Intertemporal Income Shifting:
Evidence from Small Business Owners

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Abstract

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There has been substantial growth in the number of people who work for themselves, rather than as employees in others’ businesses. These individuals are particularly responsive to changes in tax rates; for example, they are known to bunch at kinks in non-linear tax schedules. However, less is known about the relative importance of the various mechanisms used in order to bunch in taxable income. We use a new link between the personal and corporate tax records of UK company owner-managers to investigate how much of their responsiveness to tax is due to real reductions in activity versus avoidance mechanisms. We show that a substantial proportion of their responsiveness is due to short-term income shifting across tax years. We provide evidence that the remainder may be due to longer-term income shifting i.e. withdrawing income as capital gains on company sale or dissolution. Our findings have important implications for tax design.

Keywords: income shifting, elasticity of taxable income
JEL classification: D12, D62, H21, H23

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1 Introduction

The UK labour market has changed considerably in recent years. Since 2008, 40% of the workforce growth has come from people working for their own businesses, rather than as employees of others’ businesses. In the UK, operating as a sole-trader (self-employment) is more common than being a company owner-manager, but the number of individuals owning and managing incorporated businesses has almost doubled since the Great Recession (Adam et al. (2017)). The growth in incorporation has been occurring since at least the mid 1990s and has been seen across many European countries. This is, to a substantial degree, driven by tax motivated moves from the personal to the corporate tax base (de Mooij and Nicodème (2008)). Company owner-managers have been shown to be particularly responsive to changes in their marginal rate of tax (Adam et al. (2017)). Part of this is likely due to the fact that they face fewer constraints on adjusting their labour supply than employees (see Chetty et al. (2011)), but they also have scope to use other margins of adjustment to respond to tax changes. Understanding how these individuals respond to tax is crucial to understanding both the revenue and efficiency implications of various systems of taxation. For example, if they are shifting income over time, but paying tax on this income at some point in the future, then this is important to take into account.

The contribution of this paper is to use a new link between corporate and personal tax records to understand how company owner-managers, who run their own incorporated businesses, respond to changes in their marginal rate of tax. One important mechanism available to these individuals is the ability to retain profits in the company and choose when (i.e. in what tax year) to withdraw it as personal taxable income. This means they can easily shift income intertemporally to reduce their tax liability, which is particularly useful given the year-to-year volatility of their incomes. Owner-managers can also chose how much income to take as the return to labour versus the return to capital, which is valuable because salary is often taxed more heavily than dividends or capital gains. In contrast, the self-employed (who run their own unincorporated businesses) do not have the ability to switch between the corporate and personal tax bases nor to retain cash in the firm to smooth personal taxable income across years. Company owner-managers also have other ways in which they can respond to tax changes, such as adjusting their
use of capital allowances. However, the most straightforward way for them to shift income intertemporally is to retain profits within the firm.

We use a bunching framework to estimate individuals’ responsiveness to kinks in the nonlinear tax schedules that they face. We show that the annual taxable income of owner-managers is very responsive to changes in their marginal tax rate: bunching at the higher rate threshold (an increase in the marginal tax rate of 20 percentage points) implies an elasticity of taxable income of 0.1. However, we show that much of this responsiveness can be accounted for by short term shifting of taxable income across tax years. We also provide evidence that company owner-managers are retaining profits in the firm for longer periods, potentially to withdraw as more lightly taxed capital gains on company liquidation. Another way that company owner-managers can manipulate the timing and magnitude of their tax payments is through the use of capital allowances (which may or may not relate to productive investment). Capital spending is deducted from revenue that flows into the company, and therefore affects the corporate profits of the firm, but not the personal taxable income of the owner. We therefore use kinks in the corporate tax schedule to investigate how investment responds to changes in the marginal tax rate faced by owner-managers: much of the bunching at kinks in the corporate tax schedule can be explained by individuals’ use of investment allowances.

One of the strengths of this paper is that we have access to a new link between personal and corporate administrative tax returns, which gives a much fuller picture of the behaviour of company owner-managers than has previously been available. Other papers have looked at either the corporate or personal side. For example, Adam et al. (2017) show that there is considerable bunching of owner-managers in annual taxable income at the higher rate threshold, but they cannot see how taxable income at the personal level relates to the profits earned and retained at the corporate level. Devereux et al. (2014) analyse the corporate tax data and show that there is bunching at thresholds in the corporate tax data. They use firms accounts data to attempt to answer some questions relating to behaviour on the personal tax side, but are not able to use this to look explicitly at bunching in the taxable income of company owner-managers. Since owner-managers have control over their firm’s total income and can choose how much to take out of the business
each year, fully analysing their behaviours requires information from both the personal and corporate levels.

Using bunching to elicit behavioural responses has become increasingly popular in recent years, in part due to the availability of administrative data (see Kleven (2016) for a summary). Saez (2010) shows how the amount of bunching at a kink point in a nonlinear tax schedule can be used to estimate the elasticity of taxable income (ETI). Under further assumptions, the ETI is equal to a structural parameter of interest, namely the elasticity of labour supply. However, the one-to-one mapping between the amount of bunching and a structural parameter is predicated on particular model assumptions. Einav et al. (2016) show how different models, both consistent with observed patterns of bunching, can produce very different estimates of the structural parameters of interest.

Although the assumptions under which the ETI is equal to a structural labour supply elasticity are unlikely to hold in practice, it is nonetheless a potentially useful object to estimate (see Chetty (2009b) for further discussion of the sufficient statistics literature). For example, Feldstein (1995, 1999) shows that the marginal welfare gain from raising the income tax rate can be expressed purely as a function of the ETI. Saez (2001) shows how earnings elasticities can be used to make inferences about the optimal progressive income tax schedule in the Mirrlees (1971) model. The ETI captures the margins of response that agents may engage in that may affect their taxable income. This sidesteps the need to separately estimate all the separate margins of response to tax changes. Since this seminal work, the ETI has been estimated in a variety of contexts and settings (e.g. Gruber and Saez (2002)). However, the sufficiency of the ETI for the excess burden of tax depends on the agent adjusting using all margins of response such that the marginal cost of using each mechanism equals the tax rate (Chetty (2009a)).

An implication of this is that the ETI is sufficient for welfare analysis only if there are not spillovers to other tax bases, for instance, due to individuals’ shifting income across tax bases (see Slemrod (1995), Slemrod and Yitzhaki (2002)). In our setup, we can interpret the ability of company owner-managers to shift taxable income across tax years as analogous to shifting across tax bases. It is common to estimate the ETI using (possibly repeated) cross sections of data at the annual level, for a particular tax. However, if, as in this case, individuals can adjust their taxable income across tax years relatively
easily, then the ETI is no longer sufficient for the marginal welfare gain of adjusting the tax rate. Instead, understanding the mechanisms wrapped up in the ETI is crucial for welfare analysis. Recent work has started to unpack some aspects of the ETI (e.g. Harju and Matikka (2016) explicitly consider shifting across taxes bases), but this is still relatively limited.

We use a dynamic model of effort decisions and income shifting developed by le Maire and Schjerning (2013). This extends the bunching framework developed by Saez (2010) in two important ways: (i) agents’ incomes are subject to fluctuations that are outside their control, and (ii) they have the ability to shift income across tax years. This allows us to more accurately model the environment in which company owner managers make decisions. We use the framework to investigate how much bunching in annual taxable income is due to real reductions in income, short term income shifting, and use of other mechanisms. The ETI estimated using annual taxable income overstates the extent of “real responses” to the tax rate, because it fails to account for the fact that some individuals are just shifting taxable income across tax years, and there is no associated loss in real output. We can use the panel nature of the data to calculate average taxable income (across many years); the elasticity of average taxable income is only a third as large as the elasticity of annual taxable income. This suggests that short term income shifting explains a substantial proportion of the apparent responsiveness of company owner-managers to changes in their marginal tax rate.

The population studied by le Maire and Schjerning (2013) – the Danish self-employed – have the ability to shift taxable income across tax years. The marginal tax rate that they face depends on the amount of income they withdraw in a given year; there is no tax incentive to hold income in the company for long periods. In our setting, UK company owner-managers have an additional margin of adjustment, which is to shift taxable income across tax bases from dividend to capital gains income. For most of the owner-managers, the tax rate on capital gains income lies between the basic and higher rates of tax applied to dividend income. This means that company owner-managers face a tax incentive to shift taxable income over long periods, by retaining income above the higher rate threshold and withdrawing as capital gains income on company liquidation.

We define two income concepts: (i) annual taxable income, which is the income of the individual that is taxed under the personal tax system,
(ii) annual total income, which is the maximum amount of income that the individual could withdraw from the company in a given year.\footnote{This is the wage the individual pays herself, plus pre-tax corporate profits.} This incentive to retain income in the company over long periods means that for a given period in the company’s lifecycle, average taxable income may not equal average total income. We find that this is indeed the case: there is no evidence of bunching in average total income at the higher rate threshold in the personal tax schedule. This suggests that company owner-managers are not engaging in substantially reducing the real income of their companies in response to the higher tax rate they pay above a certain threshold. However, we do find that individuals that bunch at the higher rate threshold in average taxable income (i.e. they bunch consistently in annual taxable income), have cumulative retained profits in the firm that grows over time. This is consistent with these individuals retaining income to withdraw as capital gains at a later date. In contrast, cumulative retained profits are constant for individuals who do not bunch in average taxable income.

These results have important implications for designing tax policy. As discussed above, the ETI has gained popularity as a sufficient statistic for welfare analysis, but this is predicated on assumptions, which, for company owner-managers are unlikely to hold. Indeed, Chetty (2009a) highlights that when responses to taxes incur no resource costs, then the elasticity of earned income (analogous in our setup to the elasticity of average total income) is more appropriate than the elasticity of taxable income for welfare analysis. One of the challenges of estimating the elasticity of earned income is lack of data. The link between the corporate and personal income tax records allows us to estimate both the elasticity of earned and taxable income, which can be used in tax policy design. Relatedly, by separately identifying the effect of tax on real activity from the responses allowed by institutional features of the tax system, we can speak to how different types of reforms could affect the welfare loss associated with taxes.

Our specific results on intertemporal income shifting are particularly relevant for the design of taxes for groups of individuals that have volatile incomes. If individuals’ incomes are subject to year-to-year fluctuations, a progressive tax system can lead to higher average rates for incomes that are more volatile.
This is undesirable. However, if individuals can costlessly shift income across tax years, then they can smooth their marginal tax rate over time, such that their income fluctuations do not affect their total tax payments. We show that a substantial proportion of the response of owner-managers’ annual taxable income to kinks in the personal tax schedule is due precisely to this shifting of taxable income across years to smooth the marginal rate faced. However, another mechanism used by these company owner-managers is to retain income above the higher rate tax threshold, withdrawing it on company sale or dissolution at a lower capital gains tax rate. Although we may want a tax system that does not penalise volatile incomes, it is less clear that the system should offer a way for individuals who run their own incorporated businesses to avoid paying the higher rate of tax.

The rest of the paper is structured as follows. In the next section we describe the institutional setting and tax incentives faced by company owner-managers. In Section 3 we set out a simple stylized model that extends the Saez (2010) bunching model to account for volatile incomes and the ability of agents to shift income across tax years. In Section 4 we present our empirical results. A final section concludes and discusses the implications for policy.

2 Institutional setting

In this section we describe our population of interest, namely, individuals who own and run their own incorporated businesses, and the tax incentives that they face. Our interest is in the individual and the decisions that he/she makes. The tax system treats an individual and the company that they work for as two distinct entities. Getting a complete picture of the behaviour of these individuals has historically been difficult because data is recorded separately for these two entities: corporate tax records contain information on the company, and personal tax records contain information on the taxable income of the individual. In this paper we have access to data that links the corporate and personal tax records. As we discuss below, this is crucial if we want to better understand how these individuals respond to tax.

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2This is why the UK has explicit regimes that allow farmers and some artists and authors to smooth their tax liabilities over tax years.
2.1 Company owner-managers

A company owner-manager is an individual who works for an incorporated business (a company) in which they are also a controlling shareholder. Their economic activity produces revenue for the company. After deducting allowable costs (including some investment costs and the remuneration costs of any employees) and the wage that she chooses to pay herself, she is left with corporate profit. This profit is subject to corporation tax, after which she can withdraw dividends, which are taxed again at the personal level or choose to retain profits in the company. Profits can be used (e.g. for investment) or withdrawn as dividends in later years. If the owner chooses to liquidate or sell part or all of the company, she will face capital gains tax on the difference between the initial investment and final value of the shares.

The timing of tax due is important in this setting. On both the corporate and personal side, the tax is only due in the year in which the relevant entity receives the income. This means that corporation tax is paid in the year in which the company makes profits, and personal taxes on wages, dividends and capital gains are due only when income is withdrawn from the company and paid to the individual. This creates an incentive to retain profits in the company to smooth personal taxable income over time and reduce the total tax liability.

We will use two concepts of income in the rest of the paper. We define annual total income as the maximum amount of a given year’s income that the individual could withdraw from the company in that year, after deducting allowable costs. This is measured as the wage that the individual pays herself, plus pre-tax corporate profits. We define annual taxable income as the amount of income that the individual chooses to withdraw from the company in a given year. This is measured as the wage the individual pays herself, plus dividend income. The difference between annual total income and annual taxable income is retained income. This can be negative if an individual chooses to withdraw earnings that were retained in previous years (thereby increasing taxable income at the personal level above the total amount earned in that year).
2.2 Data

We use administrative tax records for a sample of 113,128 company owner-managers in the UK, made available by Her Majesty’s Revenue Customs (HMRC). Our main analysis focuses on companies with a single director who is also the sole shareholder and employee. On average, owner-managers are in our sample for four years. We have access to a new link between the personal tax records of the owner-managers and the corporate tax records of their companies. We also have access to the company accounts, which contains information on the company’s ownership, assets, liabilities and financial position. These three data sources provide a much more complete picture of the behaviour of individuals who run their own incorporate businesses, which allows for a much more in depth analysis. For example, our measure of annual total income includes the corporate profits of the company, which is available only in the corporate tax records, and the wage paid to the owner-manager, which is available only in the personal tax records. We also construct a measure of the stock of retained earnings using information on shareholders’ funds from company accounts.

The personal and corporate tax records are matched for the 2012-13 tax year, with histories for both the individual and the company going back to 2001. Figure 2.1 shows annual taxable income over this period. Changes in tax rates applied to incomes above £100,000 led to forestalling of taxable income over this period, which led to a steeper increase in 2009-10, but decline in 2010-12.
Figure 2.1: Yearly taxable income, 2001-2012

Table 2.1 lists the largest industries to which the owner-managers in our sample belong. Individuals are concentrated in consultancies, accountancy, architecture and other technical services, plumbing and electrical fittings. Average taxable income is in the range of £30,000-£60,000, with total income higher, on average, in most industries. Individuals in business services and consultancy earn more than individuals in plumbing, building and construction work.
Table 2.1: *Average taxable and total income, by industry*

<table>
<thead>
<tr>
<th>Industry</th>
<th>Total income</th>
<th>Taxable income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business activities not otherwise classified</td>
<td>51,837.9</td>
<td>46,379.8</td>
</tr>
<tr>
<td>Business and management consultancy</td>
<td>57,663.3</td>
<td>52,478.3</td>
</tr>
<tr>
<td>Software consultancy and supply</td>
<td>56,030.4</td>
<td>47,913.8</td>
</tr>
<tr>
<td>Construction and civil engineering</td>
<td>53,722.7</td>
<td>41,711.5</td>
</tr>
<tr>
<td>Architectural, engineering and technical consultancy</td>
<td>51,706.5</td>
<td>41,237.1</td>
</tr>
<tr>
<td>Other computer related activities</td>
<td>49,150.6</td>
<td>42,174.2</td>
</tr>
<tr>
<td>Other service activities</td>
<td>46,663.3</td>
<td>42,880.6</td>
</tr>
<tr>
<td>Accounting, book-keeping, auditing; tax consultancy</td>
<td>39,424.9</td>
<td>35,884.1</td>
</tr>
<tr>
<td>Letting of own property</td>
<td>54,666.8</td>
<td>64,821.8</td>
</tr>
<tr>
<td>Installation of electrical wiring and fittings</td>
<td>43,244.7</td>
<td>33,712.0</td>
</tr>
<tr>
<td>Other construction work</td>
<td>51,337.2</td>
<td>38,150.2</td>
</tr>
<tr>
<td>Plumbing</td>
<td>40,495.3</td>
<td>30,658.6</td>
</tr>
<tr>
<td>Other building completion</td>
<td>40,472.4</td>
<td>31,930.9</td>
</tr>
<tr>
<td>Other human health activities</td>
<td>48,780.2</td>
<td>42,725.3</td>
</tr>
<tr>
<td>Other classification</td>
<td>61,413.7</td>
<td>45,898.9</td>
</tr>
</tbody>
</table>

Notes: Average shown for firms within each industry over the period 2001-2012.
Source: Calculations based on HMRC administrative datasets.

The incomes of individuals who run their own businesses are more volatile than those who work as employees in businesses run by others. Figure 2.2 shows the within-individual across-time standard deviations in total and taxable income against the individual’s mean total income. There is greater volatility in the incomes of individuals with a higher average income. Taxable income is less volatile than total income: on average, the standard deviation of taxable income is roughly 20% of the mean of total income, while the standard deviation of total income is around 40% of the mean of total income. The magnitude of these income fluctuations, and the fact that taxable income is much less volatile than total income, is in line with data on the Danish self-employed in le Maire and Schjerning (2013). Fluctuations in total income provide an incentive for individuals to retain income in the firm to smooth their taxable income, and hence their marginal tax rate, over time.
2.3 Tax incentives

Operating as a company owner-manager is the most tax advantaged legal form in the UK. Taxation of dividends (at the personal and corporate level combined) is lower than personal taxes on wage income or self-employed profits. Furthermore, being an owner-manager provides additional benefits, such as the ability to retain profits in the company and thus smooth taxable income over time.\(^3\) In this section, we focus on tax incentives as they apply to company owner-managers (our group of interest), while briefly comparing these incentives to those faced by the self-employed (owners of unincorporated businesses).

\(^3\)For a full discussion of the different treatment of legal forms, see Adam et al. (2017). There are laws that seek to prevent genuine employment (i.e. where there is a contract of employment between an individual and a third party) being disguised as a more tax advantaged legal form (IR35 rules). While this constrains who can incorporate for tax purposes, there will remain some one person companies where the owner looks more like an employee than a business owner.
2.3.1 Personal tax incentives

The structure of the personal income tax system was broadly stable over our time period. In every year, the optimal way for an owner-manager to take income out of the company in a given year involved taking a wage close to the personal allowance (the level at which the marginal income tax rate increases above zero) and withdrawing the remainder through dividend income.\(^4\) Figure 2.3 shows the distribution of wage income around the personal allowance: a large proportion of individuals in our sample follow this optimal strategy, paying themselves a wage equal to the personal allowance, and paying themselves dividend income above this point.

Figure 2.3: Distribution of wage earnings for company owner-managers

Notes: Wage earnings are reported employment income for individuals in our sample over the period 2001-2012.
Source: Calculations based on HMRC administrative datasets.

The top panel of Figure 2.4 shows the marginal rate schedule for personal income (accounting for taxes at the corporate and personal level) in 2005-6 for

\(^4\)Precisely, the optimal wage level is the point at which the marginal personal tax rate (including income tax and National Insurance Contributions (NICs)) exceeds the corporate tax rate. The National Insurance system operates with slightly different thresholds to the income tax system, which means that the optimal wage in most years is equal to the primary thresholds, the point at which employee NICs becomes payable.
an individual who follows the optimal withdrawal policy. Dividends attract
an effective 0% marginal rate at the personal level (and 19% corporation tax
at the corporate level, assuming the total profits of the company are below
300,000) below the higher rate threshold. Above that threshold, dividends
attract a 25% marginal rate at the personal level (and incur the same corporate
liability), creating a large convex kink in the tax schedule. The exact position
of the thresholds in the personal tax system and the rates in the personal and
corporate systems have changed over time, but the shape of the schedule and
the incentives over how to take income have been stable over our period of
observation. There is strong evidence of bunching at the higher rate threshold,
with many individuals choosing a taxable income that places them at the kink
point. One of the objectives of this paper is to understand what mechanisms
individuals are using to locate at the kink.

After 2010, additional marginal rate bands were created at £100,000 and
£150,000 (fixed in nominal terms). The bottom panel of Figure 2.4 shows the
marginal rate schedule in 2011-12.\textsuperscript{5} These kinks introduced similar incentives
described above for individuals with income around the higher-rate threshold
for those with higher incomes. We truncate the distributions above £100,000
for data disclosure reasons, however there is evidence of bunching at these
kinks in 2010/11-2011/12.

\textsuperscript{5}The non-convex nature of the schedule between £100,000 and £150,000 is a result of
a policy that withdraws the personal allowance above £100,000: an individual loses 50p of
personal allowance for every £1 she earns above £100,000 until the personal allowance has
been reduced to zero.
Figure 2.4: Distribution of taxable income for company owner-managers, 2005/6 and 2011/12

(a) 2005/6

Notes: For a description of the tax systems, see the text. Distributions truncated above £100,000 due to data disclosure requirements.
Source: Calculations based on HMRC administrative datasets.
The personal tax system described above relates to the withdrawal of income from the company in the form of dividends or wages. A different system applies when an individual chooses to sell their company or liquidate the shares on company dissolution. At this point, any retained earnings are subject to capital gains tax at the personal level. In almost all cases, capital gains tax rates faced by owner/managers are lower than dividend tax rates when income is above the higher rate threshold. However, rates are higher than those levied on dividend income below the higher rate threshold. Up to 2007, capital gains above an exempt amount (around £8,000) were taxed at marginal income tax rates, but business assets were subject to taper relief which reduced the liability by up to three quarters if the asset had been held for a sufficient period of time (more than two years from 2002 onwards). After 2007, rates were reduced below marginal income tax rates and taper relief was replaced by Entrepreneurs relief, which applied a reduced rate of 10% to the first £1 million of qualifying gains in a lifetime. Most owner/managers’ gains will qualify. The lifetime limit was steadily extended, up to £10 million after 2011. These reductions in capital gains tax have increased the incentive for individuals to retain income in the company and to realise them on sale or dissolution.

2.3.2 Corporate tax incentives

Corporate taxable profits are calculated, broadly, as annual revenue net of allowable deductions, the most notable of which are employees’ costs (including wages, employer NICs and pension contributions) and capital allowances. Incentives at the corporate level were relatively stable for the majority of our time period. In most years, companies with profit below £300,000 faced a flat corporation tax rate (between 19% and 21%). From 2001-02 to 2005-06, there was a lower rate below (and therefore a kink at) £10,000 (either 10% or 0%), with a slightly higher marginal rate from £10,000 to £50,000 (such that the average tax rate at £50,000 was equal to the Small Profits’ Rate). As with the personal tax schedule, these kinks create an incentive for firms to bunch

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6 The capital gains rate on business assets above the higher-rate threshold would be higher than the dividend tax rate only if the business was sold before 2002 and the individual had owned the business for less than three years.

7 Above this level there was a marginal rate scheme in place that increased the rate from the Small Profits’ Rate to the main rate, which varied from 25% to 30%.
in corporate profits. Figure 2.5 shows that individuals bunched around the £10,000 kink in 2001-02 to 2005-06, but that this bunching disappeared along with the kink after 2005-06. Figure 2.6 shows that individuals also bunched below the £300,000 for our sample period; although there is clear evidence of bunching, only a small fraction of individuals have total income near this threshold.

Although the kinks in the corporate tax schedule create incentives for owner-managers to bunch in corporate profits, it does not affect the incentives for individuals to adjust their salary or dividends over time. There was never an incentive to increase wages above the optimal level outlined above in order to keep corporate profit below the kink.

An important feature of the corporate tax system is how investment, or capital spending, is deducted from company revenue in order to calculate corporate profits. Capital allowances determine how quickly investments in different assets can be deducted from revenue. Broadly, the main capital allowance regime is supposed to mimic economic depreciation, but throughout this period smaller companies faced a more generous regime (at least for certain assets). Until 2008 plant and machinery investments were subject to a first year allowance, which doubled the allowable deduction to 40% in the first year for SMEs. After 2008, first year allowances were replaced by an Annual Investment Allowance (AIA), which allowed between £25,000 and £500,000 (depending on the year) of plant and machinery to be fully deducted from profits. Kinks in the personal and corporate tax schedules can affect choices over when to make tax deductible investments. A firm looking to undertake genuine business investment has a greater incentive to do so in a year in which profits are taxed at a higher rate (i.e. above a kink in the corporate tax schedule) because capital allowances are more valuable as a tax shield at this point. This would be one mechanism through which taxable income is shifted over time and may lead to bunching at corporate tax kinks.

Another possible use of capital allowances is as a means of avoiding or evading the tax due on personal use assets. An owner-manager may, for example, purchase a laptop for personal use but claim it as a business expense.\footnote{Discussion of rules and wholly, exclusively and necessarily to be added.} Under the AIA this allows the asset to be purchased out of income that is untaxed at either the corporate or personal level. Owner-managers face an tax
incentive to do this (subject to anti-avoidance and evasion rules) regardless of their level of income, although it may be particularly attractive if it allows total annual income to be brought below a kink in the corporate tax system. Brockmeyer (2014) shows that companies used investment, especially in fast depreciating assets, in response to the £10,000 kink in the tax schedule in the early 2000s. In Section 4 we investigate how individuals used investment as a means to bunch at the kinks in the corporate tax schedule. However, we also note that most of the companies in our sample have taxable incomes below 300,000, such that they do not face the incentive to use capital allowances for this purpose.

It is also possible that an individual that is bunching at, say, the higher rate personal tax threshold through a combination of salary and dividends, may be more likely to use capital allowances to effectively extract benefits in kind from the company as an additional form of remuneration. In our current analysis, we abstract from the use of capital allowances in relation to bunching at the personal tax threshold. Effectively, we assume that investment choices are exogenous and that total annual income is driven only by effort choices and income shocks.
Figure 2.5: Distribution of corporate profits for company owner-managers, £10,000 kink

Source: Calculations based on HMRC administrative datasets.
2.3.3 Other tax incentives

Owner-managers may also have other opportunities to reduce their tax liability. As with employees, they are able to save in pensions, which are a tax advantaged form of saving. The downside of this form of saving is its inflexibility: while retained earnings in a company can be withdrawn at any time, pension pots can only be accessed when the individual reaches retirement age. The corporate form also creates an opportunity to split income with a spouse or other family member. If the spouse has low earnings, making the spouse an equal shareholder means more income can be withdrawn from the company at lower marginal rates (the UK taxes personal income on an individual rather than joint basis).

2.3.4 The self-employed

In the UK, the majority of individuals working for their own business choose to be self-employed (running an unincorporated business) rather than a company owner-manager. This legal form is also tax advantaged relative to employees, with lower personal tax rates (which arise as a result of differential treatment
in the NICs system). Like owner-managers, the self-employed have the ability to split income with spouses and, if their company holds physical assets, are eligible for taper relief/entrepreneurs relief. Unlike owner-managers, their opportunities for shifting income across time are more limited. Self-employed profits are taxed in the year they are earned at personal income tax rates. While the self-employed may be able to invest in plant and machinery to shift income across time, this is more difficult than the opportunities afforded to owner-managers through the use of retained earnings.

Given this, it may be surprising that more self-employed individuals do not incorporate more often. This will be partially explained by the additional burden imposed by filing company accounts that likely does not outweigh the tax benefit to owner-management at relatively low levels of income. Furthermore, certain industries, such as accountancy and legal services, tend to operate as partnerships (and are taxed under the self-employed regime) for both historical and practical reasons.

3 Model

In this section we describe a stylized model we use to decompose the bunching response of owner-managers into various mechanisms used. We use a dynamic extension to the Saez (2010) bunching formula developed by le Maire and Schjerning (2013). The Saez (2001) model is appealing because it links the observed bunching of individuals to the elasticity of taxable income. However, the ETI is a sufficient statistic for the deadweight loss of tax only under a number of assumptions that we think are unlikely to hold for company owner-managers. In order to be able to say more about the responsiveness of company owner-managers and the implications for tax design, we want to unpack the ETI. The le Maire and Schjerning (2013) extension incorporates two features that we think are of first-order importance for these individuals: (i) the ability to shift taxable income across years, and (ii) volatility in income that is outside of the individuals’ control.

The model allows us to use different moments from the data to estimate the proportion of the elasticity of taxable income (ETI) that is due to short-term income shifting, real response, and other mechanisms.
3.1 Set-up

A company owner-manager exerts effort, $e_t$, in each time period, $t = 1, \ldots, T$. She derives utility from consumption and disutility from exerting effort, $\psi(e_t)$. However, total income, $z_t$, is also affected by mean zero income shocks, $\eta_t$. Note that we abstract from capital and labour costs; total income, $z_t = e_t + \eta_t$, is therefore analogous to corporate profits above.

In each period, the owner-manager can choose to retain profits in the company, $m_t$. We impose the constraint that the sum of retained profits equals zero, $\sum_t m_t = 0$. We discuss relaxing this constraint below.

Retaining profits in the company affects the owner-manager’s taxable income, $y_t = z_t + m_{t-1} - m_t$. There is a piecewise linear progressive tax system with a kink at $y^*$, such that taxable incomes below $y^*$ are taxed at a low rate $\tau_0$, and taxable income above $y^*$ is taxed at a higher rate, $\tau_1$. The tax function is therefore:

$$T(y_t) = \tau_0 \min(y_t, y^*) + \tau_1 \max(y_t - y^*, 0) \quad (3.1)$$

We assume that individuals choose $\{e_t, m_t\}_{t=1}^T$ maximise the sum of post-tax income less the disutility of efforts:

$$\max_{\{e_t, m_t\}_{t=1}^T} \sum_{t=1}^T [y_t - T(y_t) - \psi(e_t)]$$

s.t. $y_t = z_t + m_{t-1} - m_t = e_t + \eta_t - m_t$, $\sum_{t=1}^T m_t = 0$

The interior solution to individuals’ choice of $\{e_t, m_t\}_{t=1}^T$ has the following first-order conditions:

$$\psi'(e_t) = 1 - T'(y_t)$$

$$\psi'(e_t) = \psi'(e_{t+1})$$

These conditions imply that individuals will choose effort and retained profits to equalize their marginal tax rate over time. This result depends on the assumption that there is no cost to retaining profits and shifting income over time. We think that for company owner-managers this is a reasonable assumption, but we will discuss robustness to this assumption below.

Note that because the marginal tax rate jumps discontinuously at $y^*$, there are a continuum of values of $z_t$ that are consistent with reporting $y^*$. There-
fore, if $z_t$ is continuously distributed in the population, regardless of whether it is purely exogenous or determined by optimal effort choices, then we would expect bunching at $y^*$. In order to further analyse the behaviour of these individuals, we assume that $\psi$ takes the following isoelastic form:

$$\psi(e_t) = \frac{1}{\gamma \epsilon} \frac{e_t^{1+\frac{\gamma}{\epsilon}}}{1 + \frac{1}{\epsilon}}$$

where $\gamma$ is a heterogeneous ability parameter drawn from $F(\gamma)$. $\epsilon$ is the structural elasticity of effort with respect to the net of marginal tax rate, which we assume is constant in the population. Saez (2010) shows how this can be easily generalised to the case of heterogeneous elasticities, in which case bunching is proportional to the average elasticity of individuals in the locality of the kink.

This functional form and first order conditions imply:

$$e_t = \gamma (1 - \tau_0)^{\epsilon} \quad \text{when} \quad y_t < y^* \quad (3.2)$$

$$e_t = \gamma (1 - \tau_1)^{\epsilon} \quad \text{when} \quad y_t > y^* \quad (3.3)$$

These effort levels are optimal when the self-employed does not bunch in period $t$.

We now consider how the behaviour of individuals varies depending on their ability and income shocks. There are three types of individuals: (i) never bunchers, (ii) sometimes bunchers, and (iii) always bunchers; the bunching in this case refers to bunching in annual taxable income.

Some individuals do not bunch in taxable income in any period. This is because either, (i) they are sufficiently skilled that their total income is far above the kink, even given the worst possible income shock, $\gamma > \gamma^{HH}$, or (ii) they are sufficiently unskilled that their total income is below the kink, even given the best possible income shock, $\gamma < \gamma^{LL}$. In both cases, effort exerted across periods is equal to $e^*$, which is determined by the optimal effort choice equation (3.2) for the lowest ability individuals, and equation (3.3) for the highest ability individuals. The thresholds $\gamma^{HH}$ and $\gamma^{LL}$ are
defined as follows:

\[ \gamma_{HH} = y^* - \min_t \eta_t \frac{(1 - \tau_1)^\epsilon}{(1 - \tau_0)^\epsilon} \] (3.4)

\[ \gamma_{LL} = y^* - \max_t \eta_t \frac{(1 - \tau_0)^\epsilon}{(1 - \tau_0)^\epsilon} \] (3.5)

If the range of possible income shocks, \( \max_t \eta_t - \min_t \eta_t \), is very wide, then we would expect a small number of individuals to be in this group.

The second group of individuals bunch in some periods, using the ability to shift income to smooth their taxable income, but do not adjust their effort choices from the optimal choice. As above, there are two types of individuals. First, higher ability individuals may have total income that sometimes falls below the kink. In this case, they withdraw profits from the company (taxable income exceeds total income in that year) to bunch at the kink, which allows them to minimise their total tax liability over all years. These individuals have abilities in the range, \( \gamma_{HL} < \gamma < \gamma_{HH} \), and set their effort choices according to (3.3). Second, lower ability individuals may have total income that sometimes exceeds the kink. In these years, they can retain profits in the company (taxable income is less than total income in that year) to bunch at the kink, which also allows them to minimise their total tax liability over all years. These individuals have abilities in the range, \( \gamma_{LL} < \gamma < \gamma_{LH} \). The thresholds, \( \gamma_{HL} \) and \( \gamma_{LH} \) are the abilities of the individuals who are indifferent between not reducing their effort from the interior optimum and reducing their effort to bunch in taxable income in every period:

\[ \gamma_{HL} = \frac{y^*}{(1 - \tau_1)^\epsilon} \]

\[ \gamma_{LH} = \frac{y^*}{(1 - \tau_0)^\epsilon} \]

The final group of individuals have an ability in the range, \( \gamma_{LH} < \gamma < \gamma_{HL} \), such that it is preferable for them to reduce their effort and pay \( \tau_0 \), than set the effort at the interior optimum and pay \( \tau_1 \). These individuals therefore bunch in every period in taxable income, \( e^* = y^* \), and use retained profits to smooth their income shocks to total income, \( m_t = \eta_t \).
3.2 Bunching behaviour

The framework above provides us with a way to decompose the elasticity implied by bunching in annual taxable income into the part due to intertemporal income shifting, the part due to real responses and the part due to other factors. We can use different moments from the data to identify the proportions of individuals in each group. These are: the amount of bunching in annual taxable income, the amount of bunching in average taxable income, and the amount of bunching in average total income. We would not expect to observe bunching in annual total income. This is because even individuals who reduce their effort so that they bunch in average total income have annual total incomes that fluctuate around this average, due to the income shocks.

The amount of bunching in annual taxable income is proportional to the elasticity of taxable income for this group of individuals. This object has been estimated previously; our contribution is to decompose the proportion due to income shifting, real responses and other mechanisms. We can estimate the proportion due to income shifting by using the amount of bunching in average taxable income. Individuals that only bunch in annual taxable income when they have an income shock above or below the kink do not bunch in every period, and therefore only bunch on average. In contrast, individuals who are adjusting their effort in response to the kink bunch every period and therefore also bunch in average taxable income.

Figure 3.1 shows distributions of annual taxable, annual earned and average taxable income from simulations in which the true elasticity is 0.2. Estimating the elasticity using bunching in annual taxable income gives an estimate of 2.7, which overestimates the true elasticity because it fails to account for income shifting. Estimating the elasticity using bunching in annual earned income yields an underestimate of 0.001, because it fails to account for the volatility in total incomes outside the individuals’ control. Using bunching in average taxable income yields the correct estimate.
In this model, we imposed the constraint that retained profits sum to zero, which means that average earned income equals average taxable income.
This means that we have an overidentification restriction: we can estimate the proportion of the elasticity that is due to real response using either average taxable income or average total income. If individuals are not using other mechanisms, then we would expect to get the same result. However, if individuals have other means to shift income such that average total income does not equal average taxable income, then the estimated elasticities will differ. In this case, we interpret the elasticity of average taxable income as the elasticity that strips out short-term income shifting, and the elasticity of average earned income as the real reduction in activity as a result of the kink. The difference between these two estimates is therefore due to other factors. In Section 4 we provide evidence that this is likely due to longer-term income shifting i.e. retaining profits until company dissolution and withdrawal as capital gains.

### 3.3 Welfare

We define social welfare as the sum of individuals’ utility (which is money metric given quasilinearity of the utility function) and tax revenue:

\[
W(\tau_0, \tau_1) = \int_0^{\gamma^H_L} \left\{ \sum_t (1 - \tau_0) y_t(\gamma) - \psi(e_t; \gamma) - \lambda_t(\gamma)[y_t - e_t - \eta_t + m_t] + \mu(\gamma) \left[ \sum_t m_t \right] \right\} dF(\gamma)
\]

\[
+ \int_{\gamma^H_L}^\infty \left\{ \sum_t (1 - \tau_1) y_t(\gamma) - \psi(e_t; \gamma) - \lambda_t(\gamma)[y_t - e_t - \eta_t + m_t] + \mu(\gamma) \left[ \sum_t m_t \right] \right\} dF(\gamma)
\]

\[
+ \int_0^{\gamma^H_L} \tau_0 \sum_t y_t dF(\gamma) + \int_{\gamma^H_L}^\infty \tau_1 \sum_t y_t dF(\gamma)
\]

where \(\lambda_t\) and \(\mu\) are the Lagrange multipliers on the constraints in the individuals’ maximisation problem.

To consider the excess burden of raising \(\tau_1\), we conduct the standard conceptual experiment of measuring the net dollar-value loss from raising the tax rate and returning the revenue lump sum to the taxpayers:

\[
\frac{dW}{d\tau_1} = \int_{\gamma^H_L}^\infty \left\{ \sum_t \frac{\partial y_t}{\partial \tau_1} - \psi'(e_t; \gamma) - \lambda_t(\gamma) \left[ \frac{\partial y_t}{\partial \tau_1} - \frac{\partial e_t}{\partial \tau_1} + \frac{\partial m_t}{\partial \tau_1} \right] + \mu(\gamma) \sum_t \frac{\partial m_t}{\partial \tau_1} dF(\gamma) \right\}
\]

Noting that the first order conditions from the agent’s problem give: \(\lambda_t(\gamma) = \mu(\gamma) = \psi'(e_t; \gamma) = (1 - \tau_1)\) so that:

\[
\frac{dW}{d\tau_1} = \tau_1 \int_{\gamma^H_L}^\infty \left\{ \sum_t \frac{\partial y_t}{\partial \tau_1} \right\} dF(\gamma)
\]
which is the fiscal externality of changing $\tau_1$.

Let $\epsilon_y = \frac{d\bar{y}}{d(1-\tau_1)} \frac{(1-\tau)}{\bar{y}}$ denote the elasticity of average taxable income. We can then express the excess burden as:

$$\frac{dW}{d\tau_1} = -\epsilon_y N_{\tau_1} \frac{\tau_1}{1-\tau_1} T E[\bar{y} | \gamma \geq \gamma_{HL}]$$  \hspace{1cm} (3.6)$$

where $N_{\tau_1}$ is the number of individuals with $\gamma \geq \gamma_{HL}$.

This shows that the excess burden of increasing the higher tax rate is proportional to the elasticity of average taxable income, rather than the elasticity of annual taxable income. This is because the elasticity of annual taxable income incorporates income shifting across tax years. This breaks the proportionality between this elasticity and the excess burden of taxation, because there is no resource, or efficiency, costs to shifting profits across tax years. Under this assumption, the relevant measure of the excess burden of $\tau_1$ is the reduction in income across all tax years, rather than just the reduction in income in just one tax year.

So far, we have assumed that individuals withdraw all retained income over the lifetime of the company. However, as discussed in Section 2, company owner-managers have an alternative way to withdraw income from the company wrapper, namely, by taking income as capital gains on company liquidation. This introduces a wedge between average taxable income and average total income. Chetty (2009b) analyses the implications for using elasticities as sufficient statistics when there agents can engage in avoidance and evasion. He shows that the elasticity of taxable income, or, in this case, the elasticity of average taxable income, is sufficient for welfare analysis only if agents engage in sheltering such that the marginal costs of sheltering equal the tax rate. If, on the other hand, there are no resource costs to sheltering, then the appropriate elasticity for welfare analysis is the elasticity of total income, or, in this model, the elasticity of average total income.

4 Empirical results

4.1 Estimating the excess mass and elasticities

In order to estimate the excess mass due to bunching we need to estimate the counterfactual density in the absence of the kink. We follow Chetty et al.
by fitting a flexible polynomial to the observed distribution of income, excluding observations in the a window, \([-R, R]\) around the threshold \(k\). We account for the fact that individuals who bunch come from above the kink point by imposing the integration constraint that the area under the counterfactual distribution of earnings must equal the area under the empirical distribution. In practice, this involves increasing the excluded area above the threshold and repeatedly estimating the polynomial.

The counterfactual distribution \(\hat{H}_j\) is defined as the fitted values from the regression:

\[
\hat{H}_j \left( 1 + 1[j > R] \frac{\hat{B}}{\sum_{j=-R}^{R} H_j} \right) = \sum_{i=0}^{q} \beta_i (f_j)^i + \sum_{k=-R}^{R} \gamma_i 1[f_j = i] + \varepsilon_j
\]

where \(f_j\) is the number of individuals in a small income bin, and \(\hat{B} = \sum_{j=-R}^{R} H_j - \hat{H}_j = \sum_{k=-R}^{R} \hat{\gamma}_k\) is the predicted excess mass at the threshold. The dependent variable is a function of \(\hat{B}_N\), so we iteratively estimate the regression recomputing \(\hat{B}\) using the estimated \(\hat{\beta}_i\) until a fixed point is reached.

We can use the estimated bunching mass to estimate the elasticity associated with bunching in that income measure (see Saez (2010)). We use the three income measures: annual taxable income, \(y_t\), average taxable income, \(\bar{y}\), and average total income, \(\bar{z}\). We can use each of these income measures, denoted \(x\), to estimate the elasticity, under the stylized bunching model described above. Individuals with ability \(\gamma \in \left[y^* \left/ (1 - \tau_0)\right, y^* \left/ (1 - \tau_1)\right]\) choose \(x = y^*\) (the threshold) and hence bunch at the kink point. \(\epsilon_x\) denotes the elasticity associated with bunching in each of the three income measures. Therefore any individual earning between \(y^*\) and \(y^* + \Delta y^*\) under the linear tax \(\tau_0\) bunches at the kink under the piecewise linear tax \((\tau_0, \tau_1)\) where:

\[
\frac{\Delta y^*}{y^*} = \left( \frac{1 - \tau_0}{\tau_1} \right)^{\epsilon_x} - 1
\]
The fraction of the population bunching in income $x$ is therefore:

$$B = \int_{y^*}^{y^*+\Delta y^*} h_0(x) dx \approx \Delta y^* \frac{h_0(y^*) + h_0(y^* + \Delta y^*)}{2}$$

$$= \frac{h(y^*) - h(z^*)}{2} \left( \frac{1-\tau_0}{1-\tau_1} \right)_x$$

where we have used the standard trapezoid approximation for the integral.

Combining these two expressions yields a quadratic in $\left( \frac{1-\tau_0}{1-\tau_1} \right)_x$:

$$B = y^* \left[ \left( \frac{1-\tau_0}{\tau_1} \right)^{\epsilon_x} - 1 \right] \frac{h(y^*) - h(z^*)}{2} \left( \frac{1-\tau_0}{1-\tau_1} \right)_x.$$

(4.2)

We estimate $B = \hat{B}_x$ as described above, and we estimate the densities either side of the bunch $h_{z^-} = \hat{H}_{-R}/w$ and $h_{z^+} = \hat{H}_{-R}/w$, where $w$ is the width of the income bin. This allows us to estimate $\epsilon_x$ for each income measure $x = y_t, \bar{y}, \bar{z}$.

4.2 Elasticities

We use the method outlined above to estimate the bunching mass, and associated elasticities, in annual taxable, average taxable, and average total income. Figure 4.1 shows the estimated excess mass at the kink in these three income measures. There is a large excess mass of 10.4% in annual taxable income. Much of this is driven by intertemporal income shifting: the excess mass in average taxable income is only 3.3%. However, the excess mass in average earned income is zero. This suggests that individuals are using some other mechanism to respond to tax than adjusting total income to locate at the kink. We discuss this below.
Figure 4.1: Bunching in annual taxable, average taxable and average total income

(a) Annual taxable

(b) Average taxable

(c) Average total

Notes: Method for estimating the counterfactual density described in the text. Bin width is £100.
Source: Calculations based on HMRC administrative datasets.
Table 4.1 shows the elasticities implied by the bunching in the three different income measures. The elasticity of annual taxable income is 0.1, suggesting that these individuals are very responsive to tax. This is of a similar magnitude found by Adam et al. (2017). However, a significant proportion of this is driven by intertemporal income shifting: the elasticity of average taxable income is around 0.04. The elasticity of earned income is not significantly different from zero. This could be for two reasons: either their effort choices are not particularly responsive to tax, or the effective marginal tax rate that they face does not increase at this kink point because they have other means to withdraw income from the company.

Table 4.1: Income elasticities

<table>
<thead>
<tr>
<th>Income measure</th>
<th>Elasticity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual taxable income</td>
<td>0.112</td>
</tr>
<tr>
<td>Average taxable income</td>
<td>0.039</td>
</tr>
<tr>
<td>Average total income</td>
<td>-0.009</td>
</tr>
</tbody>
</table>

Notes: Method for estimating the elasticities described in the text. Source: Calculations based on HMRC administrative datasets.

4.3 Other responses

In this section we provide evidence on other mechanisms that company owner-managers use to respond to tax. We focus on two that seem to be of first order importance: (i) the use of long term retained profits and withdrawing as capital gains, and (ii) use of capital allowances, or investment, to bunch in corporate profits.

4.3.1 Capital gains

We show above that although there is evidence that some agents bunch in average taxable income, there is no evidence of bunching in average total income. This suggests that they use other mechanisms to withdraw income from their company. One option available to company owner-managers is to retain income in the company, and withdraw as capital gains on company dissolution. The marginal tax rate on capital gains income is higher than the basic rate tax on dividend income, but lower than the higher rate of tax applied to dividend income. This means that if average total income exceeds
the higher rate threshold, the company owner-managers have an incentive to retain profits above the threshold above and withdraw them as capital gains on company dissolution. This reduces their total tax liability.

If individuals were using this mechanism then we would expect to see the total incomes of people bunching in average taxable income to exceed their average taxable income. We would also expect to see their cumulative retained profits increasing over time. Figures 4.2 shows that the cumulative retained income of individuals who consistently bunch in taxable income is increasing over time. In contrast, cumulative retained earnings are constant for individuals who do not consistently bunch in taxable income.

The extent to which people choose to do this is likely to depend on their discount factor and credit constraints. This also affects the interpretation of the relevant elasticity for welfare analysis. If there is a resource cost to retaining earnings in the firm and withdrawing as capital gains, and individuals use this mechanism up till the point where the marginal resource cost equals the tax rate, then the relevant elasticity for the excess burden of the higher rate is the elasticity of average taxable income. On the other hand, if there is no resource cost, and people are simply costlessly shifting income into capital gains, then the relevant elasticity for the excess burden of the higher rate is the elasticity of average total income. We show above that the elasticity of average total income is effectively zero.
Figure 4.2: *Cumulative retained earnings over time, bunchers and not bunchers*

![Graph showing cumulative retained earnings over time for bunchers and not bunchers.](image)

**Notes:** Bunchers in average taxable income are those individuals who are consistently located at the higher rate threshold; non bunchers are everyone else. Retained earnings are the difference between total and taxable income in each year, the graph shows this cumulatively in each tax year.

*Source: Calculations based on HMRC administrative datasets.*

### 4.3.2 Investment

As discussed in Section 2, capital allowances allow an individual to deduct capital costs from corporate revenue, which affects taxable corporate profits. Brockmeyer (2014) shows that companies used investment, especially in fast depreciating assets, in response to the £10,000 kink in the tax schedule in the early 2000s. Figure 4.3 shows that the bunching in corporate profits at the £10,000 threshold and £300,000 disappears when we account for capital allowances. This suggests that company owner-managers are adjusting investment in response to the change in the marginal corporate tax rate that they face.
Figure 4.3: Distribution of corporate profits for company owner-managers accounting for investment

5 Conclusion

To conclude, we use a new link between personal and corporate tax returns to investigate how individuals who run their own incorporated businesses respond
to tax. We confirm previous results that they respond strongly to changes in the marginal rate that they face, both in the personal and corporate tax schedule. However, a substantial proportion of the response to a 20 percentage point increase in the personal marginal tax rate can be attributed to short-term income shifting across tax years. Individuals bunch at the threshold in order to smooth fluctuations in their income, and hence their marginal tax rate. We also present evidence that is consistent with much of the remaining response being driven by individuals retaining profits in the company longer-term and withdrawing as capital gains on company sale or dissolution. Finally, we also show how individuals may adjust investment in response to changes in the marginal tax rate that they face.

Our results have important implications for designing tax policy. For example, how should tax policy be designed to treat people with volatile incomes? How should capital gains tax treat the income of company owner managers? And how does investment respond to changes in the tax system? Our findings provide useful evidence that can contribute to answering questions such as these.
References


