SONOMA: a Small Open ecoNOmy for MAcrofinance

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Overview: finance in open economy macro

- In open economies 3 channels of transmission / prices
    1. Intra-temporal trade / exchange rates
    2. Inter-temporal trade / interest rates
    3. Valuation effects / asset prices

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    - Examples: IRBC and NOEM have a hard time explaining exchange rates and asset prices.
- SONOMA: goes after 2 and 3
- Ambitious and necessary endeavor

Outline

- Empirical contribution
- Theoretical contribution
- On interest rates and economic activity
- Identification and directions

Empirical contribution

- 6 (sort of) small open economies:
  Finland,Italy,Portugal,Spain,Sweden,Switzerland, 1995-2017, quarterly
- 3 variables:
  - Long run component of productivity growth (estimated using productivity and stock market data)
  - Corporate debt to output ratio
  - Long term rates (on govt debt), not explained by external debt

Main finding

- Increases in long term interest rates (on average) are associated to
  - Declines in future productivity growth ($\beta_{r,x} < 0$)
  - Reduction in corporate debt ratios ($\beta_{r,\xi} < 0$)
- Positive Co-skewness between long term rates and long run productivity growth
  - A bit confusing: *Two random variables exhibit positive co-skewness when undergo extreme positive deviations at the same time*)

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- Alternative 1: (Arellano, Bai and Bocola, 2019) spread $\uparrow$, Bond prices $\downarrow$, banks in trouble, credit $\downarrow$, investment $\downarrow$, long run growth $\downarrow$
- Alternative 2: (Bai, Kehoe and Perri, 2020) long run growth $\downarrow$, default risk $\uparrow$, spread $\uparrow$, credit $\downarrow$

Theoretical contribution

- Small open economy, real, model
- Three correlated exogenous shocks (motivated by empirics above): Firm's domestic credit constraints (Jerman and Quadrini, 2012), Long Run Growth prospects (Bansal and Yaron, 2004), Household external interest rate (Mendoza, 1991)
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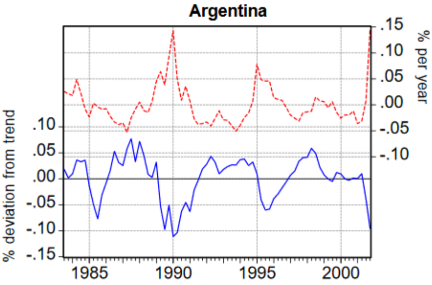
- Do they have independent effect on domestic economy?

Interest Rates and Economic Activity, 1

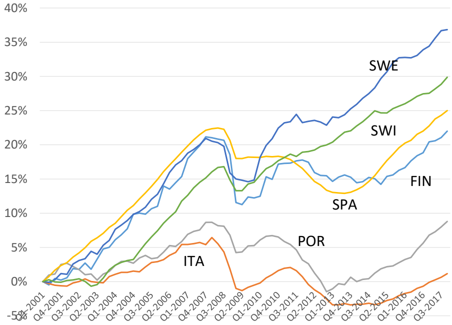


- Data: negative relation between interest rates and economic activity
- IRBC type models (like SONOMA) direct effect of interest increase is either zero or positive
  - Increase in interest rate make country poorer, labor supply ↑, Y ↑
- Same issue in Perri-Quadrini (2 country version of Jermann-Quadrini) main driver of economic activity is credit constraints, not interest rate

Interest Rates and Economic Activity, 2

- Alternative models
- Working capital+GHH preferences (Neumeyer Perri, 2004), tightening of financial constraints (Bocola, 2016), sticky prices plus labor mkt frictions (NOEM)
- Suggestion: incorporating some of these channels in SONOMA might help explain the initial empirical findings

Identification of macro-finance shocks



- Most interesting idea of the paper is that financial shocks can be, endogenously, connected with long run growth performance
- Within sample large variation in long run performance (and financial shocks)
- Use more country specific variation (in growth, shocks and possible other states such as government debt) to identify impact of financial shocks and connection to long run growth