

Discussion of
“THE PEOPLE VERSUS THE MARKETS:
LONG-RUN INFLATION AND MONETARY POLICY”
by Ricardo Reis

Emanuel Moench (Deutsche Bundesbank, Goethe University Frankfurt,
CEPR)

Konstanz Seminar

June 5, 2019

The views expressed here are mine and are not representative of the views of Deutsche Bundesbank or the Eurosystem.

Outline

① Summary

② Comments/questions

- Fall of 2008: Liquidity or Disagreement?
- Risk *and* disagreement or risk *through* disagreement?
- Should central banks react to market signals? Reflection problems.
- Minor comments.

③ Conclusion

Summary of the paper and some related literature

High-Level Summary of the Paper

- Shows discrepancy between market and survey-based measures of long-run inflation expectations correlated with inflation, monetary policy,
- Argues discrepancy partly due to disagreement between marginal trader and households, but standard model-based measures of inflation risk premium do not account for discrepancy.
- Proposes Grossman-Stiglitz type model of inflation risk with three agents: survey participants, market traders, noise traders. Uses model to map distribution of survey forecasts into traders' expectations. Model-implied disagreement bw traders and HH explains discrepancy.
- General equilibrium version of model to discuss inflation determinacy and anchoring of π^e when CB responds to different signals about π .

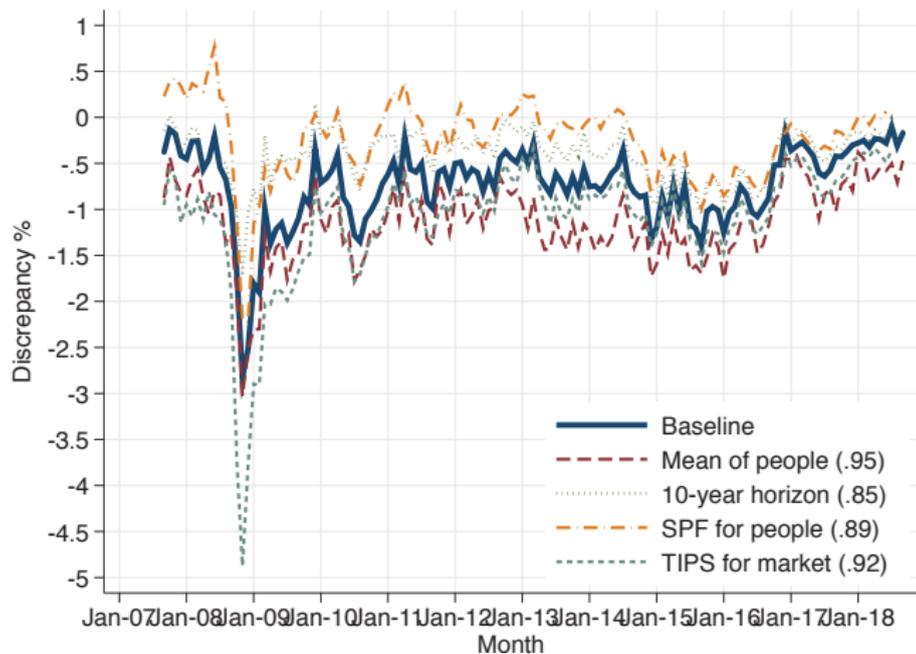
Inflation risk and disagreement: selective literature review

- Literature on heterogeneous beliefs in asset pricing: Detemple&Murphy 1994, Buraschi&Jiltsov 2006, Gallmeyer&Hollifield 2008, Ehling et al 2016, ...
- Most closely related: Xiong&Yan (RFS 2009) → dynamic equilibrium model of bond pricing with two investors having different priors about informativeness of signals about inflation target. Take speculative positions against each other ⇒ relative wealth fluctuates.
- Marginal investor's belief is wealth-weighted average belief. As wealth fluctuates between agents, marginal investor's risk assessment varies ⇒ affects equilibrium bond prices.
- Representative agent term structure models: sometimes used to estimate inflation risk premia and show comovement with fcst disagreement about π (e.g. Abrahams et al. 2016).

Comments

Fall of 2008: Liquidity or Disagreement?

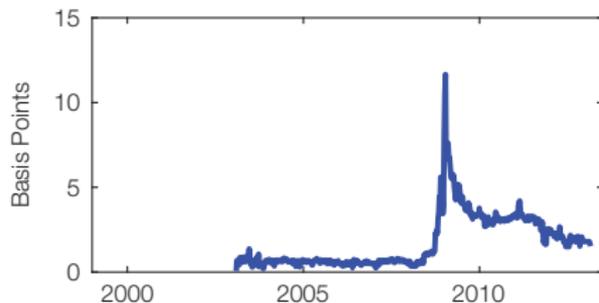
- Ricardo shows different measures of discrepancy comove strongly, all drop in 2008. Strong business cycle component?



Fall of 2008: Liquidity or Disagreement?

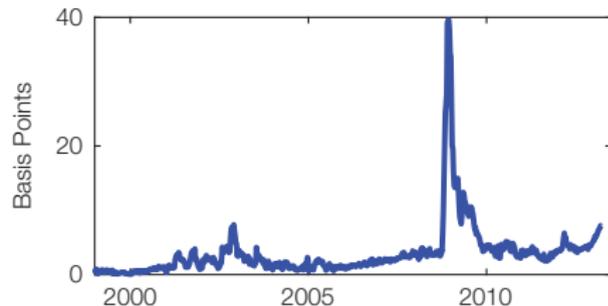
- Consensus in the literature: inflation-indexed less liquid than nominal bonds (Pflueger & Viceira 2009, Abrahams et al. 2016, ...).
- Illiquidity particularly pronounced after collapse of Lehman. Shows up in various measures of liquidity of market-based inflation comp.:

Graph A. TIPS Bid-Ask Spread



Source: D'Amico, Kim, Wei (2018).

Graph C. Average Absolute TIPS Curve-Fitting Errors



Fall of 2008: Liquidity or Disagreement?

- Suggest to emphasize the role of illiquidity in explaining discrepancy between market-based and survey-based measure of expected inflation.
- Possible in your framework. In Grossman-Stiglitz liquidity is driven by supply shocks and precision of informed traders' signals: "speculative market where prices reveal a lot of information will be very thin because it will be composed of individuals with very similar beliefs."
- Illiquidity in fall of 2008 likely due to TIPS being dumped by Lehman Bros, scarce balance sheet capacity of arbitrageurs rather than extremely precise information.

Risk *and* disagreement or risk *through* disagreement?

- Ricardo's decomposition separates risk from disagreement:

$$\phi_t = \underbrace{E_t^*(\pi_{t,T}) - E_t^m(\pi_{t,T})}_{\text{risk}} + \underbrace{E_t^m(\pi_{t,T}) - E_t^P(\pi_{t,T})}_{\text{disagreement}}$$

where

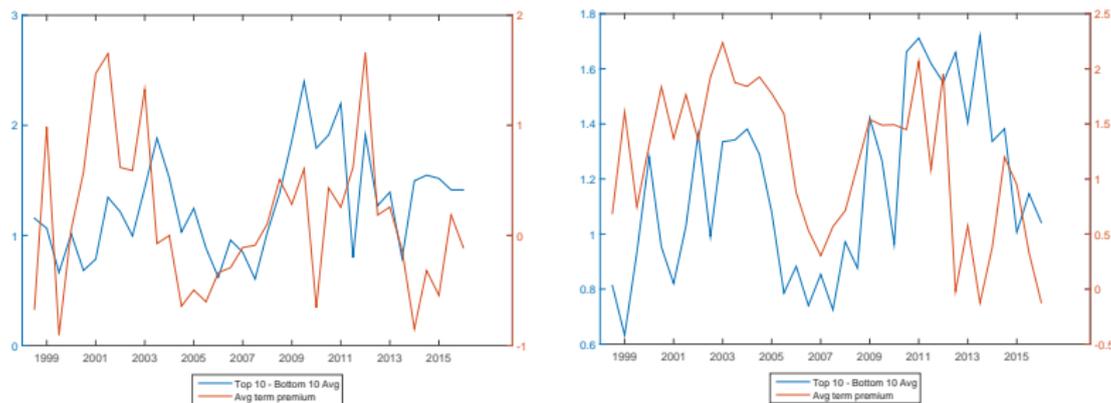
- $E_t^m(\pi_{t,T})$ subjective belief of the marginal trader
- $E_t^P(\pi_{t,T})$ subjective belief of the average household
- Different from asset pricing models with heterogeneous beliefs in which risk premia arise *because of* disagreement, e.g. Xiong & Yan (2009).

Risk *and* disagreement or risk *through* disagreement?

- Cao, Crump, Eusepi, Moench (2018): quantitative term structure model with two investors disagreeing about long-run level of rates.
- SDF of representative investor approximated by weighted average of SDFs of two investors, weights given by shares of total wealth.
- In this model, changes in term premia arise because of
 - Common response of investors to changes in pricing factors.
 - Heterogenous signals: impact representative investor's term premium as long as as the relative wealth ratio is different from one.
 - Relative wealth effect: investors disagree about expected returns, choose different portfolios. Given previous period's portfolio choice, return realization changes relative market power \Rightarrow moves term premium of representative investor.

Risk *and* disagreement or risk *through* disagreement?

Figure 4: Consensus term premium and disagreement about short rates



- Our paper (and Xiong and Yan 2009 etc.): disagreement between traders (beliefs measured by professional forecasts) drives risk premia.
- In Ricardo's model: disagreement between marginal trader and average household, who doesn't trade. As far as I understand no role for disagreement between traders driving relative wealth and risk premia.

Should CB react to market signals? Reflection problems.

- Ricardo's GE model suggests that CB should react forcefully to large deviations of market-based from survey-based π^e .
- Recent literature discusses reflection problems in financial markets (Bond et al. 2009, Morris&Shin 2018, Gai et al. 2019).
- Models where the *use of market data is self-defeating in the sense that the reflection of the expected market-based action in the price destroys the informational content of the price.* (Bond et al. 2009)
- Crucial difference to Ricardo's analysis: price in financial market affects real value of a security via information it provides to decision makers. In Grossman-Stiglitz type models security value *exogenous*.

Should CB react to market signals? Reflection problems.

- Gai et al. (2019) ingredients for CB reflection problem:
 - i) CB relies on market-based signal reflecting average action \bar{a} of market participants, public signal y (e.g. survey data), and private signal z (own research) about fundamental θ :

$$r = \lambda \bar{a} + (1 - \lambda)[(1 - \mu)y + \mu z].$$

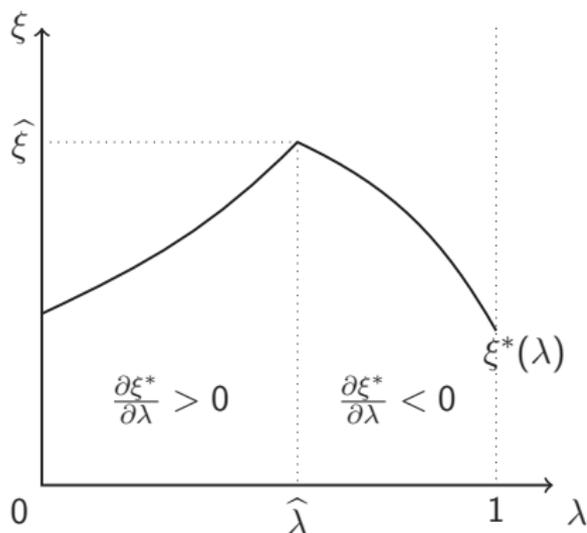
- ii) Market participants try to match weighted average of central bank action as well as fundamental using public signal y and private signal x_i . Maximize:

$$u_i = -\omega(a_i - r)^2 - (1 - \omega)(a_i - \theta)^2.$$

- iii) Equilibrium determination via Stackelberg game: CB chooses policy rule $r(\bar{a}, y, z)$ and investors choose optimal action $a_i(r, y, x_i)$.

Should CB react to market signals? Reflection problems.

- Since r depends on market-based signal \bar{a} , market participants' actions a_i exhibit strategic complementarity: optimal choice increases in $\bar{a} \Rightarrow$ for CB's weight λ on \bar{a} large enough information value of market signal decreases in that weight:



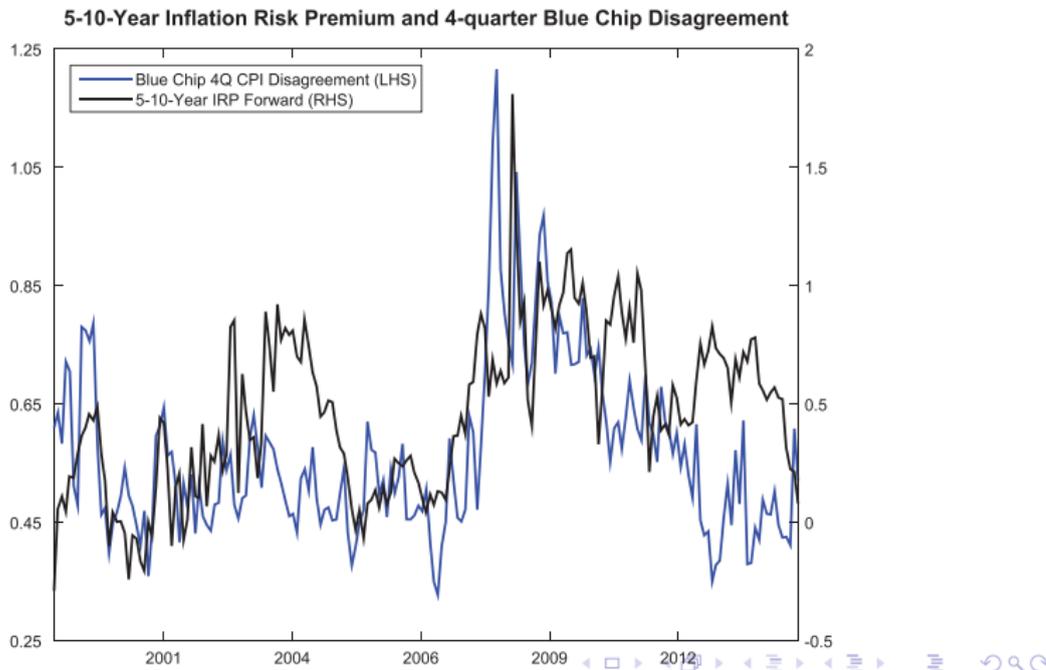
Should CB react to market signals? Reflection problems.

- Why does this issue not arise in Ricardo's model with CB rule responding to market expected inflation?
- As long as CB reacts to market signal, and traders' utility depends on policy rate, their bond pricing decisions should be strategic complements.
- Somehow the equilibrium bond price doesn't seem to depend on policy rate in determinate equilibrium. Correct? If so, why?

Minor Comments

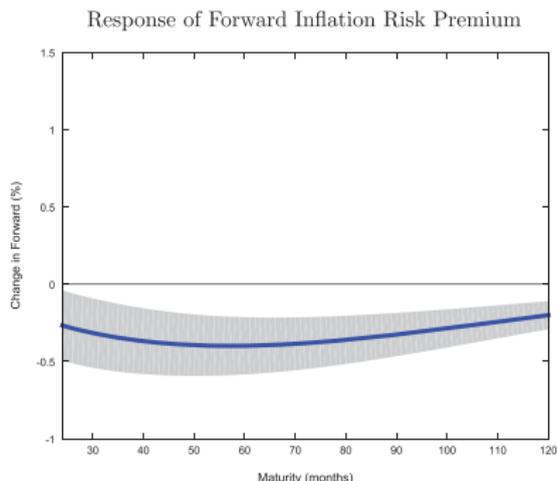
Minor Comment I

- Some empirical measures of inflation risk premia do covary with forecast disagreement about inflation. Figure 6 from Abrahams et al. (JME 2016):



Minor Comment II

- Finding that discrepancy responds negatively to MP shock consistent with prior evidence. Figure 7 from Abrahams et al. (JME 2016):



- Consistent with structural term structure models (Piazzesi&Schneider 2007; Rudebusch&Swanson 2012) → Disinflationary shocks increase real payoff of nominal bonds. When $cov(\Delta y, \pi) > 0$, nominal bonds hedge against bad times. MP shocks raise $cov(\Delta y, \pi) > 0$ so reduce IRP.

Conclusion

Conclusion

- Very nice paper that looks at an old problem with fresh eyes.
- Disagreement among market participants and households partially explains discrepancy between market and survey-based inflation compensation.
- Argues CB should respond to this discrepancy when large.
- I suggest to discuss illiquidity, risk premia arising from disagreement among traders, and potential reflection problems in paper.
- Look forward (and recommend everyone) to reading!