Appendix A: Data and methods

To model the revenue that could be raised by alternative reforms to NICs, we use administrative microdata from the Survey of Personal Incomes (SPI) Public Use Tapes, which consists of a sample of income tax records covering all UK income taxpayers.[1] We use data from 2016-17 – the most recent year that is publicly available – as well as the earnings thresholds and other relevant parameters of the NICs schedule that applied in that tax year. The data include information on all sources of income assessable for income tax.

The reforms are modelled cumulatively:

- First, we estimate the revenue that would be raised by charging NICs on the investment income of individuals below the State Pension Age, who currently pay NICs on their employment and self-employment income only.

- Second, we model the revenue that would be raised by removing the exemption for pension-age individuals, assuming that investment income has already been added to the tax base. That is, our revenue estimate for the second reform includes the NICs charged on the investment income of pension-age individuals as well as on their income from employment and self-employment. In Appendix B we show how this revenue estimate can be broken down by income source.

- Third, we model the effect of removing the UEL on the new tax base, i.e. assuming that investment income has already been included, and the exemption on pension-age individuals removed. In Appendix B we show the breakdown of this revenue estimate by who pays it (pension-age individuals or those of working age) and what income it is paid on (investment income, or earnings).

All revenue estimates are static, meaning that behavioural responses are not taken into account. In practice, we would expect the revenue raised by any of these reforms to be slightly lower than our estimates suggest, as raising NICs – either by a 1.25p addition to existing rates, or by a more comprehensive reform – affects individuals' incentive to work (or invest). These effects also highlight another reason for NICs reform to focus on a wider range of income sources: just taxing employment and self-employment more heavily increases the 'wedge' between earned income and income from other sources, which tends to increase distortionary behaviours.

Investment income can be broken down into rent from property, interest, and dividends. None are subject to NICs charges under the current system. Property income and interest are subject to the same rates of income tax as income from employment and self-employment. To equalise the rates paid on income from these sources with the rates paid on earned income, we apply the same rate of NICs as is charged on employment income.

In our main estimates in Table 2, we assume full incidence of Employer NICs on employees, and charge NICs on investment income at the combined effective tax rate. The calculation for this is as

[1] The SPI also includes some individuals who are not liable for Income Tax. As the Primary Threshold for NICs is below the personal allowance for income tax, there will be some individuals who are liable to NICs but not to income tax, and these individuals should be captured in the data. We include both taxpayers and non-taxpayers in our revenue calculations, and so our revenue calculations include all individuals with sufficient income to be liable to NICs.

follows. Currently, employees pay NICs at a rate of 12% of their gross salary between the Primary Threshold (PT) and Upper Earnings Limit (UEL), and 2% above. In addition, employers contribute 13.8% of the employee's salary. The total cost to the employer for each £100 in salary paid is therefore £113.8. The effective combined rate of NICs paid on this total cost – assuming full incidence on the employee – is therefore (12 + 13.8)/113.8 = 22.67% between the PT and UEL, and (2 + 13.8)/13.8 = 13.88% above. We apply these rates to the investment income received by individuals, treating this investment income as the top slice.[2]

By contrast, dividend income is subject to a different rate of income tax. To equalise the income tax and NICs charged across different sources of income, we must therefore apply different 'equalising' NICs charges on dividends relative to other sources. While employment income is subject to income tax, Employee NICs, and Employer NICs, we can think of dividends as being subject to the dividend rate of income tax at the point at which the income is received by the individual. Dividends are also subject to Corporation Tax before being paid out by companies to individual shareholders. As with Employer NICs, we must make an assumption on the incidence of this Corporation Tax. In this appendix, we assume full incidence on the shareholder, i.e. that the Corporation Tax is paid out of dividends that the individual would have otherwise received. In Appendix D, we show how our revenue estimates are affected by making alternative assumptions on the incidence of Corporation Tax.

To equalise the rates paid on dividends with rates paid on other sources of income, we charge NICs on dividends at a rate that equalises income tax + Employee NICs + Employer NICs (assuming full incidence), with the dividend rate + Corporation Tax (assuming full incidence). To achieve this, the NICs rate must be different for each tax band. For example, or those in the basic rate band (starting roughly at the PT and ending at the UEL), dividends are subject to a 19% corporation tax and 7.5% income tax charge, which sums to 26.5%. Earned income in the same band is subject to a 20% income tax charge, and 22.67% in combined Employee/Employer NICs, which sums to 42.67%. We must therefore charge NICs on dividend income at 42.67 – 26.5 = 16.17%. For those in the higher rate band (starting at the UEL and ending at £150,000),[3] the combined CT + dividend rate is 19 + 32.5 = 51.5%, while the tax rate on earned income is 40 + 13.88= 53.88%. To equalise these, the NICs charge on dividends must be 2.38%.

Though our approach to modelling an equalising NICs charge on dividends provides a close approximation, the thresholds used for calculating income tax bands are applied to a different base than the threshold of the NICs schedule. Income tax bands are based on the total income of the individual, which includes sources that are not in the NICs base (e.g. pension income). In our modelling, we apply the income tax bands to the NICs base under the reform, which may slightly overestimate revenue from individuals who receive income from multiple sources.

Throughout our modelling, we maintain a separate NICs schedule for self-employment income, as is currently the case. When modelling the effect of removing the UEL on employment income, we also remove the Upper Profits Limit (UPL) on self-employment income, equalising the rate paid on higher

[2] The total revenue gain from the reform would be the same regardless of how income is sliced. Taxing investment income *before* employment income would result in a higher NICs liability on employment income, as some of this would be pushed above the NICs threshold. Slicing therefore affects the NICs paid on particular sources of income, but not the total NICs paid by the individual.

[3] As there is no 'additional rate' threshold in the current NICs schedule, we introduce an additional threshold for the sole purpose of applying a different NICs charge on dividends above and below the cut-off.

levels of self-employment income with that paid lower down. However, we do not attempt to model the effect of equalising rates on self-employment income with rates paid on income from employment.

Appendix B: Breakdown of revenue estimates

Table B1 shows how the revenue obtained from each of our three main reforms can be broken down by source. In Table 2, we modelled the effect of removing the exemption for pension-age individuals *after* including investment income in the tax base. Of the £3.2 billion raised from this reform, £1.8 billion comes from charging the investment income of those above State Pension Age (SPA). In other words, were we to remove the exemption for pension-age individuals while maintaining the current NICs base (only charging pension-age individuals on their employment and self-employment income), this would raise £1.4 billion.

Our third reform removes the UEL from the new tax base, i.e. after including investment income and removing the exemption for pension-age individuals. The majority of revenue raised by this reform (83%) comes from removing the UEL on the current NICs base. That is, £16.4bil could be raised by charging the employment and self-employment income above the upper threshold at the same rate as income below, for those below pension age only. Combining this with a reform that included investment income (but again only for those below pension age), would raise a further £2.4bil. If we were to remove the exemption for pension-age individuals, but continue to exclude investment income from the tax base, then removing the UEL would generate a further £0.4bil in revenue from those above pension age. The same amount again would be raised from pension-age individuals by removing the UEL if their investment income was also chargeable.

TABLE B1. BREAKDOWN OF REVENUE ESTIMATES BY SOURCE

Our reform	**Revenue (£b)**
(i) Remove exemption for investment income	8.6
(ii) Remove exemption for pension-age individuals	3.2
of which investment income of pension-age individuals	*1.8*
(iii) Equalise rate on high earnings	19.7
of which from current NICs base	*16.4*
of which investment income of those below pension age	*2.4*
of which employment/self-employment income of pension-age individuals	*0.4*
of which investment income of pension-age individuals	*0.4*

Notes: Each reform assumes that the previous reform has been carried out (e.g. investment income included in all). Investment income is charged at the combined effective rate of Employee and Employer NICs (22.67% between Primary Threshold and Upper Earnings Limit (UEL); 13.88% above UEL).
Source: Authors' calculations based on the SPI 2016-17.

Appendix C: Alternative assumptions on incidence of Employer NICs

In our main estimates (Table 2), we assume full incidence of Employer NICs on the employee. When modelling the inclusion of investment income, we therefore charge NICs at the combined effective rate of 22.67% between the PT and UEL, and 13.88% above the UEL (see Appendix A for full derivation).

In this appendix, we model the effects of two alternative assumptions on incidence. First, we assume 0% incidence of Employer NICs on the employee, i.e. that the employer bears the full cost of their contributions in addition to the salary paid to the employee. Under this assumption, to equalise the total income tax and NICs charge on investment income with income from employment, we would charge NICs on investment income at the Employee NICs rate of 12% between the PT and UEL, and 2% above. This would reduce the total revenue raised from our combined reforms from £31.4 billion to £22.9 billion (Table C1).

Second, we assume 50% incidence of Employer NICs on the employee. The effective combined tax rate under this assumption is (12 + 0.5*13.8)/113.8 = 16.61% between the PT and UEL, and (2 + 0.5*13.8)/113.8 = 7.82% above the UEL. Applying these rates to investment income would result in a total revenue gain of £26.6bil from our combined reforms - £4.8bil lower than when full incidence is assumed.

TABLE C1. REVENUE RAISED BY REFORMING NICS UNDER ALTERNATIVE ASSUMPTIONS ON INCIDENCE OF EMPLOYER NICS

Our reform	Potential revenue, employee/self-employed rates only (£b)	Potential revenue, with rates assuming 50% incidence of Employer NICs on employees (£b)
(i) Remove exemption for investment income	1.0	4.5
(ii) Remove exemption for pension-age individuals	1.8	2.4
(iii) Equalise rate on high earnings	20.0	19.7
Total revenue from (i)-(iii)	22.9	26.6

Notes: Each reform assumes that the previous reform has been carried out (e.g. investment income included in all). Under 0% incidence, investment income is charged at the Employee NICs rate of 12% below the Primary Threshold (PT) and Upper Earnings Limit (UEL), and 2% above. Under 50% incidence, investment income is charged at 16.61% between the PT and UEL; and 7.82% above.
Source: Authors' calculations based on the SPI 2016-17.

Appendix D: Alternative assumptions on incidence of Corporation Tax

In our main estimates, we assumed full incidence of corporation tax on the shareholder in order to calculate the rate of NICs that would equalise taxes on dividends with taxes on employment income. In this appendix, we model the revenue that would be raised under two alternative assumptions (i) full incidence of corporation tax is shared between employees, suppliers and customers (0% on the shareholder); and (ii) 50% incidence of corporation tax on the shareholder. For example, under (ii), we charge NICs on dividends at the rate needed to equalise the dividend rate plus 50% of corporation tax (9.5%) with income tax plus Employee/Employer NICs (assuming full incidence of Employer NICs on the employee as we do in Table 2).

Assuming less than full incidence of corporation tax on the shareholder increases the revenue raised by equalising rates through NICs (Table D1), as the combined rate of corporation tax and dividend tax that is *currently* paid by the individual under this assumption is lower. The compensating NICs charge required to equalise tax rates is therefore higher – as is the resulting revenue gain – when we assume 0% or 50% incidence of corporation tax on the shareholder.

TABLE D1. REVENUE RAISED BY REFORMING NICS UNDER ALTERNATIVE ASSUMPTIONS ON THE INCIDENCE OF CORPORATION TAX (CT)

Income component	Potential revenue, assuming 0% incidence of CT on shareholders	Potential revenue, assuming 50% incidence of CT on shareholders
(i) Remove exemption for investment income	18.1	13.4
(ii) Remove exemption for pensione-age individuals	4.4	3.8
(iii) Equalise rate on high earnings	19.7	19.7
Total revenue from (i)-(iii)	42.2	36.8

Notes: Each reform assumes that the previous reform has been carried out (e.g. investment income included in all). Under 0% incidence, dividends are charged NICs at a rate that equalises the dividend rate with income tax + Employee NICs + Employer NICs (assuming full incidence of Employer NICs on the employee). Under 50% incidence, dividends are charged NICs at a rate that equalises the dividend rate plus half of corporation tax (9.5%) with income tax + Employee NICs + Employer NICs (assuming full incidence of Employer NICs on the employee).
Source: Authors' calculations based on the SPI 2016-17.

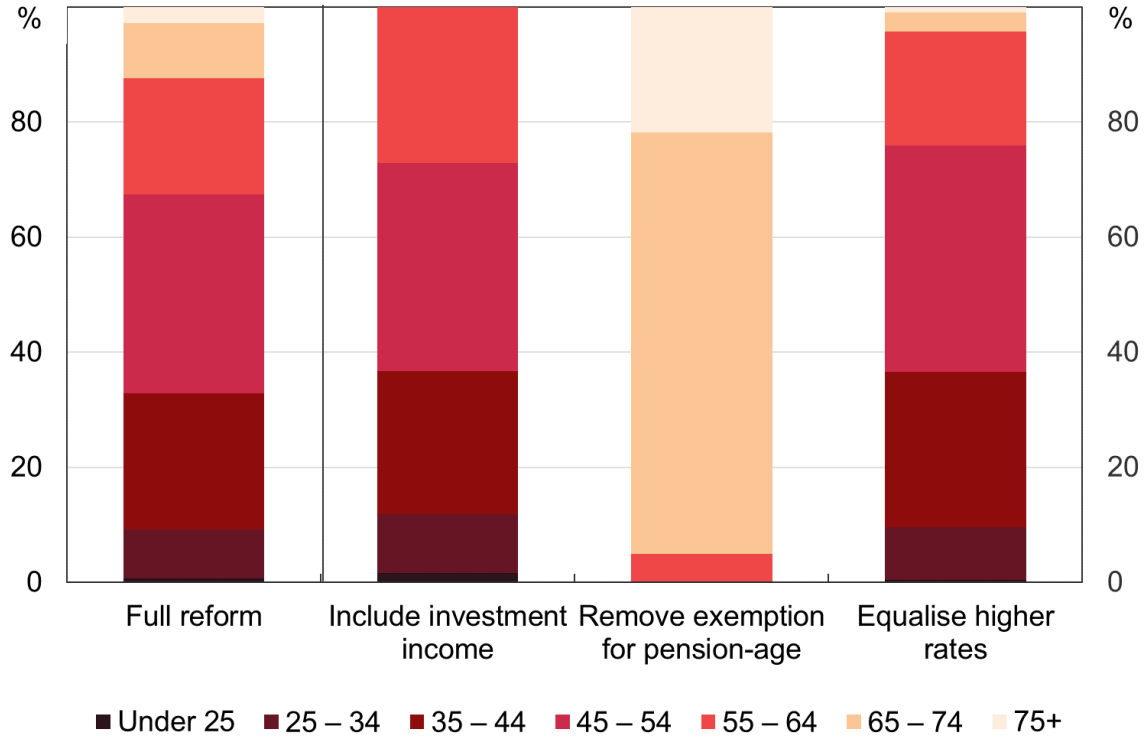
Appendix E: Breakdown of distributional impact

Figures 1-3 show the impact of the entire package of reforms we propose across the distribution of age and income, as well as across different parts of the UK. This appendix shows the distributional impact of each sequential reform.

Age

Our proposed reform is weighted towards older contributors, with two-thirds of the new revenue overall coming from people aged 45 and over (Fig. E1). While we initially broaden the tax base to include investment income but maintain the exemption for people of pension age, naturally the removal of this exemption affects only the older population. Meanwhile, 90 percent of the additional revenue from equalising the rates paid on higher incomes with those on lower incomes comes from people aged 35 or older.

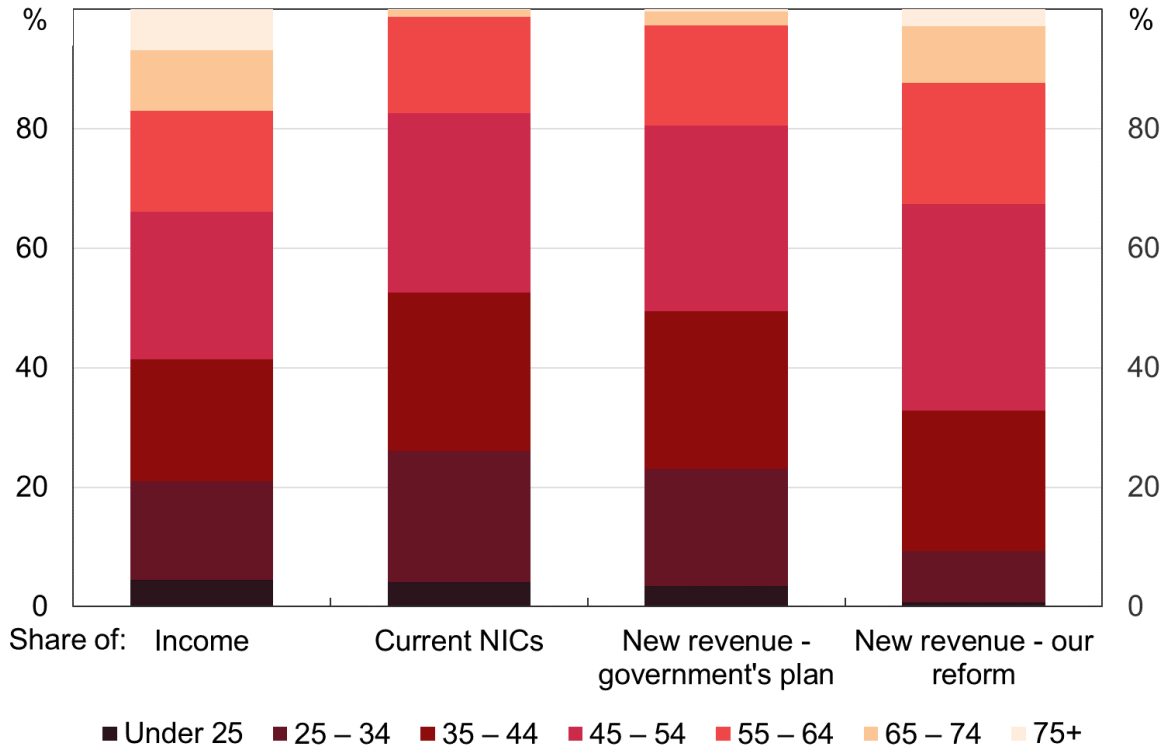
FIGURE E1. SHARE OF NEW REVENUE PAID BY EACH AGE GROUP UNDER ALTERNATIVE REFORMS TO NATIONAL INSURANCE CONTRIBUTIONS



Notes: 'Full reform' includes the effects of: (i) including investment income in the NICs base; (ii) removing the exemption for pension-age individuals; (iii) equalising rates paid above the Upper Earnings Limit (UEL) with those paid below. Shares are given as a percentage of the additional revenue generated by the reform, rather than as a share of total NICs revenue after the reform.
Source: Authors' calculations based on HMRC administrative data, 2016-17.

Because of the exemption applied to people over pension age, National Insurance contributions are currently heavily weighted towards people aged under 45: this group earns 41% of total income but pays 53% of NICs revenue (Fig. E2). Under the government's plan, this group will be similarly disproportionately affected, paying 49% of the new revenue. Under our proposed reform they pay only 33% of the new revenue, with older age groups contributing more.

FIGURE E2. SHARE OF INCOME, CURRENT NICS, AND NEW REVENUE UNDER ALTERNATIVE NICS REFORMS, PAID/RECEIVED BY EACH AGE GROUP

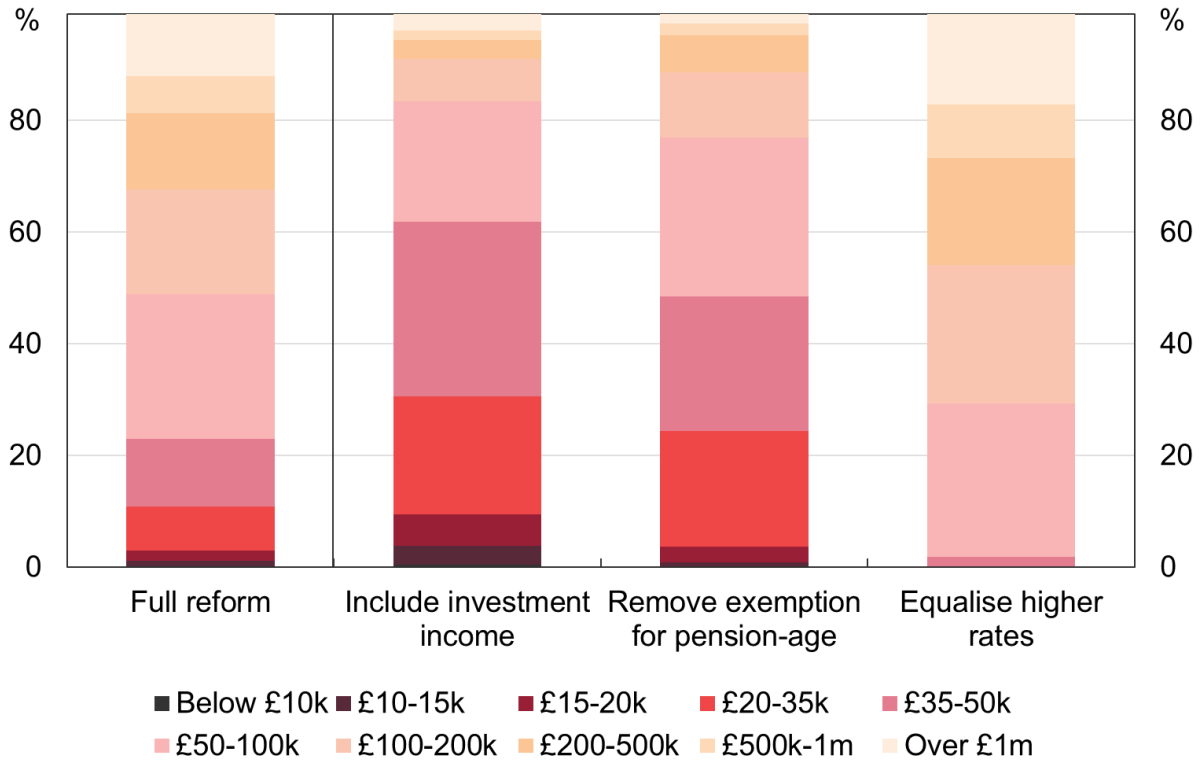


Notes: 'Our reform' includes the effects of: (i) including investment income in the NICs base; (ii) removing the exemption for pension-age individuals; (iii) equalising rates paid above the Upper Earnings Limit (UEL) with those paid below. Shares of 'Income' and 'Current NICs' are given as a share of the total. Shares of 'New revenue' are given as a percentage of the additional revenue generated by the reform.
Source: Authors' calculations based on HMRC administrative data, 2016-17.

Income

People earning between £35k-£100k would make the largest contribution to new revenues from both the expansion of the tax base to include investment income, and the removal of the exemption for people of pension age (Fig. E3). Under the government's planned levy, the share contributed by this group is slightly lower, with those earning even less making up the difference. By contrast, the impact of equalising rates on higher earners affects (by definition) the highest earners, with those above £100k paying the largest share of new revenue. This makes the overall impact of the reform more progressive.

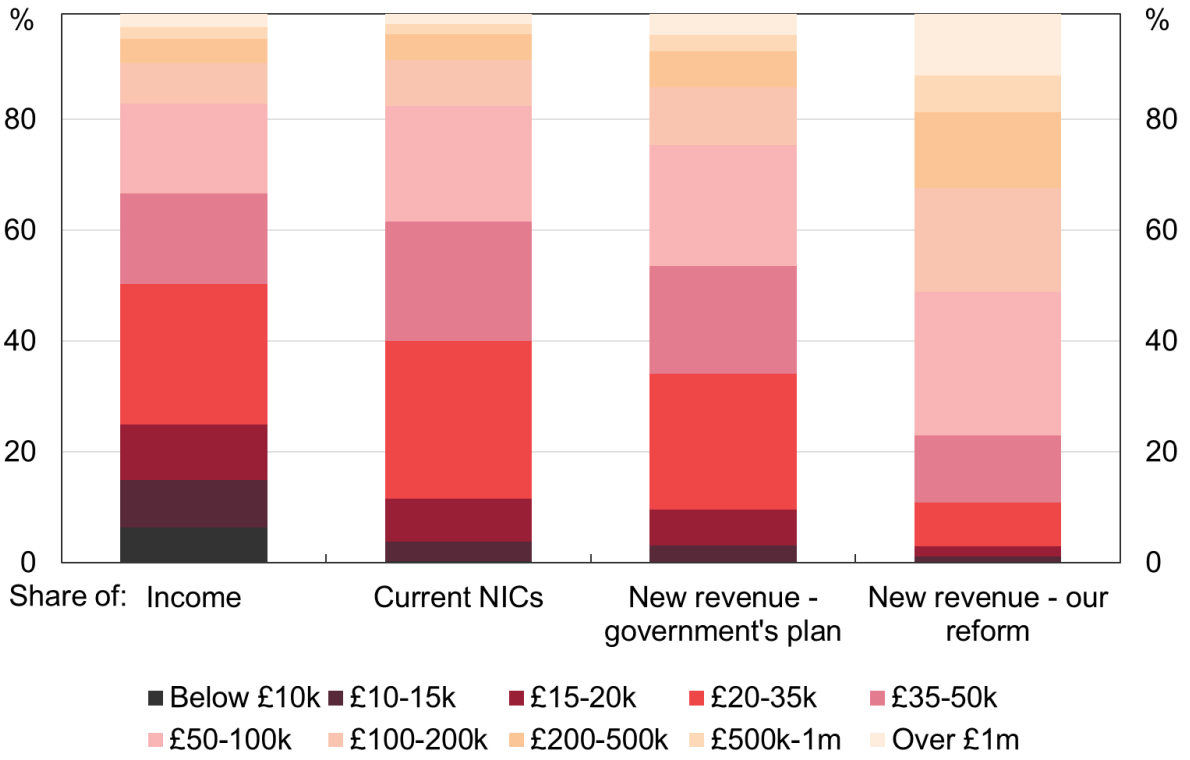
FIGURE E3. SHARE OF NEW REVENUE PAID BY EACH INCOME GROUP UNDER ALTERNATIVE REFORMS TO NATIONAL INSURANCE CONTRIBUTIONS



Notes: 'Full reform' includes the effects of: (i) including investment income in the NICs base; (ii) removing the exemption for pension-age individuals; (iii) equalising rates paid above the Upper Earnings Limit (UEL) with those paid below. Shares are given as a percentage of the additional revenue generated by the reform, rather than as a share of total NICs revenue after the reform. Individuals are allocated to income bins based on their total gross income (including from sources that are not liable to NICs).
Source: Authors' calculations based on HMRC administrative data, 2016-17.

Our proposed reform is significantly more progressive than the current NICs structure. Currently, the burden of National Insurance Contributions falls on those earning £20-50k per year: they contribute 50% of all revenue raised through NICs, despite only earning 42% of total income (Fig. E4). The government would have these people funding 44% of the additional revenue, and another 9% coming from people earning £10-20k. By contrast, those earning more than £100,000 per year contribute only a quarter. Under our reform, a much larger share of the revenue is paid by these high earners, who would contribute half of the additional revenue.

FIGURE E4. SHARE OF INCOME, CURRENT NICS, AND NEW REVENUE UNDER ALTERNATIVE NICS REFORMS, PAID/RECEIVED BY EACH INCOME GROUP

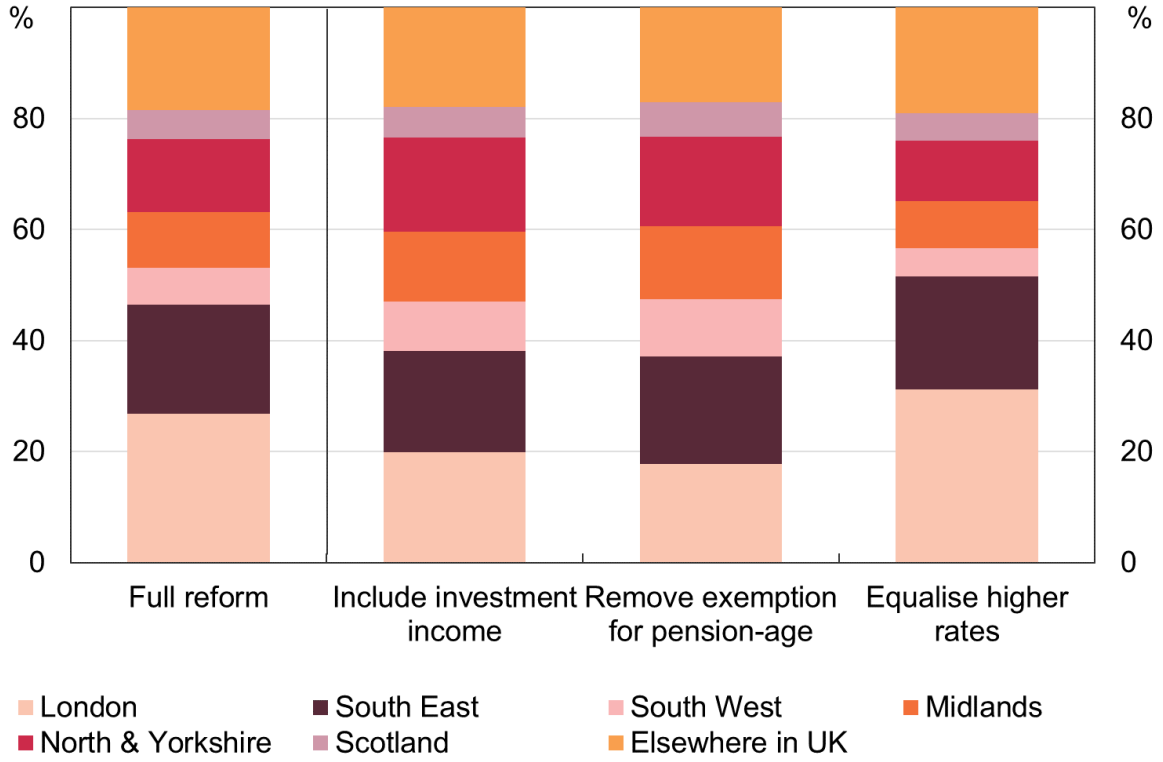


Notes: 'Our reform' includes the effects of: (i) including investment income in the NICs base; (ii) removing the exemption for pension-age individuals; (iii) equalising rates paid above the Upper Earnings Limit (UEL) with those paid below. Shares of 'Income' and 'Current NICs' are given as a share of the total. Shares of 'New revenue' are given as a percentage of the additional revenue generated by the reform. Individuals are allocated to income bins based on their total gross income (including from sources that are not liable to NICs).
Source: Authors' calculations based on HMRC administrative data, 2016-17.

Region

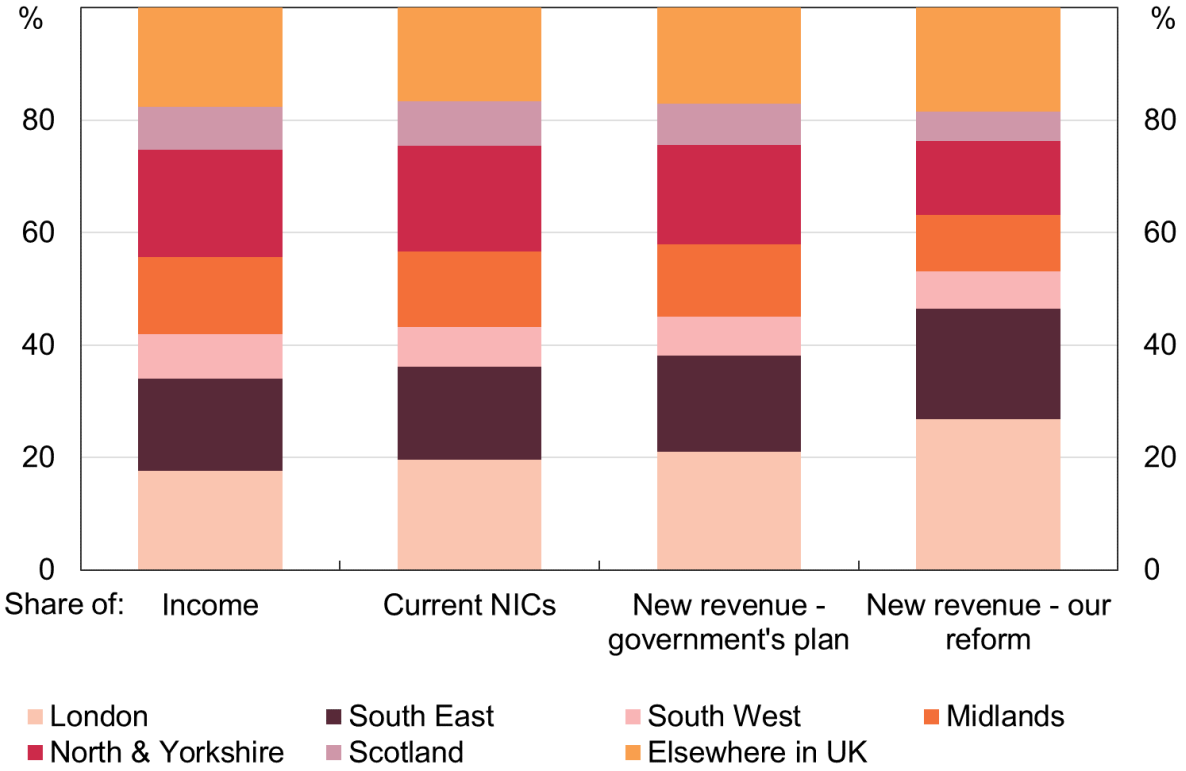
London and the South East would make the largest regional contributions to revenue collected under our reform proposal, largely due to the equalisation of higher rates (Fig. E5). Current NICs revenues closely reflect the distribution of total income across regions of the UK (Fig. E6); our proposal would see tax revenues coming slightly disproportionately from London and the South East, and disproportionately less from the North, Yorkshire, and (to a lesser extent) the Midlands.

FIGURE E5. SHARE OF NEW REVENUE PAID BY INDIVIDUALS IN EACH REGION UNDER ALTERNATIVE REFORMS TO NATIONAL INSURANCE CONTRIBUTIONS



Notes: 'Full reform' includes the effects of: (i) including investment income in the NICs base; (ii) removing the exemption for pension-age individuals; (iii) equalising rates paid above the Upper Earnings Limit (UEL) with those paid below. Shares are given as a percentage of the additional revenue generated by the reform, rather than as a share of total NICs revenue after the reform.
Source: Authors' calculations based on HMRC administrative data, 2016-17.

FIGURE E6. SHARE OF INCOME, CURRENT NICS, AND NEW REVENUE UNDER ALTERNATIVE NICS REFORMS, PAID/RECEIVED BY INDIVIDUALS IN EACH REGION



Notes: 'Our reform' includes the effects of: (i) including investment income in the NICs base; (ii) removing the exemption for pension-age individuals; (iii) equalising rates paid above the Upper Earnings Limit (UEL) with those paid below. Shares of 'Income' and 'Current NICs' are given as a share of the total. Shares of 'New revenue' are given as a percentage of the additional revenue generated by the reform.
Source: Authors' calculations based on HMRC administrative data, 2016-17.