

Prefatory Note

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MARCH 13, 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) Although the functioning of a few financial markets showed some limited signs of improvement over the intermeeting period, financial conditions overall appeared to become even less supportive of economic activity. Despite having paired some of their earlier losses in recent days, broad equity price indexes dropped significantly, on balance, amid continued concerns about the health of the financial sector, uncertainty around the efficacy of government support to the sector, and a sharp further weakening of the economic outlook. Banks' stock prices were particularly hard hit, and their credit default swap (CDS) spreads rose above the peaks recorded last fall, on anxieties about the financial conditions of the largest banks. Unsecured short-term bank funding markets, which had improved notably late last year, showed some renewed signs of deterioration.

(2) Yields on long-term Treasury securities increased, on net, likely pressured in part by expectations of heavy issuance. Long-term TIPS-based measures of inflation compensation, which have been distorted by strained liquidity conditions in recent months, declined over the intermeeting period. In contrast, survey measures of long-term inflation expectations have changed little since the end of January. Market- and survey-based measures of policy expectations indicate that investors anticipate federal funds to trade within the current target range at least through the third quarter of this year.

(3) Federal Reserve purchases of agency debt and MBS continued during the intermeeting period. Spreads of agency debt and agency MBS narrowed, on net. Gross issuance of investment-grade corporate bonds by nonfinancial firms remained

strong in February, while shorter-term business credit appears to have contracted over the same period. Spreads on AAA-rated consumer asset-backed securities (ABS) have continued to decline since late January, reportedly in anticipation of improved conditions in securitization markets due to the upcoming launch of the Term Asset-Backed Securities Loan Facility (TALF).

(4) Major foreign central banks cut their policy rates aggressively in response to the rapidly deteriorating global economic outlook. The Bank of England, the Bank of Japan, and the Swiss National Bank announced new programs to purchase assets in financial markets. The U.S. dollar appreciated broadly against major and emerging market currencies. Foreign equity prices declined sharply.

Financial Institutions

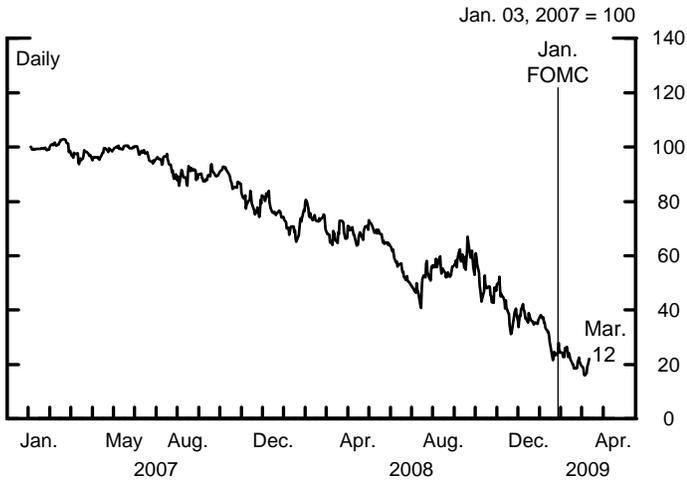
(5) Investors' concerns about the condition of several major financial institutions intensified over the intermeeting period. Despite having retraced some of the initial moves in recent days, banks' stock prices dropped to new lows and CDS spreads on subordinated and senior debt reached very high levels, reportedly as a result of investor disappointment regarding the outline of the Financial Stability Plan (FSP) announced by the U.S. government on February 10 and growing concerns that Citigroup and Bank of America would require additional government support (Chart 1).¹ Preferred stocks of the largest banks have generally continued to decline, on net, since the end of January.

(6) On February 27, Citigroup disclosed a plan to strengthen its capital structure through a conversion of a significant portion of its preferred securities to

¹ On February 25, federal bank regulatory agencies announced that they would start conducting forward-looking stress tests on U.S. bank holding companies with assets exceeding \$100 billion under two alternative scenarios. Under the first scenario, economic activity is assumed to progress in line with consensus forecasts, and under the second scenario the economic outlook is more adverse. The tests will be completed by the end of April.

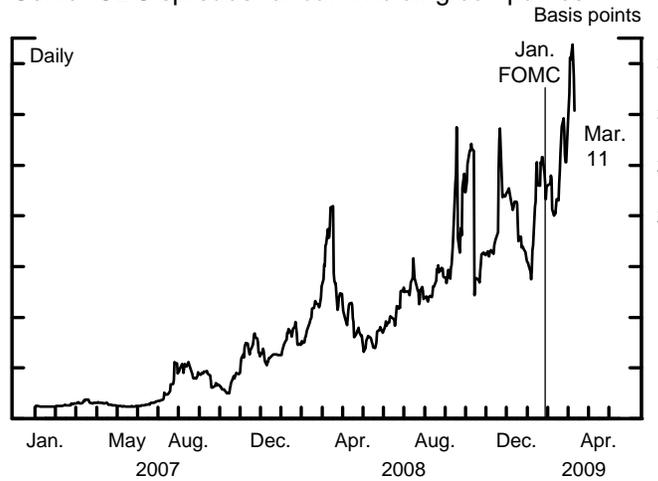
Chart 1 Financial Institutions

Bank ETF



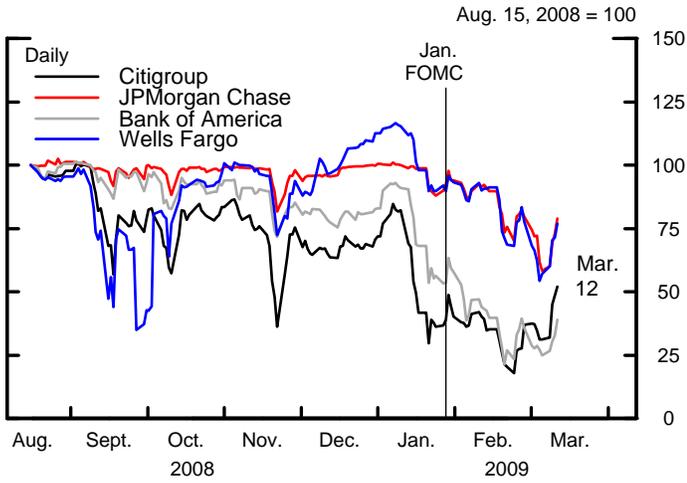
Note. There are 24 banks included.
Source. Bloomberg, Keefe Bruyette & Woods.

Senior CDS spreads for bank holding companies



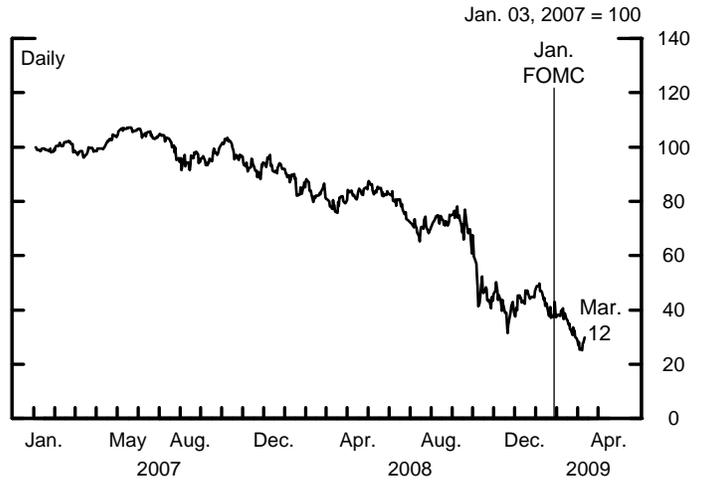
Note. Median spreads for 6 bank holding companies.
Source. Markit.

Preferred equity



Source. Bloomberg.

Insurance ETF



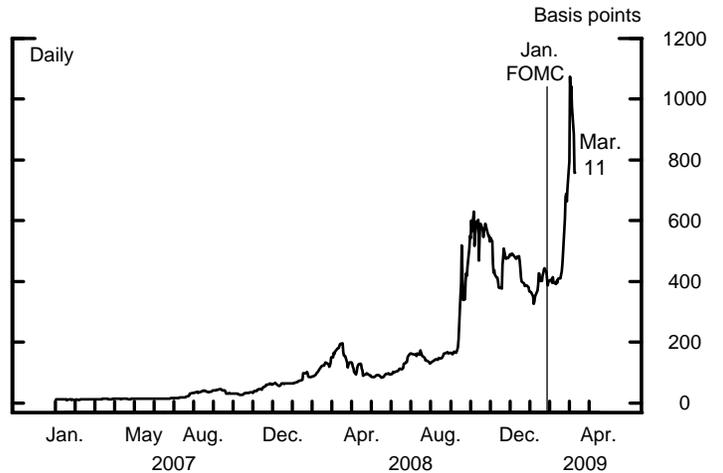
Note. There are 24 insurance companies included.
Source. Bloomberg, Keefe Bruyette & Woods.

Selected student lender equity prices



Source. Bloomberg.

CDS spread for GE Capital



Source. Markit.

common equity with exchange offers, and the Treasury announced that it would be willing to convert a portion of its preferred security interest in the holding company to common equity to the extent that Citigroup reaches an agreement with its other preferred holders and that a set of conditions are met.² Citigroup's stock price remained under significant stress after the announcement, reaching a record low level of \$1, although it has recovered somewhat in recent days.

(7) Stock prices of insurance companies dropped sharply, on net, reflecting concerns about their capitalization sparked by expectations of increased losses on their investment portfolios. Announcements of significant dividend cuts by insurance companies also reportedly weighed on market sentiment toward the sector. CDS spreads of insurance firms reached new highs during the intermeeting period, although they have retraced their earlier increases in recent days. On March 2, AIG posted a record loss of more than \$60 billion for the fourth quarter of last year, and the Treasury and the Federal Reserve announced a restructuring of the company's assistance program to enhance its capital and liquidity position.³

² The conditions announced by the Treasury are as follows: (1) The Treasury will convert its preferred securities to match dollar for dollar private preferred exchanges. (2) The Treasury will convert up to the \$25 billion of preferred stock issued under the Capital Purchase Program. Remaining Treasury- and FDIC-owned preferred stock issued under the Targeted Investment Program and Asset Guarantee Program would be converted into a trust preferred security of greater structural seniority that would carry the same 8 percent cash dividend rate as the existing issue. (3) The Treasury will receive the most favorable terms and price offered to any other preferred holder through the exchange.

³ The Treasury will exchange its existing \$40 billion cumulative perpetual preferred shares for new preferred shares with revised terms that more closely resemble those of common equity. In addition, the Treasury will create a new equity capital facility allowing AIG to draw up to \$30 billion as needed over time, in exchange for non-cumulative preferred stock issued to the Treasury. The Federal Reserve will reduce the size of the \$60 billion Revolving Credit Facility for AIG established in September 2008 to no less than \$25 billion. In addition, the interest rate on the Facility, which is three-month Libor plus 300 basis points, will be modified by removing the existing floor (3½ percent) on the Libor rate. The Revolving Credit Facility will be reduced in exchange for preferred interests—up to approximately \$26 billion—in two SPVs created to hold all of the outstanding common stock of American Life Insurance Company and American International Assurance

(8) Developments at some other financial institutions were also negative during the intermeeting period. Equity prices of the largest private providers of government-guaranteed student loans tumbled following the release of the 2010 federal budget proposal on February 17. Under the proposal, Congress would eliminate all government subsidies for financial institutions that lend to students under the Federal Family Education Loan Program (FFELP), and require that all government-guaranteed student loans be originated through the federal government's Direct Loan Program. In addition, CDS spreads for GE Capital widened sharply, on net, and the equity price of its parent company General Electric dropped, on balance, as investors' concerns about the quality of assets on GE Capital's balance sheet intensified during the intermeeting period. On March 12, Standard & Poor's downgraded General Electric's long term debt AAA rating to AA+.

(9) Financial institutions issued about \$75 billion of debt under the FDIC's Temporary Liquidity Guarantee Program (TLGP) over the intermeeting period, bringing the total amount outstanding under the program to \$200 billion. Spreads of yields on FDIC-guaranteed debt over those on comparable-maturity Treasury securities changed little, on net, over the intermeeting period, remaining in the 50 to 100 basis points range.

Market Functioning

(10) There were mixed changes in the functioning of financial markets over the intermeeting period. Although some signs of improvement were visible in certain

Company, two life insurance holding company subsidiaries of AIG. In addition, the Federal Reserve Bank of New York will make new loans of up to approximately \$8.5 billion to SPVs established by domestic life insurance subsidiaries of AIG. The SPVs will repay the loans from the cash flows received from designated blocks of existing life insurance policies held by the parent insurance companies. The proceeds of the loans will pay down an equivalent amount of outstanding debt under the Revolving Credit Facility.

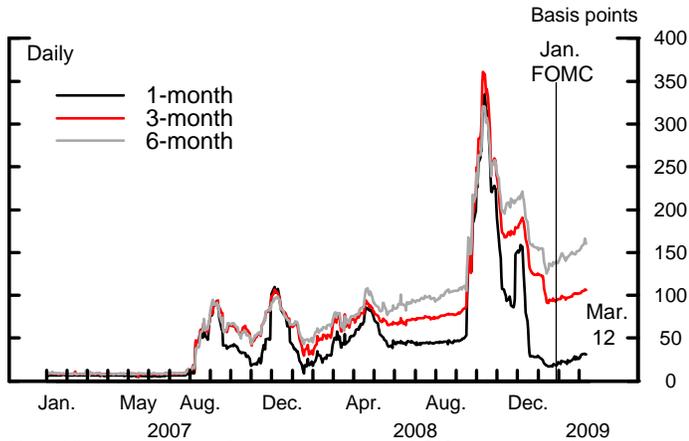
areas, particularly in the commercial paper (CP) and repo markets, many other markets remained under considerable stress.

(11) Partly reflecting pressures resulting from a large supply of newly issued Treasury securities, the overnight general collateral repo rate increased to slightly above 25 basis points over the intermeeting period from about 10 basis points in January, exerting upward pressure on the federal funds rate, which increased to the upper end of its target range. Trading volumes in overnight repos for Treasury collateral inched higher, but stayed at depressed levels, and volumes traded in the overnight federal funds market were little changed at levels well below those seen prior to the significant increase in reserve balances in the fall of last year. Despite the low level of interest rates, delivery fails on Treasury securities have remained moderate since late January. Conditions in repo markets for agency debt and CMBS showed some signs of improvement over the intermeeting period, as bid-asked spreads narrowed and haircuts fell. In contrast, conditions in the repo market for private-label residential mortgage-backed securities (RMBS) were mixed, and trading volumes of repos for all collateral types remained low.

(12) In unsecured interbank funding markets, Libor fixings (and spreads over OIS) trended higher, on net, over the intermeeting period, especially at longer maturities, and forward spreads increased, owing to renewed concerns about the financial condition of some large banks (Chart 2). Consistent with some deterioration in interbank funding markets, credit outstanding under the Term Auction Facility (TAF) increased over the period as the more recent auctions have experienced higher demand than the previous ones. Nonetheless, one-month Libor changed little as it passed quarter-end on February 27, pointing to limited market concerns regarding pressures over the upcoming quarter-end. The auction results of the Term Securities Lending Facility Options Program (TLOF), covering quarter-end, also pointed to limited market expectations of quarter-end pressures, as, for the first time, bids fell

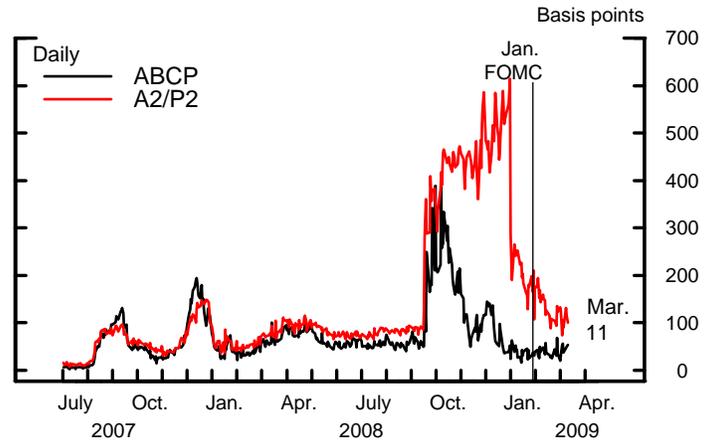
Chart 2 Market Functioning

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.

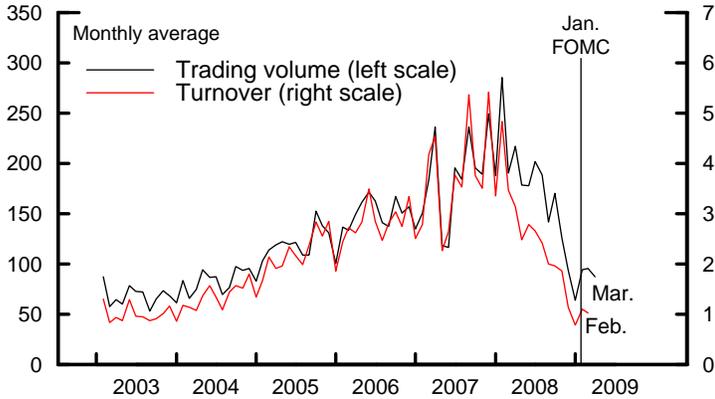
Spreads on 30-day commercial paper



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.

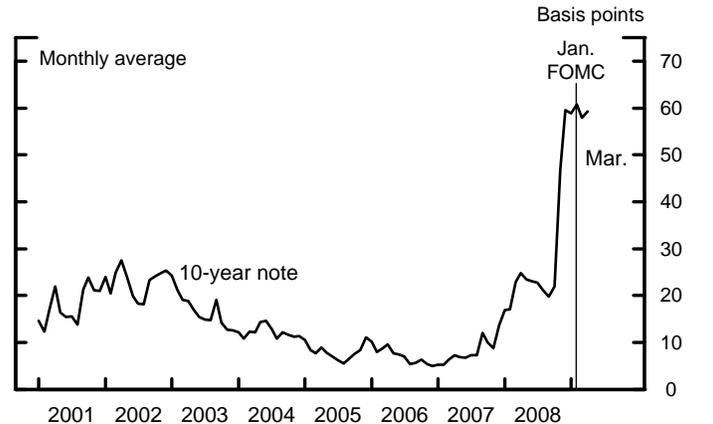
On-the-run treasury market volume and turnover

Billions of dollars



Note. Turnover is divided by total outstanding at the end of the month.
Source. BrokerTec Interdealer Market Data and Bloomberg.

Treasury on-the-run premium

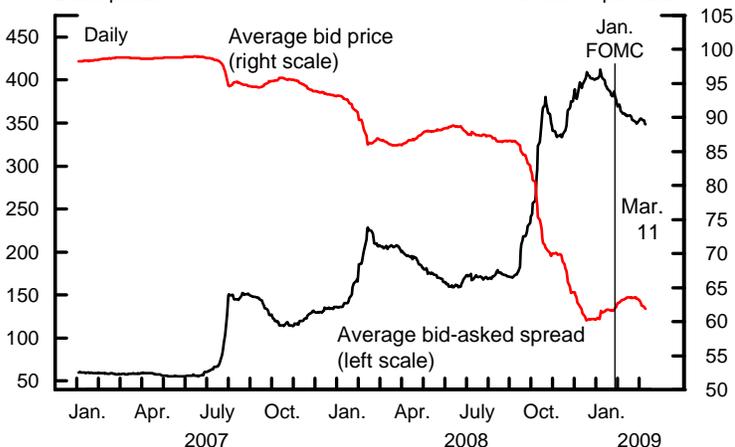


Note. Computed as the spread of the yield read from an estimated off-the-run yield curve over the on-the-run Treasury yield. March observation is the month-to-date average.
Source. Board staff estimates.

Pricing in the secondary market for leveraged loans

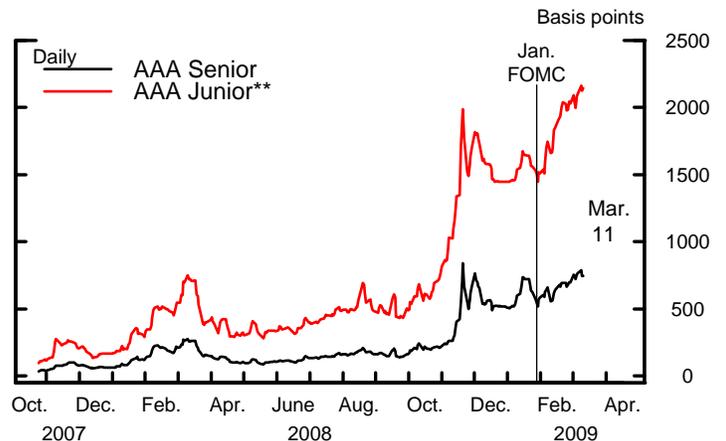
Basis points

Percent of par value



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

CMBX indexes*



*Series 4: Covers CMBS issued in late 2007.

**First loss among AAA-rated tranches.

Source. JP Morgan.

short of the total offered amount, despite a reduction of the loan rate fee to 25 basis points from 50 basis points in the most recent auction (see the box “Federal Reserve balance sheet developments over the intermeeting period”).

(13) Conditions in the CP market continued to improve, on balance, over the intermeeting period. Spreads on A2/P2-rated CP trended down further, and those on AA-rated asset-backed commercial paper (ABCP) remained at the lower end of the range recorded over the past year. During the week of January 26, about \$240 billion of CP purchased in late October under the Commercial Paper Funding Facility (CPFF) matured and a large portion was not renewed, as several financial issuers reportedly paid down paper from the program using longer-term funding alternatives, including FDIC-guaranteed debt. Overall, the reduction in credit extended under the CPFF accounted for most of the decline in total commercial paper outstanding over the same period.

(14) The 3-month Treasury bill rate was slightly above the effective federal funds rate for most of the intermeeting period, likely reflecting the large scale of bill issuance. Net par issuance of Treasury bills through March 12 totaled \$238 billion, of which \$25 billion were issued under the Supplementary Financing Program (SFP), leaving the total amount outstanding issued under the program at about \$200 billion.⁴

(15) Trading conditions in the secondary market for nominal Treasury coupon securities showed some limited signs of improvement. Average bid-asked spreads for on-the-run nominal Treasury notes were relatively stable near their pre-crisis levels, and the average magnitude of fitting errors from nominal yield curve estimates decreased notably, suggesting an increase in arbitrage activity. Daily trading volumes

⁴ On March 3, the Treasury and the Federal Reserve announced that they will seek legislation to give the Federal Reserve additional tools to manage the level of reserves while providing the funding necessary for the TALF and other key credit-easing programs. For additional detail, please refer to the memorandum entitled “Legislative Initiative for Additional Federal Reserve Balance Sheet Management Tools,” to the Federal Open Market Committee by Brian Madigan, James Clouse, Scott Alvarez and Sophia Allison.

Federal Reserve Balance Sheet Developments over the Intermeeting Period

Since the last FOMC meeting, total assets on the Federal Reserve's balance sheet have contracted by about \$60 billion to around \$1,900 billion.¹ More than accounting for the decline was a sharp contraction in foreign central bank liquidity swaps. Reportedly, some foreign banks sought less expensive funding sources, while others pared their need for dollar funding by trimming their stocks of dollar-denominated assets. Credit extended by the Commercial Paper Funding Facility edged down as 90-day paper purchased in the early weeks of the program continued to mature. Only about 60 percent of the maturing paper issued during the early days of the program was rolled over, as some institutions apparently turned toward longer-term funding alternatives, including debt issued under the FDIC's Temporary Liquidity Guarantee Program. Credit extended under the Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF), not shown separately, declined to about \$7 billion, and the Money Market Investor Funding Facility (MMIFF) continued to register no activity. Offsetting the downward movements, credit extended under the Term Auction Facility (TAF) and holdings of agency debt and mortgage-backed securities increased by about \$80 billion each. The expansion in TAF borrowing, which contrasted with the fall in central bank liquidity swaps, likely reflects in part the modestly heightened pressures in bank funding markets evident in the increase in term Libor over the intermeeting period.

On the liability side of the Federal Reserve's balance sheet, there was a steep decline in deposits of depository institutions, which fell by about \$130 billion. Deposits of other institutions, however, rose over the period. U.S. Treasury deposits were a bit higher, on net. The Treasury has essentially suspended investing excess cash in the commercial banking system. Still, the Treasury General Account, which has fluctuated around a relatively high level, ended the period \$14 billion lower. The Supplementary Financing Account increased by \$25 billion, on net, over the intermeeting period. Deposits of GSEs (included in "other deposits") increased \$46 billion; these balances have been rather volatile in recent months and in particular have risen recently in anticipation of an upcoming principal and interest payment date.

¹ These data are through March 11, 2009; purchases of agency mortgage-backed securities totaling \$155 billion are expected to settle on March 12, 2009.

Federal Reserve Balance Sheet

Billions of dollars

	Change since last FOMC	Current (3/11/2009)	Maximum level	Date of maximum level
Total assets	-62	1,901	2,256	12/17/2008
U.S. Treasury securities	-1	475	791	8/14/2007
Agency debt and mortgage-backed securities*	79	113	113	3/11/2009
Term auction credit (TAF)	78	493	493	3/11/2009
Primary credit	-3	65	114	10/28/2008
Central bank liquidity swaps	-153	312	586	12/4/2008
Primary dealer and other broker-dealer credit (PDCF)	-13	20	156	9/29/2008
Net portfolio holdings of Commercial Paper Funding Facility LLC (CPFF)	-24	241	351	1/23/2009
Other facilities	-9	79	182	10/1/2008
All other	-17	102	276	10/8/2008
Total liabilities	-63	1,857	2,213	12/4/2008
Deposits of depository institutions	-131	632	913	1/2/2009
U.S. Treasury, general account	-14	34	137	10/23/2008
U.S. Treasury, supplemental financing account	25	200	559	10/22/2008
Currency in circulation	14	899	899	3/11/2009
Other deposits	46	47	47	3/11/2008
All other	-3	44	110	12/10/2008
Total capital	1	44	45	12/17/2008
Memo:				
Securities lending	-19	113	260	9/29/2008
Overnight facility	-3	5	31	10/23/2008
Term facility	-16	108	236	10/1/2008
Option contracts outstanding	35	35	50	12/21/2008

*Includes only mortgage-backed security purchases that have already settled. Mortgage-backed security purchases totaling \$155 billion are expected to settle on March 12, 2009.

for on-the-run securities, however, inched lower, and spreads between the yields of on- and off-the-run ten-year Treasury notes remained very high.

(16) Measures of liquidity in the secondary market for speculative-grade corporate bonds worsened somewhat over the period, but remained significantly better than in the fall of 2008. The basis between the spread on the CDX Investment Grade index and measures of investment-grade corporate bond spreads—a rough measure of unexploited arbitrage opportunities in the corporate bond market—remained at high levels. Trading conditions in the leveraged syndicated loan market improved slightly, although implied spreads on the LCDX index widened sharply, on net, over the intermeeting period. Price discovery in the CDS market continued to be impaired, as evidenced by the wide range of CDS dealer quotes for the same reference entities.⁵ The market for commercial mortgage-backed securities (CMBS) also remained under heavy stress. Indexes of CDS spreads on AAA-rated CMBS (CMBX) widened to record levels, as Moody's downgraded a large portion of the 2006 and 2007 vintages following a re-evaluation of its rating criteria.

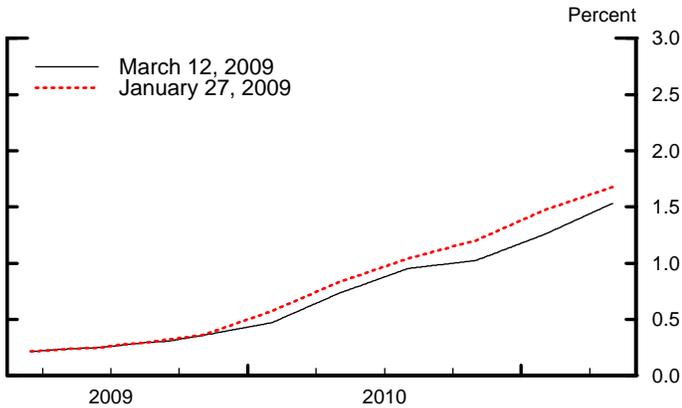
Monetary Policy Expectations and Treasury Yields

(17) The Committee's decision at the January meeting to leave the target range for the federal funds rate unchanged and the wording of the accompanying statement were widely anticipated by investors and had little impact on money markets. The path for the federal funds rate implied by futures rates shifted down somewhat, on net, mostly on incoming news about the financial sector and the economic outlook (Chart 3). Based on our standard term premium adjustment of 1 basis point per month, market quotes currently suggest that market participants anticipate that the

⁵ On March 9, ICE US Trust LLC (ICE Trust), a subsidiary of the Intercontinental Exchange Inc., began clearing credit-default swaps, following the approval by the Federal Reserve of its application to become a member of the Federal Reserve System on March 4, and of conditional exemptions by the Securities Exchange Commission (SEC) on March 6, which allow ICE Trust to operate as a central counterparty for clearing credit default swaps.

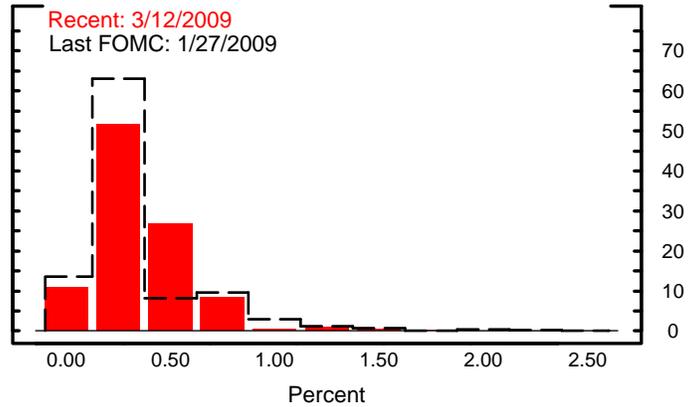
Chart 3 Interest Rate Developments

Expected federal funds rates*



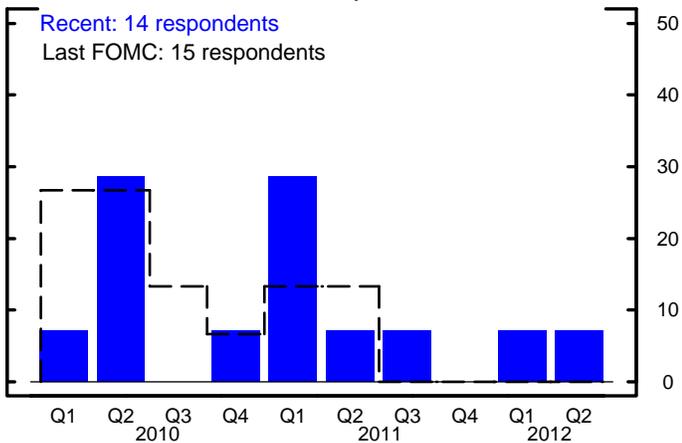
*Estimates from federal funds and Eurodollar futures, with an allowance for term premiums and other adjustments.
Source. Chicago Mercantile Exchange and CBOT.

Implied distribution of federal funds rate six months ahead*



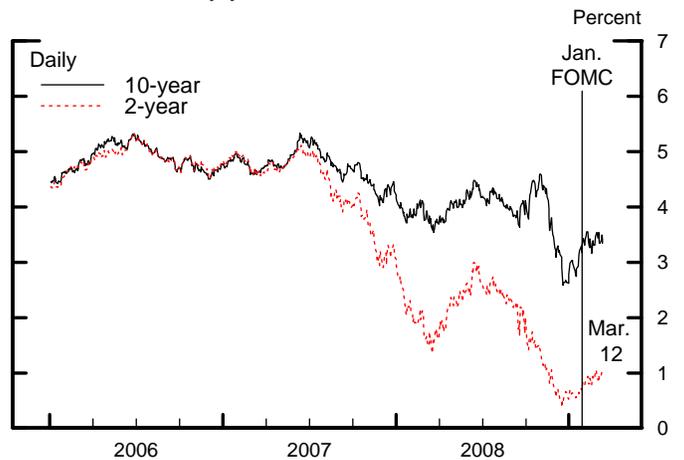
*Derived from options on Eurodollar futures contracts, with term premium and other adjustments to estimate expectations for the federal funds rate.
Source. CBOT.

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



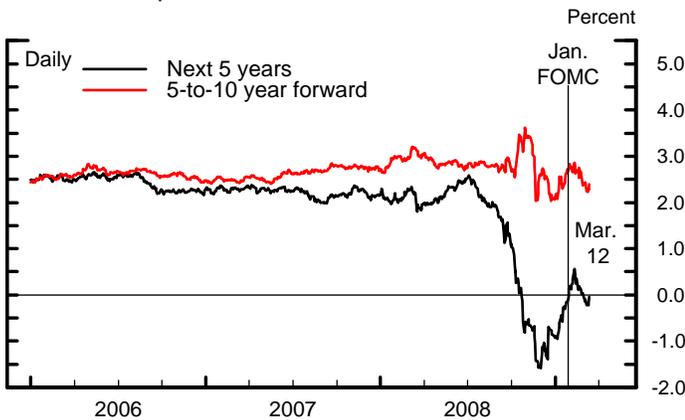
Source. Federal Reserve Bank of New York.

Nominal Treasury yields*



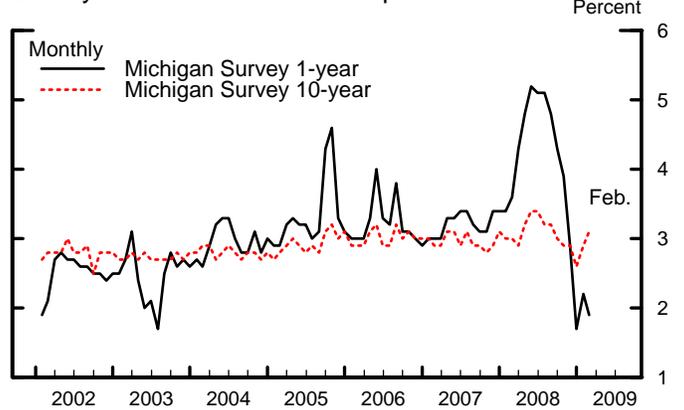
*Par yields from a smoothed nominal off-the-run Treasury yield curve.
Source. Board staff estimates.

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.

first increase in the federal funds rate will occur in the fourth quarter of 2009, and that the federal funds rate will reach about 1.1 percent by the end of 2010. Six months ahead, the option-implied distribution indicates that investors place about 45 percent odds on the funds rate trading above the current target range. However, term premiums could well be higher than usual, implying a flatter path for the federal funds rate. Indeed, none of the respondents to the Desk's survey of primary dealers expects the federal funds rate to increase before the first half of 2010, and the majority of respondents anticipate the first rate increase to occur on or after the first half of 2011.

(18) Yields on two- and ten-year nominal Treasury securities rose about 30 and 15 basis points, respectively, over the intermeeting period, reflecting in part expectations for additional supply of these securities. Option-implied measures of uncertainty about longer-term Treasury yields increased over the period.

(19) Changes in market- and survey-implied measures of inflation expectations were mixed. Yields on longer-horizon inflation-indexed securities increased more than those on their nominal counterparts, leaving five-year, five-year-ahead inflation compensation about 30 basis points lower over the period. Five-year inflation compensation was, instead, little changed. Poor liquidity in the TIPS market continues to make these readings difficult to interpret. Meanwhile, measures of inflation compensation from inflation swaps, which have also poor liquidity, moved up across different maturities. Changes in longer-term inflation expectations from the Philadelphia Fed and Michigan surveys were mixed but relatively small, while short-term inflation expectations from both surveys declined modestly. An analysis of the deflation floor embedded in TIPS suggests that market participants see considerable risks of cumulative deflation over the next few years (see the box "Extracting Inflation Probabilities from TIPS").

Extracting Deflation Probabilities from TIPS

Interest payments on TIPS are calculated based on the inflation-adjusted principal amount of the security, where the inflation adjustment reflects the cumulative change in the CPI since the bond was issued. However, if the inflation-adjusted principal amount is below par at maturity, the bondholder receives a payment equal to par rather than the actual inflation-adjusted principal, a guarantee that is commonly referred to as the “deflation floor.” Therefore, the price of TIPS comprises two parts: the discounted value of the fully inflation-indexed principal and interest payments plus the value of an embedded put option on an inflation-adjusted discount bond with a strike price of par.

In the case of the most recently issued five-year TIPS (which has about four years left to maturity), the inflation-adjusted principal is currently slightly below par, so holders are fully protected against any further deflation occurring over the remaining life of the security. In contrast, the protection against deflation offered by the TIPS security with the next closest remaining maturity—the ten year security issued on July 15, 2003—is much less because inflation accrual over the past five years has driven up its inflation-adjusted principal to well above par, so that a substantial amount of deflation has to occur before the deflation floor is reached. This difference means that the value of the embedded put option on the new five-year issue should be positive while that for the old ten-year will be close to zero, since it is unlikely that the embedded put option on the older issue will be “in the money” at maturity. Thus, assuming that the liquidity of the two issues is roughly similar, the difference in the market price of the two securities adjusted for differences in coupon payments, should be essentially equal to the value of the deflation floor on the recently issued five-year TIPS. Performing this calculation yields a value for the embedded put in the 5-year TIPS of approximately \$3.40 per \$100 of face value.

Using this valuation, we can then back out the probability of deflation as equal to the likelihood that the future inflation-adjusted principal falls below par over the next four years, using the Black-Scholes put option formula with an assumption for the mean rate of inflation. Assuming a mean rate of inflation obtained from inflation caps contracts (equal to 0.89 percent), we estimate a risk-neutral probability of cumulative deflation over the next four years of about 43 percent, and conditional on being in a state of deflation we also obtain an expected cumulative deflation rate of -4.7 percent. Note, however, that this procedure may overestimate the probability of deflation and conditional expected deflation, because most investors are probably not risk neutral and because investors may well use different distributional assumptions in valuing the put option. The average probability of deflation over the next year reported in the desk’s primary dealer survey is 30 percent; the two probabilities, however, are not directly comparable because they are measured for different time horizons.

Capital Markets

(20) Broad equity price indexes declined roughly 10 percent, on net, on increased concerns about the economic outlook and the health of the financial sector (Chart 4). Forward-trend earnings estimates for S&P 500 firms fell by similar amounts, resulting in little change in the ratio of forward-trend earnings to the estimated real long-term Treasury yield—a rough measure of the equity premium—from the high level recorded over the past few months. Option-implied volatility on the S&P 500 index was little changed, on net, over the intermeeting period.

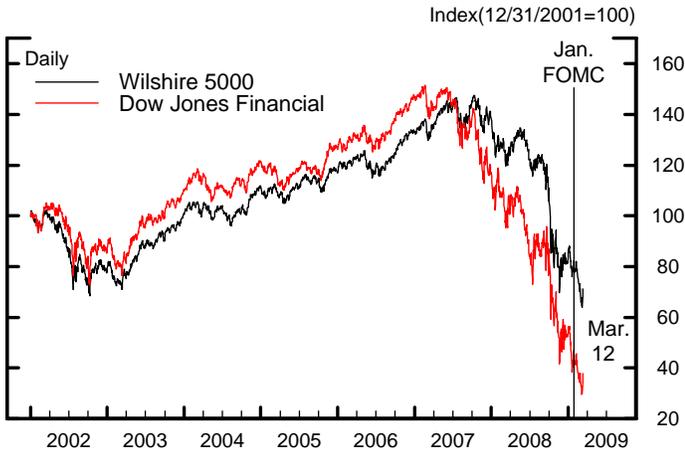
(21) In the corporate bond market, spreads of yields on BBB-rated bonds relative to those on comparable-maturity Treasuries were little changed, while spreads on speculative-grade bonds increased about 80 basis points. The investment- and speculative-grade CDX indexes widened significantly, on net, over the intermeeting period. Gross bond issuance by nonfinancial firms was very strong in January and February, as investment-grade issuance more than doubled from its already solid pace in the fourth quarter; speculative-grade issuance, however, remained sluggish.

(22) The System Open Market Account (SOMA) purchased \$17.7 billion par value of debt of the housing-related government-sponsored enterprises (GSEs) over the intermeeting period. The Federal Reserve also purchased a net amount of \$147.6 billion of agency-backed MBS between January 29 and March 11 (not all of which have yet settled).⁶ Spreads on 10-year agency debt over swap rates narrowed about 20 basis points over the intermeeting period and those on agency MBS declined about 5 basis points, on net. The interest rate on 30-year fixed-rate conforming mortgages

⁶In the last week of February, as part of the agency MBS purchase program, the Federal Reserve began conducting transactions in the dollar roll market to improve market functioning. A dollar roll transaction involves the purchase (or sale) of a mortgage-backed security paired with a forward sale (or purchase) of an equivalent security. Dollar rolls are often used by market participants as means of short-term borrowing and lending. Partly as a result of the Federal Reserve transactions, implied financing rates in the dollar roll market dropped during the intermeeting period.

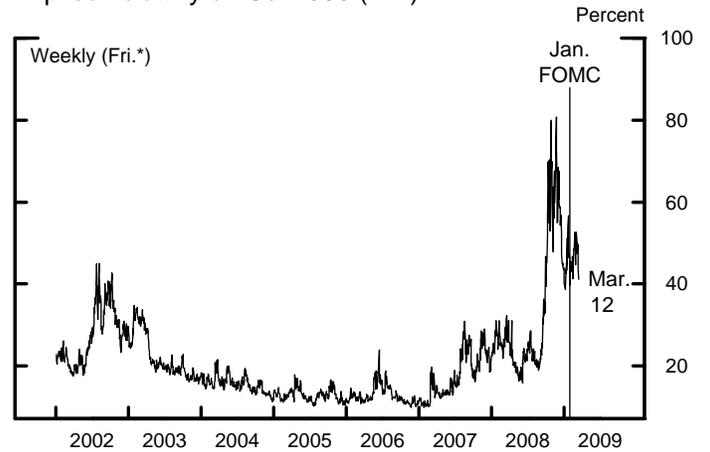
Chart 4 Asset Market Developments

Equity prices



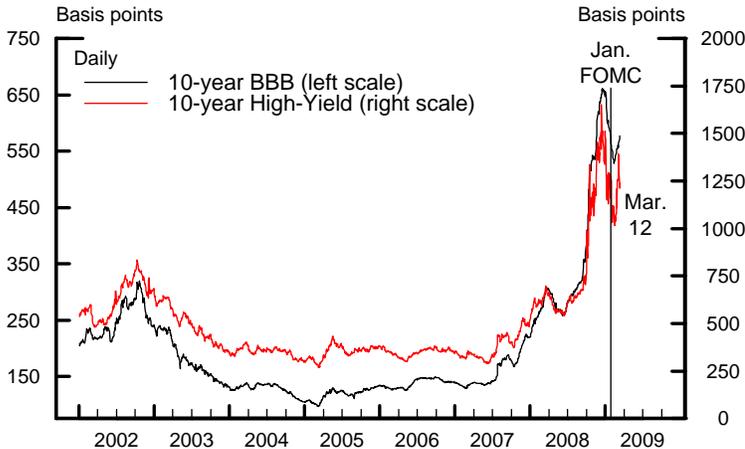
Source: Bloomberg.

Implied volatility on S&P 500 (VIX)



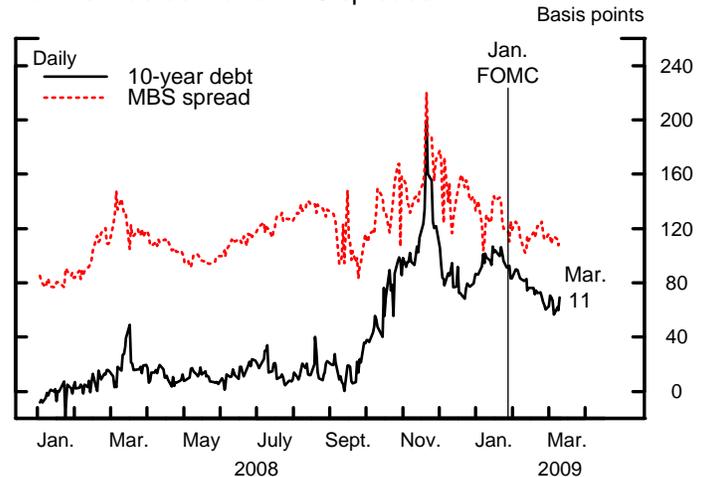
*Latest observation is for most recent business day.
Source: Chicago Board of Exchange.

Corporate bond spreads



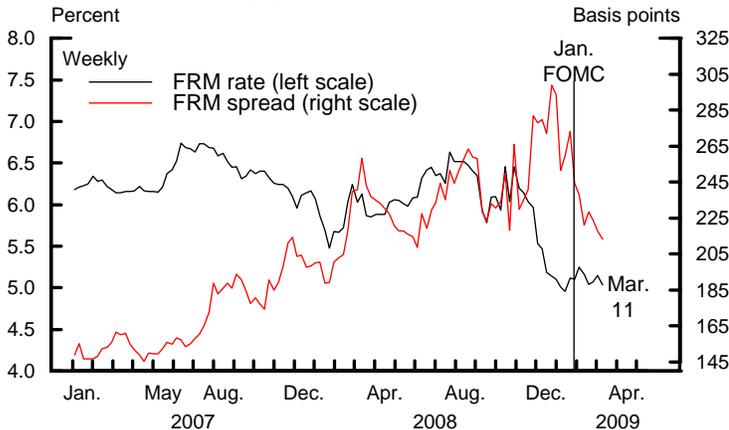
Note. Measured relative to an estimated off-the-run Treasury yield curve.
Source: Merrill Lynch and Board staff estimates.

Fannie Mae debt and MBS spreads



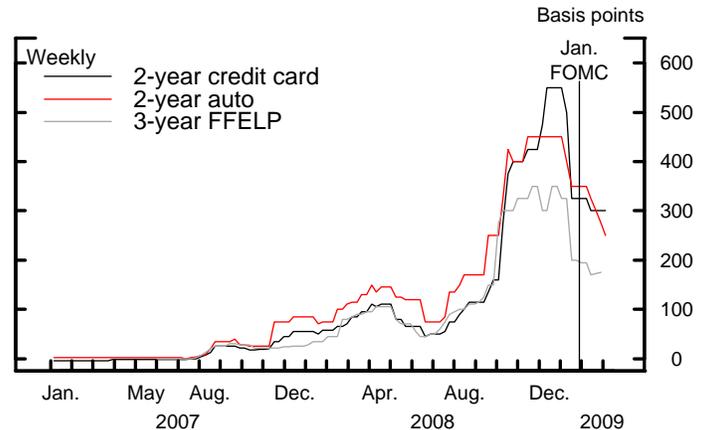
Note. Spreads over swaps of comparable maturity.
Source: Bloomberg.

Residential mortgage rates and spreads



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

AAA ABS spreads



Note. Last observation for 2-year auto and credit card ABS spreads is March 6. Last observation for 3-year FFELP is February 27.
Source. For credit card and auto spreads, trader estimates provided by Citigroup. For FFELP spreads, trader estimates provided by Merrill Lynch.

was little changed over the intermeeting period, remaining slightly above 5 percent, and its spread to the 10-year off-the-run Treasury yield narrowed about 25 basis points. On March 4, the Treasury announced additional details regarding the Homeowner Affordability and Stability Plan, which sets guidelines to enable servicers to begin modifications of eligible mortgage loans, and should help counter the ongoing rise in foreclosures.

(23) The market for asset-backed securities (ABS) showed some tentative signs of improvement. The launch of the Term Asset-Backed Securities Loan Facility (TALF) was officially announced on March 3. In the initial phase of the program, the Federal Reserve will provide up to \$200 billion of 3-year loans, on a non-recourse basis, against AAA-rated ABS backed by newly and recently originated auto loans, credit card loans, student loans, and SBA-guaranteed small business loans, and potentially certain other closely related types of ABS. Reportedly supported in part by the upcoming launch of the TALF, indicative spreads on AAA-rated tranches of ABS in the secondary market narrowed further during the intermeeting period; however, issuance of student and auto loan ABS continues to be limited. Market reports indicate that several TALF-eligible auto transactions are currently in the pipeline and ready to be brought to the facility at the first subscription for funding in mid-March.

(24) Conditions in the municipal bond market continued to show signs of improvement for top-rated issuers over the intermeeting period, although issuance of long-term municipal bonds in February remained at relatively low levels, and lower-rated entities continued to report difficulties in raising funds. Yields on long-term municipal bonds decreased sharply with the passage of the fiscal stimulus bill, which appeared to ease concerns about the credit quality of municipal bond issuers. Despite

the yield decline, the ratio of municipal bond rates to those on comparable maturity Treasury securities remained at elevated levels.⁷

Foreign Developments

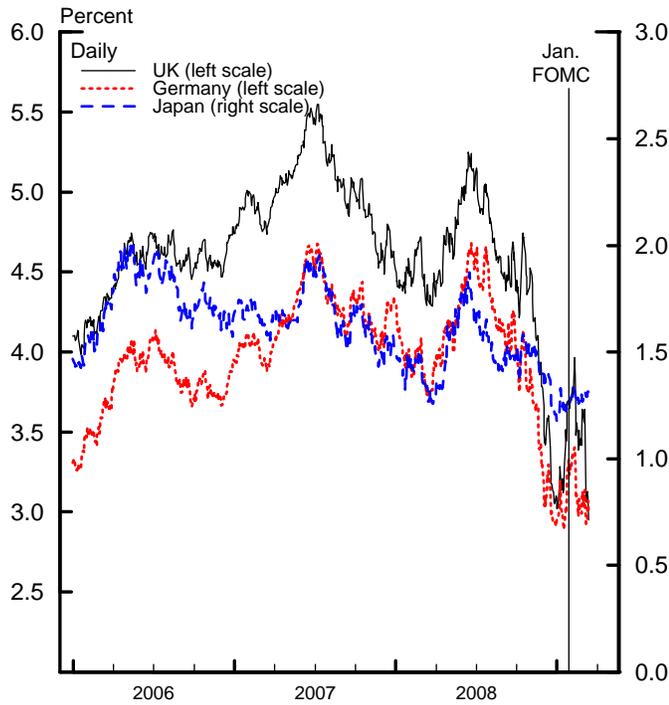
(25) The deteriorating economic outlook led many central banks to cut their policy rates over the period. The European Central Bank and the Bank of Canada both cut policy rates 50 basis points in March. The Bank of England cut its target by a cumulative 100 basis points and secured permission to purchase up to £150 billion of government and corporate debt. Ten-year sovereign yields in the United Kingdom fell nearly 60 basis points following the announcement that the Bank of England would purchase government bonds (Chart 5).⁸ The British government also initiated its Asset Protection Scheme, insuring £325 billion of assets placed by Royal Bank of Scotland and £260 billion placed by Lloyds while taking larger ownership shares in both banks. The Bank of Japan left its policy target unchanged, but announced plans to purchase equities held on banks' balance sheets as well as up to ¥1 trillion in corporate bonds. The Swiss National Bank cut its target for the 3-month Swiss franc Libor rate by 25 basis points and announced that it would purchase both domestic corporate debt and foreign currency to increase liquidity.

⁷ On February 18, the monoline insurer MBIA announced a corporate restructuring plan under which it would split into two companies, one for wrapping municipal obligations and the other for structured credit.

⁸ The Bank of England announced immediate plans to purchase £75 billion in debt. Of the full amount of £150 billion, the Bank of England may use up to £50 billion for the purchase of corporate bonds and commercial paper, although it is unclear whether it will use all of those funds to do so, and any funds not spent for that purpose may be used to purchase government bonds. The Bank has stated that it intends to limit its purchases of government bonds to nominal gilts with remaining maturities of 5 to 25 years. For purposes of comparison, were the Bank to purchase £75 billion in government debt, this would represent 14 percent of the entire nominal gilt market and 30 percent of nominal gilts with remaining maturities between 5 and 25 years.

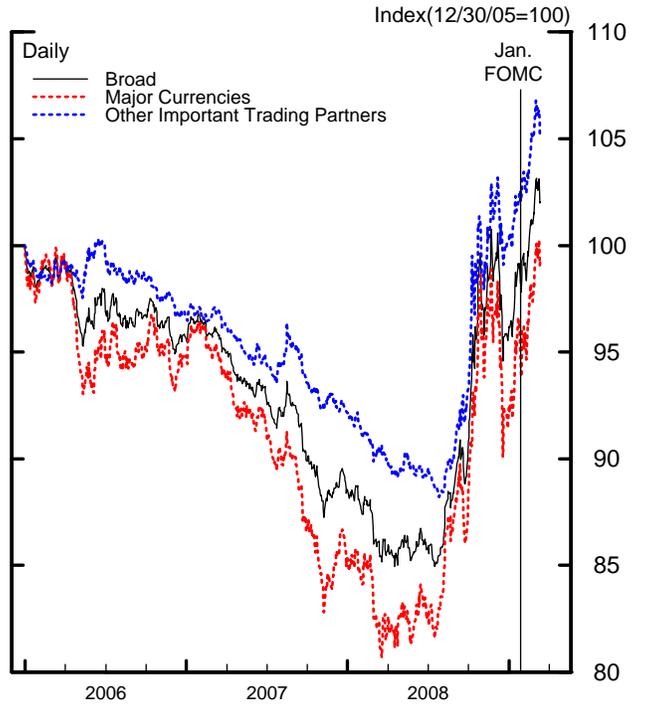
Chart 5 International Financial Indicators

Ten-year government bond yields (nominal)



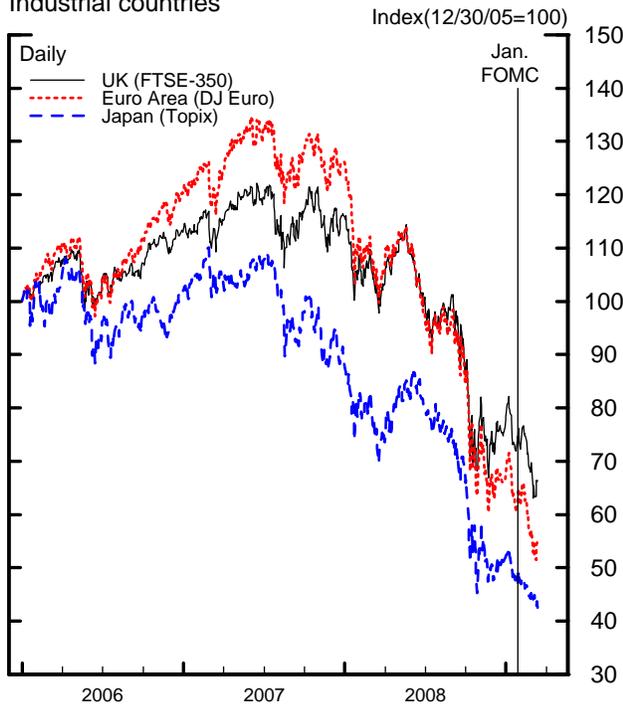
Source: Bloomberg.

Nominal trade-weighted dollar indexes



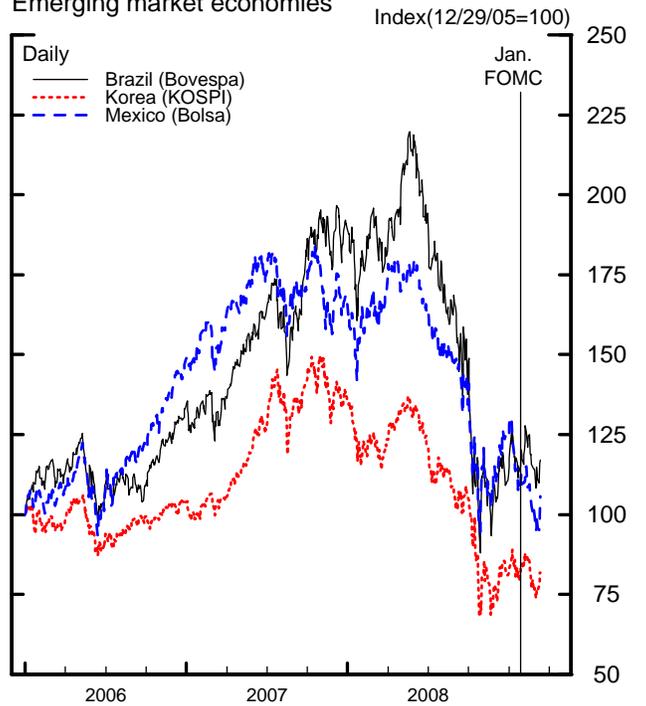
Source: FRBNY and Bloomberg.

Stock price indexes
Industrial countries



Source: Bloomberg.

Stock price indexes
Emerging market economies



Source: Bloomberg.

Note. Last daily observation is for March 12, 2009.

(26) The dollar has broadly appreciated since the January FOMC meeting as foreign economic activity appears to be weakening much more than market participants had anticipated. The major currencies index of the dollar rose $5\frac{3}{4}$ percent on net as the dollar appreciated 3 to 10 percent against the euro, Canadian dollar, and yen. Foreign equity price indexes once again declined sharply, particularly those for financial stocks. Weak earnings reports and mounting concerns about losses on loans to Eastern Europe led bank shares in the euro area to decline by a third of their value. Despite this, conditions in foreign currency interbank funding markets were little changed on net, perhaps bolstered by the numerous government actions taken over the past year to help support liquidity in those markets.

(27) The dollar appreciated 3 percent against the currencies of our other important trading partners, rising nearly 6 percent against the Mexican peso and 9 percent against the Korean won. Mexican authorities continued to intervene to support the peso, and South Korean officials also acknowledged selling dollars against the won. Equity indexes rose more than 7 percent in China as the government's stimulus package helped boost spending in key segments of the economy, and rose modestly in Brazil and Korea, but stock prices declined 2 to 12 percent in the other major emerging Asian and Latin American countries. EMBI spreads for countries in emerging Europe have risen in recent weeks as concerns about the economic outlook in these countries have grown. Foreign investment in emerging European equity funds has declined more than 10 percent. The World Bank, European Bank for Reconstruction and Development (EBRD), and European Investment Bank (EIB) announced plans to provide up to €24.5 billion in aid to help central and eastern European banks weather the financial crisis, but further attempts to coordinate a larger aid package from western European nations have thus far failed.

Debt, Bank Credit, and Money

(28) Private sector debt growth has been quite weak. The debt of the domestic private nonfinancial sector was about flat in the fourth quarter of last year and is projected to have remained so in the current quarter (Chart 6). Household debt is estimated to have contracted for the second quarter in a row, owing to declines in both consumer and home mortgage debt that stem from very weak household spending, the continued drop in house prices, and tighter terms and standards for loans. Business debt is projected to have expanded at a moderate pace in the current quarter, largely owing to the burst of corporate bond issuance. However, we do not expect that the recent pace of issuance will be sustained. Reflecting heavy borrowing by the Treasury, total debt of the domestic nonfinancial sector is projected to have expanded at a roughly 4½ percent annual rate in the first quarter, a deceleration from the pace recorded in the fourth quarter of last year.

(29) Bank credit fell at an average annual rate of 4 percent in January and February, and has now declined for four consecutive months (the first such occurrence since 1948). C&I loans have decreased at an annual rate of 7¾ percent since the beginning of the year. The February Survey of Terms of Business Lending indicated that C&I loan rate spreads over comparable-maturity market instruments rose modestly overall from the November survey, although spreads increased sharply for lower-risk loans, especially those not made under previous commitment, a category that reflects recent pricing. Commercial real estate loans outstanding have also declined thus far in 2009. By contrast, consumer loans on banks' books jumped over the first two months of the year, reflecting sizable increases at a few banks that purchased loans from their affiliated finance companies. In addition, some banks brought consumer loans back onto their books that had previously been securitized. After twelve consecutive months of contraction, residential mortgage loans on banks' books increased in February, likely reflecting the pickup in refinancing activity. In

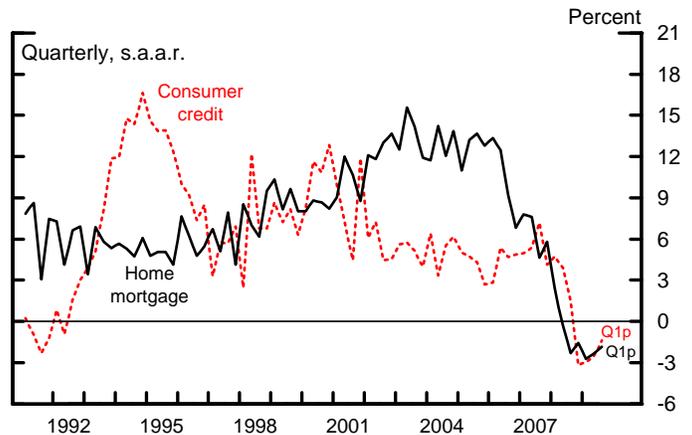
Chart 6 Debt and Money

Growth of debt of nonfinancial sectors

Percent, s.a.a.r.				
	Total	Business	Household	Government
2007	8.6	13.1	6.6	6.1
2008	5.8	4.7	0.4	17.6
Q1	5.2	7.2	3.0	6.7
Q2	3.1	5.8	0.3	4.5
Q3	8.1	4.1	0.2	28.6
Q4	6.3	1.5	-2.0	27.1
2009				
Q1p	4.4	2.9	-2.6	17.5

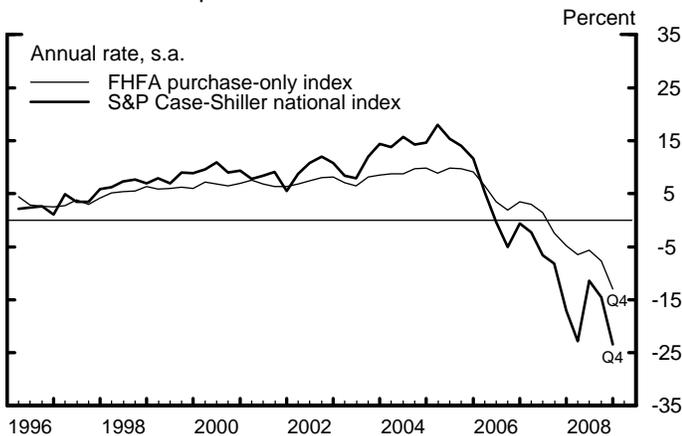
Source: Flow of Funds.
p Projected.

Growth of debt of household sector



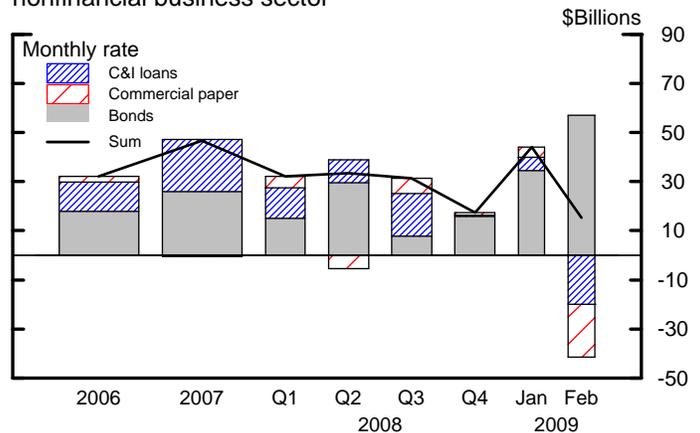
Source: Flow of Funds, Federal Reserve G.19 release.
p Projected.

Growth of house prices



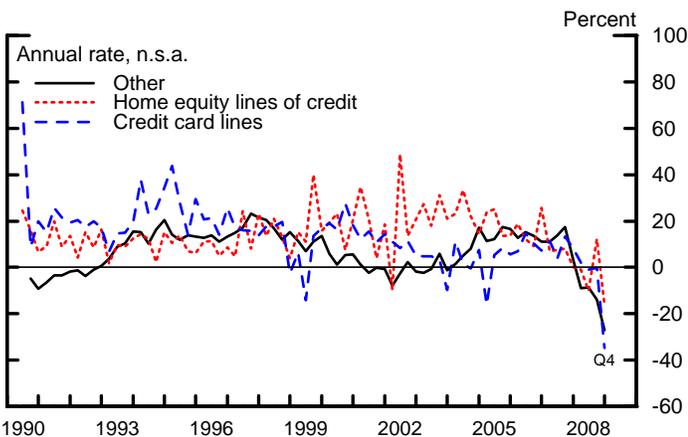
Source: Federal Housing Finance Agency (FHFA),
Standard & Poor's.

Changes in selected components of debt of nonfinancial business sector*



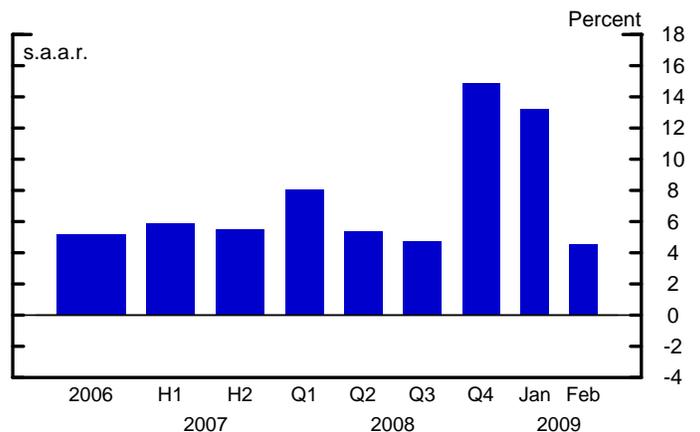
*Commercial paper and C&I loans are seasonally adjusted, bonds are not.
Source: Securities Data Company, Depository Trust & Clearing Corporation,
and Federal Reserve H.8 release.

Growth of unused commitments at commercial banks



Source: Call reports.

Growth of M2



Source: Federal Reserve.

contrast, the growth of home equity loans slowed noticeably in January and February. According to Call Report data, unused loan commitments for the major loan categories—consumer, business, and real estate loans—plunged in the fourth quarter of last year, as banks cut new and existing loan commitments.

(30) M2 grew at an annual rate of about 4½ percent in February, a sharp deceleration from the very rapid pace recorded over the past few months. Liquid deposits, while slowing considerably, continued to expand fairly briskly. Savings deposits surged while demand deposits decreased, owing in part to one large institution's resumption of its sweep program when it was clarified that swept funds would be covered under the FDIC's guarantee program. Retail money funds fell sharply in February, reflecting sizable outflows from Treasury-only funds, which have very low yields. Small time deposits also contracted noticeably, as the institutions that had been bidding aggressively for these retail funds stopped doing so. Currency growth remained robust in February, with much of the strength reflecting foreign demand, according to staff estimates.

Economic Outlook

(31) Information received since the January Greenbook has confirmed that the economy is undergoing a severe recession. Real GDP is now estimated to have contracted during the final quarter of 2008 at an annual rate of $6\frac{3}{4}$ percent—a downward revision of nearly 2 percentage points since January—and is projected to contract at a similar pace during the current quarter. Over the intermeeting period, broad equity price indexes fell about 14 percent, house prices continued to drop, and measures of consumer confidence reached historical lows. Incoming data on foreign economies indicated that major U.S. trading partners have also fallen into recession.

(32) Looking ahead, the staff projection assumes that the fiscal stimulus package approved last month will boost real GDP growth by about 1 percentage point this year and by a similar amount in 2010. The staff outlook assumes that the Federal Reserve will not be implementing any further liquidity or credit programs beyond those that have already been announced. Because market participants now appear to place significant odds on an eventual expansion of Federal Reserve acquisitions of agency debt, agency-backed MBS, and possibly long-term Treasury securities, this assumption implies that over time investors will be surprised by the lack of further policy action—a factor that helps explain the gradual rise in Treasury yields and mortgage rates anticipated in the staff forecast. Risk premiums on private securities are projected to decline gradually in response to lessened financial market strains and diminished investor uncertainty; as a result, investment-grade corporate bond spreads narrow by about 130 basis points over the projection period while equity prices rebound at an annual rate of about 11 percent. The real foreign exchange value of the dollar—which rose about 3 percent over the intermeeting period—is expected to start moving down later this year and to decline about 3 percent next year. The spot price of WTI crude oil has remained roughly

unchanged at around \$42 per barrel since late January but is projected to increase to about \$55 per barrel by the end of next year.

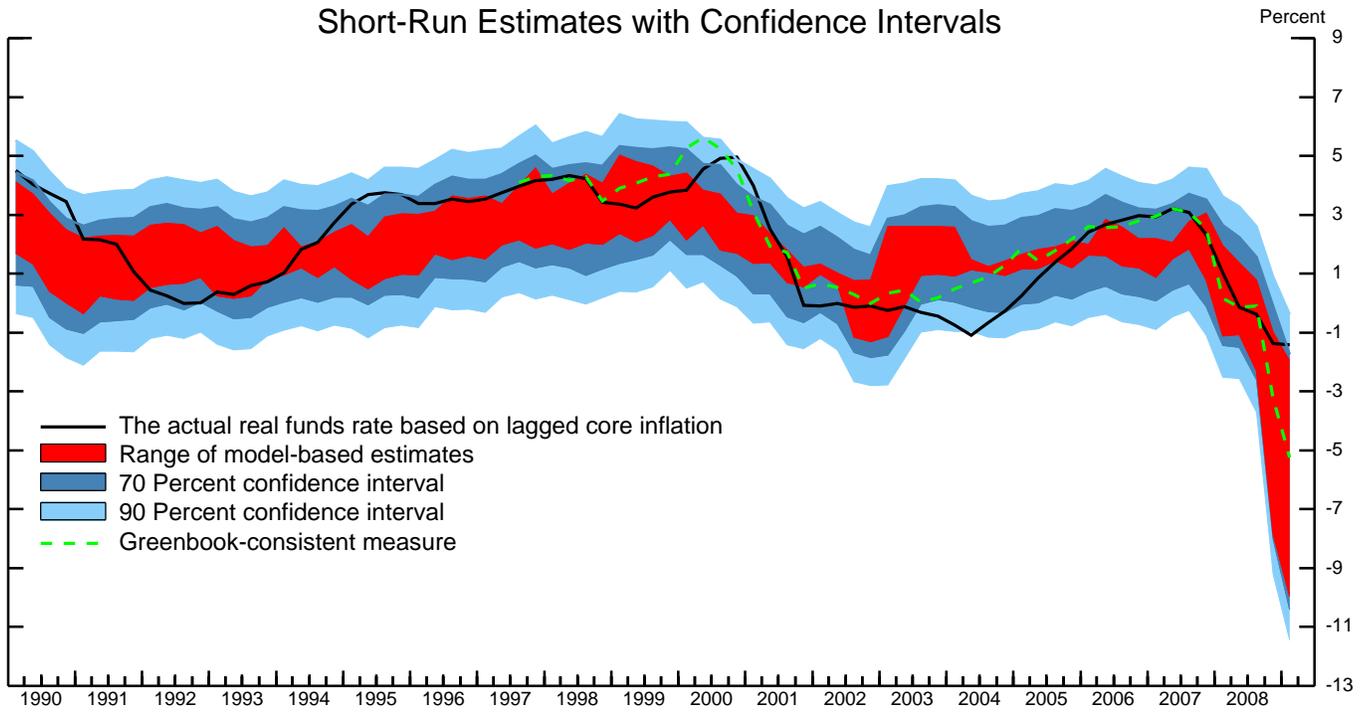
(33) Against this backdrop, real GDP is projected to contract at an annual rate of about 1 percent over the next three quarters, reaching a trough at the end of this year. Subsequently, real GDP accelerates gradually but growth remains below that of potential through 2010. As a result, the output gap widens to more than 8 percent by the end of next year, nearly 3 percentage points more than in the January Greenbook; this gap is projected to narrow thereafter but remains substantial through 2013.

The unemployment rate is projected to rise to 9 $\frac{1}{4}$ percent by the end of the year, edge up a bit further next year, and decline gradually towards the NAIRU over the subsequent few years. With such large and persistent slack in resource utilization, core PCE inflation drops from about 1 percent this year to about $\frac{1}{2}$ percent in 2010—about $\frac{1}{4}$ percentage point lower than in the January Greenbook—and remains below 1 percent for several years thereafter. In light of these projections for economic activity and inflation, the federal funds rate is assumed to stay very close to zero over the next five years.

Monetary Policy Strategies

(34) Reflecting the severe deterioration in the staff outlook for aggregate demand, all the estimates of short-run r^* are significantly lower than those shown in the January Bluebook (Chart 7). The Greenbook-consistent measure now stands at -5.2 percent, a decline of about 2 $\frac{1}{4}$ percentage points since late January. This downward revision mainly reflects recent weak readings on the labor market and many spending and production indicators, the significant reduction in broad equity price indexes, the appreciation of the dollar against major and emerging-market currencies, and much weaker foreign demand. Model-based estimates of short-run r^* span a wide interval, but all now fall substantially below zero. The estimate from the

Chart 7
Equilibrium Real Federal Funds Rate



Short-Run and Medium-Run Measures

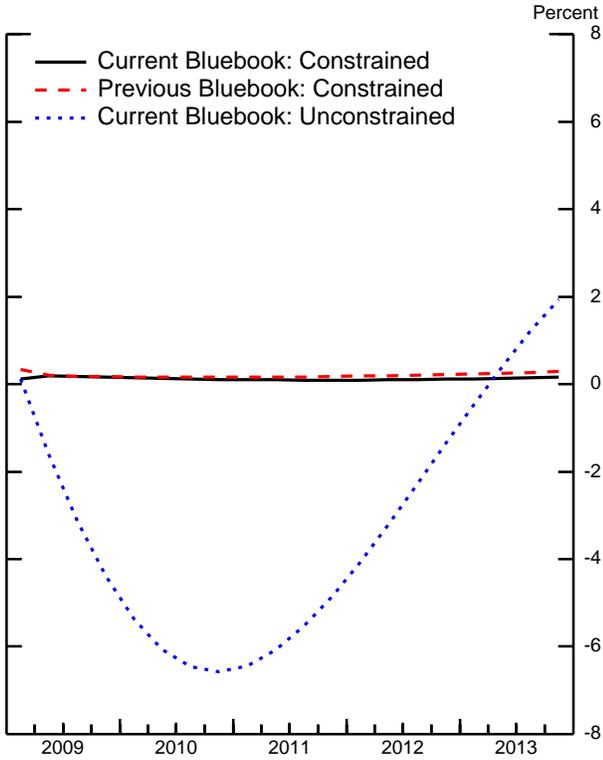
	Current Estimate	Previous <i>Bluebook</i>
Short-Run Measures		
Single-equation model	-2.0	-0.1
Small structural model	-10.0	-6.2
Large model (FRB/US)	-8.6	-6.8
Confidence intervals for three model-based estimates		
70 percent confidence interval	-10.4 - -1.7	
90 percent confidence interval	-11.4 - -0.4	
Greenbook-consistent measure	-5.2	-3.0
Medium-Run Measures		
Single-equation model	1.4	1.7
Small structural model	0.3	0.7
Confidence intervals for two model-based estimates		
70 percent confidence interval	-0.2 - 2.1	
90 percent confidence interval	-0.6 - 3.0	
TIPS-based factor model	2.0	2.0
Memo		
Actual real federal funds rate	-1.4	-1.7

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.

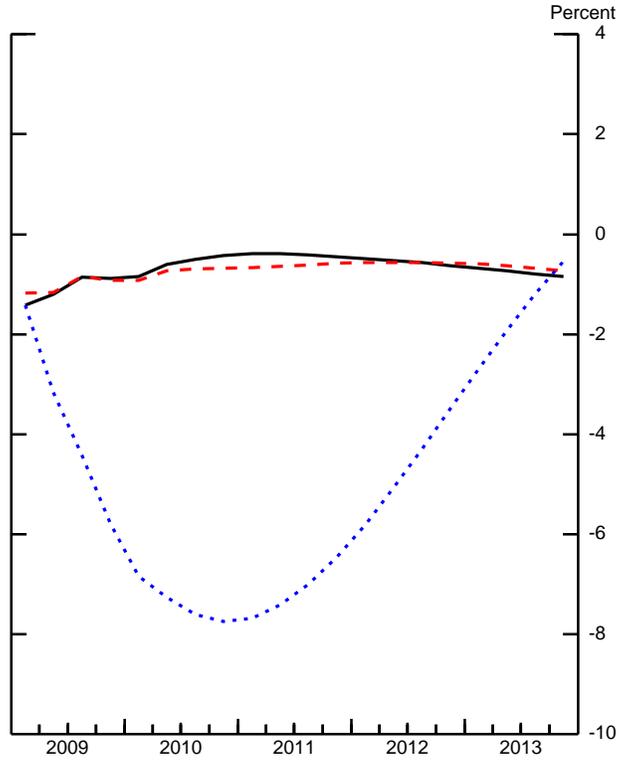
Chart 8

Constrained vs. Unconstrained Monetary Policy
(2 Percent Inflation Goal)

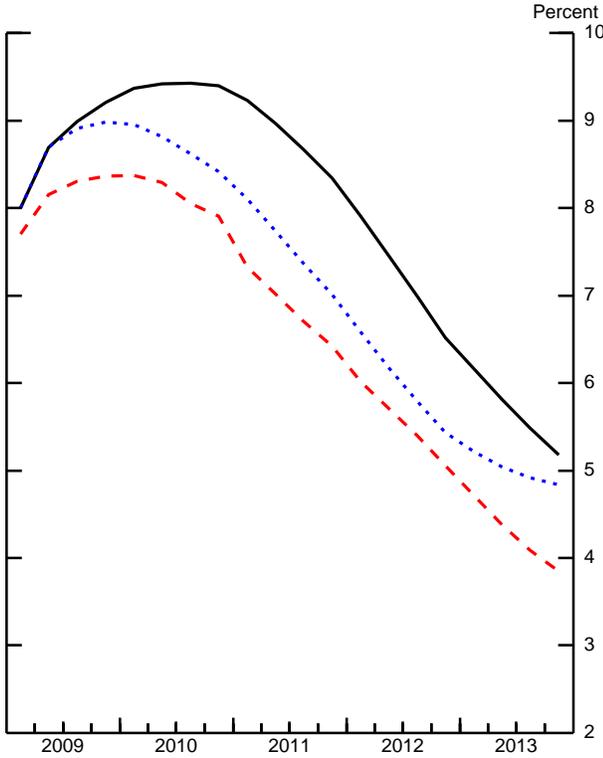
Nominal Federal Funds Rate



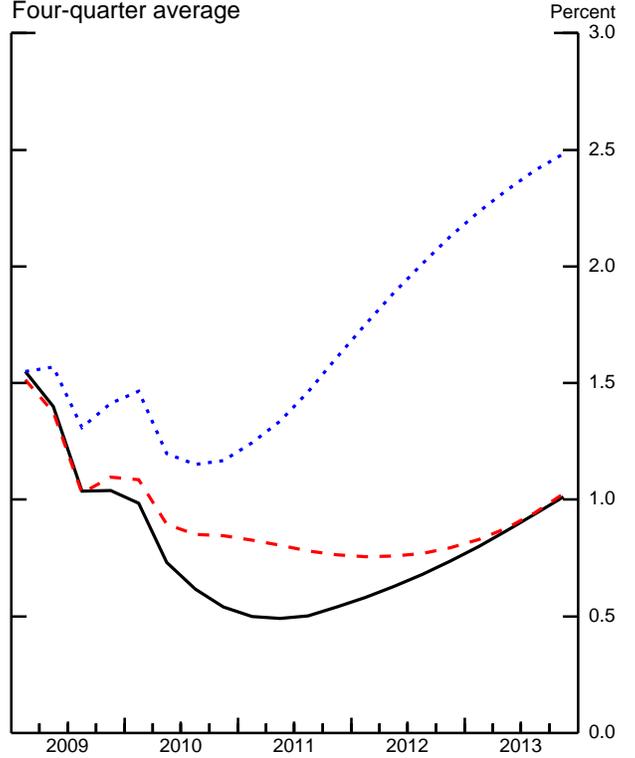
Real Federal Funds Rate



Civilian Unemployment Rate



Core PCE Inflation
Four-quarter average



small structural model is -10.0 percent, about 3¾ percentage points lower than in the last Bluebook; this revision reflects the recent widening of the output gap as well as the sharp drop in equity prices. The FRB/US model estimate of r^* is now -8.6 percent, down 1¾ percentage point from January; that drop mainly reflects the lower equity prices, the higher dollar, and weaker near-term domestic and foreign real activity. The estimate of the single-equation model—which does not depend on equity prices—is not as low as the other estimates; it now stands at -2.0 percent, about 2 percentage points lower than in the previous Bluebook. This reduction reflects the recent weakening in real activity, which translates into a larger negative output gap. All these measures of short-run r^* are well below the current level of the actual real federal funds rate.

(35) To provide another perspective on the economic outlook and possible monetary policy strategies, optimal control simulations of the FRB/US model were conducted using the long-run staff forecast as a starting point.⁹ Chart 8 shows the simulation results for an inflation goal of 2 percent—a level that is broadly consistent with the longer-run inflation projection in the February Summary of Economic Projections. As in recent Bluebooks, optimal monetary policy is severely constrained by the zero lower bound and holds the nominal funds rate close to zero through 2013 (black solid lines); an almost identical path was shown in the January Bluebook (red dashed lines). In fact, the severity of the zero bound constraint is even worse now because of the deterioration in the economic outlook, and as a result the period of very low policy rates now extends well beyond 2013, unlike the case in January (not shown). In the simulation, financial market participants recognize this downward revision to the long-run path of the funds rate—an expectation that provides some modest support to real activity and inflation over the next few years through lower

⁹ 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.

long-term interest rates. However, the additional stimulus is not enough to offset the more pronounced underlying weakness of spending in the current staff projection, as evidenced by the downward revisions to the estimates of r^* . Thus, the civilian unemployment rate is about 1½ to 2 percentage points higher from 2010 onwards than in the January simulations, and core PCE inflation is somewhat lower.

(36) To illustrate the severity of the zero lower bound constraint, Chart 8 also displays results without imposing the zero bound on the nominal interest rate (blue dotted lines). Under this unconstrained policy, the optimal funds rate path would fall to -6½ percent late next year, rising back above zero only in 2013. In the unconstrained optimal policy scenario, the additional stimulus that can be achieved in the absence of the zero bound shows through to the real federal funds rate. In the case where the zero lower bound holds, the real federal funds rate hovers around -1 percent through the entire simulation period. But in the hypothetical case in which nominal interest rates are free to turn negative, the real funds rate decreases to -7¾ percent by the end of 2010. Relative to the constrained case, such a policy would allow the civilian unemployment rate to run about 1 percentage point lower over the next few years, and would put core PCE inflation on a steep upward trajectory from about 1¼ percent in mid-2010 to 2½ percent by the end of 2013.¹⁰ This overshooting of the inflation target—which is only temporary—is desirable from the standpoint of optimal policy, because it leads to more favorable financial conditions early in the simulation period, thereby providing more initial support to real activity.

¹⁰ In the version of the FRB/US model used for these simulations, wage and price setters update their estimate of the Committee's inflation target—and thus their expectations for long-run inflation—in response to two factors: recent changes in actual inflation, and monetary policy surprises, where the latter are gauged (in essence) by the deviation of the federal funds rate from the prescriptions of an estimated Taylor rule. The large persistent fall in the nominal funds rate in the unconstrained optimal policy simulation comes as a surprise to these agents, leading them over time to mark up substantially their expectations for long-run inflation. This revision in expectations in turn causes actual inflation to rise appreciably in the simulation.

(37) The additional monetary easing associated with the counterfactual unconstrained optimal policy can provide a useful benchmark in judging the stimulus provided by nontraditional policy actions. The extra monetary stimulus resulting from removing the zero bound constraint reduces the ten-year Treasury yield, the conventional mortgage rate, and the yield on investment-grade bonds by about 1½ percentage point relative to their trajectories under the constrained policy (not shown). As presented in the box entitled “Large-Scale Asset Purchases and Unconstrained Optimal Policy,” some of the benefits of such an unconstrained policy can likely be attained by a policy of large-scale purchases of long-term Treasury securities and agency MBS.

(38) As depicted in Chart 9, the outcome-based policy rule prescribes a funds rate at its effective lower bound through mid-2012—about a year longer than shown in the January Bluebook. In contrast, the trajectory of the funds rate that appears to be anticipated by financial market participants is significantly higher; it rises above 1 percent by the end of 2010 before reaching a plateau of about 2¾ percent in 2012.¹¹ Compared with the January Bluebook, medium-term uncertainty regarding the path for policy has decreased, and the confidence intervals are now tighter for 2009 and 2010. Consistent with the deterioration in the staff’s economic projections, all the simple policy rules prescribe setting the nominal funds rate at the lower bound.

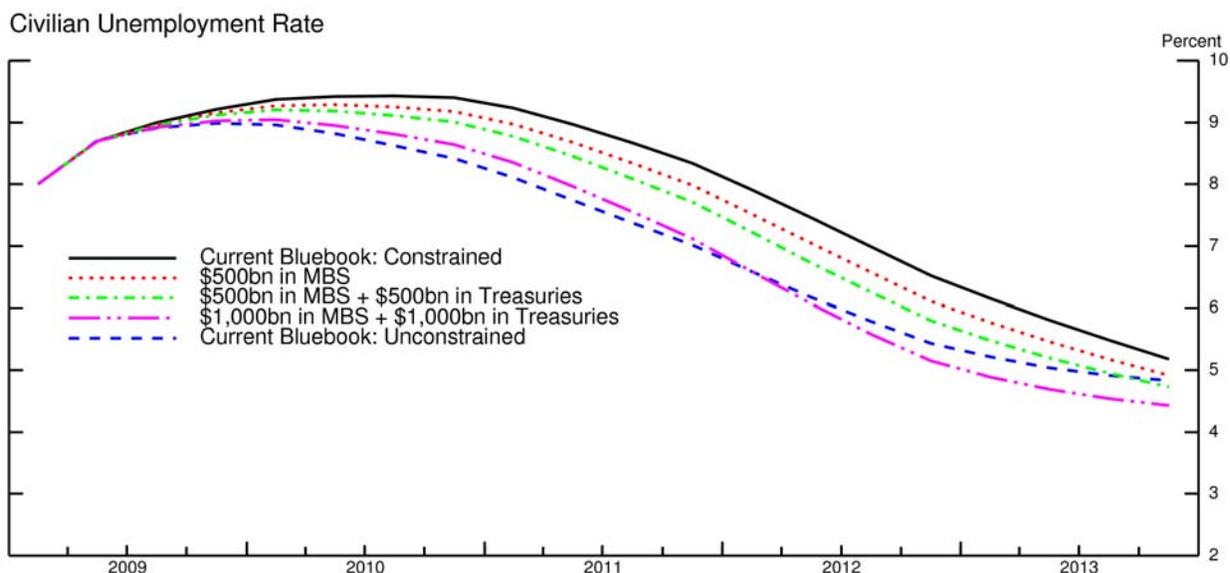
¹¹ Given the uncertainty about the economic and financial outlook, reading policy expectations from federal funds futures and options is not straightforward; in particular, the term premium may be larger than usual. The most recent dealer survey shows that the majority of respondents do not expect the first rate increase to occur until the first quarter of 2011 or later.

Large-Scale Asset Purchases and Unconstrained Optimal Policy

This box analyzes the extent to which a combination of a conventional optimal policy and nontraditional policy measures could generate unemployment and inflation outcomes similar to those associated with the unconstrained optimal policy discussed in the text. In the charts below, we use simulations of the FRB/US model to show the implications for the outlook of different scenarios for expanding the Federal Reserve's current program of large-scale asset purchases.¹

The first scenario (dotted red lines) considers additional MBS purchases of \$500 billion. The second scenario (dash-dotted green) assumes purchases of \$500 billion of long-term Treasury securities as well as an additional \$500 billion of MBS. The third program (dash-dotted magenta) considers an even larger package, totaling \$2.0 trillion, evenly split between purchases of MBS and long-term Treasury securities; this program would involve purchases equivalent to about 30 percent of the current publicly held stock of nominal coupon Treasury securities and about 80 percent of the stock with terms greater than five years. Given the current configuration of market interest rates and the staff's estimates of the relative macroeconomic effects of operations across assets, tilting the composition of asset purchases toward a larger share of MBS may be viewed as a desirable option. On the other hand, in light of the considerable uncertainty about the quantitative effects of these policies, it may be prudent to include a significant share of Treasury securities.²

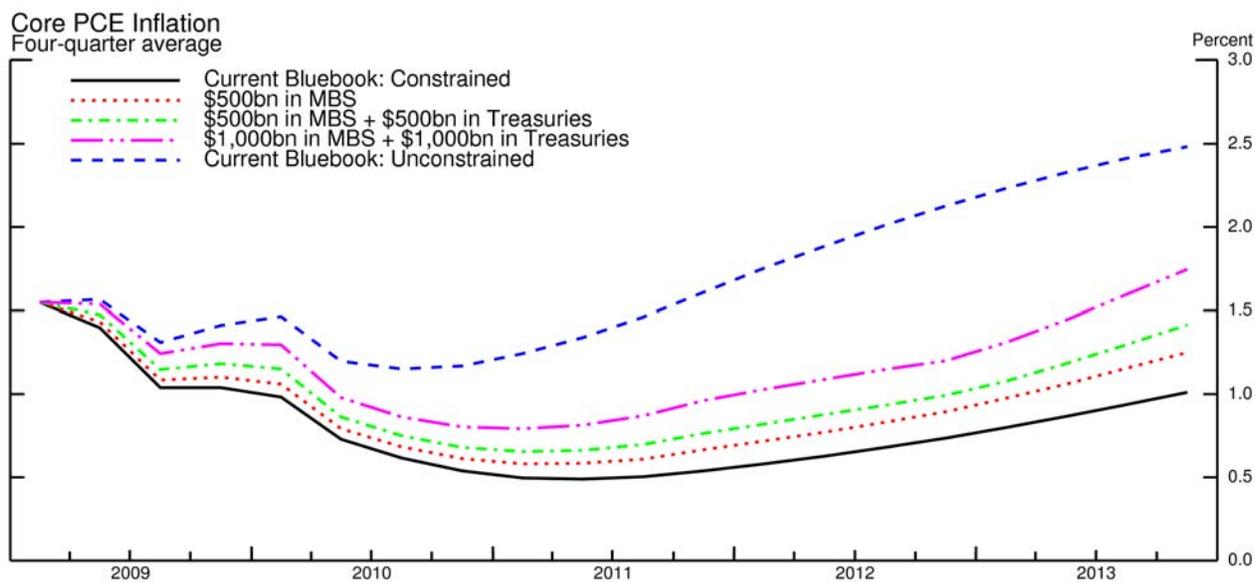
The efficacy of any asset purchase program is quite uncertain and hinges on the extent to which the program directly affects the yields of the asset purchased as well as whether those



¹ The memo "Further Information on the Economic Effects of Large-Scale Purchases of Long-term Treasury Securities and Agency Debt and MBS" by Eileen Mauskopf and David Reifschneider, sent to FOMC, March 9 2009, describes the simulations and underlying assumptions in more detail.

² See Joseph Gagnon, David Lucca, Jonathan McCarthy, Julie Remache, and Jennifer Roush, "Expanding Large-Scale Asset Purchases: Effectiveness, Benefits, Risks, and Strategies," memo to FOMC, March 11, 2009 for a discussion of alternative strategies for large-scale asset purchase programs.

Large-Scale Asset Purchases and Unconstrained Optimal Policy (cont.)



effects spill over to other asset markets. In the simulations, it is assumed that the full effects of the programs on Treasury, mortgage, and corporate bond rates are felt in the second quarter of 2009 when the programs are first announced; these shifts persist through 2011 and then begin to fade in 2012 as the Federal Reserve's positions in MBS and Treasury debt are assumed to be gradually unwound.

As shown in the chart on the previous page, depending on the size of the program, the unemployment rate is reduced on average by $\frac{1}{2}$, $\frac{3}{4}$, or $1\frac{1}{4}$ percentage points, respectively. The largest program comes close to replicating the counterfactual outlook shown for the unconstrained optimal policy. As shown in the chart above, these unconventional programs boost inflation somewhat over coming years but fail to bring inflation to the assumed 2 percent target by the end of 2013. Nonetheless, inflation returns to about $1\frac{3}{4}$ percent under the most aggressive program by the end of the forecast period.³

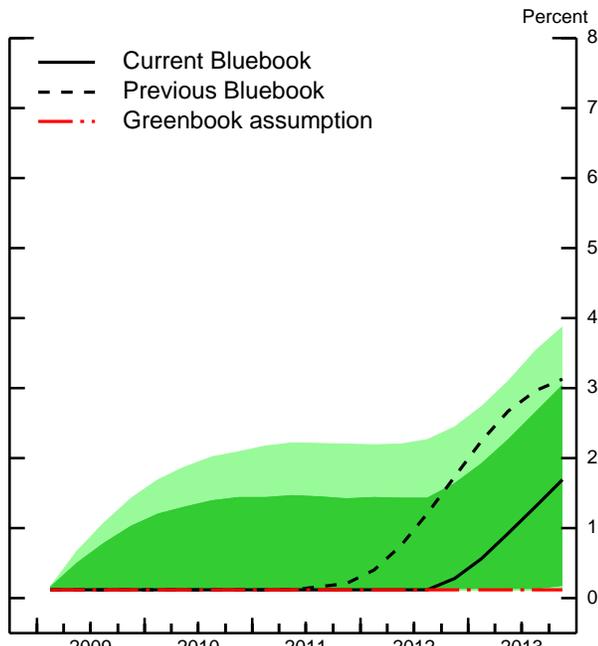
Although these simulations suggest that sufficiently large asset purchases can generate unemployment paths similar to those under the unconstrained policy, there is substantial uncertainty about this analysis. Given that financial market participants currently put substantial odds on an expansion of the current program of large-scale asset purchases, the announcement of such an extension may not have as large an effect on the near-term economic outlook as suggested in the simulations. Moreover, the currently heightened level of uncertainty could make firms and households reluctant to invest even if credit conditions improve substantially. Nonetheless, lower real long-term interest rates might increase house prices as well as mortgage refinancings by more than in the FRB/US analysis, thereby providing a greater stimulus to aggregate demand.

³ Under the unconstrained optimal policy, the significant reduction in nominal interest rates causes agents to mark up substantially their long-run inflation expectations – this raises inflation appreciably in the simulation.

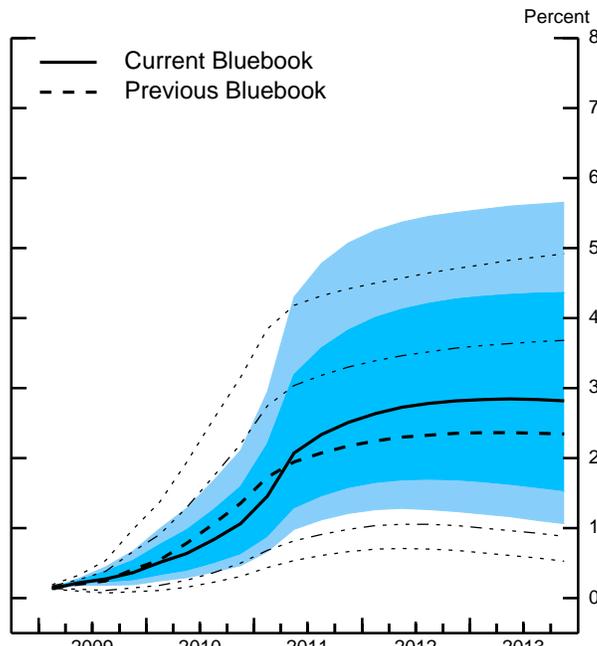
Chart 9

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		
	2009Q2	2009Q3	2009Q2	2009Q3	
Taylor (1993) rule	0.13	0.13	0.13	0.13	
<i>Previous Bluebook</i>	<i>0.30</i>	<i>0.13</i>	<i>0.13</i>	<i>0.13</i>	
Taylor (1999) rule	0.13	0.13	0.13	0.13	
<i>Previous Bluebook</i>	<i>0.13</i>	<i>0.13</i>	<i>0.13</i>	<i>0.13</i>	
First-difference rule	0.13	0.13	0.13	0.13	
<i>Previous Bluebook</i>	<i>0.13</i>	<i>0.13</i>	<i>0.13</i>	<i>0.13</i>	
Memo					
	2009Q2	2009Q3	2009Q4	2010Q1	2010Q2
Estimated outcome-based rule	0.13	0.13	0.13	0.13	0.13
Estimated forecast-based rule	0.13	0.13	0.13	0.13	0.13
Greenbook assumption	0.13	0.13	0.13	0.13	0.13
Fed funds futures	0.24	0.29	0.38	0.52	0.77
Median expectation of primary dealers	0.13	0.13	0.13	0.13	0.13
Blue Chip consensus forecast (March 1, 2009)	0.20	0.20	0.20	0.50	0.70

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

Policy Alternatives

(39) This Bluebook presents three policy alternatives for the Committee's consideration, summarized by the draft statements on the following pages.

The draft statements for Alternatives A and B incorporate a new organizational structure in which the statement begins not by referring to the federal funds rate target but by characterizing the Committee's outlook and then goes on to describe the Federal Reserve's policy strategy. The draft statement for Alternative C uses the same structure as in the January FOMC statement. A somewhat different approach to structuring these statements is discussed at the end of this section.

(40) All three alternatives maintain an unchanged target range of 0 to ¼ percent for the federal funds rate and provide forward policy guidance; as in January, Alternatives B and C indicate that the funds rate is likely to remain exceptionally low "for some time" whereas Alternative A signals a somewhat longer duration by substituting the phrase "for an extended period." All of the alternatives refer to the recent launching of the TALF and note that the range of eligible collateral for that program is likely to be expanded to include other financial assets. As in the January statement, each alternative indicates that the Committee will continue to monitor the size and composition of the Federal Reserve's balance sheet and will assess whether lending facilities should be expanded or modified.

(41) In characterizing the outlook for economic activity, Alternatives A and B indicate that the economy is undergoing "a severe contraction" and that financial conditions "have generally worsened." Both alternatives state that policy measures to stabilize financial markets and institutions, along with stimulus from fiscal and monetary policy, will contribute to "a gradual resumption of sustainable economic growth," but neither alternative makes any specific reference to the timing of economic recovery or to the balance of risks to the economic outlook. In contrast, Alternative C characterizes the incoming information as indicating that economic

activity “has slowed further” but follows the language of the January FOMC statement in pointing to a gradual economic recovery starting later this year and in noting significant downside risks to that outlook.

(42) Alternatives A and B indicate that inflation is likely to remain subdued in light of “the growing margin of economic slack here and abroad,” and both alternatives make note of the risk that inflation could remain persistently below rates consistent with the dual mandate. As in January, Alternative C refers to last fall’s drop in energy and commodity prices and to “prospects for considerable economic slack” as factors explaining the outlook for inflation, which is expected to remain subdued “in coming quarters” before returning to rates consistent with the dual mandate; this alternative does not give an assessment of risks to the inflation outlook.

(43) All three alternatives emphasize that the Federal Reserve will employ “all available tools” for promoting economic recovery and preserving price stability, but the alternatives differ regarding which new policy measures, if any, should be initiated at this meeting. Alternative A indicates that the Federal Reserve’s balance sheet will be expanded further this year by the purchase of \$500 billion in longer-term Treasury securities and by the acquisition of an additional \$500 billion of agency mortgage-backed securities (MBS), bringing total MBS purchases to \$1 trillion.¹² Alternative B expands agency MBS purchases by \$500 billion but does not initiate any acquisition of Treasury notes or bonds; as in the January statement, this alternative indicates that the Committee is prepared to purchase longer-term Treasury securities “if evolving circumstances indicate that such transactions would be particularly effective in improving conditions in private credit markets.” Under Alternative C, no new policy actions would be taken at this meeting; instead, as in January, this

¹² These alternatives do not include any expansion in Federal Reserve purchases of agency debt, because the benefits from further purchases of such securities seem limited. For further discussion, see the note on “Expanding Large-Scale Asset Purchases: Effectiveness, Benefits, Risks, and Strategies” by Joseph Gagnon, David Lucca, Jonathan McCarthy, Julie Remache, and Jennifer Roush that was distributed to the FOMC on March 11.

alternative states that the Federal Reserve stands ready to expand its purchases of agency debt and MBS and is prepared to purchase longer-term Treasury securities in light of evolving circumstances.

January FOMC Statement

The Federal Open Market Committee decided today to keep its target range for the federal funds rate at 0 to ¼ percent. The Committee continues to anticipate that economic conditions are likely to warrant exceptionally low levels of the federal funds rate for some time.

Information received since the Committee met in December suggests that the economy has weakened further. 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.

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. 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.

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 the quantity of such purchases and the duration of the purchase program as conditions warrant. The Committee also is prepared to purchase longer-term Treasury securities if evolving circumstances indicate that such transactions would be particularly effective in improving conditions in private credit markets. The Federal Reserve will be implementing 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 and help to preserve price stability.

Alternative A

1. Information received since the Federal Open Market Committee met in January indicates that the economy is undergoing a severe contraction and that the outlook for the next several quarters has worsened. Job losses, declining equity and housing wealth, and tight credit conditions have weighed on consumer sentiment and spending. Weaker sales prospects and difficulties in obtaining credit have led businesses to cut back on inventories and fixed investment. U.S. exports have slumped as a number of major trading partners have also fallen into recession. Although the near-term economic outlook is weak, the Committee anticipates that policy actions to stabilize financial markets and institutions, together with fiscal and monetary stimulus, will contribute to a gradual resumption of sustainable economic growth.
2. In light of increasing economic slack here and abroad, the Committee expects that inflation 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.
3. In these circumstances, the Federal Reserve will employ all available tools to promote economic recovery and to preserve price stability. The Committee will maintain the target range for the federal funds rate at 0 to ¼ percent and anticipates that economic conditions are likely to warrant exceptionally low levels of the federal funds rate for an extended period. To provide greater support to mortgage lending and housing markets, the Committee decided today to increase the size of the Federal Reserve's balance sheet further by purchasing an additional \$500 billion of agency mortgage-backed securities, bringing its total purchases of these securities to \$1 trillion this year; at least half of this total will be acquired by June. Moreover, to help reduce longer-term interest rates in private credit markets, the Committee decided to purchase \$500 billion of longer-term Treasury securities this year. The Federal Reserve has launched the Term Asset-Backed Securities Loan Facility to facilitate the extension of credit to households and small businesses and anticipates that the range of eligible collateral for this facility is likely to be expanded to include other financial assets. 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 lending facilities should be expanded or modified to provide further support to credit markets and economic activity and to help preserve price stability.

Alternative B

1. Information received since the Federal Open Market Committee met in January indicates that the economy is undergoing a severe contraction and that the outlook for the next several quarters has worsened. Job losses, declining equity and housing wealth, and tight credit conditions have weighed on consumer sentiment and spending. Weaker sales prospects and difficulties in obtaining credit have led businesses to cut back on inventories and fixed investment. U.S. exports have slumped as a number of major trading partners have also fallen into recession. Although the near-term economic outlook is weak, the Committee anticipates that policy actions to stabilize financial markets and institutions, together with fiscal and monetary stimulus, will contribute to a gradual resumption of sustainable economic growth.
2. In light of increasing economic slack here and abroad, the Committee expects that inflation 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.
3. In these circumstances, the Federal Reserve will employ all available tools to promote economic recovery and to preserve price stability. The Committee will maintain the target range for the federal funds rate at 0 to ¼ percent and anticipates that economic conditions are likely to warrant exceptionally low levels of the federal funds rate for some time. To provide greater support to mortgage lending and housing markets, the Committee decided today to increase the size of the Federal Reserve's balance sheet further by purchasing an additional \$500 billion of agency mortgage-backed securities, bringing its total purchases of these securities to \$1 trillion this year; at least half of this total will be acquired by June. The Committee also is prepared to purchase longer-term Treasury securities if evolving circumstances indicate that such transactions would be particularly effective in improving conditions in private credit markets. The Federal Reserve has launched the Term Asset-Backed Securities Loan Facility to facilitate the extension of credit to households and small businesses and anticipates that the range of eligible collateral for this facility is likely to be expanded to include other financial assets. 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 lending facilities should be expanded or modified to provide further support to credit markets and economic activity and to help preserve price stability.

Alternative C

1. The Federal Open Market Committee decided today to keep its target range for the federal funds rate at 0 to ¼ 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 January indicates that the economy has slowed further. Job losses, declining equity and housing wealth, and tight credit conditions have weighed on consumer sentiment and spending. Weaker sales prospects and difficulties in obtaining credit have led businesses to cut back on inventories and fixed investment. 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. 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 that occurred last fall and the prospects for considerable economic slack, the Committee expects that inflation will remain subdued in coming quarters before returning to 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 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 the quantity of such purchases and the duration of the purchase program as conditions warrant. The Committee also is prepared to purchase longer-term Treasury securities if evolving circumstances indicate that such transactions would be particularly effective in improving conditions in private credit markets. The Federal Reserve has launched the Term Asset-Backed Securities Loan Facility to facilitate the extension of credit to households and small businesses and anticipates that the range of eligible collateral for this facility is likely to be expanded to include other financial assets. 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 lending facilities should be expanded or modified to provide further support to credit markets and economic activity and to help preserve price stability.

The Case for Alternative B

(44) If policymakers judge that the economy is undergoing a severe economic contraction and that the subsequent recovery is likely to be feeble, and if they believe that a further increase in the size of the Federal Reserve's balance sheet would provide additional monetary stimulus and thereby improve the economic outlook, the Committee could decide at this meeting to expand its purchases of agency MBS and to reiterate the possibility of purchasing longer-term Treasury securities depending on evolving circumstances, as in **Alternative B**. Incoming information over the intermeeting period may have led policymakers to mark down their projections for economic activity and inflation and hence to anticipate a deeper recession and a weaker recovery—perhaps lasting five years or more—in the absence of any additional policy stimulus. For example, the Greenbook-consistent measure of short-run r^* has fallen sharply since January and is now almost 4 percentage points below the actual real federal funds rate, indicating that a substantial further increase in the degree of policy stimulus would be required to close the output gap over a three-year period. This policy alternative might also be appealing to members who already considered the economic outlook to be quite bleak in late January but preferred at that time to postpone consideration of further monetary policy easing until after Congress had approved the fiscal stimulus package and the administration had announced its plans for stabilizing the financial system and the housing sector. Even members whose modal forecast is more optimistic than that of the staff might nonetheless believe that additional monetary stimulus would be appropriate to provide impetus to the economy and to help alleviate the risk of an accelerating feedback loop between financial conditions and economic activity that might lead to even more severe macroeconomic outcomes.

(45) While predictions of the stimulative effects of expanded agency MBS purchases are subject to considerable uncertainty, especially under present economic and financial circumstances, event studies and model simulations may be helpful in providing a very rough gauge. For example, yields on agency MBS fell nearly 45 basis points on November 25, 2008—the day that the Federal Reserve announced that it would purchase up to \$100 billion in agency debt and up to \$500 billion in agency MBS—while yields on longer-term Treasury securities and investment-grade corporate debt declined by about 20 basis points. Since then, agency MBS yields have fallen further, on net, to rates more than 100 basis points below those prevailing in mid-November, while conventional mortgage rates have declined nearly 100 basis points. In light of that event study and other evidence, the staff currently estimates that expanding agency MBS purchases by an additional \$500 billion over the course of this year could push down agency MBS yields and conventional mortgage rates by about $\frac{3}{4}$ percentage point, while spillover effects might tend to reduce yields on corporate bonds and longer-term Treasury securities by about $\frac{1}{2}$ percentage point and $\frac{1}{4}$ percentage point, respectively.¹³ Assuming that the policy measure has these direct effects on longer-term interest rates, simulations of the FRB/US model indicate that the unemployment rate in late 2012 would decline by nearly $\frac{1}{2}$ percentage point relative to baseline.¹⁴ Of course, the magnitude of that impact is subject to numerous uncertainties, in part because the FRB/US model abstracts from some specific characteristics of the transmission mechanism—including house prices, distributional effects of mortgage refinancing, and credit market frictions—that might well magnify or dampen the actual stimulus from this policy measure.

¹³ See the note on “Expanding Large-Scale Asset Purchases: Effectiveness, Risks, Benefits, and Strategies” by Joseph Gagnon, David Lucca, Jonathan McCarthy, Julie Remache, and Jennifer Roush that was distributed to the FOMC on March 11.

¹⁴ See the note on “Economic Effects of Large-Scale Purchases of Long-term Treasury Securities and Agency Debt and MBS” by Eileen Mauskopf and David Reifschneider that was distributed to the FOMC on March 9.

(46) A significant consideration in deciding whether to move ahead with a \$500 billion expansion of agency MBS purchases would be the extent to which policymakers are comfortable that this policy measure would not be likely to constrain the future conduct of monetary policy. Substantial balance sheet adjustments may well be needed once the Committee judges that the funds rate should be raised above its current target range—an eventuality that does not take place until after 2013 in the Greenbook projection but that might arise sooner if the economy recovers more briskly or inflation picks up more quickly than expected by the staff. Last fall’s developments in the federal funds market showed that paying interest on reserve balances held by depository institutions may not be sufficient to provide a firm floor for the funds rate in an environment with a very high level of excess reserves and with some major market participants—such as the GSEs—ineligible to receive interest on reserves. If a reduction in reserve balances was needed to attain a specific value of the federal funds rate, the staff currently anticipates that the Desk would be able to absorb some reserve balances by selling agency MBS or Treasury securities or by engaging in reverse repos using those securities as collateral; such operations can be conducted under the Federal Reserve’s existing authority.¹⁵ However, selling large quantities of longer-term securities might induce strains in debt markets and could result in substantial capital losses for the Federal Reserve, while large reverse repo operations would avoid the realization of capital losses but might severely strain the capacity of the repo market; in any case, the overall scale of these operations could not exceed the market value of Federal Reserve holdings of longer-term securities. Of course, the size of the Federal Reserve’s balance sheet may not pose any

¹⁵ As discussed in the note on “Long-Run Balance Sheet Prospects and Exit Strategy Issues” by Chris Burke, Spence Hilton, and Warren Hrungr that was distributed to the FOMC on March 12, the Desk anticipates that developing the capability to arrange large-scale reverse repos of agency MBS—which have not been conducted to date—could require several quarters; moreover, it is difficult at this stage to assess the extent of the market capacity for such transactions.

substantial constraints on the conduct of monetary policy if statutory authority is obtained for the Federal Reserve to issue its own interest-earning obligations (“Fed bills”) or for the Treasury, at the request of the Federal Reserve, to issue Supplementary Financing Bills; in either case, these securities would be exempted from the federal debt ceiling.¹⁶

(47) A number of distinct factors might motivate a decision not to initiate purchases of longer-term Treasury securities at this meeting but to preserve the option of pursuing such purchases at a later date. Policymakers may be skeptical that large-scale purchases of Treasury notes and bonds would be the most efficient means of improving private sector credit conditions, especially in an environment of elevated credit frictions and incomplete arbitrage across different financial markets. Indeed, the Committee may see a substantial risk that purchases of longer-term Treasury securities could have detrimental effects on financial market functioning, perhaps by diminishing the value of Treasury notes and bonds as hedging vehicles. Moreover, the Committee may be concerned that the Federal Reserve’s credibility could be undermined if investors perceived this program as oriented towards monetizing the federal debt rather than as a tool for preserving price stability and promoting the resumption of sustainable economic growth; such a weakening of Federal Reserve credibility could push up inflation risk premiums and thereby raise the cost of longer-term credit for households and businesses. Finally, the recently announced expansion of the TALF is likely to increase the size of the Federal Reserve’s balance sheet, and expanded purchases of agency MBS would generate a substantial further increase in the size of the balance sheet that at some stage would need to be reversed; thus, even if policymakers conclude that large-scale purchases of Treasury notes and bonds would be helpful in providing additional economic

¹⁶ See the note on “Legislative Initiatives for Additional Federal Reserve Balance Sheet Management Tools” by Scott Alvarez and Brian Madigan that was sent to the Committee on March 9.

stimulus, they may prefer to hold off on initiating an even larger balance sheet expansion at the current juncture.

The Case for Alternative A

(48) If policymakers judge that a substantially greater degree of monetary stimulus is warranted to help promote a resumption of sustainable economic growth, the Committee could decide at this meeting to initiate large-scale purchases of \$500 billion in longer-term Treasury securities and to expand purchases of agency MBS, as in **Alternative A**. Committee participants may concur that the Federal Reserve's current liquidity and credit facilities are crucial for stabilizing the financial system and providing the prerequisites for economic recovery, but they may nonetheless view the monetary and fiscal policy measures currently in train as unlikely to foster an acceptably rapid pace for that recovery. Indeed, in the absence of any further macroeconomic stimulus, the Greenbook projects that in mid-2012 the unemployment rate will still be above 7 percent and the core inflation rate will be less than $\frac{3}{4}$ percent. As noted above, a \$500 billion expansion in purchases of agency MBS could be helpful in improving that outlook but still would not be likely to bring the economy to its potential even after five years. Moreover, participants' projections for economic activity and inflation might be considerably worse than that of the Greenbook if they anticipate that credit market frictions are likely to generate further sharp declines in spending and employment in coming quarters, as in the Greenbook's "Intensifying Financial Strains" scenario, and hence they might see an even stronger rationale for providing additional monetary stimulus to the economy.

(49) The stimulative impact of large-scale purchases of Treasury notes and bonds is very difficult to predict because such a monetary policy measure would be unprecedented for the United States. Nevertheless, various sources of evidence shed some light on the likely response of longer-term Treasury yields and other longer-term

interest rates.¹⁷ A staff review of the empirical literature indicates that a Federal Reserve program to purchase \$500 billion in longer-term Treasury securities would be likely to push down the 10-year Treasury yield by about 20 to 100 basis points; staff analysis of Treasury issuance surprises over the past decade suggests that the impact could be near the upper end of this range, whereas analysis of high-frequency order book data implies that the response could be near the bottom of this range. Earlier this month, yields on U.K. long-term government securities declined nearly 60 basis points in response to the Bank of England's announcement that it would be purchasing a substantial amount of those securities; adjusting for the size of the announced purchases relative to the outstanding stock, this event suggests that a Federal Reserve program to purchase \$500 billion in U.S. government notes and bonds would reduce longer-term yields by a similar amount. Of course, predicting the magnitude of spillovers to private interest rates is subject to a great deal of additional uncertainty. During times of normal financial market functioning, weekly changes in longer-term Treasury yields and in private interest rates exhibit correlations exceeding 90 percent, suggesting that a decline in Treasury yields would be matched by a roughly similar decline in yields on private debt instruments of comparable maturity. In contrast, the linkages across financial markets appear to be much weaker under present market conditions. For example, since the onset of the financial crisis, weekly changes in the 10-year Treasury yield have exhibited correlations of about 50 to 70 percent with changes in yields on investment-grade corporate debt.

(50) Given specific assumptions about the impact of large-scale purchases of Treasury notes and bonds on a range of longer-term yields, FRB/US model simulations can be employed to gauge the impact of such purchases on the broader

¹⁷ See the note on "Expanding Large-Scale Asset Purchases: Effectiveness, Benefits, Risks, and Strategies" by Joseph Gagnon, David Lucca, Jonathan McCarthy, Julie Remache, and Jennifer Roush that was distributed to the FOMC on March 11.

economy.¹⁸ In light of the available empirical evidence, it seems plausible that a Federal Reserve program to purchase \$500 billion in Treasury notes and bonds would push down longer-term Treasury yields by about 50 basis points and that spillover effects would lead to a 30 basis point decline in conventional mortgage rates and longer-term corporate bond yields. Assuming that the program has those effects on longer-term interest rates, simulations of the FRB/US model indicate that this program would reduce the unemployment rate in late 2012 by nearly ½ percentage point relative to the Greenbook baseline. Thus, as shown in the box on “Large-Scale Asset Purchases and Unconstrained Optimal Control Policies,” if this initiative is combined with a \$500 billion expansion in purchases of agency MBS, the model implies that the unemployment rate would be close to 5 percent by 2013 while core inflation would be about 1¼ percent and heading towards rates consistent with the dual mandate.

(51) In an environment of exceptionally high uncertainty, policymakers may judge that Alternative A provides the most appropriate balance between downside risks to the economic outlook over the next several years and the risk that excessive expansion of the Federal Reserve’s balance sheet could hamper the conduct of monetary policy at longer horizons. Members may interpret recent data as providing a strengthened rationale for taking further action to alleviate downside risks to economic activity and price stability. For example, with the trajectory for core inflation now expected to be even lower over the next few years, participants may perceive a greater risk that the longer-run inflation expectations of households and businesses could drift downward over time, as in the Greenbook’s “Deflation” scenario. Indeed, as discussed in the box on “Extracting Deflation Probabilities from TIPS,” investors evidently perceive a significant probability that the price level

¹⁸ See the note on “Economic Effects of Large-Scale Purchases of Long-term Treasury Securities and Agency Debt and MBS” by Eileen Mauskopf and David Reifschneider that was distributed to the FOMC on March 9.

will decline over the next five years; a substantial increase in monetary stimulus might help ameliorate those concerns. Moreover, to the extent that the extraordinarily high level of corporate bond spreads reflects investors' worries about an even steeper macroeconomic downturn, participants may conclude that expanding agency MBS purchases and initiating purchases of longer-term Treasury securities could reduce these spreads by reassuring investors about the economic outlook. Finally, policymakers may be reasonably optimistic about the prospects for receiving new tools for managing the Federal Reserve's balance sheet and hence they may be comfortable that a further sizable expansion in the balance sheet would not pose significant risks in terms of imposing constraints on the future conduct of monetary policy.

The Case for Alternative C

(52) If policymakers anticipate a more robust economic recovery than in the staff outlook and perceive that further expansion in the size of the Federal Reserve's balance sheet would be associated with substantial risks to the future conduct of monetary policy, they may prefer not to initiate any new policy measures at this meeting, as in **Alternative C**. Committee participants may foresee that government actions to stabilize the financial system, together with the monetary and fiscal policies already in train, are likely to foster a stronger pace of economic activity later this year and in 2010, as in the Greenbook's "Faster Recovery" scenario. Participants may also judge that some portion of the current economic downturn reflects a falloff in trend productivity growth, perhaps reflecting the costs of adjustment associated with sectoral reallocation of capital and labor, as in the Greenbook's "More Adverse Supply Conditions" scenario; in that case, the extent of economic slack would be substantially smaller than in the staff projection, and inflation could stay much closer to rates judged to be consistent with the dual mandate. Even if policymakers see the

economy as likely to follow a trajectory similar to that of the staff projection, they may see fiscal policy as the most appropriate tool for providing additional stimulus. Finally, policymakers may be particularly concerned about the risk that constraints arising from the size of the Federal Reserve's balance sheet could constrain the future conduct of monetary policy; if so, they may be reluctant to adopt measures that would further expand its assets and liabilities, at least until the Federal Reserve receives new tools for managing the size and composition of its balance sheet.

An Alternative Structure for the FOMC Statement

(53) The draft statements for Alternatives A and B begin by characterizing the outlook for economic activity and inflation, and the draft statement for Alternative C starts by indicating the Committee's decision to maintain the target range for the federal funds rate. However, participants may instead prefer that the FOMC statement begin by pointing to new policy measures that the Committee has approved, as illustrated in Alternatives A' and B' below, or to reaffirm the existing policy strategy, as in Alternative C'. The substance of these three alternatives is identical to those of Alternatives A, B, and C, respectively.

Alternative A'

1. The Federal Open Market Committee decided today to increase the size of the Federal Reserve's balance sheet further by purchasing \$500 billion of longer-term Treasury securities this year and by acquiring an additional \$500 billion of agency mortgage-backed securities (MBS), bringing its total purchases of agency MBS this year to \$1 trillion, at least half of which will be acquired by June. The Committee anticipates that these actions will help reduce longer-term interest rates in private credit markets and will provide greater support to mortgage lending and housing markets. The Federal Reserve has launched the Term Asset-Backed Securities Loan Facility to facilitate the extension of credit to households and small businesses and anticipates that the range of eligible collateral for this facility is likely to be expanded to include other financial assets. The Committee will maintain the target range for the federal funds rate at 0 to ¼ percent and anticipates that economic conditions are likely to warrant exceptionally low levels of the federal funds rate for some time.
2. This decision reflects information received since the Committee met in January that indicates that the economy is undergoing a severe contraction and that the outlook for the next several quarters has worsened. Job losses, declining equity and housing wealth, and tight credit conditions have weighed on consumer sentiment and spending. Weaker sales prospects and difficulties in obtaining credit have led businesses to cut back on inventories and fixed investment. U.S. exports have slumped as a number of major trading partners have also fallen into recession. Although the near-term economic outlook is weak, the Committee anticipates that policy actions to stabilize financial markets and institutions, together with fiscal and monetary stimulus, will contribute to a gradual resumption of sustainable economic growth.
3. In light of increasing economic slack here and abroad, the Committee expects that inflation 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 continue to employ all available tools to promote economic recovery and to preserve price stability. The Committee will monitor carefully the size and composition of the Federal Reserve's balance sheet in light of evolving financial market developments and will assess whether lending facilities should be expanded or modified to provide further support to credit markets and economic activity and to help preserve price stability.

Alternative B'

1. The Federal Open Market Committee decided today to increase the size of the Federal Reserve's balance sheet further by purchasing an additional \$500 billion of agency mortgage-backed securities, bringing its total purchases of these securities to \$1 trillion this year; at least half of this total will be acquired by June. The Committee anticipates that this action will provide greater support to mortgage lending and housing markets. The Committee also is prepared to purchase longer-term Treasury securities if evolving circumstances indicate that such transactions would be particularly effective in improving conditions in private credit markets. The Federal Reserve has launched the Term Asset-Backed Securities Loan Facility to facilitate the extension of credit to households and small businesses and anticipates that the range of eligible collateral for this facility is likely to be expanded to include other financial assets. The Committee will maintain the target range for the federal funds rate at 0 to ¼ percent and anticipates that economic conditions are likely to warrant exceptionally low levels of the federal funds rate for some time.
2. This decision reflects information received since the Committee met in January that indicates that the economy is undergoing a severe contraction and that the outlook for the next several quarters has worsened. Job losses, declining equity and housing wealth, and tight credit conditions have weighed on consumer sentiment and spending. Weaker sales prospects and difficulties in obtaining credit have led businesses to cut back on inventories and fixed investment. U.S. exports have slumped as a number of major trading partners have also fallen into recession. Although the near-term economic outlook is weak, the Committee anticipates that policy actions to stabilize financial markets and institutions, together with fiscal and monetary stimulus, will contribute to a gradual resumption of sustainable economic growth.
3. In light of increasing economic slack here and abroad, the Committee expects that inflation 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 continue to employ all available tools to promote economic recovery and to preserve price stability. The Committee will monitor carefully the size and composition of the Federal Reserve's balance sheet in light of evolving financial market developments and will assess whether lending facilities should be expanded or modified to provide further support to credit markets and economic activity and to help preserve price stability.

Alternative C'

1. The Federal Open Market Committee today reaffirmed that the focus of its policy is to support the functioning of financial markets and to stimulate the economy through 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 the quantity of such purchases and the duration of the purchase program as conditions warrant. The Committee also is prepared to purchase longer-term Treasury securities if evolving circumstances indicate that such transactions would be particularly effective in improving conditions in private credit markets. The Federal Reserve has launched the Term Asset-Backed Securities Loan Facility to facilitate the extension of credit to households and small businesses and anticipates that the range of eligible collateral for this facility is likely to be expanded to include other financial assets. The Committee will maintain the target range for the federal funds rate at 0 to $\frac{1}{4}$ percent and anticipates 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 January indicates that the economy has slowed further. Job losses, declining equity and housing wealth, and tight credit conditions have weighed on consumer sentiment and spending. Weaker sales prospects and difficulties in obtaining credit have led businesses to cut back on inventories and fixed investment. 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. 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 that occurred last fall and the prospects for considerable economic slack, the Committee expects that inflation will remain subdued in coming quarters before returning to rates that best foster economic growth and price stability in the longer term.
4. The Federal Reserve will continue to employ all available tools to promote economic recovery and to preserve price stability. The Committee will monitor carefully the size and composition of the Federal Reserve's balance sheet in light of evolving financial market developments and will assess whether lending facilities should be expanded or modified to provide further support to credit markets and economic activity and to help preserve price stability.

Bank Credit, Debt, and Money Forecasts

(54) Bank credit is expected to remain flat in 2009 amid weak loan demand from both businesses and households and tight credit standards and terms at banks. Core loans—the sum of commercial and industrial, real estate, and consumer loans—are forecasted to contract modestly, as continued paydowns more than offset new originations. In contrast, securities holdings are expected to grow moderately this year, as banks continue to park deposits and other sources of funds in safe and liquid investments. In 2010, with positive nominal GDP growth and waning effects from tighter lending standards and terms, bank credit is projected to expand at a rate of around 4¼ percent, led by continued expansion of securities, reduced runoffs of C&I loans, and a modest pickup in loans to households.

(55) In the Greenbook outlook, the debt of the private domestic nonfinancial sector is projected to contract slightly in 2009; if realized, this would be the first annual contraction since data were first compiled in 1945. A significant drop in home mortgages contributes to the reduced debt of the household sector, while nonfinancial business debt expands at a weak pace that reflects subdued capital expenditures. Private sector debt is expected to increase next year at a rate of about 1 percent, reflecting some improvement in credit conditions and the resumption of growth in nominal GDP. Federal debt is projected to bulge—growing about 27 percent this year and about 15 percent in 2010, reflecting the need to finance the fiscal stimulus package and government programs aimed at reducing financial market strains. Overall, total domestic nonfinancial debt is projected to expand 5 percent this year and 4½ percent in 2010.

(56) Despite the anticipated contraction in nominal GDP over the course of this year, M2 is projected to expand nearly 3 percent, boosted by heightened demands for safety and liquidity in response to the ongoing turmoil in financial markets as well as the lagged effects of the previous decline in the opportunity costs of holding M2

assets. M2 growth is expected to moderate next year to a rate of about 2¼ percent, roughly in line with the projected growth of nominal GDP, reflecting the gradual recovery of financial markets and waning effects of lower opportunity costs.

Directive

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

Directive Wording

Alternative A: 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 ¼ 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. The Desk is expected to purchase up to \$100 billion in housing-related GSE debt by the end of the second quarter of this year. The Desk is expected to purchase at least \$500 billion in agency-guaranteed MBS by the end of the second quarter of this year and is expected to purchase up to \$1 trillion of these securities by the end of this year. The Committee also directs the Desk to purchase long-term Treasury securities during the intermeeting period. By the end of this year, the Desk is expected to purchase up to \$500 billion of long-term Treasury securities, with the aim of improving conditions in private credit markets. 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 B: 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. The Desk is expected to purchase up to \$100 billion in housing-related GSE debt by the end of the second quarter of this year. The Desk is expected to purchase at least \$500 billion in agency-guaranteed MBS by the end of the second quarter of this year and is expected to purchase up to \$1 trillion of these securities by the end of this year.

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 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	-1.4	-5.2	-0.6
Lagged headline inflation	-0.5	-5.0	-0.4
Projected headline inflation	-0.9	-5.2	-0.6

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:

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

BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM
DIVISION OF MONETARY AFFAIRS
FOMC SECRETARIAT

Date: March 13, 2009

To: Federal Open Market Committee

From: Matthew M. Luecke

Subject: Bluebook Table of Growth Rates for M2

The attached table of growth rates for M2 was inadvertently left out of the Bluebook that was distributed this morning. This table would have appeared after page 54 of the Bluebook.

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	18.4
	Nov-08	8.6
	Dec-08	27.3
	Jan-09	13.2
	Feb-09	4.6
	Mar-09	4.4
	Apr-09	0.5
	May-09	0.0
	Jun-09	-1.0
Quarterly Growth Rates		
	2008 Q1	8.1
	2008 Q2	5.4
	2008 Q3	4.8
	2008 Q4	14.8
	2009 Q1	13.0
	2009 Q2	1.6
Annual Growth Rates		
	2008	8.5
	2009	2.9
	2010	2.2
Growth From	To	
Feb-09	Jun-09	1.0
2008 Q4	Mar-09	10.9
2008 Q4	Jun-09	6.2

* This forecast is consistent with nominal GDP and interest rates in the Greenbook forecast. Actual data through February 2009; projections after.