Is r^* a good guide for policy?

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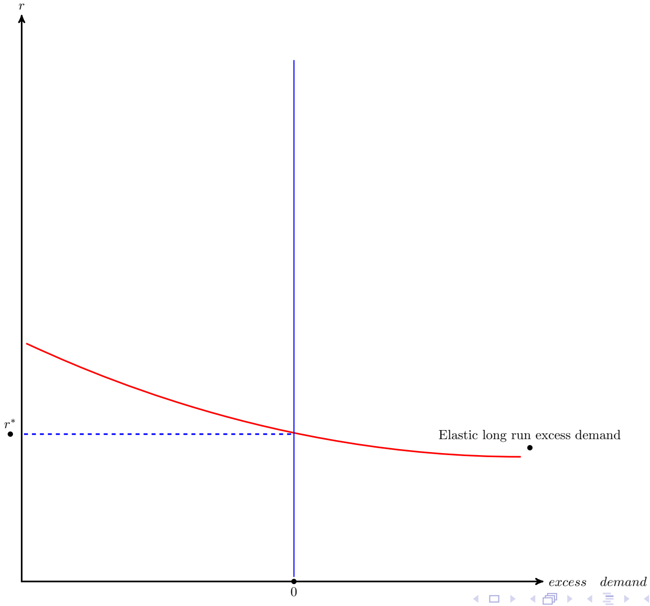
Introduction

- Consider policy rule of form

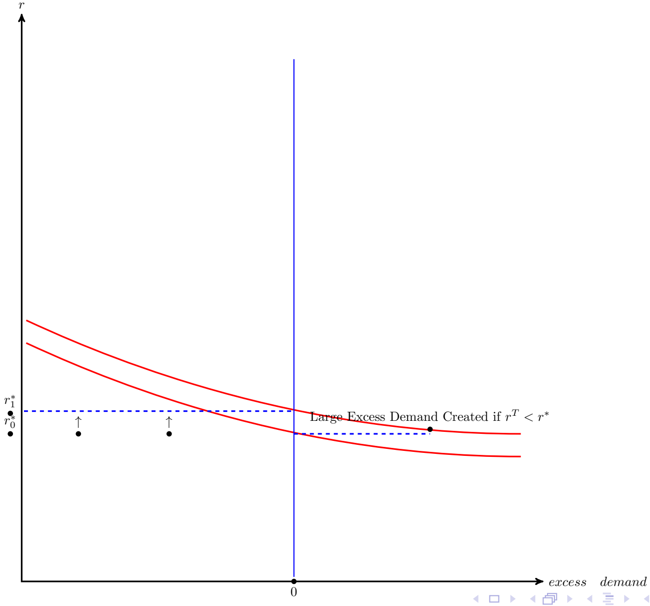
$$i_t = r^T + \pi^T + ...response \quad to \quad current \quad conditions....$$

- where r^T is the CB's view of r^*
  1. if policy anchored on $r^T \neq r^*$ for a long time, would this cause a big problems?
  2. Would we likely notice such an error quickly (ex: would Laubach-Williams provide a good signal)?
- Common perception: this would cause substantial imbalance between demand and supply, and should be apparent quickly.
- Why: Long run excess demand curve thought to be very elastic (possibly infinite)

Long Run Excess demand: elastic case



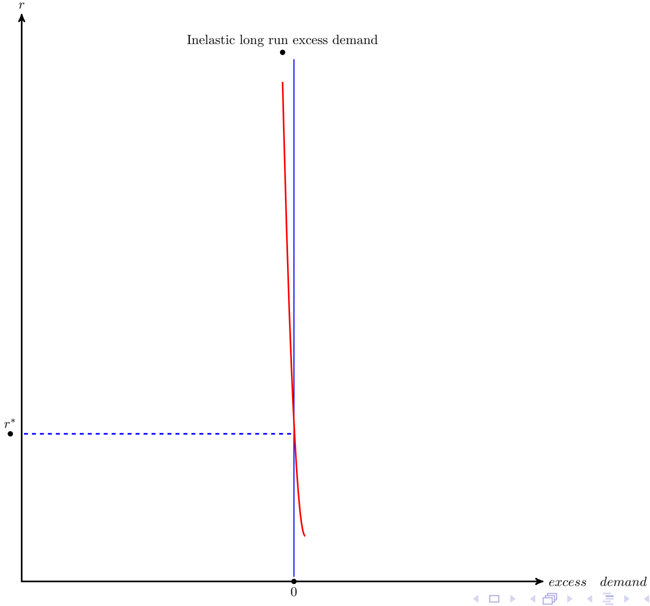
Long Run Excess demand if $r^T \neq r^*$



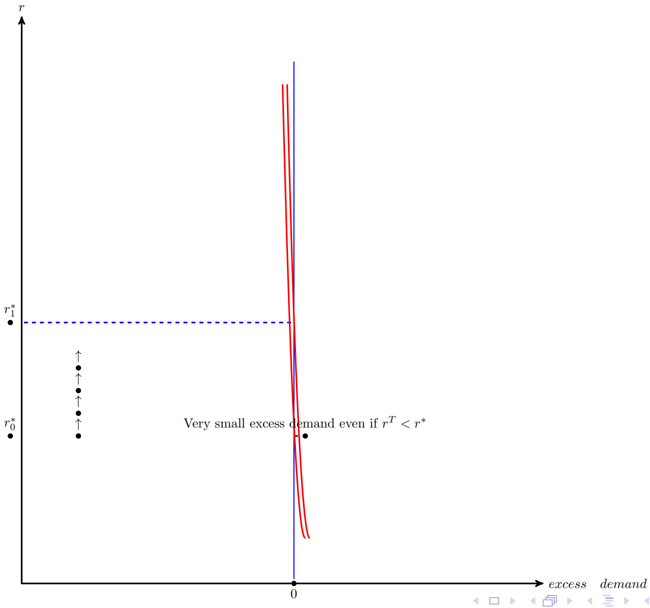
Alternative

- Long term excess demand curve possibly very inelastic (more inelastic than short run).
- If so, precise knowledge of r^* may be quasi-irrelevant, even if r^* is quite variable. Ballpark may be sufficient.
- Central Bank could be playing a coordinating device role
- This could help explain set puzzles

Long Run Excess demand and r^T; elastic case



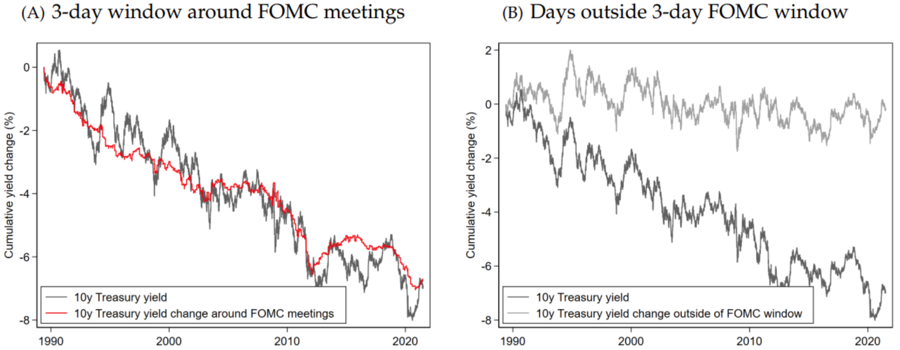
Long Run Excess demand and r^T: coordination?



Puzzles that may suggest coordination role

- Monetary policy decisions have strong effects on long-term real rates (Cochrane & Piazzesi, 2002; Hanson & Stein, 2015; Nakamura & Steinsson, 2018, Bianchi et al., 2022)
    - Most intriguing **Hillenbrand (2023)**: entire post-80s decline in long-term rates has occurred in narrow windows around FOMC dates

Hillenbrand (2023)



What do we know about slope of long run excess demand?

- In work with Paolo Cavallino (BIS), Tim Willems (BoE) we have been looking into this issue
  - Is the elasticity of long run excess demand with respect to r^T likely big or small?
- Paper entitled “Monetary policy along the yield curve: Why can central banks affect long-term real rates?”

Slope of long run excess demand

- Analyzing long run excess demand curve requires
  - allowing that activity may remain influenced by MP even in the long run (ultra Keynesian question)
  - Perspective requires including long term saving/consumption forces
  - In particular, need to go beyond inter-temporal substitution and include lower frequency forces such retirement savings, retirement spending and bequests.

Our setup to examine issue

- Build Finitely-Lived Agent New Keynesian model (FLANK)

- Blanchard-Yaari + retirement state (as in Gertler 1999)
  - Measure 1 of households who work $\rightarrow$ retire $\rightarrow$ die
  - Working households retire with prob δ_1
  - Retired households die with prob δ_2

- Embed in otherwise standard NK setup
- Only unintended bequests in baseline

Model - log-linear equilibrium

- The baseline log-linearized equilibrium without capital

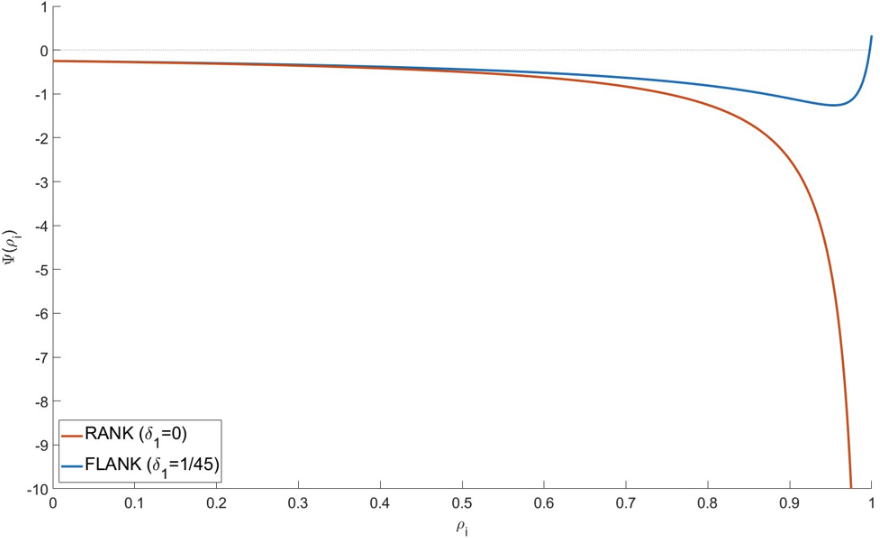
$$\hat{y}_t = (1-\gamma)\,\hat{c}_t^w + \gamma \hat{c}_t^r$$
$$\hat{c}_t^r = \hat{q}_t + \frac{1}{\sigma}\hat{\Gamma}_t$$

$$\hat{q}_t = -\mathbb{E}_t \hat{r}_{t+1} + \beta\,(1-\mu)\,\mathbb{E}_t \hat{q}_{t+1}$$
$$\hat{\Gamma}_t = (\sigma - 1)\,\mathbb{E}_t \hat{r}_{t+1} + \beta\,(1-\delta_2)^{\frac{1}{\sigma}}\,\mathbb{E}_t \hat{\Gamma}_{t+1}$$

$$\hat{c}_t^w = (1-\delta_1)\left(\mathbb{E}_t \hat{c}_{t+1}^w - \frac{1}{\sigma}\mathbb{E}_t \hat{r}_{t+1}\right) + \delta_1\left(\hat{q}_t + \frac{1}{\sigma}\hat{\Gamma}_t\right)$$

$$\hat{\pi}_t = \kappa \hat{y}_t + \beta \mathbb{E}_t \hat{\pi}_{t+1}$$
$$i_t = (1+\phi)\mathbb{E}_t \hat{\pi}_{t+1} + \varepsilon_t^i$$

Effect as we vary the persistence of deviation: RANK vs FLANK



Determinants of excess demand when $r^T \neq r^*$

- When $r \neq r^*$ permanently, the general equilibrium determination of activity driven by
  1. the average MPC our of wealth
  2. Times financial wealth a

$$Y = m\bar{p}c * a$$

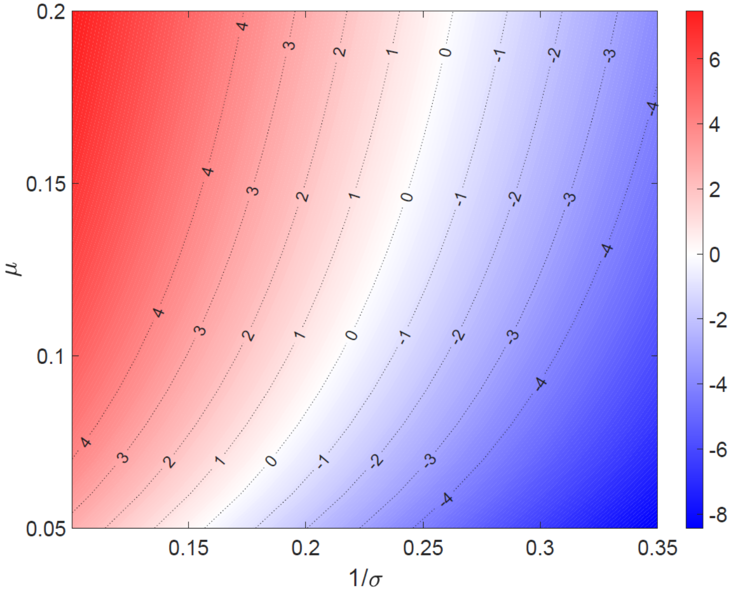
$$m\bar{p}c = [\chi(1-\beta(1-\delta_1)(1+r)^{\frac{1}{\sigma}}\delta_1^{-\frac{1}{\sigma}}+(1-\chi)(1-\delta_1)^{1/\sigma}][(1+r)^{\frac{\sigma-1}{\sigma}}-(1-\delta_2)^{\frac{1}{\sigma}}\beta^{\frac{1}{\sigma}}]$$

- As $\frac{1}{\sigma}$ goes to zero, in GE activity determined by wealth-flow

$$y \approx ra$$

- In data, y highly correlated with wealth flow, but not wealth
- Why may $\frac{\partial y}{\partial r}$ be small? Close offsetting effects if $a \approx \frac{d}{r}$ and IES small

Quantifying effect of persistent (.99) $r^L = r^* + 1\%$



Robustness to extensions

- Physical capital: holding c cst, $\frac{\partial y}{\partial r} > 0$
- Hand to mouth: Literature has taught that optimizers drive the aggregate. Here, activity driven by the anxious rich
- Bequests. Will act in similar direction if caring about flows

Laubach-Williams estimation of r*

- When departing from canonical Euler equation we show that estimates of r^* are a linear combination of actual r^* and the central banks perception of r^* (r^T).
- In particular, the weights depend on slope of long run excess demand.
- If long run excess demand very elastic, works well
- If slope small, mainly reflects own belief.

Conclusions

- Is r^* a good guide for policy?
- Maybe not very important for inflation stabilization, as being 100-200bps above or below may not create much imbalance
- Having a ballpark knowledge of r^* may be sufficient
- Instead, monetary policy could involve a coordination role about long term rates in wide interval around theoretical r^*
- Additional implications for financial stability and inequality.
- View consistent with a set of patterns and puzzles; more exploration/consideration needed !