

Financial Constraints and Misallocation in the Intangible Economy

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Research question

Intangible assets have become important in modern economies

■ Questions:

- 1** Intangible intensive firms \implies more financially constrained?
- 2** If so, what are the macro implications, particularly for aggregate productivity?

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Summary of key findings and contributions

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- Literature 2: Direct evidence from bankrupt firms
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Develop a flexible and intuitive method to estimate collateral value

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2 Lower collateral value reduces aggregate productivity

- Channel 1: productivity distribution (extensive margin)

collateral value $\downarrow \implies$ debt $\downarrow \implies$ default \downarrow from low z firms \implies more low z firms

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- ▶ With zero collateral values, credit spread depends only on the PD (and z)
- ▶ High z firms are (relatively) less constrained \implies more resources to high z firms

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Identify a new channel linking financial frictions to higher productivity

Comments overview

- 1** Productivity decomposition and its interpretation
- 2** Intangible assets as collateral and UK bankruptcy reform
- 3** Are intangible intensive young firms more constrained?

Comment 1: Productivity decomposition and its interpretation

- Olley-Pakes (statistical) decomposition

$$\sum_i \omega_i z_i = \bar{z} + \sum_i (z_i - \bar{z})(\omega_i - \bar{\omega})$$

	Intan friction ($\alpha^I = 0$)	No intan friction ($\alpha^I = \alpha^T$)
TFP Intan	1.0059	1.0313
Ave TFP Intan	0.9601	1.0105
Cov Intan	0.0458	0.0208

- Higher OP covariance \implies higher allocative efficiency (and higher TFP)?

Comment 1: Productivity decomposition and its interpretation

- In general, aggregate TFP \neq weighted average of micro TFP
(Baqae and Farhi (2020))

$$TFP = \frac{Y}{K^\theta L^\nu} \neq \sum_i \omega_i z_i$$

Comment 1: Productivity decomposition and its interpretation

- OP covariance has misleading interpretation
- Example: 3 firms, $y = z/l^\alpha$, $\alpha = 1/2$, $\bar{L} = 1$

Firm	A	B	C	TFP	OP Cov
z	1	2	3		
l^*	0.071	0.286	0.643	3.742	0.571

- l^* : efficient allocation of resources (marginal products are equalized)

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- l^* : efficient allocation of resources (marginal products are equalized)
- l : the most productive firms take all the resources
- Higher OP covariance does not imply higher allocative efficiency or TFP

Comment 1: Productivity decomposition and its interpretation

- My suggestion: Use a more interpretable decomposition of aggregate TFP

Hsieh and Klenow (2009), Baqaee and Farhi (2020), Kochen (2022)

$$\log(TFP) := \log(Y) - \theta \times \log(K) - \nu \times \log(L)$$

$$= \underbrace{\log(TFP^e)}_{\text{efficient}} + \underbrace{\log\left(\frac{TFP}{TFP^e}\right)}_{\text{allocative efficiency}},$$

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where

$$TFP = \frac{\sum_i z_i^{\frac{1}{1-\theta-\nu}} MPK_i^{\frac{\theta}{1-\theta-\nu}} MPL_i^{\frac{\nu}{1-\theta-\nu}}}{\left(\sum_i z_i^{\frac{1}{1-\theta-\nu}} MPK_i^{\frac{1-\nu}{1-\theta-\nu}} MPL_i^{\frac{\nu}{1-\theta-\nu}}\right)^\theta \left(\sum_i z_i^{\frac{1}{1-\theta-\nu}} MPK_i^{\frac{\theta}{1-\theta-\nu}} MPL_i^{\frac{1-\theta}{1-\theta-\nu}}\right)^\nu}$$
$$TFP^e = \left(\sum_i z_i^{\frac{1}{1-\theta-\nu}}\right)^{1-\theta-\nu}$$

Comment 2: Intangibles as collateral and bankruptcy reform

- Fundamentally, how can intangible assets serve as collateral?

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- Lenders recover through the going-concern value (US: Chapter 11; UK: administration)
- **Well-developed reorganization framework** for insolvent businesses
 - ⇒ Cash-flow based debt and intangibles as collateral are more prevalent
Lian and Ma (2021), Kermani and Ma (2020)
- What about UK?

Comment 2: Intangibles as collateral and bankruptcy reform

- World Bank Doing Business: prevalent reorganization in both US and UK
- Cash-flow based debt from Schularick (2021)

Share of total non-financial business debt by type, 2013-2018

Countries	Asset-Based	Cash Flow-Based
United Kingdom	17.6%	68.9%
United States	19.0%	79.5%

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- What about $\hat{\alpha}^I = 0$ in this paper? A puzzle?
 - Small vs. large firms? \implies you can actually estimate it!

Comment 2: Intangibles as collateral and bankruptcy reform

- UK Enterprise Act 2002: facilitate the reorganization of insolvent businesses

“...to promote a culture of company rescue...”

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- Came into force on September 15, 2003
- How does α_I changes before and after the reform for different size of firms?
 - Estimate PD for private firms with Moody's RiskCalc model
Falkenstein et al. (2000)
- You can use your model to study an interesting policy reform!

Comment 3: Intangible young firms and financial constraint

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- **Test this directly!** Do intangible young firms have lower credit spreads?

In a nutshell

- Great contribution to an important area of research
- The estimation method would help discipline the model and guide further research
- I hope my comments are helpful

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