

## **Prefatory Note**

The attached document represents the most complete and accurate version available based on original files from the FOMC Secretariat at the Board of Governors of the Federal Reserve System.

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JUNE 22, 2006

# MONETARY POLICY ALTERNATIVES

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

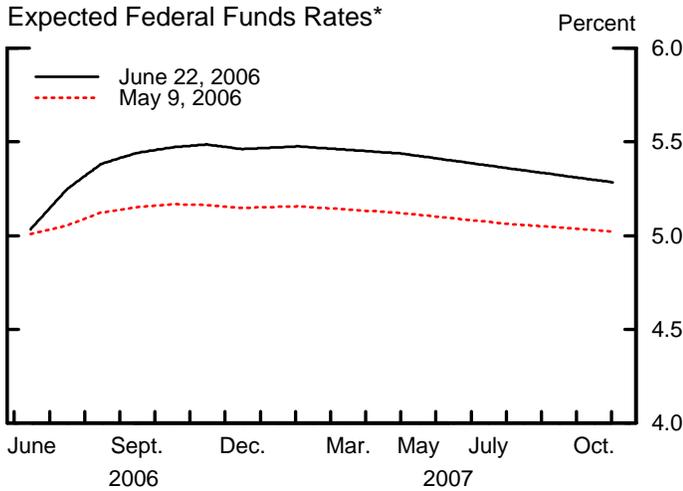
**MONETARY POLICY ALTERNATIVES****Recent Developments**

(1) Although the decision at the May 10 FOMC meeting to raise the target federal funds rate 25 basis points to 5 percent was widely expected, the indication in the accompanying statement that “some further policy firming may yet be needed” reportedly prompted financial market participants to raise their near-term policy expectations slightly that afternoon.<sup>1</sup> Over the intermeeting period, data releases on economic activity generally came in soft relative to expectations, while readings on inflation surprised to the upside, apparently leaving investors less optimistic about prospects for growth and more concerned about inflation. Those inflation concerns seemed to be assuaged by the release of the FOMC minutes and speeches by several Federal Reserve policymakers. The expected federal funds rate at the end of 2007 rose about 25 basis points (Chart 1). As judged from federal funds futures quotes and the Desk’s survey of primary dealers, market participants appear virtually certain that the FOMC will hike the target funds rate 25 basis points at its upcoming meeting, and place high odds on another such increase at the August meeting (see the box “Probabilities of Alternative Trajectories of Monetary Policy”). The expected policy path currently peaks near 5½ percent toward the end of this year and then slopes down gradually thereafter. Policy uncertainty, as measured by volatilities implied by Eurodollar options, remained low over the intermeeting period, as did the implied volatility of longer-term Treasury rates.

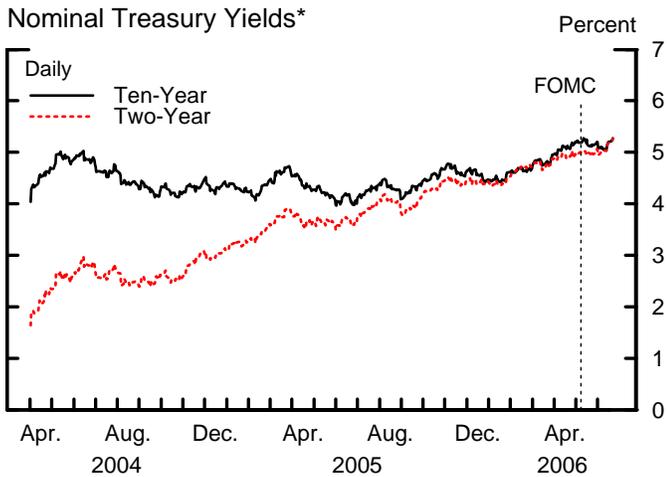
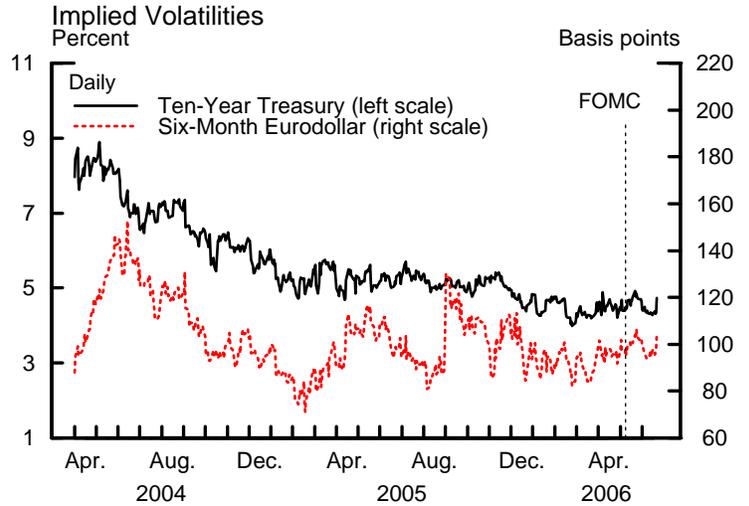
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<sup>1</sup> The effective federal funds rate averaged near its intended level over most of the intermeeting period, but this morning federal funds are trading a few basis points above the target in anticipation of tightening at next Thursday’s meeting. During the period, the Desk purchased \$7.5 billion of Treasury coupon securities in the market. The volume of outstanding long-term RPs declined \$4 billion, to \$11 billion.

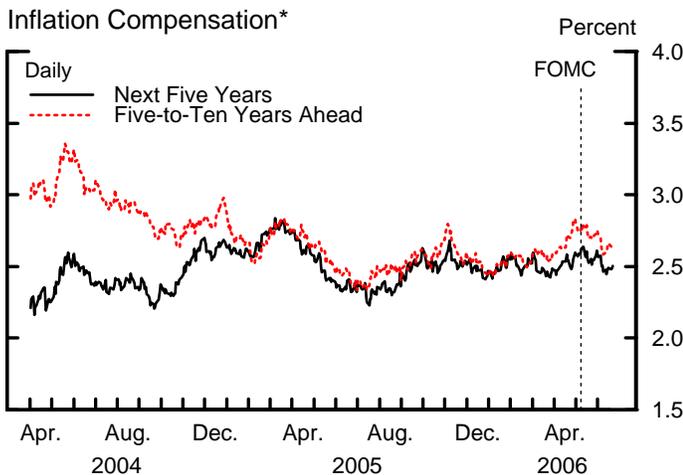
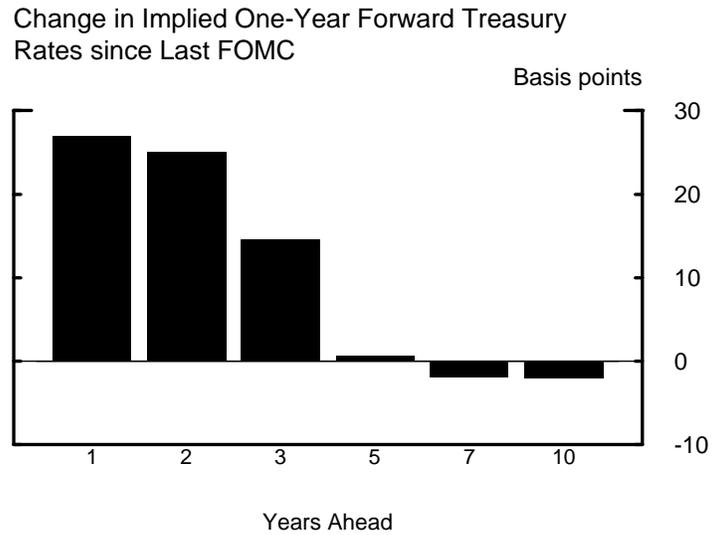
### Chart 1 Interest Rate Developments



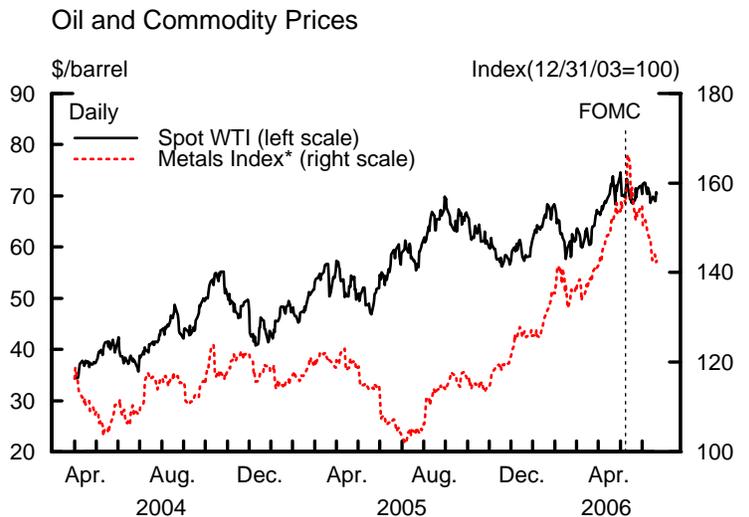
\*Estimates from federal funds and Eurodollar futures, with an allowance for term premiums and other adjustments.



\*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.



\*Source: Journal of Commerce.

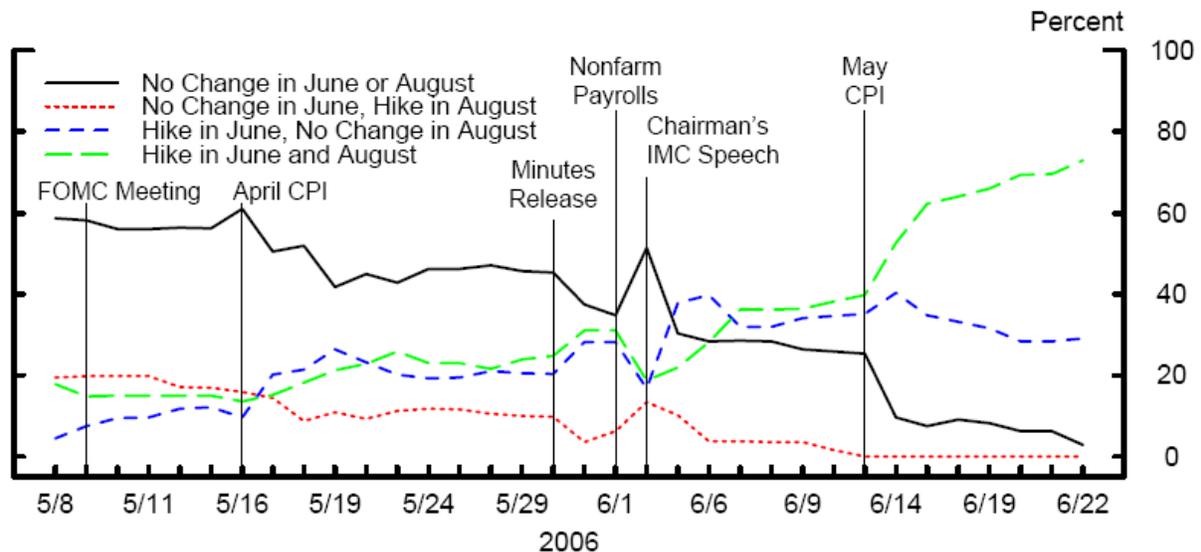
Note: Vertical lines indicate May 9, 2006. Last daily observations are for June 22, 2006.

### Probabilities of Alternative Trajectories of Monetary Policy

On the assumption that at each of its next two meetings the Committee will choose either to leave the target federal funds rate unchanged or to increase it by 25 basis points, there are four possible near-term paths for monetary policy. Quotes on federal funds futures and options can be used to solve for the implied probabilities of each of these possible paths. The time series of these probabilities since just before the last FOMC meeting are shown in the chart below.

Around the time of the May FOMC meeting, market participants apparently placed better-than-even odds on the target federal funds rate being left unchanged at both the June and August meetings. However, the probability of this outcome subsequently fell substantially, especially following the Chairman’s comments at the International Monetary Conference, and it is now close to zero. Early in the intermeeting period, investors had viewed a pause in June followed by a rate hike in August as possible, but the assessed chance of that outcome has dwindled to zero. The odds of a rate hike in June followed by a pause in August rose over most of the intermeeting period, and now stand a bit below 40 percent. The probability of rate hikes at both the June and August meetings has climbed, especially following the release of May CPI data, and is now over 60 percent.

Probabilities of Alternative Policy Paths over June and August FOMC meetings\*



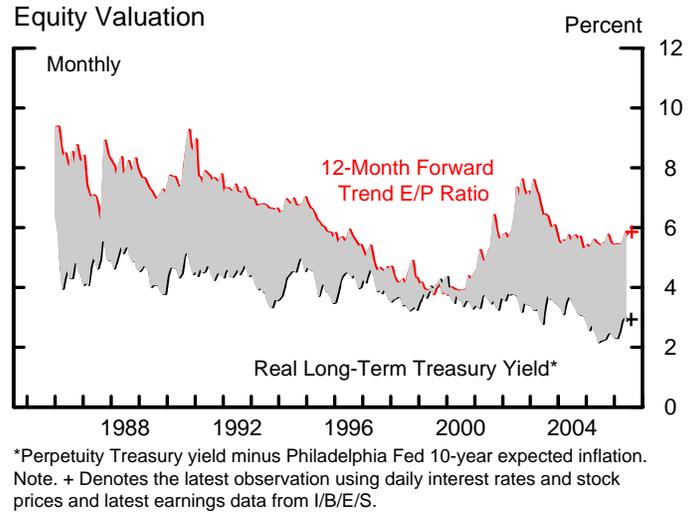
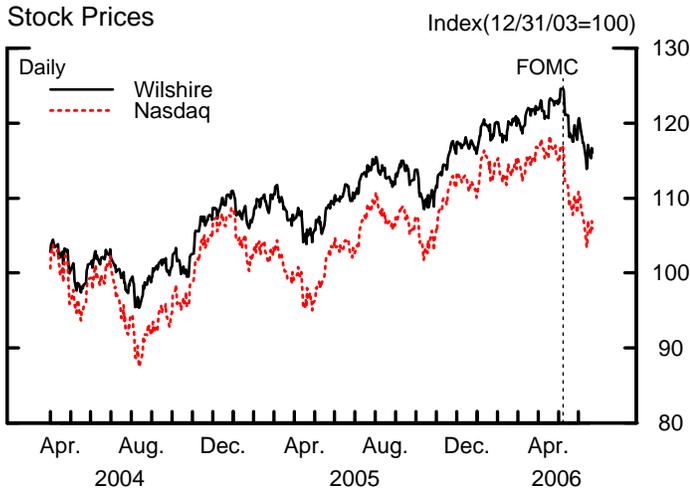
\*Calculated from federal funds futures and options prices, with term premium and other adjustments.

(2) Nominal Treasury yields showed mixed changes, on balance, over the intermeeting period: Two-year yields rose about 25 basis points, consistent with the increase in near-term policy expectations. However, forward rates at maturities of five years and beyond were little changed, leaving ten-year coupon yields up only about 10 basis points. Inflation compensation calculated from yields on nominal and indexed Treasury securities fell about 10 basis points across the maturity spectrum. This drop, which was consistent with a decline in some survey measures of inflation expectations and reversed most of the increase posted earlier in the spring, appears to have been a reaction to statements by Federal Reserve officials suggesting a willingness to tighten policy in order to contain inflation risks, as well as to soft readings on economic activity and perhaps also to lower commodity prices.

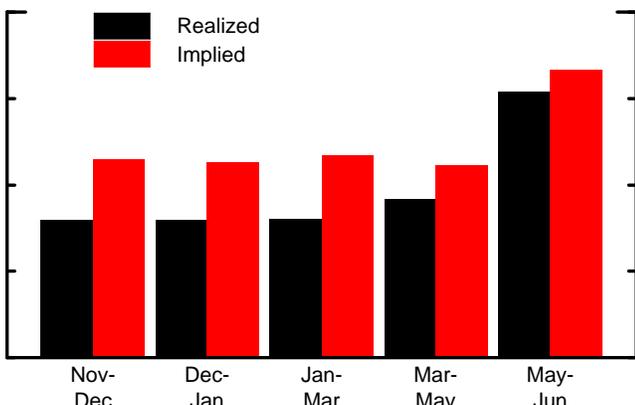
(3) The expectation of less robust economic performance and more substantial near-term monetary policy tightening apparently led investors to mark down their longer-term outlook for corporate earnings and, perhaps, to require more compensation for risk. Major stock price indexes fell 5 to 9 percent over the intermeeting period, and a rough measure of the equity premium—the gap between the twelve-month forward trend earnings-price ratio and the real perpetuity Treasury yield—widened somewhat (Chart 2). Actual and options-implied volatilities on equities jumped over the intermeeting period, in contrast to implied volatilities of interest rates. Spreads over Treasuries on investment-grade corporate bonds rose about 15 basis points, and those on speculative-grade issues rose around 35 basis points, but both stayed narrow by the standards of recent years. Broad measures of corporate credit quality generally continued to be favorable over the intermeeting period, and expected year-ahead defaults remained very low.

(4) Investors' confidence in the strength of the global expansion also flagged during the intermeeting period, a shift that was associated with substantial fluctuations in financial markets around the world. Share prices in many industrial countries

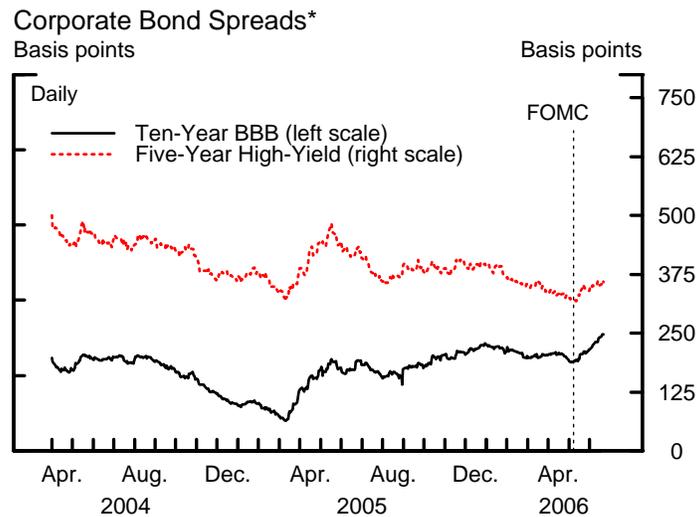
### Chart 2 Asset Market Developments



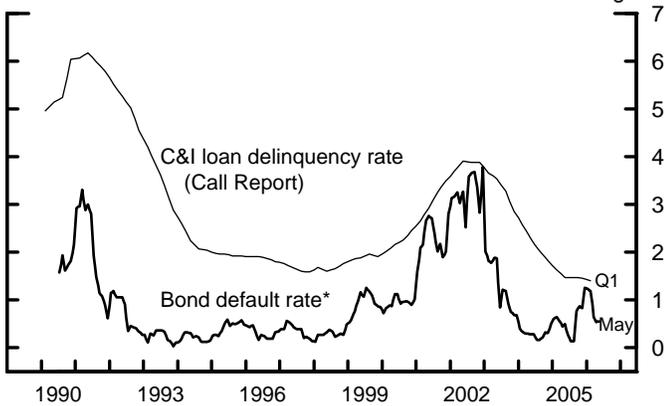
Realized and Implied S&P 500 Volatility over Recent Intermeeting Periods\*



\* Realized volatility is constructed from five-minute returns. Implied volatility is the period-average of daily implied volatilities calculated from options prices

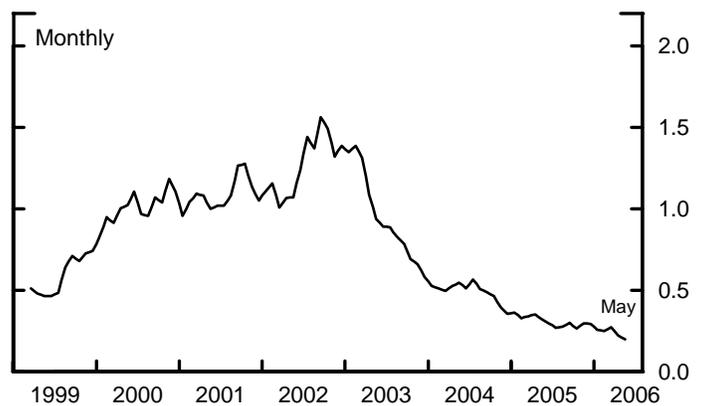


Bond Default and C&I Loan Delinquency Rates  
Percent of outstandings



\*6-month moving average, from Moody's Investors Service.

Expected Year-Ahead Defaults\*  
Percent of liabilities



\*Firm-level estimates of year-ahead defaults from KMV corporation, weighted by firm liabilities as a percent of total liabilities, excluding defaulted firms.

Note: Vertical lines indicate May 9, 2006. Last daily observations are for June 22, 2006.

recorded net declines of 6 to 11 percent (Chart 3). Yields on long-term government securities were little changed on net in most major industrial countries, but in Japan they dropped 15 basis points. The foreign exchange value of the dollar varied modestly over the period, declining in late May in reaction to the release of softer-than-expected U.S. economic data but more than recouping that loss this month in response to changes in relative returns associated partly with expressions of the FOMC's resolve against inflationary pressures. BOJ authorities re-emphasized that any rise in policy rates will be gradual, and the dollar rose 5 percent versus the yen. Against the euro, the dollar gained about 1¾ percent over the period, as market participants interpreted ECB officials' statements associated with the 25 basis point tightening in June as consistent with a slightly lower path for policy going forward than had been anticipated. The dollar appreciated 1½ percent against the Canadian dollar. On balance, the trade-weighted exchange value of the dollar against major foreign currencies rose about 2¼ percent over the intermeeting period.<sup>2</sup>

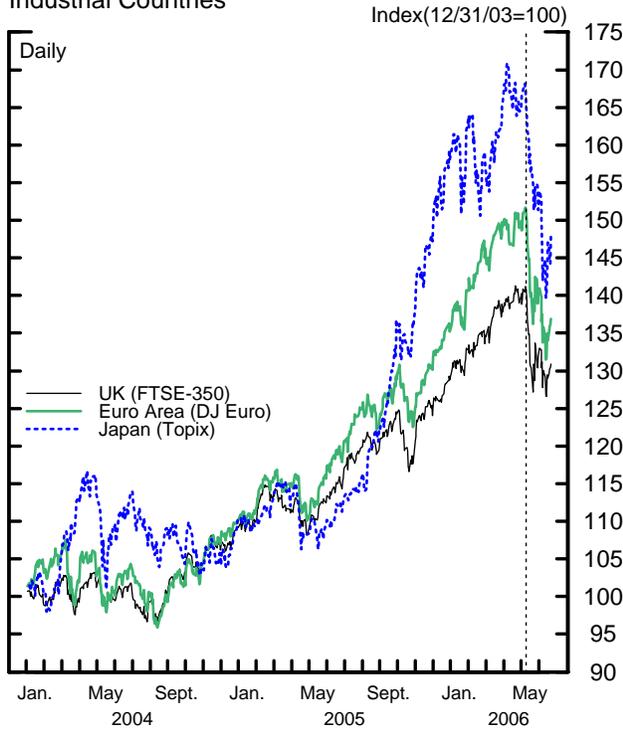
(5) The cooling in equity markets in industrial countries was accompanied by a more pronounced chill in many emerging markets. Brazilian and Mexican stock prices fell 17 percent over the period, and their EMBI+ spreads widened about 30 to 40 basis points. The dollar gained almost 9 percent against the *real* and about 5 percent against the peso. Stock prices in many Asian emerging markets also declined sharply during the period. The dollar gained 2 to 7 percent against currencies of Asian countries with flexible exchange rates. Central banks in a large number of emerging market economies firmed policy during the period, in some cases by substantially more than markets had expected. Overall, the dollar rose 2¾ percent against an index of currencies of our other important trading partners.

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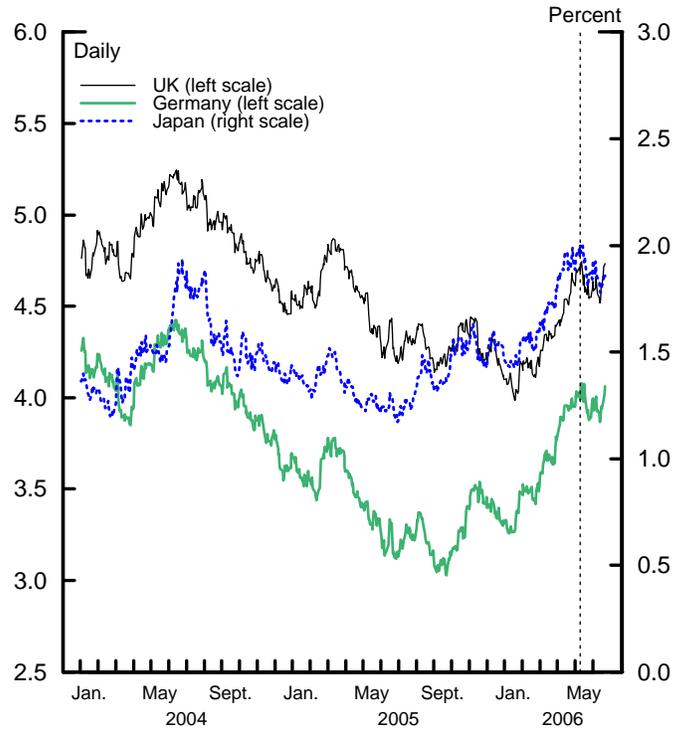
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**Chart 3**  
**International Financial Indicators**

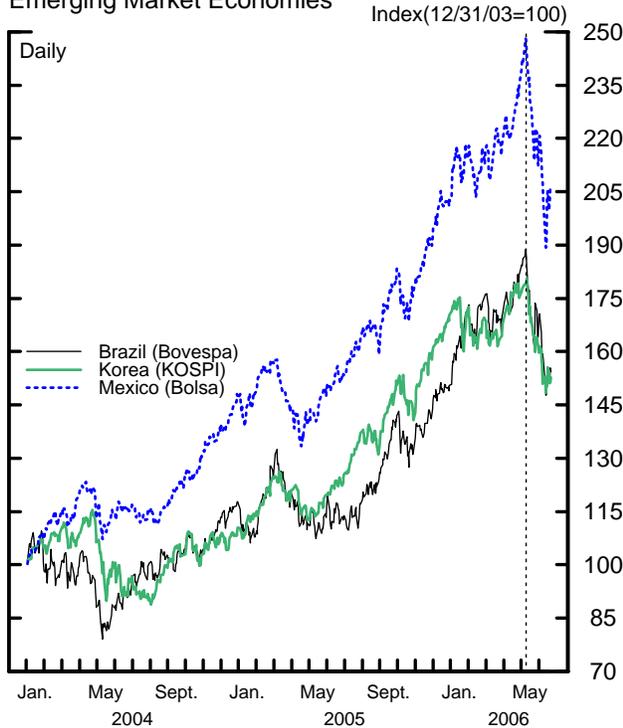
Stock Price Indexes  
Industrial Countries



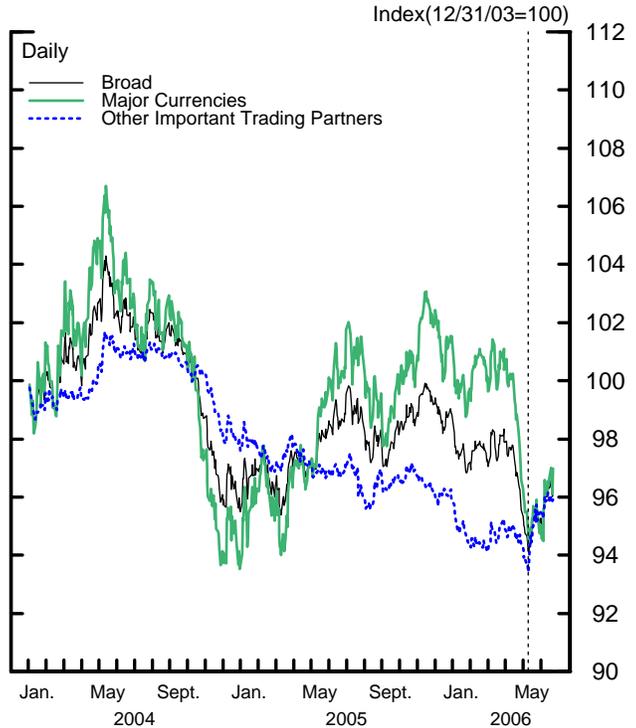
Ten-Year Government Bond Yields (Nominal)



Stock Price Indexes  
Emerging Market Economies



Nominal Trade-Weighted Dollar Indexes



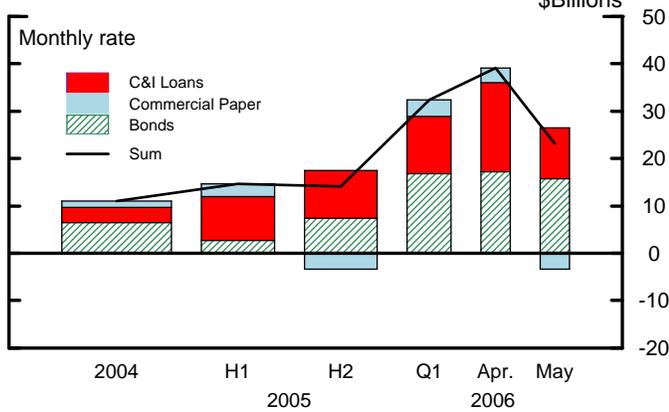
Note: Vertical lines indicate May 10, 2006. Last daily observations are for June 22, 2006.

(6) Growth of the debt of domestic nonfinancial businesses is estimated to have slowed a little in the second quarter to an  $8\frac{1}{2}$  percent annual rate (Chart 4). This deceleration largely reflected some moderation in cash-financed mergers from the extraordinary first-quarter pace. Commercial paper issuance has been weak so far in the current quarter, but growth of business loans has remained brisk. Net issuance of corporate bonds has continued to be solid. In the household sector, debt growth this quarter appears to have dropped below the double-digit rate that has prevailed for some time, as further increases in mortgage rates, the softening in housing activity, and a more moderate pace of house price appreciation have tempered the volume of mortgage borrowing. Consumer credit has remained tepid in the current quarter. In the federal sector, higher-than-anticipated tax payments have reduced the Treasury's borrowing needs. Overall, domestic nonfinancial sector debt is estimated to have decelerated notably to a  $6\frac{1}{4}$  percent rate in the second quarter.

(7) M2 growth in the second quarter, at  $2\frac{3}{4}$  percent, has been weak, as nominal income growth has apparently slowed and the lagged cumulative effects of increases in opportunity costs have continued to sap M2 demand. Liquid deposits have remained particularly soft, as rates on these instruments adjust only slowly to rising short-term rates. Overall, M2 velocity is estimated to have increased at an annual rate of about 3 percent in the second quarter.

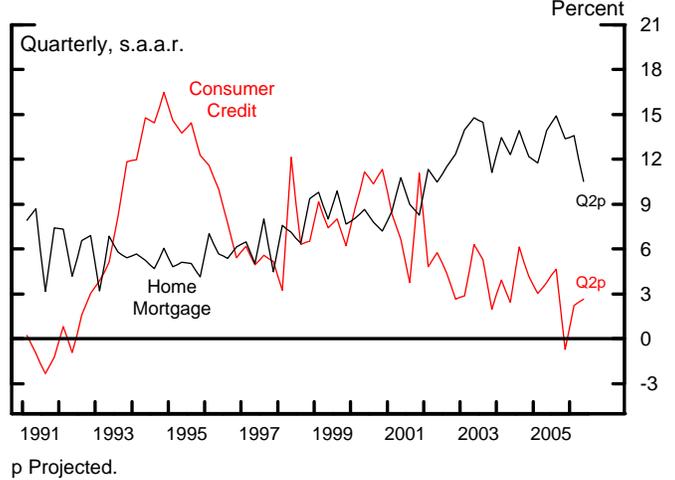
### Chart 4 Debt and Money

Changes in Selected Components of Nonfinancial Business Debt



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

Growth of Household Debt

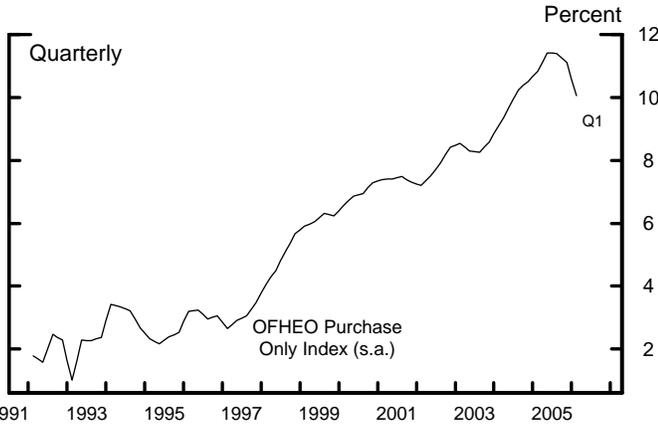


Growth of Nonfinancial Debt

		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	10.4
	Q2 p	6.2	8.3

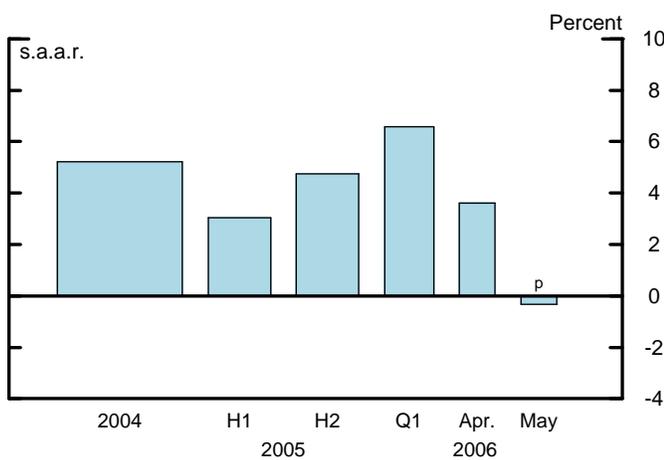
p Projected.

Growth of House Prices



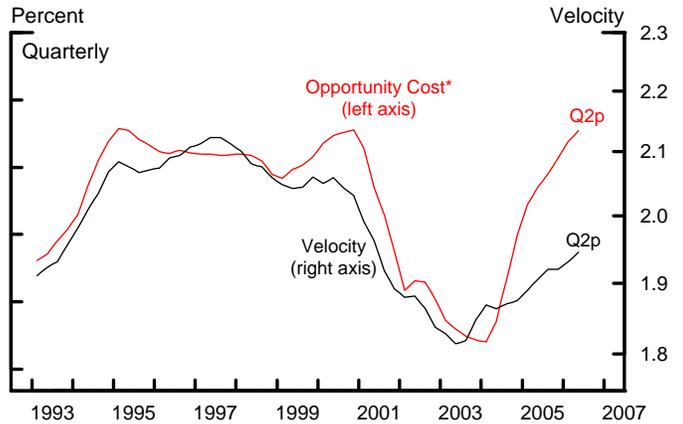
Note: Four-quarter growth rate.

Growth of M2



p Preliminary.

M2 Velocity and Opportunity Cost



\*Two-quarter moving average.

p Projected.

## Economic Outlook

(8) The staff's reading of incoming data over the intermeeting period implies a less favorable starting point for the Greenbook forecast, with real GDP growth notably lower in the current quarter and inflation higher. In particular, the bulge in core inflation is expected to be a bit larger and to last longer than in the May projection. The staff forecast is now predicated on the federal funds rate moving up to 5¼ percent in June and staying there over the next one-and-one-half years, up ¼ percentage point from the previous Greenbook. The assumed policy path keeps longer-term Treasury yields at around current levels over the forecast period. In the staff outlook, stock prices again rise at about a 6½ percent annual rate, but from a level that is 7 percent lower than in May, and the foreign exchange value of the dollar is again assumed to decline 2 percent per year, albeit from a somewhat higher point. In line with futures quotes, the price of WTI crude oil rises \$2.50 by the end of this year and then is little changed in 2007, a path \$4 to \$6 lower than in the last forecast. Against this backdrop, the staff projects real GDP to increase at a 2¾ percent pace over the next six quarters, somewhat slower than in the May Greenbook. With output expanding more slowly than its potential, the unemployment rate rises to 5¼ percent by the end of the forecast horizon, a little above the staff's estimate of the NAIRU. This slack offsets only part of the impetus from the upside surprises in recent inflation releases, and the staff has increased its forecast of total and core PCE inflation to 2½ percent in 2006 and 2¼ percent in 2007.

## Longer-Run Scenarios

(9) Longer-run aspects of monetary policy strategies—including the selection of an inflation goal and the relative weight placed on different stabilization objectives—can be informed by simulations of the FRB/US model. This analysis starts by constructing an illustrative extension of the current Greenbook projection through 2012, in which the natural rate of unemployment is assumed to hold steady at 5 percent and the equilibrium real funds rate has a medium-run value of about 2¾ percent. The optimal policy balances three objectives: keeping core PCE inflation close to a long-run goal; keeping unemployment close to its natural rate; and avoiding abrupt changes in the federal funds rate.<sup>3</sup> The optimal path of the funds rate is determined in part by the weights assigned to these three policy objectives as well as by the goal for long-run inflation; it also depends importantly on the characteristics of the extended outlook and the structure of the FRB/US model. In this analysis, policymakers and participants in financial markets, including those in the equity, bond, and foreign exchange markets, are assumed to understand fully the forces shaping the economic outlook, whereas households and firms are assumed to form their expectations using more limited information.

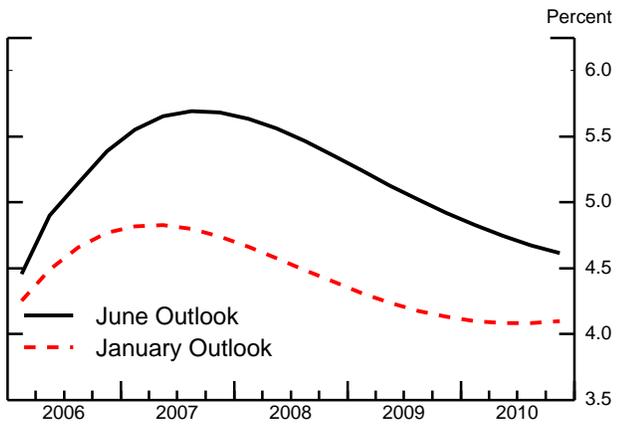
(10) To get a sense of the recent evolution of the economic outlook, the first set of simulations, shown in Chart 5, compares the policy that best accomplishes the assumed objectives and macroeconomic outcomes implied by the current outlook (solid lines) with those implied by the extended outlook at the time of the January Bluebook (dashed lines). In each of these simulations, policymakers are assumed to have a long-run inflation goal of 1½ percent and to place equal weights on the three

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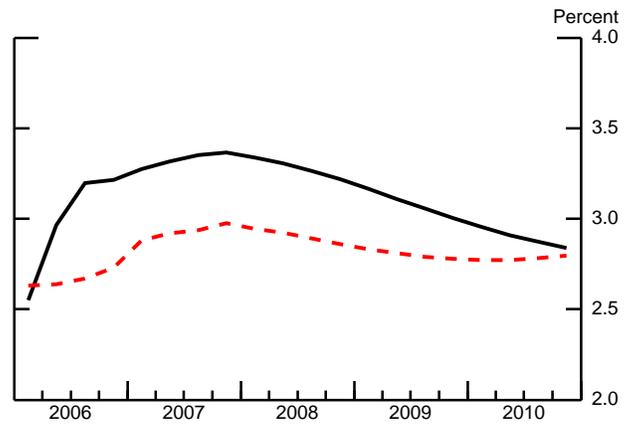
<sup>3</sup> Specifically, policy aims to minimize the weighted sum of squared deviations in four-quarter average core PCE inflation from a long-run goal, squared deviations in unemployment from its natural rate, and squared changes in the federal funds rate (all measured in percent). For further information regarding the specification and characteristics of optimal policy in the FRB/US model, see the memo to the Committee, “Optimal-Control Monetary Policies” by Michael Kiley, Thomas Laubach, and Robert Tetlow, June 20, 2006.

### Chart 5 Optimal Policy Implications of Recent Changes in the Staff Outlook

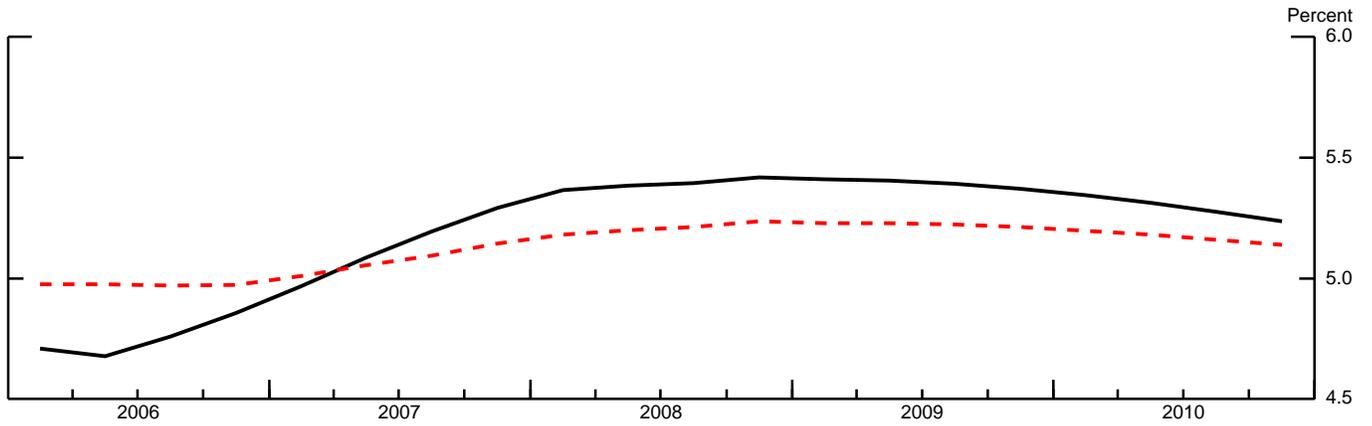
#### Federal Funds Rate



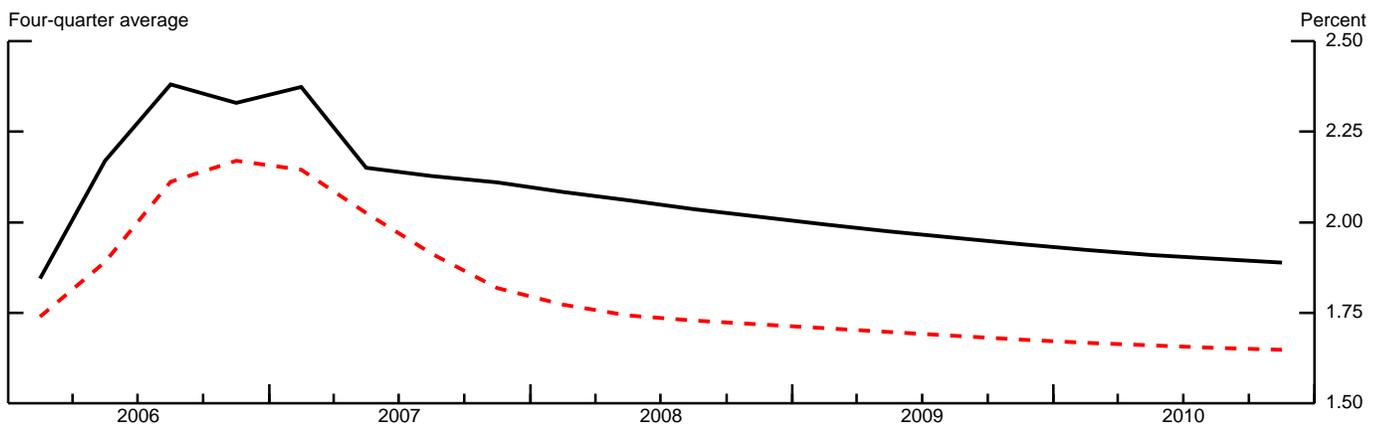
#### Five-Year Real Interest Rate



#### Civilian Unemployment Rate



#### Core PCE Inflation



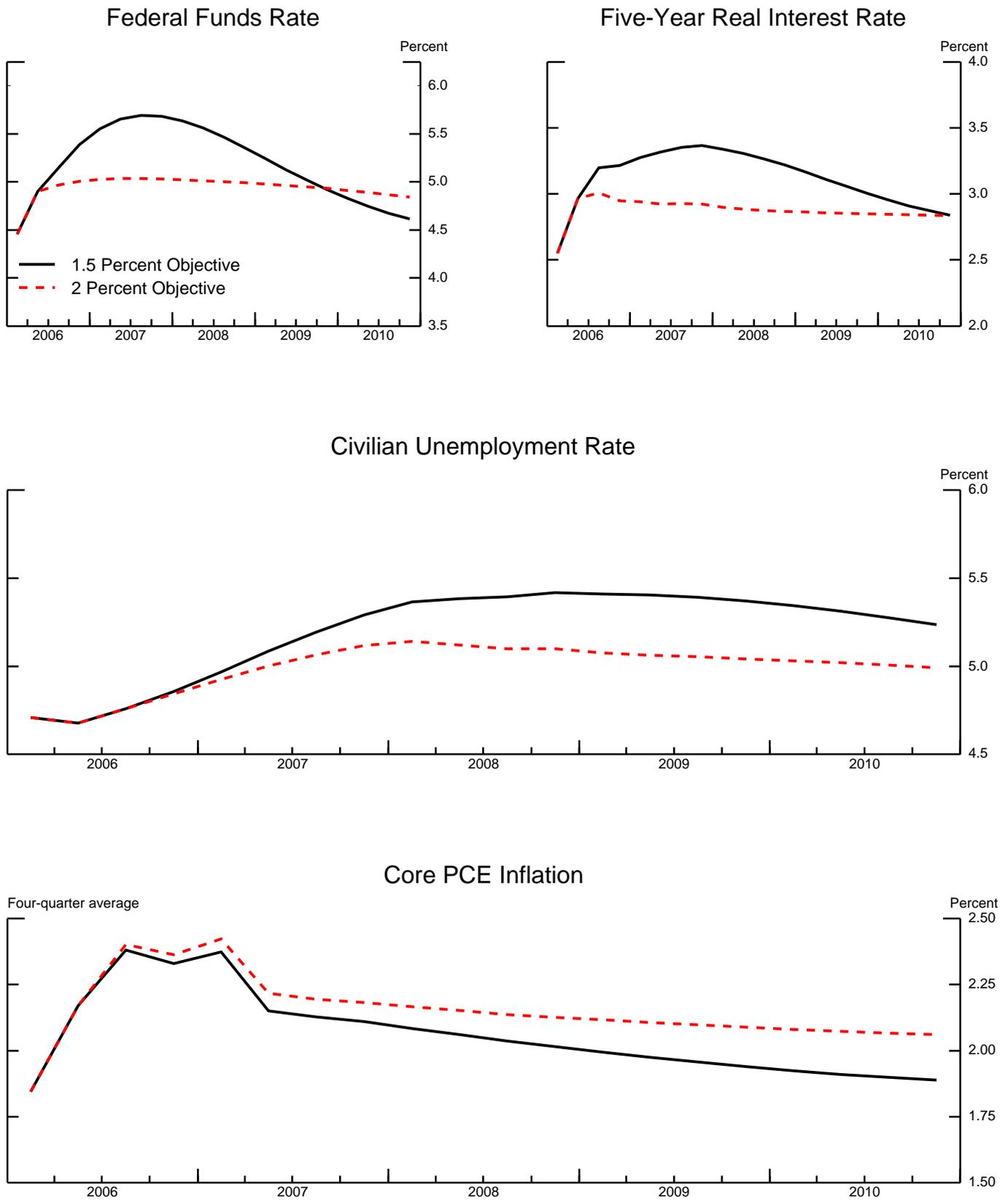
stabilization objectives.<sup>4</sup> As shown in the upper-left panel, the current outlook implies a funds rate path that peaks a bit above 5½ percent in mid-2007 and then declines gradually to about 4½ percent by 2010. This policy keeps the five-year real Treasury rate (upper-right panel) above its equilibrium value, thereby helping to restrain aggregate demand and pushing the unemployment rate (center panel) nearly ½ percentage point above its natural rate later in the decade. Although core PCE inflation (bottom panel) exhibits a near-term bulge related to transitory effects of the increase in energy prices, the persistent mild economic slack subsequently causes inflation to decline very slowly towards the long-run goal of 1½ percent. Chart 5 also illustrates the implications of recent unfavorable price developments, with the implied funds rate path through the end of next year having shifted up about a percentage point since January. Furthermore, because the staff sees recent inflation surprises as only partly transitory, the medium-run policy tradeoff is less favorable now: In these simulations, both the unemployment rate and core inflation beyond 2007 are higher than in the January outlook.

(11) The next set of simulations, shown in Chart 6, explores the implications of alternative long-run inflation goals. The solid lines replicate those of Chart 5, in which policymakers have an inflation goal of 1½ percent, while the dashed lines depict an alternative in which policy pursues an inflation goal of 2 percent. Both paths are computed using the current Greenbook projection and put equal weight on the three policy objectives. Under a 2 percent goal, the funds rate remains near 5 percent throughout the remainder of the decade. This flat trajectory largely reflects the extent to which core inflation is already close to the specified goal of 2 percent, looking beyond the transitory effects of recent energy price increases. Accordingly, the stance of policy is set to keep the unemployment rate near its natural rate.

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<sup>4</sup> In conducting this analysis, the January Greenbook projection is extended using the same set of procedures employed for the current Greenbook extension.

### Chart 6 Alternative Long-Run Inflation Objectives

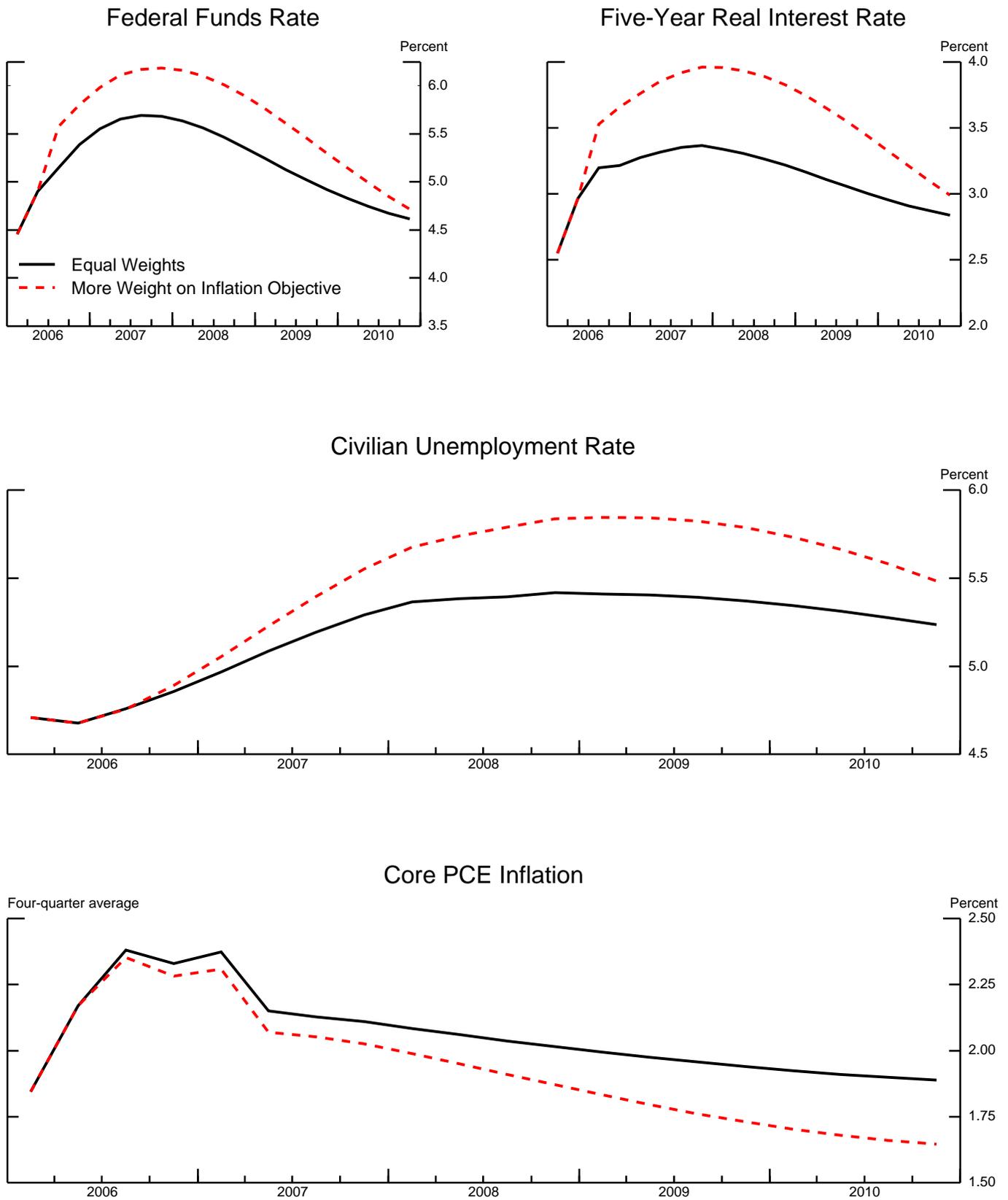


(12) Chart 7 depicts the consequences of alternative choices regarding the relative weights assigned to the three policy objectives. The solid lines replicate those of Chart 5, in which policymakers have an inflation goal of 1½ percent and place equal weights on the objectives. A potentially unattractive implication of this specification is that attainment of the inflation objective is a long time coming, with actual inflation at the end of the decade still nearly ½ percentage point above the goal. The alternative scenario (dashed lines) depicts the outcome when policymakers place greater emphasis on the inflation objective, perhaps because of concerns—not explicitly considered in the model—that a persistent deviation of inflation from its goal could damage the Federal Reserve’s credibility.<sup>5</sup> In this case, the federal funds rate climbs more steeply to 6 percent by the end of next year. This policy generates higher real interest rates that damp real activity more than under the baseline policy; as a result, the unemployment rate rises above 5½ percent late next year and remains above that level through 2010. With this additional economic slack, actual inflation exhibits a more distinct downward trajectory and approaches the long-run goal by the end of the decade.

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<sup>5</sup> In particular, the weight on unemployment gaps was lowered from 1.0 to 0.05, while the weights on the inflation objective and changes in the funds rate were maintained at 1.0.

### Chart 7 Placing Greater Relative Weight on the Inflation Objective



## Short-Run Policy Alternatives

(13) This Bluebook presents three alternatives for the Committee's consideration, summarized by the draft statements in Table 1. Under Alternative A, the Committee would leave the federal funds rate unchanged at this meeting and indicate that it would likely stay its hand for at least one more meeting before deciding whether further tightening was necessary. Under Alternative B, the Committee would tighten 25 basis points and signal that an additional tightening in August was possible. Alternative C combines a 50 basis point increase in the target with a statement suggesting that additional firming was likely.

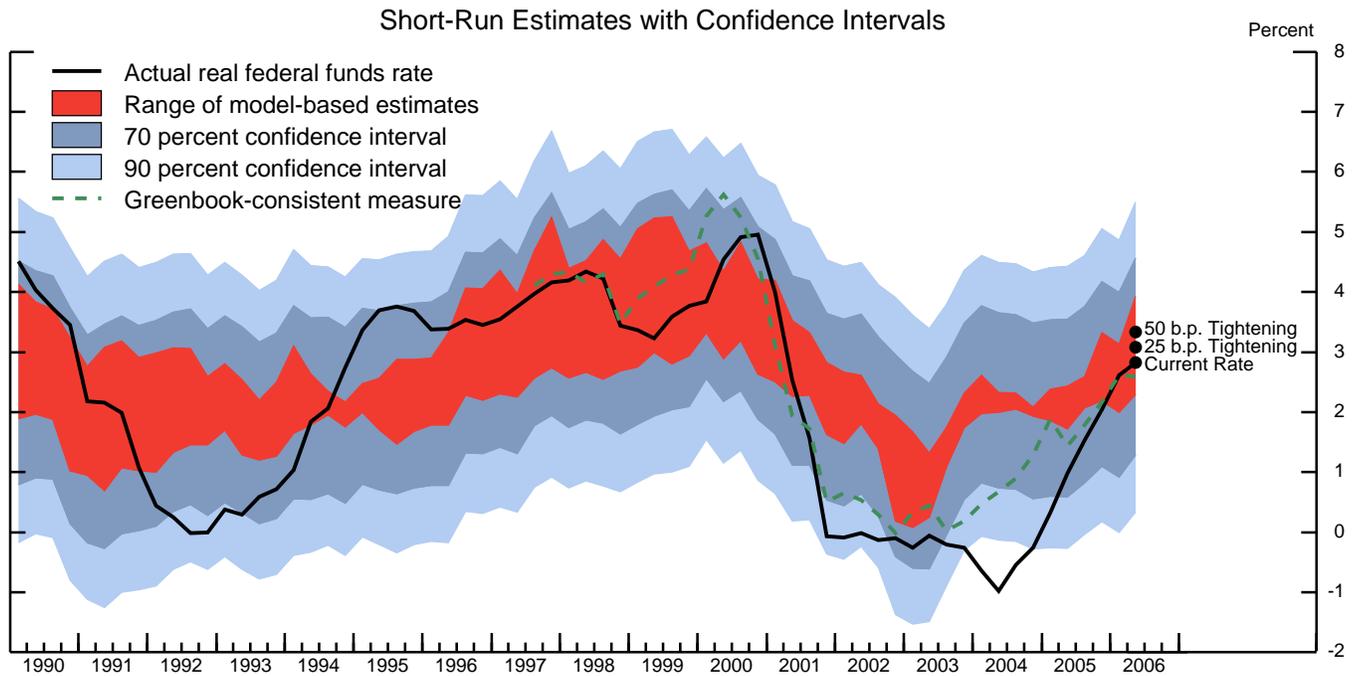
(14) If the Committee finds the staff forecast both probable and as desirable as can be achieved in current circumstances, it may choose to tighten policy 25 basis points at this meeting, as in **Alternative B**. A 25 basis point firming would raise the real federal funds rate somewhat above most of the staff's estimates of the equilibrium federal funds rate (Chart 8), a moderately restraining stance of policy that might be viewed as appropriate given the worsening of the inflation outlook. Such a firming might also be seen as necessary to contain the risk that the near-term bulge in inflation could become entrenched in expectations. In that regard, members might be heartened by the fact that the building market expectation of additional policy firming in recent weeks was associated with some apparent decline in inflation expectations—progress that they might be loathe to surrender by surprising investors with an easier-than-anticipated policy action. The current configuration of asset prices, however, might be judged as embedding too great a likelihood of policy tightening at the August meeting. If so, the Committee would presumably seek to craft its statement to convey an assessment that an additional move in August was possible but perhaps not as likely as currently anticipated in financial markets.

(15) Under Alternative B, the rationale paragraph could indicate that economic growth appears to be moderating. The Committee could list the developments adding

**Table 1: Alternative Language for the June FOMC Announcement**

	<b>May FOMC</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Policy Decision</b>	1. The Federal Open Market Committee decided today to raise its target for the federal funds rate by 25 basis points to 5 percent.	The Federal Open Market Committee decided today to leave its target for the federal funds rate <b>unchanged</b> at 5 percent.	The Federal Open Market Committee decided today to raise its target for the federal funds rate by 25 basis points to <b>5¼</b> percent.	The Federal Open Market Committee decided today to raise its target for the federal funds rate by <b>50 basis points</b> to <b>5½</b> percent.
<b>Rationale</b>	2. Economic growth has been quite strong so far this year. The Committee sees growth as likely to moderate to a more sustainable pace, partly reflecting a gradual cooling of the housing market and the lagged effects of increases in interest rates and energy prices.	<b>Recent indicators suggest that economic growth is moderating considerably from its quite strong pace earlier this year.</b>	<b>Recent indicators suggest that economic growth is moderating from its quite strong pace earlier this year.</b>	<b>Recent indicators suggest that economic growth is moderating from its quite strong pace earlier this year, but the level of resource utilization remains relatively high.</b>
	3. As yet, the run-up in the prices of energy and other commodities appears to have had only a modest effect on core inflation, ongoing productivity gains have helped to hold the growth of unit labor costs in check, and inflation expectations remain contained. Still, possible increases in resource utilization, in combination with the elevated prices of energy and other commodities, have the potential to add to inflation pressures.	<b>The Committee views the pickup in core inflation this spring as unwelcome but likely to be transitory. Ongoing productivity gains, anchored inflation expectations, and moderate economic growth should reduce inflation in coming quarters.</b>	<b>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.</b>	<b>Ongoing productivity gains and contained inflation expectations should restrain inflation going forward. However, recent readings on core inflation have been elevated, which the Committee views as unwelcome.</b>
<b>Assessment of Risk</b>	4. The Committee judges that some further policy firming may yet be needed to address inflation risks but emphasizes that the extent and timing of any such firming will depend importantly on the evolution of the economic outlook as implied by incoming information.	<b>The Committee judges that the risks to the attainment of price stability remain tilted to the upside but recognizes that the moderation in the growth of aggregate demand, along with other forces, should work to contain inflation going forward. While the Committee judges that some further policy firming may yet be needed to address inflation risks, considerable uncertainty attends the outlook, making it prudent to await the accumulation of additional information.</b>	<b>Although the moderation in the growth of aggregate demand should help to contain inflation pressures, the Committee judges that the risks to the attainment of price stability remain tilted to the upside. The extent and timing of any further policy action will depend importantly on the evolution of the economic outlook as implied by incoming information.</b>	<b>In order to foster price stability and sustainable economic growth, the Committee seeks a medium-term decline in core inflation from its recent elevated levels. The Committee judges that some further policy firming may yet be needed to accomplish this outcome. The extent and timing of any such firming will depend importantly on the evolution of the economic outlook as implied by incoming information.</b>
	5. In any event, the Committee will respond to changes in economic prospects as needed to support the attainment of its objectives.	<b>[None]</b>	<b>In any event, the Committee will respond to changes in economic prospects as needed to support the attainment of sustainable economic growth and price stability.</b>	<b>[None]</b>

### Chart 8 Equilibrium Real Federal Funds Rate



### Short-Run and Medium-Run Measures

	Current Estimate	<i>Previous Bluebook</i>
<b>Short-Run Measures</b>		
Single-equation model	2.3	2.2
Small structural model	2.6	2.6
Large model (FRB/US)	3.9	3.8
Confidence intervals for three model-based estimates		
70 percent confidence interval	1.3 - 4.6	
90 percent confidence interval	0.3 - 5.5	
Greenbook-consistent measure	2.6	2.8
<b>Medium-Run Measures</b>		
Single-equation model	2.2	2.2
Small structural model	2.4	2.4
Confidence intervals for two model-based estimates		
70 percent confidence interval	1.4 - 3.2	
90 percent confidence interval	0.7 - 3.8	
TIPS-based factor model	2.2	2.2
<b>Memo</b>		
Actual real federal funds rate	2.83	2.74

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 TIPS-consistent measure and the actual real funds rate are the values published in the previous 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
<b>Single-equation Model</b>	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.
<b>Small Structural Model</b>	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.
<b>Large Model (FRB/US)</b>	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.
<b>Greenbook-consistent</b>	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.
<b>TIPS-based Factor Model</b>	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.

to inflation pressure, including taut resource markets and elevated oil and commodity prices, and acknowledge the recent pickup in core inflation. The rationale could also note the forces acting to reduce inflation pressures, such as the subdued increases in unit labor costs and the continued containment of inflation expectations. To indicate that further tightening was possible but not certain, the assessment of risk could note that, while forces that should restrain inflation were at work, the risks to inflation continued to be on the upside. The Committee could again note that any further policy action will depend on the evolution of the economic outlook.

(16) Market participants are somewhat more confident that the Committee will tighten at its August meeting than the wording of Alternative B suggests. As a result, investors would trim back their near-term policy expectations, and short-term interest rates would probably decline slightly. The policy surprise might add to expected volatility, as market participants became a little less sure of the predictability of the Committee's behavior. The downward revision to expectations would tend to lower longer-term yields, but some of that decline might be offset by a backup in term premiums. Stock prices would likely rally some, and downward pressure on the foreign exchange value of the dollar could emerge.

(17) The Committee might instead desire a more forceful policy response to the deterioration in the inflation outlook and find some appeal in the 50 basis point tightening of **Alternative C**. Although measures of inflation expectations have edged lower on balance in recent weeks, they have risen since earlier this year, potentially adding momentum to actual inflation. Moreover, resource utilization appears to be relatively high, and some policymakers have noted that inflation is already above a range they see as consistent with price stability. In these circumstances, the Committee might be concerned by the risk that the recently higher readings on inflation could get embedded in inflation expectations along the lines of the "rising inflation expectations" alternative simulation in the Greenbook. The Committee may

also favor a more sizable move now so as to make more rapid progress toward moving inflation lower. In the alternative policy simulation presented earlier, the pursuit of a 1½ percent inflation target requires additional tightening in the near term, especially so if inflation deviations receive a higher relative weight in the FOMC's objective function. If policymakers believed that additional firming, beyond a 50 basis point policy move at this meeting, probably would be necessary, they may find it appropriate to indicate a fairly high likelihood that further tightening was in train. Such an indication may be particularly appealing if firmer financial conditions were judged to be desirable to make satisfactory progress toward the Committee's objectives.

(18) The rationale paragraph under Alternative C could place more emphasis on the recent unwelcome pickup in inflation while noting that productivity gains and contained inflation expectations are restraining inflation. To signal that further tightening is likely, the risk assessment could indicate that additional policy action may be needed to reduce core inflation to a more desirable level. So that the Committee would not become locked into additional tightening even if there were additional elevated monthly readings on core inflation, the assessment could specify that the reduction in core inflation was sought in the medium term and repeat that the extent and timing of firming would depend on the evolution of the economic outlook.

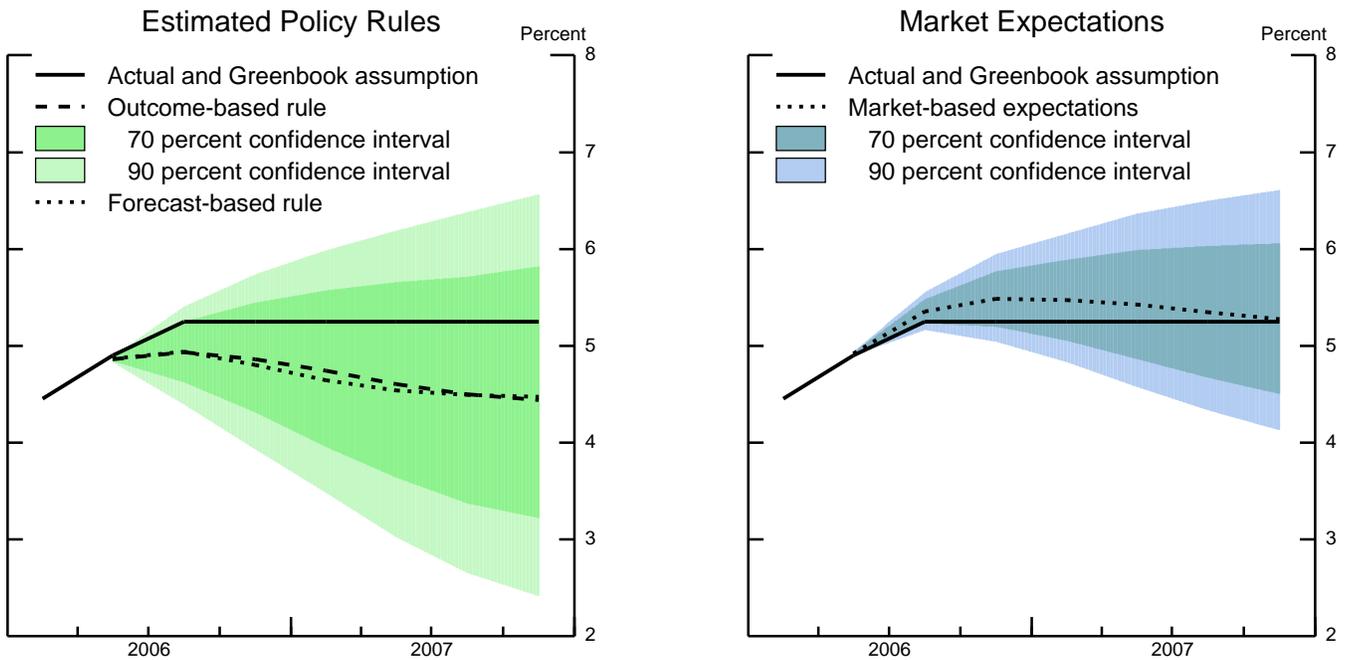
(19) The announcement of Alternative C would lead market participants to revise upward their outlook for the path for policy, and short- and intermediate-term interest rates would rise as a result. Longer-term interest rates could also rise, especially if investors concluded that the FOMC was much more worried about underlying inflation than previously thought. Stock prices would fall substantially, and the foreign exchange value of the dollar would increase.

(20) If, in contrast, the Committee is particularly concerned by the soft tone to the incoming data on spending, it might feel that the best course of action at this

meeting would be to leave the stance of policy unchanged, as in **Alternative A**. With news on spending and prices pointing in different directions, the Committee could combine such a policy move with statement language implying that policy would likely be on hold in the near term to await additional information, although policy firming was likely at some point down the road. Leaving policy unchanged at the current meeting would be consistent with the prescriptions from a number of simple and estimated policy rules (Charts 9 and 10). Indeed, most of those rules call for an easier policy than currently priced into financial markets, suggesting that the level of the federal funds rate may have already been brought up enough to prevent an unsustainable spurt in economic growth. Staff estimates of equilibrium real interest rates indicate that cumulative tightening to date has effectively removed policy accommodation. Given the lags in policy, the easing of pressures on resources expected to result from this prior tightening, together with the anticipated flattening out of energy prices, may be seen as likely to be sufficient to point inflation down toward an acceptable range. Moreover, the Committee may see significant downside risk to the outlook if it views the recent marked declines of indicators of housing activity as possible harbingers of a prolonged and sizable reduction in housing construction and household spending along the lines of the “housing slump” Greenbook scenario.

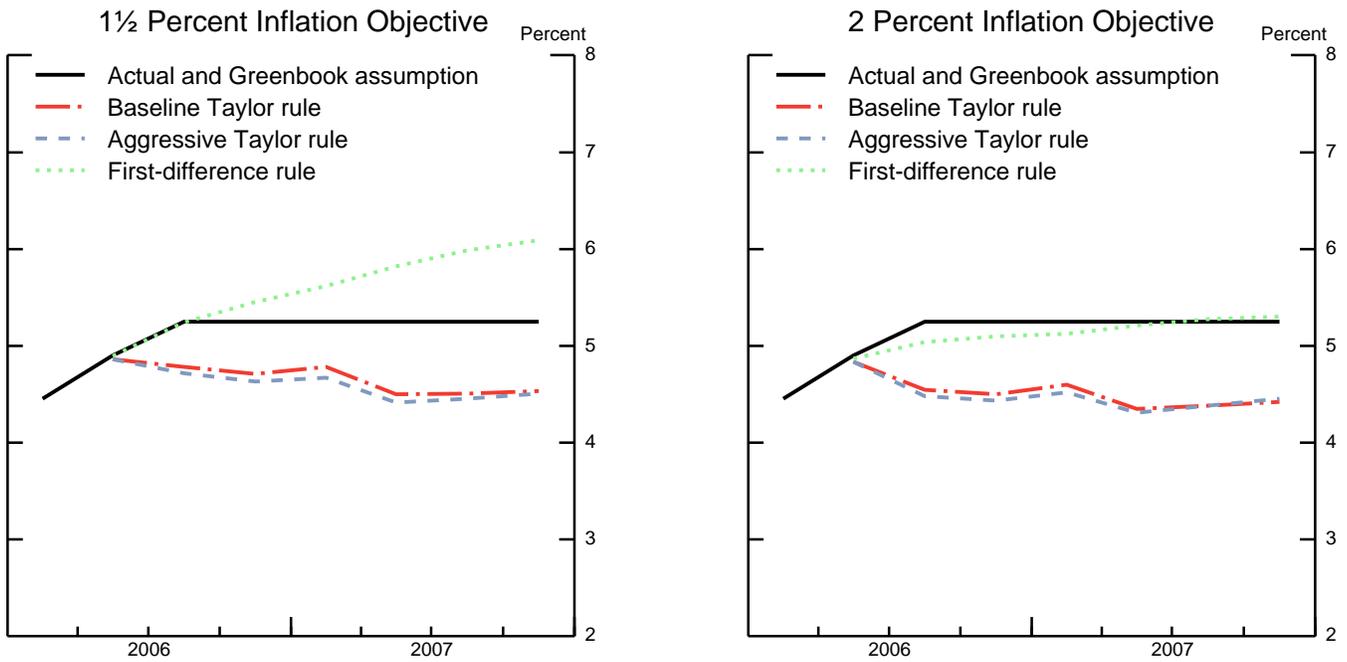
(21) To explain a choice to leave policy unchanged, the rationale paragraph could emphasize the considerable slowdown in economic activity. That slowing, anchored inflation expectations, and subdued advances in labor costs could be cited as reasons why the recently elevated readings on core inflation, while unwelcome, should prove transitory. The risk assessment could reflect the Committee’s concerns by indicating downside risks to growth and upside risks to inflation, which would justify a pause in policy to await additional information bearing on the outlook.

### Chart 9 Information from Estimated Policy Rules and Financial Markets



	2006			2007			
	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>Estimated Policy Rules</b>							
Outcome-based policy rule	4.9	4.9	4.9	4.7	4.6	4.5	4.4
70 percent confidence interval							
Lower bound	4.8	4.6	4.3	4.0	3.6	3.4	3.2
Upper bound	4.9	5.2	5.4	5.6	5.7	5.7	5.8
90 percent confidence interval							
Lower bound	4.8	4.4	3.9	3.5	3.0	2.7	2.4
Upper bound	4.9	5.4	5.7	6.0	6.2	6.4	6.6
Forecast-based policy rule	4.9	4.9	4.8	4.6	4.5	4.5	4.5
<b>Market Expectations</b>							
Expected funds rate path	4.9	5.4	5.5	5.5	5.4	5.3	5.3
70 percent confidence interval							
Lower bound	4.9	5.2	5.2	5.1	4.9	4.7	4.5
Upper bound	4.9	5.5	5.8	5.9	6.0	6.0	6.1
90 percent confidence interval							
Lower bound	4.9	5.2	5.0	4.8	4.6	4.3	4.1
Upper bound	4.9	5.6	5.9	6.2	6.4	6.5	6.6
<b>Memo</b>							
Greenbook assumption	4.9	5.3	5.3	5.3	5.3	5.3	5.3

### Chart 10 Policy Paths under Alternative Inflation Objectives



	2006			2007			
	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>Simple Policy Rules</b>							
Baseline Taylor rule							
1 1/2 percent inflation objective	4.9	4.8	4.7	4.8	4.5	4.5	4.5
2 percent inflation objective	4.8	4.5	4.5	4.6	4.3	4.4	4.4
Aggressive Taylor rule							
1 1/2 percent inflation objective	4.9	4.7	4.6	4.7	4.4	4.5	4.5
2 percent inflation objective	4.8	4.5	4.4	4.5	4.3	4.4	4.5
First-difference rule							
1 1/2 percent inflation objective	4.9	5.2	5.5	5.6	5.8	6.0	6.1
2 percent inflation objective	4.9	5.0	5.1	5.1	5.2	5.3	5.3
<b>Memo</b>							
Greenbook assumption	4.9	5.3	5.3	5.3	5.3	5.3	5.3

### 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 ( $\pi_t$ ), 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 ( $\pi^*$ ).

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. Finally, for the forecast-based rule and the first-difference rule, it should be noted that prescriptions near the end of the Greenbook horizon also depend on an extension of the Greenbook baseline forecast.

**Estimated Policy Rules:** Estimation is performed using real-time quarterly data taken from the Greenbook and staff memoranda closest to the middle of each quarter. The specific lag structure of the outcome-based rule is chosen according to the Bayesian information criterion over the sample period starting from 1988Q1. The forecast-based rule differs from the outcome-based rule in that it also permits staff forecasts of inflation and the output gap to be among the explanatory variables. Confidence intervals, shown only for the outcome-based rule, are based on stochastic simulations of the FRB/US model, where the shocks are randomly drawn from the set of model equations residuals for the period 1986-2004. The following table indicates the specification of each rule and its root mean squared error (RMSE) over the sample 1993:1-2005:4.

<b>Outcome-based Rule</b>	$i_t = 0.27 + 1.14i_{t-1} - 0.36i_{t-2} + 0.32\pi_t + 0.60(y_t - y_t^*) - 0.40(y_{t-1} - y_{t-1}^*)$	.19
<b>Forecast-based Rule</b>	$i_t = 0.24 + 1.14i_{t-1} - 0.35i_{t-2} + 0.31\pi_{t+2 t} + 0.42(y_{t+1 t} - y_{t+1 t}^*) - 0.23(y_{t-1} - y_{t-1}^*)$	.18

**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 Policy Rules:** The following table indicates the specification of each rule and its RMSE over the sample 1993:1-2005:4 for two inflation objectives.

		$\pi^*=1.5$	$\pi^*=2$
<b>Baseline Taylor Rule</b>	$i_t = 2 + \pi_t + 0.5(\pi_t - \pi^*) + 0.5(y_t - y_t^*)$	.99	.99
<b>Aggressive Taylor Rule</b>	$i_t = 2 + \pi_t + 0.5(\pi_t - \pi^*) + (y_t - y_t^*)$	.62	.63
<b>First-difference Rule</b>	$i_t = i_{t-1} + 0.5(\pi_{t+3 t} - \pi^*) + 0.5(\Delta^4 y_{t+3 t} - \Delta^4 y_{t+3 t}^*)$	.51	.44

(22) Markets would be surprised, to say the least, if the Committee left the stance of policy unchanged, and short-term interest rates would drop. Longer-term interest rates could rise if market participants concluded that the FOMC was willing to tolerate a higher level of inflation over time than had previously been thought and so marked up inflation compensation. The foreign exchange value of the dollar would probably fall. Stock prices likely would rise, given the lower real interest rates.

### **Money and Debt Forecasts**

(23) Under the Greenbook forecast, M2 is expected to expand just 4 percent in 2006, reflecting the moderate growth in nominal income and the restraining effects of past policy tightenings (Table 2). With short-term interest rates unchanged after the June meeting, opportunity costs gradually level out, and M2 growth picks up to 5 percent in 2007, matching the growth in nominal income.

(24) Growth of domestic nonfinancial sector debt is projected to drop from 9½ percent last year to 8 percent in 2006 and 6½ percent in 2007. The slowdown reflects the contours of the staff outlook for nominal GDP and, in the near term, a reduction in federal debt growth owing to the surprisingly strong tax receipts this spring. In addition, merger and acquisition activity is expected to moderate next year, contributing to a decline in business borrowing. Moreover, past increases in home mortgage rates and the projected deceleration of home prices restrain household debt growth over the forecast horizon.

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

	No Change*	Raise 25 bp/ Greenbook**	Raise 50 bp***	
<b>Monthly Growth Rates</b>				
Jan-06	11.2	11.2	11.2	
Feb-06	4.1	4.1	4.1	
Mar-06	3.1	3.1	3.1	
Apr-06	3.6	3.6	3.6	
May-06	-0.3	-0.3	-0.3	
Jun-06	4.6	4.6	4.6	
Jul-06	3.9	3.5	3.1	
Aug-06	4.2	3.4	2.6	
Sep-06	4.1	3.3	2.5	
<b>Quarterly Growth Rates</b>				
2005 Q2	2.5	2.5	2.5	
2005 Q3	4.4	4.4	4.4	
2005 Q4	5.1	5.1	5.1	
2006 Q1	6.6	6.6	6.6	
2006 Q2	2.8	2.8	2.8	
2006 Q3	3.7	3.3	2.9	
<b>Annual Growth Rates</b>				
2004	5.2	5.2	5.2	
2005	3.9	3.9	3.9	
2006	4.4	4.1	3.8	
2007	5.1	5.0	4.8	
Growth From May-06	To Sep-06	4.2	3.7	3.2

\* No change in in the target federal funds rate at this meeting and no change thereafter.

\*\* Increase of 25 basis points in the target federal funds rate at this meeting and no change thereafter. This forecast is consistent with nominal GDP and interest rates in the Greenbook forecast.

\*\*\* Increase of 50 basis points in the target federal funds rate at this meeting and no change thereafter.

## 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 \_\_\_\_\_ 5 percent.

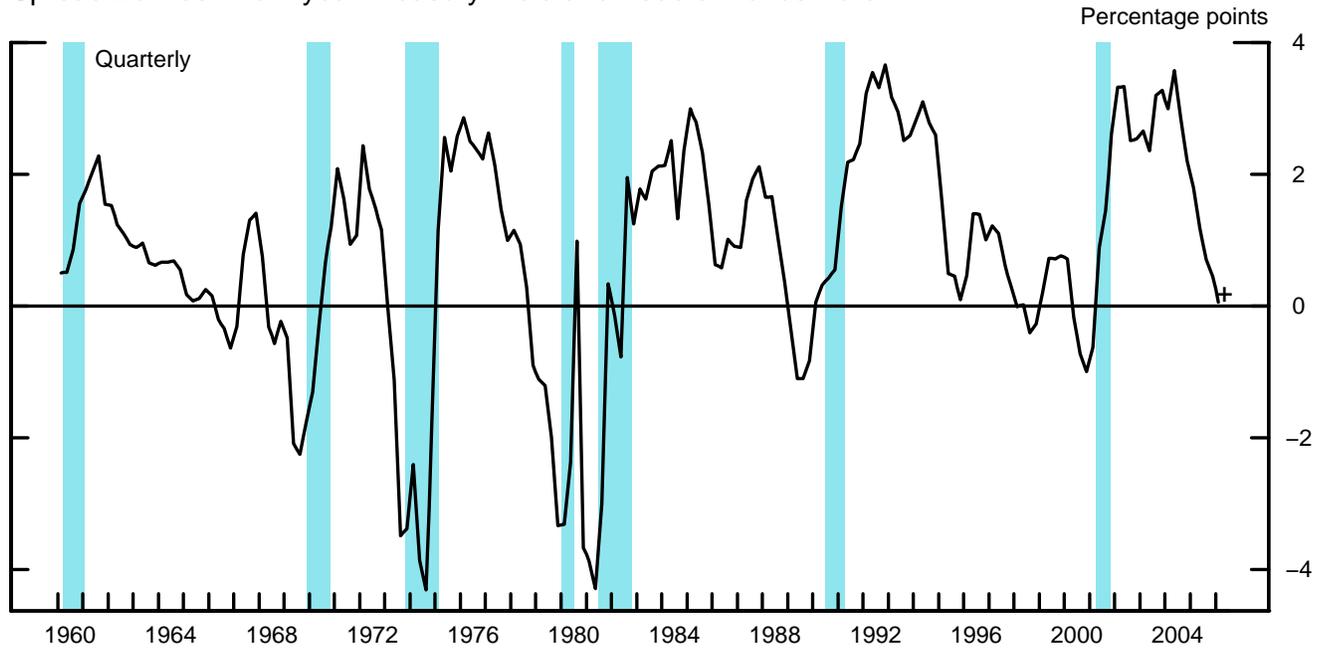
### *Risk Assessments*

- A. The Committee judges that the risks to the attainment of price stability remain tilted to the upside but recognizes that the moderation in the growth of aggregate demand, along with other forces, should work to contain inflation going forward. While the Committee judges that some further policy firming may yet be needed to address inflation risks, considerable uncertainty attends the outlook, making it prudent to await the accumulation of additional information.
- B. Although the moderation in the growth of aggregate demand should help to contain inflation pressures, the Committee judges that the risks to the attainment of price stability remain tilted to the upside. The extent and timing of any further policy action will depend importantly on the evolution of the economic outlook as implied by incoming information. In any event, the Committee will respond to changes in economic prospects as needed to support the attainment of sustainable economic growth and price stability.

C. In order to foster price stability and sustainable economic growth, the Committee seeks a medium-term decline in core inflation from its recent elevated levels. The Committee judges that some further policy firming may yet be needed to accomplish this outcome. The extent and timing of any such firming will depend importantly on the evolution of the economic outlook as implied by incoming information.

# Treasury Yield Curve

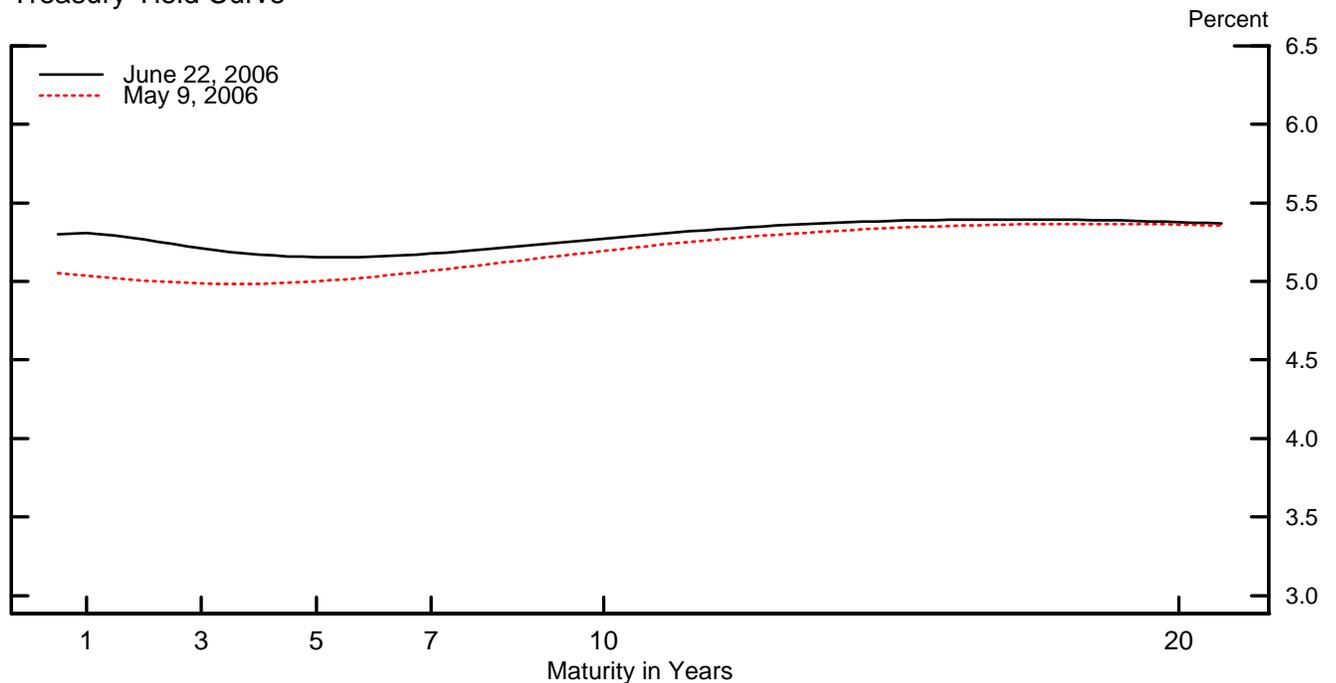
### Spread Between Ten-year Treasury Yield and Federal Funds Rate



+ Denotes most recent weekly value.

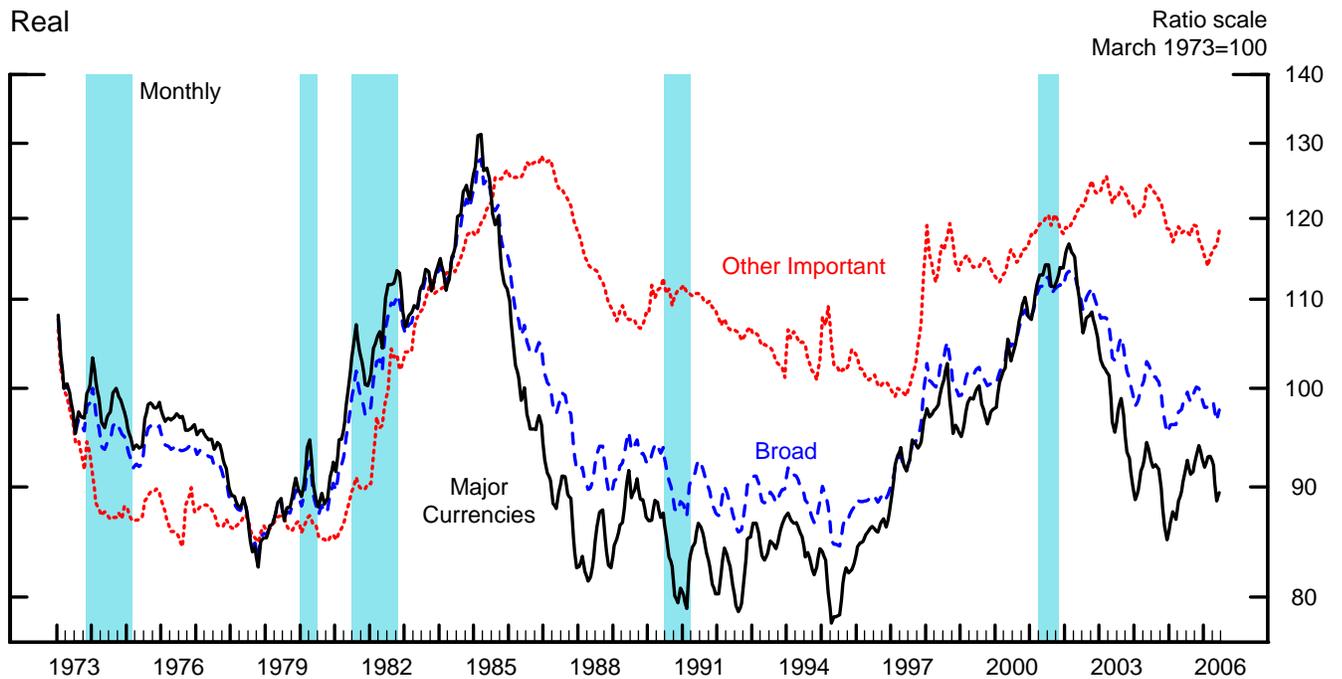
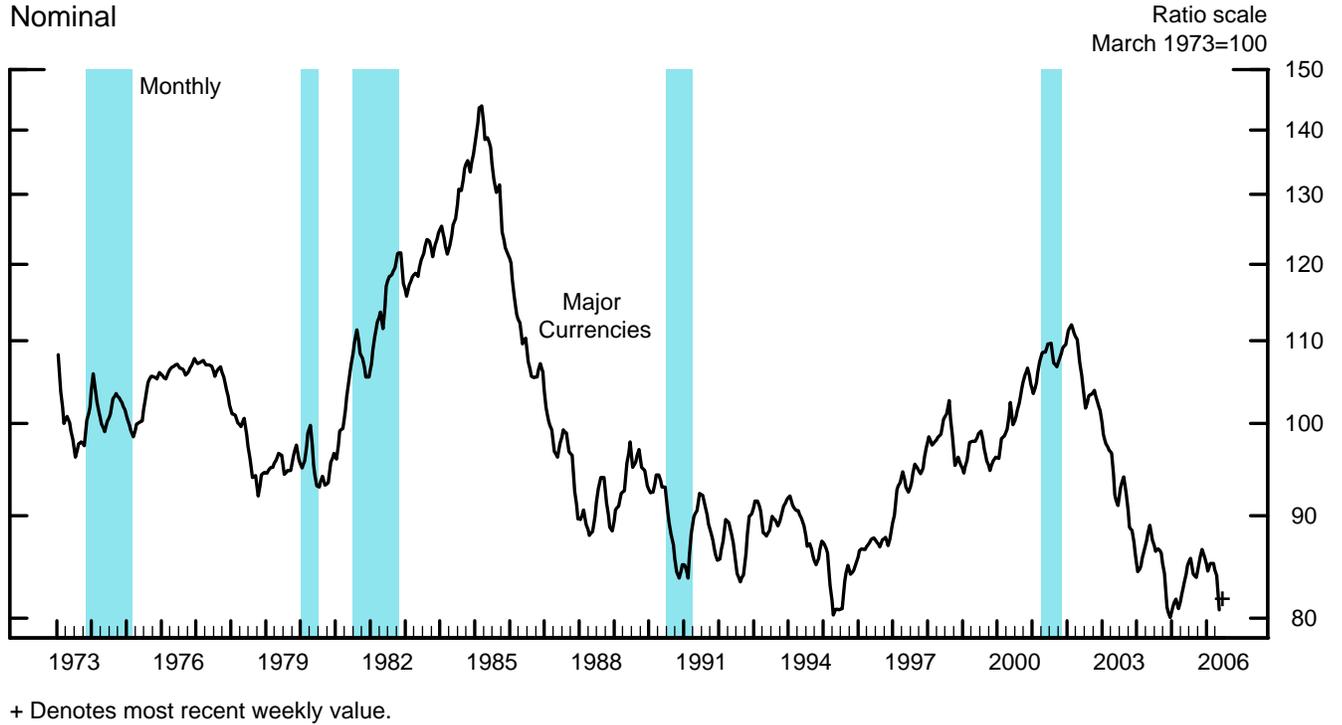
Note. Blue shaded regions denote NBER-dated recessions.

### Treasury Yield Curve\*



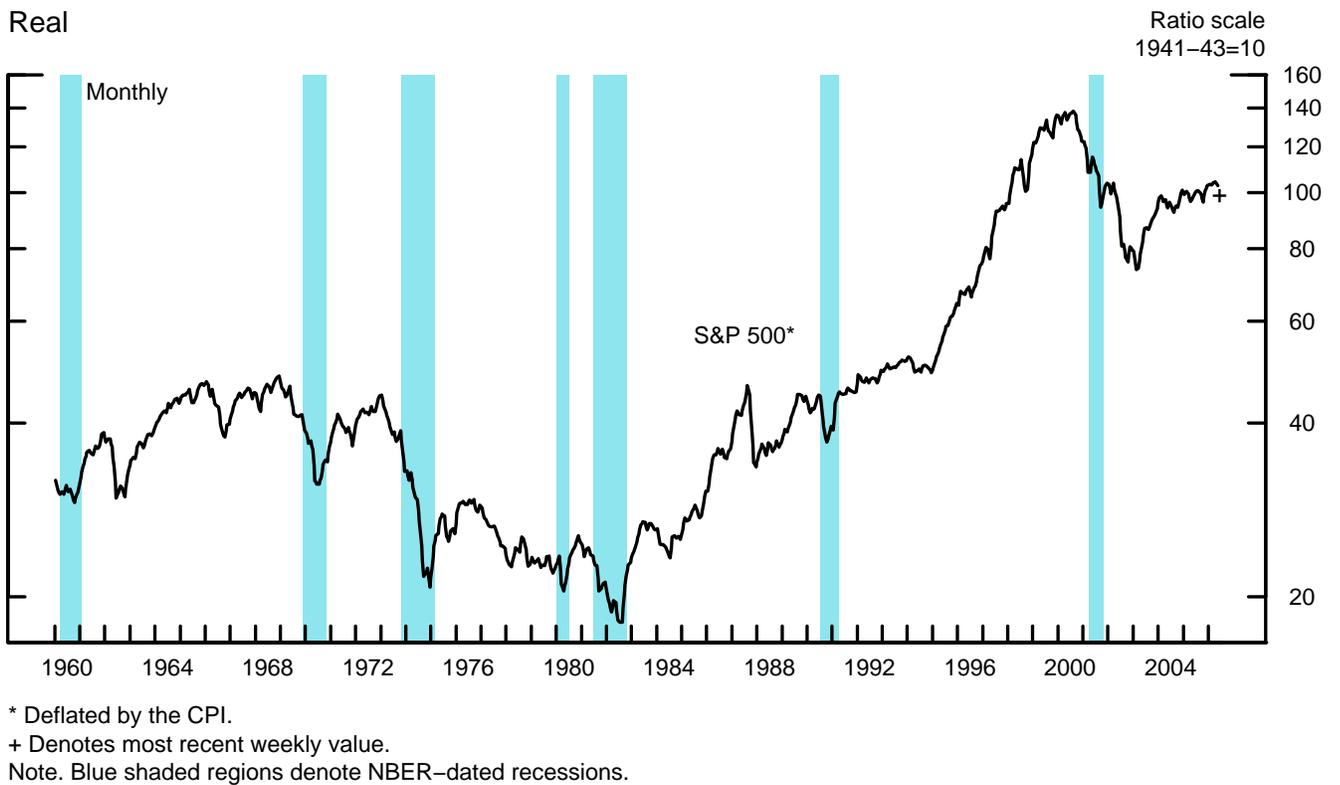
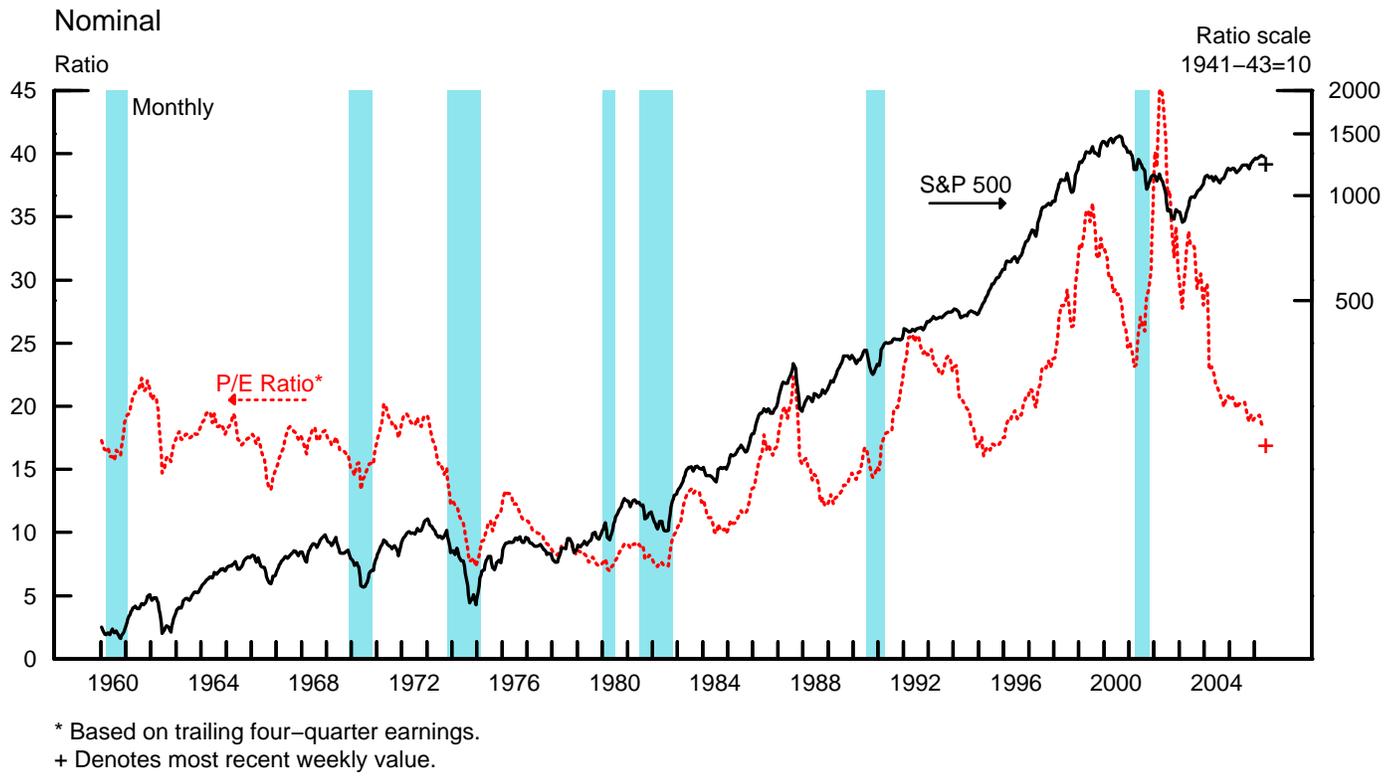
\*Smoothed yield curve estimated from off-the-run Treasury coupon securities. Yields shown are those on notional par Treasury securities with semi-annual coupons.

# Dollar Exchange Rate Indexes



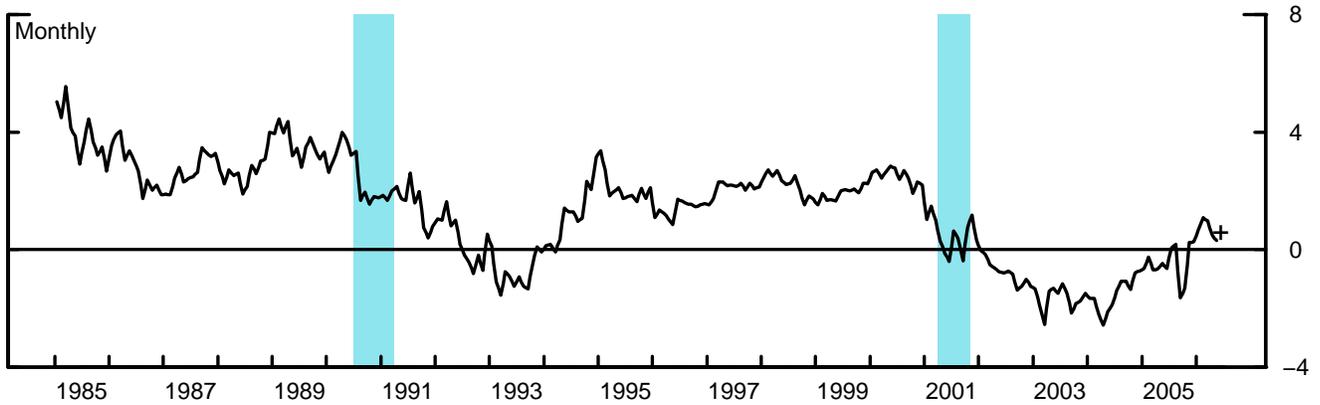
Note. The major currencies index is the trade-weighted average of currencies of the Euro area, Canada, Japan, the U.K., Switzerland, Australia, and Sweden. The other important trading partners index is the trade-weighted average of currencies of 19 other important trading partners. The Broad index is 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



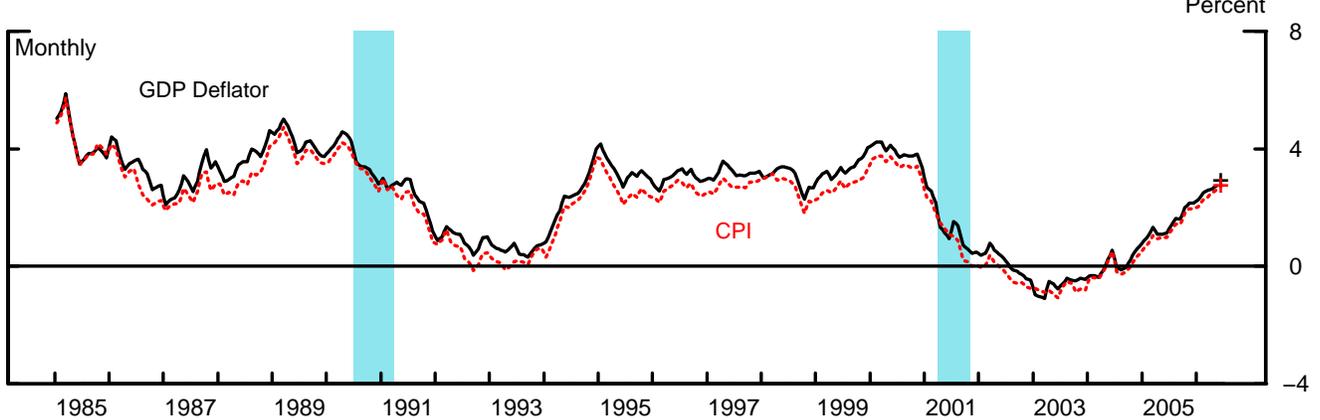
# One-Year Real Interest Rates

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



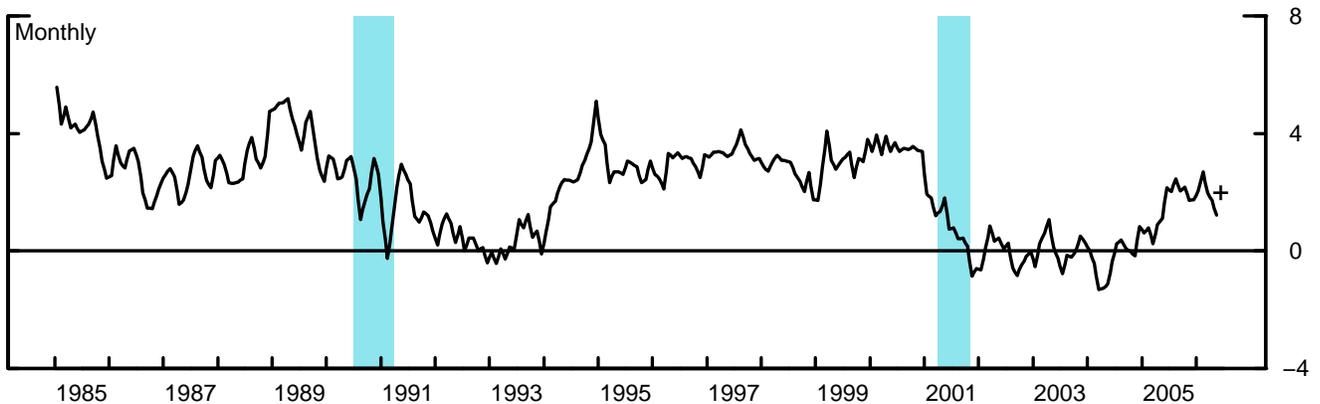
\* Mean value of respondents.

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.

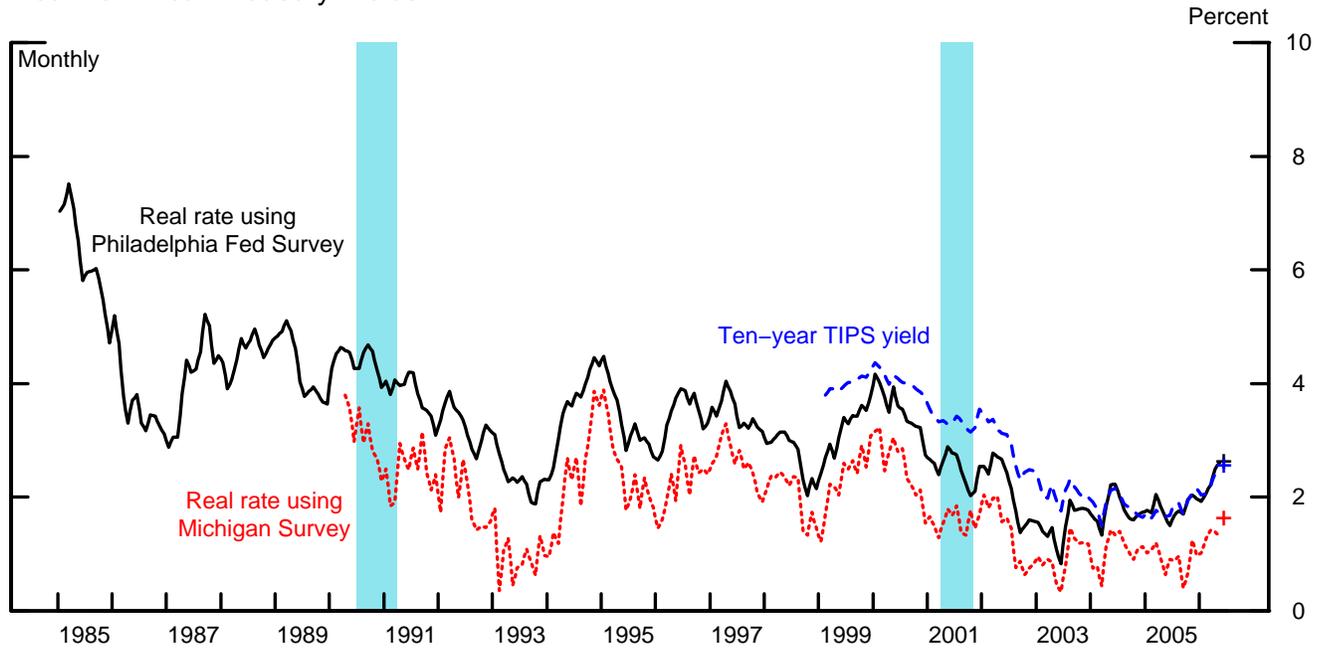
One-Year Treasury Constant Maturity Yield Less Change in the Core CPI from Three Months Prior



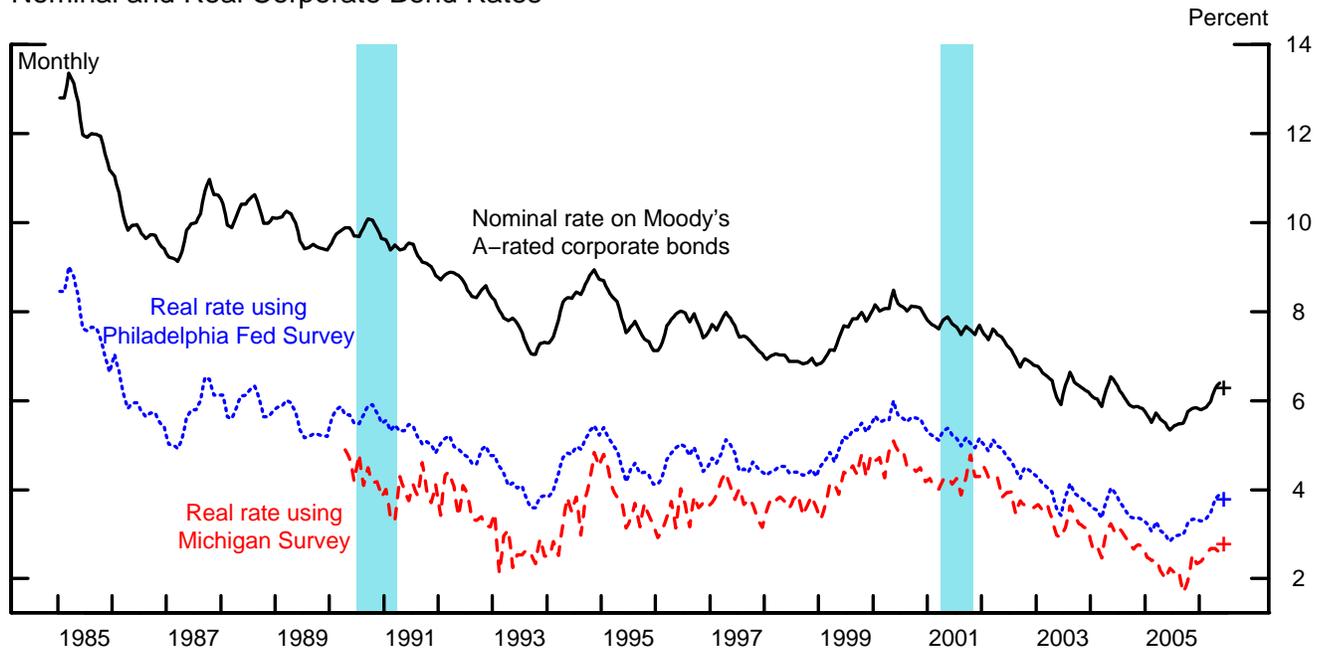
+ Denotes most recent weekly Treasury constant maturity yield less most recent inflation expectation.  
Note. Blue shaded regions denote NBER-dated recessions.

# Long-Term Real Interest Rates\*

## Real Ten-Year Treasury Yields



## Nominal and Real Corporate Bond Rates



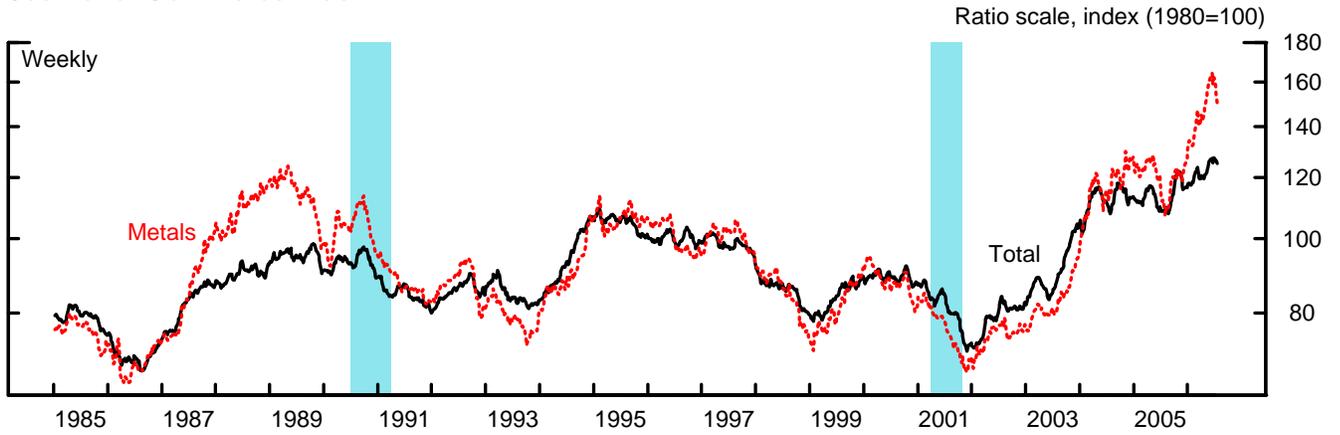
\* For real rates, measures using the Philadelphia Fed Survey employ the ten-year inflation expectations from the Blue Chip Survey until April 1991 and the Philadelphia Federal Reserve Bank Survey of Professional Forecasters thereafter (median value of respondents). Measures using the Michigan Survey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

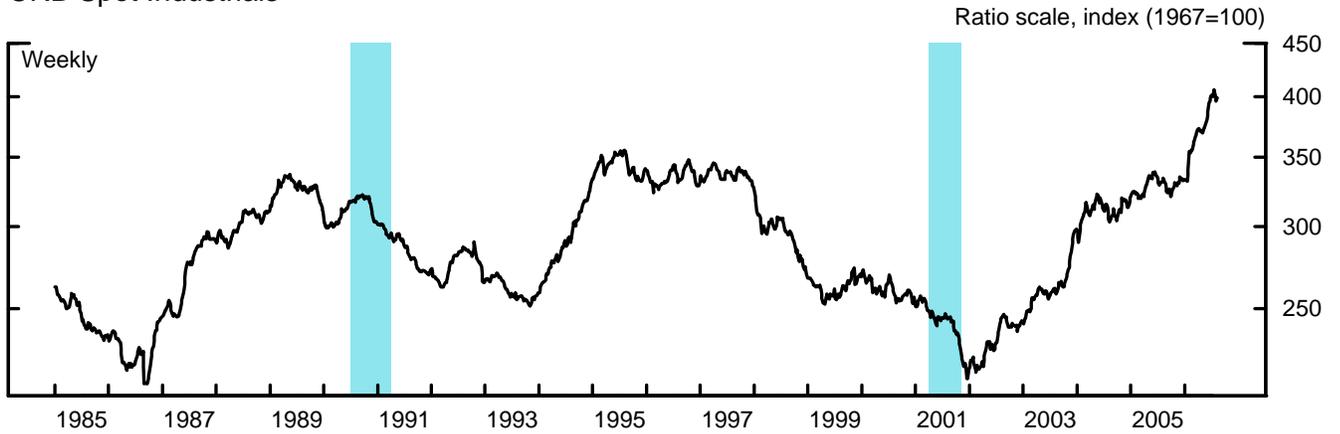
Note. Blue shaded regions denote NBER-dated recessions.

# Commodity Price Measures

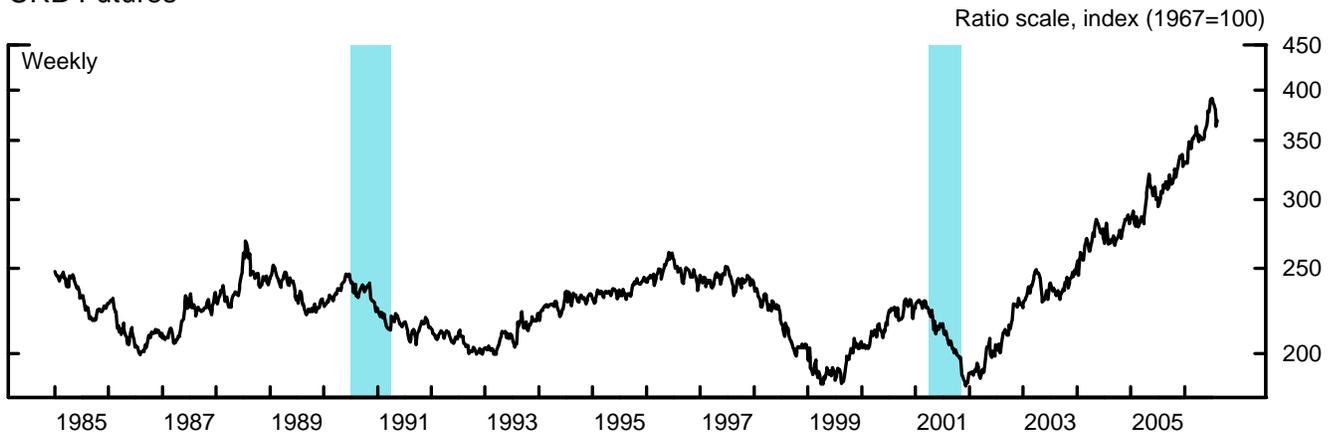
### Journal of Commerce Index



### CRB Spot Industrials



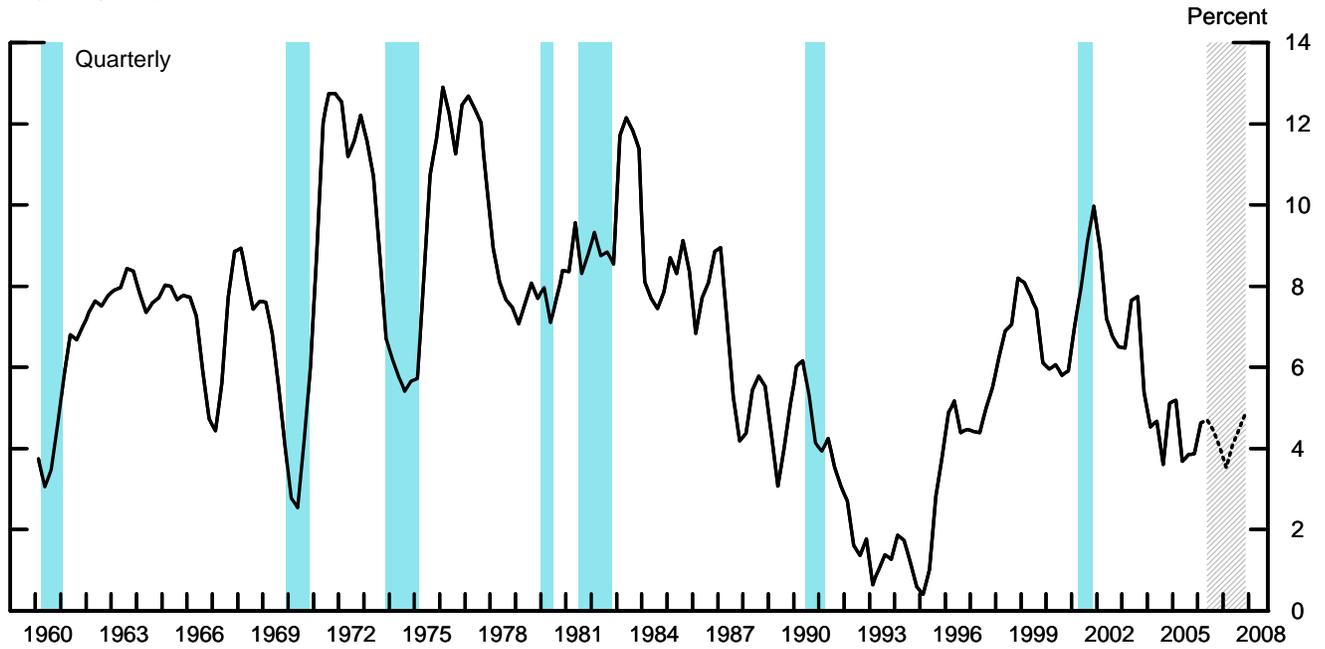
### CRB Futures



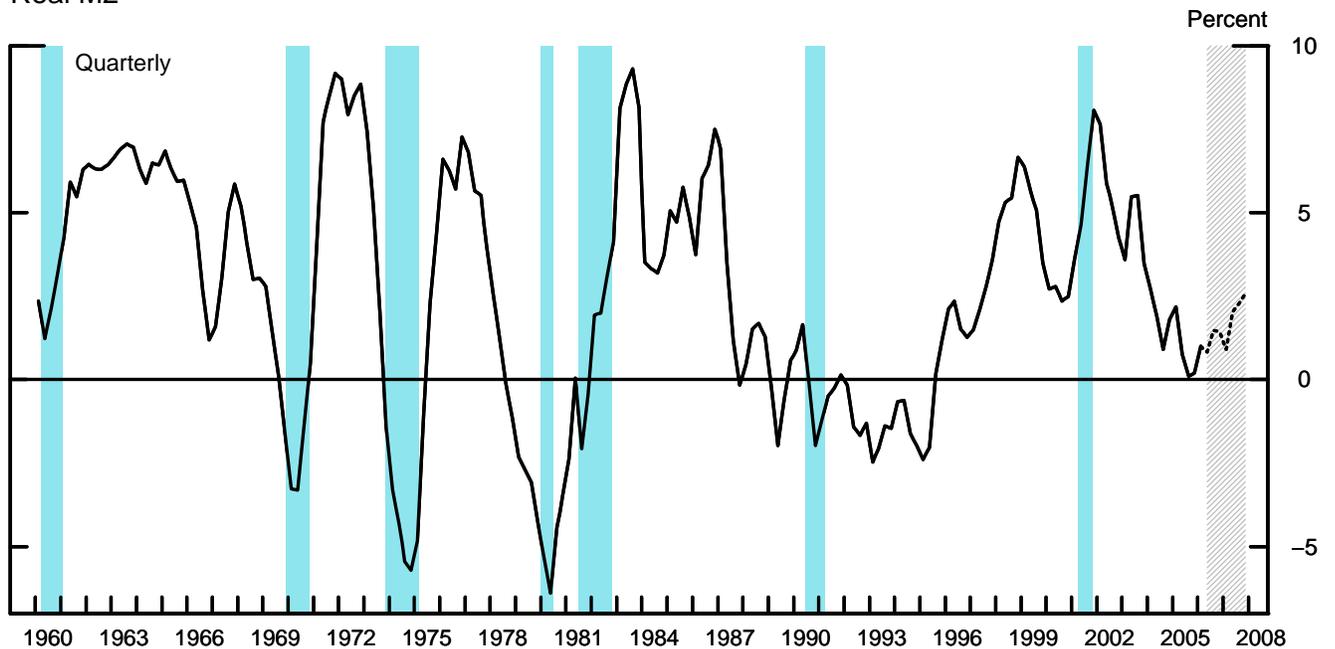
Note. Blue shaded regions denote NBER-dated recessions.

# Growth of M2

## Nominal M2

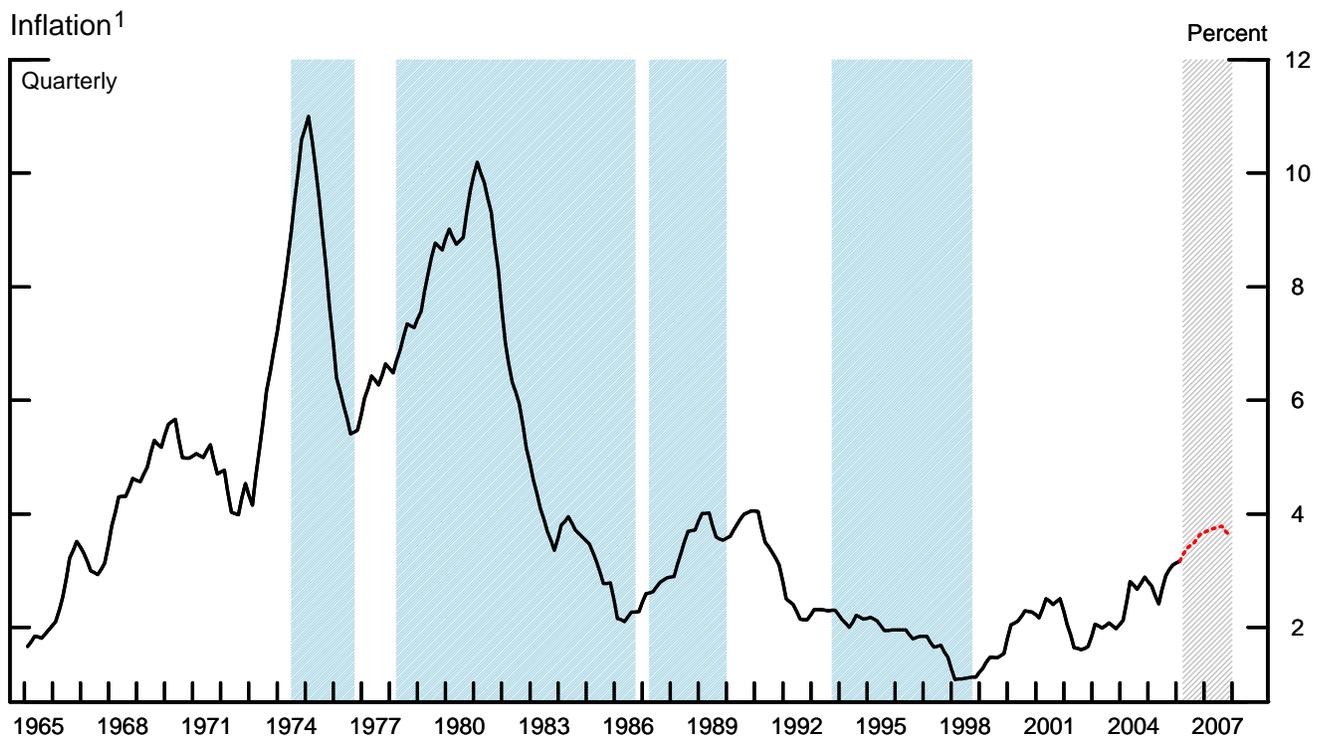
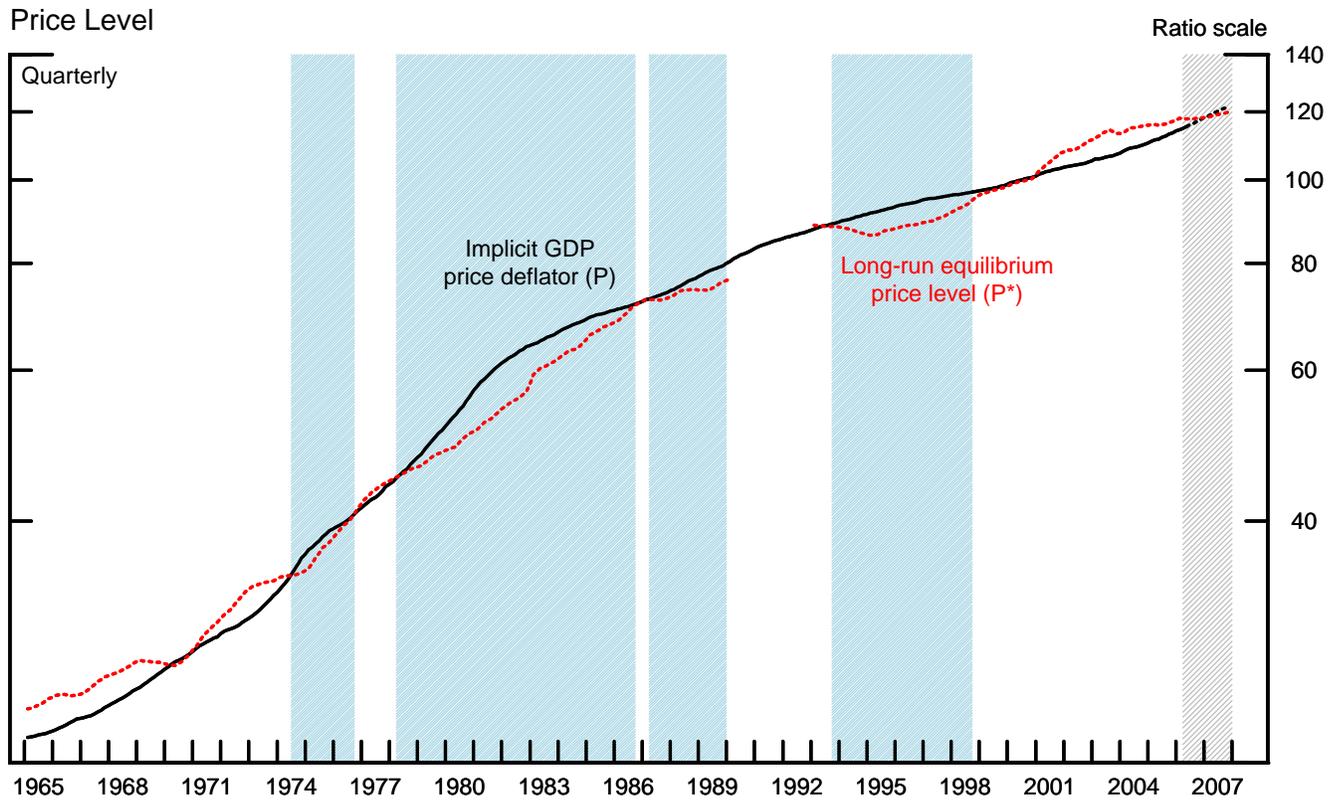


## Real M2



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	5.05	4.80	4.94	5.25	5.42	5.16	5.27	5.15	5.27	5.45	2.53	2.63	6.84	5.25	6.71	5.75
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																
Jun 05	3.04	2.82	3.03	3.22	3.38	3.11	3.65	3.76	4.07	4.38	1.37	1.67	5.86	4.77	5.58	4.24
Jul 05	3.26	3.09	3.29	3.53	3.57	3.27	3.90	3.98	4.25	4.50	1.64	1.88	5.95	4.85	5.70	4.40
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
Weekly																
Apr 21 06	4.75	4.55	4.73	4.91	5.05	4.79	4.91	4.90	5.10	5.28	2.20	2.40	6.72	5.20	6.53	5.63
Apr 28 06	4.77	4.62	4.78	4.94	5.09	4.87	4.95	4.94	5.14	5.31	2.28	2.43	6.73	5.22	6.58	5.68
May 5 06	4.83	4.62	4.81	4.99	5.11	4.91	4.98	4.99	5.21	5.38	2.26	2.45	6.75	5.24	6.59	5.67
May 12 06	4.89	4.65	4.86	5.02	5.13	4.94	5.02	5.02	5.21	5.38	2.25	2.44	6.74	5.25	6.58	5.62
May 19 06	5.00	4.73	4.83	5.00	5.14	4.96	4.99	4.98	5.19	5.37	2.26	2.45	6.76	5.24	6.60	5.62
May 26 06	4.98	4.74	4.83	5.01	5.18	4.98	4.97	4.94	5.13	5.31	2.26	2.44	6.72	5.22	6.62	5.61
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	--	4.64	4.93	5.24	5.41	5.14	5.23	5.12	5.24	5.35	2.49	2.59	--	--	6.71	5.75
Daily																
Jun 6 06	4.99	4.80	4.86	5.05	5.23	--	5.01	4.92	5.08	5.23	2.29	2.45	6.66	--	--	--
Jun 7 06	4.99	4.80	4.86	5.06	5.25	--	5.04	4.95	5.11	5.24	2.35	2.50	6.69	--	--	--
Jun 8 06	5.02	4.78	4.86	5.06	5.27	5.04	5.03	4.92	5.08	5.21	2.33	2.47	6.66	--	--	--
Jun 9 06	5.00	4.78	4.87	5.07	5.27	5.06	5.02	4.91	5.06	5.18	2.31	2.46	6.64	--	--	--
Jun 12 06	5.01	4.76	4.94	5.13	5.28	5.09	5.04	4.93	5.06	5.18	2.32	2.46	6.64	--	--	--
Jun 13 06	5.00	4.72	4.90	5.13	5.29	5.01	5.02	4.91	5.04	5.16	2.34	2.45	6.64	--	--	--
Jun 14 06	5.00	4.68	4.90	5.17	5.32	5.10	5.12	5.00	5.13	5.24	2.38	2.50	6.72	--	--	--
Jun 15 06	5.02	4.59	4.84	5.16	5.37	5.12	5.17	5.04	5.17	5.28	2.40	2.52	6.77	--	--	--
Jun 16 06	4.94	4.62	4.87	5.19	5.38	5.16	5.19	5.07	5.20	5.32	2.43	2.55	6.80	--	--	--
Jun 19 06	4.95	4.65	4.94	5.25	5.39	5.13	5.21	5.09	5.22	5.33	2.47	2.58	6.81	--	--	--
Jun 20 06	4.92	4.70	4.93	5.24	5.40	5.15	5.23	5.10	5.23	5.34	2.49	2.59	6.82	--	--	--
Jun 21 06	4.91	4.66	4.92	5.23	5.41	--	5.23	5.11	5.23	5.34	2.49	2.60	6.84	--	--	--
Jun 22 06	5.01 <sup>p</sup>	4.54	4.92	5.24	5.42	--	5.27	5.15	5.27	5.38	2.53	2.63	--	--	--	--

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	5.2	5.2
2005	0.0	3.9	5.0
Quarterly (average)			
2005-Q2	-0.3	2.5	3.2
Q3	-0.6	4.4	5.7
Q4	0.8	5.1	6.2
2006-Q1	3.6	6.6	7.4
Monthly			
2005-May	4.4	1.6	0.8
June	-1.1	4.9	6.5
July	-6.2	3.7	6.3
Aug.	7.0	5.6	5.2
Sep.	-2.5	5.5	7.7
Oct.	1.7	5.3	6.3
Nov.	0.7	4.0	4.8
Dec.	-1.2	5.1	6.7
2006-Jan.	12.4	11.2	10.8
Feb.	-5.3	4.1	6.6
Mar.	7.3	3.1	2.0
Apr.	5.0	3.6	3.3
May p	2.6	-0.3	-1.1
<u>Levels (\$billions):</u>			
Monthly			
2006-Jan.	1383.0	6738.0	5354.9
Feb.	1376.9	6761.3	5384.4
Mar.	1385.3	6778.5	5393.2
Apr.	1391.1	6798.9	5407.9
May p	1394.1	6797.1	5402.9
Weekly			
2006-May			
1	1388.3	6795.3	5407.0
8	1382.8	6771.6	5388.8
15	1386.6	6781.8	5395.2
22	1397.8	6807.1	5409.3
29	1404.9	6810.5	5405.6
June			
5p	1383.3	6807.1	5423.8
12p	1357.1	6806.4	5449.3

p preliminary

**Appendix Table 3**  
**Changes in System Holdings of Securities <sup>1</sup>**  
**(Millions of dollars, not seasonally adjusted)**

June 22, 2006

	Treasury Bills			Treasury Coupons						Federal Agency Redemptions (-)	Net change total outright holdings <sup>4</sup>	Net RPs <sup>5</sup>		
	Net Purchases <sup>2</sup>	Redemptions (-)	Net Change	Net Purchases <sup>3</sup>				Redemptions (-)	Net Change			Short-Term <sup>6</sup>	Long-Term <sup>7</sup>	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 QI	35	---	35	---	---	---	---	544	-544	---	-509	1,653	-3,454	-1,801
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
2005 Oct	1,023	---	1,023	500	1,693	---	902	---	3,095	---	4,118	-1,468	-5,369	-6,837
Nov	489	---	489	1,096	1,096	800	---	189	2,802	---	3,292	-627	3,635	3,008
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
2006 Mar 29	1,228	---	1,228	---	---	---	---	---	---	---	1,228	-24	-6,000	-6,024
Apr 5	---	---	---	---	---	---	---	---	---	---	---	3,105	-2,000	1,105
Apr 12	---	---	---	---	---	---	---	---	---	---	---	-4,143	1,000	-3,143
Apr 19	---	---	---	---	---	---	---	---	---	---	---	4,093	1,000	5,093
Apr 26	---	---	---	---	1,096	---	---	---	1,096	---	1,096	-5,428	2,000	-3,428
May 3	---	---	---	---	---	---	---	---	---	---	---	3,218	---	3,218
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
2006 Jun 22	---	---	---	---	---	---	---	---	---	---	---	2,867	-3,000	-133
Intermeeting Period														
May 10-Jun 22	---	---	---	1,375	4,967	1,181	---	1,217	6,306	---	6,306	3,497	-4,000	-503
Memo: LEVEL (bil. \$)														
Jun 22			275.4	135.9	216.0	60.7	78.4		491.0	---	766.3	-14.6	11.0	-3.6

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.