Small Business Incorporation and Investment: The Role of Corporation Tax

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Motivation:Why Do Small Businesses Incorporate?

- Limited liability?

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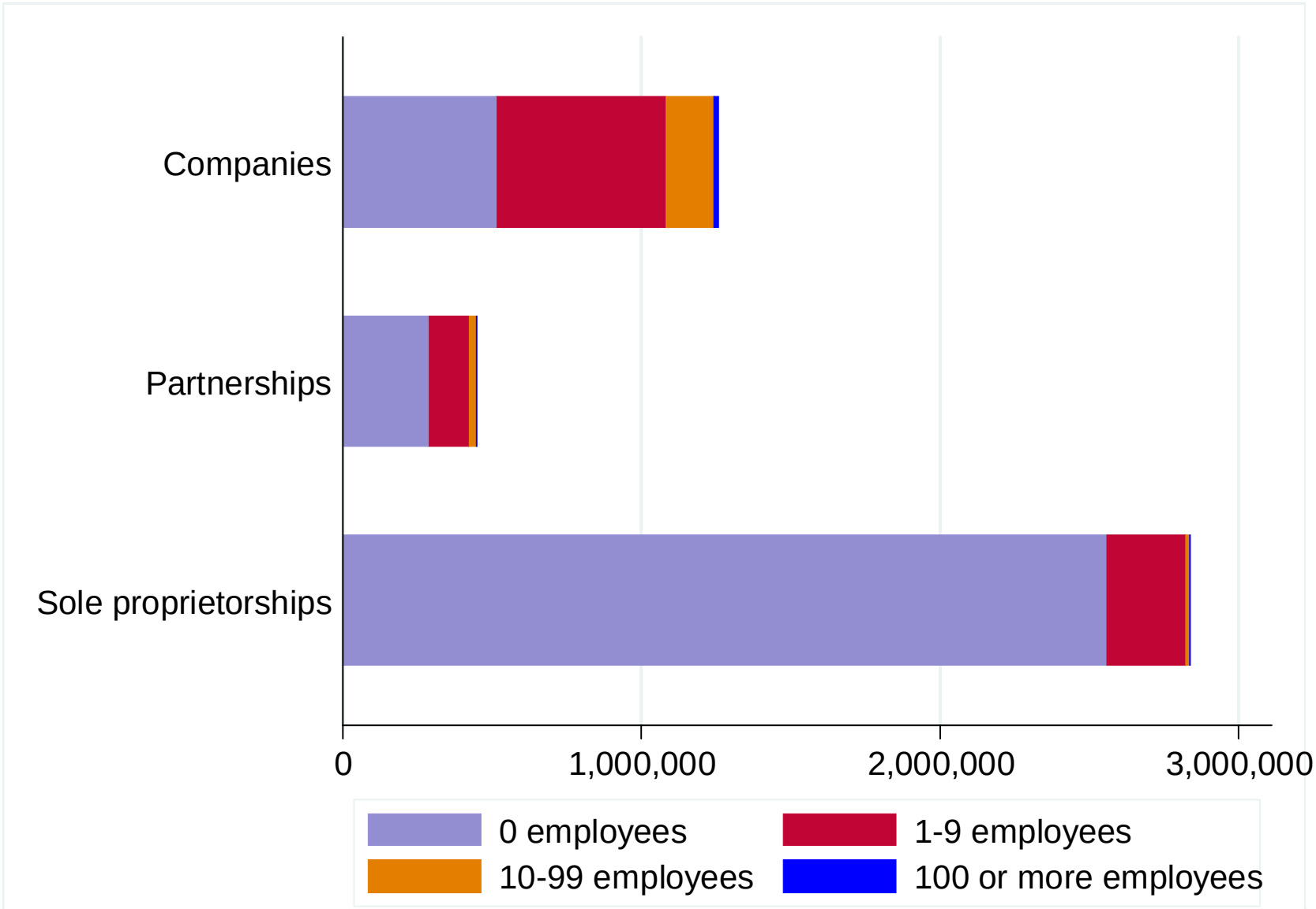
Number of Businesses in the UK, By Employment



Why Do Small Businesses Incorporate?

- Limited liability?
- Separation of ownership and control?
- Better access to external finance for more investment?
- Information for lenders better if incorporated, and improves over time
- Lower tax

What is the Role of Corporation Tax?

- Lower CT induces firms to incorporate conditional on personal tax
- Lower CT increases post-tax cash flow for companies and allows financially-constrained companies to invest more
- Lower CT reduces cost of capital for companies and provides greater incentive to invest

Our empirical approach

- Use population of UK corporation tax records in 2001/02 - 2008/09

so data only on corporations, not unincorporated businesses

- Explore the UK 2006 abolition of zero starting rate as a quasi-natural experiment
  - examine effect on incorporation, and
  - effect on investment, via cost of capital and cash flow

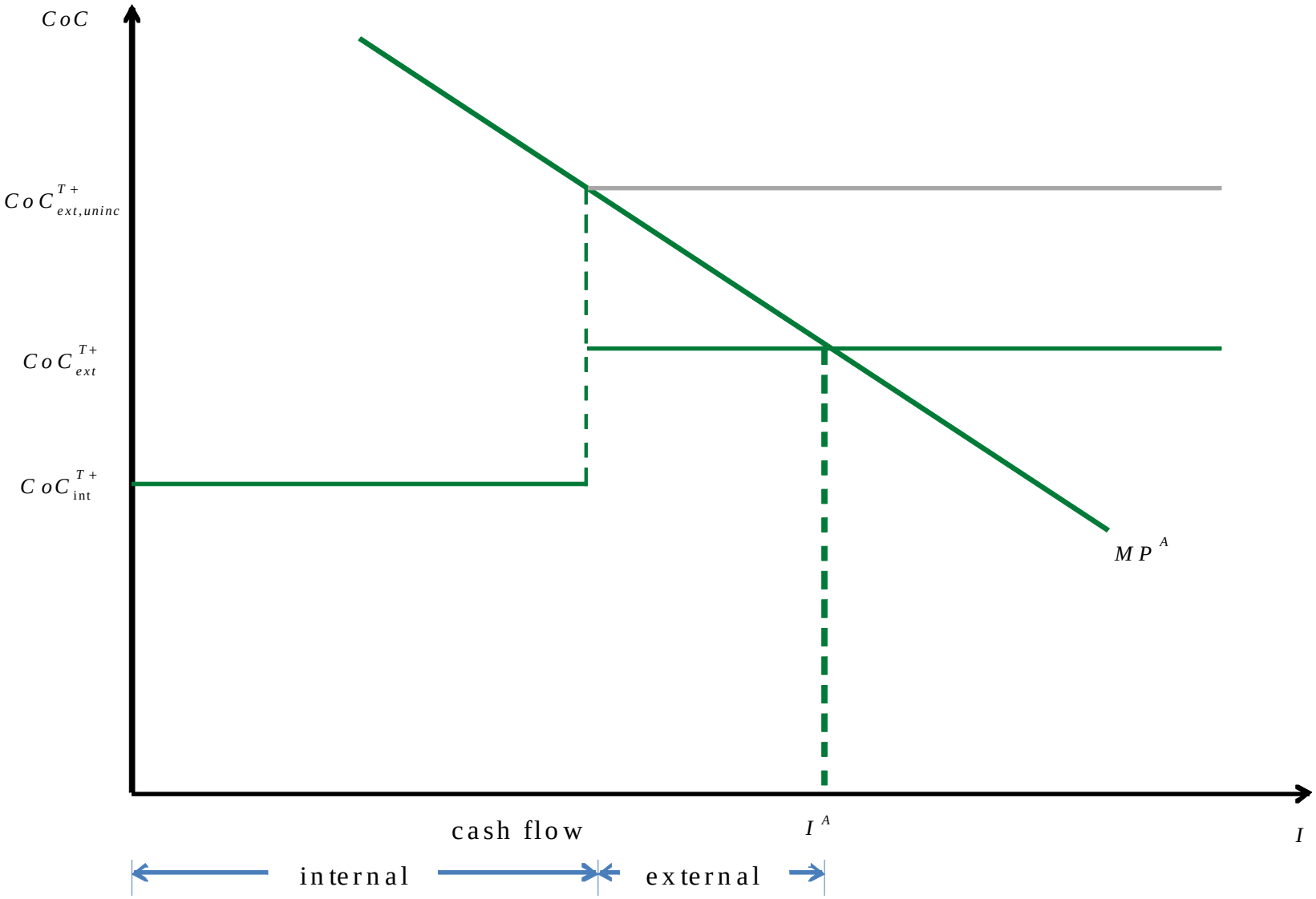
Results

- Estimate a significant positive effect of tax savings to incorporation
  - On average, a 1 percentage point increase in tax saving raises probability of incorporation by 2% to 4%
- Estimate effects of CT on investment by companies through 2 channels:
  - a higher user cost of capital, and
  - a reduction in internal cash flow available for investment
- Effects of cash flow diminish with company age

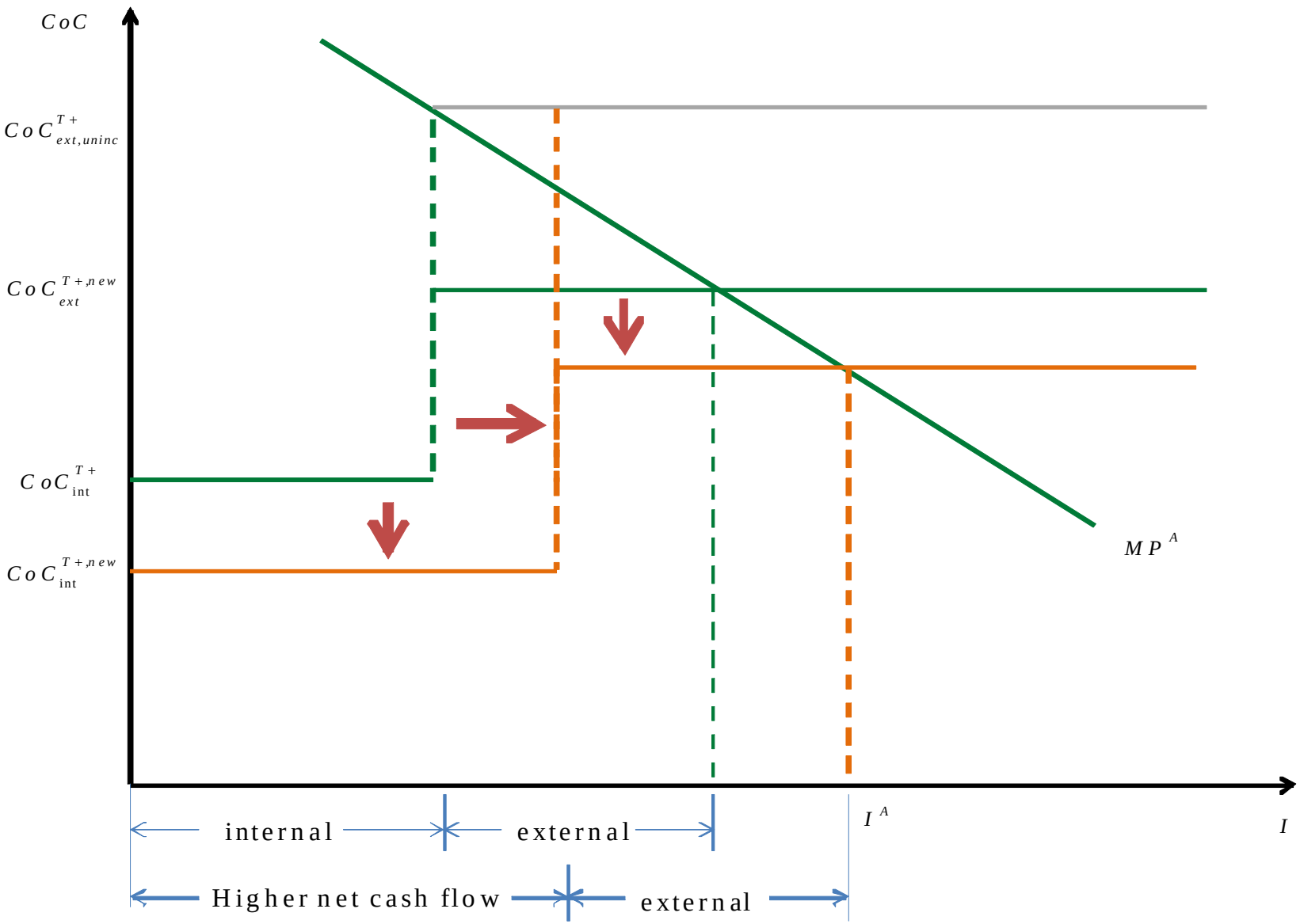
Some Existing Literature

- Corporate Investment and Financial Constraints
  - Theoretical models of capital markets with asymmetric information: e. g. Stiglitz and Weiss (1981), and Myers and Majluf (1984)
  - Empirical literature: Fazzari, Hubbard and Peterson (1988), Bond and Meghir (1994), Bond and Van Reenen (2007)
- Taxes, Risk Taking and Entrepreneurship
  - Mackie-Mason and Gordon (2002), Cullen and Gordon (2007)
- Taxes and the Choice of Organizational Form
  - Goolsbee (2004), de Mooij and Nicodeme (2008), Da Rin et al. (2011), Elschner (2013) and Liu (2014)

Basic Setup with Corporation Tax



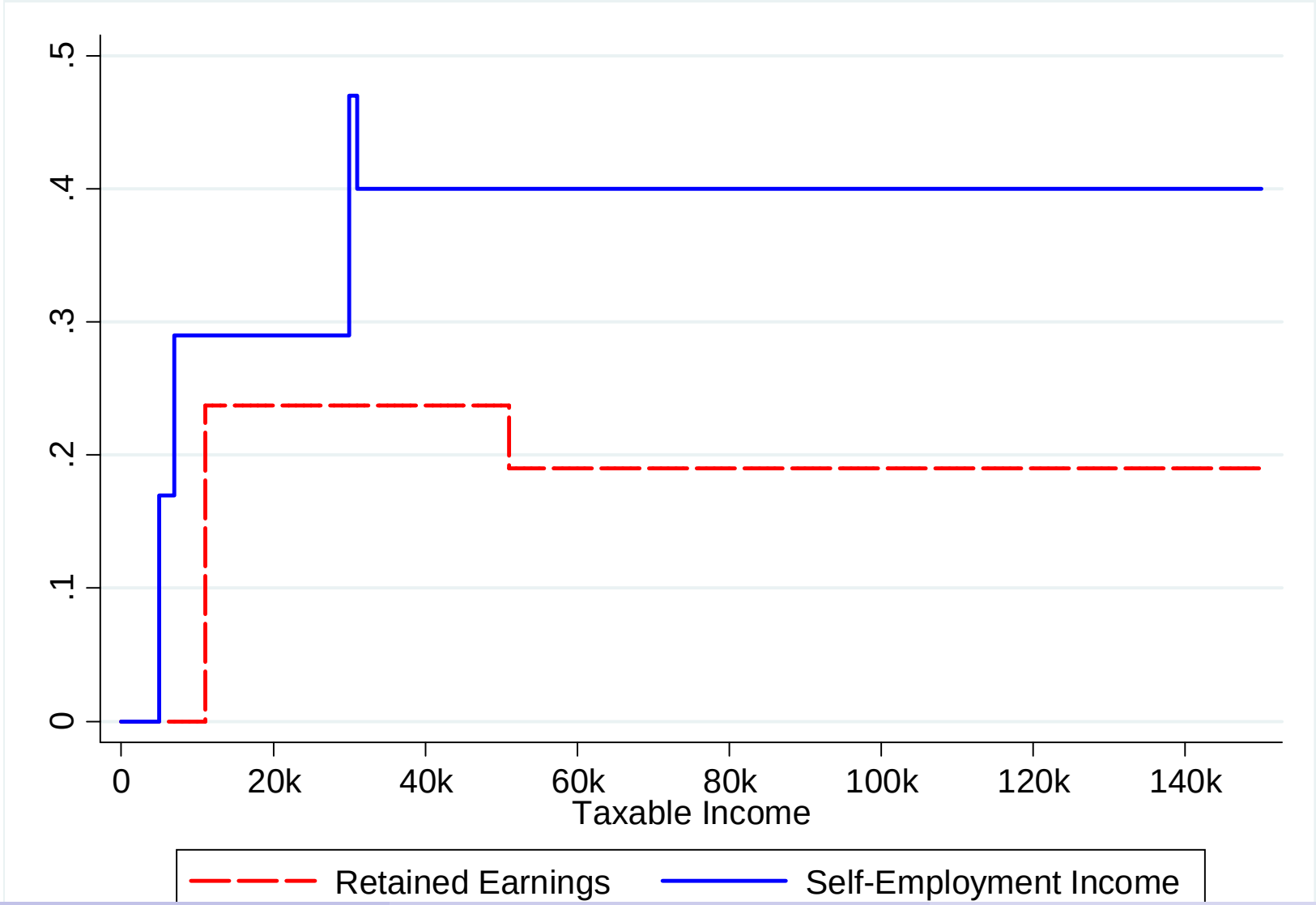
Following a Decrease in the Corporation Tax



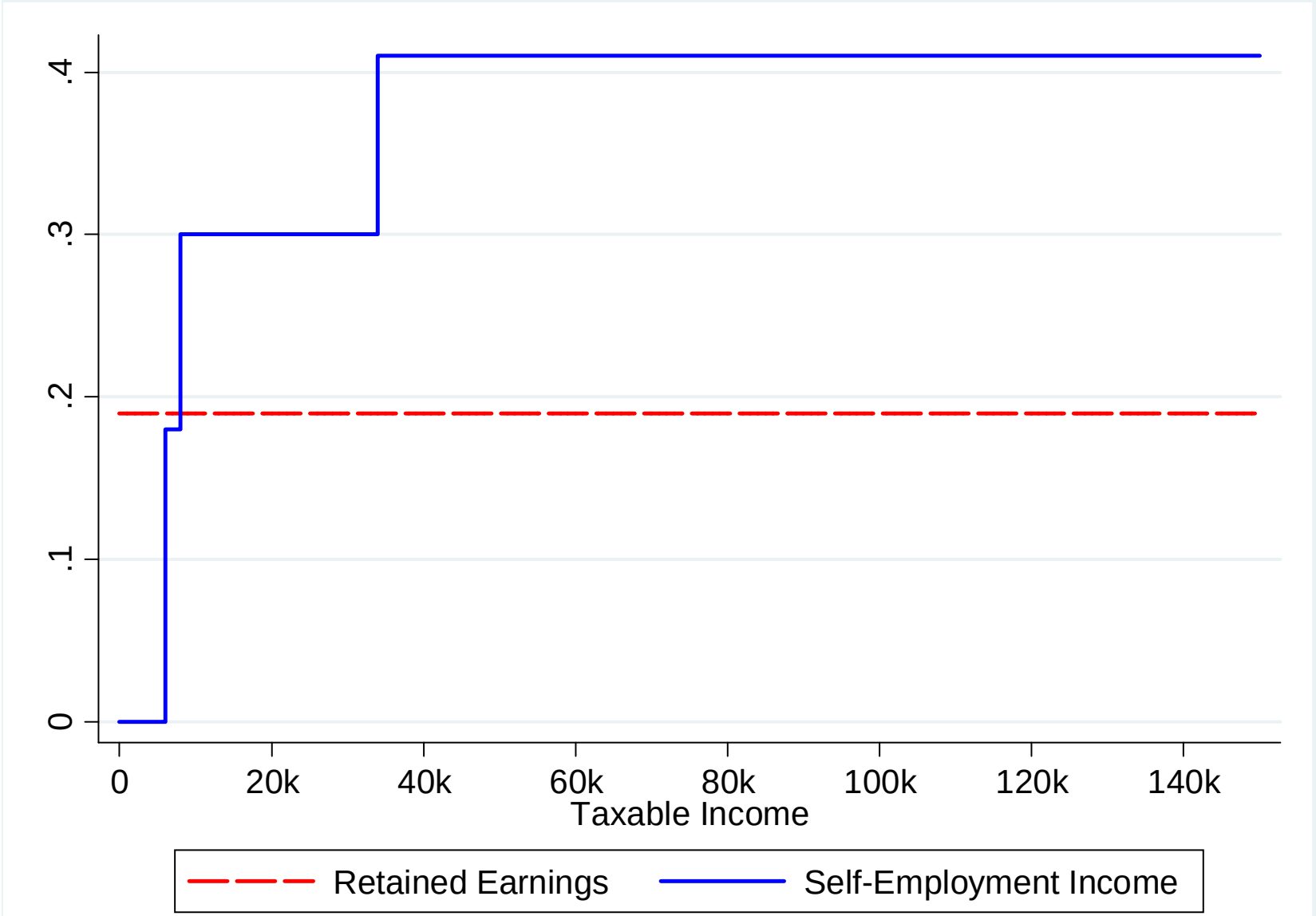
Data

- Population of UK corporate tax returns (CT600), 2001/02 to 2008/09
  - 10.7 million observations for 2.5 million companies
  - Detailed and precise information on taxable profits and how they are determined
- Around 90% of the tax records matched with company accounts in FAME
- Year of Incorporation: FAME
  Investment: qualifying expenditure on machinery and plant, including
  - qualifying expenditure for FYA (CT600, Box 118),
  - long-life assets and integral features (Box 120), and
  - other machinery and plant (Box 121).

Policy Reform to the Zero Starting Rate: Marginal Tax Rate in 2002/03

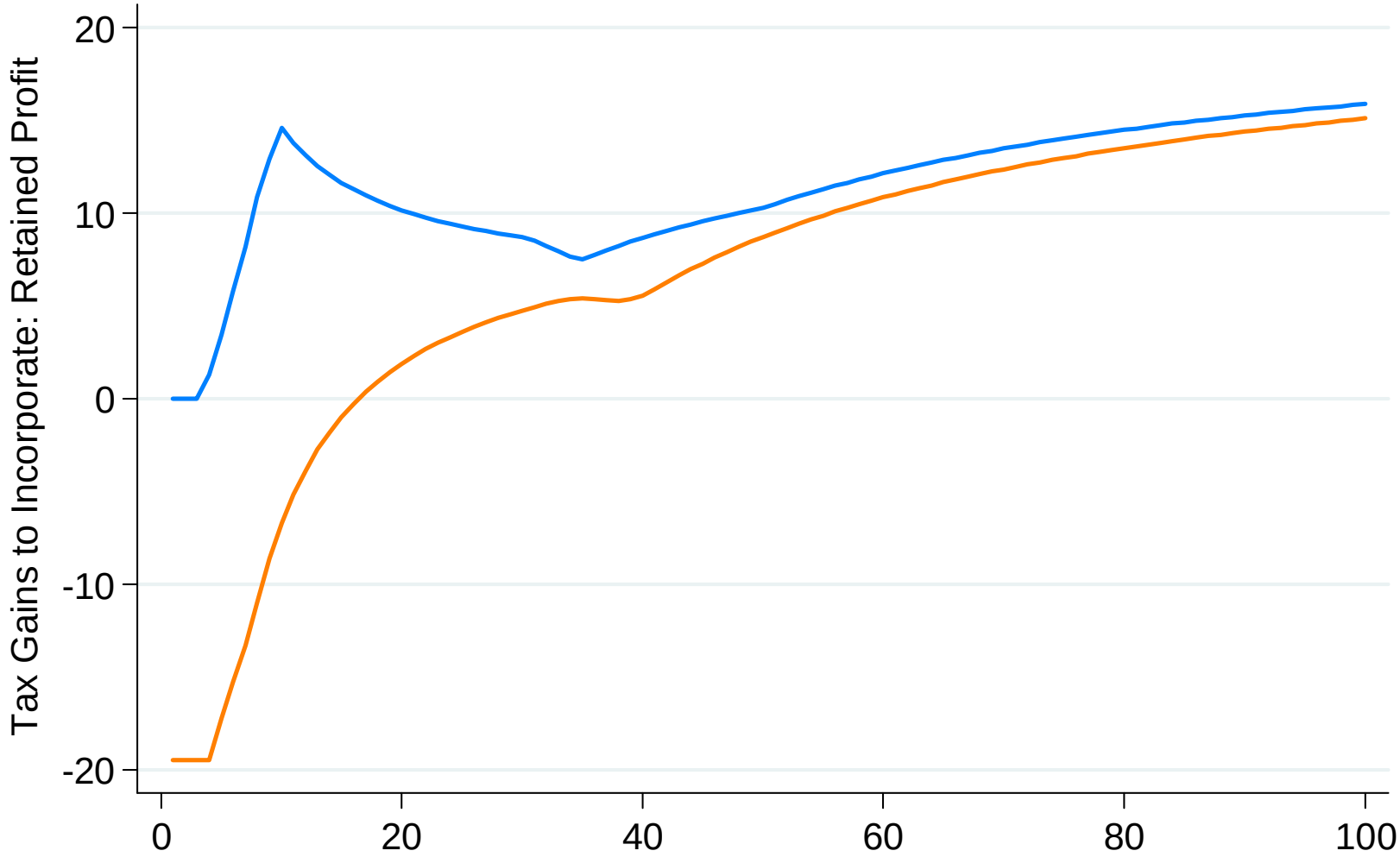


Zero Starting Rate Abolished in 2006/07

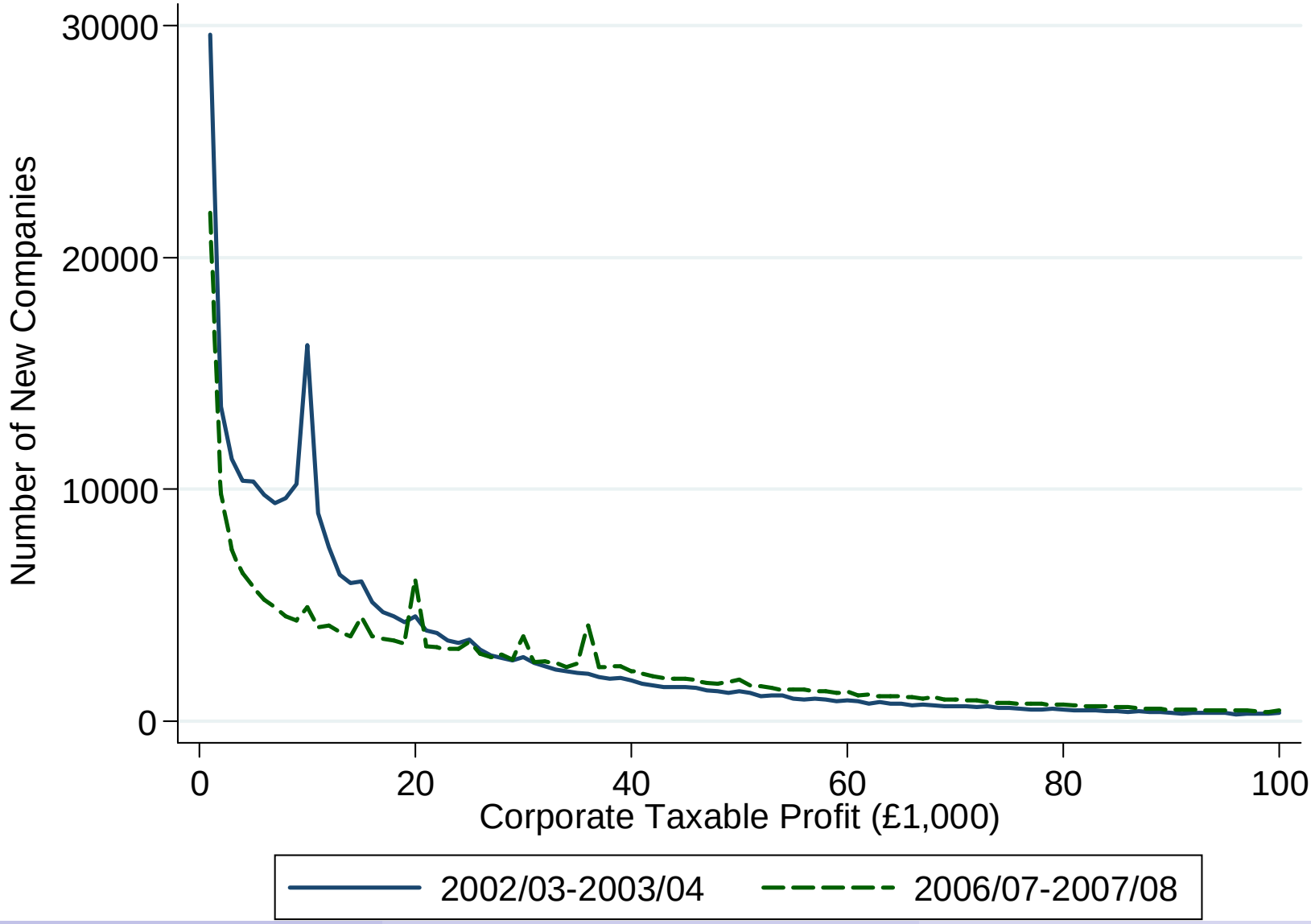


Tax Gains to Incorporate: Retained Profit

- Tax Gains to Incorporate (%): Average Tax Rate$_{\text{Self-Employment Income}}$ - Average Tax Rate$_{\text{Corporate Profit}}$



Number of Newly Incorporated Firms



The Causal Effect of Tax Incentives on Incorporation

$$E\left(c_{it}|Tax_Gain_{it,}X_{it}\right) = \exp\left(\gamma_i + \lambda_t + \beta_{tax}Tax_Gain_{it} + \mathbf{X}_{it}\boldsymbol{\beta}_x\right)$$

- c_{it} : number of newly incorporated businesses in income bin i of £100 at time t
- γ_i : income bin dummies
- λ_t : time dummies
- Tax_Gain_{it} : the difference between average tax rate for observed corporate profit, and the corresponding average tax rate if the corporate profit were earned as self-employment income
- X_{it} : other observed firm characteristics that may matter for incorporation
- Associated error term can be additive or multiplicative depending on functional form

Baseline Specification: Model Comparison

Estimation Model	Log Linear	Poisson GLM	Negative Binomial	Poisson Pseudo-MLE
Tax Gains:				
Retained Profits	0.043***	0.042***	0.046***	0.042***
	(0.001)	(0.004)	(0.001)	(0.002)
Income Bin FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
No. of Observations	6,000	6,000	6,000	6,000
No. of Income Bins	1,000	1,000	1,000	1,000

Full Model Specification

- Coefficients lower (1.9% to 2.2%) if based on tax saving for distributed dividends
- Effects robust to
  - inclusion of covariates. such as turnover, total asset, and number of workers
  - exclusion of the bunching region
  - industry-level estimation controlling for industry fixed effects, industry-specific time trend, and industry-level covariates
  - heterogeneous responses across different industries

Investment Equation

Static Specification:

$$\frac{I_{it}}{K_{i,t-1}} = \Delta \ln Y_{it} - \sigma \Delta \ln CoC_{it} + d_i + \eta_t + \varepsilon_{it}$$

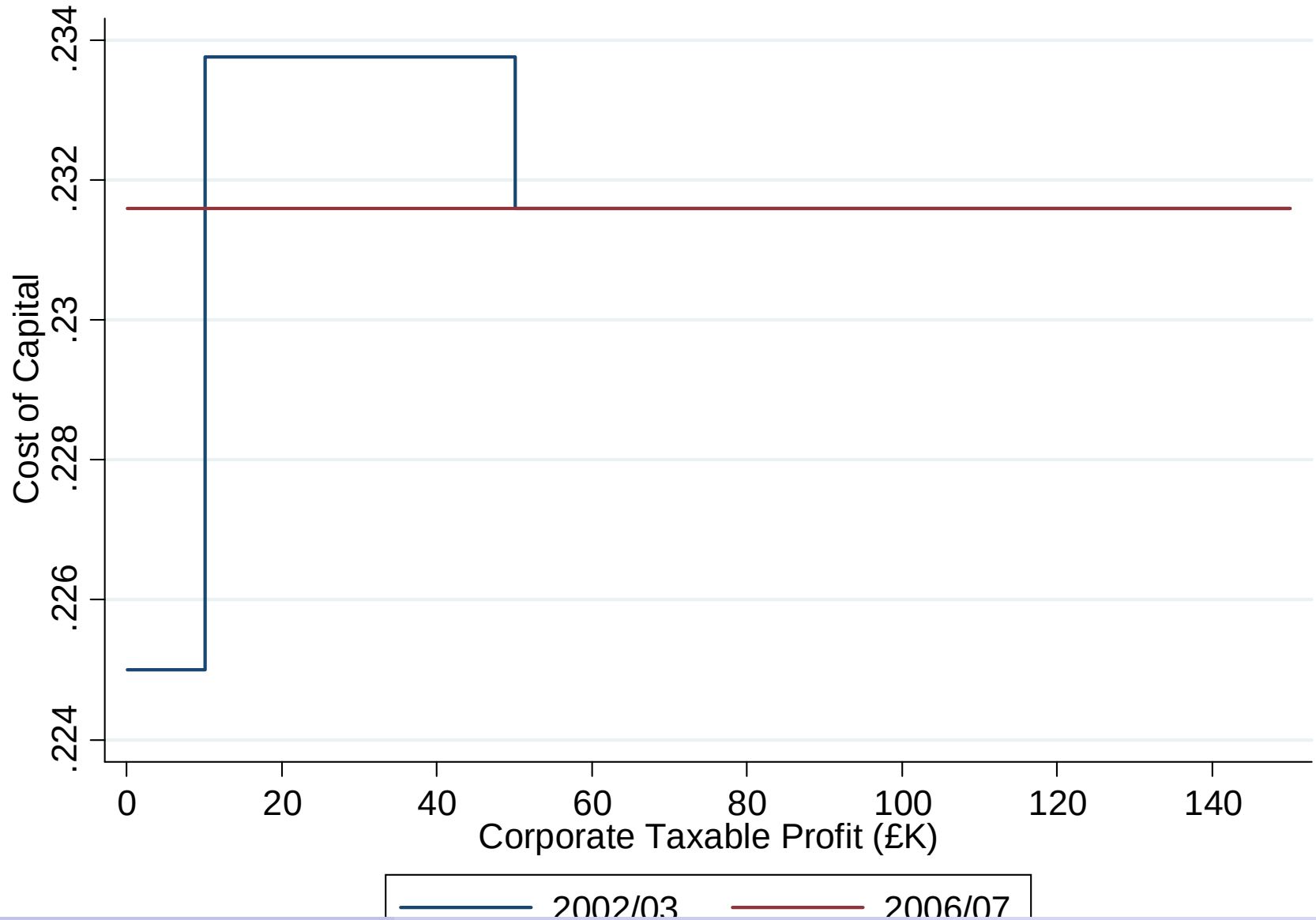
- $\frac{I_{it}}{K_{i,t-1}}$: investment undertaken by company i in year t, scaled by beginning-of-year book value of tangible asset K_{t-1}; approximation for $\Delta \ln K_{it} + \delta_i$

Excess Sensitivity to Cash Flow

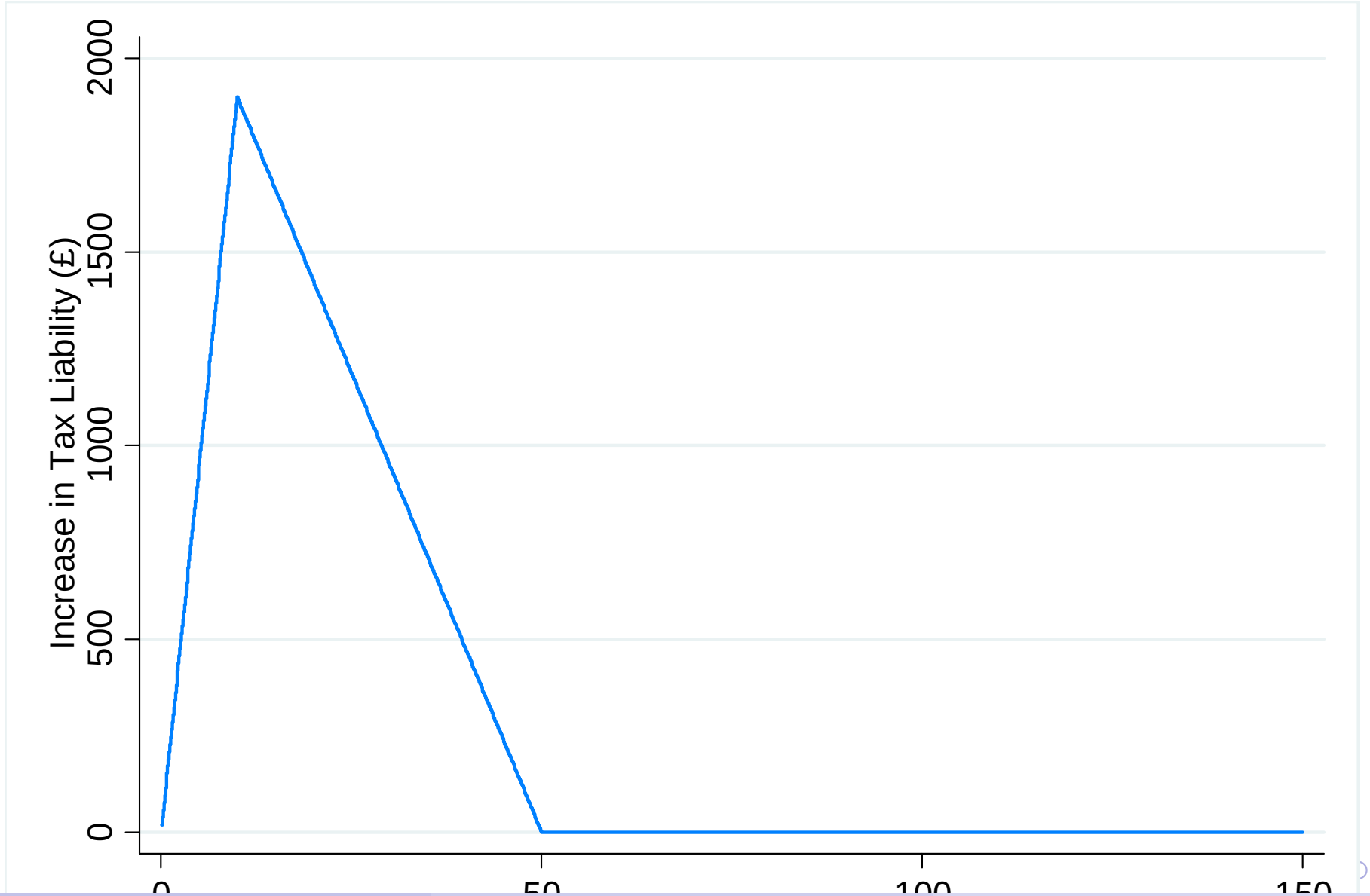
$$\frac{I_{it}}{K_{i,t-1}} = \Delta \ln Y_{it} - \sigma \Delta \ln CoC_{it} - \gamma_{tax} \frac{\Delta Tax_{i,t-1}}{K_{i,t-1}} + d_i + \eta_t + \varepsilon_{it}$$

- $\Delta Tax_{i,t-1}$: one-year lagged increase in tax bill after abolishing the zero starting rate; $=\Delta\tau_{i,t-1} \cdot$ Taxable Profit$_{i,t-1}$,where $t = 2007$ or 2008
- Instrumented with $\Delta\tau_{i,t-1}$, change in the statutory marginal tax rate due to exogenous changes in the tax system
- Allow γ_{tax} to depend on "age" ie. time since incorporation

Changes in the Cost of Capital



Increase in Tax Liability 2006/07, £000



Excess Sensitivity to Cash Flow: Empirical Findings

	Static Specification		
	(1)	(2)	(3)
$\Delta \ln Y_{it}$	0.125***	0.139***	0.138***
	(0.002)	(0.003)	(0.003)
$\Delta \ln CoC_{it}$	-1.895***	-1.696***	-1.677***
	(0.066)	(0.084)	(0.086)
$\frac{\Delta Tax_{i,t-1}}{K_{i,t-1}}$		-0.783***	-1.371***
		(0.260)	(0.229)
$\frac{\Delta Tax_{i,t-1}}{K_{i,t-1}} \times Age_{it}$			0.090***
			(0.035)
Firm FE	Y	Y	Y
Year FE	Y	Y	Y
No. Obs	561,486	381,499	381,499

Excess Sensitivity to Cash Flow: Empirical Findings

	Error-Correction Specification		
	(4)	(5)	(6)
$\Delta \ln Y_{it}$	0.354***	0.354***	0.352***
	(0.003)	(0.004)	(0.004)
$\Delta \ln CoC_{it}$	-1.052***	-0.911***	-0.904***
	(0.060)	(0.070)	(0.071)
EC_{it-1}	-0.481***	-0.519***	-0.516***
	(0.003)	(0.006)	(0.007)
$\frac{\Delta Tax_{i,t-1}}{K_{i,t-1}}$		-0.352***	-0.725***
		(0.211)	(0.178)
$\frac{\Delta Tax_{i,t-1}}{K_{i,t-1}} \times Age_{it}$			0.057*
			(0.029)
Firm FE	Y	Y	Y
Year FE	Y	Y	Y
No. Obs	526,457	381,499	381,499

Conclusions

- Evidence that
  - incorporation decisions depend on scale of tax advantage
  - investment of companies affected by exogenous change to cash flow
  - cash flow effect greater for younger companies, consistent with cost of external finance falling as banks have access to more information