Prefatory Note

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

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APRIL 24, 2008

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) Over the intermeeting period, conditions in financial markets generally improved but nonetheless remained strained. Many indicators of financial stress spiked in the days immediately before and after the March FOMC meeting amid a widespread flight to quality and liquidity.[1] However, stresses subsequently eased in the wake of the FOMC's policy action and the Federal Reserve's extraordinary measures to boost liquidity, which helped to calm fears of a worsening of the crisis. Equity prices rose considerably. Investment-grade bond spreads moved a bit lower and speculative-grade credit spreads declined more substantially. Bid prices in the secondary market for leveraged loans recovered somewhat. Investment-grade bond issuance held up well. Treasury cash and repo market functioning improved. However, spreads in interbank term funding markets increased, approaching their December highs, and commercial paper (CP) spreads also widened. Banks reported further tightening of terms and standards across a range of loan categories in the most recent Senior Loan Officer Opinion Survey. Spreads of rates on conforming mortgage products over those on comparable-maturity Treasury securities narrowed somewhat but remained high. Although issuance of agency residential mortgage-backed securities (RMBS) continued to be strong, issuance of non-agency RMBS and commercial mortgage-backed securities

[1] Unless otherwise noted, intermeeting changes in U.S. asset prices and yields are calculated under the normal practice of using the closing prices on the day before the previous FOMC meeting and on Bluebook publication day. In cases for which sharp movements close to the March FOMC meeting make this convention potentially misleading, we provide greater detail on price developments.

(CMBS) remained close to nil. Against this backdrop, market participants significantly revised upward the expected path for the federal funds rate and currently price in only a 10 percent chance of a cut of more than 25 basis points at the upcoming FOMC meeting.

Monetary Policy Expectations and Treasury Yields

(2) The 75 basis point cut in the target federal funds rate in March was somewhat smaller than markets had expected; near-dated federal funds futures rates rose 10 to 15 basis points on the announcement.[2] Market reports also pointed to the two dissenting votes and to FOMC statement language conveying somewhat more concern about inflation than had been expected as factors contributing to an increase in the expected future path of interest rates. The Chairman's testimony on April 2 was viewed as somewhat more optimistic about the outlook for economic growth than markets had expected, and rates edged up further that day. Indicators of economic activity and inflation were mixed over the intermeeting period, but overall they were apparently viewed in markets as a bit stronger than expected. Investors appeared to mark down the odds on an adverse tail event in the near future. Market participants now expect the federal funds rate to decline to about 1.95 percent by late summer, about 60 basis points higher than at the time of the March meeting, before rising to 3 percent by the end of 2009

[2] The effective federal funds rate averaged 2.24 percent over the intermeeting period. Volatility of the funds rate remained elevated, comparable to that seen in recent months. Over the period, the volume of long-term RPs increased $38 billion, primarily reflecting the previously announced expansion of the single-tranche term RP program. The Desk redeemed $44 billion in Treasury bills and sold $91 billion of Treasury securities on an outright basis to offset the provision of balances from other sources, including primary credit, the Primary Dealer Credit Facility, the Term Auction Facility, the single-tranche term RP program, and draws on foreign currency swap arrangements.

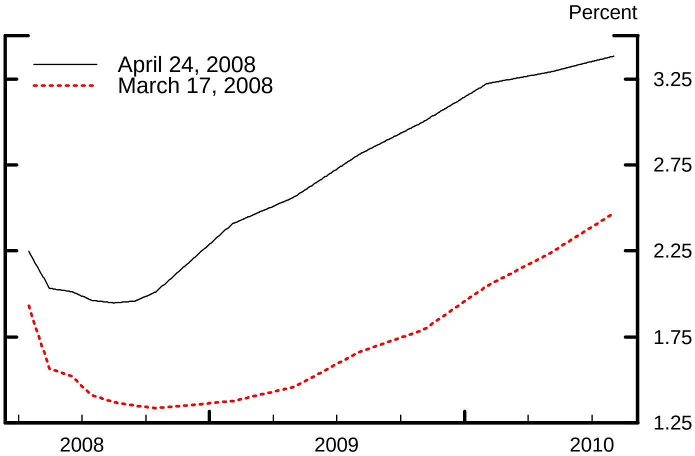
(Chart 1).[3] Judging from options on federal funds futures, investors place about two-thirds odds on a 25 basis point cut at the upcoming FOMC meeting, with most of the remaining probability on no move. Investors see high odds on rates being left unchanged at the June FOMC meeting, and the market-based probability of reaching very low interest rates in the next six months has declined significantly. The Desk's survey of primary dealers also indicates that a 25 basis point cut is the most likely outcome at the April meeting, but dealers place somewhat higher odds on a 50 basis point cut than is implied by market quotes. Also in contrast to options prices, dealers place significant odds on cuts at the June and August FOMC meetings and do not anticipate a shift to tighter policy until 2009.

(3) Yields on Treasury securities declined in the days immediately preceding the March FOMC meeting, most notably on shorter-maturity instruments. Yields have since rebounded sharply, with 2- and 10-year yields climbing 95 and 50 basis points, respectively, over the intermeeting period. These increases are consistent with both the higher expected path for policy and an easing of investor demands for safety and liquidity. Conditions in the Treasury coupon market had deteriorated markedly around the time of the March FOMC meeting, as bid-asked spreads widened and shorter-term yields plunged. Although those conditions have since improved, liquidity remains somewhat impaired relative to historical averages. In the TIPS market, the yield on 10-year issues rose in line with its nominal counterpart. Inflation compensation derived from TIPS was very volatile around the time of the March FOMC meeting. Over the intermeeting period, ten-year inflation compensation was little changed on net, as a moderate increase in inflation compensation over the next 5 years was roughly offset by a moderate

[3] Strains in the Libor market are complicating the estimation of monetary policy expectations based on longer-horizon Eurodollar futures, perhaps leading to an upward bias in the expected future policy path.

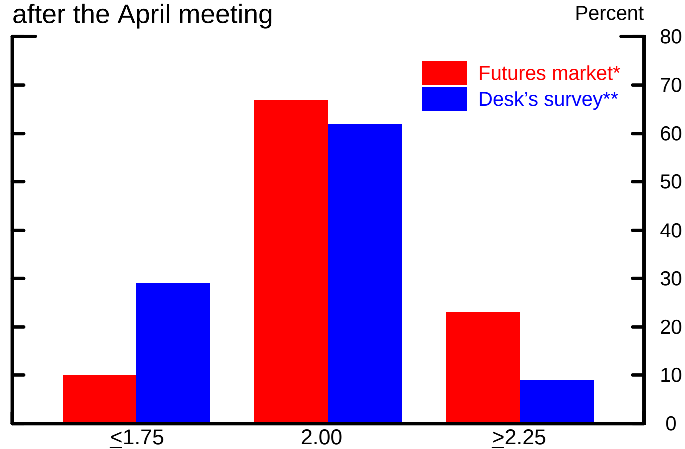
Chart 1
Interest Rate Developments

Expected federal funds rates*



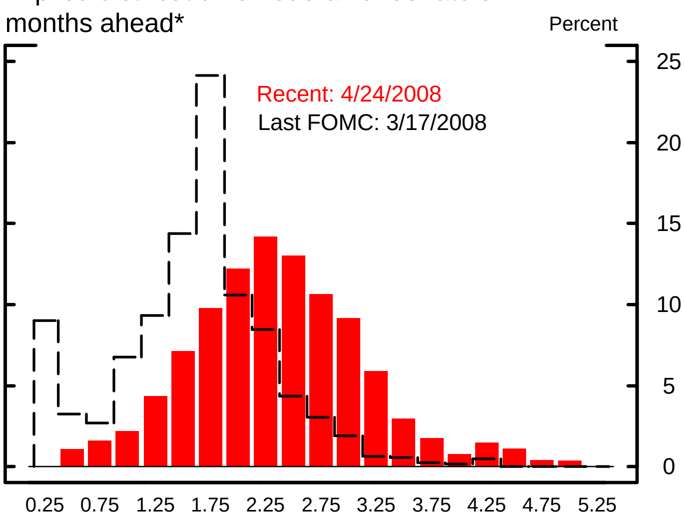
*Estimates from federal funds and Eurodollar futures, with an allowance for term premiums and other adjustments.

Probability density for target funds rate after the April meeting



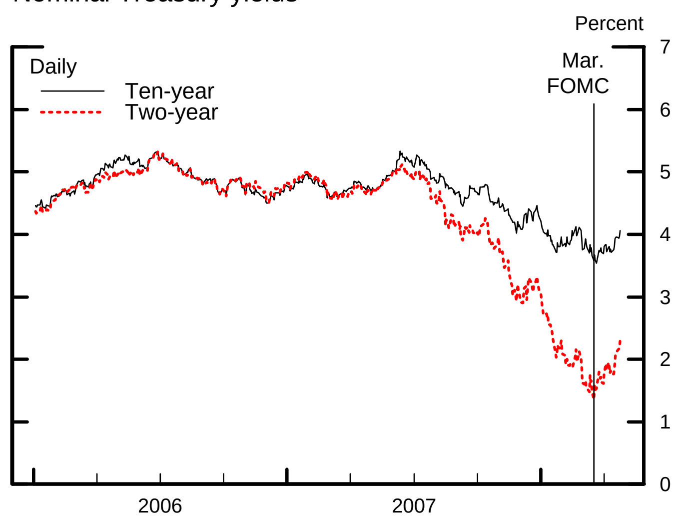
*Derived from options on federal funds futures.
**Survey of primary dealer economists on April 21, 2008.

Implied distribution of federal funds rate six months ahead*



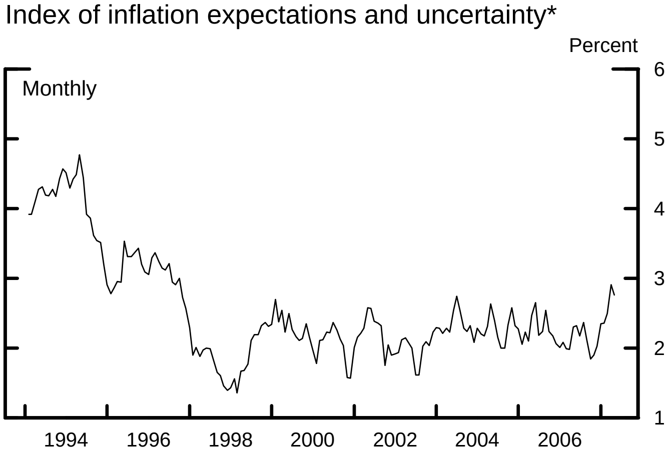
*Derived from options on Eurodollar futures contracts, with term premium and other adjustments to estimate expectations for the federal funds rate.

Nominal Treasury yields*



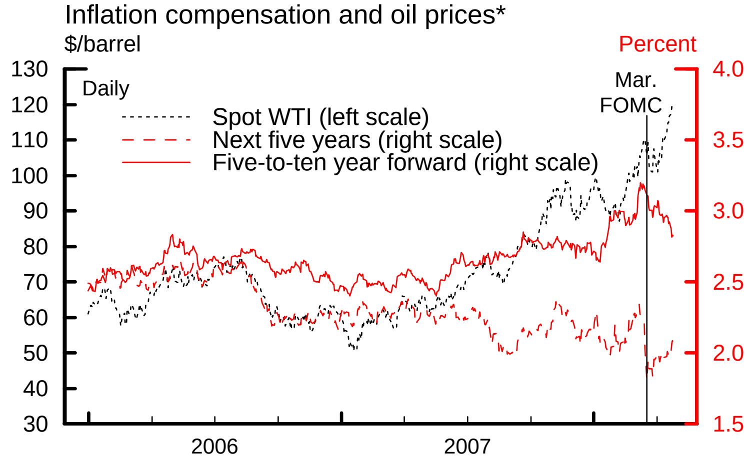
*Par yields from a smoothed nominal off-the-run Treasury yield curve.

Index of inflation expectations and uncertainty*



*Measured as the first principal component of fourteen forward-looking inflation indicators.

Inflation compensation and oil prices*



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

decrease in compensation from 5 to 10 years ahead.[4] Compared to the levels prevailing earlier in March, both the 5-year and 5-to-10-year forward measures of inflation compensation have declined, as firmer policy expectations and reduced uncertainty may have lowered inflation expectations and risk premiums. However, some other indicators of inflation expectations have increased in recent weeks. The staff's index of inflation expectations and uncertainty, distilled from a collection of market and survey data on future inflation levels and risks, edged above the top of its 10-year range in March and is estimated to have remained there in April, primarily reflecting increases in the Michigan survey of inflation expectations at both short and long horizons.

Money Markets

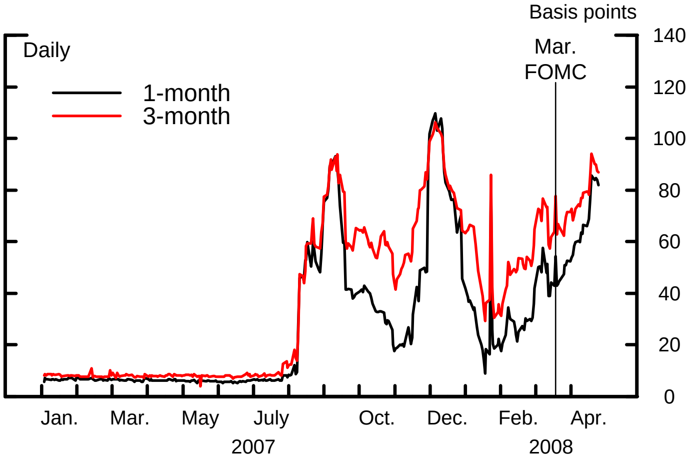
(4) The overnight Treasury general collateral (GC) repo rate plummeted on the day of the March FOMC meeting and hit a low of 20 basis points for several days thereafter, as investors exhibited a strong preference for Treasury securities over other collateral (Chart 2). The overnight GC repo rate recovered to near the federal funds target immediately after the first Term Securities Lending Facility (TSLF) auction on March 27 and it has remained around that level since. Dealer haircuts on non-Treasury repos—which had widened significantly in the weeks before the March FOMC meeting—edged higher on most collateral types over the period. (See box "Developments in Central Banks' Liquidity Facilities.")

(5) Spreads of interbank term funding rates over comparable-maturity overnight index swap (OIS) rates have trended up over the intermeeting period,

[4] Five-year inflation compensation dropped 22 basis points the day before the March FOMC meeting but bounced up 9 basis points by 2:00 p.m. on FOMC day. The 2:00 p.m. rate is used here for computing intermeeting movements.

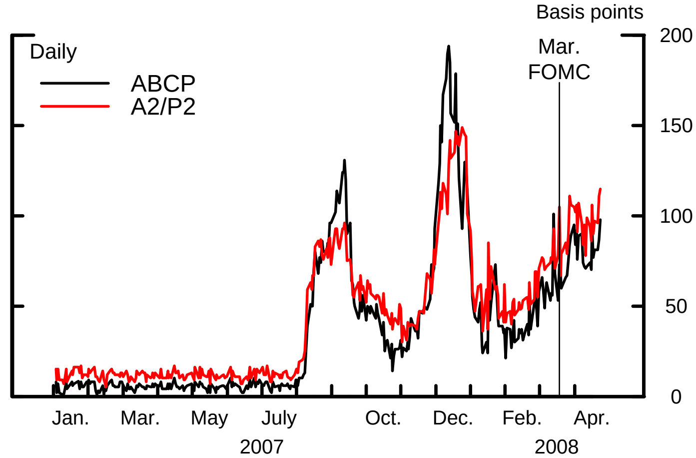
Chart 2
Asset Market Developments

Spreads of Libor over OIS



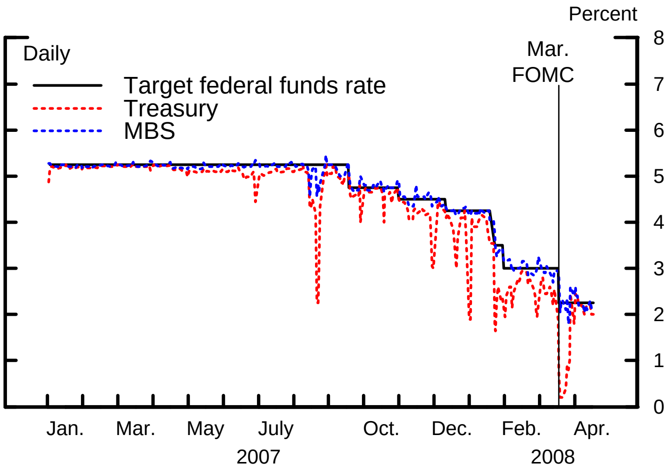
Note. Libor quotes are taken at 6:00 am, and OIS quotes are observed at the close of business of the previous trading day.

Spreads on thirty-day commercial paper



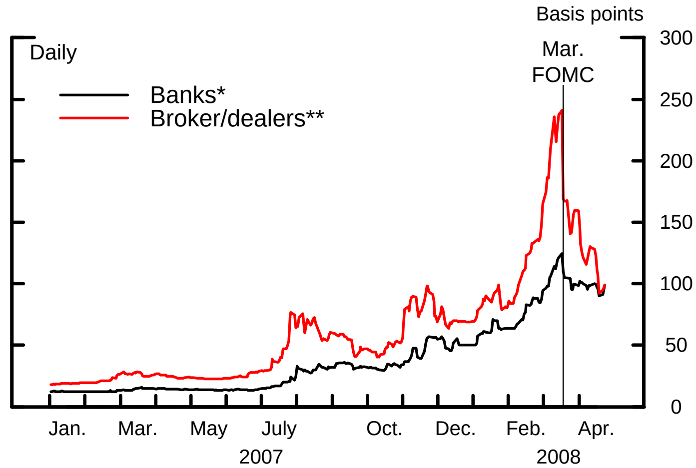
Note. The ABCP spread is the AA ABCP rate minus the AA nonfinancial rate. The A2/P2 spread is the A2/P2 nonfinancial rate minus the AA nonfinancial rate. Last observation is for Apr. 23, 2008.

Overnight repo rates



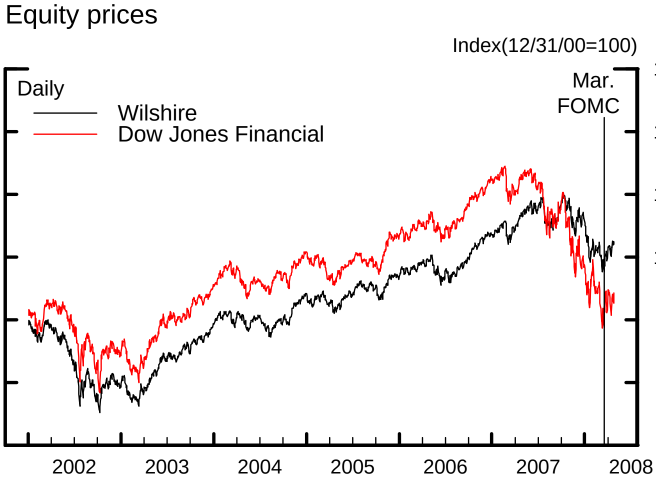
Source. Bloomberg

CDS spreads at selected financial institutions

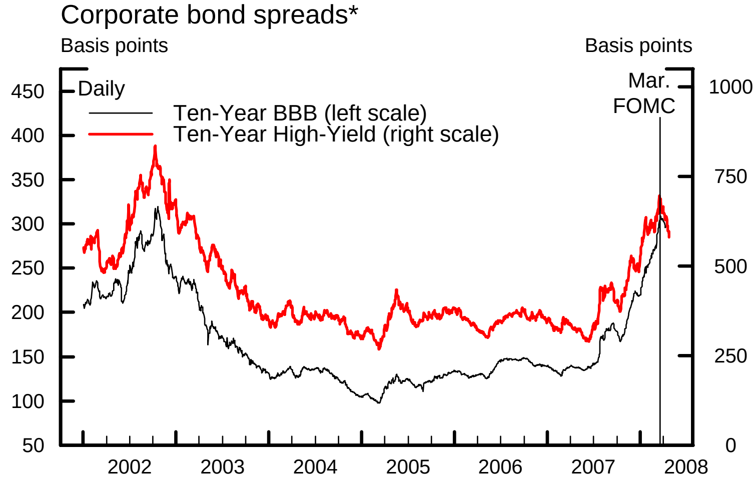


*Median spread of 23 banking organizations.
**Median spread of 10 broker-dealers.
Note. Last observation is for Apr. 23, 2008.

Equity prices



Corporate bond spreads*



*Measured relative to an estimated off-the-run Treasury yield curve.

Developments in Central Banks' Liquidity Facilities

The Federal Reserve's liquidity facilities appear to have eased some of the strains in term funding markets. Dislocations remain in interbank markets, but liquidity provision to securities dealers seems to have satisfied a substantial portion of their need for funding.

Stress in bank funding markets, combined with the narrowing of the spread between the primary credit rate and the target federal funds rate, has led to substantial overnight and term borrowing from the primary credit facility. Most of the borrowing institutions have used the window for their own funding needs, but some institutions appear to have used the window to arbitrage the market. Many depository institutions, however, apparently are still reluctant to access the discount window, and the overnight federal funds market has remained volatile, with trading frequently taking place above the primary credit rate, and pronounced tiering of rates across borrowers.

By contrast, depository institutions have not shied away from the Term Auction Facility (TAF). Demand was strong at the March and April TAF auctions; there was a large number of bidders, and bid-to-cover ratios were around 1.8 even with auction sizes that were increased to $50 billion. Indeed, the stop-out rates at the two auctions in April were well above the primary credit rate and near or above term Libor rates.

Borrowing under the Primary Dealer Credit Facility peaked at around $40 billion in late March and has since declined to around $20 billion. The series of single-tranche term repos operations has cumulated to $75 billion, easing funding needs for primary dealers, especially for MBS collateral.

To maintain the overnight federal funds rate close to its target, the Desk has drained balances to offset the liquidity provided through the facilities described above, including outright sales of Treasury securities that totaled $91 billion over the intermeeting period.

Operation of the Term Securities Lending Facility (TSLF) commenced on March 27. Under the TSLF, the Desk lends Treasury securities in exchange for a substantially broader set of collateral than accepted in the traditional securities lending facility. To date, there have been five TSLF auctions, offering between $25 billion and $75 billion each. The April 10 and April 24 schedule 2 auctions were undersubscribed, apparently reflecting reduced stresses for dealers in funding lower-quality collateral. With the increased supply of Treasuries, repo market functioning improved notably, Treasury general collateral repo rates rose substantially, and spreads of Treasury repo rates over other repo rates narrowed.

Other central banks have also provided extra liquidity to markets in both domestic currencies and in dollars. The Bank of England conducted two three-month repo auctions during the intermeeting period and unveiled a temporary scheme that will allow U.K. banks to swap MBS backed by U.K. and European residential mortgages that had been issued before the end of 2007 and other asset-backed securities in exchange for government bonds for a period of up to three years. The ECB and SNB drew upon their swap lines with the Fed to provide dollar funding in conjunction with TAF auctions. The ECB auctioned $15 billion each on March 24, April 7, and April 21, and the SNB auctioned $6 billion each on March 25 and April 22. On March 28, the ECB announced new long-term refinancing operations (LTROs) with a six-month maturity; the first LTRO auction on April 2 was met with high demand.

and they are approaching the highs reached last December.[5] Term funding spreads also widened in sterling and euro despite several steps taken by foreign central banks to ease funding pressures. The strains in these markets apparently reflect mounting pressures on bank balance sheets, continued uncertainty regarding the size and distribution of losses on mortgage-related and other assets, and a general desire on the part of financial firms to reduce leverage. The premium on rates paid by banks of perceived lower credit quality has increased notably in recent weeks.

(6) Spreads of rates on asset-backed, financial, and lower-rated nonfinancial CP over the yield on higher-rated nonfinancial paper all rose in the weeks leading up to the March FOMC meeting and they have remained elevated since then. However, with the yield on higher-rated paper moving down as a result of policy easing, most CP rates are down significantly from last year. The level of outstanding unsecured CP have shown little trend in recent months. The amount of outstanding asset-backed CP continued to decline gradually in the United States and Europe.

Capital Markets

(7) Broad equity price indexes were volatile at times but rose about 9 percent on net over the intermeeting period. Financial sector stocks outperformed the broad indexes. First-quarter results at large financial firms were generally poor but roughly in line with market expectations. However, steps announced by some firms to raise new capital and to dispose of troubled assets encouraged investors and may have reduced concerns about possible failures of important institutions.

[5] There was a widespread belief in late March and early April that banks on the Libor panel were understating their borrowing costs, particularly after the ninth TAF auction stopped out at a rate above one-month Libor. Libor-OIS spreads rose notably in mid-April after reports that the British Bankers' Association had admonished members of its panel not to contribute deceptive or stale information.

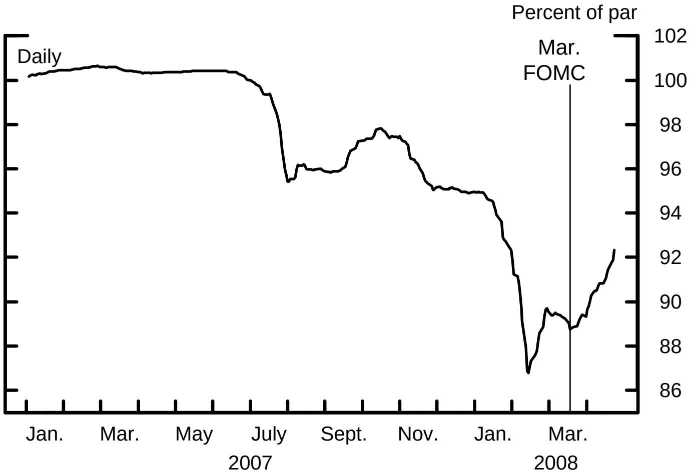
Outside of the financial sector, first-quarter earnings reports have been quite solid over the intermeeting period. The spread between the twelve-month forward trend earnings-price ratio for S&P 500 firms and the real long-term Treasury yield—a rough gauge of the equity risk premium—has edged down in recent weeks but remains near the upper end of its range over the past two decades. Option-implied volatility on the S&P 500 index declined substantially, and, while still above its range in recent years, it is now near its longer-term average.

(8) Yields on investment-grade corporate bonds rose less than comparable-maturity Treasury yields, implying some narrowing of spreads from recent high levels. For speculative-grade bonds, yields actually fell, leaving spreads down notably from the peaks reached around the time of the March FOMC meeting. Credit default swap (CDS) spreads were also down, most notably for large banks and broker-dealers. However, the median CDS spread of a group of regional banks, which jumped last month, in part on concerns about deteriorating asset quality, has not fallen back. Issuance of investment-grade bonds continued to be robust in March and the first half of April. After a few months of near-zero issuance, speculative-grade bond issuance has picked up slightly of late. Leveraged loan issuance weakened further in the first quarter. However, secondary market bid prices for the most liquid loans extended their rebound from February lows, reflecting improved market sentiment as banks reduced their backlogs of underwritten deals (Chart 3). Similarly, implied spreads on the LCDX indexes dropped considerably. Implied volatility in the CDS market remain higher than normal.

(9) Concerns about the impact of stresses at financial guarantors on the municipal bond market appear to have diminished in recent months. Ratios of municipal bond yields to comparable-maturity Treasury yields eased somewhat in April after spiking last month, but remain quite high. Recently, the state of

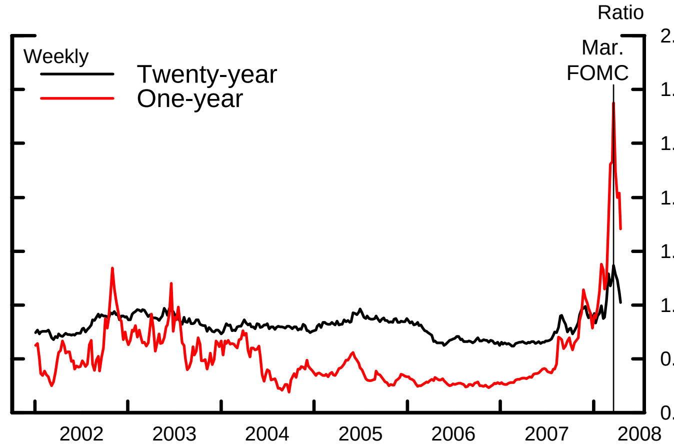
Chart 3
Asset Market Developments

Average bid price on most liquid leveraged loans



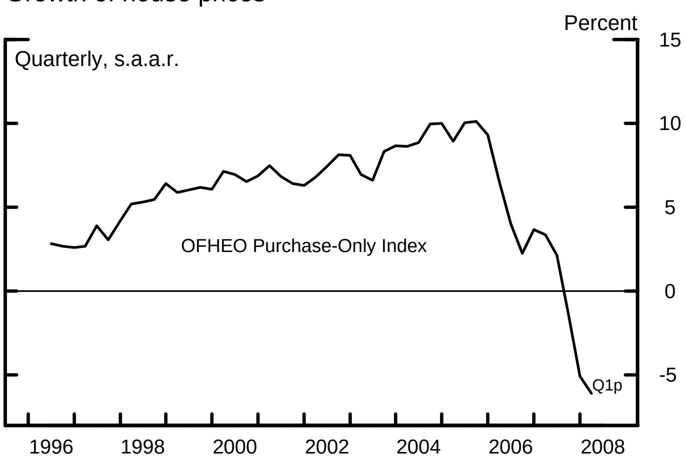
Note. Last observation is for Apr. 23, 2008.
Source. LSTA/LPC Mark-to-Market Pricing on SMi 100 index.

Municipal bond yield ratios



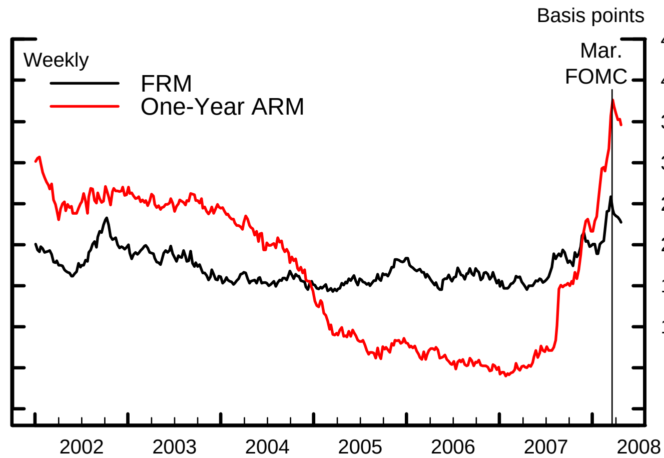
Note. Yields over Treasury. Last observation is for Apr. 17, 2008.
Source. Bloomberg.

Growth of house prices



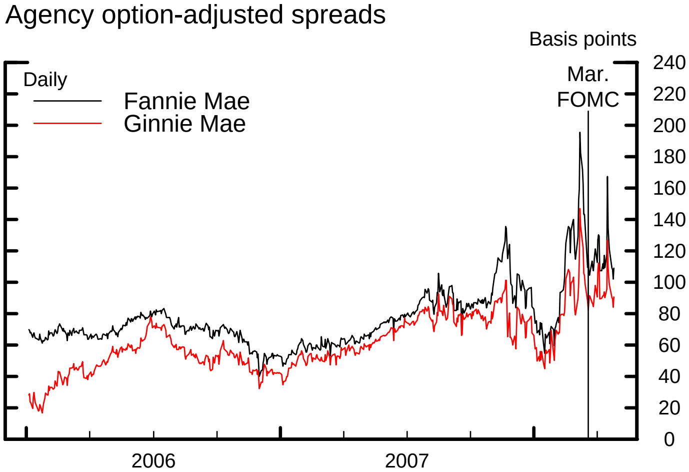
p Projected.

Mortgage rate spreads



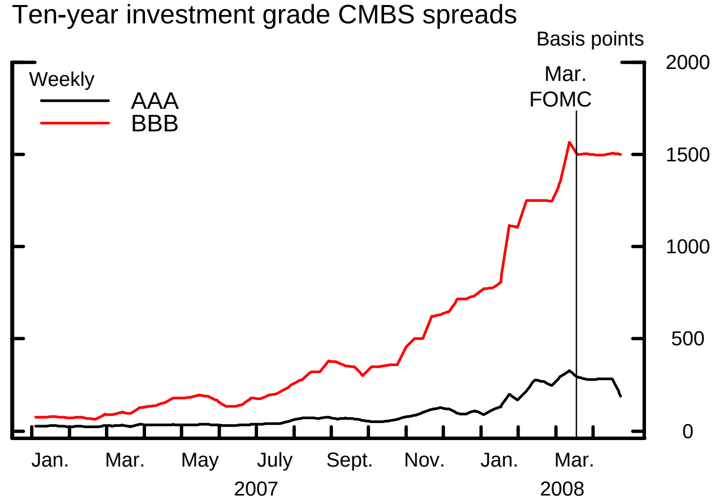
Note. FRM spread relative to ten-year Treasury. ARM spread relative to one-year Treasury. Last weekly observation is for Apr. 23, 2008.
Source. Freddie Mac.

Agency option-adjusted spreads



Note. Spreads over Treasury.
Source. Bloomberg.

Ten-year investment grade CMBS spreads



Note. Spreads over swaps. Last weekly observation is for Apr. 23, 2008.
Source. Morgan Stanley.

California announced that it would no longer seek insurance for its bonds from financial guarantors. Issuance of long-term municipal bonds was very strong in March and that strength appears to have carried into April. Some of this issuance reflected the refinancing of auction rate securities (ARS) whose auctions failed earlier this year. The troubles in the ARS market have also damped funding for student loans. In addition, the student loan market has been affected by a tightening of government-mandated lending terms and a general aversion to structured finance products. Lenders accounting for more than 10 percent of the volume of government-guaranteed student lending have exited the market, and other large originators announced that they would curtail lending to students attending schools with poorer repayment records.

(10) Interest rates on 30-year fixed-rate conforming mortgages, which had shot up in February, declined significantly in the days before the March FOMC meeting. Over the intermeeting period these rates remained fairly steady. Posted offer rates on 30-year jumbo mortgages have declined slightly on balance since the March FOMC meeting. Overall, spreads between prime mortgage rates and comparable-maturity Treasury securities narrowed substantially over the intermeeting period, though they remain high relative to historical norms. Option-adjusted yield spreads on agency MBS relative to Treasury securities fell back somewhat from their peak just before the March FOMC meeting, but they too remain elevated. Issuance of agency RMBS stayed strong, but issuance of private-label RMBS backed by nonconforming loans remained very light. Likewise, issuance of commercial mortgage-backed securities (CMBS) continued to be negligible and spreads on CMBS over swaps remain at historically high levels.

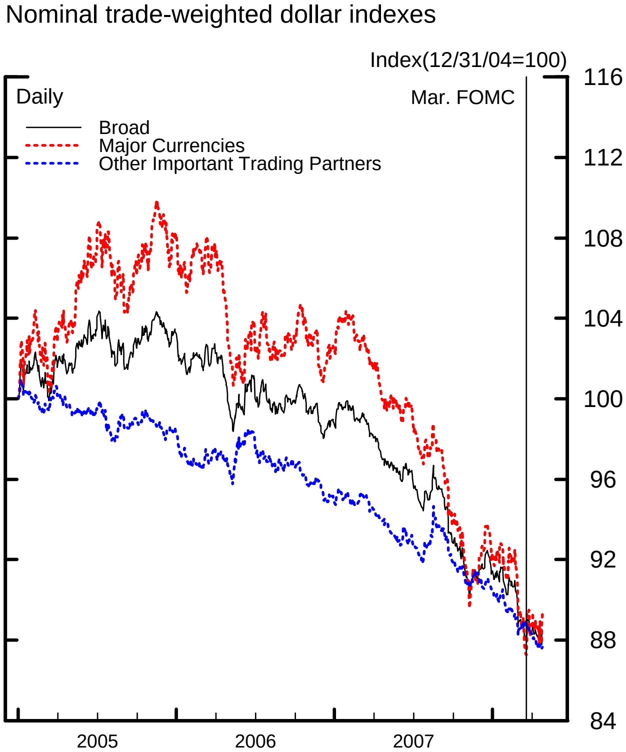
Foreign Developments

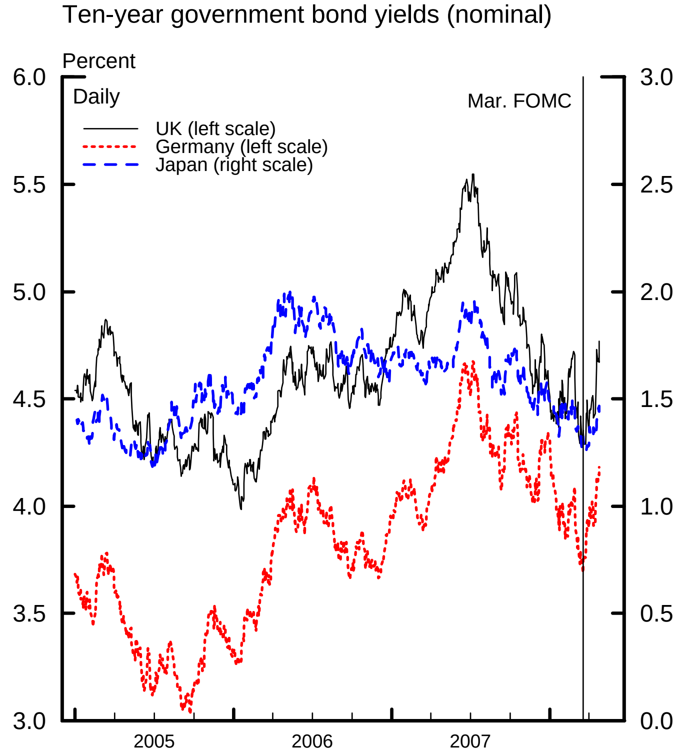
(11) The trade-weighted index of the exchange value of the dollar against the major foreign currencies increased 2¼ percent over the intermeeting period (Chart 4). The dollar had fallen sharply immediately before the March FOMC meeting and rebounded soon afterward; it has been moving up in recent days.[6] In line with improvements in market sentiment in the United States, major headline equity indexes in Europe and Japan ended the period up 6 to 13 percent on net. Financial sector share prices generally rose even more, despite announcements of further writedowns by a number of large foreign banks. Market analysts appeared to be focused on earnings reports by several U.S. banks and broker-dealers that were seen as reassuring, as well as both actual and planned capital raising at some U.S. and foreign banks. The Bank of England and the Bank of Canada lowered their policy interest rates during the intermeeting period by 25 and 50 basis points, respectively, while the European Central Bank and the Bank of Japan left their policy rates unchanged. Ten-year nominal sovereign yields were up about 15 to 45 basis points in the advanced foreign economies.

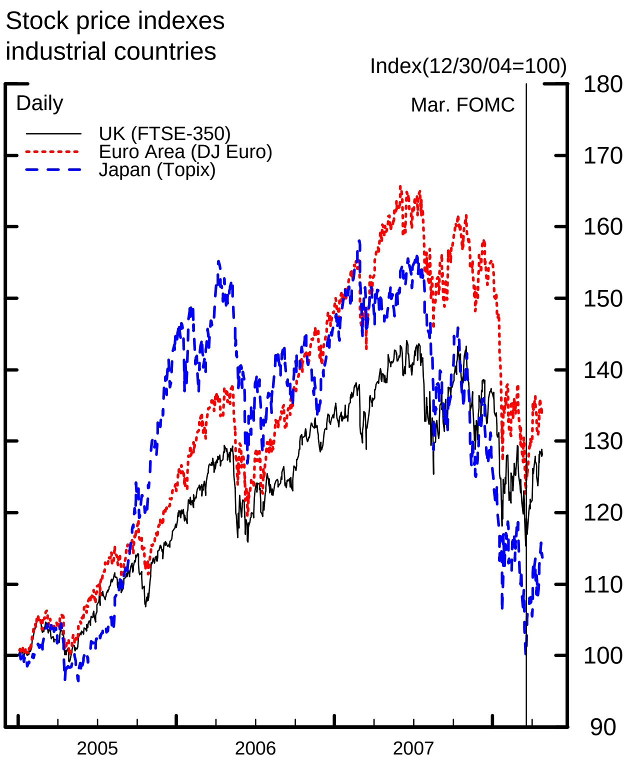
(12) The exchange value of the dollar against the currencies of our other important trading partners fell about 1 percent over the intermeeting period, as readings on both economic activity and financial markets held up reasonably well in most Asian and Latin American economies. Emerging market risk spreads generally narrowed and most stock price indexes moved up. A notable exception was China, where, notwithstanding indications of continued strong economic growth, the Shanghai equity index dropped 2 percent.

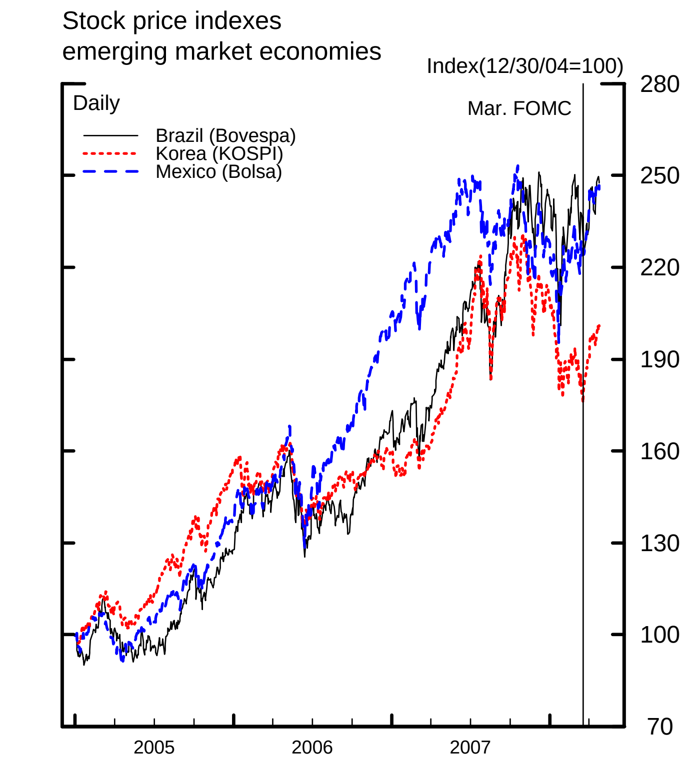
[6] There were no foreign official purchases or sales of dollars by reporting central banks in industrial countries during the intermeeting period.

Chart 4
International Financial Indicators









Debt and Money

(13) The debt of domestic nonfinancial sectors is estimated to have expanded at an annual rate of 5¾ percent in the first quarter, more than 2 percentage points below last year's rate (Chart 5). Nonfinancial business sector debt decelerated again in the first quarter, as growth in both C&I loans and bonds slowed. In part, this slowdown reflects the cooling of mergers and acquisitions and a reduction in equity repurchases. In the household sector, home mortgage debt and consumer credit are estimated to have continued their recent slowdowns into the first quarter. Falling house prices are a major factor holding down household credit.

(14) In the April Senior Loan Officer Opinion Survey, the net percentages of respondents that reported tightening credit standards over the past three months increased further, and for the domestic respondents these measures are at or close to record levels for most major loan categories. Nonetheless, commercial bank credit grew robustly in March, led by banks' acquisitions of securities and strength in business lending and residential real estate loans. C&I loans at large banks continued to expand smartly, as some nonfinancial firms reportedly drew on existing lines of credit. Consistent with these reports, the Senior Loan Officer Opinion Survey indicated that demand for C&I loans has been bolstered by shifts from other sources of business credit. For the first quarter as a whole, bank credit expanded at a moderate pace, down notably from the very rapid advance posted in the second half of last year.

(15) M2 expanded at a robust 12½ percent annual rate in March, bringing growth for the first quarter to a 9½ percent pace. Retail money market funds and liquid deposits continued to rise rapidly as investors sought safety and liquidity. In addition, growth of liquid deposits was boosted by recent declines in opportunity costs. Currency increased moderately after several quarters of very slow growth, but most of this rebound appears to reflect difficulties in seasonal adjustment

Chart 5
Debt and Money

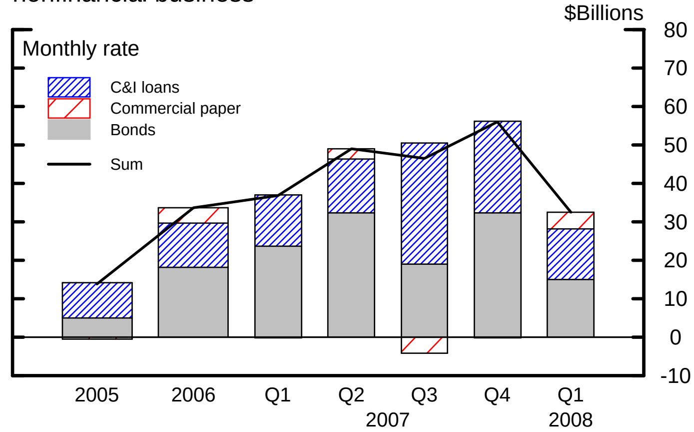
Growth of debt of nonfinancial sectors

Percent, s.a.a.r.

		Total	Business	Household
2006		8.8	9.7	10.2
2007		8.1	11.5	6.9
	Q1	8.1	10.0	6.8
	Q2	7.2	11.0	7.2
	Q3	9.1	12.8	7.0
	Q4	7.3	10.6	5.7
2008	Q1 e	5.8	6.5	3.6

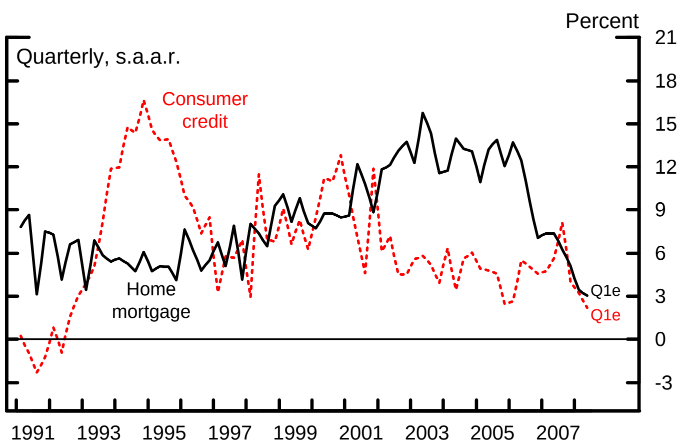
e Estimated.

Changes in selected components of debt of nonfinancial business*



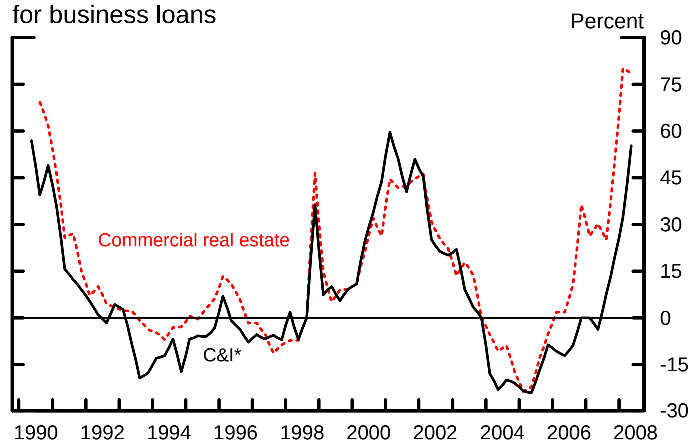
*Commercial paper and C&I loans are seasonally adjusted, bonds are not.

Growth of debt of household sector



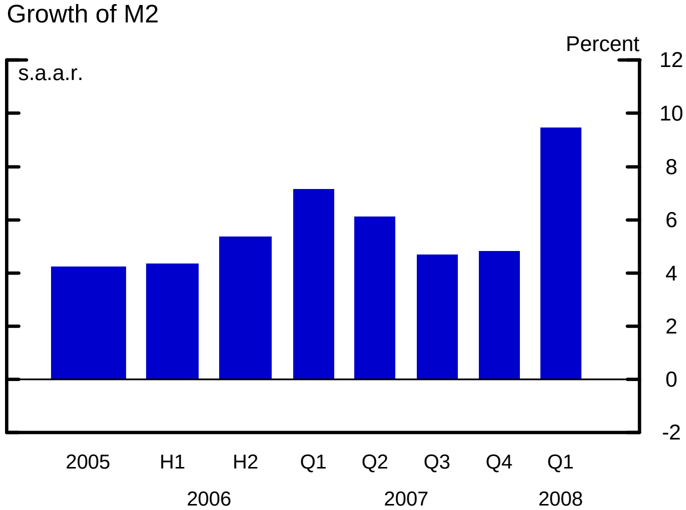
e Estimated.

Net percentage of banks tightening standards for business loans

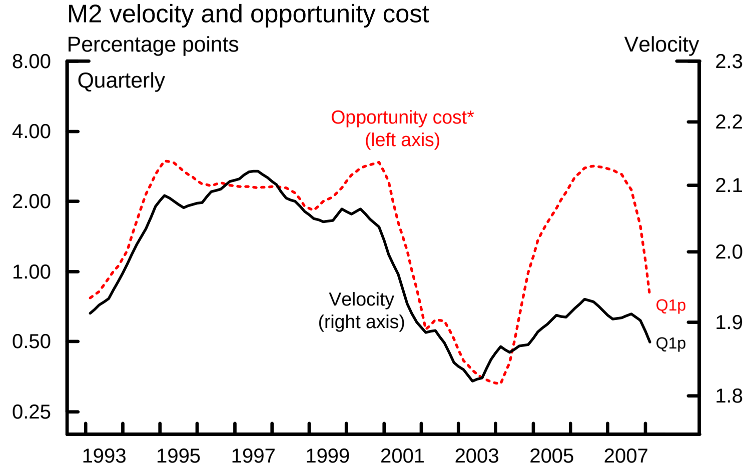


*Loans to large and medium-sized firms.

Growth of M2



M2 velocity and opportunity cost



*Two-quarter moving average.

p Projected.

owing to an unusually early Easter. Small time deposits contracted sharply in March, the first decline since 2004, and the spreads of rates paid on these deposits relative to other deposits narrowed. These spreads had been somewhat elevated in recent months as some institutions had been bidding aggressively for these deposits as a funding source.

Economic Outlook

(16) Incoming information has been broadly consistent with the staff's expectations at the time of the March Greenbook. Consequently, the Greenbook projection for both economic activity and inflation is little changed from March. The staff forecast continues to be conditioned on the assumption that the target federal funds rate is reduced to 2 percent at the April FOMC meeting and to 1¾ percent at the June meeting and is then maintained at that level through the end of 2009. Long-term Treasury yields edge up through this year and next as the influence of the particularly low short-term interest rates expected over this period wanes. Equity prices start from a level about 5 percent higher than anticipated in the previous staff forecast but otherwise follow a similar contour, increasing at an annual rate of about 7 percent over the remainder of this year, before accelerating to a rate of around 11½ percent in 2009 as the equity premium declines toward more normal levels. The trade-weighted dollar is again assumed to depreciate at an annual rate of 3 percent over the projection period. In line with futures quotes, the price of WTI crude oil is expected to average around $116 per barrel through the remainder of 2008 and $111 per barrel in 2009, about $10 per barrel higher than in the previous Greenbook.

(17) The staff continues to judge that the economy is in recession, with real GDP projected to contract at an annual rate of about 1½ percent in the second quarter of this year. Fiscal stimulus and the lagged effects of monetary policy easing engender a shallow recovery in the latter half of 2008. As in the March Greenbook, the level of GDP is projected to be almost unchanged over 2008 as a whole. Thereafter, as the functioning of financial markets gradually improves and the drag on demand from past increases in oil prices lessens, the recovery gathers momentum, with GDP advancing by around 2¾ percent in 2009, about ½ percentage point faster than the staff's estimate of the expansion in the productive

potential of the economy. As in the March projection, the sub-par economic growth over the next few quarters causes the unemployment rate to rise to 5¾ percent by the end of this year. The unemployment rate edges down only slightly during 2009 and is still around ¾ of a percentage point above the staff's estimate of the NAIRU at the end of next year. Total PCE inflation is projected to remain elevated through much of this year, boosted by increases in both energy and nonfuel import prices. As in March, the staff's inflation forecast assumes that the public's long-term inflation expectations have moved up a little since the end of last year. However, the projected leveling-out of oil and other commodity prices, combined with an anticipated deceleration in import prices and increasing slack in labor and product markets, push headline inflation down to around 1¾ percent in 2009. The staff forecast for core PCE inflation follows a broadly similar pattern, slowing from an average of 2¼ percent in 2008 to 2 percent in 2009.

(18) The Greenbook forecast has been extended beyond 2009 using the FRB/US model with adjustments to ensure consistency with the staff's assessment of longer-run trends. The extended forecast embeds several key assumptions: Monetary policy aims to stabilize PCE inflation in the long run at a level of 1¾ percent; trend multifactor productivity grows a bit faster than 1 percent per year; relative energy prices edge down; the real value of the dollar depreciates steadily at about 1 percent per year; and fiscal policy is essentially neutral. With the unemployment rate notably above the NAIRU and core inflation running at about 2 percent in 2009, these long-run assumptions are consistent with a very gradual tightening in monetary policy; the federal funds rate rises from less than 2 percent on average in 2010 to 4 percent by the end of 2012. Policy is nonetheless sufficiently accommodative that the unemployment rate declines to 4¾ percent—the staff's assessment of the NAIRU—by 2012. Under the pressure of persistent

slack, core PCE inflation edges down over time, while headline inflation stays close to 1¾ percent.

Monetary Policy Strategies

(19) Consistent with the minor revisions to the staff's outlook for real activity and actual and projected financial conditions, the Greenbook-consistent estimate of short-run r* is -0.5 percent, essentially unchanged from the March Bluebook (Chart 6). The FRB/US model-based estimate of short-run r* is 0.3 percent, which is a bit higher than the current real funds rate. The estimate of short-run r* from the small structural model is -0.8 percent, slightly above the March estimate. The single-equation model estimate of short-run r* is about unchanged from the previous Bluebook.

(20) Chart 7 depicts optimal control simulations of the FRB/US model using the long-run Greenbook forecast beyond 2009. In these simulations, policymakers place equal weight on keeping core PCE inflation close to a specified goal, on keeping unemployment close to the long-run NAIRU, and on avoiding changes in the nominal federal funds rate.[7] For an inflation goal of 1½ percent (the left-hand set of charts), the simulation prescribes a nominal federal funds rate that declines to around 2 percent by the end of next year and then rises toward 4 percent by late 2012. With an inflation goal of 2 percent (the right-hand set of charts), the optimal funds rate falls more sharply, dipping to near 1 percent by late 2009 before rising to about 4¼ percent by 2012. Under either inflation goal, these prescriptions for the funds rate, as well as the associated outcomes for the unemployment rate, are little changed from those shown in the previous

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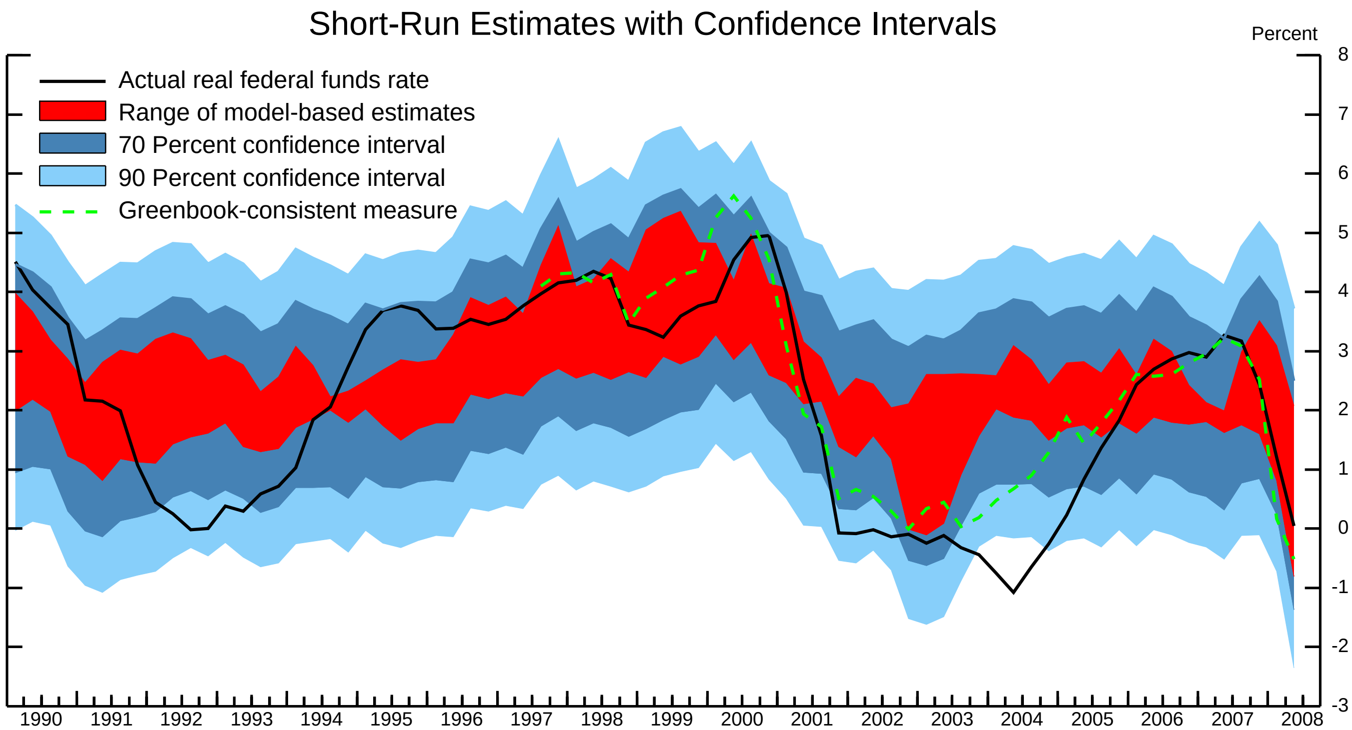
7 In conducting these simulations, policymakers and participants in financial markets are assumed to understand fully the forces shaping the economic outlook (as summarized by the extended Greenbook projection), whereas households and firms form their expectations using more limited information.

Chart 6
Equilibrium Real Federal Funds Rate



Short-Run and Medium-Run Measures

	Current Estimate	*Previous Bluebook*
Short-Run Measures		
Single-equation model	2.1	*2.0*
Small structural model	-0.8	*-1.1*
Large model (FRB/US)	0.3	*-0.1*
Confidence intervals for three model-based estimates		
70 percent confidence interval	-1.4 - 2.5	
90 percent confidence interval	-2.4 - 3.7	
Greenbook-consistent measure	-0.5	*-0.5*
Medium-Run Measures		
Single-equation model	2.2	*2.2*
Small structural model	1.7	*1.7*
Confidence intervals for two model-based estimates		
70 percent confidence interval	1.0 - 2.9	
90 percent confidence interval	0.5 - 3.7	
TIPS-based factor model	2.0	*2.0*
Memo		
Actual real federal funds rate	0.1	0.8

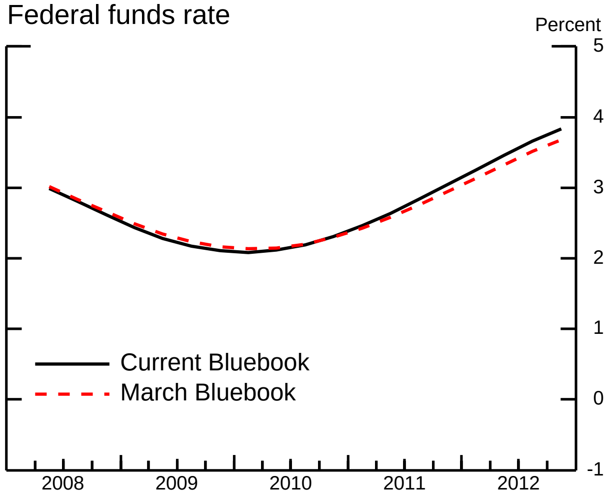
Note: Appendix A provides background information regarding the construction of these measures and confidence intervals.

Chart 7

Optimal Policy Under Alternative Inflation Goals

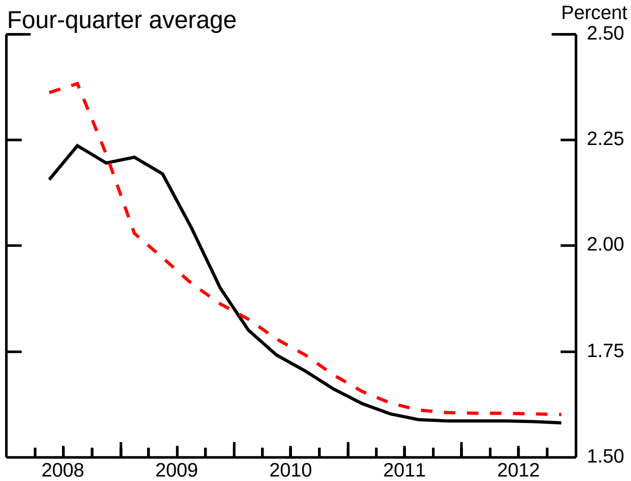
1½ Percent Inflation Goal

Federal funds rate

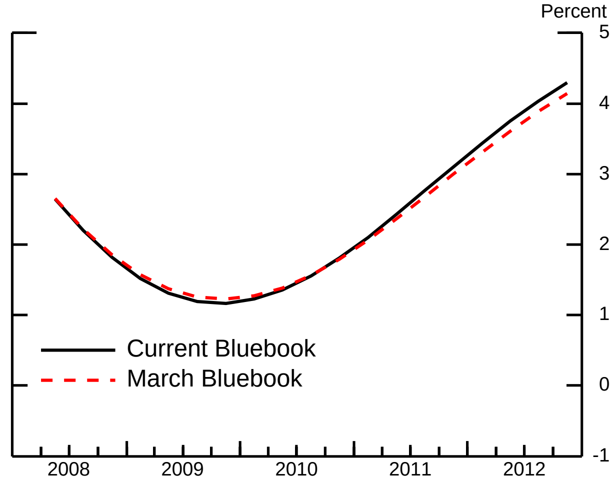


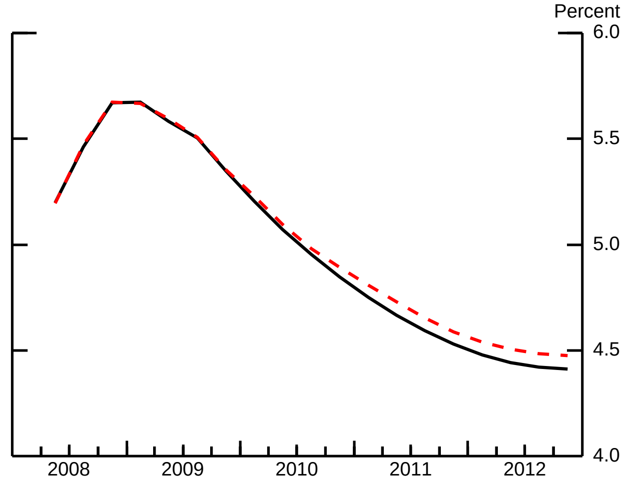
Civilian unemployment rate

Core PCE inflation
Four-quarter average

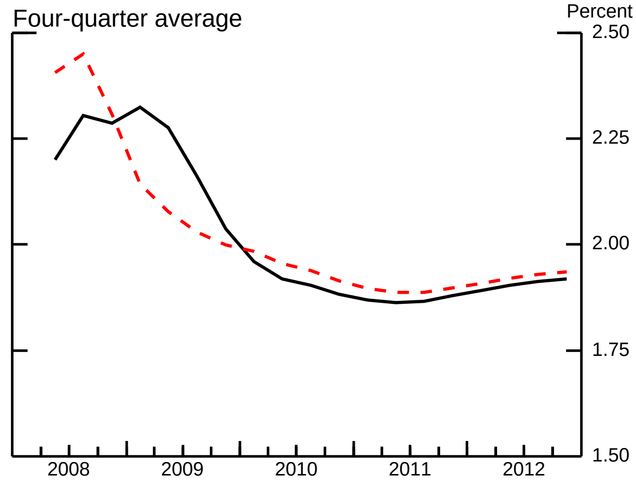


2 Percent Inflation Goal





Four-quarter average



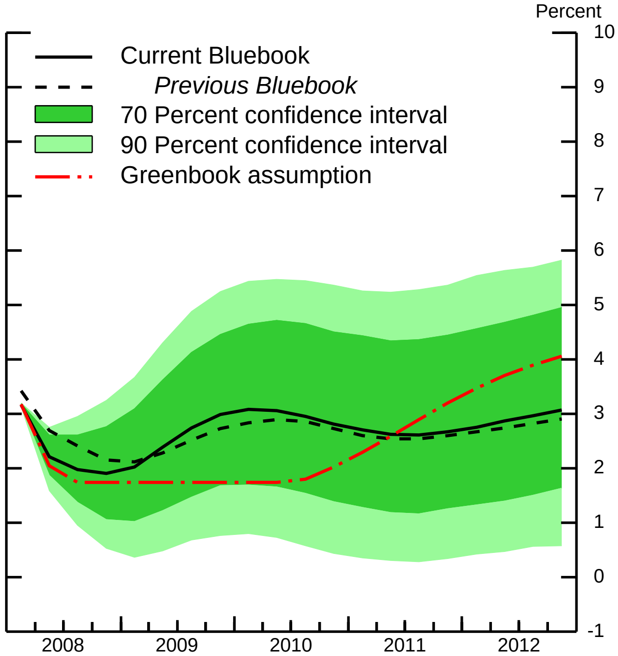
Bluebook, consistent with the small revisions to the Greenbook projection. However, the very near-term paths for the core inflation rate have been revised down because of the transitory effects of the favorable news on non-energy prices received since the close of the March Bluebook; core inflation is a touch higher in 2009, though, as higher oil and import prices this year are projected to add a bit more to core prices through much of next year.

(21) The outcome-based monetary policy rule prescribes a funds rate path that moves down to 2 percent by the fourth quarter of this year, rises gradually throughout 2009, and then stays between 2¾ and 3 percent (Chart 8). On average in 2008, this projection is around 30 basis points lower than the trajectory in the March Bluebook, mostly reflecting a lower funds rate at the start of the projection. According to financial market quotes, investors anticipate that the funds rate will remain around 2¼ percent through the end of this year and then progressively rise to slightly above 4 percent by the end of 2012. This path is slightly higher than in the previous Bluebook. The confidence intervals obtained from stochastic simulations of the FRB/US model indicate a substantial probability that the funds rate falls below 1 percent within the next few quarters, whereas the probability implied by options on interest rate caps is relatively low. (See box "The Likelihood of Reaching Very Low Interest Rates.") The near-term prescriptions from the simple policy rules proposed by Taylor (1993, 1999) are lower than those shown in the March Bluebook, but remain well above the current target rate or the prescriptions of the estimated outcome-based rule. These prescriptions are relatively high because they do not include any role for policy inertia and do not take into account current financial market pressures and other forward-looking information captured by market expectations and the staff forecast.

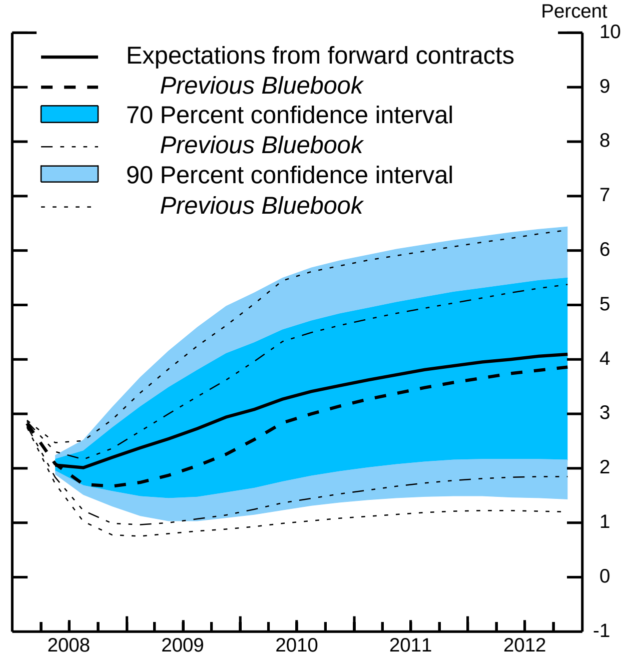
Chart 8

The Policy Outlook in an Uncertain Environment

FRB/US Model Simulations of Estimated Outcome-Based Rule



Information from Financial Markets



Near-Term Prescriptions of Simple Policy Rules

	1½ Percent Inflation Objective		2 Percent Inflation Objective	
	2008Q2	2008Q3	2008Q2	2008Q3
Taylor (1993) rule	**4.0**	**4.0**	**3.7**	**3.7**
Previous Bluebook	*4.3*	*4.2*	*4.0*	*3.9*
Taylor (1999) rule	**3.3**	**3.2**	**3.1**	**3.0**
Previous Bluebook	*3.6*	*3.4*	*3.4*	*3.1*
Taylor (1999) rule with higher r*	**4.1**	**4.0**	**3.8**	**3.7**
Previous Bluebook	*4.4*	*4.1*	*4.1*	*3.9*
First-difference rule	**2.7**	**2.8**	**2.5**	**2.3**
Previous Bluebook	*2.8*	*2.8*	*2.5*	*2.3*

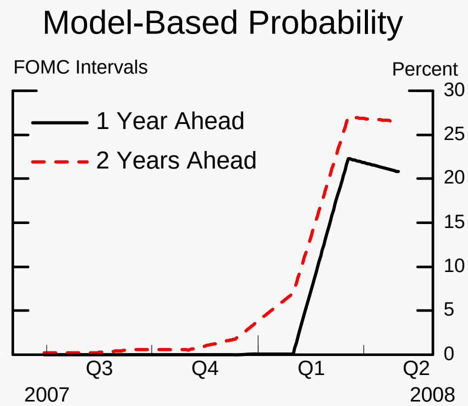
Memo

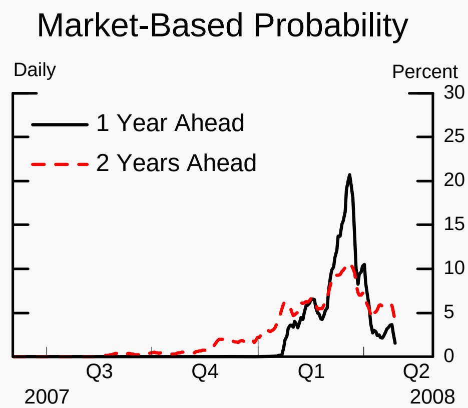
	2008Q2	2008Q3
Estimated outcome-based rule	2.4	2.2
Estimated forecast-based rule	2.4	2.1
Greenbook assumption	2.1	1.8
Fed funds futures	2.1	2.0
Median expectation of primary dealers	1.8	1.8

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

The Likelihood of Reaching Very Low Interest Rates

The staff's outlook assumes that the federal funds rate will fall to 1¾ percent in mid-2008 and then remain at that level through the end of next year. The discussion in this box gauges the likelihood of reaching very low interest rates—that is, rates below 1 percent. Such low rates might occur if further policy easing were needed to counteract ongoing strains in financial markets or other adverse shocks to the economy. The box ends with a discussion of the implications of very low interest rates for monetary policy strategy.





Note: Five-day moving average.

The upper panel depicts the recent evolution of model-based probabilities that the target funds rate will fall below 1 percent at a horizon of one year (solid line) or two years (dashed line). These probabilities have been computed from stochastic simulations of the FRB/US model. The stochastic simulations are computed using real time data; in particular, the model baseline is given by the corresponding vintage of the Greenbook outlook. The shocks are drawn from the Great Moderation period, and the path of policy is determined by the empirical outcome-based rule. These model-based measures indicate that the probability of reaching very low interest rates has risen substantially since last year and now exceeds 20 percent at a one-year horizon and 25 percent at a two-year horizon.

The lower panel depicts market-based probabilities derived from options on Eurodollar futures contracts. Evidently, financial market participants perceived the likelihood of very low interest rates to be negligible over the second half of 2007; by late February, however, investors saw odds of about 1 in 3 that the target funds rate would be below 1 percent at the end of this year, but odds of only 1 in 10 that the funds rate would be that low a year later. In recent weeks, these market-based probabilities have fallen back to very low levels, partly because investors appeared to reduce the odds on an adverse tail event in the near future.

Very low interest rates pose challenges for policy makers, partly because of uncertainty about the efficacy of unconventional policy tools that might be employed if further reductions in the federal funds rate became infeasible because of the zero bound.

If policymakers perceive a substantial probability of further weakness in aggregate demand sufficient to call for a very low target funds rate in coming quarters, then existing research would prescribe policy adjustment that is more aggressive than usual to provide insurance against the risk of a protracted recession.[1] However, in contrast to the policy situation in 2003, the current rate of expected inflation is somewhat elevated. This observation may give policymakers some comfort that they can provide considerable stimulus to real activity if needed through very low real short-term interest rates and so do not need to act more aggressively. Moreover, if policymakers place relatively low odds on a very low funds rate, then a shift to more aggressive policy adjustment may be less compelling.

[1] Reifschneider, David and John C. Williams (2000). "Three Lessons for Monetary Policy in a Low-Inflation Era." *Journal of Money, Credit and Banking, Vol. 32, No. 4, Part 2: Monetary Policy in a Low-Inflation Environment* (Nov.), pp. 936-966.

Short-Run Policy Alternatives

(22) This Bluebook presents three policy alternatives for the Committee's consideration, summarized in Table 1. Under Alternative A, the Committee would reduce the target federal funds rate by 50 basis points to 1¾ percent, under Alternative B the federal funds rate target would be cut by 25 basis points to 2 percent, and under Alternative C the Committee would maintain the federal funds rate target at 2¼ percent. In contrast to the FOMC statement in March, the risk assessments in Alternatives A and B no longer emphasize the downside risks to growth and so convey a more neutral policy stance. Alternative B indicates that the pace of interest rate reductions may need to slow in order for the Committee to assess better the effects of policy actions taken to date, whereas Alternative A reiterates that the Committee stands ready to act in a timely manner. Alternative C retains the judgment that downside risks to growth remain and explains that the Committee's decision to pause at this meeting was to allow more time to assess the effects of past policy actions. As usual, the Committee could formulate its statement using language from more than one alternative. Table 1 may need to be modified once participants have submitted their economic projections in order to ensure that the draft statements are consistent with the projections and the accompanying narratives.

(23) If the Committee judges that the target funds rate is nearing a level that would appropriately balance the risks to its dual objectives of fostering maximum employment and price stability, it may wish to reduce the target federal funds rate by 25 basis points, as in **Alternative B**, a relatively modest action compared with those taken over the past several months. Members may view the incoming data as broadly consistent with their earlier assessments concerning the underlying weakness of economic activity and the likely need for further monetary stimulus at this meeting to promote a timely resumption of moderate economic growth.

Table 1: Alternative Language for the April 2008 FOMC Announcement

	March FOMC	Alternative A	Alternative B	Alternative C
Policy Decision	1. The Federal Open Market Committee decided today to lower its target for the federal funds rate 75 basis points to 2-1/4 percent.	The Federal Open Market Committee decided today to lower its target for the federal funds rate 50 basis points to 1-3/4 percent.	The Federal Open Market Committee decided today to lower its target for the federal funds rate 25 basis points to 2 percent.	The Federal Open Market Committee decided today to keep its target for the federal funds rate at 2-1/4 percent.
Rationale	2. Recent information indicates that the outlook for economic activity has weakened further. Growth in consumer spending has slowed and labor markets have softened. Financial markets remain under considerable stress, and the tightening of credit conditions and the deepening of the housing contraction are likely to weigh on economic growth over the next few quarters.	Recent information indicates that economic activity remains weak. Household and business spending has been subdued and labor markets have softened further. Financial markets remain under considerable stress, and tight credit conditions and the deepening housing contraction are likely to weigh on economic growth over the next few quarters.	Recent information indicates that economic activity remains weak. Household and business spending has been subdued and labor markets have softened further. Financial markets remain under considerable stress, and tight credit conditions and the deepening housing contraction are likely to weigh on economic growth over the next few quarters.	Recent information indicates that economic activity remains weak. Household and business spending has been subdued and labor markets have softened further. Financial markets remain under considerable stress, and tight credit conditions and the deepening housing contraction are likely to weigh on economic growth over the next few quarters.
	3. Inflation has been elevated, and some indicators of inflation expectations have risen. The Committee expects inflation to moderate in coming quarters, reflecting a projected leveling-out of energy and other commodity prices and an easing of pressures on resource utilization. Still, uncertainty about the inflation outlook has increased. It will be necessary to continue to monitor inflation developments carefully.	Inflation has been elevated, and some indicators of inflation expectations have risen in recent months. The Committee expects inflation to moderate in coming quarters, reflecting a projected leveling-out of energy and other commodity prices and an easing of pressures on resource utilization. Still, uncertainty about the inflation outlook remains high. It will be necessary to continue to monitor inflation developments carefully.	Inflation has been elevated, and some indicators of inflation expectations have risen in recent months. The Committee expects inflation to moderate in coming quarters, reflecting a projected leveling-out of energy and other commodity prices and an easing of pressures on resource utilization. Still, uncertainty about the inflation outlook remains high. It will be necessary to continue to monitor inflation developments carefully.	Inflation has been elevated, and some indicators of inflation expectations have risen in recent months. The Committee expects inflation to moderate in coming quarters, but uncertainty about the inflation outlook remains high. It will be necessary to continue to monitor inflation developments carefully.
Assessment of Risk	4. Today's policy action, combined with those taken earlier, including measures to foster market liquidity, should help to promote moderate growth over time and to mitigate the risks to economic activity. However, downside risks to growth remain. The Committee will act in a timely manner as needed to promote sustainable economic growth and price stability.	The Committee judged that a further reduction in interest rates was appropriate to foster moderate growth over time and to mitigate the risks to economic activity. The Committee will act in a timely manner as needed to promote sustainable economic growth and price stability.	The Committee judged that a further reduction in interest rates was appropriate to foster moderate growth over time and to mitigate the risks to economic activity. At this juncture, some time may be needed to better assess the effects of the policy actions taken to date. However, the Committee remains prepared to act as needed to promote sustainable economic growth and price stability.	The Committee judges that downside risks to growth remain but concluded that more time is needed to better assess economic prospects and the effects of the policy actions taken to date. The Committee will act in a timely manner as needed to promote sustainable economic growth and price stability.

Indeed, the Greenbook-consistent measure of the equilibrium funds rate is about ½ percentage point below the Bluebook estimate of the current real funds rate, suggesting that policy likely still needs to be eased fairly significantly in order to bring output back to its potential over the medium term. However, the Committee may view the calibration of the appropriate level of the funds rate as particularly problematic given the difficulty of assessing the effects of the substantial easing of policy to date and the myriad uncertainties surrounding the outlook for output and inflation. In light of this difficulty and with the gap between the real federal funds rate and its equilibrium rate now estimated to have narrowed, members may prefer to adjust policy more gradually than hitherto. The deterioration in the near-term outlook for inflation over recent months may also be viewed as supporting the adoption of a more incremental approach. In particular, members might be concerned that a more aggressive policy easing at this meeting would encourage a perception that the Committee has a greater tolerance for inflation than previously thought, with the potential for adverse effects on longer-term inflation expectations. Members might also worry that another substantial reduction in the funds rate would increase the likelihood of a steep decline in the foreign exchange value of the dollar or possibly even a further run-up in commodity prices, developments that would put additional upward pressure on inflation.

(24) The discussion of the outlook for economic activity and inflation in the proposed statement accompanying Alternative B is little changed from the March FOMC statement. The characterization of the real economy has been amended to note that recent information indicates that economic activity "remains weak" in contrast to the March statement in which the outlook for economic activity was judged to have "weakened further." Similarly, in light of the mixed developments in financial markets, credit conditions are described as "tight" as opposed to the

"tightening" highlighted in March. The paragraph about inflation is essentially unaltered from the previous statement, save for some modest adjustments to the references to the apparent rise in inflation expectations and to the increase in the uncertainty attending the inflation outlook in order to avoid giving the impression that either of these concerns has escalated over the intermeeting period. Even though the economic outlook has not changed materially, the draft risk assessment notes that the "Committee judged that a further reduction in interest rates was appropriate to foster moderate growth over time and to mitigate the risks to economic activity." In contrast to the March statement, the risk assessment no longer highlights the downside risks to growth and thus implies that policy has moved to a more neutral stance. The proposed risk assessment also indicates that "some time may be needed to better assess the effects of the policy actions taken to date." As such, the statement is likely to be interpreted as suggesting that policy may be on hold for a while. Nonetheless, the statement concludes by noting that the Committee "remains prepared" to act as needed to promote economic growth and price stability.

(25) Alternative B would likely be viewed by market participants as being broadly consistent with their expectations. Investors' modal expectation as implied by financial futures and options prices appears to be for a 25 basis point easing at this meeting and for the target funds rate to be maintained at 2 percent at the June meeting. Taken at face value, these financial market quotes suggest that the reaction of financial asset prices to Alternative B is likely to be relatively muted. However, respondents to the Desk's survey of primary dealers expected a notably lower path for the federal funds rate than that implied by futures prices, and this divergence makes the reaction to Alternative B somewhat harder to predict.

(26) If the Committee believes that the substantial easing of monetary policy to date together with the fiscal stimulus package is likely to provide considerable support to economic activity and is concerned that inflation might not moderate at an acceptable pace, it may prefer to keep rates unchanged at this meeting, as in **Alternative C**. With the real federal funds rate close to historically low levels, the Committee may anticipate that the economy will avoid a pronounced downturn. The Committee may not view the incoming data as suggesting the sort of broad weakening in spending that the staff expects as a result of the economy shifting to a "recessionary state," and hence may put some weight on the "Near-Term Upside Risk" scenario in the Greenbook. Members might also be worried that inflation may follow a higher trajectory than in the staff forecast. Energy and commodity prices have repeatedly surprised to the upside in recent years and members might attach some likelihood to this pattern continuing, as illustrated in the "Greater Inflationary Pressure" scenario in the Greenbook. Moreover, members might feel that the pass-through of past cost increases into retail prices could be greater than anticipated by the staff. In addition, some indicators of inflation expectations have risen in recent months and members might worry that long-term inflation expectations could drift up further if inflation remains around its current elevated level, a development that would be costly to reverse. In that regard, members might be troubled that core PCE inflation has averaged more than 2 percent in every year since 2004 and is forecast by the staff to do so again in 2008. In a similar vein, members might be concerned that the apparent deterioration in inflation expectations could cause inflation to settle at an unacceptably high level once economic activity returns to more normal level and the downward contribution to inflation from the projected slack in resource markets dissipates. These considerations might suggest that the Committee stay its

hand at this meeting in order to allow more information to accumulate on prospects for both growth and inflation.

(27) The discussion of economic activity in the proposed statement for Alternative C is identical to that in the statement suggested for Alternative B. And, as in Alternative B, the draft inflation paragraph continues to indicate that inflation seems likely to moderate in coming quarters. However, in contrast to the FOMC statement in March, the factors expected to contribute to that moderation are not explicitly identified in order to emphasize the uncertainty attending the Committee's outlook for inflation. The proposed risk assessment notes that although "downside risks to growth remain," the Committee judged that "more time is needed to better assess economic prospects and the effects of the policy actions taken to date," thereby explaining why the stance of policy was left unchanged at this meeting. Although the statement concludes by reiterating that the Committee will act "as needed to promote sustainable economic growth and price stability," market participants may see the statement as suggesting that the pause in policy actions could continue for a while.

(28) Alternative C would come as a surprise to market participants, who appear fairly confident that the funds rate target will be cut by at least 25 basis points at this meeting. This surprise would be compounded if the accompanying statement is interpreted as suggesting that policy may remain on hold over the next few meetings. Investors would likely mark up their expectations for the path of policy over the next few quarters, leading to an increase in short- and intermediate-term interest rates. Pressures in short-term funding markets could worsen. Long-term nominal Treasury yields would rise by less or could even fall if the Committee's decision caused investors to revise down their expected trajectory of future inflation. With real rates higher, equities would probably fall, credit spreads

on corporate debt might widen, and the foreign exchange value of the dollar might be expected to rise.

(29) In contrast, if the Committee continues to view the outlook for economic activity as unacceptably weak, it may prefer to reduce the target funds rate by 50 basis points at this meeting, as proposed in **Alternative A**. The Committee might judge that financial headwinds could continue to exert a significant drag on economic growth through much of next year and thus policy may eventually have to be eased by more than envisaged by the staff, a possibility explored in the "Greater Financial Stress" scenario in the Greenbook. Alternatively, the Committee might share the staff's assessment of the underlying forces shaping the economy and the probable extent to which policy will need to be eased in order to foster a return to more normal levels of activity, but judge that the downside risks to growth are such that it is preferable to adjust rates more promptly than suggested by the staff forecast. In particular, the Committee might feel that an adverse feedback loop—in which weakness in the real economy exacerbates strains in financial markets which in turn feed back onto economic activity—remains a distinct possibility and that it is prudent for policy to respond decisively to reduce the risk of this dynamic taking hold. In this case, members might be willing to tolerate the likelihood of a somewhat higher path for inflation than in the staff forecast in order to respond more aggressively to the possibility of significant weakness in output. In that regard, the optimal-control simulation with an inflation goal of 2 percent prescribes a trajectory for the target funds rate that drops close to 1 percent by the end of 2009, notably softer than the policy path assumed in the Greenbook.

(30) The discussion of the outlook for economic activity and inflation in the draft statement accompanying Alternative A is identical to that proposed for Alternative B. The draft risk assessment also follows Alternative B in omitting the

judgment from the March FOMC statement that "downside risks to growth remain," and so indicates that policy has moved to a more neutral stance. The statement concludes by reiterating that the Committee "will act in a timely manner" to promote economic growth and price stability.

(31) With investors attaching little weight to the possibility of a 50 basis point cut in the target funds rate at this meeting, Alternative A would come as a considerable surprise to financial markets. Short- and intermediate-term interest rates would move lower. Long-term nominal Treasury yields and measures of inflation compensation could increase if the Committee's action was interpreted as implying that it was willing to tolerate a higher trajectory for inflation than investors had previously thought. Equity prices would probably rise and the foreign exchange value of the dollar could weaken further. However, these responses would be damped somewhat to the extent that the accompanying statement was read as suggesting that the Committee was not inclined to ease rates further after this meeting.

Money and Debt Forecasts

(32) Under the Greenbook forecast, M2 is expected to grow around 9½ percent this year, significantly faster than the projected expansion of nominal GDP. The resulting decline in the velocity of M2 is largely due to a substantial fall in the opportunity cost of M2 assets that reflects the easing of monetary policy. Growth of M2 is also likely to be boosted by a further shift in the composition of households' portfolios towards safe and liquid monetary assets in response to the ongoing financial turmoil. The expansion of M2 is expected to slow to around 5½ percent in 2009, reflecting the anticipated leveling-off in the opportunity cost of M2 assets and the return to more-normal financial market conditions.

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

		50 bp Ease	25 bp Ease	No change	Greenbook Forecast*
Monthly Growth Rates					
	Oct-07	3.8	3.8	3.8	3.8
	Nov-07	4.6	4.6	4.6	4.6
	Dec-07	4.9	4.9	4.9	4.9
	Jan-08	8.0	8.0	8.0	8.0
	Feb-08	16.8	16.8	16.8	16.8
	Mar-08	12.6	12.6	12.6	12.6
	Apr-08	5.7	5.7	5.7	5.7
	May-08	9.0	8.6	8.2	8.6
	Jun-08	9.6	8.8	8.0	8.8
	Jul-08	9.3	8.5	7.7	8.9
	Aug-08	8.7	8.0	7.3	8.8
	Sep-08	8.4	7.9	7.4	8.7
Quarterly Growth Rates					
	2007 Q1	7.1	7.1	7.1	7.1
	2007 Q2	6.1	6.1	6.1	6.1
	2007 Q3	4.7	4.7	4.7	4.7
	2007 Q4	4.8	4.8	4.8	4.8
	2008 Q1	9.5	9.5	9.5	9.5
	2008 Q2	9.7	9.5	9.3	9.5
	2008 Q3	9.2	8.5	7.8	8.9
Annual Growth Rates					
	2007	5.8	5.8	5.8	5.8
	2008	9.4	9.1	8.7	9.4
	2009	5.3	5.3	5.2	5.4
Growth From	To				
Mar-08	Sep-08	8.6	8.0	7.5	8.4
2008 Q1	Jun-08	9.7	9.4	9.1	9.4
2008 Q1	Sep-08	9.4	9.0	8.5	9.3

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

(33) After advancing at an annual rate of around 8 percent in 2007, the growth of domestic nonfinancial sector debt is projected to slow to around 4½ percent in 2008 and to remain around that pace in 2009. The deceleration reflects a broad-based slowdown in borrowing by households, nonfinancial businesses, and state and local governments. In the household sector, the ongoing weakness in housing market activity and prices is expected to weigh on mortgage borrowing through this year and next. Similarly, advances in consumer credit are likely to remain relatively subdued given sluggish gains in household spending on durables and tighter standards and terms on consumer loans. The slowing in business borrowing is consistent with the sharp tailing-off in M&A and share repurchase activity. State and local government borrowing has decelerated in response to a drop in issuance for long-term capital projects and advance refunding. In addition, the ongoing difficulties of major bond insurers are likely to restrain municipal bond issuance somewhat this year. In contrast, the growth of federal debt is expected to pick up to around 7½ percent in 2008, boosted in part by borrowing to fund the economic stimulus package.

Directive

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

Directive Wording

The Federal Open Market Committee seeks monetary and financial conditions that will foster price stability and promote sustainable growth in output. To further its long-run objectives, the Committee in the immediate future seeks conditions in reserve markets consistent with MAINTAINING/INCREASING/reducing the federal funds rate AT/to an average of around ________ ~~2¼~~ percent.

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.

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 five variables: the output gap, the equity premium, the federal budget surplus, the trend growth rate of output, and the real bond yield.
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 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), while the third is a variant of the Taylor (1999) rule with a higher value of r^*. The prescriptions of the first-difference rule do not depend on assumptions regarding r^* or the level of the output gap; see Orphanides (2003).

Outcome-based rule	$i_t = 1.20 i_{t-1} - 0.39 i_{t-2} + 0.19[1.17 + 1.73\pi_t + 3.66(y_t - y_t^*) - 2.72(y_{t-1} - y_{t-1}^*)]$
Forecast-based rule	$i_t = 1.18 i_{t-1} - 0.38 i_{t-2} + 0.20[0.98 + 1.72\pi_{t+2|t} + 2.29(y_{t+1|t} - y_{t+1|t}^*) - 1.37(y_{t-1} - y_{t-1}^*)]$
Taylor (1993) rule	$i_t = 2 + \pi_t + 0.5(\pi_t - \pi^*) + 0.5(y_t - y_t^*)$
Taylor (1999) rule	$i_t = 2 + \pi_t + 0.5(\pi_t - \pi^*) + (y_t - y_t^*)$
Taylor (1999) rule with higher *r**	$i_t = 2.75 + \pi_t + 0.5(\pi_t - \pi^*) + (y_t - y_t^*)$
First-difference rule	$i_t = i_{t-1} + 0.5(\pi_{t+3|t} - \pi^*) + 0.5(\Delta^4 y_{t+3|t} - \Delta^4 y_{t+3|t}^*)$

FRB/US Model Simulations: Prescriptions from the two empirical rules are computed using dynamic simulations of the FRB/US model, implemented as though the rule were followed starting at this FOMC meeting. The dotted line labeled "Previous Bluebook" is based on the current specification of the policy rule, applied to the previous Greenbook projection. Confidence intervals are based on stochastic simulations of the FRB/US model with shocks drawn from the estimated residuals over 1986-2005.

Information from Financial Markets: The expected funds rate path is based on forward rate agreements, and the confidence intervals for this path are constructed using prices of interest rate caps.

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

References:

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

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

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