BANCO DE ESPAÑA

The Joint Determination of TFP and Financial Sector Size

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Discussed by:

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The size of the finance sector

- **Issues:** What determines the **size of the financial sector**, how does it affect **productivity and growth**, and is it **optimal**?

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- **Important, difficult, topical** questions
- **Simple, elegant** general equilibrium search model of credit markets

The size of the finance sector

- **Issues:** What determines the **size of the financial sector**, how does it affect **productivity and growth**, and is it **optimal**?

- **Important, difficult, topical** questions
- **Simple, elegant** general equilibrium search model of credit markets

- **Main criticisms:**
  - Quite **preliminary**
  - Missing some relevant references
  - **Relevance of main positive results?**
  - **Would like to see more normative results**

Make things, or finance things

Unmatched:

m entrepreneurs:

Matched:

Choose profession:

Matched:

1-m brokers:

Unmatched:

Value functions

Unmatched: $\delta V_0 = p(\theta)\int_b^\infty (V_1(a) - V_0)\,dG(a)$

m entrepreneurs:

Matched: $\delta V_1(a) = \pi(a) - \rho(a)$

Choose profession:

Matched: $\delta \Gamma(a) = \rho(a)$

1-m brokers:

Unmatched: $\delta B = \theta p(\theta)\int_b^\infty \Gamma(a)\,dG(a)$

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Bargaining

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Choose profession: $B = V_0$

Flow match surplus: $\pi(a) - \rho(a) - \delta V_0 = \beta(\pi(a) - \delta V_0)$

$\rho(a) = (1-\beta)(\pi(a) - \delta V_0)$

Matched: $\delta\Gamma(a) = \rho(a)$

1-m brokers:

Unmatched: $\delta B = \theta p(\theta)\int_b^\infty \Gamma(a)\,dG(a)$

Plug in bargaining shares

Unmatched:

$$\delta V_0 = p(\theta)\int_b^\infty (V_1(a) - V_0)\,dG(a) = \beta p(\theta)\int_b^\infty \frac{\pi(a) - \delta V_0}{\delta}dG(a)$$

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Matched: $\delta V_1(a) = \pi(a) - \rho(a)$

Choose profession:

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1-m brokers:

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$$\delta B = \theta p(\theta)\int_b^\infty \Gamma(a)\,dG(a) = (1-\beta)\theta p(\theta)\int \frac{\pi(a) - \delta V_0}{\delta}dG(a)$$

Solve for V_0 and B

Choose profession:

$B = V_0$

m entrepreneurs:

Unmatched: $\delta V_0 = \beta \dfrac{p(\theta)(1-G(b))}{\delta + p(\theta)(1-G(b))} \int_b^\infty \dfrac{\pi(a)dG(a)}{1-G(b)}$

Matched: $\delta V_1(a) = \pi(a) - \rho(a)$

1-m brokers:

Matched: $\delta \Gamma(a) = \rho(a)$

Unmatched: $\delta B = (1-\beta) \dfrac{\theta p(\theta)(1-G(b))}{\delta + p(\theta)(1-G(b))} \int_b^\infty \dfrac{\pi(a)dG(a)}{1-G(b)}$

Arbitrage determines tightness

Choose profession:

$B = V_0$

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Matched: $\delta V_1(a) = \pi(a) - \rho(a)$

Implies: $\theta = \dfrac{\beta}{1-\beta}$

1-m brokers:

Matched: $\delta \Gamma(a) = \rho(a)$

Unmatched: $\delta B = (1-\beta) \dfrac{\theta p(\theta)(1-G(b))}{\delta + p(\theta)(1-G(b))} \int_b^\infty \dfrac{\pi(a)dG(a)}{1-G(b)}$

Indifference at reservation threshold:

Unmatched: $\delta V_0 = \beta \dfrac{p(\theta)(1-G(b))}{\delta + p(\theta)(1-G(b))} \int_b^{\infty} \dfrac{\pi(a)dG(a)}{1-G(b)}$

m entrepreneurs:

Matched: $\delta V_1(b) = \pi(b) = \delta V_0$

Choose profession:

$B = V_0$

Implies: $\theta = \dfrac{\beta}{1-\beta}$

1-m brokers:

Matched:

Unmatched:

Calculating reservation threshold:

Choose profession: $B = V_0$

m entrepreneurs:

Unmatched: $$\frac{\pi(b)}{\int_b^\infty \pi(a)dG(a)} = \beta \frac{p(\theta)}{\delta + p(\theta)(1 - G(b))}$$

Matched: $\delta V_1(b) = \pi(b) = \delta V_0$

Implies: $$\theta = \frac{\beta}{1-\beta}$$

1-m brokers:

Matched:

Unmatched:

Calculating size of financial sector:

Choose profession: $B = V_0$

m entrepreneurs:

Unmatched: $$\frac{\pi(b)}{\int_b^\infty \pi(a)dG(a)} = \beta \frac{p(\theta)}{\delta + p(\theta)(1-G(b))}$$

Matched: $\delta V_1(b) = \pi(b) = \delta V_0$

Implies: $$\theta = \frac{\beta}{1-\beta}$$

1-m brokers:

Matched:

Unmatched:

Tightness: $$\theta = \frac{m_s}{1-m} = \frac{\delta}{\delta + p(\theta)(1-G(b))} \frac{m}{1-m}$$

Minor comments

- Clarify discussion of **role of annuities markets**
- Discuss assumption of **match-specific productivity**
- Present all **four Bellman equations symmetrically,** as I did here
  - Discuss assumption that **brokerage activity has no opportunity cost**
- **Reorder to tighten up the derivations,** as I did here
  - Bellman + bargaining equations → (18)
  - Equilibrium tightness (13) derived on the way to (18)
  - **No need to pass through (5), (8), (9)!**
- Correct **contradictory comments** about Result 3

Correlation of wealth with finance sector size

- Empirically, **wealthier** countries have **larger financial sectors**
- Obviously, **more intermediation, cet. par.,** helps produce **more output**
  - But in **general equilibrium,** finance sector could **crowd out** production sector

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- **Greater wealth, per se, does not lead to a larger financial sector**
  - Because **returns to production** and **returns to finance** are **both proportional** to productivity

- Model suggests alternative explanation of correlation: **more efficient production** creates **demand for more financial intermediation**

Correlation of wealth with finance sector size

- **Greater wealth, per se, does not lead to a larger financial sector**
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- Model suggests alternative explanation of correlation: **more efficient production** creates **demand for more financial intermediation**

- But intuitively some **other characteristics of advanced economies** may be **more plausible drivers** of demand for intermediation?
  - **More complex production** might drive demand for more financial intermediation
  - **More specialization** might drive demand for more financial intermediation

- **Suggestion:**
  - Work out a version of your growth model where **number of products is trending** over time

Is finance bloated?

- Size of the financial sector is a **hot topic nowadays**, but the interest is **normative as well as positive**

- In the model **financial sector may be too big or too small**
  - Depends especially on **bargaining shares**

- But paper contains **very few normative results…**

Some missing references

- **Philippon and Reshef (20XX)**, “Wages and human capital in US finance...”
  - “...finance jobs were relatively more **skill intensive, complex, and highly paid prior to the 1930s and after the 1980s**, but not in the interim”
  - ...circumstantial evidence that size of financial sector is policy-determined
  - ...but **not** just a matter of changing bargaining shares

- **Bolton, Santos, and Scheinkman (2012)**, “Cream skimming...”
  - Adverse selection: **opaque OTC market** may take away the most profitable clients from transparent exchanges, resulting in excessively large, excessively paid OTC sector

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- Can your model do more? Can it shed light on **claims that financial sector has crowded out talent from productive activities?**

James Costain

Thanks!

BANCO DE ESPAÑA

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