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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Class I FOMC – Restricted Controlled (FR)

June 18, 2009

Monetary Policy Alternatives

Prepared for the Federal Open Market Committee
by the Staff of the Board of Governors of the Federal Reserve System

RECENT DEVELOPMENTS

SUMMARY

Strains in financial markets eased further over the intermeeting period. Investor unease about the largest U.S. bank holding companies seemed to lessen following the release of the results of the Supervisory Capital Assessment Program (SCAP), and subsequently these institutions issued a large amount of equity and nonguaranteed debt. Equity price indexes rallied, with financial stocks outperforming. Short-term funding rates generally fell, and market functioning showed widespread improvement. Consistent with the improvements in financial markets, demand for Federal Reserve credit declined.

Yields on nominal Treasury securities climbed steeply over the intermeeting period, especially for longer-dated issues. Market participants attributed the move to several factors, including an upward shift in the expected path of the federal funds rate resulting from the somewhat improved economic outlook, and a rise in term premiums reflecting, in part, technical factors associated with mortgage-related hedging flows. The increase in TIPS yields did not keep pace with the rise in their nominal counterparts, leaving inflation compensation markedly higher over the period. While some of the widening in inflation compensation likely reflected an increase in inflation expectations, evidence suggests that an increase in inflation risk premiums as well as technical factors may also have boosted inflation compensation. In private debt markets, rates on mortgages and mortgage-backed securities climbed along with the run-up in nominal Treasury yields. In contrast, yields on both investment-grade and speculative-grade corporate bonds declined, and their spreads to comparable-maturity Treasury securities narrowed substantially.

Domestic nonfinancial sector debt is projected to have expanded at an annual rate of 5½ percent in the second quarter, with net borrowing due almost entirely to the federal government. Bank credit increased slightly in May, following six consecutive months of decline, although core loans shrank again. Recent issuance of credit card and auto asset-backed securities (ABS) was solid, stimulated by the Term Asset-Backed Securities Loan Facility (TALF).

Money market conditions abroad also improved slightly over the intermeeting period. Yields on sovereign bonds rose notably, and the dollar depreciated against most major currencies. Many foreign central banks eased policy rates or expanded nonconventional policies. Stock market indexes around the world moved up sharply.

FINANCIAL INSTITUTIONS

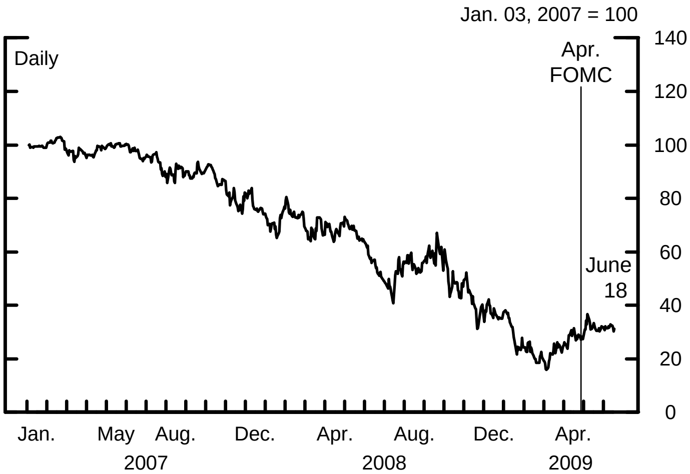
Investors' concerns about the health of the largest U.S. financial institutions eased somewhat over the intermeeting period as the announcement of the results of the SCAP stress tests and subsequent successful capital raising efforts were seen as key steps toward recovery of the financial system. In particular, stock prices of banks rose 11 percent and CDS spreads on debt of major bank holding companies narrowed considerably (Chart 1).[1]

The results of the SCAP, released on May 7, were positively received in financial markets. Implied volatility of bank share prices declined markedly after the results, apparently reflecting a reduction in uncertainty about prospects for these institutions.

[1] On June 17, Standard & Poor's announced that it lowered its ratings for 18 U.S. banks, noting that operating conditions for the industry will become less favorable than they were in the past. The rating action included 7 banks that were included in the stress tests. While the announcement was reportedly not entirely unexpected, equity prices of the downgraded institutions declined.

Chart 1
Financial Institutions

Bank ETF

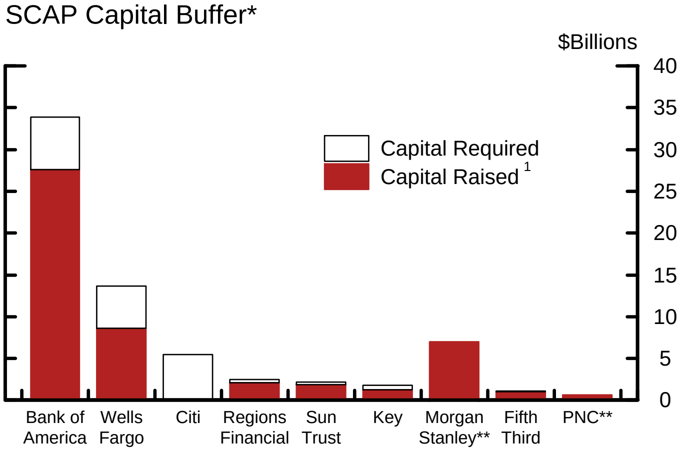


Note. There are 24 banks included.
Source. Bloomberg, Keefe Bruyette & Woods.

Bank CDS spreads

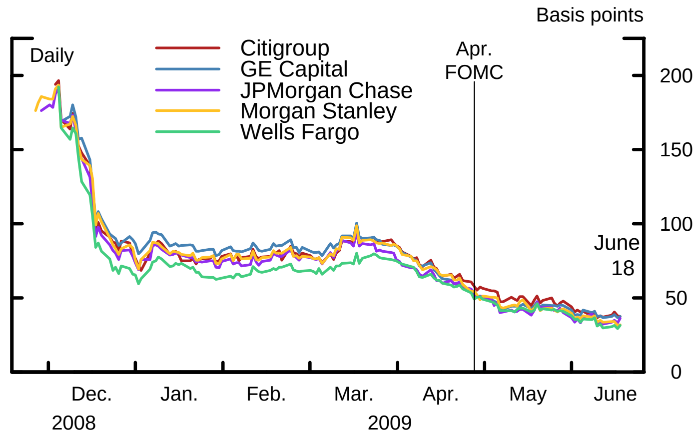
Note. Median spreads for 6 major bank holding companies and 12 other banks.
Source. Markit.

SCAP Capital Buffer*



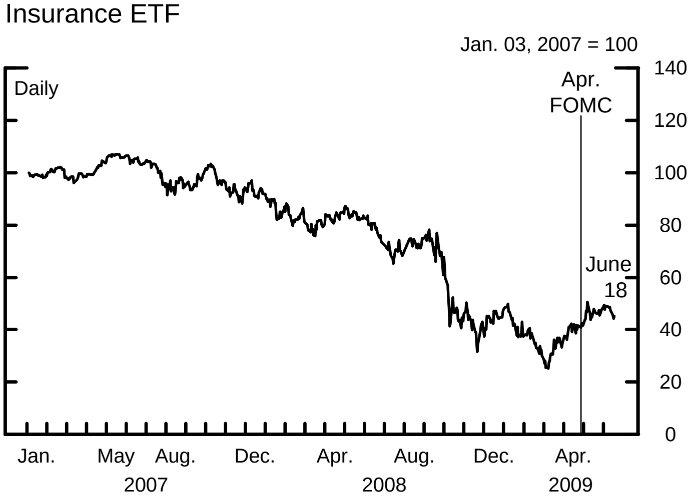
1 Source. Staff estimates.
* Includes new common equity offering, exchange of preferred to common, and asset sales.
** Morgan Stanley and PNC have raised more capital than required.
Note. Chart excludes GMAC.

Selected FDIC-guaranteed spreads



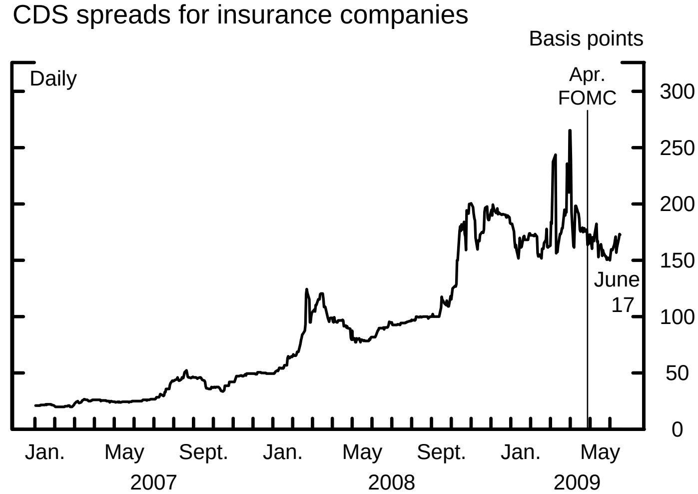
Note. Spreads to comparable-maturity Treasury securities for issues maturing around year-end 2011.
Source. Bloomberg.

Insurance ETF



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

CDS spreads for insurance companies



Note. Median spread for 53 insurance companies.
Source. Markit.

Spreads on outstanding FDIC-guaranteed debt for most issuers narrowed a bit over the intermeeting period but there was considerable variation across institutions in the yields on non-guaranteed debt. CDS spreads for large banking organizations declined notably over the period, though they remained elevated.

Subsequent to the release of the SCAP results, the 10 institutions that were required to increase their capital buffer raised or announced plans to raise around $55 billion in common equity through public offerings, conversions of preferred stock, and asset sales, and they submitted capital plans to raise the remaining capital required under the SCAP by November. Most of the other institutions evaluated in the stress tests also raised capital, totaling an additional $15 billion, with the intent to repay U.S. Treasury capital. The 19 firms issued more than $25 billion of non-guaranteed debt after the SCAP results were announced, and a few firms issued a total of roughly $10 billion in FDIC-guaranteed debt. On June 1 the Federal Reserve Board released an outline of the criteria it would use to evaluate applications to repay U.S. government capital, and on June 9, the Treasury announced that 10 of the largest institutions had met the requirements for repaying funds; equity prices of these institutions generally rose and CDS spreads ticked lower on the day of the Treasury announcement. On June 17, about $68 billion was repaid to the Treasury.

Fannie Mae and Freddie Mac reported fourth-quarter losses in line with market expectations and requested an additional $19 billion and $6 billion, respectively, from the Treasury under the Senior Preferred Stock Purchase Agreement. Nonetheless, Fannie Mae issued $5 billion of five-year notes and Freddie Mac issued $9 billion of three-year notes in well-subscribed auctions. The Federal Home Loan Bank System auctioned $5 billion in two-year notes, its largest such issuance in a year, amid reportedly high demand. Spreads of yields on agency debt over those on comparable-maturity Treasury securities narrowed over the intermeeting period as the Federal Reserve continued its purchases of agency debt.

Market participants appeared to view the outlook for insurance firms as somewhat improved, as their equity prices rose, on net, over the intermeeting period. The improvements coincided with news reports suggesting that insurance companies would be eligible for TARP funds. Some insurance companies, including Ameriprise Financial and Allstate, announced that they would not accept such funds, but others, such as Hartford Financial and Lincoln National, announced that they intend to issue preferred stock to the Treasury and have obtained preliminary approval to do so.

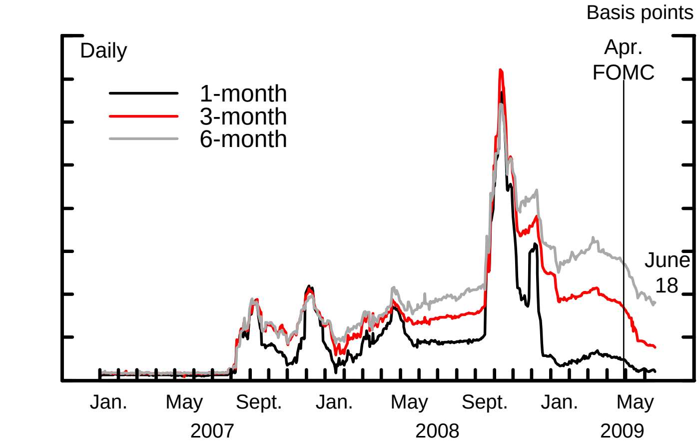
MARKET FUNCTIONING

Functioning in many financial markets improved, on net, over the intermeeting period. Pressures in short-term bank funding markets eased further, as evidenced by declines in Libor fixings and spreads over OIS (Chart 2). Spreads at the one- and three-month horizons narrowed to levels not seen since early 2008, volume increased modestly, and market participants reported tentative signs of improved liquidity. The reverse repurchase (repo) market saw slight improvement, with bid-asked spreads for most types of transactions ticking down and haircuts roughly unchanged. Delivery fails on Treasury securities dropped after the May 1 implementation of the Treasury Market Practices Group's fails charge.[2] Nevertheless, the 10-year on-the-run Treasury

[2] On May 1, a "fails charge" recommended by the Treasury Market Practices Group was implemented. The charge is incurred when a party to a repo or cash transaction fails to deliver the contracted Treasury security to the other party by the date agreed upon by the parties. The charge is a share of the value of the securities, where the share is the greater of 3 percent (annual rate) minus the target federal funds rate (or the bottom of the range when the FOMC specifies that instead) and zero. Previously, the practice was that a failed transaction was allowed to settle on a subsequent day at an unchanged invoice price; therefore, the cost of a fail was the opportunity cost of the funds owed in the transaction, which was minimal when short-term interest rates were very low, and thus provided little

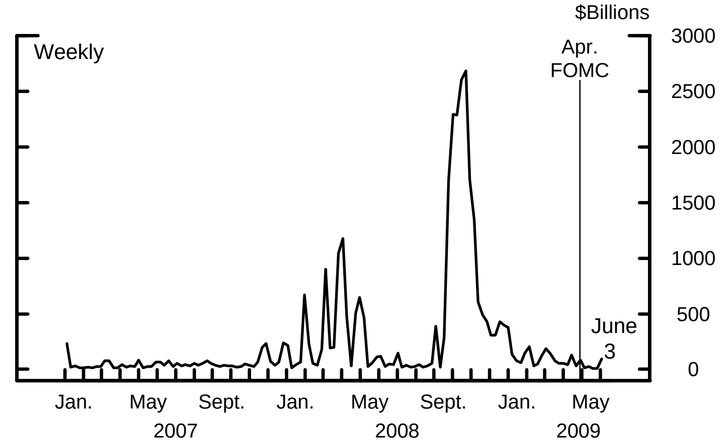
Chart 2
Market Functioning

Spreads of Libor over OIS



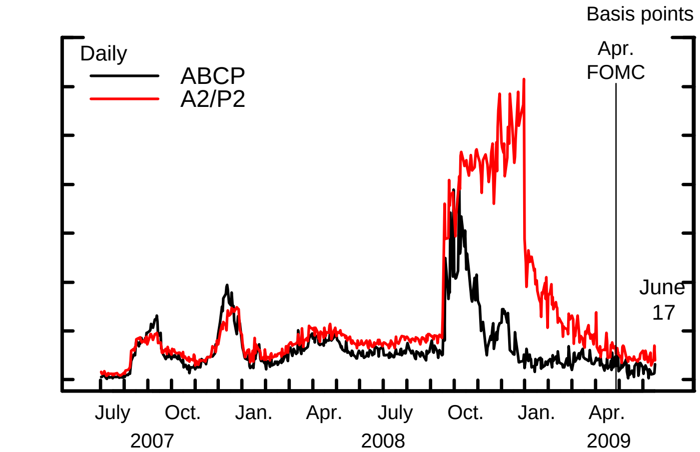
Note. Libor quotes are taken at 6:00 a.m., and OIS quotes are observed at the close of business of the previous trading day.
Source. Bloomberg.

Treasury fails to deliver



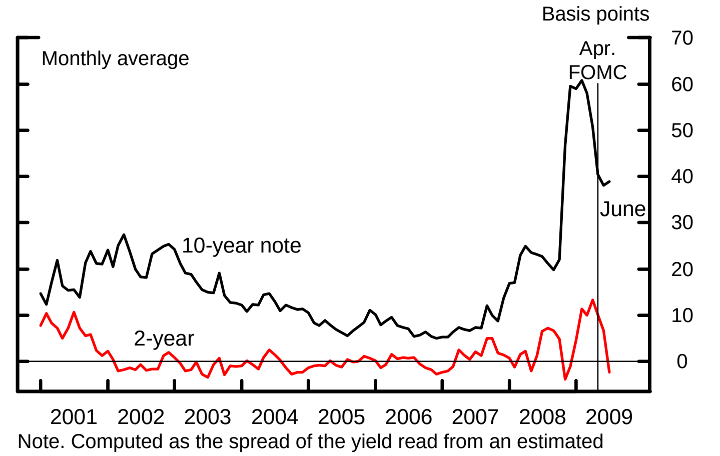
Source. FR2004.

Spreads on 30-day commercial paper



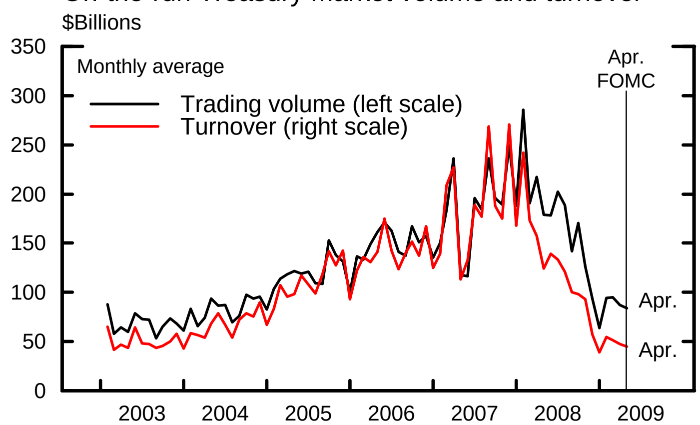
Note. The ABCP spread is the AA ABCP rate minus the AA nonfinancial rate. The A2/P2 spread is the A2/P2 nonfinancial rate minus the AA nonfinancial rate.
Source. Depository Trust & Clearing Corporation.

Treasury on-the-run premium



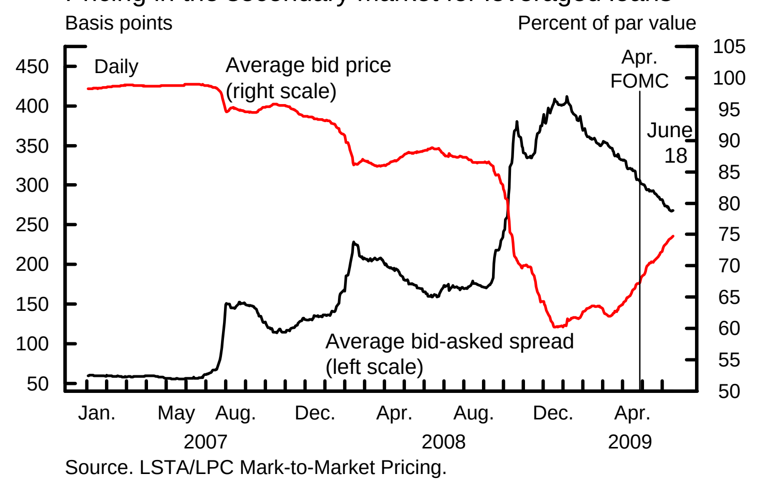
Note. Computed as the spread of the yield read from an estimated off-the-run yield curve over the on-the-run Treasury yield. June observation is the month-to-date average.
Source. Staff estimates.

On-the-run Treasury market volume and turnover



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

Pricing in the secondary market for leveraged loans



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

security was in particularly short supply in early June, and delivery fails for that issue increased notably and trades in overnight repos for this issue took place at negative yields. On June 15, a new supply of the on-the-run 10-year note settled following the regular reopening, and delivery fails fell to zero.

Consistent with improvement in the bank funding markets, use of Federal Reserve liquidity facilities directed at depository institutions declined. (See box entitled "Balance Sheet Developments During the Intermeeting Period.") Term Auction Facility (TAF) credit outstanding declined by nearly $70 billion over the intermeeting period. Bidding in both the 28-day and 84-day auctions decreased fairly steadily over the period, although the 28-day auction that immediately preceded the announcement of the SCAP results drew more aggressive bidding, reportedly because of anxiety on the part of a few SCAP banks about the stress tests results. Foreign central bank liquidity swaps outstanding dropped about $100 billion over the period, continuing their steady decline since the start of the year. With the improvement in bank funding markets and the relatively higher cost of this funding relative to the TAF, foreign central bank dollar liquidity was seen as less attractive.

Lending through the Commercial Paper Funding Facility (CPFF) dropped by $50 billion, as less than half of maturing commercial paper in the program was reissued to the CPFF. Reportedly, many firms issued longer-term debt to pay down short-term borrowing financed through the facility. Outside the CPFF, spreads on 30-day asset-backed commercial paper and A2/P2 commercial paper edged down further to around the low end of their ranges recorded over the past 18 months.

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incentive to minimize fails. The new practice of a fails charge ensures that the total cost of a fail (opportunity cost plus the fails charge) is at least 3 percent. Given the new rules, repo rates for securities in especially high demand can routinely trade as low as -3 percent; previously, market conventions prevented repo rates from falling much below zero even during periods of intense demand for particular securities.

Balance Sheet Developments During the Intermeeting Period

Since the April FOMC meeting, the Federal Reserve's total assets have remained at around $2 trillion, but their composition has shifted significantly.[1] As a result of the ongoing asset purchase programs, securities held outright increased $201 billion, but this increase was roughly offset by a decrease of $206 billion in liquidity programs and other credit facilities.

The Open Market Desk purchased $90 billion in U.S. Treasury securities, $22 billion in agency debt securities, and $90 billion in agency mortgage-backed securities.[2] Loans extended under the Term Asset-Backed Securities Loan Facility (TALF) increased by $19 billion, and those extended under the Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF) increased by $15 billion. The TALF conducted two operations during the intermeeting period to finance the issuance of asset-backed securities. The increased lending through the AMLF occurred just prior to the announcement of results from the Supervisory Capital Assessment Program and reportedly reflected money market mutual funds' concern that their holdings of commercial paper issued by some of the institutions subject to the stress tests might be downgraded or placed on watch for downgrade by the rating agencies and thereby become ineligible for the facility.

A number of the System's credit and liquidity programs contracted. Foreign central bank liquidity swaps declined $101 billion, term auction credit declined $67 billion, and primary credit declined $9 billion.[3] All of these declines likely reflect improvements in global bank funding markets. Credit extended through the Commercial Paper Funding Facility declined $50 billion after a large amount of commercial paper funded under the program matured and was not completely rolled over. This decline likely reflects, at least in part, some substitution of longer term credit for commercial paper. Lending under the Primary Dealer Credit Facility declined $1 billion to zero, and securities lent through the Term Securities Lending Facility (TSLF), which do not affect assets because the Federal Reserve retains ownership of the securities lent, declined by $17 billion. The decline in TSLF lending reportedly reflects improvements in the repo market, particularly a narrowing of risk spreads on term repo transactions.

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1 These data are through June 17, 2009.

2 The figures for MBS holdings reflect only trades that have settled. Over the intermeeting period, the Open Market Desk committed to purchase $172 billion of MBS, on net.

3 The amount of term auction credit and the amount of foreign central bank liquidity swaps are expected to decline $54 billion and $27 billion respectively, on June 18, 2009.

On the liability side of the Federal Reserve's balance sheet, the U.S. Treasury's general account increased $70 billion as a result of tax payments and the repayment of some of the preferred stock provided to financial institutions under the U.S. Treasury's Troubled Asset Relief Program. This increase was roughly offset by a $69 billion decrease in reserve balances of depository institutions, leaving the Federal Reserve's total liabilities about unchanged over the period.

Federal Reserve Balance Sheet

Billions of dollars

	Change since last FOMC	Current (6/17/2009)	Maximum level	Date of maximum level
Total assets	**6**	**2,074**	**2,256**	**12/17/2008**
Selected assets:				
Liquidity programs for financial firms	-162	540	1,247	11/06/2008
Primary, secondary, and seasonal credit	-9	37	114	10/28/2008
Term auction credit (TAF)*	-67	337	493	03/11/2009
Foreign central bank liquidity swaps*	-101	149	586	12/04/2008
Primary Dealer Credit Facility (PDCF)	-1	0	156	09/29/2008
Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF)	15	19	152	10/01/2008
Lending through other credit facilities	-31	157	351	01/23/2009
Net portfolio holdings of Commercial Paper Funding Facility LLC (CPFF)	-50	132	351	01/23/2009
Term Asset-Backed Securities Loan Facility (TALF)	19	25	26	06/09/2009
Support for specific institutions	-13	105	118	04/02/2009
Credit extended to AIG	-3	43	91	10/27/2008
Net portfolio holdings of Maiden Lane LLC, Maiden Lane II LLC, and Maiden Lane III LLC	-10	62	75	12/30/2008
Securities held outright**	201	1,184	1,184	06/17/2009
U.S. Treasury securities	90	639	791	08/14/2007
Agency debt securities	22	90	90	06/17/2009
Agency mortgage-backed securities***	90	456	456	06/17/2009
Memo: Term Securities Lending Facility (TSLF)	-17	16	236	10/01/2008
Total liabilities	**6**	**2,027**	**2,213**	**12/04/2008**
Selected liabilities:				
Federal Reserve notes in circulation	4	868	870	05/27/2009
Reserve balances of depository institutions	-69	744	955	05/20/2009
U.S. Treasury, general account	70	133	137	10/23/2008
U.S. Treasury, supplemental financing account	0	200	559	10/22/2008
Other deposits	0	0	53	04/14/2009
Total capital	**0**	**47**	**47**	**05/05/2009**

* The amount of term auction credit and the amount of foreign central bank liquidity swaps are expected to decline $54 billion and $27 billion respectively, on June 18, 2009.

** Par value.

***Includes only mortgage-backed security purchases that have already settled. Over the intermeeting period, the Open Market Desk committed to purchase $172 billion of MBS, on net.

One exception to the decreased usage of Federal Reserve facilities was the Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF), which jumped from zero to $27 billion in early May. The increase was sparked by concerns about potential downgrades of commercial paper issued by banking institutions around the time of the stress tests that led money funds to place their paper in the AMLF in case the collateral subsequently became ineligible for this facility. Subsequently, amounts borrowed from the AMLF declined, with amounts outstanding falling to $19 billion most recently.

Functioning in the market for Treasury securities generally improved and trading volumes picked up, but some strains remained. The average fitting error estimated from staff yield curve models decreased noticeably. The on-the-run/off-the-run premium narrowed considerably at the short end of the yield curve. Concerns about volatility linked to mortgage-related hedging flows, however, appeared to keep these spreads somewhat wide for longer-dated issues. Some strains emerged at times in the mortgage-backed securities (MBS) market perhaps associated with the mortgage-related hedging flows; market participants reacted to the large and rapid changes in MBS yields by widening the bid-asked spreads on MBS.

Functioning in the corporate bond market reportedly improved a bit over the intermeeting period. Bid-asked spreads for speculative-grade and investment-grade bonds declined on net over the period. Meanwhile, the basis between the CDX investment-grade index of CDS spreads and measures of investment-grade corporate bond spreads—a rough measure of unexploited arbitrage opportunities in the corporate bond market—decreased, although it remained wide. Market sentiment toward the syndicated leveraged loan market also improved, with the average bid price increasing notably and bid-asked spreads narrowing a bit further.[3] Liquidity in the CDS market appeared to improve, with the average range of CDS dealer contributions narrowing significantly, especially so for financial firms.

Use of the TALF continued to expand, with the May and June subscriptions providing $10.6 billion and $10.7 billion in new loan extensions, respectively. Issuance of auto and credit card ABS, including a couple of ABS issues that came to market outside of the TALF, was solid in these months. In addition, the TALF program was extended in two dimensions. First, the list of eligible collateral under the TALF program was expanded to include newly issued and legacy commercial mortgage-backed securities (CMBS), as well as insurance premium finance loans. Second, the Board authorized TALF loans with maturities of five years to finance purchases of CMBS, ABS backed by student loans, and loans guaranteed by the Small Business Administration.[4] The inclusion of CMBS in the TALF program resulted in a narrowing of spreads in the secondary market. However, CMBS spreads have since widened as rating agencies have issued conflicting opinions regarding the methodology to evaluate credit quality of many senior CMBS tranches. In addition, commercial real estate fundamentals worsened as vacancy rates rose and prices declined, resulting in higher delinquency rates on commercial mortgages and construction loans.

[3] Some market participants suggested that two factors might have contributed to the increase in leveraged loan prices. First, some issuers tapped the bond market and reportedly paid down loans, leaving managers of collateralized loan obligations with excess cash to reinvest in the loan market. Second, many syndicated loan borrowers have reportedly reached agreements with their creditors to extend the maturity and increase the size of their loan facilities in exchange for significantly wider spreads.

[4] The first TALF subscription for new CMBS on June 16 received no submissions. This outcome was expected, given the time that it takes to arrange CMBS transactions.

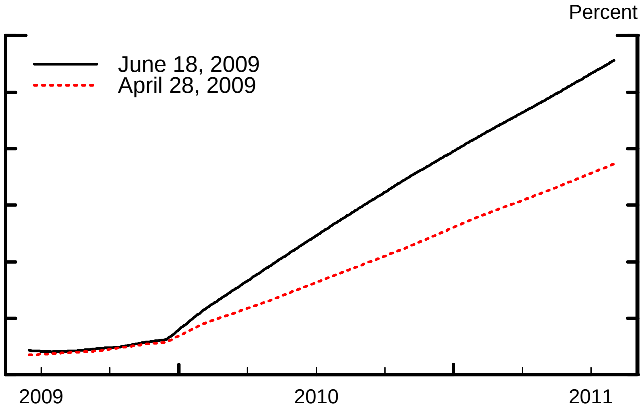
MONETARY POLICY EXPECTATIONS AND TREASURY YIELDS

The Committee's decision at its April 28-29 meeting to leave the target range for the federal funds rate unchanged and the accompanying statement indicating that the FOMC would maintain the size of the large-scale asset purchase program were largely anticipated, but yields on Treasury securities rose slightly as a few investors apparently had placed some odds on the Committee expanding the purchase program.[5] The release of the April FOMC minutes three weeks later prompted a reversal of this move, as market participants reportedly focused on the suggestion that the total size of the purchase program might need to be increased at some point to spur a more rapid pace of recovery. The expected path for the federal funds rate implied by futures prices was largely unchanged by the releases of the Committee's statement and the minutes. However, in the days following the release of the May employment report, which was read as being significantly less negative than anticipated, market participants marked up their expected path for the federal funds rate. Although about half of this upward shift has since been reversed, futures quotes – combined with our standard assumptions about the term premium – imply an expected federal funds rate at the end of 2010 of about 1.8 percent, up about 65 basis points from the expected rate at the time of the April FOMC meeting (Chart 3). Part of the increase in the expected funds rate path might reflect an increase in the term premium that is not incorporated in our standard assumptions. The option-implied distribution of the federal funds rate six months from now widened substantially over the period possibly pointing to a widening in the term premium. And the Desk's survey of primary dealers reported that all respondents continued to expect short-term policy

[5] The effective federal funds rate averaged 0.19 percent over the intermeeting period. Trading volumes declined somewhat toward the end of the period, and the intraday standard deviation averaged 5 basis points.

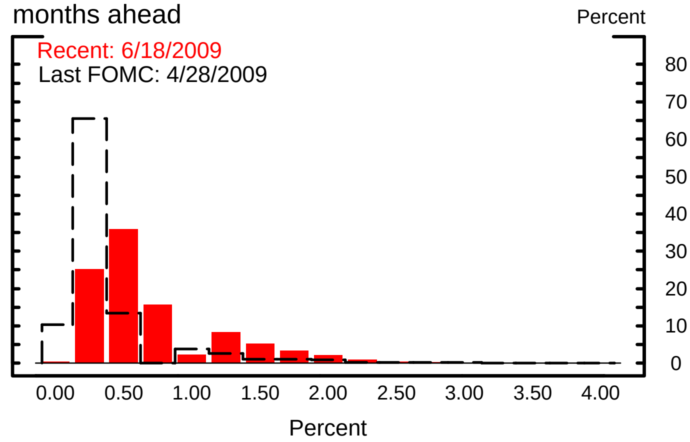
Chart 3
Interest Rate Developments

Expected federal funds rates



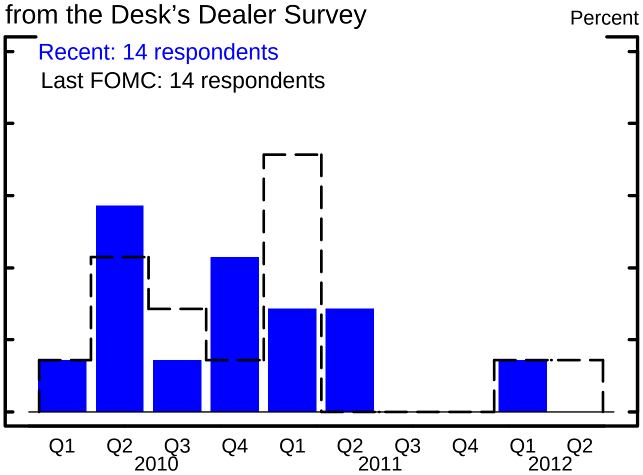
Note. Estimates from federal funds and Eurodollar futures, with an allowance for term premiums and other adjustments.
Source. Chicago Mercantile Exchange and Chicago Board of Trade.

Implied distribution of federal funds rate six months ahead



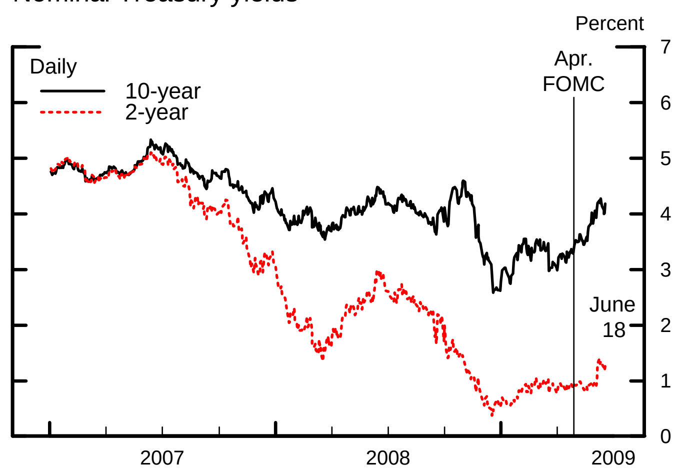
Note. Derived from options on Eurodollar futures contracts, with term premium and other adjustments to estimate expectations for the federal funds rate.
Source. Chicago Mercantile Exchange.

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



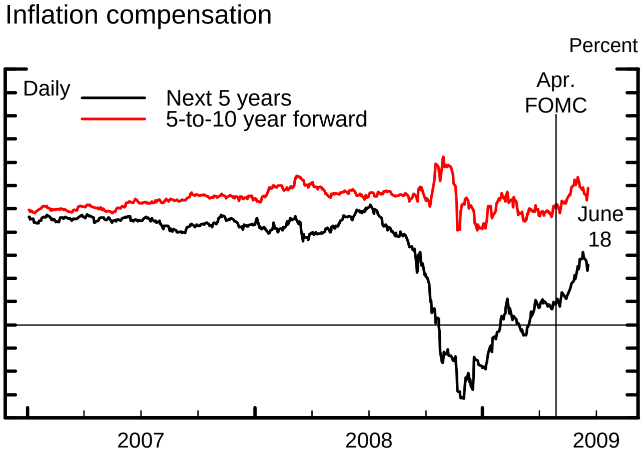
Source. Federal Reserve Bank of New York.

Nominal Treasury yields



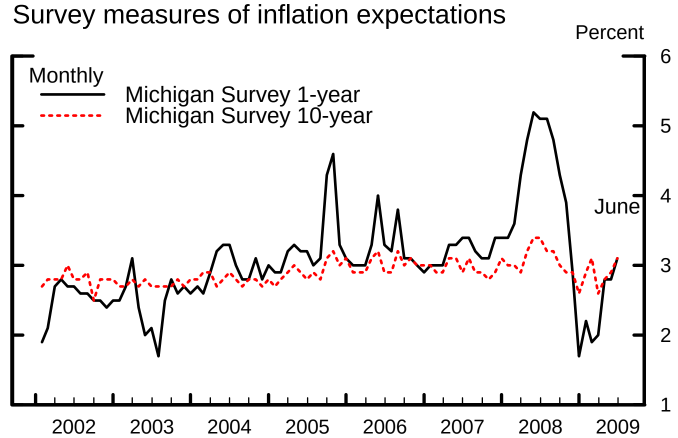
Note. Par yields from a smoothed nominal off-the-run Treasury yield curve.
Source. Staff estimates.

Inflation compensation



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

Survey measures of inflation expectations



Source. Reuters/University of Michigan.

rates to remain on hold in 2009, again suggesting that some portion of the upward revision in the futures path may reflect higher term premiums.

Nominal Treasury yields increased sharply over the intermeeting period, with yields on two- and ten-year notes up about 35 and 80 basis points, respectively. Against a backdrop of heavy Treasury issuance, the ten-year yield trended up over the intermeeting period likely reflecting a number of factors, including the favorable reception of the SCAP results and better-than-expected economic data, which boosted the expected path of future short rates and pushed up the term premium, as well as technical factors related to mortgage-related hedging flows. (See box entitled "The Recent Rise in Long-term Nominal Treasury Yields.") The two-year Treasury yield increase mainly followed the release of the milder-than-expected May employment report.

Inflation compensation rose over the intermeeting period as yields on inflation-indexed Treasury securities increased much less than those on their nominal counterparts. Some of the increase in inflation compensation may reflect an increase in inflation expectations, but an improvement in liquidity in the TIPS market and mortgage-related hedging flows may have boosted inflation compensation as well. (See box entitled "Interpreting the Rise in Inflation Compensation.")

CAPITAL MARKETS

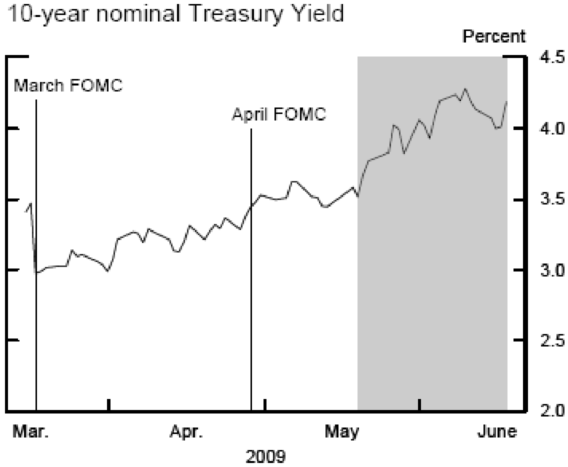
Broad stock price indexes rose about 7 percent, on balance, over the intermeeting period amid generally better-than-expected economic data releases (Chart 4). Implied stock-price volatility continued to decline, although it remained elevated. The equity premium—measured as the staff's estimate of the expected real equity return over the next ten years relative to the real 10-year Treasury yield—narrowed notably but remained high by historical standards. Revisions to analysts' forecasts of year-ahead

The Recent Rise in Long-term Nominal Treasury Yields

Yields on long-term nominal Treasury securities increased substantially over the intermeeting period. The 10-year yield climbed 80 basis points (left chart below), with much of the increase concentrated in forward rates at horizons between 3 and 7 years. Estimates from the staff's three-factor affine term structure model suggest that much of the rise in the 10-year yield can be attributed to wider term premiums, although the expected path of future short-term rates also boosted yields.

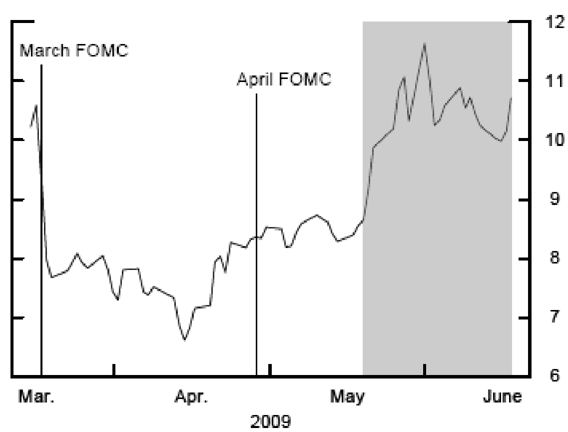
A more optimistic assessment of the economic outlook on the part of investors was reportedly a significant factor boosting the expected path of future short rates. Data releases in the United States and other countries pointed to some tentative signs that the global deterioration in economic activity could be moderating. Indeed, nominal government bond yields moved higher in most industrialized countries. Stronger economic data and rising oil prices may also have contributed to an increase in inflation expectations over the period, leading to higher inflation compensation in nominal government bond yields in a number of advanced foreign economies.

10-year nominal Treasury Yield



Note: Obtained from a smoothed yield curve fitted to off-the-run coupon securities. Last observation is June 18.

Long-term interest rate implied volatility



Note: Derived from options on 10-year Treasury note futures. Last observation is June 18.

A number of factors reportedly boosted term premiums for Treasury securities. The favorable reception of the Supervisory Capital Assessment Program (SCAP) results and the improved tone of economic data seemed to spur an unwinding of safe-haven demands. As yields moved higher, other factors reportedly amplified the upturn in rates. First, investors concluded that the Fed was not defending particular rate levels for Treasuries and mortgages as part of its large-scale asset purchase (LSAP) programs. Second, the rise in yields reportedly prompted mortgage-related hedging flows—as mortgage rates moved higher, the duration of mortgage-backed securities increased and investors reportedly pared holdings of longer-term Treasuries in an effort to keep the duration of their portfolios at desired levels. The rise in mortgage hedging demands was accompanied by a notable increase in option-implied measures of uncertainty about long-term interest rates (shaded grey area in the right chart above), which may have also contributed to the widening of term premiums.

Interpreting the Rise in Inflation Compensation

Inflation compensation, defined as the difference between yields on nominal Treasury securities and those on comparable-maturity TIPS, increased notably over the intermeeting period. Five-year inflation compensation rose about 70 basis points, and five-year inflation compensation five years forward increased about 35 basis points, with the largest increases occurring following the May nonfarm payroll release, comments from Fed officials pointing to upside inflation risks, and large increases in oil prices.

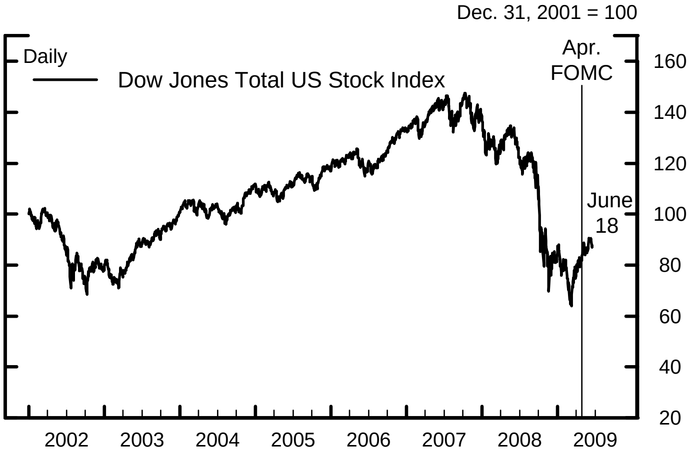
The staff's real term structure model provides one means of decomposing these changes into changes in inflation expectations, inflation risk premiums, and other factors. As noted in the table below, the model suggests that inflation expectations at the five-year and five-year forward horizon moved up about 40 basis points over the intermeeting period. For comparison, the Michigan and Philadelphia Fed measures of long-term inflation expectations increased 40 basis points and 10 basis points, respectively, since the April meeting. The model also points to an increase of about 20 basis points in the inflation risk premium at both the five-year and five-year forward horizons.

Changes over the intermeeting period (in basis points)	5-year	5-year, 5-year forward
Change in inflation expectations	+40	+37
Change in inflation risk premium	+17	+22
Change in residuals	+11	–25
Total change	+68	+34

While these model results are suggestive, the point estimates of changes in the components may be subject to more than the usual degree of uncertainty. In particular, market participants pointed to a number of special factors boosting nominal yields over the period that probably would not have affected TIPS yields to the same degree. For example, the unwinding of safe haven demands in light of the perceived improvement in the economic outlook as well as the upward pressure on longer-term rates stemming from mortgage-hedging flows both are factors that could be expected to boost nominal Treasury yields relative to TIPS yields. Indeed, inflation compensation at both the five-year and five-year forward horizon moved up very sharply in the summer of 2003 during the intense mortgage-hedging episode at that time.

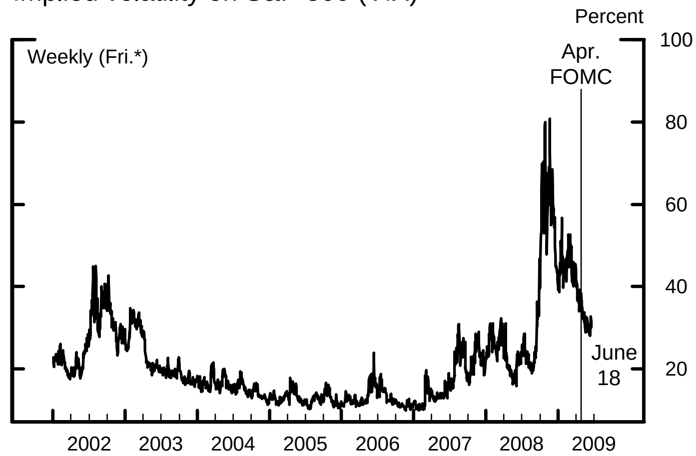
Chart 4
Asset Market Developments

Equity prices



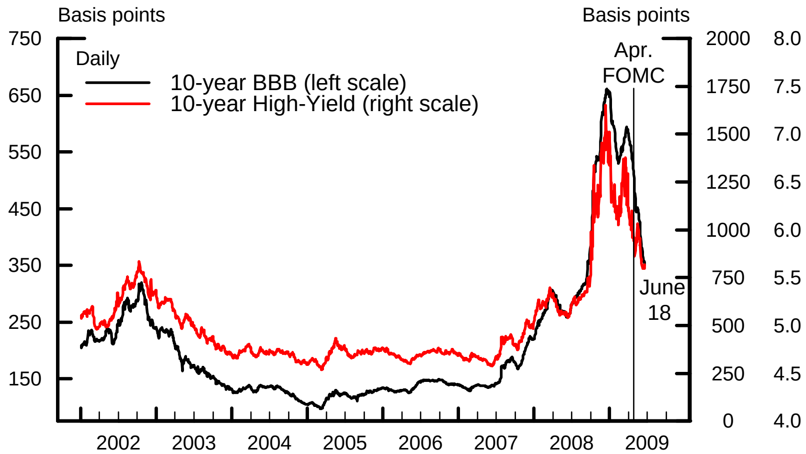
Source. Bloomberg.

Implied volatility on S&P 500 (VIX)



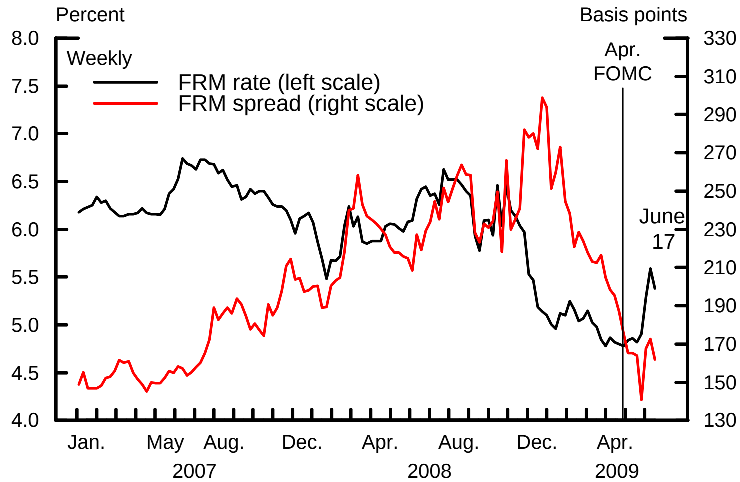
*Latest observation is for most recent business day.
Source. Chicago Board Options Exchange.

Corporate bond spreads



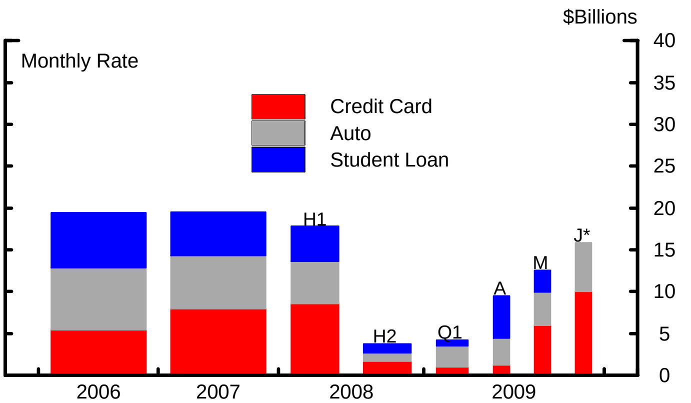
Note. Measured relative to an estimated off-the-run Treasury yield curve.
Source. Merrill Lynch and staff estimates.

Residential mortgage rates and spreads



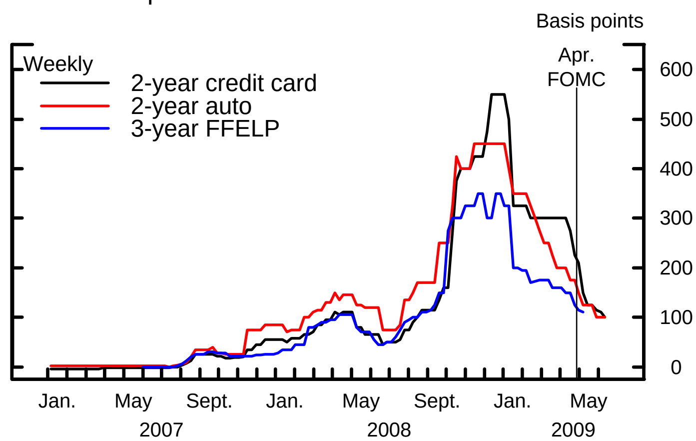
Note. FRM spread is relative to 10-year Treasury.
Source. Freddie Mac.

Gross ABS Issuance



*Actual issuance as of June 16.
Note. Auto ABS include car loans and leases and financing for buyers of motorcycles.
Source. Inside MBS & ABS, Merrill Lynch, Bloomberg, and the Federal Reserve.

AAA ABS spreads



Note. Last observations for 2-year auto and credit card ABS spreads are June 12. Last observation for 3-year FFELP is May 8.
Source. For credit card and auto spreads, trader estimates provided by Citigroup. For FFELP spreads, trader estimates provided by Merrill Lynch.

earnings for S&P 500 firms were negative in the month ending in mid-May, but the downward revision was much smaller than in the prior several months. Financial firms issued a record volume of public equity in May, and seasoned offerings by nonfinancial firms surged. Net issuance of equity by nonfinancial firms, which had been negative since 2002, was essentially zero in the first quarter, as equity retirements from cash-financed mergers and share repurchases slowed significantly.

Yields on speculative-grade and investment-grade bonds dropped, and spreads over yields on comparable-maturity Treasury debt narrowed considerably. Consistent with the generally improved market sentiment, CDX indexes of spreads for both investment-grade and speculative-grade debt fell over the intermeeting period, with the largest declines recorded for financial firms. Gross issuance of corporate bonds was strong over the intermeeting period by both nonfinancial and financial firms. Issuance by investment-grade nonfinancial firms rebounded from its April lull, and the pace of issuance by speculative-grade companies was the highest since June 2007. Many firms reportedly used the proceeds to pay down bank loans and commercial paper over the intermeeting period. Bond issuance by financial firms was primarily outside the FDIC's Temporary Liquidity Guarantee Program. The expected year-ahead default rate from Moody's KMV, which covers both financial and nonfinancial firms, decreased markedly over the period, reflecting both higher estimated asset values and lower estimated asset volatilities. Nevertheless, this measure of expected defaults remained extremely high by historical standards.

Mortgage rates increased sharply over the intermeeting period. Yields on MBS increased 80 basis points, while the average rate on 30-year fixed-rate conforming mortgages increased less, rising about 60 basis points to 5.4 percent. As a result, the spread between the yield on Fannie Mae MBS and the primary mortgage market rate narrowed on net. Rates offered on jumbo mortgages rose even less. Issuance of

MBS by the housing-related GSEs increased in recent months, due to the securitization of refinance mortgages originated earlier this year, as well as seasoned mortgages securitized from Fannie Mae's portfolio. MBS issuance by Ginnie Mae expanded modestly in March and April. However, the private-label MBS market remained closed.

The credit card and auto ABS market saw a marked pickup in issuance, primarily associated with deals funded through the TALF. Spreads on AAA-rated consumer ABS continued the narrowing that began early in the year and have now retraced a large portion of the run-up that occurred between mid-2007 and the end of 2008.

Conditions in the municipal bond market continued to improve. Gross issuance of municipal bonds remained solid in May. Yields on long-term municipal bonds rose less over the intermeeting period than those on comparable-maturity Treasury securities, reducing the ratio of municipal-to-Treasury yields to its lowest level in almost a year. As indicated by the 7-day SIFMA Municipal Swap Index, yields on short-term municipal instruments declined notably and the index reached its lowest level on record.

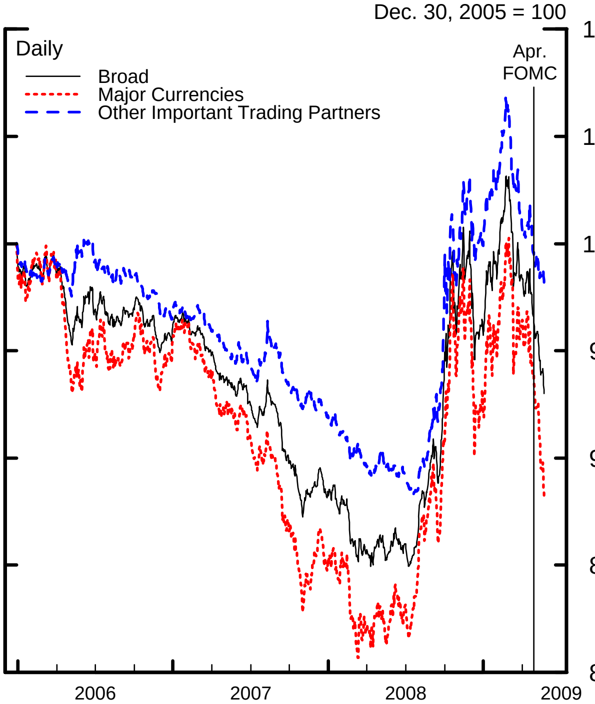
FOREIGN DEVELOPMENTS

The major currencies index of the dollar has declined nearly 6½ percent during the intermeeting period as the dollar depreciated sharply against the currencies of all of our major trading partners except the yen (Chart 5). This decline appeared to be driven by a renewed sense of optimism about global growth prospects, leading investors to shift demand from safe-haven assets in the United States and Japan to riskier assets elsewhere. As in the United States, conditions in bank funding markets abroad improved over the period; spreads between Libor and OIS rates in euro and sterling decreased. Investors' concerns about foreign financial institutions eased a bit,

Chart 5

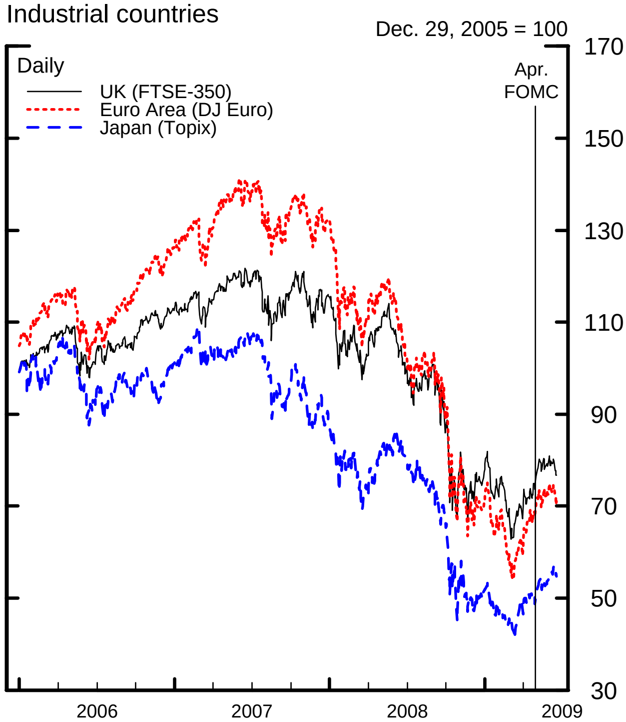
International Financial Indicators

Nominal trade-weighted dollar indexes



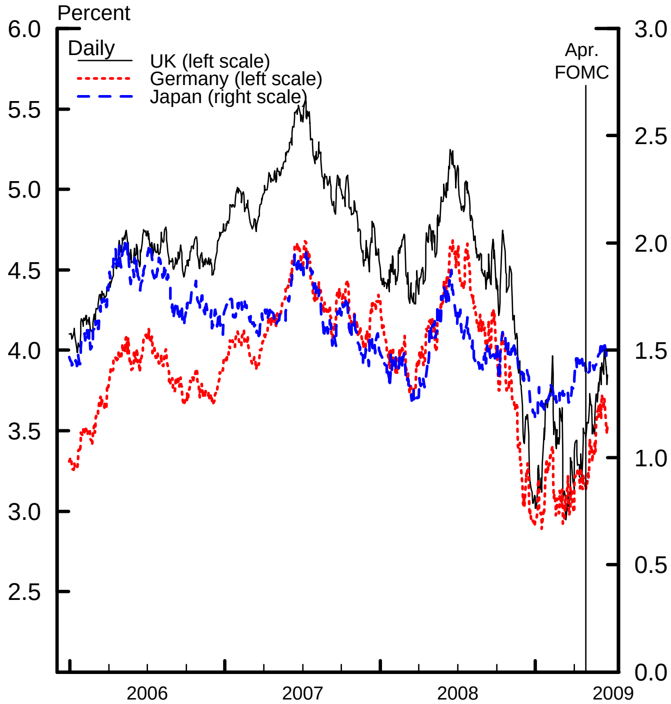
Source. FRBNY and Bloomberg.

Stock price indexes
Industrial countries



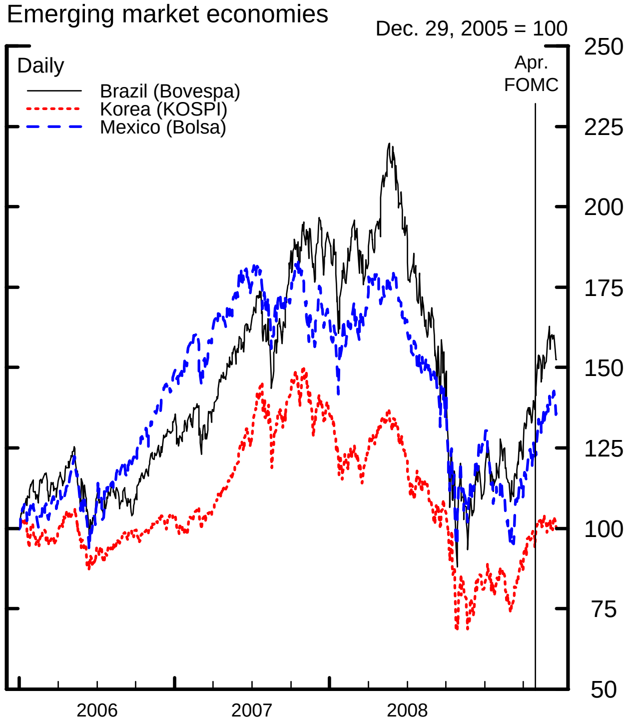
Source. Bloomberg.

Nominal Ten-year government bond yields



Source. Bloomberg.

Stock price indexes
Emerging market economies



Source. Bloomberg.

Note. Last daily observation is for June 18, 2009.

and foreign banks took advantage of better market conditions to raise capital. This improved access to capital markets and the better economic outlook helped lead bank stocks higher. Headline stock indexes in Europe and Japan rose roughly 4 and 16 percent, respectively, while bank stocks increased 11 to 14 percent.

The European Central Bank lowered its policy rate 25 basis points to 1 percent and announced that it would purchase €60 billion in covered bonds. The Bank of England kept its policy rate constant at 50 basis points but increased the size of its planned asset purchases from £75 billion to £125 billion. Despite these policy decisions, yields on longer-term sovereign nominal and inflation-indexed bonds rose over the period. As in the United States, the rise in yields was likely driven by several factors, including an increased willingness on the part of investors to move out of safe assets such as government bonds and into riskier investments; the improvement in the global outlook, which may have led markets to expect that central banks will tighten rates sooner than had been anticipated; and concerns among some investors that rising fiscal deficits may lead to rising inflation. Ten-year gilt yields rose about 15 basis points following Standard & Poor's warning that rising fiscal deficits might lead it to downgrade the United Kingdom's sovereign rating, but Moody's and Fitch reaffirmed the United Kingdom's AAA rating.

The dollar depreciated 3 percent against the currencies of our other important trading partners on a trade-weighted basis, falling 11 percent against the Brazilian real and 6½ percent against the Korean won. Chinese authorities held the renminbi nearly unchanged against the dollar and the dollar depreciated a more modest 1 to 4 percent against most other emerging market currencies. Several central banks intervened to purchase dollars in recent weeks, attempting to lessen the rate of the dollar's depreciation against their currencies. Stock indexes in most emerging market economies rose at least 10 percent and several climbed more than 20 percent as mutual fund flows into those markets remained positive.

DEBT, BANK CREDIT, AND MONEY

The level of private-sector debt is projected to have remained about unchanged in the second quarter as a further modest decline in household debt likely about offset a slight increase in nonfinancial business debt (Chart 6). In contrast, the federal government issued debt at a rapid clip, and state and local government debt is projected to have expanded moderately. All told, the growth rate of domestic nonfinancial sector debt is projected to have increased from an annual rate of 4 percent in the first quarter of this year to 5½ percent in the second quarter.

Call Report data for the first quarter showed a rebound in the profitability of commercial banks, although earnings remained quite low by historical standards. The increase in profitability was concentrated among the largest banks and reflected a sharp increase in noninterest income and a drop in banks' noninterest expense. In contrast, profits for banks outside the top 25 stayed negative as loss provisions increased further amid deteriorating asset quality. Indeed, the aggregate charge-off rate and the overall delinquency rate reached their highest levels in more than fifteen years last quarter.

Commercial bank credit rose slightly in May, following six consecutive months of decline. The turnaround, however, was accounted for by increases in reverse repurchase agreements as well as in banks' securities holdings, with the latter boosted as a few banks reportedly retained portions of their recent securitizations of consumer loans. In contrast, core loans — that is, loans to nonfinancial businesses and households — continued to contract, shrinking at a 7 percent annual rate in May, likely reflecting an ongoing tightening of lending standards and terms along with weak

Chart 6
Debt and Money

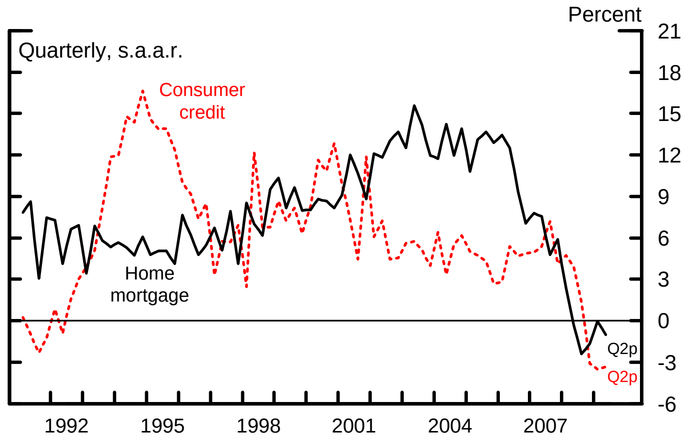
Growth of debt of nonfinancial sectors

Percent, s.a.a.r.

	Total	Business	Household	Government
2007	8.7	13.5	6.6	6.1
2008	5.9	5.1	0.4	17.5
Q1	5.4	7.5	3.0	6.7
Q2	3.2	6.1	0.4	4.4
Q3	8.3	5.0	0.1	28.6
Q4	6.2	1.5	-2.0	26.7
2009				
Q1	4.1	-0.3	-1.1	18.0
Q2p	5.6	0.9	-1.3	22.1

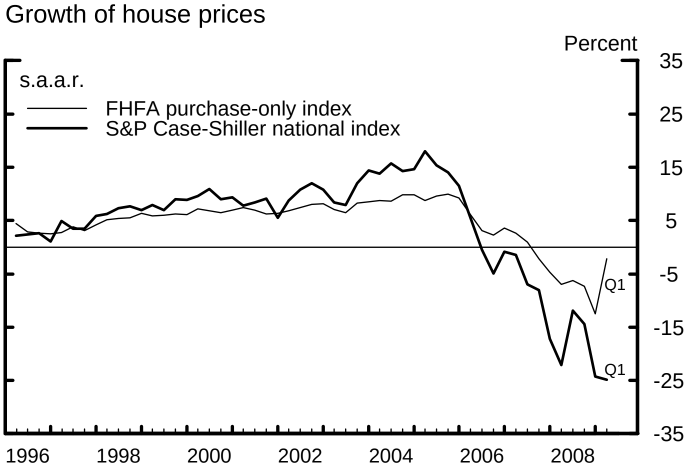
Source. Flow of Funds.

Growth of debt of household sector



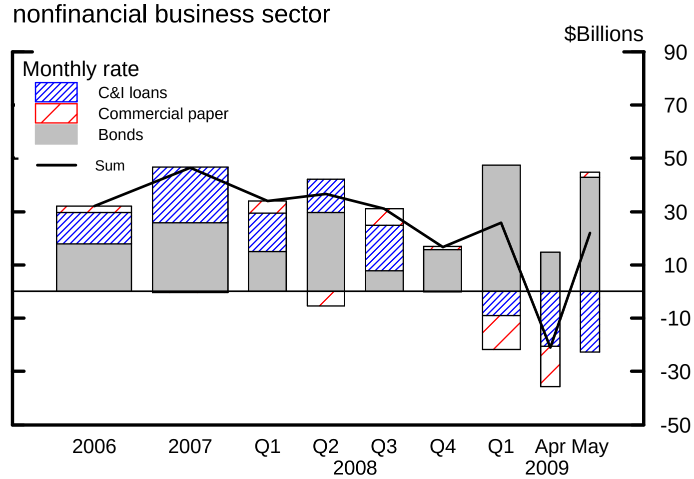
Source. Flow of Funds, Federal Reserve G.19 release.

Growth of house prices



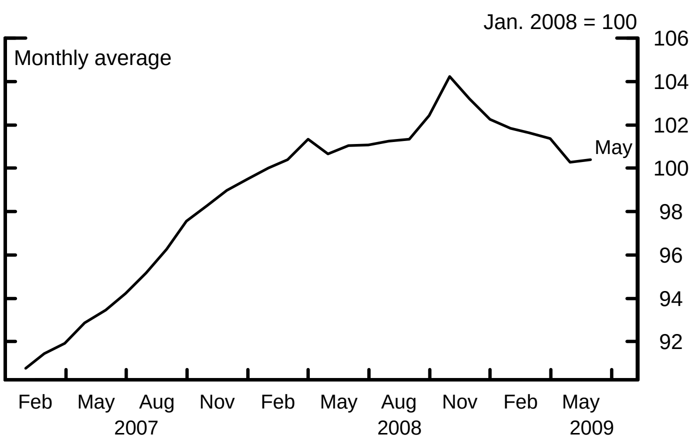
Source. Federal Housing Finance Agency (FHFA), Standard & Poor's.

Changes in selected components of debt of nonfinancial business sector



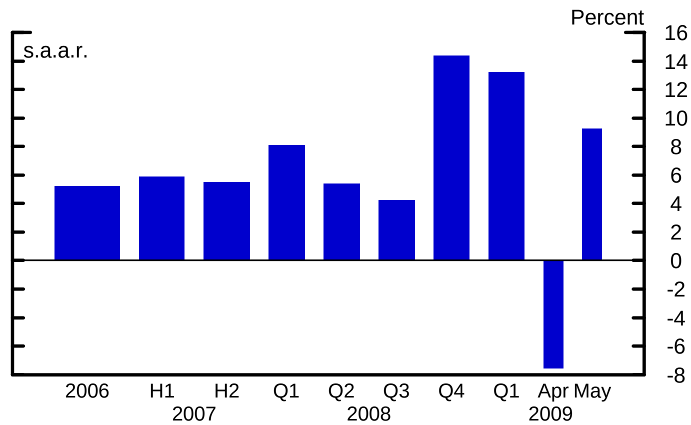
Note. Commercial paper and C&I loans are seasonally adjusted, bonds are not.
Source. Securities Data Company, Depository Trust & Clearing Corporation, and Federal Reserve H.8 release.

Bank credit



Source. Federal Reserve.

Growth of M2



Source. Federal Reserve.

loan demand, and some shifts in funding from banks to long-term credit markets. Those trends in securities holdings and core loans continued, on balance, through early June.

All major components of core loans contracted in May. C&I loans dropped at about a 15 percent annual rate amid subdued origination activity and broad-based paydowns of outstanding loans. Real estate loans fell nearly 5 percent, reflecting declines in commercial real estate loans, home equity loans (the first such decline since October 2006), and closed-end residential mortgages. Consumer loans, both those originated by and those retained by banks, edged down. Meanwhile, large banks significantly increased their allowances for loan and lease losses again in May, suggesting continued worsening of credit quality in the second quarter.

M2 expanded at an average annual rate of about ¾ percent over April and May, a sharp slowdown from the rate of growth observed in the first quarter. Considerable inflows into bond and equity mutual funds during these months suggest that households might have shifted funds away from M2 assets as concerns about the financial crisis eased. Within M2, flows into liquid deposits were offset by flows out of retail money market funds and small time deposits, likely in response to declining rates on money funds and consumer CDs. Currency growth slowed in April and May, apparently due to a softening in foreign demand. The monetary base continued its recent expansion in April and May, although at a slower pace than in the first quarter as the effect of Federal Reserve asset purchases on reserves was mostly offset by a drop in usage of liquidity facilities.

ECONOMIC OUTLOOK

Information received since the April meeting suggests that the downturn in economic activity is abating. Consumer spending appears to have leveled off in recent months, and the housing sector has exhibited signs of stabilization. Tempering the positive news, further deterioration in the labor market has boosted the unemployment rate to 9.4 percent, considerably higher than the staff projected last round.

As in April, the Greenbook outlook is predicated on the assumption that the Federal Reserve will not implement any further liquidity or credit programs beyond those that have already been announced and will not further expand its large-scale asset purchase programs. The staff also assumes that the federal funds rate will remain at exceptionally low levels for the next few years.

In the staff's projection, longer-term Treasury yields edge up slightly during the remainder of this year and in 2010; this rise is moderated by the assumption that financial market participants will gradually revise their expectations regarding the onset of federal funds rate tightening to match the timing assumed in the Greenbook. Mortgage rates shift up in parallel with yields on longer-term Treasuries, whereas investment-grade corporate bond yields drop substantially as risk spreads continue to moderate from historically high levels. The equity risk premium—which remains very high by historical standards—diminishes further over coming quarters, and hence equity prices rise at a fairly brisk annual rate of 15 percent through the end of 2010. The foreign exchange value of the dollar is assumed to depreciate at an annual rate of about 2 percent over this horizon. The spot price of West Texas Intermediate crude oil jumped almost 50 percent to $70 per barrel over the intermeeting period; readings from futures quotes indicate that this price is likely to reach about $80 per barrel by the end of next year.

Against this backdrop, the staff now expects real GDP to grow at an annual rate of about 1 percent during the second half of 2009, roughly ¼ percentage point faster than in the April Greenbook but still about a percentage point below the staff's estimate of the current growth rate of potential output. The unemployment rate is projected to rise further, reaching a peak of 10 percent by the fourth quarter of this year. The economy is expected to strengthen somewhat further next year, with real GDP growing at a rate of 3 percent and the unemployment rate declining slightly to about 9¾ percent by the end of 2010.

Core PCE prices increased almost 2 percent at an annual rate during the first half of this year, boosted in part by the transitory effects of a hike in excise taxes on tobacco. Excluding tobacco prices, core prices rose at a pace closer to 1¼ percent over the first half. With no further boost from excise taxes expected in coming months, and given the current high level of economic slack, the staff projects that core PCE inflation will moderate over time, averaging just under 1 percent over the second half of this year and ¾ percent in 2010. Reflecting the recent runup in the prices of energy and other commodities, headline PCE prices are expected to rise at an annual rate of about 2½ percent over the remainder of the year before moderating to about 1 percent next year.

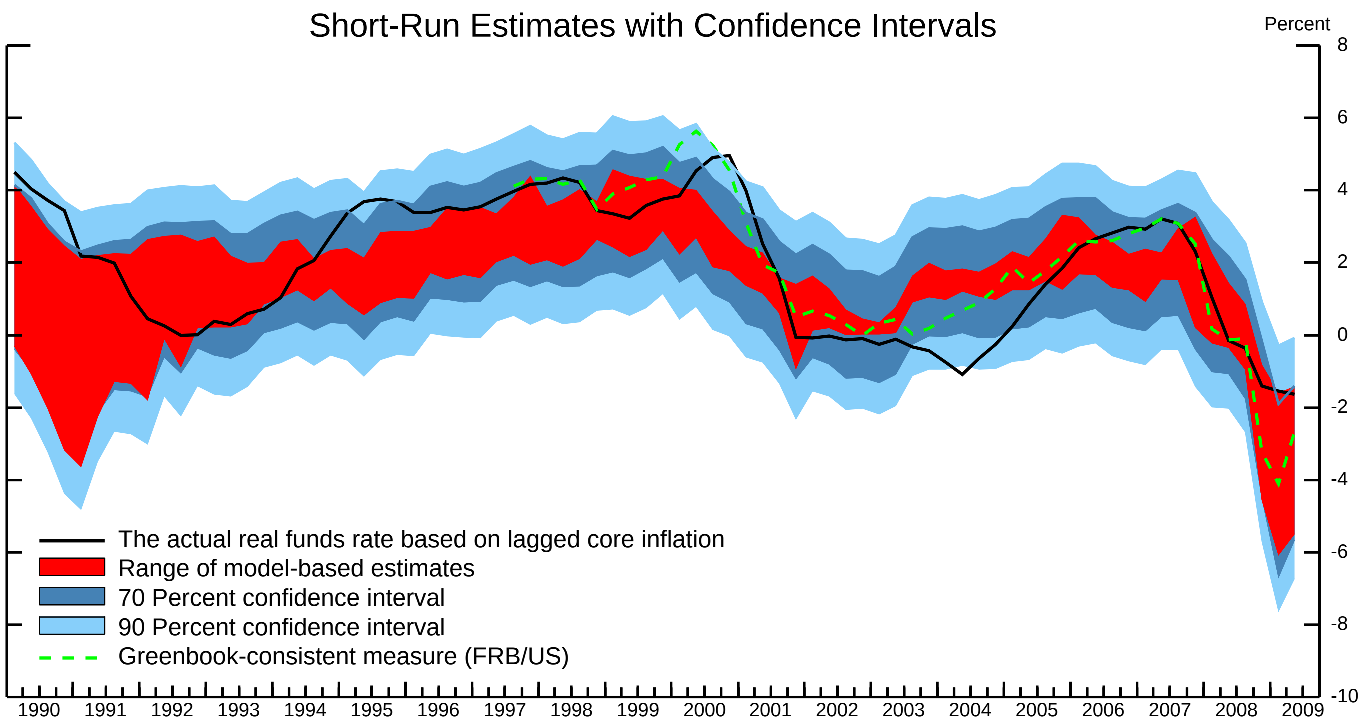
Looking further ahead, the staff assumes that the federal funds rate will remain at its effective lower bound until 2012 and then move up to about 4 percent by the end of 2013. The staff forecasts that real GDP will expand at an average rate of about 4¾ percent from 2011 through 2013, outpacing a rise in potential output that averages nearly 2½ percent per year. As a result, the unemployment rate declines steadily, falling to 4.9 percent by late 2013—a bit below the staff's estimate of the NAIRU. As real activity recovers, PCE inflation slowly rises to 1.3 percent by 2013 but still remains well below the assumed long-run inflation goal of 2 percent.

MONETARY POLICY STRATEGIES

As shown in Chart 7, all of the staff's estimates of short-run *r**—the value of the real federal funds rate that would close the output gap within twelve quarters—have moved up since the April Bluebook. The Greenbook-consistent measure of short-run *r** based on the FRB/US model, at about -2¾ percent, has risen by ½ percentage point since April, mainly reflecting higher stock prices, a lower foreign exchange value of the dollar, and lower corporate bond rates. The same factors largely account for an upward revision of the FRB/US model estimate to -5½ percent, about 1¼ percentage points higher than reported in the previous Bluebook. The FRB/US model estimate still lies substantially below the Greenbook-consistent estimate in part because the former does not incorporate some of the effects of nontraditional monetary policy that are embedded in the Greenbook projection. The short-run *r** estimate from the small structural model is now -3½ percent, and its marked increase since the April Bluebook is largely due to declines in the equity risk premium and the real corporate bond yield. All of these estimates remain substantially below the current real funds rate of -1.6 percent. By contrast, the estimate from the single-equation model, which depends only on the level of the output gap and the lagged real funds rate and so does not take account of the effects of financial market strains, is a bit above the actual real rate.

In addition to the three models that have been employed in the past to generate estimates of short-run *r**, this Bluebook introduces new measures derived from the EDO model (see box "Measures of the Equilibrium Real Interest Rate from a DSGE Model"). The current estimate of Greenbook-consistent *r** from EDO is about -4 percent; this estimate is noticeably below the FRB/US Greenbook-consistent estimate of -2¾ percent because the estimated boost to real activity that results from a sustained period of low real rates is smaller in EDO than in FRB/US. The EDO

Chart 7
Equilibrium Real Federal Funds Rate



Short-Run and Medium-Run Measures

	Current Estimate	*Previous Bluebook*
Short-Run Measures		
Single-equation model	-1.4	*-1.7*
Small structural model	-3.5	*-9.1*
EDO model	-3.8	---
FRB/US model	-5.5	*-6.7*
Confidence intervals for four model-based estimates		
70 percent confidence interval	-5.7 to -1.4	
90 percent confidence interval	-6.7 to -0.1	
Greenbook-consistent measures		
EDO model	-3.9	---
FRB/US model	-2.7	*-3.2*
Medium-Run Measures		
Single-equation model	1.5	*1.5*
Small structural model	1.5	*1.2*
Confidence intervals for two model-based estimates		
70 percent confidence interval	0.6 to 2.4	
90 percent confidence interval	-0.1 to 3.0	
TIPS-based factor model	2.0	*2.0*
Memo		
Actual real federal funds rate	-1.6	*-1.7*

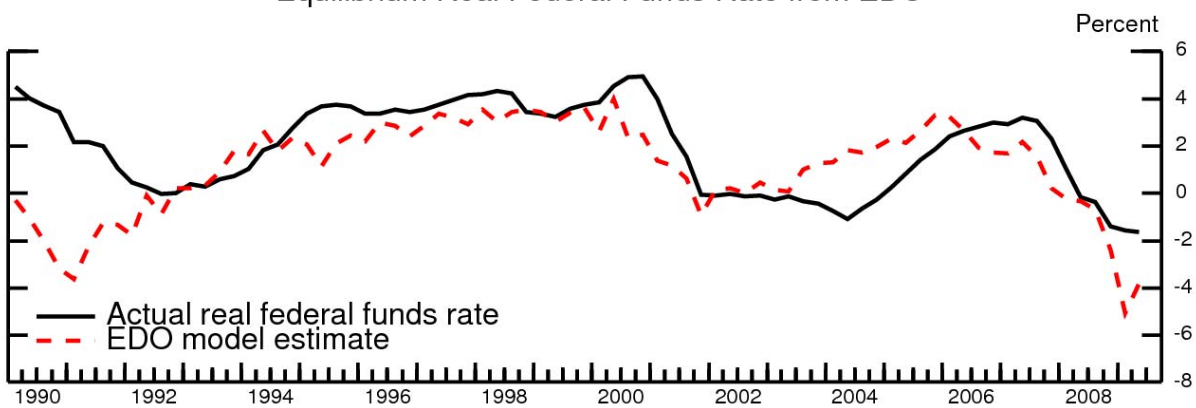
Note: Appendix A provides background information regarding the construction of these measures and confidence intervals. The actual real federal funds rate shown is based on lagged core inflation as a proxy for inflation expectation. For information regarding alternative measures, see Appendix A.

Measures of the Equilibrium Real Interest Rate from a DSGE Model

Chart 7 includes two new measures of the equilibrium real short-term interest rate (*r**) derived from a dynamic stochastic general-equilibrium (DSGE) model developed and estimated by the staff. This model—an Estimated Dynamic Optimization model, called EDO—consists of a set of equations for the spending, production, and wage and price decisions of households and firms that are derived from explicit utility and profit maximization both under model-consistent expectations. Research has demonstrated that the model fits many aspects of the data well and has good forecasting properties.[1]

The EDO model is used to generate two *r** measures. The first measure, called the EDO estimate, is the level of the real short-term interest rate that would close the output gap—defined as the deviation of GDP from EDO's estimate of its long-run trend—in twelve quarters given the model's projection of economic conditions. The figure below presents this estimate of *r** from EDO (the red, dashed line) along with the actual real federal funds rate (the black line). For the early part of this year, the EDO model estimates *r** to be quite low by historical standards, but this measure has recently risen somewhat and is about -3¾ percent as of 2009Q2.

Equilibrium Real Federal Funds Rate from EDO



1 A detailed description of the model is contained in Rochelle M. Edge, Michael T. Kiley, and Jean-Philippe Laforte, 2007, "Documentation of the Research and Statistics Division's Estimated DSGE Model of the U.S. Economy: 2006 Version," Finance and Economics Discussion Series 2007-53, Board of Governors of the Federal Reserve System. The forecast performance of the model is considered in Rochelle M. Edge, Michael T. Kiley, and Jean-Philippe Laforte, 2009, "A Comparison of Forecast Performance between Federal Reserve Staff Forecasts, Simple Reduced-form Models, and a DSGE Model," Finance and Economics Discussion Series 2009-10, Board of Governors of the Federal Reserve System.

The second measure of *r**, called the Greenbook-consistent estimate from EDO, is the value that closes the output gap given the staff's extended projection for the economy. Discrepancies between Greenbook-consistent *r** from EDO and Greenbook-consistent *r** from FRB/US reflect differences across the models in the responses of activity and inflation to changes in interest rates. The current estimate of Greenbook-consistent *r** from EDO is about -4 percent. The EDO Greenbook-consistent estimate lies below the FRB/US Greenbook-consistent estimate of around -2¾ percent because the boost to real activity from a sustained period of low real interest rates is smaller in EDO than in FRB/US. [2]

[2] A DSGE model can also be used to generate an alternative concept called the natural real interest rate. This value corresponds to the real interest rate consistent with "efficient" economic fluctuations, or fluctuations that would occur in the absence of economic distortions generated by the presence of nominal wage and price rigidities. This concept is less prevalent in policy discussion and relies to a considerable extent on modeling assumptions (for example, regarding the structural rigidities in price and wage setting) that are not necessarily comparable across models. For a discussion of the natural rate of interest in the EDO model, see Rochelle M. Edge, Michael T. Kiley, and Jean-Philippe Laforte, 2008. "Natural Rate Measures in an Estimated DSGE Model of the U.S. Economy," *Journal of Economic Dynamics and Control*, vol. 32(8), pages 2512-2535, August.

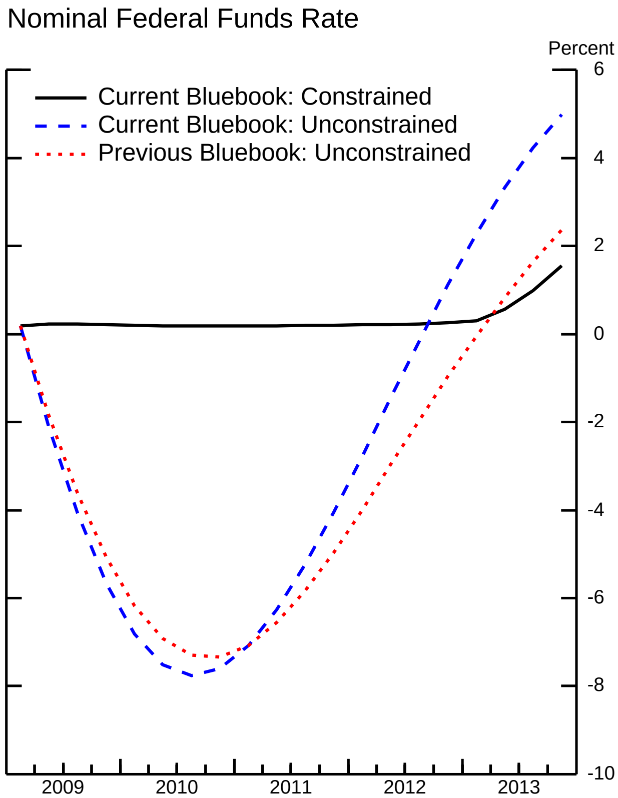
model estimate of *r** is about -3¾ percent, 1¾ percentage points higher than the FRB/US model estimate; the higher value reflects the faster waning of the surprising weakness in spending in the EDO model than in FRB/US.

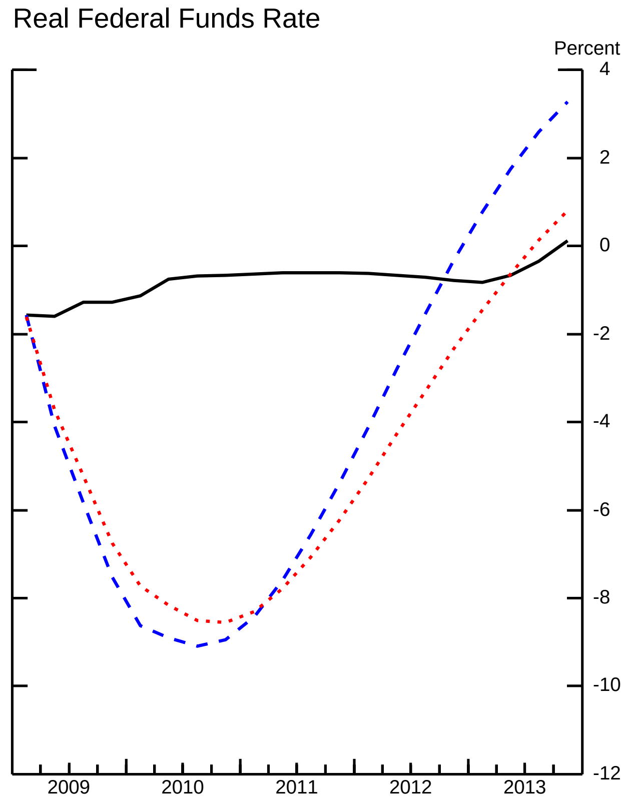
Chart 8 shows the result of optimal control simulations of the FRB/US model that were conducted using the extended staff forecast as a starting point. Policymakers are assumed to place equal weight on keeping core PCE inflation close to their 2 percent inflation goal, on keeping unemployment close to the NAIRU, and on avoiding changes in the federal funds rate. The staff now estimates that the NAIRU is 5 percent—¼ percentage point higher than assumed in previous Bluebooks—reflecting the staff's assessment that this recession's very high rates of permanent job loss will raise the level of frictional unemployment. As in recent Bluebooks, monetary policy remains severely constrained by the zero lower bound in these simulations, with the nominal funds rate remaining at the lower bound until late 2012 (black solid lines). Due to this constraint, the unemployment rate stays significantly above the NAIRU until 2012, and core PCE inflation remains noticeably below the 2 percent goal.

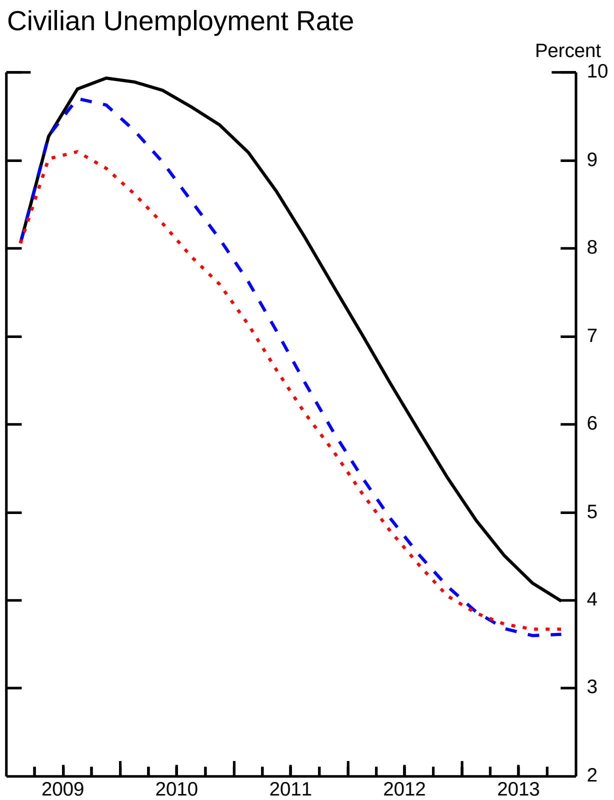
Chart 8 also displays the optimal control results that would be obtained if the zero bound did not constrain the nominal funds rate (blue dashed lines). Under this unconstrained policy, the funds rate falls to almost -8 percent next year and stays below zero until mid-2012; the real funds rate decreases to about -9 percent in 2010. Relative to the constrained policy, such a policy would reduce unemployment by about 1½ percentage points over the next few years and would put core PCE inflation on a significantly higher trajectory. These paths for unemployment and inflation are slightly above those reported in the April Bluebook (red dotted lines), reflecting the net effect of the following three intermeeting developments. First, the outlook for aggregate demand has improved, as evidenced by the increase in *r** in Chart 7.

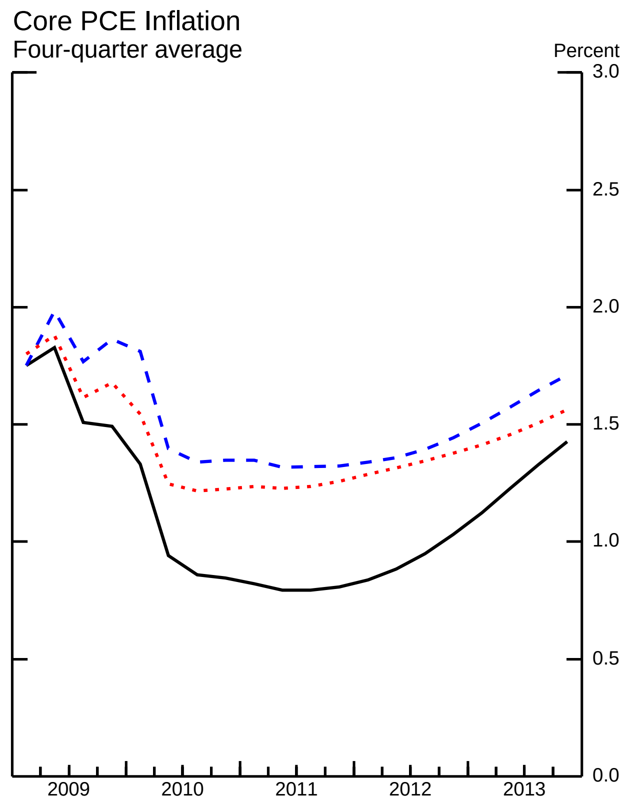
Chart 8

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









Second, since April the unemployment rate has continued to move up by more than would be expected given developments in spending and production, implying that the outlook for labor market slack, which is reflected in the calculation of the optimal policy path, has not improved despite the revision in r^*. Third, the current projection of core inflation is slightly higher than in the previous Greenbook, in part because long-run inflation expectations have not declined as anticipated over recent months, but if anything, have increased modestly.

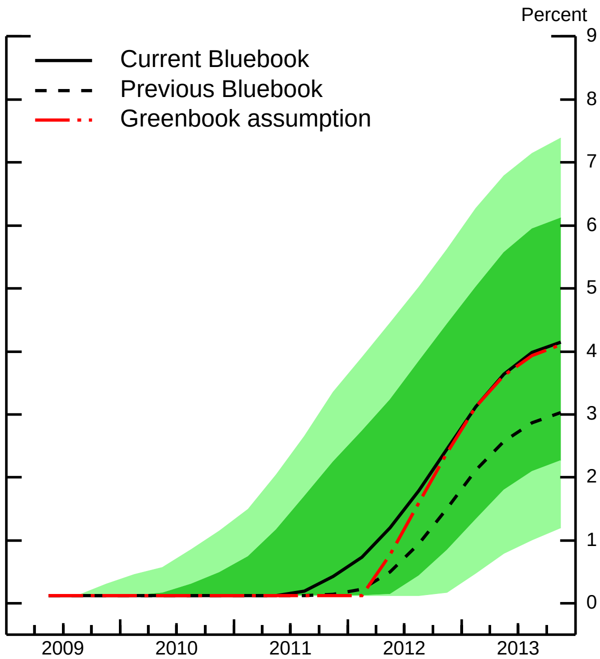
As depicted in Chart 9, the outcome-based policy rule prescribes a funds rate at its effective lower bound until mid-2011; the federal funds rate begins to increase about a quarter earlier than the prescription shown in the April Bluebook and is consistently above the April path by about 1 percentage point, largely reflecting the improvement in the outlook for aggregate demand. Financial market participants expect that the federal funds rate will rise above 2 percent by 2011 and subsequently reach a plateau of about 4 percent.[6] The expected funds rate path is significantly higher than in the previous Bluebook, reflecting increased optimism on the part of market participants about the economic outlook. The distribution of the anticipated federal funds rate is quite wide, with the 90 percent confidence interval ranging from 1½ to 7½ percent in 2013, and is skewed to the upside. The federal funds rate path anticipated by market participants appears to involve a much earlier start to tightening than implied by the outcome-based rule. For example, in the second quarter of 2011, the outcome-based rule prescribes a funds rate at the lower bound, whereas the funds rate expected by financial markets appears to be about 2½ percent.

[6] The staff has incorporated some technical adjustments in the calculation of the expected federal funds rate path and the confidence intervals since the April Bluebook. To facilitate comparison, the upper right panel of Chart 9 displays the expected path and the confidence intervals for the current and previous Bluebooks based on the revised estimation procedure.

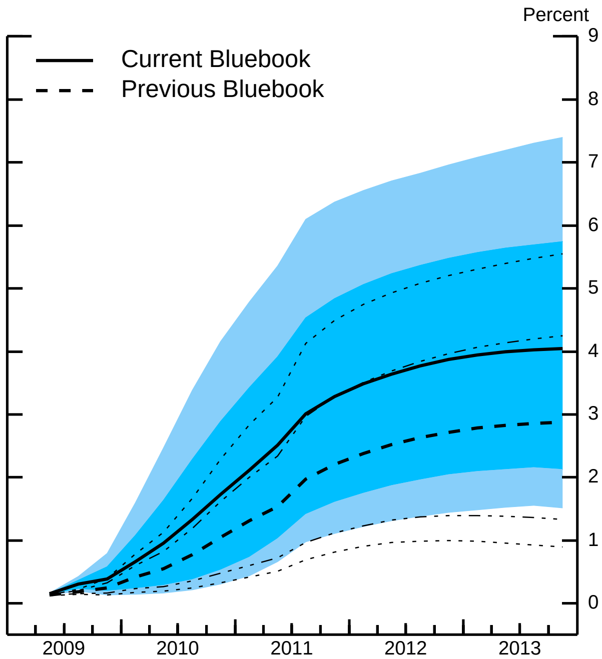
Chart 9

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 results labeled as "Previous Bluebook" have been generated using the revised estimation procedure noted in the text.

Near-Term Prescriptions of Simple Policy Rules

	Constrained Policy		Unconstrained Policy	
	2009Q3	2009Q4	2009Q3	2009Q4
Taylor (1993) rule	**0.13**	**0.13**	**-0.03**	**-0.12**
Previous Bluebook	*0.13*	*0.13*	*-0.47*	*-0.66*
Taylor (1999) rule	**0.13**	**0.13**	**-3.21**	**-3.34**
Previous Bluebook	*0.13*	*0.13*	*-3.87*	*-4.15*
First-difference rule	**0.13**	**0.13**	**-0.51**	**-0.90**
Previous Bluebook	*0.13*	*0.13*	*-1.94*	*-2.56*
Estimated outcome-based rule	**0.13**	**0.13**	**-0.56**	**-1.26**
Previous Bluebook	*0.13*	*0.13*	*-1.79*	*-2.59*
Estimated forecast-based rule	**0.13**	**0.13**	**-0.61**	**-1.46**
Previous Bluebook	*0.13*	*0.13*	*-2.09*	*-3.02*

Memo

	2009Q3	2009Q4
Greenbook assumption	0.13	0.13
Fed funds futures	0.22	0.29
Median expectation of primary dealers	0.13	0.13
Blue Chip forecast (June 1, 2009)	0.20	0.20

Note: In calculating the near-term prescriptions of these simple policy rules, policymakers' long-run inflation objective is assumed to be 2 percent. Appendix B provides further background information.

The lower panel of Chart 9 provides near-term prescriptions from simple policy rules. As shown in the left-hand columns, all the prescriptions are at the effective lower bound. The right-hand columns show the prescriptions that would be implied by these rules if the lower bound was not imposed. Under this counterfactual condition, the Taylor (1993) rule prescribes a slightly negative funds rate for the next couple of quarters. This prescription is higher than in the April Bluebook by about ½ percentage point, consistent with the improvement in the economic outlook as summarized in the output gap and inflation. The funds rate prescriptions of all the other simple rules are also higher than in April.

POLICY ALTERNATIVES

This Bluebook presents three main policy alternatives—labeled A, B, and C—for the Committee's consideration. A variant of B, labeled as B′, is also presented. Table 1 gives an overview of key elements of these alternatives, and draft statements are provided on the following pages.

Each of the alternatives refers to the slowing pace of economic contraction and to improvements in financial market conditions but has a distinct characterization of the outlook for economic activity and inflation. Consistent with these distinctions, each alternative presents a different set of judgments regarding the appropriate path of monetary policy, including the anticipated funds rate trajectory, the total amount and composition of the Federal Reserve's large-scale asset purchases (LSAPs), and the likely timing of the end of such purchases.

In characterizing the incoming information on economic activity, all of the alternatives state that "indicators of consumer and business sentiment have risen" and note that household spending has shown "further signs" of stabilizing but remains constrained by "job losses, reduced housing wealth, and tight credit." Each statement also refers to cuts in business spending and staffing while adding that firms are or appear to be "making progress in bringing inventory stocks into better alignment with sales."

Regarding the prospects for economic recovery, Alternative A indicates that in the absence of further monetary policy stimulus, "the sharp rise in some longer-term interest rates over recent months" could undermine the economic recovery. Alternative B reiterates the language from the April FOMC statement indicating that the Committee anticipates that economic activity "is likely to remain weak for a time" but that the policies now in train, together with market forces, "will contribute to a gradual resumption of sustainable economic growth in a context of price stability." These two alternatives are not specific about the likely timing of the recovery, whereas Alternative C indicates that a gradual recovery "is expected to begin later this year."

As in the April FOMC statement, each alternative indicates that the Committee expects inflation "will remain subdued." In elaborating on this outlook, Alternatives A and B make reference to "substantial resource slack here and abroad," while Alternative C does not refer to the degree of resource slack. Alternatives B and C also note that the prices of energy and other commodities have risen "of late." Following the language of the April statement, Alternative A indicates that the Committee still sees some downside risks to the inflation outlook, whereas Alternatives B and C do not comment on the risks to inflation.

All of the alternatives maintain an unchanged target range of 0 to ¼ percent for the federal funds rate while providing forward guidance about the anticipated duration of this policy setting. As in the previous two FOMC statements, Alternative B indicates that economic conditions are likely to warrant an exceptionally low funds rate "for an extended period." Alternative A includes an option under which the Committee would specify that the funds rate will likely remain exceptionally low "at least through mid-2010." Alternative C states that the funds rate is likely to remain at exceptionally low levels "until late this year."

Each alternative includes the continuation of the previously announced LSAPs. Alternative A expands the total size of the LSAP program by specifying that the Federal Reserve will purchase up to $750 billion in Treasury securities and indicating that those purchases will be conducted through the end of this year. Alternatives B and C make no changes to the maximum amounts or timing of securities purchases.

All of the alternatives include language stating that the Committee will continue to evaluate the timing, composition, and amounts of the LSAPs based on financial market conditions and the economic outlook. Alternatives A and B indicate that any additional purchases beyond the announced amounts will be evaluated in view of "the necessity of assuring that policy accommodation can ultimately be withdrawn smoothly and at the appropriate time," thereby underscoring the importance of the exit strategy in the Committee's decision-making process. In contrast, Alternative B´ does not include this additional phrase. Alternative C indicates that the Committee expects that the pace of LSAPs "will taper off gradually by the end of this year" and hence that this program is unlikely to be expanded or prolonged.

FOMC statements since last December have indicated that the Federal Reserve will employ "all available tools" in promoting economic recovery and preserving price stability, whereas the alternatives presented here modify this phrase by referring to "a wide array of tools." Moreover, each of the alternatives concludes by stating that the Committee will continue to monitor the Federal Reserve's balance sheet and that adjustments to credit and liquidity programs will be made "as warranted" by evolving economic and financial conditions. These adjustments to the statement language could be particularly appropriate if policymakers determine that some liquidity facilities should be discontinued in light of the recent improvements in financial market functioning.[7]

[7] See the memo "Proposal Regarding Credit and Liquidity Facilities" that was sent to the Board and the Committee on June 12, 2009.

Table 1: Overview of Alternative Language for the June 23-24, 2009 FOMC Announcement

<table>
<tr><th rowspan="2"></th><th rowspan="2"></th><th rowspan="2">April FOMC</th><th colspan="4">Alternative</th></tr>
<tr><th>A</th><th colspan="2">B / B′</th><th>C</th></tr>
<tr><td rowspan="3">1. Economic Activity</td><td>Outlook</td><td>“likely to remain weak for a time”</td><td>-----</td><td colspan="2">“likely to remain weak for a time”</td><td>recovery “expected to begin later this year”</td></tr>
<tr><td>Pace of Recovery</td><td>gradual</td><td>-----</td><td colspan="2">gradual</td><td>gradual</td></tr>
<tr><td>Risk Assessment</td><td>-----</td><td>Recovery could be undermined by higher long rates, absent further monetary stimulus</td><td colspan="2">-----</td><td>-----</td></tr>
<tr><td rowspan="3">2. Inflation</td><td>Outlook</td><td>“will remain subdued”</td><td>“will remain subdued”</td><td colspan="2">“will remain subdued”</td><td>“will remain subdued”</td></tr>
<tr><td>Rationale</td><td>increasing slack here and abroad</td><td>substantial slack “likely to persist here and abroad”</td><td colspan="2">recent rise in energy prices; substantial slack “likely to persist here and abroad”</td><td>recent rise in energy prices</td></tr>
<tr><td>Risk Assessment</td><td>some downside risk</td><td>still some downside risk</td><td colspan="2">-----</td><td>-----</td></tr>
<tr><td rowspan="4">3. Policy Decision</td><td>Forward Guidance on Funds Rate</td><td>“for an extended period”</td><td>“for an extended period” or “at least through mid-2010”</td><td colspan="2">“for an extended period”</td><td>“until late this year”</td></tr>
<tr><td>Changes in LSAPs</td><td>-----</td><td>$750 billion in Treasuries by end of year</td><td colspan="2">-----</td><td>“will taper off gradually” by end of year</td></tr>
<tr><td>Evaluation of LSAPs</td><td>“timing and overall amounts”</td><td>“timing, composition, and amounts”, subject to exit strategy</td><td>“timing and composition”, additional amounts subject to exit strategy</td><td>“timing, composition, and overall amounts”</td><td>“timing, composition, and overall amounts”</td></tr>
<tr><td>Adjustments to Programs</td><td>-----</td><td>“as warranted”</td><td colspan="2">“as warranted”</td><td>“as warranted”</td></tr>
</table>

April FOMC Statement

Information received since the Federal Open Market Committee met in March indicates that the economy has continued to contract, though the pace of contraction appears to be somewhat slower. Household spending has shown signs of stabilizing but remains constrained by ongoing job losses, lower housing wealth, and tight credit. Weak sales prospects and difficulties in obtaining credit have led businesses to cut back on inventories, fixed investment, and staffing. Although the economic outlook has improved modestly since the March meeting, partly reflecting some easing of financial market conditions, economic activity is likely to remain weak for a time. Nonetheless, the Committee continues to anticipate that policy actions to stabilize financial markets and institutions, fiscal and monetary stimulus, and market forces will contribute to a gradual resumption of sustainable economic growth in a context of price stability.

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.

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. As previously announced, to provide support to mortgage lending and housing markets and to improve overall conditions in private credit markets, the Federal Reserve will purchase a total of up to $1.25 trillion of agency mortgage-backed securities and up to $200 billion of agency debt by the end of the year. In addition, the Federal Reserve will buy up to $300 billion of Treasury securities by autumn. The Committee will continue to evaluate the timing and overall amounts of its purchases of securities in light of the evolving economic outlook and conditions in financial markets. The Federal Reserve is facilitating the extension of credit to households and businesses and supporting the functioning of financial markets through a range of liquidity programs. The Committee will continue to carefully monitor the size and composition of the Federal Reserve's balance sheet in light of financial and economic developments.

June FOMC Statement — Alternative A

1. Information received since the Federal Open Market Committee met in **April suggests** that the pace of **economic** contraction **is slowing**. **Indicators of consumer and business sentiment have risen, and** household **expenditures have** shown **further** signs of stabilizing; **nonetheless**, spending remains constrained by ongoing job losses, lower housing wealth, and tight credit. Businesses **continue to** cut back on fixed investment and staffing **but are making progress in bringing inventory stocks into better alignment with sales**. **Although conditions in financial markets have generally improved, the Committee judges that further monetary policy stimulus is warranted to help ensure that the sharp rise in some longer-term interest rates over recent months does not undermine a recovery in overall economic activity**.
2. **Substantial resource** slack **is likely to persist** here and abroad, and the Committee expects that inflation will remain subdued. Moreover, the Committee **still** 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 **is employing a wide array of** 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 | **at least through mid-2010**]. To provide **additional** support to mortgage lending and housing markets and **to facilitate further improvement** in private credit market conditions, **the Committee decided to increase the total amount of its large-scale securities purchases. The Committee now anticipates that over the course of this year** the Federal Reserve will purchase up to $1.25 trillion of agency mortgage-backed securities, up to $200 billion of agency debt, and up to **$750 billion** of Treasury securities. **The Committee will evaluate the timing, composition, and amounts of any additional purchases of securities in view of market conditions, the evolving economic outlook, and the necessity of assuring that policy accommodation can ultimately be withdrawn smoothly and at the appropriate time.** The Federal Reserve will **also be monitoring** the size and composition of **its** balance sheet **and will make adjustments to its credit and liquidity programs as warranted** in light of financial and economic developments.

June FOMC Statement — Alternative B

1. Information received since the Federal Open Market Committee met in **April suggests** that the pace of **economic** contraction **is slowing**. **Conditions in financial markets have generally improved in recent months, and indicators of consumer and business sentiment have risen.** Household spending has shown further signs of stabilizing but remains constrained by ongoing job losses, lower housing wealth, and tight credit. Businesses have **continued to** cut back on fixed investment and staffing **but appear to be making progress in bringing inventory stocks into better alignment with sales**. **Although economic activity is likely to remain weak for a time,** the Committee **anticipates** that policy actions to stabilize financial markets and institutions, fiscal and monetary stimulus, and market forces will contribute to a gradual resumption of sustainable economic growth in a context of price stability.

2. **The prices of energy and other commodities have risen of late. However, substantial resource slack is likely to persist here and abroad, dampening cost pressures for some time,** and the Committee expects that inflation will remain subdued.

3. In these circumstances, the Federal Reserve **is employing a wide array of** 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 **continues to** anticipate that economic conditions are likely to warrant exceptionally low levels of the federal funds rate for an extended period. As previously announced, to provide support to mortgage lending and housing markets and to improve overall conditions in private credit markets, the Federal Reserve will purchase a total of up to $1.25 trillion of agency mortgage-backed securities and up to $200 billion of agency debt by the end of the year. In addition, the Federal Reserve will buy up to $300 billion of Treasury securities by autumn. **The Committee may modify the timing and composition of these purchases in view of market conditions and the evolving economic outlook. In evaluating possible purchases beyond the amounts already announced, the Committee will also take careful account of the necessity of assuring that policy accommodation can ultimately be withdrawn smoothly and at the appropriate time.** The Federal Reserve will **be monitoring** the size and composition of **its** balance sheet **and will make adjustments to its credit and liquidity programs as warranted** in light of financial and economic developments.

June FOMC Statement — Alternative B´

1. Information received since the Federal Open Market Committee met in **April suggests** that the pace of **economic** contraction **is slowing**. **Conditions in financial markets have generally improved in recent months, and indicators of consumer and business sentiment have risen.** Household spending has shown further signs of stabilizing but remains constrained by ongoing job losses, lower housing wealth, and tight credit. Businesses have **continued to** cut back on fixed investment and staffing **but appear to be making progress in bringing inventory stocks into better alignment with sales**. **Although economic activity is likely to remain weak for a time,** the Committee **anticipates** that policy actions to stabilize financial markets and institutions, fiscal and monetary stimulus, and market forces will contribute to a gradual resumption of sustainable economic growth in a context of price stability.

2. **The prices of energy and other commodities have risen of late. However, substantial resource slack is likely to persist here and abroad, dampening cost pressures for some time,** and the Committee expects that inflation will remain subdued.

3. In these circumstances, the Federal Reserve **is employing a wide array of** 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. As previously announced, to provide support to mortgage lending and housing markets and to improve overall conditions in private credit markets, the Federal Reserve will purchase a total of up to $1.25 trillion of agency mortgage-backed securities and up to $200 billion of agency debt by the end of the year. In addition, the Federal Reserve will buy up to $300 billion of Treasury securities by autumn. The Federal Reserve is facilitating the extension of credit to households and businesses and supporting the functioning of financial markets through a range of liquidity programs. The Committee will continue to evaluate the timing, **composition,** and overall amounts of its securities purchases **and** to carefully monitor the Federal Reserve's balance sheet. **The Federal Reserve will make adjustments to its credit and liquidity programs as warranted** in light of the evolving economic outlook and conditions in financial markets.

June FOMC Statement — Alternative C

1. Information received since the Federal Open Market Committee met in **April suggests** that the pace of **economic** contraction **is slowing. Conditions in financial markets have improved in recent months, and indicators of consumer and business sentiment have risen.** Household spending has shown **further** signs of stabilizing but remains constrained by ongoing job losses, lower housing wealth, and tight credit. Businesses have **continued to** cut back on fixed investment and staffing **but appear to be making progress in bringing inventory stocks into better alignment with sales**. The Committee **anticipates** that policy actions to stabilize financial markets and institutions, fiscal and monetary stimulus, and market forces will contribute to a gradual **recovery in** economic **activity that is expected to begin later this year**.
2. **Although the prices of energy and other commodities have risen of late, core inflation has remained moderate**, **and** the Committee expects that **overall** inflation will remain subdued.
3. In these circumstances, the Federal Reserve **is employing a wide array of** 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 **until late this year**. As previously announced, to provide support to mortgage lending and housing markets and to improve overall conditions in private credit markets, the Federal Reserve will purchase a total of up to $1.25 trillion of agency mortgage-backed securities and up to $200 billion of agency debt by the end of the year. In addition, the Federal Reserve will buy up to $300 billion of Treasury securities by autumn. **The Committee anticipates that the pace of purchases of such securities will taper off gradually by the end of this year.** The Committee will continue to evaluate the timing, **composition,** and overall amounts of its securities purchases **and** to carefully monitor the Federal Reserve's balance sheet. **The Federal Reserve will make adjustments to its credit and liquidity programs as warranted** in light of the evolving economic outlook and conditions in financial markets.

THE CASE FOR ALTERNATIVE B

If policymakers judge that the monetary policy stimulus already in train is likely to foster economic and financial conditions that improve at an acceptable pace, then the Committee could choose to reiterate its previous forward policy guidance and to continue implementing the previously announced LSAPs while providing further clarification of its strategy for these purchases, as in **Alternative B**. The Committee's modal outlook may be broadly similar to that of the Greenbook, in which this policy stance contributes to a gradual acceleration in economic activity and to an unemployment rate trajectory that peaks later this year and then moves lower next year. The indication that the federal funds rate is likely to remain exceptionally low "for an extended period" is consistent with the funds rate path prescribed by the constrained optimal control policy (Chart 8) and with that implied by the estimated outcome-based rule (Chart 9); moreover, given various sources of uncertainty about the evolution of economic and financial conditions, this expression may be helpful in preserving the Committee's flexibility regarding the timing of its initiation of funds rate tightening.

The Committee may also judge that developments over the intermeeting period—including improved financial market functioning, the ability of banking institutions to raise significant amounts of private capital, the pickup in consumer and business sentiment, and the recent stabilization of household spending—point to a waning of downside risks to economic growth and inflation. Even if Committee members remain concerned about significant downside risks to inflation stemming from their expectation of persistently elevated resource slack, they may also perceive a similar degree of upside risks to inflation associated with the possibility that inflation expectations could shift upward as a consequence of large federal budget deficits, exceptionally low levels of the federal funds rate, and the extraordinary size of the Federal Reserve's balance sheet.

While participants may anticipate—as in the projections they submitted in April—that economic activity is likely to recover only gradually over the next few years, they may see the slow pace of this recovery as largely unavoidable in light of the nature and severity of the global financial crisis and the time required for healing of the financial system and for the other structural adjustments—such as the overhaul of the automobile sector—that are now underway. Even if policymakers would prefer to foster a speedier recovery, they might be concerned that measures for providing further monetary stimulus could turn out to be counterproductive. For example, expanding the total amount of purchases of Treasury securities could lead to an increase in private nominal and real borrowing rates if investors interpreted this policy as pointing towards possible future monetization of federal budget deficits and hence required greater compensation for inflation risk in nominal lending contracts.

Committee members may perceive substantial benefits of providing additional guidance regarding the LSAP program in the statement for this meeting, especially if the recent upswing in measures of implied and realized volatility in Treasury bond markets is seen as partly reflecting investor uncertainty about the Committee's LSAP strategy.[8] First, stating that the Committee "may modify the timing and composition of these purchases in view of market conditions" could help signal that policymakers are prepared to be flexible in adjusting these aspects of the LSAP program. As a case in point, if the recent rise in mortgage rates persists over coming months and induces

[8] As discussed in Appendix I of the memo "Large-Scale Asset Purchases: Recent Experience and Some Policy Considerations" that was sent to the Committee on June 16, 2009, theoretical and empirical research generally confirms that policy communications can significantly reduce the volatility of asset prices when market participants have imperfect information about the structure of the economy or the objectives of policymakers.

a slower pace of refinancing, the Committee might conclude that the timeframe for completing its agency MBS purchases should be extended into the first quarter of next year or that the composition of purchases should be adjusted. By indicating that policy accommodation will be "withdrawn smoothly," the Committee could help underscore that the LSAPs are likely to taper off rather than ending abruptly. Finally, policymakers may wish to underscore the importance of maintaining a viable exit strategy by indicating that the Committee will take careful account of the need for policy accommodation to be withdrawn "at the appropriate time" in evaluating any securities purchases beyond the amounts that have already been announced.[9]

Financial markets are likely to react only modestly to an announcement like that of Alternative B in which the Committee reiterates its forward policy guidance and maintains the LSAP program at the previously announced amounts. Based on the latest Desk survey, dealers generally anticipate that at this meeting the Committee will continue to state that the funds rate is likely to remain exceptionally low "for an extended period." Dealers also place low odds on the possibility that the Committee's announcement at this meeting will include an increase in the maximum amount of purchases of Treasury securities, agency MBS, or agency debt. The survey indicates that dealers currently expect that the Federal Reserve's purchases of Treasury securities will reach the announced maximum of $300 billion by autumn and that a majority of dealers anticipate that an additional amount in the range of $50 to $150 billion will be purchased during the fourth quarter. Dealers expect that purchases of agency MBS and agency debt will reach the previously announced maximum amounts by December. No additional LSAP purchases are anticipated beyond the end of this year.

[9] For further discussion of various exit strategies, see the memo "Reserve Management Tools to Target a Higher Policy Rate" that was sent to the Committee on June 12, 2009.

Nonetheless, the market reaction to a statement like that of Alternative B might also depend on how investors interpret the new language describing the Committee's evaluation of further adjustments to the LSAP program. For example, the reference to "possible purchases beyond the amounts already announced" could cause investors to raise their assessment of the likelihood of expanding the total amount of LSAPs. On the other hand, market participants might interpret the clause referring to "the necessity of assuring that policy accommodation can ultimately be withdrawn" as indicating a high hurdle to any such expansion and as suggesting that the Committee has become more concerned about the viability of its exit strategy. Moreover, the announcement could prompt some persistent volatility in asset prices as these interpretations continued to evolve. On net, short- and long-term yields, equity prices, and the foreign exchange value of the dollar might not move very substantially, but judging the likely response of financial markets to this statement is subject to considerable uncertainty.

If members' assessment of the current outlook and the appropriate stance of policy matches that of Alternative B, but they see a significant risk that the associated statement could cause confusion on the part of financial market participants, then the Committee might wish to follow the language of the April FOMC statement more closely, as in **Alternative B´**. The financial market reaction to the publication of a statement like Alternative B´ would likely be muted, with little change in yields, equity prices, or the foreign exchange value of the dollar.

THE CASE FOR ALTERNATIVE A

If policymakers judge that a protracted period of substantial resource slack continues to pose downside risks to inflation and if they are concerned that the recent increase in some longer-term interest rates could undermine the economic recovery, then the Committee may wish to expand the total amount of purchases of Treasury securities and to extend the timeframe for conducting those purchases, as in **Alternative A**. Even if participants generally agree with the contours of the staff's modal outlook, they may not view that outcome as acceptable and may see compelling grounds for providing increased monetary policy stimulus to promote a more rapid pace of recovery and to help keep inflation from falling persistently below rates consistent with the Federal Reserve's dual mandate. Indeed, the optimal control simulations depicted in Chart 8 indicate that the real federal funds rate would be substantially lower and would foster significantly better outcomes for unemployment and inflation if the nominal funds rate were not constrained by the effective lower bound; thus, these simulations may provide motivation for policymakers to expand the degree of monetary stimulus provided through nontraditional policies such as LSAPs.

Policymakers may view the upward shift in mortgage rates over the intermeeting period as posing a significant threat to the stabilization of the housing sector that could put further pressure on financial institutions and economic activity. Moreover, members may perceive a number of other factors as augmenting the magnitude of the downside risks, such as those considered in the "False Dawn" and "Deflation" scenarios in the Greenbook. Thus, the Committee may conclude that an expansion of the LSAP program is warranted to reduce longer-term yields or at least to mitigate any further increases in such yields, thereby limiting the downside risks to the economy.

As noted in recent staff analysis, the Committee may see expanded Treasury securities purchases as the most suitable means of implementing an expansion in the overall size of the LSAP program, given that the current flow of the Federal Reserve's purchases of Treasury securities is relatively small in comparison with the amount of new issuance of those securities.[10] In contrast, the monthly volume of agency MBS purchases already constitutes a large share of new issuance, and a further increase might be particularly problematic if the pace of mortgage refinancing falls off further in coming months. Expanded purchases of agency securities would appear to be inadvisable in light of their narrow spreads and shrinking supply.

Since market participants reportedly see only small odds that the Committee will announce an expansion of its securities purchases at this meeting, it is likely that longer-term yields would fall substantially following the release of a statement like that accompanying Alternative A. Although considerable uncertainty surrounds any assessment of the effects of LSAPs on asset prices, recent experience suggests that an expansion of $450 billion in purchases of Treasury securities would induce a decline of about 20 to 45 basis points in Treasury yields and other longer-term rates immediately following the announcement. Equity prices would likely climb, and the foreign exchange value of the dollar would fall. Forward inflation compensation could increase if this announcement led to a heightening of investor concerns regarding the Federal Reserve's exit strategy or the future monetization of federal budget deficits.

THE CASE FOR ALTERNATIVE C

If policymakers are reasonably confident that an economic recovery will begin during the second half of this year and that laying the foundations for a gradual withdrawal of monetary stimulus would thus be appropriate under present circumstances, they may judge that the LSAP program should taper off this fall and that an increased funds rate might well be warranted at the end of this year or early

[10] See section IV of the memo "Large-Scale Asset Purchases: Recent Experience and Some Policy Considerations" that was sent to the Committee on June 16, 2009.

next year, as in **Alternative C**. Given the recent behavior of inflation expectations, the somewhat smaller margin of projected resource slack, and the rises in the prices of energy and other commodities, the Committee may now see the risks to the inflation outlook as roughly balanced, with significantly diminished odds of excessive disinflation. Participants may also prefer to assign relatively little weight to real-time estimates of resource slack in projecting the likely path of inflation and in assessing the risks to the inflation outlook. Uncertainties about the path of potential output and the level of the NAIRU might be seen as particularly high in the current context of structural changes related to the financial crisis, the housing collapse, and the overhaul of the auto sector.

In light of the recent pickup in forward inflation compensation, policymakers may also determine that a preemptive move towards reducing policy accommodation would be appropriate to help ensure that long-term inflation expectations do not drift upward over coming quarters. Moreover, participants may perceive a substantial likelihood that the recuperation of financial markets and institutions could contribute to a stronger rebound in economic activity than the staff projects, as illustrated by the Greenbook's "Early Liftoff" scenario.

An announcement like that of Alternative C would come as a considerable surprise to financial market participants and would likely lead many investors to expect a significantly less accommodative path of monetary policy than they had previously anticipated. The Desk survey indicates that primary dealers uniformly expect that the Committee's statement at this meeting will reiterate the same forward policy guidance as in recent FOMC statements. Only one-third of the dealers expect the federal funds rate to be raised above its effective lower bound by next June, while another third expect the initial rate hike to occur during the second half of 2010, and the remainder do not expect tightening before 2011. Thus, the publication of a statement like Alternative C would likely push up short- and long-term yields and the foreign exchange value of the dollar, while equity prices would likely fall. Forward inflation compensation might decline if the statement were seen as signaling the Federal Reserve's determination to avoid a significant increase in inflation.

LONG-RUN PROJECTIONS OF THE BALANCE SHEET AND MONETARY BASE

Under the Federal Reserve's current policy approach, the size of the Federal Reserve's balance sheet is driven by the evolution of its assets, specifically, the scale of asset purchases and demand for Federal Reserve liquidity facilities and credit programs. Total liabilities are determined by total assets, and the composition of liabilities depends on currency demand and other factors on the liability side, with reserve balances determined as a residual.

Two balance sheet scenarios are presented here; they differ in their assumptions regarding asset purchases. The first scenario is a *baseline* scenario, which includes the maximum of large-scale asset purchases previously announced by the FOMC: $300 billion of Treasury securities by the autumn, $200 billion of agency debt by the end of this year, and $1,250 billion of agency mortgage-backed securities (MBS) by the end of this year. This baseline scenario corresponds to Alternative B in the Policy Alternatives section. The second scenario is an *expanded purchases* scenario, which corresponds to Alternative A in the Policy Alternatives section, where purchases of Treasury securities are increased by $450 billion to $750 billion, and the purchases continue through the end of this year.

To construct the projections, we made assumptions about all components of the balance sheet other than reserve balances, which are the residual item. On the asset side of the balance sheet, the foreign central bank liquidity swap lines and the Term Auction Facility (TAF) are assumed to wind down by year-end 2010 as financial markets continue to improve. The assets held by Maiden Lane LLC, Maiden Lane II LLC, and Maiden Lane III LLC are assumed to be sold over time; they reach zero by 2015. The Term Asset-Backed Securities Loan Facility (TALF) is assumed to reach its peak at $175 billion–well below the announced $1 trillion limit–at the end of 2010.

The first phase of the TALF makes $125 billion of three-year loans by the end of 2010; later phases are assumed to make $50 billion of five-year loans by that date. Other Section 13(3) facilities are assumed to be extended beyond October 30, 2009, but are expected to run off by the end of 2010 in a similar fashion to the swap lines. For large-scale asset purchases, the baseline path of purchases matches the assumed path in the Greenbook whereas the expanded purchases scenario boosts Treasury purchases; both scenarios assume that the assets purchased are held to maturity. For the projection of MBS holdings, a slower-than-average path for the prepayment of MBS implies that more than half of the MBS purchased are still on the balance sheet in 2016.

Relative to the April Bluebook, there are two notable changes to the projections for assets. First, the TALF is assumed to make a total of $175 billion in loans, sharply less than the $500 billion in total loans assumed in the last Bluebook. This revision reflects experience to date with the uptake of the facility. A second significant revision comes from the prepayment rate assumed for MBS holdings. Higher interest rates in this projection and a reassessment of the models used to make these projections have led the staff to mark down the assumed prepayment rate of the MBS, implying holdings that are about $185 billion higher in 2016 than in the last Bluebook. In addition to these changes, holdings of agency debt are assumed to mature a bit more quickly than last round. Some of the other lending facilities are now seen as running off slightly faster than was previously projected in light of the improvement in financial markets. All told, total assets at year-end 2009 are about $500 billion lower in this projection compared with that presented in the April Bluebook. However, by the end of the projection period in 2016, total assets are in line with the April Bluebook projection.

On the liability side of the Federal Reserve's balance sheet, both scenarios assume that currency (Federal Reserve notes) grows at the same rate as the staff forecast for money stock currency through 2010 and after that point expands at the projected growth rate of nominal GDP in the extended Greenbook forecast. The Treasury's Supplementary Financing Account is projected to wind down by the middle of 2010, and the U.S. Treasury's general account is assumed to return to its historical target level of $5 billion by the end of 2009. All other liabilities other than reverse repurchase agreements and reserve balances are assumed to be constant at their level as of May 29, 2009. Federal Reserve Bank capital is projected to grow in line with its average pace of expansion over the past ten years. Relative to the April Bluebook, the staff has made only modest changes to the assumptions for liabilities. The Supplementary Financing Account is now assumed to stay at its current level of $200 billion somewhat longer, based on statements made by the Treasury in its last quarterly financing estimates. The assumption about capital replaces the previous assumption that capital was constant.[11]

These projections for liabilities and capital, combined with the assumed path for assets, imply a path for reserve balances under each scenario. In both scenarios, the implied level of reserve balances rises rapidly until the end of 2009, and then declines through the end of the projection period. Relative to the April Bluebook, the level of reserve balances is lower for the next few years, primarily reflecting the smaller assumed size of the TALF program. However, from 2013 forward, the slower prepayment rate assumed for MBS holdings leads to a somewhat higher level of reserve balances.

Under both scenarios, the Federal Reserve's balance sheet expands rapidly over the course of 2009. For the baseline scenario, the balance sheet reaches a peak of

[11] More details on the assumptions are provided in Appendix C.

$2.8 trillion in the fourth quarter of 2009 and then declines to a level just below $1.5 trillion at the end of the projection period. For the expanded scenario, the peak is at the same date, but at a higher level of $3.3 trillion. Assets then decline to roughly the same level as in the baseline at the end of the projection period. Relative to the last Bluebook, the peak under either scenario is lower because of the assumed usage of the TALF and the runoff of other liquidity facilities. By the end of the forecast period, the projected size of the balance sheet is in line with the last Bluebook.

The composition of Federal Reserve assets in both of these projections differs notably from historical patterns. Prior to August 2007, U.S. Treasury securities were about 90 percent of assets and the Federal Reserve did not hold any agency mortgage-backed securities. By contrast, under the baseline scenario, Treasuries are projected to account for only around one-fourth of total assets at the end of 2009 and rise to just 40 percent of total assets at the end of the projection period. Even under the expanded purchases scenario, Treasury securities account for only about one-third of assets at the end of 2009.

Projections for the growth rates of the monetary base are derived from these balance sheet projections using the sum of Federal Reserve notes in circulation and reserve balances.[12] Under both scenarios, the monetary base expands rapidly in 2009 and into early 2010. In the second quarter of 2010, however, as the liquidity facilities wind down and asset purchases cease, the monetary base begins to contract; the base continues to decline through the remainder of the projection period despite continued growth in currency.

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[12] The calculated growth rates of the monetary base presented in the table are based on an approximation for month-average values. In the April Bluebook, the calculation was based on month-end values. The April values shown in this table use the new methodology.

The extended Greenbook projection shows the target federal funds rate rising from the current 0 to ¼ percent range to 2.4 percent over the course of 2012. Under the operating procedures employed before the financial crisis, the projected 2012 end-of-year reserve balances of approximately $800 billion would not have been consistent with a federal funds rate significantly above zero. If the interest rate paid on excess reserve balances becomes an effective floor for the federal funds rate, a higher target rate could be achieved even with quite elevated reserve balances simply by raising the excess reserves rate. The experience last autumn, however, suggests that the Desk would likely need to drain reserves through open market operations to keep the funds rate close to the excess reserves rate. The projection for the balance sheet implicitly assumes that alternative operating procedures can be put into place to achieve the path for the federal funds rate assumed in the Greenbook projection; such procedures might employ a range of tools such as reverse repurchase agreements, outright sales of securities, a term deposit facility, or other strategies.[13]

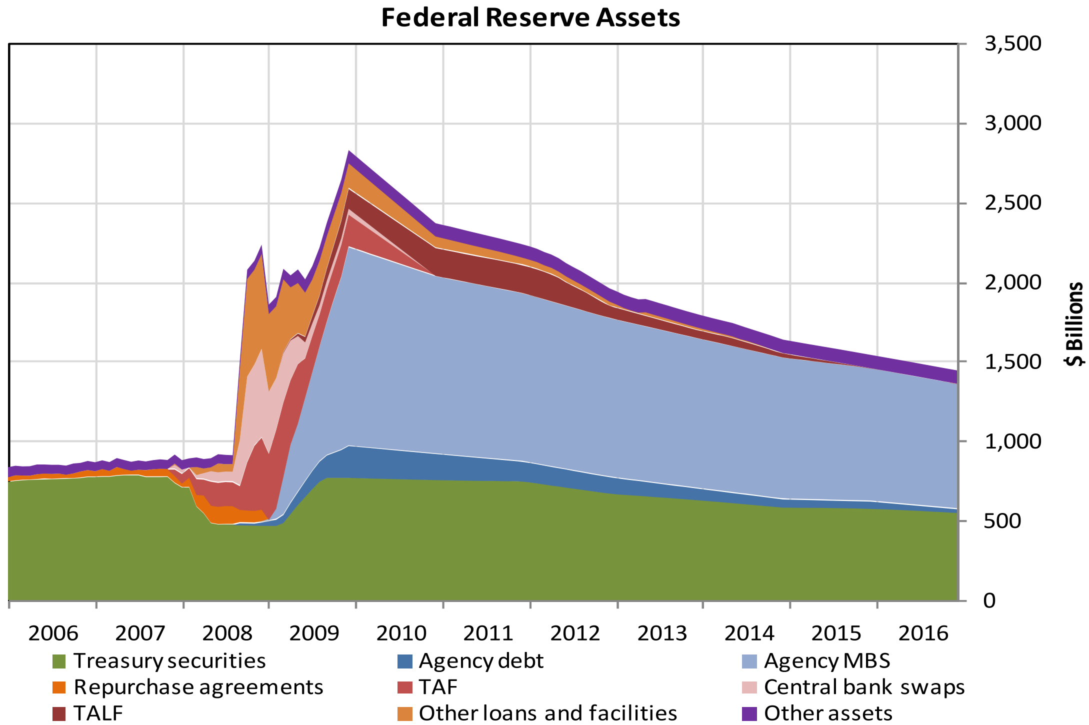
[13] A discussion of the issues surrounding tools to raise the federal funds rate can be found in a memorandum to the FOMC dated June 12, 2009 "Reserve Management Tools to Target a Higher Policy Rate."

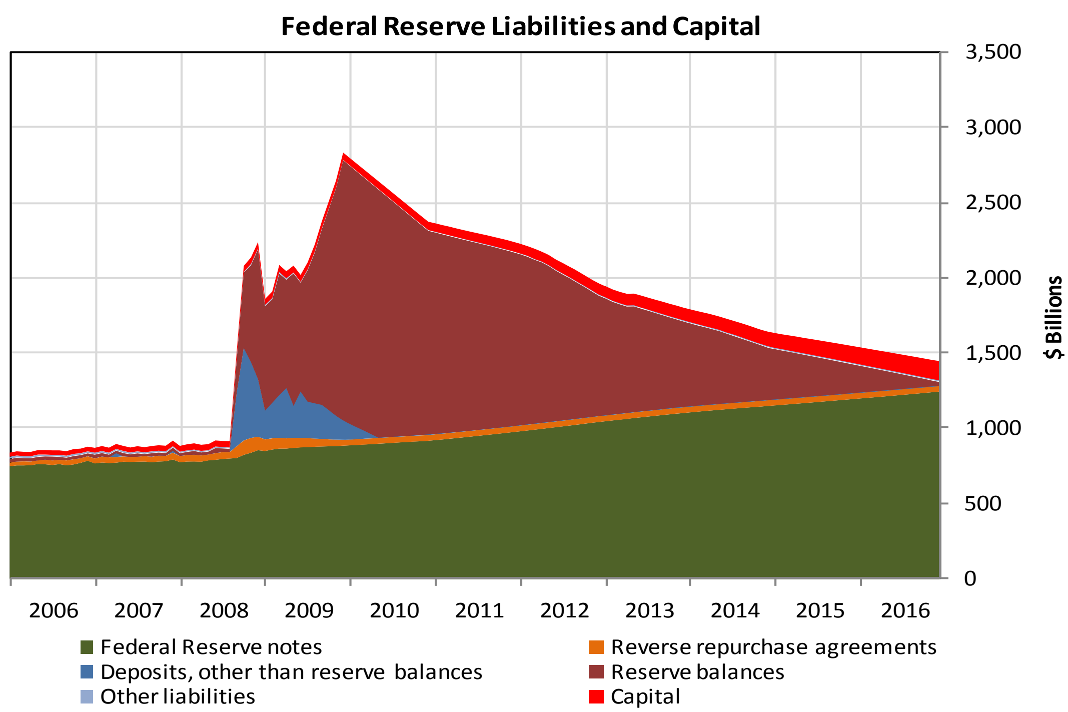
Growth Rates for Monetary Base

Date	Baseline	Expanded Purchases	April Baseline
		Percent, annual rate	
		Monthly	
Jun-09	-52.1	-52.1	60.2
Jul-09	-0.4	-0.4	131.9
Aug-09	99.3	99.3	133.9
Sep-09	97.3	97.3	120.5
Oct-09	103.1	148.3	98.1
Nov-09	95.7	173.1	79.9
Dec-09	102.1	163.8	71.1
		Quarterly	
Q2 2009	24.9	24.9	38.4
Q3 2009	22.7	22.7	111.9
Q4 2009	108.2	157.0	107.3
Q1 2010	48.0	78.6	26.2
Q2 2010	-7.1	-6.7	-17.2
Q3 2010	-15.6	-14.0	-17.9
Q4 2010	-19.0	-16.9	-18.8
		Annual - period average	
2009	92.5	98.2	120.3
2010	32.5	51.3	34.4
2011	-11.1	-10.0	-14.1
2012	-9.0	-10.0	-14.4
2013	-12.4	-14.2	-25.0
2014	-9.3	-11.2	-19.7
2015	-9.2	-10.3	-14.8
2016	-7.7	-10.2	2.3

Note: Not seasonally adjusted.

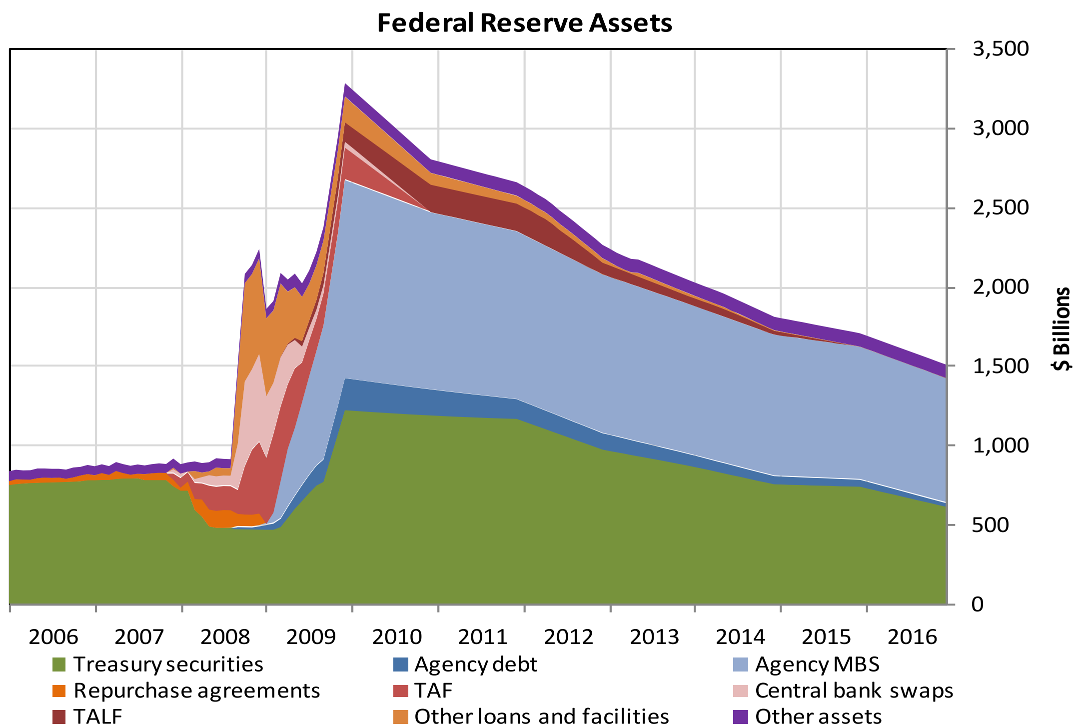
Baseline Scenario

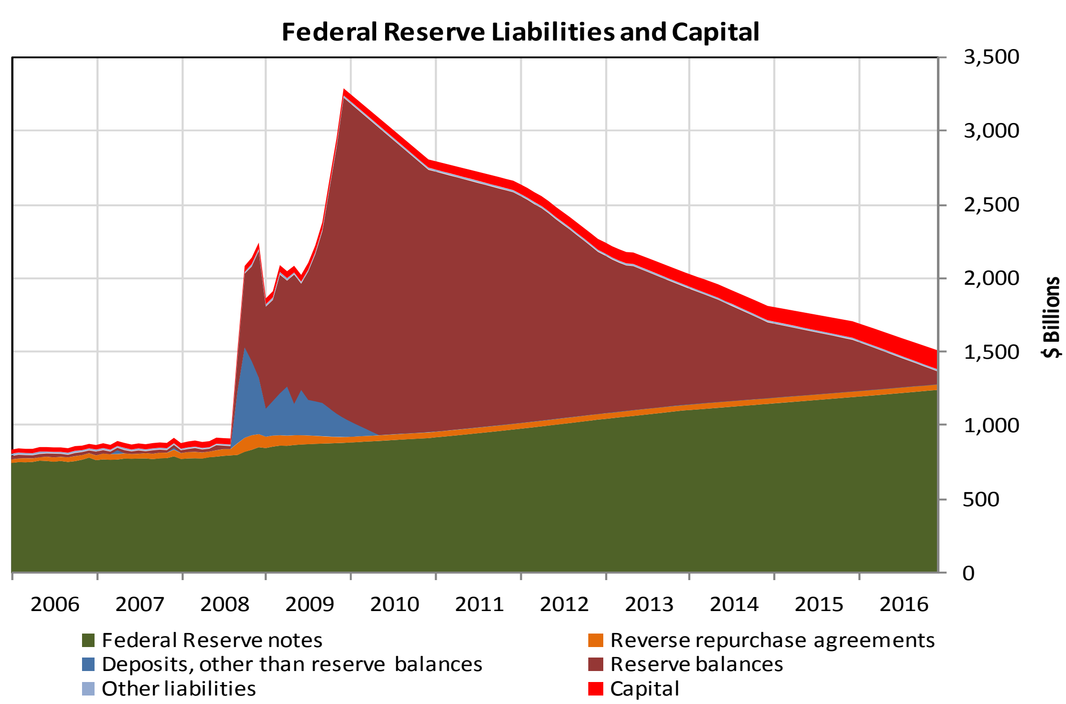




Source. Federal Reserve H.4.1 statistical release and staff calculations.

Expanded Purchases Scenario





Source. Federal Reserve H.4.1 statistical release and staff calculations.

BANK CREDIT, DEBT, AND MONEY FORECASTS

Bank credit is forecast to decline about 1 percent in 2009, reflecting weak loan demand and tight credit standards and terms, and to expand 4¾ percent in 2010. C&I loans are projected to grow only modestly through 2010, as business spending stays weak and some firms continue to substitute other sources of funding for bank loans. Real estate loans will likely keep contracting this year amid higher mortgage rates and weak residential investment spending. These loans are expected to grow modestly in 2010 as conditions in the housing sector begin to improve. After staying about flat this year, consumer loans are also forecast to resume expanding in 2010, reflecting renewed growth in personal consumption expenditures and a pickup in nominal GDP growth. An expansion in banks' holdings of securities is also expected to support bank credit growth in 2010.

Growth of domestic nonfinancial sector debt is forecast to be below its second-quarter pace over the next few quarters and then to pick up somewhat in 2010 as the economy recovers. Household debt is projected to edge lower and then remain weak next year, reflecting continuing declines in house prices, the sharply elevated level of unemployment, and lending standards that ease only slowly. Similarly, business borrowing is forecast to remain sluggish, although it strengthens a bit next year in response to a pickup in capital expenditures and some improvement in credit conditions. By contrast, federal government debt is expected to continue to increase rapidly over the forecast period, primarily reflecting the lower tax revenues and increased spending associated with the recession as well as the budget costs of the large fiscal stimulus package.

M2 is projected to grow 3¾ percent in 2009, well above the rate of nominal GDP growth, boosted by the lagged effects of declines in opportunity cost as well as an increased preference for safe and liquid assets in view of heightened volatility in financial markets in recent quarters. After growing robustly in the first half of 2009, M2 is expected to contract slightly in the second half of the year as the financial markets continue to recover and some of these safe-haven flows unwind. In 2010, M2 growth is expected to pick up gradually over the course of the year, but the aggregate is forecast to expand only 2¼ percent for the year as a whole. The rise in M2 velocity next year reflects some continued unwinding of the buildup in M2 that was related to the financial crisis.

Growth Rates for M2
(percent, annual rate)

	Greenbook Forecast*
Monthly Growth Rates	
Jul-08	7.0
Aug-08	-3.0
Sep-08	17.0
Oct-08	18.3
Nov-08	7.7
Dec-08	26.0
Jan-09	12.7
Feb-09	4.6
Mar-09	10.9
Apr-09	-7.6
May-09	9.3
Jun-09	2.8
Jul-09	-3.1
Aug-09	-1.2
Sep-09	-1.0
Oct-09	-1.0
Nov-09	-0.8
Dec-09	-0.5
Quarterly Growth Rates	
2008 Q1	8.1
2008 Q2	5.4
2008 Q3	4.3
2008 Q4	14.3
2009 Q1	13.2
2009 Q2	2.8
2009 Q3	0.2
2009 Q4	-0.9
Annual Growth Rates	
2007	5.8
2008	8.3
2009	3.8
2010	2.2

Growth From	To	
Jun-09	Sep-09	-1.8
2009 Q1	Sep-09	1.1
2009 Q1	Dec-09	0.6

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

DIRECTIVE

The April directive and draft language for the June directive are provided below.

APRIL FOMC MEETING

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 agency debt, agency MBS, and longer-term Treasury securities during the intermeeting period with the aim of providing support to private credit markets and economic activity. The timing and pace of these purchases should depend on conditions in the markets for such securities and on a broader assessment of private credit market conditions. The Committee anticipates that the combination of outright purchases and various liquidity facilities outstanding will cause the size of the Federal Reserve's balance sheet to expand significantly in coming months. The Desk is expected to purchase up to $200 billion in housing-related agency debt by the end of this year. The Desk is expected to purchase at least $500 billion in agency MBS by the end of the second quarter of this year and is expected to purchase up to $1.25 trillion of these securities by the end of this year. The Desk is expected to purchase up to $300 billion of longer-term Treasury securities by the end of the third quarter. 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.

JUNE FOMC MEETING — 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 agency debt, agency MBS, and longer-term Treasury securities during the intermeeting period with the aim of providing support to private credit markets and economic activity. The timing and pace of these purchases should depend on conditions in the markets for such securities and on a broader assessment of private credit market conditions. The Committee anticipates that the combination of outright purchases and various liquidity facilities outstanding will cause the size of the Federal Reserve's balance sheet to expand significantly in coming months. The Desk is expected to purchase up to $200 billion in housing-related agency debt by the end of this year. The Desk is expected to purchase at least $500 billion in agency MBS by the end of the second quarter of this year and is expected to purchase up to $1.25 trillion of these securities by the end of this year. The Committee also directs the Desk to expand the System's purchases of longer-term Treasury securities by up to $750 billion of longer-term Treasury 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.

June FOMC Meeting — Alternatives B and 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 ¼ percent. The Committee directs the Desk to purchase agency debt, agency MBS, and longer-term Treasury securities during the intermeeting period with the aim of providing support to private credit markets and economic activity. The timing and pace of these purchases should depend on conditions in the markets for such securities and on a broader assessment of private credit market conditions. The Committee anticipates that the combination of outright purchases and various liquidity facilities outstanding will cause the size of the Federal Reserve's balance sheet to expand significantly in coming months. The Desk is expected to purchase up to $200 billion in housing-related agency debt by the end of this year. The Desk is expected to purchase at least $500 billion in agency MBS by the end of the second quarter of this year and is expected to purchase up to $1.25 trillion of these securities by the end of this year. The Desk is expected to purchase up to $300 billion of longer-term Treasury securities by the end of the third quarter. 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.

JUNE FOMC MEETING — 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 ¼ percent. The Committee directs the Desk to purchase agency debt, agency MBS, and longer-term Treasury securities during the intermeeting period with the aim of providing support to private credit markets and economic activity. The timing and pace of these purchases should depend on conditions in the markets for such securities and on a broader assessment of private credit market conditions, and the pace of these purchases should taper off gradually by the end of this year. The Committee anticipates that the combination of outright purchases and various liquidity facilities outstanding will cause the size of the Federal Reserve's balance sheet to expand significantly in coming months. The Desk is expected to purchase up to $200 billion in housing-related agency debt by the end of this year. The Desk is expected to purchase at least $500 billion in agency MBS by the end of the second quarter of this year and is expected to purchase up to $1.25 trillion of these securities by the end of this year. The Desk is expected to purchase up to $300 billion of longer-term Treasury securities by the end of the third quarter. 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. If the upcoming FOMC meeting falls early in the quarter, the lagged inflation measure ends in the last quarter. For the current quarter, the nominal rate is specified as the target federal funds rate on the Bluebook publication date.

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.
EDO Model	Estimates of the equilibrium real rate using EDO—an estimated dynamic-stochastic-general-equilibrium (DSGE) model of the U.S. economy—depend on data for major spending categories, price and wages, and the federal funds rate as well as the model's structure and estimate of the output gap.
FRB/US Model	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	Two measures are presented—based on the FRB/US and the EDO models. Both models are matched to the extended Greenbook forecast. Model simulations determine the value of the real federal funds rate that closes the output gap conditional on the extended baseline.
TIPS-based Factor Model	Yields on TIPS (Treasury Inflation-Protected Securities) reflect investors' expectations of the future path of real interest rates. 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.

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	-1.6	-2.7	-0.8
Lagged headline inflation	0.0	-2.8	-0.9
Projected headline inflation	-1.8	-2.9	-1.0

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	$i_t = 1.20 i_{t-1} – 0.39 i_{t-2} + 0.19[1.17 + 1.73\pi_t + 3.66(y_t - y_t^*) - 2.72(y_{t-1} - y_{t-1}^*)]$
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	$i_t = 2 + \pi_t + 0.5(\pi_t - \pi^*) + (y_t - y_t^*)$
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 1969-2008.

INFORMATION FROM FINANCIAL MARKETS

The expected funds rate path is based on forward rate agreement quotes and implied three-month forward rates from swaps, 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.

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APPENDIX C: LONG-RUN PROJECTIONS OF THE BALANCE SHEET AND MONETARY BASE

This appendix presents more detail on the assumptions underlying the long-run projections of the Federal Reserve's balance sheet and the monetary base shown in the section entitled "Long-run Projections of the Balance Sheet and Monetary Base."

GENERAL ASSUMPTIONS

The projections are constructed on a monthly frequency from June 2009 to December 2016. The few balance sheet items that are not discussed below are assumed to be constant over the projection period at the level reported in the May 29, 2009, H.4.1 Statistical Release. The projections for all major asset and liability categories are summarized in the charts and table that follow the bullet points.

ASSETS

Asset Purchases

- The baseline scenario incorporates only those asset purchases that have already been announced. The Desk purchases a total of $300 billion of Treasury securities (by September 2009), $200 billion of agency debt, and $1,250 billion of agency MBS; purchases in the latter two categories are to be completed by year-end 2009. The maturity distribution of the Treasuries purchases is based on FRBNY Markets Group internal forecasts. The maturities of most purchases are between two and ten years, with the average being approximately five years. No sales are assumed, but maturing securities are redeemed and are not replaced. As a result, total holdings of Treasury securities decline as issues mature. Securities previously held in the SOMA portfolio are assumed to be reinvested as they mature. Agency debt peaks at $200 billion in 2009, and declines slowly over the remainder of the forecast horizon. For agency MBS, the rate of prepayment is based on rough estimates from the Desk. The historically low coupon on these securities implies a relatively slow prepayment rate. As a result, at the end of 2016, $784 billion of the $1.25 trillion of MBS purchased remains on the balance sheet.
- In the alternative scenario, purchases of Treasury securities are increased by $450 billion to $750 billion by the end of the year. No other changes to the assumptions are made and securities mature at the same rate as in the baseline scenario.
- By the end of the projection period, the expansion of currency and capital combined with a runoff of other assets necessitates the resumption of standard open market purchases to maintain reserve balances at a level of $25 billion. It is assumed that the Desk purchases shorter-dated Treasury securities to satisfy this need.

Liquidity and Credit Facilities

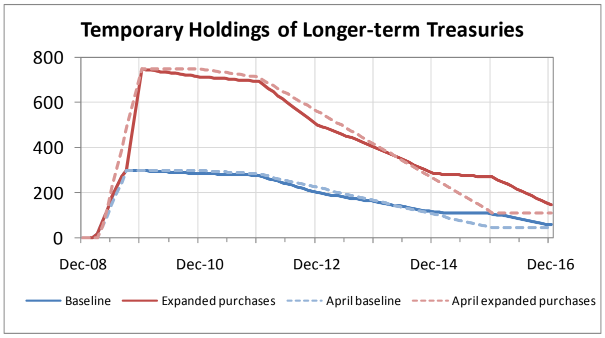
- Primary credit is assumed to decline moderately from its current level to $1 billion by the end of 2010 and remain at that level thereafter. Secondary credit is assumed to be zero for the entire projection period.
- Term Auction Facility (TAF) credit is assumed to decline with improved market functioning and is zero at the end of 2010.
- Foreign central bank liquidity swaps decline with improved market functioning and are zero at the end of 2010.
- Credit extended to AIG winds down by the end of 2014. In addition, the assets held by Maiden Lane LLC, Maiden Lane II LLC, and Maiden Lane III LLC are assumed to be sold over time, and reach zero by 2015.
- The Term Asset-Backed Securities Loan Facility (TALF), based partly on its slow initial uptake, is assumed to peak at $175 billion, well below the $1 trillion limit. For purposes of these projections, TALF is assumed to consist of two components: TALF 1.0 and TALF 2.0/3.0. TALF 1.0 issues loans with a three-year maturity and reaches $125 billion by the end of 2010. These loans are held to maturity; the quantity outstanding reaches zero by the end of 2013. TALF 2.0/3.0 extends loans with a five-year maturity and reaches $50 billion by the end of 2010. These loans are also held to maturity, and the quantity outstanding reaches zero by the end of 2015.
- Section 13(3) facilities other than the TALF are assumed to be extended beyond October 30, 2009. Credit extended through these facilities declines with improved market functioning and is zero at the end of 2010.

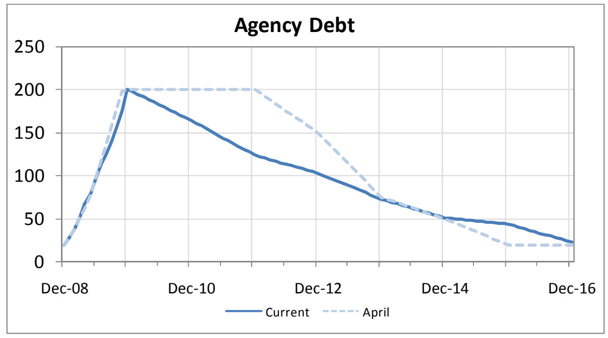
LIABILITIES

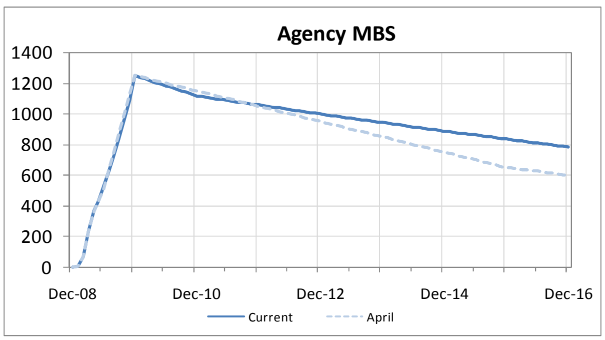
- Currency (Federal Reserve notes in circulation) grows in line with the staff forecast for money stock currency through the end of 2010. From 2010 to the end of the projection period, currency grows at the same rate as nominal GDP as projected in the extended Greenbook forecast.
- The U.S. Treasury's general account returns to its historical target level of $5 billion by the end of 2009. This account remains constant at that level over the forecast period.
- The Treasury's Supplementary Financing Account is projected to wind down to zero by the middle of 2010, and remain at zero for the rest of the of the forecast period.
- Reverse repurchase agreements with foreign official and international accounts are expected to decrease to $38 billion by the end of 2010 as these funds move to other investments.
- Capital is expected to grow at 15 percent per year, in line with the average rate of the past ten years.
- For most of the projection period, reserve balances of depository institutions are assumed to be determined by the evolution of the assets and other liabilities of the Federal Reserve. As the asset side of the balance sheet contracts, so do reserve balances. When the implied level of reserve balances reaches $25 billion, the Desk is assumed to conduct open market operations to offset the growth of currency and capital to maintain a constant $25 billion level.

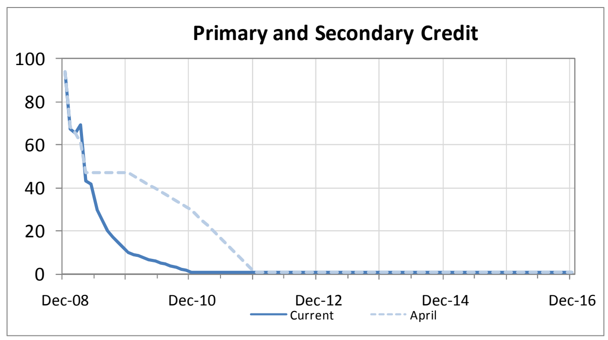
Appendix C: Individual Balance Sheet Item Profiles

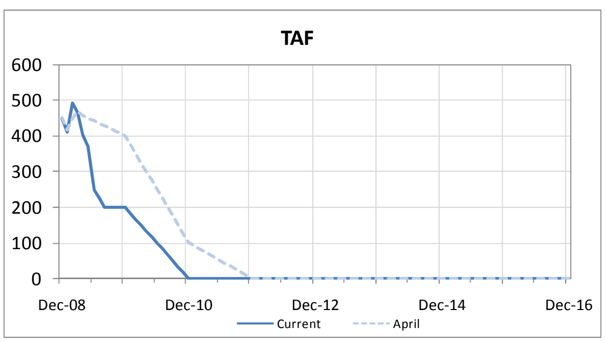
Asset purchases and Federal Reserve liquidity and credit facilities

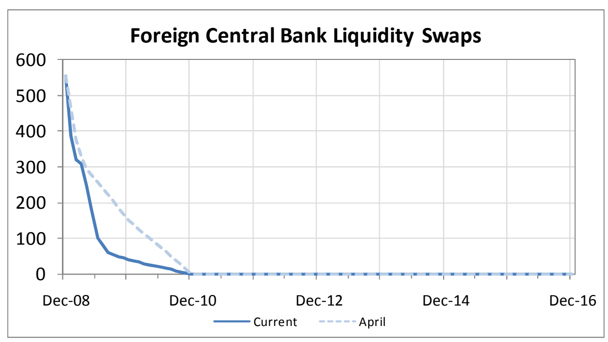


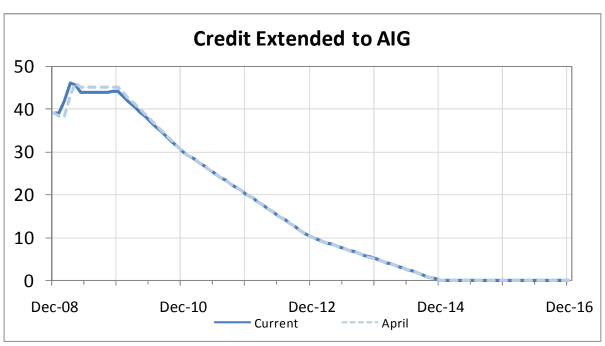


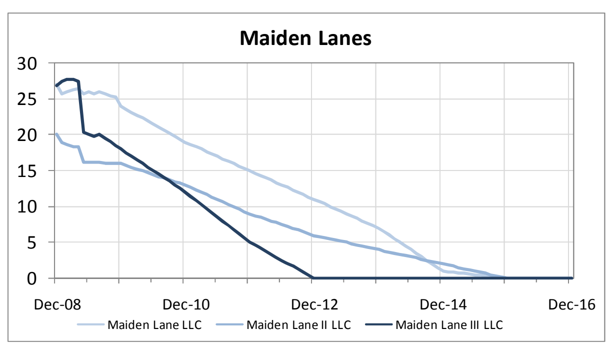








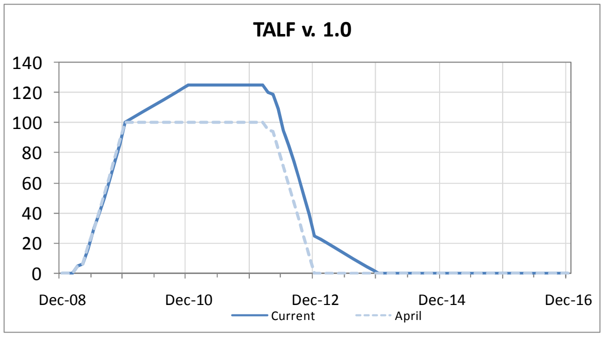


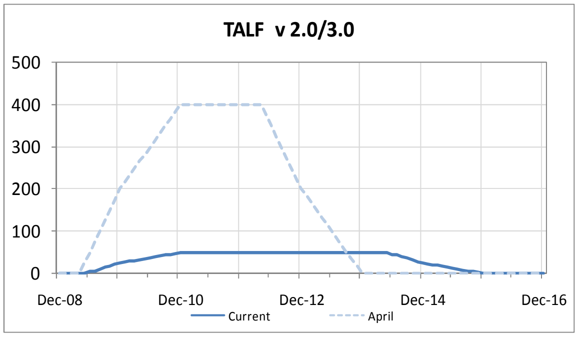


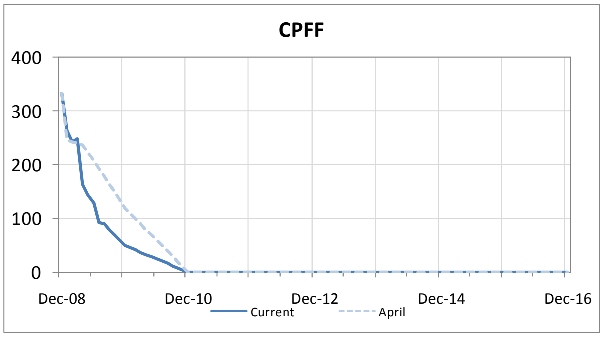
Note: All values are in billions of dollars.

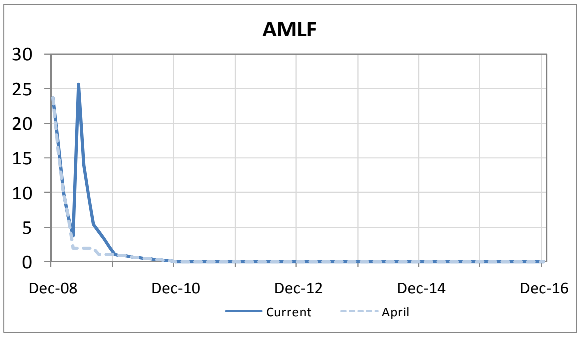
APPENDIX C: INDIVIDUAL BALANCE SHEET ITEM PROFILES, CONTINUED

Federal Reserve liquidity and credit facilities, continued

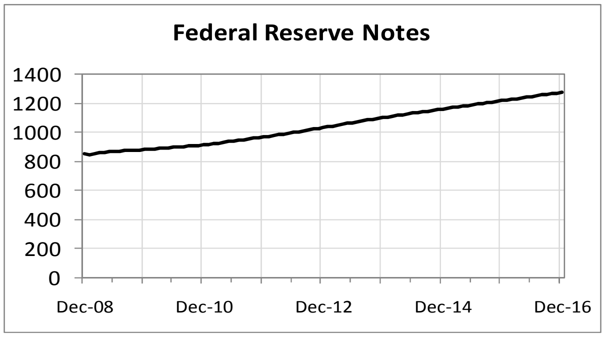


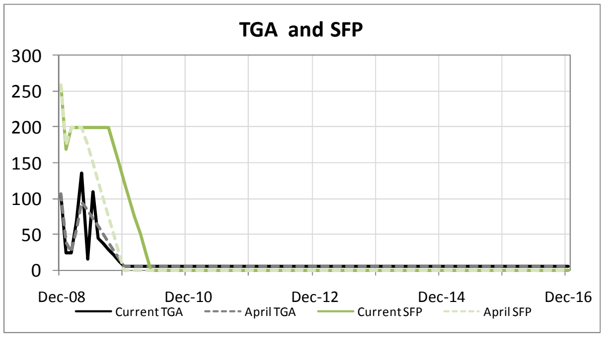


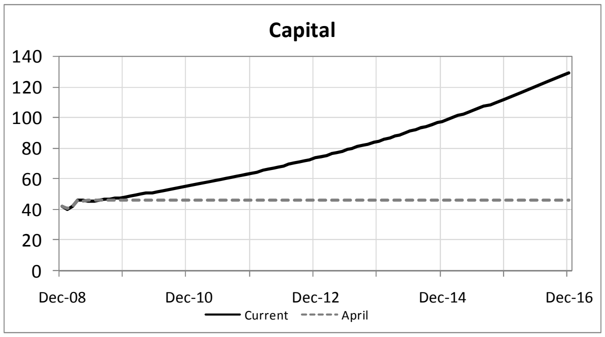


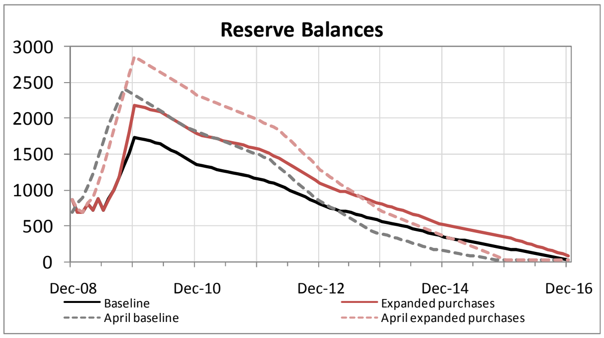


Federal Reserve liabilities and capital









Note: All values are in billions of dollars.

Appendix C: Table
Federal Reserve Balance Sheet: End-of-Year Projections -- Baseline Scenario

	May 29, 2009	2009	2010	2011	2012	2013	2014	2015	2016
		End-of-Year							
		$ Billions							
Total assets	2,084	2,837	2,376	2,244	1,965	1,803	1,641	1,547	1,448
Selected assets:									
Liquidity programs for financial firms	618	251	1	1	1	1	1	1	1
Primary, secondary, and seasonal credit	42	10	1	1	1	1	1	1	1
Term auction credit (TAF)	373	200	-	-	-	-	-	-	-
Foreign central bank liquidity swaps	178	40	-	-	-	-	-	-	-
Primary Dealer Credit Facility (PDCF)	-	-	-	-	-	-	-	-	-
Asset-Backed Commercial Paper Money Market Mutual Fund Liquidty Facility (AMLF)	26	1	-	-	-	-	-	-	-
Lending though other credit facilities	160	175	175	175	75	50	25	-	-
Net portfolio holdings of Commercial Paper Funding Facility (CPFF)	145	50	-	-	-	-	-	-	-
Term Asset-Backed Securities Loan Facility (TALF)	15	125	175	175	75	50	25	-	-
Support for specific institutions	106	102	74	49	27	16	3	-	-
Credit extended to AIG	44	44	30	20	10	5	-	-	-
Net portfolio holdings of Maiden Lane LLC, Maiden Lane II LLC, and Maiden Lane III LLC	62	58	44	29	17	11	3	-	-
Securities held outright	1,114	2,225	2,042	1,935	1,778	1,652	1,528	1,462	1,363
U.S. Treasury securities	606	775	761	753	676	636	589	583	556
Agency securities	80	200	164	124	103	73	51	44	23
Agency mortgage-backed securities	428	1,250	1,117	1,058	999	943	888	835	784
Memo: TSLF	27	27	-	-	-	-	-	-	-
Repurchase agreements	0	0	0	0	0	0	0	0	0
Total liabilities	2,039	2,789	2,321	2,180	1,892	1,719	1,544	1,435	1,319
Selected liabilities:									
Federal Reserve notes in circulation	868	884	915	972	1,040	1,101	1,146	1,192	1,240
Reserve balances of depository institutions	878	1,726	1,352	1,154	798	564	344	190	25
U.S. Treasury, general account	15	5	5	5	5	5	5	5	5
U.S. Treasury, supplemental financing account	200	125	-	-	-	-	-	-	-
Total capital	46	48	56	64	74	85	97	112	129

Source: Federal Reserve H.4.1 statistical release and staff calculations