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Remarks on Monetary Policy Challenges

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"Challenges to Central Banks in the 21st Century"

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Abstract

This paper shows that deviations from more rules-based policies that worked well in the Great Moderation or NICE (Non-Inflationary Consistently Expansionary) period have been a factor in the deterioration of economic performance in recent years. The policy deviations explain why the volatility of output increased and took the economy to an inefficient point off the tradeoff curve between output variance and inflation variance. This finding is in contrast to the view put forth by Mervyn King (2012) that the tradeoff curve itself shifted. The finding suggests that the most important challenges for monetary policy in the future are to return to a more predictable strategy for the instruments of policy and to hold to that strategy as closely as possible.

It is an honor to participate in this conference to mark the retirement of Mervyn King from the Bank of England and to thank him for his long public service. I am particularly grateful to Mervyn for his sensible ideas and practical approaches to policy over the years, and especially for our collaborations dealing with the economic aftermath of the 9/11 attacks when I was at the U.S. Treasury from 2001-2005. I will never forget his kindness—such as inviting me to play in a tennis match at Wimbledon with Alan Greenspan and me playing against him and Gus O'Donnell—or his competitive spirit, especially after I took a terrible spill going for one of his drop shots in that match.

Charlie Bean asked that we begin with some "provocative opening remarks" to encourage a lively discussion. In light of the occasion, my starting point will be Mervyn King's Stamp Memorial Lecture given last October at the London School of Economics. In that lecture, Mervyn reviewed—in his usually clear and systematic way—monetary policy and economic

performance leading up to, during, and after the financial crisis. He helpfully reflected on some of his own decisions as made then with information then available in real time. His goal was to draw lessons for monetary policy in the future. See King (2012).

Mervyn organized his thinking in the Stamp Lecture around the policy tradeoff between inflation stability and output stability. The following figure shows the tradeoff exactly as depicted in his lecture (in Figure 5). The variance of inflation is on the vertical axis and the variance of output is on the horizontal axis. Points that are higher or further out represent poorer macroeconomic performance. The tradeoff frontier between the two is implied and can be calculated from dynamic macroeconomic models which incorporate some degree of price and wage rigidity, forward looking behavior, and stochastic shocks.

Point O represents the good performance achieved during the years that have been alternatively called the Great Moderation, the Great Stability, the Long Boom, and NICE (non-inflationary consistently expansionary), a term which Mervyn coined.

Variance of inflation / Variance of output — Taylor Frontier with points A, O, B; Central Bank preferences
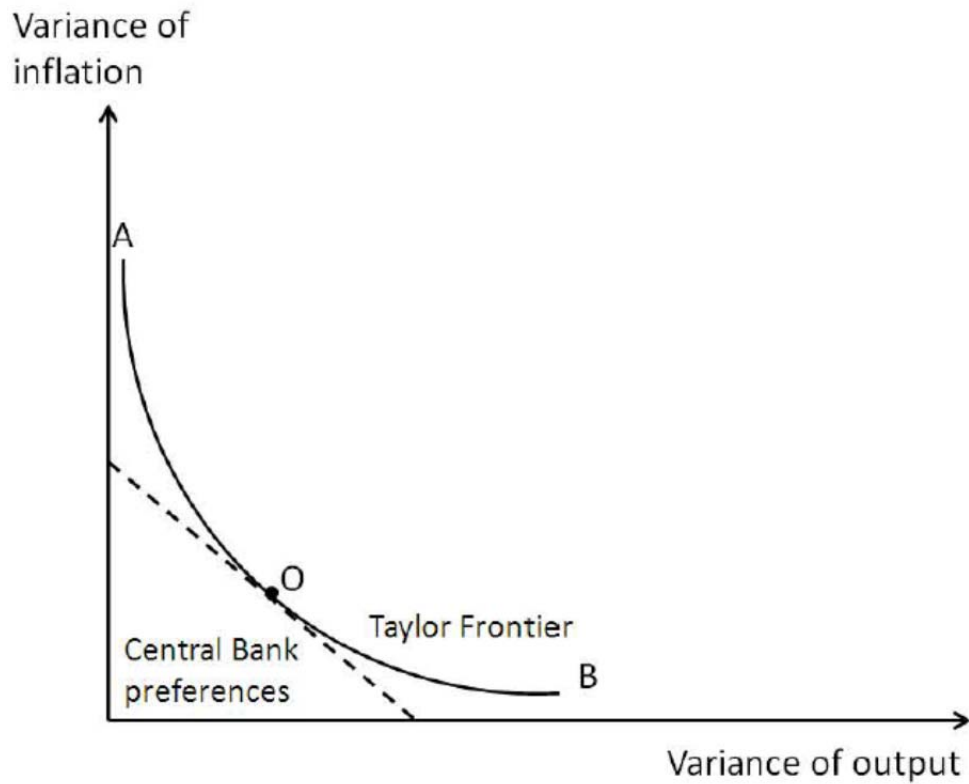
Unfortunately, as we all lament, economic performance has significantly deteriorated since those good old days. Mervyn illustrated this deterioration with the point P shown in the next diagram. Output stability (and employment) performance is significantly worse at point P than at point O and inflation performance is about the same, which is a good characterization of the actual outcomes. Mervyn's Stamp Lecture investigated the causes of this deterioration, and he considered several explanations.

Variance of inflation

A

O

P

Taylor Frontier

B
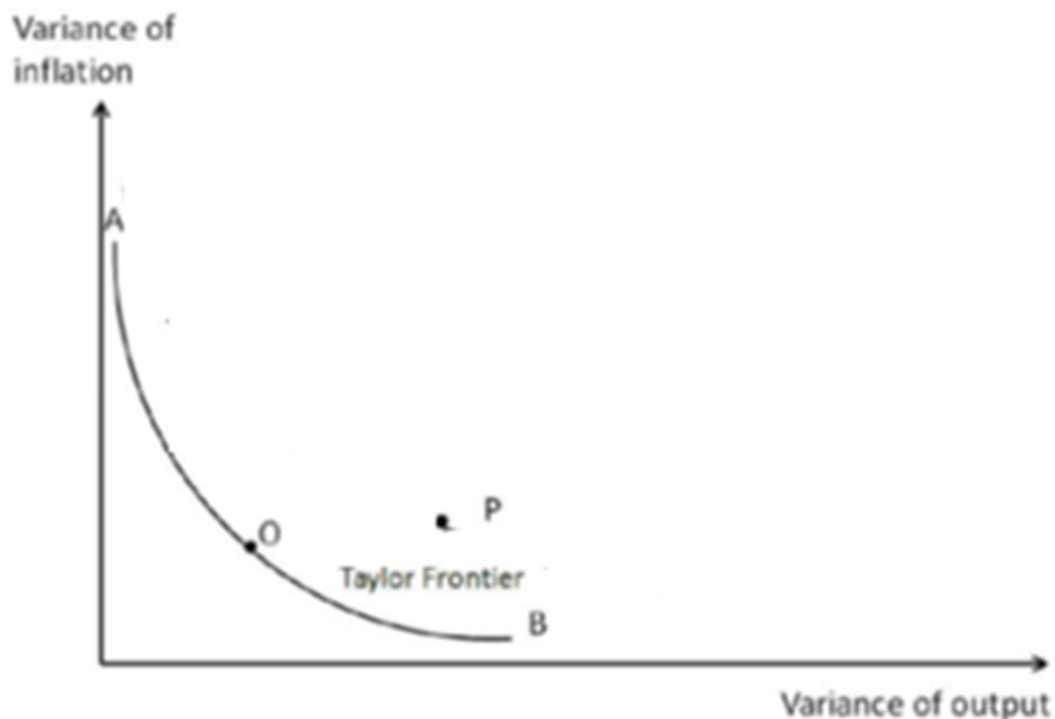
Variance of output

Source: Figures 5 and 6 of Mervyn King's Stamp Memorial Lecture, October 9, 2012

Why the Deterioration in Economic Performance?

One explanation, which Mervyn favors, is that the tradeoff curve moved out along the variability of output axis—as shown in next figure, which is again an exact replica of a chart from Mervyn's Lecture (in Figure 6). Mervyn calls this shifted curve the Minsky-Taylor Frontier. The basic idea, which Hyman Minsky and others warned about, is that stability breeds instability, largely through complacency of investors who, thinking that stability conditions will continue, take too much risk and thereby increase instability.
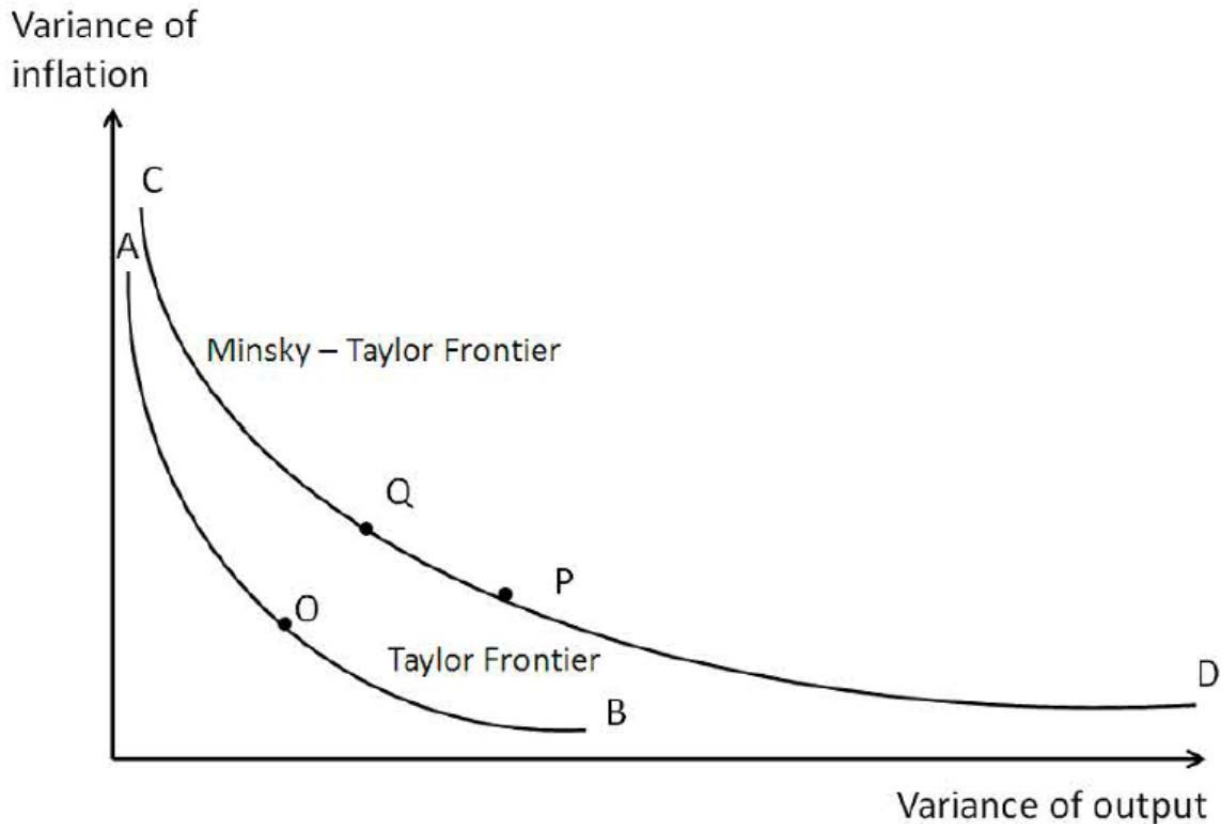
Put simply, Mervyn's hypothesis is that policymakers were fooled by the optimistic location of the tradeoff curve in the first figure. He argues, for example, that this more favorable Taylor curve came from the stable period, and thus policymakers did not realize that it would shift bringing on the unstable period. One pessimistic implication of this hypothesis is that we are destined to operate on the "new normal" Minsky-Taylor tradeoff, perhaps moving over to point Q, though that is still clearly inferior to point O.

I want to make the case for a different, and I think more optimistic, view. It is that the tradeoff curve didn't shift, but rather that, by getting off track, policy brought the economy to the inefficient point P off that tradeoff frontier. Some evidence consistent with this view is that the Taylor curve was not originally estimated during the more stable Great Moderation or NICE

period. Rather it was estimated in the 1970s, which were very unstable. Indeed, economists (for example Bernanke (2004)) had argued that a policy-induced movement of actual performance toward that curve was the reason for the Great Moderation.
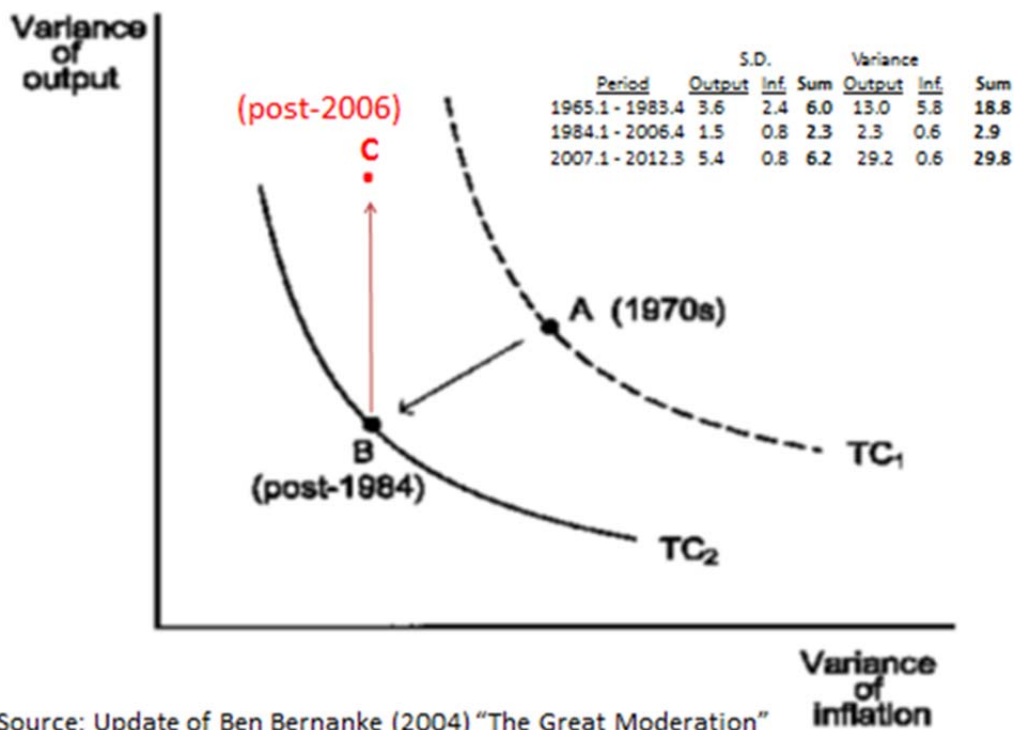
My view is simply that a policy-induced reversal is the reason we had to say goodbye to the Great Moderation. Consider some evidence based on my research on the United States.

The Case of the United States

We can use the same type of diagram and tradeoff concept used in Mervyn's lecture, and it will be convenient here to borrow from the 2004 speech by Ben Bernanke in doing so. In that speech Ben Bernanke was discussing the possible reasons for the Great Moderation, which can be illustrated in this diagram as a move down and to the left as both output stability and inflation stability improved in the 1980s and 1990s compared with the late 1960s and 1970s. Indeed, the discussion of the possible factors and the analytics are remarkably similar conceptually to the question at hand.

The following figure shows a variability tradeoff between output and inflation for the United States. The diagram is a replica of the chart used in Ben Bernanke's 2004 speech, but I have added the point C and the arrow showing the movement toward it. In addition I have added empirical measures of output and inflation performance for the United States in the table at the top of the chart. Note that the axes are reversed in this diagram (as in the curve as originally estimated) compared to Mervyn's chart. Thus the deterioration of economic performance is mainly up rather than to the left, but the story is the essentially same [1]

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[1] You can also look at unemployment: The standard deviation of unemployment around a 5.6% average normal rate (assumed by the Fed) increased from 1.0% during 1984Q1 -2006Q4 to 2.8% during 2007Q1 – 2012Q4.

		S.D.			Variance		
Period	Output	Inf.	Sum	Output	Inf.	Sum
1965.1 - 1983.4	3.6	2.4	6.0	13.0	5.8	18.8
1984.1 - 2006.4	1.5	0.8	2.3	2.3	0.6	2.9
2007.1 - 2012.3	5.4	0.8	6.2	29.2	0.6	29.8

Source: Update of Ben Bernanke (2004) "The Great Moderation"

My empirical research focusses on a shift in monetary policy as a significant cause of this change in performance, though regulatory policy, which failed to enforce or overlooked existing rules, was also a problem. The empirical evidence is based on a comparison of monetary policy decisions in the 1980s and 1990s with those leading up to the crisis, especially in the years 2003-2005. Examining the deviation of policy from a monetary policy rule that worked well during the Great Moderation is one way to do this, but there are many other ways.

Consider the next figure for example. It shows the U.S. inflation rate with several values of the federal funds rate marked in boxes. I originally used this illustration at Milton Friedman's 90th birthday celebration in November 2002 in Chicago, and updated it at the Friedman Centennial celebration last November (see Taylor (2012)). When you look back from the vantage

point of November 2002, you can see how monetary policy—as measured by the federal funds

rate instrument—got more responsive to inflation in the 1980s and 1990s compared with the

1960s and 1970s, and the performance of inflation (and the whole economy) improved greatly.

I cheered this record of improved monetary policy at that time.
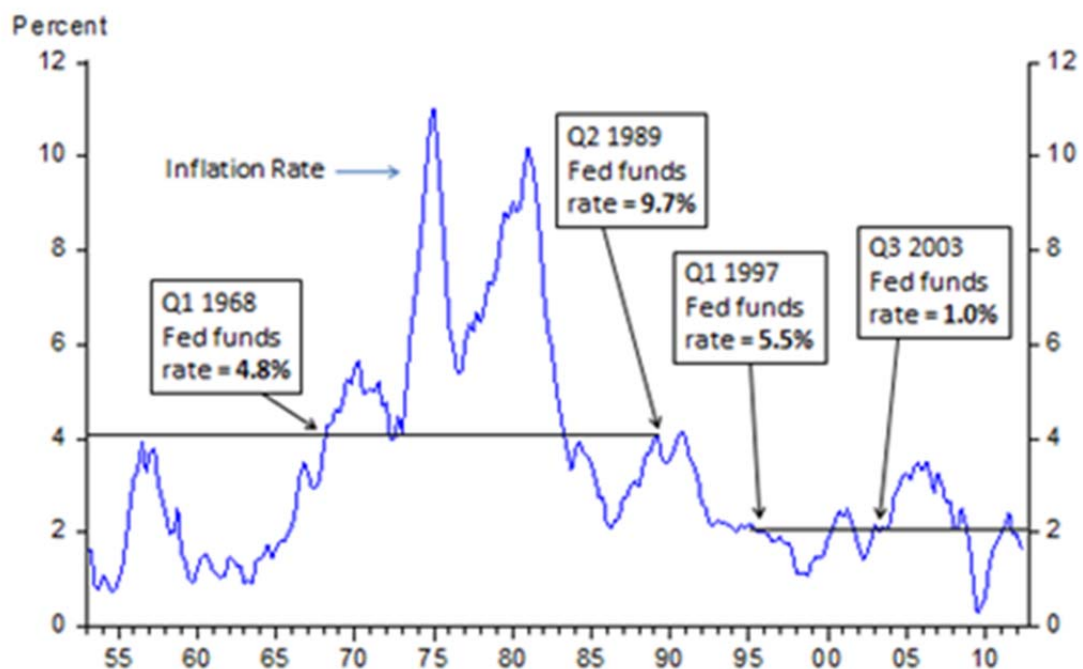
But a policy reversal began around 2003-2005. Note the line drawn at 2% inflation, and

observe that the federal funds rate was much lower in 2003 (1.0%) than in 1997 (5.5%) even

though the inflation rate and business cycle conditions were roughly the same in 2003 as in 1997.

In other words monetary policy—as measured by the federal funds rate reactions—deviated

significantly from the type of policy that had worked well in the 1980s and 1990s. This was a
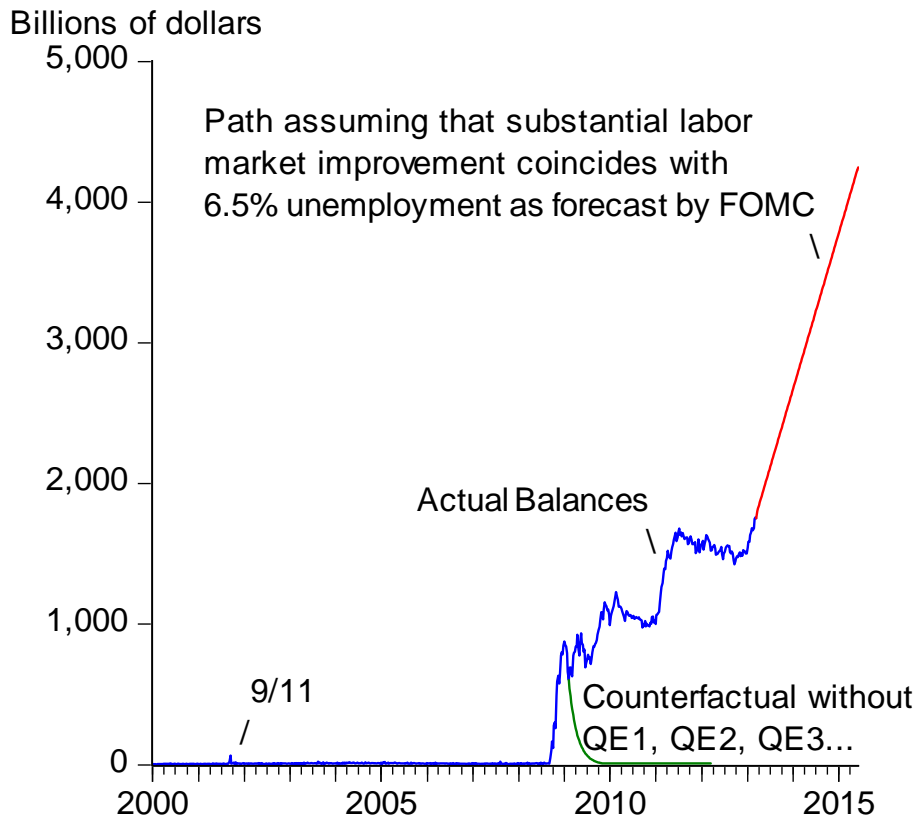
change that characterized the whole 2003-2005 period, which some call the "too low for too long" period.

Continuing Deviations

In my view monetary policy deviations have continued since then, but in different ways. Consider the deposits that banks hold at the Federal Reserve—commonly called *reserve balances* in the United States. These are a good measure of how much liquidity the monetary authorities are providing to the financial markets.

In the next figure you can see the increase in the supply of reserve balances around 9/11/2001 when the financial system was physically damaged by the terrorist attacks in lower Manhattan. This liquidity support was removed quickly after the financial markets started functioning again.

You see another increase in the supply of liquidity in response to the panic of 2008 though it was considerably larger. Both of these are classic responses to financial stress.

Billions of dollars

Path assuming that substantial labor market improvement coincides with 6.5% unemployment as forecast by FOMC

Actual Balances

9/11

Counterfactual without QE1, QE2, QE3...

Banks' Reserve Balances at the Fed

But rather than removing liquidity in 2009 as the short run liquidity facilities were drawn down, the monetary authorities increased liquidity further by buying mortgage backed securities and US Treasury securities as part of their massive quantitative easing operations. Thus, the extraordinary interventions continued long after the panic ended. They continue today and they are expected to continue into the future, with one possible scenario indicated by the upward sloping straight line which increases at $85 billion per month corresponding to one interpretation of the Fed's contingency plans for buying mortgage-backed and U.S. Treasury securities. There is a great debate about the effectiveness of these unconventional operations. Many (including

me) are concerned that the costs outweigh any benefits, but in any case it is an unprecedented departure from a rules-based policy for the instruments.

Many say that these quantitative easing actions were necessitated by the zero bound, but that is at least debatable as you can see in the next figure which shows two policy rules for setting the federal funds rate. The figure is an updated version of a graph produced by Robert DiClemente of Citigroup. Rule 1 is the so-called Taylor Rule and Rule 2 is an alternative to that rule which is sometimes used at the Fed (see Yellen (2012)) with a coefficient on the output gap which is twice as high. Rule 1 did not imply large negative values for the Federal funds rate and thus would not alone justify the quantitative easing. At the least one would have to make the case for Rule 2 before using it to justify quantitative easing.
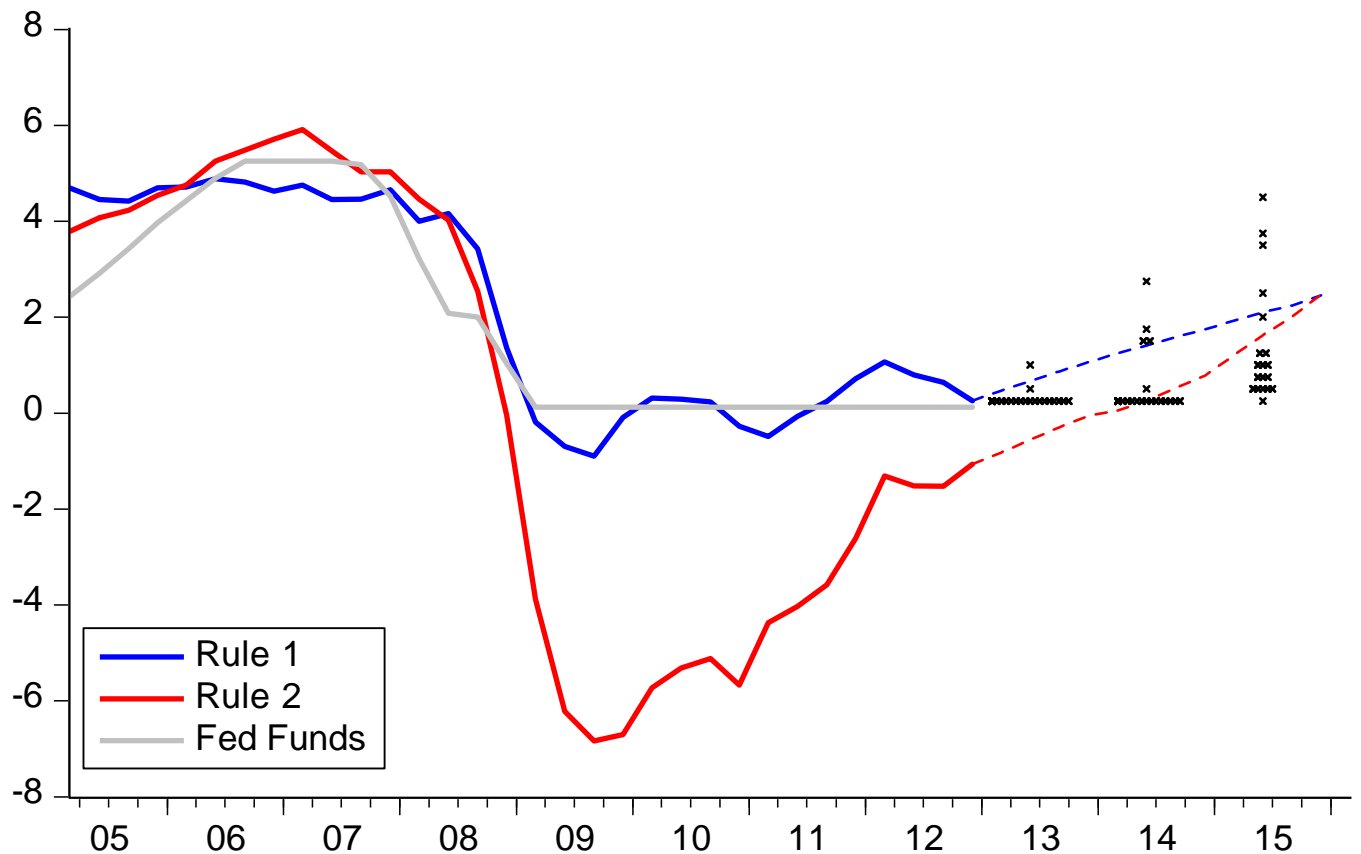
This figure also shows each policymaker's individual forecast of future interest rates (marked by an x) and the implied interest rate settings for each policy rule in the future using the forecasts for output and inflation. These indicate an intention to continue to deviate from rules based policy, whether or not one prefers Rule 1 or Rule 2. The rationale for this deviation is that it helps keep long term interest rates low in light of the zero bound on the short rate. But that rationale also depends on the lower bound actually being a constraint.

International Ramifications

Such deviations from rules based policy can cause another problem in an international setting. Analyzing this problem requires considering the international connections between monetary policies in different countries, another issue raised in Mervyn King's Stamp lecture. Largely because of exchange rate or capital flow concerns, there is a tendency for central banks to follow each other's interest rate or quantitative easing decisions.

Mervyn King explains in the Stamp Lecture why, for example, it was difficult for the Bank of England to maintain an appropriate level of interest rates for the U.K. in 2003-2005 when the federal funds rate was so low. There is also evidence of similar difficulties in the ECB at the same time, and the exacerbation of housing booms in the Greece, Spain, and Ireland were a possible result.

Put simply, interest rates abroad have an influence on central bankers' interest rate decisions. I illustrate this in next figure (drawn from Taylor (2013)), which shows the reaction of two central banks (US and Rest of World) to the interest rate in the other country. When central

banks follow each other in this way, their interest rate decisions are magnified. In this example, a decision to lower the interest rate in the US by 1% ends up lowering the interest rate by 2%.
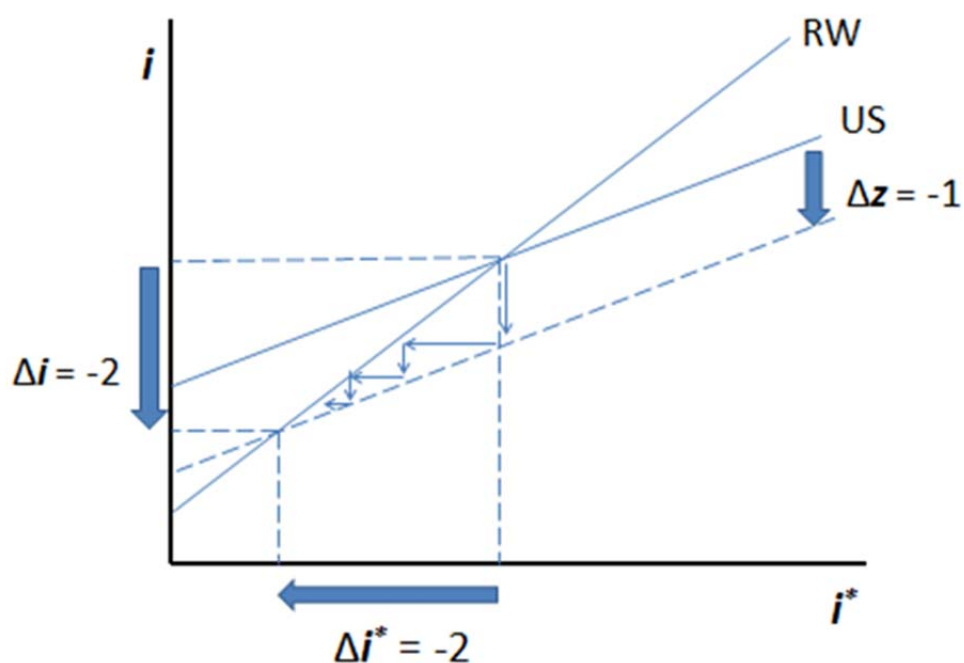
Though the diagram is an oversimplification, magnifications like this are likely to occur in the real world and they are unlikely to be optimal. They may already have been a factor in a commodity cycle in 2009-2011 as emerging market central banks followed the easier policy in the developed economies and then had to pull back. The induced fluctuations abroad in turn cause fluctuations back home.

In other words, deviations from sound monetary policies in the developed countries can end up causing a negative feedback back, via the emerging market economics, on the developed countries themselves. Thus, even if monetary policymakers were only concerned about monetary

policy in their own country, finding a way to deal with these international spillovers would be appropriate for it would have beneficial effects at home.

The Challenges Ahead

In sum, my view is that deviations from more rules-based policies that worked well in the Great Moderation or NICE period have been a negative for the economy. They help explain why we have moved from point O to point P in Mervyn King's diagram or from point B to point C in Ben Bernanke's diagram.

The implication is that the most important challenges for monetary policy in the future are to return to a more predictable strategy for the instruments of policy, to hold to that strategy as closely as possible, and to thereby return to better performance on the tradeoff curve.

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