Risk-taking Dynamics and Financial Stability

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Disclaimer

The views expressed in this paper are my own and do not necessarily coincide with those of Banca d'Italia

Summary

Motivation

- Since the crisis vivid interest on boom and bust dynamics
- Literature mostly focused on representative agent models
- Evidence that high-growth agents may have played a role in US financial crisis

Paper contribution

- Brings an evolutionary theory view to the topic
- Focus on how composition dynamics of heterogeneous agents lead to procyclical aggregate dynamics
- Emphasis on dynamic composition effect of policies such as bail-outs or caps on growth rather than on risk-taking decisions

Assessment

- Thought provoking & promising original approach
- A more specific modelling of financial sector would render policy implications more convincing

The baseline model

Model set-up

- Heterogeneous infinitely lived log-utility bankers
- Bankers have access to time-invariant type-specific investment opportunities with stochastic one period return
- Investment opportunities are exposed to systemic shocks (good and bad shocks)
- Investment is entirely funded out of bankers' wealth
- Incomplete markets: no possibility for bankers to diversify their portfolios

Optimal bankers' decisions

- Consume constant fraction of wealth per period
- Invest in strategy that maximizes expected log-return or average growth rate of own wealth

Equilibrium dynamics

Results decentralized equilibrium

- Only types with maximum expected log-return survive
- Two classes of surviving bankers:
  - High (low) risk bankers: high (low) return and high (low) variance investment
- Composition of wealth across banks' types evolves along time
  - After a good (bad) shock share of wealth owned by high risk bankers augments (diminishes) and also the volatility of the economy going forward
  - Procyclicality in aggregate volatility of bank capital$\Rightarrow$*good times sow the seeds for the next financial crisis*
  - Evolutionary theory analogy: *system is temporary maladapted after good shocks*

Results first-best economy

- No composition dynamics and higher expected growth

The model with real sector

Ingredients additional to baseline model

- Households with log-utility and no possibility to save
- Competitive firms with intra-period production
  - Cobb-Douglas production function with bank capital and households' labour as inputs
  - Both supply of bank capital and households' labour is inelastic

Results

- Dynamic of decentralized and first-best economy mimic those in the baseline model
  - Procyclicality in aggregate volatility of bank capital⇒procyclicality in output, wages and consumption of all agents

Policy interventions

Bail-outs

- Banks' risk-taking choices held fixed to focus on compositional effects of bail-outs
- When a boom busts aggregate capital is very low and its marginal return very high
- $\Rightarrow$Optimal for households to make transfers to banks
- If bail-out size is equal for all banks, intervention changes distribution of surviving types towards riskier ones with lower geometric mean return
    - Evolutionary theory analogy: *bail-outs interfere with the natural selection process in the system*

Limits on volatility of bankers' investments or on asset growth

- Reduce procyclicality of aggregate volatility

Comments: Compositional effects and risk dynamics in the literature

- Central idea of the paper: aggregate risk dynamics depend on compositional effects in financial sector
- Related to some other papers on endogenous boom and busts. E.g.:
- Good booms and bad booms, Gorton and Ordognez (2016)
  - Credit expansion starts with perfectly informed investors
  - As the boom evolves information decays and average quality of active firms worsens
  - $\Rightarrow$Information acquisition by lenders and credit crash
- Banks' Endogenous Systemic Risk Taking, Martinez-Miera and Suarez (2014)
  - After good shocks bank capital is abundant and expected scarcity rents low
  - $\Rightarrow$Increase in the fraction of banks' lending towards systemic firms

Comments: What financial sector in the model?

- Bankers are completely equity funded
- In real economy extension banks do not intermediate funds from households to firms
- Not clear what are the real assets backing banks' one-period investments
- A more explicit role for financial agents as intermediaries would render financial stability implications more concrete

Comments: Mechanical risk-taking dynamics in the model

- Banks' risk-taking decisions are constant: independent of other banks' decisions & of risk composition of the economy
- ⇒Risk-taking decisions have an effect on the risk composition of the economy but not the other way round
- Aggregate risk-taking dynamics are somewhat mechanical
- Interesting & more realistic to enrich the model so that risk-taking decisions depend on composition of the economy
  - Does this exacerbate procyclicality?
  - Does this increase the impact & need of policy interventions?
- ⇒Relate to long literature on financial sector concentration and stability (e.g. Martinez-Miera and Repullo, 2010)

Comments: More structured analysis of policy interventions

- Discussion of policy interventions would benefit from a more structured approach
- What are the instruments at the disposal of authorities?
  - Are bank's types observable by the supervisor?
  - Are risk-taking decisions observable and enforcebale by regulation?
  - Is there access to fiscal policy (taxation & redistribution)?
- What is the welfare function policy wants to maximize?
- To address these questions necessary to specify more concretely the role of financial sector in the economy

Comments: Introduction of cap on intermediaries' growth

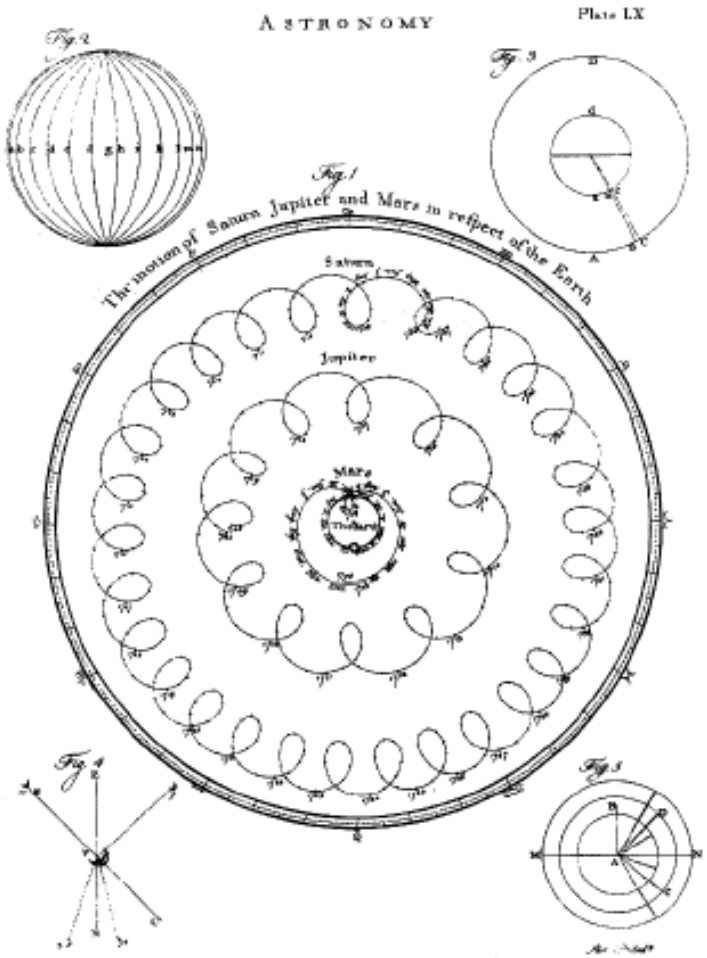
- Policy instrument that looks most suitable to tackle procyclicality in the model is a cap on banks' growth
- As opposed to cap on size, introduction of cap on growth is completely outside the policy debate
- Potentially the selling point of the paper but necessary to take into account possible cons of such a measure
  - E.g. harm high productivity institutions, limit innovation, foster "creative accounting"

Conclusions

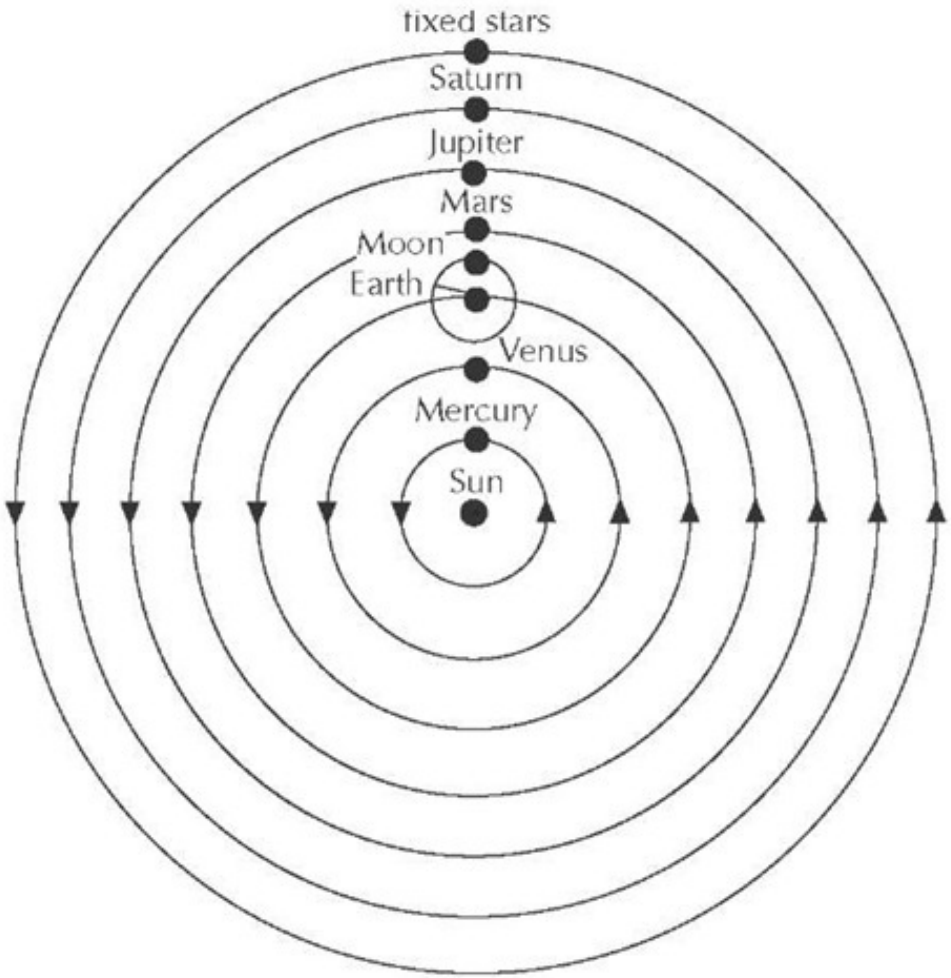
- Thought provoking approach to boom-bust dynamics through the lens of evolutionary theory
- Highly promising but currently looks more like an analogy rather than an accomplished "Copernican revolution"

The Copernican revolution

Ptolemaic system



Copernican system



Conclusions

Further work necessary for the paper to be a new way of looking at things that allows us to

- See things we could not see before
- Do things we had not envisaged before