

## **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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DECEMBER 7, 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

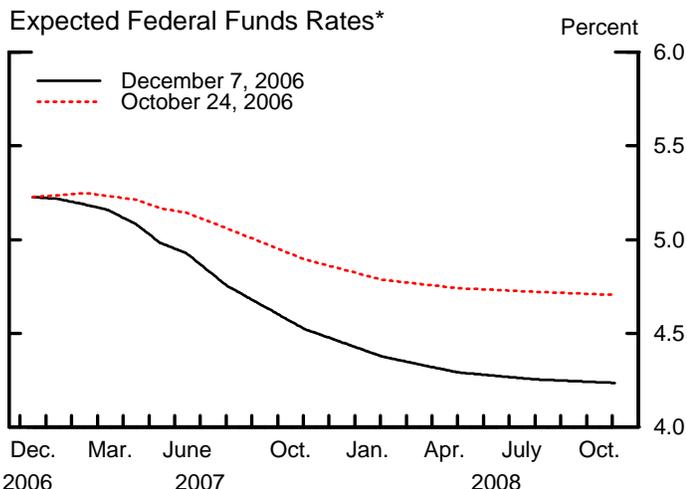
### Recent Developments

(1) Neither the FOMC's decision at the October meeting to keep its target for the federal funds rate at 5¼ percent nor its policy statement surprised market participants.<sup>1</sup> As a result, the market reaction to the announcement was muted, as was the response to the subsequent publication of the minutes of the meeting. Over the intermeeting period, investors continued to anticipate that the FOMC will leave policy unchanged at this meeting. However, partly in response to several weaker-than-expected economic data releases, they built in some odds of an easing at the January meeting and significantly lowered their expectations for the path of policy further ahead. Futures quotes indicate that market participants now expect more than 75 basis points of easing during 2007, almost 50 basis points more than they anticipated before the October meeting (Chart 1). However, on average, respondents to the Desk's survey of primary dealers expect somewhat less policy easing in 2007—about 50 basis points. The primary dealers generally also anticipate the December FOMC statement to be broadly similar to that in October. Although some dealers think that the Committee will allude to some softening in the economic outlook, most believe that the Committee will continue to emphasize inflation risks. According to options prices, market participants' uncertainty about the near-term path of monetary

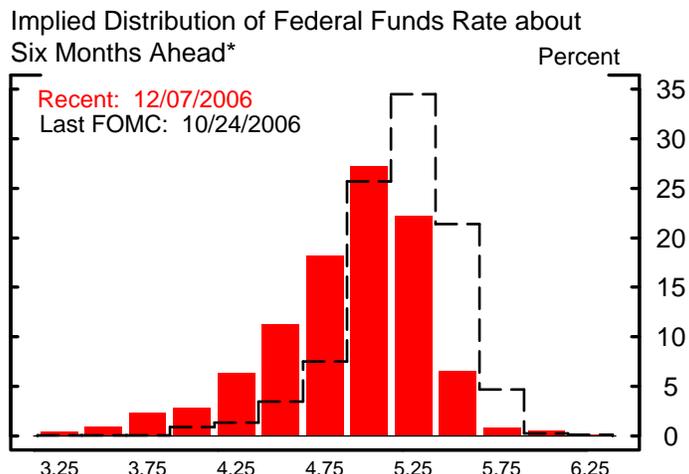
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<sup>1</sup>The effective federal funds rate averaged 5.25 percent over the intermeeting period. During the period, the Desk purchased \$6.2 billion of Treasury coupon securities in the market and redeemed \$335 million of coupon securities. The volume of outstanding long-term RPs increased by \$4 billion, to \$19 billion, primarily to accommodate seasonal increases in currency. The changes to the guidelines for per-issue holding limits by the System Open Market Account that were discussed at the October FOMC meeting were implemented uneventfully during this intermeeting period.

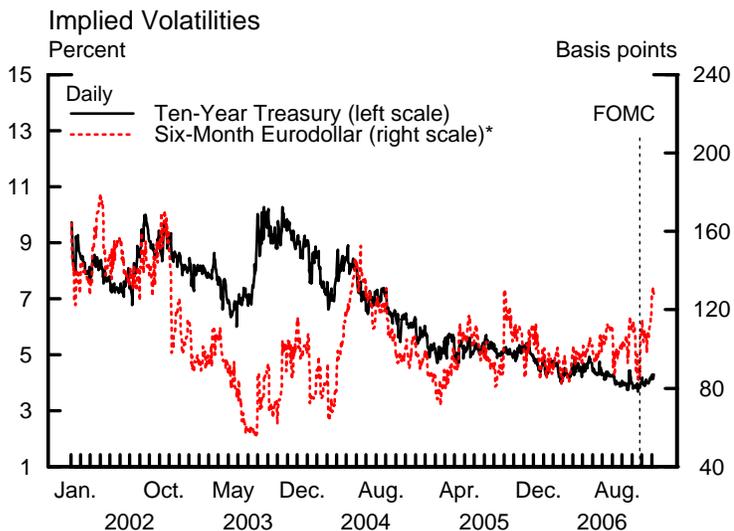
### Chart 1 Interest Rate Developments



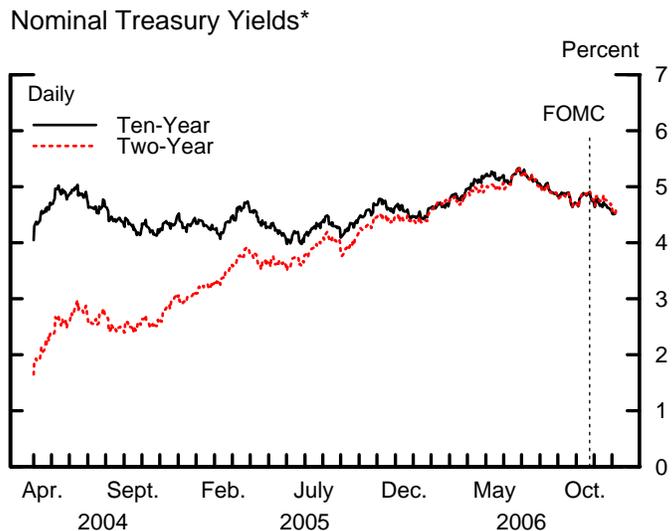
\*Estimates from federal funds and Eurodollar futures, with an allowance for term premiums and other adjustments.



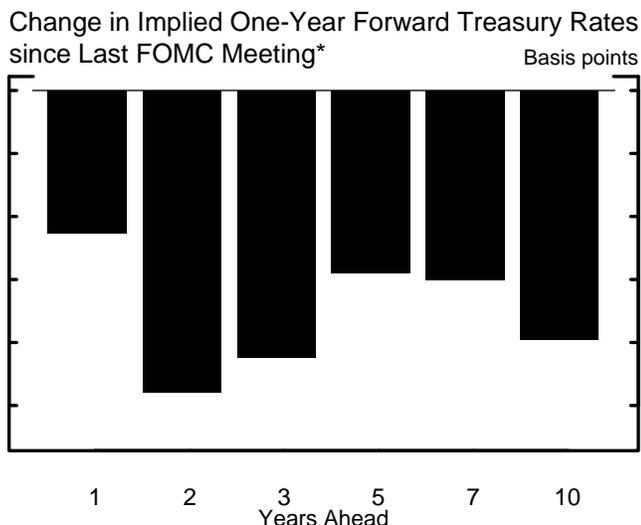
\*Estimates from options on Eurodollar futures contracts, adjusted to estimate expectations for the federal funds rate.



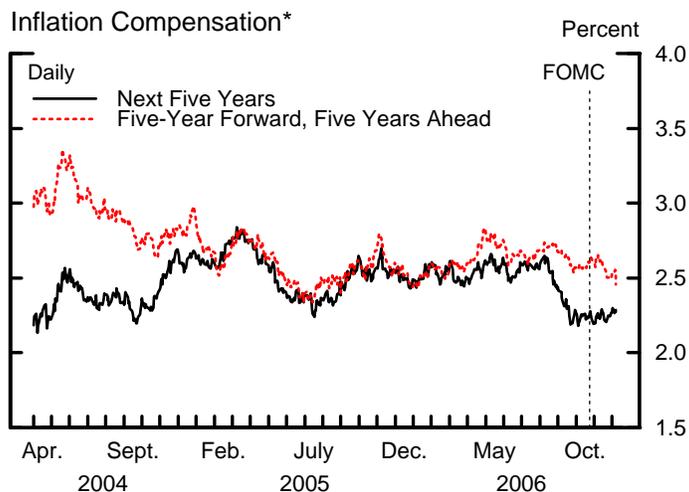
\*Width of a 90 percent confidence interval computed from the term structures for the expected federal funds rate and implied volatility.



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



\*Forward rates are the one-year rates maturing at the end of the year shown on the horizontal axis that are implied by the smoothed 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 October 24, 2006. Last daily observations are for December 7, 2006.

policy increased somewhat over the intermeeting period—though it remained low by historical standards—and their outlook for the funds rate became more skewed toward lower outcomes.

(2) Yields on Treasury securities also fell notably over the intermeeting period. The yield curve shifted downward in a nearly parallel fashion, with yields on two- through ten-year nominal Treasury notes dropping about 35 basis points. These rate declines apparently reflected, at least in part, a less optimistic economic outlook among investors. Both expected future short-term interest rates and term premiums are estimated to have declined (see box on the next page). After adjusting for carry effects, TIPS-based inflation compensation for the next five years was essentially unchanged over the intermeeting period, and inflation compensation for the subsequent five years edged somewhat lower on balance. According to the Michigan survey, households' short- and long-term inflation expectations moved down a bit.

(3) Major stock price indexes rose between 2 and 3 percent, on net, over the intermeeting period (Chart 2). The decline in bond yields and the continued positive tone of the final batch of reports on third-quarter corporate earnings evidently offset the negative effects of the weaker macroeconomic news. Implied volatility of the S&P 500 rose somewhat, though it remained near historical lows, and a rough measure of the equity risk premium widened somewhat. Spreads of yields on investment- and speculative-grade bonds over those on comparable-maturity Treasuries were about unchanged. Measures of the credit quality of nonfinancial firms stayed solid, supported by robust earnings and by strong and liquid balance sheets.

(4) The trade-weighted value of the dollar versus major foreign currencies fell  $2\frac{3}{4}$  percent on balance over the intermeeting period, with a particularly steep slide in late November (Chart 3). Although the drop did not appear to be triggered by specific events, it occurred in the context of both weaker-than-expected U.S.

## Interpreting the Decline in Treasury Yields over the Intermeeting Period

Nominal Treasury yields declined about 35 basis points over the intermeeting period, with the drop spread across the forward rate curve. To put the size of this move into some historical perspective, the average absolute intermeeting change in two- and ten-year Treasury yields since 1994 is 29 and 27 basis points, respectively. Judging from TIPS yields, the decline in near-term nominal rates over the intermeeting period has been mostly concentrated in real yields. Further out the term structure, a small portion of the decline in nominal forward rates owes to a modest decline in inflation compensation. Various estimates suggest that both expected future short-term interest rates and term premiums declined, with the latter reflecting, in particular, lower compensation for real interest rate risk. This broad pattern was also evident, albeit somewhat less pronounced, in global bond markets as nominal and real rates moved lower in a number of industrialized countries.

To a degree, the drop in yields seems to have been prompted by weaker-than-anticipated indicators of aggregate demand against the backdrop of relatively benign inflation data. To be sure, the initial market reaction to recent spending data, as gauged by yield changes in narrow intervals around their releases, falls well short of explaining the full movement in yields. However, market reports suggest that incoming information spurred a broader revision to investors' views regarding the macroeconomic outlook. Primary dealers, for example, have lowered their forecasts of real GDP growth in the fourth quarter about  $\frac{1}{2}$  percentage point, and to a lesser extent going forward, which is consistent with the fall in real interest rates, particularly at the front end of the curve. And some dealers have marked down their estimates of potential output growth, which might help to explain some of the decline in real rates at distant horizons.

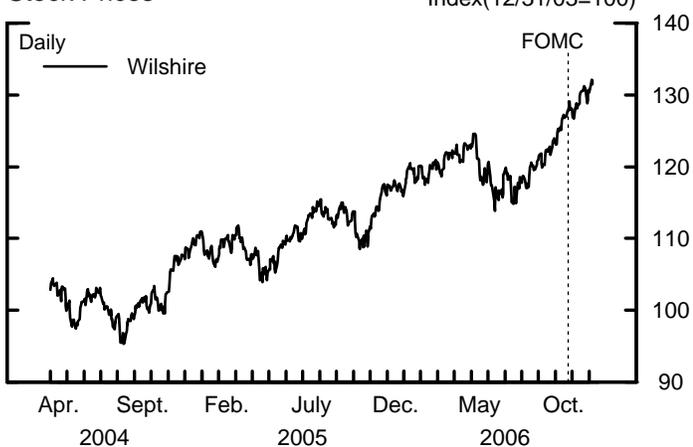
On balance, the drop in yields over the intermeeting period seems to accord reasonably well with a sense that investors may perceive greater downside risks in the outlook for spending and economic growth. Nonetheless, some aspects of recent yield curve developments do not appear to fit so neatly with changes in economic fundamentals. The sizable drop in estimated term premiums, for example, seems to run counter to the uptick in some measures of interest rate uncertainty.

Market analysts have offered several other special stories for the drop in yields, but these explanations also are not completely satisfying. For example, some analysts have focused on anecdotal reports of strong foreign demand for Treasury securities. However, available indicators do not point to a large increase in such demand. Similarly, while some market participants have suggested that the recent declines in yields have been amplified by mortgage-related hedging flows, staff analysis indicates that the current level of rates would be expected to prompt only fairly modest hedging demands for longer-duration assets. Finally, a few commentators have suggested that the outcome of the Congressional elections may have played a role in lowering longer-term interest rates, perhaps because investors expect federal budget deficits to be reduced. Although yields declined modestly on the day after the election, little evidence can be adduced to support this hypothesis.

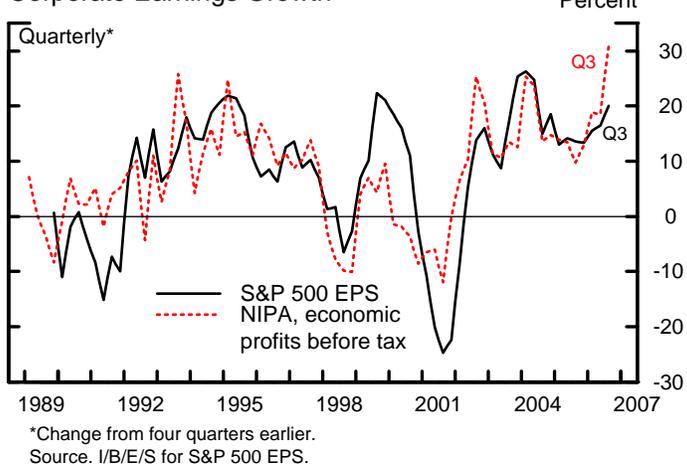
In summary, while the direction of interest rates over the period seems consistent with changing perceptions of economic fundamentals, the magnitude of these changes remains somewhat surprising.

## Chart 2 Asset Market Developments

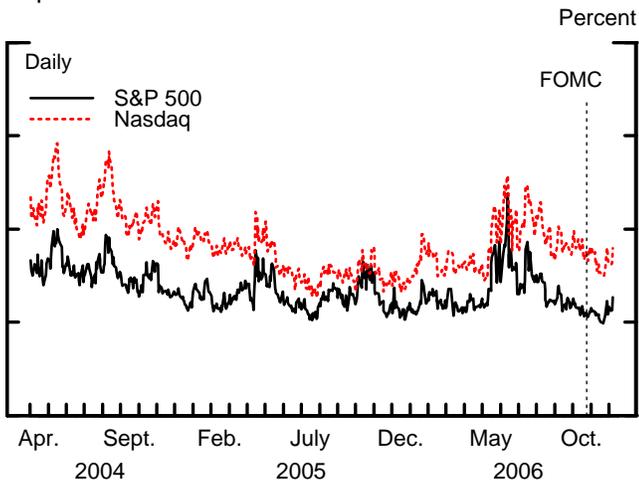
Stock Prices



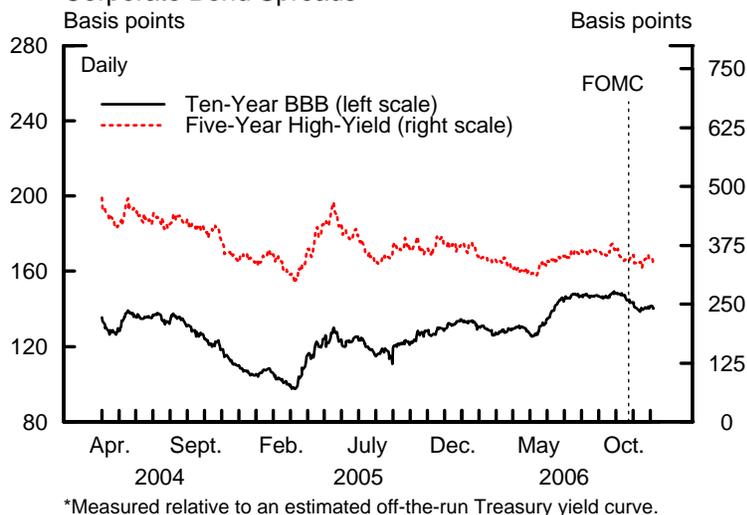
Corporate Earnings Growth



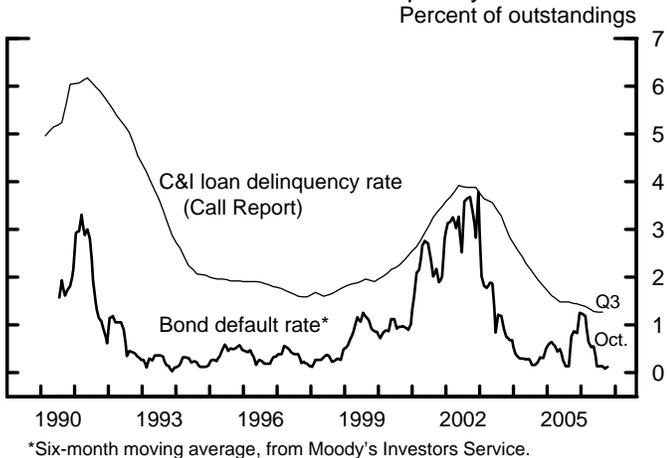
Implied Volatilities



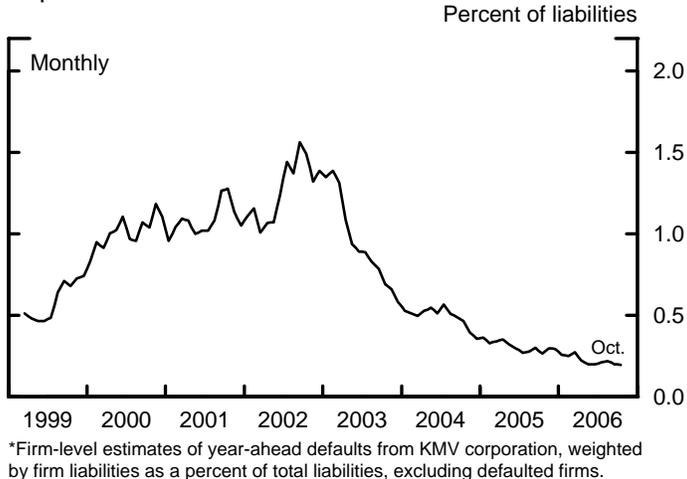
Corporate Bond Spreads\*



Bond Default and C&I Loan Delinquency Rates



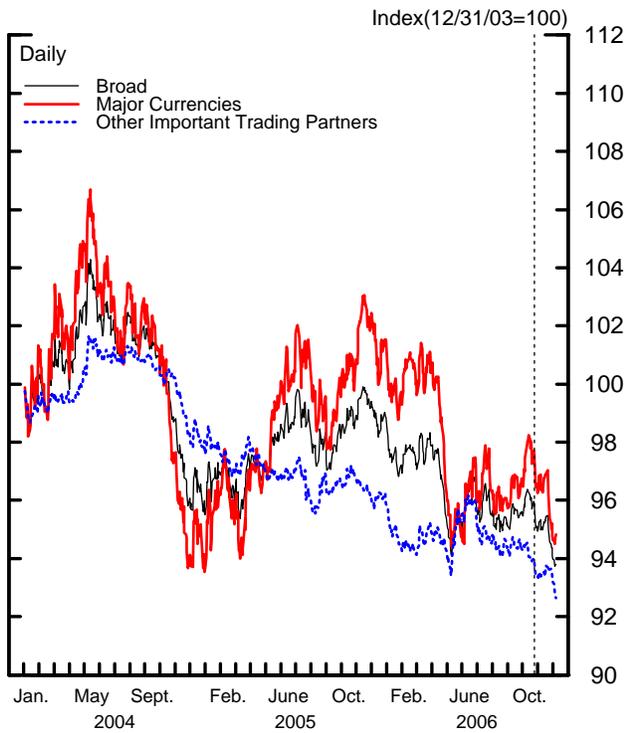
Expected Year-Ahead Defaults\*



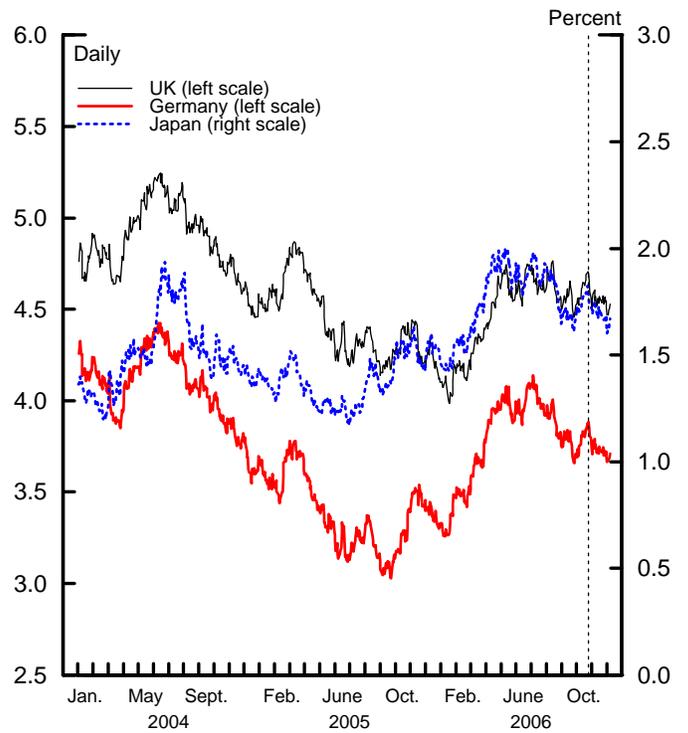
Note: Vertical lines indicate October 24, 2006. Last daily observations are for December 7, 2006.

### Chart 3 International Financial Indicators

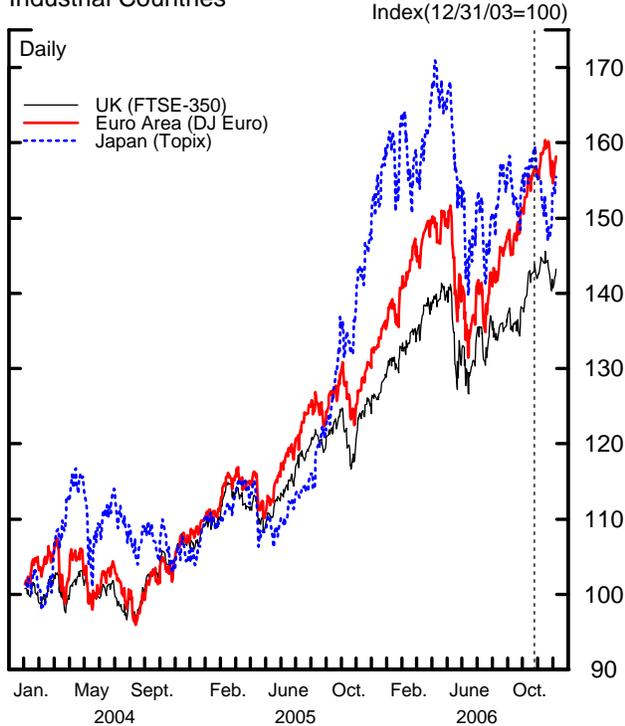
Nominal Trade-Weighted Dollar Indexes



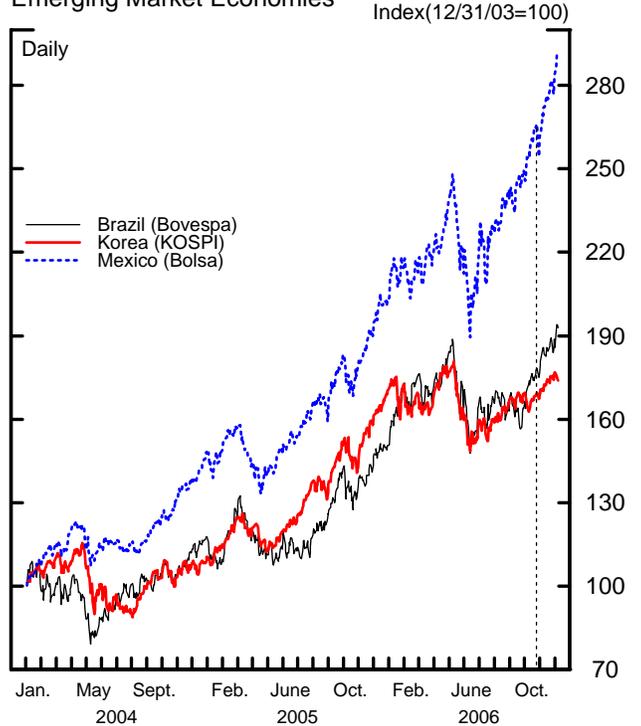
Ten-Year Government Bond Yields (Nominal)



Stock Price Indexes  
Industrial Countries



Stock Price Indexes  
Emerging Market Economies



Note: Vertical lines indicate October 25, 2006. Last daily observations are for December 7, 2006.

economic data and relatively strong economic indicators for Europe. On balance, the dollar fell  $5\frac{1}{4}$  percent against the euro,  $4\frac{1}{4}$  percent versus sterling, and about  $3\frac{1}{4}$  percent against the yen. By contrast, the dollar rose about 2 percent against the Canadian dollar, as data on Canadian economic activity were unexpectedly soft. Yields on long-term government securities in foreign industrial countries registered declines of 10 to 30 basis points, generally somewhat less than those on comparable-maturity U.S. Treasury issues. Major foreign stock markets recorded small net changes over the intermeeting period. To combat inflation pressures, the Bank of England, the Riksbank, the Reserve Bank of Australia, and the European Central Bank raised their policy rates 25 basis points during the intermeeting period.<sup>2</sup>

(5) The dollar declined about  $1\frac{1}{4}$  percent on net against an index of currencies of our other important trading partners.

The dollar's slow decline versus the Chinese renminbi accelerated a bit, leaving the dollar about 1 percent lower by the end of the intermeeting period. Despite signs of continued strong Mexican economic performance, the peso weakened because of ongoing political turmoil surrounding the change in the Mexican presidency; on balance, the dollar gained about  $\frac{3}{4}$  percent against the peso over the intermeeting period. Stock prices in Mexico and Brazil climbed roughly 11 and 8 percent, respectively, and their EMBI+ spreads remained steady near low historical levels.

(6) The debt of the domestic nonfinancial sectors grew at about a 6¾ percent annual rate in the third quarter and appears to be expanding at nearly that pace in the current quarter (Chart 4). Net issuance of investment- and speculative-grade corporate bonds surged in November, supported by the continued elevated level of mergers and acquisitions and the decline in yields. Short-term business borrowing, by contrast, appears to have moderated somewhat, with C&I loans slowing notably in the fourth quarter from their rapid pace earlier in the year. Growth of home mortgage debt is estimated to have stepped down significantly in the third quarter, about in line with the sustained deceleration in house prices. Consumer credit again expanded at a moderate pace in the third quarter, and data for consumer loans at commercial banks suggest continued modest growth in the current quarter.

(7) Reflecting the pattern of expansion in liquid deposits, M2 growth jumped in October but fell back to a 6 percent annual rate in November. By contrast, small time deposits and retail money funds—two components of the aggregate whose yields tend to follow short-term market rates fairly closely—continued to expand briskly. For the fourth quarter as a whole, M2 growth appears to be outpacing that of nominal income, the first decrease in the velocity of M2 in more than two years. Appendix A analyzes the growth of money and the debt of domestic nonfinancial sectors this year.

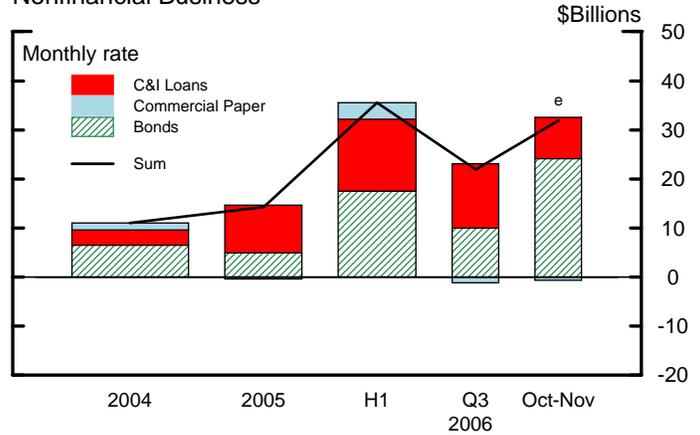
### Chart 4 Debt and Money

Growth of Debt of Nonfinancial Sectors

|      |                 | Total | Nonfederal |
|------|-----------------|-------|------------|
| 2005 |                 | 9.5   | 10.1       |
| 2006 | Q1              | 9.5   | 9.1        |
|      | Q2              | 6.7   | 8.7        |
|      | Q3              | 6.7   | 7.4        |
|      | Q4 <sup>p</sup> | 6.4   | 7.0        |

<sup>p</sup> Projected.

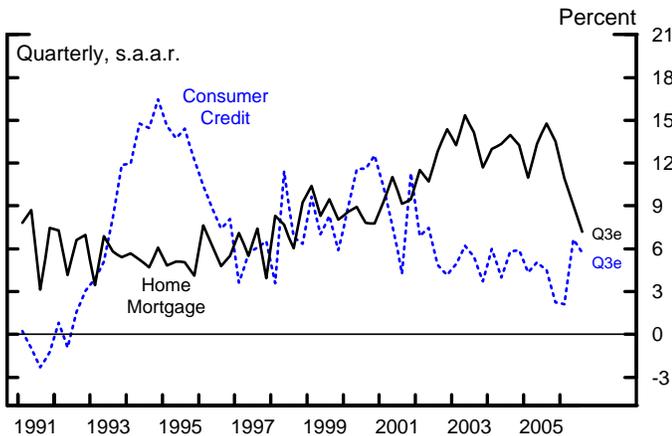
Changes in Selected Components of Debt of Nonfinancial Business



<sup>p</sup> Preliminary.

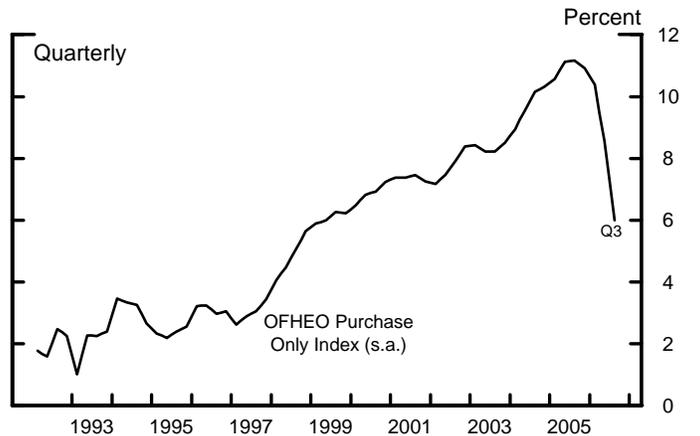
Note. Commercial paper and C&I loans are seasonally adjusted, bonds are not.

Growth of Debt of Household Sector



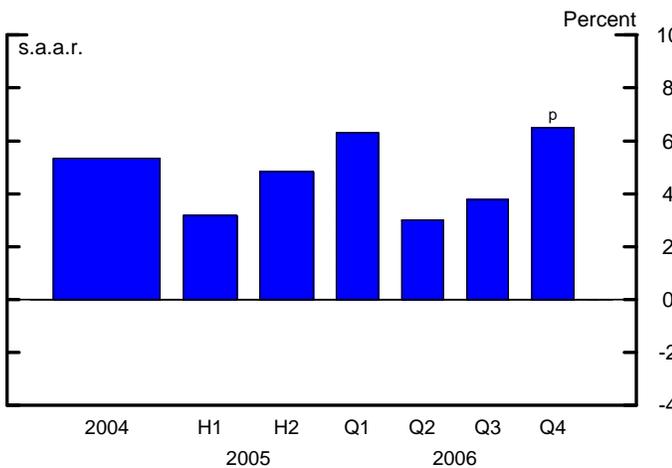
<sup>e</sup> Estimated.

Growth of House Prices



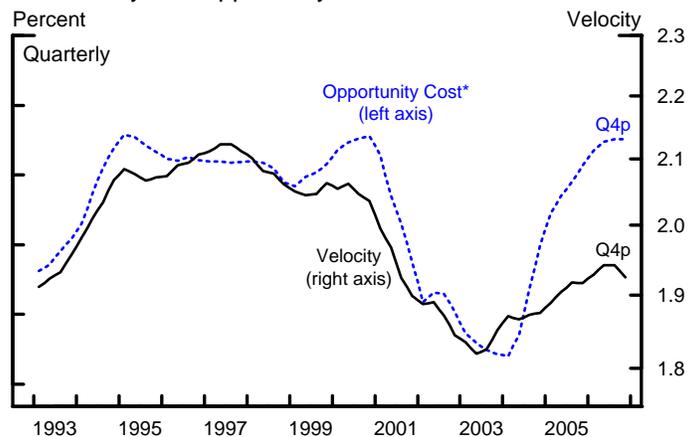
Note: Four-quarter growth rate.

Growth of M2



<sup>p</sup> Preliminary.

M2 Velocity and Opportunity Cost



\*Two-quarter moving average.

<sup>p</sup> Projected.

## Economic Outlook Through 2008

(8) The staff's forecast for both real GDP and inflation is largely unchanged from that presented in the October Greenbook. The underlying pace of economic growth in the second half of this year is judged to be a touch weaker than had been anticipated; further out, however, the forecast for real activity is little different, with growth projected to pick up gradually during 2007 to a rate broadly in line with the staff's estimate of sustainable output growth. As in October, the forecast assumes that the Committee maintains the current stance of policy through mid-2008 and then eases slightly. Longer-term Treasury yields start from a lower level than in the previous forecast, but rise almost 50 basis points over 2007 as investors come to realize that policy is unlikely to be eased next year. Stock prices climb at about a 6½ percent annual rate from a starting point that is around 4 percent higher than projected in the October Greenbook. The real trade-weighted dollar is again assumed to depreciate gradually, but from a level about 2 percent lower than assumed in October. Oil prices edge somewhat higher over the forecast horizon, in line with futures quotes. Reflecting the unexpected drop in the unemployment rate earlier this autumn, the labor market is projected to be slightly tighter through 2007 than had been anticipated in October, but the higher level of the markup implied by the downward revision to compensation suggests that firms will largely absorb the increased cost pressures emanating from the labor market. Core PCE inflation is again projected to edge down to about 2 percent by the end of 2008, primarily reflecting a further waning of the effects of the earlier run-up in the prices of energy and imported goods and a fall in the rate of increase of shelter costs. Overall PCE inflation is expected to be about 2¾ percent in 2007 and 2 percent in 2008.

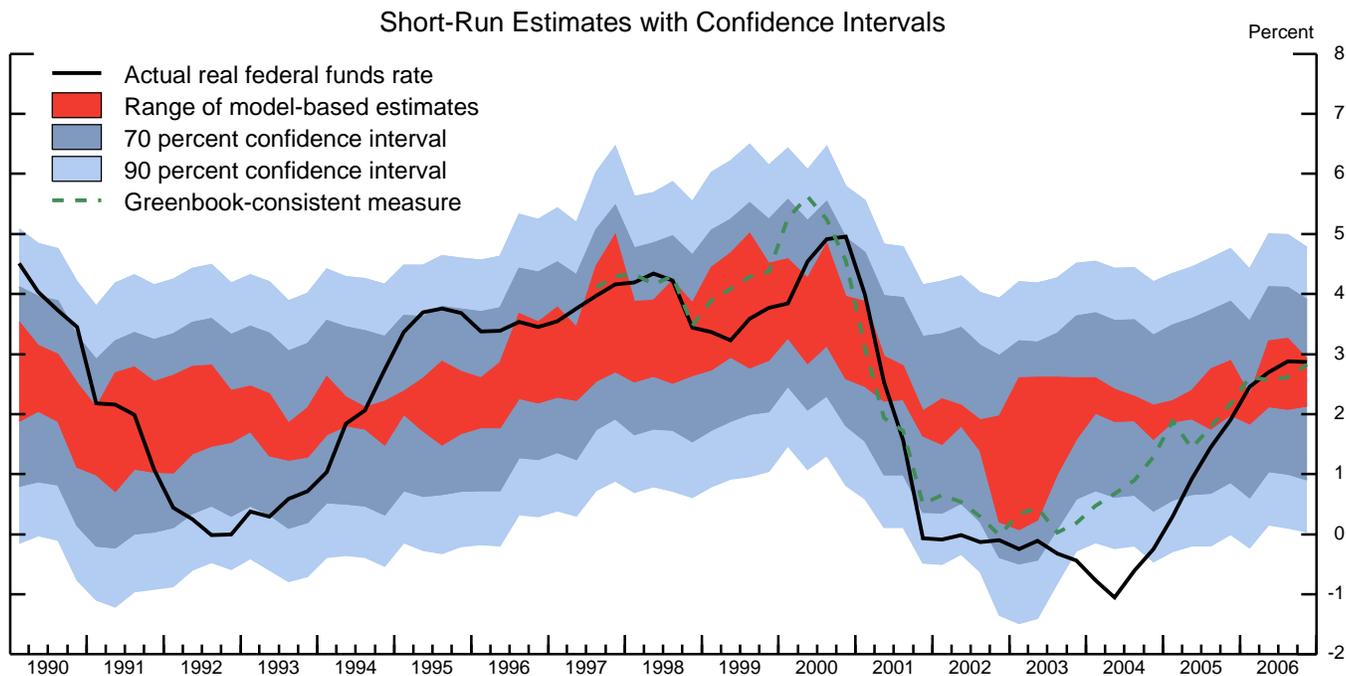
## Update on Medium-Term Strategies

(9) Charts 5 to 7 provide an update of the materials on medium-term strategies that were presented in the October Bluebook. The Greenbook-consistent measure of the short-run equilibrium real federal funds rate ( $r^*$ )—the value that would close the output gap over the next twelve quarters—remains at about  $2\frac{3}{4}$  percent, reflecting the modest changes to the staff's outlook for aggregate demand over the intermeeting period (Chart 5). The actual real funds rate is just above the Greenbook-consistent measure and at the upper end of the range of model-based estimates of short-run  $r^*$ . Optimal control simulations of the FRB/US model prescribe policy paths that are virtually identical to those presented in the October Bluebook (Chart 6).<sup>3</sup> With an inflation goal of 2 percent, the optimal funds rate remains near  $5\frac{1}{4}$  percent through 2008; in contrast, with an inflation goal of  $1\frac{1}{2}$  percent, optimal policy prescribes a funds rate path that peaks at about 6 percent late next year. The estimated outcome-based rule prescribes a nearly constant funds rate of about  $5\frac{1}{4}$  percent through the end of 2008—a path that is substantially tighter than that embedded in financial market prices (Chart 7). Options prices continue to suggest noticeably less uncertainty about the future course of policy among market participants than implied by FRB/US model simulations. The near-term prescriptions of several simple rules—such as those proposed by Taylor (1993, 1999)—have not changed significantly over the intermeeting period.

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<sup>3</sup> The FRB/US model was employed—together with judgmental adjustments—to construct an illustrative extension of the Greenbook forecast beyond 2008 that served as a baseline for these simulations. This extension was based on the same medium-term assumptions that were described in the October Bluebook. In the optimal control exercises, policymakers and participants in financial markets are assumed to understand fully the forces shaping the economic outlook (as summarized by the extended Greenbook projection), whereas households and firms form their expectations using more limited information. The optimal policies shown in Chart 6 assume that policymakers place equal weights on three stabilization objectives: keeping core PCE inflation close to a specified goal of either  $1\frac{1}{2}$  or 2 percent; keeping unemployment close to the long-run NAIRU of 5 percent; and avoiding sharp changes in the nominal funds rate.

### Chart 5 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                                | 2.2              | 2.1                      |
| Small structural model                               | 2.1              | 2.1                      |
| Large model (FRB/US)                                 | 2.9              | 2.7                      |
| Confidence intervals for three model-based estimates |                  |                          |
| 70 percent confidence interval                       | 0.9 - 3.9        |                          |
| 90 percent confidence interval                       | 0.0 - 4.8        |                          |
| Greenbook-consistent measure                         | 2.8              | 2.8                      |
| <b>Medium-Run Measures</b>                           |                  |                          |
| Single-equation model                                | 2.2              | 2.2                      |
| Small structural model                               | 2.1              | 2.2                      |
| 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                      |
| <b>Memo</b>  |                  |                          |
| Actual real federal funds rate                       | 2.9              | 2.9                      |

Note: Appendix B provides background information regarding the construction of these measures and confidence intervals.

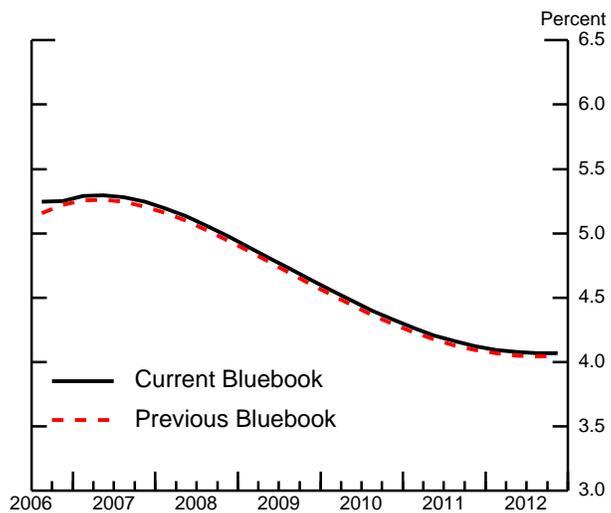
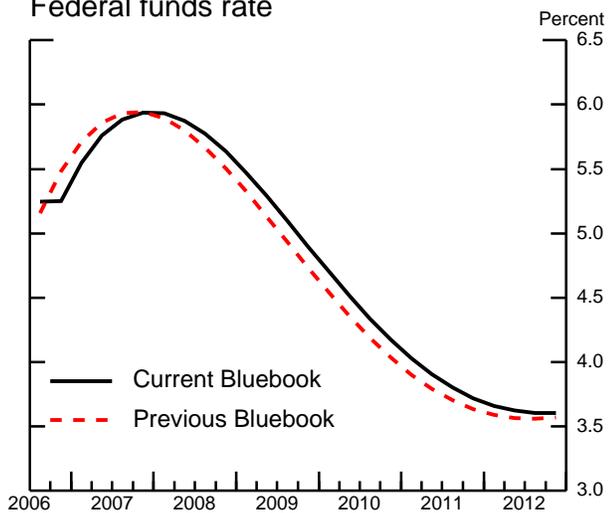
### Chart 6

## Optimal Policy Under Alternative Inflation Goals

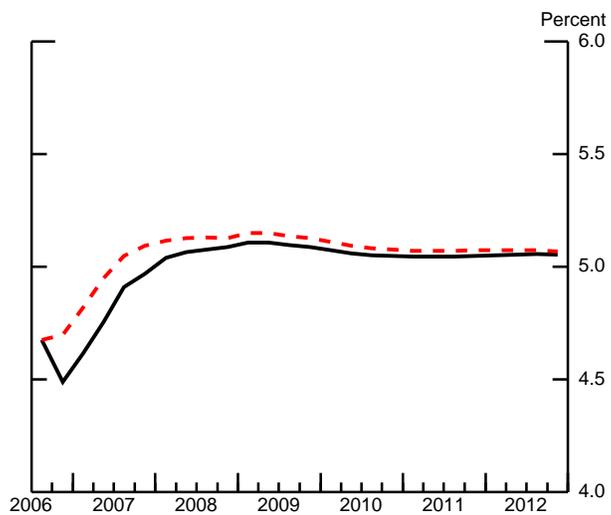
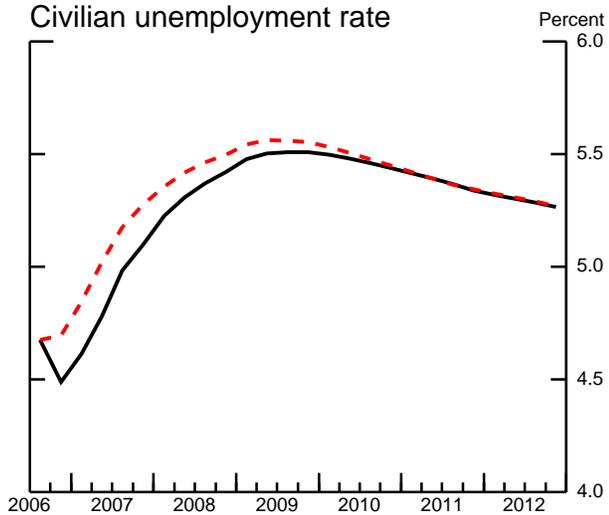
### 1½ Percent Inflation Objective

### 2 Percent Inflation Objective

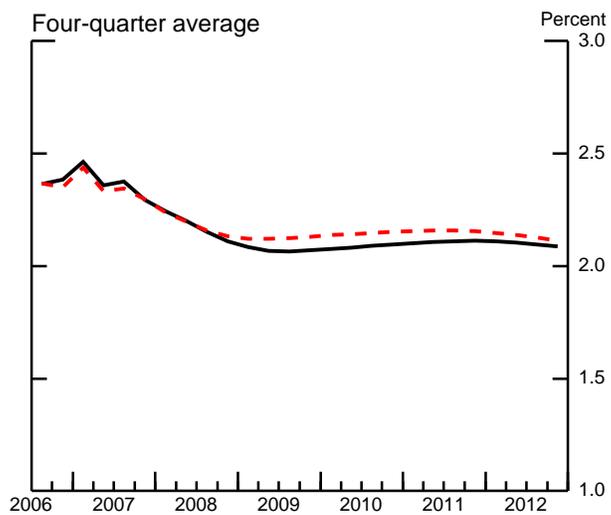
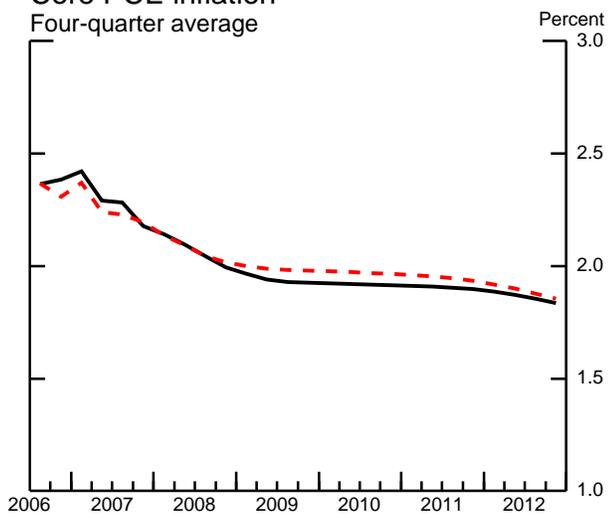
#### Federal funds rate



#### Civilian unemployment rate

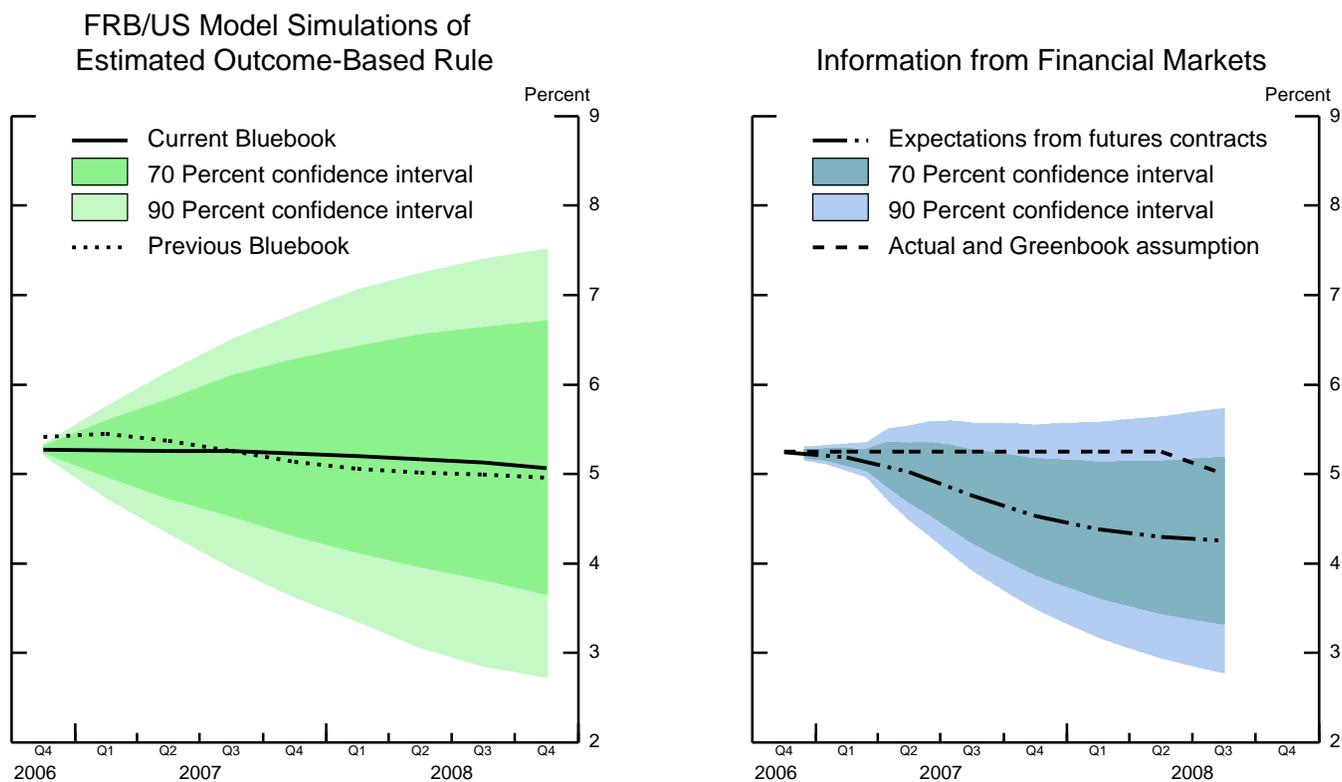


#### Core PCE inflation Four-quarter average



### Chart 7

## The Policy Outlook in an Uncertain Environment



### Near-Term Prescriptions of Simple Policy Rules

|                                   | 1½ Percent Inflation Objective |        | 2 Percent Inflation Objective |        |
|-----------------------------------|--------------------------------|--------|-------------------------------|--------|
|                                   | 2006Q4                         | 2007Q1 | 2006Q4                        | 2007Q1 |
| Taylor (1993) rule                | 4.9                            | 4.9    | 4.7                           | 4.7    |
| <i>Previous Bluebook</i>          | 4.9                            | 4.9    | 4.6                           | 4.7    |
| Taylor (1999) rule                | 5.0                            | 4.9    | 4.8                           | 4.7    |
| <i>Previous Bluebook</i>          | 4.9                            | 4.9    | 4.7                           | 4.7    |
| Taylor (1999) rule with higher r* | 5.8                            | 5.7    | 5.5                           | 5.4    |
| <i>Previous Bluebook</i>          | 5.7                            | 5.7    | 5.4                           | 5.4    |
| First-difference rule             | 5.4                            | 5.6    | 5.1                           | 5.1    |
| <i>Previous Bluebook</i>          | 5.5                            | 5.6    | 5.2                           | 5.1    |
| <b>Memo</b>                       |                                |        |                               |        |
| Estimated outcome-based rule      | 5.3                            | 5.3    |                               |        |
| Estimated forecast-based rule     | 5.2                            | 5.1    |                               |        |
| Greenbook assumption              | 5.3                            | 5.3    |                               |        |
| Market expectations               | 5.2                            | 5.1    |                               |        |

Note: Appendix C provides background information regarding the specification of each rule and the methodology used in constructing confidence intervals and near-term prescriptions.

## Short-Run Policy Alternatives

(10) This Bluebook presents three policy alternatives for the Committee's consideration, associated with the draft statements in Table 1. Under Alternatives A and B, the Committee would leave the stance of monetary policy unchanged at this meeting; Alternative A would imply that the risks to economic growth and inflation were now judged to be broadly balanced, whereas Alternative B would again indicate that the risks to inflation remained of greatest concern. Under Alternative C, the Committee would increase the target rate 25 basis points at this meeting and continue to emphasize the presence of upside risks to inflation. The employment report for November will be published the day after this document is completed; a revised draft of Table 1 will be circulated if warranted by those data.

(11) If the Committee views a combination of near-trend growth and a gradual ebbing of core inflation over the next two years as the best attainable outcome in current circumstances and continues to judge that the current stance of policy is broadly consistent with achieving such an outcome, it might be attracted to **Alternative B**. With the real federal funds rate at the upper end of the range of model-based estimates of its equilibrium value and a bit above the Greenbook-consistent measure, policy might be viewed as applying slight restraint on economic activity, helping to foster a reduction of inflation. Some tentative signs suggest that core inflation may be starting to moderate, and incoming data suggest that near-term economic expansion may be a bit further below growth of potential output than had previously been anticipated. Even so, the possibility that inflation might not slow as expected may remain the dominant concern for policy going forward. The substantial uncertainty regarding the dynamics of inflation implies a risk that recent rates of inflation might persist even if output grows at only a moderate pace and energy prices are broadly unchanged. Moreover, the current tightness of the labor market—evidenced both by the low unemployment rate in October and by widespread reports

| Table 1: Alternative Language for the December FOMC Announcement |   |  |  |  |
|--|---|--|--|--|
|  | October FOMC  | Alternative A  | Alternative B  | Alternative C  |
| <b>Policy Decision</b>   | 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 keep its target for the federal funds rate at 5¼ percent.   | The Federal Open Market Committee decided today to <b>raise</b> its target for the federal funds rate <b>by 25 basis points to 5½</b> percent.   |
| <b>Rationale</b>   | 2. Economic growth has slowed over the course of the year, partly reflecting a cooling of the housing market. Going forward, the economy seems likely to expand at a moderate pace.   | Economic growth has slowed over the course of the year, partly reflecting a <b>substantial</b> cooling of the housing market. <b>Although that adjustment is ongoing and could have a more pronounced effect on growth in coming quarters than anticipated</b> , the economy seems likely to expand at a moderate pace.  | Economic growth has slowed over the course of the year, partly reflecting a <b>substantial</b> cooling of the housing market. <b>Although the recent pace of growth appears to have been somewhat more subdued than anticipated</b> , the economy seems likely to expand at a moderate pace <b>on balance over coming quarters</b> . | Economic growth has slowed over the course of the year, partly reflecting a <b>substantial</b> cooling of the housing market. The economy seems likely to expand at a moderate pace <b>on balance over coming quarters</b> .   |
|  | 3. Readings on core inflation have been elevated, and the high level of resource utilization has the potential to sustain inflation pressures. However, inflation pressures seem likely to moderate over time, reflecting reduced impetus from energy prices, contained inflation expectations, and the cumulative effects of monetary policy actions and other factors restraining aggregate demand. | Readings on core inflation have <b>improved modestly since the spring but remain</b> elevated. The high level of resource utilization has the potential to sustain inflation pressures. However, inflation pressures seem likely to moderate over time, reflecting reduced impetus from energy prices, contained inflation expectations, and the cumulative effects of monetary policy actions and other factors restraining aggregate demand. | [Unchanged]  | Readings on core inflation have been elevated, and the high level of resource utilization has the potential to sustain inflation pressures. Inflation pressures seem likely to moderate over time, <b>but the extent and speed of that moderation are uncertain. In these circumstances, the Committee believed that an additional firming of policy was appropriate to foster the achievement of price stability.</b> |
| <b>Assessment of Risk</b>  | 4. Nonetheless, 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.  | <b>In these circumstances, future policy adjustments</b> will depend on the evolution of the outlook for both inflation and economic growth, as implied by incoming information.   | [Unchanged]  | <b>Although the Committee both seeks and expects a gradual reduction in inflation, it continues to view the risks to that outcome as to the upside.</b> 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.  |

of labor shortages for a range of occupations—might be seen as posing an upside risk to the Committee’s desired moderation in inflation. Even if the likelihood of a deterioration in inflation performance relative to expectations is not thought to be significantly greater than that of a corresponding deterioration in economic growth, the Committee might judge that an erosion in inflation outcomes would be more costly and thus view the upside risks to inflation as the greater concern for policy.

(12) In light of the recent data and the revision to the staff’s projection for near-term growth, the Committee may wish to make two changes to the discussion of economic growth in the policy statement accompanying Alternative B. First, the extent of the decline in housing activity in recent quarters means that it may now be more appropriate to refer to the cooling of the housing market as “substantial.” Second, the statement could acknowledge that “the recent pace of growth appears to have been somewhat more subdued than anticipated...” Even so, the Committee could note that “the economy seems likely to expand at a moderate pace on balance over coming quarters.” The inclusion of the phrase “on balance” allows for the possibility that measured GDP growth in the current and subsequent quarter may be notably below trend before rebounding thereafter. With the prospects for inflation largely unchanged, there appears to be little reason to alter the inflation paragraph from that in the October statement. Likewise, the statement could conclude by repeating the risk assessment from the previous statement.

(13) An announcement along the lines of Alternative B is unlikely to prompt a significant market reaction. Money market futures and options indicate that investors assign essentially no probability to a change in the target rate at the December meeting. And the Desk’s survey indicates that the majority of primary dealers expect that the accompanying statement will not differ significantly from the October announcement apart from some modest updating of the paragraph characterizing economic growth, though a minority anticipate language that points to some

downside risks to the growth outlook while still citing upside risks to inflation.

Although the statement proposed for Alternative B does not explicitly recognize risks to growth, it seems consistent with the broad thrust of these expectations.

(14) If the data released over the intermeeting period have caused members to revise their assessment of the distribution of possible outcomes for inflation and economic growth such that the risks are now thought to be more balanced, the Committee may prefer the policy choice and wording of **Alternative A**. The sharper adjustment in residential investment implied by the incoming data, combined with the continuing high level of inventories in the auto sector and the softer tone of recent spending and production indicators more generally, might be seen as increasing the downside risks to economic growth. Members may also see some possibility that the recent easing of financial conditions, and the associated stimulus to economic growth, could be short lived, as illustrated in the “Tighter financial conditions” scenario presented in the Greenbook. Moreover, the staff’s projection of relatively sluggish near-term expansion might cause the Committee to worry that such downside risks, if they materialized, could lead to a disproportionate slowdown in growth. At the same time, the Committee’s confidence that core inflation will decline may have been boosted by the improvement in some measures of core inflation, the downward revisions to data on increases in hourly compensation and unit labor costs earlier this year, and the absence so far of substantial renewed upward pressure on oil prices. The Committee may also place some weight on the possibility that inflation could slow more quickly than in the staff forecast, either because the general persistence of inflation may have declined over the past decade or because the recent pickup in core inflation was associated importantly with increases in shelter costs, which might fall back relatively sharply if the ongoing adjustment of the housing market leads to a marked increase in the supply of rental accommodation. Finally, as noted earlier, maintaining the federal funds rate at 5¼ percent over the next few quarters would be

broadly consistent with the Committee's past behavior as captured in the estimated policy rules.

(15) To acknowledge the downside risks to growth, the statement accompanying Alternative A would note that the ongoing adjustment of the housing market could have a "more pronounced effect on growth in coming quarters than anticipated." The Committee may also wish to recognize the slight decline in some measures of core inflation in recent months by noting that "Readings on core inflation have improved modestly since the spring." Even so, the statement would stress that readings on core inflation "remain elevated." Given the competing risks to inflation and growth, the risk assessment would simply note that "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."

(16) Although market participants expect the current target for the federal funds rate to be maintained at this meeting, they generally do not expect a statement that suggests that the Committee views the risks to economic growth and inflation as balanced and is no longer predisposed towards policy firming. Market participants are likely to interpret such a statement as boosting the likelihood that the Committee will begin easing the stance of policy early next year. Short- and intermediate-term yields would probably decline moderately, but any drop in long-term yields would likely be relatively small. The recent slide in the foreign exchange value of the dollar could be extended, and stock prices might rally.

(17) In contrast, the Committee may now see it as unlikely that inflation will decline at an acceptable pace should the current stance of policy be maintained and hence judge it necessary to take further policy action, as in the 25 basis point firming of **Alternative C**. In particular, members may believe that the tightness in labor markets means that inflation may fail to decline, and could even rise, as illustrated in the "Greater wage acceleration" scenario presented in the Greenbook. In addition,

the recent easing of financial conditions could impart significant stimulus to aggregate demand, augmenting pressure on resources. Also, some members may judge that long-term inflation expectations are higher than would be consistent with an appreciable decline in inflation from recent rates and that monetary policy needs to tighten to help foster a reduction in these expectations. Even if members think that the staff's forecast for core inflation to edge gradually lower is reasonable, they may consider the extent and pace of that expected decline, in which core PCE inflation is projected to remain above 2 percent through 2008, to be unacceptable, and hence see further policy firming as necessary. In the medium-term strategies presented earlier, the optimal policy path associated with an inflation objective of 1½ percent involves raising the federal funds rate to about 6 percent over the next year.

(18) The description of the prospects for growth in the statement associated with Alternative C could be identical to that suggested for Alternative B. However, in the inflation paragraph, rather than listing the various factors contributing to the expected moderation in inflation, the Committee could indicate that “Inflation pressures seem likely to moderate over time, but the extent and speed of that moderation are uncertain.” The discussion of inflation could conclude by stating that “In these circumstances, the Committee believed that an additional firming of policy was appropriate to foster the achievement of price stability.” And if, despite the firming in policy, the Committee remained concerned that inflation would not moderate as desired, it could underscore its commitment to price stability by modifying the first sentence of the risk assessment to note that “Although the Committee both seeks and expects a gradual reduction in inflation, it continues to view the risks to that outcome as to the upside.”

(19) The firming of the stance of policy envisaged under Alternative C and the accompanying statement would come as a considerable surprise to the markets. Investors would likely revise up sharply their expectations for the path of policy over

the next year or so. Short- and intermediate-term nominal and real yields would rise markedly. Longer-term nominal yields would likely rise by less or could even fall if investors concluded that the FOMC had a lower objective for inflation than they had previously thought. With real rates higher, the foreign exchange value of the dollar would likely rise, and equity prices would decline.

### **Money and Debt Forecasts**

(20) Under the Greenbook forecast, M2 is projected to grow about 5 percent in both 2007 and 2008, largely unchanged from the October forecast. Given the flat path assumed for the federal funds rate, the restraining effects on money demand of previous policy tightenings will probably have run their course by early 2007. As a result, M2 is projected to rise broadly in line with nominal income. Liquid deposits—the largest share of M2—are expected to accelerate gradually as deposit rates on these assets continue to catch up with the earlier increases in market rates. Small time deposits and retail money funds, which have been growing rapidly because their yields follow market rates closely, are forecast to decelerate noticeably. Currency is projected to continue to expand moderately.

(21) Growth of domestic nonfinancial sector debt is expected to slow to an annual rate of around 6½ percent in 2007 and 2008, down from about 7½ percent in 2006. This deceleration largely reflects a marked step-down in the growth of home mortgage debt, mirroring the ongoing adjustment in the housing market. The growth of business debt is also expected to ease slightly, owing to some slowing in net equity retirements. Federal debt is projected to expand at a 6 percent pace over the next two years.

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

|                               | No Change | 25 bp Tightening | Greenbook Forecast* |     |
|-------------------------------|-----------|------------------|---------------------|-----|
| <b>Monthly Growth Rates</b>   |           |                  |                     |     |
| Jul-06                        | 3.7       | 3.7              | 3.7                 |     |
| Aug-06                        | 4.2       | 4.2              | 4.2                 |     |
| Sep-06                        | 2.9       | 2.9              | 2.9                 |     |
| Oct-06                        | 10.5      | 10.5             | 10.5                |     |
| Nov-06                        | 6.1       | 6.1              | 6.1                 |     |
| Dec-06                        | 4.5       | 4.1              | 4.5                 |     |
| Jan-07                        | 4.9       | 3.9              | 4.9                 |     |
| Feb-07                        | 4.9       | 3.7              | 4.9                 |     |
| Mar-07                        | 5.0       | 3.5              | 5.0                 |     |
| Apr-07                        | 4.9       | 3.4              | 4.9                 |     |
| May-07                        | 4.8       | 3.4              | 4.8                 |     |
| Jun-07                        | 4.8       | 3.6              | 4.8                 |     |
| <b>Quarterly Growth Rates</b> |           |                  |                     |     |
| 2006 Q1                       | 6.3       | 6.3              | 6.3                 |     |
| 2006 Q2                       | 3.0       | 3.0              | 3.0                 |     |
| 2006 Q3                       | 3.8       | 3.8              | 3.8                 |     |
| 2006 Q4                       | 6.5       | 6.4              | 6.5                 |     |
| 2007 Q1                       | 5.0       | 4.1              | 5.0                 |     |
| 2007 Q2                       | 4.9       | 3.5              | 4.9                 |     |
| <b>Annual Growth Rates</b>    |           |                  |                     |     |
| 2006                          | 5.0       | 5.0              | 5.0                 |     |
| 2007                          | 5.0       | 4.1              | 5.0                 |     |
| 2008                          | 5.0       | 5.0              | 5.3                 |     |
| <b>Growth From To</b>         |           |                  |                     |     |
| Nov-06                        | Jun-07    | 4.9              | 3.7                 | 4.9 |
| 2006 Q2                       | 2006 Q4   | 5.2              | 5.1                 | 5.2 |
| 2006 Q2                       | 2007 Q2   | 5.1              | 4.5                 | 5.1 |

\* This forecast is consistent with nominal GDP and interest rates in the Greenbook forecast.

## Directive and Balance of Risks Statement

(22) 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 \_\_\_\_\_  $5\frac{1}{4}$  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. Nonetheless, 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.
- C. Although the Committee both seeks and expects a gradual reduction in inflation, it continues to view the risks to that outcome as to the upside. 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.

## Appendix A: Review of Debt and Money Growth in 2006

Total debt of the domestic nonfinancial sectors expanded an estimated 7½ percent in 2006, below its pace in 2005, but faster than nominal income. Debt growth slowed markedly in the household and government sectors, while business debt expanded faster than in 2005.

The slowdown in household borrowing in 2006 was accounted for by a decline in home mortgage borrowing, reflecting a substantial cooling in the housing market. Meanwhile, strong tax receipts held down borrowing by the federal government, and continued improvement in the fiscal situation of state and local governments, as well as a drop in advance refunding issues, helped to reduce borrowing in that sector.

Nonfinancial business borrowing picked up to finance greater capital spending, inventory investment, and equity retirements from share repurchases and mergers and acquisitions. Net bond issuance in 2006 was quite a bit stronger than in the previous several years, while commercial paper outstanding and C&I loans also expanded at a faster pace. Business borrowing decelerated slightly in the second half of the year but remained robust on the whole. Leverage of nonfinancial businesses stayed near the lows of the past two decades, with profits strong and balance sheets liquid.

M2 grew about 5 percent this year, a slight pickup from 2005. Money growth again was restrained relative to nominal income by the increase in opportunity costs associated with the tightening of monetary policy.

### *Domestic Nonfinancial Sector Debt*

Business debt expanded 8½ percent in 2006, a considerable acceleration relative to the previous several years. A substantial fraction of borrowing proceeds for the year reportedly financed mergers and acquisitions as well as investment in plant and equipment. Net bond issuance proceeded at a good clip, with offerings above those seen since 2001. Similarly, commercial paper issuance was the strongest it has been since 2000.

C&I lending by banks expanded rapidly through much of the year, supported by an accommodative lending environment. In the Federal Reserve's Senior Loan Officer Opinion Surveys in April and July, a significant net fraction of respondents indicated that they had eased credit standards and terms on C&I loans, pointing to more-aggressive competition from other

lenders as the most important reason for having done so. Notable net fractions of respondents to these surveys also cited greater liquidity in the secondary market for such loans and increased tolerance for risk as reasons for moving toward a more accommodative lending posture. By October, however, this easing margin had disappeared, and C&I loans outstanding expanded at a somewhat more moderate rate towards the end of the year.

Gross equity issuance by nonfinancial corporations in 2006 was similar to that seen over the past several years but was dwarfed by equity retirements, producing large negative net equity issuance overall. Massive equity retirements resulted from an elevated level of cash-financed mergers and record share repurchases amid strong profits and ample cash on corporate balance sheets.

The expansion of commercial mortgage debt in 2006 remained rapid by historical standards but came in below last year's torrid pace, likely reflecting the rise in commercial mortgage rates and a net tightening of credit standards for these loans consistent with responses to the July and October Senior Loan Officer Opinion Surveys. With rents climbing and vacancy rates falling, delinquency rates on commercial real estate loans have been low, and spreads on investment-grade commercial-mortgage-backed securities remain quite narrow.

Overall, the credit quality of nonfinancial firms has generally remained very solid. Corporate earnings have stayed strong, and balance sheet liquidity, although a bit less than last year, continues to be high. Corporate leverage is near multi-decade lows, and the six-month trailing bond default rate is near zero. The delinquency rate on business loans is extremely low, as is the expected year-ahead default rate measured by the KMV index.

Household debt is estimated to have expanded about 8 percent in 2006, considerably slower than the robust 12 percent increase seen in 2005. Growth of home mortgage debt dropped about 5 percentage points to a rate of just under 9 percent, as house prices decelerated substantially and home purchases and residential investment slowed. Nonetheless, homeowners continued to extract equity from their homes, as home equity lending remained active and the volume of gross cash-out refinancing exceeded 2005 levels. Mortgage borrowing likely continued to take the place of some other forms of borrowing, and consumer credit expanded only 5 percent in 2006.

The financial obligations ratio rose to new highs this year as household debt grew more rapidly than disposable personal income and as rising interest

rates contributed to an associated increase in debt service payments. To date, evidence suggests that most households have been able to meet their obligations, although there are indications of growing strain among some groups. Delinquency rates on consumer loans and prime mortgages have remained on the low side, but delinquency rates on subprime residential mortgages—in particular, those with variable interest rates—have increased markedly. Meanwhile, household bankruptcy filings continue to run at a pace well below the average of recent years. Bankruptcies were likely damped by the decisions of some households in the fall of 2005 to accelerate their filings to avoid more onerous requirements of the new bankruptcy law.

The ratio of household net worth to disposable personal income is estimated to have increased a little, on net, over 2006, as the value of household assets was boosted by double-digit gains in equity prices. Personal saving remained at a historically low level. After substantial inflows in the first quarter, investors withdrew funds, on net, from domestic equity mutual funds in the second and third quarters. Meanwhile international equity funds saw substantial inflows over the course of the year, and inflows to bond funds were on pace to reach highs not seen for several years.

Borrowing by state and local governments dropped below its rapid 2005 pace amid improved budgets and fewer advance refunding issues. That said, bond issuance for new capital expenditures in the education, transportation, and housing sectors rose over the second half of the year and supported a rise in overall borrowing. Credit quality in the state and local sector improved substantially, as the number of credit rating upgrades far exceeded the small number of downgrades.

The Treasury borrowed about 20 percent less from the public on net during this calendar year than it did in 2005. A 12 percent increase in tax receipts outpaced a 7 percent rise in outlays, leading to a substantial decline in the federal deficit. In February, the Treasury auctioned thirty-year bonds for the first time since 2001; the offering was well received. Average participation by foreigners in Treasury coupon security auctions this year was similar to that in 2005 but below its peak in 2004.

### *Bank Credit*

Commercial bank credit expanded at a 10½ percent annual rate over the first three quarters of the year, supported by brisk growth in loans to both businesses and households. C&I loans increased at a very rapid pace over this

period, reportedly fueled by vigorous merger and acquisition activity, rising outlays for investment goods, ongoing inventory accumulation, and an accommodative lending environment. Growth in commercial real estate loans was also quite elevated, supported by strong fundamentals and favorable lending conditions. Similarly, supportive housing market conditions lifted real estate lending to households over this period, and consumer loans held by banks grew relatively briskly. However, bank credit is estimated to have decelerated sharply in the fourth quarter, driven by a reduction in growth in all major loan categories as well as a contraction in securities holdings.<sup>1</sup> The stepdown in C&I loan growth in the fourth quarter appears to have been concentrated at small banks. Growth in loans backed by residential real estate is estimated to have come to a halt in the fourth quarter, likely reflecting in part the cooling in the housing market.

### *M2 Monetary Aggregate*

The effects of the rise in short-term interest rates associated with monetary policy tightenings held M2 growth equal to or below that of nominal income for the first three quarters of the year, but the aggregate is estimated to have grown robustly in the fourth quarter. Retail money market mutual funds and small time deposits, components of M2 whose yields rise with market rates, grew rapidly all year. In contrast, liquid deposits, whose yields adjust more gradually, declined on net over the first three quarters, but rebounded in the fourth quarter. Currency has grown only moderately, as it did in 2005, reflecting weak demand both domestically and internationally. For the year as a whole, M2 is estimated to have expanded about 5 percent. The velocity of M2 rose  $\frac{1}{2}$  percentage point, a considerably smaller increase than would be expected based on its empirical relationship with opportunity cost since the early 1990s.

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<sup>1</sup> Data on bank credit and its components discussed here have been adjusted to remove the effects of a consolidation of a sizable amount of assets from affiliated thrift institutions onto a commercial bank's books in October 2006.

## Appendix B: Measures of the Equilibrium Real Rate

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. 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. 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.

Confidence intervals reflect uncertainties about model specification, coefficients, and the level of potential output. The final column of the table indicates the values for the current quarter based on the estimation for the previous Bluebook, except that the TIPS-based measure and the actual real funds rate are the values published in the previous Bluebook.

| 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.  |
| <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.   |
| <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.  |
| <b>Greenbook-consistent</b>    | The FRB/US model is used 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.  |
| <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. |

## Appendix C: Analysis of Policy Paths and Confidence Intervals

**Rule Specifications:** For the following rules,  $i_t$  denotes the federal funds rate for quarter  $t$ , while the explanatory variables include the staff's projection of trailing four-quarter core PCE inflation ( $\pi_t$ ), inflation two and three quarters ahead ( $\pi_{t+2|t}$  and  $\pi_{t+3|t}$ ), the output gap in the current period and one quarter ahead ( $y_t - y_t^*$  and  $y_{t+1|t} - y_{t+1|t}^*$ ), and the 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  $\pi^*$  denotes an assumed value of policymakers' long-run inflation objective. The outcome-based and forecast-based rules were estimated using real-time data over the sample 1988:1-2005:4; each specification was chosen using the Bayesian information criterion. Each rule incorporates a 75 basis point shift in the intercept, specified as a sequence of 25 basis point increments during the first three quarters of 1998. The first two simple rules were proposed by Taylor (1993, 1999), while the third is a variant of the Taylor (1999) rule—introduced in the August Bluebook—with a higher value of  $r^*$ . The prescriptions of the first-difference rule do not depend on assumptions regarding  $r^*$  or the level of the output gap; see Orphanides (2003).

|  |  |
|--|--|
| <b>Outcome-based rule</b>                              | $i_t = 1.17i_{t-1} - 0.37i_{t-2} + 0.20[1.04 + 1.76\pi_t + 3.32(y_t - y_t^*) - 2.37(y_{t-1} - y_{t-1}^*)]$                   |
| <b>Forecast-based rule</b>                             | $i_t = 1.16i_{t-1} - 0.36i_{t-2} + 0.20[0.89 + 1.74\pi_{t+2 t} + 2.32(y_{t+1 t} - y_{t+1 t}^*) - 1.40(y_{t-1} - y_{t-1}^*)]$ |
| <b>Taylor (1993) rule</b>                              | $i_t = 2 + \pi_t + 0.5(\pi_t - \pi^*) + 0.5(y_t - y_t^*)$  |
| <b>Taylor (1999) rule</b>                              | $i_t = 2 + \pi_t + 0.5(\pi_t - \pi^*) + (y_t - y_t^*)$   |
| <b>Taylor (1999) rule with higher <math>r^*</math></b> | $i_t = 2.75 + \pi_t + 0.5(\pi_t - \pi^*) + (y_t - y_t^*)$  |
| <b>First-difference rule</b>                           | $i_t = i_{t-1} + 0.5(\pi_{t+3 t} - \pi^*) + 0.5(\Delta^4 y_{t+3 t} - \Delta^4 y_{t+3 t}^*)$                                  |

**FRB/US Model Simulations:** Prescriptions from the two empirical rules 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. Confidence intervals are based on stochastic simulations of the FRB/US model with shocks drawn from the estimated residuals over 1986-2005.

**Information from Financial Markets:** The expected funds rate path is based on federal funds and Eurodollar futures quotes. The confidence intervals for this path are obtained from prices of at-the-money options contracts that are traded on the Chicago Mercantile Exchange.

**Near-Term Prescriptions of Simple Policy Rules:** These prescriptions are calculated using Greenbook projections for inflation and the output gap. The first-difference rule's one-quarter-ahead prescription is computed using that rule's prescription for the current quarter.

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**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 | 5.34              | 5.27                            | 5.13    | 5.33    | 5.50                 | 5.30        | 5.32                        | 5.20   | 5.32    | 5.45    | 2.63           | 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    | 6.08        | 4.55                 | 6.10                                       | 5.15 |
| Monthly    |                   |                                 |         |         |                      |             |                             |        |         |         |                |         |             |                      |  |      |
| 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 |
| Aug 06     | 5.25              | 5.17                            | 5.09    | 5.17    | 5.38                 | 5.22        | 4.93                        | 4.79   | 4.94    | 5.09    | 2.24           | 2.32    | 6.59        | 4.98                 | 6.52                                       | 5.64 |
| Sep 06     | 5.25              | 4.76                            | 4.93    | 5.08    | 5.34                 | 5.21        | 4.78                        | 4.64   | 4.80    | 4.94    | 2.35           | 2.35    | 6.43        | 4.82                 | 6.40                                       | 5.56 |
| Oct 06     | 5.25              | 4.97                            | 5.05    | 5.12    | 5.33                 | 5.20        | 4.81                        | 4.66   | 4.80    | 4.95    | 2.49           | 2.43    | 6.42        | 4.78                 | 6.36                                       | 5.55 |
| Nov 06     | 5.25              | 5.22                            | 5.07    | 5.15    | 5.32                 | 5.21        | 4.74                        | 4.54   | 4.66    | 4.79    | 2.39           | 2.30    | 6.20        | 4.59                 | 6.24                                       | 5.51 |
| Weekly     |                   |                                 |         |         |                      |             |                             |        |         |         |                |         |             |                      |  |      |
| Oct 6 06   | 5.28              | 4.73                            | 4.92    | 5.02    | 5.32                 | 5.19        | 4.68                        | 4.54   | 4.70    | 4.85    | 2.35           | 2.33    | 6.36        | 4.77                 | 6.30                                       | 5.46 |
| Oct 13 06  | 5.24              | 4.88                            | 5.03    | 5.11    | 5.33                 | 5.20        | 4.87                        | 4.72   | 4.85    | 5.00    | 2.51           | 2.47    | 6.50        | 4.76                 | 6.37                                       | 5.56 |
| Oct 20 06  | 5.23              | 5.02                            | 5.09    | 5.15    | 5.33                 | 5.20        | 4.87                        | 4.72   | 4.85    | 5.00    | 2.56           | 2.49    | 6.49        | 4.79                 | 6.36                                       | 5.57 |
| Oct 27 06  | 5.24              | 5.13                            | 5.12    | 5.18    | 5.33                 | 5.21        | 4.87                        | 4.71   | 4.84    | 4.98    | 2.56           | 2.46    | 6.42        | 4.78                 | 6.40                                       | 5.60 |
| Nov 3 06   | 5.25              | 5.18                            | 5.08    | 5.14    | 5.33                 | 5.20        | 4.73                        | 4.57   | 4.70    | 4.84    | 2.46           | 2.36    | 6.27        | 4.61                 | 6.31                                       | 5.53 |
| Nov 10 06  | 5.23              | 5.20                            | 5.09    | 5.16    | 5.32                 | 5.21        | 4.77                        | 4.59   | 4.71    | 4.84    | 2.40           | 2.31    | 6.25        | 4.60                 | 6.33                                       | 5.55 |
| Nov 17 06  | 5.25              | 5.22                            | 5.09    | 5.16    | 5.32                 | 5.20        | 4.79                        | 4.57   | 4.68    | 4.81    | 2.44           | 2.32    | 6.21        | 4.60                 | 6.24                                       | 5.53 |
| Nov 24 06  | 5.24              | 5.24                            | 5.06    | 5.15    | 5.32                 | 5.21        | 4.75                        | 4.53   | 4.64    | 4.77    | 2.40           | 2.32    | 6.18        | 4.60                 | 6.18                                       | 5.49 |
| Dec 1 06   | 5.27              | 5.25                            | 5.04    | 5.11    | 5.31                 | 5.21        | 4.64                        | 4.44   | 4.56    | 4.70    | 2.23           | 2.20    | 6.12        | 4.55                 | 6.14                                       | 5.46 |
| Dec 8 06   | --                | 4.96                            | 4.99    | 5.04    | 5.30                 | 5.20        | 4.54                        | 4.39   | 4.53    | 4.69    | 2.13           | 2.14    | --          | --                   | 6.11                                       | 5.43 |
| Daily      |                   |                                 |         |         |                      |             |                             |        |         |         |                |         |             |                      |  |      |
| Nov 21 06  | 5.29              | 5.26                            | 5.07    | 5.15    | 5.32                 | 5.20        | 4.75                        | 4.54   | 4.64    | 4.77    | 2.41           | 2.33    | 6.18        | --                   | --   | --   |
| Nov 22 06  | 5.26              | 5.25                            | 5.05    | 5.15    | 5.32                 | 5.24        | 4.75                        | 4.52   | 4.63    | 4.77    | 2.39           | 2.32    | 6.17        | --                   | --   | --   |
| Nov 23 06  | 5.26              | --                              | --      | --      | --                   | --          | --                          | --     | --      | --      | --             | --      | --          | --                   | --   | --   |
| Nov 24 06  | 5.24              | 5.23                            | 5.04    | 5.13    | 5.32                 | --          | 4.72                        | 4.51   | 4.62    | 4.75    | 2.34           | 2.28    | 6.15        | --                   | --   | --   |
| Nov 27 06  | 5.32              | 5.25                            | 5.05    | 5.14    | 5.32                 | 5.20        | 4.71                        | 4.49   | 4.60    | 4.73    | 2.31           | 2.26    | 6.15        | --                   | --   | --   |
| Nov 28 06  | 5.24              | 5.27                            | 5.04    | 5.13    | 5.32                 | 5.24        | 4.67                        | 4.46   | 4.58    | 4.71    | 2.26           | 2.23    | 6.13        | --                   | --   | --   |
| Nov 29 06  | 5.26              | 5.26                            | 5.04    | 5.13    | 5.31                 | 5.21        | 4.69                        | 4.47   | 4.59    | 4.73    | 2.26           | 2.24    | 6.14        | --                   | --   | --   |
| Nov 30 06  | 5.31              | 5.23                            | 5.03    | 5.10    | 5.31                 | 5.22        | 4.63                        | 4.41   | 4.53    | 4.67    | 2.19           | 2.16    | 6.10        | --                   | --   | --   |
| Dec 1 06   | 5.27              | 5.23                            | 5.03    | 5.05    | 5.31                 | 5.19        | 4.52                        | 4.36   | 4.50    | 4.66    | 2.11           | 2.11    | 6.08        | --                   | --   | --   |
| Dec 4 06   | 5.22              | 5.16                            | 5.01    | 5.04    | 5.31                 | 5.20        | 4.51                        | 4.36   | 4.51    | 4.66    | 2.13           | 2.12    | 6.09        | --                   | --   | --   |
| Dec 5 06   | 5.21              | 4.87                            | 4.99    | 5.03    | 5.30                 | 5.20        | 4.52                        | 4.37   | 4.52    | 4.68    | 2.12           | 2.12    | 6.10        | --                   | --   | --   |
| Dec 6 06   | 5.22              | 4.91                            | 4.99    | 5.05    | 5.30                 | 5.21        | 4.57                        | 4.42   | 4.55    | 4.71    | 2.17           | 2.16    | 6.13        | --                   | --   | --   |
| Dec 7 06   | 5.23 <sup>p</sup> | 4.91                            | 4.98    | 5.05    | 5.30                 | --          | 4.58                        | 4.42   | 4.56    | 4.71    | 2.16           | 2.20    | --          | --                   | --   | --   |

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 D Table 2  
**Money Aggregates**  
 Seasonally Adjusted

| Period                          | M1     | M2     | Nontransactions<br>Components in M2 |
|---------------------------------|--------|--------|-------------------------------------|
|                                 | 1      | 2      | 3                                   |
| <u>Annual growth rates (%):</u> |        |        |                                     |
| Annually (Q4 to Q4)             |        |        |                                     |
| 2003                            | 7.4    | 5.6    | 5.1                                 |
| 2004                            | 5.4    | 5.3    | 5.3                                 |
| 2005                            | 0.3    | 4.0    | 5.1                                 |
| Quarterly (average)             |        |        |                                     |
| 2005-Q4                         | -0.1   | 5.0    | 6.4                                 |
| 2006-Q1                         | 2.2    | 6.3    | 7.4                                 |
| Q2                              | 0.9    | 3.0    | 3.5                                 |
| Q3                              | -4.7   | 3.8    | 5.9                                 |
| Monthly                         |        |        |                                     |
| 2005-Nov.                       | 0.7    | 3.5    | 4.2                                 |
| Dec.                            | -5.8   | 4.8    | 7.6                                 |
| 2006-Jan.                       | 10.3   | 10.8   | 10.9                                |
| Feb.                            | -4.1   | 4.0    | 6.1                                 |
| Mar.                            | 7.9    | 3.0    | 1.7                                 |
| Apr.                            | 1.8    | 3.2    | 3.6                                 |
| May                             | 5.5    | 1.0    | -0.1                                |
| June                            | -19.6  | 5.2    | 11.6                                |
| July                            | 2.7    | 3.7    | 4.0                                 |
| Aug.                            | -2.8   | 4.2    | 5.9                                 |
| Sep.                            | -11.0  | 2.9    | 6.4                                 |
| Oct.                            | 10.3   | 10.5   | 10.6                                |
| Nov. e                          | -2.5   | 6.1    | 8.2                                 |
| <u>Levels (\$billions):</u>     |        |        |                                     |
| Monthly                         |        |        |                                     |
| 2006-June                       | 1370.3 | 6817.4 | 5447.1                              |
| July                            | 1373.4 | 6838.6 | 5465.2                              |
| Aug.                            | 1370.2 | 6862.3 | 5492.1                              |
| Sep.                            | 1357.6 | 6878.8 | 5521.2                              |
| Oct.                            | 1369.2 | 6939.0 | 5569.8                              |
| Weekly                          |        |        |                                     |
| 2006-Oct. 2                     | 1367.3 | 6903.4 | 5536.1                              |
| 9                               | 1369.8 | 6927.6 | 5557.8                              |
| 16                              | 1350.7 | 6930.2 | 5579.5                              |
| 23                              | 1372.2 | 6948.1 | 5575.9                              |
| 30                              | 1382.9 | 6951.4 | 5568.4                              |
| Nov. 6                          | 1362.9 | 6962.5 | 5599.6                              |
| 13                              | 1346.3 | 6944.9 | 5598.6                              |
| 20p                             | 1366.9 | 6971.2 | 5604.3                              |
| 27p                             | 1378.1 | 6991.1 | 5613.0                              |

p preliminary  
 e estimated

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

December 7, 2006

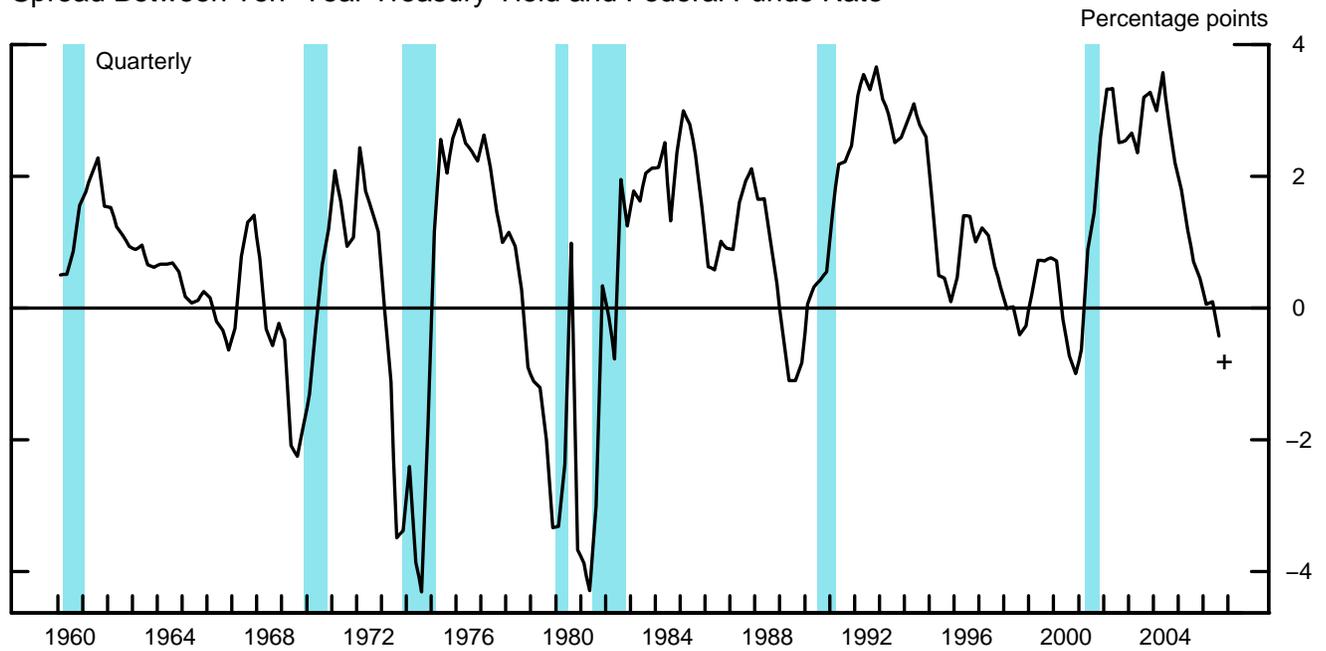
|                       | Treasury Bills             |                 |            | Treasury Coupons           |        |       |         |                 |            | Federal Agency Redemptions (-) | Net change total outright holdings <sup>4</sup> | Net RPs <sup>5</sup>    |                        |            |
|-----------------------|----------------------------|-----------------|------------|----------------------------|--------|-------|---------|-----------------|------------|--------------------------------|---|-------------------------|------------------------|------------|
|                       | 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 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     |
| QIII                  | 1,649                      | ---             | 1,649      | 415                        | 3,323  | 548   | 228     | 3,931           | 583        | ---                            | 2,232   | -3,229                  | -839                   | -4,068     |
| 2006 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       |
| Aug                   | ---                        | ---             | ---        | 415                        | 1,454  | ---   | ---     | ---             | 1,869      | ---                            | 1,869   | -231                    | 548                    | 318        |
| Sep                   | ---                        | ---             | ---        | ---                        | 1,320  | 548   | 228     | ---             | 2,096      | ---                            | 2,096   | -469                    | -2,291                 | -2,761     |
| Oct                   | ---                        | ---             | ---        | 1,757                      | 1,395  | 33    | ---     | 3,749           | -564       | ---                            | -564  | -2,037                  | 1,195                  | -842       |
| Nov                   | ---                        | ---             | ---        | 220                        | 3,151  | 411   | 780     | 335             | 4,227      | ---                            | 4,227   | -1,370                  | 7,639                  | 6,268      |
| 2006 Sep 13           | ---                        | ---             | ---        | ---                        | 1,320  | 548   | 228     | ---             | 2,096      | ---                            | 2,096   | -6,144                  | -2,000                 | -8,144     |
| Sep 20                | ---                        | ---             | ---        | ---                        | ---    | ---   | ---     | ---             | ---        | ---                            | ---   | 1,770                   | -1,000                 | 770        |
| Sep 27                | ---                        | ---             | ---        | ---                        | ---    | ---   | ---     | ---             | ---        | ---                            | ---   | -1,680                  | -2,000                 | -3,680     |
| Oct 4                 | ---                        | ---             | ---        | ---                        | ---    | ---   | ---     | ---             | ---        | ---                            | ---   | 4,465                   | -2,000                 | 2,465      |
| Oct 11                | ---                        | ---             | ---        | ---                        | ---    | ---   | ---     | ---             | ---        | ---                            | ---   | -2,442                  | 4,000                  | 1,558      |
| Oct 18                | ---                        | ---             | ---        | ---                        | 1,395  | 33    | ---     | 3,749           | -2,321     | ---                            | -2,321  | -2,913                  | 2,000                  | -913       |
| Oct 25                | ---                        | ---             | ---        | 1,757                      | ---    | ---   | ---     | ---             | 1,757      | ---                            | 1,757   | 810                     | ---                    | 810        |
| Nov 1                 | ---                        | ---             | ---        | ---                        | 1,430  | ---   | ---     | ---             | 1,430      | ---                            | 1,430   | -3,702                  | 2,000                  | -1,702     |
| Nov 8                 | ---                        | ---             | ---        | ---                        | 173    | 311   | 10      | ---             | 494        | ---                            | 494   | 1,900                   | -1,000                 | 900        |
| Nov 15                | ---                        | ---             | ---        | ---                        | ---    | ---   | ---     | 335             | -335       | ---                            | -335  | -1,060                  | 3,000                  | 1,940      |
| Nov 22                | ---                        | ---             | ---        | 220                        | 1,548  | 100   | ---     | ---             | 1,868      | ---                            | 1,868   | -397                    | 7,857                  | 7,460      |
| Nov 29                | ---                        | ---             | ---        | ---                        | ---    | ---   | 770     | ---             | 770        | ---                            | 770   | 4,360                   | -857                   | 3,503      |
| Dec 6                 | ---                        | ---             | ---        | ---                        | 878    | 445   | 324     | ---             | 1,647      | ---                            | 1,647   | 203                     | -4,000                 | -3,797     |
| 2006 Dec 7            | ---                        | ---             | ---        | ---                        | ---    | ---   | ---     | ---             | ---        | ---                            | ---   | 1,062                   | -3,000                 | -1,938     |
| Intermeeting Period   |                            |                 |            |                            |        |       |         |                 |            |                                |   |                         |                        |            |
| Oct 25-Dec 7          | ---                        | ---             | ---        | 220                        | 4,029  | 856   | 1,104   | 335             | 5,874      | ---                            | 5,874   | 7,149                   | 4,000                  | 11,149     |
| Memo: LEVEL (bil. \$) |                            |                 |            |                            |        |       |         |                 |            |                                |   |                         |                        |            |
| Dec 7                 |                            |                 | 277.0      | 129.6                      | 220.1  | 67.7  | 79.8    |                 | 497.2      | ---                            | 774.2   | -18.0                   | 19.0                   | 1.0        |

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.

# Treasury Yield Curve

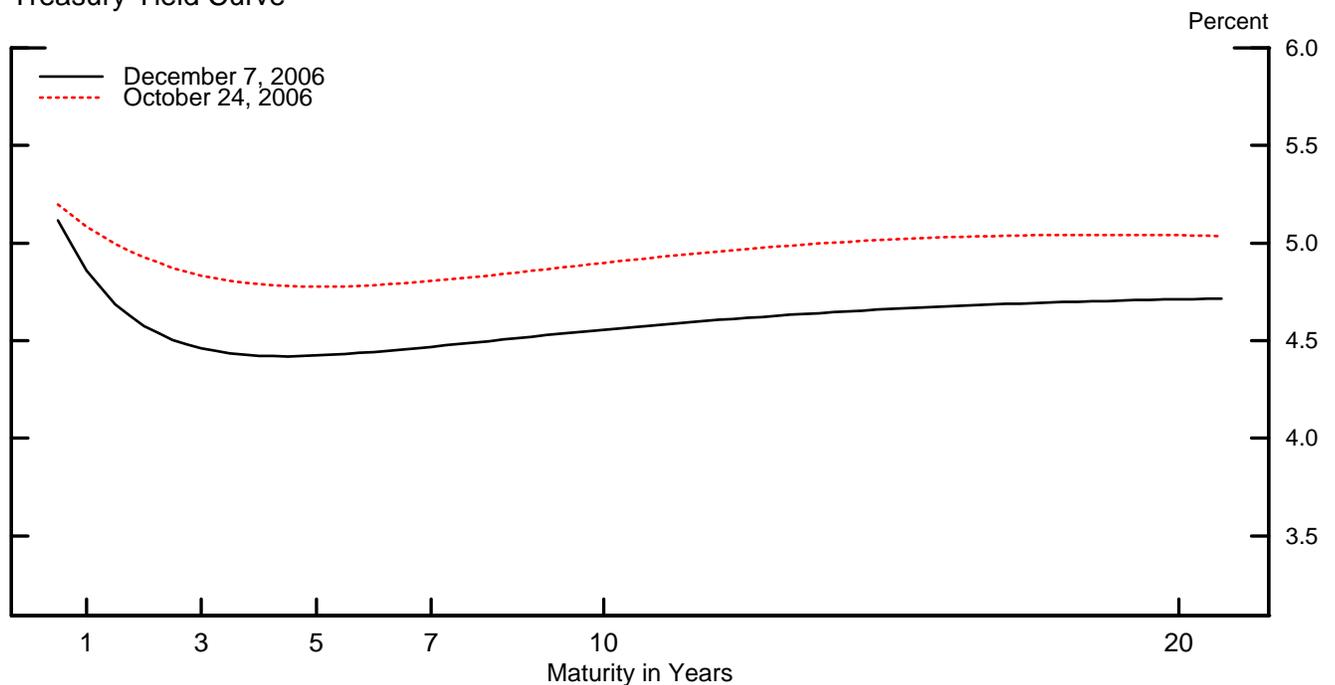
## Spread Between Ten-Year Treasury Yield and Federal Funds Rate



+ Denotes most recent weekly value.

Note. Blue shaded regions denote NBER-dated recessions.

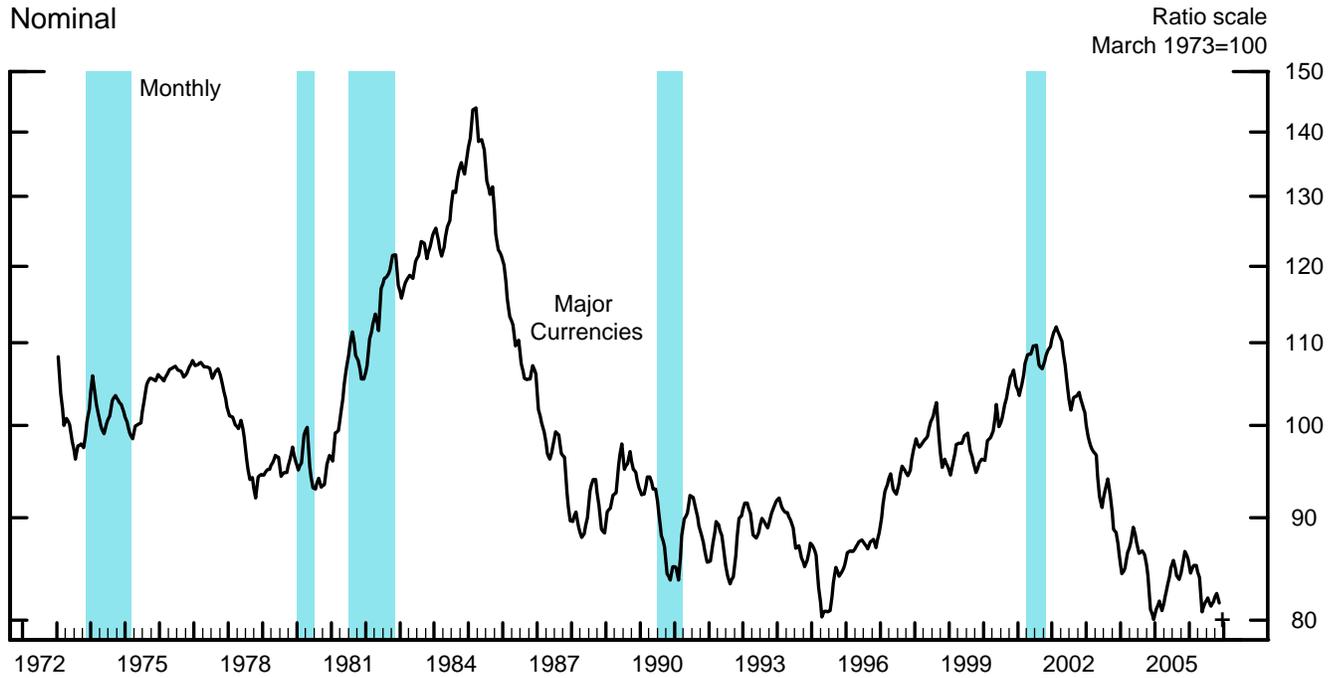
## Treasury Yield Curve\*



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

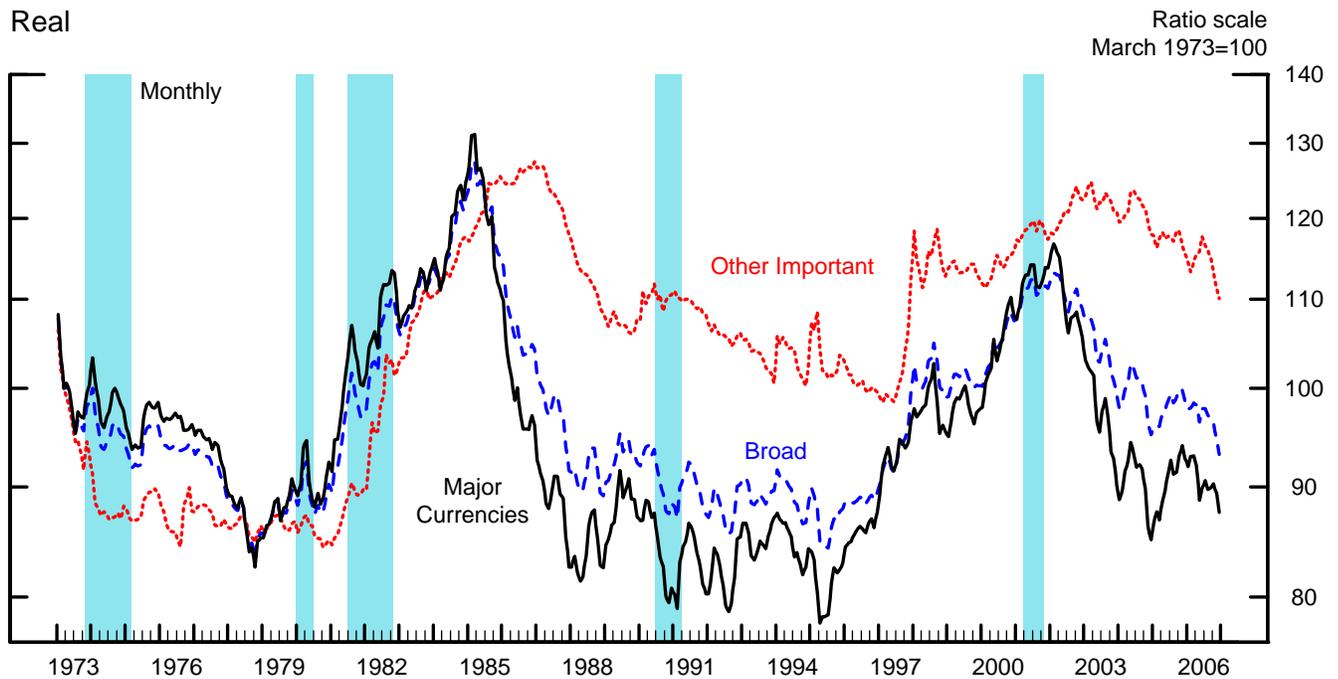
# Dollar Exchange Rate Indexes

Nominal



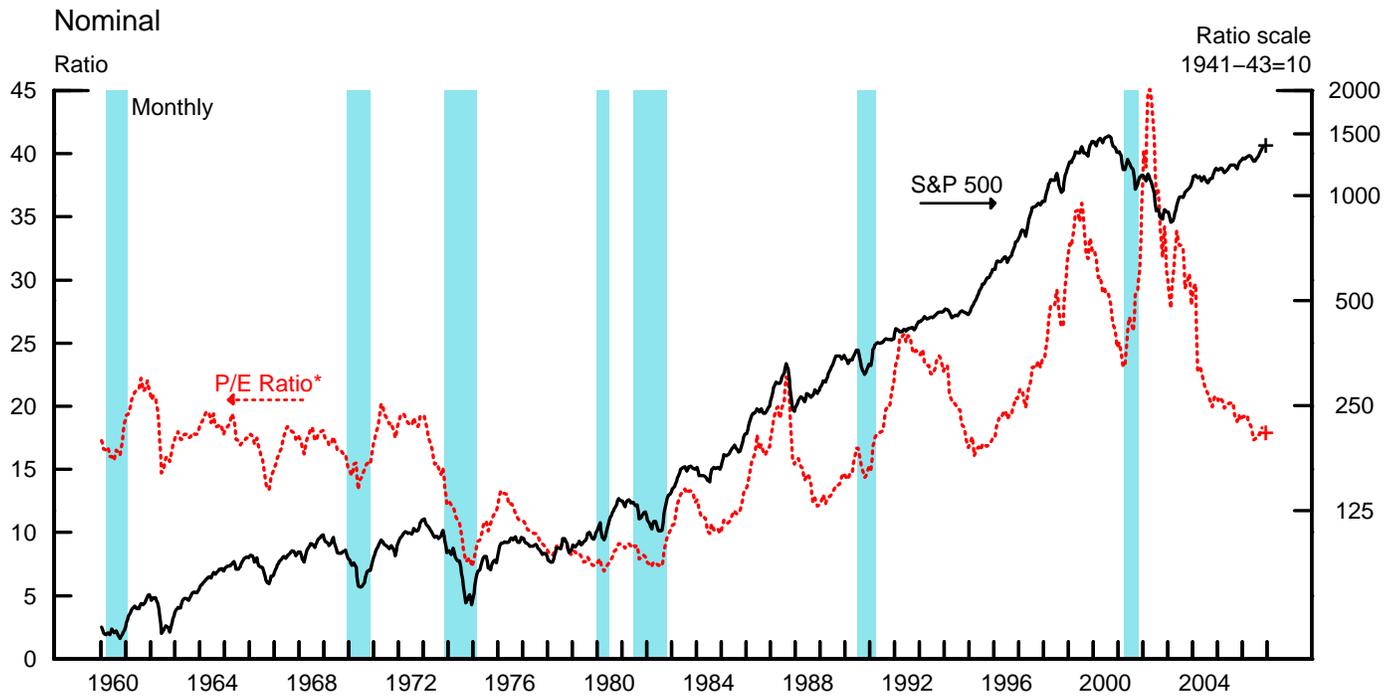
+ Denotes most recent weekly value.

Real

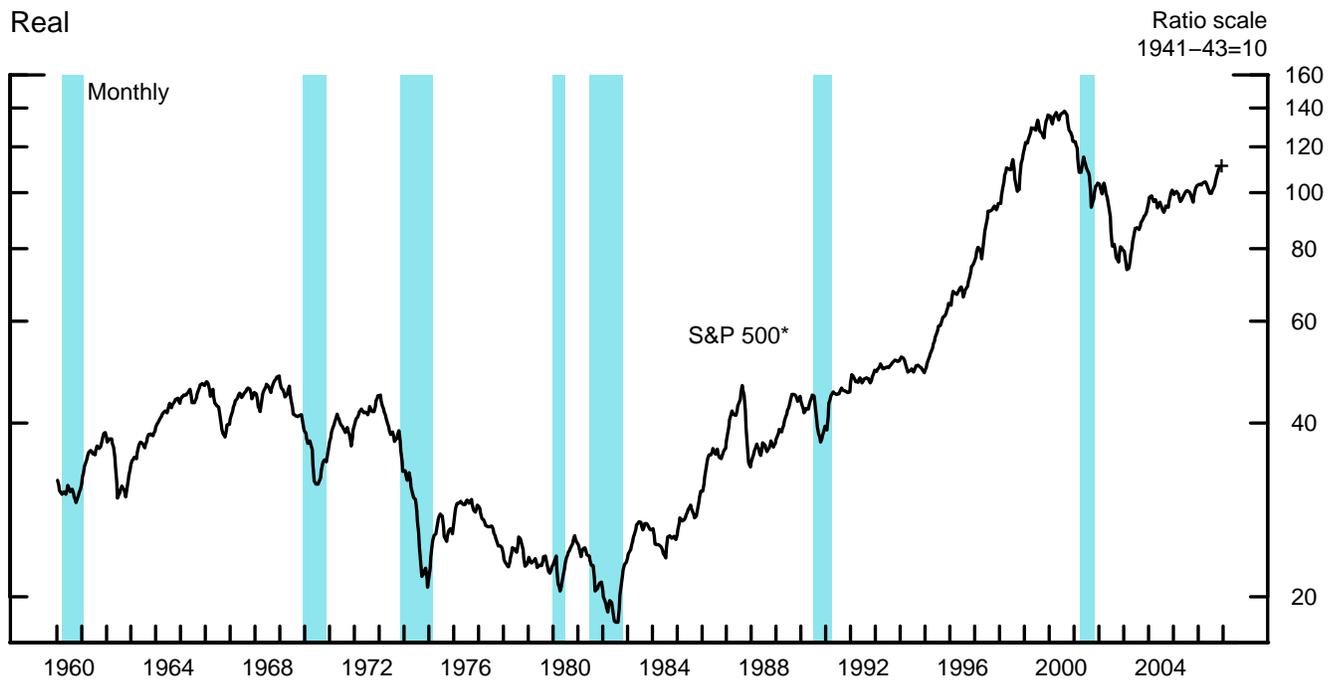


Note. The major currencies index is the trade-weighted average of currencies of the euro area, Canada, Japan, the U.K., Switzerland, Australia, and Sweden. The other important trading partners index is the trade-weighted average of currencies of 19 other important trading partners. The Broad index is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



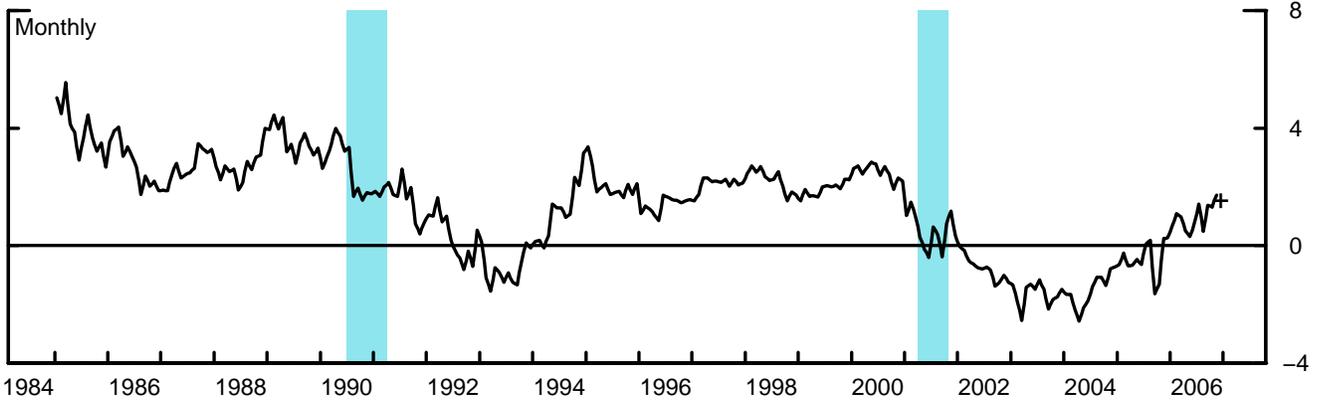
\* Based on trailing four-quarter earnings.  
+ Denotes most recent weekly value.



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

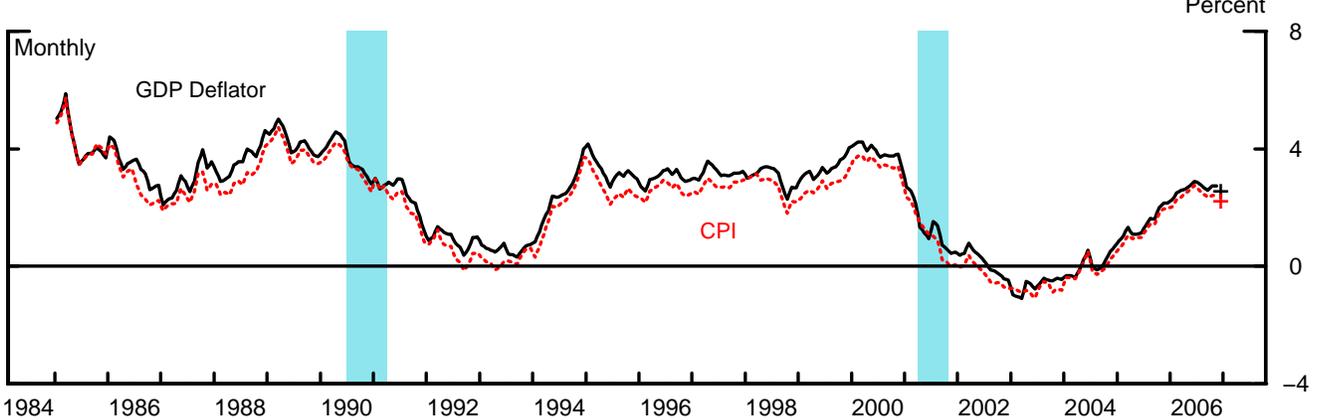
# One-Year Real Interest Rates

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



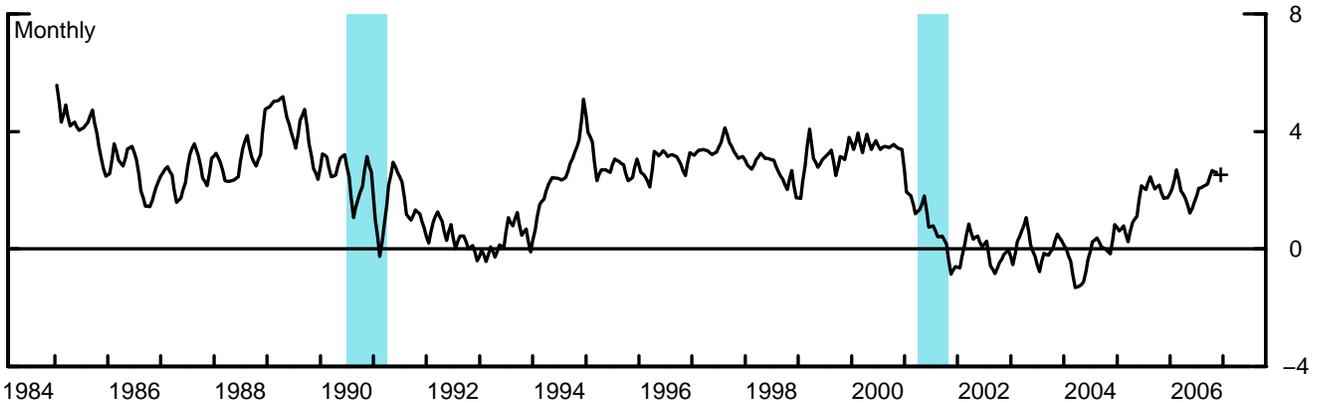
\* Mean value of respondents.

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.

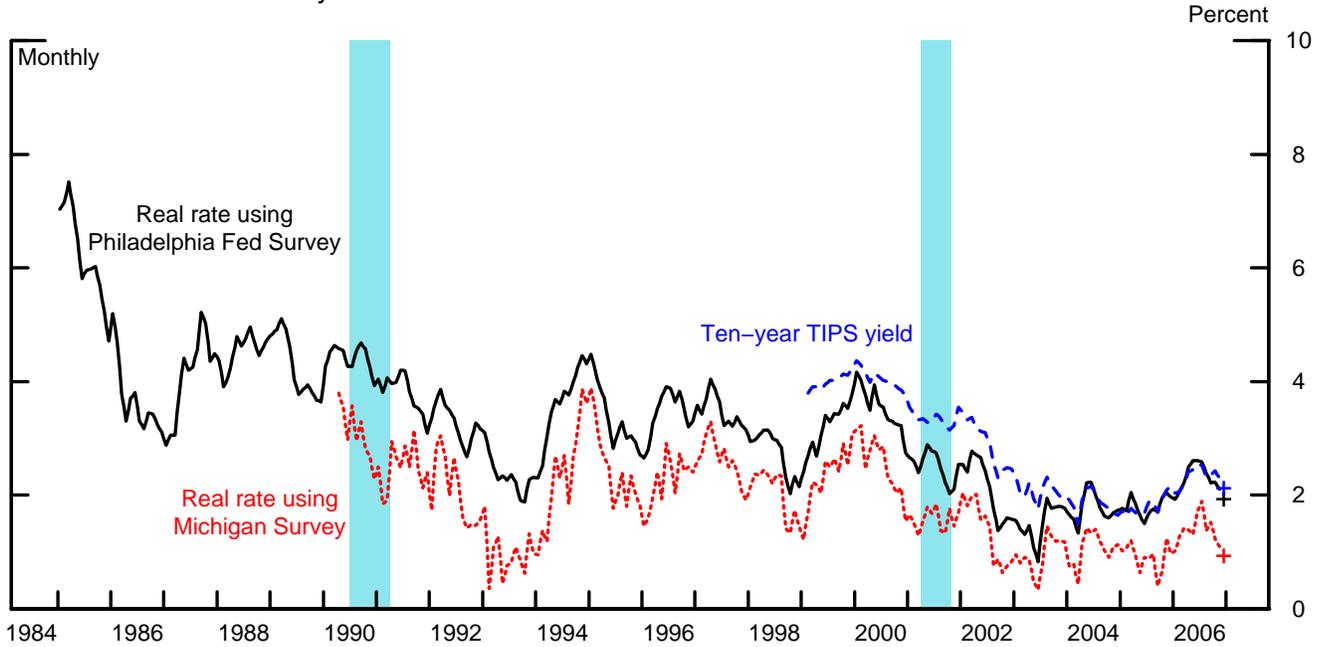
One-Year Treasury Constant Maturity Yield Less Change in the Core CPI from Three Months Prior



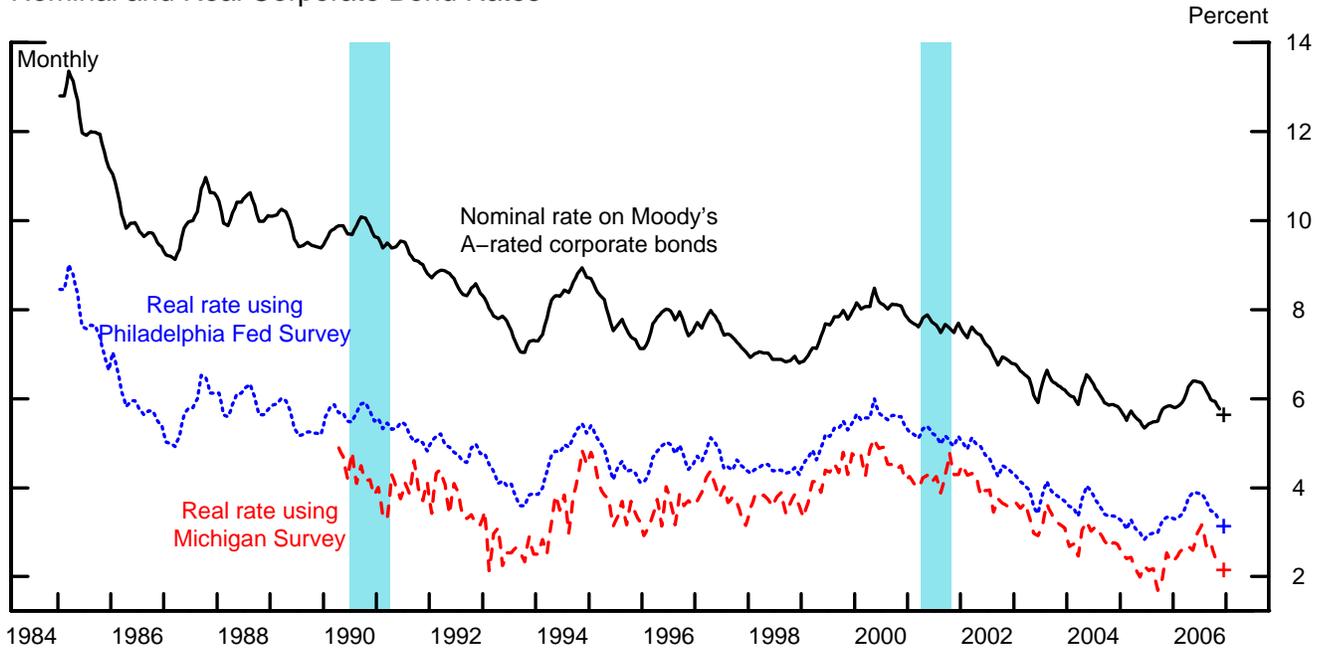
+ Denotes most recent weekly Treasury constant maturity yield less most recent inflation expectation.  
Note. Blue shaded regions denote NBER-dated recessions.

# Long-Term Real Interest Rates\*

## Real Ten-Year Treasury Yields



## Nominal and Real Corporate Bond Rates



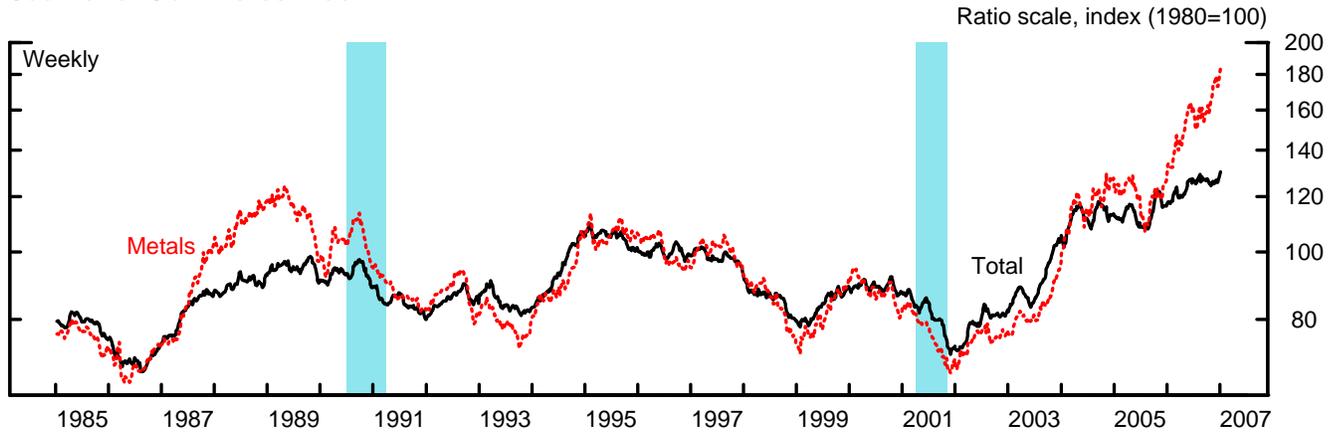
\* For real rates, measures using the Philadelphia Fed Survey employ the ten-year inflation expectations from the Blue Chip Survey until April 1991 and the Philadelphia Federal Reserve Bank Survey of Professional Forecasters thereafter (median value of respondents). Measures using the Michigan Survey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

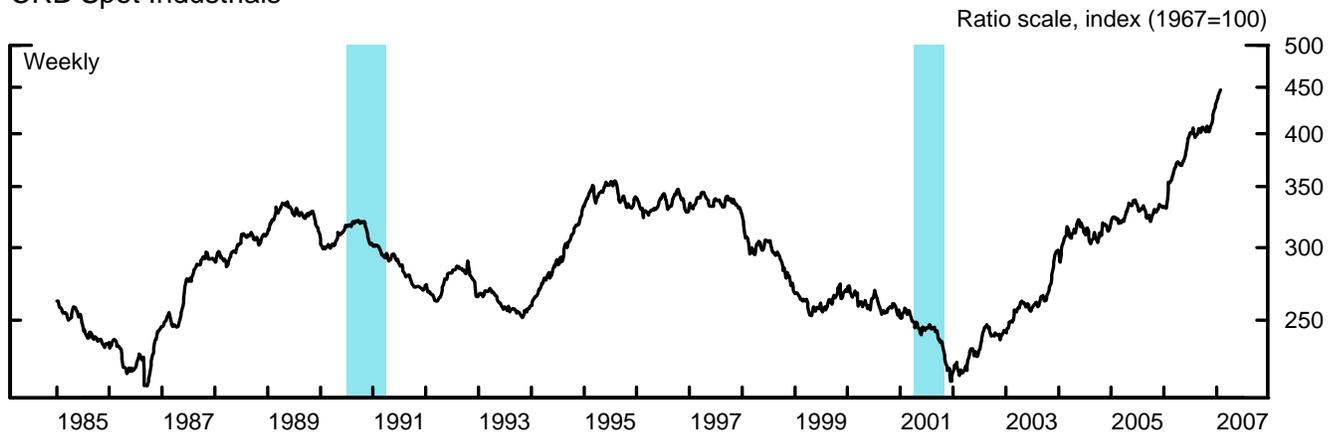
Note. Blue shaded regions denote NBER-dated recessions.

# Commodity Price Measures

## Journal of Commerce Index



## CRB Spot Industrials



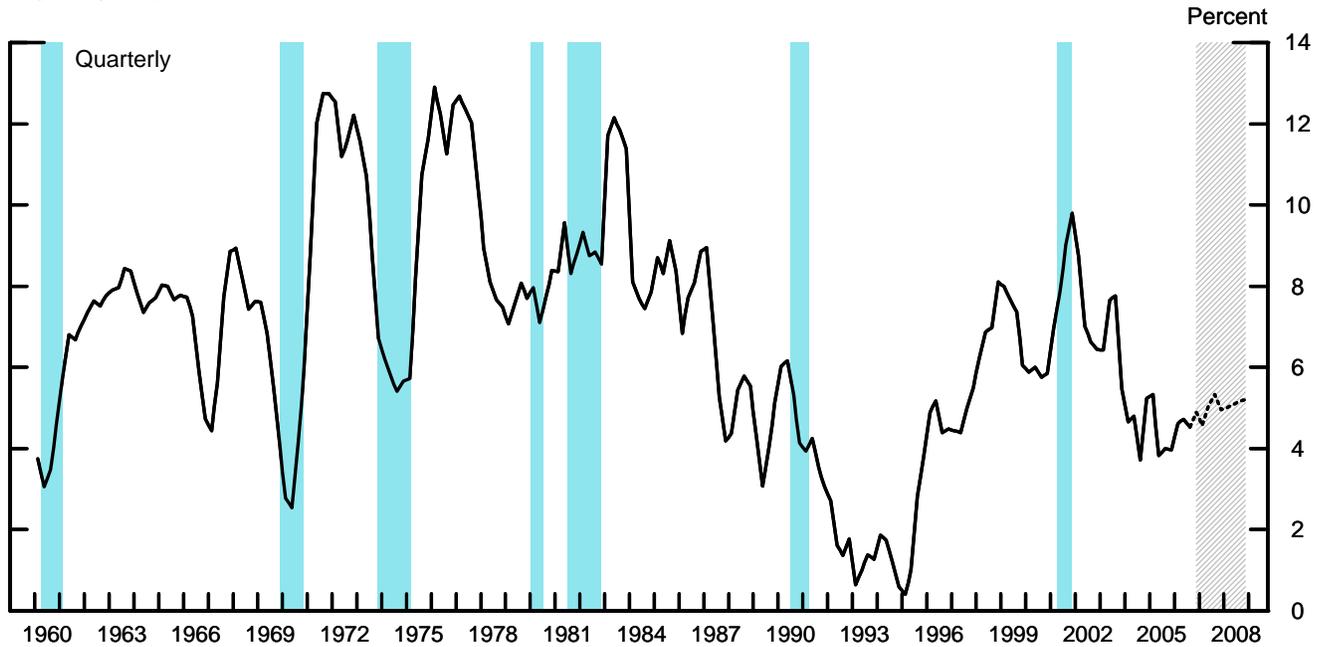
## CRB Futures



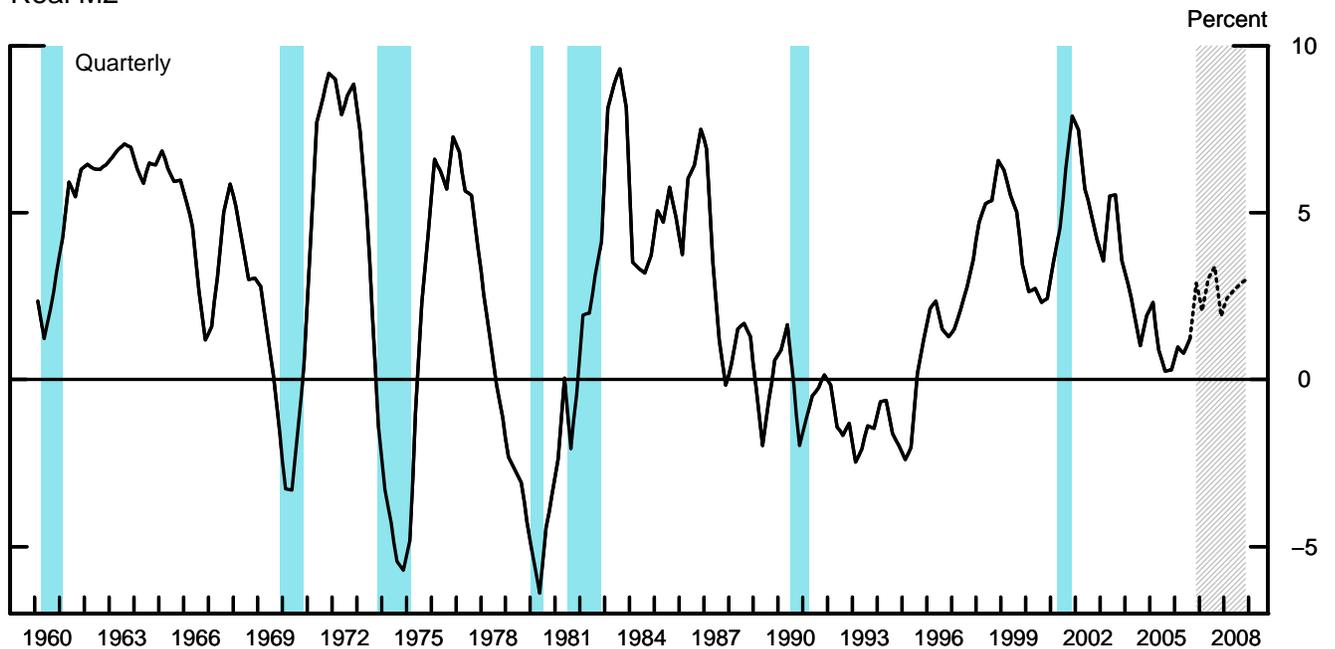
Note. Blue shaded regions denote NBER-dated recessions.

# Growth of M2

## Nominal M2

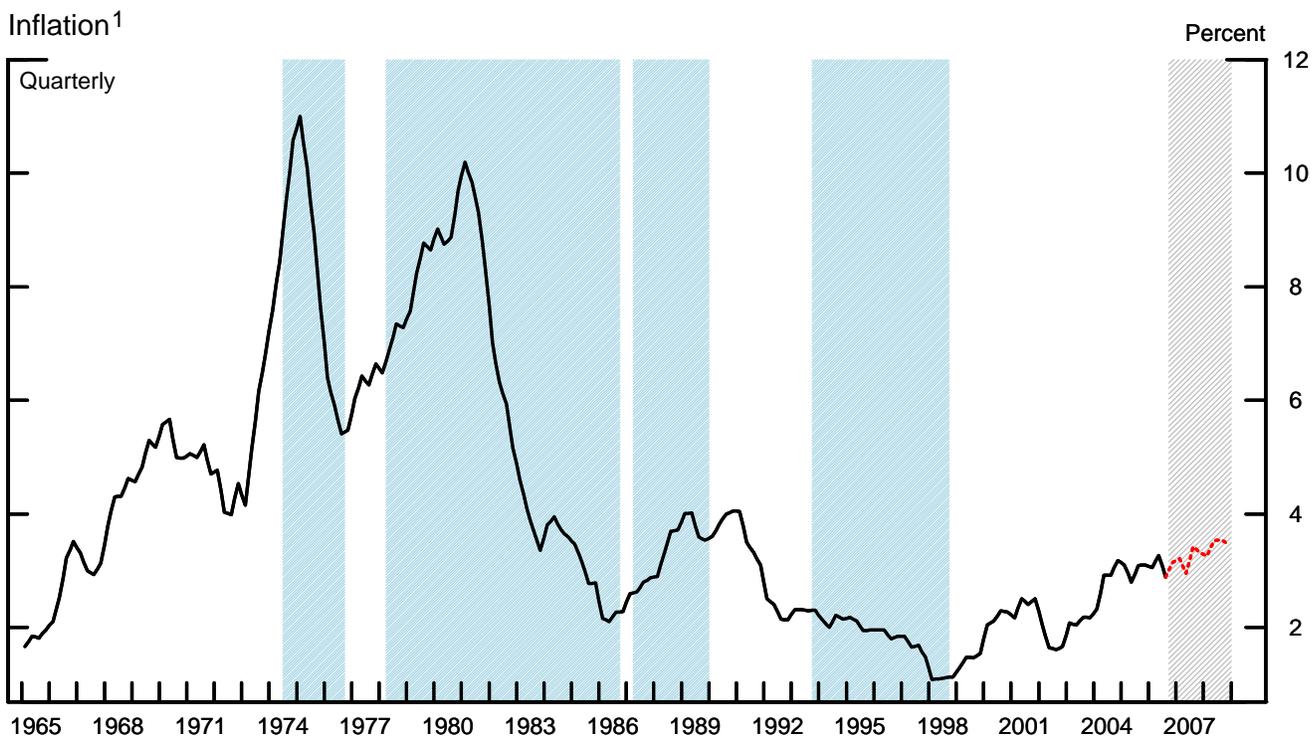
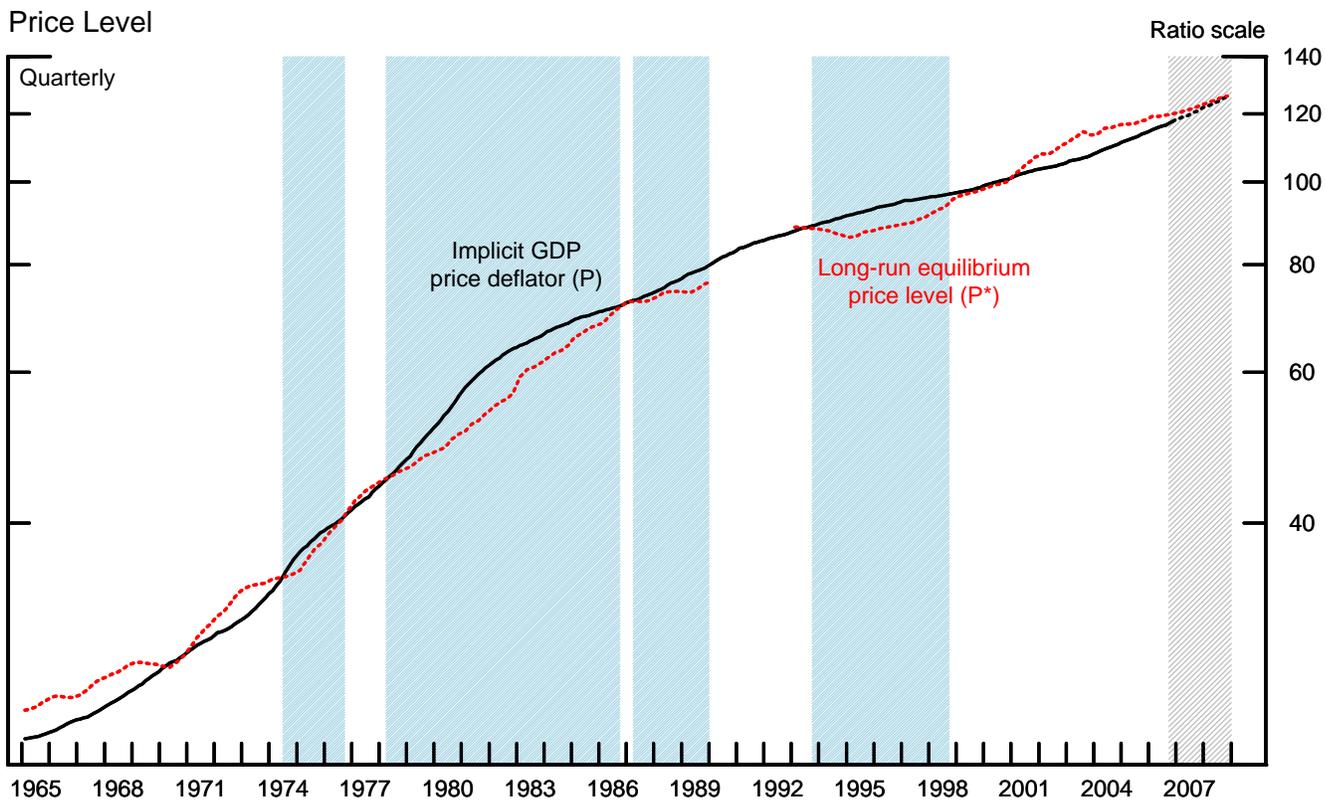


## Real M2



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.