Intertemporal income shifting and taxing owners of closely held businesses

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Tax policy and closely held businesses

More and more people are now working through their own businesses:

- in the UK, number of company owner-managers doubled between 2000-01 and 2013-14

Many governments offer preferential tax treatment to closely held businesses, often aiming to boost entrepreneurship and economic growth:

- but avoidance responses can reduce government revenue, lead to resource misallocation, and increase post-tax income inequality

Closely held business owners are known to be responsive to taxes...
UK owner-managers bunch at kinks in the tax schedule

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Closely held business owners are known to be responsive to taxes... but understanding how business owners respond is key for policy design.
**Contribution and summary of results**

We provide **new evidence on the extent and implications of intertemporal income shifting by company owner-managers.**

Use newly linked personal and corporate administrative tax returns to find:

- the entire response is attributable to intertemporal income shifting, and not the adjustment of real economic activity
- systematic retention of income within closely held companies is large, particularly for higher income individuals
- no evidence that tax-induced retention leads to increased investment in business capital
- accounting for income shifting reduces the estimated deadweight loss associated with a marginal increase in personal taxes by around 80%
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Related literature

1. Closely held business owners and government policy:

2. Estimation of labour supply and taxable income elasticities and implications for welfare.

3. Capital income taxation.
Outline

1. Institutional setting and data
2. Simple model
3. Empirical analysis
4. Policy implications
5. Summary
Who are company owner-managers?

Individuals running **incorporated** closely held businesses (i.e. companies):

- the most tax-advantaged legal form in the UK

Heterogeneity in the types of business models reflected in the closely held company population e.g.:

- individuals selling their labour services by operating as contractors to third party companies
- owners running “small businesses” that involves investing in business capital and employing others

Include individuals commonly thought of as “entrepreneurs”, but also those not carrying out particularly innovative or novel activities.
Data overview

Our **population of interest** is closely held company owners:

- company directors who are also major shareholders, such that they have significant control over the business
- closely held companies: those with at most two directors and two shareholders

Data on a panel for 2005-2015:

- **companies**: company accounts and corporate tax records

  *newly matched to*

- **owner-managers**: self-assessment personal tax records
### Sample description

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Notes: Averaged across firm-years for period 2005-2015. Includes all firms in operation at some point between 2013 and 2015.

Values expressed in 2014-15 prices. Means are winsorised at the 1st and 99th percentiles.
Industries

More than 1/4 are in business or computer services (i.e. accountants, management & IT consultants, architects, those in human resources)

▶ tend to have higher ratios of profit to turnover and assets

▶ consistent with the fact that a significant share of the income of these reflects returns to labour of the owner-manager

Also substantial numbers operating in construction, retail, health and social work (e.g. doctors), and land transport (e.g. taxi drivers).
Linking firm and owner level data

Use a new match between the company accounts and tax returns, and the self-assessment tax records of company directors:

- links the income and capital investment decisions of company to the incomes (by type and timing) of the owner-manager
- compute how much income is retained in the company
Linking firm and owner level data

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▶ compute how much income is retained in the company

Match (performed by HMRC): on the universe of company directors in firm accounts in 2013-14 on the basis of director name and address.

▶ matched sample is around half the full sample; those not matched are because director’s dob and address are missing in company accounts

▶ matched sample are of similar average age, and similar turnover to full sample. Slightly higher profit and assets in the matched sample due to more zeros in the full sample.
Closely held company owners

Closely held company owners are disproportionately:

- **higher income** – 2.5% of close company directors are in the top 1% of taxpayers based on taxable income
  
  ⇒ relevant for implications for post-tax income inequality

- **older** – average age of close company directors is 49, compared with the average age of employees of 40
  
  ⇒ relevant for individuals’ ability and willingness to hold income in their companies
Key variables

**Total income**, $z_{ft}$, of company $f$ in year $t$ is measured as:

- post-corporate tax corporate profit, $\pi_{ft}$

  plus

- the sum of wages paid to its owner-managers, $\sum_{i \in F_f} y_{it}^w$

**Taxable income**, $y_{it}$, of owner-manager $i$ in year $t$ is measured as:

- sum of wage and dividend income, $y_{it}^w + y_{it}^d$

**Flow of retained profits**, $r_{ft}$, for company $f$ in year $t$ is constructed as:

- the difference between total and taxable income, $z_{ft} - \sum_{i \in F_f} y_{it}$
Taxation of UK company owner-managers

Income taxed:

- at the corporate level as it flows into the company
- at the personal level only when it is withdrawn

Dividends are more lightly taxed than salary

- optimal strategy: take a small salary and the rest as dividends

If they retain income in the company until liquidation they can take advantage of generous capital gains tax treatment.
Marginal personal tax rate schedules

(a) Tax year 2009/10

(b) Tax year 2014/15

Notes: Marginal tax rate is the combined corporate and personal tax rate for earning and paying out of the company an extra £1. It assumes an owner-manager follows the strategy of paying him/herself a salary equal to the starting point of NICs (the Primary Threshold) and paying the remainder in dividends. Thresholds are in nominal terms.

Source: Various government sources and authors’ calculations.
Taxable income distributions

(a) Income $\leq £90,000$ (2014-15)

(b) Income $> £90,000$ (2010-11–2014-15)

Notes: Black dotted lines indicate increases in marginal rates at the primary threshold (£7,956 in 2014-15), the higher-rate threshold (£41,865 in 2014-15), the beginning of the withdrawal of the personal allowance (£100,000 in each year from 2010-11) and the additional-rate threshold (£150,000 in each year from 2010-11). Due to disclosure requirements, we pool observations of annual nominal taxable income across the years 2010-11 to 2014-15 for the right hand panel. Bin widths in both panels are £1500.

Source: Authors’ calculations based on HMRC administrative datasets.
Outline

1. Institutional setting and data
2. Simple model
3. Empirical analysis
4. Policy implications
5. Summary
Model overview

Analyse a dynamic model of company owner-manager behaviour to:

- provide intuition for the ways in which owner-managers might respond to changes in their marginal personal tax rate
- to consider which responses are likely to lead to deadweight loss, and how we can empirically estimate these efficiency losses
- to provide sufficient statistics for the deadweight loss associated with a tax change
Model set-up

Owner-managers maximise the expected net present value of lifetime utility, derived from consumption, $c_t$, and labour supply, $l_t$:

$$\mathbb{E} \sum_{t=0}^{\infty} \beta^t [u(c_t) - \psi(l_t)],$$  \hspace{1cm} (1)

where $\beta$ denotes the agent’s discount factor, $u(\cdot)$ is a well-behaved concave per-period utility function, and $\psi(\cdot)$ is a convex function denoting the disutility from working.

Each period owner-managers choose:

- labour supply, productive capital, saving in the company’s cash asset, saving in a personal cash asset

to maximise the net present value of lifetime utility.
Features of the model

Time-varying mean zero shocks to the company’s productivity create fluctuations in total income.

Allow for two company assets: productive capital and a cash asset, to look at the effect on investment and the company’s portfolio choice.

Retaining profits (i.e. saving in the company’s cash asset) allows the owner-manager to manipulate their personal taxable income:

- when the personal tax function has a constant linear marginal rate, then this does not matter

- but if the tax function is kinked, or varies across time, then there is an incentive to strategically retain and withdraw profits
Effect of tax on behaviour

**Shifting to smooth volatile incomes**: relevant for owner-managers whose income fluctuates around a kink:

- offset increased company saving with lower personal saving, so not likely to be distortive

**Shifting to take advantage of a lower future tax rate**: agents with high total income have an incentive to systematically retain profits:

**Labour supply**: kinks also create incentives to reduce labour supply.

**Investment**: whether a kink distorts the portfolio choice of firms (cash asset or productive capital) depends on relative rates of return.
Effect of tax on behaviour

Shifting to smooth volatile incomes: relevant for owner-managers whose income fluctuates around a kink:

Shifting to take advantage of a lower future tax rate: agents with high total income have an incentive to systematically retain profits:

- whether this creates distortions depends on whether individuals can perfectly borrow at personal level to offset increased company saving
- if not, then distorts intertemporal allocation of resources

Labour supply: kinks also create incentives to reduce labour supply.

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Summary of empirical analysis

How much of the responsiveness in taxable income of owner-managers can be explained by income reductions versus intertemporal shifting?

- bunching analysis around higher rate threshold (sample of single shareholder-single director companies)
- difference-in-differences using policy changes that increased rates on individuals earning above £100,000

Is there a relationship between retained profits and investment in productive capital?
Bunching in annual taxable income

Notes: Bin width is £200. The distribution is drawn for the sample of owner-managers of one director one shareholder companies who are present in the data for at least 3 years.

Source: Calculations based on HMRC administrative datasets.
Bunching in annual and average total income

(a) Annual total

Excess bunching mass: $b = -0.069$

(b) Average total

Excess bunching mass: $b = -0.117$

Source: Calculations based on HMRC administrative datasets.
Different motivations for shifting

Owner-managers primarily shifting to smooth volatility will:

▶ only bunch some of the time
▶ not systematically retain profits i.e zero average retained profits

Whereas those retaining to take advantage of, for example, preferential capital gains tax on liquidation will:

▶ bunch persistently
▶ systematically retain profits i.e postitive average retained profits

Split owner-managers into “sometimes” and “consistent” bunchers:

▶ around half of the observed mass consists of only sometimes bunchers
Different motivations for shifting cont.

(a) Sometimes and consistent bunchers

(b) Consistent bunchers only

Notes: Method for estimating the counterfactual density described in the text. Bin width is £200. The left hand panel shows the observed distribution for one director one shareholder owner-managers who are present in the data for at least 3 years (this repeats Figure 25 above). The right hand panel shows the distribution when we replace the annual taxable income of the “sometimes bunchers” (owner-managers who bunch less than or equal to half the number of years they are observed) with their annual total income in that year.

Source: Calculations based on HMRC administrative datasets.
Difference-in-differences analysis using policy reforms

Reform: in 2010-2011 tax-free allowance withdrawn for incomes above £100k, introduction of 50p additional rate on incomes above 150k.

Estimate:

\[
\ln(y_{it}) = \sum_{s \neq 2009} \beta^\text{taxable}_s D_i \times 1[\text{year}_t = s] + \varphi_t + \alpha_i + \nu_{it} \\
\ln(\pi_{ft}) = \sum_{s \neq 2009} \beta^\text{total}_s D_f \times 1[\text{year}_t = s] + \varphi_t + \alpha_f + \nu_{ft} \\
A_{ft} - A_{ft-1} = \sum_{s \neq 2009} \beta^\text{equity}_s D_f \times 1[\text{year}_t = s] + \varphi_t + \alpha_f + \nu_{ft}
\]

where \( i \) indexes directors, \( f \) indexes firms, \( y_{it} \) is company taxable income, and \( \pi_{ft} \) is firm post-corporate tax profit and treatment is defined as:

- \( D_i = 1(y_{it} \in [95000, 200000] \forall t \leq 2009) \), \( D_f = \max_{i \in \mathcal{F}_f} D_i \)
Difference-in-differences analysis: estimates

Notes: Black markers show the estimated $\beta^\text{taxable}_s$ coefficients; grey markers show the estimated $\beta^\text{profit}_s$ coefficients. The omitted year is 2009. Error bars show 95% confidence intervals. Years on the horizontal axis refer the calendar year in which the tax year ends i.e. 2007 refers to the tax year April 2006 to April 2007.

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Source: Calculations based on HMRC administrative datasets.
Who retains profits and how do they invest them?

Profit retention is the main response of owner-managers to marginal tax rates changes:

- incentive to shift to smooth volatility is only relevant for owner-managers whose income fluctuates around kinks
- but all owner-managers with total income above the higher rate threshold have an incentive to retain some
- retained profits increase as owner-managers approach retirement age
Retained profits across the total income distribution

Notes: For each single shareholder single director company owner-manager we construct their average total income and average retained profits. The figure shows the 25th, 50th, and 75th percentiles of average retained profits conditional on binned average total income, across owner-managers. Error bars show 95% confidence intervals.

Source: Calculations based on HMRC administrative datasets.
Who retains profits and how do they invest them?

Profit retention is the main response of owner-managers to marginal tax rates changes.

No evidence that increased retained profits leads to more investment:

- increase in retained profits above the threshold matched entirely by increases in **current assets**
- diff-in-diff: no change in investment among the treated group
Retained profits and asset growth

Notes: For each single shareholder single director company owner-manager we construct their average total income, average annual retained profits, and average year-on-year change in current and fixed assets. The left hand panel shows the median and the right hand panel shows the 75th percentile across owner-managers.

Source: Calculations based on HMRC administrative datasets.
No change in investment following policy reforms

Notes: The markers show the estimated $\beta_i$ coefficients; the omitted year is 2009. The dependent variable is a dummy equal to 1 if there is an increased in fixed assets greater than 20% of the fixed assets stock. Error bars show 95% confidence intervals. Years on the horizontal axis refer the calendar year in which the tax year ends i.e. 2007 refers to the tax year that runs from April 2006 to April 2007.

Source: Calculations based on HMRC administrative datasets.
Who retains profits and how do they invest them?

Profit retention is the main response of owner-managers to marginal tax rates changes.

No evidence that increased retained profits leads to more investment.

Evidence that high income owner-managers are retaining to take advantage of preferential capital gains tax treatment:

- strong positive relationship between shareholders’ equity and value of capital gains once an owner-manager ceases to be a director.
- gains are large: average eligible gains are £500,000 per owner-manager (tax saving of £75,000)
Outline

1. Institutional setting and data

2. Simple model

3. Empirical analysis

4. Policy implications

5. Summary
Tax progressivity and volatile incomes

Around half of owner-managers’ responsiveness in taxable income to the higher rate threshold attributable to shifting to smooth income volatility:

- benefits of “tax smoothing” have been widely discussed, often in the context of savings taxation

Option to smooth taxable income is not available to those running businesses taxed on a pass through basis:

- e.g. self-employed in UK, S-corporations in the US
- income volatility is as high for these groups, such that there is a case for extending the ability to smooth taxable income
Sufficient statistics

Use the model to derive the statistics sufficient for evaluating the efficiency cost an increase in the higher tax rate.

In which case, using the standard elasticity of taxable income approach overestimates the DWL by 80% for two reasons:

▶ assumes that shifting to smooth volatility is costly and therefore impacts the fiscal externality

▶ fails to account for the fact that tax is paid on the shifted income
Sufficient statistics

Use the model to derive the statistics sufficient for evaluating the efficiency cost an increase in the higher tax rate.

In which case, using the standard elasticity of taxable income approach overestimates the DWL by 80%

Important caveat: numbers are about marginal changes in the higher rate, and depend on institutional context:

- efficiency cost arises through distortion to the intertemporal allocation of resources
- if ability to shift were removed, then owner-managers may reduce income created
Preferential capital taxes and capital allocation

Policy makers often perceive a trade-off between using lower taxes on capital income to boost investment and raising capital taxes to minimise tax avoidance, and avoid distorting choices.

Lower rates of capital gains tax increase incentives to retain earnings but do little to change the incentives to invest in productive capital:

- no evidence that policy is correcting any market failures, but nor is it leading investment capital to be suboptimally allocated towards less productive but tax advantaged projects
- but does distort the intertemporal allocation of consumption
- and raises equity concerns
Summary

Use a new link between personal and corporate tax returns to investigate how individuals who run their own incorporated businesses respond to tax:

- substantial proportion of response is attributable to shifting to smooth volatility in total income
- remainder due to longer term shifting to take advantage of more favourable tax treatment available on company liquidation

The institutional context matters.

- TCJA (2017) increased incentives to operate as C-corps, with access to similar tax advantages as our population of interest
People working for their own business are the fastest growing part of UK’s workforce

Notes: Includes all companies submitting corporate tax returns with positive trading profit below 500,000 (2014 prices).

### Industries

<table>
<thead>
<tr>
<th>Industry (SIC code)</th>
<th>Number</th>
<th>%</th>
<th>Profit</th>
<th>Turnover</th>
<th>Total assets as current</th>
<th>% assets held</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other business activities (74)</td>
<td>245,592</td>
<td>22.5</td>
<td>21.7</td>
<td>68.0</td>
<td>33.5</td>
<td>83.9</td>
</tr>
<tr>
<td>Construction (45)</td>
<td>109,556</td>
<td>10.0</td>
<td>15.8</td>
<td>108.9</td>
<td>37.5</td>
<td>76.8</td>
</tr>
<tr>
<td>Computer &amp; related (72)</td>
<td>79,544</td>
<td>7.3</td>
<td>35.1</td>
<td>77.2</td>
<td>32.5</td>
<td>89.4</td>
</tr>
<tr>
<td>Retail trade (52)</td>
<td>59,320</td>
<td>5.4</td>
<td>5.9</td>
<td>173.8</td>
<td>56.8</td>
<td>76.7</td>
</tr>
<tr>
<td>Real estate (70)</td>
<td>55,165</td>
<td>5.0</td>
<td>4.9</td>
<td>45.0</td>
<td>239.4</td>
<td>45.8</td>
</tr>
<tr>
<td>Other service activities (93)</td>
<td>48,110</td>
<td>4.4</td>
<td>8.1</td>
<td>64.4</td>
<td>23.3</td>
<td>71.2</td>
</tr>
<tr>
<td>Health &amp; social work (85)</td>
<td>36,413</td>
<td>3.3</td>
<td>24.4</td>
<td>64.6</td>
<td>25.4</td>
<td>75.1</td>
</tr>
<tr>
<td>Hotels &amp; Restaurants (55)</td>
<td>34,498</td>
<td>3.2</td>
<td>3.4</td>
<td>157.3</td>
<td>45.7</td>
<td>52.8</td>
</tr>
<tr>
<td>Wholesale trade (51)</td>
<td>32,658</td>
<td>3.0</td>
<td>8.9</td>
<td>232.6</td>
<td>104.5</td>
<td>85.4</td>
</tr>
<tr>
<td>Rec., culture &amp; sport (92)</td>
<td>26,502</td>
<td>2.4</td>
<td>9.3</td>
<td>61.3</td>
<td>27.4</td>
<td>73.8</td>
</tr>
<tr>
<td>Vehicle sale &amp; repair (50)</td>
<td>20,831</td>
<td>1.9</td>
<td>12.3</td>
<td>204.9</td>
<td>70.0</td>
<td>70.7</td>
</tr>
<tr>
<td>Land transport (60)</td>
<td>17,910</td>
<td>1.6</td>
<td>7.4</td>
<td>60.1</td>
<td>28.4</td>
<td>66.3</td>
</tr>
<tr>
<td>Publishing &amp; printing (22)</td>
<td>13,429</td>
<td>1.2</td>
<td>4.9</td>
<td>66.8</td>
<td>31.4</td>
<td>77.2</td>
</tr>
<tr>
<td>Financial intermediation (65)</td>
<td>10,509</td>
<td>1.0</td>
<td>17.3</td>
<td>73.6</td>
<td>39.6</td>
<td>83.0</td>
</tr>
<tr>
<td>Manufacture NEC (36)</td>
<td>10,240</td>
<td>0.9</td>
<td>8.6</td>
<td>165.0</td>
<td>75.1</td>
<td>75.0</td>
</tr>
<tr>
<td><strong>Total (top 15 industries)</strong></td>
<td>800,277</td>
<td>73.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: Closely held companies are classified based on 2-digit SIC code (2003-based). For around 20% of closely held companies, industry classification is not recorded in the data.

Source: Authors’ calculations using HMRC administrative datasets.
Total income, taxable income, and retained profits conditional on frequency of bunching

(a) Total and taxable income

<table>
<thead>
<tr>
<th>Income around threshold (median across OMs)</th>
<th>Fraction of years bunching</th>
</tr>
</thead>
<tbody>
<tr>
<td>-5000</td>
<td>0.0</td>
</tr>
<tr>
<td>-2500</td>
<td>0.2</td>
</tr>
<tr>
<td>0</td>
<td>0.4</td>
</tr>
<tr>
<td>2500</td>
<td>0.6</td>
</tr>
<tr>
<td>5000</td>
<td>0.8</td>
</tr>
<tr>
<td>7500</td>
<td>1.0</td>
</tr>
<tr>
<td>10000</td>
<td></td>
</tr>
</tbody>
</table>

Average taxable income

Average total income

(b) Retained profits

<table>
<thead>
<tr>
<th>Average retained profits (median across OMs)</th>
<th>Fraction of years bunching</th>
</tr>
</thead>
<tbody>
<tr>
<td>-5000</td>
<td>0.0</td>
</tr>
<tr>
<td>-2500</td>
<td>0.2</td>
</tr>
<tr>
<td>0</td>
<td>0.4</td>
</tr>
<tr>
<td>2500</td>
<td>0.6</td>
</tr>
<tr>
<td>5000</td>
<td>0.8</td>
</tr>
<tr>
<td>7500</td>
<td>1.0</td>
</tr>
<tr>
<td>10000</td>
<td></td>
</tr>
</tbody>
</table>

Notes: We use the sample of single director single shareholder companies that we observe in the data for at least three years. For each owner-manager, we calculate the fraction of years they bunch at the higher rate threshold in annual taxable income. We place owner-managers into one of five groups based on this fraction i.e. (0, 0.2], (0.2, 0.4], (0.4, 0.6], (0.6, 0.8], (0.8, 1.0], shown on the horizontal axis in each panel. For each owner-manager, we take their average taxable and average total income (centered around the higher rate threshold) and average retained profits across years that we observe them. The left hand panel shows the median of average taxable and average total income, and the right hand panel shows the median of average retained profits, across owner-managers within each fraction group.

Source: Calculations based on HMRC administrative datasets.
Company owner-managers are responsive to tax
Many follow the optimal tax strategy for payment of salary

Optimal way to withdraw income:
Take a wage close to the tax-free allowance, and dividend income above that amount.

Source: Calculations based on HMRC administrative datasets.
Introduction of the 50p top rate, 2010

**FIGURE 6**

*Trends in different income sources and deductions for group with incomes greater than £150,000, 2001–02 to 2011–12 (2001–02 = 100)*

Source: Authors’ calculations using SA302 data from 2001–02 to 2011–12.

Distribution of number of directors and shareholders for UK companies

<table>
<thead>
<tr>
<th>Number of:</th>
<th>Shareholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directors</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>21.6%</td>
</tr>
<tr>
<td>2</td>
<td>17.9%</td>
</tr>
<tr>
<td>3+</td>
<td>8.0%</td>
</tr>
<tr>
<td>Total</td>
<td>47.4%</td>
</tr>
</tbody>
</table>

Notes: Table shows the distribution (%) of numbers of shareholders and number of directors for the 1,574,254 companies that are active in at least one year from 2013-2015, for which we observe information on number of shareholders and number of directors (for 23% of companies this information is missing), and who file 12-month company accounts (approximately 90% of UK companies).

Source: Authors’ calculations using HMRC administrative datasets.