

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.

Please note that some material may have been redacted from this document if that material was received on a confidential basis. Redacted material is indicated by occasional gaps in the text or by gray boxes around non-text content. All redacted passages are exempt from disclosure under applicable provisions of the Freedom of Information Act.

JANUARY 22, 2009

MONETARY POLICY ALTERNATIVES

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

MONETARY POLICY ALTERNATIVES

Recent Developments

Summary

(1) Conditions in some financial markets showed tentative and limited improvements during the intermeeting period; nevertheless, extraordinary stresses remained and concerns about financial institutions increased significantly in the latter part of the period. A number of credit spreads declined from the exceptionally high levels that prevailed from mid-September through mid-December, but most were still elevated compared to their historical ranges. In short-term funding markets, year-end passed with little incident, partly reflecting the large supply of dollar liquidity from the Federal Reserve and other central banks. Many financial institutions posted further significant losses in the fourth quarter, and their equity prices and credit default swap (CDS) spreads indicate that investors continued to have significant concerns about the health of the financial sector and remained uncertain about potential policy responses.

(2) Market participants marked down the expected path of the federal funds rate in response to the December FOMC decision, weaker-than-expected economic data, and renewed concerns about the financial sector. Market and survey measures of policy expectations suggest that investors expect the target federal funds rate to remain within its current range through the first half of this year. Yields on long-term nominal Treasury securities rose on net, with notable increases at the end of the intermeeting period. Yields on TIPS fell, reportedly as a result of some improvement in TIPS market liquidity.

(3) Broad equity price indexes decreased on net during the intermeeting period, as investors remained concerned about the economic outlook and the condition of

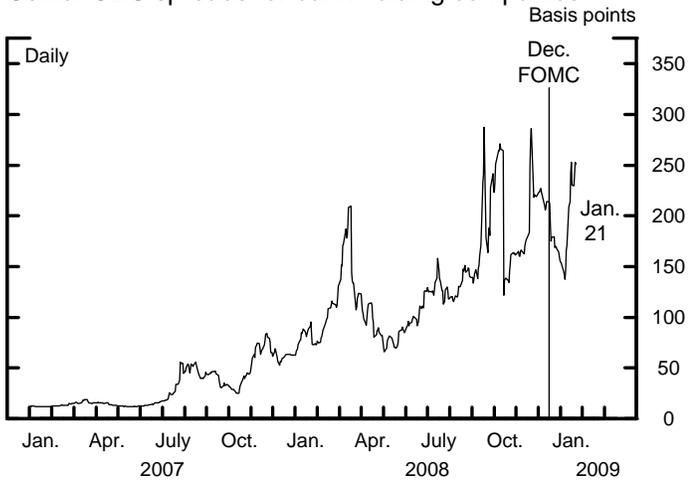
the financial sector. The Federal Reserve's programs to purchase agency debt and mortgage-backed securities (MBS) were received positively by market participants, and reportedly contributed to the improved ability of the agencies to access long-term debt markets. Investment-grade corporate bond spreads declined modestly and issuance of nonfinancial investment-grade bonds continued to be fairly solid. In contrast, issuance of speculative-grade bonds continued to be quite limited despite a noticeable decline in spreads, and issuance of asset-backed securities (ABS) remained negligible. Bank credit contracted again in December. Results from the January Senior Loan Officer Opinion Survey indicated a further tightening of banks' lending policies on all major loan categories, albeit by somewhat smaller percentages of banks than in recent surveys, and broad reductions in loan demand. A number of foreign central banks eased monetary policy further on signs of a global economic slowdown.

Financial Institutions

(4) Although investors' concerns about the condition of financial institutions appeared to ease somewhat during much of the intermeeting period, market sentiment toward financial firms soured again late in the period as the fourth-quarter earnings season got under way. CDS spreads for U.S. bank holding companies, which had narrowed for the first few weeks of the period, rose sharply in mid-January and returned to very high levels, mainly in response to renewed concerns about the viability of Citigroup and Bank of America in their current forms and the possibility that other major financial institutions could face considerable strains (Chart 1). Equity prices for bank holding companies fell to below their November lows, reflecting continued concerns about the longer-term prospect for profits. Goldman Sachs and Morgan Stanley reported larger-than-expected losses for their fiscal fourth quarter as they wrote down more assets. JP Morgan posted a small profit that was held down by asset writedowns and losses in the firm's investment banking unit, while

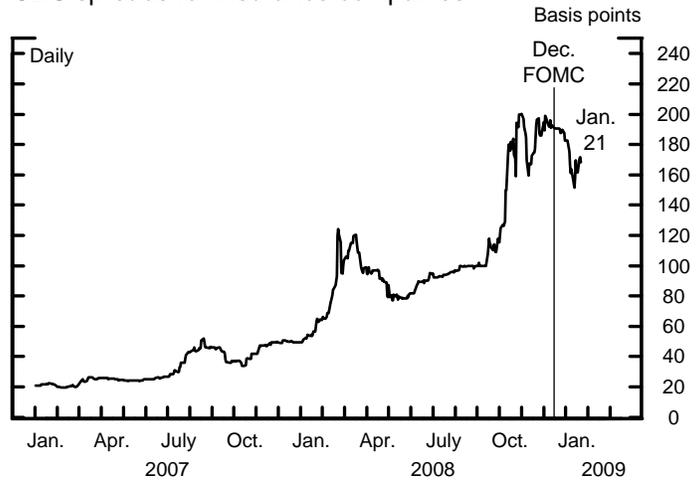
Chart 1 Financial Institutions

Senior CDS spreads for bank holding companies



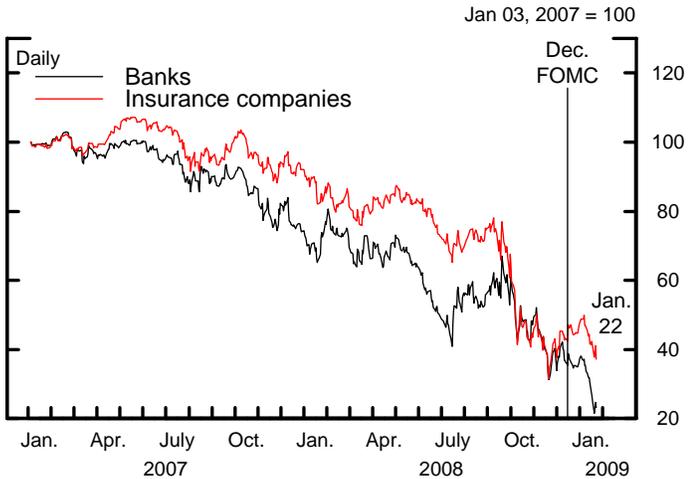
Note. Median spreads for 6 bank holding companies.
Source. Markit.

CDS spreads for insurance companies*



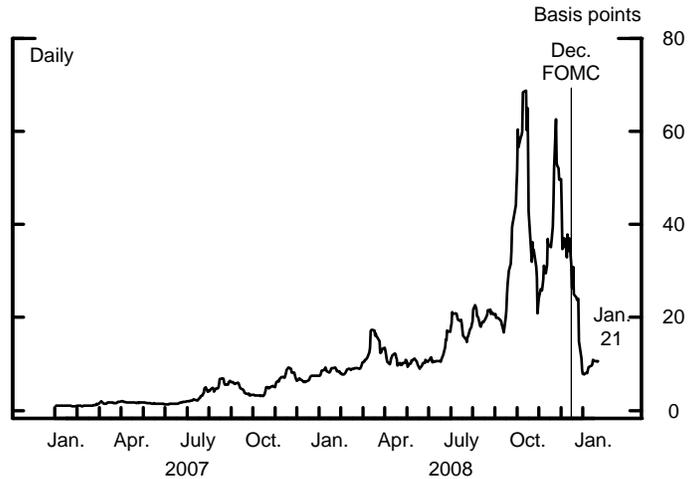
*Median spreads for 61 insurance companies.
Source. Markit.

Bank and insurance ETFs



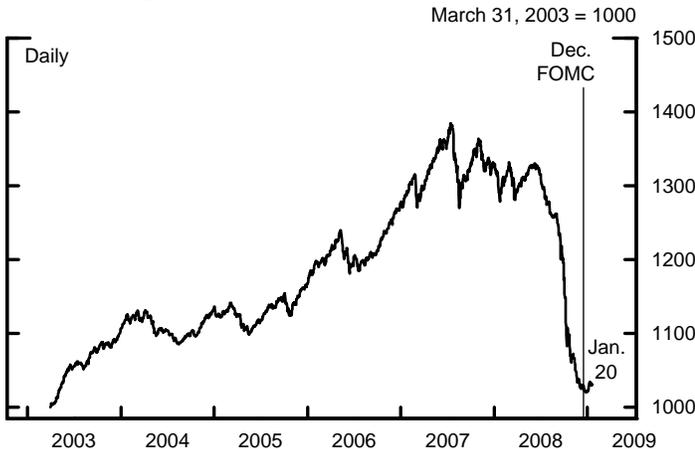
Note. There are 24 banks and 24 insurance companies included.
Source. Bloomberg.

CDS spread for GMAC



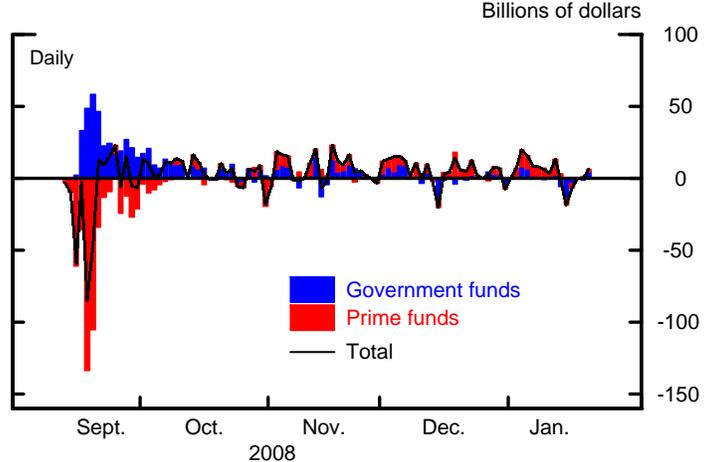
Source. Markit.

Global Hedge Fund Index values



Note. The Global Hedge Fund Index tracks net asset values for hedge funds across the industry.
Source. HFR, Inc.

Net flows into taxable money market mutual funds



Source. iMoneyNet.

Citigroup reported a large loss and announced a reorganization that would split the business into two units. A number of regional banks also reported sizable losses. Many financial institutions raised their loan loss provisions in anticipation of further increases in charge-offs.

(5) Bank of America reported large losses in the fourth quarter, both in its legacy operations and particularly in its recently acquired Merrill Lynch investment bank unit. On January 16, the U.S. government entered into an agreement with Bank of America to provide assistance to the institution. Also during the intermeeting period, the U.S. government entered into agreements to provide support to General Motors Acceptance Corporation (GMAC) and Chrysler Financial. Details of these agreements are provided in the box “U.S. Government Assistance to Three Financial Institutions.”

(6) Developments at other financial institutions were mixed. Equity prices of insurance companies edged down over the intermeeting period while their CDS spreads fell some from extremely high levels. One worrisome factor for the sector was rising delinquency rates on loans backing commercial mortgage-backed securities (CMBS)—an asset class in which insurance companies are major investors. The CMBS market remained all but shut down and spreads on the CMBX index moved back up to near their November peaks. Hedge funds posted negative average returns again in December and, according to one measure, closed the year with an annual loss of 23 percent. In the wake of the recent poor performance, industry sources indicated a record number of funds were liquidated in the third quarter and redemption requests reportedly remained elevated during the fourth quarter. The revelation of the alleged Ponzi scheme of Bernard Madoff contributed to further negative sentiment about lightly regulated financial entities. Treasury- and government-only money market mutual funds (MMMFs) faced pressures stemming from very low short-term interest rates, and many have waived fees in an effort to retain investors. In contrast,

U.S. Government Assistance to Three Financial Institutions

To help promote financial stability and economic recovery, over the intermeeting period the U.S. government entered into agreements to provide assistance to Bank of America, GMAC, and Chrysler Financial. This box provides a summary of those agreements.

Bank of America reported very large losses for the fourth quarter of 2008. In addition to poor results in its commercial banking operations, its recently acquired Merrill Lynch investment bank unit booked pre-tax losses of more than \$20 billion. To limit the potentially adverse effect on financial market stability from the announcement of these results, the U.S. government entered into an agreement with Bank of America on January 16. The Treasury and the Federal Deposit Insurance Corporation (FDIC) will provide protection against the possibility of unusually large losses on an asset pool of about \$118 billion of loans, securities backed by residential and commercial real estate loans, and other such assets, all of which have been marked to current market value. The large majority of these assets were acquired by Bank of America in its purchase of Merrill Lynch. The assets will remain on Bank of America's balance sheet.

Under the terms of the agreement, Bank of America would absorb the first \$10 billion of eligible losses on the pool. Losses above that amount would be split 90-10 between the Treasury/FDIC and Bank of America, with a maximum of \$10 billion in losses for the Treasury/FDIC. As a fee for this protection, Bank of America will issue \$4 billion of preferred stock with an 8 percent dividend rate and warrants with an aggregate value of 10 percent of the total amount of preferred issued. Beyond that, the Federal Reserve would take residual losses on the pool through non-recourse lending, subject to Bank of America's continued 10 percent loss sharing. Bank of America may draw upon the loan facility if and when losses on the pool reach \$18 billion. A fee of 20 basis points per year will be charged on the undrawn amounts of the facility and a floating rate of OIS plus 300 basis points will be charged on drawn amounts. In addition, the Treasury used \$20 billion of TARP funds to purchase Bank of America preferred stock, bringing the Treasury's total investment in Bank of America to \$45 billion.

GMAC faced considerable strains from slow originations (because of very weak motor vehicle sales) and deteriorating loan quality. To address these strains, GMAC began to prepare to apply for bank holding company status. To increase its capital as part of that process, it offered a debt-equity swap but the offering ultimately was undersubscribed. Despite that setback, GMAC applied for, and was granted, bank holding company status on December 24, as the Federal Reserve Board determined it had sufficient capital to satisfy requirements. To support the motor vehicle market, the U.S. government on December 29 entered into an agreement to provide capital support to GMAC under the TARP.

Under the agreement, the U.S. Treasury purchased \$5 billion of GMAC senior preferred equity, and provided a \$1 billion loan to GM to participate in a rights offering for GMAC. These funds were in addition to the \$13.4 billion of TARP funds pledged to GM and Chrysler to stabilize those firms. CDS spreads on GMAC senior debt, which had already declined from their mid-December highs, dropped further on the announcement. For similar reasons, on January 16, the Treasury announced it would make a \$1.5 billion five-year loan of TARP funds, secured by a senior secured interest in a pool of newly-originated consumer auto loans, to a special purpose entity created by Chrysler Financial. Chrysler Holding will serve as a guarantor for certain covenants of Chrysler Financial.

prime MMMFs had net inflows over the intermeeting period as they remained attractive to investors, and appeared once again to be purchasing asset-backed commercial paper (ABCP).

(7) Funding for a number of major financial institutions in the intermeeting period was supported by the FDIC's Temporary Liquidity Guarantee Program (TLGP). So far, financial institutions have issued about \$130 billion through the program; about three-quarters of this issuance was concentrated at six firms—GE Capital, JP Morgan, Bank of America, Goldman Sachs, Morgan Stanley, and Wells Fargo. Most of this issuance has been at a fixed rate for three years (close to the maximum period covered by the FDIC guarantee).¹ Spreads on FDIC-guaranteed debt have declined to levels close to those on agency debt—about 60 to 100 basis points above comparable-maturity Treasury securities. In this period, little non-FDIC-guaranteed debt was issued by financial institutions. GE Capital issued non-FDIC-insured thirty-year bonds, but it had to offer an unusually wide spread to do so.

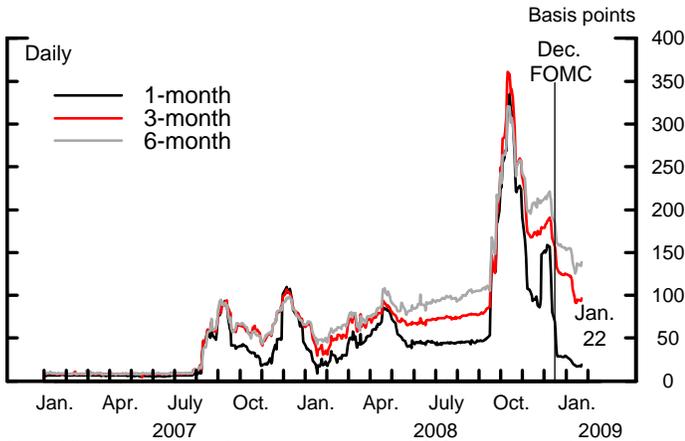
Market Functioning

(8) Stresses in the money markets eased over the intermeeting period, reflecting the passing of year-end and ample dollar liquidity provided by the Federal Reserve and other central banks. Still, conditions remained significantly strained at longer tenors. In unsecured bank funding markets, Libor fixings at most maturities declined and spreads over comparable-maturity overnight index swap (OIS) rates narrowed further on net. The one-month Libor-OIS spread declined to its lowest level since late 2007; however, the three- and six-month spreads as well as forward one-month spreads remained high (Chart 2). Market reports indicated that banks became more

¹ On January 16, the FDIC announced that it would propose a rule change to the TLGP to extend the maturity limit of the guarantee up to 10 years where the debt is supported by collateral and the issuance supports new household lending.

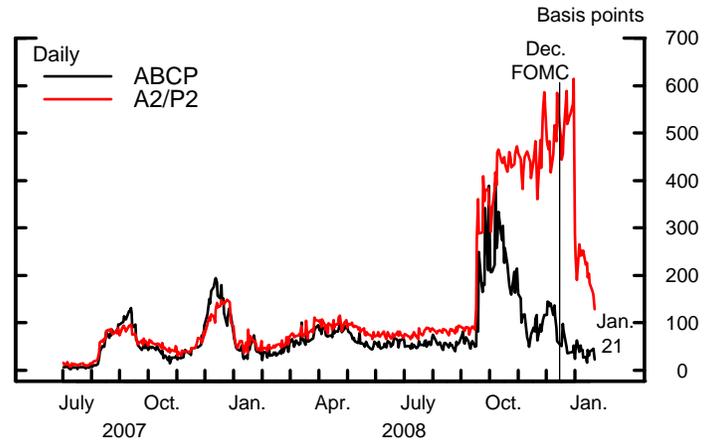
Chart 2 Market Functioning

Spreads of Libor over OIS



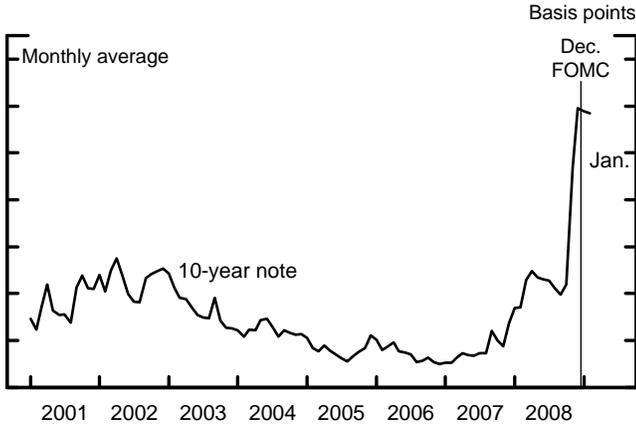
Note. Libor quotes are taken at 6:00 a.m., and OIS quotes are observed at the close of business of the previous trading day.
 Source. Bloomberg.

Spreads on 30-day commercial paper



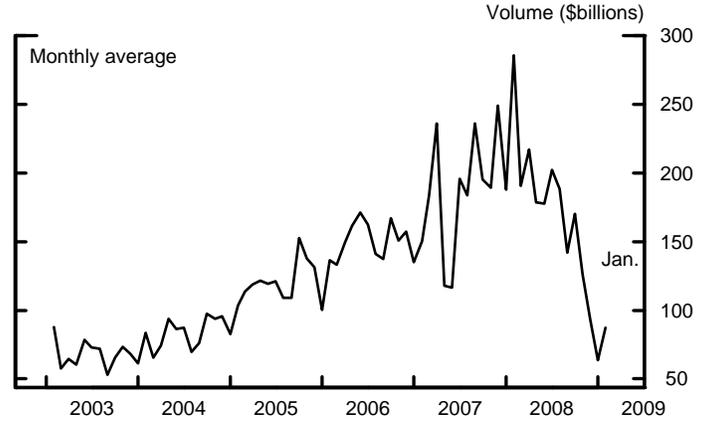
Note. The ABCP spread is the AA ABCP rate minus the AA nonfinancial rate. The A2/P2 spread is the A2/P2 nonfinancial rate minus the AA nonfinancial rate.
 Source. Depository Trust & Clearing Corporation.

Treasury on-the-run premium



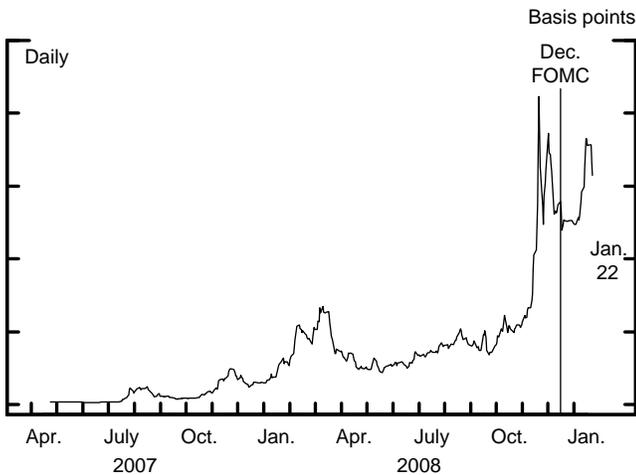
Note. Computed as the spread of the yield read from an estimated off-the-run yield curve over the on-the-run Treasury yield. January observation is the month-to-date average.
 Source. Board staff estimates.

Daily on-the-run Treasury market volume



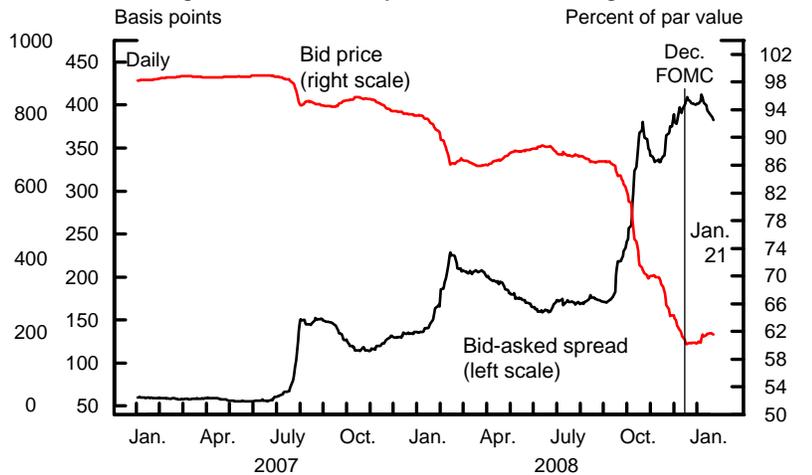
Note. January observation is average for month to date.
 Source. BrokerTec Interdealer Market Data.

AAA CMBX Index



Note. Origination date is April 2007.
 Source. JPMorgan.

Pricing in the secondary market for leveraged loans



Source. LSTA/LPC Mark-to-Market Pricing.

willing to extend liquidity to each other out to at least the one-month horizon, but the terms of interbank lending were said to be still counterparty-specific in some cases.

(9) In secured funding markets, conditions showed some improvement, but activity at longer tenors reportedly remained limited. With the overnight Treasury general collateral repo rate near zero for most of the period, implying low penalties for delivery failures, market participants were reportedly reluctant to lend Treasury collateral out of concerns about potential fails. This reluctance to lend was exacerbated in the first part of the intermeeting period by year-end concerns. Overnight securities lending from the SOMA portfolio increased as year-end approached, but it remained well below the extremely elevated levels of September and October. Delivery fails continued to run well under the high levels of September and October, reflecting in part reduction in transaction volumes as well as industry efforts to mitigate fails, including the January 5 recommendation of the Treasury Market Practices Group to implement a financial charge on settlement fails beginning in May. Conditions in the markets for repo transactions backed by agency debt and MBS improved some, especially for overnight contracts, although strains remained evident in term markets. Average bid-asked spreads declined notably, but in most cases were still above those prior to September, while haircuts were little changed at high levels.

(10) Changes in conditions in the Treasury bill market pointed to a reduction in flight-to-quality flows. Although Treasury bill rates remained very low, reflecting low overnight interest rates and expectations that they will remain so for some time, yields increased modestly on net over the intermeeting period. The Treasury issued additional cash management bills under the Supplementary Financing Program (SFP), but the outstanding level of SFP bills still fell from \$405 billion on December 10 to around \$175 billion at the end of the period.

(11) Conditions in the commercial paper (CP) market improved over the intermeeting period, reflecting continued effects of the measures taken by the Federal Reserve to support this market, greater demand from institutional investors, and the passing of year-end. Yields and spreads on 30-day A1/P1 nonfinancial and financial CP as well as on asset-backed commercial paper (ABCP) declined modestly and remained low. More notably, yields and spreads on 30-day A2/P2 CP, which is not eligible for purchase under the Commercial Paper Funding Facility (CPFF), dropped sharply after the beginning of the year, in part reflecting the dissipation of year-end pressures. The amount of unsecured CP outstanding that has been issued by financial and nonfinancial companies and the amount of ABCP outstanding both were little changed on net over the intermeeting period.

(12) The increase in the amount of CP outstanding is more than accounted for by issuance into the CPFF. As of January 21, credit extended under the CPFF was \$351 billion, \$40 billion above the level on December 10. Credit extended under the Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF) declined further over the intermeeting period to about \$15 billion as of January 21. To date, the Money Market Investor Funding Facility (MMIFF) program has registered no activity.² The low demand for credit from the AMLF and the MMIFF probably reflects continued net flows into money market mutual funds, the institutions that these two facilities were primarily designed to support.

² There was no activity even though on January 7, the Federal Reserve Board announced two changes to the MMIFF, expanding the set of institutions eligible to participate in the MMIFF and adjusting several of its economic parameters to enable the program to remain a viable source of backup liquidity for investors even at very low levels of short-term interest rates. Specifically, the set of eligible institutions was expanded to include securities lenders and U.S.-based investment funds that operate in a manner similar to money market mutual funds, such as some local government investment pools, common trust funds, and collective investment funds. Second, the minimum yield on eligible assets was reduced to 60 basis points above the primary credit rate at the time of purchase of the asset.

(13) Functioning in the market for Treasury coupon securities continued to show signs of impairment. The on-the-run premium for the ten-year nominal Treasury note was little changed over the intermeeting period at very elevated levels. The average absolute difference between yields on actual Treasury securities and corresponding yields read from an estimated yield curve declined in the period but remained high, indicating a continuing absence of arbitrage, presumably reflecting balance-sheet constraints and risk aversion of market participants. Trading volumes in the Treasury market fell to very low levels at the end of 2008, although they recovered a bit after the end of the year. More encouragingly, bid-asked spreads in the on-the-run market declined sharply at the beginning of 2009 after reaching extremely wide levels at the end of 2008; their levels at the end of the period were near those seen before the heightened market volatility last fall.

(14) Liquidity in the corporate bond market improved somewhat, with particularly notable declines in estimated bid-asked spreads for speculative-grade bonds, and an increase in trading volumes for both investment- and speculative-grade bonds, although volumes remained relatively low. Liquidity and price discovery in the CDS market remained poor, as the number of dealers providing quotes continued to be low, particularly for financial firms. The dispersion of quotes narrowed significantly over the period, but it was still quite wide. The market for CMBS, which had sold off sharply in the previous intermeeting period, continued to be strained. The CMBX index—an index based on CDS spreads on AAA-rated CMBS—widened during this intermeeting period and is only modestly below the peak levels in November. Conditions in the leveraged loan market remained very poor. Secondary market prices for leveraged loans stayed near historic lows. The average bid-asked spread in this market continued to be extremely wide. Implied spreads on the LCDX index dropped sharply after the December FOMC meeting, but rose substantially in

the latter part of the intermeeting period and remain well above the levels that prevailed prior to October 2008.

(15) Depository institutions continued to make substantial use of the discount window, although the amount of credit declined, reflecting, for the most part, reduced borrowing by foreign institutions. Primary credit outstanding fell markedly during the period from \$90 billion on December 10 to \$63 billion on January 21. TAF auctions, for both 28-day and 84-day credit, were undersubscribed in the intermeeting period, continuing the pattern that has prevailed since the early October expansion of the auction amounts to \$150 billion. The number of bidders was similar to that in other recent auctions except for the January 12 auction of 28-day credit, which saw a record high number of bidders.³ The amount of credit outstanding under the TAF remained around \$400 billion throughout the period; as of January 21, it was \$416 billion. The Term Securities Lending Facility (TSLF) auctions held during the period also were undersubscribed, and market participants exercised only \$7 billion of the options on \$50 billion of TSLF loans against Schedule 2 collateral on their December 22 exercise date. The amount of securities lent through the TSLF declined \$52 billion to about \$133 billion as of January 21. Use of the Primary Dealer Credit Facility (PDCF) declined further over the intermeeting period, with the amount outstanding falling to \$33 billion on January 21 from \$52 billion on December 10.

(16) The effective federal funds rate stayed within the new target range of 0 to 0.25 percent established at the December FOMC meeting throughout the intermeeting period, and trading volumes in the funds market were generally quite low. Very recently, however, trading volume has picked up some and federal funds

³ Starting with the January 12 auction, the minimum bid rate was adjusted to be equal to the interest rate paid on excess reserve balances rather than the OIS rate for the term of the auction at the date of the announcement. This adjustment was made to remove an arbitrage opportunity at this time of very low interest rates.

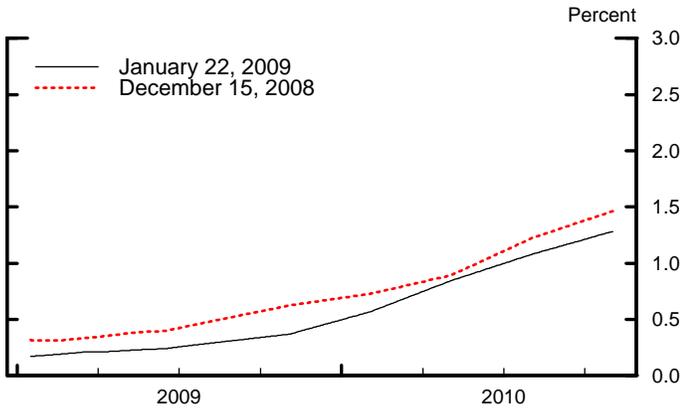
have traded closer to the upper end of the target range, particularly during the morning hours.

Monetary Policy Expectations and Treasury Yields

(17) The FOMC's decision at its December meeting to lower the target federal funds rate from 1 percent to a range of 0 to 0.25 percent was more aggressive than market expectations prior to the meeting. Furthermore, market participants reportedly did not fully anticipate the indications that the FOMC may keep rates low for some time and that the FOMC may engage in nontraditional policy such as the purchase of longer-term Treasury securities. Consequently, market expectations for the path of the federal funds rate moved downward for most horizons. Economic data released late in the intermeeting period came in generally weaker than expected and, along with increased concerns about the health of some financial institutions as fourth-quarter earnings began to be reported, pushed futures rates lower (Chart 3). Futures rates currently suggest that investors expect that the effective federal funds rate will remain within the current target range through the first half of this year and then rise gradually thereafter, with the effective rate reaching about 1.4 percent by the end of 2010. However, uncertainty about the size of term premiums and potential distortions created by the zero lower bound for the federal funds rate make it difficult to obtain a definitive reading on policy expectations of market participants from futures prices (see the box "Gauging Investor Expectations for Future Interest Rate Policy with Uncertain Term Premiums" for a discussion of term premium effects). In a very low interest rate environment, it is more likely that the zero lower bound could truncate the distribution of future short-term interest rates and lead to a greater positive skew in the distribution. In this case, expected future short interest rates implied by futures prices would be pushed up above market participants' modal forecasts. Consistent with either of these distortionary factors, the primary dealers in

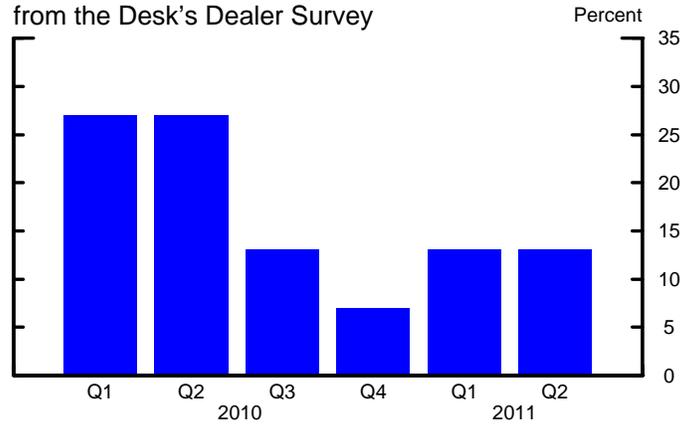
Chart 3 Interest Rate Developments

Expected federal funds rates*



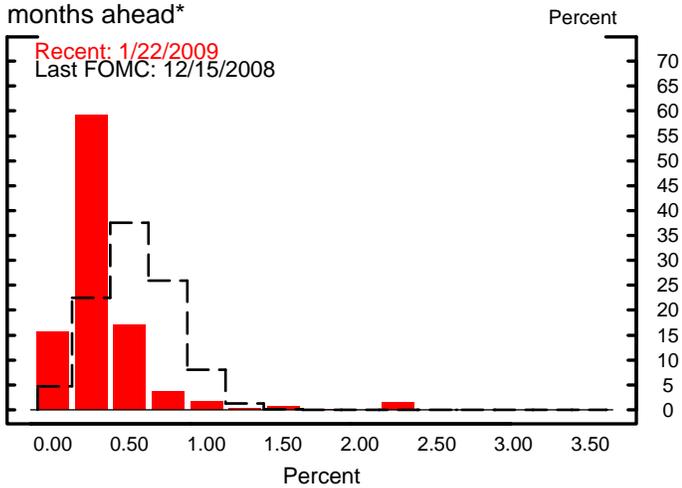
*Estimates from federal funds and Eurodollar futures, with an allowance for term premiums and other adjustments.
Source. Chicago Mercantile Exchange and CBOT.

Distribution of expected quarter of first rate increase from the Desk's Dealer Survey



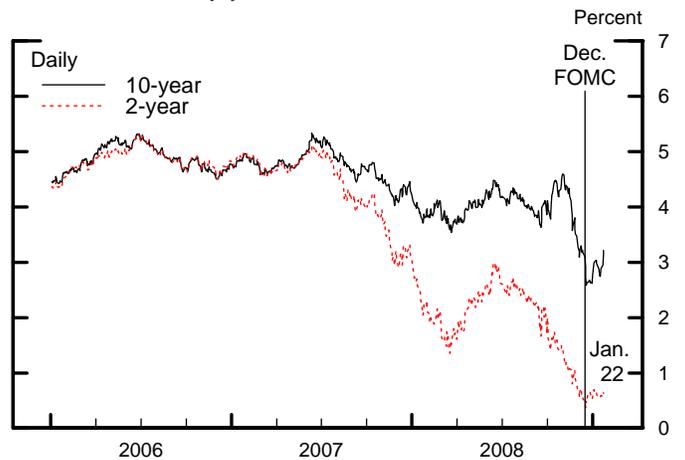
Source. Federal Reserve Bank of New York.
Note. There were 15 respondents.

Implied distribution of federal funds rate six months ahead*



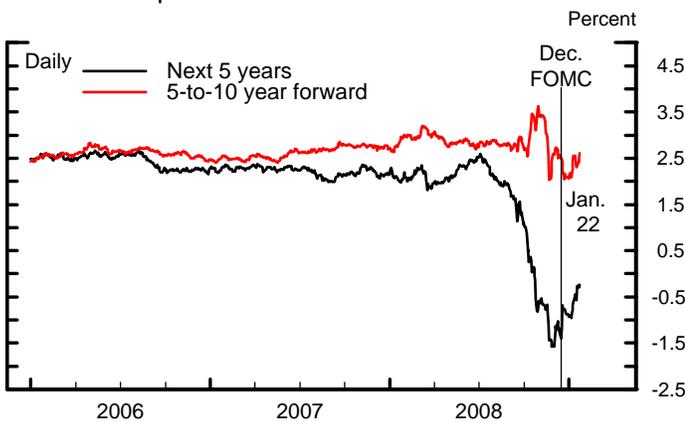
*Derived from options on Eurodollar futures contracts, with term premium and other adjustments to estimate expectations for the federal funds rate.
Source. CBOT.

Nominal Treasury yields*



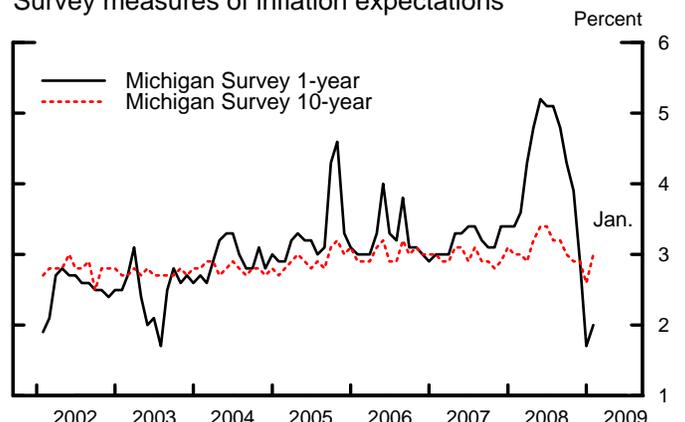
*Par yields from a smoothed nominal off-the-run Treasury yield curve.
Source. Board staff estimates.

Inflation compensation*



*Estimates based on smoothed nominal and inflation-indexed Treasury yield curves and adjusted for the indexation-lag (carry) effect.
Source. Barclays, PLC.; Bloomberg; Board staff estimates.

Survey measures of inflation expectations



Source. Reuters/ University of Michigan.

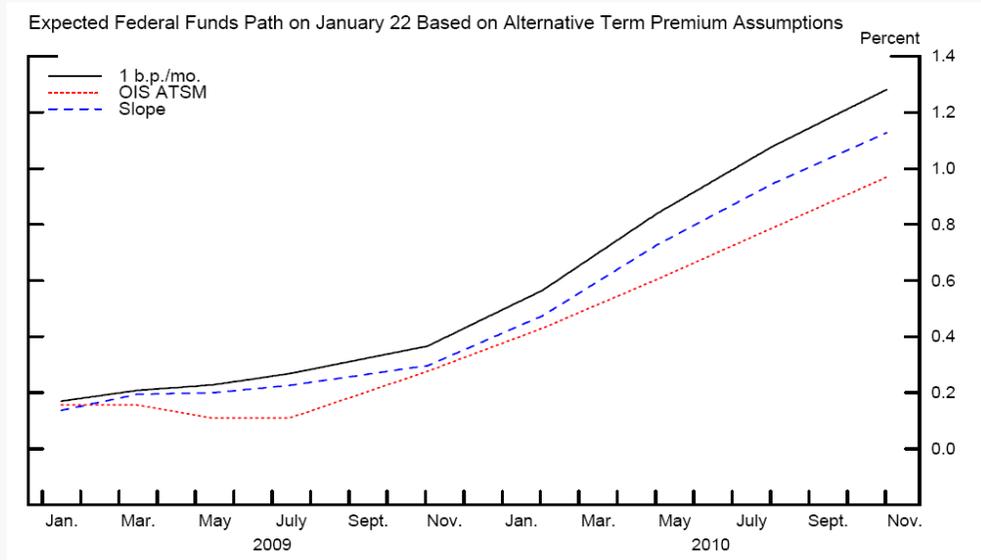
Gauging Investor Expectations for Future Interest Rate Policy with Uncertain Term Premiums

As shown by the black solid line in the graph below, under the staff's standard 1 basis point per month assumption for the term premium, futures quotes imply that investors now anticipate that the FOMC will raise the funds rate above the current 0 to 25 basis point range in the second half of this year. This outlook is noticeably above the staff's assumption for the federal funds rate in the Greenbook. The steeper trajectory for the federal funds rate in the futures path could reflect a more sanguine economic outlook on the part of investors than in the Greenbook. However, the heightened financial market turmoil of recent months may be affecting investors' perceptions of risk and their tolerance for risk. As a consequence, term premiums might currently be larger than the staff's usual assumption.

The red-dotted and blue-dashed lines in the chart below show the expected federal funds rate paths under two alternative measures of the term premiums embedded in futures rates. Under the assumption that investors are unlikely to forecast significantly different policy rates four years ahead versus five years ahead, the slope of the Eurodollar futures curve at that horizon should be determined largely by term premiums. The blue dashed line shows the expected path for the funds rate using such an estimate of the term premium, which is currently about 2 basis points per month. The red dotted line shows the expected path for the federal funds rate based on term premium estimates calculated using an affine, three-factor, no-arbitrage model of the OIS term structure with a non-negativity constraint on the expected funds rate. Estimated term premiums are maturity-specific in this case, ranging from 1 to 4 basis points.

Both of these alternative measures of the expected funds rate path imply less policy tightening over the next two years than the conventional calculation. This divergence underscores the relevance of model uncertainty for inferences about investor expectations for the federal funds rate from futures in current circumstances.

The Desk's survey of primary dealers on January 21 provides an alternative, non-model-based measure of the expected federal funds rate path. According to this survey, respondents expect the first rate increase above the current target range to occur in the second quarter of 2010, which is one quarter later than implied by the affine term structure model.



the Desk survey expected, on average, that the Committee will first increase rates in the second quarter of 2010, although they hold a wide range of beliefs on this issue.

(18) On net, off-the-run nominal two-year Treasury yields increased 15 basis points over the intermeeting period, while ten-year yields rose 13 basis points. Until late in the intermeeting period, long-term Treasury yields reportedly were driven lower in part by expectations that the Federal Reserve may begin purchasing long-term Treasury securities. On average, respondents to the Desk's survey of primary dealers assigned a roughly 50 percent probability to this possibility, with a wide dispersion across respondents. However, other factors also appeared to help push long-term yields lower, including increased concerns about the economy and the conditions of financial institutions, investor expectations that short-term rates will remain low for longer than previously anticipated, and greater hedging demand generated by lower mortgage rates. Working in the opposite direction, particularly toward the end of the intermeeting period, expectations for increased Treasury issuance to finance larger-than-previously-expected deficits as well as the new Administration's economic stimulus plan pushed up yields.

(19) Yields on inflation-indexed Treasury securities dropped sharply over the intermeeting period and inflation compensation over the next five years (carry adjusted) increased about 115 basis points to -0.24 percent, while inflation compensation five- to ten-years ahead rose modestly on net to 2.62 percent. A good amount of the increase in the five-year measure appeared to reflect improved trading conditions in the TIPS market, as a well-received auction of ten-year inflation-indexed Treasury securities reportedly reduced concerns about the liquidity of such securities and thus led investors to accept a smaller premium to hold them. Nonetheless, comparable measures of inflation compensation obtained from inflation swaps moved higher over the intermeeting period. Liquidity in both the TIPS and inflation swaps market remained quite poor and readings of inflation compensation from these

markets may not provide accurate readings of inflation expectations and inflation risk. According to the Michigan household survey, near-term inflation expectations remained fairly low, consistent with continued low oil prices. However, long-term inflation expectations have been rather volatile, rising in mid-January to a relatively high level of 3 percent after reaching a multi-year low in December.

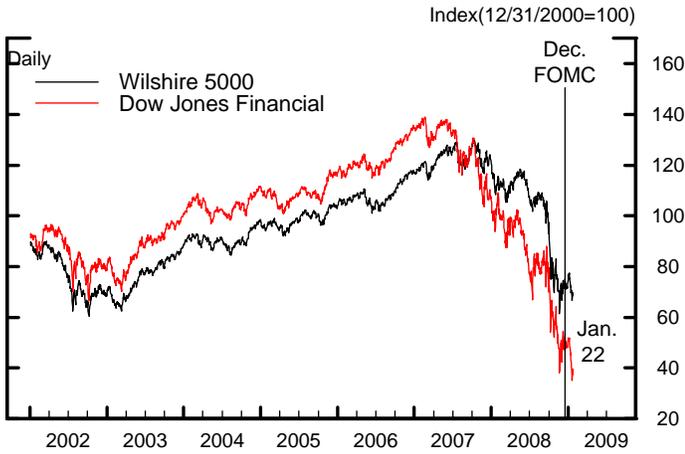
Capital Markets

(20) Investors' concerns about the financial sector and the possibility of a deep and prolonged recession weighed on equity prices. On net, broad equity indexes declined $3\frac{3}{4}$ to $4\frac{3}{4}$ percent over the period and financial shares substantially underperformed (Chart 4). Even though analysts anticipated substantial declines in corporate profits in the fourth quarter in both the financial and nonfinancial sectors, the initial corporate financial reports for the quarter generally were below expectations. The spread between the twelve-month forward trend earnings-price ratio for the S&P 500 firms and the long-term Treasury yield—a rough gauge of the equity risk premium—declined modestly but remained exceptionally elevated. Option-implied volatility of the S&P 500 declined over much of the period; however, it began to rise again later in the period and it generally stayed in the upper end of its historical range.

(21) In the corporate bond market, spreads on BBB-rated and speculative-grade bonds relative to Treasuries declined markedly over the intermeeting period, although they stayed extremely elevated. According to CDX indexes, risk spreads on investment-grade corporate bonds also declined over the intermeeting period. Gross issuance of bonds by investment-grade nonfinancial corporations remained fairly solid, while issuance by speculative-grade firms continued to be limited. Issuance of leveraged syndicated loans was extraordinarily weak in the fourth quarter, down about 97 percent from the year-earlier quarter.

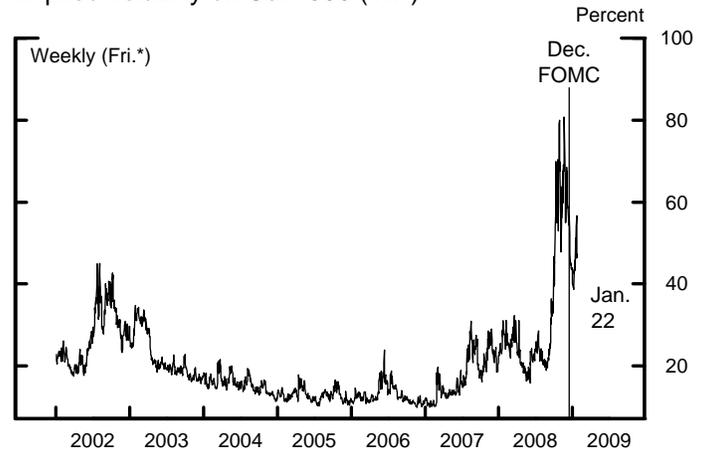
Chart 4 Asset Market Developments

Equity prices



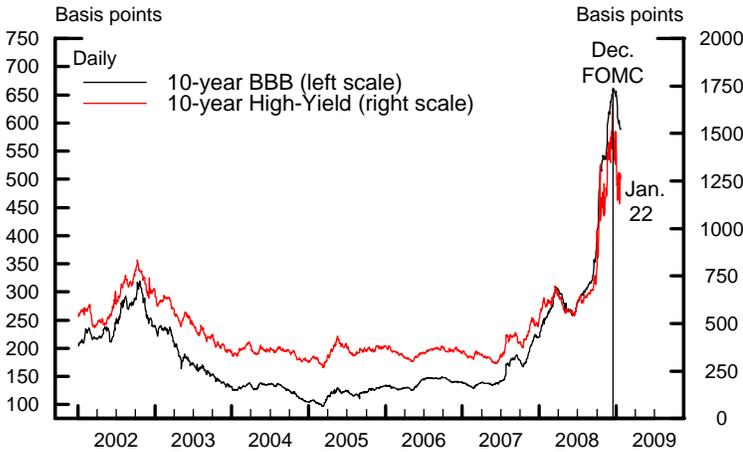
Source. Bloomberg.

Implied volatility on S&P 500 (VIX)



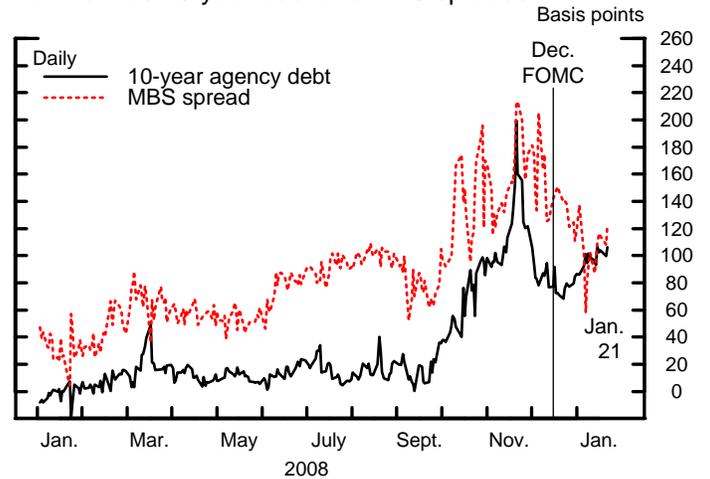
*Latest observation is for most recent business day.
Source. Chicago Board of Exchange.

Corporate bond spreads*



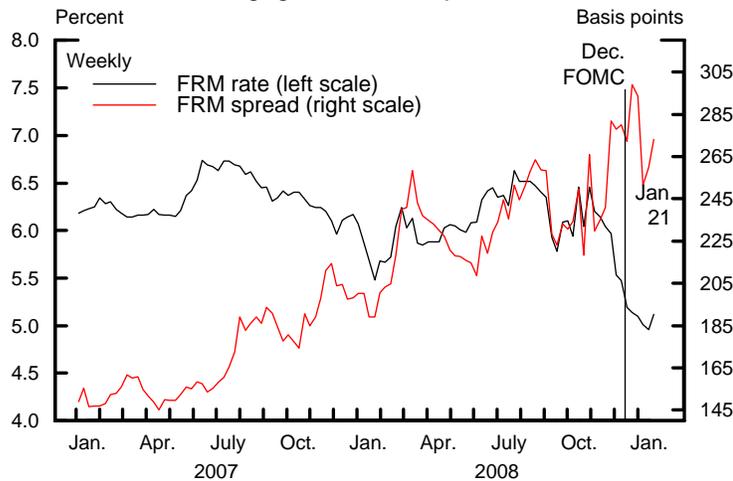
*Measured relative to an estimated off-the-run Treasury yield curve.
Source. Merrill Lynch and Board staff estimates.

Fannie Mae 10-year debt and MBS spreads



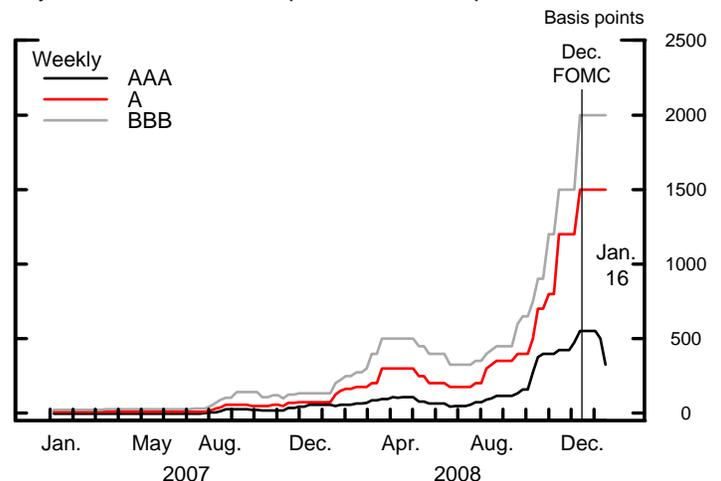
Note. Spreads over swaps of comparable maturity.
Source. Bloomberg.

Residential mortgage rates and spreads



Note. FRM spread is relative to 10-year Treasury.
Source. Freddie Mac.

2-year credit card ABS spreads over swaps



Source. Citigroup.

(22) The Federal Reserve programs to purchase the debt of the housing-related government-sponsored enterprises (GSEs) and agency-backed MBS got fully under way in the intermeeting period. The Federal Reserve purchased \$11.9 billion (par value) of agency debt during the intermeeting period; since the program began operating on December 5, the Federal Reserve has purchased \$19.9 billion of agency debt (all numbers through January 21). Even with these purchases, spreads on agency debt over swaps rose on net over the intermeeting period; nevertheless, they remain below levels seen prior to the program's announcement and initiation. The purchases also reportedly contributed to the market's generally receptive response to the renewal of debt issuance by the agencies. The Federal Reserve began the agency-backed MBS purchase program on January 5; through January 21, purchases have totalled about \$52.6 billion (current face value).⁴ Evidently in response to these purchases, the unadjusted spread on agency MBS over swaps rates dropped sharply immediately after the initial purchases; later in the period, spreads rose but were moderately lower on net over the intermeeting period. The interest rate on 30-year fixed-rate mortgages declined markedly over the intermeeting period to just above 5 percent. The spread between this mortgage rate and the 10-year Treasury yield also declined since the December FOMC meeting, but it stayed elevated relative to its range over the past year.

(23) The markets for asset-backed securities (ABS) remained very stressed as issuers awaited the beginning of operations of the Term Asset-Backed Security Loan Facility (TALF) in late February. Spreads for all types of ABS continued to be

⁴ This amount is the contracted amount of purchases. Because the MBS market can have significant delays to settlement and this program is in its early stages, the contracted amount of purchases is well above the level of MBS in the SOMA portfolio (\$6.0 billion, see footnote 4). Of the contracted purchases so far, almost 90 percent were for 30-year maturity MBS with most of the rest having 15-year maturity. The coupon on about 60 percent of these purchases was between 4 and 5 percent. About one-half of the purchased securities were backed by Freddie Mac, about one-third by Fannie Mae, and the remainder by Ginnie Mae.

extraordinarily high, although some spreads came off their highs late in the intermeeting period, reportedly owing in part to the passing of year-end, anticipation of the TALF, and the FDIC's proposed changes in the terms of the TLGP. There was no issuance of credit card and student loan ABS in the fourth quarter. During this period, credit cards were issued almost exclusively by depository institutions that obtained funds through programs such as the TLGP. Student loan ABS experienced significant downgrades in recent months; the Department of Education has become the primary backstop for the student loan market. Issuance of auto loan ABS increased modestly in December from paltry amounts in the previous two months, but remained unusually low and expensive. As stated earlier, the problems in this market contributed to the difficulties at GMAC that led it to become a bank holding company. Auto lenders, in particular, reportedly see the TALF as providing needed support to the market. Late in the period, reports indicated that issuers had begun preparatory work to issue TALF-eligible ABS.

(24) Issuance of long-term municipal bonds in the fourth quarter was somewhat below that of earlier in the year, and preliminary data suggest it has stepped down modestly so far in January. Even with the slower issuance, sentiment in the market improved some and yields on municipal bonds fell over the intermeeting period, both in absolute terms and relative to Treasury yields. Nevertheless, municipal bond yields remained unusually high relative to Treasury yields, consistent with reports indicating that the credit quality of municipal bonds deteriorated further over the intermeeting period.

Foreign Developments

(25) Although conditions in foreign financial markets were relatively stable over December, equity indexes fell sharply late in the intermeeting period as market participants' concern about the global economic outlook and prospects for corporate

earnings increased (Chart 5). The equity prices of European banks dropped following the announcement of very large prospective losses for the fourth quarter at the Royal Bank of Scotland and increased speculation that losses at other foreign banks would prove larger than previously anticipated. The United Kingdom authorities announced on January 19 a number of measures to address the financial crisis in that country.⁵ On net, equity indexes in Europe and Japan decreased 5 to 9 percent since the December Greenbook. Despite the declines in equity prices, credit availability in interbank and other wholesale markets appeared to increase modestly in the wake of a variety of government efforts over the past several months to support their financial systems. Libor-OIS spreads in euros and sterling declined over the period, although they were above the corresponding spreads in dollars, and bids fell in central bank dollar funding auctions.

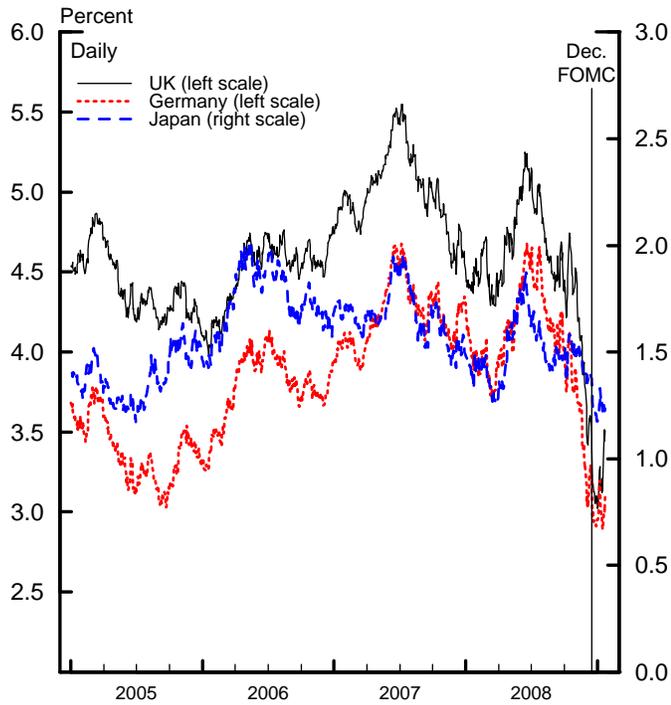
(26) In response to weaker-than-expected data on real activity and lower inflation pressures, central banks eased policy further during the intermeeting period. The Bank of England lowered its policy rate 50 basis points to a historical low of 1.5 percent, the Bank of Japan reduced its policy rate 20 basis points to a level of 10 basis points, the European Central Bank cut its base rate 50 basis points to 2 percent, and the Bank of Canada cut its policy rate 50 basis points to 1 percent. The Bank of Japan also moved to implement some nontraditional policy measures.⁶ Several central banks in emerging market economies also eased policy. Market participants expect that many foreign central banks will ease policy further in 2009. Long-term nominal sovereign bond yields in most major industrial countries declined during the

⁵ Notably, the United Kingdom authorities introduced an Asset Protection Scheme, in which the government would assume exposure to losses on some bank assets. For additional details on this and other measures by the governments in the United Kingdom and other countries, see the International Developments section of Greenbook Part II.

⁶ These measures include increased outright purchases of Japanese government bonds, the establishment of a commercial paper facility, and plans to examine the purchase of corporate bonds with less than one year remaining maturity.

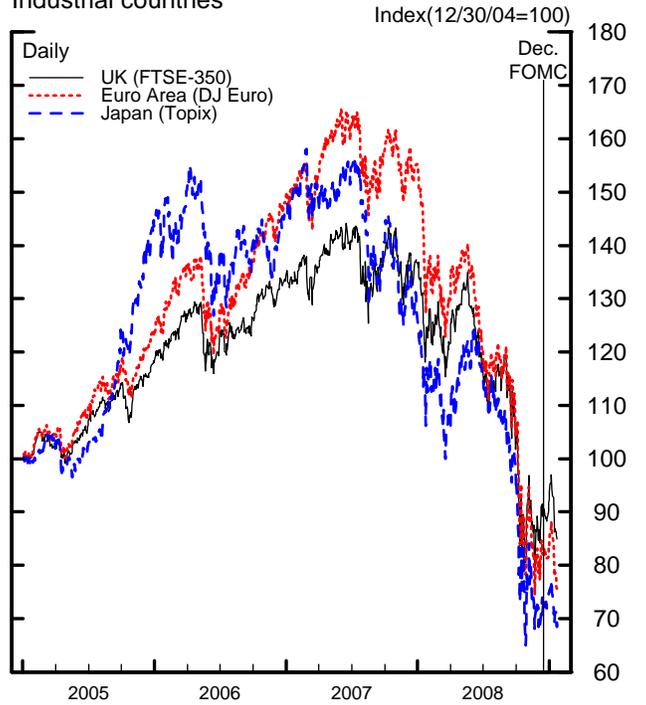
Chart 5 International Financial Indicators

Ten-year government bond yields (nominal)



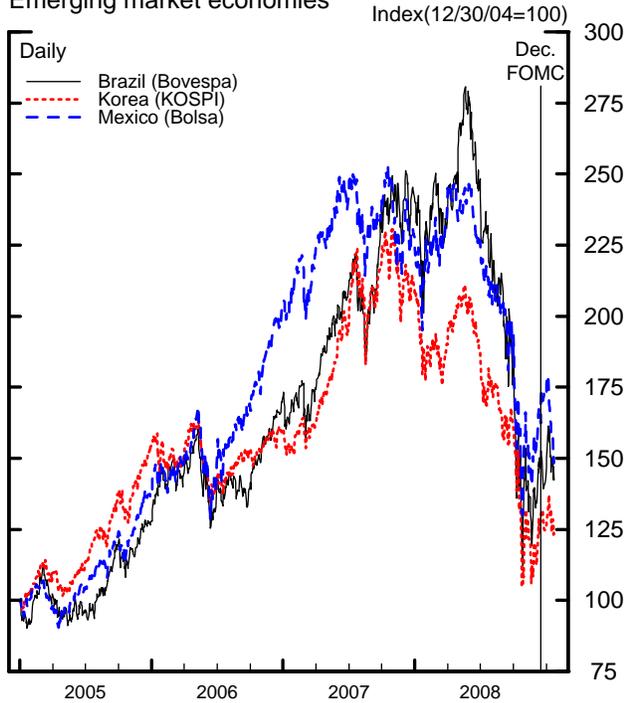
Source. Bloomberg.

Stock price indexes
Industrial countries



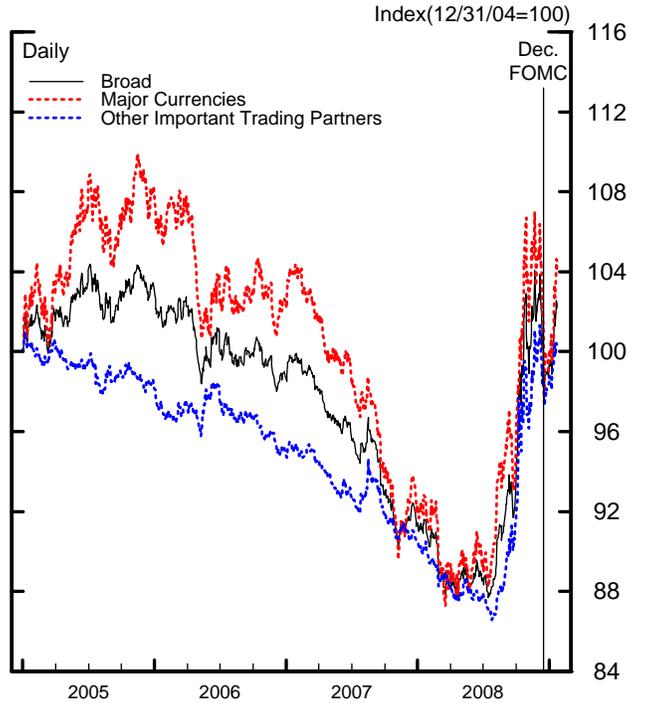
Source. Bloomberg.

Stock price indexes
Emerging market economies



Source. Bloomberg.

Nominal trade-weighted dollar indexes



Source. FRBNY and Bloomberg.

Note. Last daily observation is for January 22, 2009.

intermeeting period, consistent with the loosening of monetary policy and reduced inflation pressures.

(27) The dollar depreciated sharply in the aftermath of the December FOMC meeting and statement, but appreciated on balance over the period as a whole. The major currencies index of the dollar has increased about 3.1 percent on net since the December FOMC meeting, as appreciation versus the euro, the Canadian dollar, and sterling offset depreciation against the yen. Indications of lower inflation and weaker real activity in the euro area and the United Kingdom, which contributed to reductions in policy rates and lower policy expectations, were factors behind the appreciation of the dollar. The dollar index for other important trading partners increased about 1.6 percent, with the dollar changing little against the Chinese renminbi and most major Asian currencies, but appreciating against the Mexican peso.

Debt, Bank Credit, and Money

(28) The debt of the domestic nonfinancial sector expanded about 7³/₄ percent (annual rate) in the third quarter, somewhat faster than estimated in the previous Greenbook, and notably faster than in the first half of 2008 (Chart 6). The pickup in growth is the result of the surge in federal government borrowing related to the Supplementary Financing Program. Household debt contracted in the third quarter, reflecting a reduction in home mortgages in the weak housing market and minimal growth in consumer credit. Business sector debt growth moderated further in the quarter. The pattern of rapid debt growth in the federal government sector and essentially no debt growth on net for the rest of the domestic nonfinancial sector is estimated to have continued in the fourth quarter.

(29) Commercial bank credit fell about 13 percent at an annual rate in December, its second consecutive monthly decline. Commercial and industrial (C&I) loans contracted for a second consecutive month, reflecting a combination of tighter

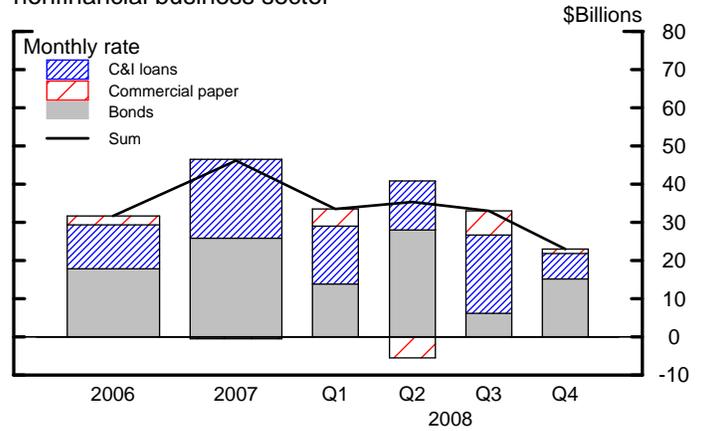
Chart 6 Debt and Money

Growth of debt of nonfinancial sectors

| Percent, s.a.a.r. | | | | |
|-------------------|-------|----------|-----------|------------|
| | Total | Business | Household | Government |
| 2007 | 8.6 | 13.1 | 6.8 | 6.1 |
| Q2 | 8.1 | 12.9 | 7.2 | 3.1 |
| Q3 | 9.1 | 14.3 | 6.1 | 7.8 |
| Q4 | 8.0 | 12.2 | 5.9 | 6.0 |
| 2008 | | | | |
| Q1 | 5.3 | 7.1 | 3.2 | 6.7 |
| Q2 | 3.1 | 5.5 | 0.6 | 4.4 |
| Q3 | 7.7 | 4.1 | -0.7 | 28.5 |
| Q4p | 6.4 | 2.8 | -2.7 | 27.0 |

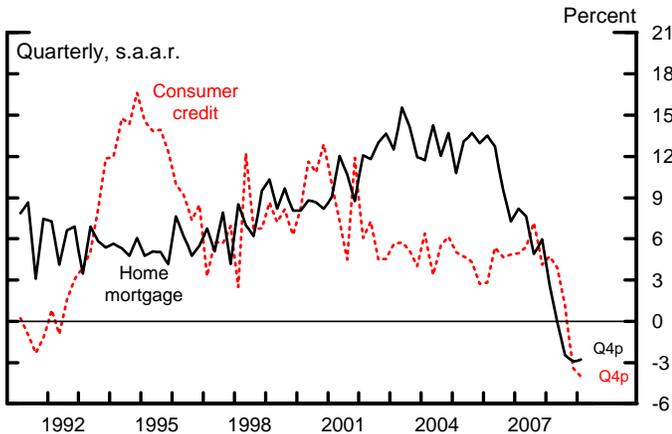
p Projected.
Source. Flow of Funds.

Changes in selected components of debt of nonfinancial business sector*



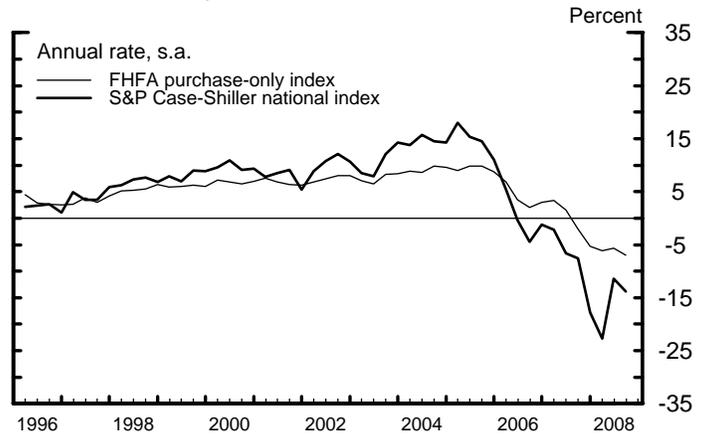
*Commercial paper and C&I loans are seasonally adjusted, bonds are not.
Source. Securities Data Company, Depository Trust & Clearing Corporation and Federal Reserve H.8 release.

Growth of debt of household sector



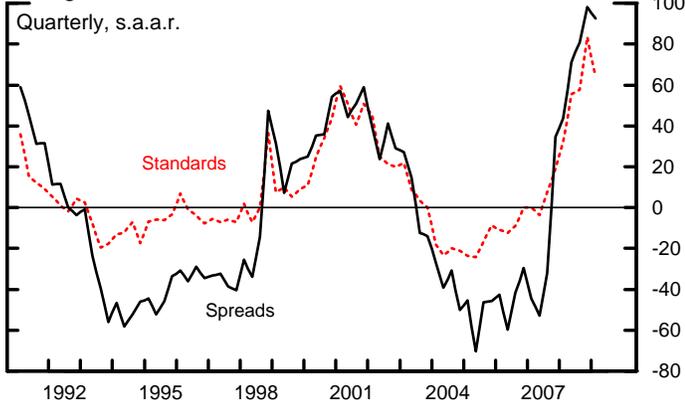
Source. Flow of Funds, Federal Reserve G.19 release.
p Projected.

Growth of house prices



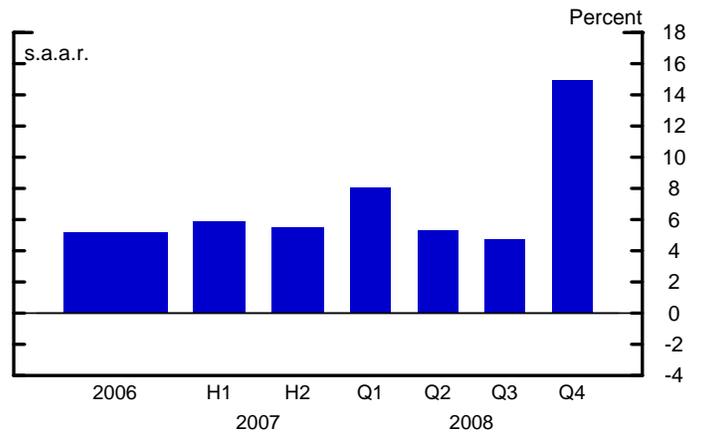
Source. Federal Housing Finance Agency (FHFA), Standard & Poor's.

Changes in Standards and Spreads on C&I Loans to large and medium-sized firms



Source. Senior Loan Officer Opinion Survey.

Growth of M2



Source. Federal Reserve.

credit supply and reduced loan demand. In contrast, commercial real estate loans retained on bank balance sheets continued to increase moderately; however, their growth reportedly has been inflated at some banks in recent months by the shutdown of the CMBS market. Loans to households also declined in December. Residential mortgage holdings at banks fell for the fourth consecutive month, in part because of renewed loan sales to the GSEs and writedowns of delinquent loans. Loans drawn under home equity lines of credit continued to rise robustly, partly reflecting attractive terms on existing lines. Consumer loans on banks' balance sheets increased solidly in December, although much of the increase probably is attributable to banks' inability to securitize such loans.

(30) The Senior Loan Officer Opinion Survey conducted in January indicated that banks continued to tighten credit standards and terms on all major loan categories over the past three months, although the net percentage of banks doing so generally declined somewhat from the record highs in the October survey. The fraction of banks reporting tighter lending standards fell the most for mortgage loans. All of the banks tightening lending standards and terms cited a weaker or more uncertain economic outlook as an important reason for the change in lending stance. In a set of special questions, notable fractions of respondents reported that they had reduced the size of credit lines for a wide range of existing business and household customers over the past three months. A majority of respondent banks also reported weaker demand for most types of loans, with the notable exception of residential mortgages to prime borrowers where only 10 percent of respondents, on net, reported weaker demand.

(31) M2 rose 27¼ percent at an annual rate in December, its fastest pace of growth since September 2001. Liquid deposits increased briskly, as both demand deposits and savings deposits surged, probably reflecting a reallocation of wealth toward assets that have government insurance or guarantees as backstops. Savings

deposits may also have been boosted by declining yields on retail money market funds. The strength in small time deposits persisted, likely owing to a number of commercial banks offering aggressive rates to build core deposits. Currency growth also remained strong as foreign demand for U.S. bank notes remained elevated. Retail money market funds increased modestly in December following a decline in November.

Economic Outlook

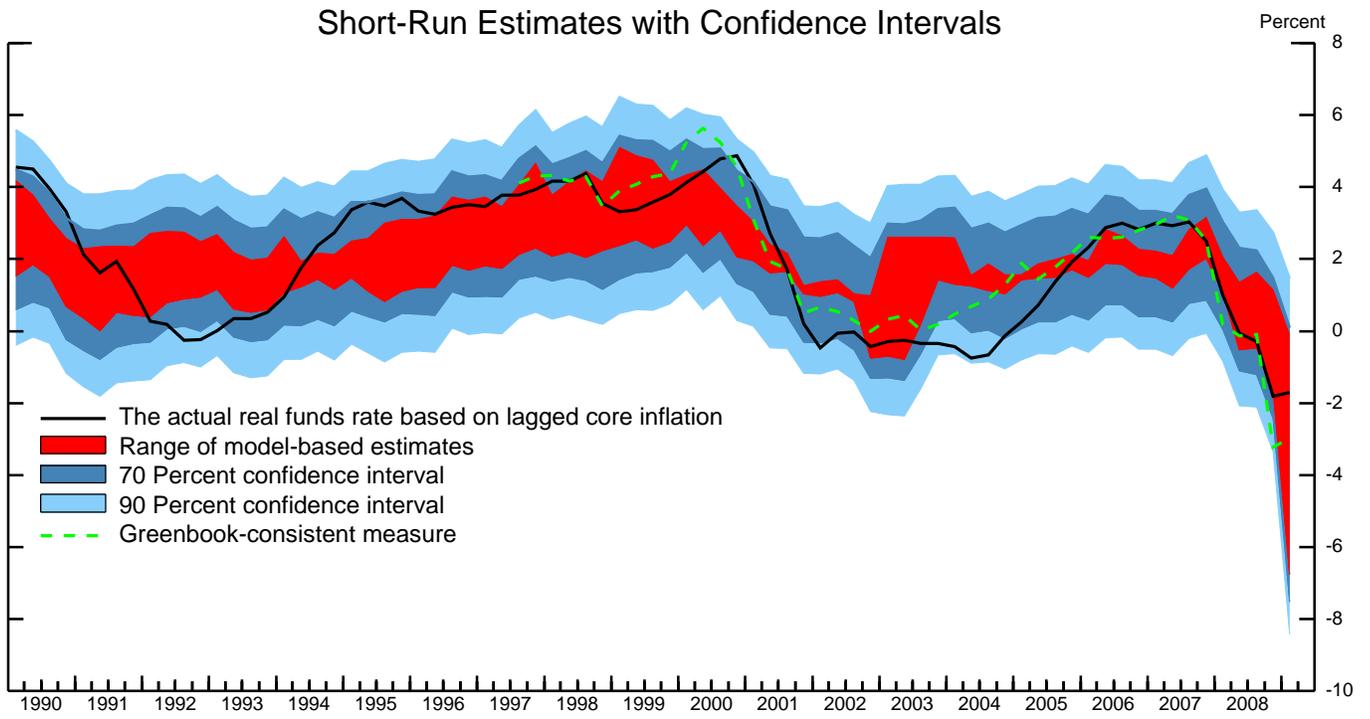
(32) Economic data received since the December Greenbook indicate that the economy remains in a severe and deepening recession. Housing starts, industrial production, and employment declined more than expected; real GDP is now estimated to have fallen at a 5 percent annual rate in the fourth quarter of last year. Meanwhile, price pressures have dropped sharply. In these circumstances, the staff assumes that the target range for the federal funds rate will remain 0 to ¼ percent through the end of the forecast period. Long-term Treasury yields are projected to drift up over the next two years from a level that is about 20 basis points lower than in December, reflecting an assumed waning of safe-haven demands as economic activity begins to improve later this year and as the ten-year window for the Treasury yield extends further beyond the period of very low short-term interest rates anticipated over the medium term. Mortgage rates declined roughly in line with Treasury yields over the intermeeting period, and they are expected to decline further, reflecting a gradual narrowing of the currently wide spread of mortgage rates over Treasury yields. Similarly, corporate bond spreads narrow and yields decline over the next two years as economic conditions eventually improve and risk aversion abates. Boosted by an assumed decline in the equity risk premium, equity prices rise at an annual rate of about 12 percent from a level that is around 4 percent lower than in the December projection. The real foreign exchange value of the dollar is roughly flat in 2009 and declines about 3 percent in 2010. Oil prices have dropped about \$5 per barrel since the December meeting, but they are projected to rise markedly over the forecast period, in line with futures quotes, to just under \$60 per barrel by the end of 2010, \$6 per barrel below their level in the previous forecast. The staff assumes that a large fiscal stimulus program, amounting to about \$800 billion over two years, will be approved by the Congress before the end of the current quarter. The assumed fiscal stimulus is about \$300 billion larger than in the December forecast.

(33) Against this backdrop, real GDP is projected to decline at a 5½ percent annual rate in the current quarter, slightly faster than in the previous Greenbook. GDP declines at a 1¼ percent rate in the second quarter. A modest rebound begins in the third quarter, with GDP rising at a 2 percent rate in the second half of 2009, roughly ¾ percentage point faster than in the December forecast. In 2010, GDP is projected to grow 2½ percent. The unemployment rate is anticipated to peak at 8½ percent by the beginning of 2010 before edging down to around 8 percent over the course of the year. The output gap exceeds 5 percent throughout the forecast period. This slack in resource utilization, combined with relatively flat prices of most commodities and imports, leads to a moderation of core PCE inflation from about 2 percent last year to 1 percent this year and ¾ percent next year. Overall PCE inflation is projected at about ½ percent in 2009 and 1 percent in 2010. These inflation projections are little changed from the December Greenbook.

Monetary Policy Strategies

(34) As indicated in Chart 7, the Greenbook-consistent measure of short-run r^* now stands at -3.0 percent, about 40 basis points above the level estimated at the time of the December Bluebook. This upward revision primarily reflects the larger fiscal stimulus package incorporated into the current staff forecast and the modest improvement in some financial markets over the intermeeting period. As in the previous Bluebook, model-based estimates of short-run r^* span a wide interval. The estimate from the small structural model now stands at -6.2 percent, about 50 basis points higher than in the last Bluebook; this revision mainly reflects the magnitude of the current quarter's fiscal expansion relative to what the model had previously projected. The estimate from the single-equation model—which does not incorporate any measures of financial stress or fiscal stimulus—remains very close to zero. Finally, the estimate from the FRB/US model is now -6.8 percent, about 50 basis

Chart 7
Equilibrium Real Federal Funds Rate



Short-Run and Medium-Run Measures

| | Current Estimate | <i>Previous Bluebook</i> |
|--|------------------|--------------------------|
| Short-Run Measures | | |
| Single-equation model | -0.1 | 0.0 |
| Small structural model | -6.2 | -6.7 |
| Large model (FRB/US) | -6.8 | -6.3 |
| Confidence intervals for three model-based estimates | | |
| 70 percent confidence interval | -7.5 - 0.1 | |
| 90 percent confidence interval | -8.4 - 1.5 | |
| Greenbook-consistent measure | -3.0 | -3.4 |
| Medium-Run Measures | | |
| Single-equation model | 1.7 | 1.7 |
| Small structural model | 0.7 | 1.2 |
| Confidence intervals for two model-based estimates | | |
| 70 percent confidence interval | 0.2 - 2.4 | |
| 90 percent confidence interval | -0.3 - 3.2 | |
| TIPS-based factor model | 2.0 | 2.0 |
| Memo | | |
| Actual real federal funds rate | -1.7 | -1.0 |

Note: Appendix A provides background information regarding the construction of these measures and confidence intervals. The actual real federal funds rate shown is based on lagged core inflation as a proxy for inflation expectation. For information regarding alternative measures, see Appendix A.

points lower than in December; this revision mainly reflects the less favorable conditions in the stock market over the intermeeting period. All of the measures of short-run r^* except the single-equation estimate are well below the current level of the actual real federal funds rate.

(35) Chart 8 depicts optimal control simulations of the FRB/US model using the long-run staff forecast.⁷ For an inflation goal of either 1½ percent or 2 percent (left-hand and right-hand sets of charts, respectively), the optimal control simulations prescribe a trajectory for the nominal federal funds rate that stays at or close to the lower bound from now through 2013.⁸ Under either inflation goal, the unemployment rate rises for the current year to about 8½ percent and remains above the NAIRU through 2012; this path is similar to the one shown in the December Bluebook. Core inflation in 2009 is a bit lower than in the previous Bluebook, reflecting in part surprisingly low recent readings on consumer prices; however, inflation in 2010 and beyond is little changed from the previous Bluebook and runs somewhat below 1 percent.

(36) The optimal policy simulations assume that the Federal Reserve does not undertake additional liquidity and credit actions beyond those already incorporated in the staff's baseline projection. However, further economic stimulus could be provided by the implementation of nontraditional policy actions beyond those already announced, such as purchases of \$500 billion in long-term Treasury securities and the \$500 billion increase in purchases of agency MBS contemplated in the Greenbook alternative scenario, "Large-scale Asset Purchases." In this scenario, these actions are

⁷ In these simulations, policymakers place equal weight on keeping core PCE inflation close to a specified goal, on keeping unemployment close to the NAIRU, and on avoiding changes in the nominal federal funds rate.

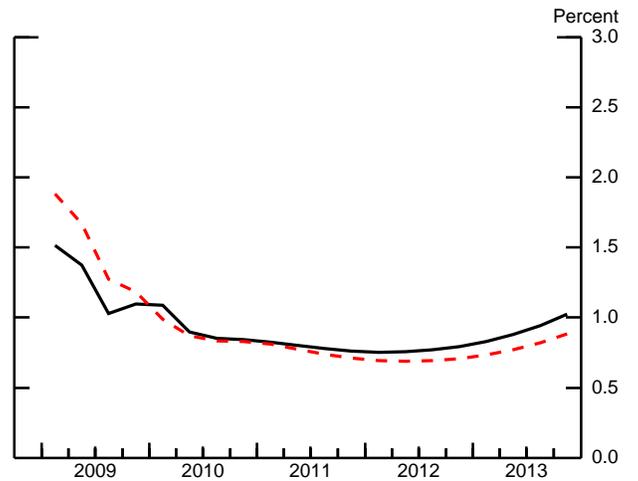
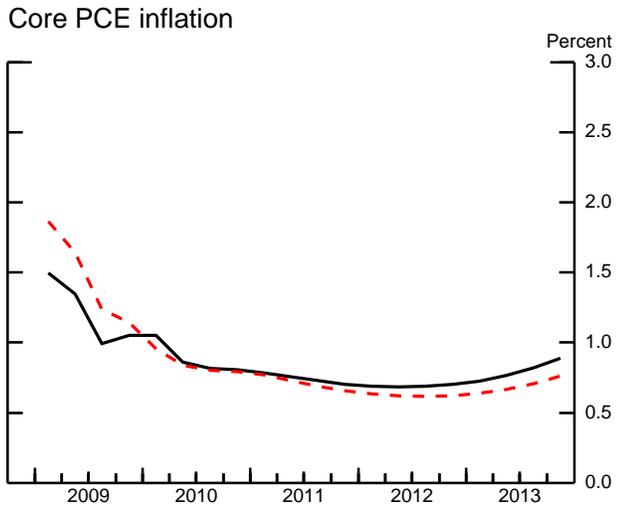
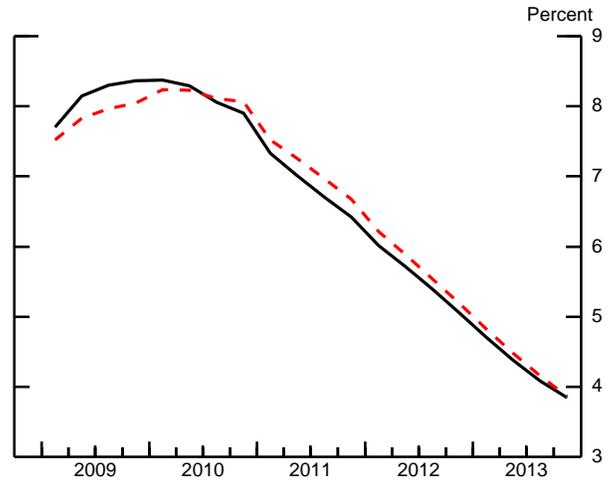
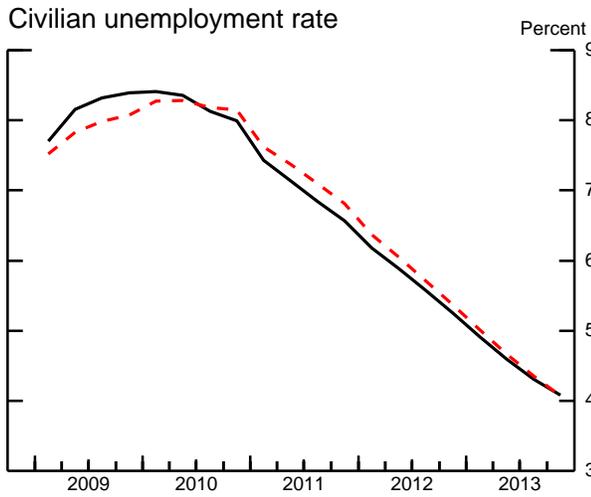
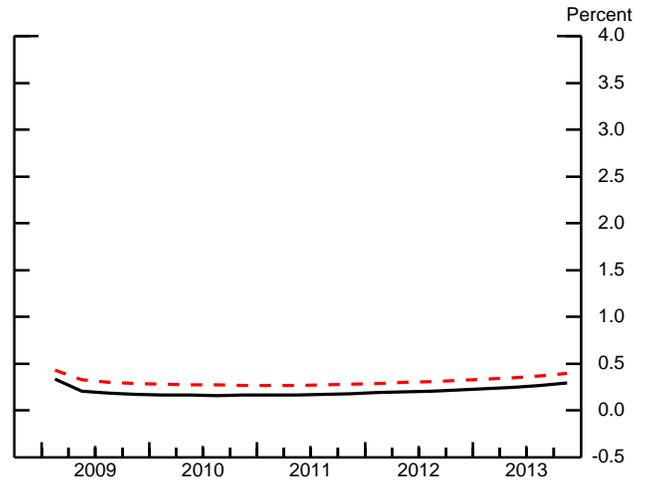
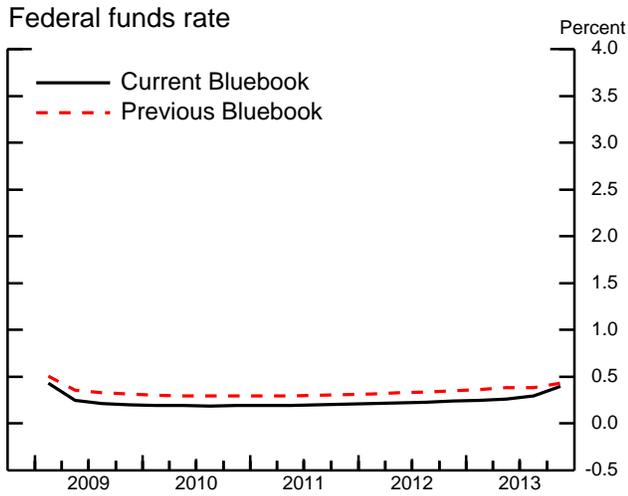
⁸ These simulations, as well as the prescriptions of the policy rules shown in Chart 9, now impose a lower bound for the policy rate of 12.5 basis points, the midpoint of the FOMC's current target range of 0 to ¼ percent. This value for the lower bound differs slightly from that in the previous Bluebook, where it was set at 25 basis points.

Chart 8

Optimal Policy Under Alternative Inflation Goals

1½ Percent Inflation Goal

2 Percent Inflation Goal



assumed to induce reductions in long-term interest rates and changes in other financial conditions that significantly boost consumption and investment.⁹ As a result, real GDP in 2011 rises a percentage point faster than in the baseline, while core PCE inflation settles in at a rate of about 1 percent over the next several years, about a quarter percentage point higher than in the baseline.¹⁰

(37) As depicted in Chart 9, the outcome-based policy rule prescribes a funds rate that stays at the lower bound through 2011 before steadily rising to about 3 percent by the end of 2013. In contrast, the trajectory of the funds rate consistent with financial market quotes is within the current target range only through the third quarter of this year before rising slowly, passing $\frac{1}{2}$ percent by the beginning of 2010 and reaching a plateau of about 2 percent starting in 2012.¹¹ As can be seen by the confidence intervals in these two panels, investors appear to assign a lower probability to the federal funds rate rising above 1 percent by the end of 2009 than is suggested by FRB/US simulations under the outcome-based rule. As shown in the bottom panel of Chart 9, the near-term prescriptions from both the Taylor (1999) rule and the first-difference rule have now fallen to the effective lower bound, reflecting the current weakness of both economic activity and inflation. By contrast, the policy path

⁹ A similar exercise was presented in the December Bluebook Box “Implications of Unconventional Policies for Optimal Monetary Policy” reflecting part of Note 21 included in the material on the zero bound that was sent to the Committee on December 5.

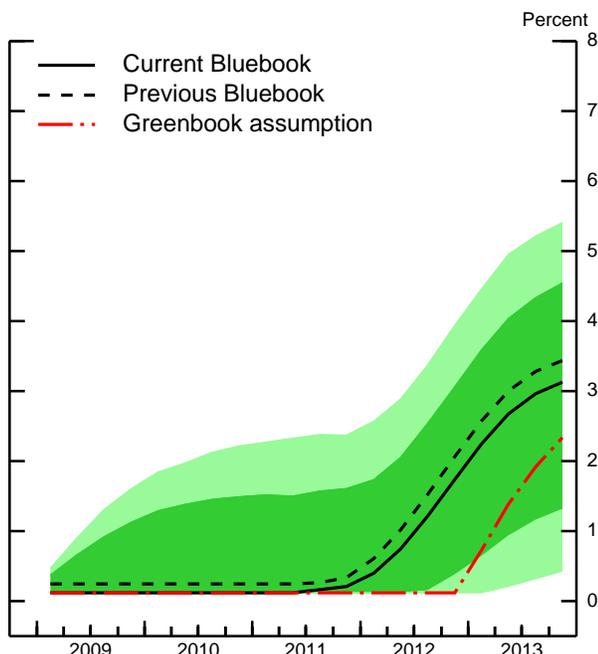
¹⁰ In the simulation, long-run inflation expectations respond to actual inflation and to any unexpected movements in the federal funds rate, but not to the asset purchases. If wage and price setters took some signal for the likely long-run trend in inflation from the asset purchases as well, then actual inflation would decline even less.

¹¹ The confidence intervals shown in the top right panel of Chart 9 are computed from interest rate caps and basis swaps with adjustments for term premiums. The effects of alternative assumptions about term premiums on measures of expectations of future federal funds rates are presented in the Bluebook Box “Gauging Investor Expectations for Future Interest Rate Policy.”

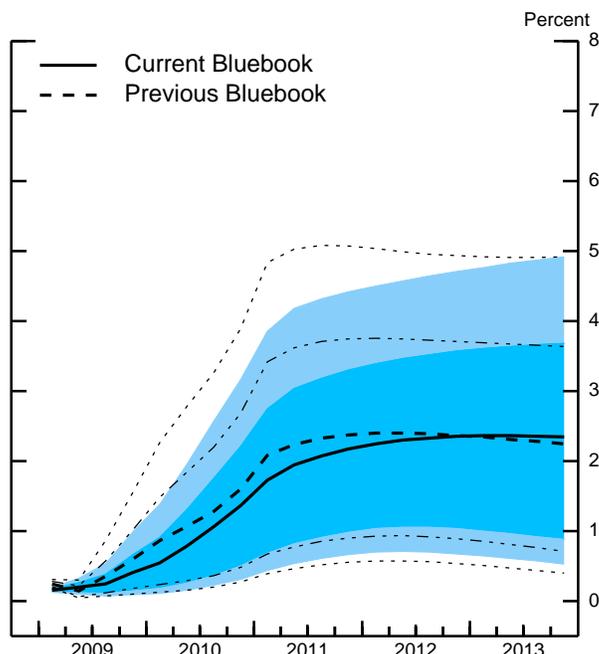
Chart 9

The Policy Outlook in an Uncertain Environment

FRB/US Model Simulations of Estimated Outcome-Based Rule



Information from Financial Markets



Note: In both panels, the dark and light shading represent the 70 and 90 percent confidence intervals respectively. In the right hand panel, the thin dotted lines represent the confidence intervals shown in the previous Bluebook.

Near-Term Prescriptions of Simple Policy Rules

| | 1½ Percent Inflation Objective | | 2 Percent Inflation Objective | |
|---------------------------------------|--------------------------------|---------------|-------------------------------|-------------|
| | 2009Q1 | 2009Q2 | 2009Q1 | 2009Q2 |
| | Taylor (1993) rule | 0.95 | 0.30 | 0.70 |
| <i>Previous Bluebook</i> | 1.65 | 0.90 | 1.40 | 0.65 |
| Taylor (1999) rule | 0.13 | 0.13 | 0.13 | 0.13 |
| <i>Previous Bluebook</i> | 0.25 | 0.25 | 0.25 | 0.25 |
| First-difference rule | 0.13 | 0.13 | 0.13 | 0.13 |
| <i>Previous Bluebook</i> | 0.25 | 0.25 | 0.25 | 0.25 |
| Memo | | | | |
| | | <u>2009Q1</u> | <u>2009Q2</u> | |
| Estimated outcome-based rule | | 0.13 | 0.13 | |
| Estimated forecast-based rule | | 0.13 | 0.13 | |
| Greenbook assumption | | 0.13 | 0.13 | |
| Fed funds futures | | 0.19 | 0.23 | |
| Median expectation of primary dealers | | 0.13 | 0.13 | |

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

prescribed by the Taylor (1993) rule—which is less sensitive to the current output gap—does not reach the lower bound until next quarter.

Policy Alternatives

(38) This Bluebook presents three alternatives for the Committee's consideration, summarized by the draft statements on the following pages. All three alternatives maintain the target range for the federal funds rate at 0 to $\frac{1}{4}$ percent and indicate, as in the December statement, that the funds rate is likely to remain exceptionally low for some time. All three alternatives again state that the primary focus of the Committee's policy is to support the functioning of financial markets and stimulate the economy through open market operations and other measures that are likely to keep the size of the Federal Reserve's balance sheet at a high level, and they all mention the imminent implementation of the Term Asset-Backed Securities Loan Facility (TALF) as one example of such policies. All of the alternatives indicate that "The Committee will continue to monitor carefully the size and composition of the Federal Reserve's balance sheet in light of evolving financial market developments."

(39) The description of the economic outlook in Alternative A highlights the weaker-than-expected incoming data, and Alternatives A and B note that global demand is slowing significantly. Alternatives B and C state that the economic outlook "remains weak." Alternative A announces either a \$250 billion increase in the Federal Reserve's commitment to purchase mortgage-backed securities or the establishment of a program to purchase \$250 billion of longer-term Treasury securities. Alternative A also highlights the risk that inflation could persist below levels consistent with the dual objectives of monetary policy; this language might help underscore the Committee's intent not to allow inflation to remain below its optimal level in the long run and thus may help prevent an unwanted further decline in expectations of long-run inflation. This sentence also may be seen as signaling that the Committee would adopt further stimulative measures should inflation continue to decline significantly. Alternative B states that the Committee is prepared to purchase longer-term Treasury securities or to increase purchases of mortgage-backed securities, but makes no

specific commitment on the timing or amount of such purchases. Alternatives A and B state that the Committee will continue to “assess whether expansions of or modifications to lending facilities would serve to further support credit markets and economic activity.” Alternative C omits all mention of possible increases in open market purchases or liquidity programs other than the TALF.

December FOMC Statement

The Federal Open Market Committee decided today to establish a target range for the federal funds rate of 0 to 1/4 percent.

Since the Committee's last meeting, labor market conditions have deteriorated, and the available data indicate that consumer spending, business investment, and industrial production have declined. Financial markets remain quite strained and credit conditions tight. Overall, the outlook for economic activity has weakened further.

Meanwhile, inflationary pressures have diminished appreciably. In light of the declines in the prices of energy and other commodities and the weaker prospects for economic activity, the Committee expects inflation to moderate further in coming quarters.

The Federal Reserve will employ all available tools to promote the resumption of sustainable economic growth and to preserve price stability. In particular, the Committee anticipates that weak economic conditions are likely to warrant exceptionally low levels of the federal funds rate for some time.

The focus of the Committee's policy going forward will be to support the functioning of financial markets and stimulate the economy through open market operations and other measures that sustain the size of the Federal Reserve's balance sheet at a high level. As previously announced, over the next few quarters the Federal Reserve will purchase large quantities of agency debt and mortgage-backed securities to provide support to the mortgage and housing markets, and it stands ready to expand its purchases of agency debt and mortgage-backed securities as conditions warrant. The Committee is also evaluating the potential benefits of purchasing longer-term Treasury securities. Early next year, the Federal Reserve will also implement the Term Asset-Backed Securities Loan Facility to facilitate the extension of credit to households and small businesses. The Federal Reserve will continue to consider ways of using its balance sheet to further support credit markets and economic activity.

Alternative A

1. The Federal Open Market Committee decided today to keep its target range for the federal funds rate at 0 to 1/4 percent. The Committee continues to anticipate that economic conditions are likely to warrant exceptionally low levels of the federal funds rate for some time.
2. Information received since the Committee met in December suggests that the economy has weakened somewhat more than anticipated. Industrial production, housing starts, and employment have declined steeply, as consumers and businesses have cut back spending. Furthermore, global demand appears to be slowing significantly. Conditions in some financial markets have improved, in part reflecting government efforts to provide liquidity and strengthen financial institutions; nevertheless, credit conditions for households and firms remain extremely tight. The Committee anticipates that a gradual recovery in economic activity will begin later this year, but the downside risks to that outlook are sizable.
3. In light of the declines in the prices of energy and other commodities in recent months and the prospects for an extended period of economic slack, the Committee expects that inflation pressures will remain subdued. Moreover, the Committee sees some risk that inflation could persist for a time below rates that best foster economic growth and price stability in the longer term.
4. The Federal Reserve will employ all available tools to promote the resumption of sustainable economic growth and to preserve price stability. The focus of the Committee's policy is to support the functioning of financial markets and stimulate the economy through open market operations and other measures that are likely to keep the size of the Federal Reserve's balance sheet at a high level.

[Alt. 1: To provide further support to activity in housing markets, the Committee decided to expand its purchases of agency mortgage-backed securities to \$750 billion this year from its previously announced total of \$500 billion. The Committee anticipates completing these purchases by the end of the third quarter. The Committee also is prepared to purchase longer-term Treasury securities as needed to improve overall financial conditions.]

[Alt. 2: To help improve overall financial conditions, the Committee decided to purchase up to \$250 billion of longer-term Treasury securities this year. The Federal Reserve continues to purchase large quantities of agency debt and mortgage-backed securities to provide support to the mortgage and housing markets, and it stands ready to expand such purchases as conditions warrant.]

Next month, the Federal Reserve will implement the Term Asset-Backed Securities Loan Facility to facilitate the extension of credit to households and small businesses. The Committee will continue to monitor carefully the size and composition of the Federal Reserve's balance sheet in light of evolving financial market developments and to assess whether expansions of or modifications to lending facilities would serve to further support credit markets and economic activity.

Alternative B

1. The Federal Open Market Committee decided today to keep its target range for the federal funds rate at 0 to 1/4 percent. The Committee continues to anticipate that economic conditions are likely to warrant exceptionally low levels of the federal funds rate for some time.
2. Information received since the Committee met in December suggests that the outlook for the economy remains weak. Industrial production, housing starts, and employment have continued to decline steeply, as consumers and businesses have cut back spending. Furthermore, global demand appears to be slowing significantly. Conditions in some financial markets have improved, in part reflecting government efforts to provide liquidity and strengthen financial institutions; nevertheless, credit conditions for households and firms remain extremely tight. The Committee anticipates that a gradual recovery in economic activity will begin later this year, but the downside risks to that outlook are significant.
3. In light of the declines in the prices of energy and other commodities in recent months and the prospects for considerable economic slack, the Committee expects that inflation pressures will remain subdued in coming quarters.
4. The Federal Reserve will employ all available tools to promote the resumption of sustainable economic growth and to preserve price stability. The focus of the Committee's policy is to support the functioning of financial markets and stimulate the economy through open market operations and other measures that are likely to keep the size of the Federal Reserve's balance sheet at a high level. The Federal Reserve continues to purchase large quantities of agency debt and mortgage-backed securities to provide support to the mortgage and housing markets, and it stands ready to expand such purchases as conditions warrant. The Committee also is prepared to purchase longer-term Treasury securities as needed to improve conditions in private credit markets. Next month, the Federal Reserve will implement the Term Asset-Backed Securities Loan Facility to facilitate the extension of credit to households and small businesses. The Committee will continue to monitor carefully the size and composition of the Federal Reserve's balance sheet in light of evolving financial market developments and to assess whether expansions of or modifications to lending facilities would serve to further support credit markets and economic activity.

Alternative C

1. The Federal Open Market Committee decided today to keep its target range for the federal funds rate at 0 to 1/4 percent. The Committee continues to anticipate that economic conditions are likely to warrant exceptionally low levels of the federal funds rate for some time.
2. Information received since the Committee met in December suggests that the outlook for the economy remains weak. Industrial production, housing starts, and employment have continued to decline steeply, as consumers and businesses have cut back spending. Conditions in some financial markets have improved, in part reflecting government efforts to provide liquidity and strengthen financial institutions; nevertheless, credit conditions for households and firms remain tight. The Committee anticipates that a recovery in economic activity will begin later this year, supported in part by additional fiscal measures and the monetary and liquidity policies already in place.
3. The declines in the prices of energy and other commodities in recent months have significantly reduced overall price inflation. With economic slack likely to persist, the Committee expects that both overall and core consumer price inflation will remain low.
4. The Federal Reserve will employ all available tools to promote the resumption of sustainable economic growth and to preserve price stability. The focus of the Committee's policy is to support the functioning of financial markets and stimulate the economy through open market operations and other measures that are likely to keep the size of the Federal Reserve's balance sheet at a high level. The Federal Reserve continues to purchase large quantities of agency debt and mortgage-backed securities to provide support to the mortgage and housing markets. Next month, the Federal Reserve will implement the Term Asset-Backed Securities Loan Facility to facilitate the extension of credit to households and small businesses. The Committee will continue to monitor carefully the size and composition of the Federal Reserve's balance sheet in light of evolving financial market developments.

(40) If the Committee agrees that current economic conditions are very weak but suspects that there is a significant possibility that policy actions already announced or likely to be adopted will have a larger effect on economic activity than is assumed in the staff's forecast, it may wish to choose **Alternative B**. In many ways, the current circumstances are unprecedented, and we lack reliable metrics for gauging the effectiveness of nontraditional policies. In light of the aggressive monetary actions already taken or announced and the large fiscal package likely to be passed, members may believe that it is prudent at this stage to wait and assess further developments before committing the Federal Reserve to any additional actions. In particular, members may wish to observe the market reaction to the implementation of the TALF, planned for next month. Moreover, the incoming administration may move rapidly to ramp up efforts to deal with the financial crisis, and the Committee will be better placed to assess these efforts in a few weeks. Alternatively, members may be concerned about the challenges of exiting from measures already adopted, and thus may wish to be quite cautious in implementing further liquidity programs. At the same time, given that the forecasts of the staff and most private analysts imply that additional macroeconomic stimulus would be desirable, the Committee may not want to signal a halt to further monetary actions. Alternative B states that additional actions will be taken as needed, and so would allow the Committee to introduce new policies quickly if it concluded that they were appropriate.

(41) If the Committee shares the staff's assessment that policies already announced or expected will not suffice to prevent considerable economic slack and a heightened risk of deflation, and if it believes that additional policy measures could help to improve the economic outlook, it may opt for **Alternative A**. The output gap in the Greenbook remains larger than 5 percent over the next two years and core inflation falls below 1 percent, which is lower than the rates of inflation that most

FOMC participants would view as consistent with the Federal Reserve's dual mandate. Most private-sector analysts have marked up their forecasts for the unemployment rate in 2009 and 2010 to levels about the same as projected by the staff, and they forecast relatively low rates of inflation, albeit not as low as the staff. Even if members have a less gloomy outlook for the economy, they may view the downside risks to this outlook as unusually large and thus may wish to take out "insurance" against an unwelcome further weakening in growth or drop in inflation. The significant decline in long-term interest rates, including conventional mortgage rates, since the Federal Reserve announced plans to purchase agency debt and MBS may give policymakers confidence that nontraditional policies can provide significant economic stimulus. As a result, the Committee may conclude that an expansion of these purchases would likely lead to further reductions in rates and increases in mortgage availability. Or, if the level of long-term interest rates is seen as higher than is consistent with a rapid economic recovery, the Committee may wish to engage in large-scale purchases of long-term Treasury securities. By lowering the general level of long-term interest rates, either of these options could support business and household spending.

(42) If the Committee has a relatively optimistic view of the underlying economic situation and outlook, it may be inclined to favor **Alternative C**. Members may anticipate a more rapid unwinding of financial strains than assumed by the staff, leading to a more pronounced rebound in activity (as in the "Faster Recovery" alternative scenario in the Greenbook). Such an outcome might be the result of a new and aggressive approach by the incoming administration to the ongoing financial crisis. Alternatively, members may believe that the monetary policies and liquidity facilities that already have been implemented or announced will provide greater stimulus to economic activity than is built into the staff forecast. Similarly, the Committee may have a larger estimate of the fiscal multiplier than that assumed by the

staff in its analysis of the likely effects of the fiscal stimulus package. Finally, as in Alternative B, the Committee may be concerned that exiting from the existing facilities could prove challenging and prefer not to take the risk of adding to such difficulties. Indeed, if the public came to view the expansion of the Federal Reserve balance sheet as implying a permanent increase in the monetary base, inflation expectations could increase, and inflation risk premiums in financial assets might rise in a destabilizing manner. The language in Alternative C makes clear that existing Federal Reserve policies and programs are viewed by the Committee as helpful, but it does not hint at any expansion of existing programs or the introduction of new programs.

(43) Based on interest rate futures contracts and on the Desk's survey of dealers, market participants attach virtually no probability to a change in the target range for the federal funds rate at this meeting. Dealers generally expect the statement to continue to refer to the funds rate remaining low for some time and to focus on the Federal Reserve's nontraditional policy tools. On average, dealers place the odds of large-scale Federal Reserve purchases of long-term Treasury securities at about 50 percent, with no time horizon specified for the onset of such purchases. Although market expectations for the statement overall are difficult to judge, the message of Alternative B seems most consistent with current market views.

Money and Debt Forecasts

(44) Bank credit is forecasted to grow at a sluggish 2¼ percent pace in 2009. Relatively tight credit standards and terms and weak loan demand are expected to persist, and each category of core loans on banks' books—commercial and industrial, real estate, and consumer—are projected to be nearly flat. In contrast, securities holdings are expected to expand moderately this year, as banks continue to park deposits and other sources of funds in safe and liquid investments. In 2010, when

GDP growth is projected to pick up and the effect of tighter lending standards and terms wanes, bank credit grows around 5 percent, mainly owing to increases in real estate and consumer loans as well as continued expansion of securities.

(45) Amid sharply curtailed credit availability, household debt is expected to decline about 1 percent in 2009 and to rise at a modest pace in 2010 as credit constraints ease only gradually. Even though overall credit conditions are expected to improve over time, nonfinancial business debt will likely expand at a weak pace next year and in 2010, as capital spending remains sluggish. Federal debt, which surged in the second half of 2008 because of government programs aimed at ameliorating financial market strains, is anticipated to continue to grow at a rapid pace throughout the forecast period, reflecting the fiscal package and continued outlays to support financial institutions and markets. Overall, total domestic nonfinancial debt is projected to expand 5 percent in 2009 and 4³/₄ percent in 2010.

(46) M2 is projected to grow at a 3 percent annual rate this year, somewhat faster than the projected growth rate of nominal GDP, reflecting the lagged effects of recent declines in the opportunity cost of holding M2 assets. In 2010, money growth is expected to align roughly with growth in nominal GDP as these lagged effects subside.

Table 1
Growth Rates for M2
(percent, annual rate)

| | | Greenbook Forecast* |
|------------------------|---------|------------------------|
| Monthly Growth Rates | | |
| | Jul-08 | 7.9 |
| | Aug-08 | -1.8 |
| | Sep-08 | 17.0 |
| | Oct-08 | 18.5 |
| | Nov-08 | 8.6 |
| | Dec-08 | 27.3 |
| | Jan-09 | 11.1 |
| | Feb-09 | 4.9 |
| | Mar-09 | 1.0 |
| | Apr-09 | 0.9 |
| | May-09 | 0.0 |
| | Jun-09 | 0.0 |
| | Jul-09 | -2.0 |
| | Aug-09 | -3.0 |
| | Sep-09 | 0.0 |
| | Oct-09 | 1.0 |
| | Nov-09 | 2.0 |
| | Dec-09 | 3.2 |
| Quarterly Growth Rates | | |
| | 2008 Q3 | 4.8 |
| | 2008 Q4 | 14.9 |
| | 2009 Q1 | 12.0 |
| | 2009 Q2 | 1.1 |
| | 2009 Q3 | -1.3 |
| | 2009 Q4 | 0.8 |
| Annual Growth Rates | | |
| | 2008 | 8.5 |
| | 2009 | 3.1 |
| | 2010 | 3.7 |
| Growth From | To | |
| Dec-08 | Mar-09 | 5.7 |
| Dec-08 | Jun-09 | 3.0 |
| 2008 Q4 | Mar-09 | 9.6 |
| 2008 Q4 | Jun-09 | 5.6 |

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

Directive

(47) Draft language for the directive is provided below.

Directive Wording

Alternative A1: 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 seeks conditions in reserve markets consistent with federal funds trading in a range from 0 to $\frac{1}{4}$ percent. The Committee directs the Desk to purchase GSE debt and agency-guaranteed MBS during the intermeeting period with the aim of providing support to the mortgage and housing markets. The timing and pace of these purchases should depend on conditions in the markets for such securities and on a broader assessment of conditions in primary mortgage markets and the housing sector. By the end of the third quarter of this year the Desk is expected to purchase up to \$100 billion in housing-related GSE debt and up to \$750 billion in agency-guaranteed MBS. The System Open Market Account Manager and the Secretary will keep the Committee informed of ongoing developments regarding the System's balance sheet that could affect the attainment over time of the Committee's objectives of maximum employment and price stability.

Alternative A2: 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 seeks conditions in reserve markets consistent with federal funds trading in a range from 0 to $\frac{1}{4}$ percent. The Committee directs the Desk to purchase GSE debt and agency-guaranteed MBS during the intermeeting period with the aim of

providing support to the mortgage and housing markets. The timing and pace of these purchases should depend on conditions in the markets for such securities and on a broader assessment of conditions in primary mortgage markets and the housing sector. By the end of the second quarter of this year, the Desk is expected to purchase up to \$100 billion in housing-related GSE debt and up to \$500 billion in agency-guaranteed MBS. The Committee also directs the Desk to purchase long-term Treasury securities during the intermeeting period. By the end of the second quarter of this year, the Desk is expected to purchase up to \$250 billion of long-term Treasury securities, with the aim of improving overall financial conditions. The System Open Market Account Manager and the Secretary will keep the Committee informed of ongoing developments regarding the System's balance sheet that could affect the attainment over time of the Committee's objectives of maximum employment and price stability.

Alternatives B and C: 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 seeks conditions in reserve markets consistent with federal funds trading in a range from 0 to $\frac{1}{4}$ percent. The Committee directs the Desk to purchase GSE debt and agency-guaranteed MBS during the intermeeting period with the aim of providing support to the mortgage and housing markets. The timing and pace of these purchases should depend on conditions in the markets for such securities and on a broader assessment of conditions in primary mortgage markets and the housing sector. By the end of the second quarter of this year, the Desk is expected to purchase up to \$100 billion in housing-related GSE debt and up to \$500 billion in agency-guaranteed MBS. The System Open Market Account Manager and the Secretary will keep the Committee informed

of ongoing developments regarding the System's balance sheet that could affect the attainment over time of the Committee's objectives of maximum employment and price stability.

Appendix A: 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 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. For the current quarter and the previous quarter, the inflation rate is computed using the staff's estimate of the core PCE price index. If the upcoming FOMC meeting falls early in the quarter, the lagged inflation measure ends in the last quarter.

Confidence intervals reflect uncertainties about model specification, coefficients, and the level of potential output. The final column of the table indicates the values published in the previous Bluebook.

| Measure | Description |
|--------------------------------|--|
| Single-equation Model | The measure of the equilibrium real rate in the single-equation model is based on an estimated aggregate-demand relationship between the current value of the output gap and its lagged values as well as the lagged values of the real federal funds rate. |
| Small Structural Model | The small-scale model of the economy consists of equations for six variables: the output gap, the equity premium, the federal budget surplus, the trend growth rate of output, the real bond yield, and the real federal funds rate. |
| Large Model (FRB/US) | Estimates of the equilibrium real rate using FRB/US—the staff's large-scale econometric model of the U.S. economy—depend on a very broad array of economic factors, some of which take the form of projected values of the model's exogenous variables. |
| Greenbook-consistent | 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. |
| TIPS-based Factor Model | Yields on TIPS (Treasury Inflation-Protected Securities) reflect investors' expectations of the future path of real interest rates, but also include term and liquidity premiums. The TIPS-based measure of the equilibrium real rate is constructed using the seven-year-ahead instantaneous real forward rate derived from TIPS yields as of the Bluebook publication date. This forward rate is adjusted to remove estimates of the term and liquidity premiums based on a three-factor arbitrage-free term-structure model applied to TIPS yields, nominal yields, and inflation. Because TIPS indexation is based on the total CPI, this measure is also adjusted for the medium-term difference—projected at 40 basis points—between total CPI inflation and core PCE inflation. |

Appendix A: Measures of the Equilibrium Real Rate (continued)

Estimates of the real federal funds rate depend on the proxies for expected inflation used. The table below shows estimated real federal funds rates based on lagged core PCE inflation, the definition used in the Equilibrium Real Federal Funds Rate chart; lagged four-quarter headline PCE inflation; and projected four-quarter headline PCE inflation beginning with the next quarter. For each estimate of the real rate, the table also provides the Greenbook-consistent measure of the short-run equilibrium real rate and the average actual real federal funds rate over the next twelve quarters.

| Proxy used for expected inflation | Actual real federal funds rate (current value) | Greenbook-consistent measure of the equilibrium real funds rate (current value) | Average actual real funds rate (twelve-quarter average) |
|-------------------------------------|--|---|---|
| Lagged core inflation | -1.7 | -3.0 | -0.9 |
| Lagged headline inflation | -1.6 | -2.7 | -0.6 |
| Projected headline inflation | -1.3 | -2.9 | -0.8 |

Appendix B: 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 (π_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 π^* 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 1988:1-2006:4; 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). The prescriptions of the first-difference rule do not depend on assumptions regarding r^* or the level of the output gap; see Orphanides (2003).

| | |
|------------------------------|--|
| Outcome-based rule | $i_t = 1.20i_{t-1} - 0.39i_{t-2} + 0.19[1.17 + 1.73\pi_t + 3.66(y_t - y_t^*) - 2.72(y_{t-1} - y_{t-1}^*)]$ |
| Forecast-based rule | $i_t = 1.18i_{t-1} - 0.38i_{t-2} + 0.20[0.98 + 1.72\pi_{t+2 t} + 2.29(y_{t+1 t} - y_{t+1 t}^*) - 1.37(y_{t-1} - y_{t-1}^*)]$ |
| Taylor (1993) rule | $i_t = 2 + \pi_t + 0.5(\pi_t - \pi^*) + 0.5(y_t - y_t^*)$ |
| Taylor (1999) rule | $i_t = 2 + \pi_t + 0.5(\pi_t - \pi^*) + (y_t - y_t^*)$ |
| First-difference rule | $i_t = i_{t-1} + 0.5(\pi_{t+3 t} - \pi^*) + 0.5(\Delta^4 y_{t+3 t} - \Delta^4 y_{t+3 t}^*)$ |

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 were followed starting at this FOMC meeting. The dotted line labeled "Previous Bluebook" is based on the current specification of the policy rule, applied to the previous Greenbook projection. 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 forward rate agreements, and the confidence intervals for this path are constructed using prices of interest rate caps.

Near-Term Prescriptions of Simple Policy Rules: These prescriptions are calculated using Greenbook projections for inflation and the output gap. Because the first-difference rule involves the lagged funds rate, the value labeled "Previous Bluebook" for the current quarter is computed using the actual value of the lagged funds rate, and the one-quarter-ahead prescriptions are based on this rule's prescription for the current quarter.

References:

Taylor, John B. (1993). "Discretion versus policy rules in practice," *Carnegie-Rochester Conference Series on Public Policy*, vol. 39 (December), pp. 195-214.

——— (1999). "A Historical Analysis of Monetary Policy Rules," in John B. Taylor, ed., *Monetary Policy Rules*. The University of Chicago Press, pp. 319-341.

Orphanides, Athanasios (2003). "Historical Monetary Policy Analysis and the Taylor Rule," *Journal of Monetary Economics*, vol. 50 (July), pp. 983-1022.