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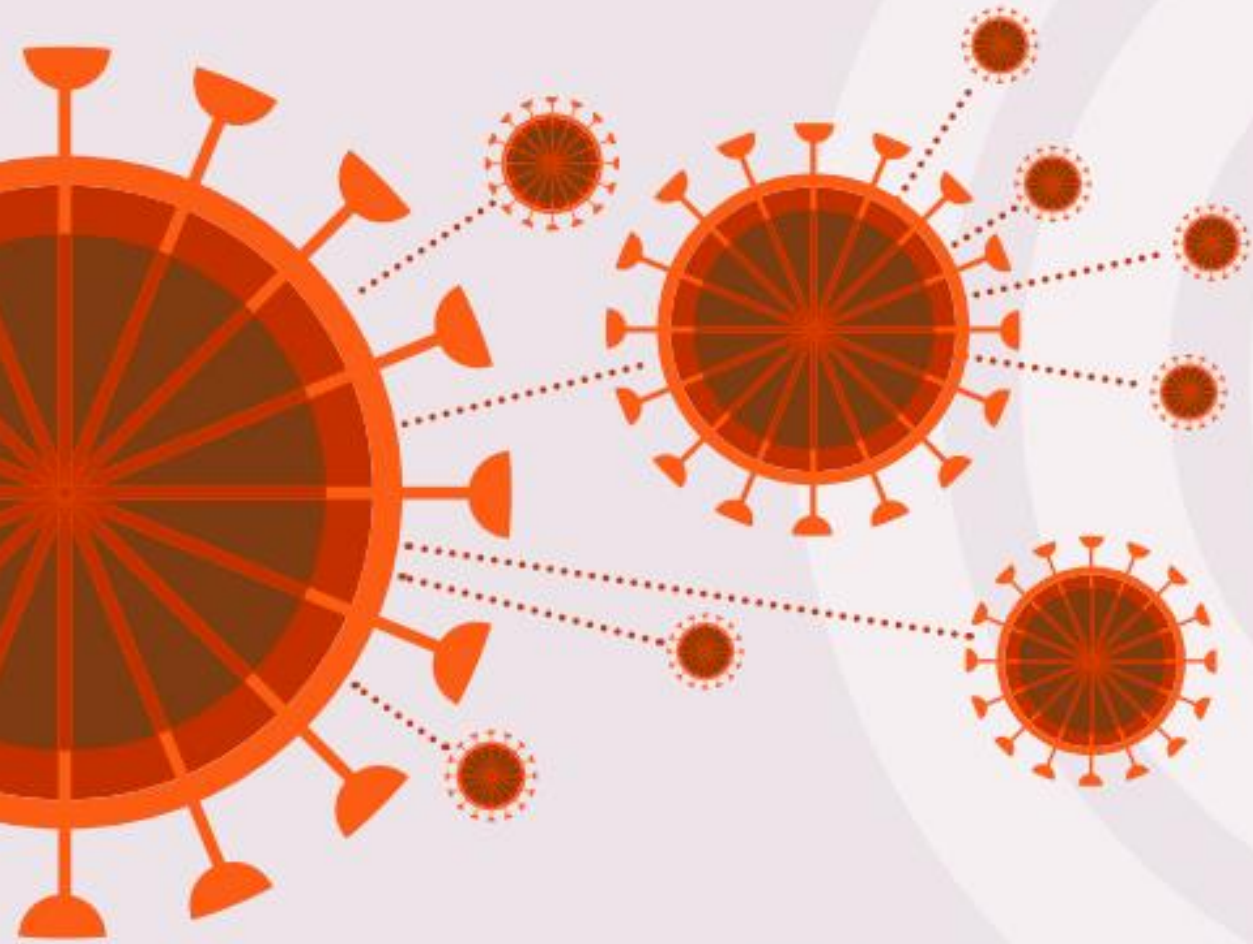

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Labour Costs Adjustment during Covid-19 (DRAFT)

CEP COVID-19 ANALYSIS

Stephen Machin and Tzvetan Moev

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- We explore different channels utilised by firms to adjust their labour costs to Covid-19. In contrast to previous recessions in the UK, firms responded by decreasing the hours of their current employees. We find that actual hours worked fell by 17% for all workers in 2020Q2 when the effects of the pandemic started propagating across the economy. This adjustment resulted largely from the furlough scheme that disincentivised firms from laying off workers. For similar reasons, the employment and unemployment rates have experienced practically no change in 2020.

- By mid-2021, hours have nearly returned to the pre-pandemic levels for all workers. While hours worked by young people have also recovered, their hours initially experienced a relatively bigger drop. This result can be attributed to the higher concentration of young people in industries such as hospitality and retail which were particularly affected by the pandemic.

- In contrast to the Global Financial Crisis (GFC), the job loss rate and job-to-job movements quickly returned to their pre-pandemic level. However, the furlough scheme also increased considerably the number of employees who are working zero actual hours. Workers in such states not only lost income but were also more vulnerable to job loss relative to workers doing a positive number of hours.

- During both the pandemic and the GFC, real wage growth slowed down. While in the late 2000s workers who wanted to change jobs had to accept a lower wage, this was not the case in 2020-1: workers were able to get a new job with a similar wage.

- Looking ahead, newly-released Labour Force Survey data for 2021Q3 allows us to explore the latest trends in labour markets. We find that furlough wind-down has not yet had a big effect on labour markets. In addition, we argue why the recent increase in the number of resignations (labelled as the 'Great Resignation') is probably been driven by a desire for a higher wage rather than a change in career.

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Introduction

Despite the end of lockdown restrictions in England on the 19th of July (dubbed as 'Freedom Day' in the media), the far-reaching consequences of Covid-19 for UK's economy continue to be felt. For example, remote working continues to be pervasive across many jobs such as professional occupations. This is no surprise given the massive shock to GDP in 2020: the economy shrunk by 9.9% (ONS, 2021). This number dwarfs the fall in GDP during the Great Recession (4.2% in 2009). Interestingly, such a shock to the GDP has not occurred since the Great Frost in 1709 when the GDP plummeted by over 13%. Thus, the effects of Covid-19 on the economy have been quite substantial in a historical perspective.

Irrespectively of the effects in 2020, the recent reports of the Monetary Policy Committee at Bank of England (2021) paint an optimistic picture for the future of the economy: GDP and unemployment are both forecasted to return to their pre-pandemic levels by respectively the ends of 2021 and 2022. Nevertheless, recent research has shown that the pandemic has engendered UK's economy via different channels from previous recessions. In particular, national lockdowns have not affected to the same extent sectors such as manufacturing and construction that have often struggled during previous recessions (Bell, Codreanu, & Machin, 2020). In contrast, workers in industries involving interaction with customers such as hospitality have suffered the most. So, the effects of Covid-19 on firms and consumers might be substantially different to the effects of previous recessions such as the Global Financial Crisis (GFC) or the Early 80s recessions.

In this paper, we explore the main adjustment channel via which firms responded to the pandemic: actual hours worked. While hours worked have remained largely unchanged during earlier recessions, we find that they have fallen by 17% in 2020Q2 as the effects of the pandemic started being propagated throughout the economy. On the other hand, the employment rate, the unemployment rate and real wages have not experienced much change. Such adjustment via hours is partly the result of furlough which allowed firms to retain their current employees for free albeit at zero hours. Furthermore, we show that workers who were set on zero hours were more likely to be laid off later. More worryingly, we show that these effects are exacerbated for young workers (aged 18-24) who are not in full-time education and who have been understandably labelled as 'Generation Covid' (Elliot Major, Eyles, & Machin, 2020). Young people are more likely to be set to zero actual hours, partly because they tend to work in the sectors that have been hit hard by the pandemic such as hospitality and retail.

These results suggest that Covid-19 has had a heterogeneous impact on various groups of workers. This idea is in line with the literature which suggests that the most vulnerable (e.g., self-employed, least educated, ethnic minorities, etc.) have experienced a disproportionate impact from the pandemic. Recent research by CEP has explored the consequences of the pandemic for different groups that were very strongly affected, including women (Hupkau & Petrongolo, 2020), people in self-employment (Blundell & Machin, 2020), children (Elliot Major, Eyles, & Machin, 2021), young workers (Elliot Major, Eyles, & Machin, 2020) and crime rates in areas hit harder by the pandemic (Kirchmaier & Villa-Llera, 2020). Turning to other recent research on UK labour markets, a report by the Resolution Foundation explores the heterogeneous impact across different industries and regions, finding that tourist areas such

as Cornwell have benefited from the presence of Brits deciding to spend their holidays in England (McCurdy, 2021). Lastly, Cribb et al (2021) find that the effects of the pandemic on young people have been mitigated by the fact that many of them moved in back with their parents.

We contribute to these findings by studying the evolution of actual hours and wages while also exploring the effects of the pandemic on young people. To that aim, we utilise cross-sectional data from the Quarterly Labour Force Survey (LFS), including the latest release for 2021Q3. We also supplement our analysis with the longitudinal data from the Two-Quarter LFS and the Five-Quarter LFS, allowing us to explore various measures of transition between employment and unemployment.

Overview of labour markets

In general, there are three main ways, in which firms can adjust labour costs in response to recessions: they can change the wages of workers, lay off employees or decrease the hours of their current employees. For example, during the Great Financial Crisis in the UK, many firms reduced labour costs by decreasing real wages (Costa & Machin, 2017). In contrast, in the US at the time of the Great Depression, wages did not fall considerably but unemployment surged to 20% after being just 3% before the recession (Margo, 1993). Thus, depending on the type of recession and the institutional framework, firms can choose which the most appropriate channel to adjust labour costs is. Of course, there are other mechanisms which firms can use to decrease their costs[1] if needed but our focus here is on *labour* costs.

These considerations raise the question how firms in the UK responded to the shock caused by Covid-19. To explore this issue, Figure 1 plots the evolution of various labour markets indicators from 2019Q1 to 2021Q3 for all workers in the labour force (aged 18-64) and young workers (aged 18-25) who are not in full-time education. The data for 2019Q1 to 2020Q1 provides the trend in the labour markets indicators before the commencing of the 'treatment period' spanning from 2020Q2 to 2021Q3 when the effects of the pandemic were felt. The reason why we emphasise the effects on young people are related to the implications of 'educational scarring' and 'unemployment scarring' for their earnings later in life (Elliot Major, Eyles, & Machin, 2020; Gregg & Tominey, 2005). In his review of the literature, von Wachter (2020) concludes that the effects of scarring can persist until workers' middle age which can also naturally affect the prospects for social mobility. So, it is important to explore the extent of scarring that 'Generation Covid' will experience.

We begin by investing two of the most commonly used indicators of labour markets' health: the employment and unemployment rates. Juxtaposing young workers to all workers, we can see that the employment rate for both groups has not changed massively in 2020 and has recovered to its pre-pandemic level by 2021Q3, despite the 9.9% fall in GDP. Moreover, it is worth noting that youth unemployment also increased slightly in 2020 relative to 2019 (by around 2pp in Q3 and Q4), although it returned to its pre-pandemic levels by mid-2021. The

[1] Such as selling land or machinery (Wadsworth, 2021)

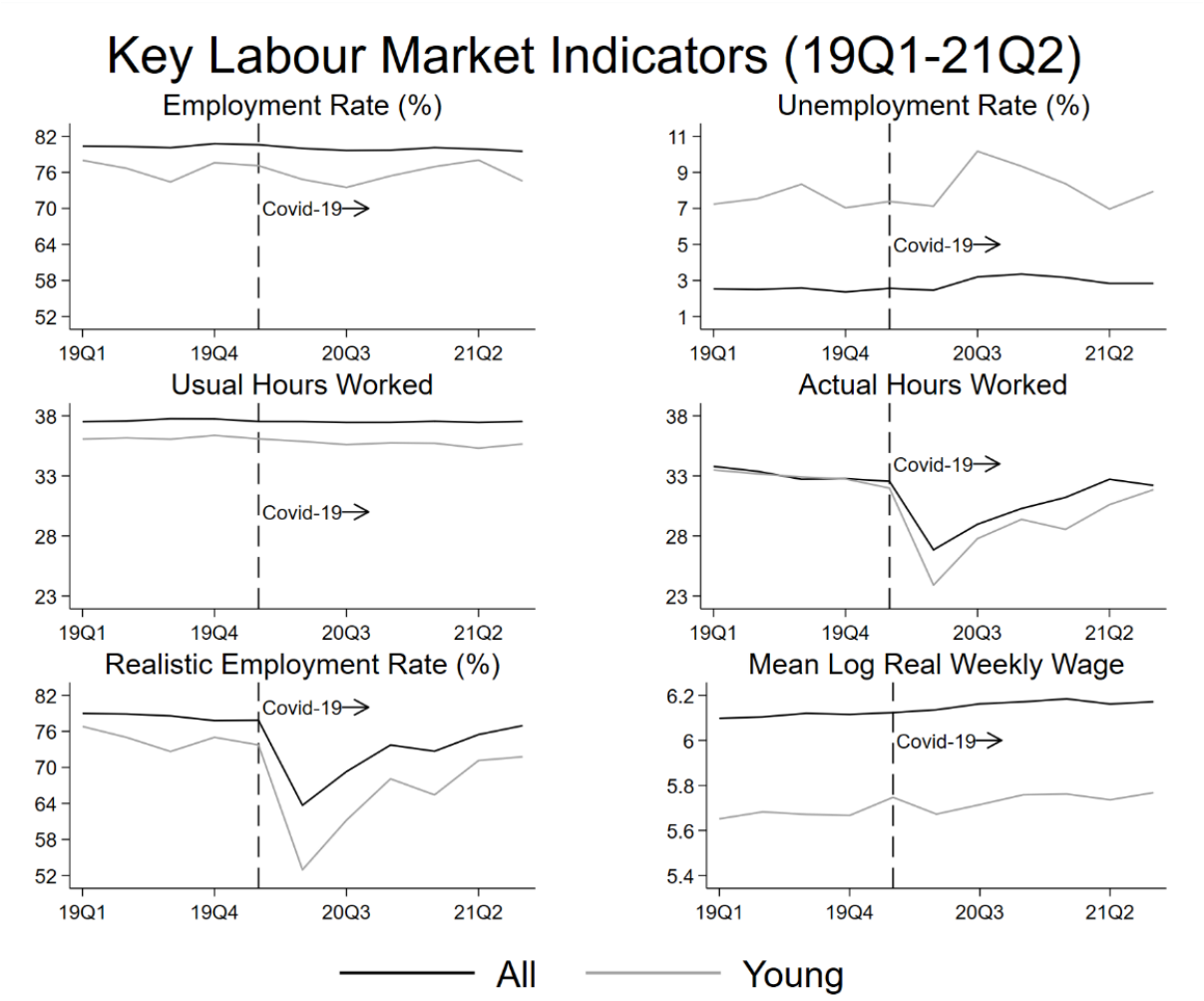

Figure 1. The evolution of six key labour market indicators: unemployment rate, employment rate, mean usual hours worked, mean actual hours worked, 'realistic' employment rate and mean log wages in 2019 GBP. Data is taken from the Cross-Sectional Quarterly LFS (2019Q1-2021Q3). The sample is restricted to workers who are aged 18-64 and are not in FT education. We define all workers as workers aged 18-64 and young workers as workers aged 18-24. All estimates are weighted.

unemployment rate for all workers also remained very low by historical standards at around 3% (Costa & Machin, 2019). Even if there was also some adjustment via the number of employed workers, this was clearly not the main channel that firms used to adjust their labour bills in response to the pandemic. Therefore, if we only look at the aggregate employment and unemployment rates, the effects of Covid-19 on labour markets would seem marginal.

These results can be rationalised in light of the furlough scheme that allowed firms to use government funds to pay up to 80% of their current employees' wages.[2] The labour hoarding subsidies essentially allowed them to retain a worker at no cost instead of laying her off amidst the pandemic. However, it remains unclear if there will not be some delayed changes to employment after the complete winding down of furlough. It is plausible that without government assistance some firms that would have gone out of business irrespectively of the effects of the pandemic would have stopped operating (e.g., perhaps they were already

[2] There were some additional conditions on the job assistance programme such as a cap of up to £2,500 a month before July 2021. For our purposes, however, the 80% is the most important one.

considering exiting their market in 2020 Q1 due to high labour costs). Downing Street has started winding down furlough in July 2021 and we can see that initially there has not been a huge effect on employment and unemployment for all workers in 2021Q3. While unemployment increased slightly for young workers, this could be due to seasonal variation. Nevertheless, additional effects of furlough's wind down may emerge in 2021Q4 and next year given that the scheme only stopped supporting workers on 30th of September 2021. Overall, furlough have contributed to avoiding a big spike in unemployment during Covid-19 and as least initially its winding down has not had any detrimental effects on labour markets.

Unfortunately, the employment and unemployment rates only measure labour supply along the extensive margin, i.e., the share of the labour force that is not workless. As a result, they ignore the change in actual hours worked which is another potential channel that firms can use to reduce labour costs. Thus, Figure 1 also plots the evolution of average *usual* hours and of average *actual* hours. The difference between the two measures is that the former reports how many hours a worker does on average in a *regular* week whereas the latter presents the number of hours in the *reference* week, in which the person was interviewed. If a worker's firm is facing a spike in demand in the reference week, her actual hours will be higher than her usual hours. So, measuring actual hours allows us to capture transitory macroeconomic shocks that workers expect to affect their hours for a relatively short period of time but will not affect substantially their usual hours in the long term.

Similarly to the employment rate, usual hours seem largely unaffected by Covid-19, meaning that firms did not anticipate a dramatic change to workers' hours. In contrast, we can see a substantive fall in actual hours. For all workers, they plummeted by 17% in 2020Q2 whereas for 'Generation Covid' they fell by 25%. Part of the reason why young workers suffered bigger effects from the pandemic stems from the fact that they are concentrated in industries such as hospitality and retail whose operation was very strongly affected by lockdowns (McCurdy, 2021). For example, while young people (aged 18-25) form only 22% of our sample, they form more than 40% of all workers in the hospitality sector where average actual hours worked fell from around 30 in 2019 to an average of less than 15 hours in 2020Q2-4.[3] Interestingly, hours for young people remained lower throughout 2020 but seems to have returned to their pre-pandemic levels (as of 2021Q3).

We can further investigate how hours evolved by defining an alternative measure of employment called the 'realistic' employment rate (Bell, Codreanu, & Machin, 2020) which excludes people who are currently working zero hours.[4] In other words, we only count as realistically employed people who are working a positive number of hours. This measure is motivated by the furlough eligibility requirements: to benefit from the subsidy, firms had to decrease the hours of some of their employees down to zero.[5] In 2020Q2, the realistic

[3] Actual hours were 10 in 2020Q2, 22.5 in 2020Q3 and 12 in 2020Q4 based on our estimates from the cross sectional LFS

[4] Except for people who are on leave or are sick. For example, if a person is currently on holiday and so report zero actual hours, they are counted as employed. In contrast, if a person reports zero actual hours because they are on a flexible contract, then they are *not* counted as employed.

[5] Suppose a firm has 10 employees who work 30h each. In response to Covid-19, they would like to cut total hours to 270. Instead of reducing each employee's hours to 27, they would furlough one employee down to 0h.

employment rate decreased by 18% and 28% respectively for all workers and young workers. While many people working zero hours were eligible for the furlough scheme that provided 80% of their earnings, the coverage of the policy was not universal. For instance, some solo self-employed workers or workers on zero-hour contracts were not provided with the same generous job assistance.[6] An additional reason why working zero hours is not ideal stems from the fact that workers on such hours are more likely to be laid off than workers working positive hours (see Figure 4 below), suggesting that the effects of being employed but working zero hours go beyond simply the loss in earnings. Similarly to actual hours worked, however, the realistic employment rate has returned to its pre-pandemic level by 2021Q3.

These considerations naturally beg the question of how wages changed during the pandemic, given that the earnings of furloughed individuals clearly fell. Figure 1 plots real *weekly* wages, meaning that the time series captures both hours worked and the hourly pay rate in each week. It seems that there was not a substantive fall in real weekly wages despite the decrease in actual hours which implies that the hourly pay also did not plummet at the time of the pandemic. Moreover, there seems to have been some positive wage growth during the pandemic. These results provide credence to the idea that many firms adjusted labour costs to the pandemic not by laying off people or decreasing wages but rather by decreasing the actual hours of their existing employees, largely because this is how they were able to benefit from the furlough scheme.

Comparison to previous recessions

Firm's strategy to decrease labour costs via changing hours in response to the pandemic raises the question whether they have adjusted similarly during earlier recessions in the UK. Thus, Figure 2 plots the distribution of UK's population (aged 18-64) by employment status in four recessions: Early 80s, Early 90s, GFC and Covid-19. The Early 80s recession is often associated with 'stagflation', namely the presence of high inflation and high unemployment simultaneously. Stagflation was partly caused by the energy crisis prompted by high oil prices following the Iranian Revolution. This recession is also remembered for the policy response by Margaret Thatcher's government aimed at lowering inflation. On the other hand, the Early 90s recession was not characterised by stagflation but by the overvaluation of the British pound, high interest rates and falling housing prices. In September 1992, it eventually led to the withdrawal of the UK from the European Monetary System which was one of the predecessors to the Eurozone.

From Figure 2, we can see that during both the Early 80s and the Early 90s recessions there was significant adjustment via the number of workers, as evidenced by the employment rate[7] which fell by roughly 5pp in both cases. While there were significant changes to wages during the GFC, the employment rate also fluctuated, as it decreased by slightly less than 1.5pp. Relatively speaking, therefore, the small increase in the employment rate by 0.6% from 2019 to 2020Q2-Q4 due to the impacts of the pandemic seems smaller. Nevertheless, given the

[6] The Self-Employment Income Support Scheme, for instance, did not support self-employed people who only started trading in 2020.
[7] Sum of *Employed, Working* and *Employed, Not Working* in Figure 2.

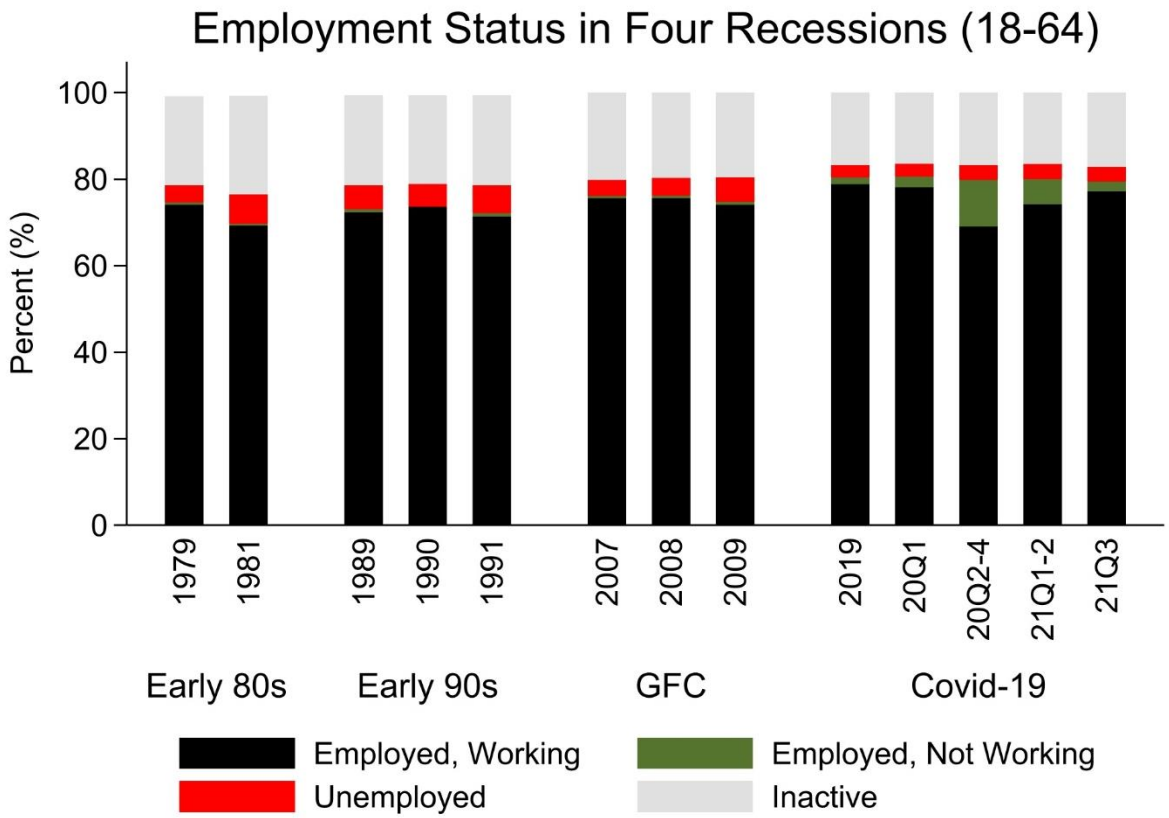

Figure 2. The distribution of UK's population by employment status in the course of four recessions. Data is taken from the Quarterly Cross-sectional LFS for the respective year and all estimates are weighted. Full-time students are excluded and only people aged 18-64 are included.

furlough scheme, firms were able to adjust their wage bills not by laying off workers but by simply decreasing their hours and receiving government support for their wages. This is reflected in the fact that the share of people who were employed but actually worked zero hours increased to nearly 11%. Strikingly, during previous UK recessions, there were practically zero workers who were employed but working zero hours. Thus, it seems that the institutional framework at the time of earlier economic crises did not allow firms to adjust their wage bills via hours in contrast to the pandemic: eligibility for the furlough scheme demanded that a worker does exactly zero hours in order to receive job assistance.

Figure 2 suggests that firms decreased the hours of *some* workers down to zero during Covid-19. However, it is also possible that firms decreased labour costs in previous recessions by reducing the hours of *many* employees by a small amount, as it was the case in Germany[8] during the GFC, rather than of *some* employees down to zero (Burda & Hunt, 2011). Such a response would result in lower hours worked in previous recessions, despite the fact that the share of people on zero actual hours did not change. This cannot be captured in Figure 2 because it only differentiates between workers doing zero and non-zero hours. For this reason, Figure A1 in the Appendix examines the potential adjustment via a small change in the hours of many workers by plotting the ratio of actual hours to usual hours from the Early 80s

[8] Even though Germany experienced a bigger fall in GDP than the US, the policies that allowed German firms to adjust labour costs via hours managed to keep the employment in check and the rate of unemployment there remained much lower than in the US (Burda & Hunt, 2011).

recession up to the present recession. The ratio remained roughly constant during the Early 80s, Early 90s and GFC, meaning that firms did not change hours in contrast to Covid-19 given that usual hours remained constant (Figure 1). Overall, we can conclude that reducing labour costs via hours was endemic across firms during Covid-19, even though it was not undertaken by firms in previous UK recessions. Part of the reason is the institutional framework that did not allow firms to reduce the hours of many workers by a small amount in previous recessions. For instance, such a reduction could be achieved if firms coordinate on a similar approach when responding to the crisis or if contracts offered some degree of flexibility in terms of hours. However, since neither of these features (or furlough) was in place during previous recessions, UK firm did not adjust labour costs via hours.

Transitions

To further probe into how firms adjusted costs in response to Covid-19, it is illustrative to explore whether it became harder for them to hire workers. It seems clear that if firms are trying to reduce labour costs, they will be posting fewer vacancies, implying that the job finding rate, i.e., the probability of finding a new job when workless, should be lower amidst recessions. As evidence of this, Wadsworth (2020) reports that the vacancy rate in the UK indeed decreased considerably during both the GFC and Covid-19. A related measure to job finding is the job-to-job transition rate which gives us the share of workers who changed their jobs in each period. In addition to job finding and job-to-job transitions, there is also the job loss rate which is the probability of losing one's job. The job loss rate is closely related to the unemployment rate and increased in previous recessions whenever unemployment increased (Pissarides, 2013).

Figure 3 compares the change in job finding, job-to-job moves and job loss during Covid-19 and the GFC[9] for all workers and for young workers. In Figure 3, 2019 provides the trend in the transition rates before the pandemic and 2007 provides the trend in transition rates before the GFC. After the effects of the pandemic started propagating across the economy in early 2020, job finding remained stable throughout 2020 and 2021.[10] Similarly, job finding during the GFC did not fall considerably for all workers, even though there was a small reduction in job finding for young workers. Overall, however, it seems that in both cases workers were still able to obtain jobs when workless, even though the economy was in a recession. Nevertheless, the question remains whether the jobs that people found were of the same quality: it is possible that the jobs found included a lower wage relative to what workers would have obtained in pre-crisis times.

Turning to job-to-job transition, we can see some important differences between the GFC and Covid-19. In 2020, job-to-job movements fell slightly but returned to their pre-pandemic level by 2020Q4. However, during the GFC, they decreased from 4.2% to 2.4% between 2007Q4 and 2009Q1, which represents a fall of 43%, and remained low in 2009. Workers seemed to have changed job less often during the late 2000s than previously. We can partly rationalise these findings in light of the falling real wages at the time (Costa & Machin, 2019) which meant that if a worker changes job they might have expected a lower wage. In contrast, as Figure 1

[9] Due to data limitations, we cannot extend the comparison to Early 80s and Early 90s recessions.
[10] This might seem puzzling, as the rate of vacancies has collapsed by roughly 55% in 2020 Q2.

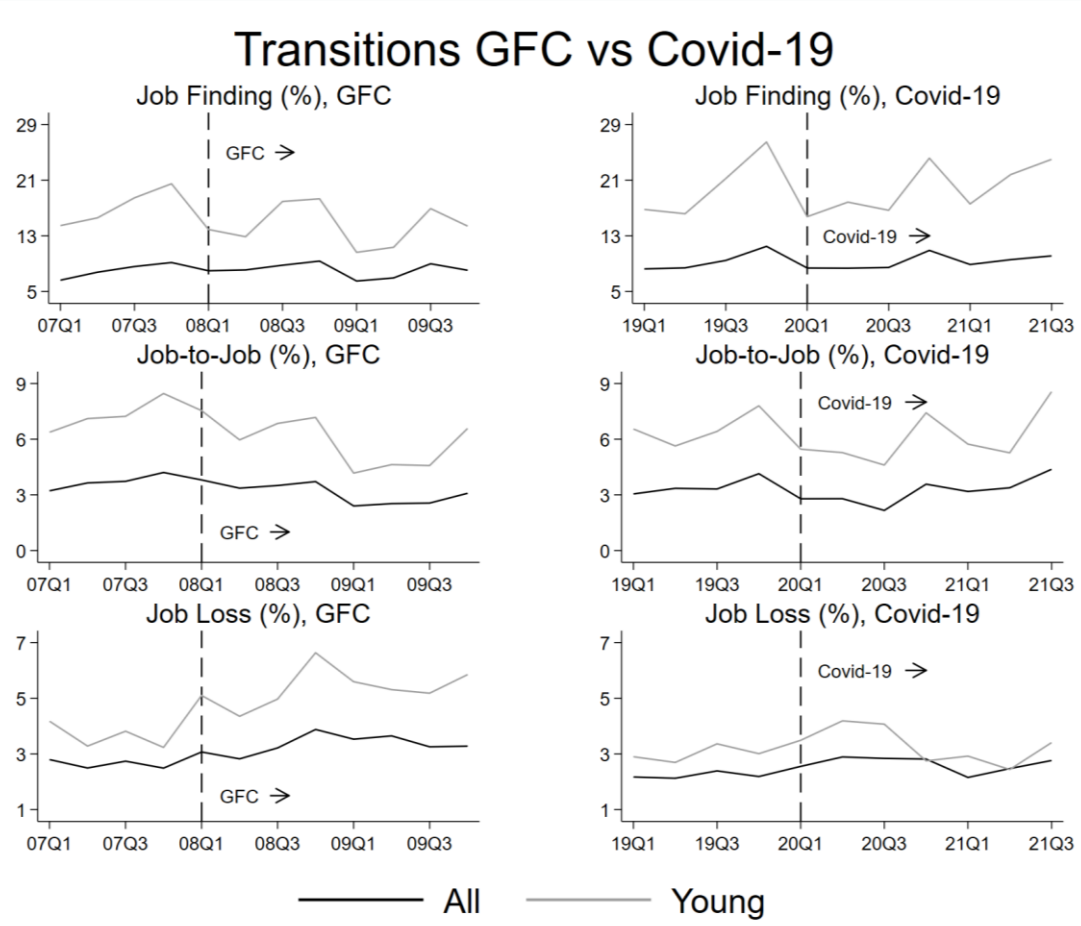

Figure 3. Changes in Job Finding, Job-to-Job Transitions and Job Loss during the GFC and Covid-19. Data is taken from the Two-Quarter Longitudinal LFS and all estimates are weighted. Full-time students are excluded. Job Finding is defined as the share of all people aged 18-64 who found a job

illustrates, real wages did not experience a decrease in 2020, so workers were probably able to obtain jobs with wages that were not lower than their previous wage. Interestingly, job-to-job moves for all workers are at their highest point (4.3%) in 2021Q3. Despite the fact that the recession was not over yet, people were willing to change jobs. This spike in job-to-job transitions is related to the so-called 'Great Resignation' in the last few moments where we observed a big increase in the number of people who resigned jobs. We consider this issue in great depth below (see Figure 6).

Returning to other transition rates, the evolution of the job loss rate also looks different across the two recessions. The job loss rate increased in both 2020 and 2008, meaning that it became harder for workers to retain their jobs one year after the shock. Although at the time of GFC job loss remained at a higher value for two years after the shock until 2009, and especially so for young workers, at the time of Covid-19 job loss returned to its pre-pandemic level by 2021Q1. Thus, it seems that job loss recovered more quickly during the present recession. The presence of the furlough scheme can rationalise these results. Given the lack of labour hoarding subsides during the GFC, it is not surprising that job loss remained high even in 2009. In contrast, in 2020 the policy response averted a potential domino effect that could have

exacerbated the effects of Covid-19. Consider the supply shocked caused by the pandemic.[11] Without furlough, this would force firms to lay off workers which would worsen the crisis, as the supply shock also turns into a demand shock. As a result, consumers spend less due to lower incomes, leading to more negative effects on the economy. However, the furlough scheme had a key role in preserving existing matches between firms and workers and so firms did not have to lay off workers in the first place.

However, these aggregate dynamics hide some important heterogeneous impacts across groups. Overall, some disadvantaged groups (e.g., minorities) obtain worse matches that are more likely to be destroyed (Fryer, Pager, & Spenkuch, 2013). It is important to explore the decomposition of transition probabilities across different types of workers, especially given the well-documented disproportionate effects of the pandemic on the most vulnerable groups as discussed above (Bell, Codreanu, & Machin, 2020).

To explore this heterogeneity further, Figure 4 plots the decomposition of the three transition measures by the number of hours that an individual is *actually* working. We define four categories of hours: working zero hours ('0h'), working between one hour and 16 hours ('1h-16h'), working between 17 hours and 35 hours ('17h-35h') and working more than 35 hours ('35+h'). The threshold of 16 hours was chosen due to the eligibility for the Working Tax Credit[12] that requires single parents and disabled workers to do at least 16 hours of work per week to receive government assistance. On the other hand, the other threshold of 35 hours was selected because we are looking at actual hours worked and the traditional 40-hour week includes a lunch break of one hour.

We begin by decomposing job finding, so that we explore the probability of finding a job with a particular number of hours. Overall, the distribution of job finding by hours remained stable during both GFC and Covid-19. The only exception is 2020 Q2 when there was a spike in the number of jobs found with zero hours, although this could potentially reflect people who were recently hired and were immediately furloughed or had to self-isolate. Next, we decompose job-to-job movements by the number of hours worked on the job which a worker left, i.e., the origin, not the destination, of the movement.[13] During the GFC, we can see that the number of job-to-job transitions from jobs with 16 hours or less remained stable but transitions decreased from jobs with more than 16 hours and particularly from jobs with 35 or more hours. Thus, people with full-time jobs were no longer able to easily find satisfactory positions elsewhere. On the other hand, in 2020 this was not the case: people working 35 or more hours were still able to find jobs. However, in 2020Q3, we can see an increase in the number of people doing 0 hours who engaged in a job-to-job transition: they formed nearly 40% of all workers who changed jobs at the time, even though they constituted less than 14% of all employed workers.

So, it seems that the furlough scheme incentivised workers to seek new jobs. We can see why this is the case by exploring the decomposition of the job loss rate by the number of hours worked. In other words, we investigate what is the probability of being laid off conditional on

[11] One can argue that lockdowns and social distancing caused a supply shock, as some firms were no longer able to produce at the same level given that their employees had to stay at home.
[12] As of now (August 2021), Working Tax Credit is being integrated into Universal Credit.
[13] See Figure A2 in Appendix for the distribution of Job-to-Job Transitions by hours in destination job.

hours worked four months earlier. Throughout the GFC, job loss continued to increase but the shares of the distribution of hours remained roughly constant over time. This trend is in stark contrast to the distribution of job loss during the pandemic: even though employed people on zero actual hours are a small share of all employed workers (around 25% in 2020Q2), they made up more than 50% of all workers who lost their job in 2020Q3. If a worker is on furlough, she not only gets just 80% of her normal earnings but also faces a higher probability of losing her job.

Clearly, this is also related to the fact that firms would probably choose to set on furlough employees that are less productive on average, as they would prefer to retain their most productive employees on their full hours. If before the pandemic a firm was contemplating whether to lay off a particular worker due to her low productivity, the furlough scheme provided a lifeline for this specific match because it presented the firm with an opportunity to keep the worker for the duration of the policy at no extra cost. In any case, this result illustrates why working zero actual hours is a state between employment and unemployment: a worker is still technically employed but she is also under a serious threat of job loss. Moreover, this finding also explains why there was an increase in the job-to-job transitions of people who were working zero actual hours: they anticipated that they might be next in line for unemployment, so they started looking for a job earlier while being furloughed.

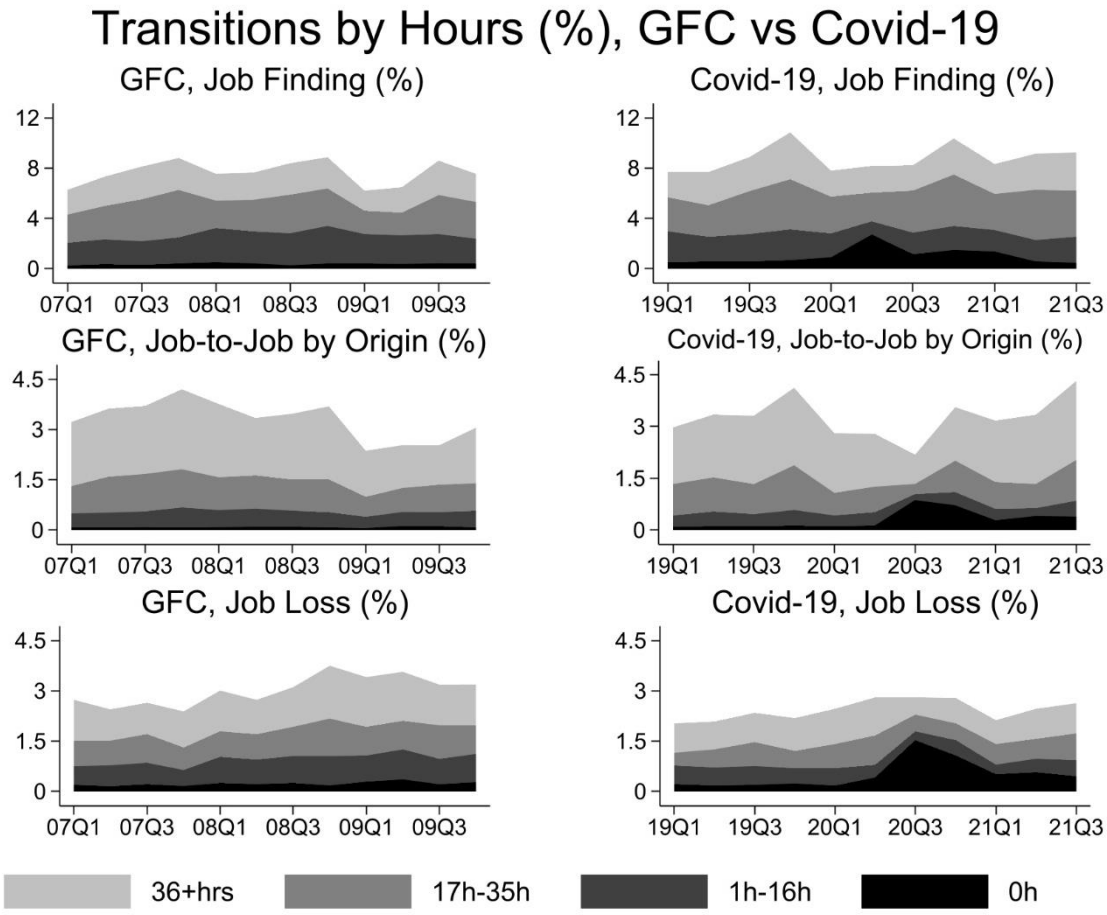

Figure 4. Decomposition of Job Finding, Job-to-Job Transitions and Job Loss Rates by hours worked
Data is taken from the Two-Quarter LFS and all estimates are weighted. Full-time students are excluded.

Furthermore, a workers' actual hours affect not only their probability of job loss but also their probability of finding a job. Essentially, it seems that some types of workers are more likely to both find and lose jobs, i.e., their career paths are more volatile, as they involve more transitions between worklessness and employment. This idea is in line with recent research that documents the heterogeneity in individual career path and identifies types of workers that circle across worklessness and employment much more than other workers (Hall & Kudlyak, 2020). Therefore, Figure A3 in the Appendix reports the effect of working a particular number of hours on the probability of two transitions: moving from one job to another job and moving from a job to being workless (i.e., losing a job). Relative to working 36 or more hours, we can see that working between 16 and 35 hours increases the probability of both changing a job and losing a job by around 0.5pp. This effect is much bigger, however, for working zero hours (but being employed): the probability of changing job increases by 2pp whereas the probability of losing a job raises to 6.5pp. These results imply that people on zero hours are generally experiencing more transitions both in and out of employment.

Wages

The discussion in the previous section raises the question what type of jobs people were finding during the pandemic. We know that the job finding rate and the job-to-job transition rate did not fall considerably in 2020 but the wages associated with the new job also matter. Usually, job-to-job transitions are associated with wage growth: a worker will voluntarily leave their current job only if they have a better offer. Topel and Ward (1992) argue that such transitions in the early years of worker's careers are crucial for finding stable employment later on. However, in recessions, job-to-job transitions can also play another role: a worker can choose to move jobs if she believes that her current job is under threat and in expectation a new job would bring her higher lifetime earnings. In the context of Covid-19, a worker who is furloughed might anticipate that she could be laid off immediately after furlough winds down and so decides to change jobs in advance, i.e., to engage in a job-to-job transition. The question then becomes whether such workers can move to a job that is better or worse paid than the job they held previously.

Figure A4 investigates this issue by decomposing job finding and job-to-job movements by the wage that workers obtained in their new job for GFC and Covid-19. In particular, it looks at the share of workers whose new job was paying below the mean real wage in the last pre-crisis period (respectively in 2007 Q4 and 2019 Q4). Looking at job finding, we can see that during both recessions (with the exception of 2020 Q3[14]) there was not much change: workless people were still able to obtain jobs below and above the pre-recession mean wage. However, things are more interesting if we look at job-to-job transitions: during the GFC, the probability of getting a job below the mean pre-recession wage seems to have increased.[15] In particular, out of all job-to-job transitions before the GFC around 54% involved getting a wage below the pre-recession mean but this increased to 60%. This result certainly contributed to falling real wages

[14] The big fall in the share of people getting a job below the mean real wage during Covid-19 in 2020 Q3 could perhaps be attributed to people who were laid off in 2020 Q2 after the pandemic hit the economy but then were quickly hired back after firms realised that they can furlough workers or that the effects of the pandemic would not be as bad as they thought. This is an example of 'temporary' unemployment in contrast to 'permanent' unemployment (Gallant, Kroft, Lange, & Notowidigdo, 2020).

[15] Due to small sample size, the time series are quite volatile but we can still see the trend.

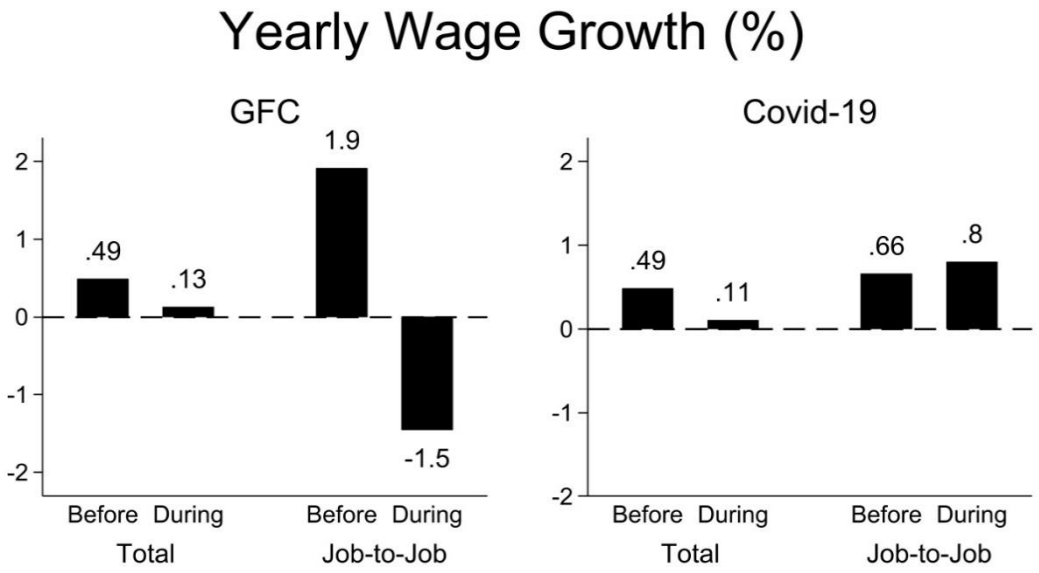

Figure 5. Overall real wage growth and real wage growth for all workers in job-to-job movements before and during Covid-19 (2019Q1-2021Q3) and GFC (2007Q1-2009Q4)
Data is taken from the Five-Quarter Longitudinal LFS and all estimates are weighted. Sample is constrained to workers aged 18 to 64 and full-time students are excluded. 'Before' Covid-19 refers to 2019Q1-2020Q1 and 'Before' GFC refers to 2007Q1-2007Q4.

in late 2000s and early 2010s (Costa & Machin, 2017). Even if people who did not change jobs retained their pre-crisis wages, average real wages will fall if people who changed jobs had to accept a lower wage. On the other hand, the distribution in job-to-job movements by wage during Covid-19 remained roughly constant. Thus, it seems that investigating the real wage change in job-to-job transitions is important for understanding the effects of GFC and Covid-19 on workers' wages.

We can further probe into this question by comparing the wage growth in job-to-job transitions. To that aim, Figure 5 plots the overall wage growth as well as the wage growth involved in job-to-job transitions before and during Covid-19 and the GFC. Using data from the Five-Quarter Longitudinal LFS, we can calculate the wage growth on a yearly basis, e.g., how much a worker's wage changed in 2020Q1 relative to 2019Q1.[16] Regarding the overall real wage growth, in both cases it was positive before the recessions (at 0.5%) and was nearly zero percent after the shock struck the economy.

However, there is a striking change in the wage growth associated with job-to-job transitions during the GFC. Before GFC, workers changing jobs were able to enjoy higher wage growth (1.9%) than the average wage growth (0.5%), confirming Topel and Ward's suggestion (1992). Nevertheless, this trend reversed in 2008: job-to-job movements no longer involved an increase in wages, as workers who changed job had to accept a fall in wages of 1.5%. This result implies that some workers probably decided to change jobs because they anticipated to be earning less from their current job, e.g., the risk of laid off becomes higher amidst recession. In contrast, the change in wages in job-to-job transitions before and during Covid-19 did not exhibit such

[16] Unfortunately, we cannot calculate wage growth on a quarterly basis, as wages are not recorded every quarter in the LFS but only in the first and the last (or fifth) quarter, in which a person is interviewed.

a decrease: before the pandemic workers changing jobs increased their wage by 0.66% whereas during the pandemic this increased to 0.8%. This means that despite the fall in actual hours worked and the impact from furlough on workers' earnings workers were still able to obtain new jobs that are well paid relative to their current job. In the long-term, thus, real wages should not stagnate to the same extent as in the late 2000s.

Great Resignation

During Covid-19, the positive wage growth may not have been the only motivation for people to change jobs. On the other hand, in 2021Q3 there is some evidence that both resignations and job-to-job moves have increased. Since this means that workers have left voluntarily their jobs, this event has been termed as the 'Great Resignation' with a similar pattern observed in the US (Rosenbaum, 2021). Thus, we may wonder what caused the Great Resignation. It could be due to wage growth where a worker moves to a more highly paid job. However, it could be the result of people re-examining the lives due to lockdown, changing their priorities and deciding to chase their dream, e.g., by embarking on a new career.

On the firm side, the Great Resignation is problematic because a firm cannot retain recent hires for long enough for them to reach a high level of productivity. Given that UK labour markets are tight at present, i.e., there are a lot of vacancies and low unemployment, this means workers have more bargaining power when negotiating the terms of their contracts, as they can quickly find a better paid job or quit to chase their dreams. The question remains, however, whether dreams or wages are at the heart of the Great Resignation. Figure 6 provides some evidence for the idea that wages are more important in explaining the Great Resignation.

Firstly, Figure 6(a) plots the distribution of job-to-job transitions by the reason for leaving one's previous job. Normally, nearly 50% of workers who change jobs resign from their original job. There is a notable drop in the share of resignations in 2020Q1 due to the effects of Covid-19. In addition to fewer vacancies, some workers were afraid for their lifetime earnings, so decided to delay their plans for a job move. While the *share* of people who resigned before a job move did not increase in 2021Q3, the total *number* of people who resigned before a job move did increase slightly due to the fact that total job-to-job moves increased (Figure 3). Interestingly, we can see that at the same time the share of people who changed job after being dismissed increased. This is in line with what happened in the US, although to a much bigger extent than in the UK (Giupponi, Landais, & Lapeyre, 2021). Some workers were dismissed at first, received benefits for a bit and quickly returned to work after the spread of the pandemic started to be contained. However, Figure 6(a) does not yet tells us what the source of the Great Resignation is.

Secondly, Figure 6(b) directly examines this issue. If the source is a desire for a career change, then we will expect that a worker would accept a lower wage in their new job and would change their occupation. As an example of these trends, we can consider a banker who decides to pursue a new career as a high-school English teacher. Figure 6(b) plots the share of workers who engaged in a job-to-job move and experienced an increase in wages or a change in occupation. The share of people whose wage increased after a job-to-job move has remained constant at 62% before and during the pandemic. On the other hand, fewer people are changing occupations in 2020-1 relative to 2019. Thus, there is not very strong evidence to support the idea that the Great Resignation was caused by people reconsidering their careers.

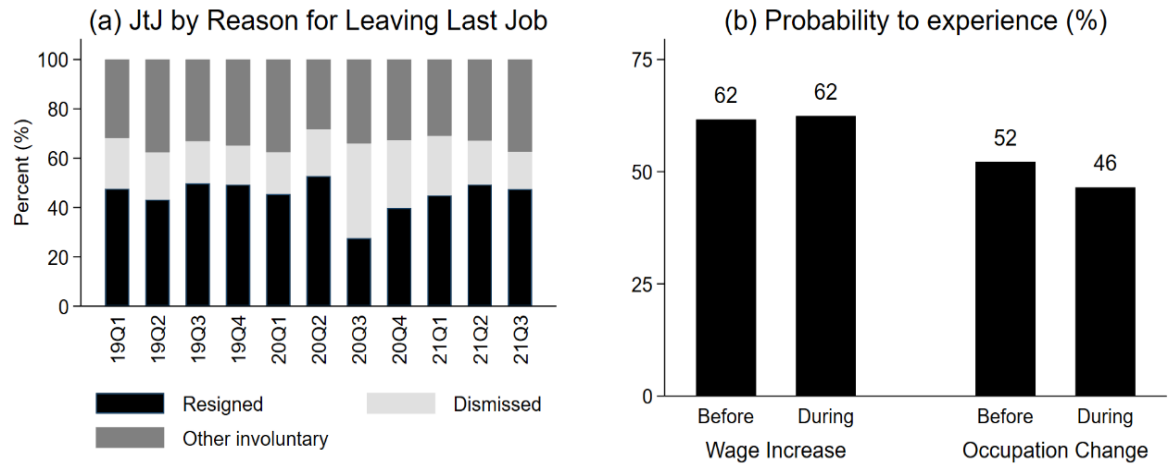

Figure 6. Covid-19 and the Great Resignation: (a) decomposes JtJ by the reason for leaving the origin job; (b) plots the probability of experiencing a wage increase or occupation change.
Data for (a) is taken from the Two-Quarter Longitudinal LFS and data for (b) is taken from the Five-Quarter Longitudinal LFS. All estimates are weighted. Sample is constrained to workers aged 18 to 64 and full-time students are excluded. 'Before' Covid-19 refers to 2019Q1-2020Q1.

Zero-hours contracts

When a worker changes jobs, their wages do not depend only on their hourly pay but also on the number of hours worked. For this reason, we also explore the changes to the number of zero-hours contracts (ZHC) during the pandemic. ZHC are one of the main type of flexible working arrangements in the UK economy and they allow for 'on demand' work where the employer does not guarantee a fixed number of hours to their workers. Importantly, ZHC are widely used in low-wage sectors such as social care and hospitality (Datta, Giupponi, & Machin, 2020). In the context of Covid-19, ZHC are problematic because an employer has no incentive to put her employees with ZHC on furlough since she has the legal right simply not to call on them. Moreover, even if a worker with a ZHC is furloughed, the exact amount that she receives should depend on how often she was called in recent weeks. Overall, employees on ZHC seem to be more vulnerable to an earnings loss than employees on standard working arrangements during Covid-19.

Figure 7 plots the share of ZHC out of all jobs and out of all *new* jobs before and during Covid-19. We define *new* jobs as all jobs that have been started within the last three months. The share of ZHC increased slighly from 2.9% to 3.2% after Covid-19 hit the economy in 2020Q2. Similarly, the share of new jobs with ZHC increased from 5.9% to 7.2. This trend partly reflects an increase in demand for workers in social care as a result of the pandemic. However, eventually the share of new jobs with ZHC decreased down to 4.8%, indicating that demand for social care workers returned to pre-pandemic levels. This result for 2021Q3 suggests that the share of ZHC might fall in the next quarter, given that fewer new jobs are associated with ZHC.

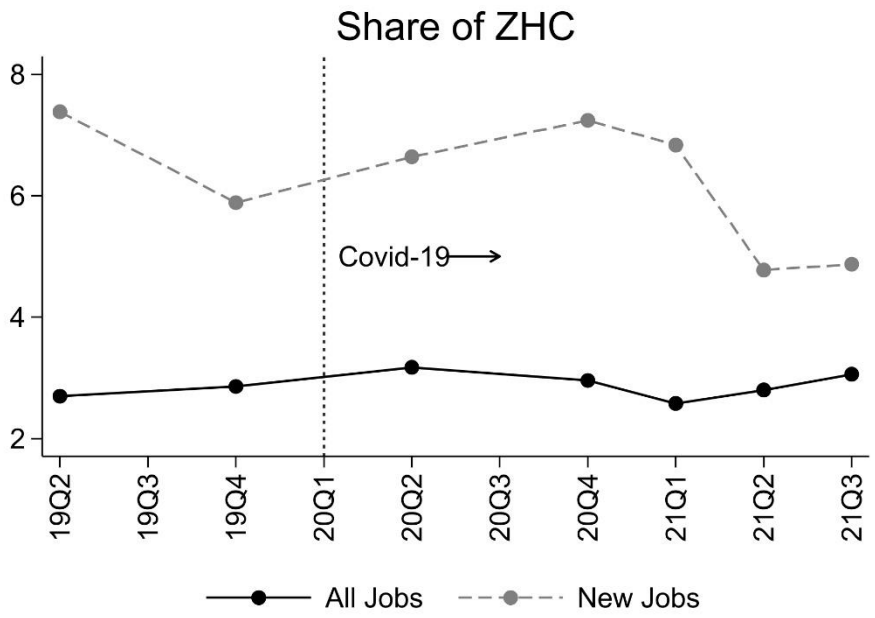

Figure 7. Share of workers on Zero-Hours Contracts (ZHC) out of all workers and out of all new jobs
Data is taken from the Cross-Sectional LFS and all estimates are weighted. Sample is constrained to workers aged 18 to 64 and full-time students are excluded.

Conclusion

When responding to the effects of recessions, firms can adjust labour costs in three different ways: decreasing wages, changing the number of workers or reducing the hours of their current employees. In contrast to earlier UK recessions, the institutional framework during Covid-19 incentivised firms to reduce the hours of some of employees down to zero. Thus, it comes as no surprise that actual hours worked fell by 17% in 2020Q2 whereas the employment rate and real wages did not experience any big changes.

The striking reduction in hours was mostly the result of the furlough scheme which prevented firms from laying off workers so long as they are employed but do not work any actual hours. However, being employed but working zero hours is far from ideal: not only are earnings lower, but also the probability of losing one's job is higher. Unfortunately, these effects are not diffused homogeneously across the UK population, as some groups such as young people are more likely to work in industries that were hit harder by the pandemic. While GDP is projected to return to its previous levels by 2022Q4, the effects from the pandemic on such groups may persist due to scarring. In any case, accounting for such heterogeneous effects is an important part of exploring how labour markets responded to the pandemic.

Moreover, although workers who changed jobs did not suffer a big loss in earnings as during the GFC, some questions remain open regarding the long-term effects from Covid-19. At present (October 2021), the furlough scheme has completely wound down and the government does not plan to extend it. In addition, labour markets will also be affected by the on-going energy crisis and the labour supply shortages. Thus, we might expect to see some delayed

changes in the employment rate and its sectoral decomposition in 2021Q4, meaning that the long-term effects of Covid-19 on labour market may well persist next year.

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Appendix

This Appendix contains several figures that were discussed in the main body of the paper.

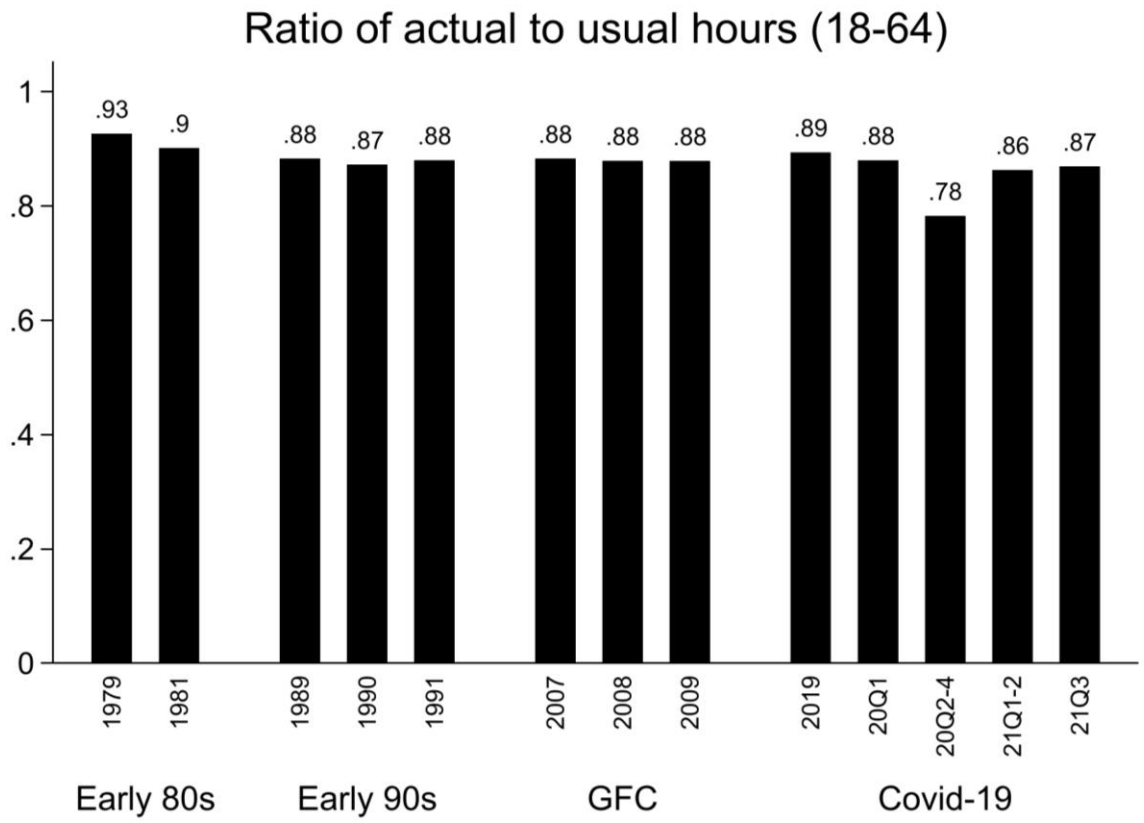

Figure A1. Ratio of actual to usual hours over three recessions
Note: the number of usual hours remains largely unchanged over time, suggesting that it is mostly the numerator (namely, actual hours) that affects the ratios.
Data is taken from Cross-sectional LFS and all estimates are weighted. Full-time students are excluded. The reason why the ratios for the Early 80s are higher is because the actual hours variables (numerator) also include over-time which is excluded from all other denominations in the ratios.

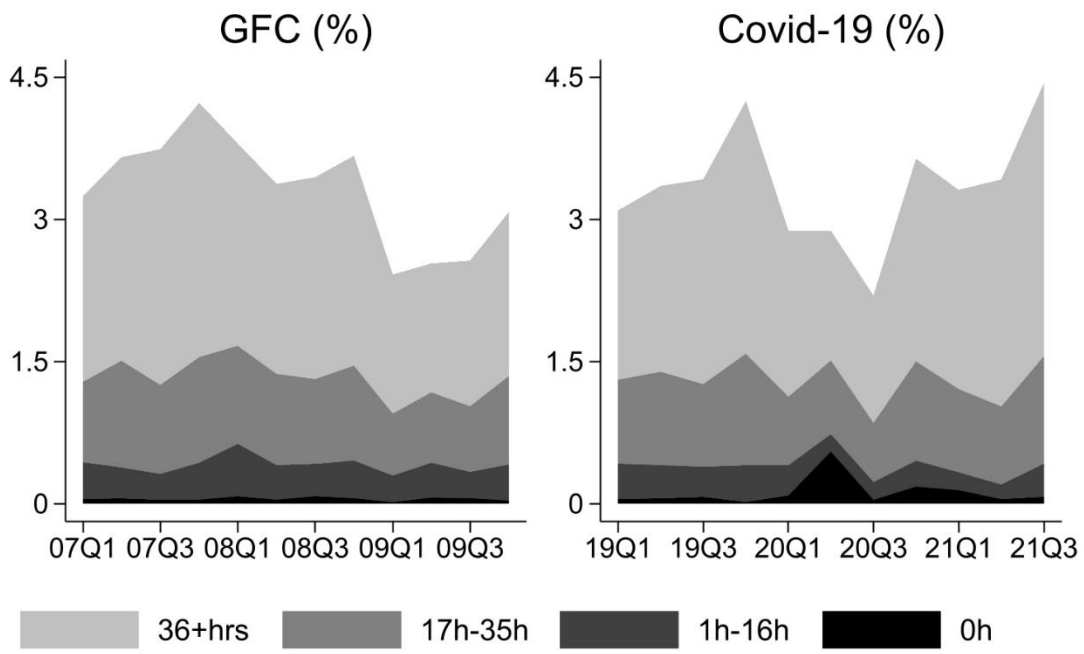

Figure A2. Job-to-Job Movement decomposed by the number of hours in the job, to which a worker moves, i.e., the destination of the job move
Data is taken from the Two-Quarter Longitudinal LFS and all estimates are weighted. Full-time students are excluded. The results are obtained relative to the baseline of working more than 35 hours.

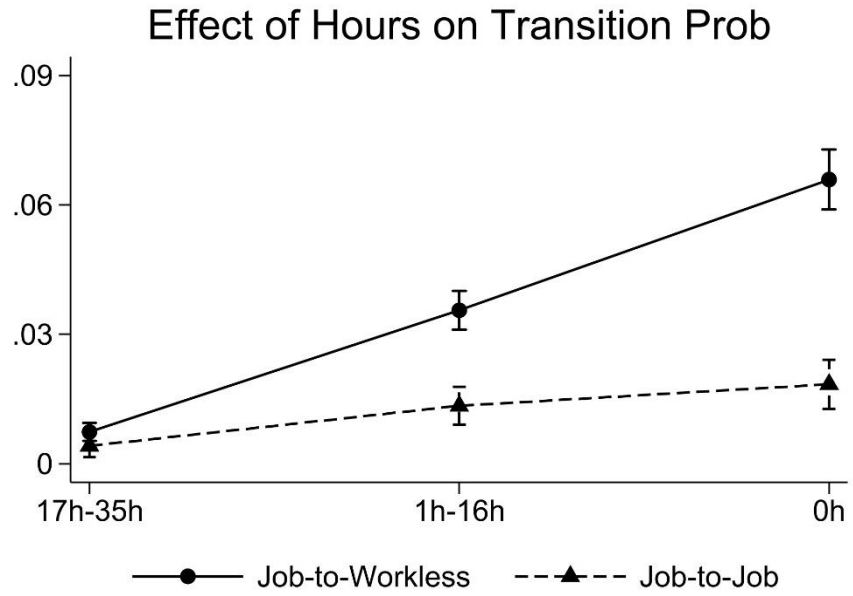

Figure A3. The effect of lagged hours on two types of transitions: from an old job to a new job and from a job to becoming workless
Data is taken from the Two-Quarter Longitudinal LFS and all estimates are weighted. Full-time students are excluded. The results are obtained relative to the baseline of working more than 35 hours.

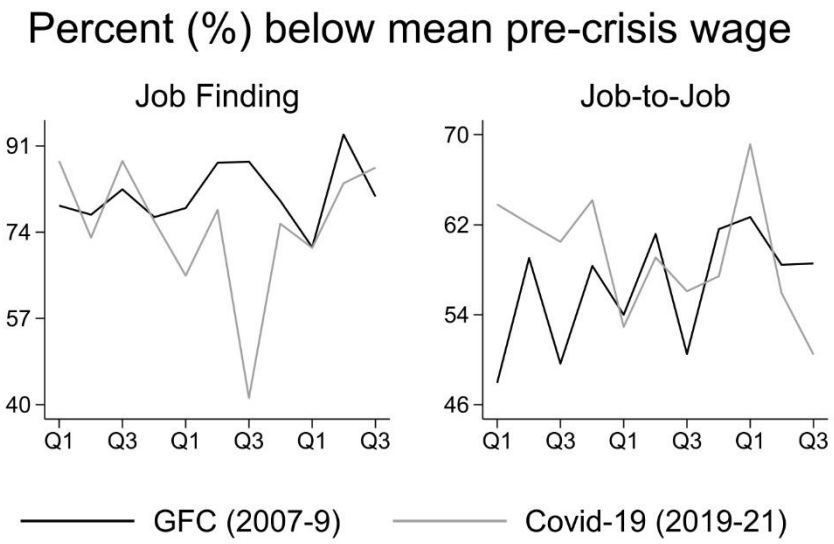

Figure A4. Percent of workers earning below the mean pre-crisis (log) real wage after a job move during Covid-19 and GFC
Data is taken from the Two-Quarter Longitudinal LFS and all estimates are weighted. Full-time students are excluded. Mean pre-crisis wage for GFC is the mean wage in 17Q4 and mean pre-crisis wage for Covid-19 is the mean wage in 20Q1.