6.3). Second earners in working households in poverty also tend to work fewer hours than second earners not in poverty.

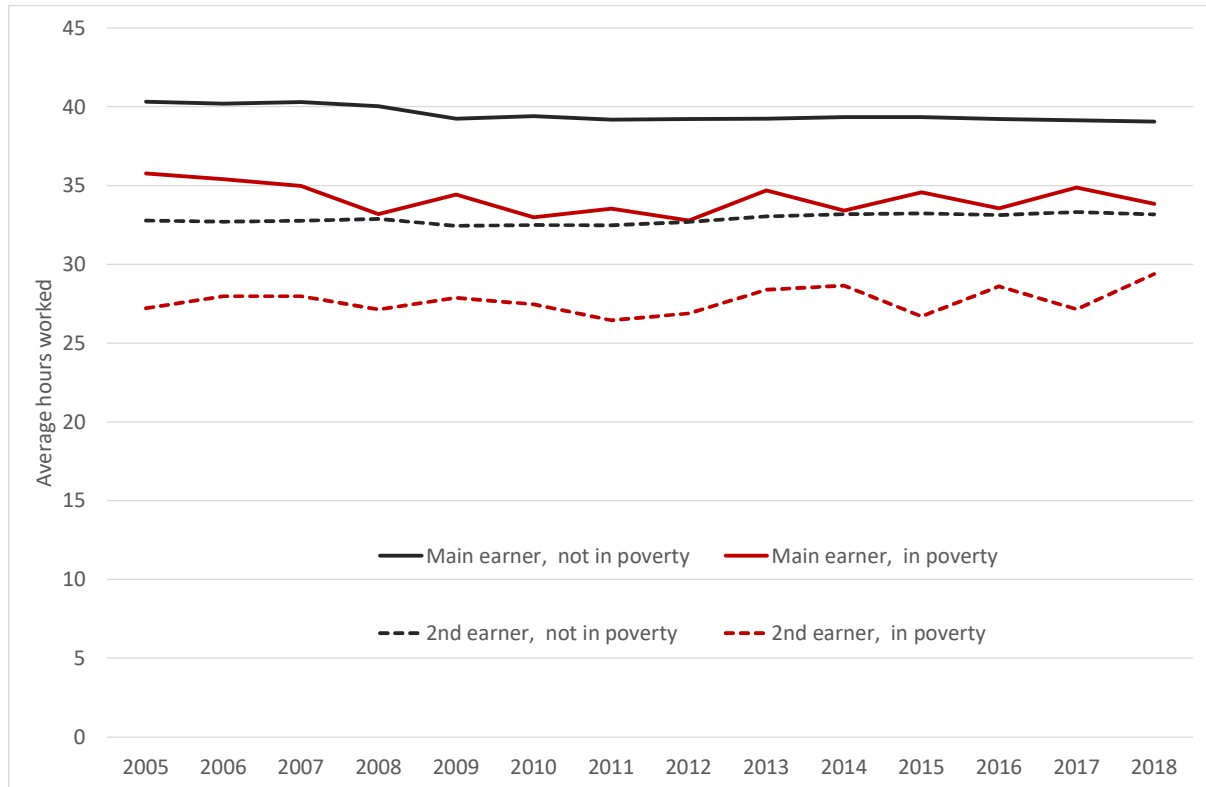
The fact that main and second earners in households in poverty work fewer hours than those not in poverty might not be seen as particularly surprising. But at the same time, it might not in itself be viewed as alarming. The finding could be an artefact of composition: perhaps working households in poverty are proportionately more likely to have young children, and thus work shorter hours (whether through choice or reflecting costs or inadequacies of childcare), perhaps for a relatively temporary phase of their lifecycle.

In fact however, the trend for workers in in-work poverty to work fewer hours than equivalent household types not in poverty is observed across single and couple households, and those with and without children (Chart 6.4).

There are a couple of important points to take from Chart 6.4. The first is the point made already: workers in poverty tend to work fewer hours than those not in poverty, indicating that hours worked are, at least to an extent, a factor influencing the likelihood of being in poverty. But it is also striking that both main earners and second earners work only slightly fewer hours per week on average than their not-in-poverty counterparts. That tells us that there are factors other than hours worked influencing the likelihood of probability.

Chart 6.3: Workers in households in poverty work fewer hours

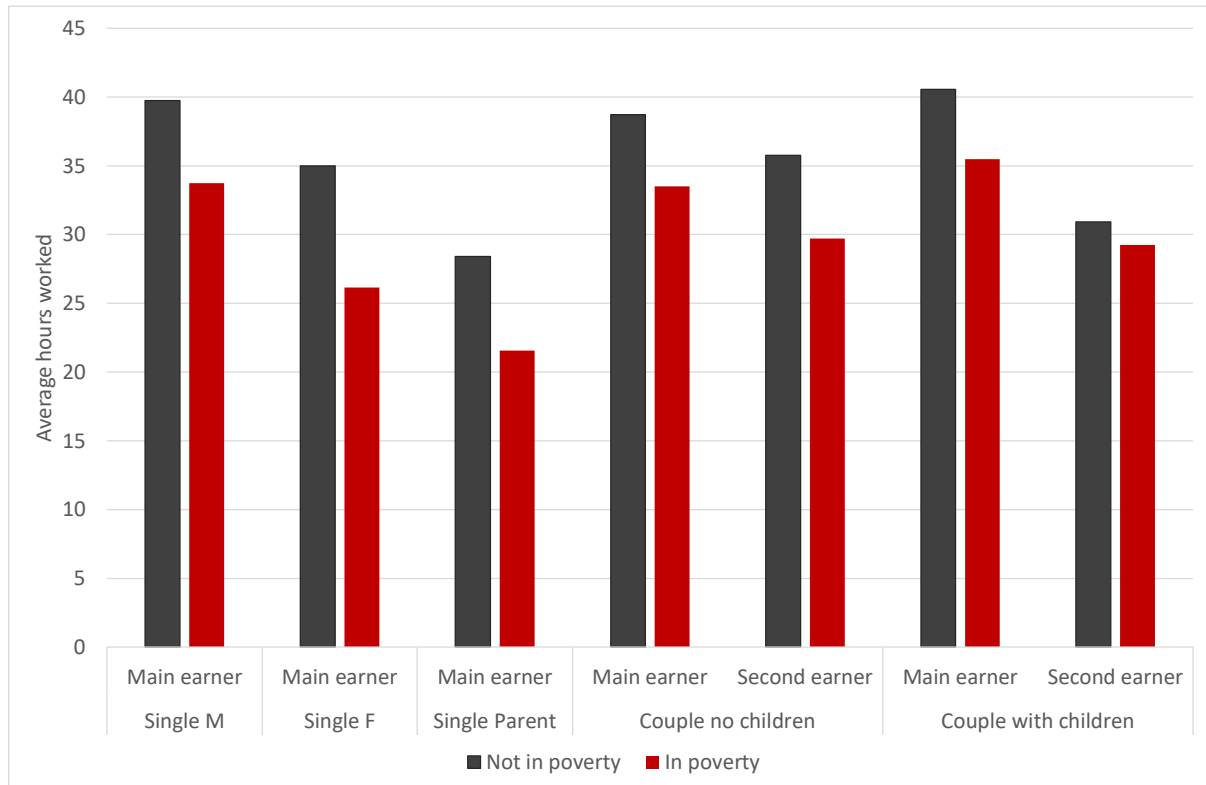
Average hours worked by main and second earners by household poverty status



Source: FAI analysis of FRS/HBAI

Chart 6.4: Working fewer hours is a feature of in-work poverty across all household types

Average hours worked by workers in and not in HHs in poverty, by household type



Source: FAI analysis of FRS/HBAI

But working longer hours will often not, in itself, be enough to move out of poverty

The fact that households in in-work poverty tend to work fewer hours than those not in poverty is clearly established. By how important are hours worked in influencing poverty status?

We can try to formalise the importance of hours worked in determining in-work poverty by modelling the probability of a working household being in poverty as a function of hours, hourly pay, and characteristics of the household. This is described in Box 6.1.

The results imply that hours worked are statistically significant in determining in-work poverty, but the size of the effect is relatively small. This is probably unsurprising to the extent that those in in-work poverty tend to work in relatively less well-paying jobs, and often face relatively high marginal rates of earnings taxation, particularly if they are eligible for low-income benefits that would be withdrawn as hours increase.

Running the regression for each year from 2005 does not provide evidence that hours have become more or less important in determining in-work poverty. This is largely to be expected: the rise in in-work poverty in recent years is not due particularly to a rise in inequality between working households. Instead it is due to the relatively stronger increases in the incomes of pensioner relative to working age households (which raise the median household income and hence the level of the poverty line), and, in the case of after housing cost (AHC) poverty, the fact that low income households tend to occupy housing tenures, notably private-rented accommodation) whose costs have increased relatively more than the costs associated with owner occupied housing (Bourquin et al. 2019).

Box 6.1: Modelling the probability of a working household being in relative poverty

We model the following equation, using data from the 2018/19 financial year:

$$Pov_i = \alpha_0 + \alpha_1 Mainhours_i + \alpha_2 Mainpay_i + \alpha_3 Children_i + \alpha_4 Adults_i + \alpha_5 Secondearner_i$$

The probability of a household being in poverty Pov_i is modelled as a function of:

- The hours worked by the mainearner, $Mainhours_i$
- The log of the hourly wage of the mainearner, $Mainpay_i$
- A dummy variable $Children_i$ equal to one if the household has children and zero otherwise
- A dummy variable $Adults_i$ equal to one if the household has more than one adult and zero otherwise
- A dummy variable $Secondearner_i$ equal to one if the household has a second earner and zero otherwise.

We would expect the coefficient on the first two variables to be negative: higher hours and higher wage should reduce the probability of poverty.

Implicitly, the excluded category from this regression is single adult households with no children.

The coefficient on the children variable should be positive: all else equal, households with children are more likely to be in poverty (this is largely an artefact of the equivalisation process – the equivalisation process effectively reduces the incomes of families in proportion to the number of children are in those families, to reflect the fact that a given level of income has to ‘go further’.).

Similarly, the coefficient on the Adult variable should also be positive. But we would expect it to be more than offset by a larger negative coefficient on the second earner dummy variable. Households with two or more adults are more likely to be in poverty unless the second adult is working, in which case the probability of poverty will be lower.

The results of the regression are shown in Table 6.3. The coefficients are all of the expected sign and magnitude. The coefficients show for example that a working household with children is 2% more likely to be in poverty than a working household without children. A second adult not in work increases the probability of poverty by 4.2%, but if the second adult is also in-work this reduces the poverty rate (relative to a single adult household) by 1.6% (4.2% - 5.8%).

Table 6.3: Modelling the probability of a household being in poverty

	Dependent variable: probability of household being in poverty
Hours of main earner	-0.002*** (0.0002)
Log of main earner's hourly wage	-0.098*** (0.0043)
Children in household?	0.020*** (0.0017)
More than one adult in household?	0.042*** (0.0033)
Second earner in household?	-0.058*** (0.0053)
Observations	9,914

Standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$

The hours variable is negative and statistically significant. But quantitatively the coefficient is small in size: working an additional 10 hours per week would reduce the probability of poverty by 3%.

As a rough approximation, this implies that if a main earner increased his/her average hours of work by 6 per week (bringing them into line with the average of main earners not-in-poverty), this would reduce the poverty rate of in-work households by around 1.8%.

Linking individual labour survey and household income data will be an important focus of future research

Unfortunately, household level data contains relatively little information that might help inform an analysis of the extent to which workers are content or not with their working pattern, and how underemployment is contingent on household as well as individual factors. Household level data also contains little or no information on the nature of individuals' employment contract, or on the types of factors that may constrain their hours.

A focus of our data work during the remainder of this project will be to explore the potential for linking individual labour force data with household level income data. If it is possible to do this in a statistically robust way, this will enable us to assess how underemployment is contextualised by

household level factors, and how measures of job insecurity are correlated with household, as opposed to individual, income.

7. Hours changes during the Covid-19 pandemic

This project was conceived in a pre-Covid world of (close to) full employment, albeit one characterised by underemployment and insecurity. The Covid pandemic has created the most abrupt labour market disruption in decades. But how might it affect the themes discussed so far?

Key points

- During the second quarter of 2020, broadly corresponding to the period of ‘lockdown’, the employment rate remained relatively stable. But this marked a huge and unprecedented fall in hours worked as a result of the government’s furlough scheme.
- Furloughing has been heavily concentrated in the lowest paying occupations, particularly hospitality and retail, where restrictions have been tightest and where working from home is not a possibility.
- There remains significant uncertainty around how the labour market will respond to further restrictions. The response will be influenced by the scale and design of government intervention. The government’s proposed Job Support Scheme (Open), specifically aimed to provide employers with incentives to bring furloughed workers back on a reduced hours basis. However, the likelihood of prolonged restrictions throughout the winter resulted in the government shelving its plans for the JSS(Open) scheme in favour of a return of the furlough scheme.
- The next few months are likely to see us moving into a world of higher unemployment than we have been used to in recent years. If so, the focus of policy-makers’ concern will understandably shift to the unemployed, and the gap, in incomes and well-being, between those in and not in employment.
- But there remains a significant risk that the pandemic will increase employers’ requirements for flexibility and use of flexible forms of employment. And if this coincides with weakness in pay growth, together with a rise in part-time or reduced hours working, then we may be in for a period of increasing underemployment. In short, the inevitable rise in unemployment over the next few months does not mean that challenges around insecure work and underemployment will disappear – if anything they are likely to increase.

Employee hours worked fell by 16% during the lockdown phase of the pandemic

The labour market has recently undergone its largest shake-up in modern history. The coronavirus pandemic and subsequent economic lockdown has meant hundreds of thousands of people across the country have no longer been required to work.

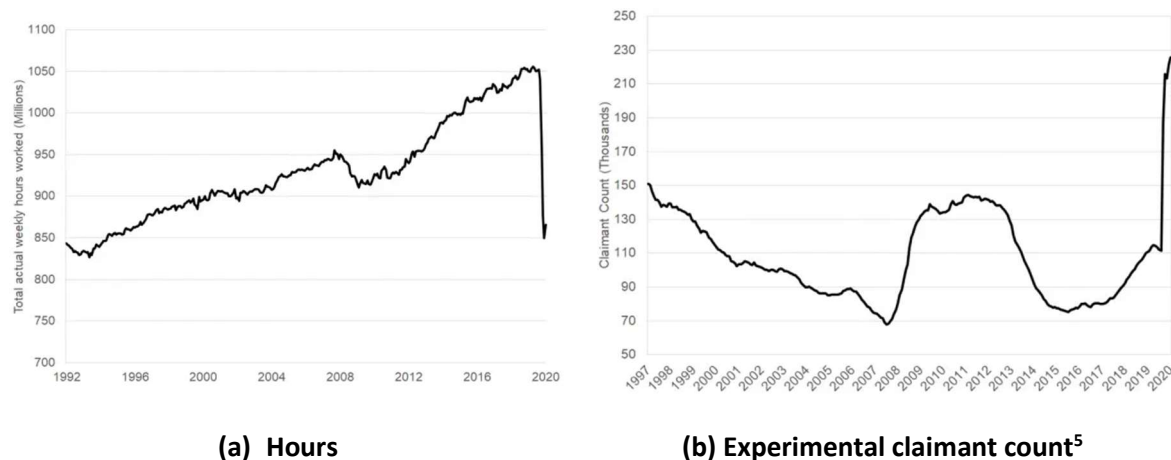
Labour market data is now available for the period of the 'lockdown' when economic restrictions were at their height, from April through to June.

Throughout this period, headline estimates of unemployment and employment have been surprisingly resilient, however. This is because the UK Government's Coronavirus Job Retention Scheme (CJRS) has helped keep workers technically employed, whilst they actually work very few or no hours at all. At the peak of the lockdown, around 9m employees were furloughed and technically 'away from work', although they remained employed.

As a result, although the number of employees actually increased slightly between the first and second quarters of 2020, the number of hours worked each week by employees dropped 16%, from 876 million to 731 million (Chart 7.1). This is the largest quarterly decline in hours worked since records began. At the same time, the claimant count – which measures the number of people claiming benefits principally for the reason of being unemployed – soared.

Chart 7.1: The fall in hours worked during the pandemic was unprecedented

Total hours of work and claimant count over time



(a) Hours

(b) Experimental claimant count⁵

Source: LFS/DWP

But the fall in hours has been very unevenly distributed

The effect of the lockdown has been far from equal. Given the nature of the economic restrictions, economic activity declined most in sectors with low-pay. For example, retail, accommodation, food services, arts and entertainment, and many other services were almost completely shut down for months.

At the same time, traditionally high-paying jobs like those in information and technology, financial services and professional, technical and scientific industries have been able to transition to working

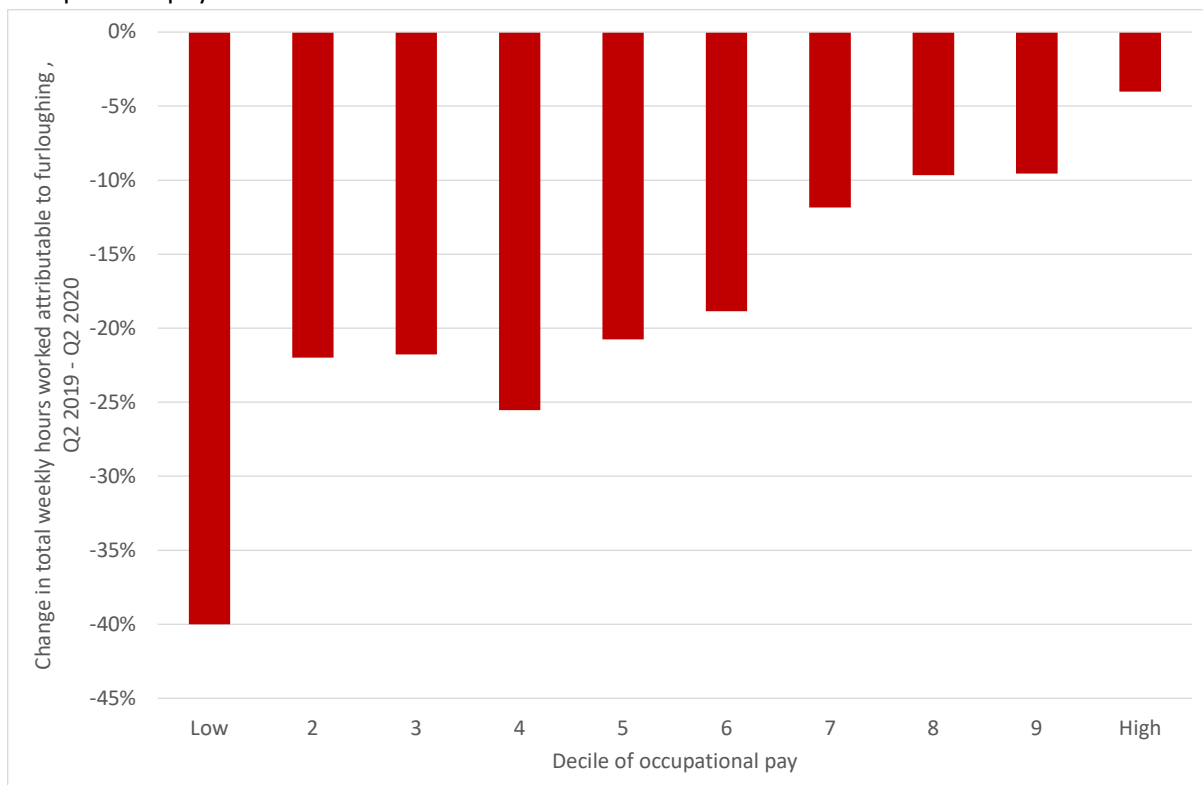
⁵ The claimant count measures the number of people claiming benefit principally for the reason of being unemployed. The ONS refers to it as 'experimental' in that changes to the benefit system mean that the count is not directly comparable over time.

from home, for the most part working the same hours and earning their usual salary (Blundell et al., 2020, Adams-Prassl et al., 2020a).

As a result, the total change in hours of work has been significantly more pronounced in occupations at the lower end of the pay distribution (Chart 7.2). This is most striking among the lowest paying 10% of jobs, and is driven almost entirely by a move toward zero hour weeks – an artefact of the CJRS. This has meant one-in-three workers in the bottom 20% of the earning distribution have lost their job or been furloughed, compared with less than one-in-ten in the highest 20% of earners (Gardiner & Slaughter, 2020). Workers on temporary contracts and other forms of insecure work have also been more likely to have been furloughed or lost their jobs in the early phase of the crisis (Resolution Foundation, 2020).

Chart 7.2: The impact of furlough on hours worked has been much more significant in low-paying occupations

Percentage change in total hours worked between Q2 2019 and Q2 2020 due to furlough, by occupational pay decile



Notes: Occupational pay deciles are created by ranking 350 occupations according to average hourly pay in 2019. For each of these occupational wage deciles, the chart then calculates the fall in hours worked between Q2 2019 and Q2 2020 as a result of an increase in the number of workers working zero hours in the reference week. The increase in proportion of workers working zero hours is taken as a proxy for furlough.

Source: FAI analysis of LFS

The characteristics of workers in these hard-hit occupations has also meant certain people have been disproportionately impacted. For example, over a third of workers between 18-24 had lost their job or been furloughed (Gustafsson, 2020) compared with only one-sixth of those aged 35-29. Similarly, the evidence is now clear that females, those with lower levels of education, already precarious working conditions, or who are from a minority ethnic background have been most

affected by the reduction in hours (Benzeval et al., 2020, Adams-Prassl et al., 2020b, Gardiner & Slaughter, 2020).

How the labour market will adapt to ongoing restrictions remains hugely uncertain

The huge move toward zero hour weeks among those in the lowest earning occupations highlights how the Government's CJRS has supported individuals and businesses through the pandemic. This support was designed on the premise that economic restrictions would be relatively temporary, and that employees would return to work once restrictions were lifted.

But with some form of restriction likely to remain in place for many months, it is now clear that the pandemic could result in some major, permanent changes in the labour market. The government's intention had been to wind down the original CJRS furlough scheme, replacing it by a less generous scheme from 1 November.

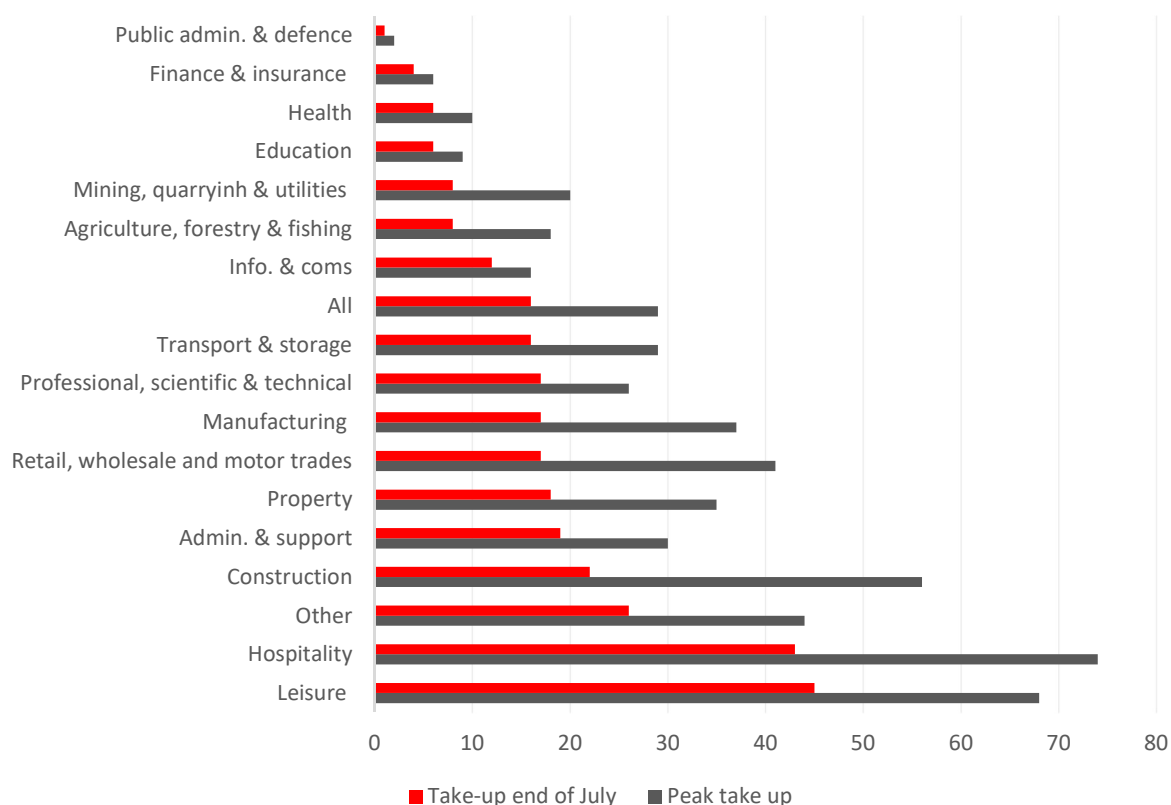
It had been feared that the ending of the scheme would coincide with significant job losses. Yet the idea that workers made redundant will straightforwardly be able to reallocate to alternative employment seems unrealistic at a time of such heightened uncertainty.

On the 31 October however the government announced that the original CJRS furlough scheme would be extended throughout the winter in response to the newly announced 'lockdown' measures.

At peak take-up of the CJRS, the proportion of employees furloughed was highest in hospitality (75%) and leisure (68%), followed by retail (41%) and manufacturing (37%). Although the economy has begun to re-open, latest estimates suggest many of those in the most affected sectors are still on some sort of furlough, most likely because economic activity in these areas is still substantially lower than pre-lockdown (Tomlinson, 2020).

Chart 7.3: Use of furlough varies substantially by industry

Percentage of employment furloughed by sector at peak take up and when unwinding began



Source: HMRC Coronavirus Job Retention Scheme Statistics: September 2020 & Tomlinson, 2020

The extent to which labour market adjustment will be via employment or hours is also uncertain

The extent to which the labour market might adjust to ongoing restrictions through reduced employment, or through reduced hours of work, also remains unclear.

The government had announced two new forms of job support scheme that were intended to replace the Job Retention (furlough) Scheme. Originally the plan was for these to replace come into affect in November, although the reality of significant ongoing restrictions during the winter caused the government to cancel these plans, and announce a continuation of the CJRS furlough scheme throughout the winter months. This scheme will pay employers 80% of hours not worked by employees (up to a maximum of £2,500 per month), with no constraints on the number of hours employees must work.

The expectation is that extension of the more generous scheme will help to mitigate falls in employment over the coming months. But even if it does, the impact of reduced pay (for employees working less than usual hours and receiving less than full pay) is likely to make life for many particularly tough.

There are large implications for policy during the period of restrictions, and the subsequent recovery, which our final report will consider

Together, all of this suggests large shifts are underway in the labour market and that those most likely to be affected are in low-pay sectors.

The decline in hours worked during the lockdown was unprecedented and unequal. It is clear that businesses in several sectors – notably leisure and hospitality, personal services, and parts of retail – will face a prolonged period of weak demand in coming months, while still bearing the financial scars from the lockdown. This will likely affect their ability to hire and offer hours to employees.

As a result, prospects for employment, hours *and* pay in these industries will be continually changing in the near future. Unfortunately, the level of uncertainty about the economic recovery is high. This means we cannot know, or even reliably predict, when and how these changes will occur, or the extent to which they will leave permanent structural scars.

Policymakers will therefore have to be flexible over the coming months. Long-term objectives will have to be balanced with short-term needs. While shorter-term shocks are important, the pandemic has shown us how much can change in a short space of time. It will be important to strike a balance between cushioning these short-term shocks and planning for a long-term recovery in which structural damage to the economy that exacerbates already existing labour market inequalities is limited.

8. Conclusions and next steps

This interim report has explored trends in hours worked based on publicly available datasets. It has shown that hours worked influence earnings inequality and the likelihood of being in poverty. And it has shown that insecurity of work is associated with higher underemployment. The final chapter considers the next steps for the project.

Key points

- The UK is about to enter a period of lower employment, coming on the back of several years of increasing employment rates. This will inevitably lead to a renewed policy focus on employment per se, rather than issues around the number or predictability of hours worked.
- But a continued policy focus on hours is justified for at least two reasons. First, there is a risk that a focus on getting back to full employment neglects consideration of job security issues. There is emerging evidence that use of zero-hours contracts has increased since the onset of the pandemic, as employers argue the need for additional flexibility. Second, a greater sharing of work on the ‘intensive margin’ may help support the recovery.
- In the remainder of the project, we will focus our attention on the role for policy. This will be informed by three broad work stages.
- We will undertake qualitative research with employers and employees to shed further light on the factors that influence working hours and the stability of those hours – with a particular focus on the way that Covid has changed the choices and priorities of employers and employees, and how policy is influencing those choices.
- We will investigate how patterns of hours worked have evolved in other countries, and how these are informed and framed by policy choices.
- We will undertake further data analysis, with a specific focus on how hours, the predictability and stability of those hours, and underemployment, are distributed across households as opposed to individuals. During the second quarter of 2020, broadly corresponding to the period of ‘lockdown’, the employment rate remained relatively stable. But this marked a huge and unprecedented fall in hours worked as a result of the government’s furlough scheme.

This interim report has sketched out some of the ways in which hours worked influence inequality and poverty. It shows that changes in hours worked have increased earnings inequalities within some groups but reduced earnings inequalities amongst women and between males and females.

It shows that employees in low-income households work fewer hours on average than those in higher income households, with hours worked being a significant factor in influencing the probability of in-work poverty.

Some of the observed trends in hours worked probably do reflect labour supply decisions. But there is also evidence that demand considerations, particularly as a result of employers' requirements for additional flexibility, have constrained hours or contributed to the a growing wedge between 'desired' and 'actual' hours. Falling use of paid overtime has constrained male hours, whilst employees working temporary or zero-hours contracts are significantly more likely to be underemployed, even after controlling for their (lower) pay and hours.

The Covid pandemic has created an abrupt shake-up in the labour market. The UK is about to enter a period of lower employment, coming on the back of several years of increasing employment rates. This will inevitably lead to a renewed policy focus on employment per se, rather than issues around the number or predictability of hours worked.

But a continued policy focus on hours is justified for at least two reasons. First, there is a risk that a focus on getting back to full employment neglects consideration of job security issues. There is emerging evidence that use of zero-hours contracts has increased since the onset of the pandemic, as employers argue the need for additional flexibility. Second, a greater sharing of work on the 'intensive margin' may help support the recovery.

In the remainder of the project, we will focus our attention on the role for policy. This will be informed by three broad work stages:

- Qualitative research with employers to shed further light on the factors that influence working hours and the stability of those hours – with a particular focus on the way that Covid has changed the choices and priorities of employers and employees. The focus of the qualitative work is outlined further in Box 8.1.
- Consideration of patterns of hours worked in other countries, and how these are informed and framed by policy choices.
- Further data analysis, with a specific focus on how hours, the predictability and stability of those hours, and underemployment, are distributed across households as opposed to individuals.

The potential role for policy is wide-ranging. Ideas proposed have included improved rights for zero-hours contract workers and others on casual contracts, such as rights to be paid for transport costs and lost earnings where a shift is cancelled at short notice (TUC, 2015), or pay premia for non-guaranteed hours. There have also been discussions around the importance of pay premia for overtime workers (D'Arcy, 2017).

The Low Pay Commission recently considered the issue of 'one-sided flexibility'; it did not recommend banning zero-hours contracts (a practice adopted in some countries) nor pay-premia for insecure work (which may push down hours amongst a group already underemployed). Instead it recommended that workers should have a right to reasonable notice of their work schedule, compensation for shift cancellation or curtailment and improved information for workers on the terms of their contract (Low Pay Commission, 2018).

Others advocate more radical ideas, such as a four-day working week (Stronge and Harper, 2019). And of course, the importance of the availability of childcare (Jourdain de Muizon, 2018), nor the

design of low-income benefits (Brewer and Hoynes, 2019), cannot be neglected in discussions of working hours.

Box 8.1: Focus of future qualitative work

The quantitative data analysis sets the scene for a deeper understanding of these patterns of underemployment in the qualitative phase of the research with employers and the ‘underemployed’. There are a number of identifiable themes that have emerged from our statistical analysis that can be usefully explored as part of the qualitative phase of the work: set in the context of the continuing, evolving and uncertain impacts of Covid-19 on UK labour markets.

If anything, the unequal decline in ‘hours worked’ during Covid-19 which has differentially affected those in lower income groups will likely further sharpen. Principally, the data analysis establishes a firmer basis for reliably identifying those economic sectors that are primarily associated with underemployment: sectors that will be more typically characterised by lower rates of pay, the greater prevalence of ‘precarious’ (i.e. less secure) temporary/casual/zero-hour contractual working (or ‘unstable’ working schedules) and those more likely to employ people in younger age groups and/or with less formal educational qualifications in ‘low-skill’ jobs.

In this respect, our statistical analysis can be understood as broadly consistent with the wider literature and research on underemployment and in-work poverty which points towards sectors such as retail, tourism, facilities management, hospitality, distribution/delivery, food production and manufacturing. To this list we can also add other sectors such as social care, leisure, transport and those with more workers in elementary occupations (e.g. cleaning, freight handling, gardening and kitchen assistants). The above sectors are where we should be targeting our efforts in the qualitative phase of the work with employers and the ‘underemployed’.

For employers we will be looking for a broad overview of how working patterns and practices have and are changing principally in relation to part-time working and contractual flexibility: the factors influencing this, the likely persistence of these trends, the likely impact of these on employees and any employer-led mitigating actions/practices. In this sense we are looking to understand the desire of employers for flexibility, their priorities and some of the decisions and choices that influence the types of contracts that they offer to employees.

We are also interested in understanding any mitigating actions they have taken (e.g. offering the Real Living Wage) to offset issues (e.g. recruitment and retention) with their workforce. For employees, we will be looking to achieve a general understanding of their labour market histories, the constraints (e.g. dependent children, single-parent income household) that effect their working hours and what factors (e.g. levels of tax credits and benefits) may help them increase these working hours. One issue highlighted in our data analysis concerns the impact of households (and potentially multiple sources of income) and there will be a need to look at people’s experiences of ‘underemployment’ as they impact of different household types (i.e. in both single and dual income settings and those with/without dependent children).

Given the importance of hours worked – and the complexity of factors that influence them - some have also proposed establishment of a ‘Time Use Commission’ to unify the policy agenda on working hours, potentially with a range of powers – like the Low Pay Commission for minimum wages – to inform policy and trial practices (such as shorter working weeks) (Bangham and Mustafsson, 2020).

One thing that is clear is that job quality – including issues around the predictability and stability of hours, and the degree of control that workers have around this – is just as important as the number of hours itself, and policy will need to be cognisant of that. In October 2020, Aviva and Standard Life

Aberdeen became the UK's first 'living hours' employers: a voluntary scheme whereby employers promise to provide at least four weeks' notice for every shift, with guaranteed payment if shifts are cancelled in that period. Voluntary schemes such as this are welcome, but it remains to be seen whether more direct legislative action will be required.

Another issue that is clear is that labour market policy in some areas can have knock-on impacts in others. Higher minimum wages for example have been associated with reductions in working hours generally (Stewart and Swaffield, 2008), and increasing use of ZHCs more specifically (Datta et al. 2018; McCrate et al. 2019). And the issue of work, and its security, interacts with the social security system: a flexible labour market that offers high and guaranteed levels of social insurance is very different from one where labour market flexibility operates alongside a more uncertain and precarious form of social security.

Our next report will weigh up these issues and complexities in drawing out recommendations for policy, both in the shorter term recovery from Covid, and in the longer term.

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