

Chapter 18 shows how a simple Taylor Rule can approximate the policy interest rate of the Federal Reserve over much of the past 20 years (See Figure 18.8 on page 447). The rule tells us that the policy rate varies only with changes in the inflation gap (the deviation of current inflation from the central bank's target) and in the output gap (the deviation of current output from potential).

While this Taylor Rule summarizes to a surprising extent the actual practice of the Federal Reserve, the sustained deviations of the policy rate from the rule also are notable and revealing. The most significant negative deviations – where the FOMC set the federal funds rate target below the level implied by the rule – occurred in 1992-93, 2002-05 and 2008-09 (see Figure 1 derived from an update of Figure 18.8).

These periods were characterized by at least one of two factors: (1) unusually stringent conditions across an array of financial markets, or; (2) deflationary worries associated with the *zero bound* (or zero floor) for interest rates. Since both factors apply to the most recent period, it is useful to examine them in some detail.

**Financial Conditions.** When financial conditions stay much stronger or much weaker than usual, policymakers may prefer an interest rate target that differs substantially from a Taylor Rule to stabilize economic activity and inflation.

Financial conditions may be defined as the state of a broad array of markets, rather than a small group of markets. Conditions may include both the prices of assets and the volume of transactions in these assets. Euphoric conditions (see Chapter 8 for a discussion of asset bubbles) often are associated both with high prices and volumes, while depressed conditions are linked with the opposite states. While central bank policy influences financial conditions, the link is loose: financial conditions may vary substantially from what usually would be associated with a specific policy rate target.

Financial conditions affect policy choices because they alter prospects for private spending and for inflation. High asset prices and large volumes of credit make it easier for households to spend out of wealth, and for households and firms to borrow against their collateral. Plunging asset prices and the loss of credit work in the opposite direction. Consequently, financial conditions can signal policymakers about future economic activity and inflation that eventually affect the Taylor Rule.

How can we measure *broad* financial conditions in a way that helps anticipate future economic activity and inflation? The answer may change over time as a financial system evolves. The answer also may differ across economies because their mechanisms of finance vary. In the United States, securities markets are larger and more important than is the case in Europe or Japan, where banks remain the principal source of finance. Consequently, a summary index of U.S. financial

conditions (FCI) is likely to include market indicators such as equity prices and credit spreads but could also include indicators of bank credit supply.

Because financial markets vary frequently, a slavish response to these changes can make monetary policy unnecessarily volatile. However, attention to persistent swings in broad financial conditions can be an invaluable policy guide.

For example, in the 2004-06 period when the Federal Reserve was raising the target federal funds rate, some observers believed that the U.S. economy would slow as policy rates rose. However, from the perspective of *broad* financial conditions, policy remained accommodative, and the economy continued to grow vigorously. Note, for example, that a survey of bank lending officers shows little indication that banks were tightening lending standards until the financial crisis began in 2007 (see Figure 2). This pattern, along with many other financial indicators, suggests that the Fed hiked rates too cautiously, a view reinforced by the subsequent pickup of inflation.

The same survey suggests that the Fed was too cautious in cutting policy rates in 2007-08 when broad financial conditions plunged. At the time, policymakers may have viewed their actions as aggressive compared the speed and scale of policy rate cuts in recent decades. However, the financial crisis was more intense than any experienced since the Great Depression, so the survey in Figure 2 suggests that Fed policy did not keep pace.

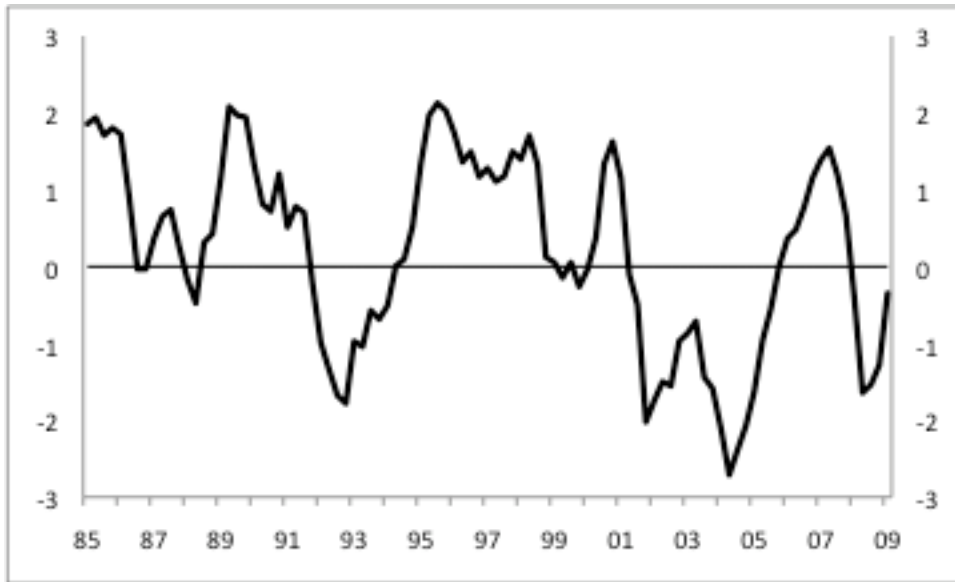
**The Zero Bound.** There is nothing to stop the policy rate indicated by the Taylor Rule from sinking below zero if inflation is low and economic activity is weak. In practice, however, central banks *cannot* target a negative interest rate. The reason is that banks and individuals can always hold cash (with a zero rate), so they would not lend to others at an interest rate less than zero. As a result, the policy rate has a floor at zero, known as the *zero bound*. If the Taylor Rule indicates a sharply negative rate, a zero rate target likely will be too high to counter economic weakness and to prevent an eventual descent into deflation.

In light of the zero bound, central banks wish to avoid circumstances that would require a negative policy rate. For example, a central bank may set its policy rate temporarily below a Taylor rule rate if the economy is weak and inflation is low and falling below target. This approach accepts as a cost the possibility that inflation will rise temporarily above the target in the future. The benefit is a lower risk of hitting policy's zero bound. Such *risk management* thinking was prevalent among U.S. policymakers when the policy rate was below the Taylor rule rate in 2002-05.

For the first time in at least 50 years, Taylor Rule rates for 2009-10 appear to be less than zero in the United States and several other economies (based on current and projected inflation and economic activity). With inflation close to zero (or lower in Japan) and economies weak across the industrial world, subzero Taylor Rule rates have become the norm.

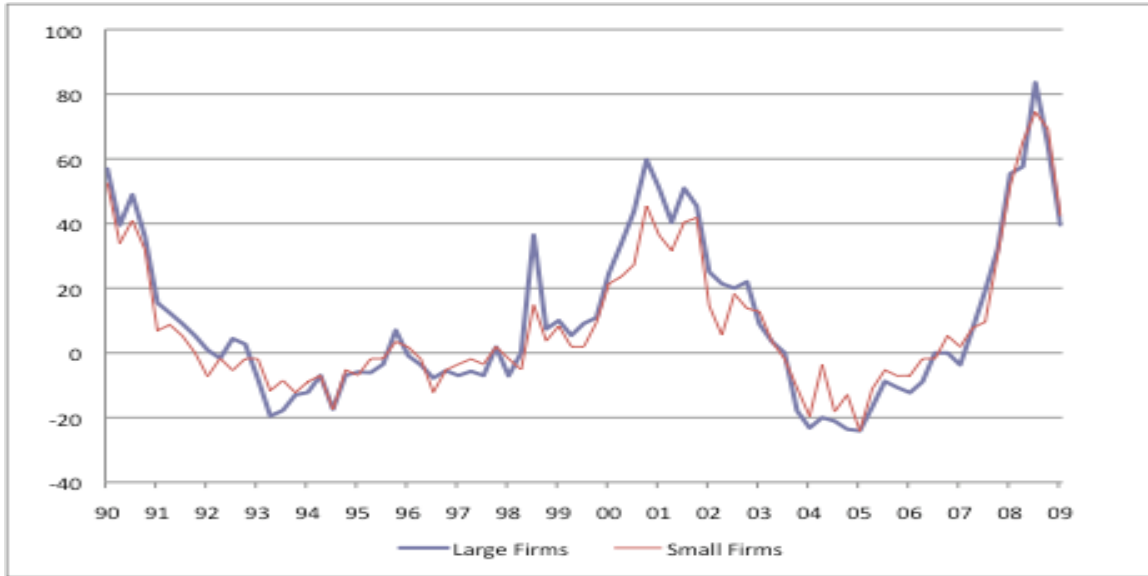
In these extraordinary circumstances, policymakers wishing to provide monetary stimulus at the zero bound have been compelled to implement *unconventional policy* approaches, such as *policy duration commitments*, *quantitative easing*, and *credit easing* (see the subsequent modules for Chapter 18). In the absence of such unconventional policies, even a zero policy target rate may restrain economic activity and lower inflation undesirably further.

Figure 1. Fed Funds Rate *Minus* Taylor Rule Rate (Percent), 1982-1Q 09



Sources: Board of Governors of the Federal Reserve System, Bureau of Economic Analysis, Congressional Budget Office, and authors' calculations.

Figure 2. Net Balance of Banks Tightening Lending Standards for Small and Large Firms (Percent), Apr 1990 - Apr 2009



Source: Federal Reserve Board Senior Loan Officer Opinion Survey on Bank Lending Practices.