

Evaluating Monetary Policy at the Zero Lower Bound

By Craig S. Hakkio and George A. Kahn

The zero lower bound and unconventional monetary policies pose challenges for evaluating the stance of policy. We compare an estimate of the stance of policy to the prescription from an estimated policy rule. The comparison suggests the recent highly accommodative stance of policy roughly offsets the earlier under-accommodative stance.

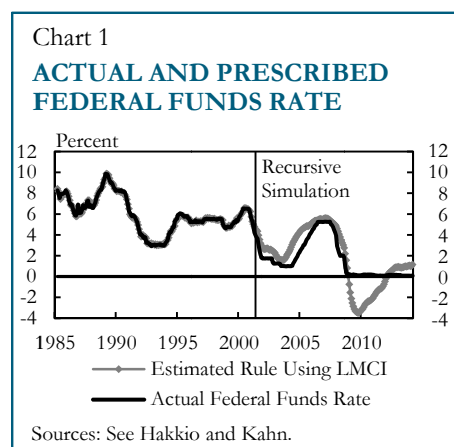
Evaluating the stance of monetary policy has become very challenging. In the past, the target federal funds rate summarized the stance of monetary policy. In the aftermath of the financial crisis, however, the FOMC provided accommodation by lowering its target for the federal funds rate to its effective lower bound and implementing a number of unconventional policies—including large-scale asset purchases and forward guidance. As a result, no single, observable indicator currently summarizes the stance of policy.

This bulletin addresses these challenges by comparing the prescriptions of a policy rule estimated over a historical period of relative macroeconomic stability to a “shadow” federal funds rate. Based on deviations of the shadow federal funds rate from the estimated rule, we find that policy was not sufficiently accommodative in the immediate aftermath of the Great Recession but became considerably more accommodative over time. While the unconventional policies adopted by the FOMC were effective in pushing the shadow federal funds rate well below zero, they did not initially lower it sufficiently to reach the level prescribed by the policy rule. Over time, the prescribed federal funds rate rose above the shadow rate suggesting that monetary policy became more accommodative. On a cumulative basis, the recent highly accommodative stance of policy roughly offsets the earlier under-accommodative stance.

The estimated rule. The estimated rule shows how monetary policy responded in the past to economic conditions. It prescribes a setting for the funds rate that depends on the deviation of inflation from the FOMC’s medium to long-term objective of 2 percent and on two indicators of labor market activity. The rule is estimated from April 1985 to March 2001 to match the period identified by Nikolisko-Rzhevskyy, Papell, and Prodan as rule-based—a period many believe was also characterized by favorable macroeconomic performance.

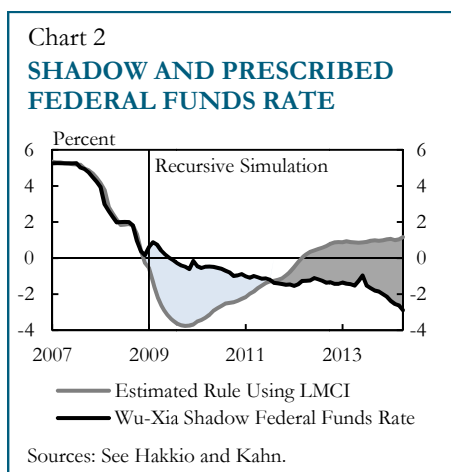
The labor market variables—which come from the Federal Reserve Bank of Kansas City’s labor market conditions indicators (LMCI)—replace the unemployment or output gaps traditionally used in policy rules based on the concern that, currently, the unemployment rate may not be a reliable indicator of economic slack and that the output gap is difficult to measure in real time. As described in Hakkio and Willis, the LMCI combines a wide range of labor market variables into two easily monitored indicators: the “level of activity” and “momentum.”

The actual path of the federal funds rate has deviated considerably since 2001 from the path prescribed by the estimated rule. Chart 1 shows the actual and prescribed funds rate over the in-sample period from April 1985



to March 2001 and the out-of-sample period from April 2001. From 2001 to December 2008, the estimated policy rule prescribed a somewhat less accommodative policy than shown by the actual path of the federal funds rate. After reaching the ZLB, the estimated rule prescribed a highly accommodative policy, with the funds rate prescription falling quickly and reaching a low of minus 3.5 percent in November 2009. The funds rate prescriptions then started rising in late 2009, reached the actual funds rate target range of zero to 25 basis points in March 2012, and has since risen to about 1 percent.

Comparison to the shadow rate. The shadow rate is an estimate of what the federal funds rate would be if it incorporated the effects of both conventional and unconventional policies. It can go negative to the extent that unconventional policies provide additional accommodation at the ZLB. Estimates of the shadow rate come from Wu and Xia. Chart 2 compares the stance of monetary policy as measured by the shadow federal funds rate (black line) to the prescriptions of the estimated rule (gray line). Even with unconventional policies,



the stance of monetary policy was less accommodative than prescribed by the estimated rule from December 2008 to July 2011. However, starting in the second half of 2011, the prescribed funds rate rose above the stance of monetary policy as measured by the shadow rate. In fact, by the end of the sample period in April 2014, the estimated rule prescribed a federal funds rate of about 1 percent, whereas the stance of policy as measured by the shadow rate suggested a rate of about minus 3 percent. But whether this suggests monetary policy was “overly” accommodative is not clear.

Several economists have argued that, when the federal funds rate is constrained by the ZLB, policy should be “history dependent.” Simply put, this means that a period in which policy is constrained from being sufficiently accommodative should be roughly offset by a period in which policy remains highly accommodative. Applying this logic to deviations of the estimated rule from the shadow rate suggests policy was insufficiently accommodative from December 2008 to July 2011, with a cumulative deviation of 66.2 percentage points (in blue). Since then, policy has been more accommodative with a cumulative deviation of 67.1 percentage points (in gray). As a result, the earlier period in which policy was insufficiently accommodative has been more than fully offset.

References

- Nikolsko-Rzhevskyy, Alex, David H. Papell, and Ruxandra Prodan. 2013. “(Taylor) Rules versus Discretion in U.S. Monetary Policy,” working paper, September 2.
- Hakkio, Craig S., and Jonathan L. Willis. 2013. “Assessing Labor Market Conditions: The Level of Activity and the Speed of Improvement,” Federal Reserve Bank of Kansas City, *The Macro Bulletin*, July 18.
- Wu, Jing Cynthia, and Fan Dora Xia. 2014. “Measuring the Macroeconomic Impact of Monetary Policy at the Zero Lower Bound,” May 3. See http://www.frbatlanta.org/cqer/researchcq/shadow_rate.cfm for the data.

For more, see Hakkio, Craig S., and George A. Kahn, 2014. “Evaluating Monetary Policy at the Zero Lower Bound,” *Federal Reserve Bank of Kansas City, Economic Review*, second quarter. The views expressed are those of the authors and do not necessarily reflect the positions of the Federal Reserve Bank of Kansas City or the Federal Reserve System.