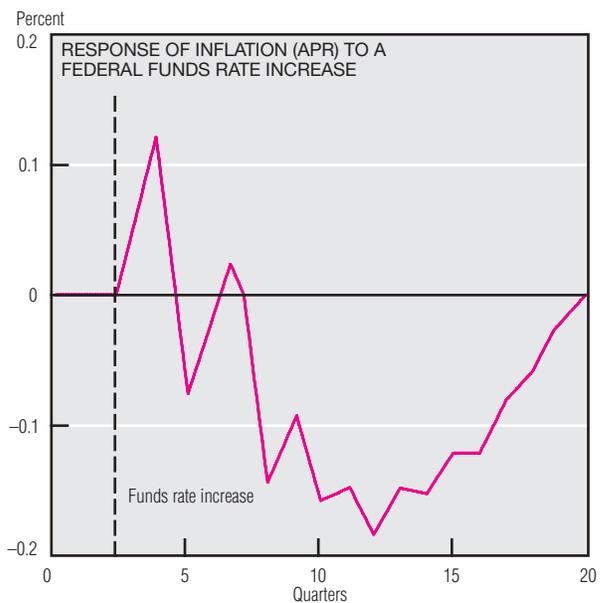
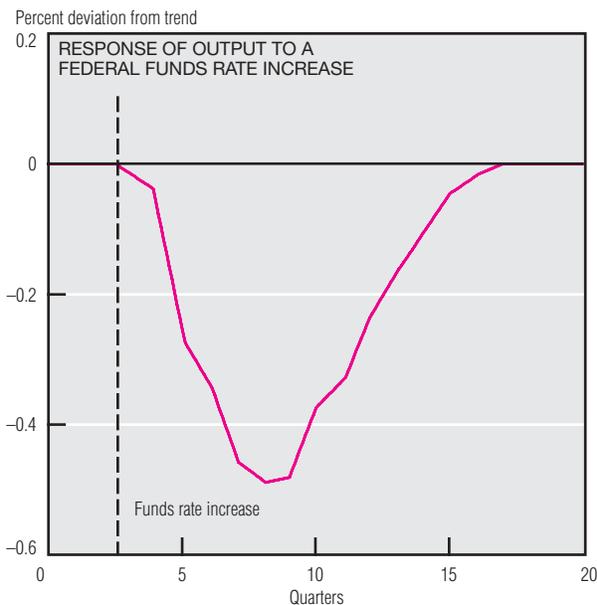
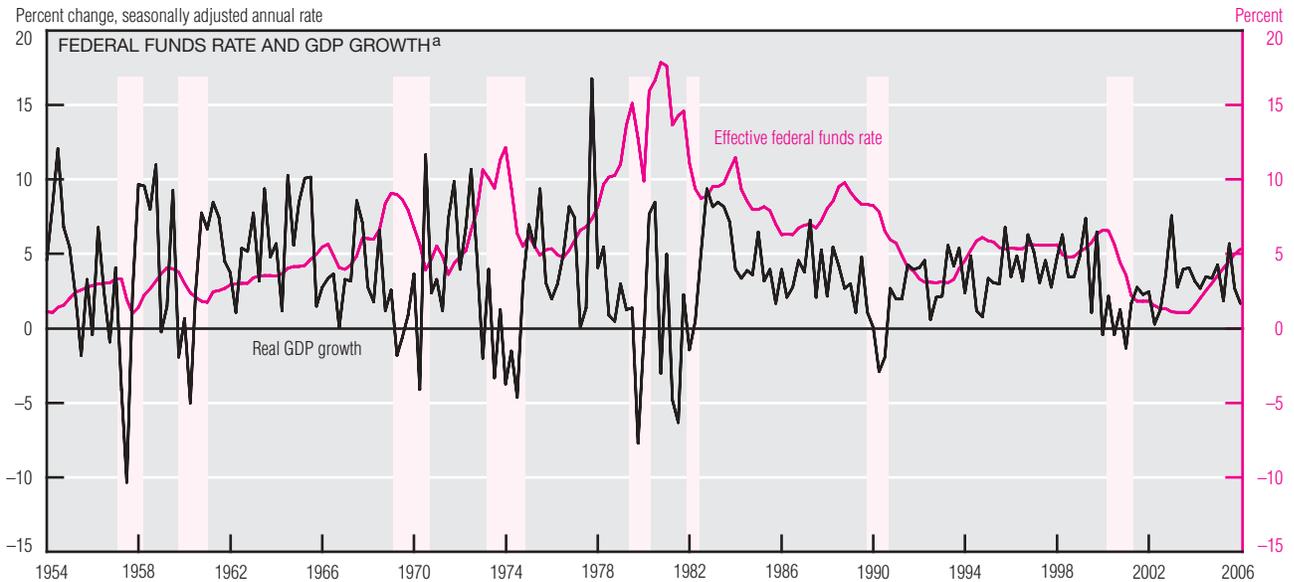


Money and Financial Markets



a. Quarterly data.

SOURCES: Federal Reserve Board; U.S. Department of Commerce, Bureau of Economic Analysis; and Lawrence J. Christiano, Martin Eichenbaum, and Charles L. Evans, "Nominal Rigidities and the Dynamic Effects of a Shock to Monetary Policy," *Journal of Political Economy* 1 (2005): 6-7.

We know that correlation does not necessarily imply causation. Nonetheless, the association between recessions and hikes in the federal funds rate suggests that increasing the funds rate can indeed cause recessions. But the sheer variety of shocks buffeting the economy implies that the correlation between the funds rate and output growth is quite small. Econometricians are left with the difficult task of isolating the effect of a funds rate increase on variables such as output and inflation.

Vector autoregressions (VARs) try to disentangle these factors and show the impact of an exogenous funds rate increase on output and inflation. The ability to disentangle the various shocks that affect these variables requires the assumption that output and inflation do not respond instantaneously to an interest rate shock.

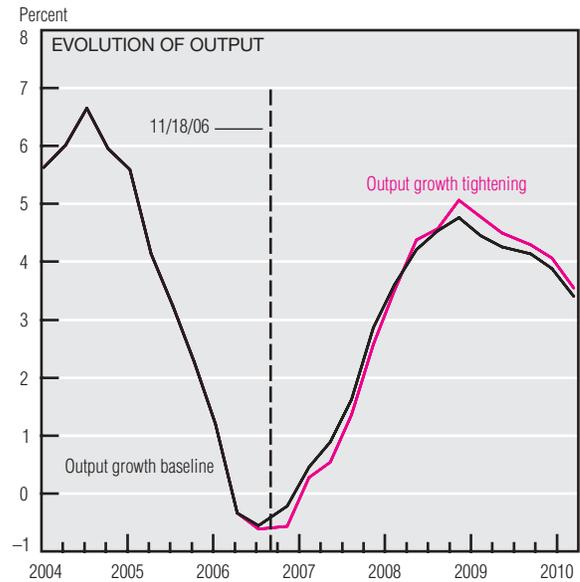
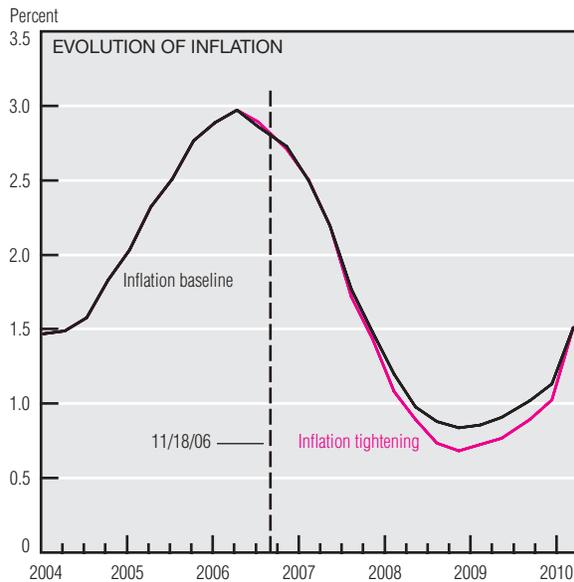
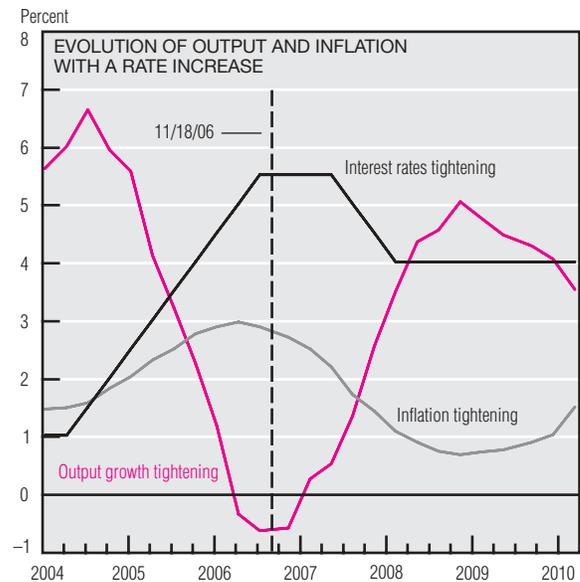
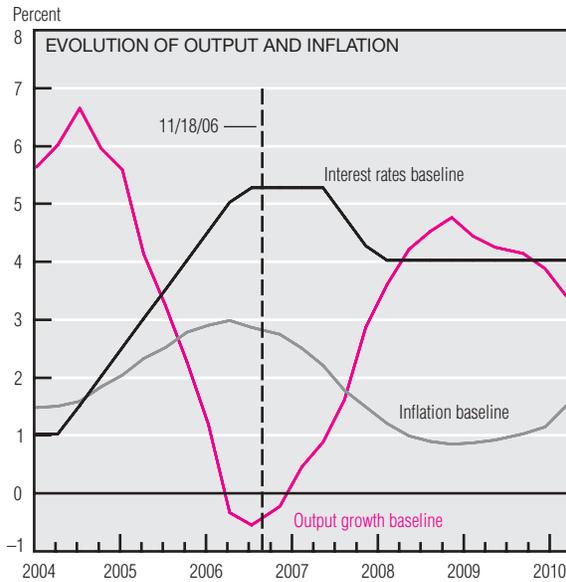
VAR evidence suggests that an increase in the interest rate temporarily lowers output and reduces inflation. However, the impact on these two variables is not symmetric; increases in interest rates affect output much

sooner than they do prices. Inflation does not respond significantly until a year after an interest rate increase, and there may be a lag of 10 quarters before the peak response occurs. Output reaches its trough roughly five quarters after the rate increase.

The lags between interest rate increases and output (and, eventually, rate increases and inflation) make it difficult for the Federal Open Market Committee (FOMC) to determine when tighter monetary policy is tight enough. The wording of the FOMC's recent statements suggests

(continued on next page)

Money and Financial Markets (cont.)



NOTE: All charts assume there are only monetary shocks.

SOURCES: Author's calculations; and Lawrence J. Christiano, Martin Eichenbaum, and Charles L. Evans, "Nominal Rigidities and the Dynamic Effects of a Shock to Monetary Policy," *Journal of Political Economy* 1 (2005): 6-7.

that the recent string of interest rate increases—from a low of 1% to the current 5.25% level—is adversely affecting GDP: “Economic growth has moderated...partly reflecting...the lagged effects of increases in interest rates.” Similarly, the FOMC has reaffirmed its belief that, even without any more policy moves, inflation will eventually moderate: “Readings on core inflation have been elevated in recent months...However, inflation pressures seem likely to moderate over time, reflecting...the cumulative effects of monetary policy actions.”

How much have the cumulative effects of past monetary policy tightening curtailed output growth? What about inflation? Should we expect a significant moderation in inflation without further rate hikes? We answer this question, given the VAR evidence above, by assuming that the only shocks to hit the economy over the past 30 months are monetary. We also assume that the funds rate remains at 5.25% for four quarters before slowly declining to its long-run average of 4%.

This experiment suggests that even without any additional policy firming, output growth should be near its trough, while inflation should be near its peak. Going forward, output growth should pick up and inflation should moderate, in accord with the FOMC's recent statements.

If the funds rate had increased another 25 basis points in August, inflation would have moderated even further. But because of the long lags between rate increases and inflation, the latter will not moderate significantly until it drops below 1.5%, its assumed long-run average.