

Program Interactions and Fiscal Drag in the UK Tax-and-Benefit System: Effects on Income Inequality

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Abstract

This paper provides a comprehensive quantitative analysis of the UK tax-and-benefit system in 2023, focusing on its impact on income inequality. Using a microsimulation model and Family Resources Survey data, we find that the system reduced income inequality by 27.6%, as measured by the Gini coefficient. While substantial, this effect falls short compared to some other OECD countries, such as Ireland and France. Both non-means-tested and means-tested benefits play important roles in addressing inequality. Fiscal drag, a form of stealth taxation that arises when inflation is not accompanied by corresponding increases in tax thresholds, is shown to be a substantially less equitable method of raising revenue than adjusting tax rates, since it imposes regressive effects, particularly on individuals near tax thresholds. Furthermore, increasing the Universal Credit standard allowance proves more effective at reducing inequality than lowering the taper rate, as it provides more targeted support to low-income households. Finally, we emphasize the influence of program interactions, especially between non-means-tested and means-tested benefits, on income distribution.

Key words: Means-tested benefits; Non-means-tested benefits; Fiscal drag; Inequality; Income taxation; Universal Credit; Jobseeker's Allowance; Child Benefit; Pension Credit.

JEL classification: D63; H23; I24; I38; J22; J31.

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1 Introduction

The United Kingdom's tax-and-benefit system redistributes income, supports individuals and families in need, and partly funds public services, including education and healthcare. As a key component of the country's broader welfare state, it plays an important role in shaping living standards. Like most tax-and-benefit systems worldwide, the UK system is not a single, streamlined entity but rather a combination of various programs and benefits that interact in ways that have significant implications for the distribution of income. This article provides a contemporary, quantitative assessment of the main elements of the UK tax-and-benefit system, focusing on its redistributive effects and its impact on income inequality.

The redistributive effects of the UK's tax-and-benefit system are particularly important given the country's high level of inequality in *gross income* (i.e., income before any taxes and benefits). OECD (2021) report a Gini coefficient of 0.46 for gross household income in the UK in 2018, which is notably higher than those of Germany (0.41), Canada (0.40), Norway (0.39), and Italy (0.37) but comparable to that of the United States (0.47). Chancel et al. (2022) highlight the critical role of progressive taxation and social benefit programs in addressing income inequality.

The UK benefit system encompasses a wide array of programs, with a key distinction between means-tested and non-means-tested benefits. Means-tested benefits provide financial support to households based on their income. In general, the generosity of means-tested benefits decreases as household income from other sources increases, ensuring that higher-income households receive reduced benefits or none at all. Examples include Universal Credit and Pension Credit. Means-tested benefits are generally conceived as redistributive programs, and as such, inequality reduction is often a key metric of their success. In contrast, non-means-tested benefits are provided regardless of income from other sources, with eligibility typically determined by other criteria such as age, unemployment, or disability. Examples include Jobseeker's Allowance, the State Pension, and certain disability benefits. Non-means-tested benefits are generally conceived as insurance programs, and therefore inequality reduction is not typically an objective of these programs. In addition to these benefits, taxes play a crucial role in reducing income inequality. Specifically, the UK's personal income tax system is progressive, meaning that as an individual's gross income increases, they are required to contribute a larger proportion of that income in taxes.

In the first part of this article, we introduce a simple yet accurate framework for understanding the UK tax-and-benefit system. This framework categorizes the system into three main components: taxes, non-means-tested benefits, and means-tested benefits, with further subdivisions to capture key details. While the framework aggregates some related benefits for simplicity, it retains sufficient specificity to convey the primary functions and interactions within the system. Building on this framework, we conduct a quantitative assessment of the UK tax-and-benefit system, focusing on its impact on the inequality of *disposable income* (i.e., gross income minus taxes plus benefits). Using a large, representative sample of UK households, we calculate the average weekly values for gross income, taxes, and benefits. Our analysis highlights the significance of both non-means-tested and means-tested benefits, while also emphasizing the central role of Universal Credit.

Next, we analyze the UK's tax-and-benefit system as it operated in 2023, examining the distribution of taxes and benefits across household gross income levels. Taxes are clearly progressive, as expected. Despite means-tested benefits being specifically aimed at lower-income households, the difference in targeting compared to non-means-tested benefits is not particularly stark. Consequently, both non-means-tested and means-tested benefits contribute to reducing income inequality; we calculate a Gini coefficient of 0.354 for household disposable income, representing a 27.6% reduction from the gross income Gini coefficient of 0.489. This 27.6% reduction in inequality achieved by the UK's tax-and-benefit system is around the OECD average but it is substantially lower than the reductions observed in Ireland (38.8%), Belgium (38.4%), Finland (35.9%), and France (33.0%). Cribb (2024) place the inequality-mitigating effects of the UK's tax-and-benefit system in historical context, noting that while inequality in both gross and disposable income rose during the 1980s, it has remained relatively stable since then, aside from fluctuations during the COVID period. Belfield et al. (2017) document the strong insurance effect of benefits in the UK during the Great Recession, while Blundell et al. (2018) draw historical comparisons between the UK and the US, focusing on the role of family structures in shaping inequality.

We also examine the effects of various components of the tax-and-benefit system on income inequality by considering several counterfactual (i.e., hypothetical) reforms and assessing their impact on the distribution of disposable income. First, we explore the impact of fiscal drag in personal income taxes on income inequality. Fiscal drag occurs when tax thresholds are not adjusted for inflation, resulting in a higher real tax burden as nominal incomes rise. We analyze how, conceptually, the tax increase from fiscal drag includes both progressive and regressive elements. Notably, the increase is particularly regressive for individuals whose taxable incomes are close to the tax thresholds where tax rates increase. In contrast, a uniform increase in income tax rates tends to be more progressive. Quantitatively, our analysis shows that the tax increase driven by fiscal drag leads to a smaller reduction in inequality than a comparable uniform increase in tax rates.

Turning to benefit reforms, our analysis confirms that both means-tested and non-means-tested benefits contribute to reducing income inequality. However, we see variation in inequality-reducing effects across different components of the system. For instance, non-means-tested Jobseeker's Allowance has particularly strong inequality-reducing effects when adjusted its cost. Additionally, lowering the taper rate for means-tested Universal Credit, which slows the reduction of benefits as household income increases, is less cost-efficient in reducing inequality compared to increasing the base value of the benefit.

Finally, this paper explores the complex interactions between various components of the tax-and-benefit system. Program interactions occur when changes in one part of the tax-and-benefit framework affect other components. We show that around one-third of the value of an increase in non-means-tested Jobseeker's allowance is offset by reductions in means-tested benefits, which considers the increase in the value of Jobseeker's Allowance additional income. Non-means-tested disability benefits also interact with means-tested benefits, although less strongly than Jobseeker's Allowance. By analyzing these interactions, we highlight the importance of considering program interactions and evaluating policy reforms, as failure to account for these interactions can result in

unintended or unanticipated effects.

Before proceeding, it is important to note certain limitations of the counterfactual analysis presented in this paper, which stem primarily from the static nature of the approach. First, the analysis assumes no behavioral changes in response to the reforms, even though the reforms change incentives and therefore could lead to such adjustments. As a result, this analysis should be interpreted as an evaluation of the current tax-and-benefit system rather than a prediction of the effects of any hypothetical reform. Second, since the analysis focuses on income inequality in a single year, it automatically labels transfers from individuals paying taxes to individuals receiving benefits in that year as redistribution. However, individual circumstances often fluctuate over time, meaning a person may be a recipient of benefits in one year but also a contributor to the tax-and-benefit system in another. In such cases, the tax-and-benefit system is not redistributing income between different individuals but rather insuring individuals against shocks and changes in circumstances experienced throughout their lives. In other words, the static framework conflates insurance with redistribution. The extent to which this confounds the interpretation of the results is larger for non-means-tested benefits, which are designed primarily to provide insurance. However, in reality, even non-means-tested benefits include a redistributive element. Consider, for example, contributory pensions, which are designed to provide insurance against longevity risk. Since life expectancy is positively correlated with educational attainment and lifetime earnings, redistribution arises between lifetime-rich and lifetime-poor individuals because those who earned more during their lives typically receive contributory pensions for more years. For a discussion of the effects of taxes and benefits on the inequality of lifetime income, see, for example, Aaberge and Mogstad (2015), Bengtsson et al. (2016), and Brewer and Shaw (2018). Haan et al. (2023) study how taxes and benefits redistribute lifetime income and how they insure against lifetime income risk.

The paper proceeds as follows. Section 2 presents a representation of the UK tax-and-benefit system. Section 3 draws on the UKMOD microsimulation model and the Family Resources Survey data to provide a quantitative summary of the main components of the UK tax-and-benefit system. Section 4 offers insights into the distribution of taxes and benefits across household gross income levels. Section 5 documents the effect of the UK's tax-and-benefit system on income inequality and highlights the varying inequality-reducing effects of taxes and different components of the benefits system. Section 6 concludes with further discussion and emphasizes some challenges and opportunities.

2 The UK tax-and-benefit system

A tax-and-benefit system is a set of rules that determine the taxes households must pay and the monetary benefits they are entitled to receive. In this section, we work from the program descriptions in van de Ven and Popova (2023) to provide a simple yet accurate organizing framework for understanding the UK tax-and-benefit system as it stood in 2023. This framework is designed to familiarize the reader with the different types of programs that make up the overall system. The

framework is applicable to all types of households, including single individuals, families, and retired households. This framework also serves as an organizing framework for the quantitative analysis that follows.

Equation (1) outlines how household disposable income is determined by subtracting taxes from gross household income and adding both non-means-tested and means-tested benefits. For the purpose of this article, gross income includes employment income, self-employment income, capital income (including investment income and property income), personal pension income, child support, and statutory payments for maternity, paternity, and sick leave. In our representation of the UK tax-and-benefit system, we first distinguish between two broad categories of benefits: non-means-tested benefits, which are provided regardless of the household's income from other sources, and means-tested benefits, which are restricted to individuals or households with sufficiently low levels of income.

Before discussing the benefits within each category, we highlight two important differences between non-means-tested and means-tested benefits. First, while means-tested benefits primarily target households at the lower end of the income distribution, their effectiveness in reducing inequality depends on how progressively access to these benefits is restricted as income rises. Second, means-tested benefits typically take into account income from non-means-tested benefits. This creates an interaction between the two types of benefits; for example, an increase in a non-means-tested benefit might be partially offset by a reduction in a means-tested benefit, as the latter considers the non-means-tested benefit part of the household's income.

$$\begin{array}{rcccl}
 \text{Disposable} & = & \text{Gross} & - & \text{Taxes} & + & \text{Non-means-tested} & + & \text{Means-tested} & & (1) \\
 \text{income} & & \text{income} & & & & \text{benefits} & & \text{benefits} & & \\
 & & \underbrace{\hspace{10em}} & & & & \underbrace{\hspace{10em}} & & \underbrace{\hspace{10em}} & & \\
 & & \text{Post-tax income} & & & & \text{Contributory disability} & & \text{Universal Credit} & & \\
 & & & & & & \text{Contributory pensions} & & \text{Child-related benefits} & & \\
 & & & & & & \text{Jobseeker's Allowance} & & \text{Pension Credit} & & \\
 & & & & & & \text{Non-cont. disability} & & & &
 \end{array}$$

We now discuss the categories of non-means-tested and means-tested benefits. Non-means-tested benefits include both contributory and non-contributory programs. Contributory benefits can be further divided into three subcategories: contributory disability benefits (i.e., the Employment and Support Allowance), contributory pensions (including the (New) State Pension and legacy state pensions), and the (New Style) Jobseeker's Allowance. Eligibility for each contributory benefit is based on an individual's National Insurance contributions. For example, 35 years of qualifying contributions are required to receive the full State Pension, while Jobseeker's Allowance and the Employment and Support Allowance require at least six months of National Insurance contributions in the last two years. In addition to the contribution requirements, each benefit has specific qualifying conditions. The State Pension has age requirements; Jobseeker's Allowance requires that

the individual be unemployed and limits benefits to six months; and Employment and Support Allowance requires that the individual have a limited capacity to work due to health issues or disability. Since these benefits are based on specific conditions rather than income or financial need, they are sometimes referred to as conditional benefits.

While contributory disability benefits, contributory pensions and Jobseeker's Allowance are income replacement programs, they are not generally related to the level of previous labor earnings (the exception being some legacy state pension benefits). For example, Jobseeker's Allowance provides a fixed weekly benefit of £84.80 to individuals aged 25 or above, regardless of previous earnings. Similarly, the Employment and Support Allowance and the State Pension offer standardised levels of support rather than a benefit calculated as a percentage of prior earnings. This characteristic of the UK system is somewhat unusual internationally, as many developed countries offer income-replacement benefits that are scaled according to prior earnings. Non-contributory, non-means-tested benefits comprise a range of disability benefits, including the Personal Independence Payment (PIP) and Attendance Allowance. These benefits provide financial support to individuals with long-term health conditions or disabilities, with PIP aimed at those of working age and Attendance Allowance designed for retired individuals.¹

Turning to means-tested benefits, we distinguish between Universal Credit, Child-related benefits (beyond the child components of Universal Credit), and Pension Credit.² Universal Credit is a welfare benefit introduced in the UK in 2013, with a full national rollout starting in 2016. It is a means-tested benefit that replaces six legacy benefits, providing financial support to low-income households.³ Universal Credit includes a standard allowance, depending on age and partnership status, with additional elements for children, childcare costs, housing, disability, and caring responsibilities. For every £1 of after-tax gross income, the Universal Credit payment is reduced by 55 pence, a reduction rate known as the taper rate. However, those with children, or a disability or health condition that affects their ability to work, are allowed to earn a certain amount—called the Work Allowance—before Universal Credit starts to be reduced. Universal Credit payments are subject to capital limits: households with capital exceeding £16,000 are ineligible for the benefit, while those with capital between £6,000 and £16,000 have their monthly benefit reduced by £4.35 for every £250 of capital (the primary residence and personal possessions are generally excluded from this calculation). As of 2023, the monthly standard allowance was £368.74 for a single person aged over 25 and £578.82 for a couple who are both over 25. The child element was £315.00 for the first child and £269.58 for the second child. In 2023, Universal Credit was capped at £1,666.67 per month for couples and single parents and £1,116.67 per month for single adults without children.

Among child-related benefits, Child Benefit is the most significant. It is a universal payment provided to those responsible for children, offering financial support to help cover the costs of raising a

¹The other programs in this category are Carer's Allowance, Disability Living Allowance, Industrial Injuries Disablement Benefit, Scottish Carer's Allowance Supplement, Severe Disablement Allowance, and War Pensions.

²Child-related benefits include Child Benefit, the Sure Start Maternity Grant, the Best Start Grant, and the Scottish Child Payment. We include Housing Benefit for non-working-age households with Pension Credit.

³Universal Credit replaced Income Support, Income-Based Jobseeker's Allowance, Income-Related Employment and Support Allowance, Housing Benefit for working-age households, the Child Tax Credit, and the Working Tax Credit.

child. However, if a parent's income exceeds £50,000 per year, they must repay a portion of the Child Benefit through the High-Income Child Benefit Charge (HICBC). Once the income reaches £60,000, the HICBC equals the full amount of Child Benefit received. Although Child Benefit is universally available, the repayment mechanism effectively makes it a means-tested benefit for higher-income households. Pension Credit guarantees a minimum income for pensioners, with additional support for those with severe disabilities or health conditions.

The final component of our representation of the UK's tax-and-benefit system is what we refer to as 'Taxes', encompassing personal income taxation and employee National Insurance contributions. In 2023, personal income tax in the UK was structured into three main bands: the basic rate (20%) on annual taxable income between the thresholds of £12,571 and £50,270, the higher rate (40%) on taxable income between the thresholds of £50,271 and £125,140, and the additional rate (45%) on taxable income over £125,140. Taxable income comprises most components of gross income plus income from contributory non-means-tested benefits. National Insurance contributions for employees are also tiered, with a primary rate of 12% on weekly gross labor earnings between £242 and £967, and 2% on weekly gross labor earnings above £967. As mentioned above, National Insurance contributions provide entitlement to certain contributory benefits, including the State Pension and Jobseeker's Allowance. Personal income taxes and National Insurance contributions are assessed at the individual level, independent of marital status or other household characteristics.

Taxation interacts with the benefits system in two main ways: first since contributory non-means-tested benefits are taxed, changes in taxation can affect the disposable incomes of households receiving these benefits, even if they have no other income sources. Second, since means-tested benefits are based on pre-tax gross income, changes in taxation can impact the benefits received from programs such as Universal Credit and Pension Credit.

A few additional benefits exist in the UK but are not included in this analysis. Specifically, we have excluded the Winter Fuel Allowance, the Scottish Child Winter Heating Assistance, student loans, training allowances, and the Education Maintenance Allowance. Additionally, we do not consider the substantial but temporary COVID-related benefits, such as the Coronavirus Job Retention Scheme and the Self-Employed Income Support Scheme.

3 A quantitative summary of the UK tax-and-benefit system

In this section, we utilize a preexisting, publicly available tax-and-benefit microsimulation model to quantify the importance of various components within the UK's tax-and-benefit system. Following the framework outlined in Section 2, we demonstrate how taxes, non-means-tested benefits, and means-tested benefits interact with gross income to determine disposable income. In particular, we focus on the tax and benefit system for the year 2023 and leverage the public use UKMOD tax sim-

ulation tool (Richiardi et al., 2021) to predict the taxes and benefits for a sample of UK households.⁴

For taxes and most benefits, this exercise calculates amounts based on individual and household characteristics, such as earnings from employment and household demographics, combined with the rules of the tax-and-benefit system. A key challenge in predicting incomes using tax and benefit rules is addressing non-take-up for certain benefits. Households do not always claim all the benefits they are entitled to, often due to factors like claiming costs, information frictions, or stigma. In our quantitative analysis, we adopt the UKMOD approach to this problem by incorporating adjusting benefits based on take-up estimates provided by the Department for Work and Pensions and the Scottish Fiscal Commission. However, for certain benefits, the lack of sufficient data on individual characteristics prevents the application of tax-and-benefit system rules to calculate benefit amounts. In such cases, benefit amounts are instead taken directly from the sample. This category includes benefits that require detailed information on health or disability status, such as the Personal Independence Payment and Attendance Allowance. In these instances, non-take-up is naturally accounted for in the sample, as observed benefit amounts are zero for non-claimants.

The sample used in this analysis is from the Family Resources Survey (FRS). The FRS is an annual household survey conducted in the United Kingdom. It collects information from a representative sample of private households, focusing particularly on detailed income data. This includes earnings from employment, such as wages, salaries, bonuses, commissions, and overtime. The survey also gathers information on income from wealth, including interest, dividends, and rental income, though it excludes capital gains. It is important to note that surveys of this type often under-sample high-income households, which is largely due to their lower likelihood of participation. The FRS provides survey non-response weights, derived based on demographic and geographic variables, which are applied throughout this study and ensure that the estimates are representative of the United Kingdom as a whole. However, these adjustments are unlikely to fully account for the higher non-response rates among high-income households. While this limitation does not pose a significant concern when analyzing the effects of the benefits system, it suggests that estimates based on the FRS may understate the level of income inequality before taxes and benefits. Additionally, since high-income individuals are disproportionately affected by income taxation, the mitigating impact of taxes on the inequality of disposable income is also likely underestimated.

It is important to recognize that while taxes and certain benefits can be calculated at the individual level, many benefits, including Universal Credit, are assessed at the household level. Since the division of income within a household is not directly observable, disposable income must be calculated at the household level. To ensure that incomes, taxes, and benefits are comparable across households of different sizes, these quantities are adjusted using the Modified OECD equivalence scale, normalized to a value of one for a two-adult household without children.⁵ Therefore, all fig-

⁴The results presented here are based on UKMOD version B2024.14. UKMOD is maintained, developed and managed by the Centre for Microsimulation and Policy Analysis (CeMPA) at the University of Essex. The process of extending and updating UKMOD was financially supported by the Nuffield Foundation (2018-2021) and the Financial Fairness Trust (2023-2024). The results and their interpretation are the author's sole responsibility.

⁵Under the Modified OECD equivalence scale, the first adult gets a weight of 1, each additional adult gets a weight of 0.5, and each child gets a weight of 0.3.

Table 1: Average weekly household taxes and benefits

	Average (£/week)	Percentage receiving [contributing]	Average among recipients [contributors] (£/week)
Gross income	728	89.3	815
Taxes	[204]	[92.3]	[221]
Non-means-tested benefits	66	29.7	222
Contributory disability	1	0.8	118
Contributory pensions	50	20.5	244
Jobseeker's Allowance	0.1	0.1	70
Non-cont. Disability	15	12.7	115
Means-tested benefits	55	45.5	122
Universal Credit	39	24.3	161
Child-related benefits	11	33.8	34
Pension Credit	5	3.2	149
Disposable income	645	98.5	655

Notes: Author's calculations using the UKMOD tax microsimulation model for 2023, applied to the Family Resources Study data for 2022 (the most recent available data). All figures are then adjusted to 2023 prices and equivalized to a two-adult household without children. Square brackets indicate that taxes are paid by households to the government (i.e., taxes are contributions by households to the tax-and-benefit system and negatively impact a household's disposable income). The fraction of households receiving benefits accounts for benefit non-take-up by eligible households, based on the UKMOD approach, which incorporates corrections using the take-up estimates reported by the Department for Work and Pensions and the Scottish Fiscal Commission, e.g., for Pension Credit, the estimated take-up rate is 70%.

ures presented are equivalent to those of a two-adult, no-children household (see Anyaegbu, 2010, for further discussion of the use of household equivalence scales in the study of taxes and benefits).

In more detail, we use the tax microsimulation to calculate benefits and disposable income for each household in the FRS sample. We then use the Modified OECD equivalence scale to rescale each household's earnings, benefits, and incomes to make the figures comparable to those of a two-adult household without children. For example, for a household with two adults and two children, we calculate the benefits the household is entitled to, including any child-related benefits, and then determine the household's disposable income. We then equivalize all figures for this household by dividing by the OECD adjustment of 1.4 (since the OECD calculates that a household with two adults and two children needs 1.4 times the resources of a two-adult household to reach the same standard of living).

Table 1 provides a summary of average weekly household taxes and benefits. The average weekly household gross income is £728, with 89.3% of households having some form of gross income. On average, households pay £204 per week in personal income taxes and National Insurance contributions, amounting to 28% of average gross income. The vast majority of households – 92.3% – contribute to taxes, with an average payment of £221 per week among contributors. Note that the percentage

of households contributing taxes exceeds the percentage receiving gross income because some non-means-tested benefits are taxable but are not included in gross income. Non-means-tested benefits account for 54% of all benefits. On average, non-means-tested benefits amount to £66 per week and are received by 29.7% of households. Means-tested benefits are slightly lower on average, at £66 per week, but are more widely received, with 45.5% of households benefiting from them. Household disposable income averages £645 per week, indicating that, on average, taxes exceed total benefits by £83 per week.

A closer examination of non-means-tested benefits reveals that Jobseeker's Allowance is received by fewer than 0.1% of households. This low figure reflects the fact that Jobseeker's Allowance is limited to six months and has relatively strict eligibility conditions—claimants must be actively seeking work, be available to start immediately, and have previously paid sufficient National Insurance contributions. More importantly, this suggests that the risk of unemployment is primarily mitigated by means-tested benefits, particularly Universal Credit, as well as by intra-household insurance through savings or the income of a spouse or other household members. This pattern carries significant policy implications, as it indicates that means-tested benefits may adversely impact the job search efforts and labor supply decisions of unemployed individuals. For instance, Hoynes and Schanzenbach (2012) provide evidence of such effects in the case of Food Stamps in the United States. Therefore, the design of means-tested benefits should thoughtfully balance the potential disincentive effects against their role in reducing inequality. Similarly, contributory disability benefits are not widely received, with fewer than 1% of households receiving such benefits. As a result, contributory pensions and non-contributory disability benefits are the most quantitatively substantial non-means-tested benefits.

Turning to means-tested benefits, Universal Credit constitutes a significant portion of the benefit system, both in terms of its value and the rate of receipt: 24.3% of households receive Universal Credit, with an average benefit of £161 per week among recipient households. Child-related benefits are received by 33% of households but with a lower average value of £34 per week per recipient household. Pension Credit is less widely received, with only 3.2% of households benefiting from it, but the average value among recipient households is £149 per week. Pension Credit thus provides substantial additional income to pensioner households with low or non-existent contributory benefits.

4 Taxes and benefits across the distribution

Having assessed the relative size of the various components within the UK tax-and-benefit system, we now examine how these components are distributed across household gross income levels. Specifically, we group households according to their position in the distribution for gross income and then calculate the average levels of gross income, taxes, and benefits for each group. From Panel A of Table 2 we see that the tax-and-benefit system effectively redistributes income across households: apart from some modest exceptions noted below, the system provides more generous

benefits to households with lower gross incomes while progressively increasing taxes with gross household income. Overall, 38.5% of households are net beneficiaries of the tax-and-benefit system, meaning that their disposable income exceeds their gross income.

Considering Panel A of Table 2 in more detail, we see that means-tested benefits are unequivocally redistributive. Means-tested benefits average £199 per week for households in the lowest decile of gross income, fall sharply to £101 per week for households in the 10th–25th percentile of gross income, and continue to decline monotonically as gross income increases. The picture for non-means-tested benefits is more nuanced. Average benefits follow a non-monotonic pattern with gross income, starting at an average of £123 per week for households in the lowest decile of gross income, increasing to £150 per week for households in the 10th–25th percentile of the gross income, and then falling monotonically to £19 per week for households above the 90th percentile of gross income. This non-monotonicity is driven by contributory pensions and reflects that households eligible for contributory pensions typically have capital income and, therefore, do not fall into the lowest decile of gross income.

Panel B of Table 2 presents the redistributive effects of the tax-and-benefits system for the sub-population of retired households, defined as those where all adults are aged 66 years or older (the state pension age). For retired households, the relevant non-means-tested benefits are contributory pensions and non-contributory disability benefits, while the only relevant means-tested benefit is Pension Credit. Private pensions and capital income remain included in gross income. Within the sub-population of retired households, contributory pensions do not exhibit strong or systematic variation with gross income. Consequently, the redistributive effect of contributory pensions observed in Panel A of Table 2 for the entire population is primarily driven by retired households being concentrated in the lower deciles of the gross income distribution. In contrast, non-contributory disability benefits (including Attendance Allowance, a key benefit for older retired individuals) and Pension Credit remain strongly targeted at households with lower levels of gross income.

We make two broader observations regarding the results presented in Table 2. First, disposable income is higher for households in the lowest decile of gross income than for those in the 10th–25th percentile, both in the whole population and for the subpopulation of retired households. This reflects that the reduction in mean-tested benefits as gross income increases from the bottom decile to the 10th–25th percentile outweighs the modest rise in gross income, leaving households in the 10th–25th percentile with lower disposable incomes than those in the bottom decile. The driving force behind the reduction in means-tested benefits differs between the working-age population and retired households. For working-age households, the decline is primarily driven by Universal Credit and is attributed to its capital limits, which disqualify some households in the 10th–25th percentile of gross income from eligibility. This pattern highlights how capital limits, while ensuring that means-tested benefits are targeted at households lacking sufficient savings to support themselves, can inadvertently penalize saving and discourage the accumulation of capital. For retired households, the decline in means-tested benefits is driven by Pension Credit, and reflects that the minimum income guaranteed by Pension Credit is higher for individuals with severe disabilities or health conditions. As indicated by the distribution of non-contributory disability benefits, these

individuals are concentrated in the lowest decile of the gross income distribution.

Second, while means-tested benefits are more targeted toward households at the lower end of the income distribution compared to non-means-tested benefits, the distinction is not particularly pronounced. Among means-tested benefits, only Pension Credit is exclusively received by the poorest 50% of households. Universal Credit, with its taper rate of 55%, is sufficiently generous that some households in the upper half of the income distribution still qualify. Child-related benefits are even less tightly means-tested, with some households above the 90th percentile of gross income still receiving these benefits. Conversely, non-contributory disability benefits, although not means-tested, are predominantly received by households in the lower percentiles of the gross income distribution. In summary, in the UK's context—where non-means-tested benefits are generally not tied to prior labor earnings, and many means-tested benefits are only gradually withdrawn as income rises—it is reasonable to view both means-tested and non-means-tested benefits as key components of redistributive policy.

Table 2: Average weekly household taxes and benefits across the distribution of gross income

Panel A: All households

	Percentile of the distribution of household gross income					
	≤10th	10th-25th	25th-50th	50th-75th	75th-90th	>90th
Gross income	0	33	294	706	1,184	2,636
Taxes	17	19	52	153	303	952
Non-means-tested benefits	123	150	81	41	24	19
Contributory Disability	4	2	1	0	0	0
Contributory Pensions	63	115	67	35	20	17
Jobseeker's Allowance	0.3	0.4	0.0	0.0	0.0	0.0
Non-cont. Disability	55	33	13	6	3	2
Means-tested benefits	199	101	64	20	8	4
Universal Credit	157	70	48	8	2	1
Child-related benefits	16	12	15	12	6	2
Pension Credit	25	19	2	0	0	0
Disposable income	304	265	387	615	913	1,707

Panel B: Retired households

	Percentile of the distribution of household gross income					
	≤10th	10th-25th	25th-50th	50th-75th	75th-90th	>90th
Gross income	0	1	89	329	658	1,544
Taxes	28	27	37	83	153	460
Non-means-tested benefits	295	283	299	298	298	303
Contributory Pensions	251	252	272	285	290	297
Non-cont. Disability	44	31	27	13	8	6
Means-tested benefits	110	70	30	3	1	1
Pension Credit	110	70	30	3	1	1
Disposable income	378	327	380	547	803	1,387

Notes: See the notes to Table 1. Retired households are defined as those where all adults are aged 66 years or older. Disposable income exceeds gross income for 38.5% of all households and 92.9% of retired households.

5 Taxes, benefits and the inequality of income

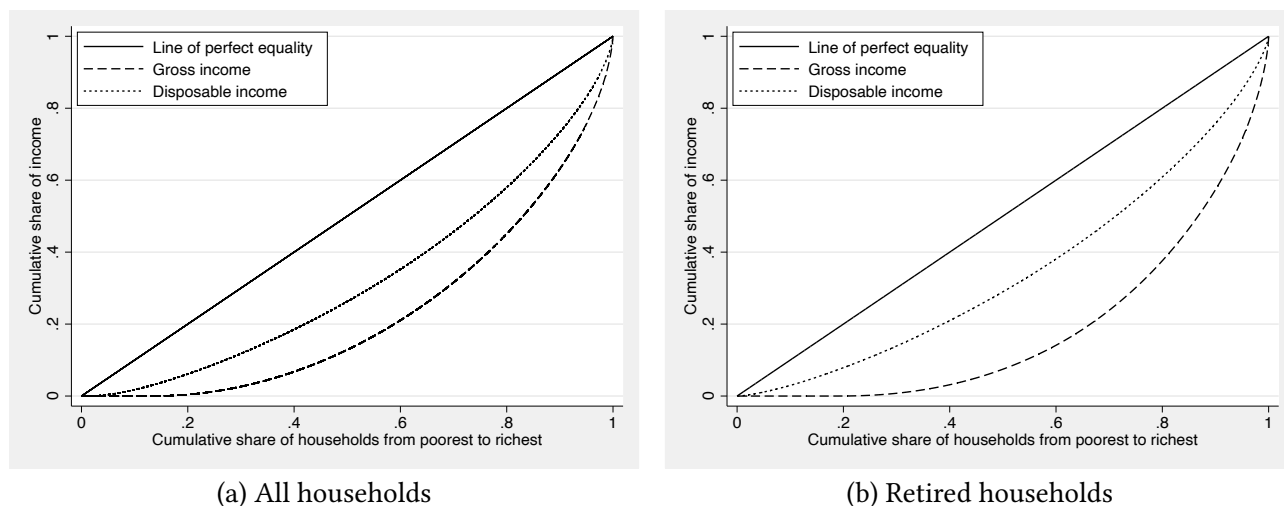
Table 2 demonstrates that the tax-and-benefit system reduces income inequality. This effect is further illustrated in Figure 11(a), which shows Lorenz curves plotting the cumulative shares of gross and disposable income against the cumulative share of households, ordered from the poorest to the richest. The figure also includes the line of perfect equality, representing the distribution of income in a society where all households have the same income. We see that, at all points in the income distribution, the Lorenz curve for gross income deviates more from the line of perfect equality than the Lorenz curve for disposable income, showing the unambiguous inequality-reducing impact of the tax-and-benefit system.

The Lorenz curves can be summarized by the Gini coefficients, which are calculated as the ratio of the area between the line of perfect equality and the Lorenz curve to the total area under the line of perfect equality. Conceptually, Gini coefficients range from zero, indicating perfect income equality where all households have the same income, to one, where a single household possesses all of the society's income. For the UK in 2023, we calculate Gini coefficients of 0.489 for gross income and 0.354 for disposable income. This indicates that the tax-and-benefit system reduces income inequality, as measured by the Gini coefficient, by 27.6%. To provide context for this effect, we use the Gini coefficients for gross income and disposable income for each OECD country in 2018, as reported by OECD (2021), and calculate the percentage reduction in the Gini coefficient attributable to the tax-and-benefit system. The largest impact of the tax-and-benefit system is observed in Ireland (38.8%), followed by Belgium (38.4%), Finland (35.9%), and France (33.0%). In contrast, the smallest effects are seen in Chile (5.2%), Korea (11.2%), Switzerland (14.7%), and Israel (17.4%). The 27.6% reduction in inequality achieved by the UK's tax-and-benefit system is around the average of all OECD countries, which is 24.3%. Another salient point of comparison is with the United States. Again, based on OECD (2021), we calculate that the US tax-and-benefit system reduces income inequality, as measured by the Gini coefficient, by 17.7%, placing the US significantly below the UK in terms of the redistributive impact of its tax-and-benefit system. Heathcote et al. (2010) and Piketty et al. (2018) provide a more detailed discussion of the distribution of taxes and benefits in the United States.

In Figure 11(b), we focus exclusively on retired households, defined as those where all adults are aged 66 years or older. Compared to the full population, retired households exhibit higher inequality in the distribution of gross income but lower inequality in the distribution of disposable income. Specifically, for retired households in 2023, we calculate Gini coefficients of 0.564 for gross income and 0.308 for disposable income. This indicates that, for retired households, the tax-and-benefit system reduces inequality, as measured by the Gini coefficient, by 45.4%.

In the remainder of this article, we analyze the inequality-mitigating effects of key components of the tax-and-benefit system. Section 5.1 examines the impact of fiscal drag on income inequality and compares it to the effects of increasing personal income tax rates. Section 5.2 delves into the design of means-tested and non-means-tested benefits, exploring how specific benefit rules influence the distribution of disposable income. The methodology for these analyses is as follows: we use the 2023 tax-and-benefit system as the baseline and apply the UKMOD microsimulation model to

Figure 1: Lorenz curves



(a) All households

(b) Retired households

Notes: Retired households are defined as those where all adults are aged 66 years or older.

calculate the taxes paid and benefits received by a large, representative sample of UK households. We then re-simulate taxes and benefits for each household under a counterfactual tax-and-benefit system, where one specific component has been reformed relative to the baseline 2023 system. By comparing inequality across the baseline and counterfactual policy environments, we can assess the effects of specific components of the tax-and-benefit system. Specifically, we calculate the Gini coefficient of household disposable income under each system, as well as the percentage change in the Gini coefficient resulting from the shift from the baseline to the counterfactual scenario. As explained in the introduction, this analysis has several limitations, including being static in that it does not consider how household behaviors, such as their work choices, might change in response to the reform.

5.1 Fiscal drag versus tax rate increase

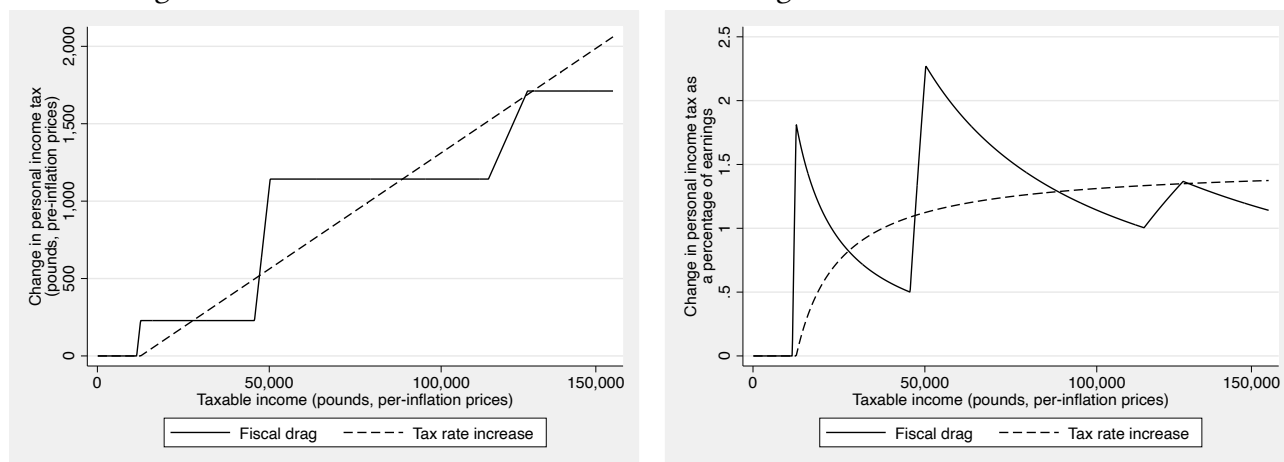
Fiscal drag is a ‘stealth’ tax increase that occurs when gross incomes rise due to inflation but tax thresholds remain frozen, resulting in higher government revenue and lower post-tax income in real terms. Understanding fiscal drag is particularly important in the UK, given that CPIH inflation rose by 3.1% in the 12 months to July 2024, while personal income tax thresholds are expected to remain unchanged until April 2028.⁶

In this section, we examine the effect of fiscal drag on income inequality and compare it to the effect of an increase in personal income tax rates. To analyze fiscal drag, we consider a scenario with 10% inflation in gross income, where all nominal thresholds in the tax and benefit system are adjusted for inflation except the personal income tax thresholds. For comparison, we introduce a “tax rate increase reform,” in which the three personal income tax rates are each raised by 1.5 percentage points, resulting in rates of 21.5%, 41.5%, and 46.5% (recall the 2023 personal income tax rates are 20% for taxable income between £12,571 and £50,270, 40% for income between £50,271 and

⁶See Masala (2024) for further discussion on fiscal drag and planned changes to UK personal income taxation.

£125,140, and 45% for income above £125,140). This particular tax increase is chosen because, in the aggregate, the fiscal drag resulting from 10% inflation and the 1.5 percentage point increase in tax rates generate approximately the same additional revenue for the government.

Figure 2: Personal income taxation with fiscal drag versus and tax rate increases



While both fiscal drag and the tax rate increase work to the burden of personal income tax, they differ in two important respects. First, in terms of transparency, fiscal drag occurs passively due to inflation and without any explicit policy change, making it a hidden or stealth tax. In contrast, the tax rate increase requires explicit government action. Second, fiscal drag and tax rate increases affect individuals differently based on how their taxable incomes align with tax thresholds. Figure 2 illustrates the absolute and relative changes in real personal income tax resulting from fiscal drag due to 10% inflation and from a 1.5 percentage point increase in all personal income tax rates. The tax rate increase applies to all taxable income above the lowest threshold of £12,571 where basic rate tax becomes payable. Since it is a rate increase, the reform raises taxes in proportion to how much an individual’s income exceeds the lowest tax threshold (illustrated by the dashed line in the left panel of Figure 2). As a result, the tax rate increase is progressive; this is illustrated in the right panel of Figure 2, which shows that change in personal income tax as a percentage of taxable income increases with taxable income beyond the standard allowance.

The change in personal income tax (in real terms) from fiscal drag is shown by the solid line in the left panel of Figure 2. Taxes increase in proportion to income for individuals with pre-inflation taxable income just below the tax thresholds as they are pulled into higher tax brackets. At the same time, all individuals who remain in a given tax bracket experience the same absolute increase in real personal income taxes, reflecting that all individuals who remain in a given tax bracket are now paying taxes on taxable income relative to the same lower tax thresholds. The increase in taxes, however, is larger for individuals in higher tax brackets as the higher tax thresholds decrease in real terms by a larger (absolute) amount. The solid line in the right panel of Figure 2 shows that fiscal drag had a mixture of regressive and progressive effects on personal income taxation: fiscal drag has regressive effects within tax brackets and progressive effects between brackets. The tax increase due to fiscal drag is particularly regressive for individuals whose pre-inflation taxable income is just above a tax threshold. These individuals face the same absolute increase in taxes as

Table 3: Fiscal drag versus a tax rate increase

	Inequality (Gini)	% Change in inequality from baseline
Baseline 2023 tax-and-benefit system	0.3540	–
Fiscal drag from 10% inflation	0.3534	-0.19
Tax rate increase of 1.5 percentage points	0.3519	-0.53

higher earners within the same tax bracket, but the tax increase represents a larger proportion of their taxable income.

Table 3 summarizes the effects of fiscal drag and a revenue-equivalent tax rate increase on disposable income inequality. In both scenarios, government revenue (tax receipts minus benefit costs) increases by approximately 6%. Fiscal drag, driven by 10% inflation, is moderately progressive, reducing disposable income inequality, as measured by the Gini coefficient, by 0.19%. In contrast, the 1.5 percentage point increase in tax rates results in a significantly larger reduction in inequality, lowering the Gini coefficient by 0.53%. Although both approaches generate the same additional government revenue, holding tax thresholds fixed during inflation is a less equitable means of increasing government revenue compared to raising tax rates while adjusting thresholds for inflation.

5.2 Benefit reforms

When exploring reforms to means-tested benefits, we focus on Universal Credit, the largest program in this category, and examine two counterfactual reforms: a 10% increase in the standard allowance and a reduction in the taper rate, i.e., the at which benefits are withdrawn as household income from other sources increases, from 55% to 45%. While we will focus on the effects of these reforms on inequality, it is important to bear in mind that both reforms are likely to change the incentives for individuals to work. In particular, the reduction in the taper rate increases the incentive for individuals to enter employment, as their Universal Credit benefit is now withdrawn less aggressively against earnings. Meanwhile, the increase in the standard allowance provides the largest increase in income to non-working and low-earning households and is, therefore, likely to disincentivize labor supply.

In addition to examining each reform's impact on the inequality of disposable income, as measured by the Gini coefficient, we also calculate the percentage change in the overall cost of the tax-and-benefit system, defined as total taxes minus total benefits. To assess how effectively each reform reduces inequality relative to its cost, we calculate the elasticity of inequality with respect to cost. From Table 4, we observe that increasing the standard allowance for Universal Credit has an elasticity of inequality with respect to cost of -0.24. Meanwhile, the taper rate reduction is less effective, with an elasticity of -0.16. This difference partly reflects that lowering the taper rate not only increases benefits for existing recipients but also expands eligibility to households with higher gross incomes. Under the current taper rate of 55%, nearly 40% of households receive Universal

Credit (see Table 1). Consequently, the additional households brought into eligibility by reducing the taper rate are not among the poorest in the country.

Table 4: Effects of benefit reforms on the inequality of disposable household income

	Inequality (Gini)	% Change in inequality	% Change in in cost	Elasticity of ineq. w.r.t cost
Baseline 2023 tax-and-benefit system	0.3540			
Non-means-tested benefit reforms				
Disability benefits: Increases by 50%	0.3513	-0.79	5.05	-0.16
Jobseekers Allowance: Increase by 50%	0.3540	-0.01	0.03	-0.44
Means-tested benefit reforms				
Universal Credit:				
10% increase in standard allowance	0.3523	-0.49	2.00	-0.24
Decrease the taper rate from 55% to 45%	0.3521	-0.56	3.56	-0.16

Turning to non-means-tested benefits, we evaluate two reforms: a 50% increase in all non-means-tested disability benefits (both contributory and non-contributory) and a 50% increase in Jobseeker’s Allowance. The results in Table 4 show that both reforms, as expected, reduce disposable income inequality while increasing the overall cost of the tax-and-benefit system. However, when effectiveness is adjusted for cost, Jobseeker’s Allowance is significantly more impactful at reducing inequality. The elasticity of inequality with respect to cost is -0.44 for Jobseeker’s Allowance, compared to -0.16 for disability benefits.

To better understand the differing impacts of Jobseeker’s Allowance and disability benefits, we examine their interactions with taxation and means-tested benefits. Means-tested benefits treat non-means-tested benefits as income when determining eligibility and payment amounts. Consequently, increases in non-means-tested benefits may be partially or fully offset by reductions in means-tested benefits. Furthermore, since contributory non-means-tested benefits are subject to personal income taxation, increases in these benefits can raise an individual’s tax liability, further attenuating the impact of the benefit increase. Table 5 quantifies these interactions. Jobseeker’s Allowance and disability benefits show limited interaction with taxation, indicating that the taxable incomes of individuals receiving these benefits typically fall below the lowest income tax threshold, even with higher benefit levels. However, both benefits interact significantly with means-tested benefits. Reductions in means-tested benefits offset 12.86% of the direct effect of increases in disability benefits and 31.19% of the direct effect of increases in Jobseeker’s Allowance.

These findings highlight the importance of accounting for the interconnected nature of the benefits system when evaluating policy changes. In particular, the strong interactions between non-means-tested and means-tested benefits demonstrate that the effects of benefit reforms cannot be fully understood in isolation from other components of the system. For a more detailed discussion of interactions between benefit programs, see Low et al. (2010), Low and Pistaferri (2015), Haan et al. (2023), Birinci and See (2023), and Haan and Prowse (2024).

Table 5: Program interactions

	Direct effects	Indirect effects		% of direct effect	
	(£/week)	(£/week)		offset by:	
	Non-means- tested benefits	Taxes	Mean-tested benefits	Taxes	Means-tested benefits
Increase all disability benefits by 50%	6.18	0.04	-0.79	0.60	12.86
Increase Jobseeker's Allowance by 50%	0.04	0.00	-0.01	0.00	31.19

6 Conclusion

The analysis presented in this paper highlights the major role of the UK tax-and-benefit system in mitigating income inequality. Through a combination of progressive taxation and a mix of means-tested and non-means-tested benefits, the system provides support to lower-income households while redistributing income across the population. However, the findings also reveal opportunities and challenges in crafting policies that effectively reduce inequality.

First, fiscal drag—a phenomenon where tax thresholds remain fixed despite wage inflation—emerges as a less equitable method of raising government revenue compared to an explicit increase in tax rates. While it automatically increases revenues, fiscal drag introduces mixed distributional effects, including regressive impacts for individuals near key tax thresholds. In contrast, raising tax rates while adjusting thresholds for inflation is both more progressive and transparent. Policymakers should prioritize explicit adjustments to tax rates and thresholds to achieve revenue goals while minimizing adverse effects on income inequality.

Second, non-means-tested benefits, while not explicitly targeted at low-income households, play a significant role in reducing inequality. Their accessibility to individuals with limited gross income ensures that they contribute meaningfully to redistributive efforts. Although inequality reduction is often not the primary objective of non-means-tested benefits, their effects in this area can be comparable to those of means-tested benefits. A comprehensive evaluation of non-means-tested benefits should, therefore, account for their impact on inequality alongside their broader policy goals.

Third, when considering reforms to Universal Credit, increasing the standard allowance is shown to be a more effective approach for reducing inequality compared to lowering the taper rate. At the current taper rate of 55%, benefits already extend beyond the poorest half of households, making reductions in this rate a relatively blunt instrument for addressing inequality. Increasing the standard allowance, by contrast, provides more targeted support to low-income households and delivers greater redistributive effects per unit of cost.

These findings underline the need for a nuanced and evidence-based approach to policy design. By addressing fiscal drag transparently, acknowledging the broader role of non-means-tested benefits in reducing inequality, and prioritizing targeted reforms to means-tested programs like Universal Credit, policymakers can enhance the equity and effectiveness of the UK tax-and-benefit system.

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