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What indicators are being used by the market to judge whether monetary authorities are approaching an exit from their ultra-accommodative policies? I will focus on the United States because of the Federal Reserve's influence and, more important, because it's the situation I am most familiar with.

To set the stage, what are central banks—and the Fed in particular—exiting from? Four instruments are currently being utilized:

- zero short-term interest rates;
- assorted liquidity facilities;
- high levels of excess reserves; and
- asset purchases.

Thus, I would define a true exit as one in which the Fed reverts to targeting a nonzero interest rate and exits the remaining mechanisms. The liquidity facilities, designed to become unattractive as money markets normalize, have been contracting for months and are slated to wind down. However, asset purchases have more than offset the reserve contraction that the reduction of liquidity facilities would otherwise have implied.

Exiting the remaining aspects—zero interest rates, high levels of excess reserves, and asset purchases—will be a significant event for the Fed and for markets more generally. What signposts are investors and traders using to assess whether the exit is approaching?

Answer: The ones the Fed has told investors to focus on. In its November statement, the ratesetting Federal Open Market Committee listed the following elements:

- measures of resource utilization;
- inflation trends; and
- stable inflation expectations.

Resource utilization: Capacity utilization is at very low levels, while unemployment has reached 10 percent. In short, the output gap is very large and should not press against capacity constraints anytime soon.

Inflation trends: Headline inflation has been negative for much of the past year. Core measures are running at around 1.5 percent.

Inflation expectations: Breakeven rates from inflation-protected treasury securities (TIPS) suggest that longer-term inflation expectations have reverted to levels observed before the

crisis. Despite worries about "quantitative easing" and "printing money," the fixed-income market has not, to this point, priced in a high likelihood of inflation that will rise beyond the Fed's implicit target.

Clearly, and not surprisingly, the Fed is placing a strong focus on inflation. However, readings of actual inflation are likely to lag. Therefore, other indicators will have to supplement this list of inflation signals. One candidate is the behavior of commercial banks. Despite high levels of excess reserves, bank lending has contracted over the past year. However, at some point, a reversal of this trend should emerge and could be an important signal by suggesting that both the demand for credit and banks' willingness to lend is reviving. This may signal a healing of the credit intermediation process (one of the important reasons for undertaking the interventions) and indicate that the economy is improving, since stronger credit demand will signal a need to finance growing receivables, inventories, and capital expenditures. In short, it may suggest the need to begin removing accommodation before inflation signals begin to turn amber.

What about logistical and operational issues posed by the exit?

The Fed's balance sheet grew by virtue of its asset purchases. Hence, the simplest means of exit would be to sell those assets. What is the probability of that happening? It borders on zero. Why? The Fed has acquired more than \$1 trillion of mortgage-backed securities (MBS). The purchases have pushed down longer-term rates in general and have compressed the MBS spread in particular. During 2009, the government (mostly the Fed, but also the Treasury) has been the only buyer of MBS. Selling would likely push both the risk-free rate and MBS spreads much higher. The adverse impact on the housing recovery could be significant. The authorities will not wish to risk that outcome.

The more likely approach for exit will be to use the securities as collateral in reverse repos. However, the there are only 18 primary dealers (the Fed's counterparties for such transactions), and they have balance sheet constraints. A broader set of counterparties will be necessary. Money market funds are an obvious choice. But this also has complications. The money market segment grew from less than \$2 trillion in 2005 to about \$3.9 trillion earlier this year—before shrinking by \$650 billion over the past eight months. In other words, the money market fund business is subject to wide fluctuations, which suggests that the Fed may want to limit its reverse repos to this segment.

An alternative for the Fed would be to increase "interest on reserves" (IOR), the interest rate if pays on excess reserves. That would push market rates higher. This method has the advantage of avoiding an abrupt drain, such as that in 1937, and gives the banks a longer period of adjustment to a world of lower reserve balances. However, there is a threshold question that has not been answered.

Assume the Fed raises the IOR to, say, 3 percent and leaves several hundred billion dollars of excess reserves in the system. Is that the same monetary policy as a 3 percent policy rate with minimal excess reserves? Are financial conditions the same even though in the first scenario the system stays awash with significant amounts of reserve balances?

Put differently, the IOR mechanism has surely affected the demand curve for reserves among commercial banks. What is the new equilibrium? How will the Fed know when to stop the draining process? How the Fed navigates this process will have huge implications for markets, and more broadly, for the economy.