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Wealth Tax Commission

Revenue and distributional modelling for a wealth tax

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REVENUE AND DISTRIBUTIONAL MODELLING FOR A WEALTH TAX

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Abstract

In this paper we model the revenue that could be raised from an annual and a one-off wealth tax of the design recommended by Advani, Chamberlain and Summers (2020). We examine the distributional effects of the tax, both in terms of wealth and other characteristics. We also estimate the share of taxpayers who would face liquidity constraints in meeting their tax liability. We find that an annual wealth tax charging 0.18% on wealth above £500,000 could generate £10 billion in revenue, before admin costs. Alternatively, a one-off tax charging 4.8% (effectively 0.96% per year, paid over a 5-year period) on wealth above the same threshold, would generate £250 billion in revenue. To put our revenue estimates into context, we present revenue estimates and costings for some commonly-proposed reforms to the existing set of taxes on capital.

1. Introduction

The Wealth Tax Commission has been studying the possibility of a wealth tax for the UK, and has delivered a body of research into the desirability and deliverability of such a tax. A crucial aspect for politicians in deciding whether or not to support a tax on wealth is how much revenue it could raise. Meanwhile, public support will hinge at least partly on how much people could be asked to pay.

In this paper we model the revenue that could be raised from an annual and a one-off wealth tax. We first consider an annual wealth tax, and calculate the tax rates that would be needed to raise £10 billion in revenue at various possible thresholds, taking into account likely behavioural effects. We analyse the distributional effect of these tax structures in terms of who pays and how much, both across the wealth distribution and across other characteristics. We also analyse who is likely to face liquidity constraints. For some of these tax structures, we look at how the revenue raised compares to the administrative burden, both for the government and the taxpayer.

We find that a wealth tax could raise a substantial amount of revenue at relatively modest tax rates. For an annual wealth tax, a flat tax of 0.18% on wealth above £500,000 could generate £10 billion in revenue, but at a (proportionally) high ongoing administrative cost to government of £1.2 billion. The administrative costs to taxpayers are even higher, at £7.2 billion per year, increasing substantially the effective tax rate inclusive of all taxpayer costs. At higher thresholds, higher tax rates are required to generate a similar amount of revenue, but administrative costs are lower as there would be fewer taxpayers. For example, at £2 million the administration costs to government fall to only 1% of the revenue raised, comparable with other major taxes (HMRC, 2019) - however, even here costs to the taxpayer add a cost of 0.14% of wealth to the tax rate. With a £10 billion revenue target this is a quarter of the headline rate.

We then consider a one-off wealth tax. Since this is a one-off event, certainly not something that would be seen for at least another generation, we consider the tax rate needed to raise £250 billion: the equivalent of raising an effective annual revenue of £10 billion per year over a 25-year period. We also consider a flat rate of 1% a year for five years, as an alternative benchmark. We perform an analogous set of analyses, studying distributional effects, liquidity constraints and administrative costs.

We find that a one-off wealth tax charging a tax rate of 4.8% on wealth above £500,000 would generate £250 billion in revenue, before admin costs. This would come at a total cost of £1.7 billion to the government, and £7.2 billion to the taxpayer. Since this is a one-off event, it is possible to achieve a much higher ratio of revenue to cost than under an annual wealth tax. A higher threshold would reduce the admin cost further, though achieving the same amount of revenue would necessitate higher rates. We estimate that with a threshold of £1 million, a one-off tax of 8.5% - or a 5-year annualised rate of 1.7% - would be required to raise £250 billion. Under this tax structure, the cost the government would be 0.4% of the revenue raised. Taxpayer costs would effectively add an additional 0.13% to the headline rate.

Under a one-off wealth tax with an exemption threshold of £500,000 generating £250 billion in revenue, we estimate that 6.4% of individuals would face liquidity constraints. This rises to 23% with a threshold of £2 million, though the absolute number of liquidity constrained taxpayers would fall, from 530,000 to 146,000. Fewer taxpayers would be liquidity constrained under an annual wealth tax generating £10 billion in revenue.

Finally, we compare the revenue we could get from a wealth tax with the revenue that might be raised by alternative reforms to the taxation of capital: in particular reforms to capital gains tax, inheritance tax, and council tax. Numerous reforms to these taxes have been proposed in recent years (APPG, 2020; Adam, Hodge, Phillips and Xu, 2020; Corlett, 2018; Roberts et al., 2018). We focus on a few headline reforms that are common to almost all reform proposals.

A brief comparison shows that it would be possible to raise similar amounts of revenue, or more, through some of the proposed reforms we examine. For example, raising tax rates on capital gains to be in line with those on income would raise an additional £12 billion, with little implied cost to tax authorities. On the other hand, a reform such as revaluing housing assets (and reforming rates) for Council Tax could raise even more substantial amounts, for around half the one-off cost to the government of implementing a wealth tax. These alternative reforms do not necessarily avoid some of the challenges inherent in implementing a wealth tax, such as the cost and difficulty of valuing assets.

The remainder of the paper is organised as follows. Section 2 describes the data we use and adjustments we make to better capture wealth held at the top. Section 3 presents our revenue modelling for an annual wealth tax, who would pay it, and how many taxpayers would face liquidity constraints. We also discuss the effect of banding on our revenue estimates. Section 4 presents similar analysis to Section 3, this time for a one-off tax on wealth. Section 5 provides a brief analysis of the revenue that could be raised from alternative reforms to the current tax system. Section 6 concludes.

2. Data and Methods

2.1 Data

Wealth and Assets Survey

Our primary data source is the Office for National Statistics' (ONS) Wealth and Assets Survey, which is the most comprehensive data source on wealth in the UK. We use the most recent wave of the data, collected in 2016-18, which covers around 40,000 individuals. The data exclude certain geographical regions, in particular Northern Ireland, and the area north of the Caledonian Canal. Individuals living in institutional settings, such as care homes, halls of residence, and prisons, are also beyond the scope of the survey. As a result, we miss around 2% of the UK population.

The WAS collects information on all major asset classes, including pensions, property, physical wealth, financial wealth, and business assets. For our purposes, the valuation concept of interest is market value – the amount for which assets could be sold. We treat the value of assets recorded in the WAS as the market value, with the exception of physical assets. When asked to report the value of household contents, individuals are asked to record their replacement cost, which is likely to be significantly higher than the amount for which household items could be sold second hand. As a result, we reduce the reported value of household contents by 75%, which we think provides a conservative estimate of market value.

Our revenue modelling assumes a comprehensive tax base, covering each of these asset classes. Advani, Chamberlain, and Summers (2020) argue, however, that a wealth tax may need to allow exemptions for low-value assets, and suggest a £3000 exemption per item. We aim to define chargeable wealth – wealth that could be taxed – to be consistent with this. It is not possible to model this precisely using the WAS, as wealth is not reported item-by-item, so we make some necessary approximations. For physical wealth, we start by excluding the value of all household contents, unless the total (market) value of this component exceeds £100,000, in which case anything above that threshold is included.[1] This reflects our assumption that most of the items included in this category are likely to be worth less than £3000 individually, and would therefore be exempt. For categories likely to include items worth more than £3000, such as collectables and valuables, vehicles, and personalised number plates, we exclude this wealth only if the total amount reported in that category is less than £3000. We apply the latter rule to property wealth (treating each category separately),[2] and business assets (treating each business separately). For pensions, we apply the £3000 rule to the category as a whole, deducting the full value of any debts. We do not allow an exemption on financial assets, as it is unlikely that such a rule would be implemented in reality.

We use individual-level, rather than household-level data, to be consistent with the recommendation of individuals as the tax unit in Advani, Chamberlain and Summers (2020). Most of the wealth recorded in the WAS is captured at individual level. For wealth recorded at

[1] This is not intended to represent a limit on low-value item exemptions, but a practical solution to data limitations. Our expectation is that individuals who own more than £100,000 in household contents in total are likely to own some items worth more than £3000. Rather than exclude these altogether, we include the total value of household contents in excess of £100,000.
[2] Property wealth is divided into main residence, second homes, buy to let property, other buildings, UK land, overseas land, overseas property, and other.

household level, which includes property wealth and certain categories of physical wealth, we divide the wealth equally between the head of household and their partner, where applicable.

Sunday Times Rich List

A key caveat to relying on the survey data alone is that they under-represent wealth held at the very top of the distribution. In response to this, we follow an approach that is similar to the one adopted in Advani, Bangham and Leslie (2020), and supplement the WAS with information from the Sunday Times Rich List (STRL).

The STRL captures, in theory, the 1000 richest people or families in Britain. The compilation and measurement of wealth held by rich list individuals draws heavily on their observable business assets. More private forms of wealth, such as financial assets, are generally not captured. We proceed under the assumption that the wealth captured primarily reflects business wealth, and that the total wealth recorded is likely to be an under-estimate of the wealth held by these individuals.

Though there are 1000 entries in the STRL, some entries include multiple individuals, such as a husband and wife or other members of the same family. To be consistent with our use of individual-level data in the WAS, we treat each individual named in the STRL as a separate unit. Where there are multiple named individuals per rich list entry, we divide wealth equally among them.

In contrast to Advani, Bangham, and Leslie (2020), we use data from the 2020 Rich List. We rescale this to match the aggregate wealth in the 2017 and 2018 (average of the two) lists, to be consistent with the time period in which the WAS data were collected. Our reason for doing this is to leverage information on the country of residence of STRL individuals, which we obtain using matched records from Companies House. Individuals need not have the UK as their main country of residence to be included in the STRL, and it is not clear that all individuals would qualify as resident for tax purposes. This is important for our revenue analysis, as we seek to establish how much revenue could be raised from those who are likely to be eligible to pay.

Though tax residence is not a readily observable characteristic, we can proxy for this using information on country of residence as recorded in the Companies House register. Most individuals in the STRL own or control part of a company registered with Companies House, and these companies are required to submit information on their directors or 'persons with significant control', including information on their usual country of residence.[3] We have matched individuals named in the STRL to Companies House records, using name and date of birth as our matching criteria. We were able to match 83% of the 1,242 named individuals automatically. A further 119 were matched manually, having been missed often as a result of different variants of their name being used across the two data sources. For the remaining unmatched 7% of individuals, we impute information on their country of residence based on the percentage of individuals in each five-percentile bin of the STRL who are UK resident. In total, we classify 85% of individuals as UK resident.

2.2 Pareto Imputation

We account for wealth missing from the top of the distribution in two ways. First, we add individuals in the STRL to our WAS data, removing the handful of individuals whose wealth

[3] A 'person with significant control' is usually someone who (a) owns more than 25% of shares in the company; (b) holds more than 25% of voting rights in the company; or (c) holds the right to appoint or remove the majority of the board of directors.

overlaps with the STRL to ensure they are not accounted for twice. Second, as in Advani, Bangham, and Leslie (2020), we implement a Pareto adjustment to estimate the amount of additional wealth that should be captured in the top tail of the wealth distribution.

It is widely observed that the top tail of the wealth distribution approximates a Pareto distribution (e.g. Jones, 2015). By fitting a Pareto distribution using data on wealthy individuals in the WAS combined with the STRL, we estimate the amount of excess wealth that is implied by the shape of the distribution. For further details on the methodology, see Advani, Bangham and Leslie (2020).

We implement our Pareto adjustment to the distribution of business wealth (including shares), rather than using total wealth as recorded in the WAS. This is to ensure consistency with what is captured in the STRL, which we believe to be primarily business wealth. We choose a relatively low threshold of £500,000 in business wealth, though in practice the chosen threshold has little impact on the amount of additional wealth estimated. Using this approach, we estimate that there is an additional £280 billion in wealth in excess of the wealth recorded in the WAS and the STRL. This differs from the estimate in Advani, Bangham and Leslie (2020) for two reasons. First, their paper uses household, rather than individual-level data to implement the Pareto adjustment. Second, they assume each entry in the rich list represents two individuals, whereas we use only individuals explicitly named in the rich list.

To estimate the amount of revenue that could be raised from individuals across the wealth distribution, we must allocate this additional Pareto wealth to observations in our data. We do this by assigning to each individual in our Pareto sample the amount of business wealth they would be expected to have according to their rank in the distribution. We then redefine each individual's total market value wealth, and total chargeable wealth, replacing their reported business wealth with the amount implied by the Pareto distribution.

For the purpose of analysing liquidity issues, it is essential to know how an individual's chargeable wealth compares to their income. However, by adjusting wealth at the top of the distribution, we have distorted this relationship. It is not clear how one could model a top wealth or income adjustment that accurately captures the relationship between these two variables at an individual level. Moreover, we do not wish to overstate the extent of liquidity issues by assuming that wealth has been under-reported while income is accurately captured. As a result, we have chosen to preserve the ratio of wealth to income as it is reported in the survey. We do this by scaling net income by the ratio of an individual's adjusted to unadjusted wealth. At an individual level, the ratio of wealth to net income is therefore consistent with the liquidity analysis undertaken in Loutzenhiser and Mann (2020).

3. Modelling an annual wealth tax

3.1 Approach

We model a wealth tax that is consistent with the recommendations outlined in Advani, Chamberlain and Summers (2020) using the data on wealth above various thresholds described in the previous section. Our tax covers all adult individuals. Children are not taxed as separate tax units. Instead, their wealth is aggregated with the wealth of their parents. We assume that, in practice, parents would be able to choose who their children's wealth is allocated to, and would do so to minimise their joint tax liability. Accordingly, we allocate children's' wealth reported in the WAS to the lower wealth parent, splitting any excess equally. In this way, we preserve the wealth ranking between parents.

Though data from the STRL are included in our analysis, in our main specification we exclude individuals who are classified as non-residents according to their Companies House records, targeting tax residence as the relevant connection criterion.

We also take into account behavioural responses. As outlined in Advani and Tarrant (2020), a net wealth tax is likely to elicit a number of avoidance and evasion responses, including under-reporting, offshore evasion, gifting and fragmentation, asset portfolio recomposition, saving responses, labour supply responses, and migration. Advani and Tarrant (2020) conclude that under a well-designed wealth tax covering all asset classes – as we assume ours will – the overall magnitude of behavioural responses could be limited to a 7-17% reduction in wealth in response to a 1% tax rate on wealth. In our revenue modelling, we take the upper bound as the 'high avoidance' scenario, and the lower bound as the 'low avoidance' scenario. We apply this response to the average tax rate faced by each individual under each tax structure. For example, for an individual facing an average tax rate of 0.5%, we reduce their chargeable wealth by 3.5% in the low avoidance scenario.

The figures 7% and 17% represent *average* behavioural responses, summarising the combined effect of each individual's response along the different margins. By applying this statistic in the way we do, we will miss heterogeneity in avoidance responses across individuals. In practice, some individuals will respond much more than others, and they will respond along different margins. For example, these statistics partly reflect migration responses. Rather than modelling who will choose to migrate and who will stay, we attribute the reduction in aggregate wealth arising from some migration, to a reduction in the wealth of all individuals. The fact that we miss this heterogeneity should not affect our revenue calculations. In our distributional analysis, we focus on who *should pay* the tax, and how much they should pay, rather than the amount they would pay after taking behavioural responses into account. This will be unaffected by our method of accounting for behavioural response in our revenue calculations.

To calculate net revenue, we estimate the administrative costs that the tax authority would face on an ongoing basis. Administrative costs to the taxpayer are calculated as in Appendix A. We also calculate the one-off costs that the tax authority would incur in order to administrate the tax. Our ongoing admin costs are based on the cost to HMRC of auditing Self Assessment (SA) Income Tax Returns. A wealth tax would be administered in much the same fashion, with potential taxpayers having to submit a tax return, a certain percentage of which would be audited by the tax authority. We assume that the cost of auditing a wealth tax return will be the same as the cost of auditing a SA return, which is approximately £2,500 per audit (Advani, Elming and Shaw, 2020). We will assume that 5% of wealth tax returns are audited, suggesting that the average cost per tax unit to HMRC from auditing is around £125. To calculate the total ongoing admin cost for each tax structure, we multiply this figure by the number of filers,

assuming that anyone who thinks they are within 10% of the tax threshold also has to file a tax return. This means that the population of returns that could potentially be audited will be slightly higher than the number of taxpayers.

There are two types of one-off cost we consider. First, the cost of revaluing residential property, which we assume is done centrally rather than by the taxpayer, as is the case for Council Tax. Second, the cost of designing and developing an IT system for administering the tax.

For the cost of revaluing residential property, we draw on the estimated cost of revaluating properties for Council Tax in England, a project which began in 2001 but was never completed.[4] In 2005, two years into the exercise, it was estimated that the revaluation would cost the Valuation Office Agency, which was tasked with conducting the revaluation, £139.3 million in total. [5] An additional £38 million was expected to be incurred in the first year from the cost of appeals. At this point, £45 million had already been spent on bringing the VOA's systems up to date and digitising documents of paper records, an exercise which would not need fully repeating if the revaluation were resumed. Since these old documents may now partly be out-of-date, we take a conservative approach by assuming that this cost would again be incurred in full. On this basis, the exercise would have cost £180 million according to estimates from 2005. Scaling this to 2018 (the final year in our wealth tax data) by the rate of wage inflation, the most relevant cost here, suggests that a present-day valuation would cost approximately £245 million.

We assume that this £245 million would be the cost of revaluing the entire housing stock. It is possible that some fraction of this cost would be avoided, as not all properties would need to be valued under a wealth tax with an exemption threshold. However, we do not know what this fraction would be. Moreover, valuing properties at the top end of the property distribution is likely to be much more costly than valuing a standard semi-detached house, and so we cannot assume that the cost of revaluing the housing stock is proportional to the number of houses valued. This is certainly not the case, as there will be fixed costs in producing a model for estimating house values which would serve as the primary basis of valuation for the majority of properties. Our cost estimate should therefore be thought of as an upper bound.

As a proxy for the cost of building a new system for administering the tax, we take the cost of designing and developing the Customs Declaration Service, a system which went live in 2018. The system will ultimately process over 250 million customs declarations, calculating the tariffs due on each. The most recent estimate of the total cost of the project is £334 million.[6] This is a comprehensive estimate which includes the cost of planning, designing, construction and delivery, as well as ongoing maintenance costs.

3.2 Revenue

In this section we present estimates of combinations of rates and thresholds which would raise £10 billion in tax revenue under a low avoidance scenario, before accounting for admin costs (Table 1). This revenue target is not chosen to in any way be optimal, or reflect any kind of

[4] The revaluation exercise was due to be completed in April 2007 and would have been the first revaluation since 1991. However, the exercise was postponed until it could happen "…as part of a fully developed package of funding reforms, rather than as a precursor to them, and at a moment of greater financial stability for local authorities" (House of Commons Library Research Paper, 2005).
[5] House of Commons Library Research Paper 05/73 "The Council Tax (New Valuation Lists for England) Bill" (November, 2005).
[6] HMRC Government Major Project Portfolio data, September 2019.

recommendation. Instead it is selected as a useful benchmark, being roughly equivalent to increasing the basic rate of income tax by 2p (HMRC, 2020a).

With a threshold of £10 million, a tax charged at 1.1% would raise £10 billion under a low avoidance scenario, or £8.7 billion with high avoidance. Ongoing administrative costs to government here are essentially negligible, although there is some setup cost that is needed.

Lowering the threshold to £2m, the same amount could be collected with a tax rate of just 0.57% under a low avoidance scenario. Now the number of taxpayers is substantially higher, increasing from 22,000 to 626,000. The aggregate administrative costs of the tax would be much higher – the cost being largely borne by the taxpayer rather than the government.[7] At 22,000 taxpayers, the volume of taxpayers under an annual wealth tax beginning at £10 million is similar to Inheritance Tax (which covers 24,000 taxpayers per year). Comparable amounts could be raised with a progressive tax, covering the same number of taxpayers but at lower rates for those with less wealth, as shown in one particular example in the final row of Table 1.

TABLE 1: REVENUE ESTIMATES FOR AN ANNUAL WEALTH TAX – FLAT AND PROGRESSIVE TAXES

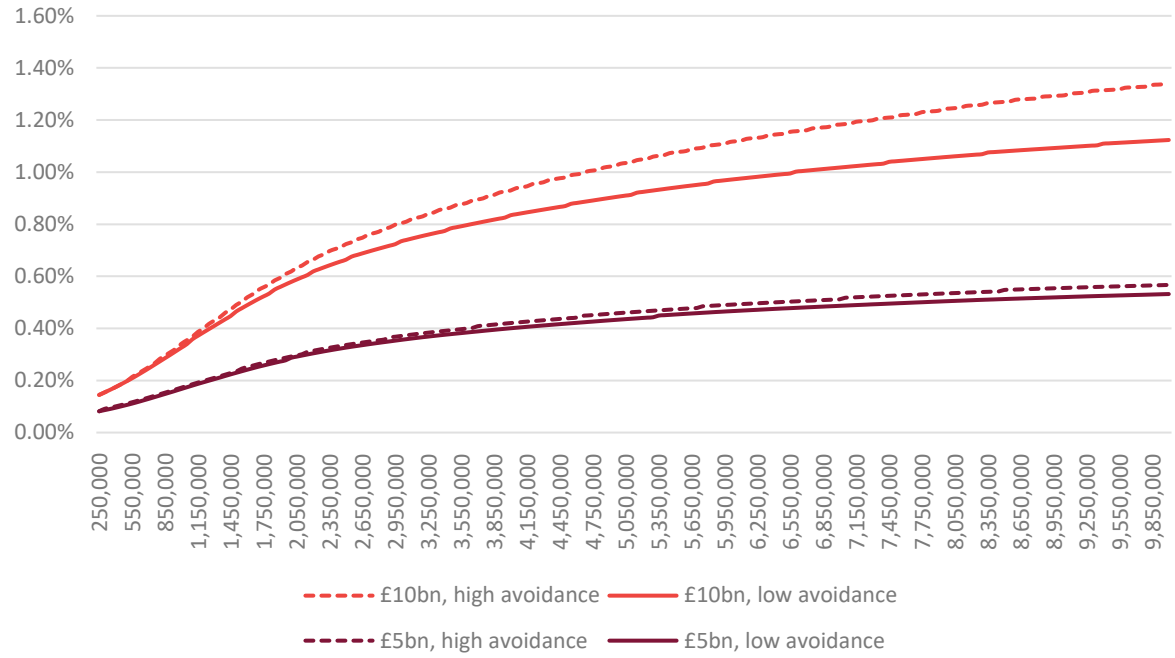
Threshold per individual (£)	Rate	Revenue (£bn)		Taxpayers ('000)	Administrative cost (£bn):		
		Low avoidance	High avoidance		to taxpayer	one-off to govt	per year to govt
Flat taxes							
10,000,000	1.12%	9.9	8.7	22	0.7	0.6	0.003
5,000,000	0.91%	9.9	9.0	83	1	0.6	0.01
2,000,000	0.57%	9.9	9.4	626	2	0.6	0.1
1,000,000	0.31%	10.0	9.7	3,004	4	0.6	0.5
500,000	0.18%	10.2	10.0	8,246	7	0.6	1.2
250,000	0.12%	9.9	9.8	15,537	10	0.6	2
Progressive taxes							
1,000,000	0.10%	9.9	9.4	3,004	4	0.6	0.1
2,000,000	0.25%						
5,000,000	0.50%						
10,000,000	0.65%						

Notes: The rates target £10bn in revenue, taking a low level of avoidance into account, before the deduction of admin costs.
Source: ONS, Wealth and Assets Survey, 2016-18; Sunday Times Rich List, 2020; Burgherr, 2020; House of Commons Library, 2005; HMRC Government Major Project Portfolio data, 2020d.

The amount of revenue raised by a tax with a given threshold can be varied by changing the rates. Figure 1 illustrates the rates that would be required to raise different revenue targets, net of ongoing administrative costs to government. Evidently, the rates required to generate a given amount of revenue at a given threshold are higher when individuals are more responsive to the tax.

[7] Note that for purposes of Total Managed Expenditure calculations, the administrative cost to government can likely be reduced by around one-third, since these costs are largely salaries, and one third of this cost will be returned to the exchequer in income tax and national insurance contributions. However, the full value of the cost must be taken into account when considering the efficiency of the tax.

FIGURE 1: RATES AND THRESHOLDS GENERATING DIFFERENT REVENUE TARGETS FROM AN ANNUAL WEALTH TAX, AFTER ADMIN COSTS



Notes: Tax rates are those required to generate the revenue target after admin costs are taken into account.
Source: ONS, Wealth and Assets Survey, 2016-18; Sunday Times Rich List, 2020.

3.3 Distributional Effects

If the UK were to introduce an annual wealth tax, who would pay it? And how would the amount of tax paid vary across individuals? In this section, we explore how tax liabilities would vary across the distribution of income and wealth under each of the annual tax structures presented in Table 1, assuming the rates required to generate £10 billion before admin costs under a low avoidance scenario. We then consider the characteristics of taxpayers, specifically considering age, sex, and region. We include individuals in the STRL when looking at the distribution by wealth, age and sex. However, as we have no information on their income nor region of residence, this analysis is based on the WAS data only.

Table 2 shows the amount of tax paid by a representative individual with different levels of wealth. A higher threshold does not necessarily mean that an individual who is still liable to pay the tax will face a smaller tax liability. Taking an individual with £7.5 million in wealth as an example, the tax liability that this individual faces is just over £20,000 under a flat tax starting at £1 million. If the threshold rises to £2 million, the rate required to generate the same amount of revenue as before means that the same individual would now face a tax liability of £31,500.

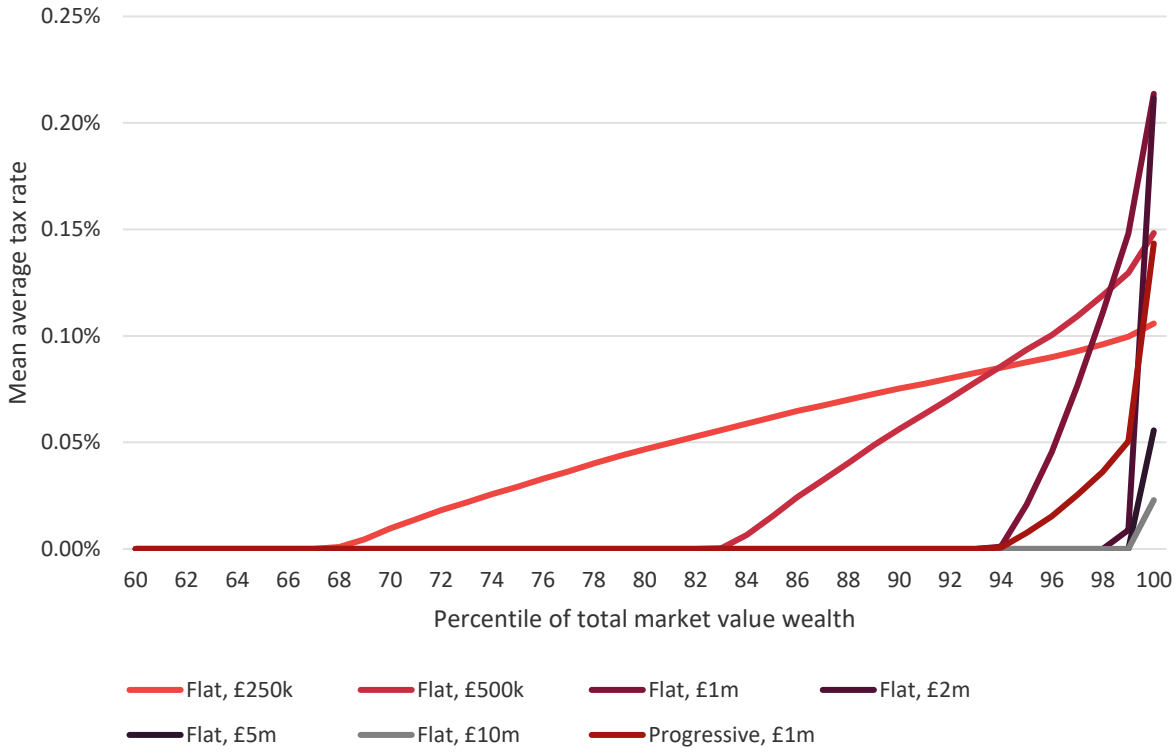
An exemption threshold of £250,000 would not charge any wealth tax to anyone in the bottom 70% of the wealth distribution. Nevertheless, by international standards this would be a very low threshold - only Switzerland is lower (Chamberlain, 2020). With a relatively low exemption threshold of £250,000, the average tax rate faced across the wealth distribution would increase steadily, reaching 0.11% (equal to the marginal tax rate) for those in the top 1%. With a higher exemption threshold, the average tax rate increases more rapidly. Individuals in the top 1% would face an average tax rate of 0.21% with an exemption threshold of £2 million, for a tax generating £10 billion in revenue (see Figure 2).

TABLE 2: AMOUNT OF TAX PAID BY A REPRESENTATIVE INDIVIDUAL UNDER AN ANNUAL TAX WITH DIFFERENT THRESHOLDS, (£)

Threshold per individual (£)	Rate	Individual net wealth (£)				
		750,000	1,500,000	3,000,000	7,500,000	15,000,000
Flat taxes generating £10bn						
10,000,000	1.12%					56,150
5,000,000	0.91%				22,650	90,600
2,000,000	0.57%			5,730	31,515	74,490
1,000,000	0.31%		1,560	6,240	20,280	43,680
500,000	0.18%	443	1,770	4,425	12,390	25,665
250,000	0.12%	575	1,438	3,163	8,338	16,963
Progressive taxes generating £10bn						
1,000,000	0.10%					
2,000,000	0.25%		500	3,500	23,500	84,500
5,000,000	0.50%					
10,000,000	0.65%					
Number of individuals within 10% of this net wealth ('000)		813	323	55	6	4

Source: ONS, Wealth and Assets Survey, 2016-18.

FIGURE 2: MEAN AVERAGE TAX RATE UNDER DIFFERENT ANNUAL TAX STRUCTURES

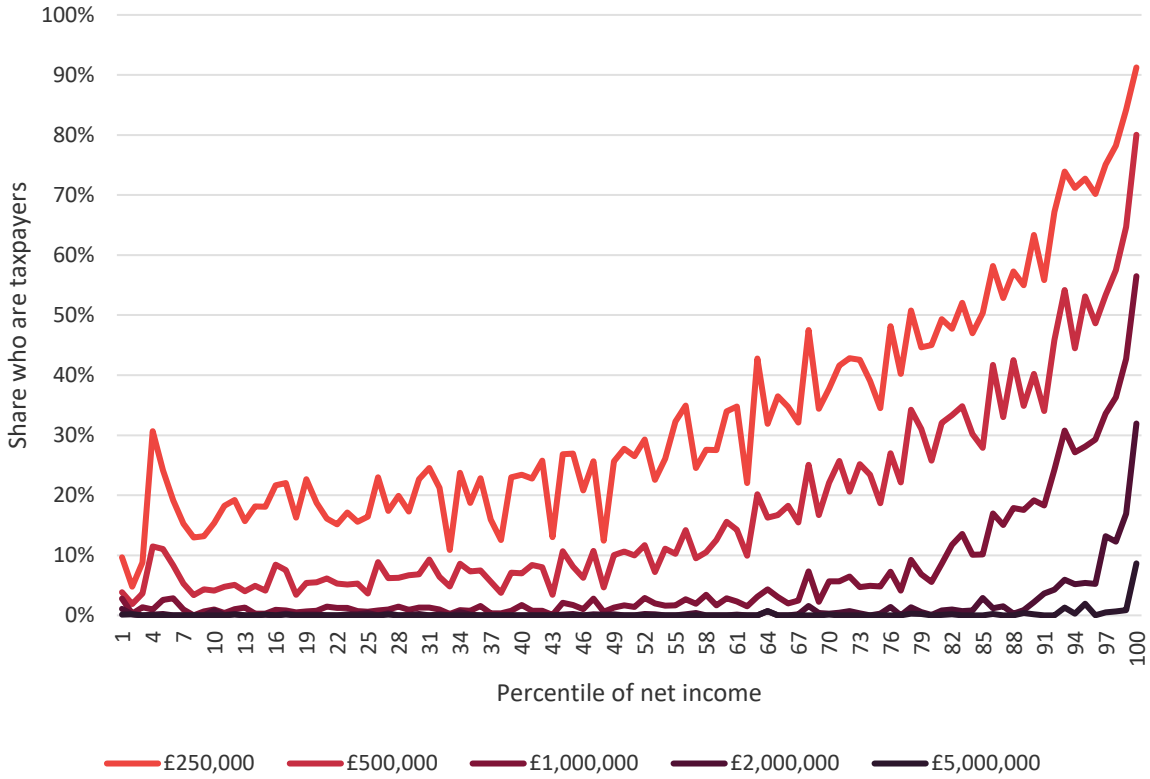


Notes: All adult individuals are ranked according to their total wealth measured at market value, and grouped into percentiles. Tax rates used are as per Table 1. The average tax rate faced by individual is the amount they *should* pay, and does not take behavioural responses into account. We take the democratic mean of average tax rates faced in each percentile. Appendix B shows the average tax rate by total chargeable wealth.
Source: ONS, Wealth and Assets Survey, 2016-18; Sunday Times Rich List, 2020.

On the whole, individuals higher up the *income* distribution are more likely to pay a wealth tax (Fig. 3). However, at each level of income there is some variation in wealth, and not all high-

income individuals have sufficient wealth to become taxpayers. Among those in the top 1% of the income distribution, 91% would pay a wealth tax with an exemption threshold of £250,000, compared with 25% of the population. As the threshold rises to £2 million, 32% would be liable to pay, and at a threshold of £5 million this figure falls to just 9%. Meanwhile, among those at the median of the income distribution, 10% would be liable to pay a wealth tax with an exemption threshold of £500,000.

FIGURE 3: WHO PAYS THE TAX UNDER DIFFERENT EXEMPTION THRESHOLDS, BY INCOME PERCENTILE

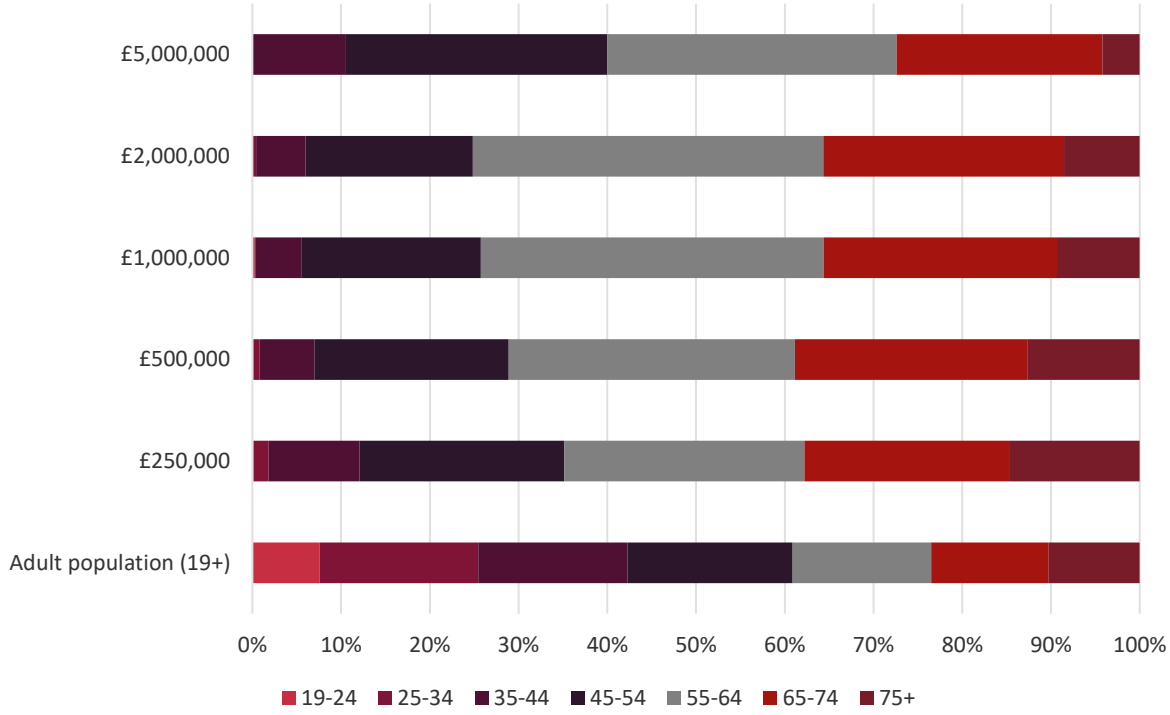


Notes: All adult individuals are ranked according to their net income, and grouped into percentiles. The chart shows the percentage of adults in each percentile group who would pay the tax for different exemption thresholds. The distribution is independent of the rate chosen, for a given threshold. Individuals in the Sunday Times Rich List are excluded from this analysis, as we have no information on their income. We do not show the distribution of taxpayers for thresholds above £5 million due to small sample sizes.
Source: ONS, Wealth and Assets Survey, 2016-18.

Older age groups are significantly over-represented among taxpayers for every threshold (Fig. 4). Despite accounting for just 39% of the adult population, adults over the age of 55 represent 60% of taxpayers under a £5 million threshold, rising to as much as 75% with an exemption threshold of £2 million. This figure illustrates clearly that the majority of taxpayers would actually be of working age, with those in the 55-64 age category being the most heavily represented. Only 1-2% of taxpayers are under the age of 35.

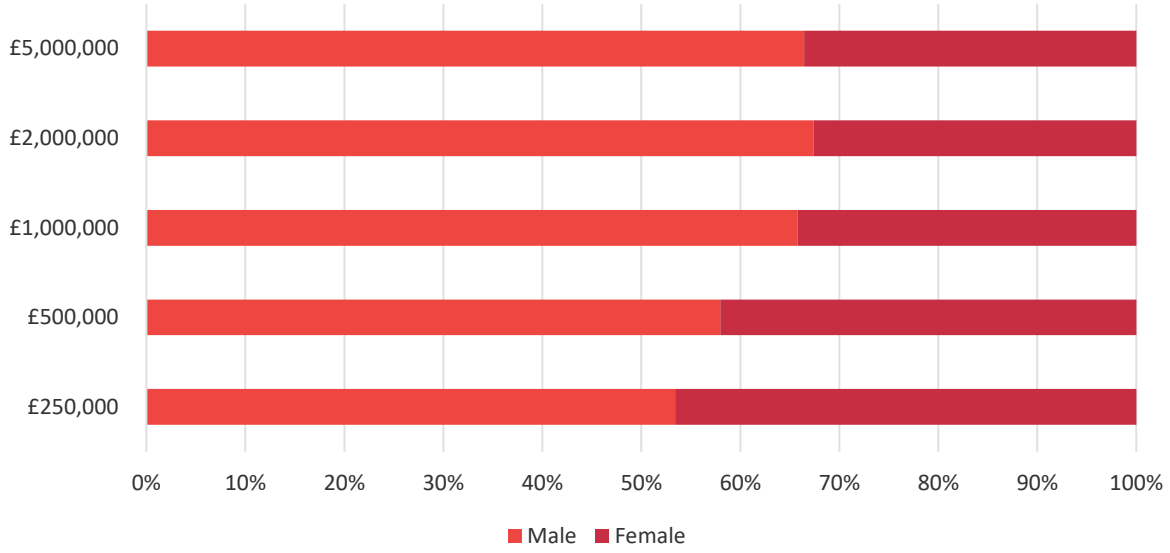
The higher the threshold, the higher the percentage of taxpayers who are male (Fig. 5). For each threshold, female taxpayers are in the minority. The gender imbalance is most pronounced under a wealth tax starting at £2 million, under which 67% of taxpayers are male. Note that this is assuming individuals do not adjust their wealth holdings in response to the tax. For a tax which defines the tax unit as the individual, we might expect some asset shifting within couples as a means of reducing their joint tax liability. This would make the gender imbalance less extreme in practice.

FIGURE 4: AGE DISTRIBUTION OF TAXPAYERS UNDER DIFFERENT EXEMPTION THRESHOLDS



Notes: The age distribution of taxpayers above different exemption thresholds is independent of the tax rate.
Source: ONS, Wealth and Assets Survey, 2016-18; Sunday Times Rich List, 2020.

FIGURE 5: SEX DISTRIBUTION OF TAXPAYERS UNDER DIFFERENT EXEMPTION THRESHOLDS



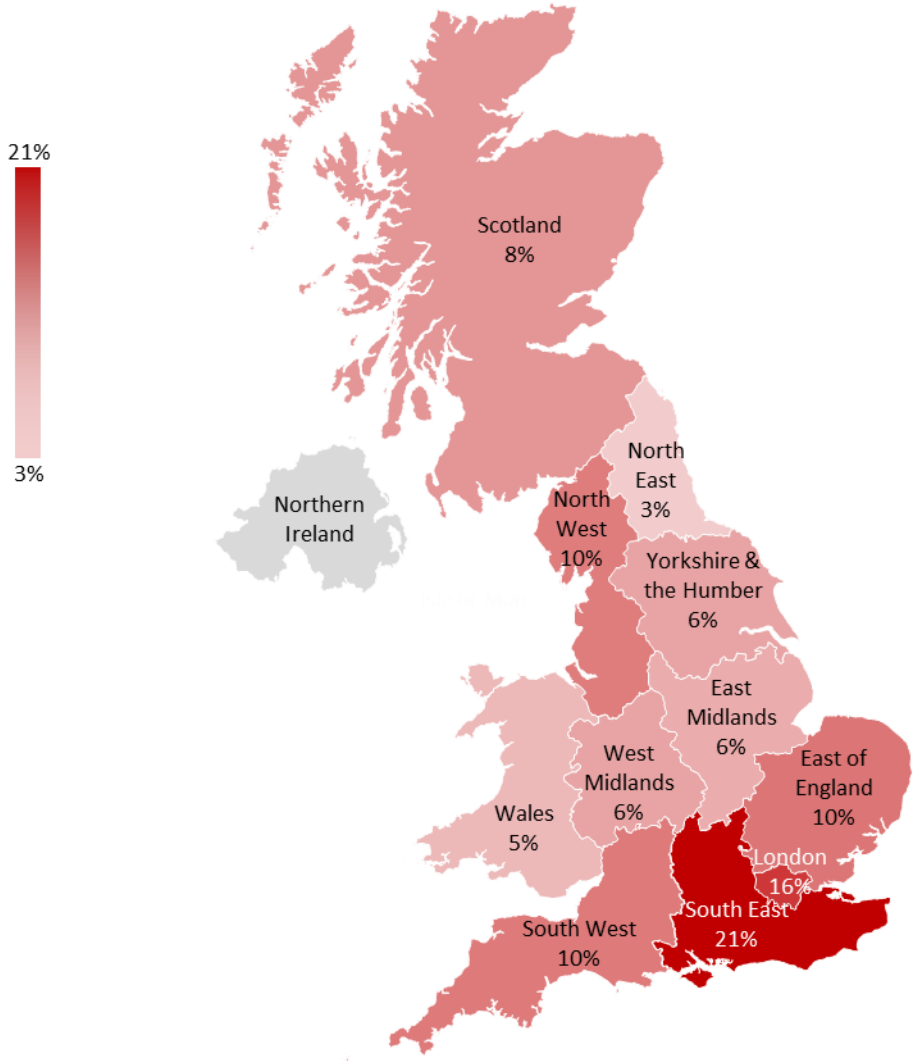
Notes: The gender distribution of taxpayers above different exemption thresholds is independent of the tax rate.
Source: ONS, Wealth and Assets Survey, 2016-18; Sunday Times Rich List, 2020.

The geographical distribution of taxpayers is skewed toward London and the South East, regardless of which threshold is chosen. Figure 6 illustrates the distribution of taxpayers for a tax starting at £500,000, under which London and the South East combined would account for 37% of all taxpayers.[8] By contrast, just 3% of taxpayers live in the North East. The majority of

[8] This is the percentage of taxpayers in Great Britain, as we do not have data for Northern Ireland.

taxpayers live in England; Scotland and Wales account for just 13% of taxpayers. Appendix C shows the geographical distribution of taxpayers for alternative exemption thresholds.

FIGURE 6: GEOGRAPHICAL DISTRIBUTION OF TAXPAYERS WITH A £500,000 EXEMPTION THRESHOLD



Notes: This chart shows how taxpayers would be distributed across the country if the tax featured an exemption threshold of £500,000. The distribution is independent of the tax rate. Individuals in the Sunday Times Rich List are not included in this analysis as we have no information on their region of residence. Appendix C shows the geographical distribution of taxpayers using different exemption thresholds. We have no data for Northern Ireland, and so the percentages shown are the percentage of taxpayers in Great Britain living in each region.
Source: ONS, Wealth and Assets Survey, 2016-18.

3.4 Liquidity Issues

Specific solutions may be required for individuals who face high tax liabilities relative to their income, especially if much of their wealth is illiquid. In this section, we illustrate the extent of liquidity problems faced by individuals under the annual tax structures presented in Section 3.2. We ask how many individuals are liquidity constrained under each of the tax structures raising £10 billion in revenue, and which groups of individuals are most affected.

In each scenario, we classify an individual as being liquidity constrained if their immediate tax liability exceeds 10% of their net income *and* 20% of their net income plus liquid assets. We

recognise that a specific solution is needed for the payment of taxes on pension wealth, as individuals below State Pension Age (SPA) generally do not have access to these funds. As recommended in Advani, Chamberlain and Summers (2020), a solution to this would be to allow individuals below SPA to pay any tax due on their pension wealth out of their lump sum once they reach SPA. Accordingly, we assume that once an individual reaches SPA, all of their wealth is 'immediately taxable'. For individuals below the SPA, we define immediately taxable wealth as all non-pension wealth, plus the value of pensions that are already in payment, as this wealth has already been accessed.[9]

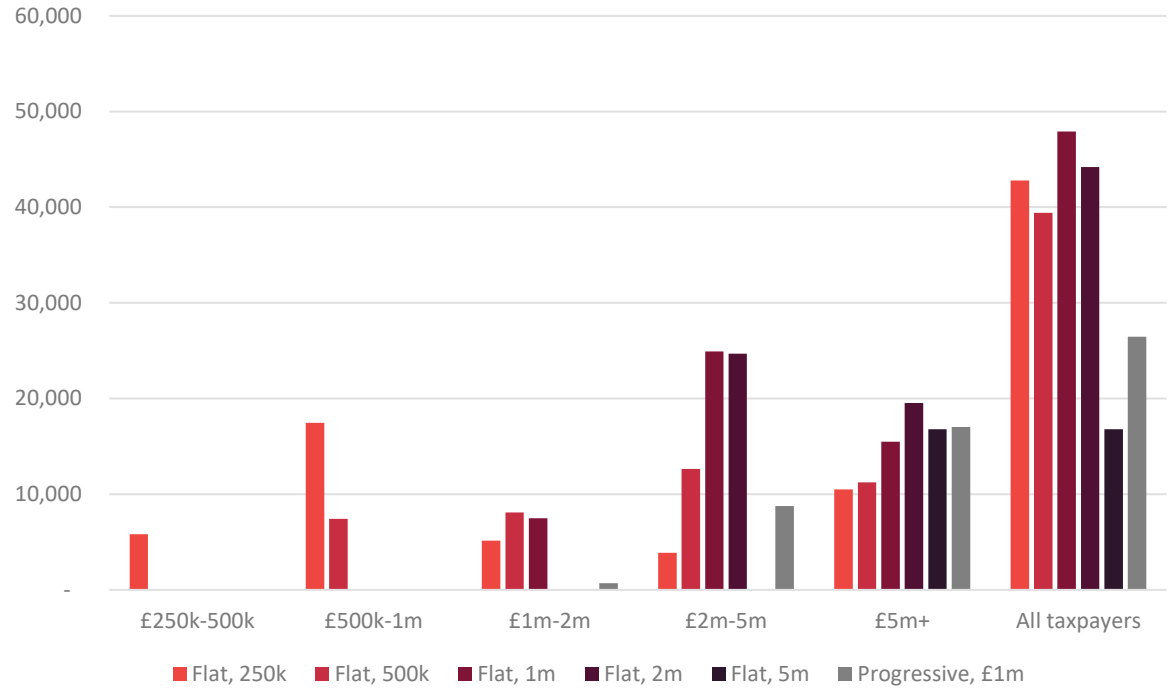
We define 'liquid wealth' as financial wealth, plus certain forms of pension wealth depending on whether the individual is above or below SPA. If the individual is below SPA, we assume that all of their pension wealth is illiquid.[10] If the individual is above SPA, we assume that any remaining wealth in a Defined Contribution pension pot becomes liquid, plus any lump sums from Defined Benefit pensions that have not yet been claimed. However, wealth arising from the discounted stream of income from a Defined Benefit or annuitised pension pot, or any other form of regular pension income, is assumed to be illiquid. [11] In practice, it is difficult to distinguish between liquid and illiquid forms of wealth. We expect some of our assumptions to classify too much pension wealth as illiquid, but that our classification of all financial wealth as liquid will have the opposite effect. It is not clear whether the net effect is positive or negative.

Of the annual tax structures raising £10 billion in revenue, a flat tax starting at £1m generates the largest number of liquidity constrained taxpayers, with over 47,000 taxpayers facing liquidity issues (Fig. 7). Though a flat tax starting at £250,000 generates almost as many liquidity constrained taxpayers, the share of taxpayers they represent is much lower, at just 0.3% (Fig. 8). By contrast, though the number of liquidity constrained taxpayers is much lower for a tax starting at £5m, at 17,000, this accounts for 20.4% of all taxpayers. Note that for each tax structure, we are adjusting the tax rates to target £10 billion in revenue. Therefore, the higher the threshold, the higher the marginal tax rate faced by individuals at the top. If we did not adjust the rates, then raising the threshold would reduce the number of liquidity constrained taxpayers, but this would also reduce revenue.

Under an annual wealth tax generating £10 billion before administration costs, the majority of liquidity constrained taxpayers have a business as their main asset (Fig. 9). The only tax structure for which this is not true is a flat tax starting at £250,000, where the composition of main assets among those who are liquidity constrained is more evenly spread. At this lower threshold, 24% of liquidity constrained taxpayers have their main residence as their main asset. As the threshold rises to £500,000, this percentage falls to 12%. At higher thresholds, business assets become much more important among those who are liquidity constrained. At a threshold of £500,000, 64% have a business asset as their main asset. With a threshold of £5 million, 93% have a business as their main asset.

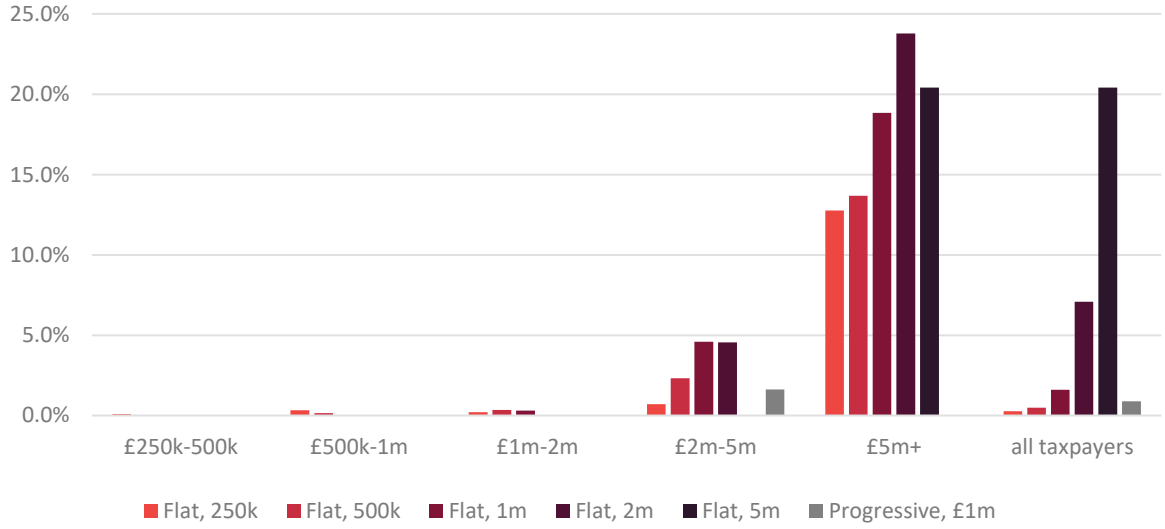
[9] A 'pension in payment' is one from which an individual is receiving a regular income stream. It is possible that there will be some individuals below SPA who have already accessed their pension pot, but are not receiving a regular income from their pension. We expect this wealth to be immediately taxable, but are unable to include these pensions in our definition of immediately taxable wealth due to data limitations.
[10] It is possible that for individuals deriving a regular income from a pension, some of this wealth is in fact liquid. This will not be the case for Defined Benefit payments or income from an annuity, but may be the case if the income is being received through a flexible drawdown arrangement. It is not possible for us to separate these income streams in order to classify them separately as liquid or illiquid, and so we treat all pension in payment as illiquid. This applies to individuals both above and below SPA.
[11] This includes Additional Voluntary Contribution pots that are part of Defined Benefit or hybrid schemes. It also includes both personal and occupational pensions.

FIGURE 7: NUMBER OF TAXPAYERS LIQUIDITY CONSTRAINED UNDER TAXES RAISING £10BN IN REVENUE, BY RANGE OF NET WEALTH



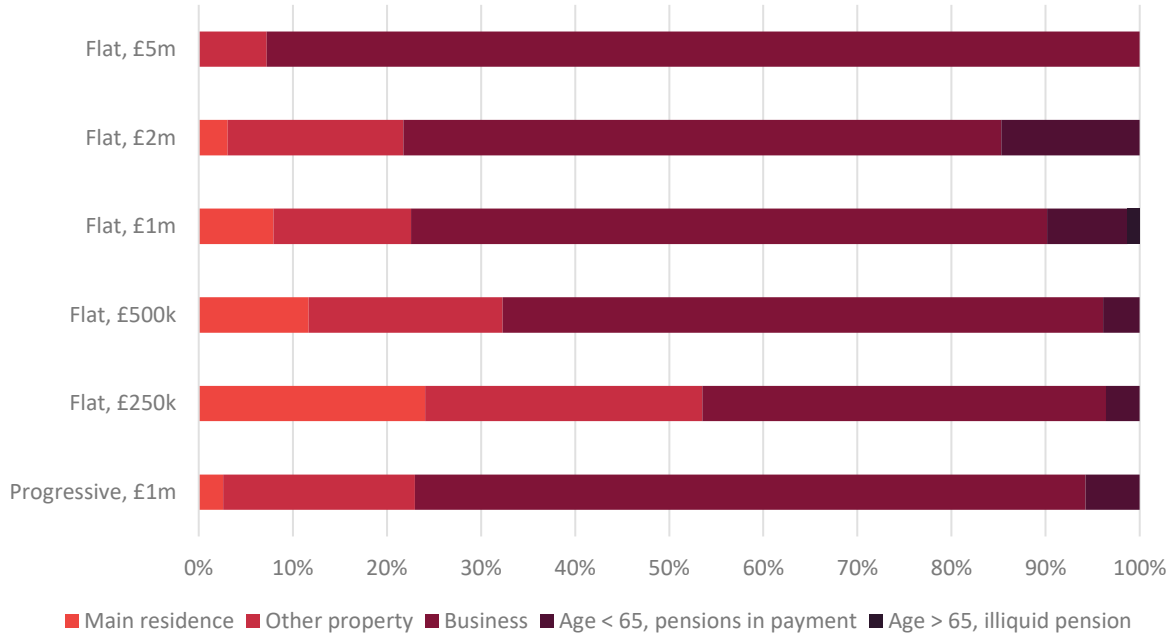
Notes: An individual is liquidity constrained if their immediate tax liability (defined in Section 3.4) exceeds more than 10% of their net income *and* 20% of their net income plus liquid wealth. Tax rates used are as per Table 1. Individuals in the Sunday Times Rich List are not included in this analysis. For individuals at the top of the WAS, we use their Pareto-adjusted business wealth values, but adjust their net income to maintain the same ratio of wealth to income as reported in the WAS. We do not present liquidity analysis using thresholds above £5 million due to small sample sizes. The numbers underlying this graph are provided in Appendix D.
Source: ONS, Wealth and Assets Survey, 2016-18.

FIGURE 8: PERCENTAGE OF TAXPAYERS LIQUIDITY CONSTRAINED UNDER TAXES RAISING £10BN IN REVENUE, BY RANGE OF NET WEALTH



Notes: An individual is liquidity constrained if their immediate tax liability (defined in Section 3.4) exceeds more than 10% of their net income *and* 20% of their net income plus liquid wealth. Tax rates used are as per Table 1. Individuals in the Sunday Times Rich List are not included in this analysis. For individuals at the top of the WAS, we use their Pareto-adjusted business wealth values, but adjust their net income to maintain the same ratio of wealth to income as reported in the WAS. We do not present liquidity analysis using thresholds above £5 million due to small sample sizes. The numbers underlying this graph are provided in Appendix D.
Source: ONS, Wealth and Assets Survey, 2016-18.

FIGURE 9: MAIN ASSET AMONG THOSE WHO ARE LIQUIDITY CONSTRAINED UNDER DIFFERENT ANNUAL TAX STRUCTURES GENERATING £10BN IN REVENUE



Notes: An individual's main asset is the largest asset in their wealth portfolio after the exemption of low-value items (see Section 2.1 for details). Individuals in the Sunday Times Rich List are not included in this analysis. For individuals at the top of the WAS, we use their Pareto-adjusted business wealth values. We do not present liquidity analysis using thresholds above £5 million due to small sample sizes.
Source: ONS, Wealth and Assets Survey, 2016-18.

3.5 Banding

Daly and Loutzenhiser (2020) discuss in detail the challenges of establishing the exact value of a person's total wealth at a given point in time – a difficult exercise which is nonetheless necessary for all taxpayers captured in the flat (or progressive) tax regimes described above. Our estimates also suggest that establishing the value of many of these assets may be costly for taxpayers (see Appendix A). One way to address this problem is to use a regime of tax bands, within each of which the tax charge is a fixed fee: this will obviate the need for exact valuations of wealth for many taxpayers.[12] In this section we discuss how revenue raised changes if using a banded regime rather than one of the flat tax regimes as discussed above.

Hughson (2020) addresses many of the issues and challenges in using such a regime as an alternative to a flat or progressive tax as described above. A key insight from this work is that a banding scheme is a blunt instrument which generates inequity: in a band covering wealth of £1m-£2m, someone with £1m in wealth pays the same amount in tax as someone with almost twice as much wealth, and (perhaps substantially) more than someone with just under £1m. There is a tension between limiting the extent of this inequity by having bands narrow enough to effectively target wealth, and choosing a set of bands wide enough to materially simplify the reporting burden of a significant proportion of taxpayers.

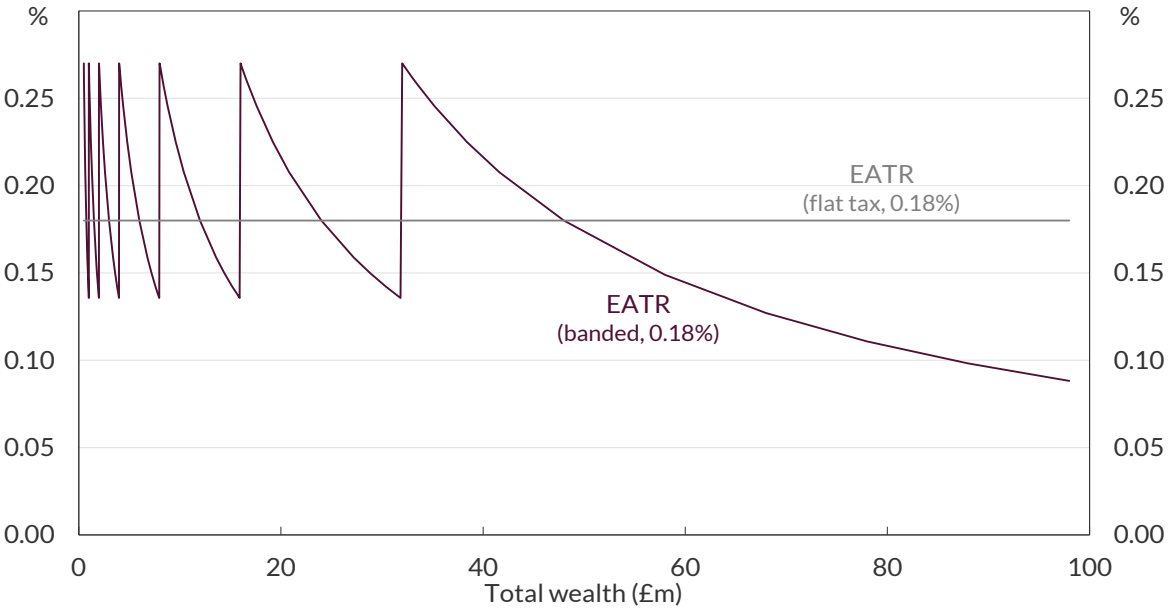
We demonstrate an example banding scheme with bands of increasing widths of total wealth: £500,000-£1m, £1m-2m, £2m-4m, £4m-8m, £8m-16m, £16m-32m, and £32m and over. We set the charge within bands based on the midpoint of the band (multiplied by a rate of 0.18%, for

[12] The current Annual Tax on Enveloped Dwellings (ATED) regime functions in a similar way, although it is only applied to one asset class (property).

comparability with a flat tax starting at £500,000).[13] The charge for the (open-ended) top of the band is set with reference to 150% of the threshold.

Figure 10 demonstrates what such a scheme would imply in terms of the effective average tax rate (EATR) paid – that is, the relevant banding charge divided by an individual's total wealth. The amount of tax paid under the banded regime is equal to the flat tax (only) at the midpoint of each band, and the band thresholds are clearly traced out at the points the EATRs jump higher. The vertical inequality created is clear: those at the bottom of each band pay a larger share of their wealth in tax than people at the top. The long tail at the right-hand side of the graph demonstrates a difficulty plaguing any banding regime: because the wealth distribution has such a long, thin tail, it is difficult to design a set of thresholds in which the very wealthiest members of society pay anything other than a tiny proportion of their total wealth in tax (especially as compared to others at the bottom of the same band, who are often paying extremely high rates).

FIGURE 10: EFFECTIVE TAX RATES IN A BANDED REGIME



Notes: Tax liability calculated with reference to the mid-point of the relevant band (£48m for top band); EATR is calculated dividing tax liability by total marketable wealth.
Source: Authors' calculations.

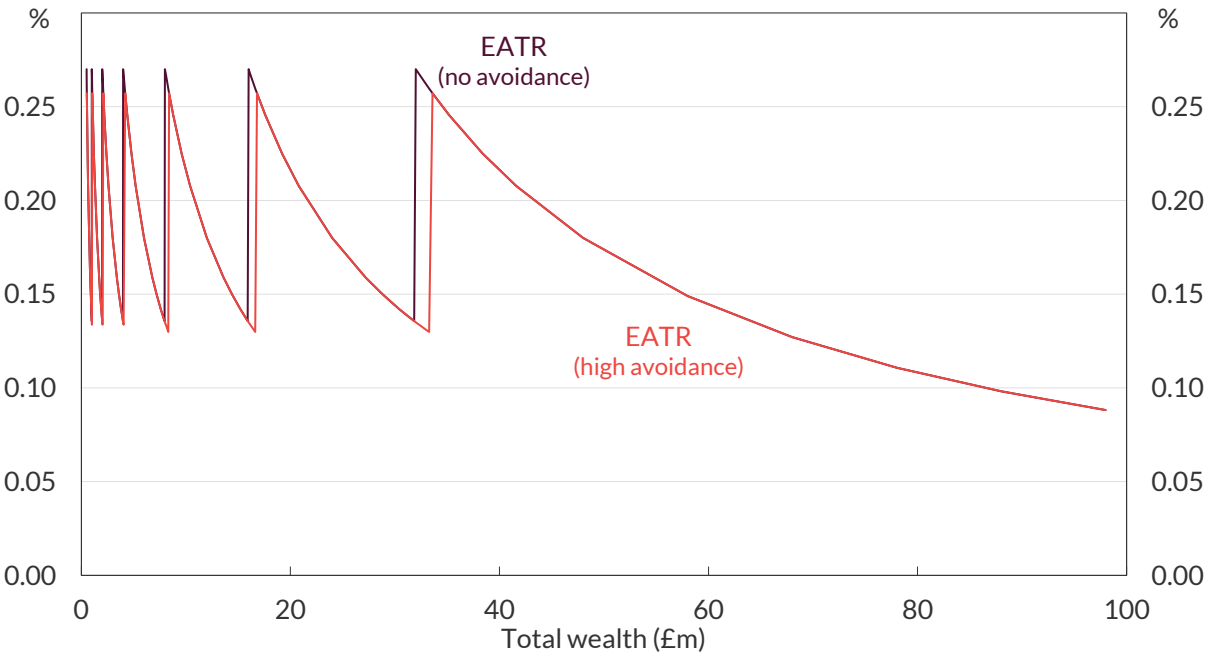
The interaction between a banded regime and avoidance is also an important consideration. Relative to a flat or even a progressive tax regime, a banded regime creates considerably stronger incentives for avoidance for those at the bottom of each band, who have only to reduce their reported wealth by enough to fall into the lower band in order to significantly decrease their tax liability. As noted in Section 3.1, by modelling an average avoidance response, we miss the heterogeneity in responses which is likely here: the incentives for avoidance are sharpened around band thresholds and dulled elsewhere.

Figure 11 demonstrates the interaction between avoidance behaviour and a banding regime: the dark line repeats the line from Figure 10 above, showing what the effective average tax rate (EATR) paid should be, with no avoidance. In our modelling, avoidance takes a very particular shape: everyone reduces their reported wealth, but this only changes the tax liability of those

[13] Hughson (2020) discusses in some detail the issues involved in the choice of the tax charge within each band. A charge based on median wealth in the band would imply lower tax rates throughout and revenues closer to the equivalent flat tax regime, but is more difficult to justify for wider and wider bands, as well as being harder to implement in practice.

close enough to the bottom of each band to fall into the lower tax band, while most others remain in the same band, so their tax liability is not affected. The result is that those who should be at the bottom of each band pay a lower EATR than those with slightly less wealth just the other side of the threshold. Because avoidance behaviour is being applied equally to all taxpayers and ignores heterogeneous responses, which in reality would probably see avoidance more focused around the band thresholds, the approach we have taken is likely to underestimate the overall impact of avoidance.

FIGURE 11: EFFECTIVE TAX RATES AND AVOIDANCE UNDER A BANDING SCHEME



Notes: Tax liability calculated with reference to the mid-point of the relevant band (£48m for top band); EATR is calculated dividing tax liability by total marketable wealth. Avoidance calculated as elasticity of 17 applied to the no-avoidance EATR.
Source: Authors' calculations.

The impact of banding on revenue collected is notable. We compare the £10-10.2bn raised by a 0.18% flat tax above £500,000 with revenue that would be raised by the banded regime explored above (which has relatively low, dense bands), and with another possible banded regime, with fewer bands but extending much further up the wealth distribution: £500,000-£2m, £2-5m, £5-20m, £20-50m, £50-200m, and £200m and over. The former regime could be conceived of as an attempt to more evenly split numbers of individuals, while the latter will do a better job of ensuring that tax liabilities track wealth more closely at the very top.

Table 3 provides a summary of estimated revenues using the two schemes, under the two avoidance scenarios outlines in Section 3.1. Unsurprisingly, more revenue is collected under a low avoidance than under a high avoidance scenario. However, consistently across either banding regime and either avoidance scenario, the revenue collected exceeds that under a flat tax. This results from a combination of the pattern demonstrated in Figure 10, where as a result of the banding scheme people at the bottom of each band are paying more than they would under an *ad valorem* scheme while those at the top pay less, and the positively skewed distribution of wealth, which means that there are many more people at the bottom of each band than there are at the top. The difference between the two banding schemes under either avoidance scenario highlights how sensitive revenues may be to the exact design of such a scheme.

TABLE 3: AMOUNT OF REVENUE RAISED UNDER 0.18% TAX AND £500,000 THRESHOLDS

Tax structure	Rate(s)	Revenue (£bn)	Number of taxpayers
Low avoidance			
Flat	0.18% (flat tax)	10.2	8,245,957
Banded: low bands	0.18% (applied to midpoint)	17.8	8,060,807
Banded: wide bands	0.18% (applied to midpoint)	22.2	7,945,246
High avoidance			
Flat	0.18% (flat tax)	10.0	8,245,957
Banded: low bands	0.18% (applied to midpoint)	17.1	7,832,693
Banded: wide bands	0.18% (applied to midpoint)	21.1	7,563,965

Source Authors' calculations using ONS, Wealth and Assets Survey, 2016-18.

4. Modelling a one-off wealth tax

4.1 Approach

As with an annual wealth tax, we use data from the WAS and the STRL on the amount of wealth above various thresholds to calculate the revenue that could be raised from a one-off wealth tax. Our approach is broadly similar to the one described in Section 3.1. The key difference between an annual and a one-off wealth tax is the behavioural response. We assume that a one-off wealth tax would be based on a predetermined date, providing no scope for real responses which reduce an individual's tax liability.

The kind of avoidance responses we allow for in our analysis of an annual wealth tax do not apply in this setting. However, we may still worry about non-compliance and genuine errors. Though individuals cannot reduce their liability by, for example, giving away some of their wealth, they could choose not to report it on their tax return, or unintentionally omit it. Troup, Barnett, Bullock (2020) estimate that 10% of the revenue from a wealth tax would be lost due to some combination of non-compliance and errors in this scenario. The approach we adopt for a one-off wealth tax is to calculate the revenue raised based on wealth as it is reported in the WAS/STRL. We then reduce the resulting revenue estimate by 10% to reflect the likely tax gap.

A one-off wealth tax is assumed to generate the same admin costs as an annual tax. The main difference is that, whereas for an annual tax it is the ongoing costs which inform the net revenue that would be raised going forwards, for a one-off tax there is no distinction between a one-off and an ongoing admin cost, as the latter are only incurred once.

There is no reason to assume that a one-off wealth tax would have to be paid in a single instalment, indeed this would be unrealistic. In the subsequent analysis, we often report the annualised rate of tax that individuals effectively pay, if payment was allowed over a 5-year period. For example, an individual facing a flat tax at a rate of 5% would pay 1% per year over 5 years.

4.2 Revenue

In this section, we present amount of revenue that would be raised by a flat tax charging 5% on wealth above various thresholds. We also show the combinations of rates and thresholds that would be required to generate £250 billion from a one-off wealth tax, before admin costs. This is effectively equivalent to raising £10 billion per year over a 25-year period.

A tax rate of 5% would generate a substantial amount of revenue if charged on wealth above a relatively low threshold – £390 billion with a threshold of £250,000. The higher the threshold, the less revenue can be raised from a 5% tax. If only wealth above £10 million were charged, this would raise £43 billion.

If the government wished to raise around £250 billion with a one-off wealth tax, it could do so with a relatively high threshold of £1 million, but this would imply taxing wealth above the threshold at a rate of 8.5% (Table 4). At lower thresholds, lower rates would be possible. Note, however, that raising £50 billion a year requires much higher rates than for the earlier annual wealth tax targeting £10 billion. This will have implications for the number and composition of those facing liquidity constraints under a one-off wealth tax, as discussed in Section 4.4.

TABLE 4: REVENUE ESTIMATES FOR A ONE-OFF TAX – FLAT AND PROGRESSIVE TAXES

Threshold per individual (£)	Annualised rate	Revenue (£bn)	Taxpayers ('000)	Administrative cost (£bn): to taxpayer	to govt
Flat tax at 5%					
10,000,000	1%	43	22	1	0.6
5,000,000	1%	53	83	1	0.6
2,000,000	1%	81	626	2	0.7
1,000,000	1%	147	3,004	4	1
500,000	1%	262	8,246	7	2
250,000	1%	390	15,537	10	3
Flat tax raising £250bn					
1,000,000	1.7%	250	3,004	4	1
500,000	1.0%	250	8,246	7	2
250,000	0.6%	250	15,537	10	3
Progressive taxes raising £250bn					
1,000,000	0.8%	250	3,004	4	1
2,000,000	1.6%				
5,000,000	2.4%				
10,000,000	3.0%				
500,000	0.6%	250	8,246	7	2
1,000,000	1.0%				
2,000,000	1.2%				
5,000,000	1.4%				
10,000,000	1.6%				

Notes: These revenue estimates account for 10% of tax revenue being lost to non-compliance.
Source ONS, Wealth and Assets Survey, 2016-18; Sunday Times Rich List, 2020; Burgherr, 2020; House of Commons Library Research Paper, 2005; HMRC Government Major Project Portfolio data, 2020d.

Even under a progressive tax, raising the threshold does not necessarily mean that taxpayers higher up the wealth distribution pay less (Table 5). Under a one-off tax generating £250 billion with a £1 million exemption threshold, a taxpayer with £7.5 million in net wealth pays £116,000. By lowering the threshold to £500,000 while maintaining the same revenue target, the same individual will pay £84,000. Revenue is maintained by increasing the amount of revenue from taxpayers lower down the wealth distribution.

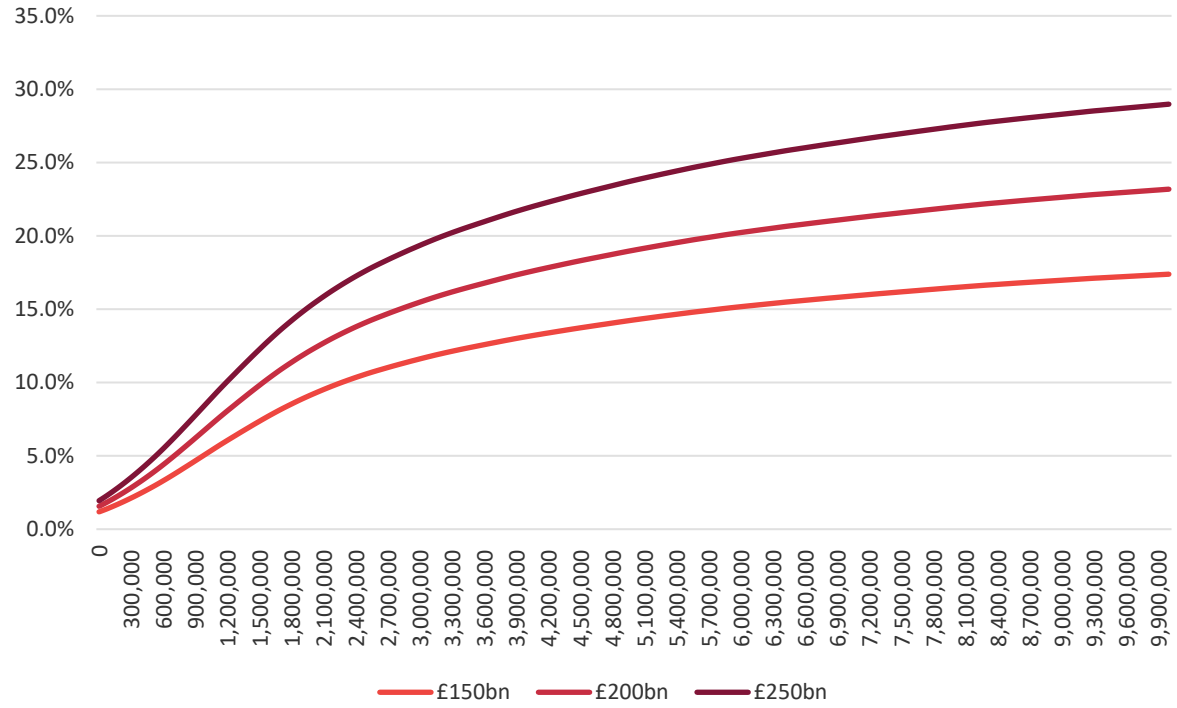
TABLE 5: AMOUNT OF TAX PAID BY A REPRESENTATIVE INDIVIDUAL UNDER A ONE-OFF TAX WITH DIFFERENT THRESHOLDS (£)

Threshold per individual (£)	Annualised rate	Individual net wealth (£)				
		750,000	1,500,000	3,000,000	7,500,000	15,000,000
Progressive taxes generating £250bn						
500,000	0%					
1,000,000	0.80%					
2,000,000	1.60%		4,000	24,000	116,000	326,000
5,000,000	2.40%					
10,000,000	3.00%					
500,000	0.60%					
1,000,000	1.00%					
2,000,000	1.20%	1,500	8,000	25,000	84,000	199,000
5,000,000	1.40%					
10,000,000	1.60%					
500,000	0.96%					
1,000,000	0.96%					
2,000,000	0.96%	2,400	9,600	24,000	67,200	139,200
5,000,000	0.96%					
10,000,000	0.96%					
Number of individuals within 10% of this net wealth		813	323	55	6	4

Source ONS, Wealth and Assets Survey, 2016-18.

Figure 12 shows the different combinations of rates and thresholds that would be required to generate different revenue targets from a one-off wealth tax, after admin costs. Naturally, the higher the revenue target, the higher the rate needed for a given exemption threshold.

FIGURE 12: RATES AND THRESHOLDS GENERATING DIFFERENT REVENUE TARGETS FROM A ONE-OFF WEALTH TAX, AFTER ADMIN COSTS



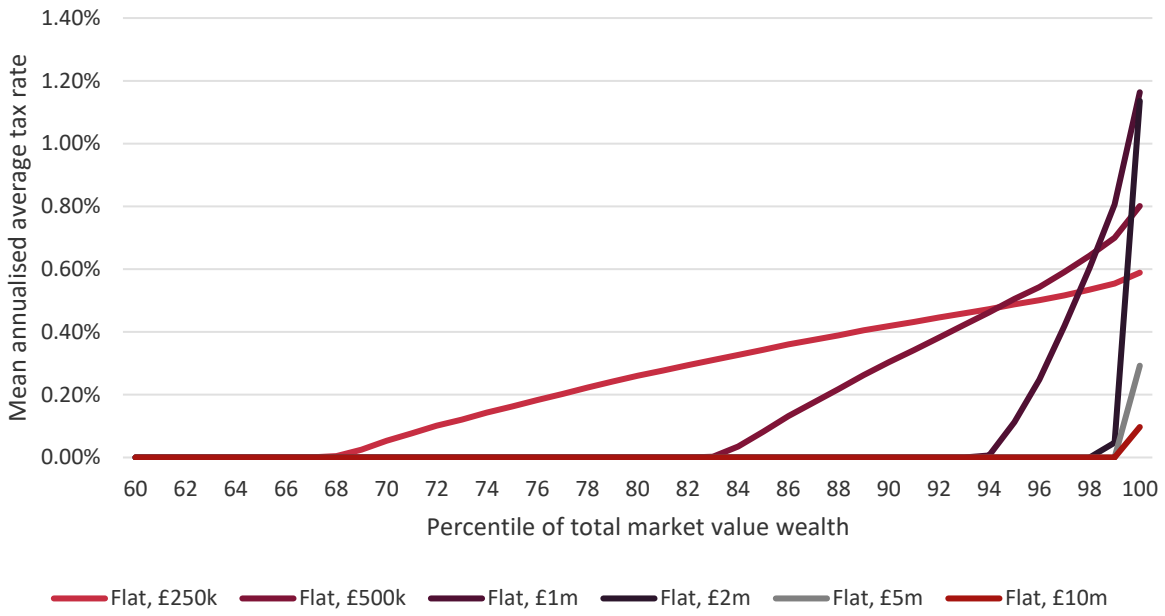
Notes: Tax rates are those required to generate the revenue target after admin costs are taken into account. We assume that 10% of tax revenue is lost to non-compliance.
Source: ONS, Wealth and Assets Survey, 2016-18; Sunday Times Rich List, 2020.

4.3 Distributional Effects

Given that taxpayer status depends only on having wealth above the tax threshold, and not on the frequency of the tax or rates charged, much of the analysis presented in Section 3.3 also applies in the context of a one-off wealth tax. What will differ is the *amounts* of tax paid by different taxpayers.

In Section 3.3, we showed how the share of wealth taxpayers varies across the income distribution for a given threshold. This is the same for a one-off tax, since it does not depend on the tax rate charged. Figure 13 illustrates how the annualised average tax rate under a one-off tax varies across the wealth distribution. The annualised rates are noticeably higher than for an annual wealth tax. The average tax rate paid by someone in the top 1% is 0.96% in each of the 5 years, compared to 0.18% under an annual wealth tax generating £10 billion in revenue. In Appendix B, we show how the average tax rate varies by total wealth, rather than by percentile. Here, it is evident that as wealth increases, the average tax rate gradually converges to the headline marginal rate.

FIGURE 13: MEAN AVERAGE (ANNUALISED) TAX RATE BY PERCENTILE UNDER DIFFERENT ONE-OFF TAX STRUCTURES



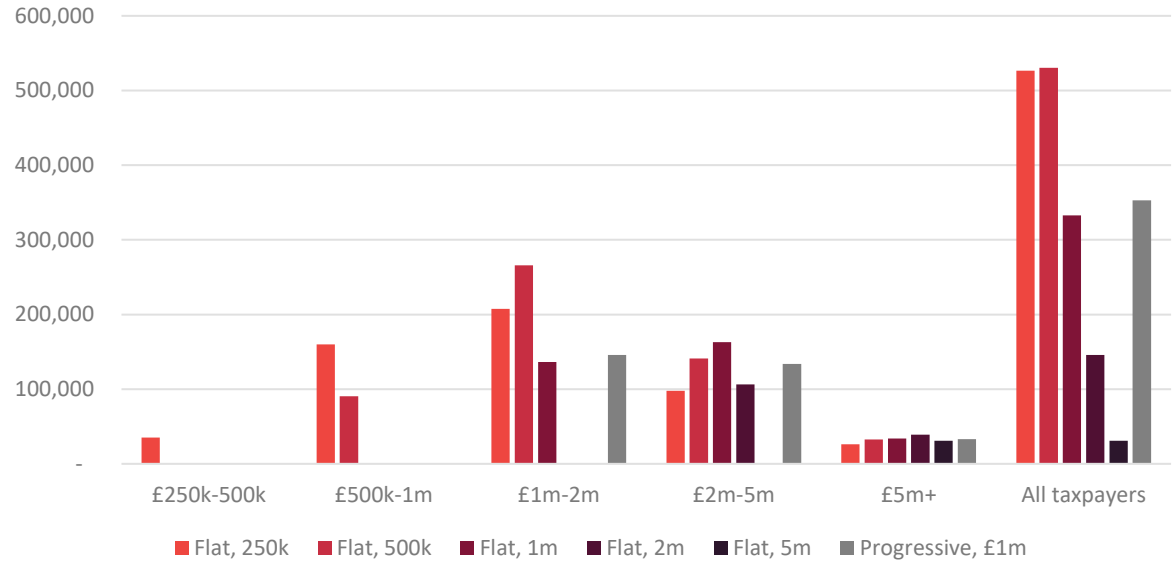
Notes: All adult individuals are ranked according to their total wealth measured at market value, and grouped into percentiles. For each tax structure, the tax rates are adjusted to target £250 billion in revenue, before admin costs, as per Table 4. The annualised average tax rate faced by individual is the amount they *should* pay in each year of the 5-year payment period, and does not take behavioural responses into account. We take the democratic mean of average tax rates faced in each percentile. Appendix B shows the average tax rate by total chargeable wealth.
Source: ONS, Wealth and Assets Survey, 2016-18; Sunday Times Rich List, 2020.

4.4 Liquidity Issues

The tax rates required to raise £250 billion in tax revenue from a one-off wealth tax – effectively £10 billion per year over a 25-year period – are clearly higher than the rates required to generate £10 billion from an annual wealth tax. Under a flat tax starting at £500,000, taxpayers would face a tax rate of 4.8% under a one-off tax, or 0.96% per year over a 5-year payment period. By contrast, the same individual would have to pay 0.18% per year under an annual wealth tax. As a result, the number of taxpayers who are liquidity constrained under a one-off wealth tax will far exceed the number constrained under an annual tax.

Figure 14 shows the number of taxpayers that would be liquidity constrained under a wealth tax generating £250 billion with a 5-year payment period. An individual is liquidity constrained if the amount of tax they have to pay *in the first of the 5 years* exceeds 10% of their net income, and 20% of their net income plus liquid wealth (see Section 3.4 for details). In this setting, a flat tax starting at £500,000 generates the greatest number of liquidity constrained taxpayers, at 530,000 (6.4%). Less than 10% of these individuals would be liquidity constrained under an annual flat tax generating £10 billion. As a percentage of the number of taxpayers, a flat tax starting at £5 million produces the highest share facing liquidity constraints, at 38%.

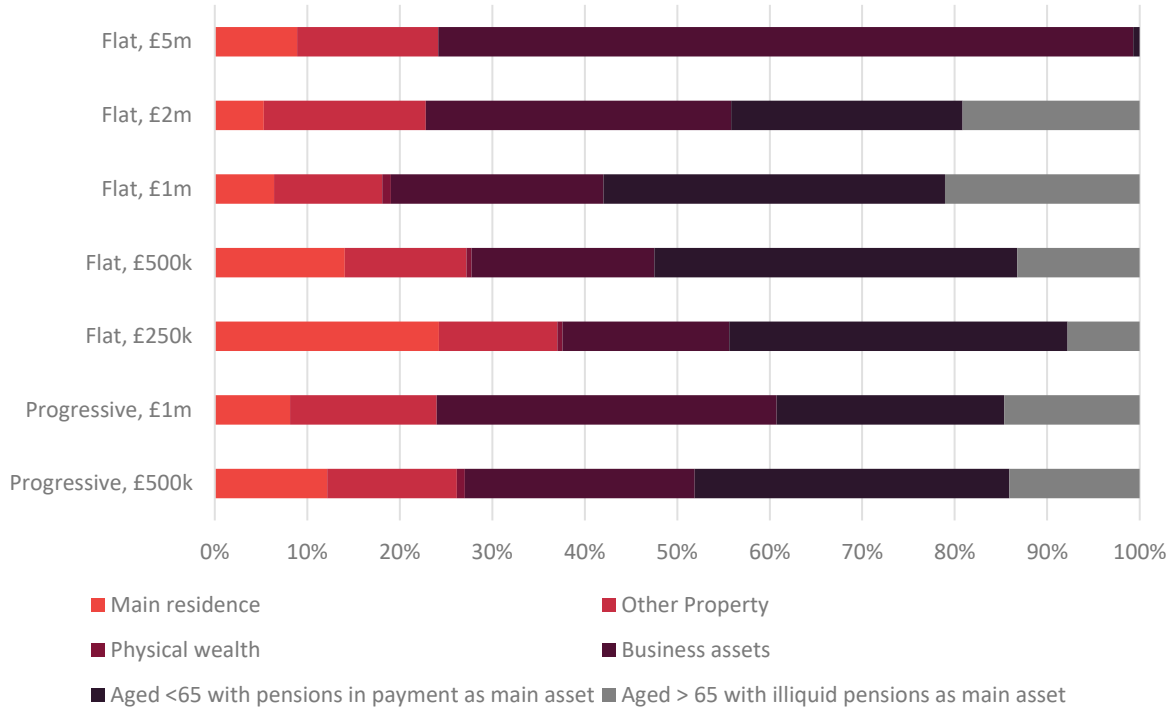
FIGURE 14: NUMBER OF TAXPAYERS LIQUIDITY CONSTRAINED UNDER TAXES RAISING £250BN IN REVENUE, BY RANGE OF NET WEALTH



Notes: An individual is liquidity constrained if their immediate tax liability (defined in Section 3.4) exceeds more than 10% of their net income *and* 20% of their net income plus liquid wealth. Tax rates used are as per Table 4, where we target £250bn in revenue under each tax structure. Individuals in the Sunday Times Rich List are not included in this analysis. For individuals at the top of the WAS, we use their Pareto-adjusted business wealth values, but adjust their net income to maintain the same ratio of wealth to income as reported in the WAS. We do not present liquidity analysis using thresholds above £5 million due to small sample sizes. The numbers underlying this graph are provided in Appendix D.
Source: ONS, Wealth and Assets Survey, 2016-18.

The composition of main assets among those who are liquidity constrained under a one-off wealth tax is markedly different than for an annual wealth tax generating £10 billion in revenue (Section 3.4), as many more taxpayers are liquidity constrained under a one-off tax generating £250 billion in revenue. Business assets still feature prominently as a main asset among those constrained, and are the most common main asset among those constrained by a tax with an exemption threshold of at least £2 million. However, pension assets are a much more common main asset among the liquidity constrained than under an annual tax. With a flat tax starting at £500,000, 52% of those who are liquidity constrained have illiquid pension wealth as their main asset. For those over State Pension Age, this consists of annuitised and Defined Benefit pensions, which are illiquid. For those below State Pension Age, this consists of pensions already providing a regular income stream, on which they are expected to pay a wealth tax immediately as the pension has already been accessed.

FIGURE 15: MAIN ASSET AMONG THOSE WHO ARE LIQUIDITY CONSTRAINED UNDER DIFFERENT ONE-OFF TAX STRUCTURES GENERATING £250BN IN REVENUE



Notes: An individual's main asset is the largest asset in their wealth portfolio after the exemption of low-value items (see Section 2.1 for details). Individuals in the Sunday Times Rich List are not included in this analysis. For individuals at the top of the WAS, we use their Pareto-adjusted business wealth values. We do not present liquidity analysis using thresholds above £5 million due to small sample sizes.
Source: ONS, Wealth and Assets Survey, 2016-18.

4.5 Banding

As discussed in Section 3.5 above, a tax regime which utilises tax bands can alleviate the valuation challenges for taxpayers, but this can have a large impact on revenue: even with relatively tight bands, the revenue collected tends to be higher than that under a flat tax equivalent, because the bulk of taxpayers pay more.

Banding also has a marked impact on revenue in the context of a one-off wealth tax. Even if we assume the same response from taxpayers (i.e. reducing wealth above the threshold by 10% to reflect non-compliance) as in a one-off flat or progressive tax, the estimated revenue raised is over £460bn rather than £250bn under a flat tax.[14] It is worthwhile explicitly pointing out that, in this context, more revenue is not necessarily better: here the additional revenue comes from the distortion caused by the banded system, leading to many individuals paying far higher tax rates than they would under an *ad valorem* tax. The costs of valuation would need to be extremely high in this scenario to justify such a substantial distortion.

This can be attenuated to some extent by basing the band charge on a point lower in the band. For example, basing the charge on the value a quarter of the way into the band (as opposed to the halfway point, the midpoint) reduces the estimated revenue collected to around £390bn.

[14] This estimate is based on the tightly-banded scheme outlined earlier, with thresholds at £500,000, £1m, £2m, £4m, £8m, £16m, and £32m.

That said, our modelling of avoidance behaviour in this scenario is quite mechanical, assuming that all taxpayers respond in the same way, by reducing their reported wealth by 10%. Some taxpayers fall into a lower band as a result, but for most, their payment will remain the same. Clearly, this is unrealistic, as those whose wealth is close to a band lower boundary have stronger incentives to respond than those higher up in the band. On net, though, this will only partly work against the effect of the high EATRs being paid by individuals at the bottom of each band, and will not remove the large variation in EATRs across individuals.

While it may be desirable to introduce a banding scheme as a response to the difficulty of valuing wealth precisely, the invariable result is that some individuals will pay much higher taxes than they would under an equivalent flat tax. It is only possible to avoid large distortions in the tax burden by having very tight bands. Hughson (2020) shows that the trade-off for this choice is the better valuation accuracy needed to avoid large numbers of individuals accidentally mis-classifying their wealth. In the case of a one-off wealth tax as described above, this might not be unreasonable given the recommended design implies performing high quality valuation across most of the tax base.

5. Alternative reforms to capital taxes

To get a sense of scale for wealth tax revenues, it is helpful to consider the effects of alternative reforms that have been proposed. In this section, we provide some evidence on the amount of revenue that could be raised from alternative reforms to capital taxes, namely Capital Gains Tax (CGT), Inheritance Tax (IHT), Council Tax.

5.1 CGT

The current CGT regime raised £8.8bn in 2019-20 (HMRC, 2020b), but recent estimates suggest the amount raised could be almost tripled by equalising the tax rates charged on capital gains with that charged on income. Capital gains are afforded a significant tax discount compared to earned income which incentivises those who can to take remuneration as gains instead of income, meaning that the taxation system does not redistribute remuneration from gains nearly as effectively as it does remuneration from income.

Advani and Summers (2020) show that, by taking advantage of the preferential tax rates afforded on capital gains, many of the highest-income earners pay lower rates of tax than those on below-average incomes. If everyone with total income and gains over £100,000 paid the headline average tax rates on earnings, this would raise a further £12 billion. The Office for Tax Simplification (OTS), in their review of Capital Gains Tax, suggested that the same reform could raise around £14bn (OTS, 2020).

A second substantial reform would be the removal of 'death uplift'. Currently, any accrued capital gains are written off on death. The estate of the individual who dies does not have to pay capital gains tax. The inheritor is treated as having a 'base cost' (original value of asset against which gain is calculated) equal to the value of the asset when they receive it, so when they sell they only pay tax on the gains that occur after receipt. This creates strong incentives to delay realising gains, so that the gains can be written off.

The OTS review of CGT proposes moving to a 'no-gain no-loss' basis. Here the estate of the individual continues not to have to pay the capital gains tax[15], but the inheritor now receives the asset at the base cost of the previous owner. No CGT is now written off: instead the CGT owed by the deceased is paid by the inheritor when the inheritors sells (or otherwise 'disposes of') the asset. The OTS estimates that this reform will raise only £470-900 million in additional tax revenue in the short term.

The relatively modest sum raised here – at 5-10% the current CGT revenue – is because many of the assets passed on will continue not to be sold for some time. The proposed reform also retains some lock-in effect for two reasons. First, for inheritors capital gains tax would have to be paid on the assets when sold, while the full value is otherwise available to borrow against – this is already a problem for the original owner, but the magnitude increases over time. Second, in the absence of new reliefs, it discourages *inter vivos* gift-giving (which would still require payment of CGT).

A better alternative would be to raise the money when assets are transferred, by treating this as a disposal. No-gain no-loss benefits those who have enough wealth that some assets can continue to be passed through multiple generations without ever being sold. In principle the same revenue will eventually be owed. However, there is a risk that the tax owed on some of

[15] There are some complexities in how this is structured, including the implications for inheritance tax, which we do not describe here. For full details see OTS (2020).

these gains gets wiped out by calls for 'rebasing' – essentially forgiveness of tax owed before some date. Such a proposal made its way in to the OTS review of CGT, on the basis that base costs for some assets cannot be found.[16]

Moving to a disposal treatment at death is likely to raise £1.6bn a year, almost 20% of the current CGT revenue, and would increase proportionally with the tax rate, on a static calculation (*inter alia,* OTS 2020, showing the long term equilibrium effects of removing uplift at death).

Removing uplift at death in favour of either of these alternatives would create some administrative cost. Although the estate must be valued on death anyway, base costs would now also be needed for assets. Assuming all assets are hard to value, and using the estimate from Burgherr (2020) that a central estimate of valuation costs is 0.5% of the total value of the asset, this would cost an additional £80 million per year.

5.2 IHT

Inheritance tax is a tax on wealth passing on death. The current tax base is far from comprehensive. Pension wealth is exempt from IHT, and reliefs are given on business assets (BPR) and agricultural property (APR). The exclusion of these assets from the tax base makes it easy for individuals who are flexible in how they hold their wealth to avoid the tax. Regarding pensions, the current system creates an unusual incentive for individuals to draw down all *other* wealth in order to pass on their pension pot tax-free to the next generation. This is particularly anomalous since pension savings already receive significant tax advantages when saving is being done.

The tax is, in principle, levied on wealth in excess of £325,000, though exemptions also apply, notably for estates passing to a surviving spouse.[17] The exemption threshold (nil rate band) each estate faces in practice depends on what assets it contains and who they are passing on to, as certain assets such as the main residence qualify for a higher exemption threshold if they are passed on to the direct descendants of the deceased. It also depends on whether or not the estate had been inherited from a spouse who did not use up their own nil rate band, as any excess can be transferred to the surviving spouse.

In sum, the multitude of exemptions and reliefs make the current inheritance tax system complex, and the tax easy for wealthy and well-advised individuals to avoid. This is evidenced by the fact that the effective average tax rate declines from 20% among estates worth more than £8-9 million to 10% for estates worth more than £10 million (OTS, 2018).

Numerous reforms to the existing tax system have been proposed. In this paper, we focus on two: the removal of APR and BPR, and the inclusion of pensions in the tax base.[18] We calculate the amount of revenue that could be raised from these reforms using data from the WAS for 2016-18, comparing this to official estimates of the charges levied on estates passing on death in 2017-18, which totalled £4.8 billion.[19]

[16] Given the work done by the Wealth Tax Commission to study valuation issues, we think that difficulty getting past asset values is unlikely to be a serious concern. Nevertheless it appears to be a politically salient issue, that has led to a proposal that base values be rebased to a value in the year 2000 (OTS, 2020).
[17] Charitable donations are also exempt.
[18] An alternative proposal, which we do not consider here is replacing inheritance tax entirely with a lifetime gifts tax. See Corlett (2018), Roberts et al. (2018) and Dolphin (2020) for details.
[19] Tax due on estates passing on death in 2017-18, Inheritance Tax Statistics Table 12.2 (HMRC, 2020c).

Approach

The WAS represents a snapshot of the wealth held by the living population, rather than the population of estates passing on death. To model the value of estates passing on death, we apply age-sex specific mortality rates to individual survey weights in the WAS. That is, within each age-sex cell, we scale the weights of individuals in that cell to match the number of deaths among that group recorded in the ONS' official UK death statistics for 2018. The aim of this exercise is to produce a sample which is representative of those who would die in the year following the survey. The resulting sample is not fully representative, since we do not adjust mortality rates to reflect the fact that wealthier individuals are likely to live longer than other individuals of the same age and sex.

Modelling the removal of APR and BPR can only be approximated using these survey data, and our estimates are only intended to be illustrative.[20] The questionnaire does not allow for the construction of wealth totals which map neatly into the eligibility criteria for these reliefs. First, agricultural business assets are combined with other businesses in the WAS, making it difficult to distinguish between the two reliefs.[21] Listed and unlisted shares are also combined into a single category, though they are treated differently under BPR.[22] We approximate this by classifying all shares owned by individuals who *only* own unlisted shares as unlisted, and all other shares as listed. We assume that the former are eligible for BPR, while the latter are not. This could lead us to overstate the revenue gains from abolishing BPR, as some shares classed as 'listed' would have already qualified for at least partial relief. On the other hand, it is possible that some business assets categorised under the 'own businesses' section of the WAS, which we assume are eligible for 100% relief, would not qualify currently.

Our revenue analysis excludes individuals from the Sunday Times Rich List. This is because though we believe their recorded wealth primarily reflects business assets, we are not confident in assigning the full value of this wealth as qualifying for 100% relief under BPR. Including this wealth in the wealth added through the removal of BPR and APR would overstate the revenue implications of this reform. We do, however, take into account the adjustment made to business wealth owned by WAS individuals through our top wealth adjustment.[23]

In modelling the revenue implications of taxing inherited pension wealth, we account for the fact that the value of pensions that are inherited differs from the total value of pension wealth held by an individual while they are alive. While the value of a Defined Contribution pension pot generally remains intact when it is inherited, Defined Benefit pensions and the value of pensions that have been annuitised can be worth less to the individual to whom the pension is passed on, as they do not usually receive the full amount of income paid to the original recipient. We assume that the value of a Defined Benefit pension when passed on is worth 50% of what it was

[20] As we explain, the data we use do not directly map on to the categories available for relief. We also do not have the necessary information for the very top of the wealth distribution (which we elsewhere impute using the Sunday Times Rich List), nor do we have information on the remaining nil rate band that a given individual has. Our revenue estimates here therefore have more uncertainty than when modelling a wealth tax. A more in-depth analysis of Inheritance Tax reform is beyond the scope of this work.

[21] Other wealth categories in the WAS, such as property – which includes both residential property and land – may also include some assets that would qualify for APR. However, we cannot separate the assets that would meet the eligibility criteria from those that would not. To the extent this is a problem, it would cause us to overestimate the current revenue from inheritance tax, and underestimate the value of removing APR.

[22] According to the eligibility criteria, unlisted shares qualify for 100% relief, while listed shares qualify 50% and only if the individual controls more than 50% of voting rights.

[23] We also add in the (unadjusted) wealth of survey respondents who overlapped with the Sunday Times Rich List, which partly offsets the exclusion of top wealth individuals from the STRL.

worth to the original recipient. Pensions that have already been inherited from a former spouse or partner are assumed to cease when the individual who inherited them passes on.

We cannot accurately model the exemption threshold that each individual in our dataset would face, not least because we cannot identify individuals who have inherited some nil rate band from a spouse, nor do we know to whom the estate would be passed. This makes it impossible to say whether exemptions such as the Residence Nil Rate Band, which depends on the relationship between donor and donee, should apply. Regarding the spousal exemption, we can assume that all individuals who are married when they die would pass their estate to the surviving spouse, but we cannot confirm this. As a result of these limitations, the revenue model we implement will necessarily be stylised.

Our approach makes use of the fact that the current IHT system taxes 4% of all estates passing on death. We take this as our target taxpaying population total, N. We then exclude individuals who are married when they die, under the assumption that these estates qualify for spousal exemption. Finally, we assume that the wealthiest N of the remaining estates are taxed, at a rate of 40% (as per the current system), on wealth in excess of the minimum wealth required to be among the taxpaying population. This final step amounts to assuming that all individuals face the same 'effective threshold', when in practice some individuals would be face a higher threshold and some a lower one.

As well as calculating the revenue that could be raised from these reforms, it is important to consider their administrative cost. We will assume that the average administrative cost per taxpaying estate, currently £1,450 (Burgherr, 2020), is the same when pensions are included as when they are not. While implementing the reform is likely to come at some administrative cost, it is possible that this will be partially offset by the average complexity of estates brought into IHT being lower than the complexity of estates that already face the tax. Overall, we assume that these effects offset one another.

For the removal of APR and BPR, we assume that there is an administrative cost to valuing businesses. Following our method for calculating taxpayer costs for a wealth tax, we assume that this is a fixed percentage of the business value reported in the WAS. We take 0.8% of business wealth – the upper bound applied for valuing hard-to-value assets under a wealth tax – for all taxpayers with business wealth in excess of £30,000, but assume that the total cost of valuating a business cannot exceed £25,000, which Burgherr (2020) suggests is the maximum cost faced in practice. This is then added to the current average cost of administering IHT per taxpayer. This is likely to be an upper bound, as the cost of valuing businesses will be partially offset by no longer having to decide whether or not a business is eligible for reliefs. In this exercise, we are assuming that the additional cost of valuing businesses is borne by HMRC. This may not be the case. If individuals are required to obtain valuations then this cost would be borne by the taxpayer instead, as a cost to the executor that would be able to be taken out of the estate.

Our main specification does not take avoidance responses into account. It is not clear how individuals would respond to these reforms, given that they shut off some of the channels that can currently be exploited to avoid IHT, such as passing wealth on through a pension pot or business. In Appendix E, we present a specification which assumes avoidance responses that are likely to be larger than we would observe in reality, for comparison. The effect of these responses on our revenue estimates is small, and does not change our interpretation of the results.

Revenue

Our stylised approach to modelling the IHT system predicts that with the tax base that exists currently, i.e. excluding pensions and business assets, the tax ought to have raised £4.5 billion in revenue from individuals passing the year following the survey. This is slightly lower than the £4.8 billion charge actually levied on individuals passing on death in 2017-18. One explanation for this shortfall is that our data under-represent wealth held at the top of the distribution. While we adjust the data for our wealth tax analysis by including the STRL and adjusting business wealth, this is not taken into account in our IHT modelling as business wealth is excluded from the tax base and we do not include the STRL. A second factor is that we do not observe lifetime gifts made in the 7 years prior to death, which are also subject to IHT.

We estimate that including pension wealth in the tax base, keeping the threshold the same, could increase revenue by 31%, or £1.4 billion. We estimate an additional administrative cost (as a result of additional taxpayers needing to file) of £13 million, around 0.1% of the additional revenue. It is important to note that this, and all other estimates here, are *static* revenue estimates: they do not account for how individuals might respond. We provide some suggestive modelling of this in Appendix E.

An alternative reform which adds businesses (agricultural and other) to the current tax base, keeping the threshold the same and not changing the treatment of pensions, would increase revenue by 20%, or £900 million, at an additional cost of £4 million.

Combining the two reforms would yield 51% more revenue, and would cost £17 million more than the current system, bringing an additional 9,000 estates into inheritance tax. In proportional terms these reforms raise substantial revenue, and at very low administrative cost. They also have the benefit of not distorting choices of which assets to hold in order to reduce tax liabilities on death. However, relative to the amounts that a wealth tax could raise the revenue gains from these reforms alone are small.[24] Implementing these reforms would involve many of the valuation challenges faced under a wealth tax, though – importantly – for much lower volumes of taxpayers in any given year. By being paid once (at most) per individual, rather than annually, the administrative costs are much lower, though the principle of needing to value additional asset classes for inheritance tax is not changed.[25]

Removing APR, BPR and pensions relief would reduce distortions. Whether a government wants to then also have more taxpayers and more revenue is a political choice, rather than something which can be judged objectively. We therefore consider two further reforms.

First, we target the same number of taxpayers as the current system after including pensions and businesses. Implicitly this raises the "effective threshold" needed to be a taxpayer. This reduces the revenue raised by the reform from £6.8 billion to £5.8 billion, but this is still an increase of £1.3 billion on the status quo.

[24] Corlett (2018) estimates the revenue that could be raised from a different alternative: completely replacing inheritance tax with a lifetime receipts tax. Under a tax structure which features a £3000 annual allowance per recipient, a £125,000 lifetime allowance, and a flat rate of 15% on lifetime gifts in excess of this, it is estimated that £6.9 billion could be raised in the first year of the tax. Over time, the amount of tax revenue would increase as some individuals who do not reach their lifetime allowance in year one receive additional gifts and inheritances.

[25] As Advani, Chamberlain and Summers (2020) note, all these asset classes are already valued elsewhere in the tax system.

Second, we estimate the rate that would be needed to raise the same amount of revenue as the 'current' scenario, after a reform that includes all assets in the tax base. The tax rate suggested by our model in this scenario is 27%.

TABLE 6: REVENUE FROM REFORMING INHERITANCE TAX (ILLUSTRATIVE)

	Taxpayers	Effective threshold (£)	Rate	Revenue (£bn)	Administrative cost (£m)
Current IHT tax base	25	592,728	0.40	4.5	0
adding pension wealth	34	592,728	0.40	5.9	0
adding business wealth	25	592,728	0.40	5.4	4
adding pension and business wealth	34	592,728	0.40	6.8	4
Raising the threshold	25	677,150	0.40	5.8	4
Reducing the rate	34	592,728	0.27	4.5	4

Notes: 'Current IHT tax base' shows our stylised model of the current IHT system. The 'effective threshold' is the amount of wealth required to be among the taxpaying population. The revenue calculation is the rate applied to total wealth above the effective threshold. 'Adding pension wealth' adds pensions to the current tax base, according to their inherited value, keeping the effective threshold fixed. 'Adding business wealth' adds businesses and unlisted shares to the current tax base, keeping the effective threshold fixed. 'Adding pensions and business wealth' combines the previous two reforms. 'Raising the threshold' takes the tax base as inclusive of all assets (pensions and business wealth included) and raises the threshold to maintain the same number of taxpayers as the current IHT system. 'Reducing the rate' calculates the rate required to generate the same amount of revenue as the 'current' IHT system (our model), from the same number of taxpayers, with a comprehensive tax base.
Source: Authors' calculations based on the ONS Wealth and Assets Survey 2016-18.

Table 7 illustrates how these reforms shift inheritance tax liabilities toward the top of the wealth distribution. Taxing all wealth on death at 40%, while maintaining the same number of taxpayers by raising the threshold, reduces the average tax paid among taxpaying estates worth £650,000-£1 million by more than a third. By contrast, it increases the average tax paid by taxpaying estates by 15% for those worth £2-5 million and 11% for those worth more than £5 million.

TABLE 7: TAX DUE UNDER A REFORMED IHT, BY RANGE OF TOTAL WEALTH ON DEATH

Total wealth on death		Current tax base	Reformed, old threshold	Reformed, raised threshold	Reformed, raised threshold, lowered rate
£650-1m	Average tax due among taxpayers (£)	34,455	120,678	21,488	32,144
	Number of taxpayers ('000)	6	9	6	9
	Total tax due (£m)	197	1,061	139	283
£1-2m	Average tax due among taxpayers (£)	88,838	294,596	84,069	78,469
	Number of taxpayers ('000)	7	8	8	8
	Total tax due (£m)	589	2,216	632	590
£2-5m	Average tax due among taxpayers (£)	232,933	756,507	268,834	201,504
	Number of taxpayers ('000)	9	9	9	9
	Total tax due (£m)	2,094	7,032	2,499	1,873
£5m+	Average tax due among taxpayers (£)	726,621	2,108,097	809,470	561,516
	Number of taxpayers ('000)	2	2	2	2
	Total tax due (£m)	1,256	3,725	1,430	992

Notes: Total wealth on death is the wealth that would be taxed under a reformed IHT which includes pension wealth and business assets (including agricultural). The reformed taxes are as per Table 6.
Source: Authors' calculations based on the ONS Wealth and Assets Survey 2016-18.

If we lowered the rate to make the reform revenue neutral, but kept the current threshold, the average tax liability would be lower than the current system in all wealth bands. However, total

tax revenue would remain unchanged as the tax liability would be spread across a greater number of taxpaying estates. This reform would create greater horizontal equity by taxing estates with the same total net worth equally.

5.3 Council Tax

Another tax on wealth that regularly receives proposals for reform is Council Tax. Council Tax is a tax levied on residential property. The statutory incidence of the tax is on the person occupying the property, rather than the owner, although it is important to note that part of this cost may be passed on through lower rents. The tax is administered at a local level, with some elements of the tax structure set centrally. The charge is based on banded property values, with the bands fixed across local authorities. However, local authorities have some freedom in setting the tax liability that is paid in each band.

Residential properties in England have not been revalued for Council Tax since 1991, and the current tax bands are based on prices from this period.[26] This creates horizontal inequities in the current system, with properties that have the same value today being taxed different amounts depending on how their value has changed since 1991. A revaluation exercise is almost certainly needed, to ensure tax liabilities are based on what the property is actually worth. As discussed in Section 3.1, the cost of this exercise to government would be around £245 million. However, it is worth noting that the alternative – sticking to 1991 property values – is not without cost: currently all newly built properties have to be assessed as if they had been built in 1991, which is more likely to be open to dispute than the current value of a property.

Revaluation need not affect the revenue raised from Council Tax, nor the average tax liability households face. If the bands were adjusted to current values, maintaining the same proportion of properties in each band, and rates were set the same, the amount of revenue would not change (at a national level). All that would change is *who* pays: properties that have appreciated considerably since 1991 would attract a higher liability, while properties experiencing more modest growth would see a decline in their tax liability.

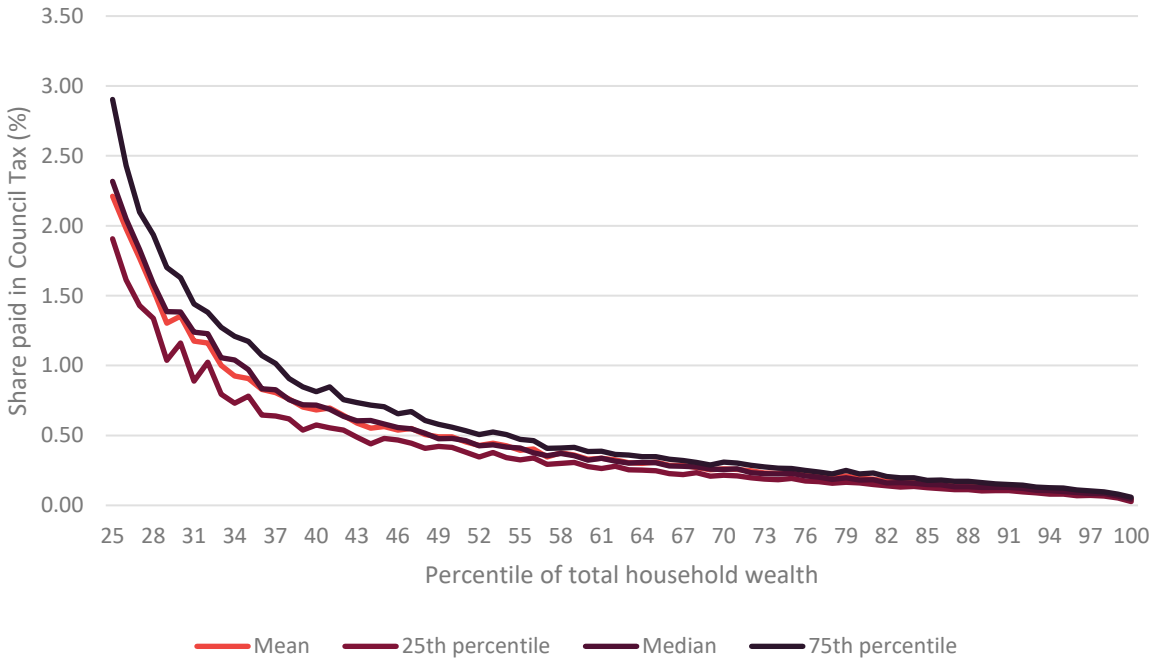
However, there are good reasons why we might want to change the rates paid across different tax bands. The current system is highly regressive. The average tax rate paid on a house at the midpoint of the lowest Council Tax band is 1.65%.[27] By contrast, a house at the bottom of the top band attracts an average tax rate of just 0.2%. The regressivity with respect to wealth of the current system is evident in Figure 16. This plots Council Tax paid as a share of wealth across the wealth distribution, based on data from the Wealth and Assets Survey. A quarter of households in the 25th percentile of the wealth distribution pay more than 2.9% of their wealth in Council Tax. At the 75th percentile, the average tax rate is 0.23%, with no household paying more than 0.45%.

A more progressive Council Tax could be achieved by making tax liabilities proportional to property values.[28] Again, this need not affect the total amount of revenue raised, as rates could be set to increase the tax paid at the top of the property distribution and reduce the amount paid by those at the bottom. However, bringing the tax rate charged on valuable properties in line

[26] Properties in Wales have since been revalued to 2003 prices, and a new band added at the top.
[27] This takes the average tax liability faced by a property in band A across all local authorities. The endpoints of the bands are set by central government. Here, we use the revalued bands calculated by Adam et al. (2020) and described in the subsequent section (see Table 8).
[28] This would still be distinct from having a wealth tax on property, since council tax is set by reference to the value of the house someone lives in, not whether they own the house nor how much equity they have in the house if they do own it.

with rates currently paid on properties at the bottom could raise a significant amount of revenue. We model such a reform in the subsequent section.

FIGURE 16: COUNCIL TAX PAID AS A SHARE OF WEALTH, BY WEALTH PERCENTILE



Notes: 'Mean' shows the average (mean) share of wealth paid in Council Tax at different percentiles of the wealth distribution. 'Median' shows the median share of wealth paid in Council Tax at different percentiles of the wealth distribution. 'XXth percentile' shows the XX percentile share wealth paid in Council Tax at different percentiles of the wealth distribution. All households are ranked according to total household wealth measured by market value and divided into percentile groups. Based on Wave 6 (July 2016 to March 2018) of the WAS. Weights are scaled to match the full population total.
Source: Authors' calculations based on the ONS Wealth and Assets Survey 2016-18.

Approach

To model the revenue that could be raised from a more progressive Council Tax based on current property values, we draw on evidence from Adam et al. (2020), who model the distributional effects of six Council Tax reforms. The first, which we shall use in our analysis, is a revaluation reform whereby properties are revalued and placed in one of the current Council Tax bands (in England), with the band thresholds adjusted to maintain the same proportion of properties in each band. Their estimates suggest that a Council Tax based on revalued property values would have the structure presented in Table 8.

Revaluation alone does nothing to address the regressivity in the system. Under this system, a property worth £250,000 is charged 0.62%, while a property worth £10 million is charged just 0.0035%. We can use these revalued tax bands as a basis for considering a more progressive tax. Achieving a more progressive tax does not necessarily mean abolishing the banded system. One option for making Council Tax more proportional to property values would be increasing the tax rate paid in higher bands, perhaps by setting this with reference to the median or midpoint in each band. Adding additional bands would also provide greater capacity for taxing high value properties a higher liability than lower valued properties.

TABLE 8: COUNCIL TAX STRUCTURE WITH CURRENT PROPERTY VALUES

Tax band	Lower threshold (£)	Upper threshold (£)	Average tax payment (2019-20) (£)	Tax rate at lower threshold	Tax rate at midpoint	Tax rate at upper threshold	Fraction of properties
A	-	142,000	1,173	N/a	1.65%	0.83%	24%
B	142,001	204,560	1,365	0.96%	0.79%	0.67%	20%
C	204,561	301,810	1,558	0.76%	0.62%	0.52%	22%
D	301,811	415,120	1,750	0.58%	0.49%	0.42%	16%
E	415,121	571,050	2,135	0.51%	0.43%	0.37%	10%
F	571,051	794,420	2,520	0.44%	0.37%	0.32%	5%
G	794,421	1,769,840	2,923	0.37%	0.23%	0.17%	4%
H	1,769,841	...	3,500	0.20%	N/a	N/a	1%

Notes: Average tax payment is the average across local authorities. The 'tax rate at lower/upper threshold' is the average tax rate faced by a property at the lower/upper bound of the tax band under the current system. The 'tax rate at midpoint' is the tax rate faced by a property in the middle of the tax band.
Source: Authors' calculations based on Adam et al. (2020); Ministry of Housing, Communities & Local Government (2019).

In this paper, we will estimate the amount of revenue that could be raised by reforming Council Tax into a continuous progressive tax, under which the tax liability would be set by reference to the exact value of the property, rather than by reference to bands. For the purpose of estimating the revenue that could be raised from Council Tax reform, this exercise is informative even if there is no desire for a system which does away with banding. This is because the amount of revenue raised from a fully continuous tax provides a lower bound on the revenue that would be raised from a banded system which sets the charge by reference to the median or midpoint of the band. Hughson (2020) explains how and why this is also true in the context of a wealth tax. The key intuition is that, because the distribution of property values is skewed to the right, properties at the lower end of each band attract a much higher average tax rate than the property at the median or midpoint.

To estimate the revenue that could be raised from a continuous and proportional Council Tax based on current property values we simply multiply aggregate gross property wealth by the desired tax rate.[29] We estimate the revenue that would be raised under two alternative reforms. The first brings the tax rate in line with the rate paid at the 24th percentile of the currently property value distribution under the revalued band system, which is approximately the top of band A. A property at this point, worth £142,000, would pay an average tax rate of roughly 0.83%. The second reform brings the tax rate in line with the average tax rate at the 45th percentile of the distribution – the bottom of band C with a property value of around £250,000 – which is 0.76%.

Bringing the tax rate faced by all properties in line with the tax rate currently faced by a property at the 24th percentile could raise an additional £17.6 billion, at a one-off admin cost of £245 million (Table 9). Alternatively, charging the rate currently faced by a property at the 45th percentile of the distribution could result in a revenue gain of £13.4 billion.

[29] This implicitly assumes the removal of existing reliefs such as the 25% single-person discount. Adam et al. (2020) argue that there would be efficiency gains from such a reform.

TABLE 9: REVENUE RAISED FROM COUNCIL TAX REFORM

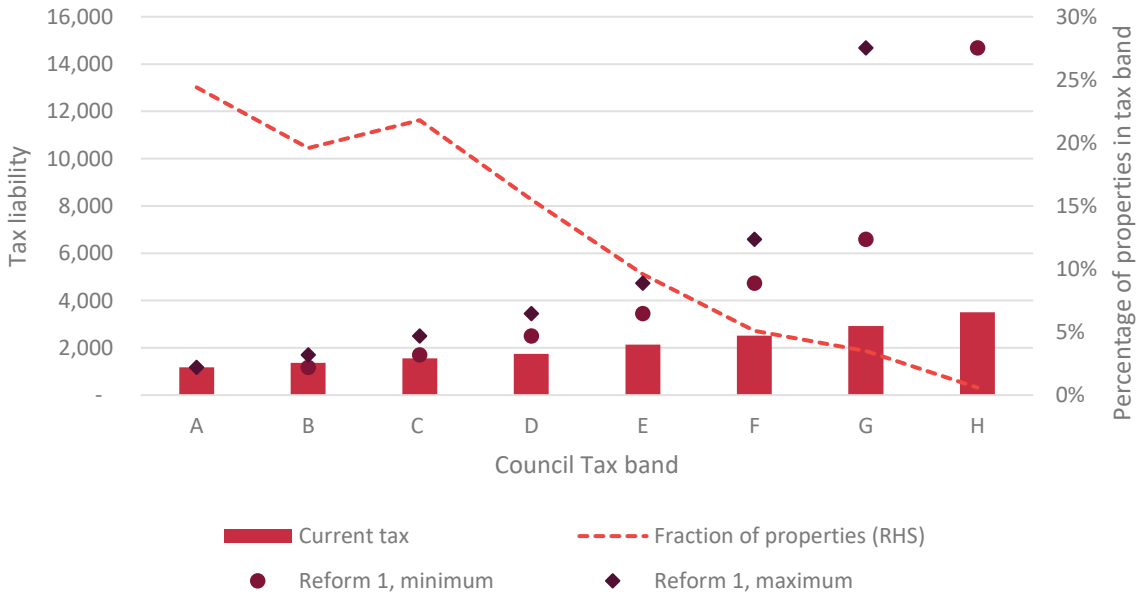
Council Tax system	Average tax rate	Revenue (£bn)	Revenue gain (£bn)
Current	0.53	31.8	
Reform 1: tax rate at 24th percentile	0.83	49.4	17.6
Reform 2: tax rate at 45th percentile	0.76	45.2	13.4

Notes: The revenue estimate takes a fixed percentage of the total value of UK housing. Based on Wave 6 (July 2016 to March 2018) of the WAS. Weights are scaled to match the full population total.
Source: Authors' calculations based on the ONS Wealth and Assets Survey 2016-18.

More than a quarter of households would see a reduction in their Council Tax liability under these reforms (Figures 17 and 18). Reductions in Council tax liabilities would be observed at the bottom of the property value distribution, for properties currently in bands A and B. The top 10% of properties would see a significant increase in their Council Tax charge, with a minimum additional annual charge of £3,000. For properties in the top 1% of the distribution, the minimum additional charge would be £10,000 annually. Under this system, households at the top would be paying the same tax rate as households at the bottom.

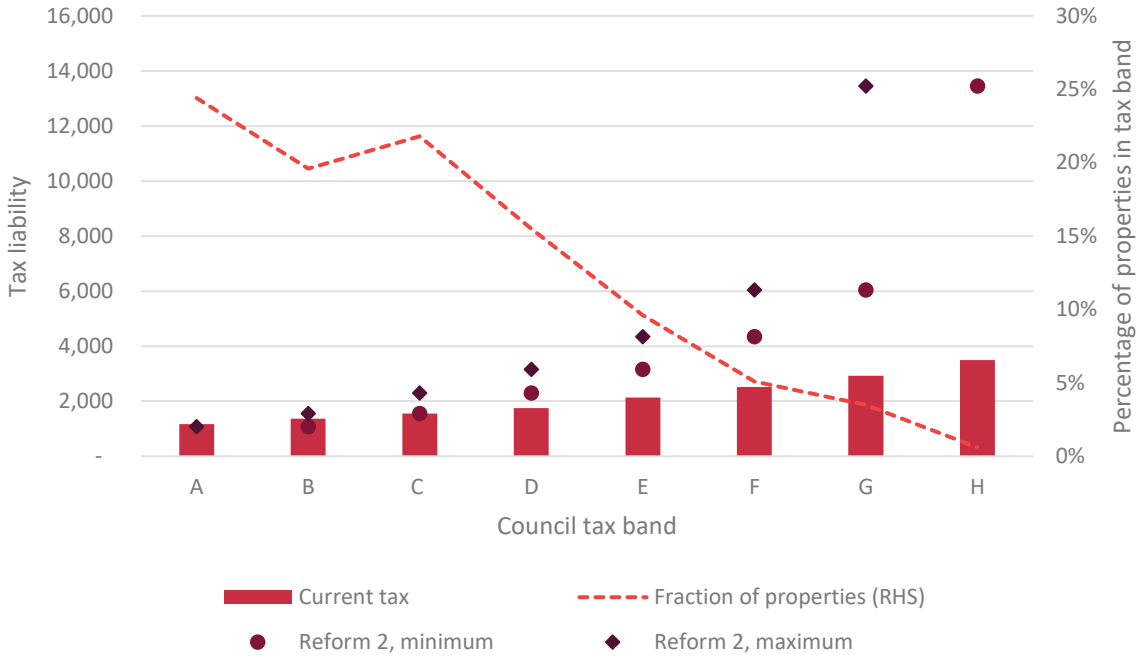
Note, however, that we have not yet accounted for the effect of the reform on property prices. We would expect a reform which lowers the tax charged on low value properties, and increases the tax charged on high value properties, to lead to a compression in house prices. High value properties will be worth less, as any buyer now faces a higher Council Tax charge. Meanwhile, the lower Council Tax levied at the bottom of the property distribution would, to some extent, be capitalised into higher property values.

FIGURE 17: COUNCIL TAX LIABILITY UNDER REFORM 1, BY TAX BAND



Notes: 'Current tax' is the average tax liability faced in the tax band across local authorities in England. 'Reform 1' is a Council Tax reform which charges all properties the rate currently charged at the 24th percentile of the property value distribution, which is 0.83%. The maximum (minimum) shows the tax that would be paid by a property at the upper (lower) threshold of the band, where applicable.
Source: Authors' calculations based on the ONS Wealth and Assets Survey 2016-18; Adam et al. (2020).

FIGURE 18: COUNCIL TAX LIABILITY UNDER REFORM 2, BY TAX BAND



Notes: 'Current tax' is the average tax liability faced in the tax band across local authorities in England. 'Reform 1' is a Council Tax reform which charges all properties the rate currently charged at the 45th percentile of the property value distribution, which is 0.76%. The maximum (minimum) shows the tax that would be paid by a property at the upper (lower) threshold of the band, where applicable.
Source: Authors' calculations based on the ONS Wealth and Assets Survey 2016-18; Adam et al. (2020).

6. Conclusion

We find that a tax rate of 0.18% on wealth above £500,000 would be needed to raise £10 billion with a flat annual wealth tax. The same revenue could be generated at higher thresholds with a higher tax rate, or by a progressive tax in which those towards the lower end of the wealth distribution pay a lower rate, and those at the top end pay a higher rate. Under this tax structure, just 0.5% of taxpayers would face liquidity constraints.

Alternatively, a one-off wealth tax could raise £250 billion in revenue by charging 4.8% on wealth above £500,000 (effectively, 0.96% per year, paid over a 5-year period), with similar possible alternative rates and thresholds. Taxpayers would be more likely to be male, of working age, and residents of London and the South East. Under this tax structure, 6.4% of taxpayers – 530,000 individuals – would face liquidity constraints.

We also estimate administrative costs to the taxpayer and to the government. Administrative costs to taxpayers are estimated at £7.2 billion per year under a tax with a £500,000 threshold, and would decrease in aggregate (but increase on a per-taxpayer basis) at higher thresholds, as there would be fewer taxpayers but those at the top of the wealth distribution typically hold more hard-to-value assets. The cost to the government of setting up the tax would be around £580 million, with ongoing costs for a £500,000 exemption threshold estimated at around £1.2bn, again decreasing at higher thresholds.

A brief comparison shows that it would be possible to raise similar amounts of revenue to an annual wealth tax, or more, through reforming existing taxes on capital. These reforms would also come at a cost, and would not necessarily avoid some of the challenges imposed by a wealth tax, including a need to re-value housing, and high valuation costs for other assets. However, in many cases the volume of taxpayers would be lower, making these costs per taxpayer more tolerable.

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Appendix A: Administrative costs – Taxpayers

In this paper and in Advani, Chamberlain and Summers (2020), we provide estimates of the administrative costs to taxpayers of the proposed Wealth Tax, as distinct from the tax liability they face. These estimates are intended to represent the costs to taxpayers of professional assistance with valuing their assets and filing their returns, a cost which, by design, should only be incurred by those with relatively complex portfolios. This appendix explains how we produce those estimates.

Burgherr (2020) provides estimates of compliance costs faced by taxpayers seeking professional assistance with current tax regimes which require wealth valuation (in particular, ATED and IHT), and suggests that reasonable estimates of taxpayer costs of compliance with a wealth tax are likely to be between 0.05% and 0.3% of taxable wealth, with a central estimate of 0.1%. These figures are informative for taxpayers who would be likely to need professional assistance to complete their returns, but we expect that a large share of taxpayers will not require such assistance. In this appendix we combine Burgherr's work on the scale of compliance costs with information from the Wealth and Assets Survey (WAS) and insights from Pentelow (2020) on which taxpayers are more likely to need professional assistance in complying with the wealth tax design as outlined in Advani, Chamberlain and Summers (2020). The results suggest there is a strong prospect of keeping administrative costs to taxpayers to within 0.03-0.11% of the total chargeable assets of the tax.

As Burgherr (2020) notes, compliance involves three key costs to taxpayers: filing costs, valuation costs, and the cost of disputes and litigation. This appendix focuses on valuation costs, although we add a fixed fee for some taxpayers to reflect the cost of assistance with filing, as suggested by Burgherr's work. We do not attempt to account for legal costs of disputes with the tax authority, as the scale and variation of these costs are much less predictable; nor do we attempt to account for the opportunity cost of the taxpayer's time for those taxpayers who (we assume) do their own filing. The estimates cover a single year of a tax and do not depend on the tax rate, nor do they vary between a one-off tax and an annual tax; in an annual tax scenario with valuation only necessary every few years, costs could be expected to be lower after the initial valuation.

A1. Which assets would require professional valuation?

The cost of carrying out valuations varies substantially across asset types and, particularly, the complexity of the portfolio of assets needing to be valued. Our approach is to classify the components of total wealth in WAS data[30] into three broad categories according to how difficult they are to value (based on Pentelow, 2020).

Table A1 summarises how we apply this taxonomy to the WAS data. The hard-to-value assets are of particular interest, as these are the assets which will ultimately determine our estimates of taxpayers' compliance costs. Unfortunately, the asset types in Pentelow (2020) often do not have a precise equivalent in the WAS data: for example, 'commercial property' could be

[30] In general, in this paper, WAS data are augmented with information from the Sunday Times Rich List (STRL) following the procedure outlined in Section 2, which boosts the estimated business and share wealth of individuals with over £500,000. This accounts for the difficulty of capturing wealth at the top of the distribution. However, as we do not have any information on the asset composition of STRL individuals, they are excluded from much of the analysis that follows. For the purposes of cost aggregates, we calculate a per-taxpayer administration cost to apply to STRL individuals on the assumption that their fortunes are similarly hard to value as those at the top of the WAS wealth distribution.

recorded as a business asset or as a personal asset, depending on how the respondent answers the survey questions (all personal property is included in the 'mid' difficulty tier, while all business assets are 'hard'); the WAS questions also distinguish between listed and unlisted share holdings, but this is a poor proxy for the distinction of interest for the purposes of ease of valuation, which is between retail unlisted shares and private equity investments (both of which would be reported as unlisted shares).

TABLE A1: CLASSIFICATION OF ASSETS ACCORDING TO DIFFICULTY OF VALUATION

	Pentelow (2020)	WAS equivalent	Wealth tax design
Easy	Savings Listed shares Other securities Pensions	Net financial wealth (excl. some unlisted shares)* Mortgage endowments Pensions Vehicles Business assets (< £30k)⁺ Household contents > £100k∞	Pensions valued by pension funds; otherwise taxpayer's responsibility to value
Mid	Residential property Commercial property Most agricultural land	Net property wealth (excl. UK & overseas land)◦	Valued by VOA
Hard	Shares in private companies Intellectual & other intangible property Unincorporated businesses Land with 'hope value' for development Collectibles such as fine art	Business wealth (>= £30k)⁺, including shares in own business Unlisted shares* Land wealth◦ Collectables & valuables	Taxpayer's responsibility to value (likely to need professional valuation)
Excluded		Any broad asset categories with less than £3k Household contents unless total is over £100k (in which case easy) ∞	De minimis exemption for individuals' items worth < £3000

Notes:
* Arms-length retail shares cannot be properly disentangled from private equity investments; shares held by individuals with only unlisted UK shares are added to hard-to-value assets, and all other shareholdings are added to easy-to-value.
⁺ Personal services companies and other small businesses should not be difficult to value (see section on business valuations below); these are proxied by businesses with a very small amount of assets.
◦ No information on development prospects of land value in WAS; however, land without buildings is not expected to be valued by the VOA. Property assets reported in WAS should exclude any commercial property, which should be reported as a business asset.
∞ We assume that most of the items included in this category are likely to be worth less than £3000 individually (and thus exempt) and exclude any wealth below £100,000 - see Section 2.1 for details.
Source: Pentelow (2020)

We attempt to implement this classification at a broad level, aiming to remain transparent while acknowledging that this will be a very imprecise exercise. For example, any individuals who report owning UK unlisted shares only (as opposed to also owning UK listed shares or any shares held overseas) has their shareholdings included in their 'hard-to-value' assets; otherwise share holdings are all assumed to be 'easy' to value.[31] As a result we will classify some unlisted (private equity) share investments as easy-to-value assets, if the holder also has listed shares; at the

[31] Shares that individuals hold in their own businesses should be reported as business assets.

same time, some unlisted shareholdings which we do allocate to the hard-to-value category will likely include retail unlisted shares such as those listed on the Alternative Investment Market (AIM), which should thus be easy to value. On balance of probabilities we suspect this may slightly overestimate the share of hard-to-value assets.

Effect of de minimis exemptions

Our policy design includes exemptions for individual assets worth less than £3000 (except in the case of financial assets, including shares). While we cannot model this precisely with the WAS, as values are generally aggregated by asset type rather than reported on an asset-by-asset basis, we expect that some asset types will reflect just one or two major assets (such as houses or business investments), while others will be the aggregated value of many smaller assets which are unlikely to be worth more than £3000 each. Household contents, more so than other asset types, will typically reflect the value of multiple items which are not aggregable, so we would not assume that a reported total value that exceeds £3000 would imply all the constituent assets would be chargeable assets under the wealth tax. Our bar for including these categories of assets is much higher, at £100,000. Table A2 shows that the vast majority of individuals with property, land, and pension wealth report the value of those assets to be well over £3000. By contrast, household contents and other physical assets are far less likely to be reported in large values.

TABLE A2: EFFECT OF DE MINIMIS EXEMPTIONS ON CHARGEABLE WEALTH

		Number of individuals with positive net wealth ('000)	Share of which > £3k (%)	Within which, average chargeable wealth (£)
Easy to value				
	Financial assets	38,829	*	--
	Pensions	32,619	87.5	214,495
	Shares	5,852	*	--
	Vehicles	32,714	60.8	9,752
	Number plates	3,732	3.0	6,550
	Contents (main property)	40,755	+	--
	Contents (2nd home)	883	+	--
	Contents (buy-to-let)	1,322	+	--
	Contents (overseas)	555	+	--
Mid difficulty				
	Property	29,300	99.9	172,977
Hard				
	Business assets	2,566	74.7	368,220
	Collectables & valuables	5,753	50.7	18,597
	UK land	446	86.1	164,540
	Overseas land	1,222	91.8	76,438

* No de minimis exemption for financial assets
+ Higher exempt threshold (£100,000) applies for household contents asset types.
Source: Authors' calculations based on ONS, Wealth and Assets Survey.

In general, asset value figures in this appendix refer to chargeable wealth – that is, wealth beyond the de minimis exempt level.

Business wealth

Business wealth as reported in WAS

Business net wealth values in the WAS survey are reported in response to the following question, which is asked of anyone reporting that they are a director or partner of a business which they own (at least in part), or otherwise self-employed:

> *'If you sold your business/your share in this business today, including any debts or liabilities, about how much would you get? Please include the value of financial assets, accounts receivable, inventories, land, property, machinery, equipment, customer lists and intangible assets.'*[32]

This broad list of assets includes many of the more complex varieties which Pentelow refers to as being difficult to value, such as intellectual and intangible property or land with development value. However, it will not be the case that all those reporting owning business assets will have these complex assets and will require valuations.

How much of it will it be hard to value?

Some small businesses, especially those which are owned and managed by one or two people, are less likely to present valuation problems. For example, personal service companies essentially provide a corporate structure for an individual to work in much the same way a self-employed person might, but with different tax implications.

Work done by the IFS shows that there has been a substantial rise in such companies over the past decade, such that small, closely-held businesses now make up a large share of all companies (Cribb, Miller, and Pope, 2019). For example, around 1/3 of owner-managed companies in the business services industry were owner-managed companies with a single director, and another 1/3 had two directors. That paper also provides evidence suggesting that profits of many closely-held businesses tend to simply be a return on the labour of the owner-manager, particularly in industries such as business services, financial services, and medicine; these businesses tend not to have employees or undertake substantial investment. As our tax design uses open market valuation we exclude the value of the owner's own human capital from the chargeable tax base; as a result, such businesses are likely to have little or no marketable value beyond the re-sale value of the tangible assets, such as tools or equipment.

It follows that it is important to separate these from larger or more complex businesses which would have re-sale value and thus need professional valuation for the purposes of a wealth tax. Unfortunately, the WAS gives us no information with which to make the distinction between, for example, personal service companies and more substantial businesses whose sale would involve the transfer of intellectual property and intangible assets. We take the size of the businesses as an (admittedly, poor) approximation of this distinction, assuming that businesses with total assets less than £30,000 will have little additional resale value and are thus easy to value, while businesses with assets worth more are 'hard' and likely to require a professional valuation. Table A3 shows that only a little over a third of all individuals who report having business assets estimate that those assets are worth more than £30,000. By excluding the business assets of around 1.7 million business owners from the hard-to-value category, we come

[32] The survey indicates elsewhere that the response to this question should not include any shares held at arms-length, but be limited to the business assets over which the respondent exerts direct control.

close to the IFS estimate that there were 1.8 million company owner-managers (the vast majority being directors of one- or two-director companies) in 2014-15.

TABLE A3: INDIVIDUALS WITH BUSINESS ASSETS BY TOTAL VALUE OF BUSINESS ASSETS

Range	Count ('000)
£0-3k	696
£3-10k	527
£10-20k	221
£20-30k	213
£30-40k	57
£40-50k	96
£50-100k	208
£100k-1m	445
£1m+	103
Total	2,566

Notes: Businesses with total assets less than £3000 are not chargeable under the wealth tax design.
Source: Authors' calculations based on ONS, Wealth and Assets Survey.

'Hard' valuations

Having categorised assets according to their valuation difficulty, we briefly explore how the incidence of each type of asset varies across different levels of wealth. Of most interest is the distribution of hard-to-value assets (that is, business wealth, valuables, some unlisted shares, and land), as these will form the basis for our administrative cost estimates.

Across the distribution there is a mix of asset types; however, for levels of wealth below £5m, fewer individuals hold hard-to-value assets than those who do not (Table A4). Below £5m in wealth, the vast majority of assets by value (90% or more) are in the 'easy' or 'mid' categories.

TABLE A4: ASSETS BY DIFFICULTY OF VALUATION ACROSS THE DISTRIBUTION

	Share of individuals who have (%):			Share of total marketable value (%)		
	Easy assets	Mid assets	Hard assets	Easy assets	Mid assets	Hard assets
0-250k	64.4	30.9	3.3	43.5	48.4	2.0
250-500k	99.3	94.2	15.1	50.8	44.9	2.0
500k-1m	99.9	95.9	23.1	61.3	34.4	3.0
1-2m	100.0	97.9	29.7	69.0	26.1	4.0
2-5m	99.4	98.6	45.8	63.8	26.3	9.3
5-10m	100.0	100.0	84.6	46.1	19.7	34.0
10m+	100.0	98.1	96.0	16.2	15.9	67.7

Notes: Excludes assets falling below 'de minimis' (most asset types < £3k); also excludes household contents < £100k. Wealth thresholds and total wealth calculated with reference to total marketable wealth; columns 5-7 will not sum to 100 because of assets excluded by exemptions. £10m+ row should be interpreted with caution, as it is based on a relatively small number of WAS observations so may be subject to more uncertainty.
Source: Authors' calculations based on ONS, Wealth and Assets Survey.

Our criteria for a taxpayer needing a professional valuation is possession of a hard-to-value asset. At a low tax threshold of £500,000, the absolute number of people needing a professional valuation is substantial (2.3 million of 8.4 million total taxpayers, Table A5). At a higher

threshold of £2 million, only an estimated 327,000 taxpayers have hard valuations, but these make up a more substantial share of total taxpayers. For taxpayers above a threshold of £10 million, hard-to-value assets make up two thirds of the value of assets and the vast majority of taxpayers have hard-to-value assets, but at that level the absolute number of taxpayers is small.

TABLE A5: NUMBER OF TAXPAYERS WITH 'HARD' VALUATIONS BY THRESHOLD:

Threshold per individual	Taxpayers ('000) with hard valuations	Share of taxpayer population (%)
£250k	3,413	21.5
£500k	2,283	27.2
£1m	1,047	34.2
£2m	327	51.4
£5m	74	87.6
£10m	21	96.0

Notes: To estimate counts of taxpayers we need to add back in individuals from the Sunday Times Rich List, who have been excluded from earlier calculations. As we do not have information on these individuals' asset composition, we estimate the share who would hard valuations based on characteristics of WAS taxpayers with £10m+ in wealth (as reported in Table A4).
Source: Authors' calculations based on ONS, Wealth and Assets Survey and Sunday Times Rich List.

A2. Costs to taxpayers by threshold

As noted earlier, we begin with the assumption that only hard-to-value assets (business wealth, private equity investment, collectables, and land) incur a valuation cost substantial enough to be relevant for the purposes of this exercise. In our design, pension assets are valued by pension funds, and valuation of residential property is carried out by the Valuation Office Agency (VOA),[33] while other asset types are small enough (household contents) to be likely exempt or easy enough to value (financial assets) that the vast majority of taxpaying households would not need a professional valuer's assistance.

This reduces the range of assets for which the taxpayer may need to pay a valuer's fee. Nonetheless, it is difficult to pin down what that fee might be: Burgherr (2020) provides evidence that the cost to taxpayers of valuations of property or business assets may vary by as much as a factor of 10 depending on the size, value, and complexity of the asset.[34] We apply these figures as indicated in this section.

Figures quoted on professional valuations in the UK for ATED suggests an upper bound on costs of around 0.6% of the value of the asset (highest fee £3000; lowest threshold £500,000), although we note this is the cost of valuing housing, which (as we have emphasised) is likely to be easier to value than business assets. Costs for property valuation for IHT are similar, while there is a slightly higher upper bound of around 0.8% for business valuation (£2,500 for a simple case, lowest threshold £325,000).

[33] While we exclude costs to the VOA here, they are included in estimates of administrative costs to the tax authority elsewhere in this paper.
[34] Burgherr also notes that the costs quoted are not likely to be representative of the cost to an 'average' taxpayer, but rather to taxpayers with complex affairs – hence we apply these costs to hard-to-value assets only. He also argues that the costs for a well-designed wealth tax with a broad base would likely lie between the costs for ATED and IHT.

Lower bounds on valuation costs are difficult to estimate, as much of the evidence presented in Burgherr suggests that valuation costs eventually reach an upper limit, while the wealth distribution has an extremely long tail. In general we try to err towards assuming a more costly regime, so as not to over-estimate the net revenue collected under a tax design, although there are a number of reasons to believe these costs may already be on the high side: these figures represent costs to taxpayers with very high wealth and/or complex affairs, and who interact (in the case of IHT) with a complex system of exemptions and reliefs such that taxpayers may be willing to pay more in order for the prospect of reducing their tax bill. Our wealth tax design is intended to avoid providing such incentives.

We proceed by assuming that the cost of a valuation is a fixed percentage of a taxpayer's hard-to-value assets (business wealth, land, collectables & valuables, and some unlisted share holdings), implicitly assuming that the valuation of these assets can take place separately to the remaining assets making up a person's total wealth (or, at least, that adding these to the valuation does not add appreciably to its cost). Based on the above work on current costs of valuation in the UK, we explore how costs vary between a relatively low rate (0.1% of the asset's reported value) and an upper bound rate (0.8% of value).

The evidence presented by Burgherr (2020) suggests that there is a fixed cost of filing which, while dwarfed by the valuation cost, should be accounted for. We add a £2000 cost for all taxpayers with hard-to-value assets, reflecting a central estimate from the range he establishes.

The effect of assuming valuation costs are a fixed percentage of the value of complex assets is that the total valuation cost increases faster than wealth, as hard-to-value assets become a larger proportion of total wealth. While this seems reasonable at first, given the increasing complexity of wealthier individuals' portfolios, we cannot justify an assumption that leads valuation costs to increase more-than-proportionately with total worth forever. This also seems to be supported by Burgherr's findings that valuation costs for ATED tend to cap out at around £10,000, and at around £25,000 (for business wealth only) for IHT. To reflect this we cap total administrative costs at £50,000, a generous figure which we hope accommodates the larger number of assets which may need to be valued.[35]

To produce administrative cost aggregates we must also apply valuation and filing costs to STRL individuals: we assume they are also incurring costs at the maximum possible rate. Aggregating administrative costs across all taxpayers, we can calculate average costs per taxpayer and total administrative costs as a share of assets captured by the tax (Table A6). This is a necessarily approximate exercise and is not expected to be particularly accurate on a taxpayer-by-taxpayer level, as valuation costs themselves will vary substantially across taxpayers. As an example, to the extent that some business assets are jointly owned, the cost of valuation of business assets will be overstated as the valuation on the whole business only needs happen once.

With a low variable cost of valuation the filing cost of £2000 has a large impact on the total cost to taxpayers, with the overall valuation cost decreasing as a share of both chargeable assets (total assets of those captured by the tax), and taxable assets (that is, excluding wealth below the tax threshold; Table A6). When assuming a higher valuation rate, the variable valuation costs make more of an impact on the total cost of professional fees, which vary in this scenario from 0.05-0.11% of total chargeable assets and from 0.07-0.17% of total taxable assets. The

[35] It is possible that individual cases may exceed this figure, but on average there is scope for it to be offset by individuals who face a lower valuation cost. Nonetheless, Burgherr notes that the existence of the £20m+ band for ATED significantly reduces the complexity of high-value property valuations; depending on the precise wealth tax design the wealthy may have more need to establish a more precise point estimate of their wealth than under ATED.

impact of the assumed £50,000 cap on professional fees is clearer in the high-cost scenario, with relative cost of valuation falling between the £5 million and £10 million thresholds.

TABLE A6: ADMINISTRATIVE COST ESTIMATES WITH LOW VALUATION RATE (0.1%) SCENARIO

Threshold per individual (£)	Taxpayers ('000)	Total admin cost to taxpayers (£m)	Admin cost per taxpayer (£)	Admin cost as % chargeable assets	Admin cost as % taxable assets
Low valuation rate (0.1%)					
250k	15,537	7639	492	0.06	0.09
500k	8,246	5342	648	0.05	0.09
1m	3,004	2813	936	0.04	0.08
2m	626	1265	2021	0.04	0.06
5m	83	634	7604	0.04	0.05
10m	22	392	17653	0.03	0.03
High valuation rate (0.8%)					
250k	15,537	11939	768	0.09	0.13
500k	8,246	9245	1121	0.09	0.15
1m	3,004	5938	1977	0.09	0.17
2m	626	3489	5572	0.11	0.17
5m	83	1881	22547	0.11	0.14
10m	22	755	33993	0.05	0.07

Source: Authors' calculations based on ONS, Wealth and Assets Survey and Sunday Times Rich List.

Because of the way we have chosen to model valuation costs, taxpayers' administrative costs as a share of chargeable assets depends on the threshold of the tax. Even so, these two broad scenarios suggests that costs to the taxpayer of a wealth tax could be contained within 0.03-0.11% of total chargeable wealth.

Again, there is a wide range of possible comparisons: Burgherr (2020) shows that comparable figures internationally range from 0.005% to 0.06% in Germany, and were estimated at around 0.3% for Elizabeth Warren's proposed tax in the US.[36] That said, costs in both scenarios are within Burgherr's estimate that the costs of administering a wealth tax for taxpayers are likely to be between 0.05% and 0.3% of taxable wealth, and well below Troup et al.'s (2020) assumption that taxpayer costs related to IHT range between 1% and 1.5% of total assets.[37] Again, given the wealth tax design is in fact much less complex for the taxpayer than the current IHT regime we think it is appropriate that our estimate is well below these latter figures.

Central estimate

As we have shown, there is a wide range of possible estimates of administrative costs, both on a by-taxpayer basis and in aggregate. In order to provide headline net revenue estimates, in this section we provide a 'central' scenario based on valuation costs amounting to 0.4% of the value

[36] This tax was designed to target the wealthiest individuals, whom we would expect would have an even more concentrated need for professional valuation than individuals in our design. To the extent that this estimate can be compared to our own, it should be considered very much an upper bound.
[37] As Burgherr (2020) notes, there are good reasons to expect that 1-1.5% may overstate the likely costs for the majority of taxpayers: much of the probate process, which contributes to IHT costs, would not be necessary in the case of a wealth tax, and estimates representing the fees of top firms will not be representative of costs for many taxpayers with less complicated affairs.

of hard-to-value assets (with the same filing cost and overall cap). This is not completely 'central' in the sense that it is slightly closer to our low-rate scenario than the high-rate scenario, however for the reasons indicated earlier we believe it to be a more reasonable representation of the likely cost to taxpayers. Table A7 shows that there is not a substantial difference from either estimate; in aggregate the expected costs of valuation to the taxpayer based on this central estimate hover around 0.05-0.08% of chargeable assets, and 0.06-0.13% of taxable assets, depending on the tax threshold.

TABLE A7: ADMINISTRATIVE COSTS WITH CENTRAL VALUATION RATE (0.4%) SCENARIO

Threshold per individual (£)	Taxpayers ('000)	Total admin cost to taxpayers (£m)	Admin cost per taxpayer (£)	Admin cost as % chargeable assets	Admin cost as % taxable assets
250k	15,537	9696	624	0.08	0.11
500k	8,246	7228	877	0.07	0.12
1m	3,004	4366	1454	0.07	0.13
2m	626	2432	3884	0.07	0.12
5m	83	1382	16572	0.08	0.10
10m	22	723	32557	0.05	0.06

Source: Authors' calculations based on ONS, Wealth and Assets Survey and Sunday Times Rich List.

A3. Who will need professional valuations?

Table A4 above shows that substantial hard-to-value assets are heavily concentrated amongst the wealthiest individuals. In this section we briefly survey characteristics of those who face relatively high valuation costs, and for what assets. As we rely on values as reported by owners for these hard-to-value assets (which under our policy design would probably not be considered adequate for a self assessment return) this analysis should be considered very approximate.

Who are the individuals likely to need professional assistance in making their valuations? By definition we might expect this to capture individuals whose main assets are business assets or land. However, even amongst the individuals who hold hard-to-value assets, these assets do not tend to dominate their wealth portfolio. More of these individuals report their most valuable assets are property[38] or pension wealth rather than the complex assets such as business assets (Table A8). That said, those individuals who report business assets report that these are much more valuable, on average, than other main asset type average values, but these make up less than 10% of all individuals who have a hard-to-value asset.

[38] Note our design proposal includes houses being valued by the VOA, so property here (which excludes land assets) is not ultimately a problem for the individuals. However, this does show that a substantial share of individuals would be affected if the VOA were not to take this responsibility.

TABLE A8: MAIN ASSETS OF INDIVIDUALS WITH COMPLEX VALUATIONS

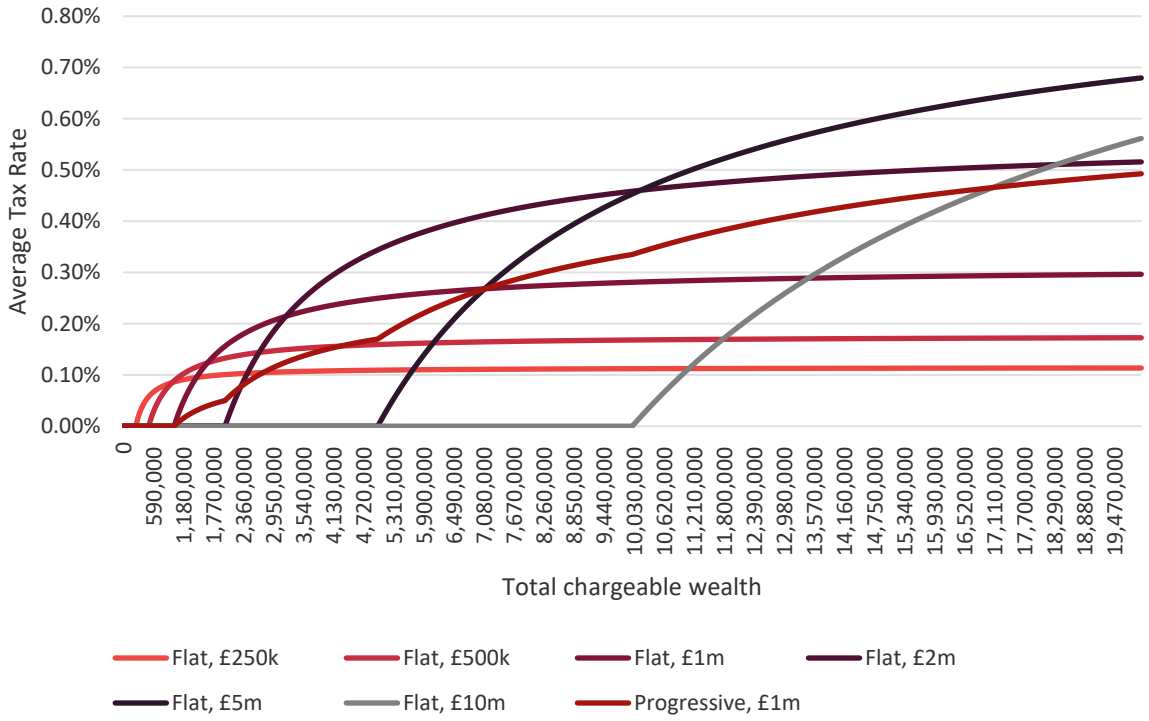
Asset type	Count with this as main asset ('000)	For whom, average value
Property excl. land	2,163	£359,297
Pension wealth	1,549	£564,603
Business assets	450	£1,314,251
Financial wealth	351	£744,290
Land	304	£233,926
Physical wealth	99	£32,069
No single largest asset type	4	--

Source: Authors' calculations based on ONS, Wealth and Assets Survey and Sunday Times Rich List.

Appendix B: Tax paid across the wealth distribution

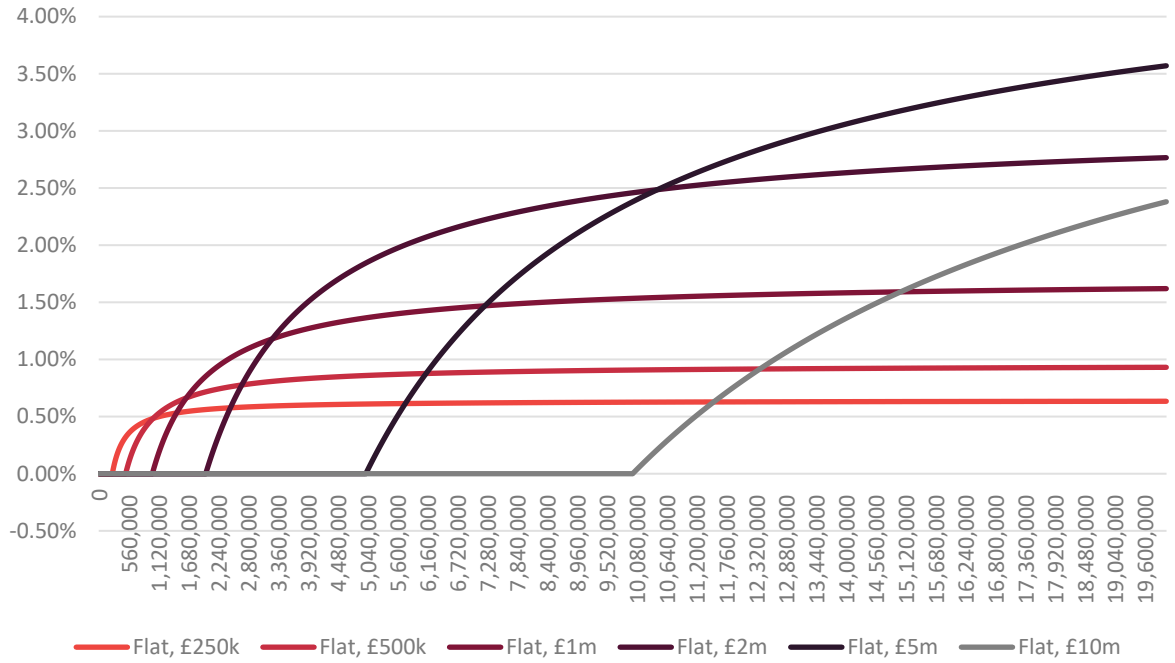
This section presents evidence on how the average tax rate faced by taxpayers varies by total wealth. Figure B1 shows how the average tax rate increases with wealth under each of the annual tax structures presented in Table 1. Figures B2 and B3 provides a similar illustration for the one-off tax structures presented in Table 4. It is clear that the average tax rate eventually converges to the headline marginal rate. The average tax rate appears to increase less rapidly than in Figures 2 and13, where the average tax rate is plotted with wealth percentiles on the X-axis. This is because the distribution of wealth is heavily skewed to the right.

FIGURE B1: AVERAGE TAX RATE UNDER AN ANNUAL WEALTH TAX, BY TOTAL CHARGEABLE WEALTH



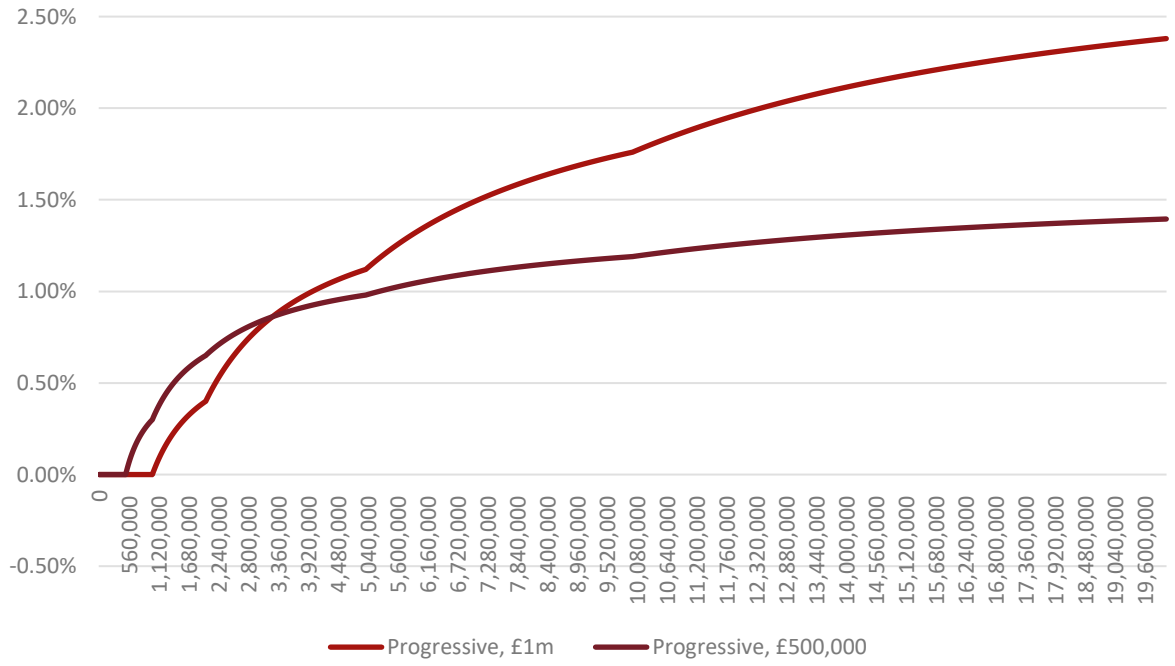
Notes: The average tax rate is the amount that should be paid at each level of wealth. 'Total chargeable wealth' is total market wealth excluding low-value items, which are exempted. Tax rates used are as per Table 1. Figure 2 shows the average tax rate by wealth percentile.
Source: Authors' calculations.

FIGURE B2: AVERAGE TAX RATE UNDER A FLAT ONE-OFF WEALTH TAX, BY TOTAL CHARGEABLE WEALTH



Notes: The average tax rate is the amount that should be paid at each level of wealth. 'Total chargeable wealth' is total market wealth excluding low-value items, which are exempted. Tax rates used are as per Table 4. Figure 13 shows the average tax rate by wealth percentile.
Source: Authors' calculations.

FIGURE B3: AVERAGE TAX RATE UNDER A PROGRESSIVE ONE-OFF WEALTH TAX, BY TOTAL CHARGEABLE WEALTH

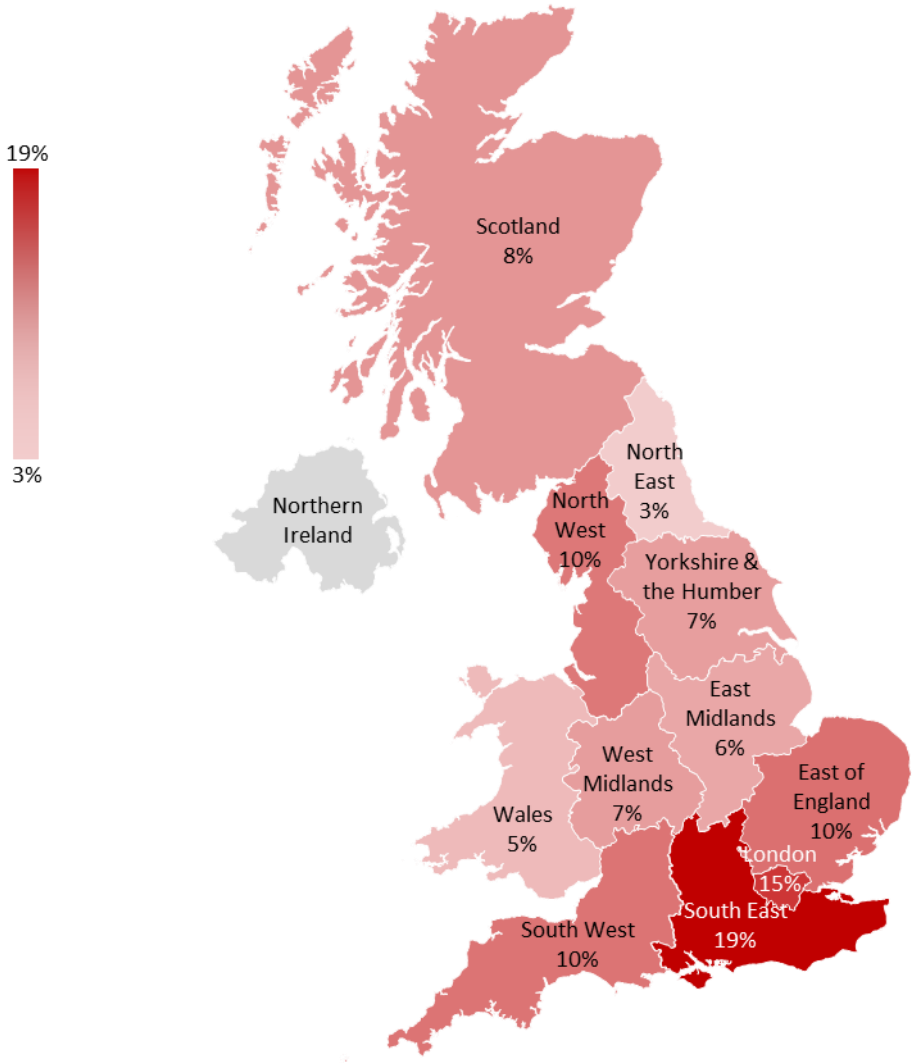


Notes: The average tax rate is the amount that should be paid at each level of wealth. 'Total chargeable wealth' is total market wealth excluding low-value items, which are exempted. Tax rates used are as per Table 4. Figure 13 shows the average tax rate by wealth percentile.
Source: Authors' calculations.

Appendix C: Geographical distribution of taxpayers

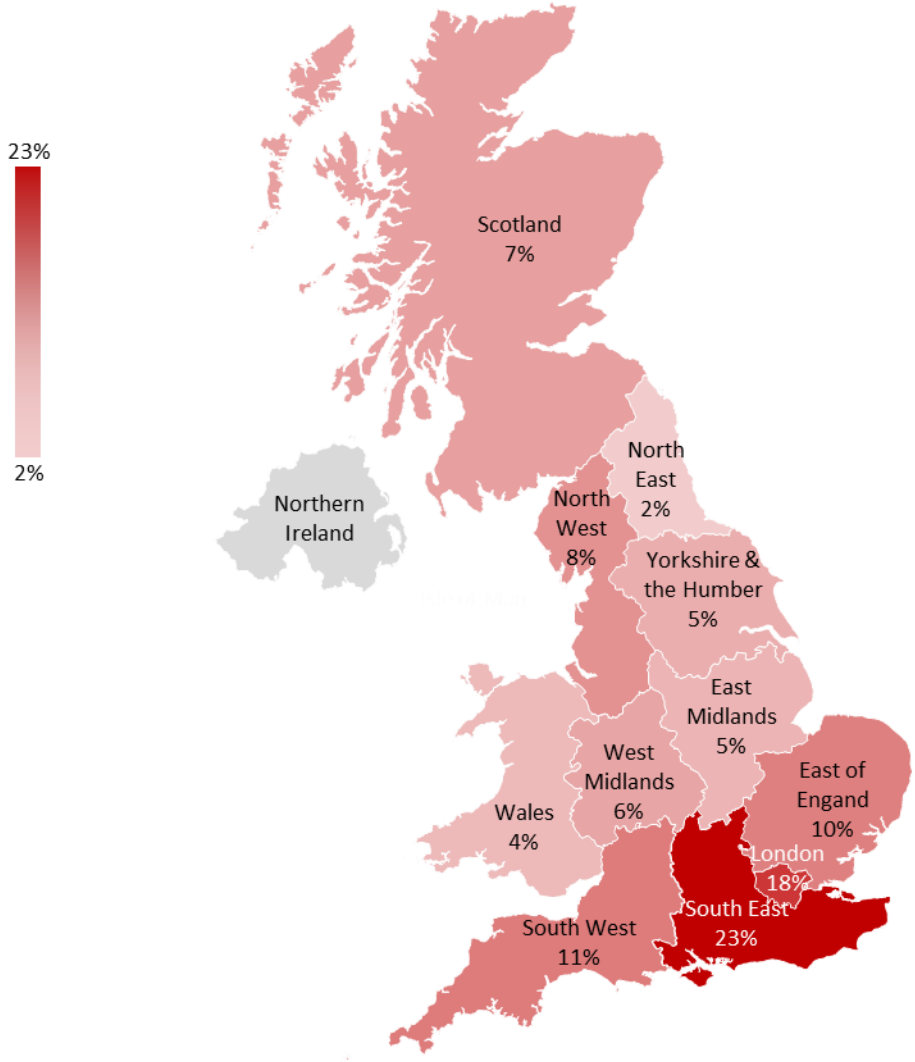
In this appendix we show the geographical distribution of taxpayers for different exemption thresholds. For a threshold of up to £1 million per individual, taxpayers are heavily concentrated in London and the South East. However, when the threshold is set to £5 million, taxpayers are evenly spread across a few key regions: the South East (20%), the South West (18%) and the North West (19%). London accounts for 13% of taxpayers at this threshold.

FIGURE 2: GEOGRAPHICAL DISTRIBUTION OF TAXPAYERS UNDER A £250,000 EXEMPTION THRESHOLD



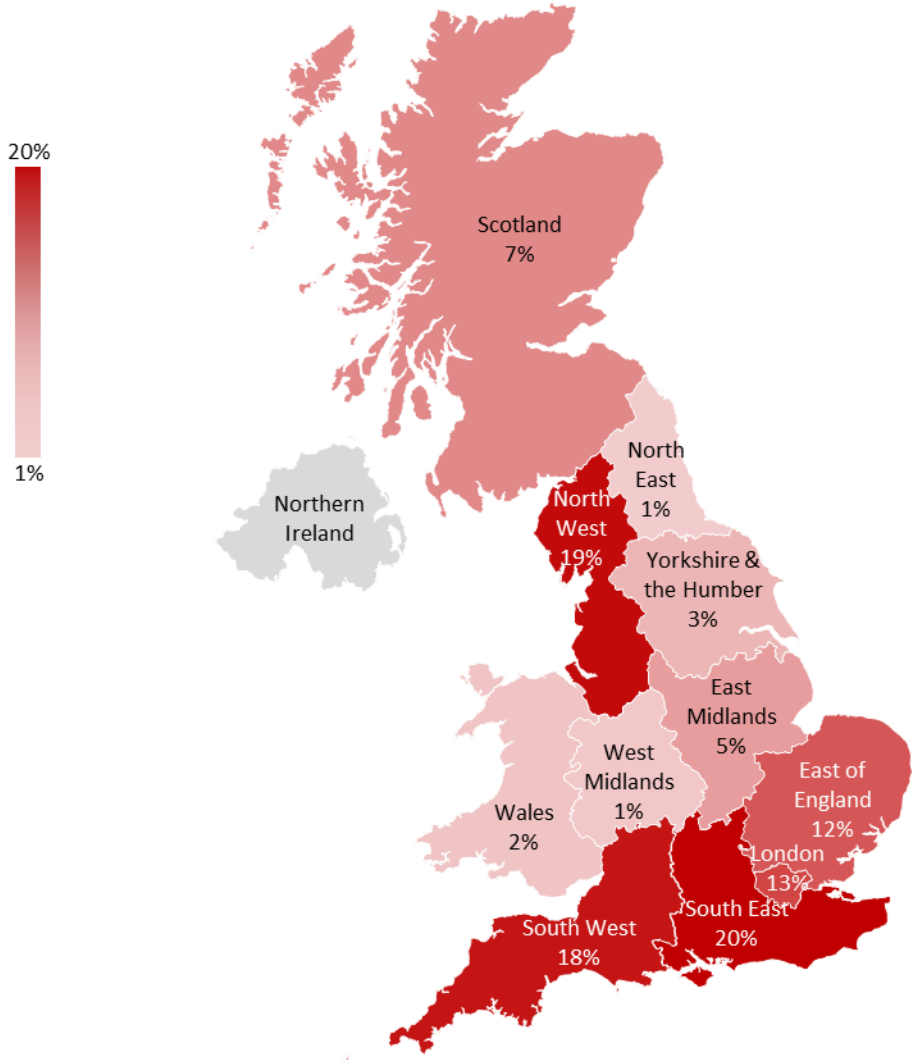
Notes: This chart shows how taxpayers would be distributed across the country if the tax featured an exemption threshold of £250,000. The distribution is independent of the tax rate. Individuals in the Sunday Times Rich List are not included in this analysis as we have no information on their region of residence. We have no data for Northern Ireland, and so the percentages shown are the percentage of taxpayers in Great Britain living in each region.
Source: ONS, Wealth and Assets Survey, 2016-18.

FIGURE 3: GEOGRAPHICAL DISTRIBUTION OF TAXPAYERS UNDER A £1 MILLION EXEMPTION THRESHOLD



Notes: This chart shows how taxpayers would be distributed across the country if the tax featured an exemption threshold of £1,000,000. The distribution is independent of the tax rate. Individuals in the Sunday Times Rich List are not included in this analysis as we have no information on their region of residence. We have no data for Northern Ireland, and so the percentages shown are the percentage of taxpayers in Great Britain living in each region.
Source: ONS, Wealth and Assets Survey, 2016-18.

FIGURE 4: GEOGRAPHICAL DISTRIBUTION OF TAXPAYERS UNDER A £5 MILLION EXEMPTION THRESHOLD



Notes: This chart shows how taxpayers would be distributed across the country if the tax featured an exemption threshold of £5,000,000. The distribution is independent of the tax rate. Individuals in the Sunday Times Rich List are not included in this analysis as we have no information on their region of residence. We have no data for Northern Ireland, and so the percentages shown are the percentage of taxpayers in Great Britain living in each region.
Source: ONS, Wealth and Assets Survey, 2016-18.

Appendix D: Liquidity constrained taxpayers

This appendix provides the statistics underlying Figures 7, 8 and 14, which show the number and share of taxpayers who are liquidity constrained under different tax structures.

TABLE D1: PERCENTAGE OF TAXPAYERS LIQUIDITY CONSTRAINED UNDER ANNUAL TAXES RAISING £10BN IN REVENUE, BY RANGE OF NET WEALTH

Threshold (£)	Rate	Percentage of taxpayers liquidity constrained by range of total					
		all taxpayers	£250k-500k	£500k-1m	£1m-2m	£2m-5m	£5m+
Flat taxes raising £10bn							
5,000,000	0.91%	20.4%					20.4%
2,000,000	0.57%	7.1%				4.5%	23.8%
1,000,000	0.31%	1.6%			0.3%	4.6%	18.8%
500,000	0.18%	0.5%		0.1%	0.3%	2.3%	13.7%
250,000	0.12%	0.3%	0.1%	0.3%	0.2%	0.7%	12.8%
Flat taxes raising £20bn							
5,000,000	2%	25.83%					25.8%
2,000,000	1.24%	11.46%				7.3%	39.3%
1,000,000	0.66%	3.27%			0.6%	10.7%	31.2%
500,000	0.36%	1.13%		0.5%	0.6%	6.5%	20.7%
250,000	0.24%	0.62%	0.2%	0.7%	0.5%	4.6%	18.2%
Flat taxes raising £30bn							
5,000,000	3.40%	31.6%					31.6%
2,000,000	1.90%	16.9%				13.2%	41.4%
1,000,000	0.99%	5.7%			1.4%	19.5%	39.8%
500,000	0.54%	2.0%		0.7%	1.8%	10.9%	29.8%
250,000	0.36%	1.0%	0.3%	0.9%	1.5%	7.6%	21.3%
Progressive taxes raising £10bn							
Starting at £1,000,000		0.9%			0.0%	1.6%	20.7%

Notes: An individual is liquidity constrained if their immediate tax liability (defined in Section 3.4) exceeds more than 10% of their net income *and* 20% of their net income plus liquid wealth. Tax rates used are as per Table 1. Individuals in the Sunday Times Rich List are not included in this analysis. For individuals at the top of the WAS, we use their Pareto-adjusted business wealth values, but adjust their net income to maintain the same ratio of wealth to income as reported in the WAS. We do not present liquidity analysis using thresholds above £5 million due to small sample sizes.
Source: ONS, Wealth and Assets Survey, 2016-18.

TABLE D2: NUMBER OF TAXPAYERS LIQUIDITY CONSTRAINED UNDER ANNUAL TAXES RAISING £10BN IN REVENUE, BY RANGE OF NET WEALTH

Threshold (£)	Rate	Number of taxpayers liquidity constrained ('000) by range of total wealth					
		all taxpayers	£250k-500k	£500k-1m	£1m-2m	£2m-5m	£5m+
Flat taxes raising £10bn							
5,000,000	0.91%	17					17
2,000,000	0.57%	44				25	20
1,000,000	0.31%	48			7	25	15
500,000	0.18%	39		7	8	13	11
250,000	0.12%	43	6	17	5	4	10
Flat taxes raising £20bn							
5,000,000	2%	21					21
2,000,000	1.24%	72				39	32
1,000,000	0.66%	98			15	58	26
500,000	0.36%	93		26	15	35	17
250,000	0.24%	97	11	34	12	25	15
Flat taxes raising £30bn							
5,000,000	3.40%	26					26
2,000,000	1.90%	106				72	34
1,000,000	0.99%	171			32	106	33
500,000	0.54%	166		38	44	59	24
250,000	0.36%	161	20	46	37	41	17
Progressive taxes raising £10bn							
Starting at £1,000,000		26			1	9	17

Notes: An individual is liquidity constrained if their immediate tax liability (defined in Section 3.4) exceeds more than 10% of their net income *and* 20% of their net income plus liquid wealth. Tax rates used are as per Table 1. Individuals in the Sunday Times Rich List are not included in this analysis. For individuals at the top of the WAS, we use their Pareto-adjusted business wealth values, but adjust their net income to maintain the same ratio of wealth to income as reported in the WAS. We do not present liquidity analysis using thresholds above £5 million due to small sample sizes.
Source: ONS, Wealth and Assets Survey, 2016-18.

TABLE D3: PERCENTAGE OF LIQUIDITY CONSTRAINED TAXPAYERS UNDER ONE-OFF TAXES, BY RANGE OF WEALTH

Threshold (£)	Annualised rate	Percentage of taxpayers liquidity constrained by range of total wealth					
		all taxpayers	£250k-500k	£500k-1m	£1m-2m	£2m-5m	£5m+
Flat tax at 5%							
5,000,000	1%	21.4%					21.4%
2,000,000	1%	10.4%				6.7%	34.8%
1,000,000	1%	5.7%			1.4%	19.5%	39.8%
500,000	1%	6.9%		1.9%	12.3%	26.3%	40.0%
250,000	1%	8.1%	1.1%	9.7%	20.3%	29.2%	40.0%
Flat taxes raising £250bn							
5,000,000	5.84%	37.8%					37.8%
2,000,000	3.09%	23.3%				19.6%	47.7%
1,000,000	1.72%	11.1%			5.7%	30.0%	41.1%
500,000	0.96%	6.4%		1.7%	11.2%	26.0%	39.9%
250,000	0.65%	3.4%	0.5%	3.0%	8.7%	18.0%	31.8%
Progressive taxes raising £250bn							
Starting at £500,000		4.3%		0.8%	6.1%	24.7%	40.4%
Starting at £1,000,000		5.3%			0.8%	19.1%	41.4%

Notes: An individual is liquidity constrained if their immediate tax liability (defined in Section 3.4) exceeds more than 10% of their net income *and* 20% of their net income plus liquid wealth. Tax rates used are as per Table 4, where we target £250bn in revenue under each tax structure. Individuals in the Sunday Times Rich List are not included in this analysis. For individuals at the top of the WAS, we use their Pareto-adjusted business wealth values, but adjust their net income to maintain the same ratio of wealth to income as reported in the WAS. We do not present liquidity analysis using thresholds above £5 million due to small sample sizes.
Source: ONS, Wealth and Assets Survey, 2016-18.

TABLE D4: NUMBER OF LIQUIDITY CONSTRAINED TAXPAYERS UNDER ONE-OFF TAXES, BY RANGE OF WEALTH

Threshold (£)	Annualised rate	Number of taxpayers liquidity constrained ('000) by range of total wealth					
		all taxpayers	£250k-500k	£500k-1m	£1m-2m	£2m-5m	£5m+
Flat tax at 5%							
5,000,000	1%	18					18
2,000,000	1%	65				36	29
1,000,000	1%	171			33	106	33
500,000	1%	569		101	292	143	33
250,000	1%	1,261	79	509	482	159	33
Flat taxes raising £250bn							
5,000,000	5.84%	31					31
2,000,000	3.09%	146				106	39
1,000,000	1.72%	333			136	163	34
500,000	0.96%	530		90	266	141	33
250,000	0.65%	526	35	160	208	98	26
Progressive taxes raising £250bn							
Starting at £500,000		353		40	146	134	33
Starting at £1,000,000		158			20	104	34

Notes: An individual is liquidity constrained if their immediate tax liability (defined in Section 3.4) exceeds more than 10% of their net income *and* 20% of their net income plus liquid wealth. Tax rates used are as per Table 4, where we target £250bn in revenue under each tax structure. Individuals in the Sunday Times Rich List are not included in this analysis. For individuals at the top of the WAS, we use their Pareto-adjusted business wealth values, but adjust their net income to maintain the same ratio of wealth to income as reported in the WAS. We do not present liquidity analysis using thresholds above £5 million due to small sample sizes.
Source: ONS, Wealth and Assets Survey, 2016-18.

Appendix E: IHT reform

In this section we present our revenue estimates for the IHT reforms described in Section 5.2 when we allow for avoidance responses. We base our modelling of avoidance responses on empirical estimates of the elasticity of taxable wealth with respect to the net-of-tax rate for inheritance tax, which are in the range 0.1-0.2 (Kopczuk, 2013). These estimates suggest that a 1% reduction in the share of the estate that would be passed on after tax would lead to a 0.1-0.2% reduction in the size of the estate after behavioural responses, on average. We take the upper bound of these estimates. However, it is not clear how, or to what extent, individuals would respond to these reforms, since they shut off some of the channels currently used to avoid the tax. We therefore expect the avoidance response to be smaller than this statistic suggests.

For each individual, we apply the elasticity to the percentage change in the net-of-average tax rate they face under the reformed system relative to the existing system. Note that some of the reforms we propose lead to a reduction in the tax rate faced by some individuals. As a result, we expect some individuals to *increase* their taxable wealth in response to the reform – i.e. pass on more wealth, while others will reduce their taxable wealth. It is therefore not obvious from the outset that the reforms we suggest should have a negative effect on taxable wealth through behavioural responses, overall.

Accounting for behavioural responses in this way has little effect on our revenue estimates (Table E1). Under no reform is the amount of revenue reduced by more than £100 million.

TABLE E1: REVENUE FROM REFORMING IHT, ASSUMING SOME AVOIDANCE RESPONSE (ILLUSTRATIVE)

	Taxpayers	Effective threshold (£)	Rate	Revenue (£bn)	Administrative cost (£m)
Current IHT tax base	25	592,728	0.40	4.5	0
adding pension wealth	34	592,728	0.40	5.8	0
adding business wealth	25	592,728	0.40	5.4	4
adding pension and business wealth	34	592,728	0.40	6.7	4
Raising the threshold	25	677,150	0.40	5.7	4
Reducing the rate	34	592,728	0.26	4.5	4

Notes: In this table we assume an elasticity of taxable wealth with respect to the net-of-tax rate of 0.2. 'Current IHT tax base' shows our stylised model of the current IHT system. The 'effective threshold' is the amount of wealth required to be among the taxpaying population. The revenue calculation is the rate applied to total wealth above the effective threshold. 'Adding pension wealth' adds pensions to the current tax base, according to their inherited value, keeping the effective threshold fixed. 'Adding business wealth' adds businesses and unlisted shares to the current tax base, keeping the effective threshold fixed. 'Adding pensions and business wealth' combines the previous two reforms. 'Raising the threshold' takes the tax base as inclusive of all assets (pensions and business wealth included) and raises the threshold to maintain the same number of taxpayers as the current IHT system. 'Reducing the rate' calculates the rate required to generate the same amount of revenue as the 'current' IHT system (our model), from the same number of taxpayers, with a comprehensive tax base.
Source: Authors' calculations based on the ONS Wealth and Assets Survey 2016-18.

Appendix F: Impact of narrowing the tax base

Throughout this report we have examined revenue estimates based on a comprehensive tax base - that is, including all wealth in the base of taxable assets, with only a few exemptions for some low-value items as described in Section 2.1. This is consistent with the recommendation Advani, Chamberlain and Summers (2020), as it will prevent arbitrary inequalities in the tax burden being generated across taxpayers who happen to have different asset mixes, and help to limit avoidance through taxpayers changing their asset mix.

In this appendix we present estimates of the revenue that would be lost by exempting major asset classes from the tax base (Table F1). These are compared to a 100% benchmark which represents revenue raised from a wealth tax starting at £500,000. The percentage lost from exempting assets is independent of the rates charged above this threshold.[39] These revenue loss estimates vary according to the exemption threshold, as the asset mix of taxpayers changes across the distribution. For example, at thresholds of £500,000 or below, more than half of revenue which could be raised with a comprehensive tax base would be lost if pension assets were exempted. By contrast, at thresholds of £2m or more, the exemption of business assets would have a larger impact, as business wealth becomes a more dominant part of taxpayers' asset mix.

It is worth explicitly noting that the numbers in Table F1 are not equivalent to the share of total wealth that is held in the form of the relevant asset by those taxpayers. The asset class exemption takes a 'slice' off the top of the taxpayer's taxable wealth (of which it comprises a larger proportion), so that the full impact of the exemption works through the taxpayer's marginal tax rate rather than the average tax rate.

TABLE F1: REVENUE LOSS FROM EXEMPTING ASSETS

	Share of revenue lost by excluding...					
Threshold per individual (£)	Main home	All property	Pensions	Business assets	Financial wealth	Physical wealth
250,000	31%	38%	54%	16%	17%	2%
500,000	30%	37%	54%	23%	19%	2%
1,000,000	25%	33%	43%	39%	21%	2%
2,000,000	15%	23%	20%	64%	17%	1%
5,000,000	7%	12%	5%	87%	9%	0%
10,000,000	3%	6%	1%	95%	4%	0%

Source: Advani, Hughson and Tarrant (2020).

[39] See Table 1 for the taxpayer counts which apply at this threshold.