Financial Liberalization, Debt Mismatch, Allocative Efficiency and Growth
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Summary

- Model of growth & crises
  - Two sector AK structure: Tradables & Nontradables (capital intensive)
  - N sector firms face financial frictions → balance sheet effects

- Sunspot equilibria
  - Crisis = self-fulfilling drop in N price + many N sector defaults
  - Crisis risk if N sector issues enough T denominated debt

- Role of asset structure ("stages of financial liberalization")
  - If contracts allow more contingencies, get more leverage
    → more investment & growth, but also more crisis risk

- Cross country evidence
  - Compare output loss in crises & leverage through lens of model
    → Conclude that benefit of fast growth outweighs costs from crisis risk

- Discussion
  - Review model ingredients
  - Comment on connection to data
Benchmark 2 sector AK model

- Preferences (workers, entrepreneurs); world interest rate $\delta^{-1}$
  \[ \sum_t \delta^t c_t \]

- Technology
  \[ \sum_i c_t^i = n_t^\alpha l_t^{1-\alpha} + \text{net foreign stuff} \quad (\text{tradables}) \]
  \[ n_t + q_{t+1} = \theta q_t \quad (\text{nontradables}) \]

- Planner problem
  - constant investment rate $q_{t+1} = \phi^* \theta q_t$
  - "capital deepening": N capital grows faster than T output

- Competitive equilibrium
  \[ n(p_t) + \phi^* \theta q_t = \theta q_t \]
  - T sector input demand $n(.)$ decreasing in $p_t = \text{relative price of N goods}$
Mechanics: balance sheet effects & multiple equilibria

- Replace investment rate $\phi^*$ by $\phi(w_t) < \phi^*$
  
  $$n(p_t) + \phi(w_t)\theta q_t = \theta q_t$$

  - balance sheet effect: $\phi$ increasing in $w_t = \text{N sector net worth}$

- N sector net worth increasing in price
  
  $$w_t = w(w_{t-1}, p_t)$$

  - strong balance sheet effect $\rightarrow$ backward bending demand for N goods

- Areas of state space with multiple market clearing prices
  
  - hi or lo price, net worth $w_t$, investment, demand

- Rational expectations equilibria driven by binary sunspot $s_t$
  
  - price process $p(w_{t-1}, s_t)$: sunspot selects hi or lo price

- Hard work in paper
  
  - set up "credit market game" with explicit financial frictions
  - derive $w(\cdot)$ as optimal strategy of N sector firms
  - obtain further predictions on risk taking & role of asset structure
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Credit market game (played every period)

- N sector firms & risk neutral lenders (break even)
- Financial frictions faced by N sector
  1. firms cannot commit to repay debt
     - limited debt capacity; net worth matters for investment
  2. systemic bailout guarantee
     (lump sum taxes used to pay lenders if many defaults)
     - debt capacity still limited (no insurance against individual default)
     - debt capacity higher (present value of bailout = capital)
     - incentive to default when others default (price low!)
- Debt denomination: a tool to exploit bailout guarantees
  - denominate debt in T goods to default when N good price is low
  - if bailout expected, achieve higher debt capacity & ex ante investment
Equilibria under different asset structures

- Sunspot not relevant if
  - only N debt can be issued by N firms
  - N sector small (balance sheet effect not strong enough)

- Self-fulfilling creation of crisis risk if enough T debt issued
  - suppose sunspot can trigger crisis tomorrow
  - systemic bailout expected in bad equilibrium tomorrow
  - coordinated risk taking profitable today
  - all firms denominate debt in T goods today
  - sunspot can indeed trigger crisis

- Welfare comparisons: 2nd best world with competing distortions
  - underinvestment from commitment problem...
  - ... alleviated by use of T debt + bailouts
  - whether allowing T debt is better depends on parameters, taxation
Quantitative analysis of financial frictions

- Approach 1: "Summary statistics" for welfare effects
  - in stylized model, find number that captures welfare effects
  - e.g. wedges from frictionless FOC, or (here) leverage vs crisis loss
  - collect observable counterparts for many countries/industries/firms
  - interpret cross section as driven by differences in frictions

- "Summary statistics" approach
  - leans heavily on model structure to derive statistic
  - assumes model applies equally to all countries etc

- "Summary statistics" approach does not
  - provide evidence in favor of model structure
  - explicitly handle other sources of variation across countries etc

- Approach may uncover x-sectional patterns, but welfare conclusions?
Quantitative analysis of financial frictions

- **Approach 2: "Country studies" using DSGE models**
  - use country specific data to inform technology, financial structure
    - what are key N goods (capital intensity, durability – housing vs other)
    - how important is external finance in N sector
    - availability of different securities
  - arrive at joint distribution of financial & macro variables
    - compare to data over transition episode
    - do spreads on N sector firms reflect bailout guarantees?
    - does volatility vary across areas of state space?
    - investment vs employment over cycle

- "Country studies approach"
  - confronts model’s cross equation restrictions with data
  - failures & caveats more apparent
  - welfare conclusions easier to interpret