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Devolved income tax: forecasting by tax bands

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Abstract

Following the fiscal framework agreed between the UK and Welsh Governments in December 2016 we are required to forecast income tax liabilities related to non-savings, non-dividend (NSND) split into the 'basic', 'higher' and 'additional' rate tax bands and split between Wales and the combined total in England and Northern Ireland. This paper sets out how we intend to adapt our methodology to perform this task, which seeks to balance the inevitable complexity this brings to the modelling with the need to meet our normal requirements for forecasting models.

Devolved income tax: forecasting by tax bands

Introduction

1   The December 2016 fiscal framework agreement between the UK and Welsh Governments set out the funding arrangements for the Welsh Government that would follow implementation of the Wales Acts of 2014 and 2017. It explained how block grant funding from the UK Government to Wales was to be adjusted following tax devolution. Changes to the block grant will be determined by a formula that compares changes in the equivalent measure of the UK Government tax to changes in that which has been devolved. The full terms of the agreement will come into effect from the UK Government's Autumn Budget 2018.

2   The fiscal framework agreement places an obligation on the OBR to forecast each relevant component and, for devolved income tax, that the block grant adjustment *"will be applied separately to each band of income tax"*. Unfortunately, this means that one relevant component is a split of income tax liabilities that is not currently collected in outturn, is difficult for HMRC to estimate and, therefore, represents a significant forecasting challenge. Specifically, we need to forecast income tax liabilities related to non-savings, non-dividend (NSND) income, split into the 'basic', 'higher' and 'additional' rate tax bands *and* split between Wales and the combined total in England and Northern Ireland (as NSND income tax has already been devolved to Scotland,[1] so this comprises the 'rest of the UK' for the block grant adjustment calculations). This paper sets out the methodology we intend to use to perform this task, which seeks to balance the inevitable complexity this brings to the modelling with the need to meet our normal requirements for forecasting models.[2]

The Welsh rates of income tax

3   The Wales Act 2014 gave new tax and borrowing powers to the Welsh Assembly. It provided for the full devolution of stamp duty land tax and landfill tax from April 2018 and stated that the Welsh Assembly would be able to set new Welsh rates of income tax (WRIT). The Wales Act 2017 removed the need for a referendum before setting the WRIT.

4   Under the WRIT, the existing basic, higher and additional rates of income tax levied by the UK Government will be reduced by 10p in the pound for 'Welsh taxpayers' – defined as individuals that are resident in Wales for the majority of the year. Each year, the Welsh Assembly will be required to set rates for each band. The WRIT will be devolved from April 2019, but it will continue to be administered and collected by HMRC.

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[1] For more on Scottish income tax see our *Devolved taxes and spending forecast* document, which is available on our website.
[2] More detailed information on what we see as the characteristics of a good forecasting model can be found in Chapter 4 of our 2017 *Forecast evaluation report*. They are based around high-level principles that models should be accurate, plausible, transparent, effective and efficient. The latter refers to the ability to turn around a forecast within a day in order to produce the final round of a Budget forecast.

5   Income tax is being devolved on a liabilities basis rather than a cash basis – i.e. revenue is allocated to the year in which the income that generated the liability was earned, not when the cash payment to HMRC was made. The effects of this are most important for receipts collected via the self-assessment system. These are paid with a significant lag, so outturn data on these liabilities are not available until well after the fiscal year has ended.

6   Figure 1 gives a graphical (though not to scale) representation of how the UK income tax regime splits into NSND income and savings and dividend income, then how NSND sub-divides by geography and finally by the different bands.[3] It also highlights the WRIT by band and the equivalent in England and Northern Ireland, which is required for calculating the block grant adjustment. At present, income tax liabilities data are only available split either by taxpayer (i.e. by the top marginal tax rate that an individual pays) and geography, or by type of income (e.g. employment, savings, dividends, etc), but not both. No estimates are available of income tax liabilities by tax band (i.e. for additional rate payers, splitting their liability between a first slice that is taxed at the basic rate, a second slice taxed at the higher rate and a third and final slice taxed at the additional rate).

Figure 1: UK income tax liabilities split by geographical and tax band components

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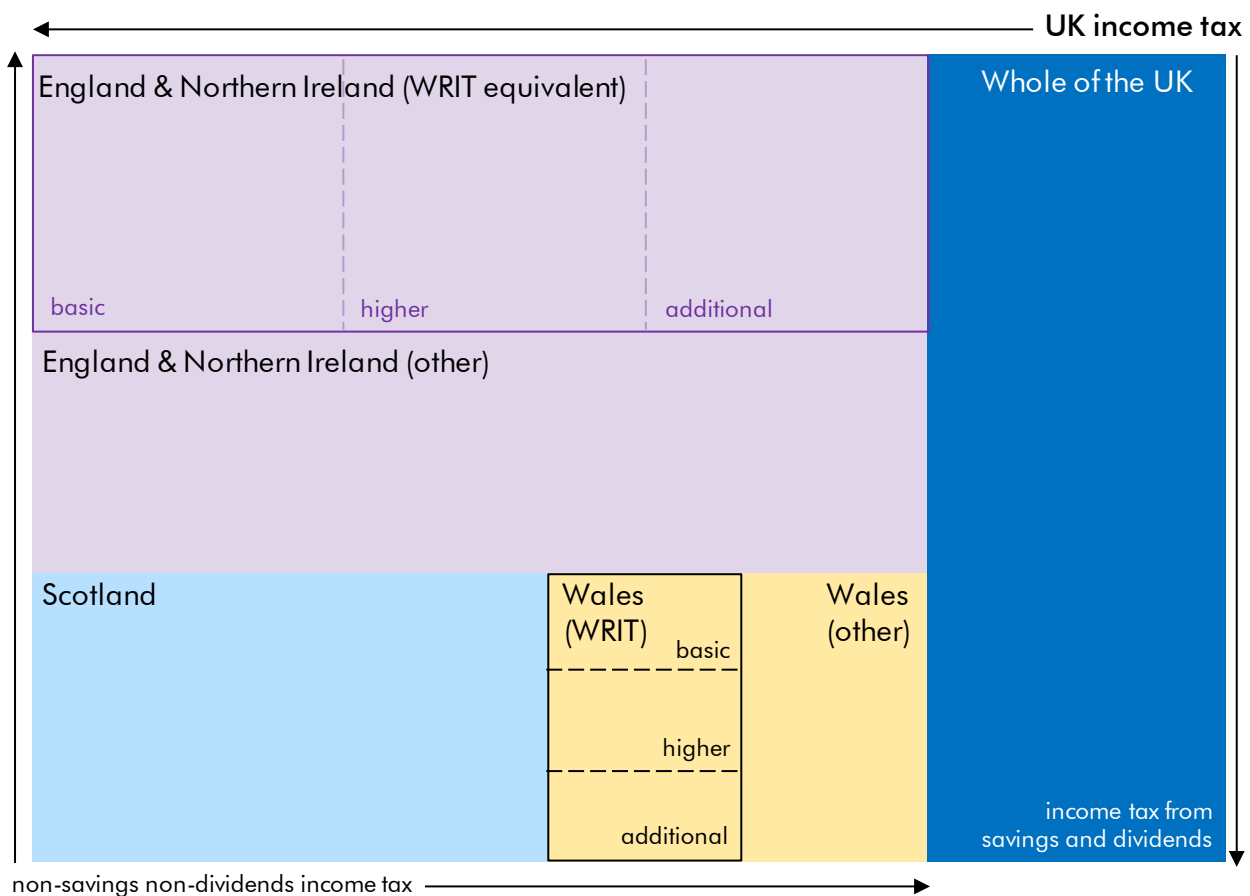
[3] The five Scottish bands have been combined for simplicity. If the figure were presented to scale on the basis of the latest income tax liabilities data (relating to 2015-16), the WRIT box would cover just over 1 per cent of the area, instead of the 5 per cent here.

7   Table 1 shows the prevailing income tax rates and thresholds in the UK in 2017-18 and in the UK outside Scotland in 2018-19. It also reports the levels assumed in our March 2018 forecast on the basis of the UK Government's default indexation policies. Based on the current UK rates of income tax, devolving the first ten percentage points of tax on NSND would shift half the NSND tax raised at the basic rate, a quarter of that raised at the higher rate and 22.5 per cent of that raised at the additional rate to the Welsh Assembly.

Table 1: UK income tax rates and thresholds

| | NSND tax rate (per cent) | | | | | |
| | Outturn | | Forecast | | | |
	2015-16	2018-19	2019-20	2020-21	2021-22	2022-23
Tax rates						
Basic rate	20	20	20	20	20	20
Higher rate	40	40	40	40	40	40
Additional rate	45	45	45	45	45	45
	Tax threshold (£)					
Tax thresholds						
Personal allowance	10,600	11,850	12,130	12,360	12,610	12,870
Higher rate	42,385	46,350	47,530	48,460	49,510	50,570
Additional rate	150,000	150,000	150,000	150,000	150,000	150,000

Shaded cells represent estimated policy assumptions needed for forecasting purposes. From 2019-20 onwards, we assume that all thresholds rise in line with CPI inflation except the additional/top rate, which remains constant in cash terms. The Scottish Government has announced different rates and threshold for NSND income tax.

8   Figure 2 provides three illustrations for how an individual Welsh taxpayer's 2019-20 income tax liability would be split between the UK and Welsh Governments:

- **For a basic rate taxpayer earning £30,000** from only one source of employment income, their £3,574 liability would be split equally between the two administrations.

- **For a higher rate taxpayer earning £60,000**, with £55,000 coming from employment and £5,000 of dividends from company shareholdings, 39 per cent of their £11,043 liability would relate to the WRIT and 61 per cent would go to the UK Government, including all the £975 due on their dividend income.

- **An additional rate taxpayer earning £250,000**, with £200,000 of employment and £50,000 in dividends income, would have a total tax liability of £93,708. Of this, 79 per cent would go to the UK Government and 21 per cent to the Welsh Government. At this income level a taxpayer would not receive any personal allowance. The higher share for the UK Government reflects two factors: first, all earnings above £35,400 would be taxed at the higher or additional rate, where the UK Government share is much larger; and second, the taxpayer has liability of £18,288 from their dividend income, all of which is retained by the UK Government.

- **The relative importance for tax receipts of higher earners** is also illustrated. The higher rate taxpayer earns twice as much as the basic rate taxpayer, but has a tax liability that is three times greater. The additional rate taxpayer earns four times as much as the higher rate taxpayer, but has a tax liability that is more than eight times greater.

Chart 1: Illustrative splits between WRIT and UK Government income tax liabilities


Source: OBR
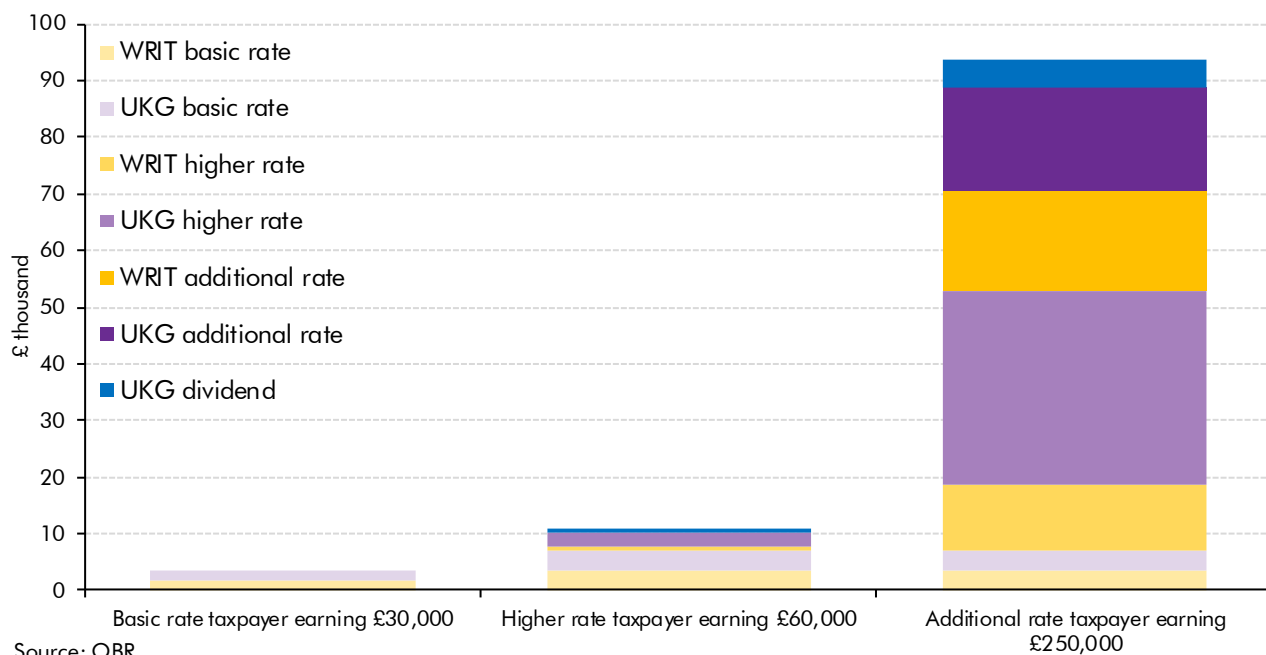
Differences in earnings across the UK

9   The amount of tax collected that relates to each tax band naturally depends on the composition of the taxpayer population and their earnings, as Figure 2 illustrated. These have long differed between Wales and the UK as a whole.

10   The best source of comprehensive information on this is HMRC's *Survey of Personal Incomes* (SPI), a sample of 745,000 UK taxpayers drawn from HMRC's administrative data. The survey is comprehensive at the UK level, but at smaller geographies the correspondingly smaller sample sizes reduce the quality of the SPI data by increasing the likelihood that the characteristics of the sample differ from those of the true underlying population. This may have been one reason for the large difference between HMRC's outturn estimate of income tax raised from Scottish taxpayers in 2016-17 and the estimates that we and the Scottish Fiscal Commission had previously made on the basis of the 2015-16 SPI. The SPI is also only available after a long lag, with the 2015-16 data not published until March 2018.

11   Chart 2 shows the proportion of taxpayers, in both Wales and the UK as a whole, with total reported incomes above £50,000 (including income from savings and dividends) and the amount of tax that they paid. These individuals make up a minority of taxpayers in both Wales and the UK as a whole, but persistently more so in Wales. In 2015-16, 7 per cent of taxpayers in Wales had an income above £50,000, versus 11 per cent UK-wide.

12   Income tax receipts rely disproportionality on higher-income taxpayers, which can be seen in the chart. In 2015-16, 62 per cent of total UK income tax liabilities related to those with incomes over £50,000. By contrast, the proportion of income tax raised in Wales from the equivalent group was much lower at 41 per cent. The proportion raised from this group has

increased over the period both in Wales and UK-wide. This partly reflects policy changes, such as above-inflation personal allowance rises and various measures raising the tax burden higher up the earnings distribution. The SPI data show that, in 2015-16, additional rate payers – just one per cent of all taxpayers – accounted for 31 per cent of all income tax paid (including that paid on savings and dividends income).[4]

Chart 2: Percentage of taxpayers and income tax from individuals with incomes of more than £50,000
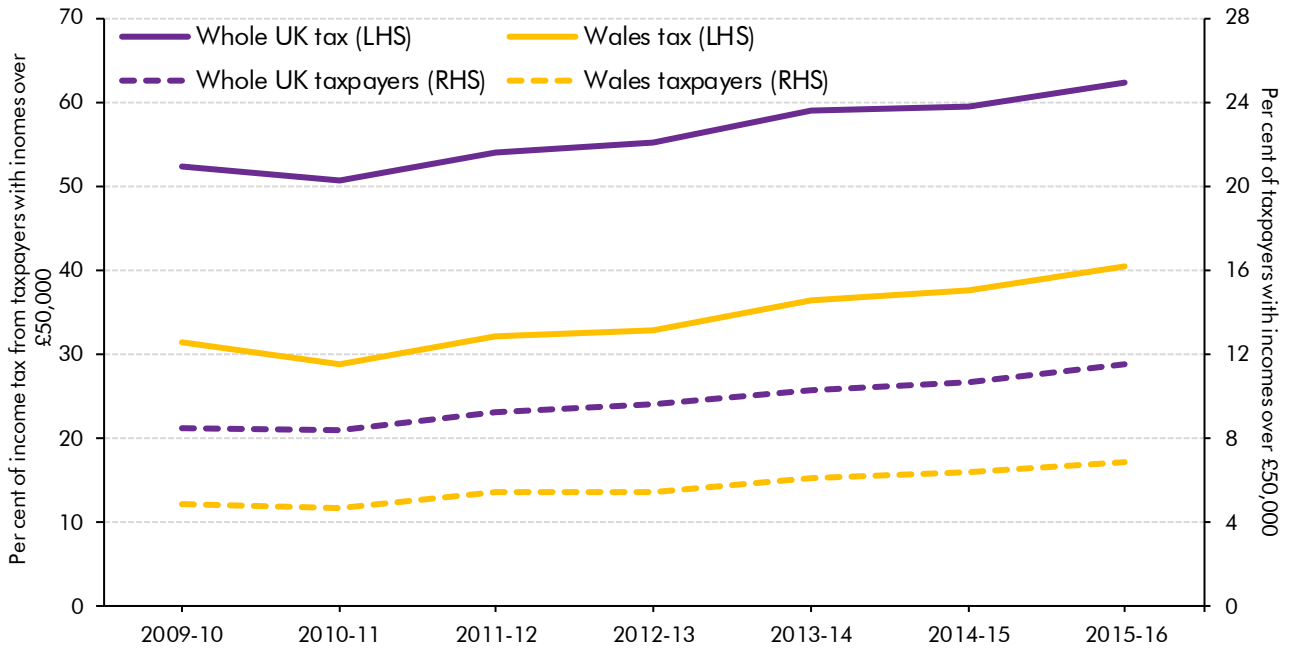
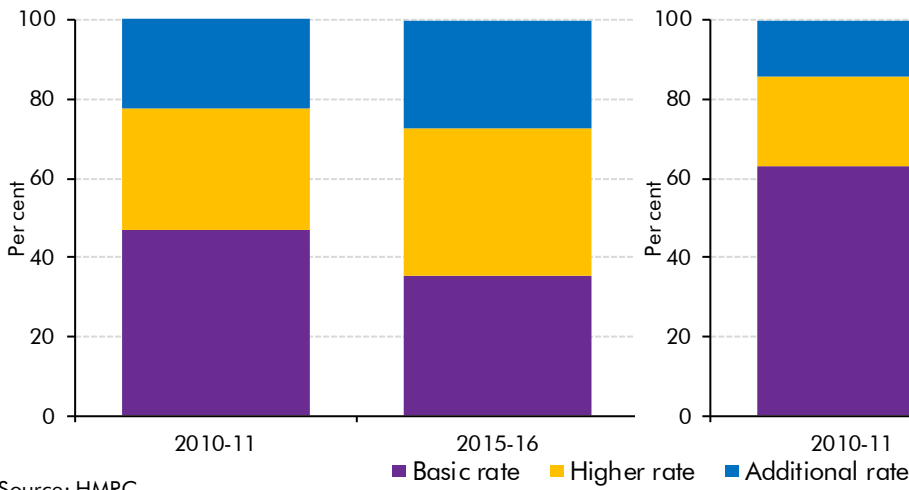
Source: HMRC

13   Chart 3 shows the proportion of total UK income tax on *earnings* only, received from basic, higher and additional rate taxpayers respectively. This splits income tax liabilities by the top marginal rate that a taxpayer pays. It is routinely published by HMRC.[5] For example, for someone earning more than the £150,000 additional rate threshold, all the income tax they pay would be classified as coming from an additional rate taxpayer. In 2015-16, 27 per cent of income tax on earnings (i.e. excluding tax on savings and dividends income) came from those taxpayers earning over £150,000, up from 22 per cent in 2010-11.

14   Chart 4 shows that when measured by the proportion of income raised within each band of income tax, the concentration at the top end of the earnings distribution is less marked. This splits income tax liabilities by the rate at which each pound of income was taxed. The source of the reduced concentration can be illustrated using the same example, where the additional rate taxpayer still pays tax on the first parts of their taxable income at the basic and higher rates. Under this definition, income tax paid on income liable to the additional rate amounted to 17 per cent in 2015-16, up from 14 per cent in 2010-11.

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[4] For more on the increasing reliance of income tax receipts on a relatively small number of taxpayers, and the risk this poses, see Chapter 5 of our 2017 *Fiscal risks report*, available on our website.
[5] See Table 2.6 in HMRC's annual *UK Income Tax Liabilities Statistics*.

Chart 3: UK income tax by top marginal rate paid by each taxpayer

Chart 4: UK income tax by tax rate applied to each pound of income

■ Basic rate   ■ Higher rate   ■ Additional rate

Source: HMRC
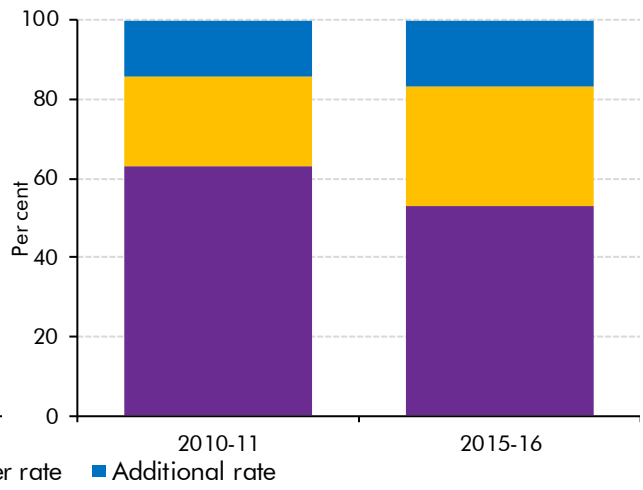
15   As well as differences in the level and growth of incomes and income tax between the countries of the UK, there is a great deal of variation within each country. Figure 3 uses SPI data to show the change in the average amount of tax paid per taxpayer in each local authority of the UK between 2010-11 and 2015-16. It shows substantial variation within each country, with at least one local authority in each where the average amount of tax paid has fallen and another where it has increased by more than 15 per cent. There could be several reasons behind these differences, including the asymmetric effects of policy changes, compositional changes within local labour markets and sampling variance within the SPI.[6] It further highlights the challenges in forecasting the earnings distribution at the country level.

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[6] The average number of taxpayers in each reported local authority in 2015-16 was around 80,000 while the average number of sample cases in each local authority in the 2015-16 SPI was just 1,800.

Figure 3: Percentage change in mean income tax per taxpayer in each local authority between 2010-11 and 2015-16
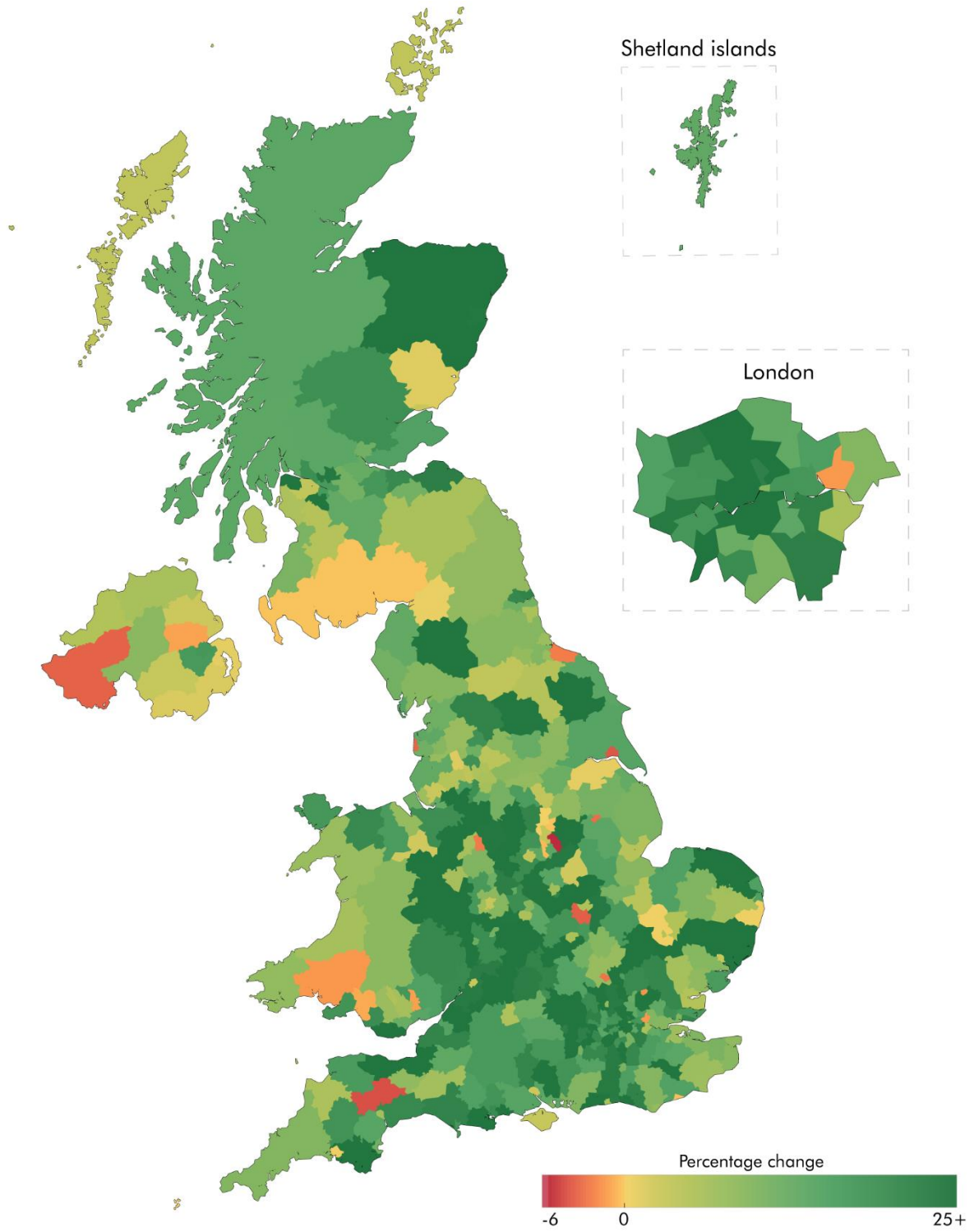
Pre-measures UK income tax forecast methodology

16   Our current approach to forecasting income tax at the UK level is to forecast each of the different collection methods separately.[7] Pay-as-you-earn (PAYE) income tax accounts for over 80 per cent of revenue; nearly all the remainder is collected via the self-assessment (SA) system. PAYE income mainly represents the earnings of employees, while SA income includes profits from self-employment and income from dividends, land and property, and savings. As tax on savings and dividends income is collected via SA, the proportion of NSND income tax collected via PAYE is even higher than for total income: over 90 per cent.

17   Our PAYE forecast uses HMRC's personal tax model (PTM) – a micro-simulation model based on the SPI. This model calculates the average marginal tax rate on additional income by taking account of reliefs, allowances and our assumptions about future rates of inflation and any differences in earnings growth at different points in the earnings distribution.[8] The latter are informed by the ONS Annual Survey of Hours and Earnings and HMRC's real-time information on the PAYE population. The PTM applies the calculated tax rates to our forecast for income growth to which are in turn used in our tax forecast.

18   We generate our final PAYE forecast by including the effects of past policy measures that have not yet been fully implemented, off-model factors such as the effect of incorporations, plus any new policy measures announced by the Government alongside each forecast.

19   Our SA income tax forecast starts by splitting up historical tax return data into the key income streams and projecting these forward using relevant determinants drawn from our economy forecast. We turn these income forecasts into projections for SA liabilities by applying an average effective tax rate. This is currently calculated and projected forward using an econometric model, but we are considering a more disaggregated approach.

20   Our overall approach to forecasting income tax receipts has several advantages. Since it aligns our forecast with how HMRC administers the tax system and how the ONS reports income tax in the National Accounts, it maximises our ability to monitor and evaluate our forecast against outturn. This is particularly important given the very different collection profile and accounting treatment of PAYE and SA receipts.[9]

Forecasting devolved income tax liabilities

21   Our basic approach to forecasting income tax devolved to Wales and Scotland is simple. We extract a UK-wide NSND forecast from our overall UK income tax forecast, then convert it to a liabilities basis and estimate the proportion of liabilities incurred in Wales and Scotland. To do that, we start from the proportion reported in the most recent SPI and project it forward

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[7] More information on our approach to forecasting income tax is available in the 'in-depth' section on our website. Both the PAYE and SA models are currently under review. We will report any changes in a future *Economic and fiscal outlook* or *Forecast evaluation report*.
[8] Table 1 sets out our most recent policy baseline assumptions.
[9] PAYE income tax is paid monthly. The ONS accrues monthly cash receipts back to the previous month to approximate when the liability arose. SA income tax is not paid until much longer after the liability was generated – usually in the following fiscal year. The ONS records receipts in the month when HMRC receives the cash payment rather than applying any accruals-related timing adjustments. SA payments are almost entirely concentrated in two peak periods at the end of January and July.

taking into account differences in population growth and the effect of any policy measures that we believe would be different in Wales or Scotland than in the UK as a whole (e.g. due to where in the earnings distribution they hit.)

22   Forecasting on a liabilities basis generates greater uncertainty. Given the long lag before SPI data are published, we must take the additional step of forecasting the initial level of SA liabilities. For example, our March 2018 forecast for devolved income tax included a forecast of 2016-17 liabilities because outturn data only extended as far as 2015-16.

23   A fuller explanation of how our devolved income tax forecasts are prepared is available in Chapter 2 of our March 2018 *Devolved tax and spending forecast* publication.

Forecasting non-savings, non-dividend income tax by band

24   To date, our UK and devolved income tax forecasts have been produced on an aggregate basis – for total income in the UK and NSND income in Wales and Scotland. But the new formula for adjusting the Welsh block grant requires us to forecast the equivalent UK Government tax to the WRIT – the first 10p in each band of NSND income tax in England and Northern Ireland – split by the tax rate at which each pound of income was liable.

25   HMRC does not currently publish estimates of outturn tax liabilities split by tax band and by country, so we are not able to take the normal approach to developing a forecast model by analysing trends in outturns. HMRC will publish its first estimates of outturn liabilities on this basis in the summer of 2020, with final outturn expected in the summer of 2021.

26   Our initial modelling approach will be to:

- **forecast UK NSND income tax liabilities**, which includes total PAYE liabilities, SA liabilities on NSND income, PAYE repayments and repayments to pension providers;

- **calculate the proportion of liabilities within each tax band and in each country** by filtering taxpayer information in the PTM, which in turn is based on the most recent SPI;

- **adjust for differences in population growth** using ONS population projections, to adjust for the relative size of the adult population in each country;[10]

- **apply this share to our latest UK forecast for NSND income**, ensuring the splits remain consistent with our total UK NSND forecast;[11]

- **adjust for country-specific gift aid repayments;**[12] and

- **account for previous 'off-model' policy measures** that were costed outside the PTM and that we believe would have had an asymmetric effect across countries.

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[10] The specific variant of the ONS population projections used to calculate this adjustment will be consistent with that used in our central forecasts for the UK economic and public finances – currently the principal projections.
[11] This approach is similar to that used by HMRC in its *UK Income Tax Liabilities Statistics* publication (see Table 2.6), which forecasts liabilities up to 2018-19, expanded to include geographic breakdowns.
[12] For more information on these adjustments see our *Devolved tax and spending forecasts* publication.

27   We have tried to balance the additional modelling complexity necessitated by the terms of the block grant adjustment methodology with the importance of maintaining a transparent and tractable approach that can be delivered efficiently at the most time-pressured stages of a UK Budget or Spring Statement forecast process.

28   The main uncertainties to which our approach is subject include:

- **The representativeness of the geographical and income distributions reported in the SPI**: the SPI is designed to be representative at the UK level, but the sample is not stratified by geography (i.e. the sample size in each geographical area is smaller than for the whole UK, and so is likely to be less representative). In the latest version, the confidence interval around the SPI estimate of tax liabilities at the UK level was just 0.6 per cent, but for Wales it was a more material 4.5 per cent. Sampling variance – in particular due to the small number of sample observations of high-income taxpayers in Wales – is another potential source of error, although the SPI does have a relatively large sample size overall and is designed to over-sample taxpayers with higher incomes.

- **The use of UK-level macroeconomic determinants**: we forecast employment, hours worked, productivity and wages at the UK level, and assume that growth from the latest outturns will be equal in Wales and the UK as a whole. This reflects our assumption that future disparities between growth in any of these variables in Wales and the UK as a whole are as likely to go in one direction as the other, so a central assumption is that they move in parallel. In reality, of course, they will differ.

- **Adjusting only for population growth, with no further allowance for relative ageing**: this captures the effect of changing numbers of taxpayers, but not the effect of any age-related changes in the distribution of incomes across the tax bands.

- **The effect of past policy measures**: we model asymmetric policy effects across countries in the base data, but it would require an unreasonable amount of HMRC analyst time to estimate any asymmetric effects of past 'off model' measures *by band*.

29   Tables 2 to 6 set out the results of our initial modelling consistent with our March 2018 UK and devolved taxes forecasts.[13] These are not outturns in any sense, but are estimates consistent with HMRC's 2015-16 SPI, our March 2018 forecast and the methodology set out above. They are clearly subject to considerable uncertainty, as has been illustrated by the large difference between our SPI-based estimate of Scottish income tax liabilities in 2016-17 and HMRC's recently published outturn.

30   In nominal terms, the amount of tax is increasing in every band, both in Wales and in England and Northern Ireland combined. As the additional rate threshold is fixed at

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[13] For the UK-wide results, the Scottish element has been presented on the same basis as was published in HMRC's *UK Income Tax Liabilities Statistics*. Liabilities have been allocated on an equivalent basis to the threshold of the UK Government's tax bands to aid comparison. For example, we have included tax from the Scottish Government's new 'starter' and 'intermediate' rate bands under the basic rate heading as they are closest to that rate in the UK Government's system.

£150,000, fiscal drag means the number of taxpayers in this band is projected to rise, as is its share of tax receipts. The shares accounted for by the basic and higher rate bands are projected to fall. The number of basic and higher rate taxpayers will be affected by earnings growth relative to CPI inflation, which is the UK Government's default indexation policy for the personal allowance and higher rate threshold.

31   Table 6, which shows the 'WRIT equivalent' measure of income tax in England and Northern Ireland, is the relevant one for calculating the Welsh block grant adjustment.

32   The WRIT liabilities accruing to the Welsh Government are estimated to fall from 1.24 per cent of the UK-wide total in 2014-15 to 1.18 per cent in 2019-20, the year in which they will be devolved, and to 1.17 per cent in 2022-23. Non-WRIT income tax liabilities from Welsh taxpayers accruing to the UK Government also fall, from 1.61 per cent of the UK-wide total in 2014-15 to 1.53 per cent in 2019-20 and 1.51 per cent in 2022-23.

Table 2: Whole UK NSND income tax liabilities by band

| | £ billion | | | | | | | | |
	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
March 2018 forecast	150.9	155.4	162.8	168.5	173.5	178.1	184.4	190.7	198.8
of which:									
Basic rate	81.3	82.7	85.8	89.1	91.7	94.5	98.0	101.6	105.8
Higher rate	44.8	47.0	49.5	50.0	50.9	51.4	52.6	53.8	55.7
Additional rate	24.8	25.8	27.6	29.5	31.0	32.2	33.7	35.3	37.2
Percentage distribution									
Basic rate	53.9	53.2	52.7	52.9	52.8	53.1	53.2	53.3	53.2
Higher rate	29.7	30.2	30.4	29.7	29.3	28.9	28.5	28.2	28.0
Additional rate	16.4	16.6	16.9	17.5	17.8	18.1	18.3	18.5	18.7

Based on March 2018 forecast. Estimates for historical years should not be treated as firm outturns.

Table 3: Welsh Government WRIT NSND income tax liabilities by band

| | £ million | | | | | | | | |
	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
March 2018 forecast	1873	1890	1952	2006	2053	2099	2165	2232	2317
of which:									
Basic rate	1607	1614	1661	1712	1754	1797	1853	1912	1984
Higher rate	227	244	257	255	259	260	267	272	282
Additional rate	38	32	35	38	41	43	45	47	50
Percentage distribution									
Basic rate	85.8	85.4	85.1	85.4	85.4	85.6	85.6	85.7	85.6
Higher rate	12.1	12.9	13.2	12.7	12.6	12.4	12.3	12.2	12.2
Additional rate	2.0	1.7	1.8	1.9	2.0	2.0	2.1	2.1	2.2

Shaded cells represent notional estimates for years when tax devolution has not occurred.

Table 4: UK Government non-WRIT NSND income tax liabilities from Welsh taxpayers by band

	£ million								
	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
March 2018 forecast	2423	2459	2554	2612	2672	2725	2810	2894	3007
of which:									
Basic rate	1607	1614	1661	1712	1754	1797	1853	1912	1984
Higher rate	682	733	770	766	776	780	800	816	847
Additional rate	134	112	123	133	142	149	157	166	177
Percentage distribution									
Basic rate	66.3	65.6	65.0	65.6	65.6	65.9	65.9	66.1	66.0
Higher rate	28.2	29.8	30.2	29.3	29.0	28.6	28.5	28.2	28.2
Additional rate	5.5	4.5	4.8	5.1	5.3	5.5	5.6	5.7	5.9

Shaded cells represent notional estimates for years when tax devolution has not occurred.

Table 5: UK Government income tax liabilities from English and Northern Irish taxpayers by band

	£ billion								
	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
March 2018 forecast	135.7	140.1	146.9	152.0	156.7	160.8	166.5	172.3	179.6
of which:									
Basic rate	71.3	72.6	75.3	78.4	80.8	83.3	86.4	89.6	93.3
Higher rate	40.8	42.9	45.2	45.5	46.3	46.8	47.9	49.0	50.7
Additional rate	23.6	24.7	26.4	28.2	29.6	30.8	32.2	33.7	35.6
Percentage distribution									
Basic rate	52.5	51.8	51.3	51.6	51.5	51.8	51.9	52.0	52.0
Higher rate	30.1	30.6	30.8	29.9	29.6	29.1	28.8	28.4	28.2
Additional rate	17.4	17.6	18.0	18.5	18.9	19.1	19.4	19.6	19.8

Shaded cells represent notional estimates for years when tax devolution has not occurred.

Table 6: UK Government WRIT-equivalent income tax from English and Northern Irish taxpayers by band

	£ billion								
	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
March 2018 forecast	51.1	52.5	54.8	56.8	58.5	60.2	62.3	64.5	67.2
of which:									
Basic rate	35.6	36.3	37.7	39.2	40.4	41.6	43.2	44.8	46.7
Higher rate	10.2	10.7	11.3	11.4	11.6	11.7	12.0	12.2	12.7
Additional rate	5.3	5.5	5.9	6.3	6.6	6.8	7.2	7.5	7.9
Percentage distribution									
Basic rate	69.8	69.1	68.7	69.0	69.0	69.2	69.3	69.4	69.4
Higher rate	20.0	20.4	20.6	20.0	19.8	19.4	19.2	19.0	18.8
Additional rate	10.3	10.4	10.7	11.0	11.2	11.4	11.5	11.6	11.8

Shaded cells represent notional estimates for years when tax devolution has not occurred.

Policy costings and the post-measures forecast

33   Our final post-measures forecast is produced by adding the effects of new policies to our pre-measures forecast.[14] We have not previously needed to assess the effect of new policies on the individual bands of income tax, though we do consider effects across the earnings distribution where they are relevant to the scrutiny of a policy costing.

34   Many of the general sources of uncertainty around policy costings that we routinely highlight in our *Economic and fiscal outlooks* are likely to be amplified as we disaggregate costings by geography and tax band. For that reason, we believe a relatively simple approach that makes sufficient allowance for asymmetric policy effects across countries and bands while not seeking spurious precision at considerable cost in analyst time is a sensible one. In part this reflects the relatively small amounts involved – relative to our UK-wide forecast – and the fact that these estimates need to be generated during the most time-pressured phase of a UK Budget forecast process.

35   We will use the PTM to assess those measures that change the rates or thresholds of NSND income tax, for example a change in the level of the personal allowance. For other 'off-model' measures, including those targeted at a sub-set of the population, we have approved a series of rule-of-thumb profiles developed by HMRC from its various sources of taxpayer information. These relate to different collection methods, income streams or taxpayer characteristics and are set out in the annex to this paper. They will be updated periodically as new information becomes available.

36   Most of these profiles have been created using information from the PTM and SPI. For anti-avoidance measures targeting higher-earning individuals they are based on taxpayers' postcodes recorded in HMRC's disclosure of tax avoidance schemes register. If we were to judge that a measure did not readily fit one of these pre-approved profiles, or if additional bespoke analysis were available, we would of course make use of that information.

Conclusions

37   The methodology set out in this paper will allow us to produce forecasts disaggregated by tax band and geography as necessitated by the terms of Welsh Government's fiscal framework agreement. Given the lack of outturn data against which to test the assumptions upon which we will have to base these forecasts, it is inevitable that they will be subject to considerable uncertainty. Our first set of forecasts by band will be presented in the *Devolved tax and spending forecasts* publication that will accompany our next *Economic and fiscal outlook*, to be published alongside the UK Government's Autumn Budget 2018.

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[14] The process behind this is set out in detail in our *Briefing paper No.6: Policy costings and our forecast*, available on our website.

A Policy costing profiles: by country and tax band

A.1   This annex contains various estimated profiles for the effect of policy costings by country and tax band that we have pre-approved for use in calculating the block grant adjustments associated with different types of policy measure. The percentages in each table sum to 100 vertically for each year.[15] The profiles include:

- **the standard profile**: this would be used for measures that would be expected to affect all NSND income taxpayers broadly proportionately, for example *'insolvency use to escape tax debt'* from Autumn Budget 2017;

- **the PAYE population profile**: used for policy measures like *'company car tax: retain the 3ppt diesel supplement from April 2016'* from Autumn Statement 2015;

- **the SA population profile**: used for policy measures like *'income tax: cap on unlimited tax reliefs'* from Budget 2012;

- **those above state pension age**: used for policy measures like *'pensions: reduce withdrawal tax rate from 55% to marginal income tax rate'* from Budget 2014;

- **additional rate payers**: used for policy measures like *'income tax: reduce additional rate to 45p in 2013-14'* from Budget 2012;

- **taxpayers with property income**: used for policy measures like *'residential property: reform wear and tear allowance'* from Summer Budget 2015; and

- **tax avoidance schemes**: used for policy measures like *'asset managers: reform treatment of performance awards'* from Budget 2016.

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[15] All figures are based on PTM estimates using the 2015-16 SPI projected using economic assumptions consistent with our March 2018 *Economic and Fiscal Outlook* with the exception of A.7.

Table A.1: Standard profile

	Per cent					
	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
rUK						
NSND basic rate	42.5	42.5	42.3	42.2	42.0	41.8
NSND higher rate	24.6	24.1	23.7	23.3	23.0	22.9
NSND additional rate	15.9	16.0	16.1	16.2	16.3	16.4
Savings and dividends	7.1	7.6	8.1	8.5	8.9	8.9
Scotland						
NSND basic rate	4.0	4.0	4.0	4.0	4.0	4.0
NSND higher rate	2.0	2.0	2.0	2.0	2.0	2.0
NSND additional rate	0.7	0.7	0.7	0.7	0.7	0.7
Savings and dividends	0.4	0.5	0.5	0.5	0.6	0.6
Wales						
NSND basic rate	1.9	1.9	1.9	1.9	1.9	1.9
NSND higher rate	0.6	0.6	0.6	0.5	0.5	0.6
NSND additional rate	0.1	0.1	0.1	0.1	0.1	0.1
Savings and dividends	0.2	0.2	0.2	0.2	0.2	0.2

Table A.2: Measures that only affect the PAYE population

	Per cent					
	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
rUK						
NSND basic rate	71.4	71.5	71.3	71.1	70.7	70.4
NSND higher rate	15.0	14.8	14.8	14.8	15.1	15.4
NSND additional rate	0.3	0.3	0.3	0.3	0.3	0.3
Savings and dividends	0.4	0.6	0.7	0.9	1.0	1.0
Scotland						
NSND basic rate	7.3	7.3	7.3	7.3	7.2	7.2
NSND higher rate	1.6	1.6	1.6	1.6	1.6	1.7
NSND additional rate	0.0	0.0	0.0	0.0	0.0	0.0
Savings and dividends	0.0	0.0	0.1	0.1	0.1	0.1
Wales						
NSND basic rate	3.5	3.5	3.5	3.5	3.5	3.4
NSND higher rate	0.5	0.5	0.5	0.5	0.5	0.5
NSND additional rate	0.0	0.0	0.0	0.0	0.0	0.0
Savings and dividends	0.0	0.0	0.0	0.0	0.0	0.0

Table A.3: Measures that only affect the self-assessment population

	Per cent					
	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
rUK						
NSND basic rate	21.4	21.4	21.2	21.1	21.0	20.9
NSND higher rate	31.7	30.9	30.1	29.4	28.8	28.5
NSND additional rate	27.3	27.4	27.5	27.7	27.9	28.3
Savings and dividends	12.0	12.7	13.4	14.1	14.6	14.7
Scotland						
NSND basic rate	1.6	1.6	1.6	1.6	1.6	1.6
NSND higher rate	2.4	2.3	2.3	2.2	2.2	2.2
NSND additional rate	1.1	1.2	1.2	1.2	1.2	1.2
Savings and dividends	0.7	0.8	0.8	0.9	0.9	0.9
Wales						
NSND basic rate	0.8	0.8	0.8	0.8	0.7	0.7
NSND higher rate	0.7	0.6	0.6	0.6	0.6	0.6
NSND additional rate	0.2	0.2	0.2	0.2	0.2	0.2
Savings and dividends	0.3	0.3	0.3	0.3	0.3	0.3

Table A.4: Measures that only affect those above state pension age

	Per cent					
	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
rUK						
NSND basic rate	52.5	52.3	51.9	51.6	51.2	51.1
NSND higher rate	18.8	18.3	18.0	17.8	17.6	17.5
NSND additional rate	7.7	7.6	7.6	7.6	7.7	7.8
Savings and dividends	10.4	11.2	11.9	12.4	12.9	13.0
Scotland						
NSND basic rate	4.8	4.8	4.8	4.7	4.7	4.7
NSND higher rate	1.4	1.4	1.3	1.3	1.3	1.3
NSND additional rate	0.4	0.3	0.3	0.3	0.4	0.4
Savings and dividends	0.6	0.6	0.7	0.7	0.7	0.7
Wales						
NSND basic rate	2.7	2.7	2.7	2.7	2.7	2.7
NSND higher rate	0.5	0.5	0.5	0.5	0.5	0.5
NSND additional rate	0.1	0.1	0.0	0.0	0.0	0.1
Savings and dividends	0.2	0.2	0.3	0.3	0.3	0.3

Table A.5: Measures that only affect additional rate payers

	Per cent					
	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
rUK						
NSND basic rate	4.3	4.4	4.5	4.6	4.7	4.8
NSND higher rate	27.3	26.9	26.5	26.1	25.8	25.6
NSND additional rate	52.3	51.8	51.2	50.8	50.3	50.2
Savings and dividends	10.6	11.4	12.1	12.8	13.4	13.5
Scotland						
NSND basic rate	0.2	0.2	0.2	0.3	0.3	0.3
NSND higher rate	1.6	1.6	1.6	1.6	1.6	1.6
NSND additional rate	2.2	2.2	2.2	2.2	2.1	2.2
Savings and dividends	0.6	0.6	0.7	0.7	0.8	0.8
Wales						
NSND basic rate	0.1	0.1	0.1	0.1	0.1	0.1
NSND higher rate	0.4	0.4	0.4	0.4	0.4	0.4
NSND additional rate	0.3	0.3	0.3	0.3	0.3	0.4
Savings and dividends	0.1	0.1	0.2	0.2	0.2	0.2

Table A.6: Measures that only affect taxpayers with property income

	Per cent					
	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
rUK						
NSND basic rate	23.8	23.7	23.5	23.3	23.1	23.0
NSND higher rate	26.6	25.9	25.3	24.7	24.2	24.0
NSND additional rate	25.6	25.6	25.6	25.7	25.8	26.0
Savings and dividends	16.7	17.5	18.3	19.0	19.6	19.7
Scotland						
NSND basic rate	1.6	1.6	1.6	1.6	1.6	1.5
NSND higher rate	1.7	1.7	1.6	1.6	1.6	1.6
NSND additional rate	1.0	1.0	1.0	1.0	1.0	1.0
Savings and dividends	0.9	0.9	1.0	1.0	1.1	1.1
Wales						
NSND basic rate	0.9	0.9	0.9	0.9	0.9	0.9
NSND higher rate	0.6	0.6	0.6	0.6	0.6	0.6
NSND additional rate	0.3	0.3	0.3	0.3	0.3	0.3
Savings and dividends	0.3	0.4	0.4	0.4	0.4	0.4

Table A.7: Operational measures and measures that affect tax avoidance schemes

	Per cent					
	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
rUK						
NSND basic rate	44.8	44.8	44.6	44.5	44.2	44.1
NSND higher rate	26.0	25.4	25.0	24.5	24.3	24.2
NSND additional rate	16.7	16.8	16.9	17.0	17.2	17.3
Savings and dividends	7.5	8.0	8.5	9.0	9.3	9.4
Scotland						
NSND basic rate	2.2	2.2	2.2	2.2	2.2	2.2
NSND higher rate	1.1	1.1	1.1	1.1	1.1	1.1
NSND additional rate	0.4	0.4	0.4	0.4	0.4	0.4
Savings and dividends	0.2	0.3	0.3	0.3	0.3	0.3
Wales						
NSND basic rate	0.7	0.7	0.7	0.7	0.7	0.7
NSND higher rate	0.2	0.2	0.2	0.2	0.2	0.2
NSND additional rate	0.0	0.0	0.0	0.0	0.0	0.0
Savings and dividends	0.1	0.1	0.1	0.1	0.1	0.1