



CENTRAL
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Neo-Fisherianism

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Expectations in Dynamic Macroeconomic Models

University of Oregon

13 August 2015

Eugene, Oregon

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

Introduction

Purpose of the talk

- This talk considers “neo-Fisherianism,” a topic of academic interest, especially within the macroeconomics learning literature.
- The direct links between this topic and current monetary policy are limited.
- Neo-Fisherianism may, however, prove to be an important consideration for monetary policy in the medium and longer term.

Background

- The Fisher equation is central to macroeconomics.
- Benhabib, *et al.*, (2001) combined the Fisher equation with a Taylor-type policy rule and the ZLB.
- They argued that global analysis reveals a second, “unintended” steady state characterized by near-zero short-term nominal interest rates and low or negative inflation.
- Bullard (2010) argued that *unmitigated* ZIRP may cause convergence to this unintended steady state.
- The learning literature says otherwise.

Neo-Fisherianism

- The idea that the Fisher equation could dictate the convergence dynamics over the medium or longer term has come to be called “Neo-Fisherian.”
- The core idea is that maintaining *and committing* to ZIRP for a sufficiently long period of time could lead to low inflation expectations and low actual inflation.
 - Garcia Schmidt and Woodford (2015, slides) verify this possibility under RE in a standard NK model.
- For a discussion, see John Cochrane’s blog, “The Neo-Fisherian Question,” November 6, 2014, and July 14, 2015.

This talk

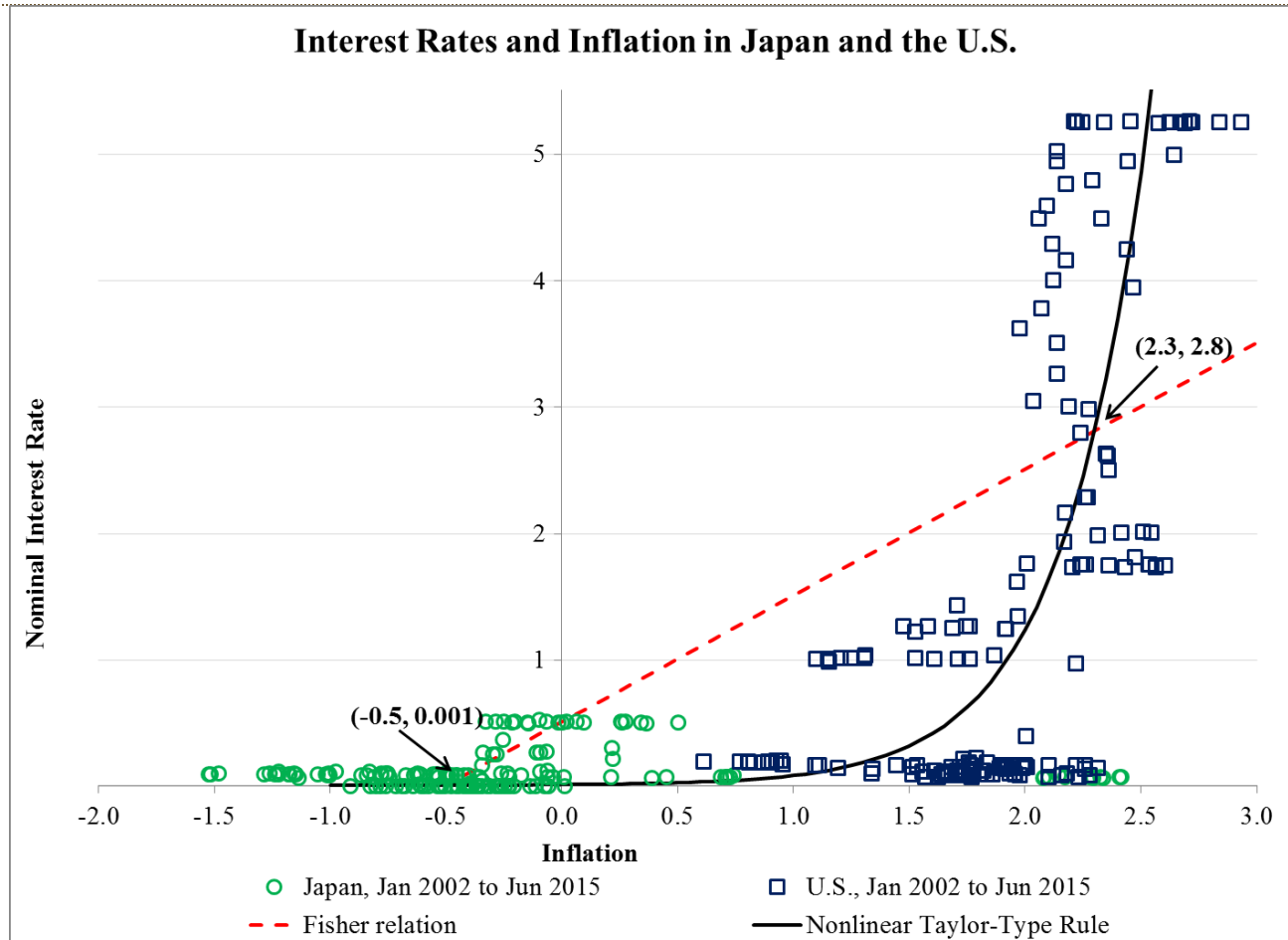
- Japan has been the poster child for the low nominal interest rate, low inflation (LL) steady state for two decades.
 - This motivated the original BSU (2001) “perils” paper.
- In this talk I will look informally at the state of more recent empirical evidence for convergence to the LL steady state across key developed economies.
- This evidence is arguably pointing toward LL convergence.
- The macro learning literature results tend to be at odds with this empirical evidence.

Benhabib, Schmitt-Grohe, and Uribe

What Benhabib, *et al.* (2001) said

- Policymakers control a short-term nominal interest rate.
- Policymakers are rigidly committed to a Taylor-type rule with inflation as the single argument.
 - (How does this mesh with unconventional monetary policy?)
- The rule obeys the Taylor principle: The policy rate responds more than one-for-one with deviations of inflation from target near the “targeted” steady state.
- The zero lower bound constrains the policy rate from below.
- Result: Models with these features have a LL steady state.

The U.S. and Japan through the lens of BSU (2001)



How relevant is the LL steady state?

- Financial markets tend to put high weight on the possibility of convergence to LL.
 - August 10, 2015 news item: A survey at a recent gathering of Wall Street professionals said 78 percent are “more worried about deflation than inflation.”
- The learning literature and policymakers tend to put low or zero weight on convergence to LL.
 - The LL steady state tends to be unstable under standard learning analyses—a sort of “victory” for the learning literature.

Some sample academic literature

- Werning (2012): NK model has no LL steady state included, yet analyzes $R=0$ and associated dynamics.
- Garcia Schmidt and Woodford (2015, slides): LL in NK model is a RE curiosum, and a reasonable departures from RE suggest it is not a relevant medium-term outcome.
- Evans (2013): Alternative NK model with LL as a locally stable “stagnation regime” under learning.
- Schmitt-Grohe and Uribe (2013): Alternative NK model under RE includes LL in which raising the policy rate raises inflation.

Slaves to the NK abstraction?

- Departures from the NK model may fit the data better.
- The stability properties of these equilibria under learning are unknown.
- Andolfatto and Williamson (2015): Assume RE. Allow for liquidity premia on bonds and possible asset shortages. LL can be persistent.
- Caballero and Farhi (2015): Assume RE. Shortage of safe assets. LL can be persistent.
- Eggertsson and Mehrotra (2014): “Secular stagnation” under RE.

The Recent Time Series Evidence

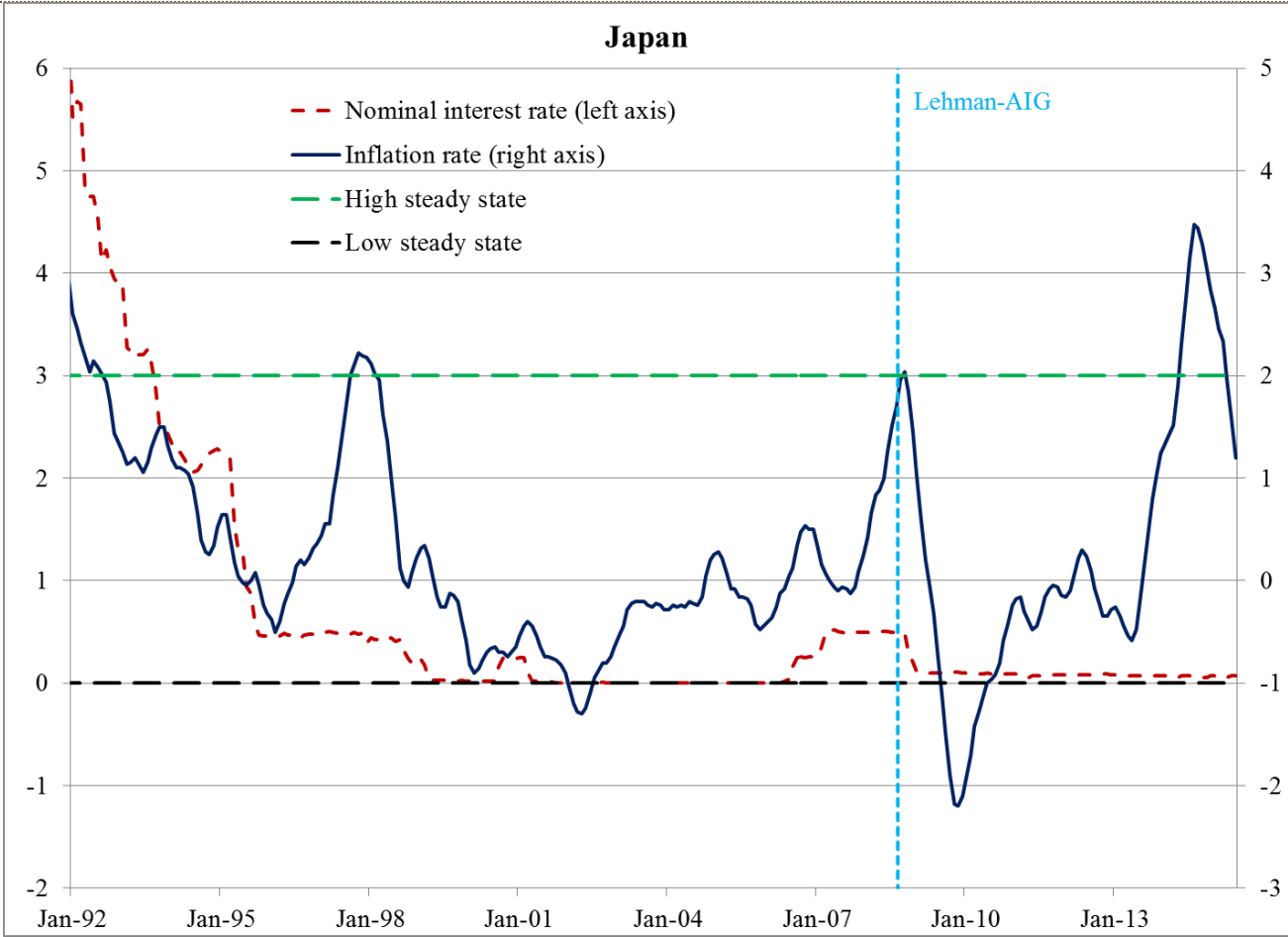
The recent time series evidence

- Let's consider a schematic representation of the two BSU steady states.
- Assume an inflation target of 2 percent across countries.
- Assume a short-term steady state real interest rate of 1 percent for all countries.
- Use headline inflation measured from one year earlier from the OECD main economic indicators for comparability.
 - inflation rates have been smoothed using a MA(5) filter.
- In these charts, the policy rate is on the left axis and inflation is on the right axis, and the difference in scale is the real rate.

Japan

- Japan has spent a lot of time near the LL steady state since 1995.
- Japan did not have an inflation target until recently.
- Abenomics dates from the political rise of Shinzo Abe beginning in late 2012.
- The BOJ “QQE” program has arguably had an important impact and may be moving inflation closer to the 2 percent target.

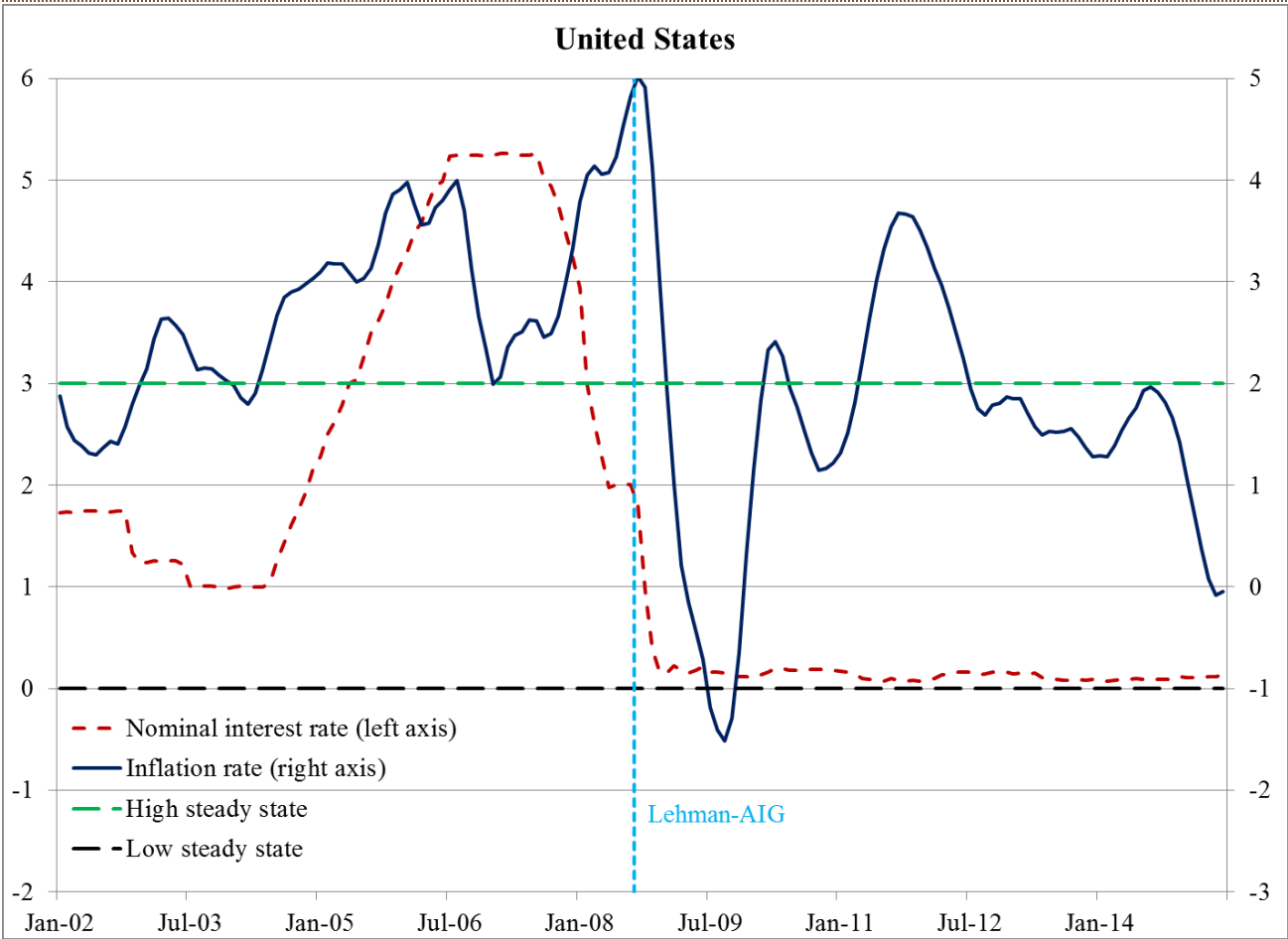
Japan



U.S.A.

- The U.S. had inflation above target as of January 2012, but has since seen inflation decline.
- The Fed pursued unconventional monetary policy following the crisis, once beginning in 2010 and again beginning in 2012.
- The most recent program ended in 2014.
- Those programs have left the Fed with a \$4.5 trillion balance sheet.

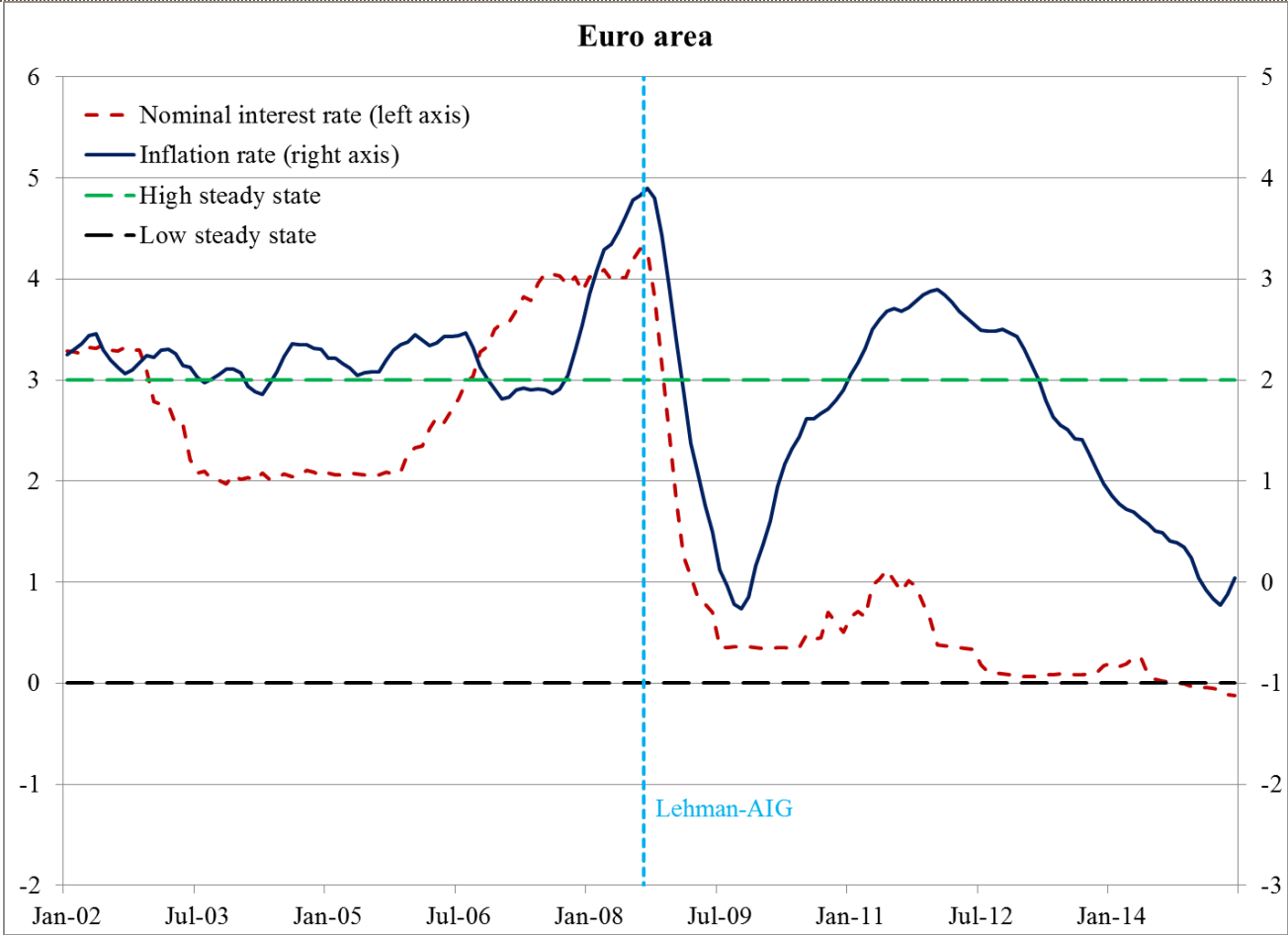
United States



Euro area

- Euro area inflation was above target as of 2012, but has also declined since that time.
- The ECB generally resisted unconventional monetary policy, either forward guidance or quantitative easing, until this year.
- Key motivation: Inflation was falling far below target.
- The current ECB QE program is expected to continue until September 2016.
- Main development in the global economy in the last two years is that the Euro Area has begun to look more like Japan.

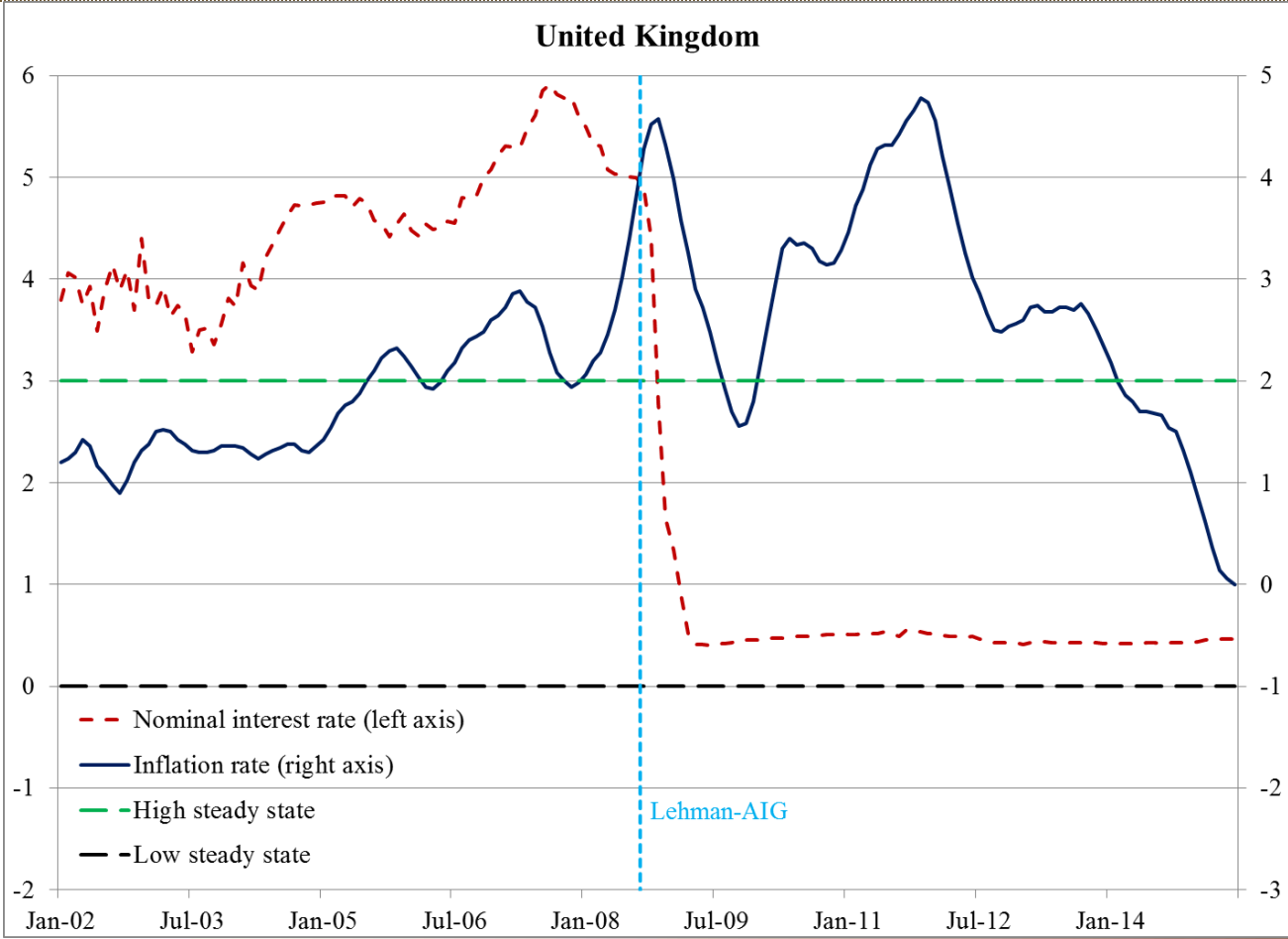
Euro area



United Kingdom

- The United Kingdom generally has been thought to be less affected by neo-Fisherian concerns.
- Inflation has generally been above target since 2008.
- Recently, however, inflation has fallen to low levels.

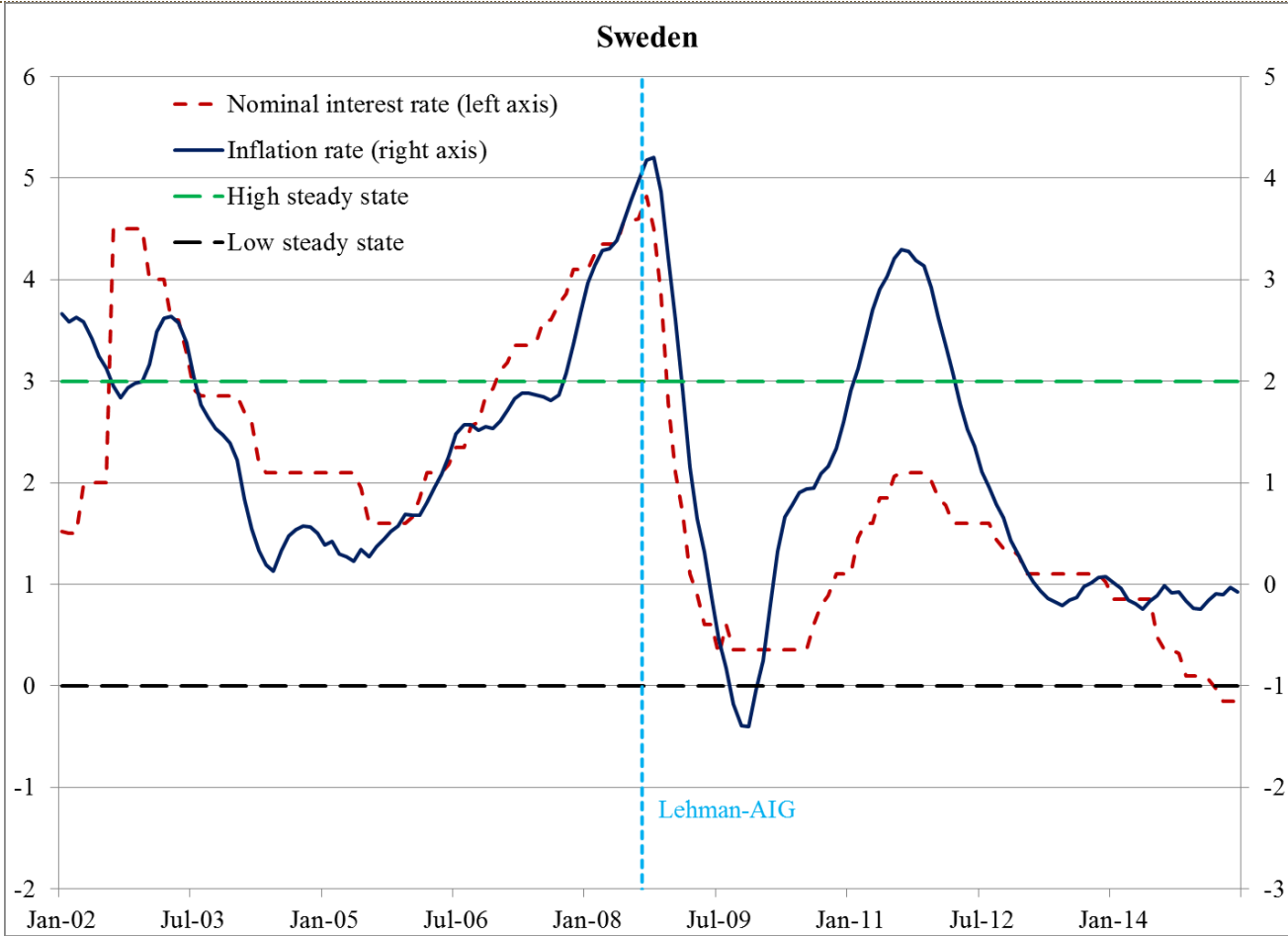
United Kingdom



Sweden

- Let's look at some smaller open economies.
- The Riksbank raised rates to combat rising inflation during 2011 and 2012, but inflation then fell considerably below target.
- Inflation has stabilized at zero over the last two years, and the Riksbank has experimented with negative policy rates recently.

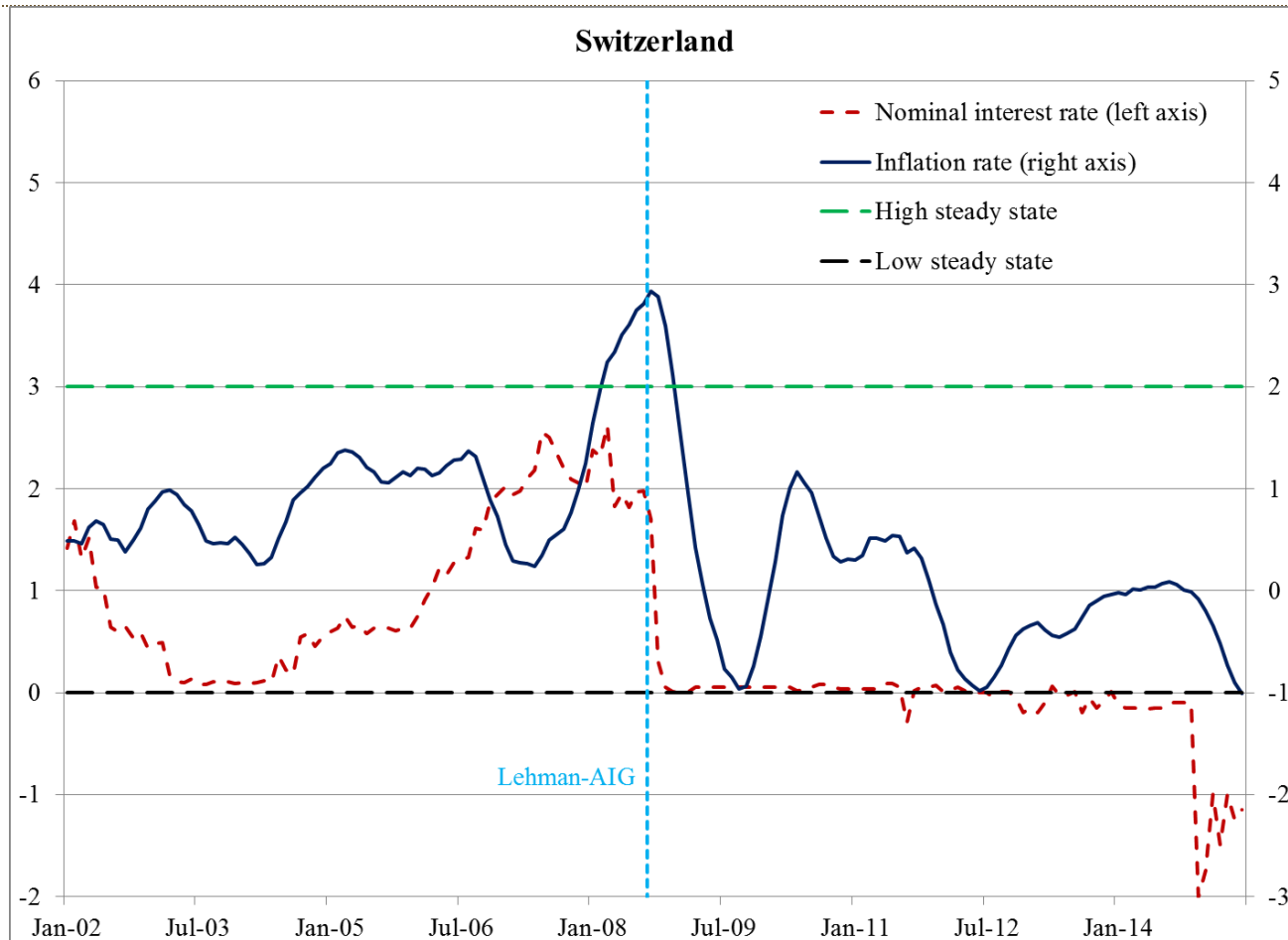
Sweden



Switzerland

- The Swiss economy has arguably been almost as close to the LL steady state as Japan over the last decade.
- Swiss inflation has been zero or negative for 3.5 years.
- The SNB has also experimented with negative policy rates.

Switzerland



Lessons from this evidence

- The policy rates in these countries have been near zero for most or all of the last 6.5 years.
- Conventional NK theory suggests higher inflation should have materialized, and on a time scale far shorter than 6.5 years.
- Let's assess whether these countries are closer today to the targeted steady state or the LL steady state.
- Let's use Euclidean distance in the policy rate and the inflation rate.

Distances from steady states in June 2015

	High s.s.	Low s.s.
United States	3.52	0.97
Japan	3.04	2.20
Euro area	3.68	1.05
United Kingdom	3.23	1.10
Sweden	3.77	0.94
Switzerland	5.13	1.15

Distance from the LL steady state

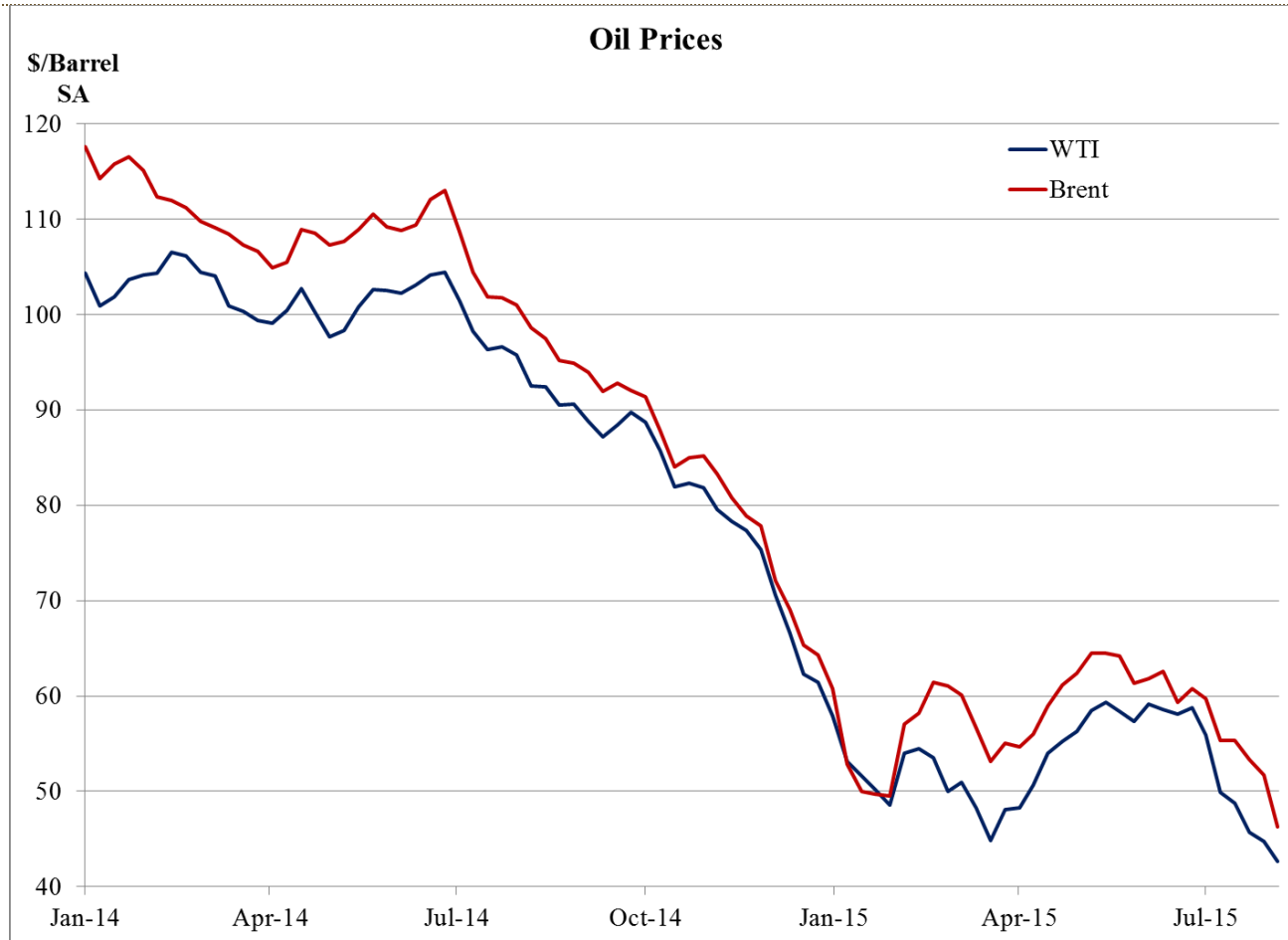
- The table indicates that as of June 2015, all countries are better described as close to the LL steady state than the targeted steady state.
- Some of this is because policy rates remain near zero.
- One could interpret recent QQE in Japan and QE in Europe as indicating that policymakers intend to remain at the zero policy rate for quite some time into the future.
- This commitment may be long enough to strengthen neo-Fisherian dynamics.

Further Considerations

Bottom line

- The bottom line is that a case can be made that the LL steady state has, in an empirical sense, a basin of attraction.
- This conflicts with the general result from the learning literature that the LL steady state is locally unstable.
- There are of course many other possibilities.
- The standard NK model may not be the right abstraction, as Evans, Andolfatto-Williamson, Caballero-Fahri, Eggertsson-Mehrotra, Schmitt-Grohe-Urbe and others suggest.
- Also, other global factors may be important. One is the price of oil.

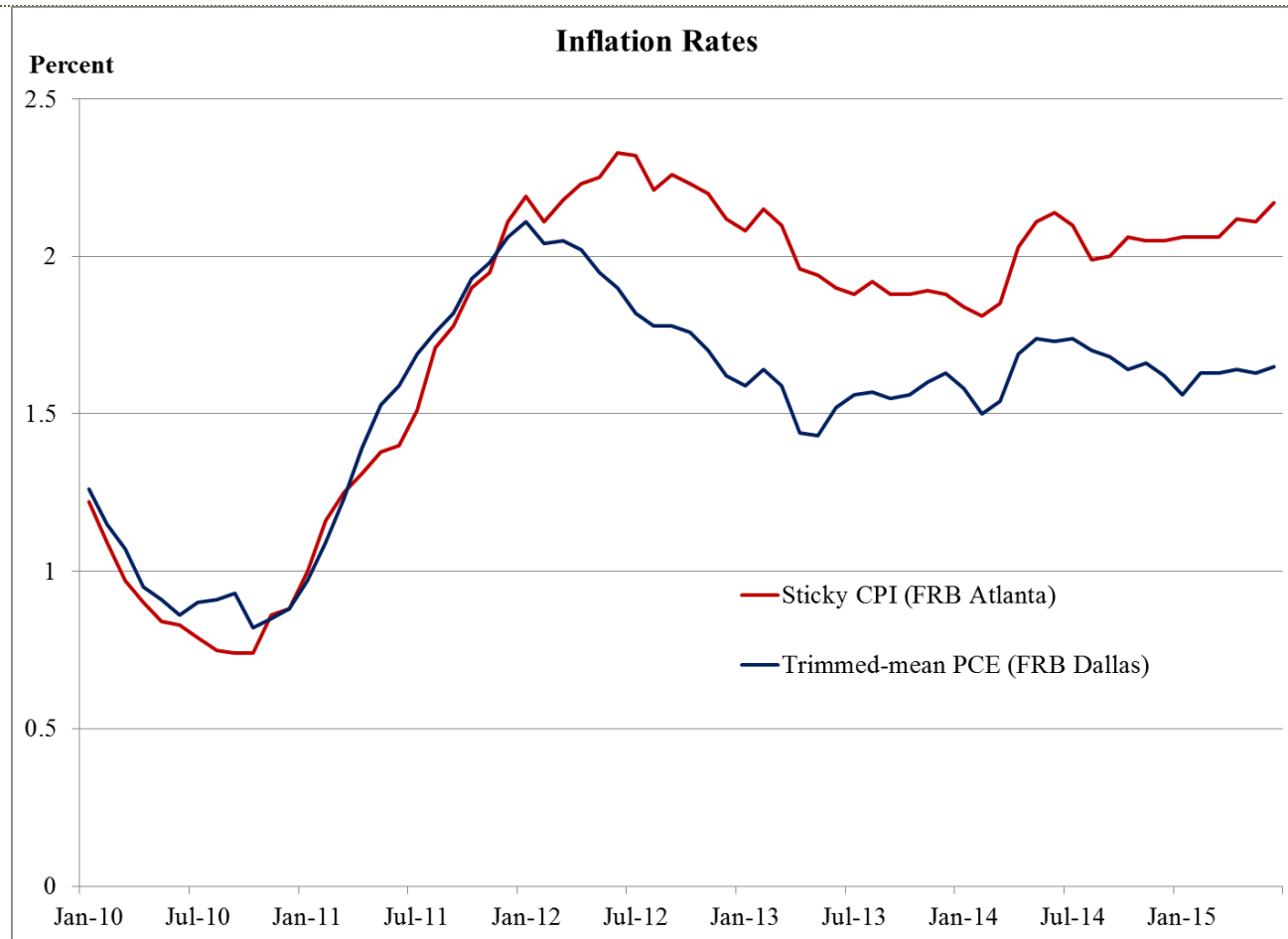
Oil price shock in 2014 has affected inflation



Extent of the oil price effect on measured inflation

- I have argued in interviews and commentary that the Fed should look through the oil price shock and expect inflation to rise in the coming quarters and years.
- A rigorous measure of smoothed inflation like the Dallas Fed trimmed-mean PCE inflation rate suggests headline inflation may be closer to target soon.
- The Atlanta Fed's "sticky price CPI inflation" measure is somewhat above target. True believers in NK theory would target sticky price inflation (see Eusepi *et al.*, 2011).
 - One has to adjust for differences in CPI vs. PCE inflation.

Smoothed measures of U.S. inflation



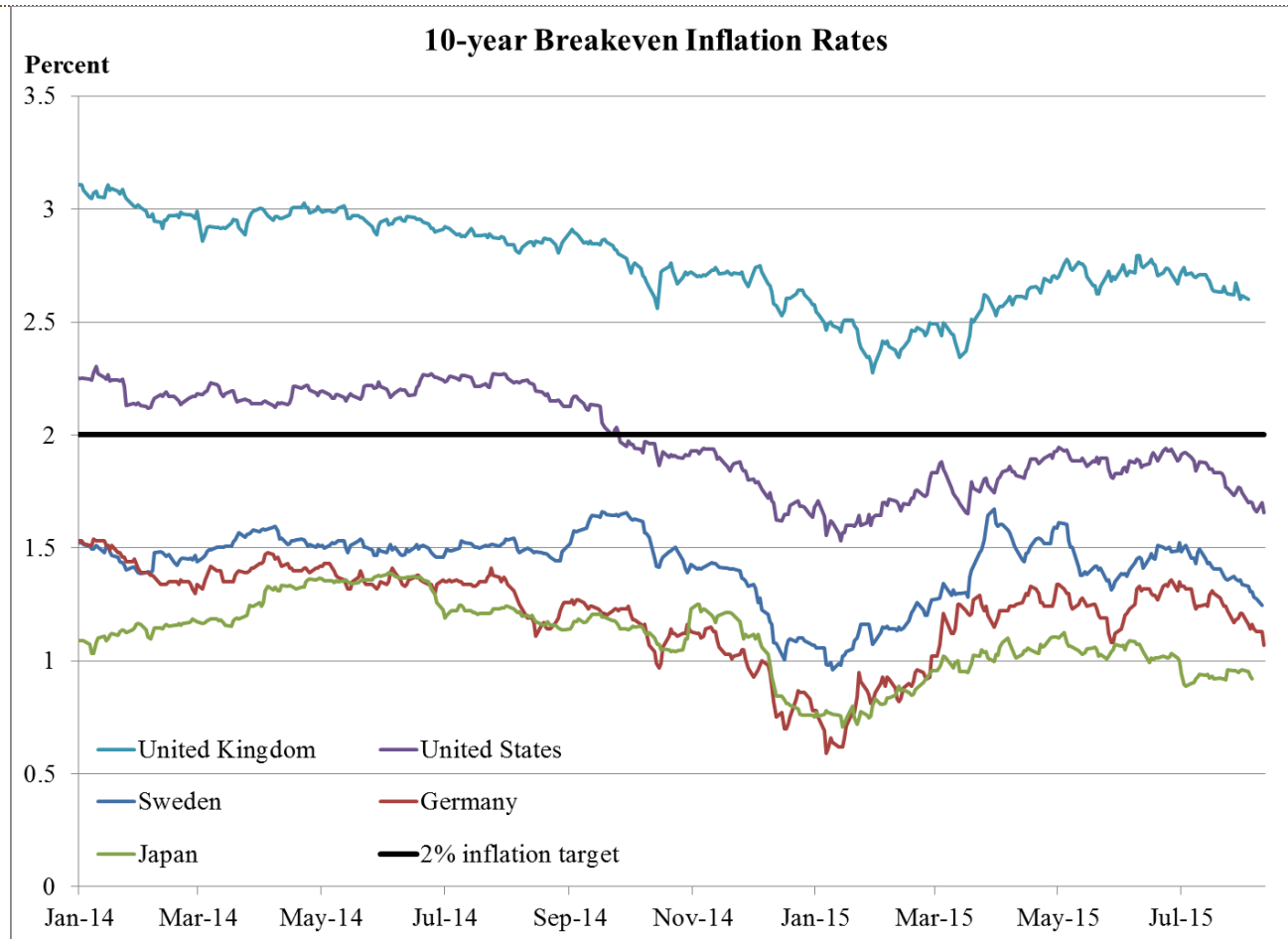
Smoothed measures of inflation were lower in 2010

- In the summer of 2010, I began arguing via the “seven faces” paper that inflation was “too low.”
- At that time, even smoothed measures of inflation had fallen below 1 percent.
- This is apparent in the previous chart.
- Today, smoothed measures of inflation look less threatening, bolstering the case that policymakers may be wise to expect temporary influences on headline inflation to abate.

Inflation expectations

- The neo-Fisherian story requires that inflation expectations tend to fall as the ZIRP policy continues.
- Central banks like the Fed have put heavy weight on the idea that actual inflation expectations are well-anchored.
- One way to look at inflation expectations is to consider TIPS-based measures.
 - For many countries considered here, 10-year expected inflation is below 2 percent. The exception is the U.K.

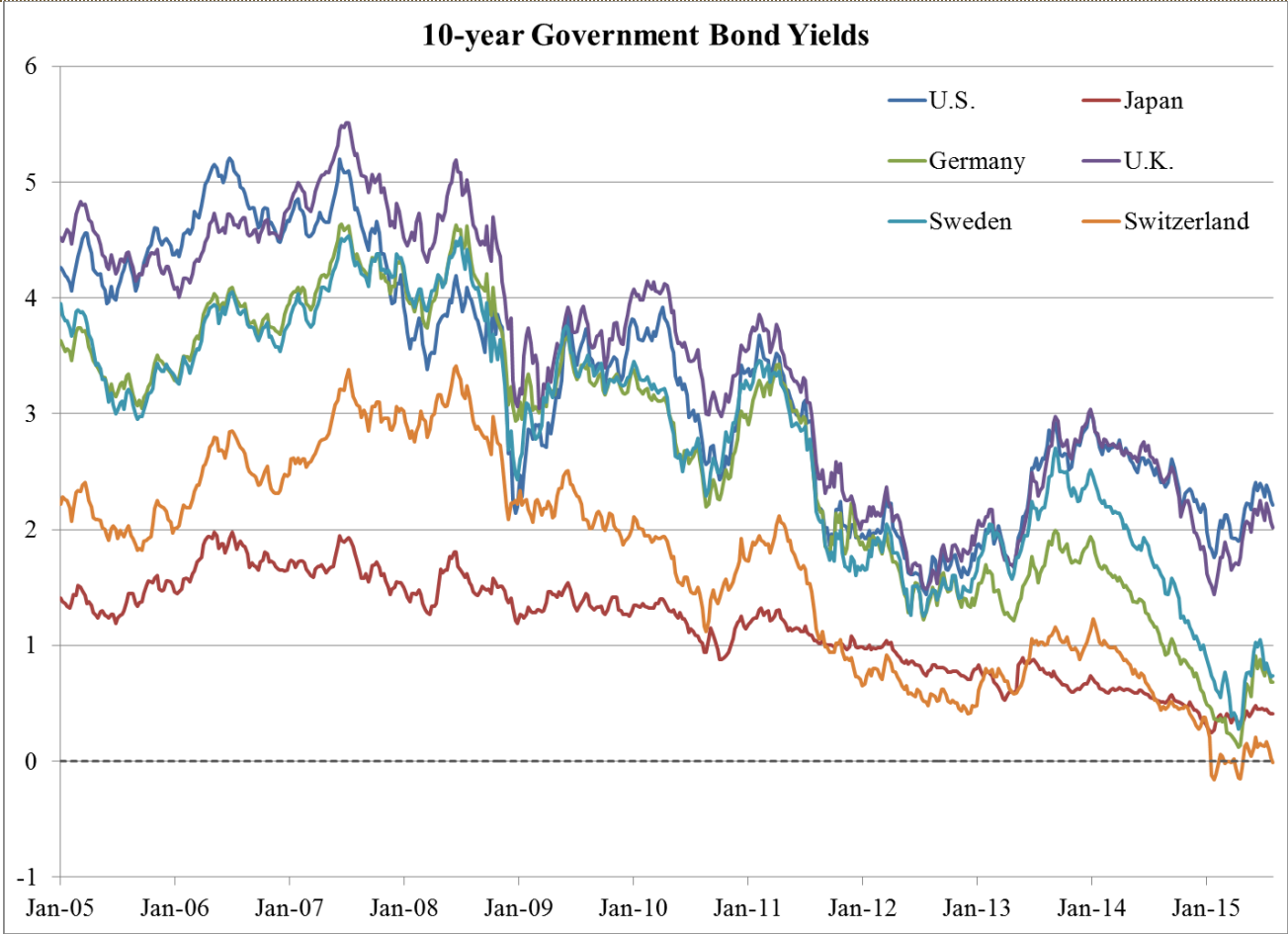
Inflation expectations generally below target



Longer-term bond yields

- The neo-Fisherian story would also suggest that nominal bond yields should decline over time as expected inflation and possibly inflation risk premia would tend to move lower as convergence occurred.
- This may be happening.

Bond yields



Summary

Summary

- Policymaker conventional wisdom and NK theory both suggest low nominal rates should cause inflation to rise.
- The simple empirical evidence reviewed here suggests this is not happening even after 6.5 years of ZIRP.
- There are still reasons for maintaining faith in the conventional wisdom, including a major oil price shock and arguably anchored inflation expectations.
- The general result from the learning literature on the local instability of the LL steady state seems unhelpful—it predicts a natural return of inflation.

Future policy

- Even if the Fed begins normalization this year, U.S. and other rates will still be exceptionally low over the medium term.
- These very low rates may be pulling inflation and inflation expectations lower via the neo-Fisherian mechanism.
- For now, I am willing to argue that current inflation is low in part due to temporary commodity price movements, and that inflation expectations remain well anchored.
- If the neo-Fisherian effect is strong in the quarters and years ahead, however, we will need to think about monetary policy in alternative ways.

References

- D. Andolfatto and S. Williamson, 2015, “Scarcity of Safe Assets, Inflation, and the Policy Trap,” FRB of St. Louis Working Paper No. 2015-002A.
- J. Benhabib, S. Schmitt-Grohe, and M. Uribe, 2001, “The Perils of Taylor Rules,” *Journal of Economic Theory*, 96(1-2), pp. 40-69.
- J. Bullard, 2010, “Seven Faces of ‘The Peril’,” FRB of St. Louis *Review*, 92(5), pp. 339-52.
- R.J. Caballero and E. Farhi, 2015, “The Safety Trap,” unpublished manuscript, Harvard University.
- J. Cochrane, 2014, “[The Neo-Fisherian Question](#),” November 6 blog post on <http://johnhcochrane.blogspot.com>.
- J. Cochrane, 2015, “[Garcia Schmidt and Woodford on neo-Fisherian economics](#),” July 14 blog post on <http://johnhcochrane.blogspot.com>.
- G.B. Eggertsson and N.R. Mehrotra, “A Model of Secular Stagnation,” NBER Working Paper No. 20574.

References

- S. Eusepi, B. Hobijn, and A. Tambalotti, 2011, “CONDI: A Cost-of-Nominal-Distortions Index,” *American Economic Journal: Macroeconomics*, 3(3), pp. 53-91.
- G. Evans, 2013, “The Stagnation Regime of the New Keynesian Model and Recent US Policy, Ch. 3 in *Macroeconomics at the Service of Public Policy*, ed. by T.J. Sargent and J. Vilmunen, Oxford University Press.
- M. Garcia Schmidt and M. Woodford, 2015, “Are Low Interest Rates Deflationary? A Paradox of Perfect-Foresight Analysis,” unpublished manuscript, Columbia University.
- S. Schmitt-Grohe and M. Uribe, 2013, “The Making of Great Contraction with a Liquidity Trap and A Jobless Recovery,” unpublished manuscript, Columbia University.
- I. Werning, 2012, “Managing a Liquidity Trap: Monetary and Fiscal Policy,” unpublished manuscript, MIT.



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