HM Treasury

Impact on households:

distributional analysis to accompany Budget 2021

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Contents

Executive summary

This document sets out the impact on household finances of the government's decisions since Spending Round 2019 (SR19) and recent trends in living standards.

Households' living standards are affected both by the general performance of the economy and by the direct impact of government decisions. A strong economy means there are more job opportunities and wages are higher. The government's stewardship of the economy, such as through fiscal policy and the regulatory environment for businesses, influences these factors. In addition, policy decisions, for example about whether to raise or cut particular taxes, or to invest in public services, have a direct impact on household living standards.

This document is split into three sections: Chapter 1 describes recent trends in living standards, earnings, and employment, as well as illustrating the impact both COVID-19 and the government policy response has had on households' incomes over the last year; Chapter 2 estimates the direct impact of policy decisions on households' future living standards; and Chapter 3 details the data sources and methodology used for this analysis. The analysis in Chapter 2 reflects the impact of measures announced since SR19, including Budget 2021 measures listed in Table 2.1 of the Budget document where there is a direct, quantifiable impact on households.

The analysis in this document shows:

- in the years prior to the COVID-19 pandemic, real median household income growth was greater in the lower- and middle-income quintiles than in the highest income quintile
- the UK labour market was performing strongly, with earnings growth strongest amongst the lowest earners and the employment rate reaching a record high
- the COVID-19 pandemic has brought with it significant economic disruption, with the UK suffering its biggest annual fall in output in 300 years in 2020
- despite such a deep recession, the labour market has held up well relative to previous recessions, with policies such as the Coronavirus Job Retention Scheme (CJRS) helping to protect jobs during the pandemic
- the UK unemployment rate has also remained lower than that of comparable groups of countries

- taken together, the CJRS, other government policies such as the Self-Employment Income Support Scheme (SEISS) and increases to welfare have protected those with the lowest incomes the most
- households in all income deciles are better off in 2021-22 as a result of tax, welfare and public service spending decisions taken since SR19, with the poorest income deciles supported the most as a percentage of net income

Chapter 1
Trends in living standards

1.1 This chapter describes recent trends in living standards and the labour market up to and including the pandemic. Whilst the government's plan to Build Back Better will do more to deliver growth that benefits the whole of the United Kingdom, the analysis presented here shows that[1]:

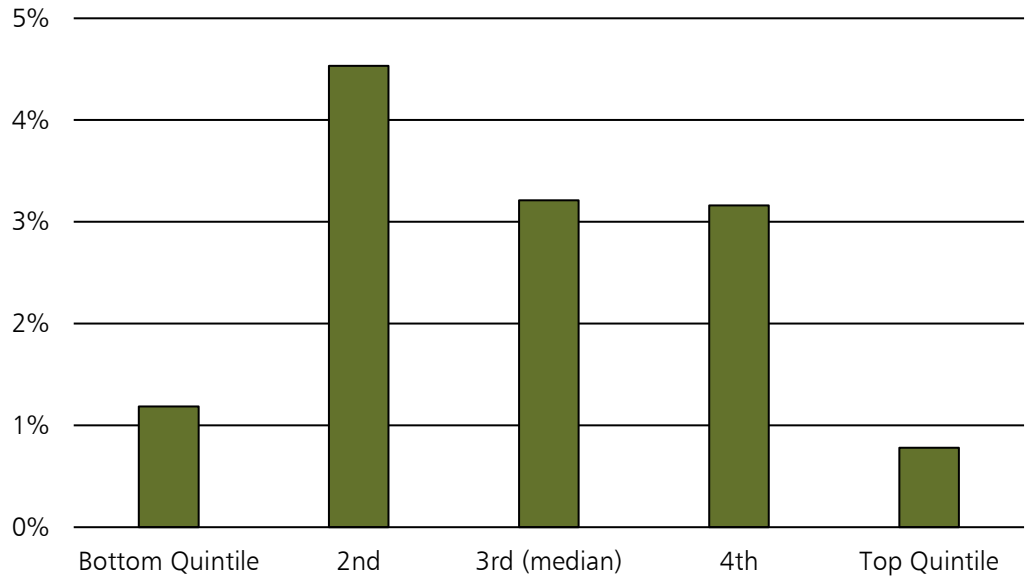
- in the years prior to the COVID-19 pandemic, real median household income growth was greater in the lower- and middle-income quintiles than in the highest income quintile
- the UK labour market was performing strongly, with earnings growth greatest amongst the lowest earners and the employment rate reaching a record high
- the COVID-19 pandemic has brought with it significant economic disruption, with the UK suffering its biggest annual fall in output in 300 years in 2020
- despite such a deep recession, the labour market has held up well relative to previous recessions, with policies such as the Coronavirus Job Retention Scheme (CJRS) helping to protect jobs during the pandemic
- the UK unemployment rate has also remained lower than that of comparable groups of countries
- taken together, the CJRS, other government policies such as the Self-Employment Income Support Scheme (SEISS) and increases to welfare, have protected those with the lowest incomes the most

[1] All analysis presented in this chapter is for the UK, unless stated otherwise.

The living standards context prior to the COVID-19 pandemic

1.2 As shown in Chart 1.A, real median household incomes increased across all quintiles of the income distribution between 2009-10 and 2018-19. This growth was greater for those in the lower- and middle-income quintiles than for those in the highest income quintile.

Chart 1.A: Percentage change in median equivalised real disposable household income, before housing costs, by household income quintile, 2009-10 to 2018-19



Source: Households Below Average Income, DWP

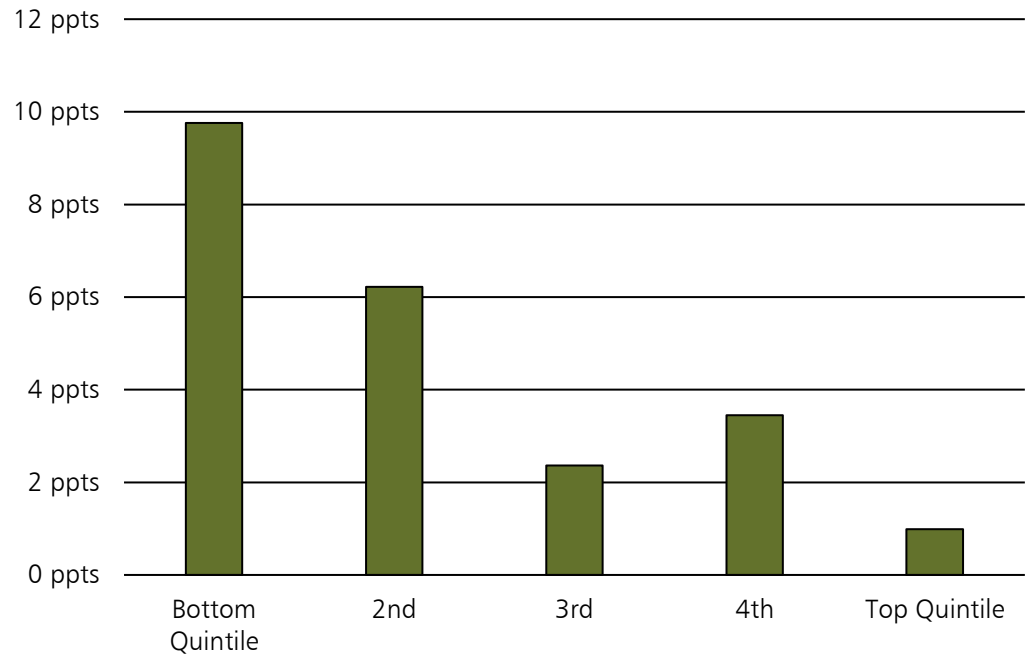
1.3 One of the main drivers of living standards is the performance of the labour market. Before the COVID-19 pandemic, the UK labour market was performing strongly, with the employment rate steadily increasing, as shown by Chart 1.B. In the three months to February 2020, the employment rate reached a record high of 76.6%.

Chart 1.B: UK employment rate (ages 16 to 64 and seasonally adjusted, 2010-Q1 to 2019-Q4)

Source: Labour Force Survey, ONS

1.4 The increase in the employment rate was highest among the lowest income households, as shown in Chart 1.C. For the lowest 20% of households, the employment rate increased by 9.8 percentage points from 2009-10 to 2018-19.

Chart 1.C: Change in employment rates (percentage points) by equivalised net household income quintile, before housing costs, 2009-10 to 2018-19[2]

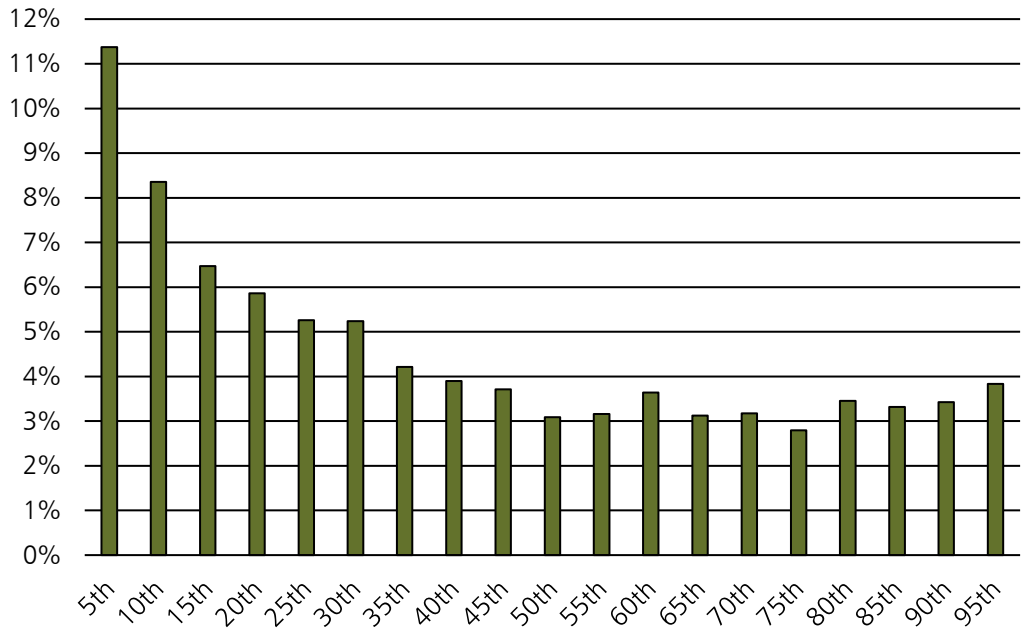


Source: Households Below Average Income, DWP calculations

1.5 Supported by the introduction of the National Living Wage (NLW) in April 2016 and its subsequent increases, earnings growth predominantly benefitted lower earners in the years preceding the COVID-19 pandemic. This is shown in Chart 1.D, which shows that individual full-time employees at the fifth earnings percentile saw their real wages grow strongly, by 11.4%, in the four years from 2015 to 2019.

[2] The analysis is based on 16 to 64 year old employment rates. Households are ranked based on income quintiles for the whole population.

Chart 1.D: Percentage change in individual full-time employee gross weekly real earnings across the UK, 2015 to 2019, at example percentile points



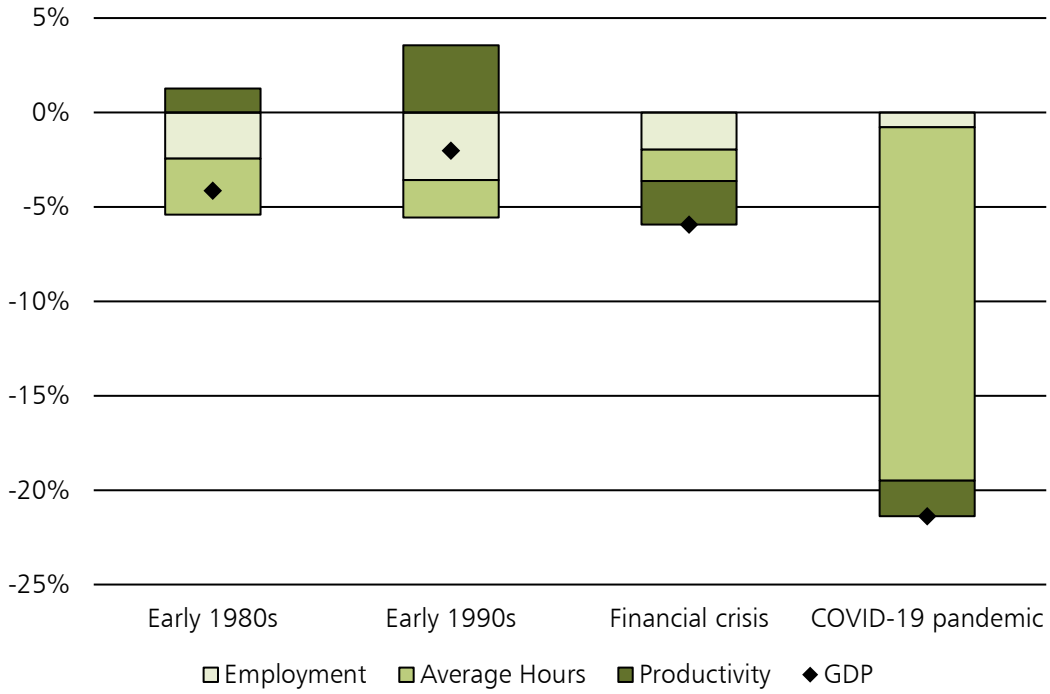
Source: HM Treasury analysis of the Annual Survey of Hours and Earnings: 2015 and 2019 final (revised) results, ONS

The impact of the COVID-19 pandemic on living standards

1.6 The COVID-19 pandemic has brought with it significant disruption to the UK economy and countries around the world. From the outset, the government took necessary action to slow the spread of the virus, placing considerable restrictions on people and businesses. Alongside this, the government provided exceptional support to jobs and incomes.

1.7 In the first and second quarters of 2020, the UK experienced the deepest recession on record. However, when comparing with previous recessions the labour market held up relatively well during this fall in output. This is illustrated by Chart 1.E, which shows that despite the sharp fall in output during this period, the proportional fall in employment was lower compared to previous recessions.

Chart 1.E: Changes in GDP, average hours, employment and productivity during recessions (COVID-19 pandemic and previous recessions)[3]

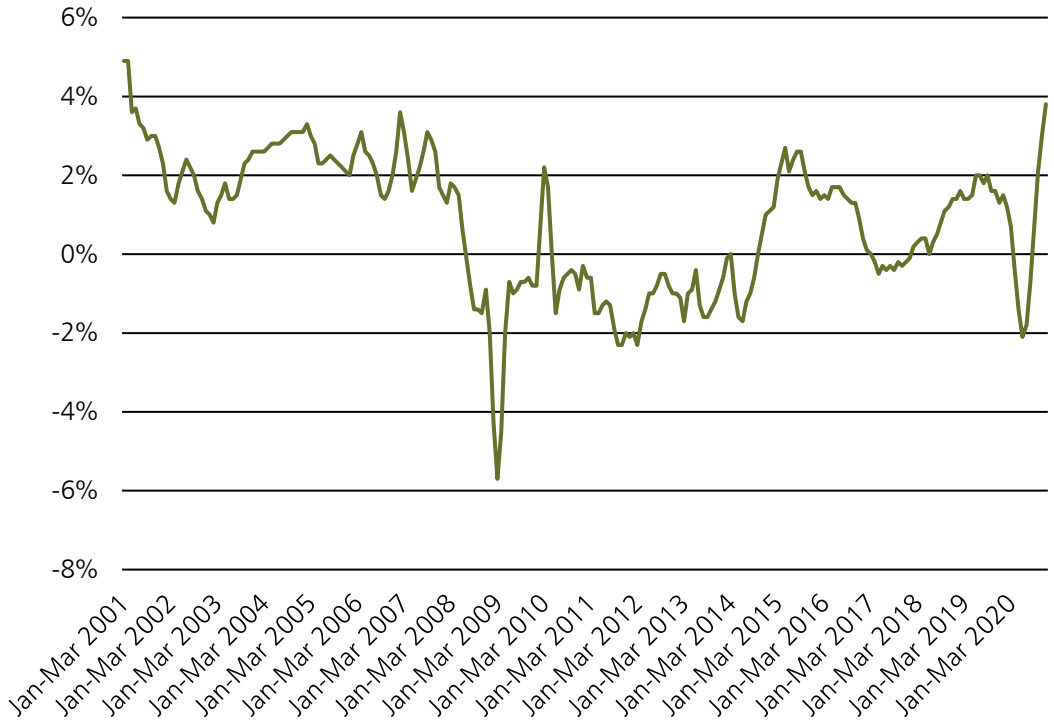


Source: ONS

1.8 Whilst average hours fell dramatically alongside the sharp fall in output during the pandemic, as shown in Chart 1.E, real average earnings growth has not seen a fall of the same scale. Real average earnings growth in Great Britain did fall in 2020, but it did so by much less than during the financial crisis, as shown by Chart 1.F.

[3] For each recession this analysis takes the quarterly GDP, average hours, employment and productivity (calculated as GDP per hour) immediately prior to the recession and compares them with the same figures in the final quarter of the recession (i.e. the last quarter with negative quarter-on-quarter GDP growth). It then apportions the percentage change in GDP across the changes in average hours, employment and productivity, consistent with analysis undertaken by the Office for Budget Responsibility (OBR) in the Economic and Fiscal Outlook, November 2020.

Chart 1.F: Annual growth rates of real average weekly earnings in Great Britain, (January-March 2001 to October-December 2020, seasonally adjusted)[4]

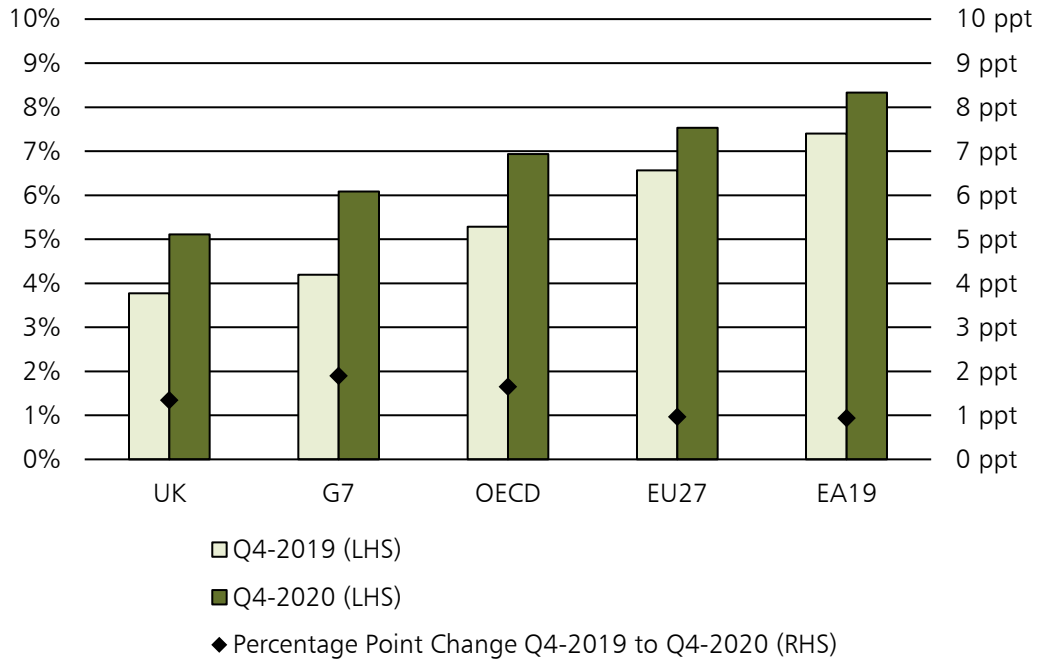


Source: Monthly Wages and Salaries Survey, ONS

1.9 Internationally, the UK unemployment rate has remained lower than that of comparable groups of countries during the pandemic. Chart 1.G shows that the UK unemployment rate before the pandemic hit was lower than the averages in the OECD, G7, EU27 and the euro area (EA19), and has remained lower during the pandemic so far.

[4] Earnings are measured as total weekly pay (which include bonuses but exclude arrears of pay) in real terms. Figures shown are for each month, where three-month averages are given.

Chart 1.G: Unemployment rate in the UK and different groups of countries, Q4-2019 to Q4-2020[5]



Source: OECD

1.10 Part of the reason the labour market has held up well relative to past recessions is due to the unprecedented action the UK government has taken to protect jobs, incomes and living standards.

1.11 The government introduced the CJRS in March 2020, which provides employers with grants to help pay the wages of furloughed employees, as well as the SEISS, which provides support to eligible self-employed individuals in the form of grants. In addition, the government remains committed to supporting the low paid, through its ambitious target for the NLW to reach two thirds of median earnings and to extend the NLW to those aged 21 and over, by 2024, provided economic conditions allow. In April 2020, the NLW increased to £8.72 an hour.

1.12 To support those on low incomes, the government also introduced a temporary £20 per week increase to the Universal Credit standard allowance and Working Tax Credit basic element for 2020-21, a temporary suspension of the Universal Credit Minimum Income Floor for self-employed claimants and an increase in the Local Housing Allowance rates for Universal Credit and Housing Benefit claimants.

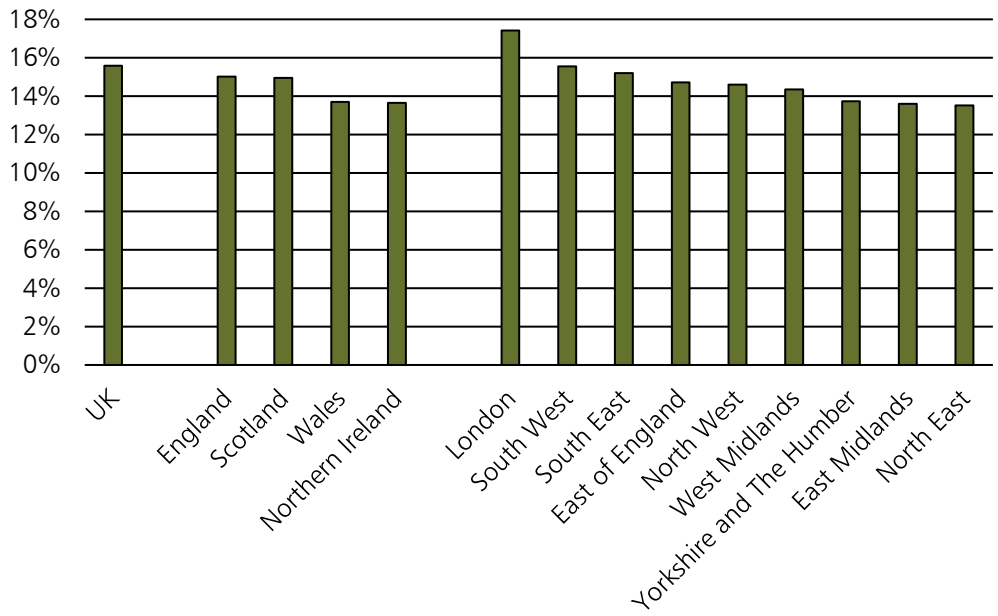
1.13 As of 15 February 2021, 11.2 million jobs have been supported by the CJRS since the start of the scheme, totalling to £53.8 billion in value of claims. As of 31 January 2021, the SEISS has provided support to 2.7 million self-

[5] Unemployment rate is measured as the unemployed population as a percentage of the labour force and it is seasonally adjusted. Q4-2020 is the latest quarter in which there is data available from the OECD for each of all the countries and groups of countries shown.

employed individuals, with claims totalling over £19.7 billion across the first three grants.

1.14 The CJRS has protected jobs in every part of the UK. Chart 1.H shows the percentage of eligible employments furloughed across the UK, as at 31 January 2021 (provisional figures). For the whole of the UK, the percentage of eligible employments furloughed is 16% and London is the only region with a percentage of eligible employments on furlough that is higher than that, at 17%.

Chart 1.H: Percentage of all eligible employments that are on furlough[6], across the UK, as at 31 January 2021 (provisional figures)

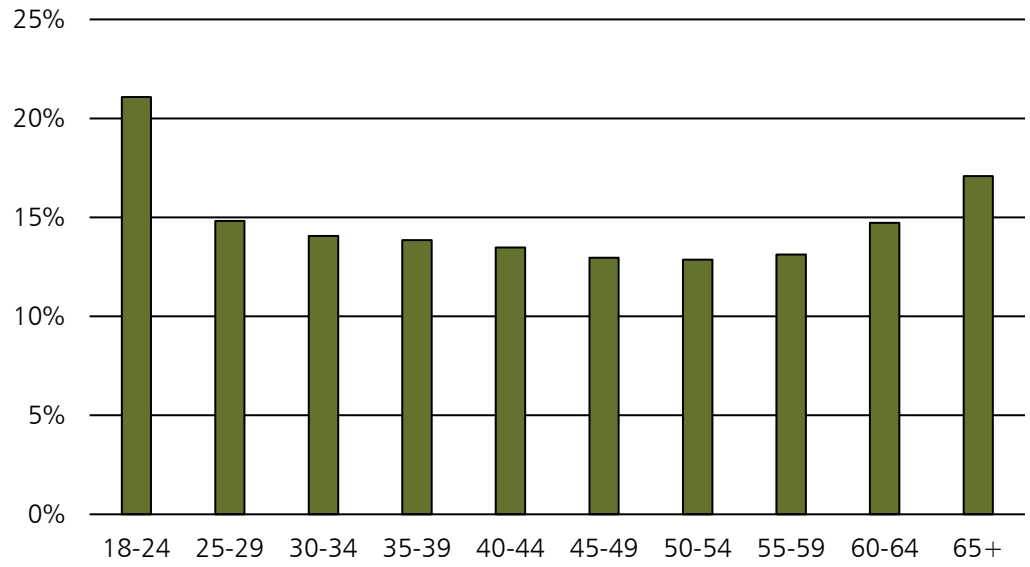


Source: HMRC Official Coronavirus Job Retention Scheme Statistics, February 2021 release

1.15 Looking across age groups, the CJRS has disproportionately supported younger workers, with those under 25 most likely to be supported by the scheme. As shown by Chart 1.I, 21% of eligible employments for 18 to 24-year olds were on furlough, as at 31 January 2021 (provisional figures).

[6] This is the take-up rate of furlough, which is defined as the number of employments furloughed as a percentage of the number of eligible employments. Eligible employments are those eligible according to the criteria following the CJRS extension in October 2020.

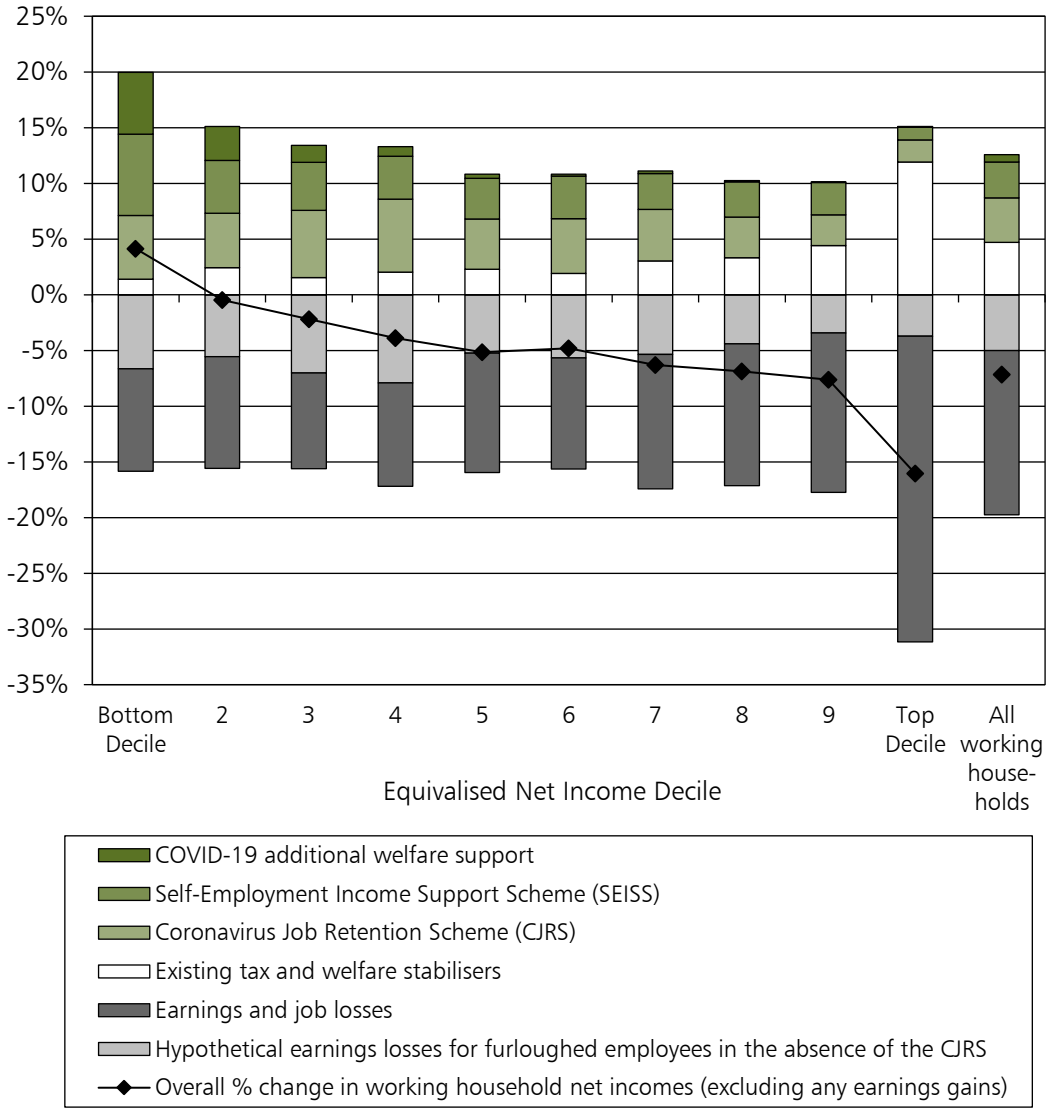
Chart 1.I: Percentage of all eligible employments that are on furlough, by age group (18 and over), as at 31 January 2021 (provisional figures)



Source: HMRC Official Coronavirus Job Retention Scheme Statistics, February 2021 release

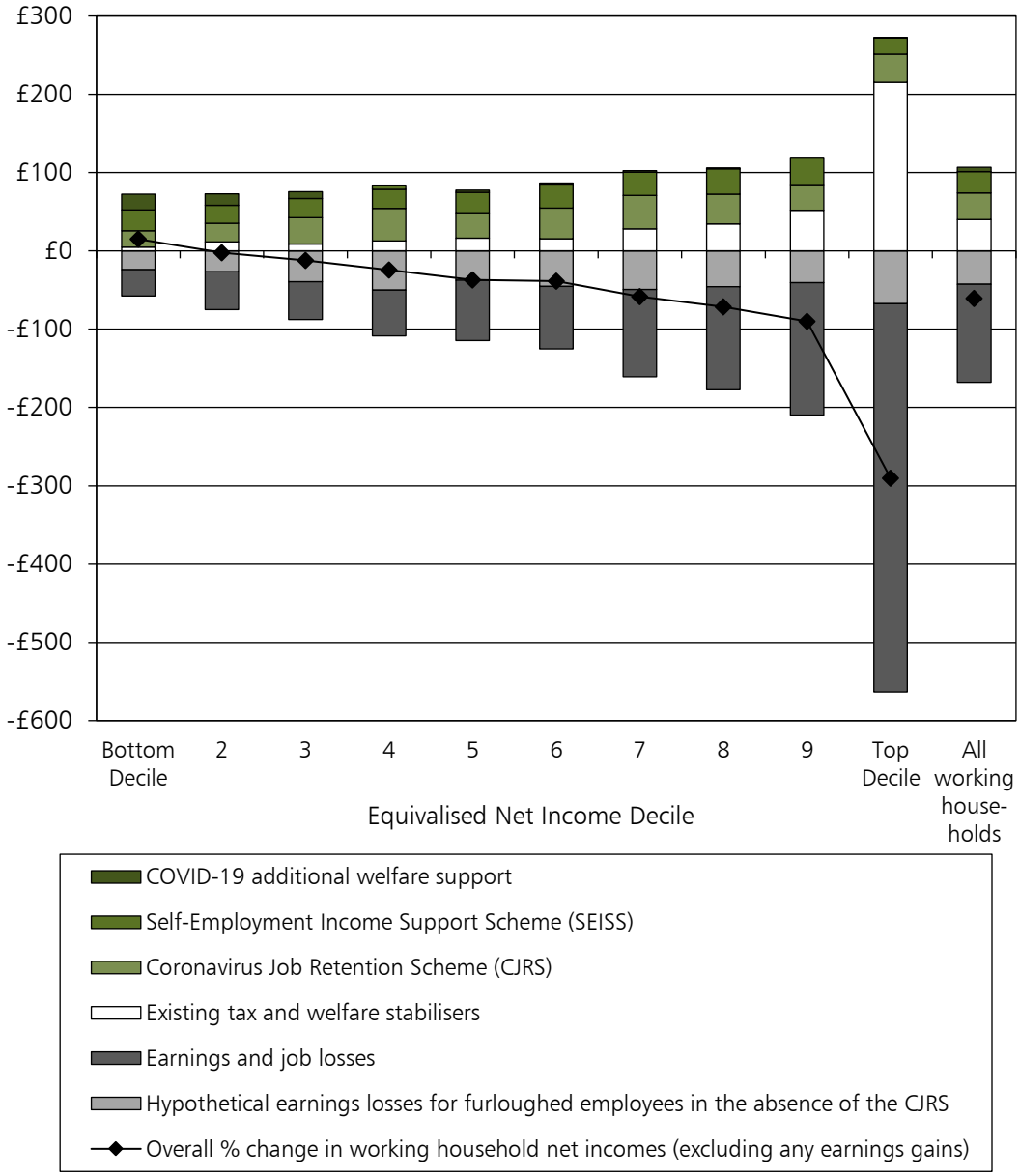
1.16 The final charts in Chapter 1 illustrate the challenge faced by households during the COVID-19 pandemic, and how government interventions have supported households of different income levels. Survey-based estimates of job loss, earnings loss and furloughing have been used to help simulate uptake of government support like the CJRS, SEISS and welfare. This has enabled us to model the estimated impact these schemes had in offsetting income losses faced by working households between February and November 2020. Charts 1.J and 1.K show that, as of November 2020, when the latest survey data is available, government interventions were supporting the poorest working households the most (as a proportion of pre-COVID income).

Chart 1.J: Percentage change in household income (excluding earnings gains), by working household net income decile, as of November 2020



Source: HM Treasury distributional analysis model

Chart 1.K: Change in household income (excluding earnings gains), £ per week, by working household net income decile, as of November 2020



Source: HM Treasury distributional analysis model

1.17 Charts 1.J and 1.K show the impacts on households who had at least one person in work immediately prior to the COVID-19 pandemic. If we widen the modelling to include all working-age households (which would include a significant number of lower-income households with inactive and unemployed adults) the overall distributional impacts look slightly flatter but similar in shape. The smaller earnings losses for the lower deciles remain more than offset by government support, meaning that across all working-age households the poorest have been protected the most from income losses.

Chapter 2

Distributional analysis of tax, welfare and public service spending decisions since Spending Round 2019

2.1 This chapter sets out the estimated impact of tax, welfare and public service spending changes announced since Spending Round 2019 (including those measures and spending settlements announced at Budget 2020, Spending Review 2020 (SR20) and Budget 2021) that carry a direct, quantifiable impact on households. It also presents estimates of the overall level of tax paid and public spending received by households in 2021-22.

2.2 The analysis here focuses on those tax, welfare and public service spending changes that are not directly related to the government's response to the COVID-19 pandemic, and which have a longer-term impact on household incomes. It does not illustrate the impact of government support in response to the pandemic (for example the Coronavirus Job Retention Scheme (CJRS), Self-Employment Income Support Scheme (SEISS), or additional public service spending), much of which is temporary, benefiting households in 2021-22 only, and aimed at offsetting the losses households have faced elsewhere (such as a loss of self-employed earnings). Analysis of the economic impact of COVID-19 on households between March and November 2020, including the corresponding government support, is shown instead in Charts 1.J and 1.K in Chapter 1.

2.3 The modelling in this chapter is on a static basis and shows the effect of tax and spending policy in isolation, and before households' behavioural responses are taken into account. For this reason, it only illustrates some of the factors which will drive households' living standards in 2021-22, and importantly does not take into account changes in the labour market or the wider economic impacts of government policy. The analysis also presents average effects on households within each income decile, but there will be variation around this average.

Box 2.A: Measuring household incomes

The analysis in this document uses household income as the measure of a household's standard of living. While this is the standard measure, some households experience periods of low income temporarily, or finance their standard of living through utilising wealth rather than through income. Therefore, income may not always best represent their general standard of living. Such individuals are often students, the temporarily unemployed, or the self-employed. The most recent analysis by the Department for Work and Pensions has shown that, of those surveyed in 2017-18, 54% of those in the bottom quintile in 2010-11 were in a higher income quintile in 2017-18.

Alternative approaches have used household expenditure to approximate a household's standard of living. Approximately 20% of those in the bottom income decile are in the top half of the distribution when households are ranked by their total expenditure. Due to limitations in the data, an expenditure-based approach is not used here, but the impacts of government decisions on low-income households should be considered in the context of these methodological choices.

Many of the charts included in this document are presented by household equivalised net income decile. This means that a household's net income (income after taxes and benefits) is adjusted to take account of the size and composition of the household. Households are then ranked from lowest to highest equivalised net income and divided into 10 equally sized groups.

To help understand where different households sit in the income distribution, Chapter 3 includes the median gross income for each decile, as well as a more detailed explanation of the data sources, methodology, and the equivalisation process.

2.4 Charts 2.A to 2.C include the impact of measures and spending settlements set out at SR19, Budget 2020 and SR20. In addition, the Budget 2021 tax and welfare measures included in these charts are:

- Fuel duty: one year freeze in 2021-22
- Alcohol duty: one year freeze in 2021-22
- Pensions Lifetime Allowance: maintain at £1,073,100 up to and including 2025-26

2.5 Most of this analysis is presented in the fiscal year 2021-22. This is because, for most departments, day-to-day spending – known as Resource Departmental Expenditure Limits (RDEL) – has only been allocated to 2021-22, and therefore it is not possible to estimate the distributional impacts of public spending beyond this point.

2.6 The impact of maintaining the income tax Personal Allowance and higher rate threshold at their 2021-22 levels is not included in Charts 2.A to 2.C, as this does not impact household incomes until 2022-23. However separate

analysis of the impact of this measure, alongside other relevant tax and welfare measures in 2022-23, is set out in Charts 2.D and 2.E.

2.7 We have not included those temporary measures in this analysis that are designed to support households in 2021-22 in response to the economic effects of the COVID-19 pandemic. This includes the following measures:

- CJRS: extension to September 2021
- SEISS: two further grants
- VAT: extension to reduced rate for hospitality, accommodation and attractions
- Stamp Duty Land Tax: maintain nil-rate band at £500k until 30 June 2021, £250k until 30 September 2021
- Universal Credit: maintain £20 increase to standard allowance for six months, three month delay to Minimum Income Floor reintroduction, and maintain surplus earnings de minimis at £2,500 in 2021-22
- £500 payment to eligible Working Tax Credit recipients

2.8 As shown in Charts 1.J and 1.K, the combination of the CJRS, SEISS and temporary increases to welfare have, to date, reduced the scale of the economic losses to households, with the poorest working households benefiting the most as a proportion of income. While extensions to these schemes are not included in the analysis presented here, we expect these to continue to have a significant impact on household incomes into 2021-22 as the government continues to support households through the pandemic.

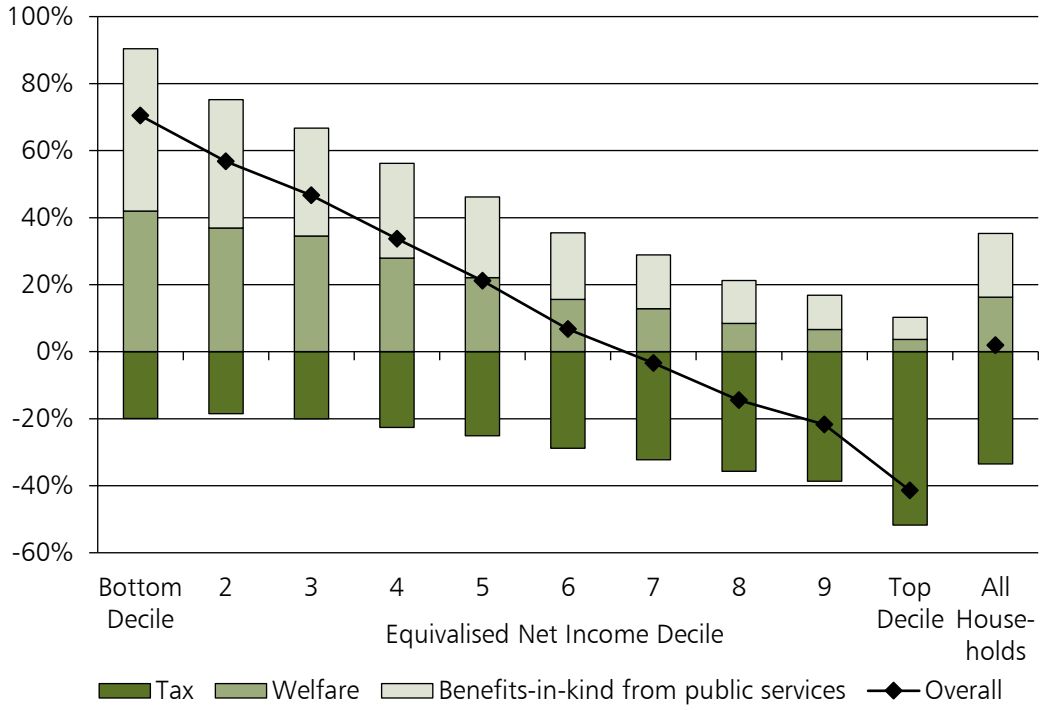
2.9 In addition, the government announced at SR20 a further £55 billion of new funding in 2021-22 to support the public services response to COVID-19. Much of this funding will support those with the lowest incomes, including funding for schools in England to help children catch up on lost learning, and policies that prioritise supporting jobs, such as the Kickstart Scheme for young people and doubling the number of work coaches in Job Centre Plus.

Overall level of tax, welfare and public service spending

2.10 Government policy continues to be highly redistributive. Chart 2.A shows the estimated overall level of public spending received, and tax paid, by households across the income distribution (the black diamonds indicate the net position). It shows that in 2021-22:

- on average, households in the lowest income decile receive over £4 in public spending for every £1 they pay in tax
- the poorest 60% of households receive more in public spending than they contribute in tax

Chart 2.A: Overall level of public spending received, and tax paid, as a percentage of net income (including households' benefits-in-kind from public services), by income decile, in 2021-22



Source: HM Treasury distributional analysis model

Analysis of decisions announced since Spending Round 2019

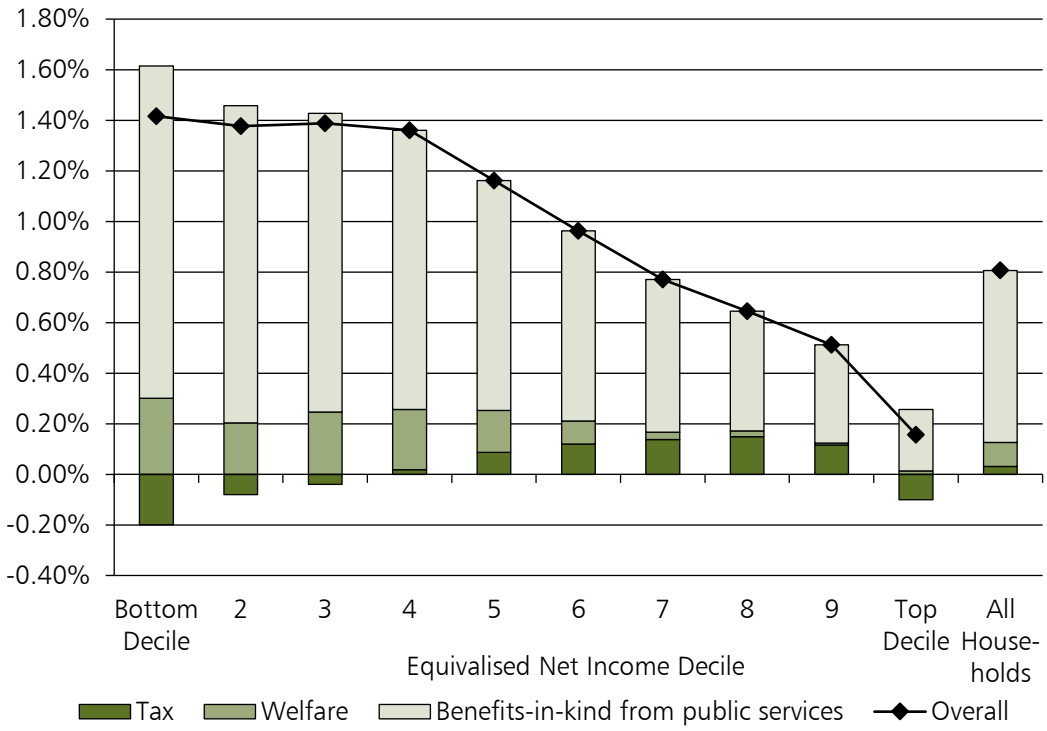
2.11 Charts 2.B and 2.C set out the estimated impact of decisions announced since SR19 (including those measures and spending settlements announced at Budget 2020, SR20 and Budget 2021) across the income distribution. Only those measures set out in paragraph 2.4 are included in the analysis presented here. Chart 2.B shows these impacts as a percentage of net household income (including benefits-in-kind from public services), while Chart 2.C is expressed in annual cash terms. The charts show the impacts on households in 2021-22 compared to a hypothetical world in which modelled government policies announced since SR19 were not introduced. This analysis shows that, on average, households in each income decile are better off as a result of decisions taken since SR19, with the poorest income deciles gaining the most as a percentage of net income.

2.12 As set out in more detail in Chapter 3, Charts 2.B and 2.C only show measures with a direct impact in 2021-22 on benefit income, taxes paid, or the benefits-in-kind received through public services by UK residents. The charts exclude the impact of business taxes, changes to regulation including the National Living Wage (NLW), the impact of government borrowing, and the impact of measures in years other than 2021-22.

2.13 Whilst it is important to consider the impact of tax, welfare and public service spending collectively when assessing the overall impact of government policy, for the majority of departments RDEL spend has only

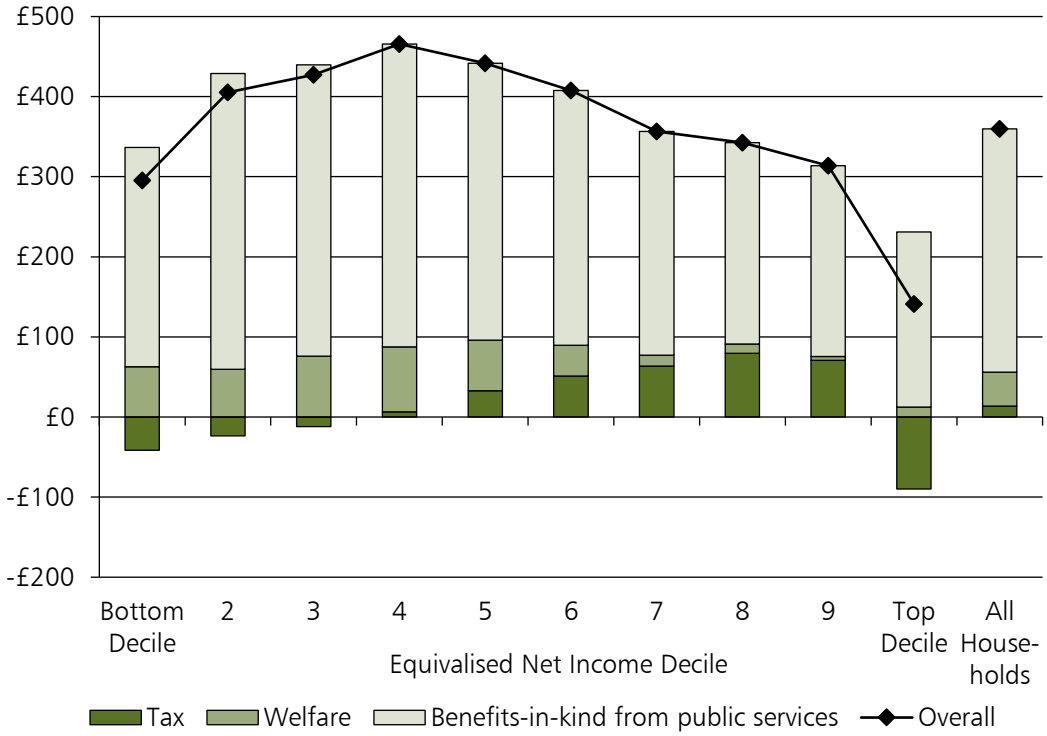
been allocated to 2021-22 and not beyond. It is therefore not possible to provide further cumulative analysis of tax, welfare and public service spending beyond this point. However, Charts 2.D and 2.E illustrate the impact of Budget 2021 tax and welfare measures only that have an impact on households in 2022-23. This includes the impact of maintaining the income tax Personal Allowance and higher rate threshold at their 2021-22 levels, which has not been included in Charts 2.B and 2.C.

Chart 2.B: Impact of decisions announced since Spending Round 2019 on households in 2021-22, as a percentage of net income, by income decile



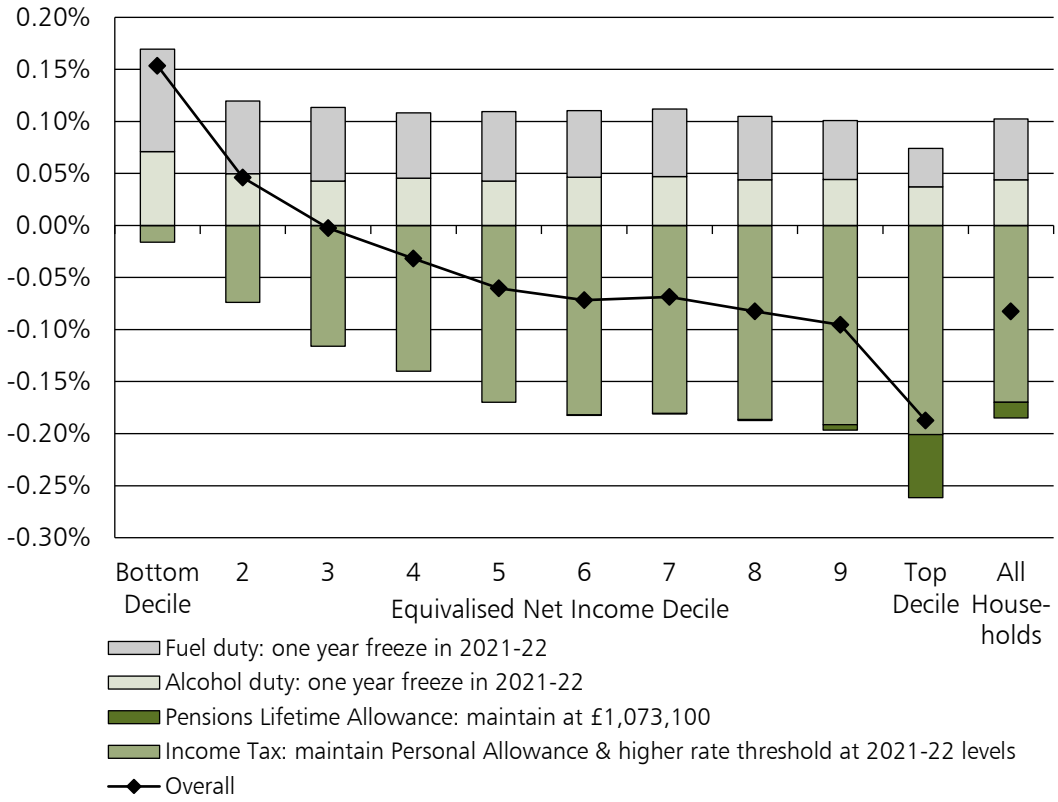
Source: HM Treasury distributional analysis model

Chart 2.C: Impact of decisions announced since Spending Round 2019 on households in 2021-22, in cash terms (£ per year), by income decile



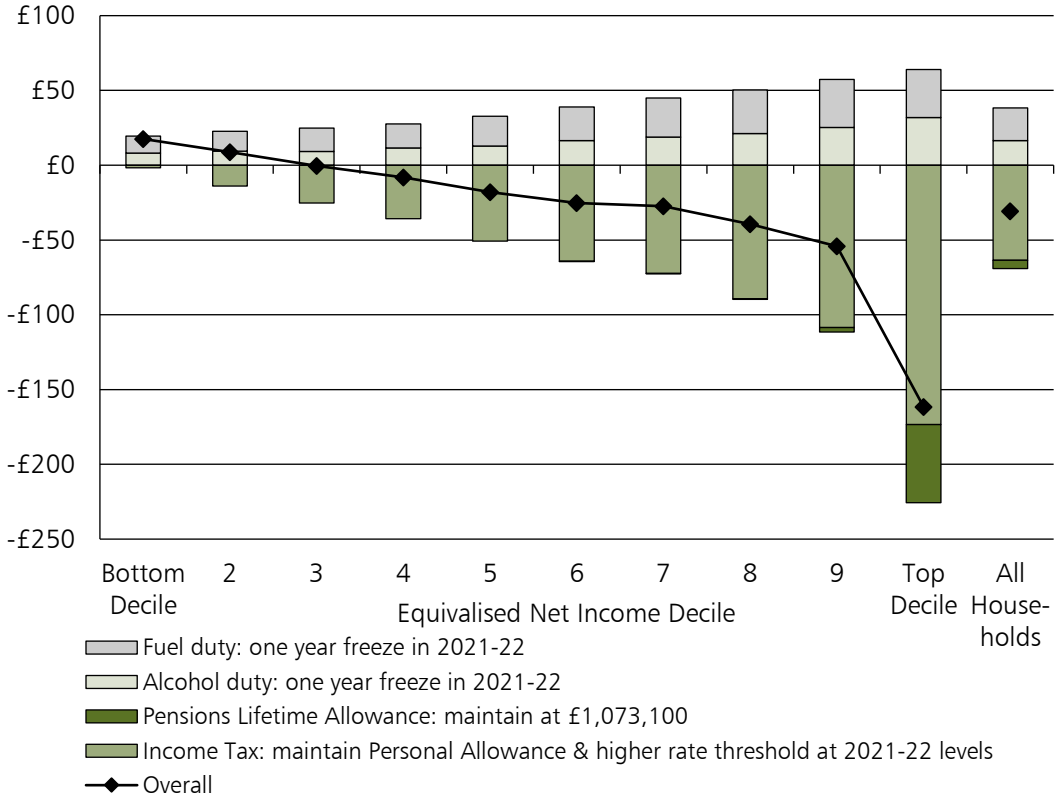
Source: HM Treasury distributional analysis model

Chart 2.D: Impact of Budget 2021 tax and welfare decisions on households in 2022-23, as a percentage of net income, by income decile



Source: HM Treasury distributional analysis model

Chart 2.E: Impact of Budget 2021 tax and welfare decisions on households in 2022-23, in cash terms (£ per year), by income decile



Source: HM Treasury distributional analysis model

Chapter 3
Data sources and methodology

Table 3.A: Data sources for charts

Chart	Source
1.A	DWP, Household Below Average Incomes, 2018-19
1.B	ONS, Labour Force Survey, UK, February 2021
1.C	DWP, Households Below Average Income 2018-19, DWP calculations
1.D	HMT analysis of ONS, Annual Survey of Hours and Earnings, 2015 results and 2019 final (revised) results[1]
1.E	ONS: GDP (seasonally adjusted), Labour Force Survey, total actual weekly hours worked (seasonally adjusted) and number of people in employment (aged 16 and over, seasonally adjusted), February 2021
1.F	ONS, Monthly Wages and Salaries Survey, February 2021
1.G	OECD Data, Short-Term Labour Market Statistics, Unemployment Rates
1.H	HMRC, CJRS Official Statistics, February 2021
1.I	HMRC, CJRS Official Statistics, February 2021
1.J-1.K	Internal HM Treasury modelling. See 3.1 to 3.11
2.A-2.E	Internal HM Treasury modelling. See 3.12 to 3.18

Table 3.B: Data sources for statistics

Paragraph	Statistic	Source
1.1	Annual Output	ONS, GDP, Bank of England, 'A millennium of macroeconomic data for the UK'
1.3	Employment rate	ONS, Labour market overview, UK: February 2021
1.7	Quarterly GDP	ONS, GDP, February 2021
1.13	CJRS Statistics	HMRC Official CJRS Statistics, February 2021 release
1.13	SEISS Statistics	HMRC Official SEISS Statistics, February 2021 release
1.15	CJRS Statistics	HMRC Official CJRS Statistics, February 2021 release

[1] Data from the Annual Survey of Hours and Earnings data is based on earnings in April of every year, therefore we have used data up until 2019, as the 2020 data was affected by the COVID-19 pandemic

Box 2.A	Income movements	DWP, Income Dynamics: Movements between quintiles: 2010-2018, March 2020
Box 2.A	Expenditure distribution	Internal HM Treasury modelling

Constructing Charts 1.J and 1.K

3.1 Charts 1.J and 1.K aim to show the impact of government interventions set against household income losses. The analysis is based on HM Treasury modelling, using emerging data from the COVID-19 survey modules conducted by the long-running UK Household Longitudinal Study (UKHLS) between April and November 2020. UKHLS is a broadly representative household survey of the same individuals in the UK each year (starting in 2009) and contains detailed information on individual and household characteristics. The COVID-19 modules are short web-based surveys, covering the impact of the pandemic on the welfare of UK individuals and families, varying across areas such as health and wellbeing, to employment and financial outcomes.

3.2 The first step of the analysis uses the UKHLS survey data to calculate the probability of 20 to 64 year-old individuals of different earnings levels losing their job, becoming furloughed, or seeing a greater than 10% earnings loss, by comparing employment status (and average decrease in gross pay) in November with February 2020.[2]

3.3 Due to changes in Coronavirus Job Retention Scheme (CJRS) policy arising around the time of the November UKHLS COVID-19 survey being released to participants, the overarching question used to identify furloughed employees was not asked. We have therefore made best use of the other employee data in the survey to estimate the probability of furlough across different earnings levels. The final definition we used was based on individuals who still declared themselves to be employed and who fulfilled any of the following criteria: if the individual had ever been previously furloughed (in an earlier module of this survey) and was still working less than five hours; if the individual specifically mentioned furlough as the reason for reduced working hours; if the individual was working above 20 hours in the February baseline and was now doing less than five hours and had not specified another reason for reduced hours (e.g. bereavement, annual leave etc.). Restricting or relaxing these criteria does not have a significant impact on the distributional picture presented.

3.4 Using these individual-level probabilities (of earnings losses, job loss and furlough), we then simulate a similarly sized employment and earnings shock using HM Treasury's distributional analysis model (the Intra-Governmental Tax and Benefit Microsimulation model (IGOTM)[3]), accounting for the offsetting impact of higher benefit receipt and lower tax payments. Baseline earnings and employment levels are taken from the Office for National

[2] Individuals are asked, in the UKHLS, about their employment status and earnings in January or February 2020, which is used as their 'baseline' economic status before the COVID-19 pandemic hit. We have referred to the baseline as 'February' throughout this document for simplicity.

[3] Further information on IGOTM can be found in paragraphs 3.23 onwards.

Statistics' Living Costs and Food Survey, the dataset underlying the IGOTM model. We have also assumed the proportion of welfare claimants in February on Universal Credit and legacy benefits respectively is as set out in the Office for Budget Responsibility's March 2020 Economic and Fiscal Outlook, alongside DWP estimates of total steady-state welfare claimants. New working-age welfare claimants since February are assumed to have claimed Universal Credit.

3.5 We then model the impact of additional government support provided to mitigate these shocks, specifically:

- the Coronavirus Job Retention Scheme (CJRS)
- the Self-Employment Income Support Scheme (SEISS)
- temporary increase in the Universal Credit standard allowance by £20 a week
- temporary increase in the basic element of Working Tax Credit by £20 a week
- temporary suspension of the Minimum Income Floor in Universal Credit
- increase in the Local Housing Allowance to the 30th percentile of market rents in 2020-21.

3.6 The 'Existing tax and welfare stabilisers' bars in Charts 1.J and 1.K reflect the net impact of changes to tax liability and benefit entitlement, from job and earnings losses and higher taxes received from CJRS and SEISS payments (as these grants are subject to Income Tax and National Insurance). We have not included in the modelling earnings increases; if we did, these stabilisers would reduce in size, though the net incomes of households would increase overall.

3.7 Only those interventions that have a direct, quantifiable impact on household incomes have been included in the analysis. We have therefore excluded measures that have mainly been targeted at business (such as the Coronavirus Business Interruption Loan Scheme (CBILS)), as well as any additional public service spending. A few relatively small measures, such as the removal of the seven-day wait in Employment and Support Allowance (ESA), have also been excluded from the analysis.

3.8 Households are ranked by equivalised net income decile, as they were before the pandemic hit, and average gains and losses within each decile are calculated (excluding any possible gains from increases in earnings). Chart 1.J presents these average changes as a proportion of net income in February, while Chart 1.K illustrates the impacts in cash terms (per week).

3.9 The impact of the COVID-19 pandemic on household incomes is complex and evolving, and not captured comprehensively in any one dataset. Therefore, to illustrate the distributional impacts we have had to make several simplifying assumptions on the government interventions modelled. These assumptions do not represent an assessment about policy intent and may not fully capture the true impact of these schemes. Instead, they are designed to simplify the modelling to allow us to present as informative and

complete a picture as possible of the interventions (as of the end of November 2020). The key assumptions are as follows:

- For simplicity, we have modelled the impact on furloughed employees as if they were all on full furlough. Due to the difficulties in measuring furlough (as described in paragraph 3.3) we are unable to identify and therefore model impacts on partially furloughed employees who are working a larger number of hours. However, we believe the impact on the results should be reasonably small.
- For employees who are placed on full furlough, the CJRS pays 80% of employee earnings (up to a cap of £2,500 per month). Many employers will have chosen to 'top up' earnings beyond this. Drawing on analysis of the April 2020 ASHE statistics by the Low Pay Commission[4], we have assumed that 40% of employees in receipt of CJRS grants had their earnings fully topped-up by their employers, returning them to their 'usual' level of earnings.
- The analysis makes some simplifications in order to show the SEISS on a comparable basis with other schemes. Specifically, the chart presents SEISS grants as if they are made on a monthly basis (rather than the actual policy design, which is a single payment, equivalent to three months of trading profits). We start by applying a uniform rate of take-up to all self-employed individuals in our data (subject to meeting the eligibility requirements), based on official HM Revenue and Customs (HMRC) statistics as of the end of January 2021[5], and then scale this down slightly to approximate HMRC cost estimates for the time period in question.
- Despite the CJRS and SEISS having varied in their operational details between their introduction and November 2020, we model them only as the schemes worked in November (with respect to take-up rates and grant generosity).

3.10 Some individuals in the underlying UKHLS data have reported moving into work or have seen other earnings gains between February and November 2020. To simplify the analysis and focus on the impact of government interventions in the context of earnings losses, we have not modelled these increases in earnings. If we did the underlying distributional picture would remain similar, although show higher gains to the lower-income deciles.

3.11 The underlying levels of unemployment, furloughed employees, and earnings losses in this analysis are based on UKHLS COVID-19 survey data collected in November 2020. UKHLS is designed (via its weighting system) to be broadly representative of the UK household population. Nonetheless, it would be possible to produce a slightly different set of results to what is presented here by drawing on alternative data sources, or by making an alternative set of assumptions. While the estimated overall rates of income change will be

[4] The December 2020 Low Pay Commission annual report (pp 54-56) shows that in low-paying sectors around 40-50% of employers were topping up wages above the 80% CJRS payment.

[5] https://www.gov.uk/government/statistics/self-employment-income-support-scheme-statistics-february-2021

sensitive to these issues, the broad distributional picture outlined here is consistent with several similar studies.[6]

Constructing Charts 2.A to 2.E

3.12 Chart 2.A shows estimates of the overall level of public spending received, and tax paid, by households in 2021-22. Charts 2.B and 2.C compare the estimated impact of changes in tax, welfare and public service spending policy against a counterfactual of no tax and welfare policy changes, and no change to real public service spending per capita, since Spending Round 2019 (SR19). Charts 2.D and 2.E compare the estimated impact of Budget 2021 tax and welfare measures only, against a counterfactual of no change. Measures are only included if they have a clear first order impact on the benefit incomes, taxes paid, or the benefits-in-kind received through public services by UK residents.

3.13 The following policy impacts are out of the scope for this analysis:

- those temporary measures, such as the CJRS and SEISS, aimed at supporting households in response to the COVID-19 pandemic. The impact of these measures to date is instead shown in Charts 1.J and 1.K
- the impact of changes to regulation, for example the National Living Wage (NLW), which are not direct changes to the distribution of tax or public spending
- Exchequer impacts resulting from reduced fraud, error or debt in the welfare system, as full compliance with the rules of the welfare system is assumed throughout the modelling
- Exchequer impacts resulting from reduced tax evasion, as full compliance with the rules of the tax system is assumed throughout the modelling. Anti-avoidance measures are captured where they result in a change in tax liabilities in the year being analysed
- impacts of decisions made by devolved administrations
- impacts of taxes where the incidence of the tax does not fall directly on households, for example corporation tax. We exclude such taxes from this analysis as we are unable to determine the distributional consequences of how these taxes are passed through to households
- the impact of measures without a direct impact in 2021-22

3.14 A number of tax and welfare measures are also excluded from this analysis because there is insufficient data to model robustly the distributional impacts. Most small public service spending Budget measures have also been excluded for this reason.

3.15 Measures that are excluded can nevertheless have a tangible impact on households' living standards. The Budget 2021 tax and welfare measures

[6] See for example Brewer, M. and Tasseva, I. (2020) 'Did the UK policy response to Covid-19 protect household incomes?', Euromod Working Paper EM 12/20; Brewer, M., Corlett, A., Handscomb, K. and Tomlinson, D. (2021) 'The Living Standards Outlook 2021', Resolution Foundation; Institute for Fiscal Studies (2020) 'The effects of coronavirus on household finances and financial distress'.

which carry a direct impact on households in 2021-22, but are not captured in Charts 2.A to 2.E due to data or modelling limitations are:

- Shared Accommodation Rate (SAR): accelerate introduction of exemptions
- Inheritance Tax: maintain thresholds at 2020-21 levels up to and including 2025-26
- Capital Gains Tax: maintain the Annual Exempt Amount at £12,300 up to and including 2025-26

3.16 Throughout the analysis, individual employees are assumed to be paid at least the appropriate level of the National Minimum Wage (NMW) or NLW.

3.17 Charts 2.A to 2.C show the impact of measures in 2021-22, as most Resource Departmental Expenditure Limits (RDEL) have been allocated in the years to 2021-22 but not beyond that. Charts 2.D and 2.E show the impact of measures in 2022-23, but for those tax and welfare measures announced at Budget 2021 only.

3.18 Charts published at consecutive fiscal events are not directly comparable, as they are based on the latest available Office for Budget Responsibility (OBR) forecast which is updated at every fiscal event.

Defining income and ranking households

3.19 This distributional analysis uses equivalised net household income, before housing costs, as the main indicator by which to rank households from lowest income to highest income. This indicator is comprised of several components:

- Equivalised: equivalisation is a process that adjusts a household's net income to take into account the fact that larger households will require a higher net income to achieve the same standard of living as a household with fewer members. The equivalisation factors used in the analysis are the modified OECD factors (as used in DWP's Households Below Average Income publication).
- Net: household incomes are ranked after deductions from direct taxes, and after additions from welfare benefits. Deductions from indirect taxes, or additions through benefits-in-kind from public services, are not used to rank households.
- Household: incomes are assessed in aggregate at the household, not individual level. Comparing household, rather than individual, incomes reduces the subjectivity of this analysis, ensuring that no assumptions are made about how incomes or expenditure are shared between separate individuals within the household.
- Before housing costs: housing costs such as rent or the cost of servicing a mortgage are not deducted from household incomes.

3.20 The household income distribution is created by ranking households from the lowest equivalised net income to the highest equivalised net income, and

then dividing this ranking into ten equally sized groups called deciles, across which the analysis is produced.

3.21 Table 3.C below shows estimated median gross incomes (pre-tax private income including earnings, private pensions, savings and investments, plus benefit income) within each decile. This gives a less precise estimate of a household's position in the income distribution than net income, but is easier to understand because many people think about their incomes or salaries in gross rather than net terms.

3.22 Table 3.C should therefore be used to approximate where a household will be found in the income distribution. For example, if a household consisting of two adults earns £23,000 per year between them, there is a high likelihood that this household will be found in the third income decile. However, this is not guaranteed, as different gross household incomes can result in different net household incomes, depending on how many earners there are in the household, the size of the household, and for which benefits the household qualifies.

Table 3.C: Median gross income for each decile (£ per year, 2021-22) for different household compositions[7]

Median gross income of households in decile	1 adult	1 adult and 1 child	2 adults	2 adults and 1 child	2 adults and 2 children
Top decile	67,400	-	97,900	133,700	158,700
Ninth decile	44,800	-	66,300	84,700	107,000
Eighth decile	35,900	-	52,500	70,300	86,100
Seventh decile	30,000	41,200	44,100	57,600	71,800
Sixth decile	25,600	34,300	37,600	50,600	59,600
Fifth decile	21,500	28,000	31,400	41,500	50,100
Fourth decile	18,000	23,000	27,200	35,200	43,000
Third decile	15,200	20,500	23,000	30,100	35,400
Second decile	12,600	17,000	19,200	23,600	28,300
Bottom decile	9,400	12,200	14,200	18,300	20,000

Source: HM Treasury distributional analysis model

Analysis of tax and welfare measures

3.23 Where possible, tax and welfare policy changes are analysed using HM Treasury's Intra-Governmental Tax and Benefit Microsimulation model (IGOTM), which is underpinned by data from the ONS's Living Costs and Food (LCF) survey. The sample size of the LCF means that in order to produce robust analysis, three years of data have been pooled together, specifically 2014-15 to 2016-17. This data is then projected forward to reflect the

[7] Categories with insufficient underlying sample sizes have been left blank.

financial year being modelled, using historical Annual Survey of Hours and Earnings data on earnings growth at different points across the income distribution as well as the latest OBR average earnings and inflation forecasts. The model makes no changes to the underlying demographics, employment levels or expenditure patterns in the base data.

3.24 For Charts 2.B and 2.C, the counterfactual for tax and welfare decisions is a hypothetical scenario in which policy changes announced at or after SR19 were not implemented. For Charts 2.D and 2.E the counterfactual is a hypothetical scenario in which policy changes announced at Budget 2021 were not implemented.

3.25 Not all households take up all the benefits to which they are entitled. HM Treasury's microsimulation modelling takes this into account when calculating the effects of policy changes by using information on the take-up of benefits in the underlying survey data. A policy which will lead to an increase in take-up will therefore be modelled as an increase in household income. This methodology provides a more accurate estimate of the impact on households.

3.26 Modelling of tax and welfare measures in IGOTM takes into account the devolution of decisions in some areas from the UK government to devolved administrations. UK government decisions are modelled as applying only to households directly affected by the measure, while decisions taken by the devolved administrations are not included as policy impacts.

3.27 Within the tax system, the main taxes microsimulated in this analysis are: Income Tax, employee National Insurance contributions, Council Tax, VAT, Insurance Premium Tax, Fuel Duty, Alcohol Duty, Tobacco Duty, Stamp Duty Land Tax, and Air Passenger Duty.

3.28 Within the welfare system, the most significant welfare benefits microsimulated in this analysis are: the State Pension, Pension Credit, Winter Fuel Payments, Attendance Allowance, Jobseeker's Allowance, Employment and Support Allowance, Housing Benefit, Universal Credit, Child Benefit, Disability Living Allowance, Personal Independence Payment and Tax-Free Childcare.

3.29 Unlike Charts 1.J and 1.K, all charts in Chapter 2 assume for simplicity that Universal Credit has been fully rolled out and claimants are no longer claiming benefits under the older legacy system.

3.30 Not all measures can be reliably modelled using IGOTM due to data and/or modelling constraints. Tax and welfare changes that cannot be modelled using microsimulation modelling are, where possible, apportioned to household equivalised income deciles. This is done according to the Exchequer impacts or savings from the measures, based on assumptions about where the impacts are likely to fall.

Analysis of public service spending

3.31 The analysis of public service spending only includes spending on frontline public services with a direct benefit to households. This covers services provided by the Department of Health and Social Care, the Department for

Education, the Department for Work and Pensions, the Department for Transport, the Ministry of Justice, the Department for Culture, Media and Sport, and some services delivered by local government in England.

3.32 The analysis excludes:

- administrative spending
- capital spending, and the depreciation of capital assets
- spending funded through the Reserve
- changes to public sector pay and public service pensions policy
- spending on public goods, because it is not possible to identify the direct benefits from these areas of spending for specific households

3.33 To align with the definition of income used in DWP's Households Below Average Income publication, the analysis of spending on public services also includes financial transactions through student loans. To account for this source of income, estimates of student loan outlay in a given financial year are counted as household income from public spending. Likewise, estimates of student loan repayments in that same financial year are reflected as a loss to households, again through the public spending bars.

3.34 For Charts 2.B and 2.C, the analysis of RDEL spending compares forecast spending in 2021-22 to a baseline of actual spending in 2019-20, projected to 2021-22 in line with both the GDP deflator and population growth (to account for both price and population pressures on real per capita spend received). Therefore, the RDEL impacts presented in Charts 2.B and 2.C reflect the impact on households of all RDEL measures since SR19, including Spending Review 2020 settlements.

3.35 Charts are on a UK basis, though any RDEL spending that is the responsibility of the devolved administrations in Scotland, Wales, and Northern Ireland is not reflected in this analysis. This has two effects. First, any changes to devolved spending – whether positive or negative – have no impacts in this analysis. Second, where change is expressed as a proportion of household income, the income denominators which underpin this calculation do not include any income from spending devolved to Scotland, Wales, and Northern Ireland.

3.36 The analysis of the benefits-in-kind provided by public service spending is, like with taxes and welfare measures, derived from HM Treasury's IGOTM model. However, the modelling approach taken for public services is slightly different. Where the use of a public service is reported in the LCF, no additional data is required and the approach is similar to that used for most tax and welfare modelling. The spending on a particular public service is allocated between all those households who are expected to use this public service, in proportion to each household's expected use of the service.

3.37 Where the LCF does not contain information about the use of a service, additional data sources are required. This additional data is used to identify characteristics associated with the use of the service and then used to derive probabilities of service use conditional on these characteristics. The cash

value spent on public services is converted into an identical cash gain to households and distributed to households based on the probability that any given household uses the service.

3.38 As an example, the likelihood of an individual using a service, such as visiting a GP, will be influenced by factors such as the individual's age, sex, level of income, family composition, and so on. Through regression analysis of ONS surveys, it is possible to estimate how strongly these factors affect the likelihood of an individual visiting a GP over a given timeframe. This regression analysis shows, for example, that the older an adult is, the more likely he or she is to visit a GP. The regression model estimated on ONS survey data is then applied to the LCF data that underpins the rest of HM Treasury's distributional analysis modelling. The adjusted LCF data, therefore, then contains estimates of each individual's likelihood of using this particular public service.

3.39 Spending (both actual and for the baseline) is then allocated according to each household's relative likelihood of using the service, where the relative likelihood of use acts as a weight to allocate total spending to individual households. Therefore, the spending will be skewed to those individuals and households who are most likely to use a public service over a given time period. In the example of visiting a GP above, the total public spending on this service will be skewed (but not allocated entirely) to those individuals who are estimated to be most likely to use this service over a given time period. The cash value spent on public services is converted into an identical cash gain to households. Impacts of changes in RDEL spending are calculated alongside tax and welfare and presented across the income distribution.

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