Removing the £100,000 childcare cliff-edge: Impacts and cost of reform

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Executive summary

Since 2010, all parents of 3- and 4-year-olds in England have been able to claim 15 hours a week of free childcare funded by government for 38 weeks of the year. Since 2017, working parents of 3- and 4-year-olds have been able to claim a further 15 hours, provided that certain conditions are met. These include the requirement that neither parent expects to have income above £100,000. Families with a parent whose expected income is above £100,000 – after adjustments such as for pension contributions and charitable donations – face the prospect of losing access to some or all of their free childcare, potentially leaving them worse off overall. This childcare 'cliff-edge' is in addition to and, for those affected, more severe than the withdrawal of the Personal Allowance for Income Tax, which also starts at £100,000.

The size of the childcare cliff-edge has been getting bigger, as the value of the free childcare entitlement has increased following recent reforms and rising childcare costs over time. Starting in April 2024, the entitlement has also been gradually expanded to cover a wider range of ages. Working parents of children aged 9 months to 2 years old are now eligible for 30 hours per week of free childcare, provided they both expect their income for the tax year to be below £100,000. Parents of under-3s therefore lose 30 hours of free childcare by crossing the threshold, rather than the 15 hours that parents of 3- and 4-year-olds lose. The threshold has also stayed fixed at £100,000 in cash terms since 2017, so rising incomes pull more parents into its range each year. **The combined effect is that the median affected parent would have had to reach income of roughly £105,000 to be no worse off after losing free childcare in the tax year 2021/22, but this will rise to £124,000 by the end of this parliament, in 2029/30.**[1]

The childcare cliff-edge has been widely criticised for discouraging work and creating incentives that hold back economic growth. However, quantifying these impacts and estimating the fiscal cost of reform requires analysis of HMRC administrative tax data covering the full population of parents affected by the cliff-edge, which has not previously been available. In this report, we provide the first detailed evidence on who is affected by the withdrawal of free childcare, how they respond, and how much it would cost to remove this cliff-edge by making the free childcare entitlement available to parents with incomes over £100,000, or other options short of this.

[1]Editorial note: all references to years in this report are based on tax years, giving the later year e.g., tax year 2021-22 is given as 2022.

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Key findings

Fewer parents respond to the cliff-edge than expected

In 2022 – the most recent year for which data are available – around 2,610 more parents of 3- and 4-year-olds had incomes just below £100,000 than we would expect when compared to parents with slightly higher or lower income levels. This 'bunching' is caused both by the childcare cliff-edge and the tapering away of the Personal Allowance. Using a comparison with Scottish parents, who face the same Personal Allowance taper but no childcare cliff-edge, we find that roughly 40% of the bunching among English parents is a response to the prospect of childcare withdrawal. This means **around 1,100 parents in England held their incomes below £100,000 in response to the cliff-edge**.

Despite this observed 'bunching', among all the parents who would be financially better off staying below the threshold to retain access to free childcare, most do not. In 2022, **fewer than one in ten employees with eligible children responded to the cliff-edge by holding their income down**, rising to about three in ten among the self-employed and owner-managers.

The number of parents affected by the cliff-edge is rising fast

One reason that relatively few parents currently bunch is that some may have alternative childcare arrangements and so do not require free childcare, meaning they have nothing to gain from reducing their income. Just below the threshold, we see that four out of ten parents of 3- and 4-year-olds chose not to use the childcare entitlement.

Another is that in 2022, the financial loss was from not bunching was, for many parents, still relatively small compared to their overall income. Only one in ten were more than £4,000 worse off from just crossing the threshold. However, by the end of this parliament, this will rise to eight in ten parents. Combined with the rise in the number of parents earning close to the threshold, **the number of parents bunching due to the childcare cliff-edge will rise eleven-fold, from 1,090 in 2022 to 11,980 by 2030**.

The cliff-edge has broader impacts as it pushes some parents, mostly women, out of work.

The childcare cliff-edge can affect the work incentives of both parents, not only the parent whose income is at risk of exceeding the £100,000 threshold. This is because amongst families who lose access to free childcare, some will choose to fill the gap with additional parental childcare rather than incur

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additional childcare costs. We find that this additional childcare is typically undertaken by mothers. **Below £100,000 the share of parents whose partner is not in work is about 6%, but once income crosses the threshold it rises to about 9%. Almost all of that increase (90%) comes from mothers leaving work.** The jump in non-working mothers at the point where their partner exceeds £100,000 income suggests the loss of childcare entitlement as a cause, with possible long-term consequences for those mothers' earnings.

Removing the cliff-edge entirely is unlikely to pay for itself

Some commentators have suggested that the distortive effects of the childcare cliff-edge may be so large that removing it would cost very little or may even raise revenue overall. If this were correct, it would offer the government a very easy policy choice. Unfortunately, **we find that due to the relatively low observed responsiveness of parents affected by the cliff-edge, it is unlikely that removal of the cliff-edge could be achieved without any fiscal cost.**

Our empirical analysis is primarily conducted using the 2022 tax year – the latest year for which data are available. Since April 2024, the childcare offer has extended down to 9-month-olds, and parents of under-3s now lose 1,140 hours per year if they cross the threshold. If current eligibility rules were in place in 2022, we estimate this would have increased the number of parents potentially eligible to receive the childcare entitlement by 73%. We cannot yet directly observe how parents since 2024 react to this bigger and more visible cliff-edge.

Although our data are from 2022, our central estimate accounts for the increased incentive to hold down incomes arising from the expansions of the childcare entitlement, both in terms of the increase in the value of the entitlement and the number of parents covered. In other words, all else equal, with more free hours at stake to more parents, more of them will bunch below £100,000. In addition to this, the estimate also assumes a slight increase in the share of parents with an incentive to respond who actually choose to do so. This is because we observe a gradual increase in this responsiveness in the years up to 2022, which we treat as continuing into future years.

After accounting for these effects on both childcare spending and tax revenues, the total cost of removing the £100,000 threshold is likely to be around £520 million in 2028, increasing to £640 million by 2030.

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However, if the recent expansion to free childcare made the cliff-edge more salient and parents even more responsive, the cost of removing the cliff-edge could be significantly smaller

Our central estimates assume that parental responsiveness will continue to rise, following the trend seen between 2017, when the policy was introduced, and 2022. However, increased public discussion of the cliff-edge, and the longer timeframe for which parents are affected by the cliff-edge, may lead the share of parents who respond to increase more quickly.

If this happens, even more parents would bunch their income below £100,000 in future years under the current policy regime. Since these parents would see higher incomes if the threshold were removed, the cost of removing the cliff-edge would be lower.

If the number of unresponsive parents halved between 2022 and 2028, around 4 times as many parents would be bunching in comparison to our central scenario. In this case, or if unresponsiveness fell even further, removing the cliff-edge would be revenue-raising.

If the government wishes to keep an upper income threshold, it should be based on actual rather than expected income

The entitlement to free childcare currently depends on each parent's Adjusted Net Income (ANI) for the year. This measure reflects the individual's taxable income after deducting any pension contributions or charitable donations that they have made. Using ANI allows some flexibility for parents to avoid exceeding the threshold, compared with if the cliff-edge was based on their gross income before any deductions.

Less widely known is that the threshold currently depends on each parent's *expected* ANI at the time of applying for the free childcare, not their actual ANI as evident at the end of the year. Strikingly, **we find that one third (33%) of parents whose incomes were between £100,000 and £120,000 at the end of the year, nevertheless claimed and received some free childcare.** This does not necessarily indicate any non-compliance, as they may have expected their ANI to be below £100,000 at the time they confirmed eligibility. However, relying on (reported) expectations as the basis for free childcare entitlement leads to inequalities in access for people who ultimately had the same income.

If the government wishes to keep an upper income threshold, it would be fairer and more coherent to use each parent's *actual* ANI for the year, rather than (what they say is) their expected income. A threshold based on actual

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ANI could be set higher (£111,000) than one based on expected ANI, at the same overall fiscal cost.

Switching to actual ANI would require the introduction of a clawback mechanism for the cases in which an individual had claimed free childcare but then exceeded the ANI threshold for the year despite opportunities to adjust it using pension contributions or charitable giving.

There are several options short of fully removing the childcare cliff-edge, which would be cheaper and reduce bunching, although would not solve all of the current problems

If the fiscal cost of making free childcare universal were deemed excessive, there are several ways in which the negative impacts of the current cliff-edge could nevertheless be mitigated, short of complete removal. There are three main ways of doing this:

- **Remove the threshold for the first 15 hours of childcare for under-3s**. This would halve the impact of the cliff-edge for parents whose only child in childcare is under 3, although there would remain some incentive to hold down income for all parents. This would cost around £210 million in 2030, in our central scenario.
- **Increase the threshold at which entitlement to free childcare is withdrawn.** This would reduce the number of parents affected by the cliff-edge, although would not reduce the incentive to hold down income for those above the new threshold. Raising the threshold to £125,000 or £150,000 would cost around £100 million or £250 million in 2030, respectively in our central scenario.
- **'Taper' the withdrawal of free childcare instead of removing it entirely, for parents above the threshold.** In our central scenario, a taper that deducted 8 pence from the entitlement for each pound earned over £100,000 would cost around £320 million by 2030, whereas a much steeper taper rate that deducted 28 pence is estimated to actually raise £20 million by replacing the current policy. A taper rate between these two options deducting 18 pence is estimated to cost £80 million.

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1. Introduction

Free early years education provision in the UK was introduced by the Labour government elected in 1997 with responsibility devolved to Scotland, Wales and Northern Ireland from 1999. The four nations have since developed distinct systems that differ in the hours offered, the ages covered and the conditions attached. While this report analyses the effect of the £100,000 childcare threshold in England, it is first important to understand the historic position in England, Scotland and Wales.[2]

1.1. Childcare entitlement across England, Scotland and Wales

In England, the initial free entitlement covered 4-year-olds at the equivalent of 12.5 hours per week for 33 weeks per year and was extended by September 2010 to all 3- and 4-year-olds at 15 hours per week for 38 weeks. This universal offer, which carries no income test, remains in place.

The universal offer was supplemented in September 2017 by a new Free Childcare for Working Parents scheme (henceforth 'childcare entitlement'). This entitles working parents of 3-and 4-year-olds to a further 15 hours per week (a total of 30 hours when combined with the universal offer). The additional 15 hours childcare entitlement is subject to several eligibility requirements. Two of these requirements relate to both parents' (expected) incomes. They must (1) expect to earn, on average, the equivalent of working 16 hours a week on the National Minimum or Living Wage over the 3 months after application; (2) expect to have an Adjusted Net Income (ANI) below £100,000 for the tax year in which the entitlement is being claimed. ANI is (roughly) defined as income after accounting for pension contributions and charitable donations.

In Scotland, all 3- and 4-year-olds are entitled to 1,140 hours a year (around 30 hours a week in term time) of funded early learning and childcare, with no income test and regardless of their parents' working status. The number of hours that children are entitled to has risen in stages since 2002, most recently increasing from 600 to 1,140 in August 2021.[3] The £100,000 threshold therefore does not affect the funded hours in Scotland and this distinction forms the basis of our analysis as it allows us to isolate parents' behaviour in England in response to the threshold.

[2] The provision in Northern Ireland is allocated on educational grounds rather than by income so is not discussed here.

[3] https://www.gov.scot/publications/early-learning-childcare-expansion-1140-hours-interim-evaluation-report/pages/2/

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In Wales, all 3- and 4-year-olds receive a universal Foundation Phase entitlement of at least 10 hours per week with no income test. Since April 2019 working parents can add to this through the Childcare Offer for Wales, taking combined provision up to 30 hours per week for up to 48 weeks.[4] The income condition for this is assessed on each parent's *gross income* being £100,000 or less. Gross income is measured before deductions such as pension contributions and salary sacrifice, in contrast to ANI used in England.[5]

Alongside these devolved schemes, Tax-Free Childcare operates across the whole UK. It creates a childcare account that both parents and the government pay into. For every £8 a parent pays into the account, the government will top it up by £2, up to £2,000 per child a year (higher for disabled children). It is withdrawn in full, with no taper, once either parent has an ANI above £100,000.[6]

1.2. Understanding the effect of the childcare entitlement threshold in England

The design of the childcare entitlement in England means that very small changes in expected incomes can result in large reductions in the number of hours per year that the government will fund for an early-years child. This creates a strong incentive for parents who choose to make use of the childcare entitlement to keep their income below the threshold.

Starting in April 2024, the entitlement has also been gradually expanded to cover a wider range of ages. This now provides 30 hours for 38 weeks per year for children from 9-months to 2 years, in addition to the 15 hours for 3- and 4-year-olds introduced in 2017. Significantly, the universal free 15 hours of childcare has not also been expanded beyond 3- and 4-year-olds, which means that parents of under-3s risk losing 1,140 hours of annual funded childcare, rather than the 570 hours that parents of 3- and 4-year-olds would lose.[7]

Figure 1.1 shows the range of the implicit value of childcare entitlement across England, driven by large variation in the hourly cost of childcare parents face when paying for it out of their own pocket. For most working parents of a 3- or 4-year-old in 2025, losing a full year of the childcare

[4] https://www.gov.wales/get-30-hours-childcare-3-and-4-year-olds/nursery-education
[5] The number of parents of young children in Wales receiving this level of income is small, meaning we are not able to perform statistical analysis on this group.
[6] https://www.gov.uk/tax-free-childcare
[7] 30 hours per week multiplied by 38 weeks per year.

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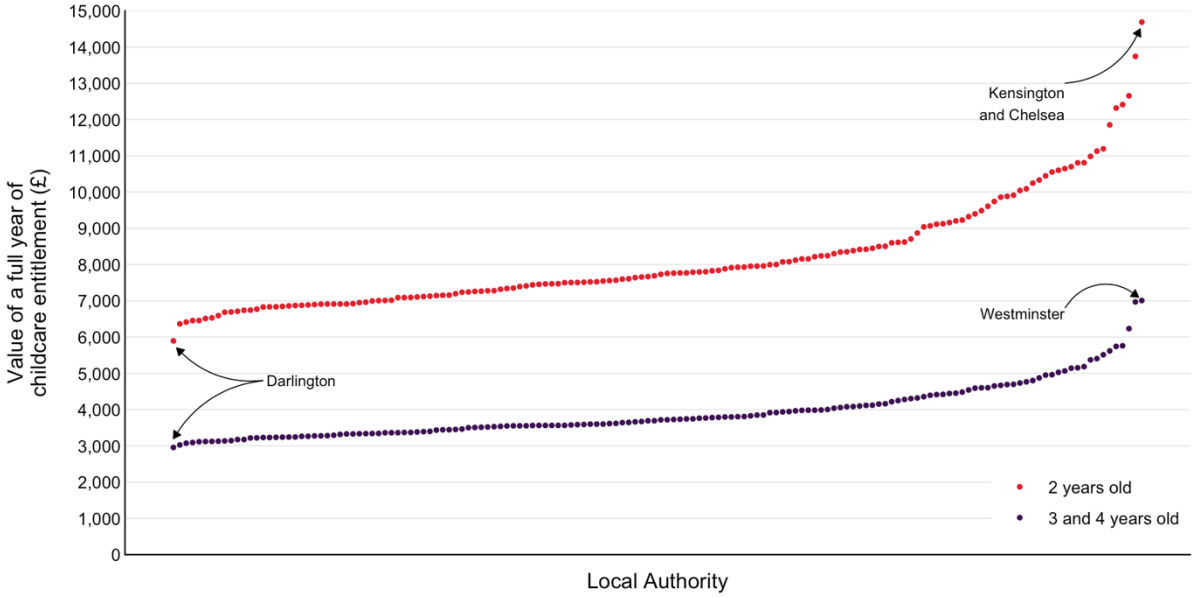
entitlement would mean losing the equivalent of between £3,000 and £5,000, if they were instead to fully fund the lost free hours themselves. For the parents of a 2-year-old, the loss is about twice as large, owing to losing twice as many hours.

The loss of childcare entitlements is not the only policy that could affect taxpayers' decisions to keep their income below the £100,000 threshold. Since April 2010, the Personal Allowance – the amount of income that is not subject to Income Tax – has been tapered away by £1 for every £2 earned above £100,000, subjecting more of a taxpayer's income to the Higher Rate of Income Tax. Given the Higher Rate is 40%, this means that an extra 20p is paid in tax for every £1 earned above £100,000, on top of the 40p paid in ordinary Income Tax, and the 2p paid in National Insurance Contributions. This creates what is effectively a 62% tax rate between £100,000 and £125,140 – the point at which the Personal Allowance is fully withdrawn.[8]

Figure 1.1: The monetary value of a full year of the childcare entitlement, by local authority in 2025



Notes: Each point represents a single local authority. The full-year childcare entitlement value has been calculated by multiplying the average hourly cost on childcare in that local authority by the additional number of hours the parents are entitled to, on top of the universal 15 hours of free childcare for 3- and 4-year-olds (570 hours for 3- and 4-year-olds, 1,140 hours for 2-year-olds). Local authorities are ordered separately for the two age groups.

Source: Authors' calculations using the childcare and early years provider survey

[8] The additional-rate threshold was also cut from £150,000 to £125,140 in April 2023 in England, Wales and Northern Ireland. Income above £125,140 is now taxed at 45% rather than 40%.

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On its own, this is already a reason to keep income below £100,000. On top of the lost childcare it makes the disincentive stronger still as a parent crossing £100,000 loses part of their Personal Allowance and the whole childcare entitlement at once, so a modest rise in pay can leave the family clearly worse off. Together, the loss of childcare and the Personal Allowance means that in 2022 the median affected parent would have had to have reached an income of around £105,000 to be no worse off after losing free childcare. Due to the expansion of the policy, and the increasing cost of childcare since, by the end of this parliament in 2030, this figure will rise to about £124,000.

1.3. Previous work

The £100,000 childcare cliff-edge is already well documented, and we are not the first to draw attention to it. Tax Policy Associates has set out how the withdrawal of free childcare produces marginal rates that exceed 100%, so that a parent earning a pound over £100,000 can be left thousands of pounds worse off.[9] The Centre for British Progress (CBP) has gone further and proposed specific reforms, including the per-child opt-in marginal rate, and has costed the removal of the cliff-edge using publicly available data.[10] Both have helpfully highlighted the issue, and make the case for reform.

However, using readily available public data can only go so far. Tax Policy Associates recognised that the scale of the effect was an open question. CBP built a synthetic microsimulation of the affected population using income and birth data. They estimated that removing the cliff-edge would raise between £130 million and £425 million in 2030, and that a 3% per-child 'surtax' would raise between £330 million and £700 million.

Their work is necessarily limited by the data available. To say what reform would cost, it helps to understand how parents near the threshold actually behave, and that means identifying the parents with a child of the relevant age from among everyone earning around £100,000, which cannot be done using publicly available data, and observing how many of them actually keep their income below the threshold.

Instead, our report uses HMRC administrative data covering the full population of parents affected by the threshold. This allows us to directly observe the number of parents responding to the threshold, rather than relying on theoretical assumptions. We provide the first estimate of the cost

[9] https://taxpolicy.org.uk/2024/10/17/reform-income-tax-end-the-scandal-of-high-marginal-rates/
[10] https://britishprogress.org/reports/rates-and-wrongs-fixing-uk-tax-cliff-edges-and-tap

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of reform using real data on the behaviour of parents affected. We explore the difference in approach between our work and others in Appendix D.

The rest of the paper is organised as follows. Section 2 describes the data and how we use it. Section 3 sets out who responds and how, and how the response is growing. Section 4 works through the options for reform and estimates what they would cost.

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2. Data and method

2.1. Data sources

This analysis brings together a range of HMRC administrative data sources to try to build a complete picture of parents that are (or could be) eligible for free childcare entitlement, as well as information on their income and financial decisions. Additional information about data sources and the methodology is available in Appendix A.

Childcare account data provides the universe of all children who have had an open HMRC childcare account at some point between the tax years 2017-18 and 2024-25. It contains their date of birth, and links to their parents' National Insurance numbers, which also allows us to link parent couples to each other.

Pay As You Earn Real Time Information (PAYE RTI) provides payroll information for the full population of employees, from 2015 onwards. Alongside the information on payment and pension contributions, for example, it also supplements the childcare account data in identifying parents by using information on when employees take parental leave. We complement this with Self-Assessment (SA) tax return records which provide information on total income, and income composition, for all SA filers. Unique Property Reference Number (UPRN) data based on home addresses reported in PAYE RTI and SA data are used for linking households.

2.2. Identifying parents

Our sample of parents comes from three sources. First, individuals who are observed to have at some point had an open HMRC childcare account. Second, as not all parents will have opened a childcare account for their children, particularly parents with incomes over £100,000, we supplement this with parents who are observed in the PAYE data to have taken parental leave. In these cases, we use the first month of a new spell of parental leave as a proxy for the month of birth of a child. Third, we use the UPRN data to match parents to their partners who are not observed to have taken parental leave or had an open childcare account. This is particularly important for identifying fathers, since paternity leave is relatively shorter than maternity leave and is therefore not always recorded explicitly by employers in payroll data.

This provides extensive coverage of the full parent population. However, there are some parents we will miss based on their (or their partner's) income and employment status that could mean they appear in neither the

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childcare account nor PAYE data. For example, if both parents are self-employed (and so are not in PAYE data) and at least one of the parents earns over £100,000 (and so is not in the childcare data), their children will not appear.

Another example is where one parent (usually father) is an employee, so is in PAYE data, but does not have parental leave recorded, the other parent is self-employed, and one parent earns over £100,000. Self-employed parents taking parental leave receive Maternity Allowance and Paternity Allowance, rather than the Statutory Maternity/Paternity Pay. Maternity and Paternity Allowance are administered by the Department for Work and Pensions (DWP) rather than HMRC, so HMRC was not able to provide access to these records.

As these parents are not identified, this will mean they will not be included in modelling the effects of reforming the childcare policy. Further, to the extent that the parents missed are more likely to be those with incomes over £100,000, since this makes them less likely to appear in childcare account data, this will mean that we overestimate the number of parents keeping their income below £100,000 relative to the number above, which will bias our estimate of the responsiveness of parents to the childcare withdrawal upwards.

2.3. Isolating effect of childcare threshold

In order to estimate the effect of the withdrawal of free childcare at the £100,000 threshold we employ a bunching approach. We do this by comparing the number of parents who have an income just below £100,000 to an estimate of the number of people we would expect to have an income at that level if parents did not have a reason to keep their incomes below £100,000. A more detailed explanation of the methodology can be found in Appendix A.

An added complication to this is that the Personal Allowance also begins to be withdrawn at £100,000, increasing the effective marginal rate for taxpayers at this point by 20 percentage points (pp). This means that even without the removal of the childcare entitlement, parents would still have some incentive to keep their income below £100,000.

To separate the effect of the childcare threshold from the Personal Allowance withdrawal, we repeat the same bunching analysis and in Appendix A for the population of parents in Scotland – where the Personal Allowance is still withdrawn starting from £100,000, but the childcare entitlement is universal. We then use this to find the amount of additional

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bunching that occurs in England, which would be due to English parents facing the childcare withdrawal in addition to the Personal Allowance withdrawal.

2.4. Isolating the labour supply effect

To estimate what share of the response to the childcare withdrawal is down to real labour supply changes, as opposed to parents responding through other mechanisms such as contributing to a pension or similar, we estimate the amount of bunching there is at £100,000 when measuring incomes using gross income.

For employees, bunching observed based on gross income – which is income before any deductions are subtracted – largely represents parents holding down incomes by reducing the amount they work, turning down promotions that would take them above £100,000 or similar labour supply responses. It may partly also represent shifting of investment income to a partner.

One often-cited method by which employees can keep their ANI – the income measure which matters for childcare access in England – below £100,000 is by making pension contributions. Some businesses allow employees to do this through 'salary sacrifice': an agreement between an employee and their employer in which the employer reduces the total salary they pay in exchange for making an equivalent employer pension contribution. HMRC does not routinely collect data on employer pension contributions or those made through a salary sacrifice arrangement, which means for people making contributions in this way it appears as if they are reducing their gross income. Therefore, we restrict our analysis in this section to the subset of taxpayers without access to a salary sacrifice regime via their employer (see Appendix A for details on how we identify these firms). Taxpayers identified as working at a firm that offers a salary sacrifice pension scheme are broadly similar to those not identified as working at one, though are more likely to live in the South East, and more likely to work in the Financial and Insurance Services industries.

2.5. Baseline use of childcare

Not every parent with a child who could be eligible for the childcare entitlement will choose to make use of it. Using data on which parents had a live childcare account at some point during the 2022 tax year, it can be seen in Figure 2.1 that around 60% of all parents (with an income below £100,000) of children between 3 and 4 had a childcare account to claim the

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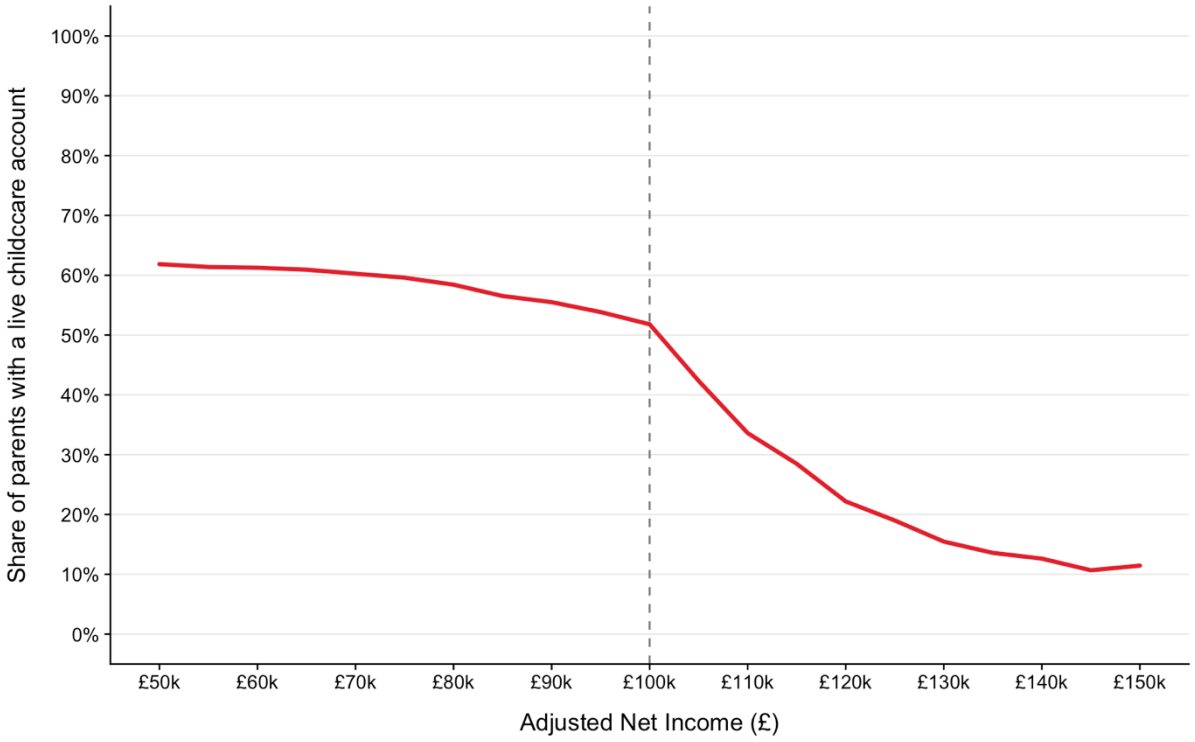
30 free hours. For some of those who choose not to access the free childcare entitlement, it will simply be because they do not want the hours they are entitled to. For example, they may use other childcare arrangements such as a parent staying home, or the child being cared for by grandparents.

This has important implications when considering how many parents stay in the 'dominated region' – the band of income above £100,000 in which a parent who would use the childcare entitlement is worse off overall, due to the lost childcare and extra tax, than if they kept their income just below the threshold. For parents that were never going to use the entitlement, they are not any worse off and have no reason to reduce their income to receive the entitlement. Therefore, we should not expect every parent in the 'dominated region' to be reducing their income below £100,000, even if there were no difficulties preventing parents from reducing their incomes.

Figure 2.1: Share of parents with a live childcare account during the 2022 tax year



Notes: Income bins are £5,000 wide. A childcare account is considered live if it has received a green response for at least one quarterly eligibility period during the year. Accounts that do not receive a green response in any quarter during the tax year are not considered live. A live childcare account cannot be used until the account has been validated. HMRC does not hold information on account validation.

Source: Authors' calculations based on HMRC administrative datasets.

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Even among parents with incomes above £100,000 there is still some use of the childcare entitlement. This is permitted and unsurprising, because eligibility for the childcare entitlement is based on *expected* ANI. Therefore, it is possible for families to still receive free childcare hours for at least some portion of the year, while their actual annual income exceeds the £100,000 threshold.

Figure 2.1 shows that around a third (33%) of potentially eligible parents with incomes between £100,000 and £120,000 had a live childcare account for at least part of the year. Even at incomes as much as £50,000 over the threshold, around 10% of parents had been deemed eligible to receive the entitlement for at least one quarter. This could occur, for example, in a situation where a parent has a genuine expectation of having an ANI below £100,000 for the tax year but part way through the year receives an unexpected increase in their income and chooses not to or cannot offset this by increasing the deductions they can make to keep their ANI below the threshold. In this case a parent's childcare account may be confirmed as eligible for a part of the year, but once it becomes clear that their income is likely to exceed £100,000 by the end of the year, the account ceases to be confirmed.

This raises the question of the coherence of the interaction between the use of ANI as the income measure to assess eligibility, and conditioning eligibility on the parent's expectation of what their income will be under this measure at the end of the tax year. Specifically: 'expectation' assumes parents are making a pure forecast for what their ANI will be by the end of the tax year, but ANI is always within the individual's own control right up to the end of the tax year (and even afterwards, up to the point of SA filing) by making the relevant deductions.

This can be problematic in terms of how families at different incomes are eligible for the entitlement. First, it can create unfairness and inequalities across families. For example, one parent may expect their income to be above £100,000 at the start of the year and so would not be eligible to receive the entitlement but then experience a negative income shock that means that their actual income ends up below the threshold. In contrast another parent may expect their income to be below £100,000 but unexpectedly exceed it. In this case, the parent whose actual income is above £100,000 would receive the entitlement, while the parent below £100,000 would not. It can also introduce opportunities for strategic gaming of the eligibility rule, if parents know that as long as they can report their 'expected' income is below the £100,000 threshold, it will still be possible for them to receive the

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entitlement for at least a period within the year, even if their actual income exceeds it.

Further discussion regarding the choice of income definition to base eligibility on can be found in the policy modelling of Section 4 and Appendix E.

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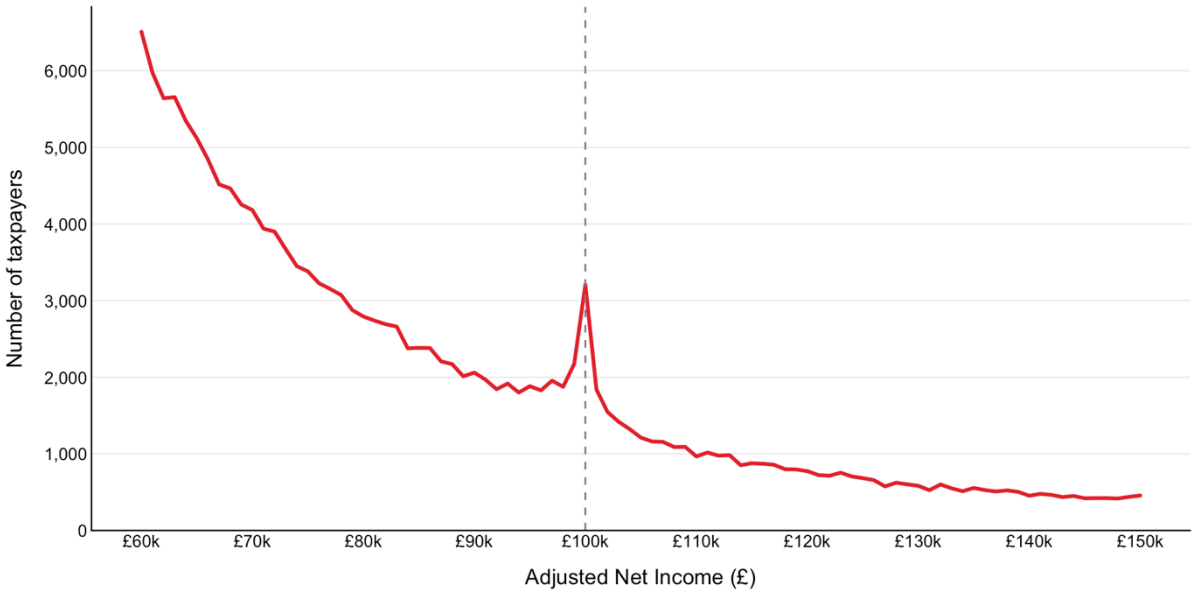
3. Who responds to the childcare threshold?

3.1. How much do people respond?

To quantify how many parents responded to the loss of the childcare entitlement, we compare the number of parents with incomes at or just below £100,000 to the number we expect to see in that region. Without policy-driven distortions, the income distribution is relatively smooth, with people spread evenly across nearby income levels rather than clustered at specific points. Excess 'bunching' at a particular income is therefore a signal that something is changing individual behaviour. By fitting a smooth curve to the shape of the income distribution, but ignoring a region around £100,000, we estimate around 2,610 parents deliberately bunched below the £100,000 threshold in 2022. This is 3.37 times the 780 parents we would expect to see just below the threshold.

As well as the removal of the childcare entitlement at £100,000, the Personal Allowance is withdrawn at the same threshold. This increases the effective marginal tax rate by 20pp and is another reason taxpayers might decide to keep their ANI below £100,000. Even without the loss of the childcare entitlement, we would therefore expect some parents to bunch at £100,000 to avoid their additional income being effectively taxed at 62%.

Figure 3.1: Income distribution of English parents of 3- and 4-year-olds, 2022



Notes: Income bins are £1,000 wide. Sample population includes all identified parents in England who have a child that is estimated to be eligible for the free childcare hours at some point during the 2022 tax year on the basis of the age eligibility rules.

Source: Authors' calculations based on HMRC administrative datasets.

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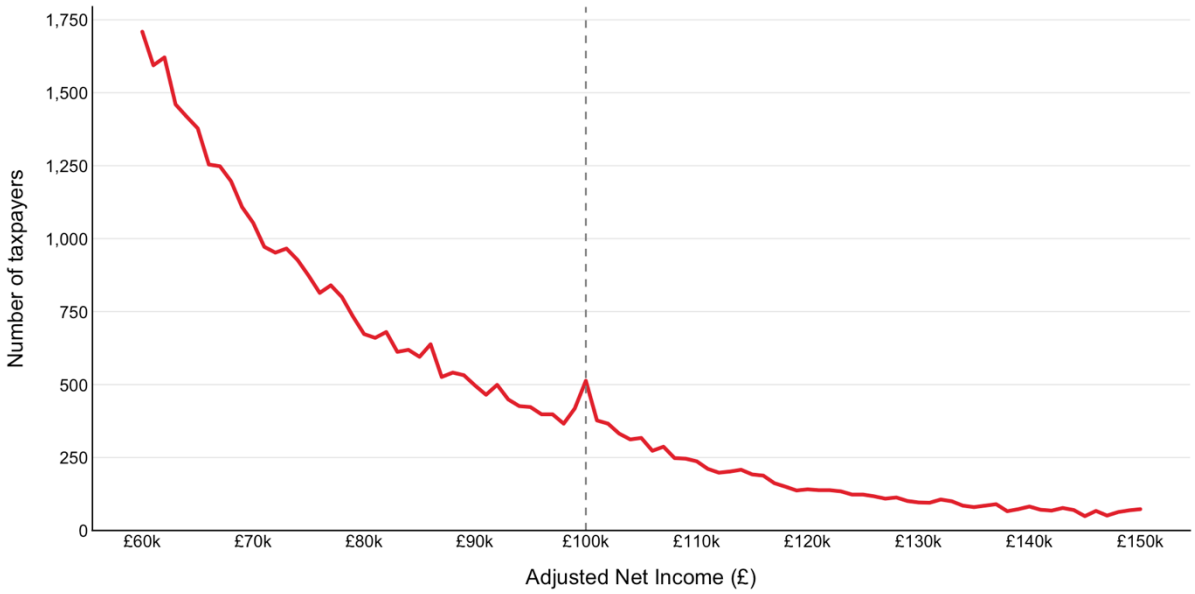
Figure 3.2: Income distribution of Scottish parents of 3- and 4-year-olds, 2019-2022



Notes: Income bins are £1,000 wide. Sample population includes all identified parents in Scotland who have a child who is estimated to be eligible for the free childcare hours at some point between the 2019 and 2022 tax year on the basis of the age eligibility rules. The larger time period, relative to the previous figure, is to account for the smaller number of individuals at these income levels in Scotland.

Source: Authors' calculations based on HMRC administrative datasets.

To separate the effects of these two policies – loss of childcare entitlement and the Personal Allowance withdrawal – we compare the amount of bunching for parents in England to parents in Scotland. Since the full 30 hours per week of funded childcare is universal for parents in Scotland, any bunching we observe at £100,000 for parents in Scotland should only be down to the Personal Allowance withdrawal.

Figure 3.2 shows the magnitude of bunching in Scotland is far smaller. As noted above, in England 3.37 times as many parents bunched at £100,000 as would be expected with no notch or kink.[11] In Scotland, where only the Personal Allowance kink applies, the equivalent figure is 1.59.

An alternative approach would be to use taxpayers in England that do not have children as a counterfactual to compare the amount of bunching to, as like parents in Scotland, they will face the incentive from withdrawal of the

[11] A notch is a threshold in the tax system where amount of tax you have to pay or the amount of benefits you are entitled to jumps sharply, rather than changes smoothly, making taxpayers strictly financially worse off by crossing it. A kink is a threshold where the tax rate changes, e.g. from 40% to 60% for Income Tax as the Personal Allowance begins to be tapered when crossing £100,000 (before accounting for other policies or taxes).

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Personal Allowance, but do not lose any free childcare hours at £100,000.[12] One potential advantage of using this group is that the mix of industries and income types will be more similar to the English parents, and so they may respond in a more similar way. A drawback is that given they do not have children themselves they may face different options, or constraints in how they respond to the incentives at the £100,000 threshold.[13] Table C.1 compares the magnitude of bunching between Scottish parents and English non-parents, considering different age ranges for the latter.

Table 3.1: Summary of bunching by parents of 3- and 4-year-olds in England, 2022

Group	Total Bunching	Relative Bunching	Relative Bunching (Scotland)	Total Bunching if Only Kink Present	Share Bunching due to Childcare
Employees	1,180	1.79	1.18	780	0.34
Non-Employees	1,430	12.41	7.13	820	0.42
Total	2,610	3.37	1.59	1,600	0.39

Notes: This table summarises the bunching analysis of parents of 3- and 4-year-olds below £100,000 ANI in the 2022 tax year. Total Bunching refers to the absolute number of additional parents in the income distribution region below £100,000. Relative bunching divides the total bunching number by the estimated counterfactual number of parents that would be observed at £100,000 if the income distributions followed the same shape as above and below the bunching region, to be able to compare responses by different absolute population sizes. Total Bunching if Only Kink Present multiplies the counterfactual density at £100,000 in England by the Relative Bunching in Scotland. Share bunching due to childcare divides (Total Bunching - Total Bunching if Only Kink Present) by Total Bunching. The Total row is the sum of the Employees and Non-Employees rows.

Source: Authors' calculations based on HMRC administrative datasets.

[12] A difference between Scottish parents and English non-parents is that Scottish parents are still eligible for the Tax-Free Childcare scheme, which can be worth up to maximum of £2,000 per child per year. Since this also applies to English parents, and this analysis focuses on the effects specifically of the free childcare hours schemes, in this regard Scottish parents may be considered the more relevant comparison group.

[13] Given our data on parental leave only goes back as far as the 2014-15 tax year, some taxpayers we do not identify as having children will potentially have older children born before April 2014 (some of these we identify through the childcare account data).

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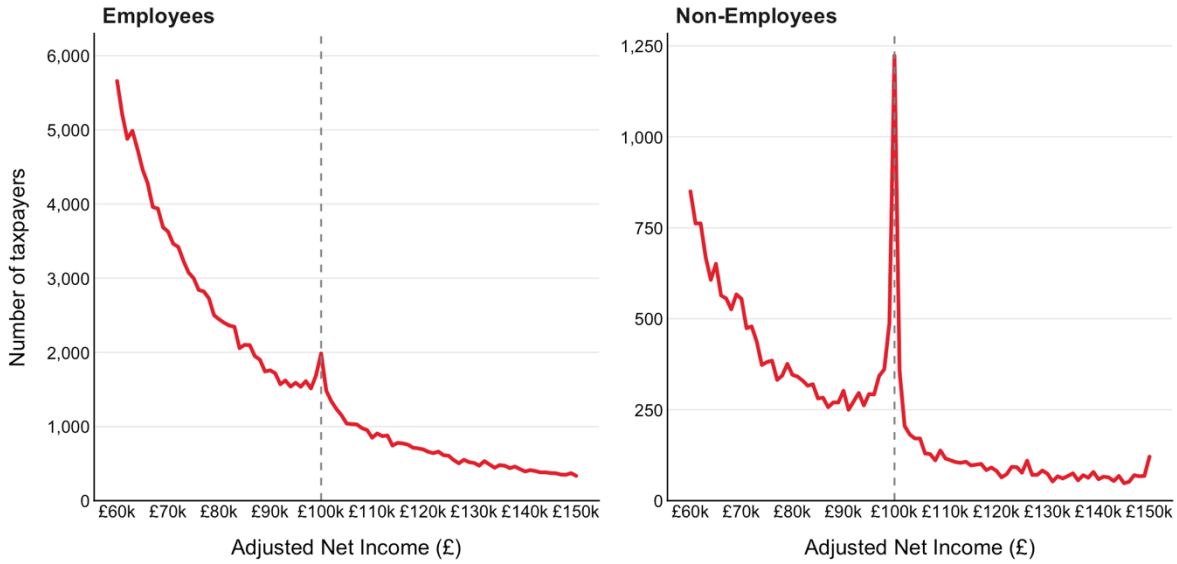
Assuming that English and Scottish parents react to incentives in the same way, this implies that if there were no withdrawal of childcare entitlements in England, only 1,600 parents would bunch below £100,000. Instead, we observe 2,610 bunching, suggesting that 39% of parents bunching in England are responding to the loss of childcare, in addition to the Personal Allowance withdrawal.

As can be seen in Table 3.1, the relative magnitude of response is far larger for those whose main source of income does not come from regular employment. This group is largely made up of the self-employed and owner-managers. In England, the relative response is almost 7 times larger for this group compared to employees.

Although the number of parents bunching at £100,000 is significant it is a relatively small share of all parents who have an incentive to respond. Among parents whose main source of income comes from employment, less than 10% of those with a financial incentive to respond are doing so. For the non-employees, this figure is larger at around 30%.

Figure 3.3: Income distribution of English parents of 3- and 4-year-olds by main source of income, 2022



Notes: Income bins are £1,000 wide. Sample population includes all identified parents in England who have a child who is estimated to be eligible for the free childcare hours at some point during the 2022 tax year on the basis of the age eligibility rules. Employees refers to taxpayers whose main source of income is from employment, non-employees refers to the population whose main source of income comes from a source other than employment.

Source: Authors' calculations based on HMRC administrative datasets.

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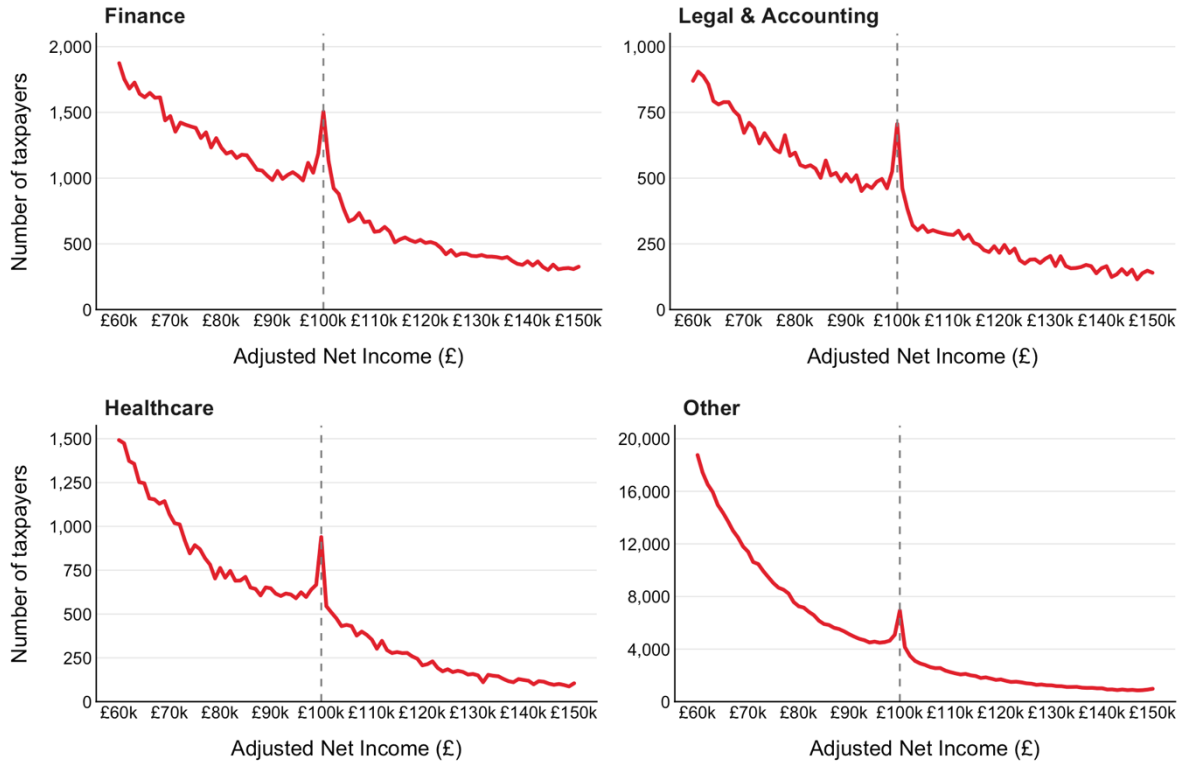
The share of parents responding does increase with the size of the incentive, with more parents responding when the value of the childcare lost is greater. However, this increase is consistent with a constant responsiveness to the childcare entitlement.[14]

Around 30,000 taxpayers in England are estimated to have bunched at £100,000 in 2022, of which the 2,610 parents bunching represent approximately 9% of total bunching. In the counterfactual distribution in which there were no incentive to bunch due to loss of childcare entitlement, eligible parents make up 7% of the population at £100,000, indicating that parents are slightly overrepresented in the bunching response.

Figure 3.4: Income distribution of English parents of 3- and 4-year-olds by industry, 2019-2022



Notes: Income bins are £1,000 wide. Sample population includes all identified parents in England who have a child who is estimated to be eligible for the free childcare hours at some point between the 2019 and 2022 tax year on the basis of the age eligibility rules. Industry is based on Standard Industrial Classification codes.

Source: Authors' calculations based on HMRC administrative datasets.

[14] Formally, the implied elasticity is relatively flat with respect to the size of the notch. See Appendix A for details.

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3.2. Who responds?

3.2.1. Income source

Figure 3.3 presents the same bunching results as Figure 3.1 but split by whether the parent's main source of income comes from employment or not. While the overall population of non-employees is much smaller, the relative response of this group is much larger. So much so that there were more non-employees in absolute numbers bunching below £100,000 than there were employees. This is in line with existing evidence that the non-employees are more responsive in adjusting their incomes than employees.[15]

3.2.2. Industry

Breaking the response down by industry shows that the level of response does not differ greatly (Figure 3.4). Together, taxpayers categorised as working in the Financial, Legal and Accounting, and Health services make up around 30% of all taxpayers earning around £100,000. The share of each industry remains relatively constant across these income levels, indicating that the bunching results are not being primarily driven by a few industries.

Looking more closely at healthcare (Figure 3.5), it can be seen that the response within the sector is relatively concentrated within medical and dental practices, as opposed to those working in hospitals.

3.2.3. Sex of parent

A further question is whether mothers or fathers respond more. In absolute terms, only around a quarter of parents with an income between £80,000 and £140,000 are women. We find no noticeable change in this share, indicating no difference in the relative response between mothers and fathers.

3.2.4. Region

Looking into how parents across England respond, there is not a significant difference in the size of the response by geographic region. Again, in all parts of England it can be seen in Figure 3.7 that the response is greater than that of equivalent parents in Scotland. Within England, however, the relative amount of parents holding their income below £100,000 does not noticeably differ.

[15] For example, Saez (2010) and Adam et al. (2021).

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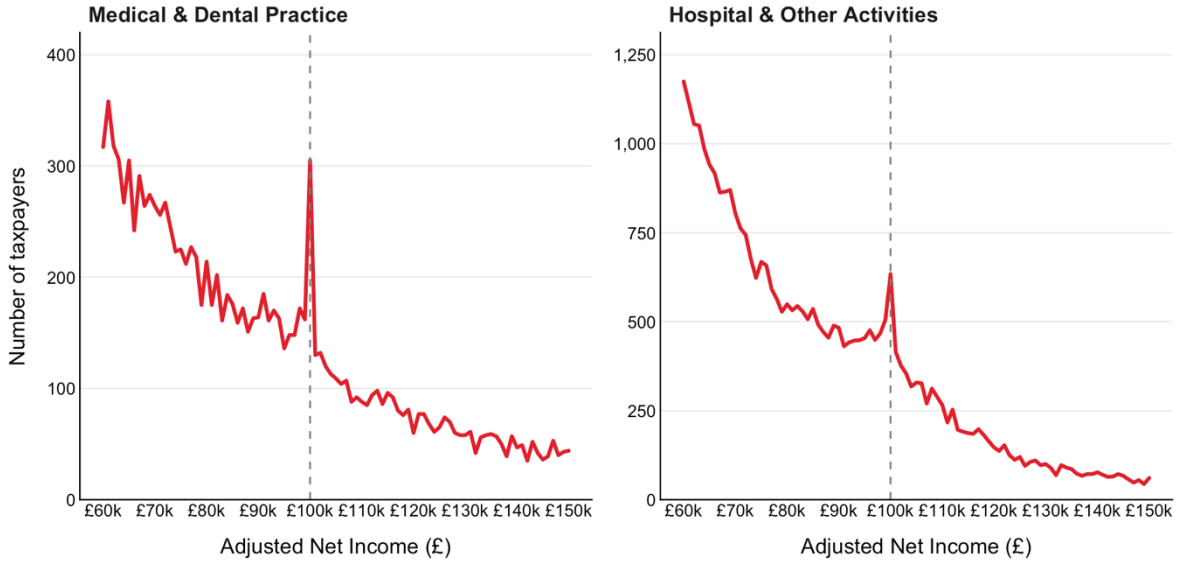
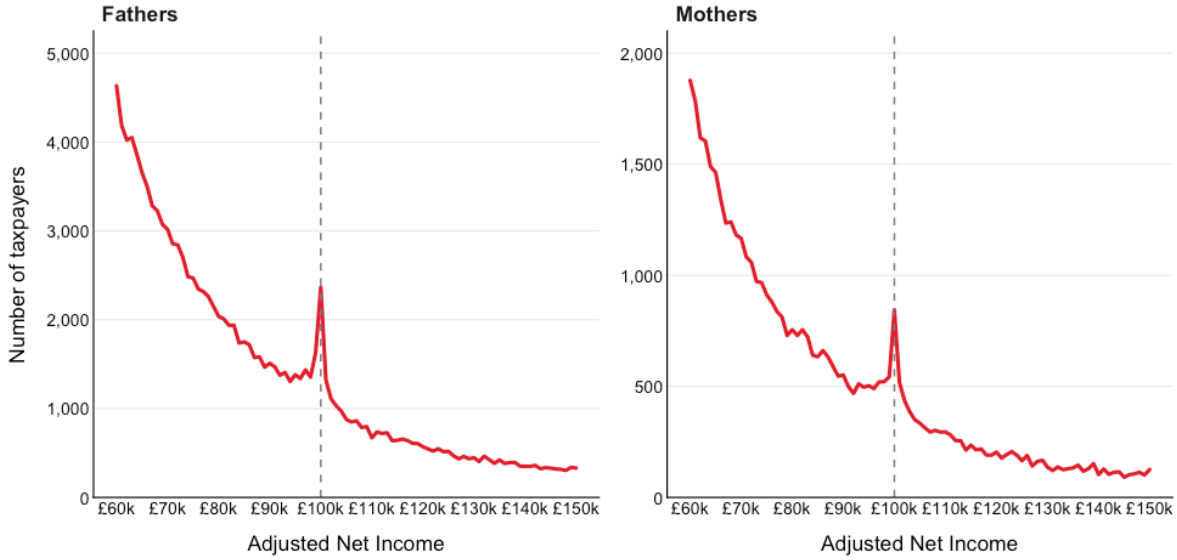
Figure 3.5: Income distribution of English parents of 3- and 4-year-olds working in the healthcare sector by subsector, 2019-2022



Notes: Income bins are £1,000 wide. Sample population includes all identified parents in England who have a child who is estimated to be eligible for the free childcare hours at some point between the 2019 and 2022 tax year. Industry is based on Standard Industrial Classification codes.

Source: Authors' calculations based on HMRC administrative datasets.

Figure 3.6: Income distribution of English parents of 3- and 4-year-olds by sex, 2022



Notes: Income bins are £1,000 wide. Sample population includes all identified parents in England who have a child who is estimated to be eligible for the free childcare hours at some point during the 2022 tax year on the basis of the age eligibility rules.

Source: Authors' calculations based on HMRC administrative datasets.

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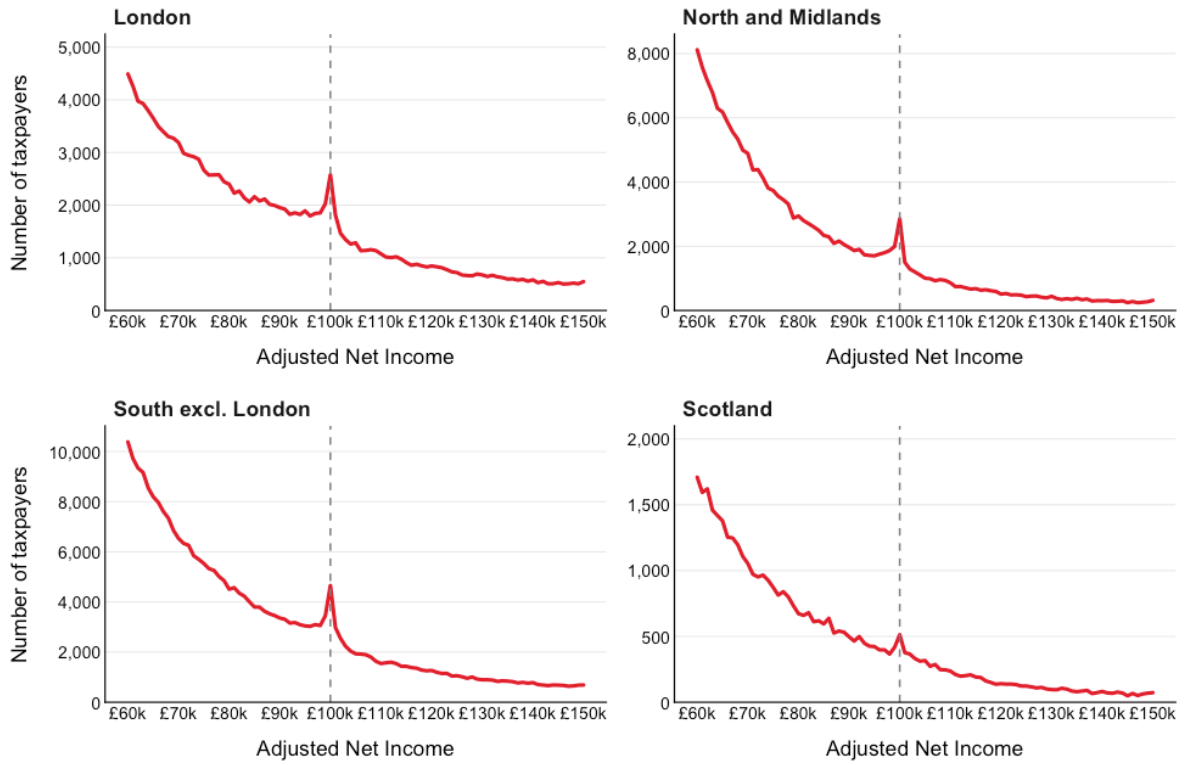
Figure 3.7: Income distribution of English parents of 3- and 4-year-olds by geographic region, 2019-2022



Notes: Income bins are £1,000 wide. Sample population includes all identified parents in England and Scotland who have a child who is estimated to be eligible for the free childcare hours at some point between the 2019 and 2022 tax year on the basis of the age eligibility rules. The larger time period, relative to the previous figure, is to account for the smaller number of individuals at these income levels in Scotland.

Source: Authors' calculations based on HMRC administrative datasets.

3.3. How have they responded?

The threshold at which childcare eligibility is lost in England is £100,000 in ANI. ANI is a taxpayer's gross income, from both earnings and investment, less various deductions. This means there are broadly three mechanisms by which parents could be holding their incomes below the threshold.

First, they could reduce their gross income before any deductions are made. For example, this could be a worker choosing to work fewer hours or turning down a promotion to ensure their income does not exceed £100,000 for the year.

Second, they might not make any changes to their gross income but instead respond by increasing eligible deductions to reduce their ANI. For employees, perhaps the most salient method of doing this is through contributing any additional income above £100,000 into a pension.

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Third, owner-managers – people who own and run a business, and who often pay themselves at least partly in dividends from the company – can re-time some of this income, by holding it inside the company. By restricting the amount they pay themselves in dividends, they can reduce immediate ANI (and gross income), retaining the additional earnings in the business to pay out in the future.

The mechanism by which parents are responding can have important implications for the overall effect of the response. If parents are primarily reducing their incomes by placing any additional earnings above £100,000 into a pension, then while this income avoids taxation at the time it is earned, it will still eventually be taxed once the pension starts to be withdrawn. It also means that parents are not reducing their actual economic activity, and so this would have less of a negative impact on overall economic growth than if parents were actively choosing to work less.

However, parents making outsized pension contributions could also be generating labour supply reductions in the future. If parents are contributing thousands of pounds extra into their pension, this could mean some parents decide they are able to retire earlier than they otherwise would have – reducing future economic activity and tax revenue for government.

As we cannot observe pension contributions made via salary sacrifice, what we observe as a taxpayer's gross income may in fact be their income after the amount they have contributed through salary sacrifice has been removed. Therefore, for the remainder of this section, we restrict our analysis to taxpayers we predict are not working at a firm that offers a salary sacrifice pension scheme. More details of how this is done can be found in Appendix A.

3.3.1. Pension contributions

Figure 3.8 plots average pension contributions against gross income, for the whole parent population and for positive contributors only. The x-axis here is gross income rather than ANI, so it measures income before deductions such as pension contributions. This is important because the higher someone's gross income, the larger the deduction they need to bring their ANI below £100,000: an employee earning £105,000 must contribute £5,000 to a pension to reach the threshold, while one earning £110,000 needs £10,000. For both groups, contributions rise with income, and the rate of increase goes up noticeably between £100,000 and around £115,000.

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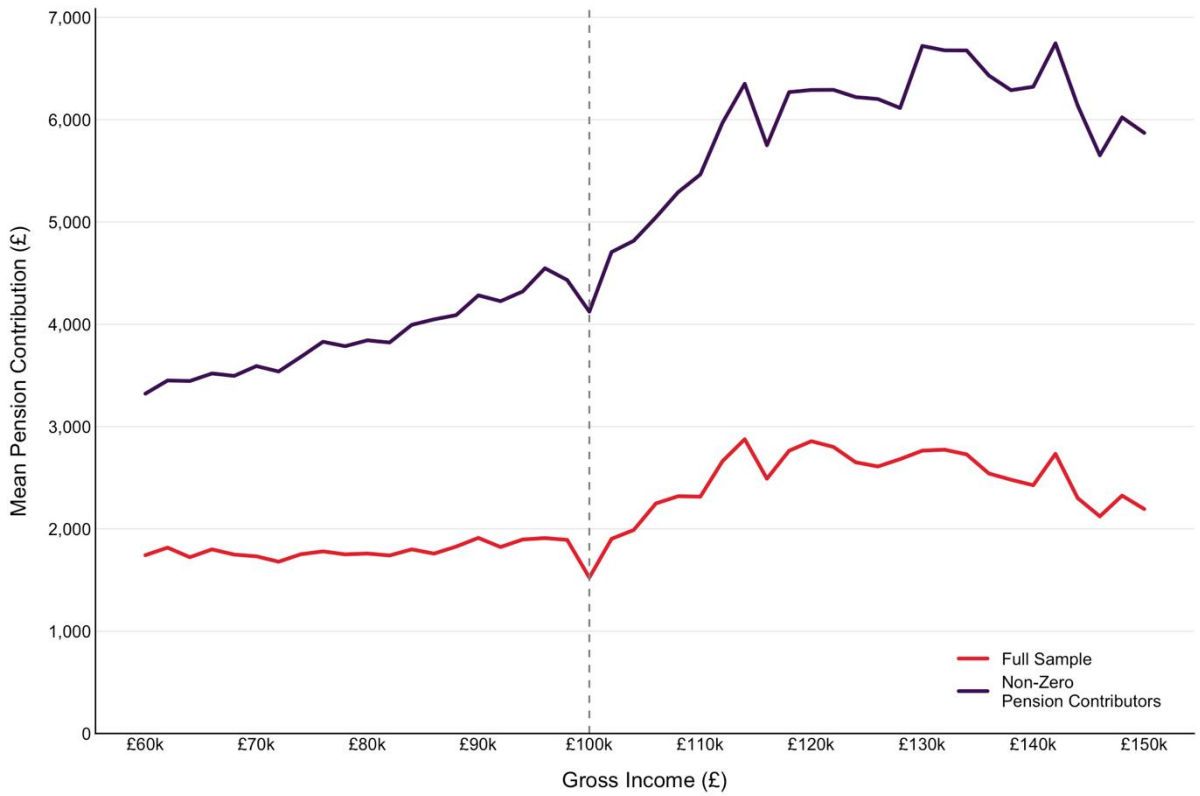
Figure 3.8: Average pension contributions of English parents of 3- and 4-year-olds, 2022



Notes: Mean pension contributions include individual contributions made to pensions through Net Pay Arrangement and Relief at Source pension schemes in 2022 by parents of eligible-age children. Information on salary sacrifice and employer contributions is not available in the data for this tax year and so is not included. Non-zero contributors restricts the population the mean is calculated over to parents whose measured pension contributions are greater than zero in the 2022 tax year.

Source: Authors' calculations based on HMRC administrative datasets.

Restricting the population to only positive contributors – those that made any pension contributions during the year – contributions increase on average by about 3p for every additional pound earned. In the £100,000 to £115,000 region, the marginal contribution rate increases to about 12p for each additional pound earned above £100,000.

Appendix B (Figure B.1) shows the equivalent figure for charitable contributions, which also reduce a taxpayer's ANI. The overall magnitude of the effect is much smaller, with the average contribution (including parents making no charitable contributions) increasing from about £150 below £100,000 to about £300 above. Restricting to parents making any charitable contribution, the average size of the contribution remains approximately level around £1,200 above and below the threshold, suggesting the effect is primarily driven by the extensive margin of parents making contributions who otherwise would not have made any contribution at all. In part this may

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be because charitable contributions can be made after the end of the tax year, but be carried backwards, allowing late adjustments to be below the £100,000 threshold.

3.3.2. Real vs reporting responses

Pension contributions are one mechanism by which taxpayers can reduce their ANI below the £100,000 threshold, without reducing their total pay packet. To investigate more generally the relative importance of 'real' labour supply responses and 'paper' responses we look at how bunching compares when we use gross income as the income measure rather than ANI. If parents are primarily making real responses to their labour supply in order to remain eligible for the childcare entitlement, then the amount of bunching we observe when looking at their gross incomes should not differ drastically from the bunching when looking at ANIs.

Bunching is significantly less apparent when measuring income using gross income. For employees working at a firm that does not run a salary sacrifice pension contribution scheme, the magnitude of bunching at £100,000 falls by 50% when measured using gross income as opposed to ANI. For those that are still bunching at £100,000 when measured by gross income, this is likely to be down to real labour supply responses (such as turning down promotions or choosing their work hours so that they do not cross the threshold).

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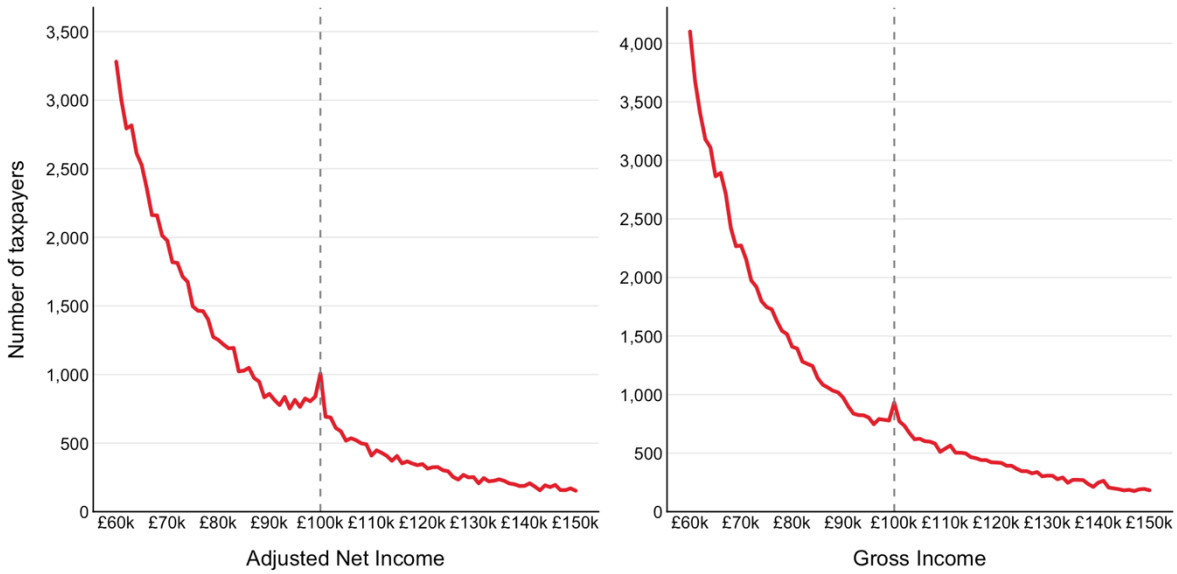
Figure 3.9: Income distribution of English parents of 3- and 4-year-olds, by ANI and Gross Income – Employees, 2022



Notes: Income bins are £1,000 wide. Sample population includes all identified parents whose main income source is from employment, in England who have a child who is estimated to be eligible for the free childcare hours at some point during 2022. The sample is further restricted to employees whose main employer is estimated to not run a salary sacrifice pension scheme on the basis of more than 75% of employees above the Personal Allowance threshold being observed to make no individual workplace pension contributions during the 2022 tax year.

Source: Authors' calculations based on HMRC administrative datasets.

Looking at the same comparison, but for those whose main source of income comes from something other than employment, we do not observe a significant change in the amount of bunching. This could also imply that those bunching when we measure by gross income in this group are reducing their labour supply to keep their income below £100,000, but for this group – which includes company owners, for example – this could also mean a retiming of income, for example retaining earnings inside a company in which case this would not appear as income in the company director's Self-Assessment filing.

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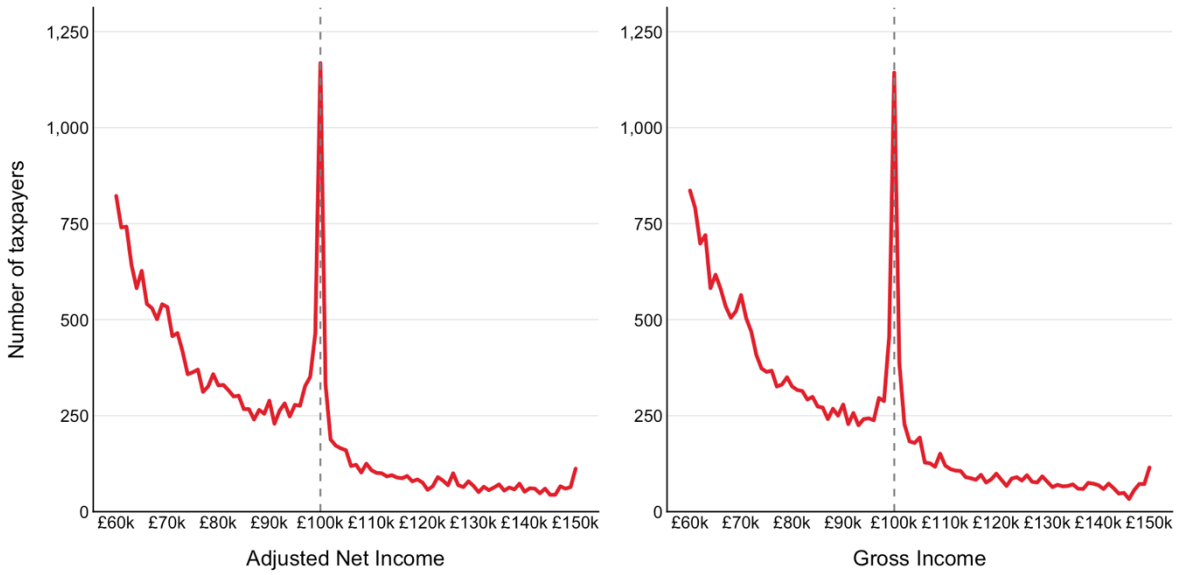
Figure 3.10: Income distribution of English parents of 3- and 4-year-olds, by ANI and Gross Income – Non-Employees, 2022



Notes: Income bins are £1,000 wide. Sample population includes all identified parents whose main income source is not from employment, in England who have a child who is estimated to be eligible for the free childcare hours at some point during 2022. The sample is further restricted to employees whose main employer is estimated to not run a salary sacrifice pension scheme on the basis of more than 75% of employees above the Personal Allowance threshold being observed to make no individual workplace pension contributions during the 2022 tax year.

Source: Authors' calculations based on HMRC administrative datasets.

Non-employees' total incomes tend to be more persistent in remaining just below the £100,000 threshold, too. Figure 3.11 shows for parents with an income between £98,000 and £100,000 in a given tax year, what share also have an income in the same range in the 3 years before and after. The figures show around a third of non-employee parents who had an income in this range in 2019, continued to have an income in the same range the following year, and just under a fifth did 3 years after. This is much greater than within other income ranges above and below the £100,000 income threshold, where the share remaining in the same range instantly falls to below 10% in the following year. For employees, the persistence of total incomes is barely greater for those at the threshold than for the comparison income ranges.

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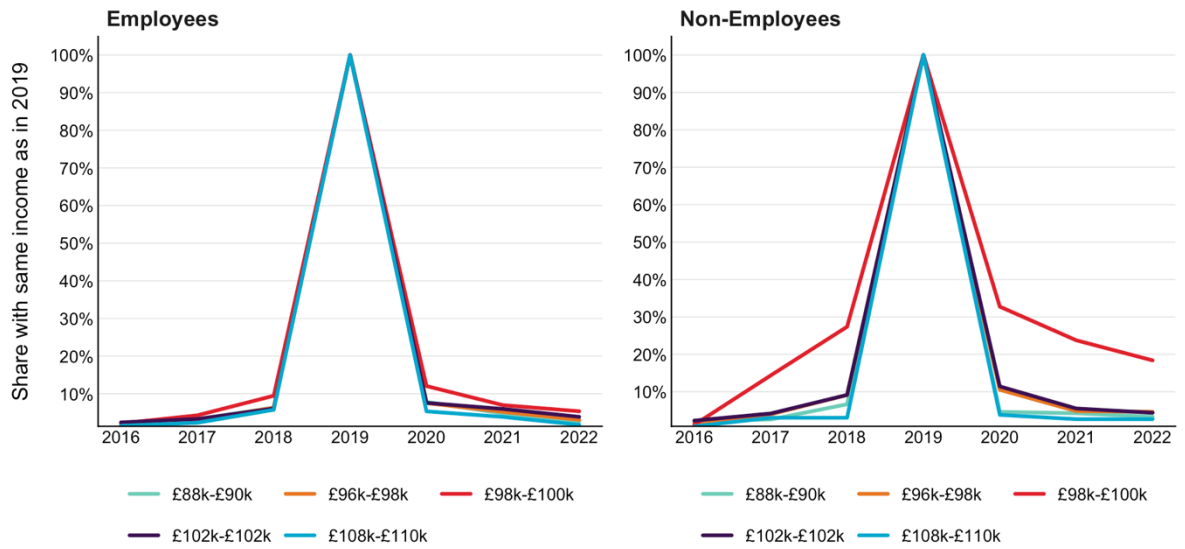
Figure 3.11: Persistence of bunching at £100,000 for employees and non-employees, 2019



Notes: This figure shows the share of parents with a total income within £2,000 income bins that have an income within the same income bin in the 3 years before and after, for parents eligible for the childcare entitlement in 2019. 2019 has been used as the baseline year in this figure to be able to observe incomes in years afterward.

Source: Authors' calculations based on HMRC administrative datasets.

3.3.3. Response of partner's income

The rule that if either parent's expected income exceeds £100,000 the entire entitlement is lost could also affect their partner's income, in either direction, separately from the higher earner reducing their own income.

If one partner in a couple earns over £100,000 and hence loses access to thousands of pounds worth of childcare, this may induce their partner to increase their income, for example by increasing the number of hours they work, to try to make up for the loss in effective income.

Alternatively, given the loss in funded childcare hours, families may decide that one parent should take up more childcare duties. This may involve one parent deciding to work part-time or dropping out of the labour market altogether. Figure 3.12 plots the share of parents along the income distribution whose partner is not in work during the tax year. The share is stable between £50,000 and £100,000 at 6%. Once income crosses the £100,000 threshold, the share of partners out of work increases by about 3pp to 9%.

Figure 3.12 also shows that this effect is very different for partners of men and women. First, below £100,000, the baseline share of fathers whose partner is not in work is significantly greater than the share of mothers'

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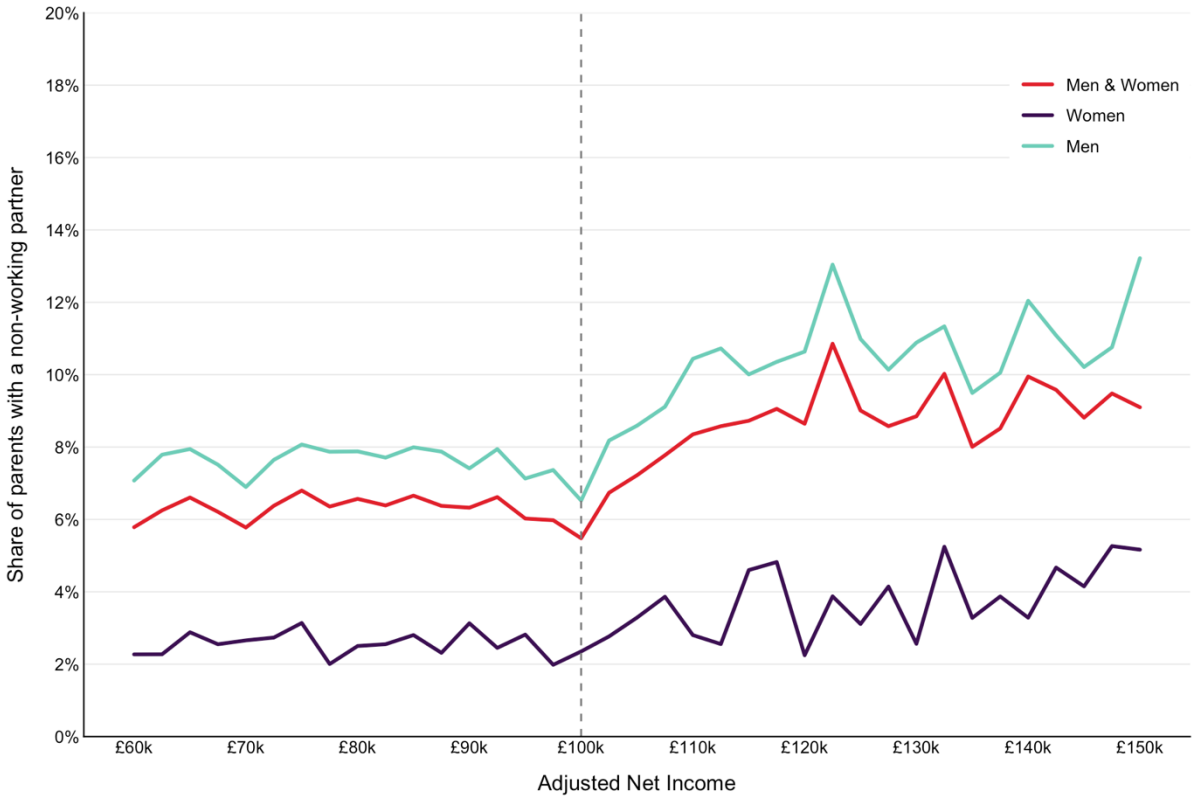
partners not working. For both, this share is fairly stable between £50,000 and £100,000, at around 7-8% for fathers' partners and 2-3% for mothers' partners. The second difference is in the change in the share of non-working partners once incomes cross £100,000. Almost all (90%) of the increase in the overall non-working rate is driven by the increase in the non-working rate of fathers' partners – suggesting that it is almost entirely mothers leaving work as a result of losing access to free childcare. This is partly due to fathers making up about 75% of the sample around this point in the income distribution. However, it is also the case that when fathers have an income just above £100,000 their partner is significantly less likely to work, relative to partners of fathers with incomes just below £100,000: the non-work rate increases by 3-4pp to around 11%. By contrast, there is little change in employment probability for partners of mothers with incomes either side of £100,000.

Figure 3.12: Share of English parents of 3- and 4-year-olds with a partner who is not in work, 2022



Notes: Income bins are £2,500 wide. A partner is considered non-working if they either do not appear in the data – either PAYE or Self-Assessment – or appear with an income of £0. The denominator of parents is restricted to those for whom we are able to identify a partner.

Source: Authors' calculations based on HMRC administrative datasets.

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3.4. How is this growing?

The data used for analysis up to this point are from 2022. Since then, multiple factors will have contributed to increasing the threshold's impact. These factors include the expansion of the entitlement to cover parents of under-3s, growing childcare costs, and rising incomes while the threshold has been kept fixed nominally at £100,000.

Since April 2024, funded childcare has been gradually expanded to cover younger ages. Beginning with entitling 2-year-olds to 15 hours per week, today, children from 9-months-old are entitled to free childcare up until the term in which they start school. If current eligibility rules were in place in 2022, we estimate this would expand the number of parents potentially eligible to receive the childcare entitlement by 73%. By itself, this expansion will increase the number of parents who have an incentive to reduce their incomes below £100,000.

This effect is further amplified for two reasons: first, parent-paid childcare fees are on average greater for younger children. In 2025, the national average hourly fee for a child under 2 years old was £7.18, compared to £6.78 for 3- and 4-year-olds.[16] Second, the universal entitlement to 15 hours of childcare has not been expanded beyond 3- and 4-year-olds, so parents face losing the full 30 hours by crossing the £100,000 threshold. This in effect doubles the value of childcare lost, creating an even stronger incentive for parents to keep their incomes below £100,000, and extends the region where parents would be strictly better off by not earning more than £100,000.[17]

Working in the opposite direction, parents of 3- and 4-year-olds are more likely to be making use of the free hours than parents of younger children. The Department for Education (DfE) estimates that in 2025 91% of parents

[16] There is a much larger difference in funding rates by child-age. In 2025, the average funding rate for under 2s was £10.43 per hour, while for 3- and 4-year-olds it was £5.67. While parent-paid fees are the more appropriate measure for analysing how parents respond to the loss of childcare hours, funding rates are important for estimating the fiscal cost of making changes to childcare policy.

[17] Taking the average childcare fees in 2025, the parent of one 3-year-old eligible for the whole year would lose the equivalent of £3,865 in free hours, which would require them to earn more than £110,170 in order to be financially better off after Income Tax and National Insurance Contributions. The parent of a child aged between 9 months and 2 years old would lose the equivalent of £8,185, and would have to earn over £121,540 in order to be financially better off.

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eligible for 3- and 4-year-olds childcare were registered for the entitlement, while 73% of parents of 9-month- to 2-year-olds were.[18]

Table 3.2: Estimated bunching of English parents of 9-month- to 4-year-olds under expanded childcare offer, 2022-2030

Tax Year	Parents Bunching (#)		Share of Parents Responding (%)	
	Total	Due to Childcare	Total	Due to Childcare
2022 (3- and 4-year-olds only)	2,610	1,090	10.3	4.3
2022	5,510	2,960	11.7	6.3
2023	6,950	4,170	12.4	7.4
2024	8,240	5,240	12.8	8.1
2025	9,730	6,440	13.1	8.7
2026	10,880	7,390	13.5	9.2
2027	12,060	8,400	14.1	9.8
2028	13,360	9,500	14.5	10.3
2029	14,740	10,670	14.9	10.8
2030	16,280	11,980	15.2	11.2
2031	17,950	13,390	15.8	11.8

Notes: This table presents the estimates of the number of parents bunching at £100,000 from 2022 to 2031, using the elasticity of taxable income estimated from the 2022 parents of 3- and 4-year-olds population, and the average value of the childcare reduction at £100,000 in each year. It further assumes an increase in the share of parents responding, continuing the trend observed from 2019 to 2022 (see Section 4.1). Parents bunching due to childcare is calculated by subtracting the number of bunchers that would be at £100,000 in England in that year if the relative bunching in England was the same as estimated in Scotland. The share of parents responding is calculated by dividing the number of parents bunching by the total number of parents estimated to be in the counterfactual income distribution between £100,000 and the income level of the estimated marginal buncher (see Appendix A).

Source: Authors' calculations based on HMRC administrative datasets.

[18] Usage is even lower focusing on parents of 9-11-month-olds at 42%. See the DfE's Funded Early Education and Childcare annual statistics release for more details.

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Taking this into account, if the current age-eligibility rules were in place in the year of our analysis (2022), we estimate that the total number of parents bunching below £100,000 due to the childcare threshold would have been 2,960, a 172% increase compared to the observed amount of bunching in response to childcare of parents of 3- and 4-year-olds.

It is not just the expansion to a wider population of children that would be expected to increase the response to the withdrawal over time. Since 2022, average childcare fees have grown by 21% for 3- and 4-year-olds,[19] meaning losing the free childcare hours by exceeding the threshold is becoming more costly. This, again, will strengthen the incentive for parents to respond.

Finally, as the threshold stays fixed at £100,000 and nominal incomes grow over time, more parents will face losing access to free childcare hours, as the threshold moves into a 'thicker' part of the distribution. For example, using the Office for Budget Responsibility (OBR)'s estimates of income growth, having the threshold at £100,000 in 2025 is the equivalent of placing the threshold at roughly £85,000 in the 2022 income distribution (approximately 5% of the population earned more than this in 2022, compared to 4% earning above £100,000).[20] Forecasting out to 2030, keeping the threshold fixed would be equivalent to a threshold of £75,000 in 2022 terms (7% earned above this in 2022).

Bringing this together, compared to the number of parents bunching in 2022, we estimate that by 2030 around 16,000 parents with children of free childcare-eligible age would be bunching at the £100,000 threshold. Of these, around 12,000 bunch only because of the loss of childcare.

Over the time horizon, the share of parents estimated to be responding to the childcare and Personal Allowance withdrawal grows slightly. This is caused both by the growing value of the childcare entitlement over time and the increased responsiveness of parents over the years observed. The growth in the share responding, however, is smaller than it may otherwise be expected to be, given the extent of the growth of the value of the entitlement. This is because the threshold remains fixed at £100,000 in nominal terms and incomes continue to grow. This means the composition of parents affected by the threshold increasingly tilts towards employees, who are observed to be less responsive.

[19] 24% for 2-year-olds, 26% for Under 2s.
[20] https://www.gov.uk/government/statistics/percentile-points-from-1-to-99-for-total-income-before-and-after-tax

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Table 3.3: Estimate of number of parents to be affected by the childcare entitlement threshold by local authority, 2031

Local Authority	Number of Parents Affected	Local Authority	Number of Parents Affected
Bromley	1,310	**Greenwich**	620
Wandsworth	1,100	**Havering**	620
Barnet	1,040	**Wiltshire**	620
Leeds	910	**Central Bedfordshire**	610
Croydon	870	**Kingston upon Thames**	600
Waltham Forest	860	**Enfield**	590
Lewisham	850	**Elmbridge**	580
Richmond upon Thames	780	**Haringey**	560
Bristol, City of	710	**Sutton**	560
Harrow	700	**St Albans**	560
Merton	690	**Milton Keynes**	540
Redbridge	680	**Trafford**	520
Ealing	680	**Stockport**	510
Hillingdon	670	**Hounslow**	470
Southwark	660	**Reigate and Banstead**	460
Bexley	660	**Windsor and Maidenhead**	450
Lambeth	650	**Brent**	450
Birmingham	650	**Tower Hamlets**	450
Wokingham	640	**Hackney**	440
Cheshire East	640	**East Hertfordshire**	440

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Notes: This table shows the Local Authorities estimated to have the greatest number of parents affected by the childcare entitlement withdrawal by 2031 (these figures are not available for 2030), by uprating 2022 incomes by the OBR's wage growth forecast. In this table 'affected' is used to mean parents with an income that would mean they are financially worse off remaining above the threshold than reducing their income below it, given the number of months within the year they would be eligible to receive the entitlement. Estimates of the number of parents are rounded to the nearest 10.

Source: Authors' calculations based on HMRC administrative datasets.

Table 3.3 shows the Local Authorities that are estimated to have the greatest number of parents that will be affected by the childcare entitlement threshold by the 2031 tax year, were it not to be reformed at all. In 2031, in total, around 70,000 parents are estimated to have an income that would mean if they were to use at least 30 hours of childcare per week, they would be financially better off keeping their income below the £100,000 threshold and receiving those hours for free.

3.5. Implications for labour market

The partner responses set out in Section 3.3 show that the threshold affects labour supply beyond the parent who is directly affected by it, which fits a wider body of work on how couples adjust their work in response to tax.[21] Beyond these effects within couples, there may be broader indirect effects which we do not quantify here. Where a parent genuinely cuts their hours or leaves work, and is hard to replace, their employer loses firm-specific experience, which can weigh on productivity and spill over onto colleagues.[22]

The responses may also have consequences over a longer horizon than we measure here. A sustained cut in hours, or a spell out of work, can leave a parent on a lower earnings path for years afterwards.[23] The extra pension saving we observe raises pension wealth over a working life, which could bring retirement forward.[24] And because most of the labour market exit response comes from mothers, the threshold may widen earnings gaps within households and add to the fall in mothers' earnings after childbirth that is well documented and persists for many years.[25] We plan to look at this directly in follow-up work.

[21] Eissa, 1995; Selin, 2014; Blundell et al., 2016; Herold and Wallossek, 2025.
[22] Jäger, Heining and Lazarus, 2024; Sauvagnat and Schivardi, 2024.
[23] Jacobson, LaLonde and Sullivan, 1993; Guvenen et al., 2017; Bertheau et al., 2023.
[24] Andersen, Borgbjerg and Maibom, 2026; Sæverud, 2025.
[25] Kleven, Landais, and Søgaard, 2019.

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4. Policy reform options and modelling

The £100,000 threshold is widely recognised as one of the sharpest distortions in the tax system. Below we discuss different options to replace it, and their effects. For each reform we estimate:

- the static cost of removing the current policy and replacing it with a new design, before accounting for any behavioural responses;
- the fiscal effects of changes to parents' incomes as the incentives to bunch are changed by each reform (the intensive margin); and
- the effects of partners entering or exiting the labour market (the extensive margin).

We then add these effects together to reach a final post-behavioural net fiscal cost of each reform. For each reform, we present a central estimate of the cost of the reform, as well as high-cost and low-cost bounds of the costs, adjusting for the assumed growth in responsiveness to the entitlement, which are explained in more detail in Section 4.1. For more detail on the steps taken to model the reforms, see Appendix A.

4.1. Growing bunching response and decreasing frictions over time

Not all parents who would be financially better off by bunching at £100,000 choose to bunch. Some may not do this because they simply do not realise the consequence of crossing the £100,000 threshold. Others may consider the hassle cost of responding to be too large. Finally, some parents do not bunch because they have different preferences for the care of their children, so do not want the free hours entitlement.

Formally, the lack of response is captured by a 'friction' parameter, which captures the share of apparently unresponsive parents, who appear as though they would be strictly better off if they were to bunch. Looking across the period 2019 to 2022, this friction parameter has been on a slight downward trend. For employees, the value is 1 percentage point smaller in 2022 compared to 2019; for non-employees, it is 5 percentage points smaller. One possible explanation for this is the rise in attention and coverage given to the threshold in recent years, although there are other possibilities.

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Table 4.1: Relative bunching and friction parameter estimates, 2019-2022

Tax Year	Employees		Non-Employees	
	Relative Bunching	Friction Parameter	Relative Bunching	Friction Parameter
2019	1.33	0.94	8.29	0.72
2020	1.43	0.93	9.19	0.72
2021	1.68	0.92	9.79	0.68
2022	1.79	0.93	12.41	0.67

Notes: This table shows the relative bunching and friction parameter estimates for employee and non-employee parents in each tax year 2019 to 2022. Relative bunching refers to the estimated excess number of parents with an income just below £100,000 for that tax year divided by the number estimated to have an income of £100,000 were there no incentive to bunch at £100,000. The friction parameter estimates are the share of parents remaining that have an income that is in a 'dominated region'. That is, where the value of the childcare entitlement exceeds the additional post-tax income they receive over £100,000.

Source: Authors' calculations based on HMRC administrative datasets.

Given this ongoing trend, our modelling takes as a conservative central estimate the assumption that this trend continues in coming years. By 2028 this would mean the friction parameter for employees would have reduced by another 2%, and for non-employees by about 13%, which would imply an overall reduction of around 5%, given the relative share of employees and non-employees in the sample. Increased response by parents to the current policy reduces the cost of reform, since relaxation of restrictions on childcare entitlement would lead (some of) them to have higher incomes, and pay more tax, while continuing to receive the entitlement as now.

Since there is now a larger age range in which children are eligible for the entitlement, as well as a greater number of free hours lost for under-3s, some parents that previously would not have considered it worth the hassle to respond may now do so. In this case the friction parameter might have reduced more quickly than the previous trend indicates. As a lower bound on the financial cost of reforms (or upper bound of the benefits), we assume that uptake of childcare entitlements rises to match the share just below the threshold. As shown in Figure 2.1, this is around 60%, providing a likely 'floor' on how much further the friction parameter can fall, as we would expect at least 40% of parents above £100,000 to not make use of the entitlement even if it were available.

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Conversely, since we have no quantitative evidence that the trend in the friction parameter has continued post-2022, as an upper bound on the financial cost we assume that the friction parameter remains unchanged at its 2022 level.

We therefore present a high cost, low cost, and central cost scenario illustrating the potential fiscal effects of reforms. In the high-cost scenario, we assume that the level of friction remains as it was in 2022. In the central scenario, we assume the trend of the change in responsiveness between 2019 and 2022 continues into the future. In the low-cost scenario, we assume the friction parameter falls by 50%, which corresponds approximately to the 'floor' in which the only parents not responding are those that would not be making use of the entitlement regardless. The scenarios presented in Section 4.2 are intended as bounds on the estimated effects of any reforms, with our central estimate representing a conservative prediction of how responsiveness to the cliff-edge has increased since 2022. As we cannot directly observe what the magnitude of frictions are beyond 2022, Appendix C presents the results for a range of changes to the friction parameters in order to show the estimated fiscal effects change with the friction parameter, as well as the modelling results for each of the reforms under the low-cost and high-cost scenarios.

4.2. Reform modelling results

4.2.1. Abolish the threshold

We take as our baseline abolishing the threshold and providing the childcare entitlement with no limit on how high a parent's income can be before losing any entitlement. There are no significant administrative considerations in doing so, as it simply removes the complexity from the system. Childcare accounts could continue to be used to administer the entitlement but significantly simplified given there is no longer a link to individual incomes or the tax system.

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Table 4.2: Fiscal cost estimates of removing £100,000 threshold, 2028 and 2030

Scenario	Tax Year	Number Bunching		Static Cost (£)	Behavioural Gain (£)		Net Fiscal Cost (£)
		Before Removal	After Removal		Intensive Margin	Extensive Margin	
Central Scenario	2028	13,360	3,850	-800m	+150m	+120m	-520m
	2030	16,280	4,300	-980m	+210m	+130m	-640m
High-Cost Scenario	2028	9,710	3,850	-820m	+100m	+120m	-610m
	2030	10,860	4,300	-1,010m	+120m	+120m	-770m
Low-Cost Scenario	2028	58,510	3,850	-580m	+630m	+90m	+140m
	2030	67,650	4,300	-700m	+770m	+90m	+160m

Notes: This table presents the results of modelling the fiscal effects of removing the £100,000 threshold for eligibility for free childcare hours. The static cost is the estimated cost of providing the modelled childcare policy, relative to the status quo, before accounting for any behavioural effects. The intensive margin behavioural gain is the estimated fiscal effect of the modelled policy due to taxpayers changing their ANI due to the change in incentive to bunch at the threshold. The extensive margin behavioural gain is the modelled effect of change in the share of partners above the threshold that enter the labour market and begin paying Income Tax and National Insurance Contributions. Figures may not sum due to rounding. Figures in £m; negative = cost to the Exchequer

Source: Authors' calculations based on HMRC administrative datasets.

Table 4.2 presents the estimated effects of removing the threshold. Under our central estimate, the static cost of providing childcare to those above the threshold is estimated to be just below £1 billion by 2030. Fiscal drag means that by this point there will be almost 200,000 potentially eligible parents with an income greater than £100,000.

Before the removal of threshold, the number of parents estimated to be bunching at £100,000 in our central scenario is about 13,000 and 16,000 in 2028 and 2030, respectively. Following the removal of the entitlement threshold, we estimate around 4,000 parents will continue bunching due to the Personal Allowance withdrawal. After accounting for these changes in parents' behaviour, the overall cost is estimated to be around £340 million

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less than the static cost. £210 million of this is estimated to arise from parents ceasing to hold their income below £100,000 and thus generating additional tax revenue. Another £130 million is expected to come from an increase in the participation rate of the partners of parents currently ineligible for the entitlement, who are now able to re-enter the labour market.

Under the lower bound cost scenario, where the share of parents assumed to remain above the threshold is half that observed in 2022, the removal of the threshold is revenue positive. This is because under this scenario, around four times as many parents are estimated to bunch due to the childcare entitlement threshold. This reduces the cost of expanding the entitlement, as there are fewer parents remaining above the threshold that would represent a new cost, while greatly increasing the behavioural revenue effect, as there are many more parents that would increase their incomes following the removal of the threshold. The extensive margin effect is smaller for the same reason the static cost is smaller – that is there are fewer currently-ineligible parents whose partners are assumed to return to work after becoming eligible.

4.2.2. Change to an *actual* ANI threshold

As explained in Section 2.5, some parents with incomes above £100,000 for the tax year have still had a live childcare account for some period of the year. One possible reform to the entitlement would be to change the income measure used to determine eligibility for the entitlement away from *expected* ANI and use parents' *actual* ANI for the year. This would mean that parents that were deemed eligible for at least part of the year because they had expected to have an income below £100,000 but ended up with an actual ANI greater than £100,000 would no longer be considered eligible for the entitlement in that year.

In 2022 there were approximately 11,000 parents who had a live childcare account for at least part of the year while going on to have an *actual* ANI greater than £100,000. If the free childcare that was provided to these parents was instead provided on the basis of actual ANI, the upper income threshold could be expanded to about £111,000 at the same fiscal cost.[26]

[26] This is estimated by calculating the number of additional parents with incomes just above £100,000 that could be provided the free childcare entitlement if the total quarters of childcare claimed by all parents above £100,000 in 2022 were instead allocated to parents just above £100,000, assuming the average number of quarters claimed by these parents would be the same as observed for parents below £100,000.

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A move to basing eligibility on actual income at the end of the tax year in which the entitlement is provided requires some form of clawback mechanism for people who received the benefit but were determined to actually be ineligible (or partially eligible) after the fact. This is more difficult in the case of a benefit delivered in kind, such as the childcare entitlement, where a monetary value must be placed on the benefit. We explore how such a clawback mechanism might work in Appendix E.

In the remainder of this section, the primary results we present continue to assume a change in the income definition determining eligibility to actual ANI. Supplementary results in which the income definition remains expected ANI are provided in Appendix B.

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Table 4.3: Fiscal cost estimates of childcare policy reforms, 2028 and 2030: actual ANI, central scenario

Reform	Tax Year	Number Bunching	Static Cost (£)	Behavioural Gain (£)		Net Fiscal Cost (£)
				Intensive Margin	Extensive Margin	
Abolish the threshold	2028	3,850	-800m	+150m	+120m	-520m
	2030	4,300	-980m	+210m	+130m	-640m
Abolish the threshold for the first 15 Hours to Under-3s	2028	11,930	-300m	+80m	+50m	-170m
	2030	14,690	-370m	+110m	+50m	-210m
Raise the threshold to £125,000	2028	7,880	-230m	+100m	+50m	-90m
	2030	9,570	-290m	+130m	+50m	-100m
Raise the threshold to £150,000	2028	5,060	-400m	+120m	+70m	-210m
	2030	6,360	-490m	+160m	+80m	-250m
Additional 8% Marginal Rate	2028	6,390	-440m	+120m	+70m	-250m
	2030	8,460	-570m	+170m	+80m	-320m
Additional 18% Marginal Rate	2028	7,300	-220m	+120m	+40m	-60m
	2030	9,450	-300m	+170m	+50m	-80m
Additional 28% Marginal Rate	2028	8,060	-120m	+120m	+30m	+30m
	2030	10,230	-180m	+160m	+40m	+20m

Notes: This table presents the results of modelling the fiscal effects of replacing the £100,000 threshold with other reforms. The static cost is the estimated cost of providing the modelled childcare policy, relative to the status quo, before accounting for any behavioural effects. The intensive margin behavioural gain is the estimated fiscal effect of the modelled policy due to taxpayers changing their ANI due to the change in incentive to bunch at the threshold. The extensive margin behavioural gain is the modelled effect of change in the share of partners above the threshold that enter the labour market and begin paying Income Tax and National Insurance Contributions. Figures may not sum due to rounding. Negative = cost to the Exchequer. Source: Authors' calculations based on HMRC administrative datasets.

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4.2.3. Expand free 15 hours to under-3s above £100,000

Extending 15 hours of childcare for 9-month- to 2-year-olds to parents earning over £100,000 would mean that crossing the threshold costs that group 15 hours of childcare rather than 30, the same as for 3- and 4-year-olds.

This is also straightforward to deliver as it represents a relatively minor change to the existing policy in administrative terms. The parameters and system used for the parents of 3- and 4-year-olds can simply be expanded to the full population of parents within scope of the policy. This roughly halves the notch for the under-3 group, which weakens the incentive to bunch. However, it does not remove the notch entirely, so families just above the threshold can still be worse off than those just below.

Table 4.3 shows that in our central scenario, the net cost of this reform is much less than completely removing the £100,000 threshold. In 2028, it is estimated that this would cost £170 million, and £210 million in 2030. This is around a third of the estimated cost of full removal, which is primarily driven by the far smaller static cost of this reform, and because of the relative unresponsiveness, this is not fully counteracted by the reductions in the behavioural effects.

Under the low-cost scenario (see Appendix C), the revenue increase of this reform is actually less than just removing the cliff-edge entirely. This is because if parents are extremely responsive to the cliff-edge at £100,000, keeping a relatively large cliff-edge in place still results in a very large number of parents bunching (roughly 50,000-60,000), reflecting continued lost tax revenue, while still incurring the cost of providing the entitlement.

4.2.4. Raise the threshold

Short of abolition, the simplest change administratively would be to raise the threshold at which parents lose their childcare entitlement. We use £125,000 and £150,000 as potential thresholds, although others could be selected. If expected ANI were retained as the income measure, this reform would also reduce compliance burdens on HMRC as the population clustered around the threshold will be significantly reduced.

Raising the threshold beyond £125,140 has the additional effect of moving the threshold clear of the Personal Allowance taper, where the marginal rate is lower so that the 'dominated region' of income a parent must surpass to

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be no worse off is smaller.[27] Given that the £100,000 limit has been held constant in nominal terms since 2017, and would stand at around £143,000 by 2028 had it risen with inflation, raising it would undo some of the effects of fiscal drag.

Moving the entitlement threshold to £125,000 would make all parents with an income between £100,000 and £125,000 newly eligible for the entitlement, at a static cost of £230 million in 2028 and £290 million in 2030. After accounting for the behavioural effects of removing the cliff-edge at £100,000 and introducing the new one at £125,000, the net cost of this reform is estimated to be close to £100 million between 2028 and 2030.

Moving the threshold further up the income distribution to £150,000 would be more expensive to government under our central scenario, as it expands the entitlement to more parents, costing £210 million and £250 million in 2028 and 2030, respectively.

Under our low-cost scenario (Appendix C), the net costs of moving to a £150,000 threshold are almost the same as a £125,000 threshold, as the additional cost of providing free childcare to parents between £125,000 and £150,000 is made up for by the fact that setting the threshold where fewer parents are affected means less lost tax revenue. In this scenario, the £125,000 and £150,000 thresholds would raise £250 million and £240 million, respectively. The equivalent figures for 2030 are £290 million and £280 million.

4.2.5. Replace the cliff-edge with a tapered entitlement

The most efficient option in terms of deadweight cost would be to introduce a policy that withdraws the childcare entitlement incrementally as parents earn over £100,000. This weakens the incentive to bunch at the threshold as there would no longer be a region in which parents would be strictly better off by reducing their incomes.[28]

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[27] Our estimate of the responsiveness (elasticity) of parents at the £100,000 threshold takes into the account the combined incentive of the Personal Allowance taper and childcare entitlement withdrawal. To the extent that there is heterogeneity in this elasticity, so that some taxpayers are highly responsive as soon as any incentive to bunch is introduced, applying our estimated elasticity from the £100,000 threshold to a new point in the income distribution (away from the taper) may underestimate the size of the response.

[28] Provided the taper rate is not set so high as to move parents' total effective marginal tax rate above 100%, after accounting for other taxes (such as Income Tax, National Insurance Contributions, and the withdrawal of the Personal Allowance). If the taper was set this high, it could lead to parents being marginally worse-off after tax from an increase in income, but not losing thousands of pounds worth of the entitlement for crossing a single threshold, as is the case with current policy.

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However, such a system comes with a number of administrative challenges that need to be worked through. Any taper design that gradually withdraws the entitlement would need to decide on how the entitlement is withdrawn.

One option would be to withdraw a certain share of the total number of hours per child for each £1 earned above the threshold.[29] In which case the point at which the entitlement is fully exhausted would be the same for each individual, regardless of the monetary value of the total entitlement. This would, in effect, impose a higher effective tax rate in that region for parents for whom the overall value of the entitlement is greater (such as parents of younger children, more children, or those in London and the South East).

Alternatively, a taper could explicitly define the marginal tax rate it imposes. This would mean that regardless of the overall value of the entitlement to parents, the monetary value lost for earning an additional £1 is the same for all parents. The consequence of this is that for parents for whom the entitlement is of greater value, the income range over which the entitlement is tapered away is wider.[30]

The administrative decisions and trade-offs are discussed in more detail in Appendix E.

If the taper were set at 8% (parents would lose an additional 8p for each £1 they earned over £100,000, on top of Income Tax and National Insurance Contributions), which would make the effective marginal tax rate 70% in the Personal Allowance withdrawal region and 55% above the Additional Rate threshold, we estimate the net fiscal cost of this would be about £250 million in 2028, and £320 million in 2030. This is around half the cost of completely removing the threshold. The relatively gradual taper rate means there is not as strong an incentive to bunch below £100,000 so there is still a significant behavioural gain (£120 million here, versus £150 million under complete abolition, in our central scenario), but the parents above £100,000 are not getting the full entitlement value, and so the static cost of delivering this policy is smaller.

If the taper rate was higher so that the full value was lost lower down the distribution, the net cost would be significantly lower. We estimate an 18%

[29] To give a concrete example, the taper could be designed so parents lose 1 hour of the full 30-hour entitlement for every £1,000 earned over £100,000. In this case the full entitlement would be lost when a parent's income reaches £130,000.

[30] For example, if the entitlement is tapered away at a marginal rate of 10% (that is 10p removed for every £1 earned over £100,000), for a parent whose monetary equivalent value of the full childcare entitlement was £5,000, the entitlement would be fully exhausted by £150,000. For someone with a full entitlement value of £10,000, it would not be fully exhausted until the parent earned £200,000.

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taper rate – implying an 80% effective marginal rate in the Personal Allowance withdrawal region, and 65% in the Additional Rate region – would only cost £60 million in 2028, and £80 million in 2030.

In fact, if the taper rate was set even higher at 28%, we estimate this would have a slightly positive fiscal effect with respect to current policy in 2030 (a gain of £20 million). Since the value of the entitlement is so large, even marginal taper rates as high as 28% mean that the average parent of an under-3 child would still be entitled to some amount of free childcare up to an income of £140,000.

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5. Conclusion

The £100,000 childcare threshold is a notch in the tax system, a point at which earning slightly more can leave a family worse off overall. Its scale has increased in recent years. The extension of the funded entitlement down to children aged 9 months has left parents of under-3s facing the loss of the full 30 hours on crossing the threshold rather than 15, and because the threshold has remained fixed in cash terms since 2017, rising incomes and childcare costs draw a greater number of parents into its range.

However, we find that parents respond to the threshold considerably less than the pronounced spike of incomes just below £100,000 would suggest. In 2022 around 2,610 parents of 3- and 4-year-olds held their income below the threshold, about 3.37 times the number we would otherwise expect, of which we estimate roughly 39% represents a response to the loss of childcare rather than to the withdrawal of the Personal Allowance. Among the parents who would be financially better off remaining below the threshold, the majority do not adjust their income at all, fewer than one in ten employees and around three in ten of the self-employed and owner-managers.

It is this limited response that leads us to conclude that abolition of the threshold, while correcting an unjustifiable anomaly, would have a real fiscal cost in the near term. Since the majority of parents above £100,000 would leave their income unchanged were the threshold removed, the exchequer would for the most part be funding childcare for families already above the threshold, while recovering relatively little additional tax in return. We estimate that removing the threshold would cost in the region of £520 million in 2028, rising to £640 million by 2030 as fiscal drag brings a growing number of parents within its scope.

Alternative reforms can achieve some of the benefits of abolition with a more limited fiscal cost. The income measure used to assess eligibility matters considerably. Because eligibility currently rests on expected rather than actual ANI, a number of parents whose income ends the year above £100,000 nonetheless receive part of the entitlement. A move to actual ANI would allow the threshold to be raised to £111,000 at the same overall fiscal cost.

To reduce the number of impacted parents without complete abolition, the simplest reform would be to raise the threshold at which eligibility is lost. Increases to £125,000 or £150,000 would cost in the region of £100 million or £250 million respectively by 2030, while moving it clear of the Personal Allowance taper. Alternatively, the financial cost to parents of losing

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eligibility could be reduced by removing the threshold for the first 15 hours to under-3s, whilst maintaining it for the second 15 hours. This would mirror closely, though not exactly, the system in place for 3- and 4-year-olds. This would cost around £210 million.

Both changing the location of the notch, and reducing its size, still leave in place the basic structure that parents are worse off when their income crosses a threshold. A better alternative, albeit one that comes with considerable administrative complexity, could be to taper away the benefit. This would reduce the cost further still, and, depending on the taper rate, could bring reform close to revenue neutral.

Finally, we would emphasise that the case for reform does not rest on fiscal considerations alone. The effects of the threshold extend beyond the parent whose income is assessed. The share of parents whose partner is not in work rises from approximately 6% below £100,000 to approximately 9% above it, an increase concentrated almost entirely among mothers who leave work. While some couples would arrange their affairs in this way regardless, the sharp change at the threshold suggests that the loss of the childcare entitlement is itself a cause, with potential long-term consequences for the careers and earnings of the mothers affected.

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Appendix A: Methodology

Defining the sample of parents

To define our sample, we include any parents who we observe as having a child whose age would qualify them for free childcare during the tax year 2022.

Identifying parents

We use three sources for identifying taxpayers that are parents in our data.

The first source is using childcare account data. These data are at a child level for all children for whom either a Department for Education (DfE) account, or Tax-Free Childcare account, is live and deemed eligible within the given tax year. These data include fields for the National Insurance numbers of both parents associated with the child's account,[31] the child's date of birth, and which type of accounts were live for this child in the tax year. This allows us to determine the age of the child, and link the child to income data from HMRC PAYE and Self-Assessment data.

The second source we use is parental leave data from HMRC PAYE Real Time Information.[32] We observe employees' RTI data at a monthly level, which allows us to identify the first month an employee begins taking a spell of parental leave. We use the first month of a new continuous spell of parental leave as a proxy for the month of birth of a new child.

The final data source used to build our sample of parents is Unique Property Reference Number (UPRN) data. This contains taxpayers' National Insurance number, Unique Taxpayer Reference, or Temporary Reference Number, linked to a UPRN and the taxpayer's start and end date at that UPRN. This allows us to supplement our sample of identified parents by matching them to their likely partners, based on who they were living with around the month of birth.

To identify partners within the UPRN data, we match parents to taxpayers overlapping at the same UPRN using the following hierarchical conditions:

1. First, we find cases of two parents overlapping at the same UPRN where they both take parental leave in the same year, are opposite sex, and their ages are within 15 years of each other.

[31] Single parent households will only include the National Insurance number of the primary parent, with whom the account is associated.
[32] As the earliest tax year for this data source is 2014-15, the earliest births we are able to identify using this method are in April 2014.

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2. Then looking at remaining unmatched parents who have taken parental leave, we then select the person in the UPRN data who overlaps at the largest number of distinct UPRNs as the parent – i.e. has moved house with them – again conditional on being opposite sex and within 15 years of each other.
3. Finally, we match the remaining unmatched parents to someone of opposite sex, within 15 years of their age, and overlapped at the same UPRN for at least 36 months.

Table A.1: Parents sample summary statistics, 2022

Sample	Variable	Whole Population	£80,000-£140,000
3- and 4-year-olds	Number of Parents	1,648,632	77,615
	Share with an Identified Partner (%)	87.52	95.55
	Share Female (%)	51.58	26.60
	Average Age	36.70	40.13
	Average ANI (£)	36,143	100,993
9-month- to 4-year-olds	Number of Parents	2,855,273	130,339
	Share with an Identified Partner (%)	87.08	95.10
	Share Female (%)	51.71	26.28
	Average Age	35.74	39.43
	Average ANI (£)	35,172	103,381

Notes: 3- and 4-year-olds sample refers to parents who we estimate to have a child whose date of birth would entitle them to be eligible for free childcare hours in 2022 for a positive number of months. The 9-month- to 4-year-olds sample refers to parents with a child that would have been eligible for free childcare hours in 2022, had the current age eligibility rules been in place in that tax year.

Source: Authors' calculations based on HMRC administrative datasets.

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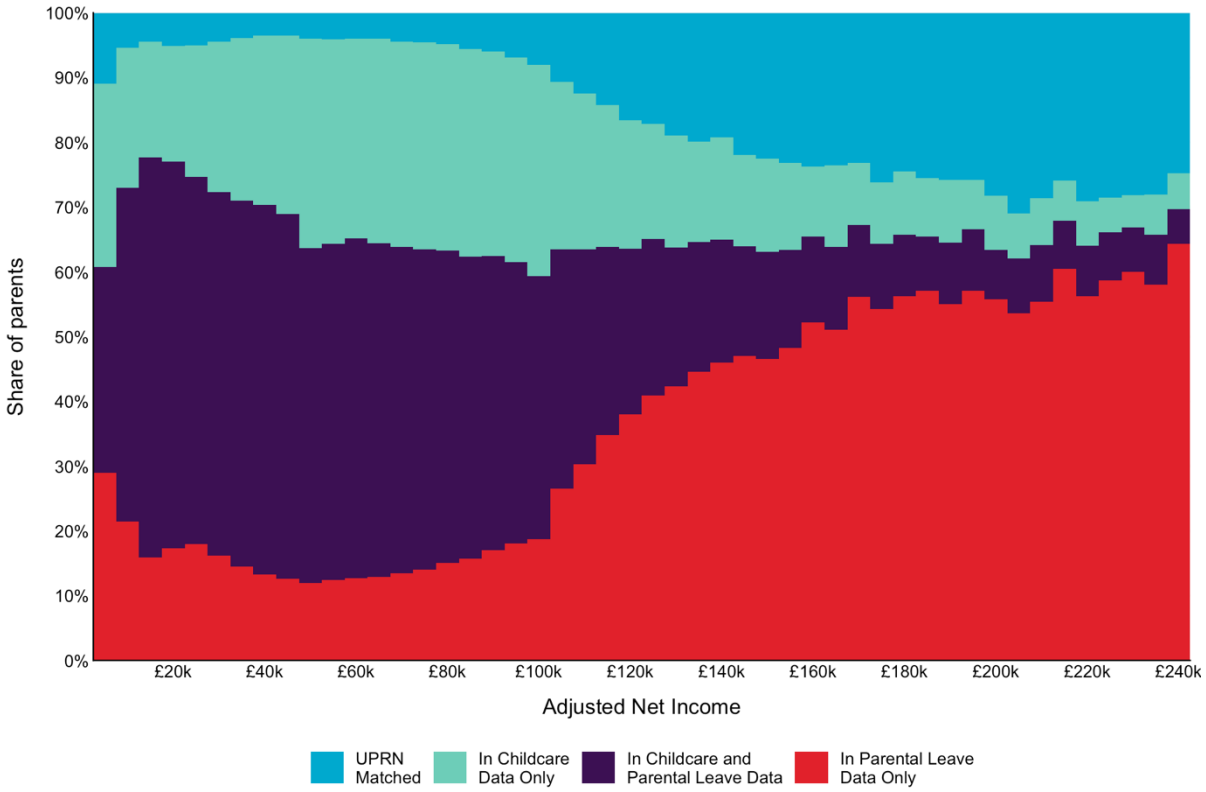
These rules will not be perfect and would obviously not be appropriate for use in operational implementation of policy. However, for statistical purposes, they aim to strike a balance between not creating apparent parent couples who are not truly co-parents (false positives) and not missing true couples (false negatives). Some true couples will be single sex, and some will have a larger age gap than 15 years. But most people living together with a large age gap, or who are single sex, are not a couple. We therefore use the above rules to balance out the risk of false positives and false negatives.

Figure A.1: Share of employee parents in sample identified from each data source, by income bin, 2022



Notes: Income bins are £5,000 wide. Each vertical column represents the share of individuals within that income bin we have identified as parents based on the data source that we have observed them in. In Parental Leave Data only means they are observed as taking parental leave and are not observed in any year as having a childcare account. In Childcare and Parental Leave Data means they are observed as taking parental leave and have had a childcare account in at least one year between 2018 and 2025. In Childcare Data Only means they are not observed as taking parental leave but have had a childcare account in at least one year. UPRN Matched means they have been matched as a partner to a parent taking parental leave based on cohabitation with the parent, being opposite sex, and within 15 years of age of the parent, but are not observed as taking parental leave or having a childcare account themselves.

Source: Authors' calculations based on HMRC administrative datasets.

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This allows us to create a dataset of couples, with the month of birth of each child observed being associated with either member of the couple (or the single parent if they have no identified partner). A final adjustment is made to account for the fact that couples may not start parental leave in the exact month of birth and may not start their parental leave in the same month as each other. Hence, if there is less than 9 months between one birth and the next apparent birth within a couple, the second of the two births is removed. This leaves us with our final sample of couples and children, and the month of birth of each child.

Figure A.1 shows from which data sources the parents in our sample have been identified, in £5,000 income bins. The first observation of note is that the share of parents in the sample that are observed to be taking parental leave is fairly stable at around 60% across the income distribution. Conditional on the assumption that the overall take-up of parental leave does not vary drastically across the income distribution, this stable share provides confidence that our strategy is successful in being able to identify parents, and in particular that we are not disproportionately missing parents at certain points in the income distribution, which would affect our estimation of the counterfactual income distribution in our bunching analysis.

Second, below £100,000, the share of parents that have been identified in the childcare account data is also stable, at around 80%. This share rapidly decreases above £100,000 as expected, but there remains a non-negligible share that have been identified through the childcare account data. This is partly down to parents who have a live account and a measured income above £100,000 (discussed later in this appendix), but it is primarily due to using the full panel of childcare account data 2018 to 2025 to identify parents but measuring their income in a single tax year (2022). This means that a parent may have had an account in a previous or subsequent year when they were eligible, but an income over £100,000 in 2022.

It should also be noted that there are parents with certain characteristics that our strategy will not be able to identify. Broadly, this will be couples where neither parent takes parental leave nor has ever had a childcare account. This is likely to be a larger issue for identifying parents above the £100,000 threshold, as it can be seen from Figure A.1 that far fewer of this part of the population has ever had a childcare account. However, if at least one of the couple is an employee and takes parental leave, we will still be able to identify them and match them to a partner through the UPRN data, and so this issue will primarily be for parents that are not in the RTI PAYE

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data (for example, they are self-employed, own a closely held company, etc.) and have an income over £100,000. Since maternity spells are easier to identify in the RTI data (since paternity leave is typically short and can fall fully within a pay month and then may not be coded as such by the employer), couples where the mother is in self-employment and has a high income (so that the couple does not have a childcare account) are likely to be the most problematic.

To the extent that this means we are more likely to miss parents above the £100,000 threshold, it would lead to a slight overestimate of the behavioural response, as we will be underestimating the number of parents remaining above the threshold.

Eligibility for Free Childcare for Working Parents ('childcare entitlement')

There are multiple conditions that parents and their children must meet in order to be eligible to receive the free childcare hours under this scheme. For example, both parents must expect to earn at least the equivalent of 16 hours a week on the National Minimum Wage over the following 3 months after applying and must *expect* their ANI to not exceed £100,000 for the relevant tax year.[33]

Table A.2: Summarised childcare policy timeline

Date of Policy Change	Ages Eligible
September 2017*	3- and 4-year-olds – 30 hours per week
April 2024	3- and 4-year-olds – 30 hours per week 2-year-olds – 15 hours per week
September 2024	3- and 4-year-olds – 30 hours per week 9-month- to 2-year-olds – 15 hours per week
September 2025	9-month- to 4-year-olds – 30 hours per week

Notes: (*) Pilots of the scheme began across the country from September 2016. 3- and 4-year-olds are also eligible for a universal 15 hours childcare entitlement (the two entitlements cannot be used in conjunction).

Source: Drayton, E and Farquharson, C. (2023). Early years spending update: Budget reforms and beyond. London: Institute for Fiscal Studies.

[33] See Appendix A for the precise definition of ANI.

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A child is deemed eligible[34] for the entitlement from the first term[35] after they have turned the relevant age and ceases to be eligible after they begin schooling. For the purposes of this analysis, we define a child as ceasing to be eligible in the September after they turn 4 years old.

Based on these eligibility rules and the month of birth, we estimate the number of months within the tax year each child would be eligible for free childcare hours within each age range.[36]

Eligibility for free childcare for 3- and 4-year-olds in this period begins the first term after the child turns 3 (either 1 January, 1 April, or 1 September) and ends when the child starts school. For the purposes of this analysis, we assume eligibility ends on 1 September following the child turning 4 years old.

Live childcare accounts of parents with income greater than £100,000

A childcare account is checked for eligibility, once per quarter. If the account is deemed to still be eligible to receive free childcare it receives a green eligibility flag and a valid code, and the account is considered 'live'. Not all parents with a 'live' account go on to use it. Parents who wish to use it, give their valid eligibility code to their chosen childcare provider and corresponding local authority, who then validate it for use. Since this process sits with local authorities, HMRC does not hold data on code validations and so our definition of an account being open and able to use free childcare is based on the green eligible flag rather than actual childcare used.

There are a non-negligible number of observations within our sample where a parent has a live childcare account within the 2022 tax year and an ANI of greater than £100,000 in the same year. There are multiple possible explanations for this.

First, as the income eligibility condition is based on *expected* ANI, it is possible that a parent had a reasonable expectation that their ANI would be below the £100,000 threshold for the year, but their actual ANI exceeded the cutoff. In these cases, the parent would still have had a live account and access to the free childcare for the year.

Secondly, a parent may have been eligible at the beginning of the tax year on the expected income condition, but experienced a change in circumstances that means it is no longer reasonable for them to expect their

[34] Focusing only on the age component of child eligibility.
[35] 1 January, 1 April, or 1 September.
[36] The age ranges considered being 9 months up to 2 years old; 2 years olds; and 3 to 4 years old.

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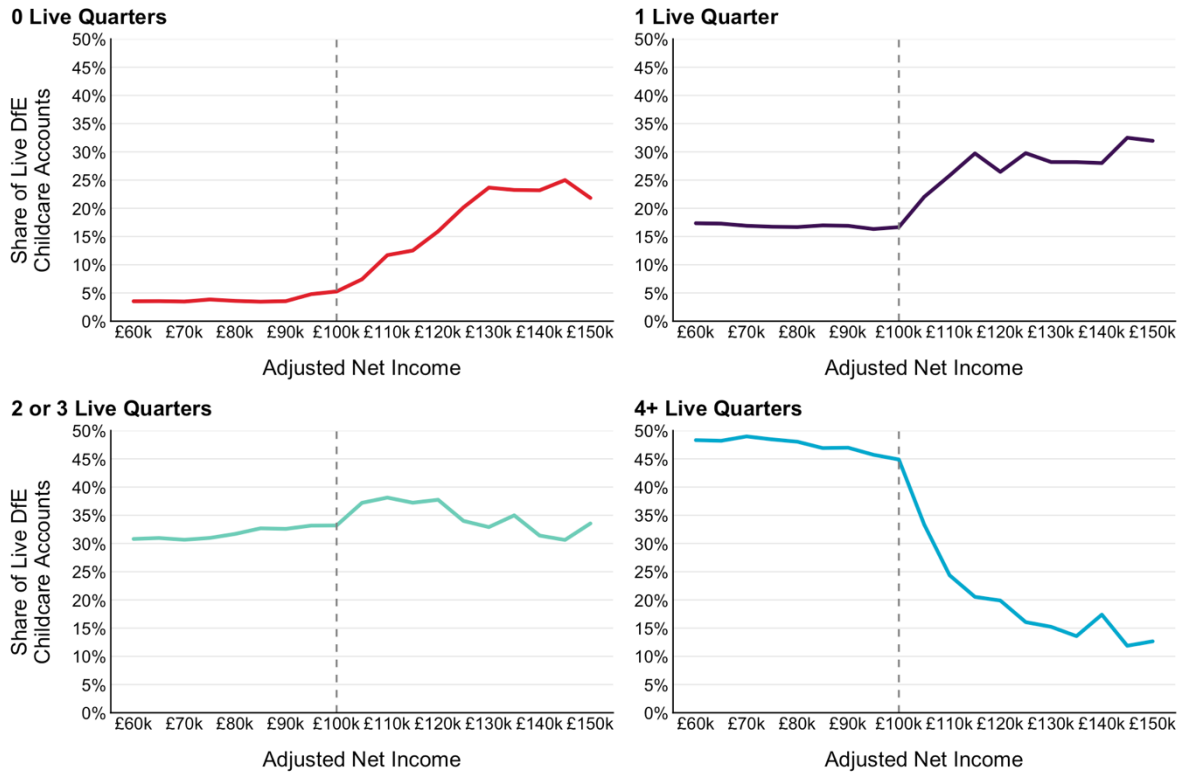
ANI to remain under £100,000 (for example, they receive a large, unexpected, bonus, or a promotion). In these cases, the child's account may have been open and eligible for a portion of the year, and then closed mid-way through. As can be seen in Figure A.2, the share of live childcare accounts within the tax year that received 0 to 4 green eligibility flags remains extremely stable below £100,000. Above the £100,000 threshold there is a large drop in the share of accounts that received at least 4 green flags within the tax year, from about 45% below the threshold to about 12% at incomes of £150,000. There is a corresponding increase in the share of live accounts receiving 0 green flags[37] (from 3% below £100,000 rising to almost 25% above) or 1 green flag (from 17% to 30%).

Figure A.2: Share of live childcare accounts by the number of green eligibility flags received, 2022



Notes: Income bins are £5,000 wide. A childcare account is considered live if it has received a green response. A live childcare account cannot be used until the account has been validated. HMRC does not hold information on account validation.

Source: Authors' calculations based on HMRC administrative datasets.

[37] Meaning the account was live in the previous year but was flagged as ineligible in the account's first check of the year.

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Identifying employees in salary sacrifice firms

In some of the analysis in this report, we restrict the sample to employees whose primary employer does not offer a salary sacrifice pension option. In particular, this is useful when we look at *how* parents bunch at £100,000: do they adjust pension contributions, adjust earned income, or something else.

This restriction is necessary because HMRC does not collect information on the size of employer and salary sacrificed pension contributions, so we cannot observe gross income before pension contributions for individuals with salary sacrifice contributions. Formally the rationale for not collecting this information is that these contributions do not ordinarily incur any tax liability,[38] although there are annual contribution limits that are difficult to observe and enforce without this information.

The implication for our analysis is that, for contributions made in this way, we cannot distinguish between what is a real labour supply response and what is pension contribution response, as both would appear to reduce total taxable income in the same way.

To deal with this issue, we first identify organisations that appear to primarily make pension contributions through a salary sacrifice scheme. We do this by calculating the share of employees within a PAYE Scheme Reference (i.e. employees on the same payroll) that are not making any pension contributions in our PAYE data through either a Net Pay Arrangement (NPA) or Relief-at-Source scheme (RAS). Where a payroll has a high share of employees who do not appear to be contributing to any pension scheme, it is likely that instead they are in fact contributing, but via a salary sacrifice scheme that we do not observe.

In practice we use a threshold of 75% for the share of non-contributing employees above which we assume the organisation operates a salary sacrifice scheme.[39]

In places where our analysis is limited to non-Salary-Sacrifice employees, this means we have restricted our sample to employees whose primary

[38] In the 2022 tax year. From April 2029, salary sacrifice pension contributions above £2,000 per year will be subject to both employee and employer National Insurance Contributions.
[39] Given that the share of employees making no NPA or RAS pension contributions within a PAYE Scheme Reference generates a strongly bimodal distribution with modes at ~0% and ~100%, the precise choice of threshold does not significantly impact the results. However, insofar as it does make a difference, a higher threshold will be more conservative in identifying salary sacrifice firms, causing there to be fewer false positives but more false negatives, and vice-versa for lower thresholds.

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employer is not identified as running a PAYE Scheme that is primarily using a salary sacrifice pension contribution scheme.

Identifying behaviour used for bunching

Since it is of interest to determine the scale of the 'real' response (for example working fewer hours or turning down a promotion) compared to other methods of reducing one's ANI to remain eligible (such as contributing any income above £100,000 towards a pension, or making a Gift Aid charitable contribution), we compare the differential scale of bunching at the £100,000 threshold when using gross income and ANI as our income measures.

If parents were only responding to the childcare notch by adjusting how much of their gross income they contributed to their pension, for example, then we would expect to see a spike in the ANI distribution, but a smooth distribution when using gross income as our income measure. In contrast, if the response was entirely driven by parents making real labour supply responses, then the distributions when using ANI and gross income would look very similar.

Calculating the monetary value of the childcare entitlement

Early years childcare in the UK is charged at an hourly rate, and fees vary by geography. Therefore, the total value of the benefit will depend on the region of the UK that the household lives in, and how many months they have a child of eligibility age within the tax year.

Early years funding rates, which the DfE pays to each local authority to fund the early years entitlements, can differ substantially from the hourly rate that parents face. Therefore, the implied cost to funding the childcare of an additional child to government can be significantly higher than the cost of childcare that parents would have to pay for themselves without the funded offer. Throughout our analysis, we use the cost of childcare to parents to estimate the behavioural response of parents to the policy, and the cost of funding childcare to estimate the fiscal costs of any reforms to the policy.

For calculating both costs, we first estimate the number of months a child would be eligible for childcare, based on their date of birth and the term in which they would begin and cease being eligible. We then apply the relevant hourly cost (either the market hourly cost or the DfE funding rate) to the implied number of hours the child would be eligible for.

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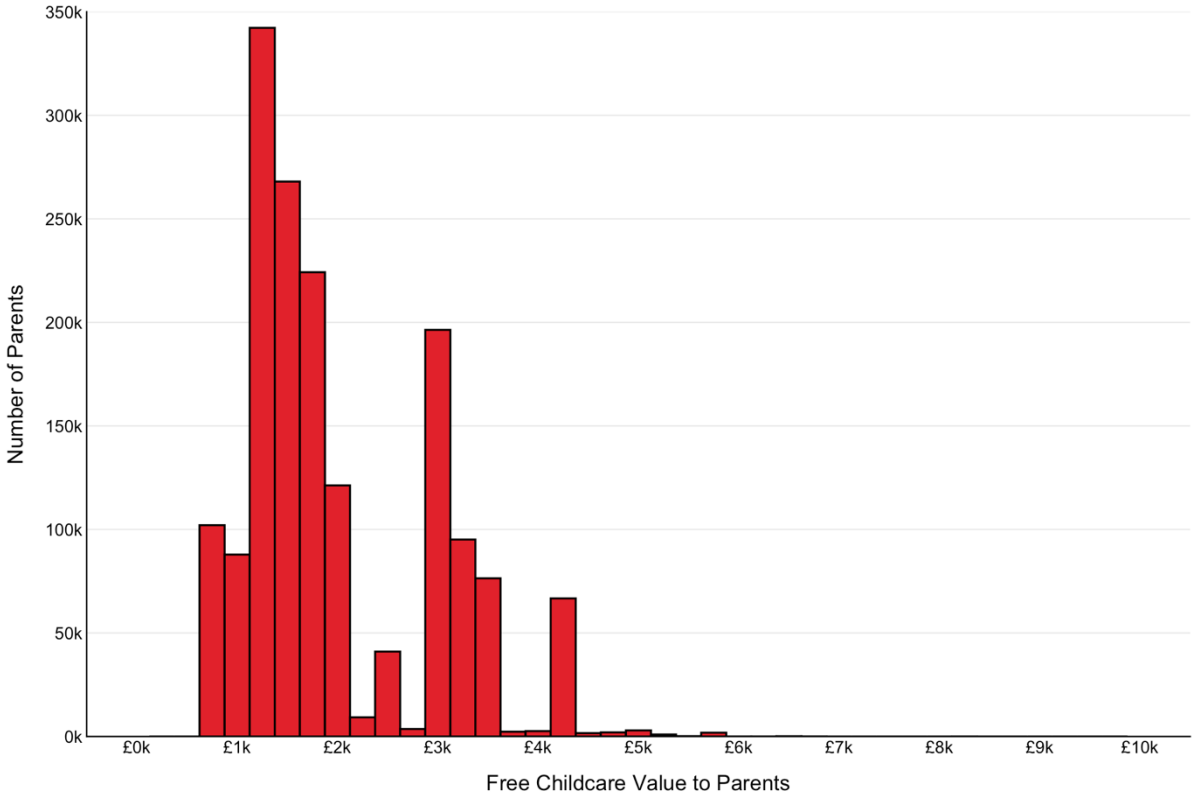
Figure A.3: Distribution of notch sizes for parents of 3- and 4-year-olds in 2022



Notes: Notch size in this figure refers to the estimated cash-equivalent value of the free childcare entitlement. For example, a child in London, where the mean hourly cost was £7.03, that was eligible for the entire 2022 tax year and loses 15 hours-worth of childcare per week for 38 weeks, the notch value is calculated as £7.03 x 15 x 38 = £4,007. Due to the effective marginal rate of tax on income above £100,000 (62% after including the Higher Rate, Personal Allowance withdrawal, and Employee National Insurance Contributions), in this example, a parent's pre-tax income must exceed £100,000 + £4,007 / (1 – 0.62) = £110,545 in order for their post-tax income to be high enough to make up for the loss of the entitlement.

Source: Authors' calculations based on HMRC administrative datasets.

Childcare hourly fees are taken from the 'childcare and early years provider survey', which provides average hourly fees charged by childcare providers to parents, broken down by UK (ITL1) Regions.[40] Funding rates used for calculating the amount paid to local governments to fund early years childcare schemes are taken from the DfE Early Years Funding guidance.[41]

[40] https://www.gov.uk/government/statistics/childcare-and-early-years-providers-survey-2025
[41] https://www.gov.uk/government/publications/early-years-funding-2026-to-2027

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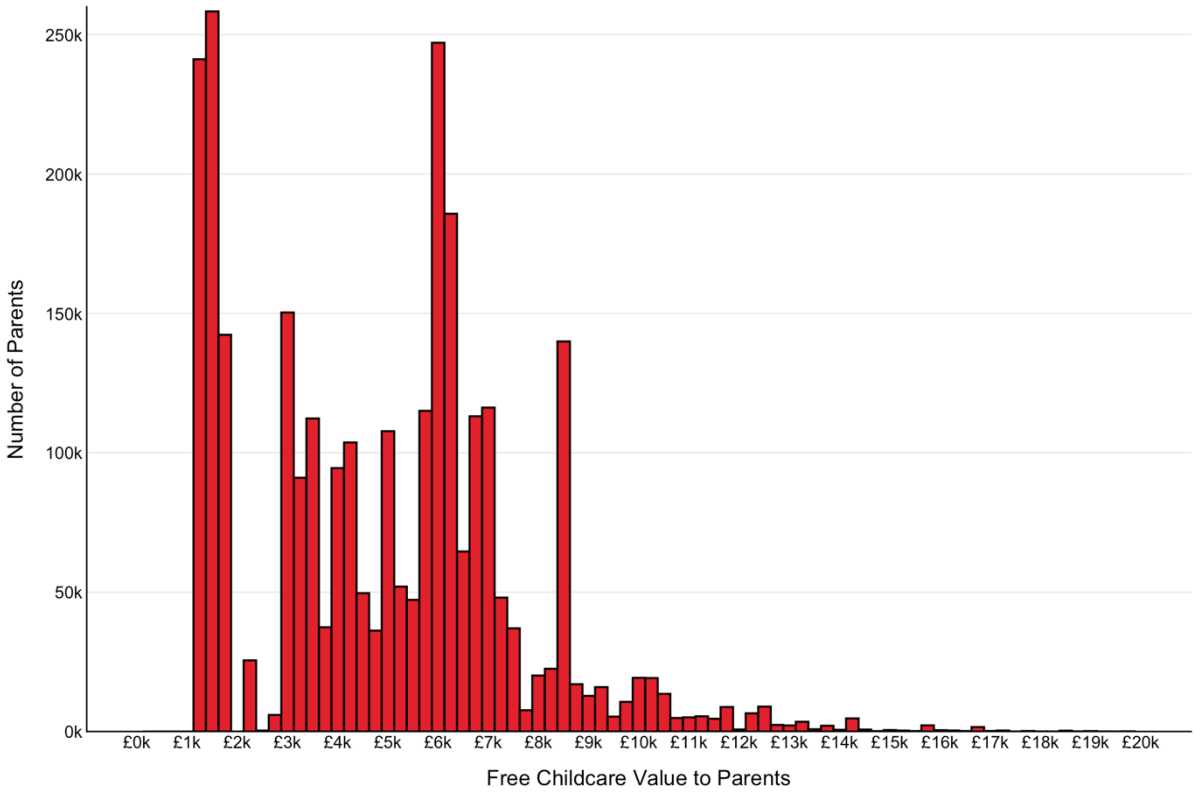
Figure A.4: Distribution of hypothetical notch sizes for parents of 9-month to 4-year-olds in 2022



Notes: This figure uses the sample of parents that would have been eligible for the free childcare entitlement, had the current age eligibility rules been in place in 2022, and calculates the implied notch values in the same way as Figure A.3, based on the estimated number of months the child would have been eligible for under-2s', 2-year-olds', and 3- and 4-year-olds' childcare within the tax year.

Source: Authors' calculations based on HMRC administrative datasets.

Table A.3: Notch size percentiles for parents of 3- and 4-year-olds and 9-month- to 4-year-olds in 2022, using 2022 and 2025 child prices

Group	Cost Year	P10	P25	P50 (Median)	P75	P90
3- and 4-year-olds	2022	£1,002	£1,342	£1,680	£2,913	£4,007
	2025	£1,226	£1,601	£2,043	£3,500	£4,902
9-month- to 4-year-olds	2022	£1,406	£2,884	£5,788	£8,234	£9,327
	2025	£1,670	£3,431	£7,097	£9,969	£11,403

Notes: Notch sizes in this table refer to the estimated cash-equivalent for of the free childcare entitlement. The group '3- and 4-year-olds' refers to parents of children who would have been eligible for the childcare entitlement as it was in 2022, and '9-month- to 4-year-olds' refers to parents who would have been eligible in 2022 had the current eligibility rules been in place in 2022. Cost Year refers to the childcare and early years provider survey year from which childcare hourly rates were taken.

Source: Authors' calculations based on HMRC administrative datasets.

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As shown in Table A.3, the estimated median value of the childcare entitlement in 2022 to parents of 3- and 4-year-olds was £1,680, with 10% of the sample with a value of £4,007 or greater. By uprating the cost of childcare to the latest year of data (2025), these figures increase to £2,043 and £4,902.

If we assume the current child age eligibility rules applied to our 2022 sample of parents, the median value for the hypothetically eligible parents would have been £5,788, and for 10% of parents the value of the entitlement would have been greater than £9,327. Again, uprating to 2025 costs the equivalent values would be £7,097 and £11,403.

The significant increase in the value of the entitlement to the expanded parent population is due to three factors. First, the average cost of childcare is slightly larger for the younger child population. Second, the universal 15-hour entitlement does not extend to under-3s and so the loss of childcare at £100,000 is twice as large for the younger children. Third, the expanded entitlement means that the average child is eligible for a longer period within the tax period,[42] increasing the value of the entitlement for the year.

Definition of ANI running variable

The free childcare hours £100,000 threshold (and Personal Allowance withdrawal) is based on the parents' ANI. This is described as 'total taxable income before any Personal Allowances and less certain tax reliefs'.[43] We calculate ANI as follows:

$$
\begin{aligned}
&AdjustedNetIncome(ANI)\\
&= TotalIncome(TI)\\
&+ Double\ Taxation\ Agreement\ Income\ for\ Which\ partial\ relief\ is\ claimed\\
&- \ Gross\ Relief\ at\ Source\ Pension\ Contribution\\
&- \ Pension\ Contributions\ Without\ Relief\ at\ Source\\
&- \ Gross\ Gift\ Aid\ Payments\ attributable\ to\ the\ tax\ year\\
&- \ Charitable\ Gifts\ In\ Kind\\
&- \ Gross\ Contributions\ to\ Charitable\ Covenants\ or\ Annuities\\
&- \ Foreign\ Tax\ Paid\ on\ estate\ income\ for\ which\ Foreign\ Tax\ Credit\ Relief\ not\ claimed\\
&- \ Net\ Losses
\end{aligned}
$$

In some cases, taxpayers are observed to make relief-at-source (RAS) pension contributions, either through a workplace contribution or a

[42] For example, a child that turns 3 during the tax year would only be eligible for a portion of the year under the scheme before expansion. Now, they would also be eligible as a 2-year-old.
[43] https://www.gov.uk/guidance/adjusted-net-income

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personal contribution, but this contribution does not appear directly in the data used to calculate ANI as the contribution has not been reported to HMRC in a Self-Assessment tax return. In these cases, we subtract this RAS pension contribution as well.

Estimating the bunching and marginal bunchers

Heterogeneity by income source

Before estimating the amount of bunching, we separate the population into those whose main source of income is from employment, and those whose main source of income is not from employment. This allows us to capture different sizes and margins of response by employees versus self-employment. In other contexts, employees are generally found to have smaller responses than owner-managers, for example. This is true both for 'real' adjustments: employees are less able to adjust hours they work than company owner-managers, and 'paper' adjustments: company owner-managers can usually control the timing and size of dividend payments, allowing them to fine-tune their ANI.

Given the focus on parents of young children with ANI close to £100,000, sample size constraints limit the analysis to a simple binary split of mainly employee vs not mainly an employee, rather than anything finer.

Estimating the excess and missing mass

To estimate the degree to which parents are responding to the loss of free childcare at £100,000 ANI, we employ a bunching approach. The withdrawal of free childcare beyond £100,000 creates an incentive for parents whose income would be above £100,000 in a world where there was no loss of free childcare to reduce their income to just below the cutoff. If taxpayers did respond in this way, we would expect to see a spike in the number of taxpayers with an income of just below £100,000, and a corresponding dip in the number of taxpayers in an income range immediately beyond £100,000.

This 'excess mass' – the spike just below £100,000, relative to the number that would be there if there was no change in incentives at £100,000 – and 'missing mass' – the gap between the number of taxpayers with incomes just above £100,000 relative to how many would be there if there were no change in incentive – can then be used to estimate the size of the response of parents' incomes to the removal of free childcare. Intuitively, the more 'excess mass' and more 'missing mass' there is, the greater the response.

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To estimate the amount of excess and missing mass, we estimate a counterfactual density distribution by fitting a flexible polynomial to the empirical distribution, excluding observations in a range [z_L, z_U] around the notch threshold z^*. The counterfactual distribution is obtained from a regression of the following form

$$c_j = \sum_{i=0}^{p} \beta_i (z_j)^i + \sum_{i=z_L}^{z_U} \gamma_i 1[z_j = i] + \theta_k 1[z_j = 150000] + \nu_j$$

where c_j is the number of individuals in bin j, z_j is the ANI level in bin j, and p is the order of the polynomial (in practice p=7). The counterfactual distribution is estimated using the predicted values from the regression, $\hat{c_j} = \sum_{i=0}^{p} \hat{\beta}_i \cdot (z_j)^i$. Excess mass below the notch threshold and the missing mass beyond the threshold are estimated as the difference between the observed and counterfactual bin counts in the relevant earning ranges $\hat{B} = \sum_{j=z_L}^{z^*} (c_j - \hat{c_j})$, and $\hat{M} = \sum_{j>z^*}^{z_U} (\hat{c_j} - c_j)$.

The counterfactual density created by this smoothing implicitly assumes incentives are smooth in this region i.e. there is no notch, and also no kink. To separate the effect of the notch, as described in Section 2, we use the Scottish income distribution to estimate what the counterfactual density would be if only the kink were in place.

Estimating optimisation frictions

As opposed to kinks – where the marginal tax rate changes, but you are never absolutely financially worse off by increasing your income – notches create a region where your post-tax (or post-benefit) income is strictly lower than keeping your income below the notch threshold. Since in theory no taxpayer should want to keep their income in this 'dominated region', the share of taxpayers that do remain in this income range can be used to estimate the magnitude of the optimisation frictions that they face.

In the standard case of a notch that is homogenous across the entire sample, optimisation frictions would usually be estimated by first calculating the size of dominated region, and then estimating the size of the 'hole' within that region. That is, the observed number of taxpayers within the dominated region is divided by the estimated counterfactual number of taxpayers that would have an income in this region were there no incentive to bunch.

Since the size of the notch varies for each individual in our sample, the size of the dominated region also varies for each of them too. For this reason, the

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standard method for estimating the degree of frictions in the notch setting – estimating the share of individuals that remain in the strictly dominated region – cannot be directly employed.

Instead, we calculate the optimisation friction parameter in the following way:

1. Sum the number of individuals in the sample that have an income that places them in their own dominated region
2. For each individual, use the counterfactual distribution to calculate the unconditional probability that they would have had an income in their own dominated range absent the notch.
3. Sum the unconditional probabilities across the sample.
4. Divide (1) by (3)

This approach provides a comparable estimate of optimisation frictions to the standard approach, in that it is the ratio of the number of taxpayers who are observed to have an ANI in their own dominated region, to the number we would expect to observe there, absent the notch.

As a test for heterogeneity, in one element of our analysis we divide parents into quintiles based on their notch size and then perform the analysis by each quintile. This allows us to directly capture any non-linearity in bunching behaviour.

Marginal bunching individual

The marginal bunching individual is the taxpayer with the highest counterfactual income that decides to reduce their income to remain below the notch. The counterfactual income of the marginal buncher is the key parameter to estimate in order to estimate the elasticity of income to the notch.

We employ three methods for estimating the income of the marginal bunching individual to derive elasticities: (i) the observed method; (ii) the bunching-hole method; and (iii) the convergence method. The observed method identifies the average observed income response, which will be attenuated by any frictions in bunching. The bunching-hole and convergence methods are two methods of identifying the behavioural income response as though there were no frictions, thus identifying the structural elasticity parameter governing the behavioural response.

The three methods differ in how they treat the individuals who would bunch in a frictionless world but who, because of adjustment costs, end up scattered just above the threshold instead. The observed method ignores

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this and so understates the true response; the other two methods each make a different correction for it. Estimating desired responsiveness and frictions separately is important because both elements play a role when examining any counterfactual policy designs.

The observed method finds the marginal bunching individual's income, $z^* + \widehat{\Delta z}_{obs}$ by integrating the counterfactual distribution from the notch threshold up to the bin where the integral equals the amount of excess mass B at the notch, in other words $\widehat{\Delta z}_{obs}$ is defined by $\hat{B} = \sum_{j>z^*}^{z^*+\widehat{\Delta z}_{obs}} \hat{c}_j$. The resulting income response comes directly from whatever bunching is actually observed in the data, so any friction that stops people from reaching the threshold pulls this elasticity estimate towards zero.

The bunching-hole method first scales up the amount of excess mass B by the size of the hole in the dominated region α. The intuition is that the dominated region – the range just above the threshold where no one should ever locate, since they could do strictly better by moving to the threshold itself – should be empty. Anyone observed there is there only because of frictions. The fraction of that region that is still occupied, α, therefore measures how much frictions are holding people back. We use this to gross up the observed bunching to the level we would see without them: $B/(1-\alpha)$. Once the scaled-up bunching has been calculated, the procedure follows the same as above, $\widehat{\Delta z}_{bh}$ is defined by $\hat{B}/(1-\hat{\alpha}) = \sum_{j>z^*}^{z^*+\widehat{\Delta z}_{bh}} \hat{c}_j$.

The convergence method defines the marginal bunching individual as the point where the observed and counterfactual distributions converge. Intuitively, the people missing from the region above the threshold are exactly the people piled up at it. The marginal buncher is the income level at which these two quantities balance — where everything taken out of the upper region has been accounted for by the excess at the threshold. This can be implemented by iteratively integrating the missing mass above the threshold up to the point where the missing mass equals the excess mass below the threshold, so $\widehat{\Delta z}_{conv}$ is defined by $\hat{B} = \sum_{j>z^*}^{z^*+\widehat{\Delta z}_{conv}} \left(\hat{c}_j - c_j\right) = \hat{M}$.

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Table A.4: Marginal buncher estimates for parents of 3- and 4-year-olds by main income source, 2022

Group	Average Notch Size	Optimisation Frictions	Marginal Buncher (£)		
			Observed Method	Bunching Hole Method	Convergence Method
Employee	2,021	0.93	100,914	117,149	121,001
Non-Employees	1,930	0.67	106,622	124,382	126,640

Notes: Average notch size refers to the average cash-equivalent value of the childcare entitlement lost by exceeding £100,000 ANI. Optimisation frictions refer to the share of individuals estimated to have an incentive to reduce their income below £100,000 that remain above. Marginal buncher refers to the estimate the individual with the largest counterfactual income had the childcare and Personal Allowance withdrawals not existed that chooses to reduce their income to below the £100,000 threshold.

Source: Authors' calculations based on HMRC administrative datasets.

Table A.5: Estimated elasticities of taxable income for parents of 3- and 4-year-olds by main income source, 2022

Group	Observed Method		Bunching Hole Method		Convergence Method	
	Structural	Reduced Form	Structural	Reduced Form	Structural	Reduced Form
Employees	0.000	0.001	0.094	0.228	0.131	0.310
Non-Employees	0.010	0.049	0.170	0.395	0.193	0.448

Notes: Elasticities are calculated using the estimated marginal buncher's income, and the change in the effective tax rate above and below £100,000 due to the withdrawal of the childcare entitlement and the Personal Allowance. The structural estimates refer to the elasticity estimates based on a structural model that explicitly models the response to the notch. The reduced-form estimates refer to the elasticity estimates based on transforming the notch into a hypothetical kink (change in the marginal tax rate) that would generate the same income response. The observed method refers to the estimate derived integrating the counterfactual distribution from the notch threshold up to the bin where the integral equals the amount of observed excess mass. The bunching hole method refers to the estimate derived from the same method, but first scaling up the amount of excess mass by the degree of optimisation frictions. The convergence method refers to estimate derived from integrating the missing mass above the threshold up to the bin where the integral equals the amount of observed excess mass.

Source: Authors' calculations based on HMRC administrative datasets.

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Deriving elasticities from marginal bunching individual

Structural elasticity estimate

In analysing the response of incomes to the loss of childcare at £100,000, we follow Kleven and Waseem (2013), adjusted to the child notch setting in the UK, where an effective lump-sum reduction in income (in the form of the child withdrawal) occurs simultaneously with an increase in the marginal rate of tax (due to the Personal Allowance withdrawal). Preferences are described by a quasi-linear and iso-elastic utility function

$$u = z - T(z) - \frac{n}{1 + 1/e} \cdot \left(\frac{z}{n}\right)^{1+1/e}$$

where z is before-tax income, $T(z)$ is tax liability, and n is an ability parameter.

The stylised tax schedule can be written as $T(z) = t \cdot z + [\Delta T + \Delta t \cdot (z - z^*)] \cdot 1(z > z^*)$, where t is the marginal rate below the notch threshold z^*, Δt is the increase in the marginal rate above the notch threshold, ΔT is the value of the free childcare hours withdrawn, and 1() is an indicator for being above the threshold. This can be rewritten to correspond with the Kleven and Waseem formulation $T(z) = t \cdot z + [(\Delta T - \Delta t \cdot z^*) + \Delta t \cdot z] \cdot 1(z > z^*)$.

Skipping steps, the relationship between the percentage earnings response $\frac{\Delta z^*}{z^*}$, the percentage change in the net-of-tax rate created by the combined lump-sum notch and change in the marginal tax rate, $\frac{\Delta T/z^* - \Delta t}{1-t}$, $\frac{\Delta t}{1-t}$, and the elasticity e can be written as

$$\frac{1}{1 + \Delta z^*/z^*}\left[1 + \frac{\Delta T/z^* - \Delta t}{1 - t}\right] - \frac{1}{1 + 1/e}\left[\frac{1}{1 + \Delta z^*/z^*}\right]^{1+1/e} - \frac{1}{1 + e}\left[1 - \frac{\Delta t}{1 - t}\right]^{1+e} = 0$$

which, for a given percentage income response and tax parameters, can be numerically solved for the elasticity e.

Reduced Form Elasticity Estimate

Again, following Kleven and Waseem (2013) and Kleven (2016), we derive a reduced form approximation of the elasticity by translating the notch into a hypothetical kink that would have created the same response as the one observed at the notch. Following the steps in Kleven (2016), the reduced-form approximation for the child setting is

$$e^R = \frac{(\Delta z^*/z^*)^2}{\left(\frac{\Delta t \cdot (\Delta z^*/z^*) + 2 \cdot (\Delta T/z^*)}{1 - t}\right)}$$

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This approximation assumes the notch is small in terms of its interior incentives. That is, if the marginal buncher were to remain above the notch, the income they would choose is not very far from their optimal income without the notch. Since the £100,000 threshold also features a large change in the marginal rate, this assumption is unlikely to hold, and the elasticity derived in this way is an upper bound but not a precise approximation.

In the administrative data, a large number of parents have ANI in the 'strictly dominated' region i.e. they would have a higher take-home pay if they were to reduce their earnings, or to put additional money into their pension, or given additional money to charity. Presence in this region is indicative of large optimisation frictions. This result alone does not identify the source of the friction. But it does explain the low apparent elasticity from the observed method: given the large notch and relatively modest apparent bunching, assuming zero frictions implies the elasticity is low. Our primary elasticity estimate used in this analysis is the estimate using the convergence method. If this overstates the elasticity, then the cost of reforms modelled will be underestimated, as we will be overestimating the increase in tax revenue gained from parents increasing their incomes following the removal or reduction in childcare notch.

Predicting bunching for the expanded childcare offer

Since the expanded offer of free childcare to children older than 9 months was not in place in the 2022 tax year, we cannot directly observe the response of the parents of children in this age range to the childcare notch. Instead, we consider all parents who would have been eligible for free childcare in the tax year had the expanded offer been in place and use the estimated response from the parents of 3-and-4-year-olds combined with the estimated value of the free childcare to model their response. This gives us a modelled baseline of what current behaviour is likely to be, given the expanded policy, in the absence of administrative data yet being available to directly observe this.

The expanded offer would also increase the total value of the free childcare hours for some parents in our original sample. For example, a child born in August 2018 would start being eligible in September 2021 under the 3- and 4-year-olds scheme, while under the expanded offer they would be eligible from September 2019. Hence our modelled baseline would consider them eligible from the start of the 2022 tax year (April 2021), rather than only from Sept 2021. Therefore, we re-estimate the income response of all parents,

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including those that were already eligible for the 3- and 4-year-olds offer within the tax year.

Since we would expect a larger response from parents that face a larger notch, we separate the new sample into parents that would have any eligibility for under-3 childcare (as for these ages, the full 30 hours is lost) and those that would only have eligibility for 3- and 4-year-olds childcare (as only 15 hours would be lost). We therefore estimate the income response separately for four subsamples: (i) employees with any under-3 childcare eligibility; (ii) employees with only 3- and 4-year-old eligibility; (iii) non-employees with any under-3 childcare eligibility; (iv) non-employees with only 3- and 4-year-old eligibility.

To predict the income response for each of these subsamples, we first calculate average notch size faced by the parents in the subsample, based on the number of hours lost if passing the £100,000 threshold, and the hourly cost in their region for a child of the relevant age.

We then use the estimated elasticity and the relationship between the elasticity and the marginal bunching individual to estimate the income of the marginal bunching individual in each of the subsamples.

Finally, to estimate the absolute number of individuals that would bunch, we estimate the counterfactual income distribution for that subsample in the same way as for the original sample and assume the share of missing mass would follow the same relative shape as estimated on our original sample. Concretely, we regress m_j on z_j^{rel}, where m_j is the share of missing mass in income bin j and $z_j^{rel} = (z_j - z^*)/\Delta z^*$ is the position of income bin j relative to the notch threshold z^* and marginal bunching income bin Δz^*, and then predict $\widehat{m_j}$ for each income bin in each subsample, using the relative income bins positions calculated from the estimated marginal bunching income.

This leaves us with a predicted number of taxpayers in each income bin had the expanded childcare offer been in place in the 2022 tax year, and a counterfactual number of taxpayers in each bin if no kink or notch existed.

Modelling reforms to the childcare policy

Removal of the £100,000 threshold

We first model the fiscal effects of removing the £100,000 income eligibility threshold completely. We do this by first calculating the static cost of increasing the number of eligible children to those with a parent with an

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ANI above £100,000. We then estimate the behavioural revenue gain arising from parents having less of an incentive to hold their income below £100,000 and so increasing their incomes that generates additional tax revenue.

Static cost

We first estimate the 'static' (i.e. mechanical) cost of this reform, in the following way. For those with incomes above the estimated marginal buncher's income, we assume none of these parents reduce their income to below £100,000 if the child threshold was in place. We sum up the implied cost to the government of funding hours for children of these parents, assuming their use of free hours would be the same (on average) as use by children of parents just below the threshold.

For those with counterfactual incomes between £100,000 and the marginal buncher's income, some share of these taxpayers we assume will bunch their income below £100,000. Our previous estimation approach allows us to understand the distribution of where this bunching comes from, although we cannot identify which specific individuals would respond. We therefore calculate average cost to government per taxpayer in each income bin and multiply this by the number of taxpayers assumed to remain in this income bin if the expanded offer and income eligibility threshold are in place.

To obtain the final total static cost, we adjust the total cost to account for the share of parents with incomes over £100,000 whose partner also has an income over £100,000, to avoid counting the cost of the same child twice. We then also adjust the cost to assume there is no provision of free childcare hours for the share of parents with incomes over £100,000 whose partner is not working in that tax year, as these children would remain ineligible under this reform.

We also adjust the cost of removing the £100,000 threshold to account for parents with live accounts with ANI of over £100,000. These live accounts are already in receipt of (some) free childcare hours and so would not represent a full additional cost of removing the threshold. However, as shown earlier in this appendix, the average number of quarters for which the live accounts above £100,000 are eligible is significantly lower than the live accounts below £100,000, so if they were to become eligible independent of income then they would still represent some additional cost. To account for this, we assume that post-removal of the £100,000 threshold, they would on average utilise the free childcare hours for the same number of quarters as parents with ANI below £100,000

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Finally, we assume that take-up rates of the benefit for the newly eligible parents would be the same as currently estimated take-up rate. For parents of 3- and 4-year-olds, we use the estimated take-up rate for the year in question from the DfE's Funded early education and childcare annual January statistics.[44] As the expanded childcare offer to under-3s has only been in place since April 2024, there is only one year of take-up rate data for this group. Therefore, for this group we apply this take-up rate in each year.

Behavioural revenue gain

To estimate the amount of additional tax revenue that would be gained from parents who would no longer keep their income below £100,000, we first estimate the number of parents who would no longer be bunching based on who we model as bunchers under the expanded offer and £100,000 threshold policy. As there would still be an incentive to bunch at £100,000 (for example, due to the kink in the tax schedule generated by the tapering of the Personal Allowance), we assume there would be some residual excess mass remaining at £100,000.

To account for this, we use the equivalent population of parents located in Scotland, where free childcare hours are universal, as a control population for the number of parents we estimate would continue to bunch in England if the £100,000 threshold was removed. We implement this by estimating the relative excess mass (that is, total observed excess mass divided by the estimated counterfactual mass in the income bin at £100,000) for the pooled population of Scottish parents of children of eligible age across the tax years 2019 to 2022.

We then divide the relative bunching estimated from our control Scottish population by the relative bunching estimated for our treated English population to estimate the share of taxpayers who would not increase their incomes following the removal of the £100,000 threshold.

For the parents we assume do increase their incomes, we assume that the number that 'debunch' into each income bin between the £100,000 threshold and the marginal bunching income is proportional to the amount of missing mass in that income bin. We then calculate the implied increase in tax liability from incomes increasing from £100,000 to the average income within each income bin above £100,000 and multiply this by the

[44] Up until the latest year (2025). For modelling beyond this year, we assume take up rates remain constant at the last observed year in the data (https://explore-education-statistics.service.gov.uk/find-statistics/funded-early-education-and-childcare/2025)

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number of parents we estimate would 'debunch' into this bin to obtain a total estimate of the behavioural revenue gain.

Extensive margin gain

To estimate the fiscal effect of parents entering the workforce following the removal of the £100,000 threshold, we first use the percentage point difference in the share of parents above and below £100,000 whose partner is not working. We multiply this by the number of parents above £100,000 to estimate the number of partners re-entering the workforce.

To estimate the implied additional tax revenue, we first estimate what the distribution of incomes of these newly working partners would be, using the ventiles of incomes of the lower earning partner's income for couples where both are working and at least one of them is earning over £100,000.[45] We then calculate what the implied Income Tax and National Insurance Contribution revenue would be.

We divide the estimate of the number of newly working partners equally across the ventiles (5% in each) and multiply by the average additional tax revenue in that ventile.

Estimating fiscal effects beyond 2022

In order to estimate the static and behavioural effects of removing the £100,000 threshold beyond 2022, we account for three changes that will affect the income response and costs going forward.

First, as incomes grow and the nominal value of the income threshold remains at £100,000, more parents will be affected by the withdrawal of the benefit and the threshold will move into a 'thicker' part of the income distribution. To account for this, we uprate the incomes in our counterfactual income distribution by the estimated wage and salary growth in the latest OBR Economic and Fiscal Outlook. This will have the effect of increasing both the static cost, as there will be more parents beyond the £100,000 threshold, and the behavioural revenue gain, as the absolute number of parents bunching will increase.

Secondly, as the hourly rates childcare providers charge to parents grow, the total value of the free childcare hours increases, and so the incentive to bunch is greater. This has the effect of increasing the total amount of bunching in the estimation by increasing the income of the marginal

[45] To the extent that the partners who leave the workforce due to childcare responsibilities on average have lower potential incomes were they to remain in the workforce than those that do remain, the estimated additional tax revenue from this effect will be an overestimate.

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bunching individual and the amount of missing mass between the £100,000 threshold and the marginal buncher's income. This decreases the static cost as there will be fewer parents estimated to be beyond the threshold, and increases the behavioural revenue gain as there will be more parents bunching that are then estimated to increase their incomes once the threshold is removed.

Thirdly, as the hourly funding rates government provides to local authorities to fund the free childcare increase, the cost of providing free childcare to children of parents with incomes over £100,000 increases. This increases the static cost.

As the latest years of childcare costs are for 2025, and for funding rates 2027, for years beyond this, we use the average growth rates of these costs to uprate the costs up to 2031.

This process is repeated for the other modelled policy reforms below.

Moving the threshold to a larger income (£125,000 and £150,000)

To estimate the effect of replacing the £100,000 threshold with a different policy, we apply the methodology explained earlier in this appendix in reverse. Starting from the counterfactual distribution where the £100,000 threshold has been removed, we first estimate the static gain of removing eligibility to parents with ANIs over the new threshold. We then estimate the behavioural revenue loss that arises from the incentive parents above threshold would now have to reduce their income to below the new threshold.

Static gain

We calculate the static gain from the estimated counterfactual distribution where the £100,000 threshold has been removed. As in the calculation of the static cost earlier in this appendix, for each income bin above the new threshold we calculate the average cost to the government of providing childcare per taxpayer within each income bin and multiply this by the estimated number of taxpayers in the counterfactual distribution to get the total cost saving from not providing childcare to parents above the new threshold.

As above, we adjust the total cost to account for the share of parents with incomes over the new threshold whose partner also has an income over this threshold and remove the cost of providing childcare to parents whose partner is not working.

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Finally, to handle the issue of live accounts above the threshold, we model the revenue effects under two different designs: one that still operates on an expected income rule where we assume the same share of parents above the threshold in each income bin receive average number of quarters of childcare as observed in the data. We then model a design based on actual income, where we assume no one received the entitlement above the threshold, which increases the static gain estimate as fewer parents are assumed to receive the entitlement.

To the extent that more parents would reduce their actual incomes below the threshold because of the change of the eligibility rule to actual income, our modelling would slightly overestimate the gain of the Actual Income policy alternative.

Behavioural revenue loss

We then estimate the behavioural fiscal effect resulting from the parents deciding to reduce their incomes below the notch at the new threshold. We do this by estimating the income of the marginal buncher, using the same structural elasticity as above, and assuming the same share of parents decide to bunch in from each relative income bin up to the marginal buncher as the share of missing mass observed in the £100,000 threshold case. For example, if the marginal buncher in the £100,000 case had an income of £140,000, and the marginal buncher if the threshold was moved to £150,000 had an income of £200,000, the share of parents who bunch from the £160,000 bin (20% of the distance between £150,000 and £200,000) is assumed to be the same as the share of missing mass estimated in the £108,000 bin in the observed £100,000 distribution.

This has two fiscal effects. First, we add back in the cost of providing childcare to these parents, as they will continue to remain eligible. Secondly, we calculate the (in-year) tax revenue reduction that results from parents reducing their income from what it is in the counterfactual distribution to just below the new threshold.

Extensive margin loss

To estimate the fiscal effect of partners leaving due to childcare responsibilities when a new threshold is introduced, we employ the same methodology as above but in reverse. That is, we use the percentage point difference in the participation rate above and below £100,000 to estimate the number of partners that would stop working and use the distribution of incomes of the lower earning partner in both-working couples as the distribution of this population's incomes to calculate the tax loss.

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Cash benefit for childcare tapered beyond £100,000

We estimate the effects of replacing the complete removal of the free childcare entitlement with a benefit that is gradually reduced as income increases. This creates a kink in the tax schedule in the same way a change in the marginal tax rate does, and so will still induce parents to reduce their incomes, and for some to bunch at the taper threshold. There are three effects that we model in this case.

Static gain

First, there is the static cost reduction to government from reducing the value of the entitlement they fund above the threshold at which the taper kicks in. This is calculated similarly to the notch analysis above, the difference in this case being the value of the saving in each bin the average cost to government within each bin, multiplied by the share of the entitlement that has been removed.

Behavioural loss

Secondly, there is again the behavioural tax revenue loss from parents reducing their incomes due to the introduction of the taper. As above, we first calculate the revenue loss from parents deciding to bunch at the taper threshold, up to the estimated marginal buncher's income. In addition to the bunching from those with incomes less than the marginal buncher's income, the gradual reduction in the entitlement will also incentivise parents with incomes above the marginal buncher's income to reduce their income to a point above the taper threshold. We calculate the estimated 'interior response' using the previously estimated elasticities and the implied percentage change in the taxpayer's marginal tax rate due to the taper. This then provides an estimate of the percentage reduction in income for these taxpayers. We then assume the share of taxpayers that respond by reducing their income in each bin is the same as the share estimated to respond to the £100,000 notch in the dominated region.

Additionally, the reduction in income also means that these parents will also be entitled to a larger childcare benefit than they would be if they kept their income higher, which is an additional cost to be considered.

Extensive margin loss

Finally, there is a revenue effect of some lower earning partners leaving employment as they lose more of the childcare entitlement and take up more childcare responsibilities.

This is again calculated in the same way as above, with the additional consideration that the magnitude of the extensive margin response would

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be expected to be smaller when more of the benefit is kept. We therefore scale the number of extensive margin responders by the share of the full childcare benefit received in each working partner's income bin above the threshold.

Estimating fiscal effects beyond 2022

We make the same adjustments to nominal incomes, the value of childcare hours to parents, and cost of funding free childcare to government as set out earlier in this appendix.

An additional consideration to make in the case of a taper is how to adjust the taper rate into the future, as the cost of childcare increases. For this we model two different policies. First, we assume the same share of the benefit is tapered away for each additional pound that is earned, similar to the High Income Child Benefit Charge (HICBC). This means that the point in the income distribution where the benefit is fully exhausted remains the same into the future, but as the cost of childcare increases, this implies a larger nominal amount is withdrawn for each additional pound earned in this taper region. This in turn implies that the effective marginal tax rate in this region will increase over time.

The second policy design we model is to assume the effective marginal tax rate determining the nominal amount that is withdrawn is fixed at the amount in the first year of analysis (2022). In this case the range over which the full value of the benefit is withdrawn is allowed to extend further up the income distribution over time.

Marginal rate opt-in

This design would be envisioned to operate in the following way. Parents could opt-in to receiving the free childcare hours, and in return their tax code would be adjusted to have a higher marginal rate within an income band over which the average value of the free childcare would be paid in tax. In practice, this design would operate in a similar way to the tapered cash benefit described above, and we use broadly the same approach to estimate the net fiscal effects. The difference in how this policy is modelled is instead of first specifying a percentage rate at which the value of the benefit is removed and then converting this into an effective tax rate, we explicitly specify what the additional marginal tax rate will be, and then proceed as in the tapered cash benefit method above.

Moving from free to a fixed cost beyond £100,000

A final policy reform design is instead of abolishing the notch completely, introducing a fixed cost for childcare to be paid by parents above the

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threshold. One key example of this style of reform would be to extend the universal 15 hours of childcare that is currently available for 3- and 4-year-olds to under-3s. This, in effect, would halve the size of the notch for the affected population.

Modelling this policy reform operates by adjusting the size of the notch and recalculating the income response based on the new notch size in the same way as the notch policy reforms laid out above.

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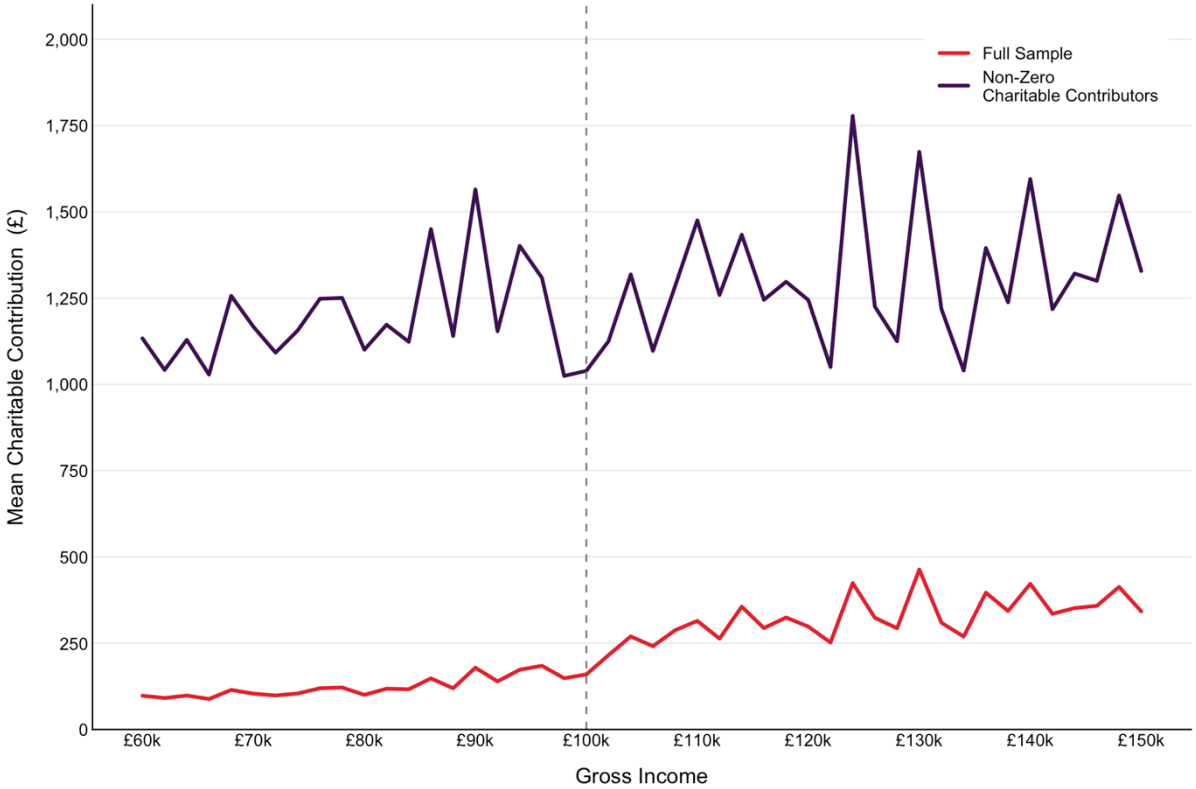
Appendix B: Additional figures

Figure B.1: Average charitable contributions of English parents of 3- and 4-year-olds, 2022



Notes: Mean charitable contributions include contributions made and reported for Gift-Aid tax relief for the 2022 tax year. Non-zero contributors restricts the population the mean is calculated over to parents whose measured charitable contributions are greater than zero in the 2022 tax year.

Source: Authors' calculations based on HMRC administrative datasets.

Table B.1: Detailed fiscal cost estimates of childcare policy reforms, 2028-2031: actual ANI, central scenario

Reform	Tax Year	Number Bunching	Static Cost (£)	Behavioural Gain (£)		Net Fiscal Cost (£)
				Intensive Margin	Extensive Margin	
Abolish the threshold	2028	3,850	-800m	+150m	+120m	-520m
	2029	4,060	-880m	+180m	+120m	-580m
	2030	4,300	-980m	+210m	+130m	-640m
	2031	4,560	-1,080m	+240m	+140m	-710m
	2028	11,930	-300m	+80m	+50m	-170m

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Abolish the threshold for the first 15 Hours to Under-3s	**2029**	13,230	-340m	+100m	+50m	-190m
	2030	14,690	-370m	+110m	+50m	-210m
	2031	16,320	-420m	+130m	+50m	-240m
Raise the threshold to £125,000	**2028**	7,880	-230m	+100m	+50m	-90m
	2029	8,680	-260m	+120m	+50m	-90m
	2030	9,570	-290m	+130m	+50m	-100m
	2031	10,480	-320m	+160m	+60m	-110m
Raise the threshold to £150,000	**2028**	5,060	-400m	+120m	+70m	-210m
	2029	5,700	-450m	+140m	+70m	-230m
	2030	6,360	-490m	+160m	+80m	-250m
	2031	7,050	-550m	+190m	+80m	-280m
Additional 8% Marginal Rate	**2028**	6,390	-440m	+120m	+70m	-250m
	2029	7,360	-500m	+140m	+70m	-280m
	2030	8,460	-570m	+170m	+80m	-320m
	2031	9,680	-650m	+200m	+80m	-370m
Additional 18% Marginal Rate	**2028**	7,300	-220m	+120m	+40m	-60m
	2029	8,310	-260m	+140m	+40m	-70m
	2030	9,450	-300m	+170m	+50m	-80m
	2031	10,720	-350m	+200m	+50m	-100m
Additional 28% Marginal Rate	**2028**	8,060	-120m	+120m	+30m	+30m
	2029	9,100	-140m	+140m	+30m	+30m
	2030	10,230	-180m	+160m	+40m	+20m
	2031	11,580	-210m	+190m	+40m	+20m

Notes: This table presents the results of modelling the fiscal effects of changing the policy on eligibility for free childcare hours. The static cost is the estimated cost of providing the modelled childcare policy, relative to the status quo, before accounting for any behavioural effects. The intensive margin behavioural gain is the estimated fiscal effect of the modelled policy due to taxpayers changing their ANI due to the change in incentive to bunch at the threshold. The extensive margin behavioural gain is the modelled effect of change in the share of partners above the threshold that enter the labour market and begin paying Income Tax and National Insurance Contributions. These results assume that no parents above the reformed income threshold would receive the entitlement. Figures may not sum due to rounding. Figures in £m; negative = cost to the Exchequer

Source: Authors' calculations based on HMRC administrative datasets.

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Table B.2: Detailed fiscal cost estimates of childcare policy reforms, 2028-2031: expected ANI, central scenario

Reform	Tax Year	Number Bunching	Static Cost (£)	Behavioural Gain (£)		Net Fiscal Cost (£)
				Intensive Margin	Extensive Margin	
Abolish the threshold	2028	3,850	-800m	+150m	+120m	-520m
	2029	4,060	-880m	+180m	+120m	-580m
	2030	4,300	-980m	+210m	+130m	-640m
	2031	4,560	-1,080m	+240m	+140m	-710m
Abolish the threshold for the first 15 Hours to Under-3s	2028	11,930	-370m	+80m	+50m	-250m
	2029	13,230	-410m	+90m	+50m	-270m
	2030	14,690	-460m	+100m	+50m	-300m
	2031	16,320	-510m	+120m	+50m	-340m
Raise the threshold to £125,000	2028	7,880	-310m	+100m	+50m	-170m
	2029	8,680	-350m	+110m	+50m	-190m
	2030	9,570	-390m	+130m	+50m	-210m
	2031	10,480	-430m	+150m	+60m	-230m
Raise the threshold to £150,000	2028	5,060	-460m	+120m	+70m	-270m
	2029	5,700	-510m	+140m	+70m	-300m
	2030	6,360	-560m	+160m	+80m	-330m
	2031	7,050	-630m	+180m	+80m	-360m
Additional 8% Marginal Rate	2028	6,390	-460m	+120m	+70m	-270m
	2029	7,360	-520m	+140m	+70m	-310m
	2030	8,460	-600m	+170m	+80m	-350m
	2031	9,680	-680m	+190m	+80m	-410m
Additional 18% Marginal Rate	2028	7,300	-270m	+120m	+40m	-110m
	2029	8,310	-310m	+140m	+40m	-120m
	2030	9,450	-360m	+160m	+50m	-140m
	2031	10,720	-410m	+190m	+50m	-170m
Additional 28% Marginal Rate	2028	8,060	-180m	+110m	+30m	-40m
	2029	9,100	-210m	+130m	+30m	-50m
	2030	10,230	-250m	+160m	+40m	-50m

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	2031	11,580	-290m	+180m	+40m	-60m

Notes: This table presents the results of modelling the fiscal effects of changing the policy on eligibility for free childcare hours. The static cost is the estimated cost of providing the modelled childcare policy, relative to the status quo, before accounting for any behavioural effects. The intensive margin behavioural gain is the estimated fiscal effect of the modelled policy due to taxpayers changing their ANI due to the change in incentive to bunch at the threshold. The extensive margin behavioural gain is the modelled effect of change in the share of partners above the threshold that enter the labour market and begin paying Income Tax and National Insurance Contributions. These results assume that the same share above the threshold continue to have live accounts for the same number of quarters on average as observed in the 2022 tax year. Figures may not sum due to rounding. Figures in £m; negative = cost to the Exchequer

Source: Authors' calculations based on HMRC administrative datasets.

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Appendix C: Robustness and sensitivity checks

Bunching in the counterfactual sample

English non-parents

Table C.1: Relative bunching for different control groups

Group	Scottish Parents	English Non-Parents		
		All Ages	30- to 50-year-olds	35- to 45-year-olds
Employees	1.18	0.88	0.96	1.00
Non-Employees	7.13	7.18	10.45	10.79
Total	1.59	2.34	2.25	2.23

Notes: This table summarises the bunching analysis of parents of 3- and 4-year-olds below £100,000 ANI in the 2022 tax year, for different potential counterfactual groups that face the Personal Allowance withdrawal but not the withdrawal of the childcare entitlement. Relative bunching divides the total bunching number by the estimated counterfactual number of parents that would be observed at £100,000 if the income distributions followed the same shape as above and below the bunching region, to be able to compare responses by different absolute population sizes. The Total row is the sum of the absolute number of parents bunching across employees and non-employees, divided by the estimated counterfactual number of parents at £100,000 across employees and non-employees.

Source: Authors' calculations based on HMRC administrative datasets.

Scottish parents bunching bounds

Table C.2: Fiscal cost estimates of childcare policy reforms using upper and lower bounds of bunching in Scottish control group, expected income definition, assuming no growth in responsiveness

Reform	Tax Year	Net Fiscal Cost (£m)		
		Lower Bound Scottish Bunching	Central Scottish Bunching	Upper Bound Scottish Bunching
Abolish the threshold	**2028**	-570m	-610m	-620m
	2029	-640m	-680m	-700m
	2030	-730m	-770m	-790m
	2031	-820m	-860m	-880m
	2028	-190m	-220m	-240m

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Raise the threshold to £125,000	**2029**	-210m	-240m	-270m
	2030	-240m	-270m	-300m
	2031	-270m	-310m	-340m
Raise the threshold to £150,000	**2028**	-300m	-330m	-350m
	2029	-340m	-370m	-390m
	2030	-380m	-420m	-440m
	2031	-430m	-470m	-490m
Abolish the threshold for the first 15 Hours to Under-3s	**2028**	-260m	-270m	-270m
	2029	-290m	-300m	-310m
	2030	-330m	-340m	-340m
	2031	-370m	-380m	-390m
Additional 8% Marginal Rate	**2028**	-310m	-340m	-360m
	2029	-370m	-400m	-420m
	2030	-430m	-460m	-490m
	2031	-500m	-540m	-560m
Additional 18% Marginal Rate	**2028**	-140m	-170m	-190m
	2029	-170m	-200m	-230m
	2030	-210m	-240m	-270m
	2031	-250m	-290m	-320m
Additional 28% Marginal Rate	**2028**	-70m	-100m	-120m
	2029	-90m	-120m	-140m
	2030	-110m	-150m	-170m
	2031	-140m	-180m	-210m

Notes: This table presents the results of modelling the fiscal effects of changing the policy on eligibility for free childcare hours, assuming that the share of affected parents responding remains at the same level as in 2022. The static cost is the estimated cost of providing the modelled childcare policy, relative to the status quo, before accounting for any behavioural effects. The intensive margin behavioural gain is the estimated fiscal effect of the modelled policy due to taxpayers changing their ANI due to the change in incentive to bunch at the threshold. The extensive margin behavioural gain is the modelled effect of change in the share of partners above the threshold that enter the labour market and begin paying Income Tax and National Insurance Contributions. These results assume that the same share above the threshold continue to have live accounts for the same number of quarters on average as observed in the 2022 tax year. The upper and lower bound columns use the upper and lower bounds of the 95% confidence interval for the relative bunching parameter of Scottish parents. Figures may not sum due to rounding. Figures in £m; negative = cost to the Exchequer

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Source: Authors' calculations based on HMRC administrative datasets.

Table C.3: Fiscal cost estimates of childcare policy reforms using upper and lower bounds of bunching in Scottish control group, actual income definition, assuming no growth in responsiveness

Reform	Tax Year	Net Fiscal Cost (£m)		
		Lower Bound Scottish Bunching	Central Scottish Bunching	Upper Bound Scottish Bunching
Abolish the threshold	2028	-570m	-610m	-620m
	2029	-640m	-680m	-700m
	2030	-730m	-770m	-790m
	2031	-820m	-860m	-880m
Raise the threshold to £125,000	2028	-130m	-130m	-150m
	2029	-150m	-150m	-170m
	2030	-170m	-170m	-190m
	2031	-190m	-190m	-220m
Raise the threshold to £150,000	2028	-260m	-260m	-280m
	2029	-300m	-300m	-320m
	2030	-330m	-330m	-360m
	2031	-380m	-380m	-410m
Abolish the threshold for the first 15 Hours to Under-3s	2028	-200m	-200m	-200m
	2029	-220m	-220m	-220m
	2030	-250m	-250m	-250m
	2031	-280m	-280m	-280m
Additional 8% Marginal Rate	2028	-320m	-320m	-340m
	2029	-370m	-370m	-390m
	2030	-430m	-430m	-460m
	2031	-510m	-510m	-530m
Additional 18% Marginal Rate	2028	-120m	-120m	-140m
	2029	-150m	-150m	-170m
	2030	-180m	-180m	-210m
	2031	-230m	-230m	-260m
Additional 28%	2028	-30m	-30m	-50m
	2029	-50m	-50m	-70m

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Marginal Rate	2030	-70m	-70m	-100m
	2031	-100m	-100m	-120m

Notes: This table presents the results of modelling the fiscal effects of changing the policy on eligibility for free childcare hours. The static cost is the estimated cost of providing the modelled childcare policy, relative to the status quo, before accounting for any behavioural effects. The intensive margin behavioural gain is the estimated fiscal effect of the modelled policy due to taxpayers changing their ANI due to the change in incentive to bunch at the threshold. The extensive margin behavioural gain is the modelled effect of change in the share of partners above the threshold that enter the labour market and begin paying Income Tax and National Insurance Contributions. These results assume that the eligibility rule would also be adjusted to be based on actual ANI at the end of the tax year and so no parents above £100,000 are assumed to reflect any additional static cost to the Exchequer. The upper and lower bound columns use the upper and lower bounds of the 95% confidence interval for the relative bunching parameter of Scottish parents. To the extent that this would induce more parents to reduce their actual ANI below £100,000, this has not been included in the modelling of the behavioural gains, which would be smaller in magnitude were such an effect to occur. Figures may not sum due to rounding.

Source: Authors' calculations based on HMRC administrative datasets.

Friction parameter sensitivity

As explained in the main body, we cannot directly observe how the response of parents has changed since the last year of available data, 2022. Therefore, in additional to the lower, central, and upper scenarios, Tables C.4 and C.5 below present the estimated fiscal cost of removing the £100,000 threshold in 2028 and 2030, respectively, assuming a range of different reductions in the friction parameter. Tables C.6 and C.7 present the estimated costs of the reforms explained in the main body.

As can be seen in the tables below, because the observed levels of frictions are so large (93% for employees and 67% for non-employees) even small reductions in the friction parameter generates a substantial change in the number of parents estimated to be bunching. This is because a very large friction parameter implies a very small amount of 'missing mass'. For example, if 93% of employees with an incentive to bunch are not doing so, this means only 7% are. If frictions are reduced by 10% (so that the share of parents not responding decreases by 10%) that would mean that the share of parents not responding would be 93% x 90% = 84%, therefore the missing mass and share of parents assumed to be responding by bunching would be 16%, over twice the share that are assumed to bunch in the baseline. By the same logic, if the frictions were to halve between 2022 and 2028, that would imply the number of bunchers would be over 6 times greater than if frictions had not changed.

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The changes in the number of bunchers has a corresponding effect on the cost of removing the threshold. First, more parents bunching below £100,000 means that there are fewer parents remaining above the threshold, which reduces the static cost of removing the threshold. On the behavioural response side, more parents bunching means a greater revenue effect from parents increasing their incomes back above £100,000 due to no longer having the incentive to keep their income below the threshold. However, the extensive margin effect of partners re-entering the workforce is smaller, as again there are fewer parents above the threshold for whom this effect applies. The overall effect of a smaller friction parameter is to decrease the net cost of removing the threshold, by roughly £150 million for each additional 10% reduction in frictions.

Table C.4: Fiscal cost estimates of removing the £100,000 threshold, for different reductions in the friction parameter, 2028

Friction Parameter Reduction	% Increase in Number Bunching	Number Bunching Before Removal	Static Cost	Behavioural Gain		Net Fiscal Cost of Removing 100k Threshold
				Intensive Margin	Extensive Margin	
0%	0%	9,710	-820m	+100m	+120m	-610m
1%	10%	10,690	-810m	+110m	+120m	-580m
5%	50%	14,590	-790m	+160m	+120m	-520m
10%	101%	19,470	-770m	+210m	+110m	-440m
20%	201%	29,230	-720m	+320m	+110m	-300m
30%	302%	38,990	-680m	+420m	+100m	-150m
40%	402%	48,750	-630m	+530m	+90m	-10m
50%	503%	58,510	-580m	+630m	+90m	+140m

Notes: This table presents the results of modelling the fiscal effects of removing the £100,000 threshold for eligibility for free childcare hours. The static cost is the estimated cost of providing the modelled childcare policy, relative to the status quo, before accounting for any behavioural effects. The intensive margin behavioural gain is the estimated fiscal effect of the modelled policy due to taxpayers changing their ANI due to the change in incentive to bunch at the threshold. The extensive margin behavioural gain is the modelled effect of change in the share of partners above the threshold that enter the labour market

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and begin paying Income Tax and National Insurance Contributions. These results further assume that the friction parameter, which determines the amount of 'missing mass' above the notch, is reduced by the amount in the first column. Figures may not sum due to rounding. Figures in £m; negative = cost to the Exchequer

Source: Authors' calculations based on HMRC administrative datasets.

Table C.5: Fiscal cost estimates of removing the £100,000 threshold, for different reductions in the friction parameter, 2030

Friction Parameter Reduction	% Increase in Number Bunching	Number Bunching Before Removal	Static Cost	Behavioural Gain		Net Fiscal Cost of Removing 100k Threshold
				Intensive Margin	Extensive Margin	
0%	0%	10,860	-1,010m	+110m	+130m	-770m
1%	10%	11,990	-1,000m	+130m	+130m	-730m
5%	52%	16,530	-980m	+190m	+130m	-660m
10%	105%	22,210	-950m	+250m	+130m	-560m
20%	209%	33,570	-880m	+390m	+120m	-380m
30%	314%	44,930	-820m	+520m	+110m	-200m
40%	418%	56,290	-760m	+640m	+100m	-20m
50%	523%	67,650	-700m	+770m	+90m	+160m

Notes: This table presents the results of modelling the fiscal effects of removing the £100,000 threshold for eligibility for free childcare hours. The static cost is the estimated cost of providing the modelled childcare policy, relative to the status quo, before accounting for any behavioural effects. The intensive margin behavioural gain is the estimated fiscal effect of the modelled policy due to taxpayers changing their ANI due to the change in incentive to bunch at the threshold. The extensive margin behavioural gain is the modelled effect of change in the share of partners above the threshold that enter the labour market and begin paying Income Tax and National Insurance Contributions. These results further assume that the friction parameter, which determines the amount of 'missing mass' above the notch, is reduced by the amount in the first column. Figures may not sum due to rounding. Figures in £m; negative = cost to the Exchequer

Source: Authors' calculations based on HMRC administrative datasets.

Table C.6: Net fiscal cost estimates of childcare policy reforms, for different reductions in the friction parameter, actual ANI, 2028

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Friction Parameter Reduction	Net Fiscal Cost (£)						
	Abolish Threshold	Expand 15hr	£125,000	£150,000	8% MTR Taper	18% MTR Taper	28% MTR Taper
0%	-610m	-190m	-130m	-260m	-320m	-120m	-30m
1%	-580m	-180m	-110m	-250m	-300m	-100m	-20m
5%	-520m	-160m	-80m	-200m	-250m	-60m	+20m
10%	-440m	-130m	-40m	-150m	-200m	-10m	+70m
20%	-300m	-80m	+30m	-50m	-90m	+90m	+160m
30%	-150m	-20m	+100m	+40m	+20m	+180m	+250m
40%	-10m	+30m	+170m	+140m	+130m	+280m	+340m
50%	+140m	+90m	+250m	+240m	+240m	+370m	+430m

Notes: This table presents the results of modelling the fiscal effects of changing the policy on eligibility for free childcare hours. The net fiscal cost is the sum of the static costs and behavioural gains. The static cost is the estimated cost of providing the modelled childcare policy, relative to the status quo, before accounting for any behavioural effects. The intensive margin behavioural gain is the estimated fiscal effect of the modelled policy due to taxpayers changing their ANI due to the change in incentive to bunch at the threshold. The extensive margin behavioural gain is the modelled effect of change in the share of partners above the threshold that enter the labour market and begin paying Income Tax and National Insurance Contributions. These results further assume that the friction parameter, which determines the amount of 'missing mass' above the notch, is reduced by the amount in the first column. Figures may not sum due to rounding. Figures in £m; negative = cost to the Exchequer

Source: Authors' calculations based on HMRC administrative datasets.

Table C.7: Net fiscal cost estimates of childcare policy reforms, for different reductions in the friction parameter, actual ANI, 2030

Friction Parameter Reduction	Net Fiscal Cost (£)						
	Abolish Threshold	Expand 15hr	£125,000	£150,000	8% MTR Taper	18% MTR Taper	28% MTR Taper
0%	-770m	-250m	-170m	-330m	-430m	-180m	-70m

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1%	-730m	-230m	-150m	-310m	-410m	-160m	-50m
5%	-660m	-200m	-110m	-260m	-350m	-110m	+0m
10%	-560m	-170m	-60m	-200m	-280m	-40m	+60m
20%	-380m	-100m	+20m	-80m	-140m	+80m	+180m
30%	-200m	-20m	+110m	+40m	+0m	+210m	+300m
40%	-20m	+50m	+200m	+160m	+140m	+330m	+410m
50%	+160m	+120m	+290m	+280m	+280m	+460m	+530m

Notes: This table presents the results of modelling the fiscal effects of changing the policy on eligibility for free childcare hours. The net fiscal cost is the sum of the static costs and behavioural gains. The static cost is the estimated cost of providing the modelled childcare policy, relative to the status quo, before accounting for any behavioural effects. The intensive margin behavioural gain is the estimated fiscal effect of the modelled policy due to taxpayers changing their ANI due to the change in incentive to bunch at the threshold. The extensive margin behavioural gain is the modelled effect of change in the share of partners above the threshold that enter the labour market and begin paying Income Tax and National Insurance Contributions. These results further assume that the friction parameter, which determines the amount of 'missing mass' above the notch, is reduced by the amount in the first column. Figures may not sum due to rounding. Figures in £m; negative = cost to the Exchequer

Source: Authors' calculations based on HMRC administrative datasets.

Table C.8: Detailed fiscal cost estimates of childcare policy reforms, 2028-2031: actual ANI, low-cost scenario

Reform	Tax Year	Number Bunching	Static Cost (£)	Behavioural Gain (£)		Net Fiscal Cost (£)
				Intensive Margin	Extensive Margin	
Abolish the threshold	**2028**	3,850	-580m	+630m	+90m	+140m
	2029	4,060	-640m	+700m	+90m	+150m
	2030	4,300	-700m	+770m	+90m	+160m
	2031	4,560	-780m	+850m	+100m	+170m
Abolish the	**2028**	48,600	-300m	+350m	+40m	+90m
	2029	52,080	-330m	+390m	+40m	+100m

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threshold for the first 15 Hours to Under-3s	**2030**	55,940	-370m	+440m	+50m	+120m
	2031	60,260	-410m	+480m	+50m	+120m
Raise the threshold to £125,000	**2028**	31,670	-290m	+490m	+50m	+250m
	2029	34,170	-320m	+530m	+50m	+270m
	2030	37,050	-350m	+590m	+50m	+290m
	2031	39,820	-390m	+640m	+50m	+310m
Raise the threshold to £150,000	**2028**	19,310	-380m	+560m	+60m	+240m
	2029	21,180	-420m	+610m	+60m	+250m
	2030	23,010	-460m	+680m	+60m	+280m
	2031	25,080	-510m	+740m	+70m	+300m
Additional 8% Marginal Rate	**2028**	14,160	-320m	+510m	+50m	+240m
	2029	14,920	-360m	+560m	+50m	+250m
	2030	15,770	-410m	+630m	+50m	+280m
	2031	16,680	-470m	+700m	+60m	+290m
Additional 18% Marginal Rate	**2028**	18,900	-160m	+510m	+30m	+370m
	2029	19,900	-190m	+570m	+30m	+410m
	2030	21,030	-220m	+640m	+30m	+460m
	2031	22,230	-250m	+710m	+40m	+500m
Additional 28% Marginal Rate	**2028**	22,640	-90m	+500m	+20m	+430m
	2029	23,820	-110m	+560m	+20m	+470m
	2030	25,150	-130m	+630m	+30m	+530m
	2031	26,570	-150m	+700m	+30m	+580m

Notes: This table presents the results of modelling the fiscal effects of changing the policy on eligibility for free childcare hours. The static cost is the estimated cost of providing the modelled childcare policy, relative to the status quo, before accounting for any behavioural effects. The intensive margin behavioural gain is the estimated fiscal effect of the modelled policy due to taxpayers changing their ANI due to the change in incentive to bunch at the threshold. The extensive margin behavioural gain is the modelled effect of change in the share of partners above the threshold that enter the labour market and begin paying Income Tax and National Insurance Contributions. These results assume that no parents above the reformed income threshold would receive the entitlement. Figures may not sum due to rounding. Figures in £m; negative = cost to the Exchequer

Source: Authors' calculations based on HMRC administrative datasets.

Table C.9: Detailed fiscal cost estimates of childcare policy reforms, 2028-2031: actual ANI, high-cost scenario

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Reform	Tax Year	Number Bunching	Static Cost (£)	Behavioural Gain (£)		Net Fiscal Cost (£)
				Intensive Margin	Extensive Margin	
Abolish the threshold	**2028**	3,850	-820m	+100m	+120m	-610m
	2029	4,060	-900m	+110m	+120m	-680m
	2030	4,300	-1,010m	+120m	+120m	-770m
	2031	4,560	-1,120m	+120m	+120m	-860m
Abolish the threshold for the first 15 Hours to Under-3s	**2028**	8,280	-300m	+60m	+40m	-190m
	2029	8,740	-330m	+70m	+40m	-220m
	2030	9,270	-370m	+80m	+50m	-250m
	2031	9,850	-410m	+90m	+50m	-280m
Raise the threshold to £125,000	**2028**	5,750	-230m	+60m	+40m	-130m
	2029	6,130	-250m	+60m	+50m	-150m
	2030	6,550	-280m	+70m	+50m	-170m
	2031	6,970	-310m	+70m	+50m	-190m
Raise the threshold to £150,000	**2028**	3,610	-400m	+80m	+60m	-260m
	2029	3,950	-450m	+80m	+70m	-300m
	2030	4,290	-490m	+90m	+70m	-330m
	2031	4,650	-550m	+100m	+70m	-380m
Additional 8% Marginal Rate	**2028**	2,740	-440m	+70m	+60m	-320m
	2029	2,880	-510m	+70m	+70m	-370m
	2030	3,030	-590m	+80m	+70m	-430m
	2031	3,210	-680m	+90m	+80m	-510m
Additional 18% Marginal Rate	**2028**	3,650	-220m	+70m	+40m	-120m
	2029	3,820	-260m	+70m	+40m	-150m
	2030	4,020	-310m	+80m	+50m	-180m
	2031	4,250	-370m	+90m	+50m	-230m
Additional 28% Marginal Rate	**2028**	4,410	-120m	+70m	+30m	-30m
	2029	4,620	-150m	+70m	+30m	-50m
	2030	4,850	-180m	+80m	+30m	-70m
	2031	5,110	-220m	+90m	+40m	-100m

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Notes: This table presents the results of modelling the fiscal effects of changing the policy on eligibility for free childcare hours. The static cost is the estimated cost of providing the modelled childcare policy, relative to the status quo, before accounting for any behavioural effects. The intensive margin behavioural gain is the estimated fiscal effect of the modelled policy due to taxpayers changing their ANI due to the change in incentive to bunch at the threshold. The extensive margin behavioural gain is the modelled effect of change in the share of partners above the threshold that enter the labour market and begin paying Income Tax and National Insurance Contributions. These results assume that no parents above the reformed income threshold would receive the entitlement. Figures may not sum due to rounding. Figures in £m; negative = cost to the Exchequer

Source: Authors' calculations based on HMRC administrative datasets.

Table C.10: Detailed fiscal cost estimates of childcare policy reforms, 2028-2031: expected ANI, low-cost scenario

Reform	Tax Year	Number Bunching	Static Cost (£)	Behavioural Gain (£)		Net Fiscal Cost (£)
				Intensive Margin	Extensive Margin	
Abolish the threshold	2028	3,850	-580m	+630m	+90m	+140m
	2029	4,060	-640m	+700m	+90m	+150m
	2030	4,300	-700m	+770m	+90m	+160m
	2031	4,560	-780m	+850m	+100m	+170m
Abolish the threshold for the first 15 Hours to Under-3s	2028	48,600	-330m	+330m	+40m	+40m
	2029	52,080	-370m	+370m	+40m	+50m
	2030	55,940	-410m	+420m	+50m	+60m
	2031	60,260	-450m	+460m	+50m	+60m
Raise the threshold to £125,000	2028	31,670	-320m	+470m	+50m	+200m
	2029	34,170	-350m	+520m	+50m	+210m
	2030	37,050	-390m	+570m	+50m	+230m
	2031	39,820	-440m	+620m	+50m	+240m
Raise the threshold to £150,000	2028	19,310	-400m	+550m	+60m	+200m
	2029	21,180	-440m	+600m	+60m	+210m
	2030	23,010	-490m	+660m	+60m	+240m
	2031	25,080	-540m	+720m	+70m	+250m
Additional 8%	2028	14,160	-340m	+500m	+50m	+210m
	2029	14,920	-380m	+560m	+50m	+230m

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Marginal Rate	**2030**	15,770	-430m	+630m	+50m	+250m
	2031	16,680	-490m	+690m	+60m	+260m
Additional 18% Marginal Rate	**2028**	18,900	-200m	+490m	+30m	+320m
	2029	19,900	-220m	+550m	+30m	+360m
	2030	21,030	-260m	+620m	+30m	+400m
	2031	22,230	-300m	+690m	+40m	+430m
Additional 28% Marginal Rate	**2028**	22,640	-140m	+470m	+20m	+360m
	2029	23,820	-160m	+530m	+20m	+400m
	2030	25,150	-180m	+610m	+30m	+450m
	2031	26,570	-210m	+680m	+30m	+500m

Notes: This table presents the results of modelling the fiscal effects of changing the policy on eligibility for free childcare hours. The static cost is the estimated cost of providing the modelled childcare policy, relative to the status quo, before accounting for any behavioural effects. The intensive margin behavioural gain is the estimated fiscal effect of the modelled policy due to taxpayers changing their ANI due to the change in incentive to bunch at the threshold. The extensive margin behavioural gain is the modelled effect of change in the share of partners above the threshold that enter the labour market and begin paying Income Tax and National Insurance Contributions. These results assume that the same share above the threshold continue to have live accounts for the same number of quarters on average as observed in the 2022 tax year. Figures may not sum due to rounding. Figures in £m; negative = cost to the Exchequer

Source: Authors' calculations based on HMRC administrative datasets.

Table C.11: Detailed fiscal cost estimates of childcare policy reforms, 2028-2031: expected ANI, high-cost scenario

Reform	Tax Year	Number Bunching	Static Cost (£)	Behavioural Gain (£)		Net Fiscal Cost (£)
				Intensive Margin	Extensive Margin	
Abolish the threshold	**2028**	3,850	-820m	+100m	+120m	-610m
	2029	4,060	-900m	+110m	+120m	-680m
	2030	4,300	-1,010m	+120m	+120m	-770m
	2031	4,560	-1,120m	+120m	+120m	-860m
Abolish the threshold for the first 15 Hours to Under-3s	**2028**	8,280	-370m	+60m	+40m	-270m
	2029	8,740	-420m	+70m	+40m	-300m
	2030	9,270	-460m	+80m	+50m	-340m
	2031	9,850	-510m	+80m	+50m	-380m

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Raise the threshold to £125,000	**2028**	5,750	-310m	+50m	+40m	-220m
	2029	6,130	-350m	+60m	+50m	-240m
	2030	6,550	-380m	+60m	+50m	-270m
	2031	6,970	-430m	+70m	+50m	-310m
Raise the threshold to £150,000	**2028**	3,610	-470m	+70m	+60m	-330m
	2029	3,950	-510m	+80m	+70m	-370m
	2030	4,290	-570m	+80m	+70m	-420m
	2031	4,650	-630m	+90m	+70m	-470m
Additional 8% Marginal Rate	**2028**	2,740	-470m	+70m	+60m	-340m
	2029	2,880	-540m	+70m	+70m	-400m
	2030	3,030	-620m	+80m	+70m	-460m
	2031	3,210	-710m	+90m	+80m	-540m
Additional 18% Marginal Rate	**2028**	3,650	-270m	+60m	+40m	-170m
	2029	3,820	-310m	+70m	+40m	-200m
	2030	4,020	-370m	+80m	+50m	-240m
	2031	4,250	-430m	+90m	+50m	-290m
Additional 28% Marginal Rate	**2028**	4,410	-190m	+60m	+30m	-100m
	2029	4,620	-220m	+70m	+30m	-120m
	2030	4,850	-250m	+80m	+30m	-140m
	2031	5,110	-300m	+80m	+40m	-180m

Notes: This table presents the results of modelling the fiscal effects of changing the policy on eligibility for free childcare hours. The static cost is the estimated cost of providing the modelled childcare policy, relative to the status quo, before accounting for any behavioural effects. The intensive margin behavioural gain is the estimated fiscal effect of the modelled policy due to taxpayers changing their ANI due to the change in incentive to bunch at the threshold. The extensive margin behavioural gain is the modelled effect of change in the share of partners above the threshold that enter the labour market and begin paying Income Tax and National Insurance Contributions. These results assume that the same share above the threshold continue to have live accounts for the same number of quarters on average as observed in the 2022 tax year. Figures may not sum due to rounding. Figures in £m; negative = cost to the Exchequer

Source: Authors' calculations based on HMRC administrative datasets.

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Appendix D: Comparison to previous work

The Centre for British Progress (CBP) has published the only other quantitative estimate of the fiscal effect of reforming the £100,000 childcare threshold.[46] Their report covers four cliff-edges and tapers in the tax and benefit system; we comment here only on the childcare component. CBP estimate that abolishing the threshold would raise between £130 million and £425 million in 2030, and that replacing it with a 3% per-child surtax on income above £100,000 would raise between £330 million and £700 million.[47]

Their approach is a synthetic microsimulation. Children are generated from Office for National Statistics (ONS) birth numbers and assigned a date of birth reflecting seasonal variation in births, which determines their entitlement. Each child is assigned two parents whose incomes are drawn from the 2023 Survey of Personal Incomes (SPI), restricted to those aged 25 to 44 and of opposite sex, with an imposed correlation of 0.5 between partners' incomes. The value of the entitlement is calculated from national average hourly funding rates, with £500 added for Tax-Free Childcare. Two behavioural models are then run separately, each allowing only one margin of response. In the first, labour income is fixed and individuals choose how much of their income above £100,000 to divert into a salary sacrifice pension. In the second, pension saving is set aside and individuals choose labour supply. In both, an individual bunches their income at the threshold if doing so leaves them at least £1,000 better off.

The synthetic approach was necessary because the data needed to answer this question directly were not in the public domain. Estimating the cost of reform requires identifying which taxpayers around £100,000 have a child of qualifying age, measuring their income on the ANI basis that determines eligibility rather than on a gross basis, observing whether they actually claim the entitlement, and observing their partner's income and work status. None of this is available in published statistics. HM Treasury confirmed in response to a Freedom of Information request in November 2025 that it holds no estimate of the number of parents affected by the threshold measured on gross income.[48] The SPI data that CBP use measure neither ANI nor gross income, so it captures some, but not all, of the bunching. CBP are explicit in their report that their analysis was subject to these constraints. Our estimates differ from theirs principally because we can directly observe

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[46] Cohen, E. and Stubbs, M., *Rates and wrongs: fixing UK tax cliff edges and tapers*, Centre for British Progress, 25 March 2026, https://britishprogress.org/reports/rates-and-wrongs-fixing-uk-tax-cliff-edges-and-tap

[47] Figures are drawn from their accompanying technical appendix, https://britishprogress.org/api/media/file/rates_and_wrongs_technical_appendix.pdf

[48] Freedom of Information response, HM Treasury, November 2025, https://www.whatdotheyknow.com/request/impact_of_ps100000_threshold_on_2

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these quantities in administrative data, and the assumptions the synthetic model made in place of data turn out to be highly consequential.

The most important of these is the treatment of frictions. CBP assume that an individual reduces their income to the threshold whenever doing so leaves them at least £1,000 better off. Set against entitlements which their model values at between roughly £3,500 and £18,000 a year, this is a low barrier, and the model consequently predicts that almost everyone with a financial incentive to hold their income down will do so. That prediction implies that the 'dominated region' above £100,000 should be nearly empty for parents of eligible-age children. As set out in Section 4.1, we estimate that 93% of employees and 67% of non-employees whose incomes placed them in their own dominated region in 2022 remained there. Prior work on bunching in UK incomes by Adam et al. (2021) provided previously available evidence of the importance of such frictions, outside the childcare context, finding substantial non-response to tax incentives.

A related assumption is that all eligible parents take up the full entitlement. We observe that around 60% of parents with incomes below £100,000 held a live childcare account in 2022 (Figure 2.1). Parents who do not want the free hours have nothing to gain by reducing their income, so the population who would bunch even with no frictions is substantially smaller than the overall parent population at these incomes. Unlike the previous point, this was not evident from previously published data. The incomplete take-up by parents means both that the behavioural effect CBP estimate is too large, but also that their static cost is too large, so the impact on the post-behavioural costing is smaller.

The labour supply model raises two further issues. The first concerns the elasticity. CBP use a Frisch elasticity of 0.3, which is a reasonable central value in the labour supply literature. However, their utility function is quasi-linear and isoelastic in hours, which removes income effects and so makes the Frisch, compensated and uncompensated elasticities coincide. Since the model contains no margin beyond labour supply, this single parameter determines the whole response of ANI, so it is in practice functioning as an Elasticity of Taxable Income while being interpreted entirely as a labour supply response. The relevant comparison is therefore with our structural estimates of 0.13 for employees and 0.19 for non-employees, rather than our reduced-form figures of 0.31 and 0.45. On that basis their elasticity is 1.5-2.3 times too large for the total response. As we show, 'paper' responses (pension contributions, rather than labour supply) account for around half of the employee response (Section 3.3), so the pure labour supply parameter we estimate is lower still. Because the income response to a notch scales approximately with the square root of the elasticity, this difference alone raises the predicted response by between a quarter and a half.

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Second, the model does not estimate a counterfactual income distribution. The disutility of labour is calibrated for each individual so that their observed income is optimal under a smooth tax schedule, which amounts to treating every income in the SPI as the income that would have been chosen in the absence of the notch. As above, that distribution already contains responses to the notch. Bunching is then simulated into this data using the model. At the individual level this is clearly incorrect: individuals who are already just below £100,000 because they have access to salary sacrifice and have chosen to bunch are treated as though this is their unconstrained optimum, so removing the threshold generates no response from them. Conversely, parents that have chosen (on the SPI observed income) to not apparently respond are simulated to potentially respond. At an aggregate level, which is what matters for the revenue numbers, it is not clear which direction this would drive the numbers.

A further modelling assumption that affects the CBP results is the imposed correlation of 0.5 between partners' incomes. This is well above the observed correlation in the data, which is below 0.1, partly because the lower-earning partners of high earners (even away from the threshold) are more likely not to be in work at all. Overstating the correlation places more couples in the group where both parents are above the threshold, which reduces the number of distinct children whose childcare would be newly funded and so understates the static cost of universalisation.

Working in the other direction, the assumption that every child has two working parents excludes the positive behavioural response from partners that we document in Section 3.3. Beyond the direct effect on high earners, there is a positive revenue impact from bringing lower earning partners back into work. We see that under the current policy design the share of parents whose partner is not in work rises from around 6% below the threshold to around 9% above it. Depending on the precise reform choice, our central scenario mostly finds that this extensive margin effect is 50-100% the size of the effect on the high earner.

The net effect of these differences is that CBP estimates for the effects of reform suggest that abolition of the cliff-edge would, on its own, be revenue raising in 2030 (£130-425 million), while our central estimate for the same year is that it would cost £640 million. Under our low-cost scenario (Table C.8), where we assume that 60% of parents take up childcare – in line with the share below £100,000 – and all parents who are in their dominated region choose to bunch, our estimates for 2030 are of a £160 million revenue gain from abolition. This is close to CBP's lower exogenous labour finding,

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indicating the sensitivity of the findings to the estimated frictions and elasticity parameter, and in particular to how the friction parameters have evolved in recent years (which we cannot observe). We are unable to reconcile their endogenous labour model findings with any parameter values from our work, for the reasons set out above.

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Appendix E: Policy implementation

Below we consider various policy design choices required in the implementation of the reforms we have modelled in this report. These are not exhaustive, but seek to give an indication of the trade-offs involved in taking any of them forward. Our aim here is not to provide strong conclusions where we think there are multiple reasonable options, but instead to set out the key administrative considerations as an indication of the complexity involved in the various reform options.

Income definition

An important policy decision is what income measure should be used to determine eligibility for the entitlement, were the definition to be changed from expected ANI. There are two particular questions for administering the entitlement – whether to use adjusted net income or gross income, and whether to use expected or actual income.

While there may be good reason to move away from an expected measure for the upper income threshold, there is still a justification for it in the context of the minimum income threshold. In this case, using forward-looking expectations of income avoids a circularity issue in which a parent cannot obtain work (and hence meet the minimum income requirement) because they cannot afford childcare but cannot receive free childcare hours until they are in work. An expectation measure avoids this by allowing a parent to have the genuine expectation they will meet the minimum income threshold in the 3-month period following their application for the childcare entitlement, on the condition they will be receiving the free hours.

However, when considering the upper income threshold there are various definitions of income that could be used as a basis for the eligibility threshold. Some potential income definitions and their relative merits are discussed below.

Expected Gross Income

This is the income measure used for childcare eligibility in Wales. It has the merit, relative to the current system of expected ANI, of being a genuine forecast and cannot be re-optimised after the fact at the end of the year. However, it is still open to gaming, given the taxpayer has more private knowledge of their expected income for the year (for example, how likely they are to receive a large bonus or overtime pay) than HMRC. As highlighted in the main body of this report, this is potentially unfair and open to abuse.

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In addition, the same threshold based on gross income instead of ANI would be less generous (since ANI is lower than gross income due to the various deductions we have described) and so a higher threshold would need to be set to maintain current eligibility levels.

Finally, to the extent that parents do respond through reducing their income, if parents are forced to do this though making changes to their gross income, this could be more economically and fiscally costly. With an ANI threshold, being able to respond through deductions such as pension contributions or charitable gifts means that parents do not necessarily have to reduce the amount of work they are doing to remain eligible. A gross income threshold therefore would likely have a greater cost to GDP. Furthermore, since contributions made to a pension, for example, would eventually be subject to taxation when withdrawn, the loss in tax revenue is more severe in a world where parents are reducing their actual work rather than making pension contributions.

Actual Gross Income

Eligibility could be based on a parent's actual income for the year, instead of relying on an expectation of income which is subject to uncertainty and open to abuse. Any measure based on actual (rather than expected) income has the added administrative complication in that it would require some sort of clawback mechanism if the entitlement has been provided to someone whose income exceeds the threshold at the end of the year.

Using actual gross income would also mean that unexpected fluctuations in income that result in someone exceeding the threshold by surprise would end up facing a clawback at the end of the year with no mechanism they could use to adjust this. If parents were worried about this happening to them, it could lead parents to deliberately undershoot the threshold by some margin, to give some scope for later surprise positive income changes. The extent of this behaviour would depend on whether the threshold remained a notch or were reformed to more smoothly taper away the benefit.

Actual ANI

Finally, ANI could be kept as the income measure used to determine eligibility, but using actual ANI instead of expected ANI. This would deal with the issue of gaming and unfairness of using an expected measure explained in the main body of the report, but would also allow more control and certainty regarding potential clawbacks. For instance, if a parent ends up with an ANI of £110,000 at the end of the year, they can contribute an extra

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£10,000 to their pension, or make a charitable contribution, to reduce their ANI to £100,000 again if they wish to avoid the clawback.

Clawback mechanisms

Any withdrawal of the entitlement that is based on a parent's actual income at the end of the tax year would require some mechanism for clawing back (some of) the value of the entitlement. The value of this clawback would then need to be deducted from the higher earning parent's income in the following tax year.

Valuing the benefit

Since the entitlement is provided in-kind, a clawback requires monetary values both of the childcare the parent received and of the childcare the parent was entitled to given their income.

This is challenging to do with a high degree of specificity given the significant variation in childcare costs, by provider, the age of children and, most significantly, by region. It would be infeasible to account for all variables individually for each family claiming the entitlement in calculating the cash value of the benefit received.[49] Reflecting that they have the greatest impact on the variation in cost, we suggest a valuation based on region and age. This would require HMRC to only know the following in order to administer some form of clawback mechanism: (1) the parents' incomes; (2) the number of hours claimed; (3) the child's age(s); and (4) the area of England where they live.

Administering a tapered design

Method of withdrawal

One option would be that instead of losing all hours at £100,000, the number of hours lost is done on a sliding scale. That is, a constant percentage of the full 30 hours is removed for each £1 earned above the threshold until all 30 hours are removed. This would mean that the point in the income distribution at which the entitlement is fully removed would be the same for all children. It also implies that for parents with higher childcare costs, the equivalent monetary value being deducted for the same increase in income over £100,000 is greater, imposing a higher effective marginal tax rate on these parents.

Alternatively, a constant monetary amount could be deducted from each £1 earned above the threshold until the equivalent monetary value of the

[49] Campbell, Dodwell and Mock, 2024.

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entitlement is fully removed. This would mean that the deduction imposes the same marginal rate on all parents, but for parents for which the cost of childcare is greater, the income range over which the entitlement is withdrawn would be larger. A variation of this would be to have a constant marginal rate, and fix an upper bound threshold, which would cap the amount of childcare cost withdrawn, and limit the region over which the higher marginal rate applied.

Under either design, the tapered design could be practically administered as follows. For each child registered for a childcare account, at the start of each year (or term), parents enter the number of hours of childcare they would like to claim for, accounting for their expectation of their income.[50] This is then converted into a monetary equivalent value. At the end of the year, the number of hours they were entitled based on their actual income is calculated and converted into a monetary value. If the number of hours claimed exceeds the number of entitled hours, the difference in the monetary value between the two would be the amount clawed back.

For most parents who claimed the full entitlement, no reconciliation would be needed as their income would be below £100,000. For those who earned more, if their expectation of their income was accurate and they claimed no more than their entitlement at that number of hours, there would also be no need to claw anything back.

This would leave a small sub-set whose income was more than they expected (for example they received an unexpected bonus or promotion) where the cost of the additional hours would then be calculated through the method described above and clawed back by HMRC. For administrative ease, this should be a 'one-way-street' (i.e. parents cannot claim the cash value of hours they did not receive if their income was lower than expected at the end of the year) but in turn there should not be any additional penalty (e.g. interest on amounts clawed back) where the taxpayer could reasonably have assumed to have been entitled to the hours claimed at the start of the year.

An alternative option would be to withdraw the benefit through a higher marginal rate above £100,000. This could be made opt-in, with parents

[50] By allowing parents to claim less than the full amount of hours, parents that expect to earn more than £100,000 can claim for fewer hours and therefore not face a large clawback charge at the end of the year. An online calculator could allow them to provide their expected income and be told the number of hours they would be eligible for if their actual income aligned with their stated expectation. If the parent selected the indicated number of hours, and their outturn income were indeed in line with their expectation, there would be nothing to clawback.

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accepting the higher rate only if they plan to take the free hours, a design proposed by the Centre for British Progress.[51] This option has the benefit of avoiding the need for a clawback mechanism. Instead parents calculate for themselves whether opting to receive the entitlement is worthwhile, meaning HMRC only have to deal with a subset of the population that have self-selected in. It also operates as a rate of tax, so could be administered through the tax system as it stands.

However, as with the hours withdrawal above it adds further complexity at this point in the distribution. And more fundamentally, it places the burden of choice on parents to decide in advance whether this will be worthwhile. Under this opt-in design if a parent's income ends up far greater than the points at which they are still financially better off opting-in, they would actually be worse off than if they had not opted-in at all. Under the more standard benefit tapers described above, there would not be a situation in which the monetary value clawed back was of greater value than the entitlement claimed (at most, 100% of the value would be clawed back).

Multiple children

If a family is claiming the entitlement for more than one child at the same time, there are two ways this could be dealt with under a taper design. First, the entitlements could be tapered away separately and concurrently. This would mean that the more children being claimed for, the higher the effective marginal tax rate of the taper, analogous to the way the High-Income Child Benefit Charge operates. For example, if a family had 2-year-old twins, the taper could deducted 1 hour of the entitlement for each twin for each £1,000 of income.

Alternatively, the entitlements could be tapered sequentially. Essentially, this would operate by deducting the same number of hours per £1,000 increment as described above. In practice this would mean the taper region extending further for families claiming for multiple children.

[51] https://britishprogress.org/reports/rates-and-wrongs-fixing-uk-tax-cliff-edges-and-tap

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