

Dicussion of Farhi & Maggiori's "A Model of the IMS"

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Outline

- Praise
 - ▶ Exciting set of questions, topic largely ignored in modern macro
 - ▶ Very ambitious paper, aims to capture variety of phenomena
 - ▶ Elegant demonstration of how simple economics can provide powerful insights
 - ▶ Beautifully written, definitely recommend reading
- Outline of discussion
 - ▶ Exposition of paper's main idea in a simpler model
 - ▶ Comments

Key idea

Setting the stage

- Monopolistic supplier (Hegemon) of a good (safe assets, insurance, etc.) demanded by large set of consumers (RoW investors)
- Suppose constant marginal costs c and linear (inverse) demand $p = A - Bq$
- Monopolist solves

$$\max_q q \underbrace{(A - Bq)}_p - cq$$

leading to

- 1 monopoly quantity $q^M = \frac{A-c}{2B} = \frac{1}{2}q^{CE}$,
- 2 monopoly price $p^M = c + \frac{A-c}{2} = p^{CE} + \frac{A-c}{2}$,
- 3 monopoly rents $\Pi^M = \frac{(A-c)^2}{4B} > 0 = \Pi^{CE}$

Setting the stage (cont.)

Labels:

- 1 $q^M < q^{CE}$: shortage of safe assets
- 2 $p^M - p^{CE} > 0$: safety premium
- 3 $\Pi^M > 0$: exorbitant privilege

Key idea

- Introduce commitment issue into this monopoly problem
 - ▶ Monopolist gets paid today, and is supposed to deliver good tomorrow
 - ▶ But when tomorrow comes, might have opportunity to default
- In particular, assume following protocole
 - ▶ Today (Calvo/Cole-Kehoe timing):
 - ★ *Stage 1*: monopolist chooses (total) revenues $r(= p \times q)$
 - ★ *Stage 2*: price p gets determined, consumer choose their demand q
 - ▶ Tomorrow (*stage 3*): if “low enforcement state” occurs (probability λ), monopolist decides whether to default on delivery, facing fixed default cost τ

Model solution by backward induction

- *Stage 3*: simple default decision: default $\iff q > \tau$
- *Stage 2*: consumer demand and price determination: inverse demand given by

$$p = \begin{cases} (A - Bq) & \text{if good always delivered} \\ (1 - \lambda)(A - Bq) & \text{if good only delivered with prob } (1 - \lambda) \end{cases}$$

- ▶ when expect no default: $q^{nd}(r) = \frac{A - \sqrt{A^2 - 4Br}}{2B}$
- ▶ when expect default: $q^d(r) = \frac{A - \sqrt{A^2 - 4Br/(1-\lambda)}}{2B} > q^{nd}(r)$

Regions

- Safe if $q^{nd}(r), q^d(r) < \tau$
- Unstable if $q^{nd}(r) < \tau$ but $q^d(r) > \tau$ (multiplicity)
- Default if $q^{nd}(r), q^d(r) > \tau$

Model solution by backward induction (cont.)

- Suppose that in case of multiplicity in stage 2, equilibrium selection via sunspot shock: default occurs with probability α
- *Stage 1*: monopolist chooses revenue, solving

$$\max_{r \geq 0} \Pi(r)$$

subject to

$$\Pi(r) = \begin{cases} \Pi^{nd}(r) \equiv r - cq^{nd}(r) & \text{if } r \in [0, \underline{r}] \\ \Pi^{inst}(r) \equiv \alpha \Pi^d(r) + (1 - \alpha) \Pi^{nd}(r) & \text{if } r \in [\underline{r}, \bar{r}] \\ \Pi^d(r) \equiv r - cq^d(r) - \lambda \tau & \text{if } r > \bar{r} \end{cases}$$

for $\bar{r} = (A - B\tau)\tau / (4B)$ and $\underline{r} = (1 - \lambda)\bar{r}$.

Graphical representation

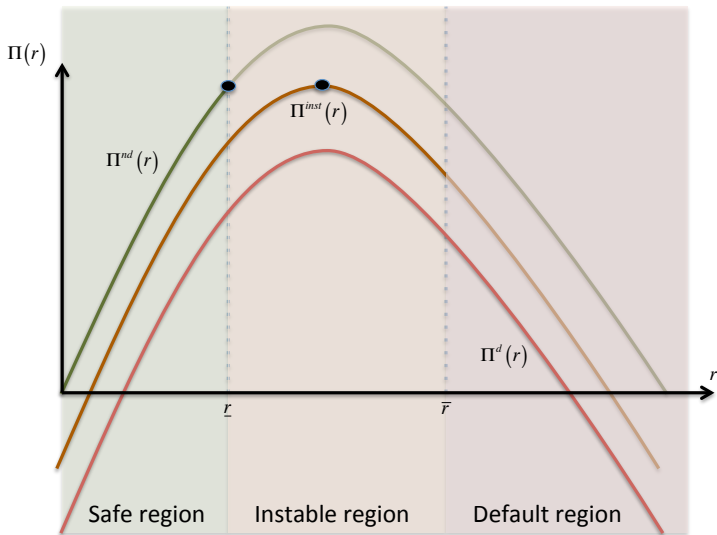


Figure:

Results

- *Triffin Dilemma*: monopolist might face choice of lower revenues in safe region vs. higher revenues in instable region
- *Under-/over-issuance*: market power force leads to under-issuance (too low revenue/quantity), but strong distaste for not receiving good with certainty could overturn this, causing over-issuance when monopolist's choice is in instable region
- *Keynesian recessions*: with nominal rigidities, shortage of safe assets together with lack of policy room (ZLB or peg) can require labor market to adjust to restore equilibrium in asset market
- *Oligopoly*: not clear if multipolar IMS is better/more stable:
 - ▶ Competition between large number of providers leads to efficient provision (with all providers in safe region)
 - ▶ Entry of 2nd provider could lead to less aggregate issuance than under monopoly (discontinuity of profit function)
 - ▶ Symmetric duopoly could be less stable than monopoly because of coordination problem

Comments

Comment 1

- Possibility of **over-issuance of reserve asset** despite monopoly problem is one of paper's key results
- Yet, possibility requires deviating from model's baseline set of assumption, by introducing preference for safety in reduced form way
- Would strengthen result to have more explicit foundation for this term, and ideally integrate it into baseline set of assumption

Comment 2

- Possibility that multipolar IMS could be less stable (**Nurske instability**) is also key result
- Yet, result is obtained using assumption that multipolar IMS is inherently less stable than hegemonic IMS
- Would be even more useful to obtain same result with more symmetric primitives across two scenarios