Long-Term Bond Supply, Term Premium, and the Duration of Corporate Investment

Antoine Hubert de Fraisse (HEC Paris)

Discussion: Walker Ray (LSE & CEPR)

EFA Doctoral Tutorial, August 2024

Motivation: QE Effects in Bond Markets

- Monetary policy over the last 15 years has relied heavily on balance sheet policies
- Unconventional policy transmission to (risk-free) yield curve is better understood:
    - Constrained intermediation/market segmentation/preferred habitat [Vayanos & Vila (2021), Ray, Droste, & Gorodnichenko (2024), Gourinchas, Ray, & Vayanos (2024), Greenwood & Vayanos (2014), Gertler & Karadi (2012, 2015), Sims and Wu (2021), ...]
- But much less is known about effects on corporate investment
- Moreover, the theory suggests that these policies should work through relative supply/demand effects

This paper:

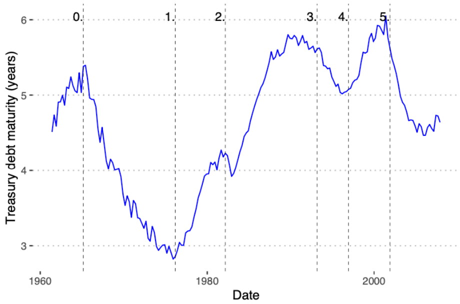
- Extends the preferred habitat framework to both bond and corporate investment
- Tests predictions through historical identification of large Treasury supply shocks
- Takeaway: supply effects are important for corporate investment

Transmission Intuition

- Changes in the supply of long-duration bonds (held by marginal investors) leads to changes in risk compensation:
  - Suppose $\downarrow$ supply of bonds (or $\uparrow$ in QE purchases)
  - Intermediaries hold fewer bonds, hence less exposed to duration risk
  - If risk averse (or face some intermediation frictions), $\implies \downarrow$ term premia
- Note that this intuition implies re-pricing of *any* investment exposed to duration risk (to the extent these investments are undertaken by the same intermediaries)
- Thus, Treasury supply shocks should affect corporate investment
  - Additionally, the effects should be larger for firms with larger cash-flow duration
  - "Across-firms" channel

Treasury Duration Shocks

- While preferred habitat theory is typically focused on monetary policy, QE/QT policy events are not well-suited for identification
  - Both policies are endogenous to the business cycle
  - QE in particular is typically undertaken during times of high macro-financial stress
- Similarly, Treasury supply typically reacts to business cycle fiscal policy
- Instead, this paper takes a more historical/narrative approach



Identification Comments and Suggestions

Empirical issues

- Narrative identification tradeoffs: five shocks is not much variation
    - Standard errors are tight, but what is the correct clustering?
- Very high degree of serial correlation
    - The theory suggests we would find pre-trends; but then how informative are the "shocks"?

Suggestions

- Romer & Romer (2010) tax shocks
    - Narrative approach to purge business cycle variation from tax policy changes
- Ray, Droste, & Gorodnichenko (2024) Treasury demand shocks
    - High frequency approach to identify shocks to Treasury demand

Model Comments and Suggestions

- Model ingredients:
  - Bonds of different maturities subject to habitat demand shocks
  - Investors (households) who intermediate bond markets also own firms and choose investment
  - Cash flow from investment is split across future time periods (firm-specific)
- Current setup: firm cash-flow is deterministic function of investment
  - Payoff of firm investment can be perfectly replicated with simple positions in short- and long-term bonds
- Modeling idea (this or follow-up paper): add cash-flow risk
  - Substantive extension of preferred habitat models
  - Allows for even richer exploration of spillovers from Treasury supply shocks (duration risk and risky payoff risk)

Model Sketch (based on Ray, Droste, & Gorodnichenko 2024)

- Continuum of risk-free bonds with maturity $\tau \in (0, T)$: price $P_t^{(\tau)}$ and pays \$1 at $t + \tau$
- Claims on future "risky" payoff stream: price $\tilde{P}_t^{(\tau)}$ and pays $D_{t+\tau} \equiv e^{d_{t+\tau}}$ at $t + \tau$
- Bonds subject to habitat demand frictions $Z_t^{(\tau)} = -\alpha(\tau) \log P_t^{(\tau)} - \beta_t(\tau)$
    - Short rate r_t, payoffs d_t, demand shocks $\beta_t^{(\tau)}$ follow stochastic process (PE or GE)
- Investing I_t in firm i implies claim on firm-specific risky payoff stream $f(I_t)\omega_i(t + \tau)D_{t+\tau}$ at period $t + \tau$
    - Can also consider extending the payoff process to allow for multiple factors
    - Or, idiosyncratic firm-specific risk $D_{i,t+\tau}$
- Thus, investing in long-duration firms exposes intermediaries to duration risk, habitat demand risk, and payoff risk

Model Hypotheses

- Ray, Droste, & Gorodnichenko (2024) does not feature corporate investment, but can make some educated guesses...
- Conjectures: $\uparrow$ Treasury supply $\implies$ $\downarrow$ value of claims on risky asset, and decreases investment
- This effect is:
    1. Larger in magnitude for long-duration firms
    2. Smaller in magnitude when short-rate risk is low
    3. Smaller in magnitude when payoff risk is high
- Ambiguous/unclear predictions:
    - Transmission when demand/supply *risk* is high/low?
    - Aggregate vs. idiosyncratic payoff risk?
    - ...
- Intersection of preferred habitat and corporate investment seems rich!

Concluding Remarks

- Really nice paper!
- The habitat model is promising; some possible extensions (for future work?)
- Narrative approach to identifying Treasury supply shocks is interesting, but there are some difficulties
- The paper already explores some alternative identification strategies, but a battery of tests is rarely a bad thing