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CENTRAL to AMERICA'S ECONOMY™

Permazero as a Possible Medium-term Outcome for the U.S. and the G-7

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The New Normal for the U.S. Economy

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Any opinions expressed here are my own and do not necessarily reflect those of the Federal Open Market Committee.

Introduction

Permazero

- The title of this conference is "The New Normal for the U.S. Economy."
- In this spirit, I will discuss some recent "neo-Fisherian" ideas and what they might mean for the U.S. economy over the medium term.
  - J. Bullard, 2015, "Permazero," speech delivered at the Cato Institute's 33rd Annual Monetary Conference, Washington, D.C.
  - J. Cochrane, 2015, "Permazero," blog post on *The Grumpy Economist*, November 12.
  - J. Taylor, 2015. "Staggering Neo-Fisherian Ideas and Staggered Contracts," blog post on *Economics One*, November 22.

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- These ideas may be quite important for the U.S. and the G-7 over the medium term.
- At this point they are untested and remain topics for monetary policy research.

My Current Policy Recommendations

My current policy recommendations

- I continue to be an advocate for beginning policy normalization.
- My argument has been that the FOMC's goals have been met, while the FOMC's policy settings remain extreme.
- The goals: Labor markets are close to normal, and inflation net of the oil price shock is reasonably close to target.
- The policy settings: The policy rate remains 325 basis points below the FOMC's long-run level, and the balance sheet is more than $3.5 trillion larger than its pre-crisis level.
- Prudent policy suggests edging the policy rate and the balance sheet toward more normal levels.

The 1984-2007 macroeconomic equilibrium

- Implicit in my argument is a desire to return to the 1984-2007 macroeconomic equilibrium. Why?
  - Relatively long economic expansions.
  - Relatively shallow recessions.
  - Relatively good monetary policy.
  - Well understood by policymakers and financial markets.
- That equilibrium was associated with a higher nominal interest rate structure than we have today.
- However, what if we cannot return to such a situation?

Rethinking Monetary Policy

Rethinking monetary policy

- Let's suppose, for the sake of argument, that we will not return to the 1984-2007 equilibrium.
- What are the implications for the future of monetary policy?
- This is an interesting scenario because:
  - The U.S. has already been at the zero lower bound (ZLB) for seven years.
  - G-7 average short-term nominal interest rates will not be far off zero over the medium term, even with liftoff in the U.S. and U.K.
  - Negative shocks are always possible, which may push short-term nominal rates back to the ZLB.

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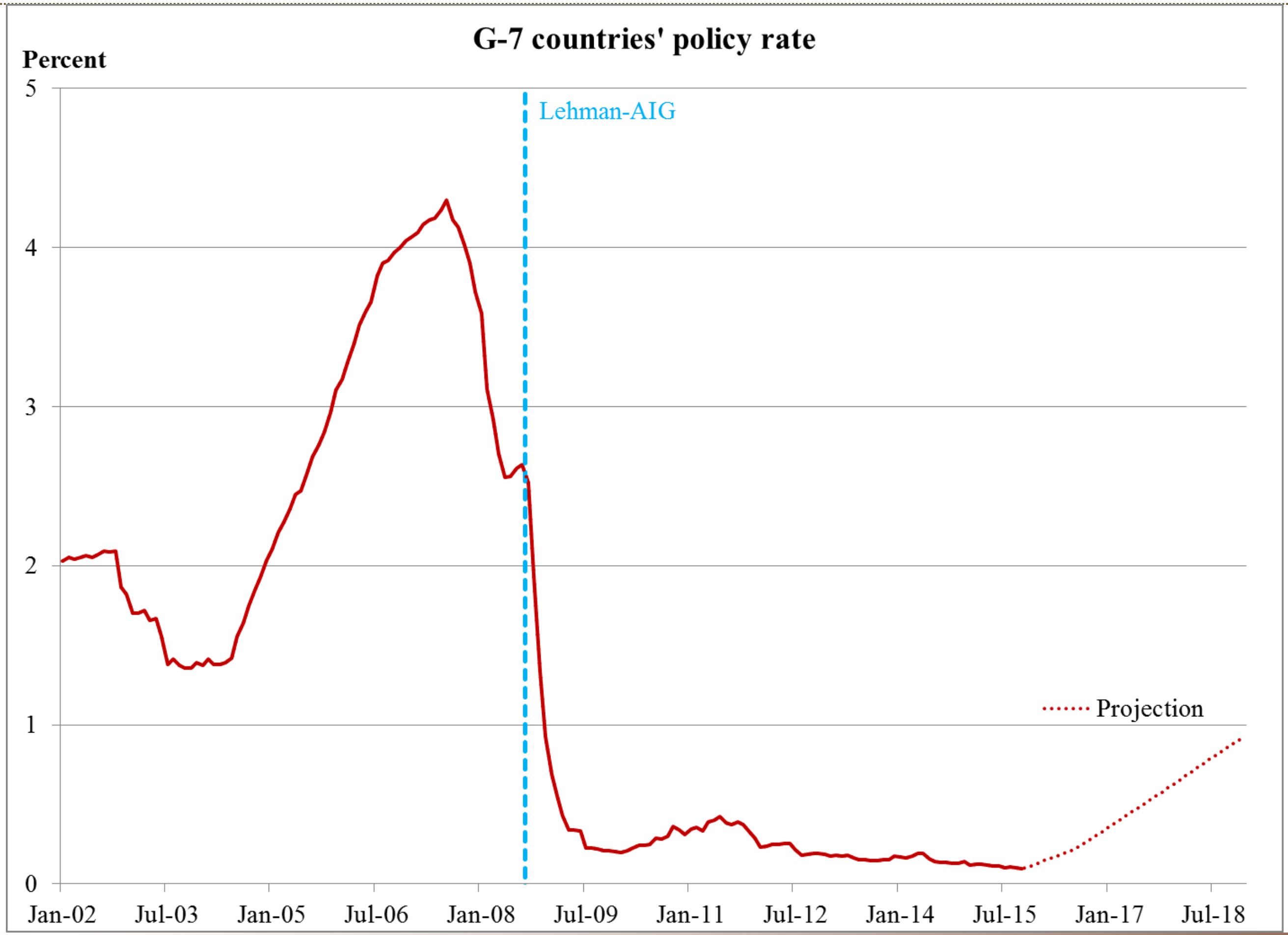
ZIRP as an interest rate peg

- Zero interest rate policy (ZIRP) has usually been viewed as temporary and as part of a policy reaction to a very large macroeconomic shock.
- But ZIRP has been in place for seven years, far beyond ordinary business cycle time.
- Arguably, this is an interest rate peg—a constant value of the policy rate independent of changes in macroeconomic conditions.

An interest rate peg?



Source: OECD's Main Economic Indicators, Bank of England's Inflation Report November 2015 and author's calculations. Last observation: October 2015.

An interest rate peg as poor policy

- 1970s view: An interest rate peg is poor monetary policy.
- See, for instance, Sargent and Wallace (1975).*
- Basic argument: Trying to keep the short-term nominal interest rate unnaturally low would lead to instability in the form of very high inflation.
- Yet today we have had ZIRP for seven years, and inflation remains below target.
  - Perhaps inflation is still in the pipeline?
  - Or, perhaps, is it time for a new model?

* *T.J. Sargent and N. Wallace. 1975. "Rational" Expectations, the Optimal Monetary Instrument, and the Optimal Money Supply Rule.* Journal of Political Economy, *83(2), pp. 241-54.*

Neo-Fisherian ideas

- The core neo-Fisherian idea is that the interest rate peg may not be unstable as Sargent and Wallace suggested, but instead can be stable under some circumstances.
- ZIRP, far from being a harbinger of runaway inflation, would instead dictate medium- and long-term inflation outcomes.
- The "neo-Fisherian" label comes from emphasizing that the Fisher equation (nominal interest rate = real rate + expected inflation) holds in all modern macroeconomic models.
- Implication: If the private sector determines the real rate, then the nominal interest rate policy choice determines the expected rate of inflation.

Cochrane (2015)

Cochrane (2015)

- John Cochrane (2015) provides a recent analysis of this issue in the most standard of macroeconomic models used for monetary policy, the linearized three equation New Keynesian model.
  - J.H. Cochrane, 2015. "Do Higher Interest Rates Raise or Lower Inflation?" Unpublished manuscript, University of Chicago Booth School of Business.
- Cochrane's message: Neo-Fisherian effects can be very important even in the most ordinary of macroeconomic models.

Standard NK model *

- Intertemporal Euler equation

$$x_t = E_t x_{t+1} - \sigma(i_t - E_t \pi_{t+1})$$

- Phillips curve

$$\pi_t = \beta E_t \pi_{t+1} + \kappa x_t$$

  - x_t: output gap
  - i_t: nominal interest rate
  - π_t: inflation

* *For textbook treatments see J. Galí, 2015,* Monetary Policy, Inflation, and the Business Cycle, Second ed, *PUP, Princeton, N.J. and M. Woodford, 2003,* Interest and Prices, *PUP, Princeton, N.J.*

Solution via Werning (2012) *

- Fundamental (i.e., no sunspots) solution

$$\pi_{t+1} = \frac{\kappa\sigma}{\lambda_1 - \lambda_2}\left[\sum_{j=0}^{\infty} \lambda_1^{-j} i_{t-j} + \sum_{j=1}^{\infty} \lambda_2^{j} E_{t+1} i_{t+j}\right]$$

$$\kappa x_{t+1} = \frac{\kappa\sigma}{\lambda_1 - \lambda_2}\left[\begin{array}{l}\left(1 - \frac{\beta}{\lambda_1}\right)\sum_{j=0}^{\infty} \lambda_1^{-j} i_{t-j} + \\ \left(1 - \frac{\beta}{\lambda_2}\right)\sum_{j=1}^{\infty} \lambda_2^{j} E_{t+1} i_{t+j}\end{array}\right]$$

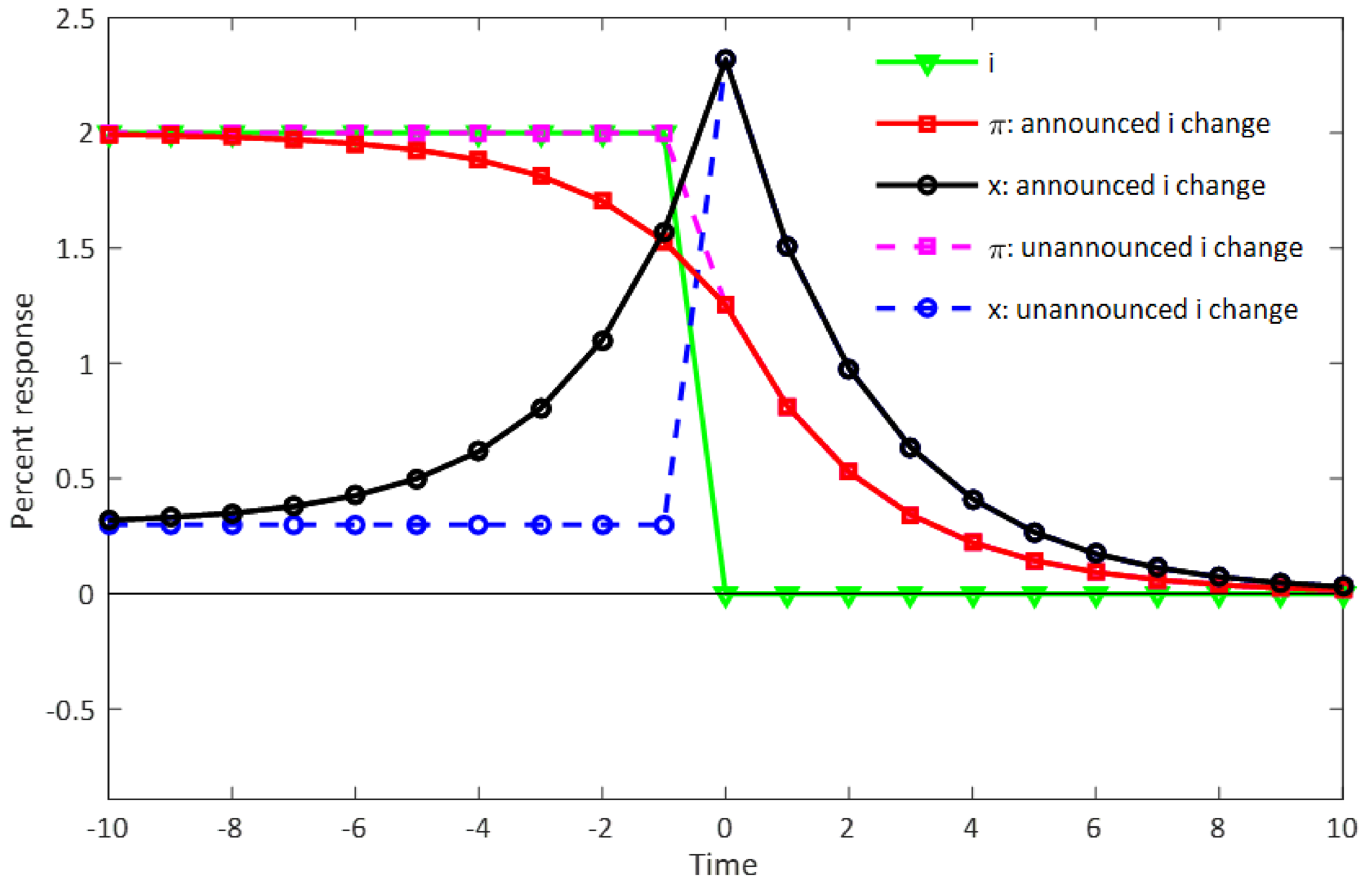
$$\lambda_2 < 1 < \lambda_1$$

* *I. Werning, 2012.* Managing a Liquidity Trap: Monetary and Fiscal Policy. *Unpublished manuscript, MIT.*

Aspects of the equilibrium

- The policymaker is choosing the interest rate sequence, and the rest of the model is tracing out the effects on the output gap and inflation.
- Inflation adjusts to the choice of interest rate sequence.
- A low interest rate sequence choice, such as a ZIRP, puts downward pressure on inflation.
- This is shown on the right hand side of the following chart.
- If the ZIRP continues indefinitely, then nothing further happens in this economy.
    - This is "permazero."

A 200 bps. policy rate decrease



Source: Author's calculations based on Cochrane (2015).

Policy implications for current events

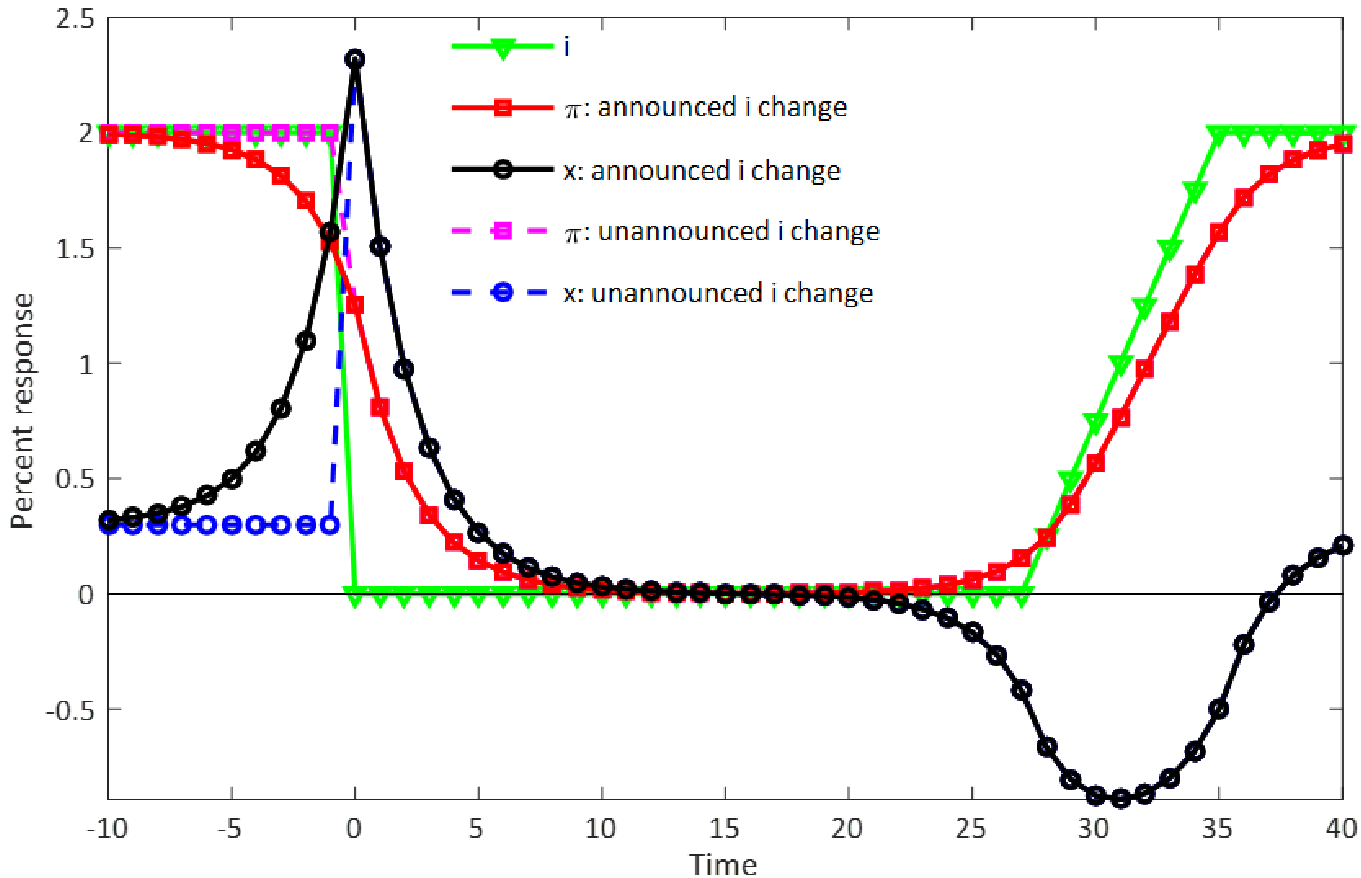
- The policy implications of neo-Fisherian ideas are profound.
- The continuing G-7 ZIRP, far from putting dangerous upward pressure on inflation, may be leading us to an outcome with low nominal interest rates and low inflation that can last for a very long time.
- This contrasts sharply with conventional wisdom and central bank rhetoric, including my own, which emphasizes that the ZIRP is putting upward pressure on inflation and offers the best hope for returning inflation to target.
- Thus neo-Fisherian ideas provide food for thought.

Reversibility

- Authors like Benhabib, Schmitt-Grohe, and Uribe (2001) suggest that a low nominal interest, low inflation equilibrium is a steady state which is difficult to exit.*
- In contrast, Cochrane's analysis suggests that inflation will return to target if the interest rate sequence is set appropriately.
- To see this, consider the same policy experiment as in the previous chart, but after seven years at zero the policymaker gradually returns the policy rate to its previous level.

* *J. Benhabib, S. Schmitt-Grohé and M. Uribe, 2001. The Perils of Taylor Rules.* Journal of Economic Theory, *96(1-2), pp. 40-69.*

A gradual policy rate increase



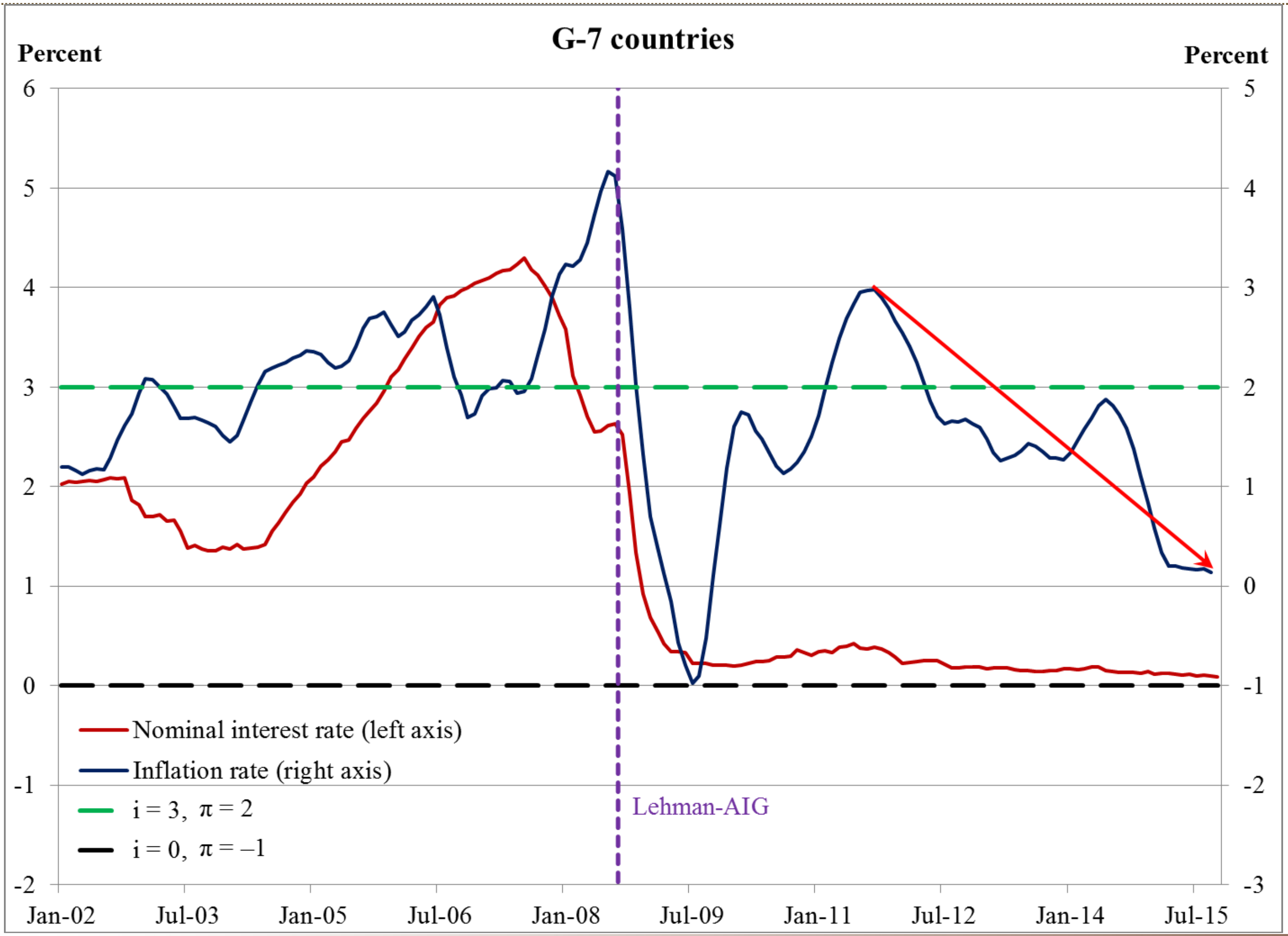
Source: Author's calculations based on Cochrane (2015).

Empirical Evidence

Empirical evidence

- How does it match up with actual experience?
- To try to get a handle on this in one graph, I will look at the G-7 averages for short-term nominal interest rates and inflation since 2002.
  - G-7 policy is unlikely to significantly deviate from ZIRP over the medium term.
- The Lehman-AIG event (September 2008) sent G-7 policy rates to near zero.
- After the crisis, G-7 inflation returned to target.
- Since 2012, however, inflation has drifted lower by about 300 basis points.

G-7 countries' aggregated inflation and policy rates



Source: OECD's Main Economic Indicators and author's calculations. Last observation: October 2015.

Interpreting the empirical evidence

- This could be interpreted as neo-Fisherian effects taking hold.
  - Of course, one has to be careful with any interpretation of the data, since other shocks have occurred during the last 3.5 years, including a very large oil price decline.
- If ZIRP was sufficient to drive inflation back to target by 2012, why has continued ZIRP not kept inflation close to target or pushed it even higher?

Consequences

Consequences

- Suppose we do remain at zero or near-zero policy rates over the medium term due to neo-Fisherian effects.
- What are the consequences? How should we think of such a situation?
- I can think of six areas on which we may want to focus.

Six possible consequences of neo-Fisherianism

- Promises to keep the policy rate at zero simply reinforce the equilibrium and do not have conventional expansionary effects. Policymakers would have to come to grips with this.
- Inflation remains persistently below target. Policymakers may wish to lower the inflation target to match actual outcomes.
- Longer-run growth is driven by human capital accumulation and technological progress. This would continue to be true, so policymakers could expect normal growth.

Six possible consequences of neo-Fisherianism

- The Friedman rule would arguably be achieved. This is a good outcome in many monetary theory contexts.
- The risk of asset price fluctuations may be high, with unknown consequences.
  - A standard theoretical result in the New Keynesian model is that under an interest rate peg there are many alternative equilibria which can be highly volatile.
- The limits on normal monetary policy through its inability to adjust short-term nominal interest rates would continue to put heavy pressure on alternative conceptions of monetary policy, such as quantitative easing.

Summary

Summary

- My current policy position remains in favor of beginning policy normalization in the U.S.
- Consistent with the theme of this conference, I have focused on issues that may be important for the medium- and long-term monetary policy outlook.
- Neo-Fisherian ideas may have an important impact on our thinking about monetary policy in the future.

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