

Prefatory Note

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AUGUST 3, 2006

MONETARY POLICY ALTERNATIVES

PREPARED FOR THE FEDERAL OPEN MARKET COMMITTEE
BY THE STAFF OF THE BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM

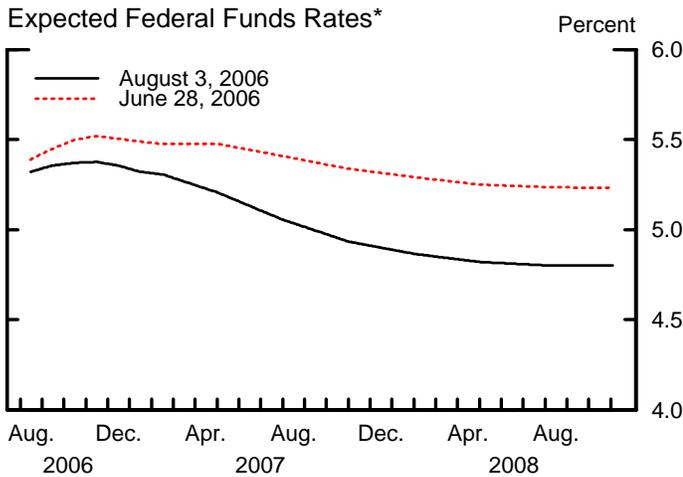
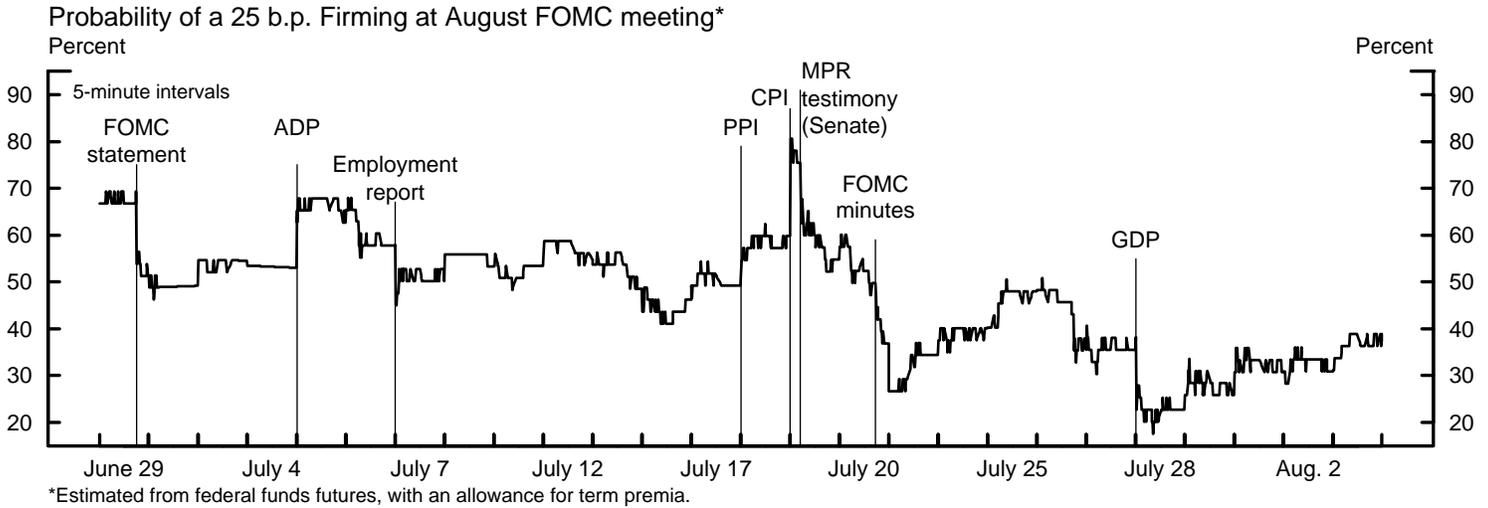
MONETARY POLICY ALTERNATIVES

Recent Developments

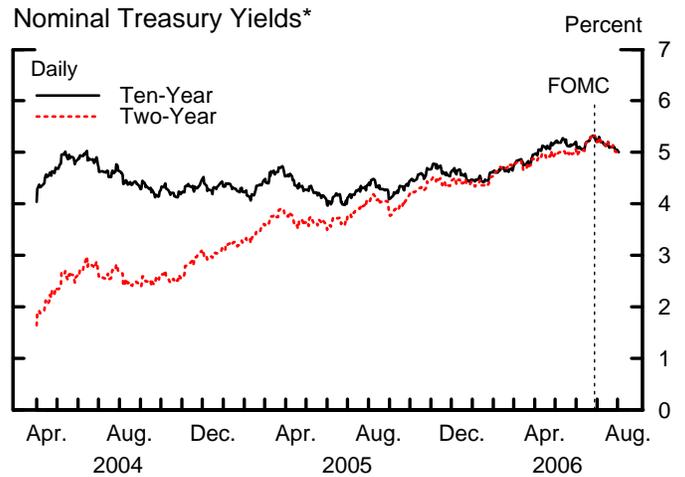
(1) The FOMC's decision at its June meeting to increase the federal funds rate target by 25 basis points to 5¼ percent was widely anticipated, but market participants apparently read the accompanying statement as indicating that a near-term pause was more likely than had been foreseen, and the expected path of the nominal funds rate edged lower. Subsequently, policy expectations jumped in response to the release of June consumer price data, but dropped following the Chairman's semiannual monetary policy testimony and declined further after the release of the minutes of the June FOMC meeting (Chart 1). Both of these communications were apparently read as indicating that, while the FOMC was concerned about elevated readings on inflation, it viewed price pressures as likely to abate over coming quarters. Policy expectations were also damped by incoming data on economic activity over the intermeeting period that were somewhat softer than expected.

(2) Futures quotes suggest that investors now put the likelihood of a quarter-point increase in the target rate at this meeting at around 35 percent, down from about 70 percent before the June meeting; the expected path of the funds rate is essentially flat for the remainder of the year. Further ahead, futures rates now point to a more pronounced downward tilt to the expected path of policy next year. In contrast to futures-market investors, respondents to the Desk's survey of primary dealers appear to expect a somewhat firmer near-term policy stance, placing a probability of about 50 percent on a quarter-point action at the August meeting; almost all respondents expect a tightening at one of the next three meetings. The primary dealers also expect the August FOMC statement to acknowledge that core inflation readings are still elevated, to describe economic growth as moderating, and

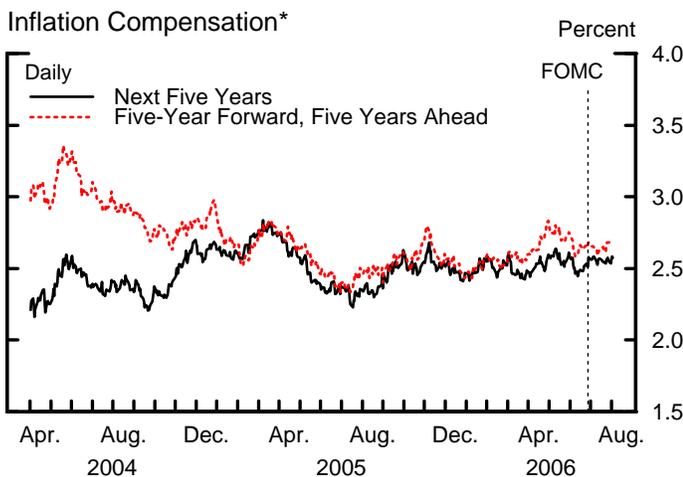
Chart 1 Interest Rate Developments



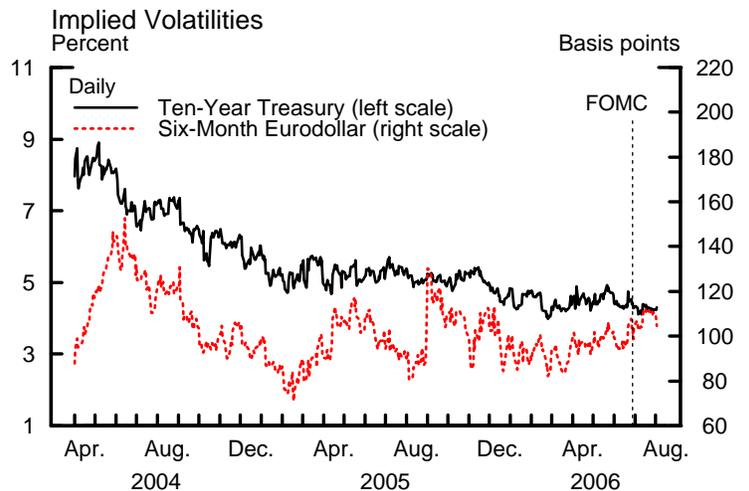
*Estimates from federal funds and Eurodollar futures, with an allowance for term premiums and other adjustments.



*Par yields from a smoothed nominal off-the-run Treasury yield curve.



*Estimates based on smoothed nominal and inflation-indexed Treasury yield curves, and adjusted for the indexation-lag (carry) effect.



Note: Vertical lines indicate June 28, 2006. Last daily observations are for August 3, 2006.

to indicate that, while the Committee expects slower growth to restrain inflation going forward, it remains concerned about inflation risks. Despite the evident uncertainty over the outcome of the August meeting, short-term Eurodollar implied volatilities rose modestly since the June meeting but have remained low.

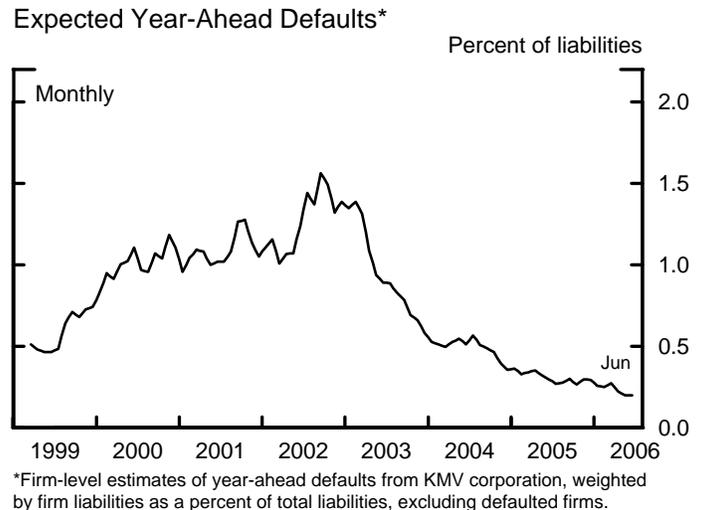
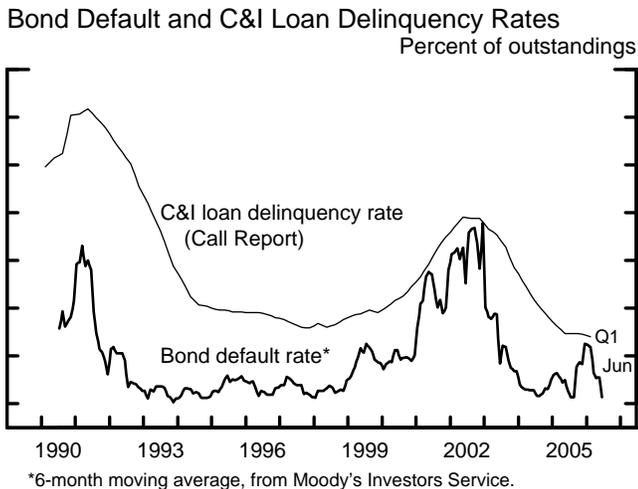
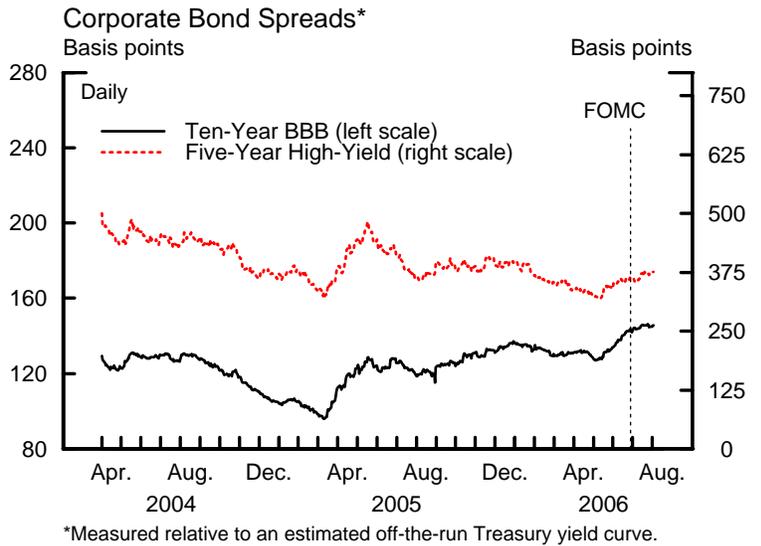
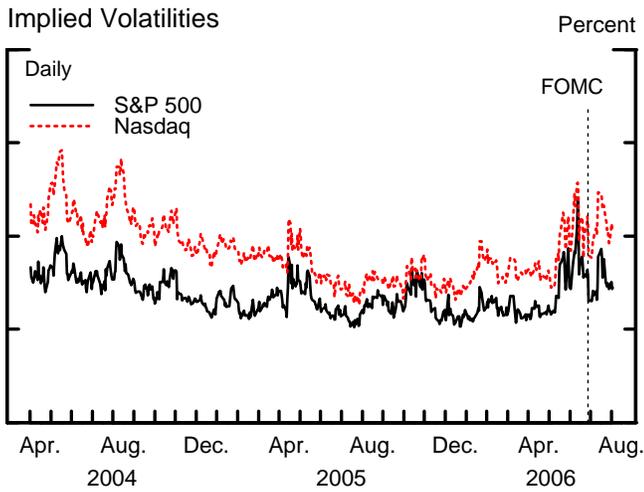
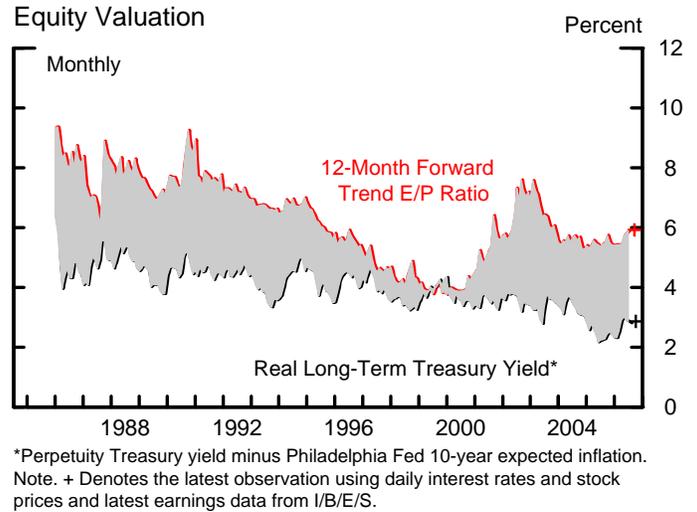
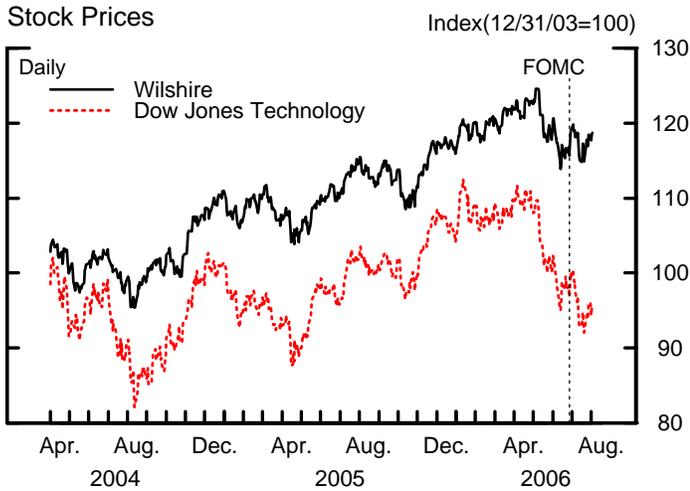
(3) The federal funds rate averaged 5.23 percent over the intermeeting period. The implementation of the Board's revised Payment System Risk policy on July 20 went smoothly, in part because practices in the federal funds and other money markets have adjusted in response to the policy change (see the box on page 5).¹

(4) Consistent with the revision to monetary policy expectations, yields on two- and ten-year nominal Treasury securities fell about 30 basis points over the intermeeting period. Yields on TIPS declined about in line with those on comparable nominal Treasury securities, leaving inflation compensation little changed, while some survey-based measures of inflation expectations ticked down. Monetary policy communications and the softer growth outlook apparently led investors to believe that, despite the disappointing recent news on consumer prices and further increases in energy prices, inflation would be contained going forward even with a lower path of policy.

(5) Broad stock price indexes posted modest increases, on net, over the intermeeting period (Chart 2). Equity prices were buoyed by earnings reports that were mainly solid and by FOMC communications that were seen as signaling a possible end to the current phase of policy tightening, but these gains were partly offset by concerns about turmoil in the Middle East, associated oil price increases, and negative second-quarter earnings reports from a few high-profile firms. The equity risk premium rose slightly, and implied volatility of the S&P 500 remained somewhat

¹ Over the intermeeting period, the Desk purchased \$1.6 billion of Treasury bills from foreign customers and \$0.5 billion of Treasury coupon securities in the market. The Desk also redeemed \$3.9 billion of Treasury coupon securities. The volume of outstanding long-term RPs increased \$1 billion, to \$12 billion.

Chart 2 Asset Market Developments



Note: Vertical lines indicate June 28, 2006. Last daily observations are for August 3, 2006.

above its average over the first four months of the year. Business default rates remained low. Spreads of yields on investment-grade bonds over those on comparable-maturity Treasury securities were about unchanged, while spreads on speculative-grade bonds widened some; both stayed narrow by historical standards.

(6) Heightened tensions in the Middle East contributed to volatile conditions in

Changes in the Federal Funds Market in Response to the Revised PSR Policy

On July 20, 2006, the Board's revised Payments System Risk (PSR) policy took effect. Under the revised policy, the Reserve Banks will release principal and interest (P&I) payments on securities issued by government-sponsored enterprises (GSEs) and certain international organizations only when the entity's Federal Reserve account contains sufficient funds to cover the payments. In the past, the GSEs had routinely incurred very large daylight overdrafts, especially on days of sizable P&I payments. Nevertheless, implementation of the policy has resulted in no disruptions to the payment system or the federal funds market, including on July 25, the first day on which large P&I payments were made.

The GSEs have reportedly relied on several strategies to comply with the new PSR policy, including tapping the increasingly active early-return federal funds market. Under early-return contracts, borrowers are obliged to return funds to the lender at a specified time, typically between 9:30 and 11:00 a.m., that is earlier than under the regular-return arrangements. Early-return funds tend to trade about 2 to 4 basis points below regular-return federal funds. Based on reports from federal funds brokers, early-return federal funds accounted for as much as one-fifth of the brokered federal funds market on July 25. The lower rate at which early-return federal funds trade and their increasing share of the market implies that the effective federal funds rate will tend to understate the average rate for regular-return federal funds. This effect is particularly pronounced on days when early-return contracts account for a relatively large share of federal funds trades. Desk and Board staff are studying the implications of the policy change and the early-return market for the effective rate and the funds market in general.

foreign financial markets over the intermeeting period, with declines in U.S. interest rates an important common factor in foreign financial developments.² Yields on long-term government bonds dropped in almost all industrial countries, though

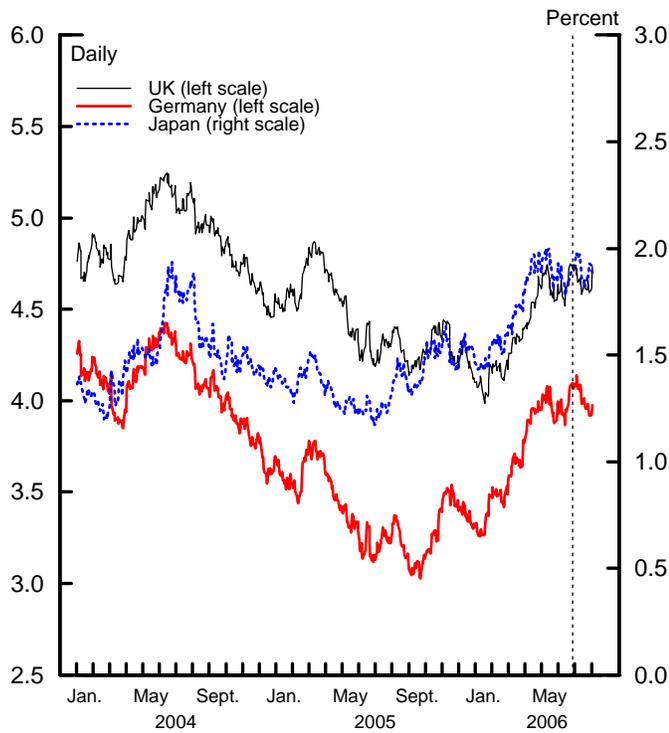
generally by less than their U.S. counterparts (Chart 3). In Canada, yields fell about as much as in the United States, as the Bank of Canada reiterated on July 13 that it considered its current policy stance to be consistent with achieving its inflation objective over the medium term. In contrast, bond yields in Japan and the United Kingdom were about unchanged on balance as declines early in the intermeeting period were reversed later when indicators of economic activity came in stronger than expected. As expected, both the European Central Bank and the Bank of Japan raised policy interest rates 25 basis points; for Japan, this move marked the end of the zero-interest-rate target. The Bank of England surprised markets this morning with a 25 basis point increase and warned that inflation is likely to stay above its target “for a while.” The dollar appreciated about 1 percent against the Canadian dollar but fell a bit more than 2 percent on average against the currencies of other industrial countries. On balance, the trade-weighted index of the dollar against other major currencies fell 1 percent. As in the United States, broad share price indexes in foreign industrial countries rose moderately.

(7) Equity values rebounded vigorously in most emerging markets, partly in response to the decline in U.S. interest rates. Mexican equity prices were among the strongest performers, spurred by the apparent victory of Felipe Calderón in Mexico’s presidential election. EMBI+ spreads declined around 20 and 35 basis points for Mexico and Brazil, respectively. The dollar fell about 3½ percent against the Mexican peso and 1 percent against the *real*. The dollar also fell against most Asian currencies, including a ¼ percent decline against the Chinese renminbi. Overall, the dollar depreciated 1¼ percent against an index of currencies of other important U.S. trading partners.

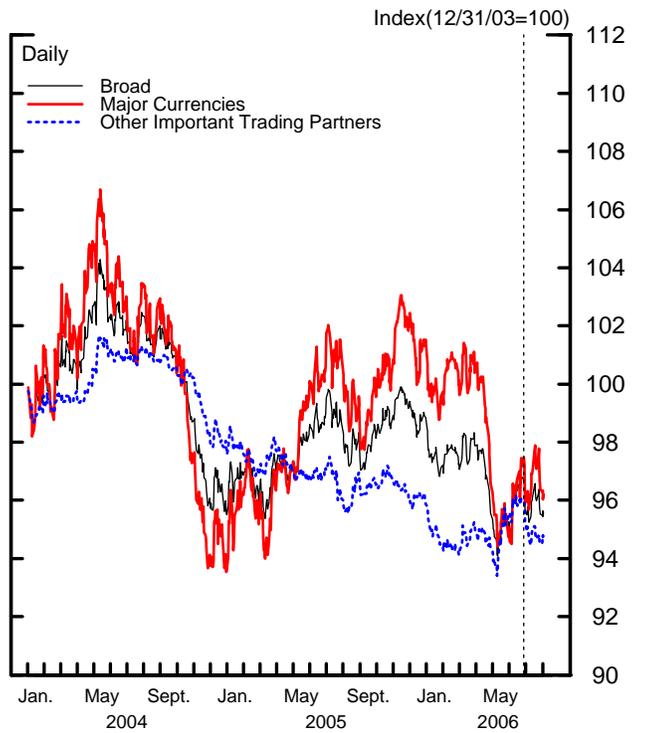
(8) Debt of the nonfinancial business sector expanded at an 8¾ percent annual rate in the second quarter, down only a bit from its rapid first-quarter pace. C&I loans, commercial paper, and corporate bonds all posted solid gains. In July, business

Chart 3 International Financial Indicators

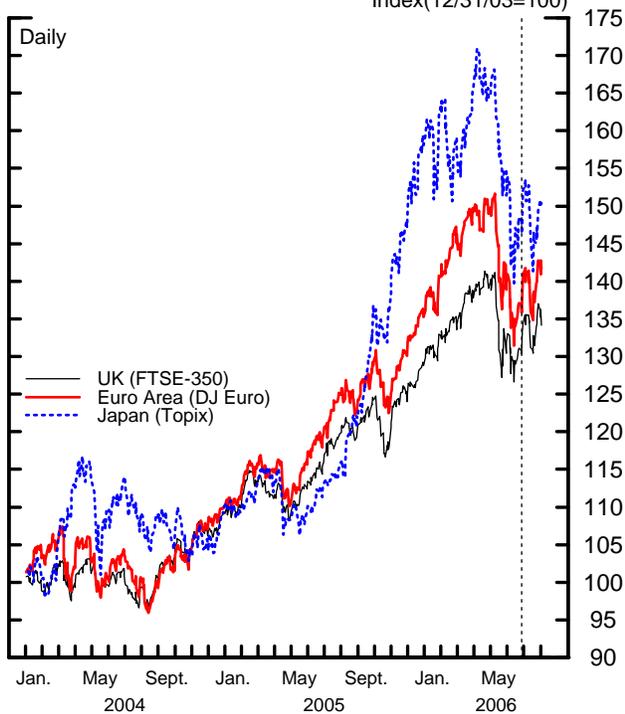
Ten-Year Government Bond Yields (Nominal)



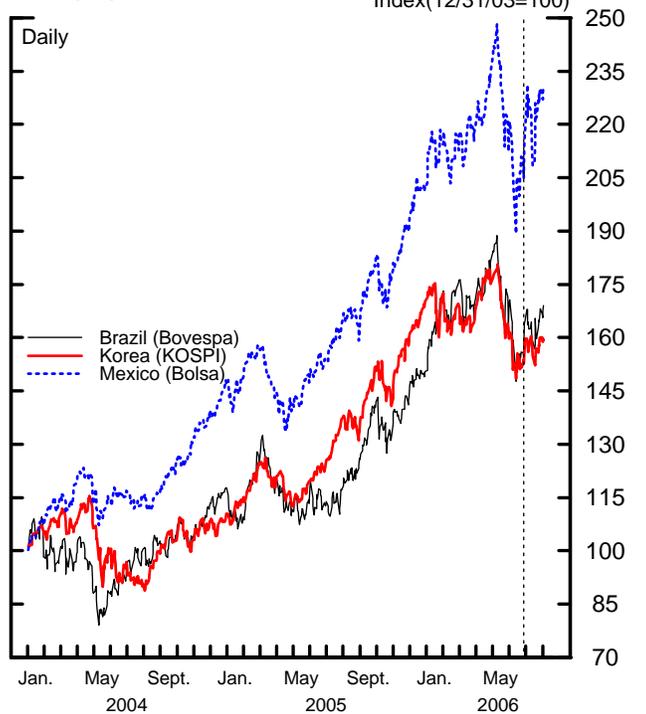
Nominal Trade-Weighted Dollar Indexes



Stock Price Indexes
Industrial Countries



Stock Price Indexes
Emerging Market Economies



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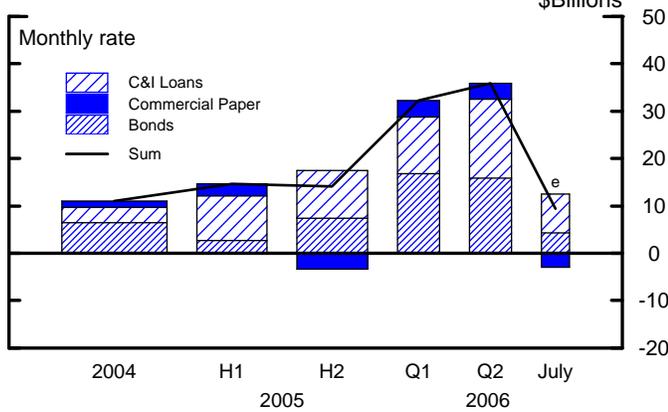
loan growth is estimated to have stayed robust, but net issuance of corporate bonds was somewhat soft and commercial paper outstanding contracted (Chart 4).

According to the July Senior Loan Officer Opinion Survey, banks further eased lending standards and some terms on C&I loans over the previous three months, largely in response to increased competition from other banks and nonbank lenders. The limited data in hand for the household sector suggest that debt growth was still brisk in the second quarter, though below the first quarter's double-digit pace. While cash-out refinancing activity remained strong in the second quarter, applications for mortgages to purchase homes continued to wane, pointing to a modest decline in overall mortgage borrowing. Consumer loan growth through May remained subdued. In the federal sector, tax receipts were strong in the second quarter, and Treasury debt outstanding contracted slightly. State and local governments stepped up borrowing. Overall, the expansion of domestic nonfinancial sector debt is estimated to have slowed last quarter to an annual rate of just under 7 percent.

(9) M2 growth averaged $5\frac{1}{4}$ percent in June and July, somewhat stronger than projected at the time of the last FOMC meeting but still consistent with moderate nominal income growth and high opportunity cost. Retail money funds and small time deposits, whose yields tend to rise about in line with short-term market interest rates, expanded rapidly over the two months. By contrast, liquid deposits, whose yields typically rise much more slowly than market rates, continued to run off. Currency growth was negative in June and July. Available data indicate that domestic demand for currency was likely about average while international demand was unusually weak.

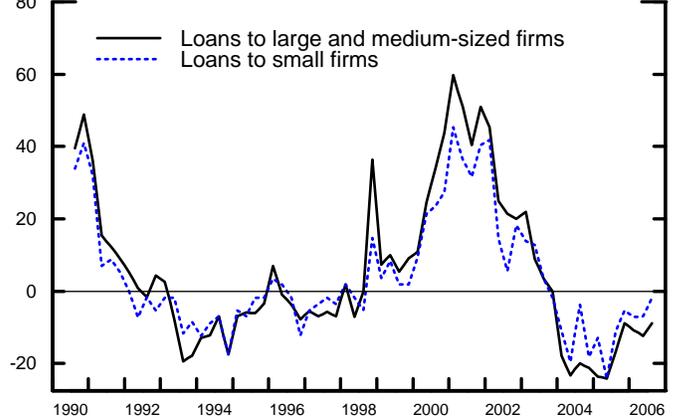
Chart 4 Debt and Money

Changes in Selected Components of Nonfinancial Business Debt

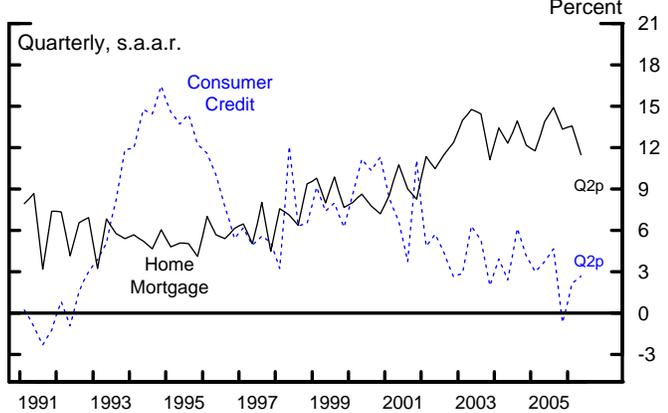


e Estimated.
Note. Commercial paper and C&I loans are seasonally adjusted, bonds are not.

Net Percentage of Domestic Respondents Tightening Standards for C&I Loans



Growth of Household Debt



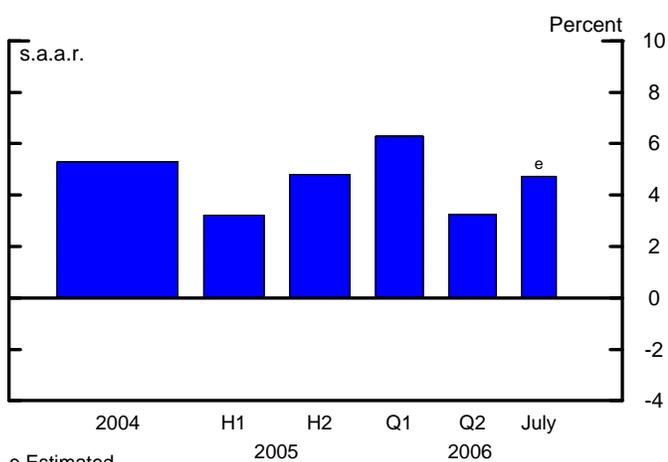
p Projected.

Growth of Nonfinancial Debt

		Total	Nonfederal
2004		8.8	8.7
2005	Q1	9.8	8.7
	Q2	8.1	9.9
	Q3	9.5	10.5
	Q4	9.4	9.8
2006	Q1	10.9	10.5
	Q2 p	6.9	9.1

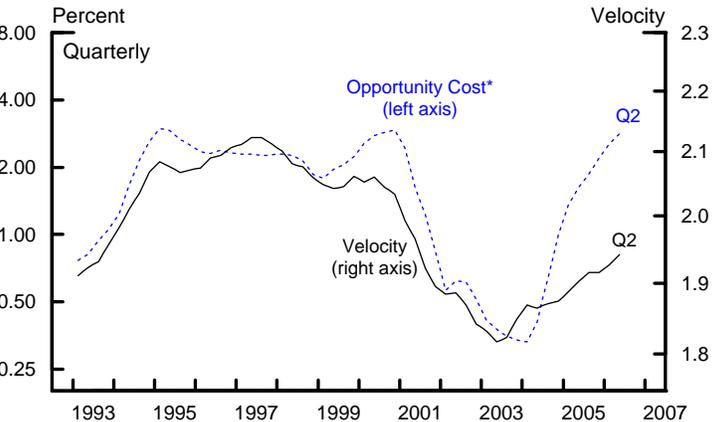
p Projected.

Growth of M2



e Estimated.

M2 Velocity and Opportunity Cost



*Two-quarter moving average.

Economic Outlook

(10) In the staff outlook, the forecasts for aggregate demand and potential output have both been revised down, leaving expected pressures on resource utilization about as projected in the June Greenbook. Nonetheless, the outlook for inflation has deteriorated somewhat, reflecting incoming consumer price data and higher energy prices. In the forecast, a federal funds rate of 5¼ percent over the remainder of this year and next—the same path as was assumed in June—engenders subdued GDP growth and core inflation that edges down slowly from its recent elevated level. Long-term Treasury yields are about unchanged through the end of next year. Stock prices are again assumed to rise at about a 6½ percent annual rate, but from a level that is a somewhat higher than in June, while the foreign exchange value of the dollar is assumed to depreciate at a 2½ percent annual rate against an index of major foreign currencies. After rising sharply over the period since the June Greenbook was completed, oil prices are assumed to remain about flat through 2007, consistent with quotes in futures markets. Against this backdrop, and with incoming data confirming that aggregate demand moderated considerably in the second quarter, the staff projects that real GDP will increase at an average annual rate of about 2¼ percent over the second half of this year and 2007. With output expanding more slowly than the staff's estimate of potential GDP growth (which has been revised down from 3.2 percent to 2.9 percent in light of the annual revision to the National Income and Product Accounts), the unemployment rate rises steadily, reaching 5¼ percent by the end of 2007 as it did in the June Greenbook. As the pass-through of increases in energy prices ebbs and pressures on resources ease, core inflation declines gradually over the projection period. Nonetheless, core PCE inflation is expected to average 2½ percent this year and 2¼ percent in 2007, slightly above the June projection for both years. The staff's forecast for inflation is broadly in line with the central tendency of the FOMC participants' projections compiled for the last meeting,

but its forecast for the unemployment rate is notably higher, as was the case in June. The central tendency for real GDP growth, which was compiled before the annual revision to the National Income and Product Accounts, was higher than either the June or the current staff forecast.³

Short-Run Policy Alternatives

(11) This Bluebook presents four policy alternatives for the Committee's consideration, summarized by the draft statements in Table 1. Under Alternatives A and B, the Committee would leave the federal funds rate unchanged at this meeting, while under Alternatives C and D it would tighten policy another 25 basis points. In Alternatives B and D, the accompanying statement would indicate that risks to inflation remain to the upside and signal that additional tightening might still be forthcoming, depending on incoming information. In contrast, Alternatives A and C would imply that the tightening cycle may well have come to a close. For reference, the June statement is included on the page following Table 1.

(12) Although recent rates of inflation, if sustained, would presumably be judged inconsistent with the maintenance of price stability, the Committee might see the current stance of policy as likely to be sufficient to put core inflation on a downward track. If so, it might be inclined to keep the federal funds rate unchanged at 5¼ percent at this meeting while indicating in the statement that some additional firming might prove necessary, as in **Alternative B**. The Committee may agree with the staff assessment that core inflation is likely to decline gradually in coming quarters as the forces that have temporarily boosted inflation begin to unwind and the moderation in economic growth fosters an easing of resource pressures. Maintaining

³ The central tendency for core PCE inflation was 2¼ to 2½ percent for 2006 and 2 to 2¼ percent for 2007. For real GDP growth it was 3¼ to 3½ percent for 2006 and 3 to 3¼ percent for 2007, while for the rate of unemployment in the fourth quarter it was 4¾ to 5 percent for both years.

Table 1: Alternative Language for the August FOMC Announcement

	Alternative A	Alternative B	Alternative C	Alternative D
Policy Decision	1. The Federal Open Market Committee decided today to keep its target for the federal funds rate at 5¼ percent.	The Federal Open Market Committee decided today to keep its target for the federal funds rate at 5¼ percent.	The Federal Open Market Committee decided today to raise its target for the federal funds rate by 25 basis points to 5½ percent.	The Federal Open Market Committee decided today to raise its target for the federal funds rate by 25 basis points to 5½ percent.
Rationale	2. Economic growth has moderated from its quite strong pace earlier this year, partly reflecting a gradual cooling of the housing market and the lagged effects of increases in interest rates and energy prices.	[Same as A]	[Same as A]	[Same as A]
	3. Readings on core inflation have been elevated in recent months, owing in part to pass-through of increased energy and other commodity prices. However, inflation pressures seem likely to moderate over time, reflecting the cumulative effects of monetary policy actions and other factors restraining aggregate demand, ongoing productivity gains, and contained inflation expectations.	Readings on core inflation have been elevated in recent months, owing in part to the pass-through of increased energy and other commodity prices. However, inflation pressures seem likely to moderate over time, reflecting contained inflation expectations and the cumulative effects of monetary policy actions and other factors restraining aggregate demand.	Readings on core inflation have been elevated in recent months, and the high levels of resource utilization and of the prices of energy and other commodities have the potential to sustain inflation pressures. However, inflation pressures seem likely to moderate over time, reflecting contained inflation expectations and the cumulative effects of monetary policy actions and other factors restraining aggregate demand.	Readings on core inflation have been elevated in recent months. The moderation in the growth of aggregate demand and anchored inflation expectations should help to contain inflation in coming quarters. However, the high levels of resource utilization and of the prices of energy and other commodities have the potential to sustain inflation pressures.
Assessment of Risk	4. In these circumstances, future policy adjustments will depend on the evolution of the outlook for both inflation and economic growth, as implied by incoming information.	Although the Committee expects inflation pressures to diminish gradually, it judges that some inflation risks remain. The extent and timing of any additional firming that may be needed to address these risks will depend on the evolution of the outlook for both inflation and economic growth, as implied by incoming information.	[Same as A]	The extent and timing of any additional firming that may be needed to foster a moderation in inflation pressures will depend on the evolution of the outlook for both inflation and economic growth, as implied by incoming information.
	5. [None]	[None]	[None]	[None]

June FOMC Statement

1. The Federal Open Market Committee decided today to raise its target for the federal funds rate by 25 basis points to 5-1/4 percent.
2. Recent indicators suggest that economic growth is moderating from its quite strong pace earlier this year, partly reflecting a gradual cooling of the housing market and the lagged effects of increases in interest rates and energy prices.
3. Readings on core inflation have been elevated in recent months. Ongoing productivity gains have held down the rise in unit labor costs, and inflation expectations remain contained. However, the high levels of resource utilization and of the prices of energy and other commodities have the potential to sustain inflation pressures.
4. Although the moderation in the growth of aggregate demand should help to limit inflation pressures over time, the Committee judges that some inflation risks remain. The extent and timing of any additional firming that may be needed to address these risks will depend on the evolution of the outlook for both inflation and economic growth, as implied by incoming information.
5. In any event, the Committee will respond to changes in economic prospects as needed to support the attainment of its objectives.

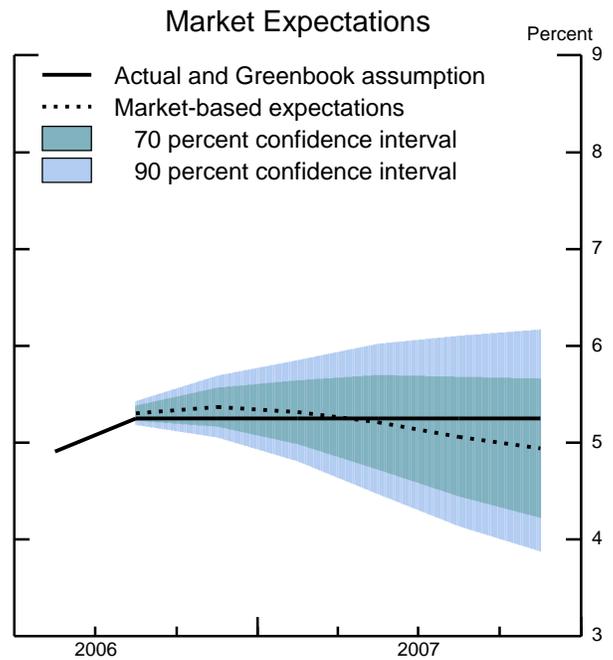
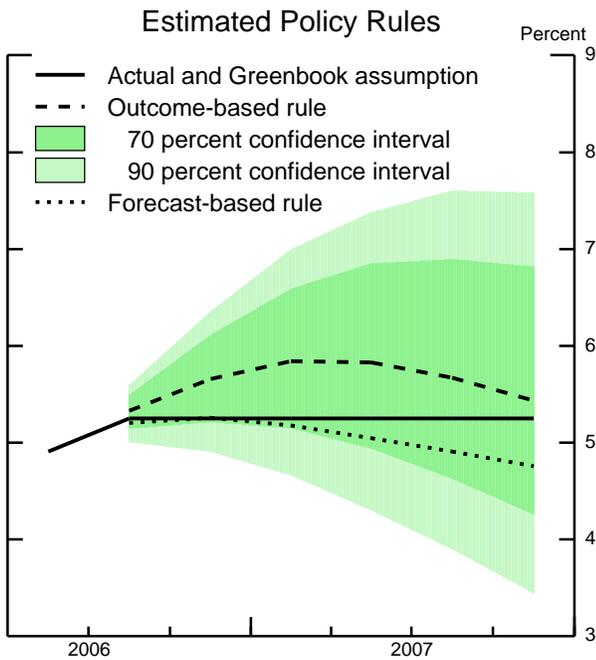
the current policy stance would be consistent with prescriptions from the estimated forecast-based policy rule (Chart 5) as well as the first-difference rule with a long-run inflation objective of 2 percent (Chart 6). (See the box “Intercept Shifts in Empirical Taylor Rules.”) A pause at this meeting, after seventeen consecutive actions, might be seen as desirable in order to limit the risk of over-tightening and the adverse consequences for employment and growth. With the real federal funds rate in the range of model-based estimates of its equilibrium value (Chart 8), the risk that deferring action for a brief time might significantly worsen underlying inflationary trends would seem to be modest. Nonetheless, the Committee may feel that elevated energy and commodity prices, possible further increases in these prices, and high levels of resource utilization imply that the upside risks to inflation remain substantial and perceive only limited downside risks to the economic expansion, and so see

Intercept Shifts in Empirical Policy Rules

Chart 5 shows the projections of two empirical policy rules—specified in terms of either outcomes or forecasts of the output gap and core inflation—that have been estimated using quarterly data from 1988Q1 to 2005Q4. In previous Bluebooks, both of these rules involved a time-invariant intercept, essentially implying that the medium-run equilibrium real rate (r^*) and the implicit inflation objective (π^*) remained constant throughout the sample period. However, recent staff analysis indicates that a significant upward shift in the intercept of each empirical rule occurred in the late 1990s. Such a shift could arise from either a 75 basis point rise in r^* , a 1 percentage point decline in π^* , or some combination of the two. The funds rate projections and confidence intervals shown in Chart 5 incorporate these intercept shifts. The projections generated by the forecast-based rule are broadly similar to the expectations of market participants, while the outcome-based rule points to some additional firming.

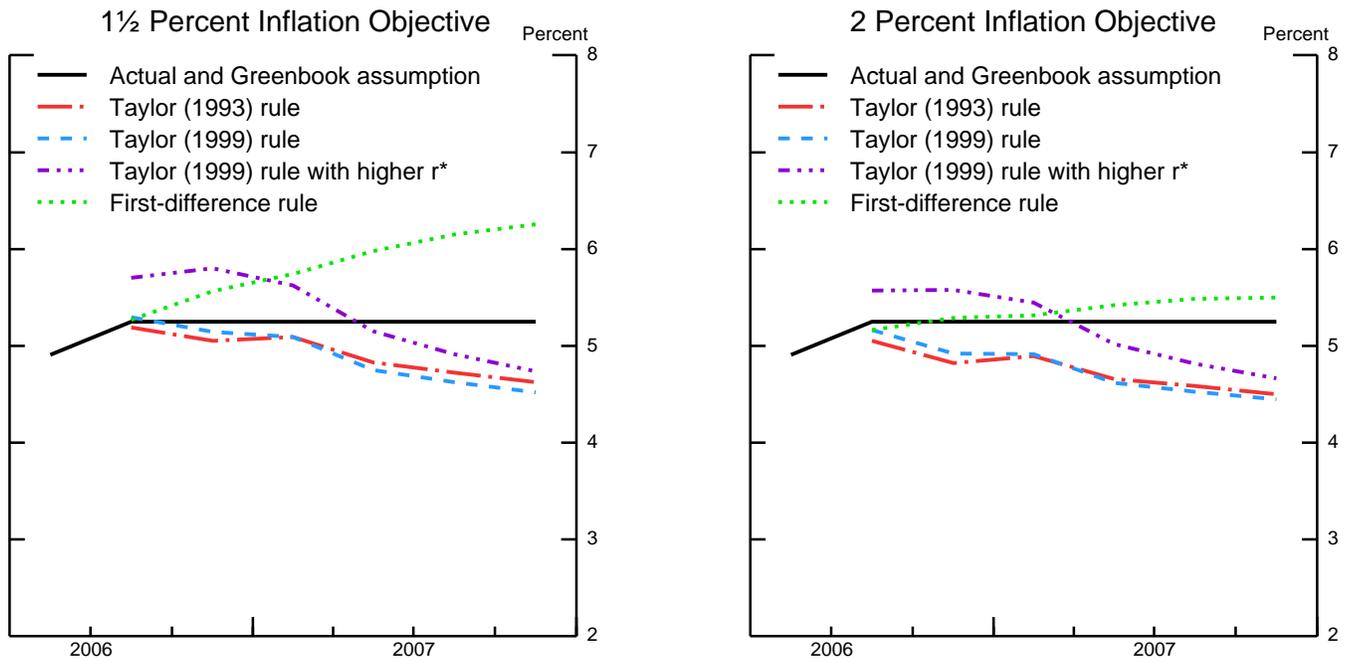
Reflecting the possibility of an upward shift in the value of r^* , this Bluebook introduces an additional simple policy rule in Chart 6. For each specified value of π^* (either 1½ or 2 percent), the new rule follows Taylor (1999) with respect to the policy coefficients—which determine the responsiveness of the funds rate to movements in the output gap and core inflation—but specifies the value of r^* at 2.75 percent instead of 2 percent.

Chart 5
Information from Estimated Policy Rules and Financial Markets



	2006		2007			
	Q3	Q4	Q1	Q2	Q3	Q4
Estimated Policy Rules						
Outcome-based policy rule	5.3	5.7	5.8	5.8	5.7	5.4
70 percent confidence interval						
Lower bound	5.1	5.2	5.1	4.9	4.6	4.3
Upper bound	5.5	6.1	6.6	6.9	6.9	6.8
90 percent confidence interval						
Lower bound	5.0	4.9	4.7	4.3	3.9	3.4
Upper bound	5.6	6.4	7.0	7.4	7.6	7.6
Forecast-based policy rule	5.2	5.3	5.2	5.0	4.9	4.8
Market Expectations						
Expected funds rate path	5.3	5.4	5.3	5.2	5.1	4.9
70 percent confidence interval						
Lower bound	5.2	5.2	5.0	4.7	4.4	4.2
Upper bound	5.4	5.6	5.6	5.7	5.7	5.7
90 percent confidence interval						
Lower bound	5.2	5.1	4.8	4.5	4.1	3.9
Upper bound	5.4	5.7	5.9	6.0	6.1	6.2
Memo						
Greenbook assumption	5.3	5.3	5.3	5.3	5.3	5.3

Chart 6 Policy Implications of Simple Rules

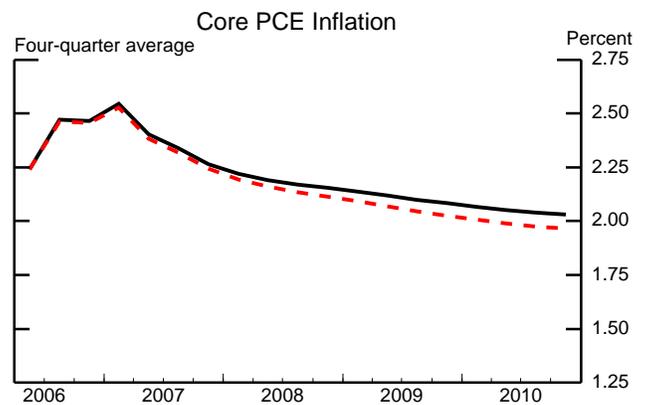
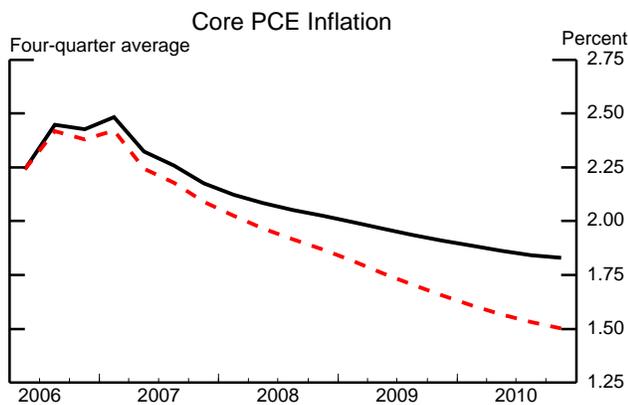
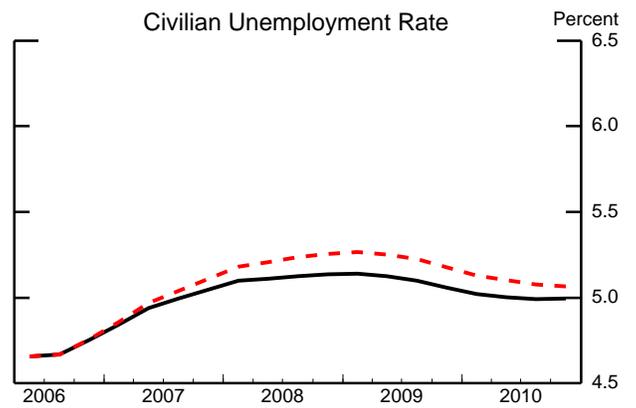
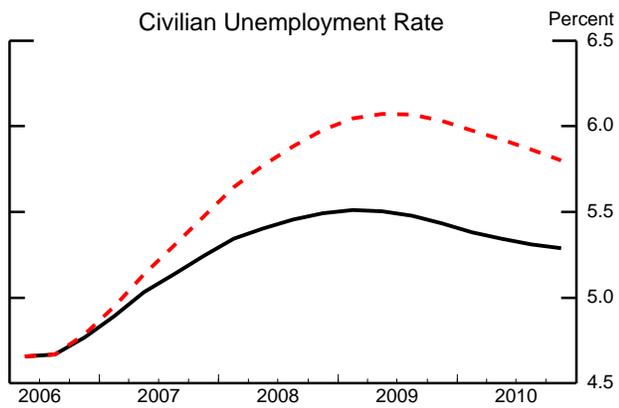
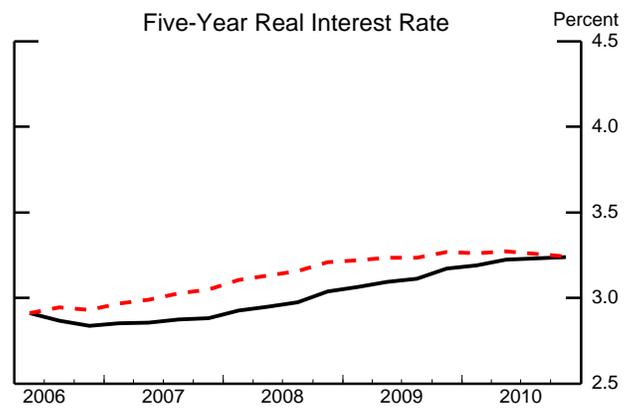
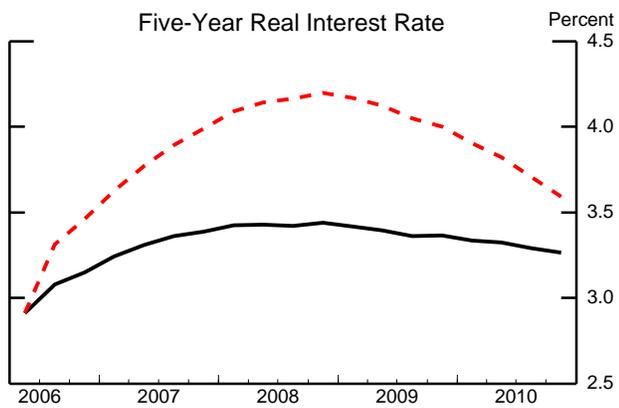
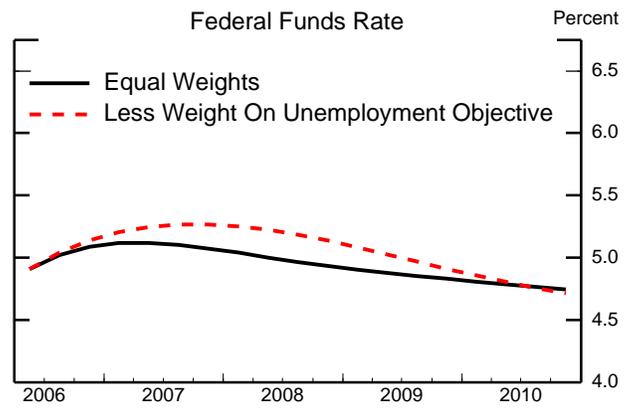
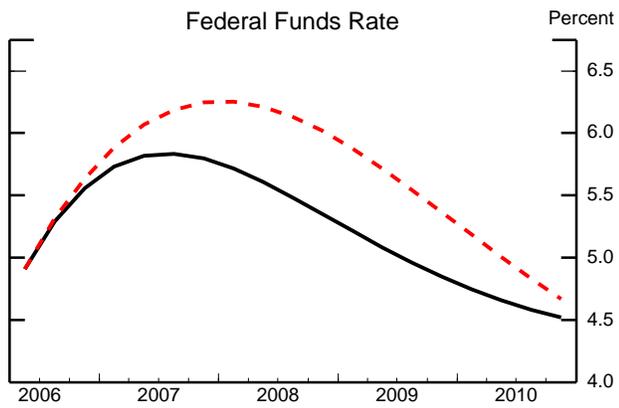


	2006		2007			
	Q3	Q4	Q1	Q2	Q3	Q4
Simple Policy Rules						
Taylor (1993) rule						
1½ percent inflation objective	5.2	5.0	5.1	4.8	4.7	4.6
2 percent inflation objective	5.1	4.8	4.9	4.7	4.6	4.5
Taylor (1999) rule						
1½ percent inflation objective	5.3	5.1	5.1	4.8	4.6	4.5
2 percent inflation objective	5.2	4.9	4.9	4.6	4.5	4.4
Taylor (1999) rule with higher r*						
1½ percent inflation objective	5.7	5.8	5.6	5.2	4.9	4.7
2 percent inflation objective	5.6	5.6	5.4	5.0	4.8	4.7
First-difference rule						
1½ percent inflation objective	5.3	5.6	5.7	6.0	6.2	6.3
2 percent inflation objective	5.2	5.3	5.3	5.4	5.5	5.5
Memo						
Greenbook assumption	5.3	5.3	5.3	5.3	5.3	5.3

Chart 7 Optimal Policy Paths Under Two Inflation Objectives

1½ Percent Inflation Objective

2 Percent Inflation Objective



Policy Rule Charts: Explanatory Notes

For the rules described below, i_t denotes the federal funds rate for quarter t , while the explanatory variables include the staff’s estimate of trailing four-quarter core PCE inflation (π_t), its forecasts of inflation two and three quarters ahead ($\pi_{t+2|t}$ and $\pi_{t+3|t}$), its assessment of the current output gap ($y_t - y_t^*$), its one-quarter-ahead forecast of the output gap ($y_{t+1|t} - y_{t+1|t}^*$), its three-quarter-ahead forecast of annual average GDP growth relative to potential ($\Delta^4 y_{t+3|t} - \Delta^4 y_{t+3|t}^*$), and the assumed value of policymakers’ long-run inflation objective (π^*).

Rule prescriptions are computed using dynamic simulations of the FRB/US model, implemented as though the rule is followed starting at this FOMC meeting. This quarter’s prescription is a weighted average of the actual value of the federal funds rate thus far this quarter and the value obtained from the FRB/US model simulations using the timing of this meeting within the quarter to determine the weights. Except for backward-looking rules, it should be noted that prescriptions near the end of the Greenbook horizon also depend on extended baselines.

Estimated Rules: Estimation is performed using real-time data over the sample 1988:1-2005:4, and the specifications are chosen according to the Bayesian information criterion. Each rule incorporates a 75 basis point shift in the intercept, specified as a sequence of 25 basis point increments that occurred during the first three quarters of 1998. Confidence intervals, shown only for the outcome-based rule, are based on stochastic simulations of the FRB/US model. The following table indicates the specification of each rule used for dynamic simulations and its root mean squared error over the sample 1993:1-2005:4.

Outcome-based rule	$i_t = 1.17i_{t-1} - 0.37i_{t-2} + 0.20 [1.04 + 1.77 \pi_t + 3.32(y_t - y_t^*) - 2.37(y_{t-1} - y_{t-1}^*)]$.17
Forecast-based rule	$i_t = 1.16i_{t-1} - 0.36i_{t-2} + 0.20 [0.89 + 1.75 \pi_{t+2 t} + 2.32(y_{t+1 t} - y_{t+1 t}^*) - 1.40(y_{t-1} - y_{t-1}^*)]$.16

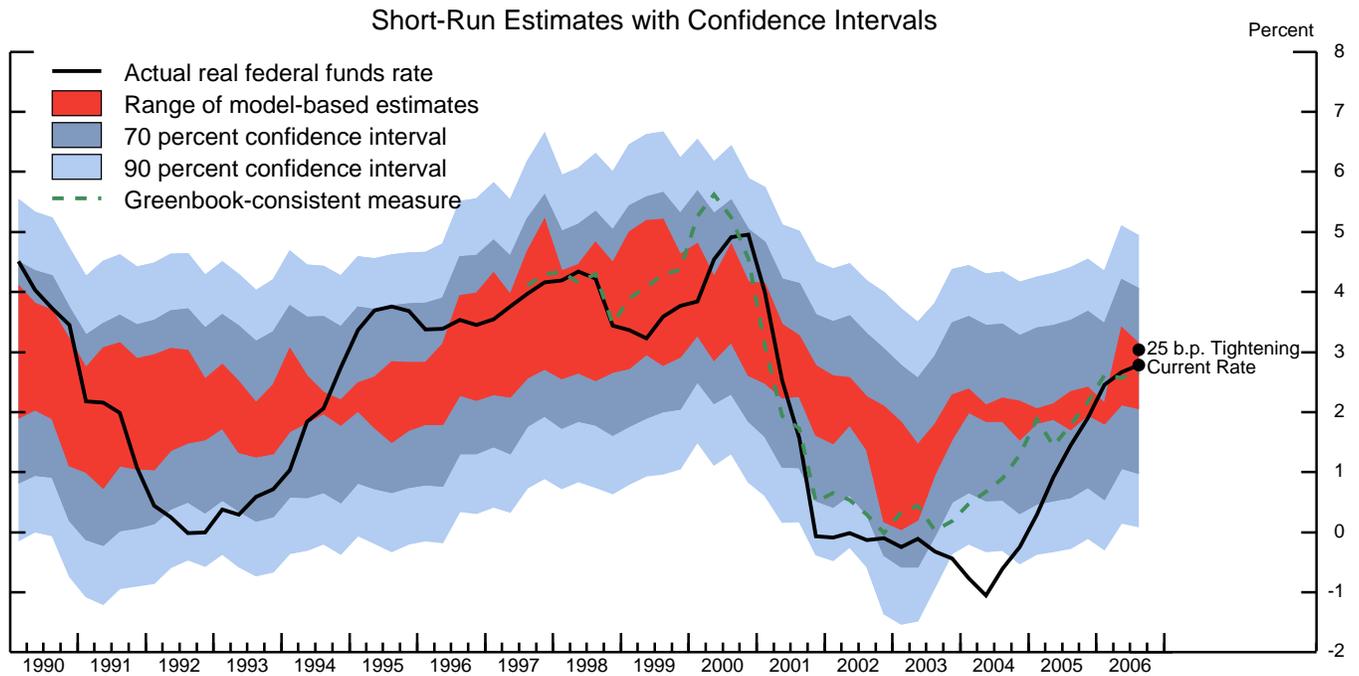
Market Expectations: The expected funds rate path is based on quotes from fed funds and Eurodollar futures, and the confidence intervals are obtained from options on those futures.

Simple Rules: The following table indicates the specification of each rule.

Taylor (1993) rule	$i_t = 2 + \pi_t + 0.5(\pi_t - \pi^*) + 0.5(y_t - y_t^*)$
Taylor (1999) rule	$i_t = 2 + \pi_t + 0.5(\pi_t - \pi^*) + (y_t - y_t^*)$
Taylor (1999) rule with a higher r^*	$i_t = 2.75 + \pi_t + 0.5(\pi_t - \pi^*) + (y_t - y_t^*)$
First-difference rule	$i_t = i_{t-1} + 0.5(\pi_{t+3 t} - \pi^*) + 0.5(\Delta^4 y_{t+3 t} - \Delta^4 y_{t+3 t}^*)$

Optimal-Control Policies: Policymakers are assumed to minimize the weighted sum of squared deviations in inflation from the long-run objective, squared deviations in the unemployment from its natural rate, and squared changes in the federal funds rate. Financial market participants are assumed to understand fully the model of the economy, the baseline economic projection, and the policy formulation process, implying model-consistent asset-price responses to policymaker actions. In contrast, households and firms are assumed to form their expectations using more limited information. For further information, see the memo to the Committee, “Optimal-Control Monetary Policies” by Michael Kiley, Thomas Laubach, and Robert Tetlow, June 20, 2006.

Chart 8 Equilibrium Real Federal Funds Rate



Short-Run and Medium-Run Measures

	Current Estimate	<i>Previous Bluebook</i>
Short-Run Measures		
Single-equation model	2.4	2.1
Small structural model	2.1	2.4
Large model (FRB/US)	3.1	3.2
Confidence intervals for three model-based estimates		
70 percent confidence interval	1.0 - 4.1	
90 percent confidence interval	0.1 - 4.9	
Greenbook-consistent measure	2.7	2.6
Medium-Run Measures		
Single-equation model	2.2	2.2
Small structural model	2.2	2.5
Confidence intervals for two model-based estimates		
70 percent confidence interval	1.3 - 3.1	
90 percent confidence interval	0.7 - 3.7	
TIPS-based factor model	2.1	2.1
Memo		
Actual real federal funds rate	2.78	2.83

Notes: Confidence intervals reflect uncertainties about model specification, coefficients, and the level of potential output. The final column indicates the values for the current quarter based on the estimation for the previous Bluebook, except that the actual real funds rate is the value published in the previous Bluebook. This Bluebook introduces methodological changes in the computation of the TIPS-based estimate, and these changes account for a 10 basis point difference in the final column relative to the corresponding measure published in the last Bluebook.

Equilibrium Real Rate Chart: Explanatory Notes

The equilibrium real rate is the real federal funds rate that, if maintained, would be projected to return output to its potential level over time. For the first three measures listed below, the short-run equilibrium rate is defined as the rate that would close the output gap in twelve quarters given the corresponding model’s projection of the economy. For the first two measures, the medium-run concept is the value of the real federal funds rate projected to keep output at potential in seven years under the assumption that monetary policy acts to bring actual and potential output into line in the short run and then keeps them equal thereafter. The TIPS-based factor model measure provides an estimate of market expectations for the real federal funds rate seven years ahead. The actual real federal funds rate is constructed as the difference between the nominal rate and realized inflation, where the nominal rate is measured as the quarterly average of the observed federal funds rate, and realized inflation is given by the log difference between the staff’s estimate of the core PCE price index and its lagged value four quarters earlier. For the current quarter, the nominal rate is specified as the target federal funds rate on the Bluebook publication date.

Measure	Description
Single-equation Model	The measure of the equilibrium real rate in the single-equation model is based on an estimated aggregate-demand relationship between the current value of the output gap and its lagged values as well as the lagged values of the real federal funds rate. In light of this model’s simple structure, the short-run measure of the equilibrium real rate depends only on the recent position of output relative to potential, and the medium-run measure is virtually constant.
Small Structural Model	The small-scale model of the economy consists of equations for five variables: the output gap, the equity premium, the federal budget surplus, the trend growth rate of output, and the real bond yield. Unlike the estimates from the single-equation model, values of the equilibrium real rate also depend directly on conditions associated with output growth, fiscal policy, and capital markets.
Large Model (FRB/US)	Estimates of the equilibrium real rate using FRB/US—the staff’s large-scale econometric model of the U.S. economy—depend on a very broad array of economic factors, some of which take the form of projected values of the model’s exogenous variables. These projections make use of several simple forecasting rules which are appropriate for the three-year horizon relevant for the short-run concept but are less sensible over longer horizons. Thus, we report only the short-run measure for the FRB/US model.
Greenbook-consistent	Measures of the equilibrium real rate cannot be directly obtained from the Greenbook forecast, because the Greenbook is not based on a formal model. Rather, we use the FRB/US model in conjunction with an extended version of the Greenbook forecast to derive a Greenbook-consistent measure. FRB/US is first add-factored so that its simulation matches the extended Greenbook forecast, and then a second simulation is run off this baseline to determine the value of the real federal funds rate that closes the output gap. The medium-run concept of the equilibrium real rate is not computed because it requires a relatively long extension of the Greenbook forecast.
TIPS-based Factor Model	Yields on TIPS (Treasury Inflation-Protected Securities) reflect investors’ expectations of the future path of real interest rates, but also include term and liquidity premiums. The TIPS-based measure of the equilibrium real rate is constructed using the seven-year-ahead instantaneous real forward rate derived from TIPS yields as of the Bluebook publication date. This forward rate is adjusted to remove estimates of the term and liquidity premiums based on a three-factor arbitrage-free term-structure model applied to TIPS yields, nominal yields, and inflation. Because TIPS indexation is based on the total CPI, this measure is also adjusted for the medium-term difference—projected at 40 basis points—between total CPI inflation and core PCE inflation.

additional firming as more likely than easing in coming months. The Committee may find communicating this posture particularly important if it were concerned that inaction at this meeting might lead investors to question its vigilance against inflation.

(13) Under Alternative B, the rationale paragraph in the statement would indicate that economic growth has moderated, noting the role of the lagged effects of increases in interest rates and energy prices and of the continuing cooling of the housing market. While acknowledging the elevated readings on core inflation, it would also cite the reasons to expect inflation to decline in coming quarters: contained inflation expectations, the cumulative effects of past policy firmings, and other factors restraining aggregate demand. In its assessment of risks, the Committee would reiterate its judgment that some upside inflation risks remain and point to the possibility of additional firming should incoming information warrant such action.

(14) Investors see about a one-third chance of a policy firming at this meeting and appear to anticipate a statement similar to that under Alternative B. As a result, the market reaction to implementation of this alternative would likely be fairly small. While short-term interest rates would decline somewhat, intermediate- and long-term rates, stock prices, and the foreign exchange value of the dollar probably would change little.

(15) If the Committee judges that the risks to the attainment of its objectives are now roughly in balance, it may be attracted to the policy choice and wording of **Alternative A**. The Committee may see greater downside risks to economic growth than it did in June. Among other developments, the incoming information on the housing sector may be viewed as suggesting the possibility of a more prolonged and sizable reduction in residential construction and spending than is currently anticipated by the staff, along the lines of the “housing slump” alternative Greenbook scenario. The incoming data pointing to a slowing in economic growth may also have increased the Committee’s confidence that the recent elevated inflation readings are unlikely to

be sustained. Keeping the federal funds rate at 5¼ percent for some time would be roughly consistent with an optimal policy path suggested by a simulation of the FRB/US model with a long-run inflation objective of 2 percent (Chart 7).

(16) The rationale presented for Alternative A in the post-meeting statement could be similar to that for Alternative B, since both alternatives would keep the federal funds rate unchanged at this meeting. However, the assessment of risks could simply point to the dependence of future policy adjustments on incoming information. Against the backdrop of its statements over the previous two years, in which the Committee either provided explicit rate guidance or pointed to upside inflation risks, such an announcement would likely suggest to market participants that the Committee was not predisposed to raising rates or lowering them going forward.

(17) As in Alternative B, shorter-term interest rates would fall a little in response to an announcement along the lines of Alternative A. However, longer-term yields might edge higher if market participants became concerned that the Committee was underestimating inflation risks or was willing to tolerate somewhat higher rates of inflation going forward than earlier anticipated.

(18) The Committee may judge instead that an additional 25 basis point increase in the federal funds rate at this meeting, as in **Alternative C**, is needed to bring the risks to the outlook for inflation and economic growth into better balance. A firming at this meeting might be appropriate if the staff's inflation forecast were seen as likely and generally acceptable but the Committee wished to have slightly greater assurance that inflation would diminish in coming quarters. Members might worry that inflation pressures could turn out to be a little greater than projected in the Greenbook. The economy has proved quite resilient in the face of higher oil prices and tighter monetary policy over the past two years, and members may see economic growth as most likely to rebound from its sharply slower pace in the second quarter. In light of the recent upside surprises in price data, raising the federal funds rate at this meeting

might also seem desirable as a signal of the Committee's resolve to foster a decline in inflation. Even with the firming action under this alternative, the Committee may judge that significant upside risks to inflation remain. However, some members may see the slowing in the expansion of aggregate demand of late as suggesting that the downside risks to growth have increased since the last meeting. The Committee might see Alternative C as bringing the risks to the attainment of its growth and price stability objectives roughly in balance and believe that, after implementation of such a policy choice, an easing and a tightening of policy are about equally probable.

(19) Under Alternative C, the paragraph on economic activity in the rationale section could be identical to that proposed for Alternatives A and B. The announcement could then acknowledge the elevated readings on core inflation and cite the potential for high levels of resource utilization and of the prices of energy and other commodities to sustain inflation pressures, but it could also point to the factors likely to reduce inflation over coming quarters. In the risk assessment sentence of the announcement, the Committee could merely point to the dependence of future policy adjustments on incoming information, as in the assessment proposed for Alternative A. Market participants would likely interpret such an announcement as suggesting that the Committee no longer had a significant inclination to continue firming policy.

(20) With market participants placing less than fifty-fifty odds on a policy move at this meeting, short-term interest rates would likely jump in response to implementation of Alternative C. However, the effect on intermediate-term interest rates would be considerably more muted, and long-term rates could even decline a little should the announcement persuade investors that inflation pressures were less intense than they had appreciated or that the Committee was seeking a slightly lower long-term rate of inflation than they had previously perceived. Despite the rise in short-term interest rates, with policy tightening evidently having drawn to a close,

equity prices might rally. The foreign exchange value of the dollar might be little affected.

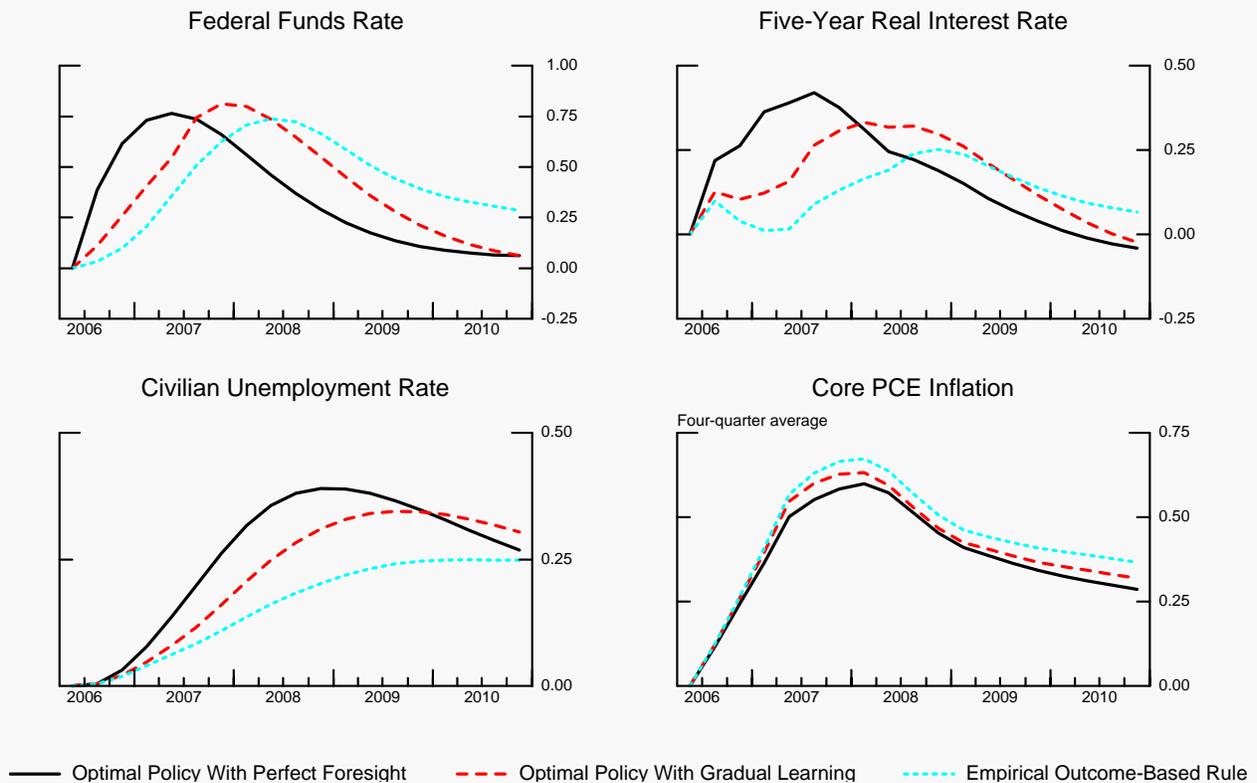
(21) If members were dissatisfied with the gradual and limited reduction in inflation in the staff forecast and favored a trajectory of policy that would foster a steeper decline, they might wish to adopt the action and language of **Alternative D**. The optimal policy path simulations of the FRB/US model (Chart 7) and the first-difference rule (Chart 6), with a long-term inflation objective equal to 1½ percent, would both call for additional firming of policy even following a 25 basis point tightening at the August meeting. The Committee may also find Alternative D attractive if it deems the outlook for employment and growth to be more favorable than the staff projection. Moreover, members may be concerned that the staff has underestimated the persistence of the forces that have boosted inflation, possible consequences of which are illustrated by the “persistent inflation” alternative Greenbook scenario. Indeed, the optimal policy path suggested by a simulation of the FRB/US model under perfect foresight in this scenario would call for considerable additional policy firming in coming months. However, the policy response would be tempered in the more realistic circumstance that the persistence of the inflationary forces became clear only gradually over time (see box on next page). Even if the Committee saw the staff inflation forecast as the most likely outcome, and one that would be satisfactory, it might find this alternative appealing if it were persuaded by recent price data that the upside risks to inflation, and the potential costs should these risks be realized, continued to predominate despite an additional 25 basis points increase in the federal funds rate at this meeting. The potential for further increases in energy prices, for example as a result of mounting geopolitical tensions, could be a reason for such worries.

(22) While acknowledging the moderation in economic growth and other forces that are expected to contain inflation in coming quarters, the rationale paragraph

Persistent Inflation: Implications of Alternative Policy Assumptions

The policy path implied by a simple rule—such as the empirical outcome-based rule shown in Chart 5 and used in analyzing the alternative scenarios in the Greenbook—often differs from the optimal policy when policymakers fully understand the forces affecting the real economy and inflation, but may well yield prescriptions close to those under the optimal policy when these forces become evident only gradually. For example, the chart below compares these alternative policy assumptions in the context of the Greenbook’s ‘Persistent Inflation’ scenario, in which the recent rise in core inflation is much more persistent than in the staff’s current projection. The solid lines depict the optimal policy and associated macroeconomic outcomes (as deviations from baseline) when policymakers have *perfect foresight* about the persistence of the inflation pressures and place equal weight on the objectives of stabilizing inflation, stabilizing unemployment, and avoiding sharp funds rate changes. In this case, the optimal policy involves a 75 basis point funds rate hike by the end of 2006. In contrast, if the persistence of the shock does not become apparent until mid-2007, the optimal policy with *gradual learning* (dashed lines) generates a funds rate trajectory over the next six quarters that lies between the path obtained under perfect foresight and the path associated with the *empirical outcome-based rule* (dotted lines), in which policy responds to contemporaneous four-quarter average core inflation and to contemporaneous and lagged output gaps. All three policy paths generate fairly similar trajectories for inflation, reflecting the relatively sluggish inflation dynamics in the FRB/US model.

Deviations from Baseline (in percentage points)



under Alternative D could emphasize that several factors have the potential to sustain inflation pressures. The risk assessment could be similar to the Committee's statement in June, indicating that additional firming may be needed, but reference an intention to foster a moderation in inflation pressures.

(23) The policy choice and announcement of Alternative D would come as a considerable surprise to market participants and lead to an upward revision of their outlook for the path of policy. Short- and intermediate-term interest rates would climb significantly. Longer-term rates probably would also rise, especially if investors read the statement as suggesting that they should be more concerned about inflation prospects, but the increase would be limited if market participants also revised downward their perceptions of the Committee's long-term inflation objective. Equity prices would likely fall, while the foreign exchange value of the dollar might rise.

Money and Debt Forecasts

(24) Under the Greenbook forecast, M2 is expected to grow about 4 percent in 2006, reflecting the restraining effects of past policy tightenings and rising opportunity costs, and the velocity of M2 is forecast to increase about 2 percent. With short-term interest rates unchanged, however, opportunity cost is forecast to level out in coming months and subsequently decline a little. Consequently, M2 growth is expected to pick up in coming quarters and, in 2007, to about match the growth in nominal income of approximately 4³/₄ percent. Debt growth of the domestic nonfinancial sector is projected to drop from 9¹/₂ percent last year to 8¹/₄ percent in 2006 and to 6¹/₂ percent in 2007. Federal debt growth, which was depressed by unexpectedly strong tax receipts this spring, is expected to pick up over the forecast horizon. However, with the expected further deceleration in house prices, mortgage borrowing is projected to slow considerably from its recent strong pace.

Table 2
Alternative Growth Rates for M2
(percent, annual rate)

	No change/ Greenbook*	Raise 25 bp
Monthly Growth Rates		
Apr-06	4.0	4.0
May-06	1.1	1.1
Jun-06	5.9	5.9
Jul-06	4.7	4.7
Aug-06	3.3	3.0
Sep-06	2.7	2.0
Oct-06	2.6	1.8
Nov-06	2.7	2.0
Dec-06	2.8	2.2
Quarterly Growth Rates		
2005 Q3	4.5	4.5
2005 Q4	5.0	5.0
2006 Q1	6.3	6.3
2006 Q2	3.2	3.2
2006 Q3	4.1	3.9
2006 Q4	2.8	2.1
Annual Growth Rates		
2005	4.0	4.0
2006	4.1	3.9
2007	4.6	4.4
2008	5.0	5.0
Growth From	To	
Jul-06	Dec-06	2.8
		2.2

* No change in the target federal funds rate at this meeting. This forecast is consistent with nominal GDP and interest rates in the Greenbook forecast.

Directive and Balance of Risks Statement

(25) Draft language for the directive and draft risk assessments identical to those presented in Table 1 are provided below.

Directive Wording

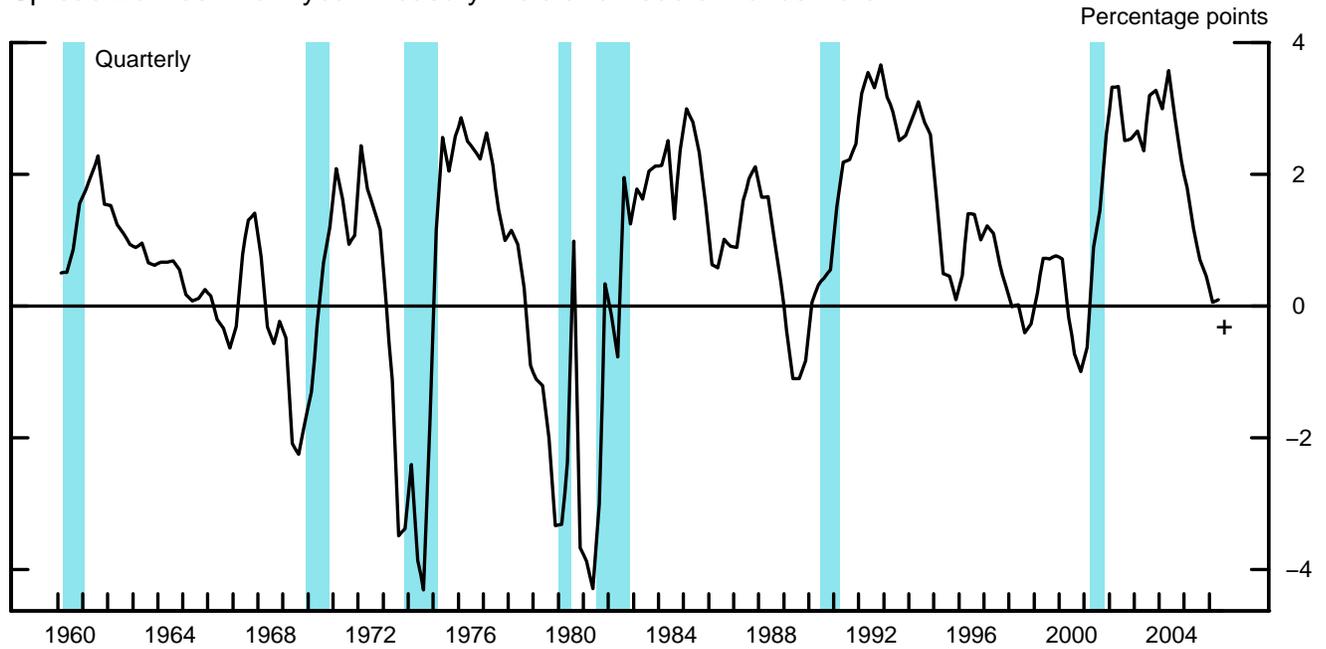
The Federal Open Market Committee seeks monetary and financial conditions that will foster price stability and promote sustainable growth in output. To further its long-run objectives, the Committee in the immediate future seeks conditions in reserve markets consistent with MAINTAINING/increasing/REDUCING the federal funds rate AT/to an average of around _____ 5¼ percent.

Risk Assessments

- A. In these circumstances, future policy adjustments will depend on the evolution of the outlook for both inflation and economic growth, as implied by incoming information.
- B. Although the Committee expects inflation pressures to diminish gradually, it judges that some inflation risks remain. The extent and timing of any additional firming that may be needed to address these risks will depend on the evolution of the outlook for both inflation and economic growth, as implied by incoming information.
- C. Same as A.
- D. The extent and timing of any additional firming that may be needed to foster a moderation in inflation pressures will depend on the evolution of the outlook for both inflation and economic growth, as implied by incoming information.

Treasury Yield Curve

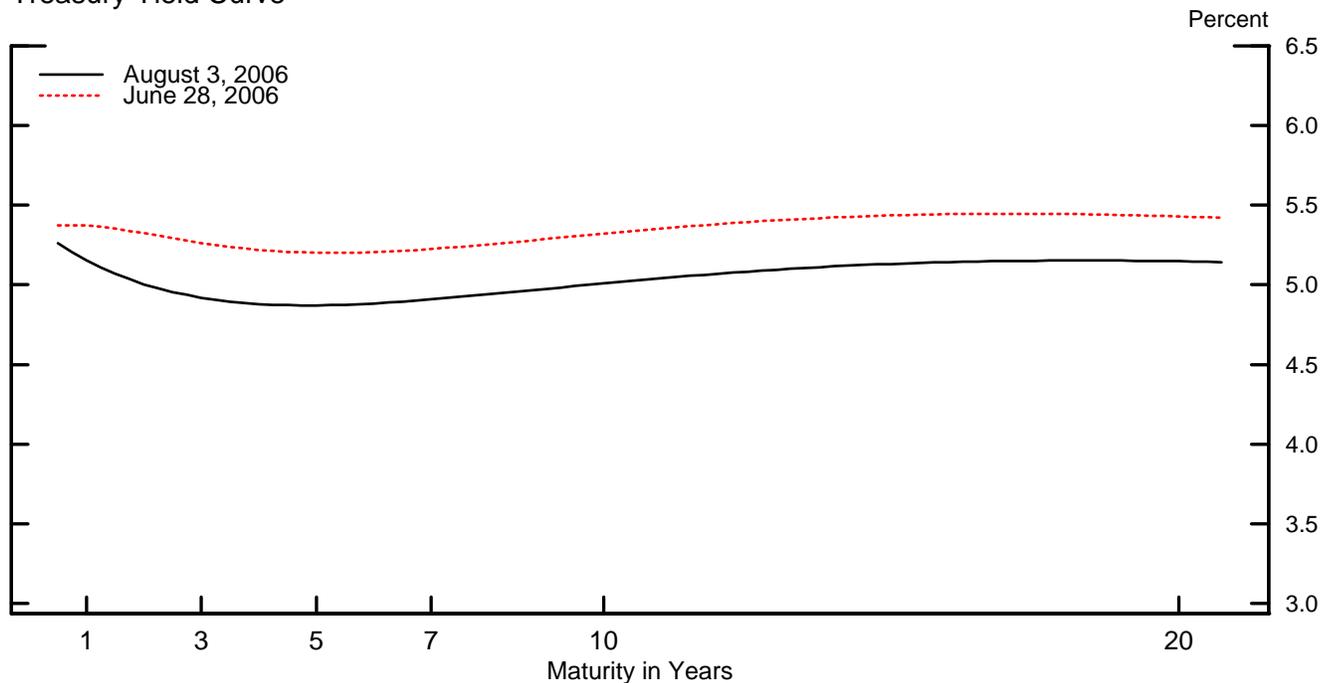
Spread Between Ten-year Treasury Yield and Federal Funds Rate



+ Denotes most recent weekly value.

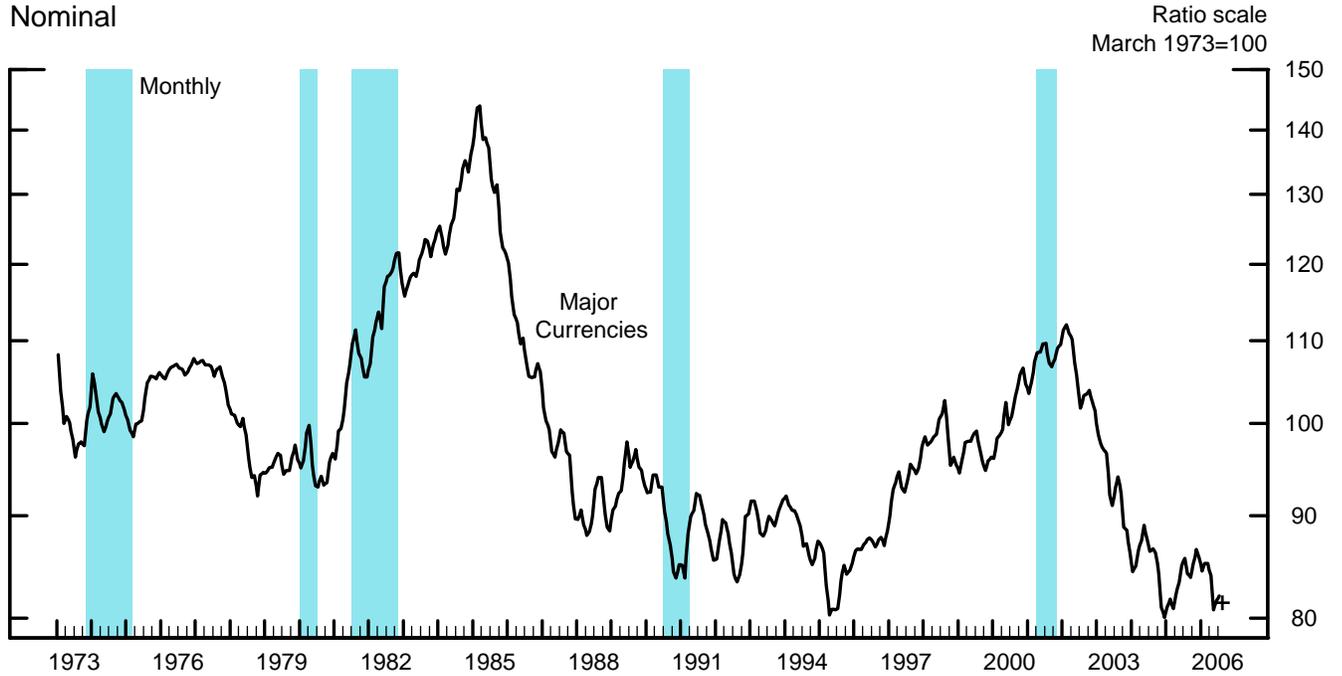
Note. Blue shaded regions denote NBER-dated recessions.

Treasury Yield Curve*

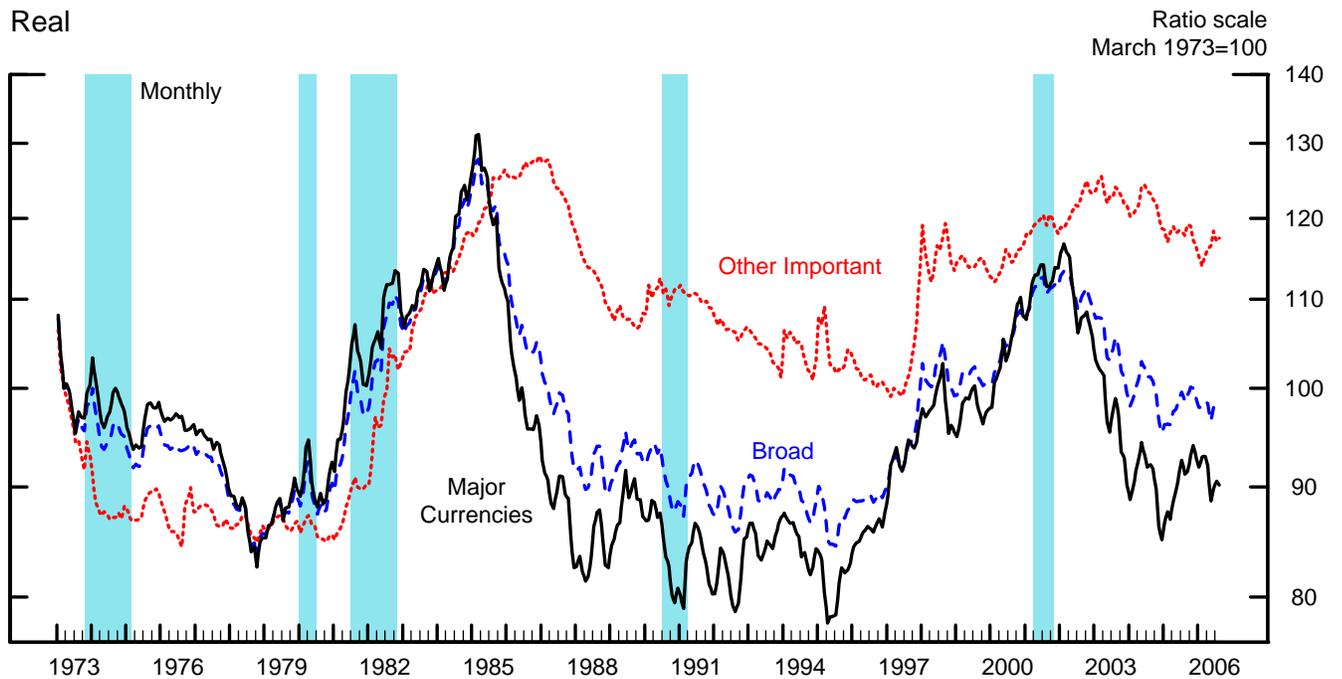


*Smoothed yield curve estimated from off-the-run Treasury coupon securities. Yields shown are those on notional par Treasury securities with semi-annual coupons.

Dollar Exchange Rate Indexes

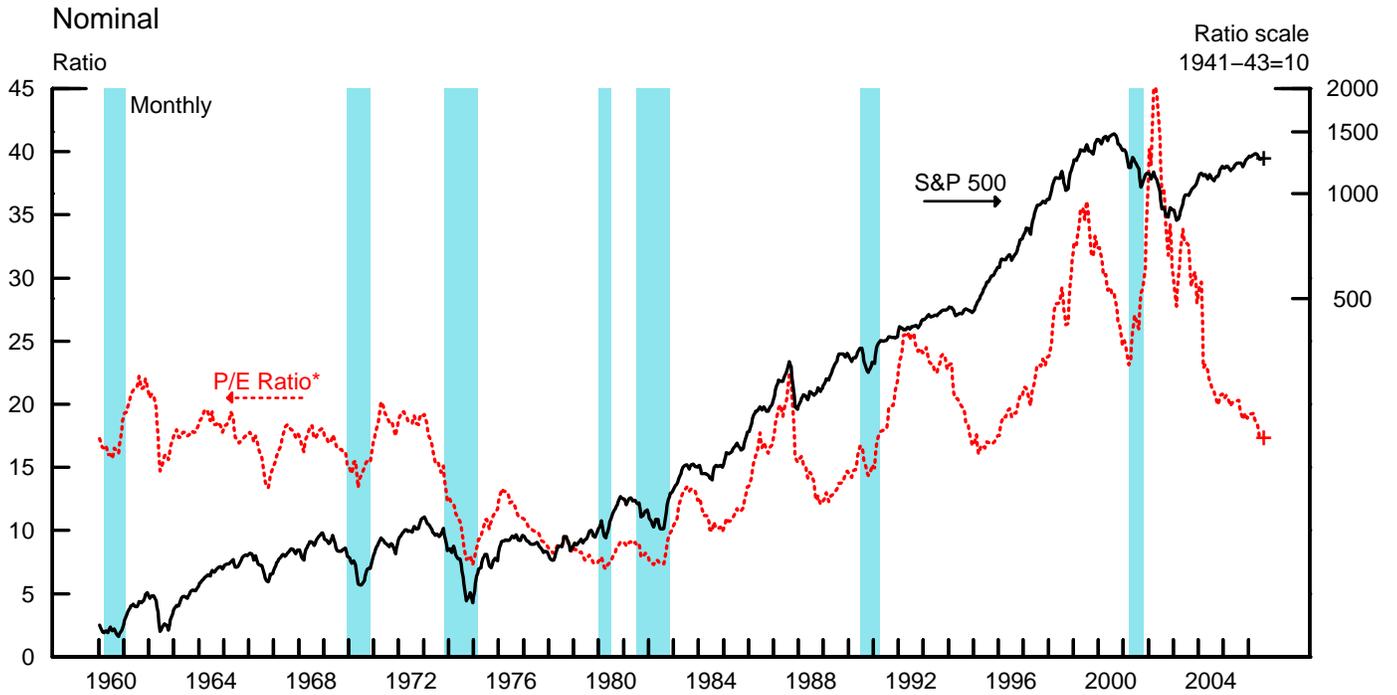


+ Denotes most recent weekly value.

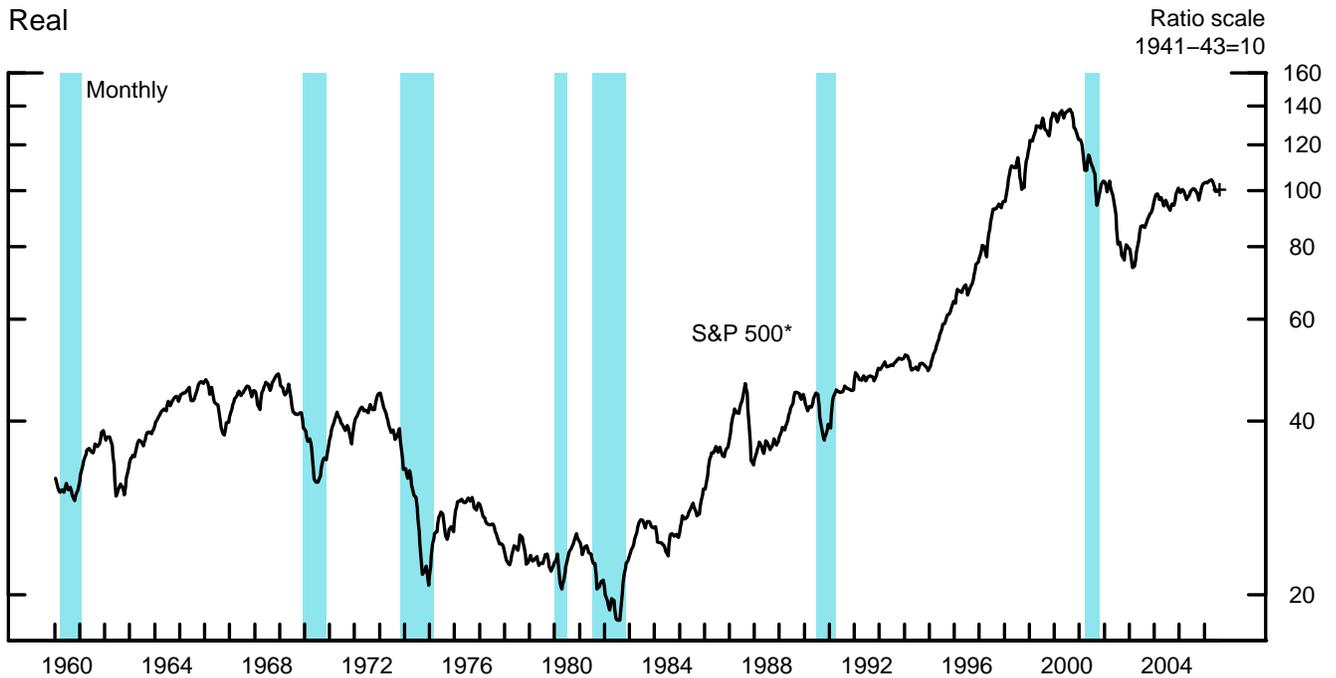


Note. The major currencies index is the trade-weighted average of currencies of the Euro area, Canada, Japan, the U.K., Switzerland, Australia, and Sweden. The other important trading partners index is the trade-weighted average of currencies of 19 other important trading partners. The Broad index is the trade-weighted average of currencies of all important trading partners. Real indexes have been adjusted for relative changes in U.S. and foreign consumer prices. Blue shaded regions denote NBER-dated recessions.

Stock Indexes



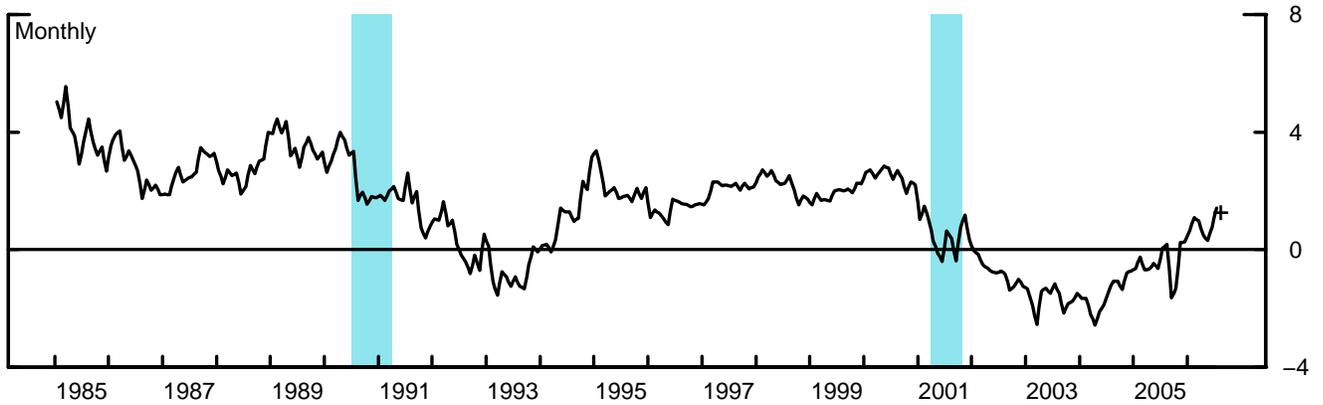
* Based on trailing four-quarter earnings.
+ Denotes most recent weekly value.



* Deflated by the CPI.
+ Denotes most recent weekly value.
Note. Blue shaded regions denote NBER-dated recessions.

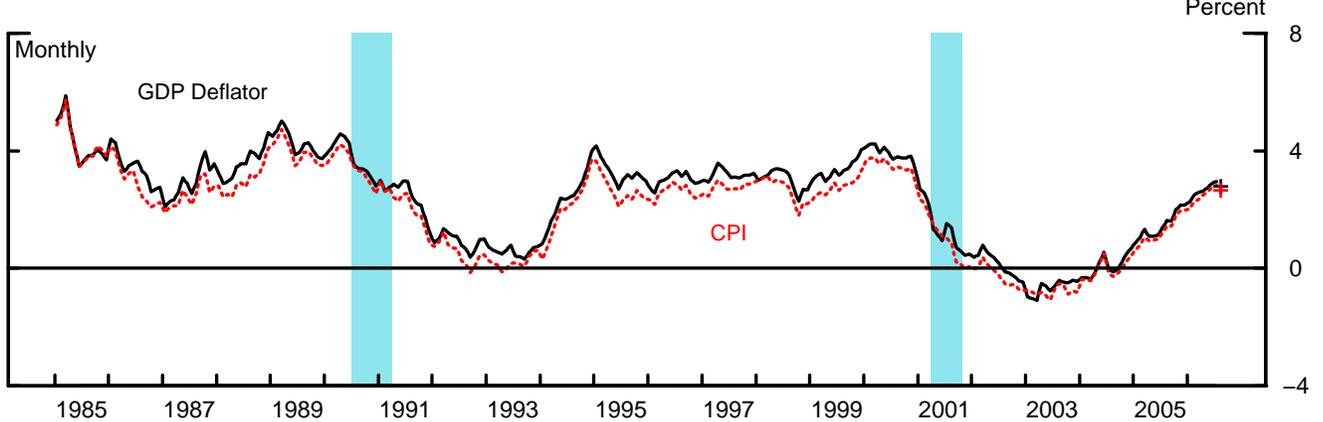
One-Year Real Interest Rates

One-Year Treasury Constant Maturity Yield Less One-Year Inflation Expectations (Michigan Survey)*



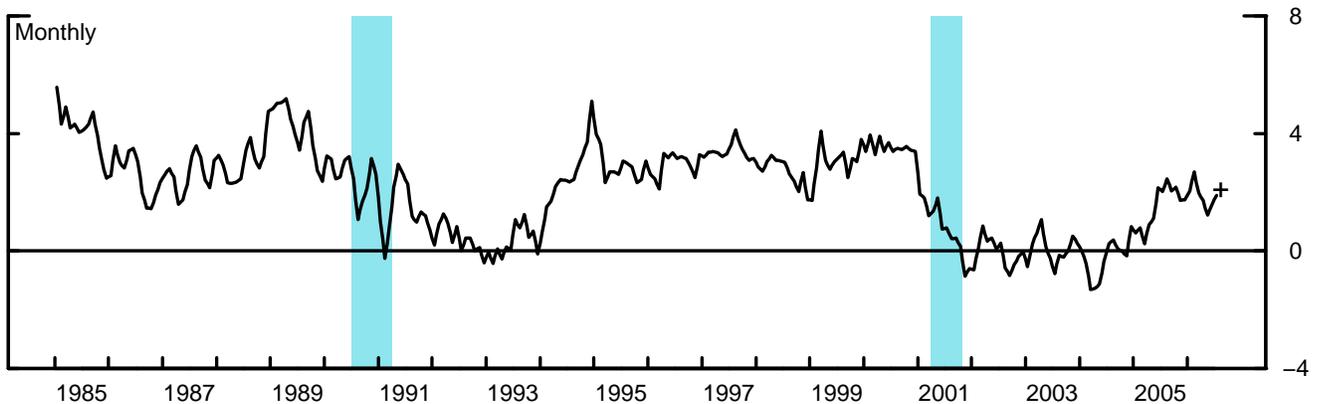
* Mean value of respondents.

One-Year Treasury Constant Maturity Yield Less One-Year Inflation Expectations (Philadelphia Fed)*



* ASA/NBER quarterly survey until 1990:Q1; Philadelphia Federal Reserve Bank Survey of Professional Forecasters thereafter. Median value of respondents.

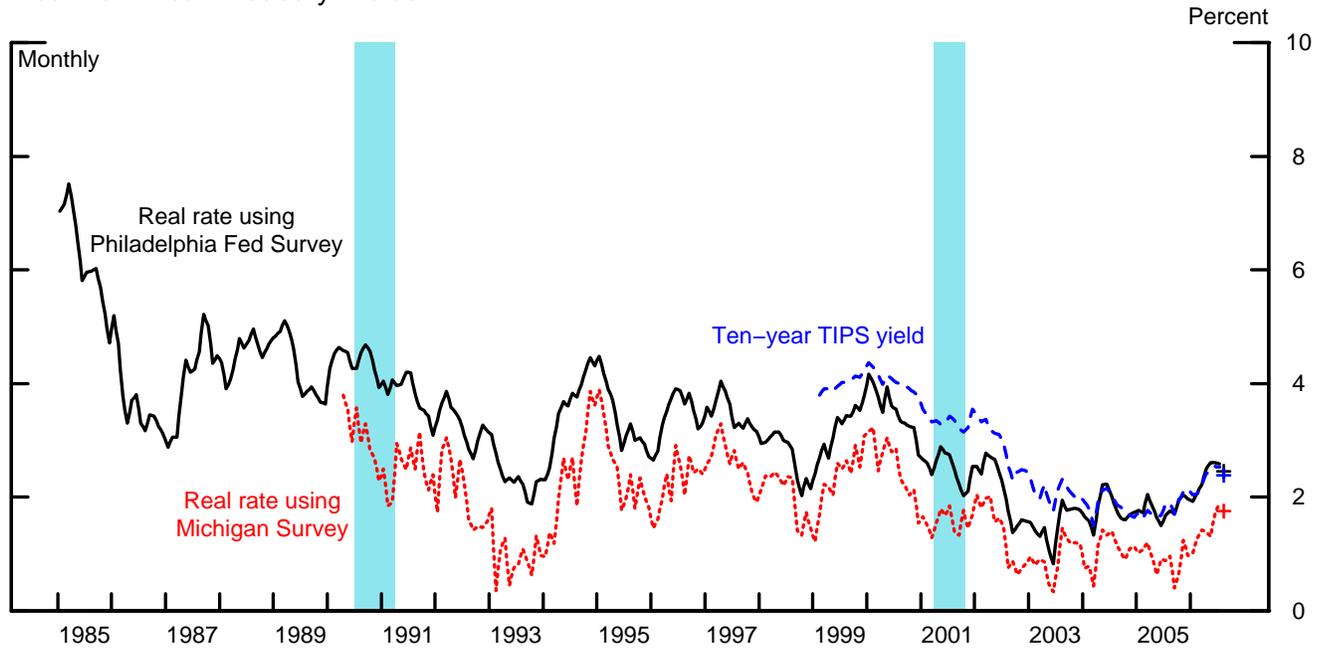
One-Year Treasury Constant Maturity Yield Less Change in the Core CPI from Three Months Prior



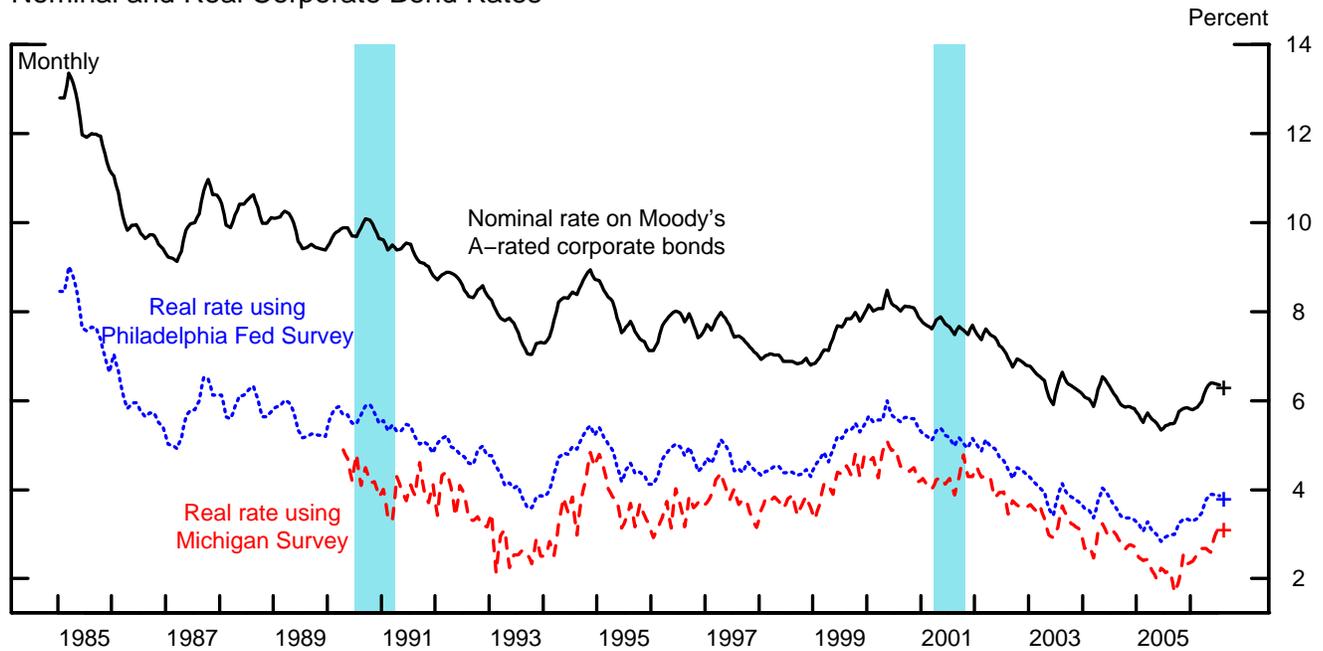
+ Denotes most recent weekly Treasury constant maturity yield less most recent inflation expectation.
Note. Blue shaded regions denote NBER-dated recessions.

Long-Term Real Interest Rates*

Real Ten-Year Treasury Yields



Nominal and Real Corporate Bond Rates



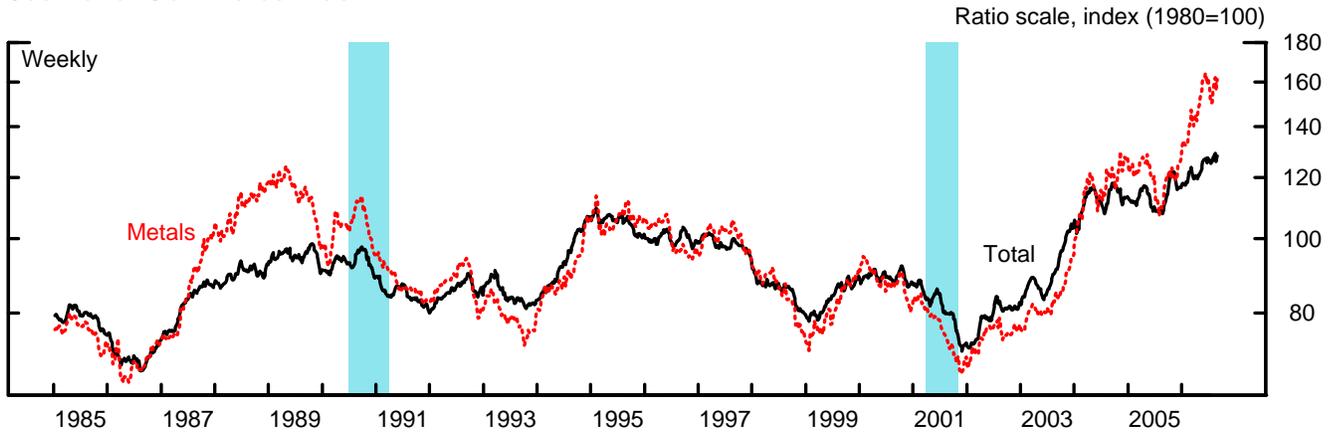
* For real rates, measures using the Philadelphia Fed Survey employ the ten-year inflation expectations from the Blue Chip Survey until April 1991 and the Philadelphia Federal Reserve Bank Survey of Professional Forecasters thereafter (median value of respondents). Measures using the Michigan Survey employ the five- to ten-year inflation expectations from that survey (mean value of respondents).

+ For TIPS and nominal corporate rate, denotes the most recent weekly value. For other real rate series, denotes the most recent weekly nominal yield less the most recent inflation expectation.

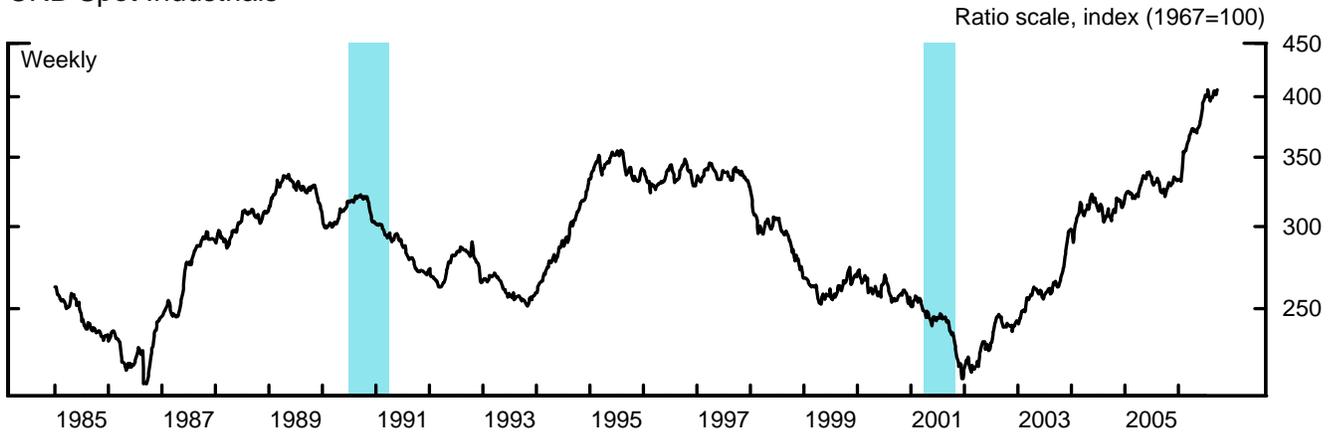
Note. Blue shaded regions denote NBER-dated recessions.

Commodity Price Measures

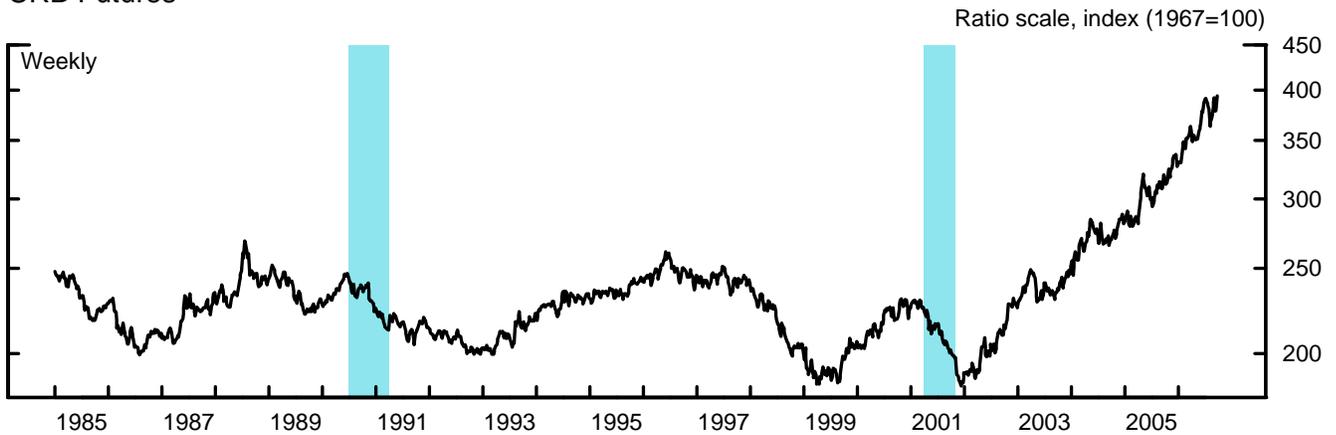
Journal of Commerce Index



CRB Spot Industrials



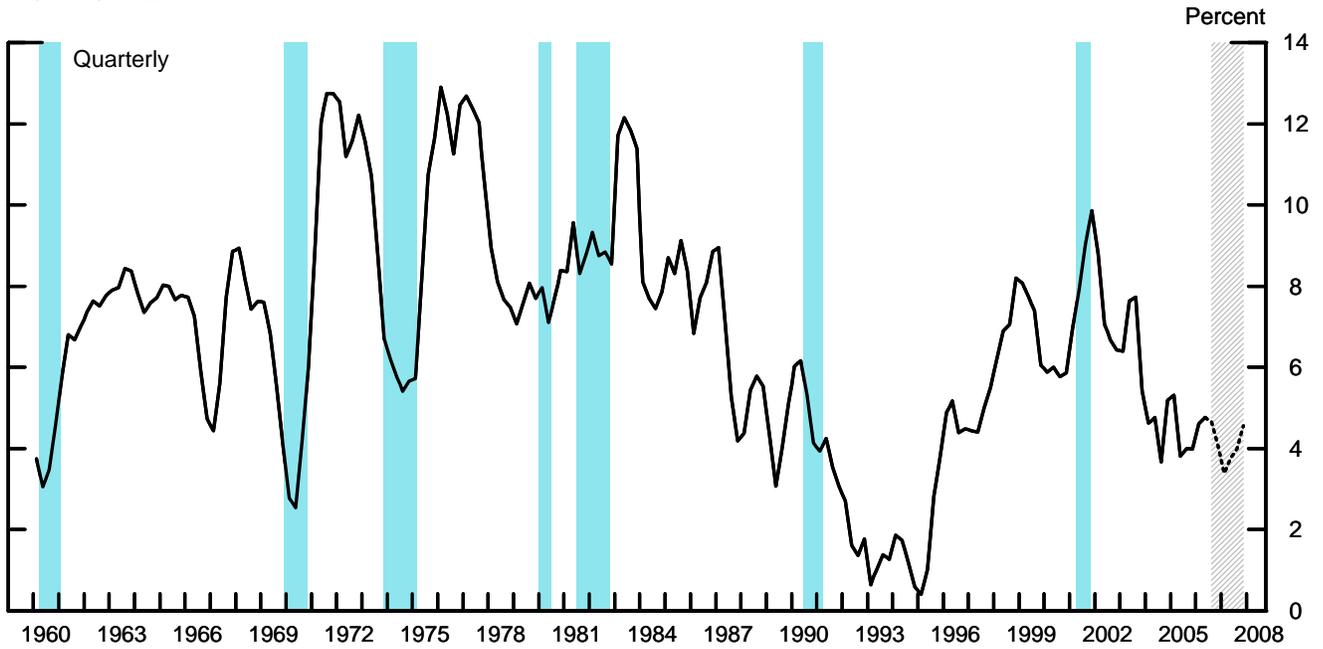
CRB Futures



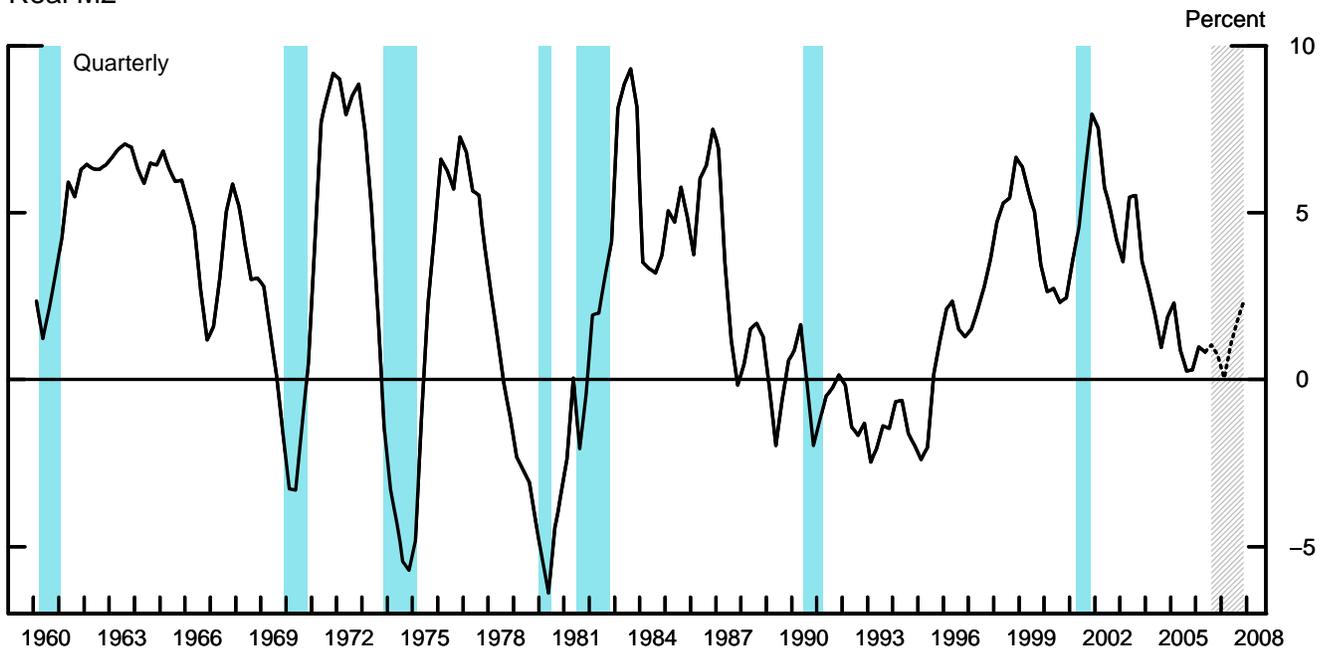
Note. Blue shaded regions denote NBER-dated recessions.

Growth of M2

Nominal M2

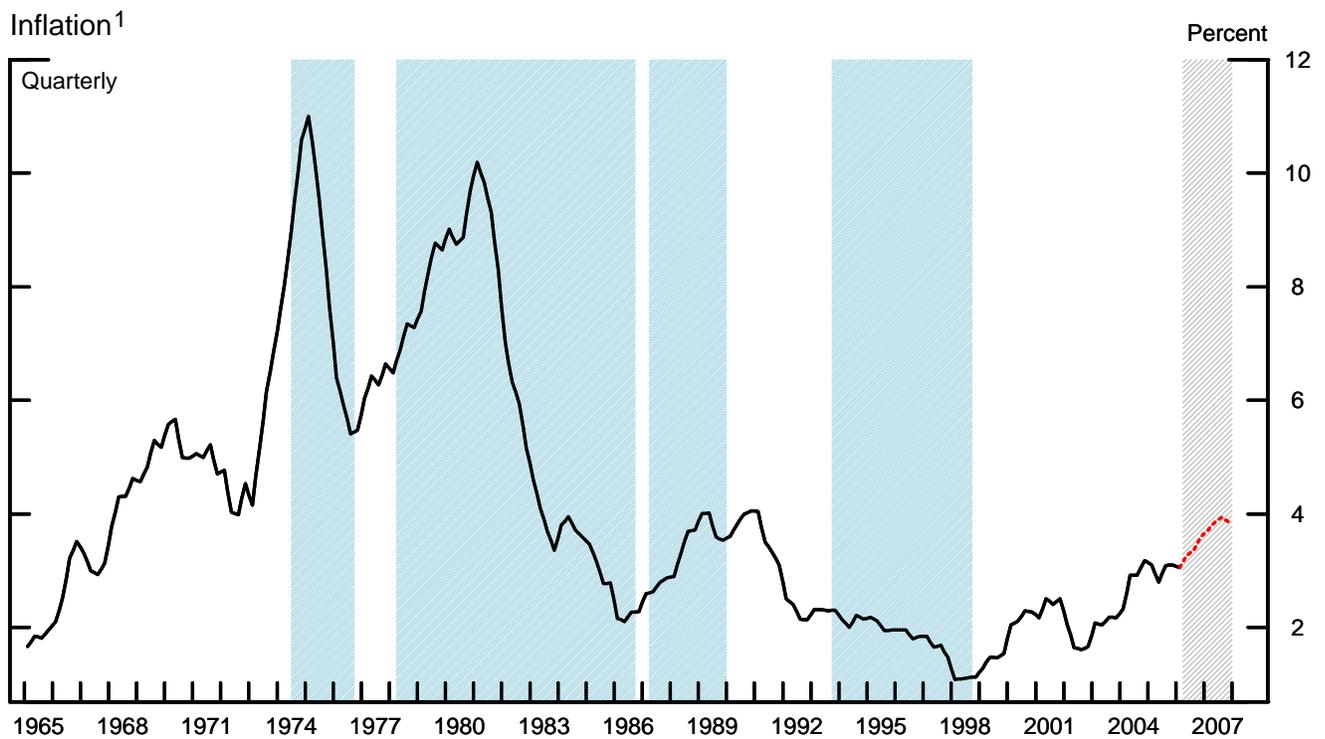
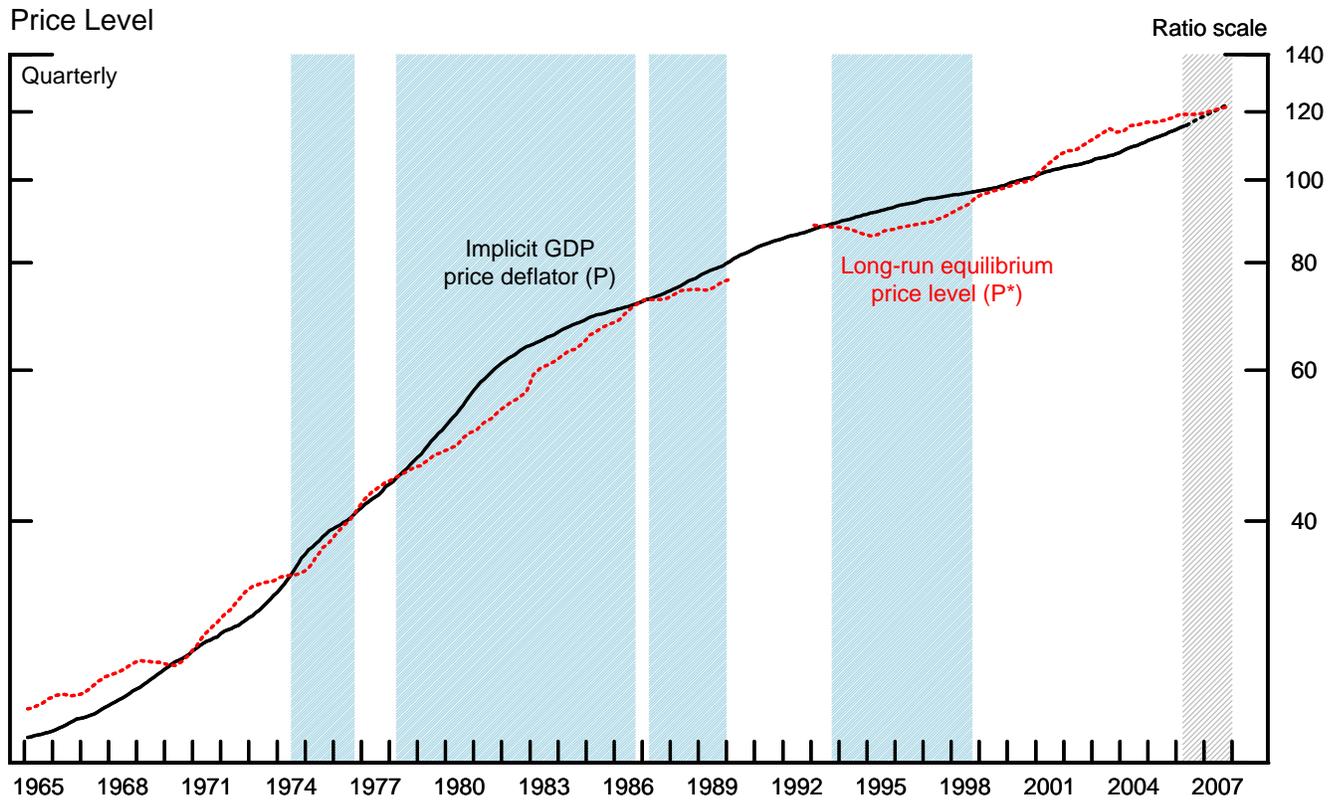


Real M2



Note. Four-quarter moving average. Blue shaded regions denote NBER-dated recessions. Gray areas denote projection period. Real M2 is deflated by CPI.

Inflation Indicator Based on M2



1. Change in the implicit GDP price deflator over the previous four quarters.

Note: P^* is defined to equal M2 times V^* divided by potential GDP. V^* , or long-run velocity, is estimated using average velocity over the 1959:Q1-to-1989:Q4 period and then, after a break, over the interval from 1993:Q1 to the present. For the forecast period, P^* is based on the staff M2 forecast and P is simulated using a short-run dynamic model relating P to P^* . Blue areas indicate periods in which P^* is notably less than P . Gray areas denote the projection period.

**Selected Interest Rates
(Percent)**

	Short-term						Long-term									
	Federal funds	Treasury bills secondary market			CDs secondary market	Comm. paper	Off-the-run Treasury yields				Indexed yields		Moody's Baa	Municipal Bond Buyer	Conventional home mortgages primary market	
		4-week	3-month	6-month	3-month	1-month	2-year	5-year	10-year	20-year	5-year	10-year			Fixed-rate	ARM
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
05 -- High	4.30	4.01	4.08	4.37	4.49	4.30	4.52	4.59	4.79	5.04	2.11	2.22	6.48	5.24	6.37	5.22
05 -- Low	2.19	1.86	2.31	2.63	2.50	2.24	3.11	3.58	3.97	4.28	0.98	1.50	5.64	4.72	5.53	4.10
06 -- High	5.31	5.20	5.13	5.33	5.50	5.30	5.32	5.20	5.32	5.45	2.60	2.68	6.94	5.31	6.80	5.83
06 -- Low	4.22	3.91	4.17	4.37	4.50	4.22	4.34	4.28	4.42	4.59	1.82	1.94	6.17	5.04	6.10	5.15
Monthly																
Aug 05	3.50	3.33	3.52	3.78	3.77	3.47	4.06	4.12	4.34	4.56	1.69	1.89	5.96	4.90	5.82	4.55
Sep 05	3.62	3.21	3.50	3.80	3.87	3.64	3.96	4.01	4.28	4.55	1.40	1.70	6.03	4.94	5.77	4.51
Oct 05	3.78	3.49	3.79	4.13	4.13	3.84	4.31	4.34	4.56	4.77	1.69	1.94	6.30	5.13	6.07	4.86
Nov 05	4.00	3.91	3.97	4.30	4.31	4.01	4.44	4.46	4.66	4.85	1.96	2.09	6.39	5.22	6.33	5.14
Dec 05	4.16	3.67	3.98	4.33	4.45	4.23	4.43	4.39	4.57	4.76	2.07	2.15	6.32	5.18	6.27	5.17
Jan 06	4.29	4.10	4.34	4.47	4.56	4.36	4.42	4.35	4.50	4.67	1.92	2.03	6.24	5.11	6.15	5.17
Feb 06	4.49	4.38	4.54	4.69	4.72	4.47	4.69	4.60	4.66	4.75	1.97	2.06	6.27	5.12	6.25	5.34
Mar 06	4.59	4.55	4.63	4.79	4.88	4.61	4.77	4.72	4.82	4.93	2.08	2.21	6.41	5.10	6.32	5.42
Apr 06	4.79	4.60	4.72	4.90	5.03	4.80	4.92	4.90	5.07	5.24	2.25	2.41	6.68	5.19	6.51	5.62
May 06	4.94	4.69	4.84	5.01	5.15	4.95	5.00	4.98	5.19	5.36	2.26	2.45	6.75	5.24	6.60	5.63
Jun 06	4.99	4.71	4.92	5.18	5.35	5.12	5.15	5.04	5.18	5.30	2.41	2.54	6.78	5.24	6.68	5.71
Jul 06	5.24	4.89	5.08	5.27	5.46	5.24	5.15	5.02	5.15	5.26	2.43	2.52	6.76	5.21	6.76	5.79
Weekly																
Jun 2 06	5.00	4.75	4.84	5.05	5.22	4.99	5.02	4.97	5.16	5.33	2.26	2.44	6.75	5.23	6.67	5.68
Jun 9 06	4.99	4.78	4.86	5.06	5.24	5.02	5.02	4.93	5.08	5.22	2.31	2.46	6.67	5.18	6.62	5.63
Jun 16 06	5.00	4.67	4.89	5.16	5.33	5.10	5.11	4.99	5.12	5.24	2.37	2.50	6.71	5.20	6.63	5.66
Jun 23 06	4.95	4.63	4.94	5.25	5.41	5.19	5.25	5.13	5.25	5.36	2.50	2.61	6.86	5.27	6.71	5.75
Jun 30 06	5.03	4.73	5.04	5.30	5.46	5.24	5.27	5.16	5.29	5.39	2.53	2.63	6.90	5.31	6.78	5.82
Jul 7 06	5.19	4.76	5.03	5.31	5.46	5.25	5.24	5.12	5.25	5.35	2.48	2.60	6.85	5.31	6.79	5.83
Jul 14 06	5.25	4.87	5.06	5.29	5.48	5.22	5.18	5.05	5.16	5.26	2.44	2.54	6.76	5.21	6.74	5.75
Jul 21 06	5.25	4.89	5.10	5.28	5.48	5.23	5.14	5.01	5.13	5.24	2.42	2.51	6.75	5.19	6.80	5.80
Jul 28 06	5.24	4.98	5.10	5.22	5.45	5.25	5.09	4.97	5.10	5.23	2.39	2.47	6.72	5.13	6.72	5.78
Aug 4 06	--	5.15	5.11	5.18	5.44	5.26	4.99	4.88	5.03	5.17	2.32	2.42	--	--	6.63	5.69
Daily																
Jul 18 06	5.22	4.94	5.13	5.33	5.47	5.23	5.22	5.09	5.20	5.30	2.49	2.58	6.81	--	--	--
Jul 19 06	5.23	4.91	5.11	5.28	5.50	5.26	5.14	5.00	5.12	5.23	2.41	2.50	6.75	--	--	--
Jul 20 06	5.24	4.85	5.08	5.24	5.49	5.22	5.10	4.96	5.09	5.21	2.38	2.47	6.72	--	--	--
Jul 21 06	5.23	4.86	5.09	5.25	5.45	5.22	5.11	4.98	5.11	5.22	2.40	2.50	6.74	--	--	--
Jul 24 06	5.24	4.88	5.10	5.26	5.45	5.23	5.11	4.98	5.11	5.23	2.42	2.51	6.74	--	--	--
Jul 25 06	5.24	5.01	5.13	5.25	5.46	5.29	5.13	5.01	5.13	5.25	2.42	2.49	6.75	--	--	--
Jul 26 06	5.24	5.00	5.11	5.21	5.46	5.24	5.09	4.97	5.10	5.23	2.38	2.46	6.72	--	--	--
Jul 27 06	5.27	5.02	5.10	5.20	5.45	5.25	5.08	4.97	5.11	5.23	2.38	2.47	6.72	--	--	--
Jul 28 06	5.26	4.97	5.07	5.16	5.45	5.24	5.01	4.91	5.05	5.19	2.35	2.43	6.67	--	--	--
Jul 31 06	5.31	5.01	5.10	5.18	5.43	5.27	5.00	4.89	5.05	5.19	2.35	2.44	6.67	--	--	--
Aug 1 06	5.27	5.20	5.12	5.18	5.43	5.26	4.99	4.88	5.04	5.18	2.32	2.42	6.68	--	--	--
Aug 2 06	5.25	5.20	5.10	5.18	5.44	5.25	4.98	4.86	5.02	5.16	2.28	2.39	6.65	--	--	--
Aug 3 06	5.25 ^p	5.19	5.11	5.19	5.44	--	5.00	4.87	5.01	5.15	2.30	2.38	--	--	--	--

NOTE: Weekly data for columns 1 through 13 are week-ending averages. Columns 2 through 4 are on a coupon equivalent basis. Data in column 6 are interpolated from data on certain commercial paper trades settled by the Depository Trust Company. Column 14 is the Bond Buyer revenue index, which is a 1-day quote for Thursday. Column 15 is the average contract rate on new commitments for fixed-rate mortgages (FRMs) with 80 percent loan-to-value ratios at major institutional lenders. Column 16 is the average initial contract rate on new commitments for 1-year, adjustable-rate mortgages (ARMs) at major institutional lenders offering both FRMs and ARMs with the same number of discount points.

p - preliminary data

Appendix Table 2
Money Aggregates
 Seasonally Adjusted

Period	M1	M2	Nontransactions Components in M2
	1	2	3
<u>Annual growth rates (%):</u>			
Annually (Q4 to Q4)			
2003	7.4	5.5	5.0
2004	5.4	5.3	5.3
2005	0.3	4.0	5.1
Quarterly (average)			
2005-Q3	0.8	4.5	5.5
Q4	-0.3	5.0	6.4
2006-Q1	2.4	6.3	7.3
Q2	1.1	3.2	3.8
Monthly			
2005-July	-4.9	3.9	6.2
Aug.	6.7	5.7	5.5
Sep.	-3.0	5.6	7.9
Oct.	0.3	5.3	6.7
Nov.	0.6	3.5	4.3
Dec.	-5.7	5.0	7.8
2006-Jan.	11.8	11.0	10.8
Feb.	-5.5	3.4	5.7
Mar.	7.8	2.7	1.4
Apr.	4.9	4.0	3.7
May	2.6	1.1	0.8
June	-20.4	5.9	12.7
July e	1.7	4.7	5.5
<u>Levels (\$billions):</u>			
Monthly			
2006-Feb.	1375.9	6752.2	5376.4
Mar.	1384.9	6767.5	5382.6
Apr.	1390.6	6790.0	5399.4
May	1393.6	6796.5	5403.0
June	1369.9	6829.9	5460.0
Weekly			
2006-June 5	1382.7	6808.3	5425.5
12	1356.3	6806.7	5450.4
19	1357.2	6838.6	5481.5
26	1373.5	6849.4	5475.9
July 3	1402.6	6870.2	5467.6
10	1373.3	6860.4	5487.1
17p	1352.9	6860.5	5507.6
24p	1372.4	6855.6	5483.2

p preliminary
 e estimated

Appendix Table 3
Changes in System Holdings of Securities ¹
(Millions of dollars, not seasonally adjusted)

August 3, 2006

	Treasury Bills			Treasury Coupons						Federal Agency Redemptions (-)	Net change total outright holdings ⁴	Net RPs ⁵		
	Net Purchases ²	Redemptions (-)	Net Change	Net Purchases ³				Redemptions (-)	Net Change			Short-Term ⁶	Long-Term ⁷	Net Change
				< 1	1-5	5-10	Over 10							
2003	18,150	---	18,150	6,565	7,814	4,107	220	---	18,706	10	36,846	2,223	1,036	3,259
2004	18,138	---	18,138	7,994	17,249	5,763	1,364	---	32,370	---	50,507	-2,522	-331	-2,853
2005	8,300	---	8,300	2,894	11,309	3,626	2,007	2,795	17,041	---	25,341	-2,415	-192	-2,607
2005 QII	2,010	---	2,010	---	3,495	1,708	1,015	1,305	4,914	---	6,923	1,082	1,361	2,443
QIII	4,743	---	4,743	1,298	5,025	1,118	90	757	6,774	---	11,517	964	1,538	2,502
QIV	1,512	---	1,512	1,596	2,789	800	902	189	5,897	---	7,410	-1,202	-1,293	-2,496
2006 QI	4,099	---	4,099	1,200	7,443	1,704	1,219	1,321	10,245	---	14,345	793	1,839	2,631
QII	---	---	---	1,375	6,063	1,181	---	1,217	7,402	---	7,402	-627	-4,413	-5,040
2005 Dec	---	---	---	---	---	---	---	---	---	---	---	1,322	6,719	8,042
2006 Jan	1,563	---	1,563	---	2,809	1,505	205	1,321	3,198	---	4,761	252	-1,355	-1,103
Feb	1,308	---	1,308	1,200	2,498	25	924	---	4,647	---	5,955	-396	-3,672	-4,068
Mar	1,228	---	1,228	---	2,136	174	90	---	2,400	---	3,628	393	-232	162
Apr	---	---	---	---	1,096	---	---	---	1,096	---	1,096	626	-3,995	-3,368
May	---	---	---	1,375	2,317	101	---	1,217	2,576	---	2,576	-756	2,511	1,755
Jun	---	---	---	---	2,650	1,080	---	---	3,730	---	3,730	-2,633	-2,077	-4,710
Jul	1,649	---	1,649	---	549	---	---	3,931	-3,382	---	-1,733	-909	110	-800
2006 May 10	---	---	---	---	---	---	---	---	---	---	---	-2,177	-1,000	-3,177
May 17	---	---	---	---	1,098	---	---	1,217	-119	---	-119	569	2,000	2,569
May 24	---	---	---	1,375	1,219	101	---	---	2,695	---	2,695	-453	---	-453
May 31	---	---	---	---	---	---	---	---	---	---	---	2,206	1,000	3,206
Jun 7	---	---	---	---	1,334	1,080	---	---	2,414	---	2,414	-1,091	---	-1,091
Jun 14	---	---	---	---	1,316	---	---	---	1,316	---	1,316	-3,350	-3,000	-6,350
Jun 21	---	---	---	---	---	---	---	---	---	---	---	-2,352	-1,000	-3,352
Jun 28	---	---	---	---	---	---	---	---	---	---	---	2,334	-3,000	-666
Jul 5	---	---	---	---	---	---	---	---	---	---	---	3,395	5,000	8,395
Jul 12	---	---	---	---	---	---	---	---	---	---	---	-6,958	---	-6,958
Jul 19	1,649	---	1,649	---	549	---	---	3,931	-3,382	---	-1,733	6,023	-4,000	2,023
Jul 26	---	---	---	---	---	---	---	---	---	---	---	-6,472	3,000	-3,472
Aug 2	---	---	---	---	---	---	---	---	---	---	---	5,587	---	5,587
2006 Aug 3	---	---	---	---	---	---	---	---	---	---	---	-2,255	-3,000	-5,255
Intermeeting Period														
Jun 29-Aug 3	1,649	---	1,649	---	549	---	---	3,931	-3,382	---	-1,733	597	1,000	1,597
Memo: LEVEL (bil. \$)														
Aug 3			277.0	128.2	218.6	61.4	79.7		487.9	---	764.8	-18.3	12.0	-6.3

1. Change from end-of-period to end-of-period. Excludes changes in compensation for the effects of inflation on the principal of inflation-indexed securities.
2. Outright purchases less outright sales (in market and with foreign accounts).
3. Outright purchases less outright sales (in market and with foreign accounts). Includes short-term notes acquired in exchange for maturing bills. Excludes maturity shifts and rollovers of maturing issues, except the rollover of inflation compensation.

4. Includes redemptions (-) of Treasury and agency securities.
5. RPs outstanding less reverse RPs.
6. Original maturity of 13 days or less.
7. Original maturity of 14 to 90 days.