How Sensitive is Young Firm Investment to the Cost of Outside Equity? Evidence from a UK Tax Relief

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Paper Overview

Q: How sensitive is young firm investment to the cost of outside equity?

I. Stylized facts
II. Evidence from a UK tax relief

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Q: How sensitive is $\underbrace{\text{young firm}}_{\text{Small private firms } <3 \text{ yrs}}$ $\overbrace{\text{investment}}^{\Delta \text{ assets}}$ to the $\underbrace{\text{cost of outside equity}}_{\text{UK tax relief}}$?

I. Stylized facts

II. Evidence from a UK tax relief

This Discussion

1. Review & contextualize results

2. How are equity and investment results related?

3. How should we think of investment?

4. Other comments

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   - Sample: professional services, construction, restaurants, …

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- Would like to know: does ability to raise outside equity *cause* asset growth?

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- Interesting: we know little about young, private firms as a group
  - Counterpart to Haltiwanger et al. (2016) small firm contribution to job creation
- To understand drivers of relationship, need natural experiment
  - Does ability to raise outside equity *cause* asset growth?

II. Evidence from a UK Tax Relief

- Seed Enterprise Investment Scheme (SEIS), launched in 2012
  - Large tax subsidy to equity investors: 50% deductibility + other benefits
- Targeted to outside investors into small, young firms
  - Investors: not employed by firm; own less than 30% *before & after* investment
  - Firms: assets < £200,000; trading < 2 years; < 25 employees; independent; UK
- Balance sheet data from Bureau Van Dijk FAME
- Difference-in-differences: pre v. post 2012, below v. above £200,000
  1. Did equity issuance increase?
  2. Did investment increase?
  3. Which firms drove the response? What else happened?

II. Evidence from a UK Tax Relief, Illustrated

1. Did equity issuance increase?

< £200,000 | Low cost equity → (Some) more equity issuance

\-

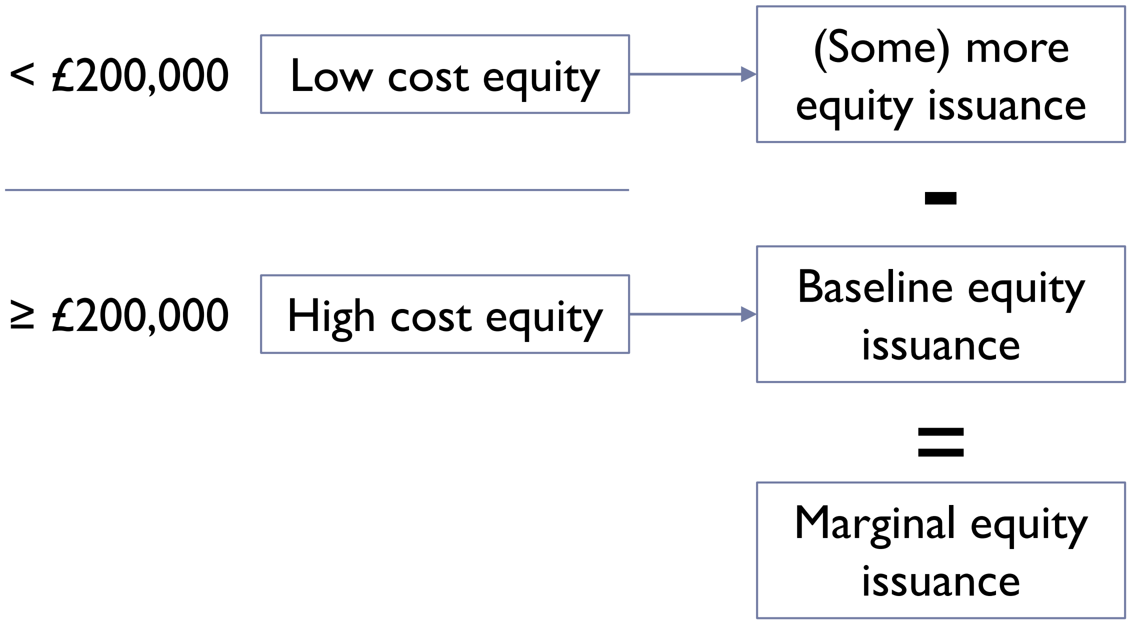
≥ £200,000 | High cost equity → Baseline equity issuance

=

Marginal equity issuance

II. Evidence from a UK Tax Relief, Illustrated

1. Did equity issuance increase? Not very much.



- Only 1% of firms increase equity issuance!

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- Relative to average = 17%

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Marginal equity issuance

- Only 1% of firms increase equity issuance!
- *Average* increase in equity = 8%
- Relative to average = 17%

II. Evidence from a UK Tax Relief, Illustrated

2. Did investment increase?

< £200,000 — Low cost equity → More investment

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≥ £200,000 — High cost equity → Baseline investment

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Marginal investment

II. Evidence from a UK Tax Relief, Illustrated

2. Did investment increase? Yes.

< £200,000	Low cost equity	→	More investment
			-
≥ £200,000	High cost equity	→	Baseline investment
			=
			Marginal investment

- *Average* increase in investment

  = 17%

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Marginal investment

- Increase in equity investors' after-tax returns

  = 113%

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Marginal investment

- Increase in equity investors' after-tax returns

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- *Average* increase in investment

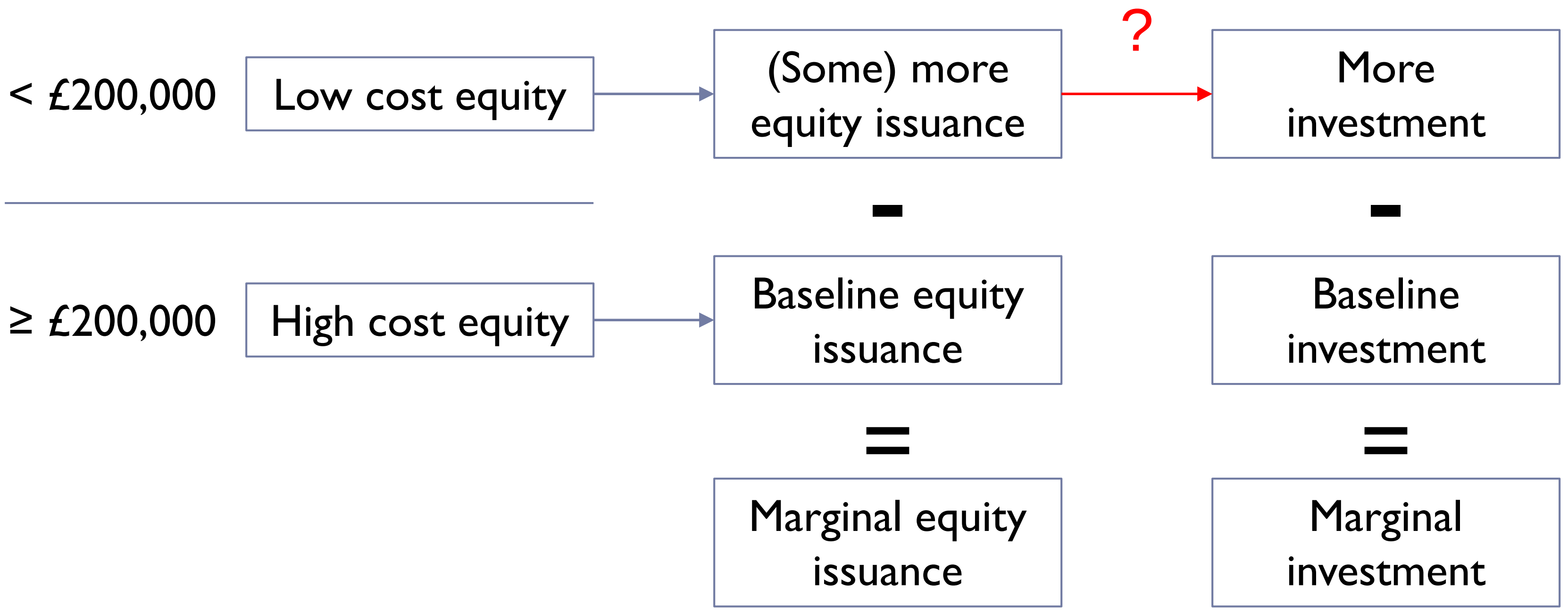
  = 17%

- *Average* sensitivity

  = - 17% / 113%

  = 1.5% ↑ investment for 10% ↓ eq. cost

How Are These Related?



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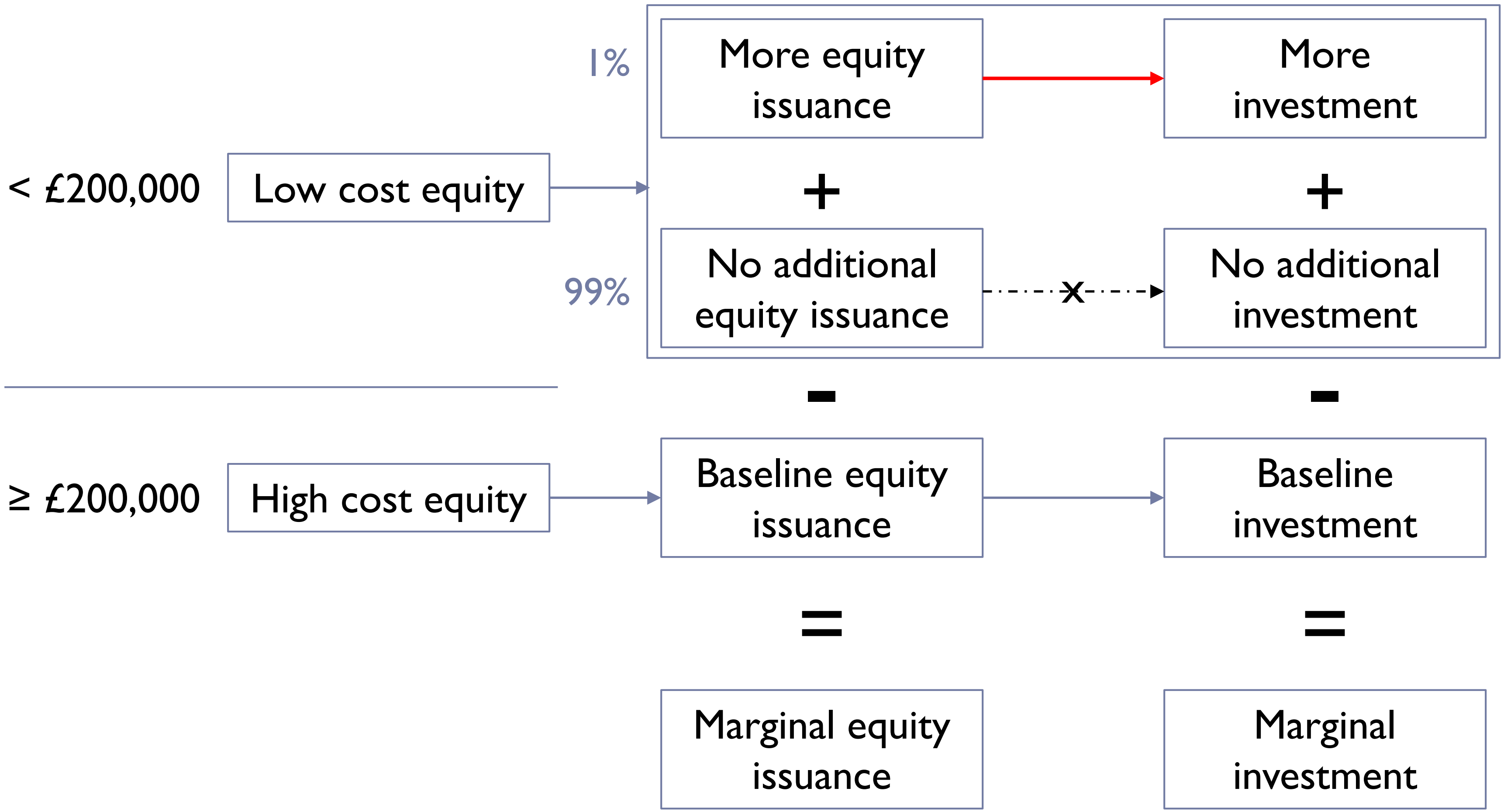
Option 1: Direct Effect



Option 1: Direct Effect

- Additional investment driven by firms that issue outside equity
- Paper emphasizes this interpretation
  - Stylized fact: high asset growth firms are the ones issuing outside equity
  - Ability to raise outside equity *causes* asset growth
- Narrative: raising outside equity allows firms to also raise more debt
  - Average increase in liabilities = 22%
  - Implies large multiplier: issuing firms invest 8x new equity capital
- How do we know these are the same firms?

Option 1: Direct Effect

3. Which firms drove the response?

	(1)	(2)	(3)	(4)	(5)
	D(Δ Issued Equity>0)	Δ Issued Equity	Δ ln(Issued Equity)	Δ Total Assets	Δ ln(Total Assets)
I. Unrelated owners					
$Eligible_i \times Post_t$	0.02	5,935	0.09	28,427**	0.39**
	(0.025)	(4,043)	(0.128)	(12,100)	(0.165)
II. Non unrelated owners					
$Eligible_i \times Post_t$	0.01**	1,029*	0.06***	14,493***	0.14***
	(0.004)	(575)	(0.022)	(3,593)	(0.041)
I. Owner managers					
$Eligible_i \times Post_t$	0.02	2,526	0.00	18,199*	0.31**
	(0.015)	(2,262)	(0.074)	(10,797)	(0.119)
II. Non-owner managers					
$Eligible_i \times Post_t$	0.01***	1,030*	0.07***	14,489***	0.14***
	(0.005)	(585)	(0.023)	(3,618)	(0.042)

- For equity issuance, firms with potential inside-outside conflicts
- For investment, unclear
- For liabilities?

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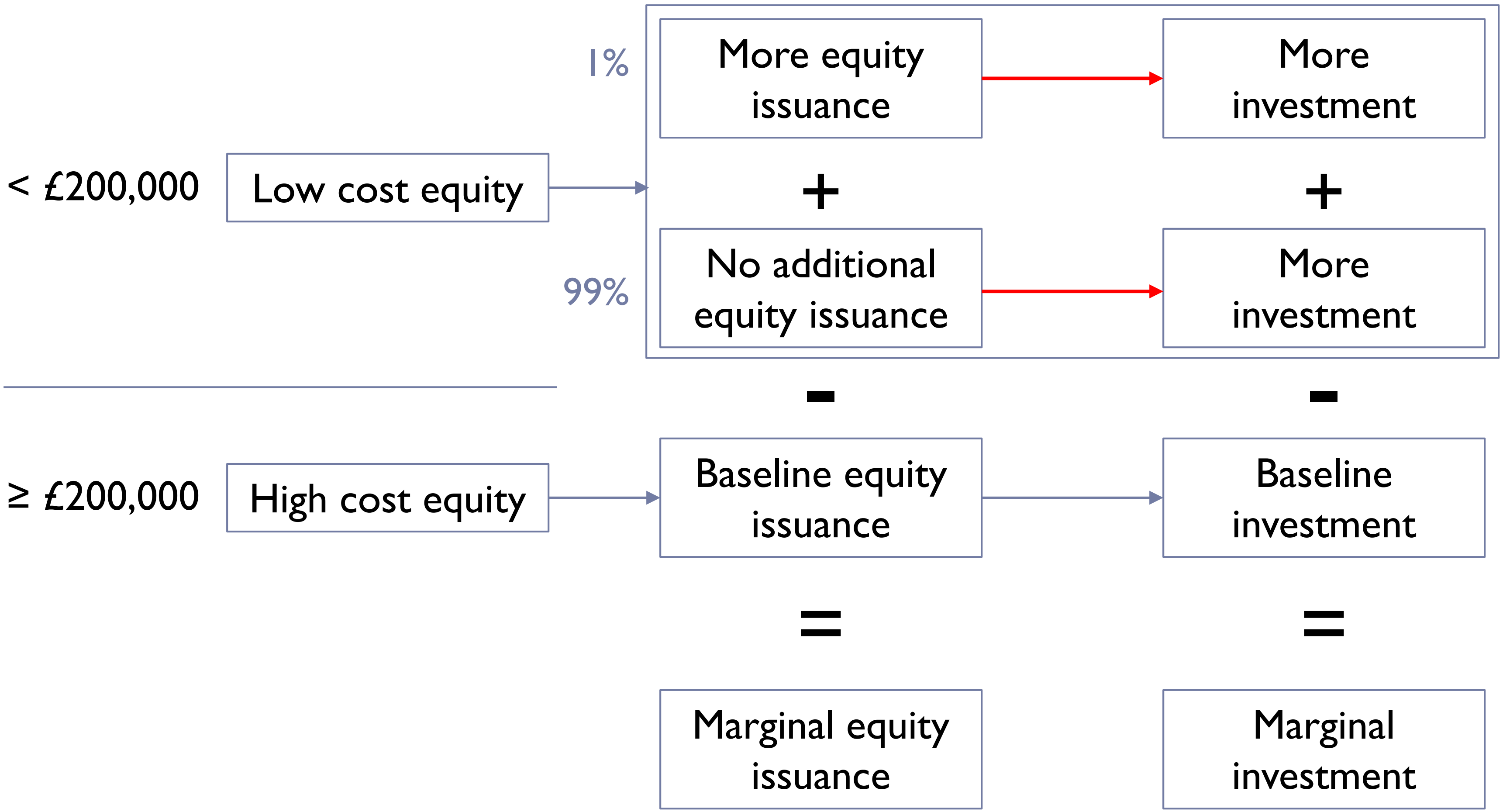
Option 2: Indirect Effect



Option 2: Indirect Effect

- Investment spillovers within industry
  - Competitive response, knowledge spillovers
- Cost of other capital decreases
  - Extra money in investors' pockets + cap on equity amount eligible for policy
  - Decreases capital costs *including for non-equity issuing firms*
- Something else happening concurrently?

Teasing Apart Direct and Indirect Stories

- *Would like to* look at investment of those who issue additional equity
  - But cannot condition on equity issuing, because selected variable
  - Classic "bad control" problem
- Instead, condition on ex-ante predictors of equity issuance response
  - Similar to Table 5, with focus on predicting equity issuance
  - If groups don't align, suggests some indirect element
- Spillovers: is investment response greater in competitive industries?
- Indirect cost of capital: do liabilities increase for non-equity issuing?
- Concurrent event: placebo with small firms in other countries
  - Already do placebo for larger UK firms

Equity and Asset Growth in German Firms

- Data from Bureau Van Dijk Amadeus
  - No access to FAME ☹
  - Some balance sheet data for European firms (seems less complete)
- Placebo German sample based on euro equivalents in 2012
- Total equity = shareholder's funds (≠ paper)
  - Very rough approx., includes P&L account

	(1) D(ΔTotal Equity>0)	(2) Δln(Total Equity)	(3) Δln(Fixed Assets)	(4) Δln(Total Assets)
eligible_post	0.0412***	0.0394**	0.0173	0.0275**
	(0.006)	(0.014)	(0.015)	(0.009)
R^2	0.386	0.302	0.321	0.339
N	86709	51879	60199	66613

- Concern: other events, trends
  - Recovery from European crisis?
  - Parallel trends for young firm population pre v. post would help

How Should We Think of Investment?

- What we want:



- Could also be:

Other Comments

- Definition of equity issuance
  - Here, want book equity to relate to book assets, and not count future opportunities
    - Definition is a bit confusing
  - Emphasis on ‘outside’ equity seems disproportionate
    - Measure is of any equity issuance; policy targets <30% ownership, which can still be inside
- Summary statistics for either side of cutoff
  - Investment, equity, debt for treated v. control
- Why is equity issuance response so low may be separate question

Conclusion

How sensitive is young firm investment to the cost of outside equity?

- Important question
  - Do not get side-tracked
- Work on mechanism
  - Aggregate results mask huge heterogeneity
  - Who are the firms increasing investment? Why?
- To extent possible, what investment
  - Matters for why we care