Discussion of "Monetary-Based Asset Pricing: A Mixed-Frequency Structural Approach" by Bianchi, Ludvigson and Ma

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Monetary policy and asset prices

- Financial markets pay a ton of attention to monetary policy
- The stock market reacts a lot to unexpected policy announcements
  - Bernanke-Kuttner: 1% tightening $\rightarrow$ 4% $\downarrow$ in stock market
- A large literature asks: why?

$$P_t = \sum_{k=0}^{\infty} \frac{\mathbb{E}_t \left[D_{t+k} \right]}{\left(1 + r^f_{t+k} + r^p_{t+k} \right)^k}$$

  - $r^f_{t+k} \uparrow$? $r^p_{t+k} \uparrow$? $\mathbb{E}_t \left[D_{t+k} \right] \downarrow$? How much?
  - What's a coherent general equilibrium model delivering this?

This paper

- **One approach**: high frequency event study
  - Pros: credible identification
  - Cons: get at best proxy causes, not useful for counterfactuals, only effect of monetary surprises
- **Alternative approach**: structural model
  - Pros: get at root causes, useful for counterfactuals, can quantify role of systematic component of monetary policy
  - Cons: need to really trust the structure...
- **Can we get the best of both worlds?**
  - Prior literature: use moments from HFI studies as targets for calibration/estimation of structural model. eg, Kekre and Lenel.
  - This paper: incorporate high frequency events into fully structural Bayesian estimation ("mixed-frequency": monthly + daily data)

Usual challenges with structural approach

$$P_t = \sum_{k=0}^{\infty} \frac{\mathbb{E}_t\left[D_{t+k}\right]}{\left(1 + r^f_{t+k} + r^p_{t+k}\right)^k}$$

In data, monetary tightening $\Rightarrow$ $r^f_{t+k} \uparrow$, $\mathbb{E}_t\left[D_{t+k}\right] \downarrow$, and $r^p_{t+k} \uparrow\uparrow$

- To explain $r^f_{t+k} \uparrow$, want a New Keynesian model
- To explain $\mathbb{E}_t\left[D_{t+k}\right] \downarrow$, usually need to avoid sticky prices
  - Otherwise profits are countercylical
  - **Here**: $D_t = K_t Y_t$ with exogenous shock to K_t (microfoundation?)
- To explain $r^p_{t+k} \uparrow\uparrow$, usually need asset pricing magic
  - Habit formation, heterogeneous risk aversion, etc
  - **Here:** time-varying beliefs about future monetary regime

The structural model

- Two agent behavioral New Keynesian model
- Macro block is backward looking New Keynesian model
  - Demand shocks, TFP shocks, cost-push shocks and monetary shocks
  - Inertial monetary policy

$$i_t = \pi_T^k + \left(1 - \rho^k\right) \psi^k \pi_t + \rho^k i_{t-1} + \epsilon_t$$

    key: parameters π_T^k, ρ^k, ψ^k depend on *monetary regime*
  - Transient Markov regime (switch to next w.p. p per period)
- Asset pricing block is made up of:
  - sdf $M_{t+1} = \beta_{pt} \left(D_{t+1}/D_t\right)^{-\sigma_p}$ (estimate $\sigma_p = 6.3$)
  - Exogenous liquidity premium on bonds vs stocks LP_t
  - Subjective beliefs about next regime (think it's absorbing). Why?

Estimation

- Model estimated with Bayesian methods
- Three difficulties relative to standard linear DSGE models.

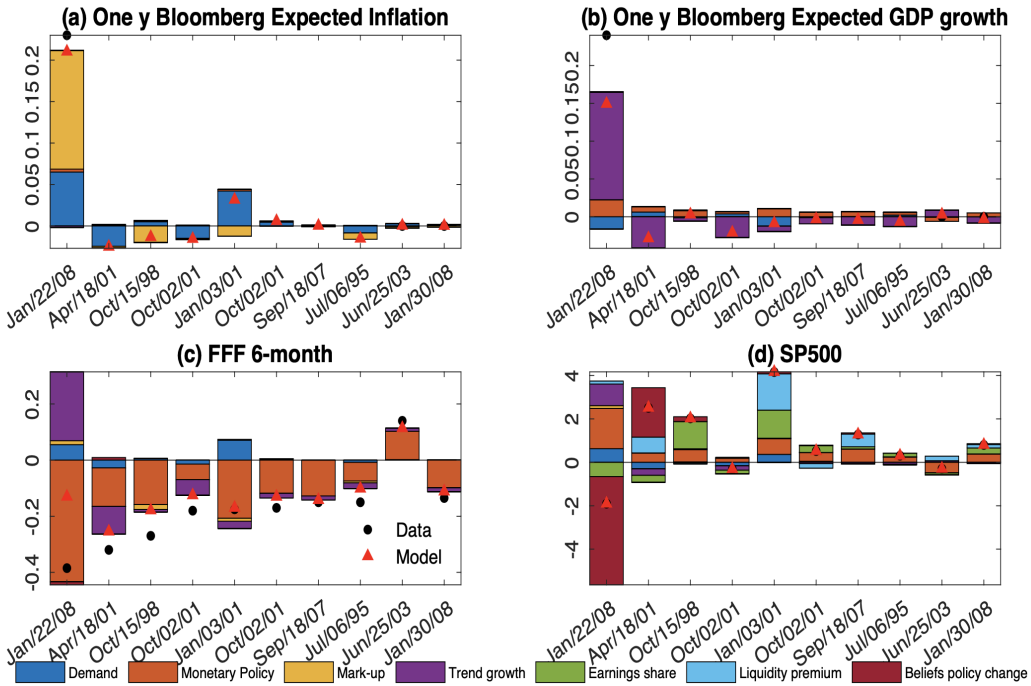
1. Want risk premia. Super complicated nonlinear filter?
   - No: just solve for levels of risk premia using first order dynamics
   - So risk premium *only* depends on current+$\mathbb{E}$ future monetary regime
   - Nice! But can we know how good this approximation is?
2. Need to deal with regime switches
   - Use techniques from Markov-switching estimation literature
3. Need to incorporate high-frequency information in estimation
   - Agents "nowcast" state and regime within month

- A hard problem! I'm impressed that it even converges.

What do we get from this?

- Rich picture of what happens around FOMC events...

Figure 8: Top Ten FOMC: 6-month FFF rate



- 01/08: "Drives the market downward because it assigns lower odds that future policy will shift towards a more active policy rule"

What happened in January 2008?

- An alternative narrative...

BUSINESS | The Fed's Actions in 2008: What the Transcripts Reveal

Jan. 21 EMERGENCY MEETING **At 6 p.m. on Martin Luther King's Birthday, Fed officials decide they can't wait any longer to cut interest rates. The next day the Fed announces the biggest interest rate reduction in more than two decades, temporarily halting the stock market's slide. The benchmark rate is cut 75 basis points, to 3.5 percent.**

Early in 2008, as signs of crisis are building, Janet L. Yellen scolds the other members of the Open Market Committee, seeking to get them to recognize that they have not done enough.

> MS. YELLEN: "The risk of a severe recession and credit crisis is unacceptably high, and it is being clearly priced now into not only domestic but also global markets."

Ms. Yellen says Mr. Bernanke's proposal of a 75 basis-point cut in the Fed's benchmark rate is a good step toward recognizing the central bank's slowness.

> MS YELLEN: "An inter-meeting move will be a surprise, but I think it will show that we get it and we recognize we have been behind the curve."

Jan. 30 SCHEDULED MEETING **The Federal Open Market Committee, or F.O.M.C., cuts its benchmark rate by another 50 basis points to 3 percent, saying "financial markets remain under considerable stress, and credit has tightened further for some businesses and households."**

Feb. 14 Mr. Bernanke and Treasury Secretary Henry M. Paulson Jr. acknowledge before Congress that the outlook for the economy has worsened, as both are accused of being overtaken by events. Mr. Bernanke testifies that problems in housing and mortgage-related markets have spread more widely and proved more intractable than he expected three months earlier. Both officials, however, continue to predict the economy will avoid recession.

Top Officials See Bleaker Outlook for the Economy »

- Can we reconcile this with the model's interpretation?

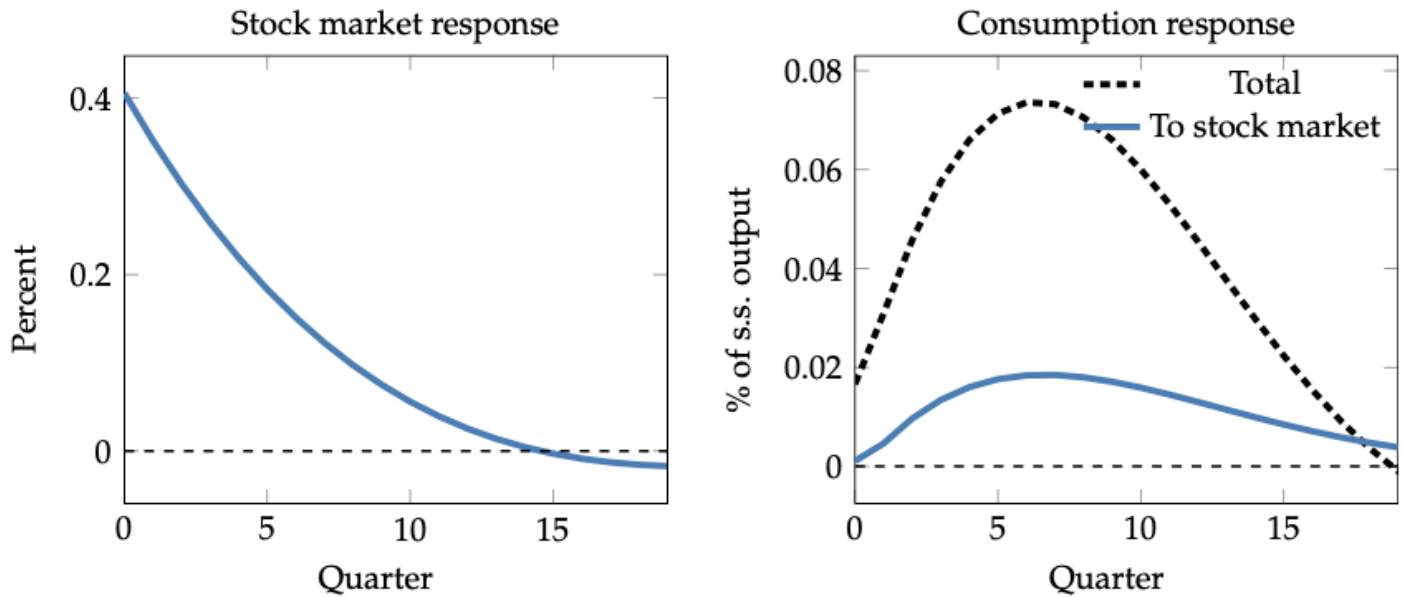
What I'd like to see in the next paper...

- Beyond two agents: let agents trade, embrace HANK!
  - Distributional effects (help with asset pricing?)
  - Feedback between asset prices and economic activity via MPC
- Inelastic asset markets, quantitative easing
- Investment as key channel of transmission of risk premia to economic activity

What recent estimated HANK models can give you

- No risk premia, but plausible total impulse to monetary shock...

Figure 9: The stock market response to monetary policy and its effect on consumption



[Auclert, Rognlie and Straub "Micro Jumps, Macro Humps"]

Concluding thoughts

- Nice paper combining the benefits of reduced form and structural approach
- Lands more on the structural end, with its benefits and drawbacks
- Would be useful to justify modeling choices at each step
- Can substantiate conclusions with narrative evidence