Lessons of the long quiet ELB
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John H. Cochrane
Hoover Institution, Stanford University

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Lessons of long quiet ELB, huge QE

- Dramatic experiment. $i = 0$. Reserves $= 300 \times$.
- $\pi$ is the same (or slightly lower and quieter)!
Japan has been in a Liquidity Trap ever since 1995
Had essentially 0% nominal rates and passive policy

- Japan. 23 years at the ELB with $\phi < 1$. And...
... and inflation has been below-target throughout. quiet and slightly negative (-1 to -2%).

- 23 years of Friedman optimum ($i = 0, \pi = -r$)?
- 2 atomic bombs (reserves, long ELB). Nothing happened!
- Important and revealing experiment.
Stability lessons

Unstable
\[ \pi_{t+1} = (\lambda > 1)\pi_t + \ldots \]

Stable
\[ \pi_{t+1} = (\lambda > 1)\pi_t + \ldots \]

- Inflation is *stable* and *quiet* at long lasting ELB, & huge interest-paying reserves.
- → with passive policy \((i_t = \phi\pi_t ; \phi < 1)\); even a peg.
- This lesson of the long quiet ELB provides a crucial experiment finally separating previously hard-to-distinguish theories.
Quantity lessons

The optimal quantity of money

- Arbitrary interest-paying reserves do not cause inflation. $MV = PY$.
- We can live the Friedman-optimal quantity of money!
- Reserves can and should be huge, pay market interest.
- No need to control reserve quantity.
- Treasuries should issue reserve-like bonds.
Interest rate lessons

Preview: a common theoretical structure

\[ x_t = E_t x_{t+1} - \sigma(i_t - E_t \pi_{t+1} + \nu_t') \]  \hspace{1cm} (1)

\[ \pi_t = E_t \pi_{t+1} + \kappa x_t \]  \hspace{1cm} (2)

\[ i_t = \max \left[ i^* + \phi(\pi_t - \pi^*), 0 \right] \]  \hspace{1cm} (3)

\[ (E_{t+1} - E_t) \pi_{t+1} = (E_{t+1} - E_t) \sum_{j=0}^{\infty} m_{t,t+j}s_{t+j}/b_t. \]  \hspace{1cm} (4)

- Adaptive or rational \( E \)? (Or halfway, e.g. Woodford k-step?)
- Handling multiple equilibria?
- Does (4) just “passively” determine \( s,.. \)
- Or does it solve all puzzles? (Yes!)
Old K/Adaptive E, Friedman 1968: $i$ peg, $\phi < 1$ is unstable.

Taylor $\phi > 1$ stabilizes. ELB $\rightarrow \phi < 1 \rightarrow$ Deflation spiral.

The deflation spiral did not happen. This theory is wrong.
Rational Expectations / New-Keynesian I

- ELB, peg, trap → $\pi$ is stable. :) !
- But indeterminate hence volatile.
  “Multiple equilibria.” “Self-confirming fluctuations.” “Sunspots.”

$$E_t\pi_{t+1} = r_t + i_t; \quad \pi_{t+1} = E_t\pi_{t+1} + \delta_{t+1}$$

- Taylor $\phi > 1$ makes economy unstable, hence locally determinate.
- $\phi < 1$ volatility is a core prediction.

  ➤ Extra sunspot volatility did not happen. This theory is wrong.
  (Incomplete.) Inflation can be stable, determinate and quiet at ELB.
NK II: Selection by future active policy

- Expected future $\phi > 1$ selects equilibria $\rightarrow$ determinate.
- (Why not 1970s?)
NK II: Selection by future active policy

Small changes to $E_0\pi_T$ can have big effect on $\pi_0, y_0$

- Forward guidance. Woodford: Commitment? Price level target. Schmitt-Grohé: Raise $i_T$ to raise $\pi_T \rightarrow \pi_0$. 

...creates large change today.

Small change in $E$ ...
Promises further in the future have bigger effects! Less P stickiness makes it bigger!

- Promises further in the future have bigger effects today.
- Prices less sticky, faster backward explosions. Frictionless limit.
NK II: Solutions?

- Woodford, Gabaix, others: Abandon rational expectations.
- Woodford k-step. Complex. Only reduces the magnitude.
- Gabaix & others return to adaptive: Spiral?
- Basic stability properties are robust!
Fiscal theory of monetary policy

- Stable, but select equilibria by $\pi_t$ not $\pi_T$.
- Unexpected deflation $\leftrightarrow$ more PV surplus to pay bondholders.
Fiscal theory of monetary policy

- Explains no deflation jump.
- Solves guidance puzzle, frictionless limit.
- Allows (not requires) rational expectations. Simple.
- Saves NK program from self-destruction!
- Only paradox-free simple theory left, consistent with stability.

\[
(E_t - E_{t-1})\pi_t = (E_t - E_{t-1}) \sum_{j=0}^{\infty} m_{t,t+j} s_{t+j}/b_t
\]
Neo-Fisherism

▶ If $\pi$ is stable with passive policy, then if the Fed raises $i$, permanently, then $\pi$ should eventually rise.
▶ Unavoidable consequence of stability. All NK models.
▶ $\pi$ could still decline in the *short run*. Does it? How?

Implication of stability. Theory?

Minimum *necessary* assumptions?
Evidence? Policy implications?
FTMP, long-term debt $\rightarrow$ negative short run response

$\begin{align*}
\dot{i}_t &= E_t \pi_{t+1}; \text{ Nominal market value of debt } / P_t = \text{EPV surpluses.} \\
\text{Higher } i &\rightarrow \text{lower bond price } \rightarrow \text{lower } P.
\end{align*}$
FTMP, long-term debt, sticky prices $\rightarrow$ realistic response

- NK IS and Phillips, FTPL, long term debt, no $\Delta s$, $i$ peg rises.
- Negative only for unexpected $i +$ long term debt.
Neofisherism?

- Long-run: An inescapable result of stability.
- NK+FTPL = FTMP gives temporary negative response with long-term debt and unexpected shock.
- → Schmitt Grohé: Gradual, expected rise!
- US vs. Europe & Japan. Neo-Fisher at work?
- Turkey, Brazil, Venezuela, Argentina? Needs fiscal foundation!


How FTMP provides a simple unified framework for interest rate policy, quantitative easing, and forward guidance, that works even in frictionless models. You add price stickiness to produce realistically slow dynamics.

This talk and slides
http://faculty.chicagobooth.edu/john.cochrane/