

Prefatory Note

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Class I FOMC – Restricted Controlled (FR)

Report to the FOMC on Economic Conditions and Monetary Policy



Book B

Monetary Policy: Strategies and Alternatives

March 8, 2012

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

Monetary Policy Strategies

The top panel of the exhibit, “Policy Rules and the Staff Projection,” provides near-term prescriptions for the federal funds rate from five selected policy rules: the Taylor (1993) rule; the Taylor (1999) rule; the outcome-based rule; the first-difference rule; and the nominal income targeting rule.¹ The first four of these rules have appeared regularly in previous Tealbooks, while a nominal income targeting rule has recently been introduced in two staff memos for the Committee.² As shown in the left-hand columns, prescriptions for the federal funds rate from most of the rules remain at the effective lower bound in both the second and third quarters of this year.³ The exceptions are the prescriptions from the Taylor (1993) rule, which embeds a relatively low response to the output gap, and the first-difference rule, which responds to the change in the output gap rather than its level. The Taylor (1993) rule prescribes policy rates around 130 basis points for the next two quarters, and the first-difference rule prescribes a rate just above the effective lower bound over that period. The right-hand columns display the rule prescriptions that arise in the absence of the lower-bound constraint. Of these, the lowest near-term values for the federal funds rate, around –110 basis points, come from the Taylor (1999) rule, which responds strongly to the output gap. Compared with the January Tealbook, the staff foresees a narrower output gap and slightly higher inflation rates over the near term, as shown in the bottom two panels and discussed below. Consequently, the unconstrained near-term prescriptions from all rules have increased.

¹ This Tealbook includes a changed format for “Monetary Policy Strategies.” See the accompanying box for discussion of the new format.

² See Christopher Erceg, Michael Kiley, and David López-Salido, “Alternative Monetary Policy Frameworks,” memo sent to the Committee on October 6, 2011, and Christopher Erceg, Matteo Iacoviello, Michael Kiley, and David López-Salido, “Simple Rules and Optimal Policies in Staff Models,” memo sent to the Committee on March 3, 2012. The nominal GDP target here is assumed to jump off from a 2007:Q4 base that is equal to potential nominal GDP; the jumping-off point for the nominal GDP target in the previous memos was based instead on the actual level of nominal GDP. Formulas for each rule and more details about the nominal income targeting base appear in Explanatory Note A.

³ In this Tealbook, the estimates of the long-run equilibrium real interest rate embedded in the outcome-based rule and the two Taylor rules have been standardized to equal 2¼ percent, which conforms to the assumption about this rate used in the staff projection. Without this adjustment, the rules would not return inflation to the 2 percent goal in the long run. This adjustment by itself raises the unconstrained Taylor (1993) and Taylor (1999) prescriptions by 25 basis points. In contrast, the adjustment has lowered the long-run intercept of the outcome-based rule by somewhat more than 25 basis points, while it has a smaller downward effect on the short-term prescriptions from the rule. To facilitate comparison, the new values of the intercepts of the rules have been applied both to the “Current Tealbook” and “Previous Tealbook” numbers displayed in the exhibit.

The New Format of “Monetary Policy Strategies”

The format of the “Monetary Policy Strategies” section in this Tealbook has been changed to sharpen the focus of the section on strategic issues of most interest to the Committee. In particular, the material on the equilibrium federal funds rate and market-based policy expectations has been trimmed, while the discussion of the implications of various policy rules for the economy and policy has been broadened.

In the revised format, the first exhibit in this section, titled “Policy Rules and the Staff Projection,” provides a summary of the near-term prescriptions for the federal funds rate from several benchmark policy rules, including the Taylor (1993) rule, the Taylor (1999) rule, the first-difference rule, and the outcome-based rule. In addition, the prescriptions table now includes a nominal income targeting rule similar to that presented in a staff memo last October, which found that the rule generated outcomes over time that compared favorably with those of several other rules.¹ The new format allows for a more transparent discussion of the implications of changes in the staff forecast for monetary policy, whereas the previous emphasis on various measures of the equilibrium real federal funds rate (r^*) often put the focus on features of the specific models used to calculate those rates. That said, the Tealbook-consistent measure of r^* based on the FRB/US model will continue to be included as a memo item. In order to help explain the changes in the rules’ prescriptions, the first exhibit also includes plots of the staff baseline forecasts for the output gap and inflation.

The new second exhibit, titled “Policy Rule Simulations,” augments the near-term policy rule prescriptions in the first exhibit with dynamic simulations of key variables (the nominal and real federal funds rates, unemployment, and four-quarter PCE inflation) based on the simple policy rules and the FRB/US model under rational expectations. Confining the coverage of simple policy rules to an analysis of their near-term policy rate prescriptions was a shortcoming of the previous version of “Monetary Policy Strategies,” as it did not adequately reflect the Committee’s need to consider how its strategy for setting policy over time—and the public’s expectations regarding how that strategy will play out—is likely to influence the longer-run evolution of real activity and inflation.

The third exhibit in the revised “Monetary Policy Strategies” format considers optimal monetary policy. The exhibit (titled “Constrained vs. Unconstrained Optimal Monetary Policy”) displays optimal control simulations using the FRB/US model, both with and without the effective lower bound imposed on the federal funds rate. The optimal control trajectory from the previous Tealbook with the lower bound imposed is also provided in order to highlight the implications of

¹ See Christopher Erceg, Michael Kiley, and David López-Salido, “Alternative Monetary Policy Frameworks,” memo sent to the Committee on October 6, 2011.

changes in the staff's assessment of the economic fundamentals. The current Tealbook baseline projection is included in the exhibit, providing a further basis for comparison. As in the "Policy Rule Simulations" exhibit, simulated values up to 2020 are plotted for four variables (the real and nominal funds rates, unemployment, and four-quarter PCE inflation).

The fourth exhibit, "Outcomes under Alternative Policies," tabulates key results from the second and third exhibits in order to facilitate comparisons of the implications of the various rules. (This table may be helpful to Committee participants as they develop their contributions to the Summary of Economic Projections.)

The fifth and final exhibit is planned to appear four times a year (subsequent to this Tealbook, the exhibit will generally appear in Tealbooks prepared for two-day meetings of the Committee). The exhibit will provide a vehicle for periodic updates of policy-related topics of interest to the Committee. The subject matter of the exhibit in the current Tealbook is "Optimal Monetary Policy: Commitment vs. Discretion." Possible topics for future Tealbooks include optimal control under different weights on the Committee's policy goals, and simple policy rule and optimal control simulations that are conditioned on alternatives to the staff's baseline outlook for the economy.

The top panel of the exhibit also reports the estimate of short-run r^* —the real federal funds rate that, if maintained, would return output to its potential in twelve quarters—generated by the FRB/US model when conditioned on the staff’s outlook for the economy (that is, the “Tealbook-consistent” estimate). Primarily reflecting the upward revision in the staff’s outlook for real activity, the r^* estimate has increased by 30 basis points, from –3.2 percent to –2.9 percent; however, it remains well below the estimated actual real federal funds rate of –1.7 percent.

The bottom half of the exhibit, titled “Key Elements of the Staff Projection,” depicts the Tealbook baseline projection for the output gap and core inflation. As detailed in Book A of the Tealbook, the staff projects a narrower output gap and higher inflation than it did in January. Core inflation runs somewhat below 2 percent for the current decade; however, convergence to the 2 percent goal occurs more quickly under the current projection than in the previous projection.⁴

The next exhibit, “Policy Rule Simulations,” reports dynamic simulations that incorporate the endogenous responses of inflation and the output gap to the different paths of the federal funds rate prescribed by the constrained versions of the five policy rules described above. These simulations are generated using the FRB/US model, assuming that each policy rule is implemented from here forward and that private agents fully understand and anticipate the implications of each rule for real activity and inflation in the future, relative to baseline. In contrast, the previous exhibit gave near-term prescriptions from the same rules, but took staff projections for inflation and the output gap as given. For comparison, the exhibit also displays the Tealbook baseline paths, which are conditioned on the prescriptions of the outcome-based rule.

Both the Taylor (1993) and the first-difference rules imply an earlier increase in the federal funds rate than the other rules. Because the Taylor (1993) rule does not respond strongly to the level of the output gap, this rule implies an immediate departure of the funds rate from its effective lower bound. For the next few years, the Taylor (1993) rule features a considerably tighter monetary policy than the other rules, with a higher unemployment path and inflation below 2 percent even in 2020. The first-difference rule also implies a somewhat higher nominal funds rate than the other rules.

⁴ The same is broadly true of headline inflation, as shown in the “Tealbook baseline” results in the next exhibit.

Policy Rules and the Staff Projection

Near-Term Prescriptions of Selected Policy Rules

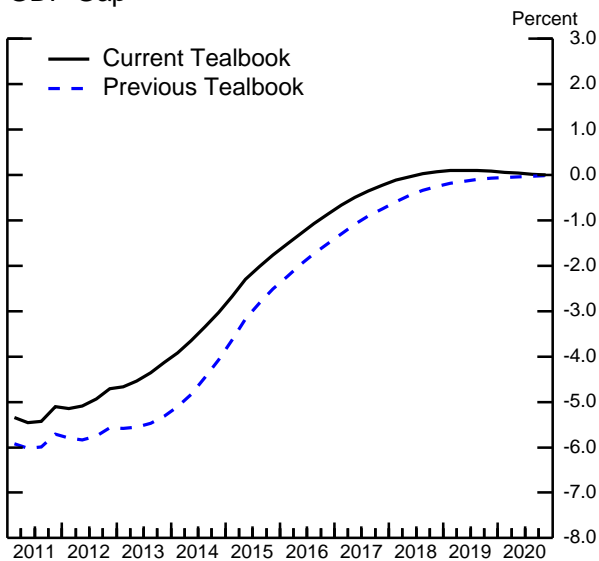
	Constrained Policy		Unconstrained Policy	
	<u>2012Q2</u>	<u>2012Q3</u>	<u>2012Q2</u>	<u>2012Q3</u>
Taylor (1993) rule	1.38	1.27	1.38	1.27
<i>Previous Tealbook</i>	0.65	0.45	0.65	0.45
Taylor (1999) rule	0.13	0.13	-1.10	-1.14
<i>Previous Tealbook</i>	0.13	0.13	-2.18	-2.34
Outcome-based rule	0.13	0.13	-0.05	-0.20
<i>Previous Tealbook Outlook</i>	0.13	0.13	-0.30	-0.77
First-difference rule	0.14	0.20	0.14	0.20
<i>Previous Tealbook Outlook</i>	0.13	0.13	-0.07	-0.22
Nominal income targeting rule	0.13	0.13	-0.55	-1.04
<i>Previous Tealbook Outlook</i>	0.13	0.13	-0.75	-1.40

Memo: Equilibrium and Actual Real Federal Funds Rate

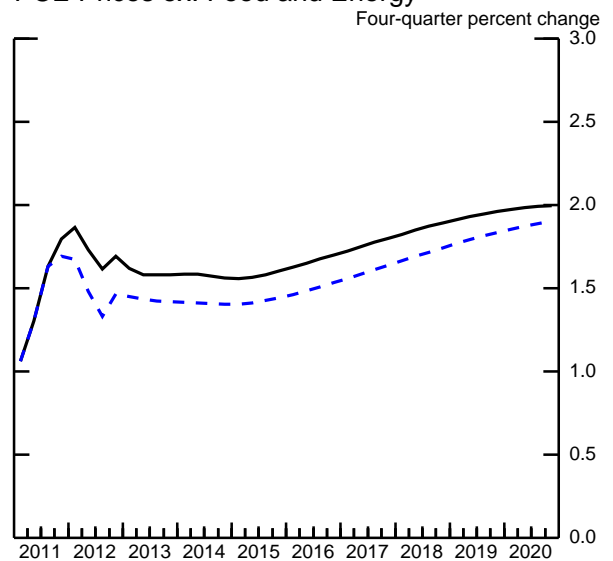
	Current Tealbook	<i>Previous Tealbook</i>
Tealbook-consistent FRB/US r^* estimate	-2.9	-3.2
Actual real federal funds rate	-1.7	-1.6

Key Elements of the Staff Projection

GDP Gap



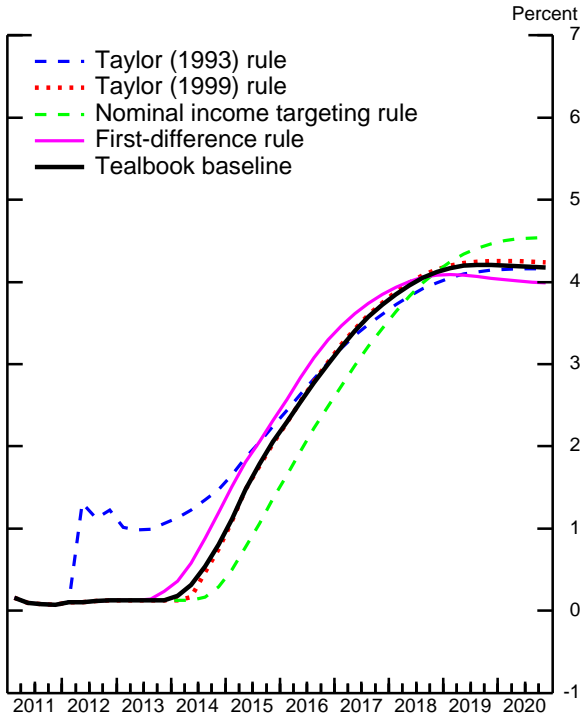
PCE Prices ex. Food and Energy



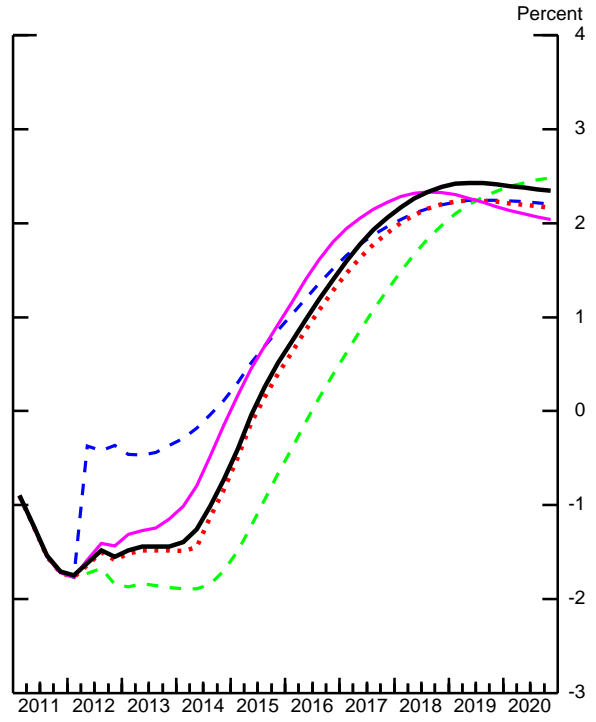
Note: For rules which have the lagged policy rate as a right-hand-side variable, the lines denoted "Previous Tealbook Outlook" report rule prescriptions based on the previous Tealbook's staff outlook, but jumping off from the average value for the policy rate thus far in the quarter.

Policy Rule Simulations

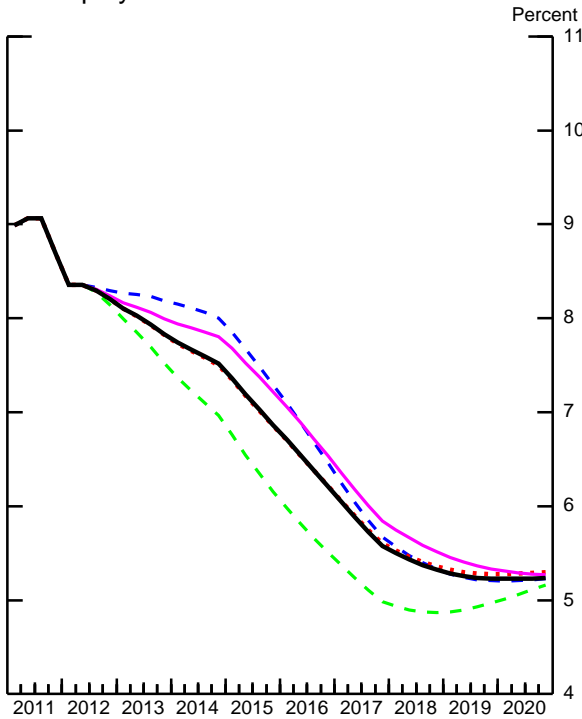
Nominal Federal Funds Rate



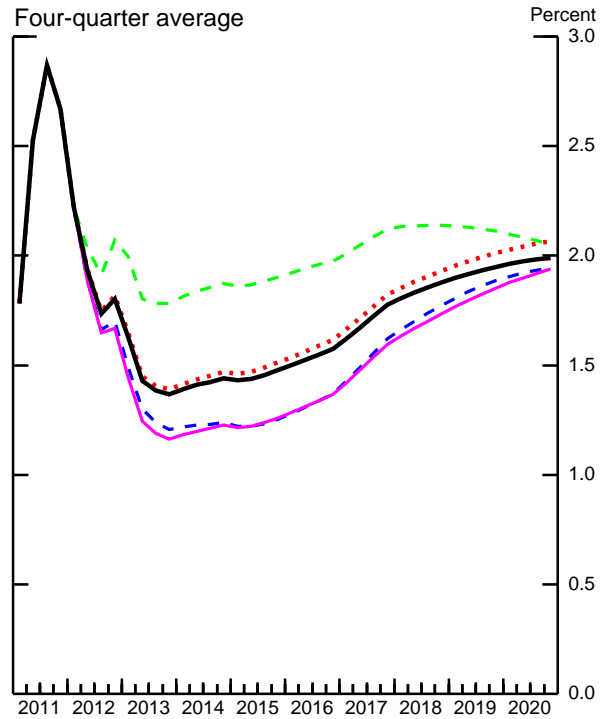
Real Federal Funds Rate



Unemployment Rate



PCE Inflation
Four-quarter average



Note: The policy rule simulations in this exhibit are based on rules that respond to core inflation. This choice of rule specification was made in light of the tendency for current and near-term core inflation rates to outperform headline inflation rates as predictors of the medium-term behavior of headline inflation.

The unemployment rate is therefore persistently higher—and inflation lower—under this rule than in the baseline projection.

The remaining rules—the Taylor (1999) rule, the nominal income targeting rule and the Tealbook baseline (outcome-based rule)—keep the policy rate at the lower bound at least through early 2014.⁵ Under the nominal income targeting rule, the initial tightening of the funds rate occurs at the end of 2014, and policy is firmed more gradually thereafter than under the other rules. This more accommodative policy is reflected in a more rapid decline in unemployment than that experienced under the other rules and in inflation hovering just over 2 percent for much of the current decade. The Taylor (1999) rule, on the other hand, produces conditions that are substantially similar to those of the Tealbook baseline (the outcome-based rule), including a convergence of inflation to the 2 percent goal at the end of 2020.⁶

The implications of the staff’s revisions to economic fundamentals can be seen in the next exhibit, “Constrained vs. Unconstrained Optimal Monetary Policy,” which compares optimal control simulations derived for this Tealbook with those shown in January.⁷ In these simulations, policymakers are assumed to place equal weights on

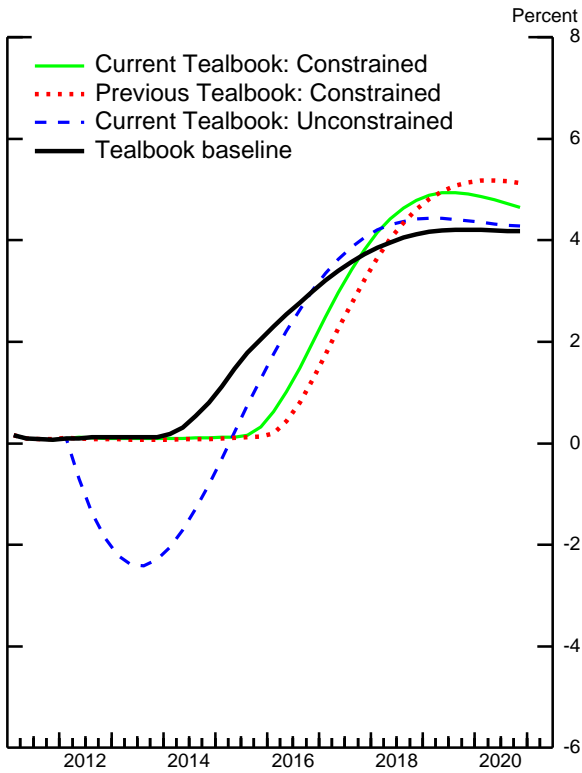
⁵ As noted earlier, the staff revised the intercepts of the two Taylor rules, the outcome-based rule, and nominal income rule to ensure that all incorporate the same longer-run value of the equilibrium real funds rate implicit in the extended staff projection. In addition, as discussed in Book A of the Tealbook, the staff revised its historical estimates of potential GDP and the output gap. These technical revisions have varying implications for the date of the first tightening of the federal funds rate depicted in these simulations. In the case of the outcome-based rule, the effects of the two revisions on the funds rate path roughly offset each other. In the case of the two Taylor rules, however, both technical revisions work in the direction of raising the prescribed path of the funds rate. In the case of the Taylor (1999) rule, this upward shift advances the initial date of tightening by three quarters beyond what the revisions to the projected paths of labor market slack and inflation would have called for. For the nominal income targeting rule, the historical revisions to potential output and the change in the rule’s intercept advanced the onset of tightening by one quarter. Finally, the first-difference rule is essentially unaffected by these technical revisions, because it has no intercept term and responds to the change in—and not the level of—the output gap.

⁶ It is perhaps surprising that the outcome-based and Taylor (1999) rules lead to such similar paths for the federal funds rate. These two rules have similar longer-run properties, especially with respect to the response to the level of the output gap. However, their short-run responses are usually more distinct. Currently, two opposing forces lead to the similar funds rate prescriptions: On the one hand, the outcome-based rule includes an output-gap change term, which, because of rapid output gains in 2014 and 2015, tends to prescribe increases in the funds rate relative to the Taylor (1999) rule. On the other hand, the outcome-based rule includes lags of the federal funds rate, whose presence tends to slow the pace of increase of the funds rate. In this particular instance, these two forces almost exactly offset each other, leading, on net, to similar funds rate prescriptions.

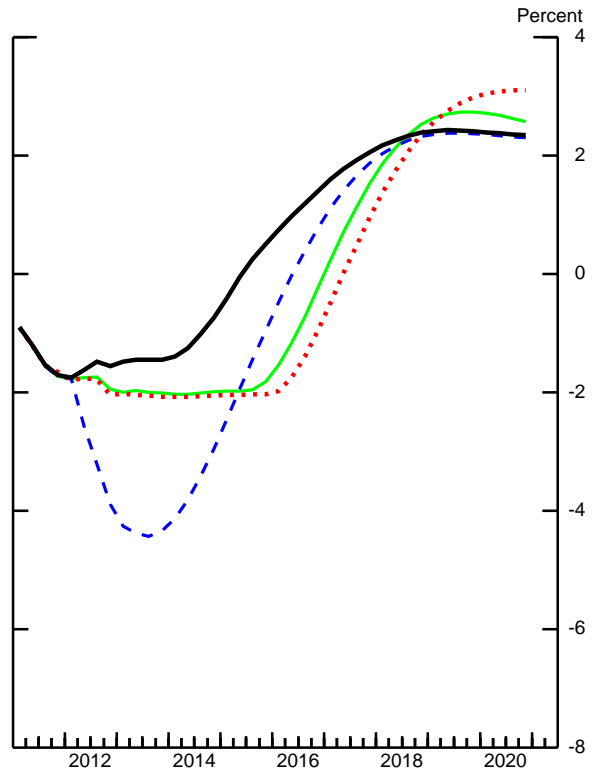
⁷ The staff’s baseline forecast incorporates the effects of the Federal Reserve’s large-scale asset purchase programs, as well as the effects of the maturity extension program and the modifications announced in September to the Federal Reserve’s reinvestment policies. The optimal policy simulations

Constrained vs. Unconstrained Optimal Monetary Policy

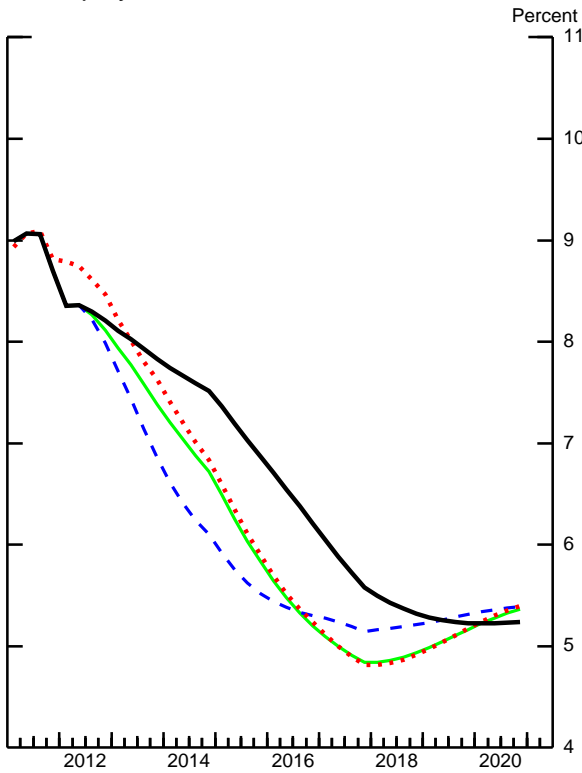
Nominal Federal Funds Rate



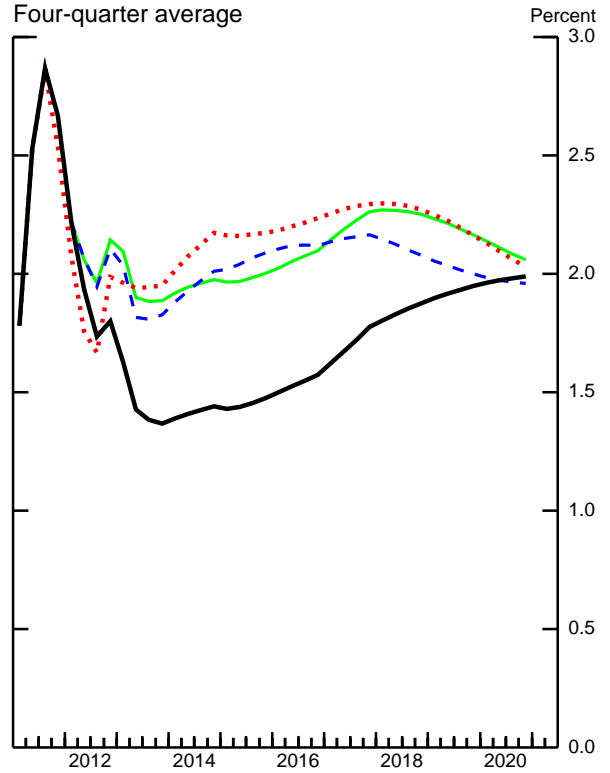
Real Federal Funds Rate



Unemployment Rate



PCE Inflation
Four-quarter average



keeping headline PCE inflation close to a 2 percent inflation goal, on keeping the unemployment rate close to the staff's estimate of the effective natural rate of unemployment, and on minimizing changes in the federal funds rate. The simulations indicate that the optimal path for the federal funds rate does not rise appreciably above zero until the fourth quarter of 2015, about two quarters earlier than in the January Tealbook.⁸

The optimal control policy keeps the funds rate lower for longer than any of the other policy approaches. As a consequence, this policy would promote a faster pace of economic recovery than in the staff's baseline outlook, as well as an inflation rate in the medium run that is closer to the FOMC's goal of 2 percent. Specifically, in the optimal control simulation, the gap between the unemployment rate and the staff's estimate of the effective natural rate of unemployment is just about closed by the end of 2015, with inflation running a little above 2 percent.⁹ These better outcomes occur because policymakers respond to the lower bound constraint by promising to keep interest rates low for an extended period of time; because the policy is assumed to be completely credible, it boosts inflation expectations and reduces real rates over the early part of the simulation.

If the nominal federal funds rate could fall below zero, the funds rate, under the optimal unconstrained policy, would decrease to -2.4 percent by mid 2013, and not turn positive until early 2015. Under these hypothetical conditions, the unemployment rate would decline more rapidly than under the constrained policy and would then remain roughly stable at 5¼ percent after 2015. With the unemployment rate stabilized, inflation would settle in at around 2 percent in 2019, about one year earlier than in the constrained simulations.

therefore also incorporate the effects of these balance sheet policies, but they assume that no further balance sheet policies are undertaken.

⁸ Although the loss function uses headline inflation instead of core inflation, the real federal funds rate shown in the upper right panel of the exhibit is calculated as the difference between the nominal funds rate and a four-quarter moving average of core PCE inflation. Core PCE inflation is used to compute the real rate because it provides a less volatile measure of inflation expectations than a four-quarter moving average of headline inflation.

⁹ Reflecting the transitory effects of extended unemployment benefits, the staff's estimate of the effective natural rate of unemployment falls from 6¼ percent in the first quarter of 2012 to 5¾ percent by the end of 2015, and then declines further until it reaches 5¼ percent by the end of 2017.

The next exhibit, “Outcomes under Alternative Policies,” tabulates the simulation results under the selected policy rules described above for key variables, including core inflation.

The final exhibit, “Optimal Monetary Policy: Commitment vs. Discretion,” displays simulations of the FRB/US model using two different concepts of optimality. Under the first concept (commitment), policymakers can choose conditional policies today that effectively constrain the Committee’s policy choices in future periods; under the second concept (discretion), policymakers are assumed to be unable to bind the policy decisions of future Committees and so choose policy today subject to the expected optimizing behavior of future policymakers. The commitment policy corresponds to the optimal control concept presented in the third exhibit, and so the red lines in this exhibit trace the same paths as in the constrained case (the green line) in the third exhibit. In the case of discretion, results are presented both with and without the effective lower bound imposed on the funds rate.

As can be seen from the unconstrained simulations under discretionary policy, policymakers would like to provide additional stimulus by cutting the current funds rate today. With that option closed, they therefore might consider a substitute strategy of promising to keep the funds rate lower in the future. Under discretion, however, policymakers’ ability to influence private sector expectations regarding the funds rate and other variables is greatly circumscribed because they cannot credibly bind future policymakers to carry out the original plan. In particular, the federal funds rate leaves the lower bound sooner under discretion than under commitment, resulting in a higher trajectory for unemployment and a lower trajectory for inflation than can be achieved under commitment.¹⁰ By the end of 2020, however, inflation is close to 2 percent under both commitment and discretion.

In judging these simulations, it should be kept in mind that the exercises take the staff’s baseline assumption about SOMA portfolio policy as given and so treat the funds rate as the sole instrument that the Committee adjusts in response to the state of the economy. If policymakers wished to provide additional policy stimulus but saw little remaining scope to lower private sector expectations of the funds rate path because of limits on their ability to commit to future policy, they could still provide stimulus by expanding the Federal Reserve’s holdings of securities.

¹⁰ For further discussion of the different properties of commitment and discretion, see the box in Book B of the December 2010 Tealbook, “The Role of Commitment in Optimal Policy Simulations.”

Outcomes under Alternative Policies

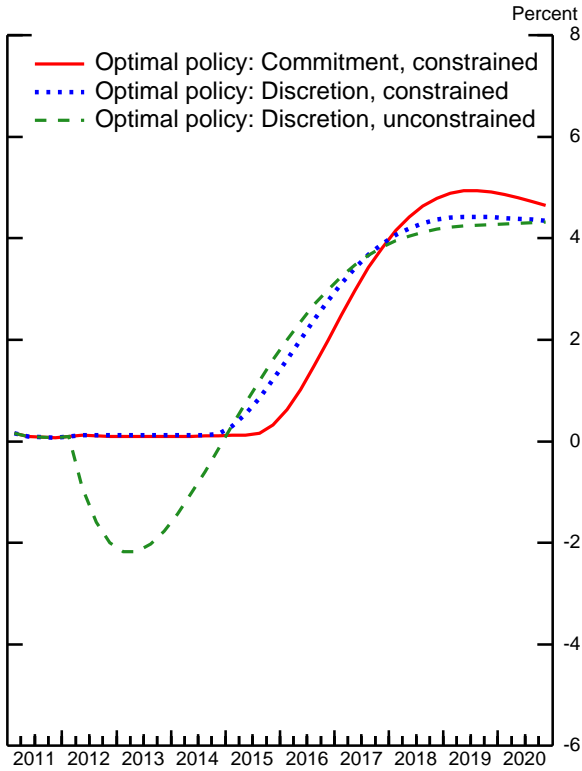
(Percent change, annual rate, from end of preceding period except as noted)

Measure and scenario	2011	2012	2013	2014	2015	2016
	H2					
<i>Unemployment rate¹</i>						
Extended Tealbook baseline	8.7	8.2	7.8	7.5	6.9	6.2
Taylor (1993)	8.7	8.3	8.2	8.0	7.3	6.5
Taylor (1999)	8.7	8.2	7.8	7.5	6.9	6.2
First-difference	8.7	8.2	8.0	7.8	7.3	6.5
Nominal income targeting	8.7	8.1	7.5	6.9	6.2	5.5
Constrained optimal control	8.7	8.1	7.4	6.7	5.9	5.2
<i>Total PCE prices</i>						
Extended Tealbook baseline	1.7	1.8	1.4	1.4	1.5	1.6
Taylor (1993)	1.7	1.7	1.2	1.2	1.3	1.4
Taylor (1999)	1.7	1.8	1.4	1.4	1.5	1.6
First-difference	1.7	1.7	1.2	1.2	1.3	1.4
Nominal income targeting	1.7	2.1	1.8	1.8	1.9	2.0
Constrained optimal control	1.7	2.1	1.9	1.9	2.0	2.1
<i>Core PCE prices</i>						
Extended Tealbook baseline	1.7	1.7	1.6	1.6	1.6	1.7
Taylor (1993)	1.7	1.6	1.4	1.4	1.4	1.5
Taylor (1999)	1.7	1.7	1.6	1.6	1.6	1.7
First-difference	1.7	1.6	1.4	1.4	1.4	1.5
Nominal income targeting	1.7	2.0	2.0	2.0	2.0	2.1
Constrained optimal control	1.7	2.0	2.1	2.1	2.1	2.2
<i>Federal funds rate¹</i>						
Extended Tealbook baseline	0.1	0.1	0.1	0.8	2.1	3.0
Taylor (1993)	0.1	1.2	1.1	1.5	2.2	3.0
Taylor (1999)	0.1	0.1	0.1	0.7	2.0	3.0
First-difference	0.1	0.1	0.2	1.2	2.3	3.3
Nominal income targeting	0.1	0.1	0.1	0.3	1.4	2.5
Constrained optimal control	0.1	0.1	0.1	0.1	0.3	2.0

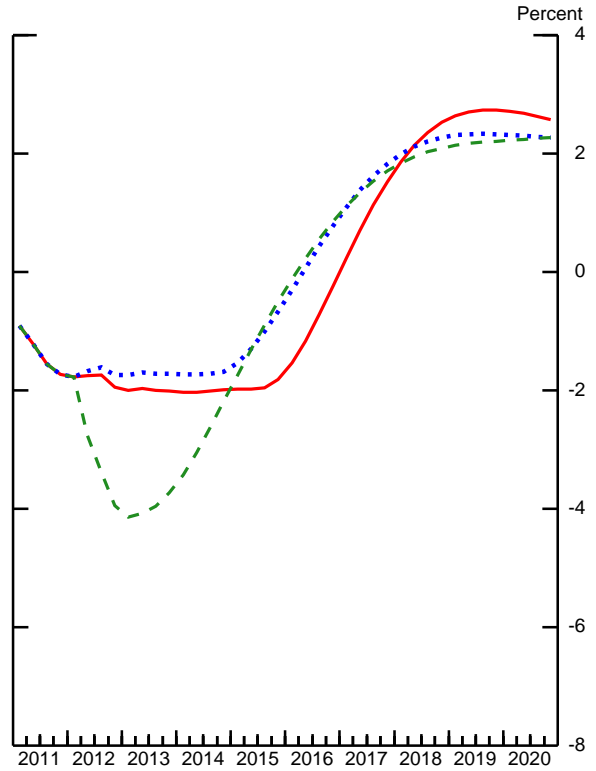
1. Percent, average for the final quarter of the period.

Optimal Monetary Policy: Commitment vs. Discretion

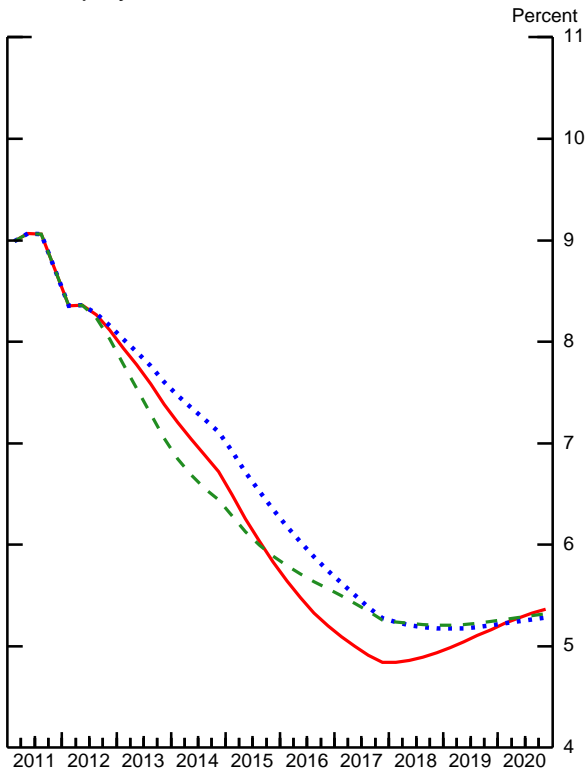
Nominal Federal Funds Rate



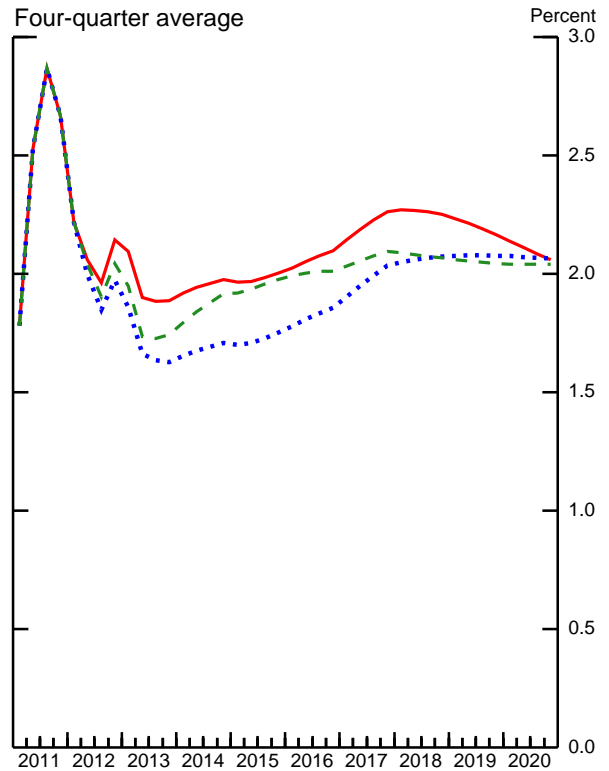
Real Federal Funds Rate



Unemployment Rate



PCE Inflation
Four-quarter average



Monetary Policy Alternatives

This Tealbook presents three policy alternatives—labeled A, B, and C—for the Committee’s consideration. Of course, the Committee could blend various components of the statements, including alternative characterizations of recent and prospective economic conditions as well as policy choices, to construct its desired statement.

Turning first to the draft statements’ characterizations of recent economic conditions, they all reflect the improvement in labor market conditions, but to differing degrees. Alternative B notes that labor market conditions “have improved further,” while Alternative A says these conditions have improved “somewhat” further. While each statement reiterates that the unemployment rate “remains elevated,” Alternative B states that it has “declined notably” in recent months, and Alternative C observes that this rate has declined notably and the pace of employment growth has “picked up.” The statements also vary in describing the recent increase in the prices of crude oil and gasoline, with Alternatives A and B noting that these prices “have increased lately,” and Alternative C saying they have “increased significantly of late.” The statements differ in their characterization of recent conditions in the housing sector as well, with Alternatives A and B saying that this sector “remains depressed,” while Alternative C notes that housing indicators “have improved somewhat.” By contrast, the statements are nearly identical in their characterizations of recent economic growth (“has been expanding moderately”), household spending and business fixed investment (“have continued to advance), inflation (“has been subdued in recent months”), and longer-term inflation expectations (“have remained stable”).

The alternative statements vary more significantly in their characterizations of the economic outlook. Alternative B indicates that the Committee expects “moderate” economic growth with the unemployment rate declining “gradually.” Alternative A says that, absent further policy action, economic growth “would slow” and the unemployment rate would decline “only gradually.” Meanwhile, Alternative C notes that “a gradual increase” in the pace of economic growth is expected along with a rate of unemployment that will “continue to decline.” Alternatives A and B observe that the recent increase in the prices of crude oil and gasoline will push up inflation temporarily, and Alternative A adds that the increase is likely to reduce consumers’ purchasing power. In contrast, Alternative C says this development is likely to push inflation above its mandate-



consistent rate in the near term.¹ In describing the risks to the outlook, Alternatives A and B cite strains in global financial markets as continuing to pose significant downside risks, although Alternative B notes that these risks have “eased somewhat.” Alternative C makes no mention of downside risks to economic activity; instead, it states that the Committee sees some risk that inflation “could remain elevated going forward.”

Against this backdrop, Alternative B makes no change either to the Committee’s current guidance regarding the anticipated period of exceptionally low federal funds rates (“at least through late 2014”) or to its balance sheet policies. Alternative A preserves the Committee’s current forward rate guidance and provides additional policy accommodation by undertaking one of two new asset purchase programs—either a discrete program to buy an additional \$500 billion of agency mortgage-backed securities (MBS) by the end of March 2013, or an incremental and open-ended program to buy \$40 billion of agency MBS per month, with adjustments as needed. Under Alternative C, the Committee would remove some policy accommodation by adjusting both its balance sheet policies and its forward rate guidance. Specifically, Alternative C would reduce the size of the maturity extension program by about one-third and end it in March, three months earlier than originally announced; Alternative C would also eliminate the date in the Committee’s forward guidance and instead describe the time period over which the exceptionally low range for the federal funds rate is appropriate as being linked qualitatively to economic conditions involving projected inflation, longer-term inflation expectations, and the state of progress toward maximum employment.

Each statement ends with a description of the Committee’s future policy intentions. Alternatives B and C say the Committee is “prepared to adjust” its holdings of securities as appropriate, while under Alternative A, the Committee will more broadly “employ its tools as needed.” Alternatives A and B indicate that future actions would be undertaken to strengthen the economic recovery; under Alternative C, the Committee’s motivation—to “promote its objectives”—is more balanced.

The following table highlights key elements of the differences in the policy actions associated with the alternative statements. The table is followed by complete draft statements and then by a summary of the arguments for each alternative.

¹ In light of the Committee’s statement on longer-run goals and monetary policy strategy that was released at the conclusion of the January FOMC meeting, inflation is now described in each of the draft statements in terms of the criterion of “the rate” the Committee judges to be “most consistent” with its dual mandate, instead of “levels” consistent with the Committee’s dual mandate.

Table 1: Overview of Policy Alternatives for the March 13 FOMC Statement

Selected Elements	January Statement	March Alternatives		
		A	B	C
Forward Rate Guidance				
<i>Guidance</i>	at least through late 2014	unchanged		only as long as inflation is projected to remain subdued over the medium term, longer-term inflation expectations continue to be well anchored, and progress toward maximum employment remains insufficient
Balance Sheet				
<i>MEP</i>	continue its program as announced in September {\$400 billion; complete by end of June 2012}	unchanged		reduce program size to \$250 billion and complete by end of March 2012
<i>Additional Purchases</i>	none	discrete: \$500 billion of agency MBS by end of March 2013 OR open-ended: \$40 billion of agency MBS per month; will adjust program as needed to foster objectives	none	
<i>Reinvestment Policies</i>	principal payments of agency debt and MBS into agency MBS; Treasuries into Treasuries	unchanged		
Future Policy Action				
<i>Future Actions</i>	prepared to adjust holdings as appropriate to...	will employ its tools as needed to...	unchanged	
	promote stronger economic recovery in a context of price stability	unchanged		promote its objectives of maximum employment and price stability

Alternatives

JANUARY FOMC STATEMENT

1. Information received since the Federal Open Market Committee met in December suggests that the economy has been expanding moderately, notwithstanding some slowing in global growth. While indicators point to some further improvement in overall labor market conditions, the unemployment rate remains elevated. Household spending has continued to advance, but growth in business fixed investment has slowed, and the housing sector remains depressed. Inflation has been subdued in recent months, and longer-term inflation expectations have remained stable.
2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee expects economic growth over coming quarters to be modest and consequently anticipates that the unemployment rate will decline only gradually toward levels that the Committee judges to be consistent with its dual mandate. Strains in global financial markets continue to pose significant downside risks to the economic outlook. The Committee also anticipates that over coming quarters, inflation will run at levels at or below those consistent with the Committee's dual mandate.
3. To support a stronger economic recovery and to help ensure that inflation, over time, is at levels consistent with the dual mandate, the Committee expects to maintain a highly accommodative stance for monetary policy. In particular, the Committee decided today to keep the target range for the federal funds rate at 0 to $\frac{1}{4}$ percent and currently anticipates that economic conditions—including low rates of resource utilization and a subdued outlook for inflation over the medium run—are likely to warrant exceptionally low levels for the federal funds rate at least through late 2014.
4. The Committee also decided to continue its program to extend the average maturity of its holdings of securities as announced in September. The Committee is maintaining its existing policies of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction. The Committee will regularly review the size and composition of its securities holdings and is prepared to adjust those holdings as appropriate to promote a stronger economic recovery in a context of price stability.

MARCH FOMC STATEMENT—ALTERNATIVE A

1. Information received since the Federal Open Market Committee met in ~~December~~ **January** suggests that the economy has been expanding moderately; ~~notwithstanding some slowing in global growth.~~ While indicators point to some further improvement in overall labor market conditions **have improved somewhat further**, the unemployment rate remains elevated. Household spending **and business fixed investment** ~~have~~ continued to advance. ~~but growth in business fixed investment has slowed, and~~ The housing sector remains depressed. Inflation has been subdued in recent months, ~~and~~ **although prices of crude oil and gasoline have increased lately**. Longer-term inflation expectations have remained stable.

2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee expects **that, absent further policy action**, economic growth **would slow** over coming quarters ~~to be modest and consequently anticipates that the unemployment rate will~~ **would** decline only gradually toward levels that the Committee judges to be consistent with its dual mandate. Strains in global financial markets continue to pose significant downside risks to the economic outlook. **The recent increase in oil and gasoline prices is likely to reduce consumers' purchasing power while pushing up inflation temporarily. Nonetheless,** the Committee ~~also~~ anticipates that ~~over~~ coming quarters, **subsequently** inflation will run at levels at or below ~~those~~ **the rate that it judges most** consistent with ~~the Committee's~~ **its** dual mandate.

3. To support a stronger economic recovery and to help ensure that inflation, over time, is at levels **the rate most** consistent with ~~the~~ **its** dual mandate, the Committee expects ~~to maintain a highly accommodative stance for monetary policy.~~ In particular, the Committee decided today to **purchase an additional \$500 billion of agency mortgage-backed securities by the end of March 2013.** **In addition, the Committee decided to** continue its program to extend the average maturity of its holdings of securities as announced in September. The Committee **also** is maintaining its existing policies of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction. **These programs should put downward pressure on longer-term interest rates, provide support to mortgage markets, and help make broader financial conditions more accommodative.** The Committee will regularly review the size and composition of its securities holdings and is prepared to adjust those holdings as appropriate.

OR

Alternatives

- 3'. To support a stronger economic recovery and to help ensure that inflation, over time, is at levels **the rate most** consistent with the **its** dual mandate, the Committee ~~expects to maintain a highly accommodative stance for monetary policy.~~ In particular, the Committee decided today to **purchase additional agency mortgage-backed securities, initially at a rate of \$40 billion per month.** **The Committee will adjust the pace of purchases and determine the ultimate size of the program as needed to foster its objectives.** **In addition, the Committee decided to** continue its program to extend the average maturity of its holdings of securities as announced in September. The Committee **also** is maintaining its existing policies of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction. **These programs should put downward pressure on longer-term interest rates, provide support to mortgage markets, and help make broader financial conditions more accommodative.** ~~The Committee will regularly review the size and composition of its securities holdings and is prepared to adjust those holdings as appropriate.~~
4. The Committee also decided to keep the target range for the federal funds rate at 0 to ¼ percent and currently anticipates that economic conditions—including low rates of resource utilization and a subdued outlook for inflation over the medium run—are likely to warrant exceptionally low levels for the federal funds rate at least through late 2014.
5. **The Committee will employ its tools as needed** to promote a stronger economic recovery in a context of price stability.

MARCH FOMC STATEMENT—ALTERNATIVE B

1. Information received since the Federal Open Market Committee met in ~~December~~ **January** suggests that the economy has been expanding moderately; ~~notwithstanding some slowing in global growth. While indicators point to some further improvement in overall Labor market conditions~~ **have improved further;** the unemployment rate **has declined notably in recent months but** remains elevated. Household spending **and business fixed investment have** continued to advance. ~~but growth in business fixed investment has slowed, and~~ The housing sector remains depressed. Inflation has been subdued in recent months, ~~and~~ **although prices of crude oil and gasoline have increased lately.** Longer-term inflation expectations have remained stable.
2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee expects **moderate** economic growth over coming quarters ~~to be modest and consequently~~ anticipates that the unemployment rate will decline ~~only~~ gradually toward levels that the Committee judges to be consistent with its dual mandate. Strains in global financial markets, **while having eased somewhat,** continue to pose significant downside risks to the economic outlook. **The recent increase in oil and gasoline prices will push up inflation temporarily, but** the Committee ~~also~~ anticipates that ~~over coming quarters~~ **subsequently** inflation will run at levels at or below ~~those~~ **the rate that it judges most** consistent with the Committee's **its** dual mandate.
3. To support a stronger economic recovery and to help ensure that inflation, over time, is at levels **the rate most** consistent with the **its** dual mandate, the Committee expects to maintain a highly accommodative stance for monetary policy. In particular, the Committee decided today to keep the target range for the federal funds rate at 0 to ¼ percent and currently anticipates that economic conditions—including low rates of resource utilization and a subdued outlook for inflation over the medium run—are likely to warrant exceptionally low levels for the federal funds rate at least through late 2014.
4. The Committee also decided to continue its program to extend the average maturity of its holdings of securities as announced in September. The Committee is maintaining its existing policies of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction. The Committee will regularly review the size and composition of its securities holdings and is prepared to adjust those holdings as appropriate to promote a stronger economic recovery in a context of price stability.

Alternatives

MARCH FOMC STATEMENT—ALTERNATIVE C

Alternatives

1. Information received since the Federal Open Market Committee met in ~~December~~ **January** suggests that the economy has been expanding moderately, ~~notwithstanding some slowing in global growth. While indicators point to some further improvement in overall labor market conditions,~~ **Although** the unemployment rate remains elevated, **it has declined notably and the pace of employment growth has picked up.** Household spending **and business fixed investment** ~~have~~ continued to advance, ~~but growth in business fixed investment has slowed, and~~ **indicators of conditions in the housing sector remains depressed have improved somewhat.** Inflation has been subdued in recent months, and longer-term inflation expectations have remained stable. **However, prices of crude oil and gasoline have increased significantly of late.**
2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee expects **a gradual increase in the pace of** economic growth over coming quarters ~~to be modest and consequently anticipates that the unemployment rate will~~ **continue to** decline ~~only gradually toward levels that the Committee judges to be consistent with its dual mandate. Strains in global financial markets continue to pose significant downside risks to the economic outlook. The Committee also anticipates that over coming quarters,~~ **the recent increase in oil and gasoline prices is likely to push** inflation ~~will run at levels at or below those~~ **above the rate that the Committee judges most** consistent with the ~~Committee's~~ **its** dual mandate. **Moreover, the Committee sees some risk that inflation could remain elevated going forward given the current degree of policy accommodation.**
3. To support a ~~stronger~~ **the** economic recovery and to help ensure that inflation, over time, is at levels **the rate most** consistent with the ~~its~~ **its** dual mandate, the Committee expects to maintain a highly accommodative stance for monetary policy. ~~The Committee also decided~~ **today** to ~~continue its~~ **reduce from \$400 billion to \$250 billion the** program to extend the average maturity of its holdings of securities as ~~that was~~ **announced in September and to complete this program by the end of March.** In particular, The Committee ~~also~~ **also** decided ~~today~~ to keep the target range for the federal funds rate at 0 to ¼ percent and currently anticipates that ~~economic conditions—including low rates of resource utilization and a subdued outlook for inflation over the medium run—are likely to warrant~~ **this** exceptionally low levels **range** for the federal funds rate ~~at least through late 2014~~ **will be appropriate only as long as inflation is projected to remain subdued over the medium term, longer-term inflation expectations continue to be well anchored, and progress toward maximum employment remains insufficient.**
4. The Committee is **also** maintaining its existing policies of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction. The Committee will regularly review the size and composition of its securities holdings and is prepared to adjust those holdings as appropriate to promote a ~~stronger economic recovery in a context of~~ **its objectives of maximum employment and** price stability.

THE CASE FOR ALTERNATIVE B

Participants may view the recent information on economic activity as somewhat better than expected, on balance, particularly the improvement in labor market conditions. Indeed, the Committee may see the recent data as consistent with a forecast of moderate economic growth over coming quarters, accompanied by a gradual decline in the rate of unemployment toward mandate-consistent levels. Even though the recent increase in the prices of crude oil and gasoline is likely to boost inflation temporarily, members may expect that inflation will fall back to rates no higher than the Committee's 2 percent longer-run inflation goal. Similarly, the rise in oil prices may reduce households' real incomes and so weigh on consumer spending for a time, but policymakers may expect this effect to be small. And while strains in global financial markets—particularly those associated with Europe's fiscal and financial problems—appeared to ease somewhat over the intermeeting period, policymakers may still see them as posing significant downside risks to the economic outlook. On balance, while the Committee may be encouraged by the better tone of recent data on economic activity, it may see the economy as progressing along a trajectory that is roughly in line with the one anticipated at the January meeting, and so wish to issue a statement like that of Alternative B, which would update the Committee's characterization of economic activity to reflect the improved tenor of the incoming data but would not alter the Committee's balance sheet policies or forward rate guidance.

In light of the notable improvement in labor market conditions in recent months—an improvement that is coupled with some signs of life in the housing sector and a continuation of growth in household and business spending—some participants may judge that the economic expansion is now well established and gaining momentum. Moreover, these policymakers may see a risk that, with economic growth likely to pickup and monetary policy extremely accommodative, the recent increase in oil and gasoline prices could pose a risk to the Committee's inflation goal over the medium term. Against this backdrop, some policymakers might wish to issue a statement at this meeting that pulls forward the anticipated date of policy firming. The Committee has emphasized that the date associated with its forward guidance is conditional on evolving economic conditions and will be adjusted accordingly. Specifying an earlier expected date for the liftoff of the target federal funds rate could be attractive to participants who are concerned that a significant gap is opening up between the date given in the Committee's January statement and their own evolving views on the economic outlook and the

appropriate path for the federal funds rate. However, other participants may judge that the economic outlook is not fundamentally different than it was at the time of the January meeting and see the change in economic conditions as insufficient to warrant revising the date, and so they might prefer to reiterate that the Committee intends to keep the funds rate low “at least through late 2014.” Given that uncertainty regarding the economic outlook is currently quite high, even policymakers who think that the outlook has improved may prefer to wait for additional information to confirm the growing strength of the expansion before making a date change that might have to be reversed later. In addition, the Committee may conclude that a change in the expected date of liftoff will be more clearly understood by the public when the Committee’s post-meeting statement is accompanied by the additional information provided by the Summary of Economic Projections, as will be the case at the April meeting. Moreover, while the combination of the outcomes-based rule—which reflects the Committee’s average behavior in past decades—and the staff forecast suggests that the FOMC is likely to raise the target range for the federal funds rate in mid-2014, the Committee might be inclined to maintain the exceptionally low range for the federal funds rate longer than it would if its ability to stimulate the economy by reducing the funds rate had not been constrained by the zero lower bound for an extended period.

Even in light of the recent data, policymakers may see a substantial degree of resource slack remaining over the medium term and view inflation as unlikely to rise much above 2 percent, even temporarily. If so, the Committee might conclude that further policy accommodation would be helpful in speeding progress toward its objectives. Such a view would reflect a judgment that the unemployment rate remains very high and the pace of employment growth, although having picked up, is only slowly restoring the jobs lost during the recession. Moreover, activity in the housing sector remains depressed even if it is no longer declining, consumer spending has been somewhat uneven, and the recovery once again appears vulnerable to an adverse shock from higher oil prices. However, the Committee may judge that with the economy expanding moderately, it is appropriate to wait for additional information regarding spending and employment, as well as the effects of the recent increase in oil and gas prices, before making a decision regarding additional policy accommodation. Or, if members judge that the Committee has only limited scope to provide further policy accommodation and see downside risks to the outlook as still significant, they may choose to forgo additional policy accommodation at this time in order to preserve sufficient scope for possible action in the future, perhaps in case the risk of deflation

rises. The Committee may also believe that, in current circumstances, the marginal benefit of additional asset purchases is unlikely to outweigh the costs and risks that would accompany such a program. In particular, some participants may be concerned that additional asset purchases could complicate the Federal Reserve's ability to exit from its extraordinarily accommodative policy stance when the time comes, or could generate distortions in the functioning of markets for Treasury securities or agency MBS.

A statement along the lines of Alternative B would be in line with the expectations of financial market participants. According to the Desk's latest survey, many primary dealers expect the Committee to update its characterization of economic conditions, referencing not only recent improvements in labor markets but also the recent, but likely temporary, rise in energy prices. On balance, the dealers anticipate that the first increase in the target federal funds rate will most likely occur in the third quarter of 2014, one quarter later than in the January survey and roughly in line with readings derived from market interest rates. Moreover, while the dealers reportedly place some odds on the Committee altering its forward rate guidance at some point over this year—with somewhat greater odds seen on the date being pulled in versus pushed out—they see essentially no chance of such a change occurring at this meeting. Therefore, if the Committee issued a statement like that of Alternative B, interest rates along the maturity spectrum would likely be little changed. Equity prices and the foreign exchange value of the dollar would probably also exhibit little response.

THE CASE FOR ALTERNATIVE A

Some policymakers may judge that, with well-anchored longer-run inflation expectations, the deviation of employment from the Committee's assessment of its maximum level is still sufficiently large to warrant more aggressive policy action at this time, as in Alternative A. Indeed, the unconstrained optimal control simulations and most of the unconstrained near-term policy rule prescriptions presented in the "Monetary Policy Strategies" section of the Tealbook call for a greater degree of policy accommodation at this time. Moreover, members may expect that, absent further policy action, the pace of economic growth over coming quarters would slow and the unemployment rate would decline only gradually toward mandate-consistent levels. With the slack in labor markets having been high for so long, the Committee may be concerned that a significant erosion in workers' attachment to the labor force is under way, and it may want to guard against the risk that a stubbornly high level of long-term

unemployment will weigh on both final demand and potential output, along the lines of the “Lost Decade” alternative simulation in Tealbook Book A. In addition, some members may be concerned that household income gains have been modest and that the recent run-up in energy prices will be a further drag on consumers’ purchasing power. Furthermore, while strains in global financial markets appear to have eased somewhat of late, the Committee may remain concerned that policymakers in Europe face a number of difficulties in resolving the situation, and that the potential for spillovers to U.S. financial markets and the U.S. economy is still significant. Policymakers may even place some odds on an adverse outcome in Europe driving the U.S. economy into a new downturn, along the lines of the “European Crisis with Severe Spillovers” simulation. With the recent run-up in oil and gasoline prices expected to push up inflation only temporarily, and inflation expectations well anchored, participants may not see inflation risks as a reason to delay taking action. Moreover, the Committee has several tools at its disposal to manage the removal of policy accommodation, and so members may be confident that undertaking additional asset purchases at this time would not undermine the Federal Reserve’s ability to implement an effective exit strategy when appropriate.

With the housing sector still depressed, the Committee may see particular value in purchasing additional agency MBS at this time, with the aim of putting downward pressure on longer-term interest rates generally and providing support to mortgage markets more specifically. In turn, the more accommodative conditions in mortgage markets would likely help strengthen housing demand and thereby contribute to the stabilization of house prices, which would support household balance sheets and consumer confidence. Alternative A presents two variants of a program to purchase additional agency MBS. The Committee could decide to undertake a large, discrete purchase program—as it has done in the past—by announcing, as in paragraph 3 of the statement, that it will purchase up to \$500 billion of agency MBS by the end of March 2013. Or the Committee could choose to implement an incremental, open-ended purchase program, described in paragraph 3’ of the statement. Under this approach, the Committee would specify an initial monthly rate of purchases, such as \$40 billion per month, and say that it would adjust the pace of purchases and determine the ultimate size of the program as needed to foster its objectives. In general, the Committee may prefer to implement a large, discrete purchase program if it believes that it can reasonably calibrate the size of the program needed to promote its objectives, and it can manage the removal of such accommodation should circumstances warrant. In contrast, members may opt for

an open-ended purchase program if they believe that more flexibility is needed to tailor the ultimate size of the purchase program to evolving economic conditions.²

A statement along the lines of Alternative A would surprise financial market participants. Although the respondents to the Desk's survey put the probability of additional asset purchases being initiated within the next year at about 50 percent, they see a much lower chance of an announcement of such a step at this meeting. Longer-term interest rates would likely decline following a statement like that of Alternative A, with the effects of announcing a discrete \$500 billion purchase program probably somewhat larger than announcing an open-ended program, owing to its greater initial clarity about the ultimate size of the program. Equity prices would probably increase, and the foreign exchange value of the dollar would likely decline.

THE CASE FOR ALTERNATIVE C

Some policymakers may judge that recent information bearing on the outlook for economic activity and inflation indicates that the economic recovery is now on a firmer footing and that a somewhat less accommodative stance of policy may be appropriate to limit the risks of an undesirable increase in inflation. If so, the Committee might prefer a statement like that of Alternative C. Some members may see the incoming economic data as pointing to a stronger economic expansion than had been anticipated. Notwithstanding the still-elevated rate of unemployment, labor market conditions have improved noticeably in recent months, including a pickup in employment growth and a continued downtrend in new claims for unemployment insurance. Household spending and business fixed investment have continued to advance, and even indicators of conditions in the housing sector have improved somewhat. In recent surveys, consumers have generally reported somewhat greater confidence. Conditions in broad financial markets have also improved lately, with higher equity prices, lower risk spreads, and a noticeable decline in market volatility.

² As reported in the January Tealbook, an LSAP program consisting of purchases of an additional \$500 billion of agency MBS would be expected to reduce the unemployment rate by about ¼ percentage point and to increase inflation by somewhat less. While the corresponding economic effects of an open-ended purchase program are not readily quantifiable, such an announcement would also be expected to put downward pressure on longer-term interest rates, provide support to mortgage markets, and help make broader financial conditions more accommodative. For a more complete discussion, please refer to the memo, "Possible Large-Scale Asset Purchase Program" (by Michelle Ezer, Josh Frost, Matthew Raskin, Julie Remache, and Nate Wuerffel of the Federal Reserve Bank of New York and Seth Carpenter, Jane Ihrig, Elizabeth Klee, Canlin Li, and Min Wei of the Federal Reserve Board) that was sent to the Committee on January 18, 2012.

Looking ahead, the Committee may expect a pickup in the pace of economic growth over coming quarters while the unemployment rate continues to decline, perhaps along the lines of the “Virtuous Circle” alternative simulation. Moreover, the Committee may see the recent easing of strains in financial markets as being consistent with stronger economic growth abroad than previously thought, with positive spillovers to the U.S. economy, such as in the “Faster European Recovery” alternative simulation. At the same time, however, the prices of crude oil and gasoline have increased significantly of late. The Committee may interpret the combination of these developments as being likely to boost inflation above the rate it sees as most consistent with its dual mandate, perhaps rapidly and substantially, with adverse effects on inflation expectations and output, as in the “Oil Price Increase” or the “Virtuous Circle with Inflation Breakout” alternative simulations. Against this backdrop, policymakers may conclude that, without a reduction in the degree of policy accommodation currently in place, such a rise in actual inflation could undermine confidence in the FOMC’s commitment to its inflation target and so lead to higher expected inflation. If the Committee now sees the economic expansion as durable and inflation risks as tilted to the upside, it may decide that the time has come to begin withdrawing policy accommodation.

Under Alternative C, the Committee would reduce policy accommodation along two dimensions. First, policymakers would scale back the maturity extension program from \$400 billion to \$250 billion and complete it by the end of March, three months sooner than originally announced in September. Second, the Committee would change its forward rate guidance from a specification that offers a particular calendar date through which the Committee expects economic conditions to warrant the current low range for the target federal funds rate to one that describes in greater detail the economic conditions that justify maintaining the current low range but does not include a date. Such a change may be warranted if policymakers think that referencing a particular date in its forward guidance is problematic, perhaps because it could be misinterpreted as a commitment about the Committee’s future policy decisions. Alternatively, participants may be concerned that it is not clear to the public how the date in the forward guidance was chosen, how the date relates to the participants’ quarterly federal funds rate projections made public in the Summary of Economic Projections, or how the Committee is likely to adjust the date over time as economic conditions evolve. Of course, if the Committee were not as adverse to providing a date in the statement, it could leave the form of the forward rate guidance unchanged, but move up the date indicated, perhaps to

“through early 2013,” in order to signal a likely need to move toward tighter policy sooner rather than later.

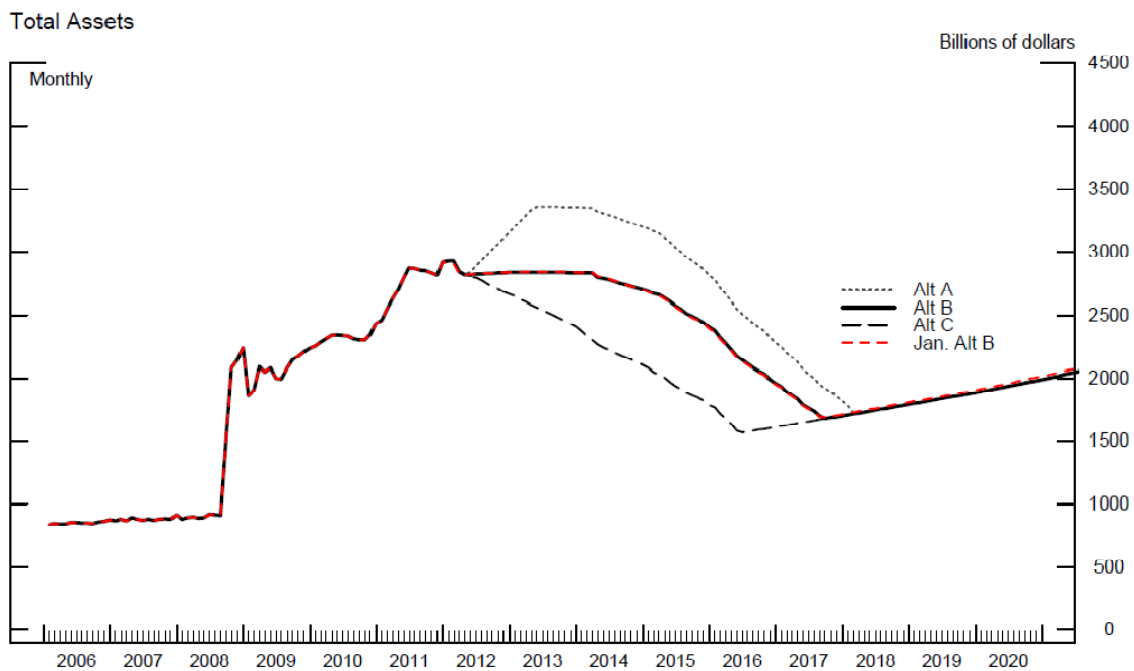
One possible version of forward rate guidance that both abstracts from a calendar date and emphasizes the conditional nature of the Committee’s future policy actions is given in paragraph 3. Under this option, policymakers would describe the period of time over which it anticipated that an exceptionally low range for the funds rate would be appropriate by providing qualitative information about the economic conditions that would have to prevail for the Committee to keep the funds rate at its effective lower bound. The economic conditions would be described along three dimensions—projected inflation (which would need to “remain subdued over the medium term”), longer-term inflation expectations (which would need to “continue to be well anchored”), and progress toward maximum employment (which would need to “remain insufficient”). Assuming this construct was communicated to the public effectively, the public would appropriately modify its assessment of the Committee’s likely timing of adjustment to the target funds rate as the combination of these conditions comes to be seen as either more or less likely to be met going forward.

A statement along the lines of Alternative C would come as a great surprise to financial market participants. According to the Desk’s survey, very few of the primary dealers expect the Committee will adjust any of the elements of its statement in the direction of policy tightening this year, and none anticipate such changes at this meeting. With market participants currently expecting the first increase in the federal funds rate target to occur sometime in the third quarter of 2014, the actions announced in paragraph 3 of Alternative C would likely cause participants to price in a much faster exit from the current accommodative policy stance, leaving market interest rates higher, especially in the two- to three-year sector of yield curve. Equity prices would fall, and the foreign exchange value of the dollar would likely rise. Alternatively, if the Committee issued a statement that retained the current structure of the forward rate guidance but pulled the expected date of liftoff nearer, the effects in markets would probably be somewhat smaller, depending, of course, on the revised date that was specified.

LONG-RUN PROJECTIONS OF THE BALANCE SHEET AND MONETARY BASE

The staff has prepared three scenarios for the Federal Reserve’s balance sheet that correspond to the policy alternatives A, B, and C. The scenario for Alternative A incorporates the \$500 billion agency MBS purchase program included in paragraph 3 of the draft statement for that alternative. This scenario is also consistent with the open-ended purchase program in paragraph 3’ of that statement if purchases last, and are expected to last, for one year. Projections under each scenario are based on assumptions about the trajectory of various components of the balance sheet. Details of these assumptions, as well as projections for each major component of the balance sheet, can be found in Explanatory Note D.

Alternatives



For the balance sheet scenario that corresponds to Alternative B, the Committee is assumed to complete the maturity extension program (MEP) that it announced in September, purchasing a total of \$400 billion (par value) of Treasury securities with remaining maturities of six years or more and selling the same par amount of securities with remaining maturities of three years or less by the end of June 2012. The Committee also continues to reinvest principal payments from its holdings of agency debt and MBS into agency MBS, while principal from maturing Treasury securities is reinvested at auction according to the Desk’s current practice (that is, reinvesting roughly proportionally across all Treasury securities that are being issued on the date the

securities mature). These policy choices would keep System Open Market Account (SOMA) securities holdings roughly constant at about \$2.6 trillion until mid-2014. In this scenario, consistent with the statement language that the federal funds rate will be at exceptionally low levels “at least through late 2014,” we assume that the first increase in the target funds rate is in October 2014.¹ Based on this lift off date, all reinvestment is assumed to cease in April 2014, six months before the first increase in the target federal funds rate, and as a result, the balance sheet begins to contract. In April 2015, the Committee begins to sell its remaining holdings of agency MBS and agency debt securities at a pace that reduces the amount of these securities in the portfolio to zero in five years—that is, by March 2020.² The combination of no reinvestment and the sale of agency securities normalizes the size of the balance sheet by October 2017.^{3,4} The balance sheet then begins to expand, with increases in SOMA holdings essentially matching the growth of Federal Reserve capital and notes in circulation. The balance sheet reaches a size of \$2 trillion by the end of 2020. The size of the balance sheet normalizes at nearly the same time under Alternative B as it did in the January Tealbook. From March 2018 onward, under all scenarios, the paths for total assets in the current projections align with the baseline path in the January Tealbook.

In the scenario for Alternative A, the Committee is assumed not only to complete the MEP and continue the current reinvestment strategy but also to purchase an additional \$500 billion of agency MBS, at a pace of about \$40 billion per month beginning in April 2012 and extending through March 2013. In this scenario, total assets peak at \$3.4 trillion in June 2013. As in Alternative B, reinvestment ends in April 2014, the target federal funds rate lifts off in October 2014, sales of agency securities commence in April 2015, and holdings of agency securities fall to zero over five years.⁵ The additional

¹ This date of the federal funds liftoff is the same as in the January Alternative B balance sheet projection, but later than the April 2014 date assumed in the current Tealbook financial projection.

² Given the maturity schedule of the agency debt securities held in the SOMA, the volume of sales necessary to reduce holdings of these securities to zero over the five-year period is minimal.

³ The tools to drain reserve balances (reverse repurchase agreements and the Term Deposit Facility) are not modeled in any of the scenarios presented. Use of these tools would result in a shift in the composition of Federal Reserve liabilities—a decline in reserve balances and a corresponding increase in reverse repurchase agreements or term deposits—but would not produce an overall change in the size of the balance sheet.

⁴ The projected timing of the normalization of the size of the balance sheet depends importantly on the level of reserve balances that is assumed to be necessary to conduct monetary policy; currently we assume that level of reserve balances to be \$25 billion. A higher demand for reserve balances would, all else equal, lead to an earlier normalization of the size of the balance sheet.

⁵ Under Reserve Bank accounting, losses on the SOMA portfolio are only realized when securities are sold. Under the current projections, even under Alternative A, which has the highest level of sales, losses

purchases of agency MBS under Alternative A postpone the normalization of the size of the balance sheet until March 2018, five months later than under Alternative B.

For the scenario that corresponds to Alternative C, the Committee continues its current reinvestment policy but scales back the MEP to \$250 billion and completes these operations by the end of March 2012. In this scenario, the federal funds rate is assumed to lift off at the beginning of 2013, twenty one months earlier than assumed in the other alternatives and, correspondingly, reinvestment of principal from maturing or prepaying securities ends earlier, in mid-2012.⁶ Sales of agency securities also commence earlier, in mid-2013. The size of the balance sheet is normalized in mid-2016, about sixteen months sooner than under Alternative B, primarily reflecting the earlier assumed liftoff date for the federal funds rate and thus the earlier halt to reinvestment of principal and the earlier start of asset sales.

On the liability side of the balance sheet, the forecasted path for reserve balances for Alternative B is roughly unchanged from the previous Tealbook's baseline. Under Alternative A, reserve balances peak at \$2 trillion—noticeably higher than in Alternative B—because of the new asset purchase program.

In the scenario corresponding to Alternative B, the monetary base is projected to expand slightly in 2012 and then shrink through the fourth quarter of 2017, primarily reflecting a decline in reserve balances that results from the assumed policy actions beginning in 2014 to remove policy accommodation and normalize the balance sheet. Starting in the first quarter of 2018, after reserve balances are assumed to have stabilized at \$25 billion, the monetary base expands again, in line with the growth of Federal Reserve notes in circulation and Reserve Bank capital. The monetary base under Alternative A expands in the near term along with the rise in reserve balances that comes from the additional asset purchases. As the balance sheet is normalized in this scenario, it follows a path similar to that in Alternative B. Under Alternative C, the monetary base

are projected to be smaller than net earnings. Considerable uncertainty surrounds these projections, however, and under plausible assumptions, losses could exceed earnings; in that case, remittances to the Treasury would cease, and a deferred asset would be booked.

⁶ To simplify the projections, the prepayment paths for agency MBS holdings and the premiums calculated under Alternative C match those for Alternative B. This simplifying assumption likely overstates somewhat both prepayments on MBS, which are reinvested into new MBS, and the net premiums on securities in the SOMA portfolio under Alternative C. As a result, the size of the balance sheet is likely somewhat larger, and the date of normalization is likely a little later than would be the case if the interest rate path was recalibrated based on this scenario.

begins to contract sooner than under the baseline because of the assumed earlier liftoff, and at a faster pace because, under Alternative C, the smaller MEP leaves a larger quantity of shorter-term securities in the portfolio, which are allowed to mature.

Growth Rates for the Monetary Base				
Date	Alternative B	Alternative A	Alternative C	<i>Memo :</i> January Tealbook
Percent, annual rate				
Monthly				
Jan-11	23.3	23.3	23.3	23.3
Feb-11	57.6	57.6	57.6	57.6
Mar-11	97.8	97.8	97.8	97.8
Apr-11	74.4	74.4	74.4	74.4
May-11	42.1	42.1	42.1	42.1
Jun-11	35.9	35.9	35.9	35.9
Jul-11	27.0	27.0	27.0	27.0
Aug-11	2.0	2.0	2.0	2.0
Sep-11	-10.6	-10.6	-10.6	-10.6
Oct-11	-4.5	-4.5	-4.5	-4.5
Nov-11	-8.0	-8.0	-8.0	-8.0
Dec-11	-4.5	-4.5	-4.5	-4.5
Jan-12	9.2	9.2	9.2	5.8
Feb-12	18.0	18.0	18.0	22.7
Mar-12	11.3	11.5	10.6	4.0
Apr-12	-31.7	-31.2	-33.9	-38.5
May-12	-13.7	-8.8	-16.9	-2.2
Jun-12	16.2	30.0	13.1	18.3
Quarterly				
2011 Q1	36.8	36.8	36.8	36.8
2011 Q2	69.3	69.3	69.3	69.3
2011 Q3	21.0	21.0	21.0	21.0
2011 Q4	-5.9	-5.9	-5.9	-5.9
2012 Q1	6.4	6.5	6.4	5.5
2012 Q2	-7.4	-4.7	-9.4	-8.1
2012 Q3	6.0	22.4	-1.5	5.6
2012 Q4	-4.5	14.3	-16.3	5.5
Annual - Q4 to Q4				
2010	0.9	0.9	0.9	0.9
2011	32.9	32.9	32.9	32.9
2012	0.1	9.9	-5.2	2.1
2013	-0.3	8.9	-7.3	0.9
2014	-2.0	-2.2	-13.8	-4.8
2015	-10.7	-11.4	-15.7	-11.4
2016	-19.8	-20.2	-15.0	-19.8

Note: Not seasonally adjusted.



DEBT, BANK CREDIT, AND MONEY FORECASTS

The staff projects that domestic nonfinancial sector debt will increase at an annual rate of 4¾ percent over the first half of this year, reflecting continued rapid expansion in federal government debt and a modest rise in private nonfinancial debt. For the remainder of the forecast period, debt is expected to increase at a 4 percent pace, on average, as federal debt advances less rapidly and private debt accelerates gradually. Nonfinancial business debt expands at a moderate pace over the forecast period, due to favorable financing conditions and increasing capital expenditures. We project growth of household debt to remain fairly sluggish throughout the forecast period, reaching only 1½ percent in 2013. Despite historically low mortgage rates, we expect home mortgage debt to contract this year and to be about flat next year, consistent with tight mortgage lending standards and further projected declines in house prices. Meanwhile, consumer credit rises at a moderate pace through the first half of this year and then accelerates gradually over the remainder of the forecast period, supported by projected increases in spending on consumer durables and improvements in credit availability.

The staff expects that commercial bank credit will increase at a pace somewhat below nominal GDP growth over the forecast period. Core loans—the sum of commercial and industrial (C&I), real estate, and consumer loans—expand modestly during 2012 and 2013, consistent with the anticipated gradual improvement in economic activity, credit quality, and banks' willingness to lend over that period. Among the core loan categories, C&I loans are expected to register strong growth over the forecast period, continuing the brisk expansion in this loan category observed over recent months. In contrast, commercial real estate loans are projected to contract through mid-2013—and only edge up thereafter—as high vacancy rates and depressed prices for commercial properties and the poor credit quality of existing loans are likely to depress activity in this sector. As for lending to households, residential real estate loans on banks' books are expected to move up only slightly over the forecast period, while consumer loans increase somewhat over the next two years. Banks' securities holdings are projected to rise at a moderate pace, with growth slowing somewhat in 2013, given slower deposit growth and a stronger expansion in bank loans in 2013 relative to 2012.

The staff forecasts that M2 will rise at a pace that is a bit above that of nominal income in 2012. Uncertainty about European financial developments likely prompted investors to boost their portfolio allocations in M2 assets early this year; however, staff

anticipates that money will grow about in line with nominal income over the remainder of the year. As risk aversion fades further and the domestic recovery solidifies, investors are likely to slowly shift their portfolios toward higher-yielding non-M2 assets; consequently, after this year, the rise in M2 is expected to slow to a pace appreciably below that of nominal GDP. The expansion of M2 in 2013 is also restrained by the expiration of unlimited FDIC insurance on noninterest-bearing transaction accounts at the end of 2012. Turning to the components of M2, liquid deposits are expected to expand moderately until the first quarter of 2013 and then slow somewhat for the remainder of the forecast period. By contrast, retail money funds and small time deposits are projected to contract through 2013, as investors continue to shift to alternative assets with higher returns and greater liquidity. Meanwhile, currency is expected to rise at a fairly brisk pace early this year on strong international demand for U.S. currency associated with country-specific political and economic concerns. Currency growth is projected to gradually return to a pace consistent with its historical average by mid-2013.

Growth Rates for M2

(Percent, seasonally adjusted annual rate)

Monthly Growth Rates	Tealbook Forecast*
Jan-12	15.6
Feb-12	2.5
Mar-12	2.2
Apr-12	4.2
May-12	4.2
Jun-12	4.2
Jul-12	4.1
Aug-12	4.1
Sep-12	4.1
Oct-12	4.3
Nov-12	4.3
Dec-12	4.3
Quarterly Growth Rates	
2012 Q1	7.9
2012 Q2	3.5
2012 Q3	4.2
2012 Q4	4.3
2013 Q1	1.8
2013 Q2	1.8
2013 Q3	2.6
2013 Q4	2.7
Annual Growth Rates	
2012	5.1
2013	2.2

* This forecast is consistent with nominal GDP and interest rates in the Tealbook forecast. Actual data through January 2012; projections thereafter.

DIRECTIVE

The directive that was issued in January is given on the next page, followed by drafts for a March directive that correspond to each of the policy alternatives.

Regarding the instructions for managing the size of the SOMA, the directives for Alternatives B and C would instruct the Desk to leave the total face value of domestic securities in the SOMA about unchanged. Under Alternative A, the Committee would instruct the Desk either to execute purchases of agency MBS in order to raise the total face value of the domestic securities holdings to about \$3.1 trillion by the end of March 2013, or to purchase agency MBS in order to raise the face value of holdings of domestic securities by approximately \$40 billion per month until instructed otherwise.

About the instructions for managing the composition of the SOMA, the directives for Alternatives A and B would instruct the Desk to take appropriate steps to complete by the end of June 2012 the \$400 billion maturity extension program that was announced last September. The directive for Alternative C would instead instruct the Desk to reduce the amounts of purchases and sales associated with the maturity extension program to \$250 billion each and to complete these operations by the end of March. Each of the draft directives would instruct the Desk to continue the current practice of rolling over maturing Treasury securities at auction and of reinvesting principal payments on all agency debt and agency MBS in agency MBS.

January 2012 Directive

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 continue the maturity extension program it began in September to purchase, by the end of June 2012, Treasury securities with remaining maturities of approximately 6 years to 30 years with a total face value of \$400 billion, and to sell Treasury securities with remaining maturities of 3 years or less with a total face value of \$400 billion. The Committee also directs the Desk to maintain its existing policies of rolling over maturing Treasury securities into new issues and of reinvesting principal payments on all agency debt and agency mortgage-backed securities in the System Open Market Account in agency mortgage-backed securities in order to maintain the total face value of domestic securities at approximately \$2.6 trillion. The Committee directs the Desk to engage in dollar roll transactions as necessary to facilitate settlement of the Federal Reserve's agency MBS transactions. 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.

March 2012 Directive—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 continue the maturity extension program it began in September to purchase, by the end of June 2012, Treasury securities with remaining maturities of approximately 6 years to 30 years with a total face value of \$400 billion, and to sell Treasury securities with remaining maturities of 3 years or less with a total face value of \$400 billion. [**The Committee also directs the Desk to execute purchases of agency mortgage-backed securities by the end of March 2013 in order to increase the total face value of domestic securities held in the System Open Market Account to approximately \$3.1 trillion. | The Committee also directs the Desk to execute purchases of agency mortgage-backed securities in order to increase the total face value of domestic securities held in the System Open Market Account by approximately \$40 billion per month.**] The Committee also directs the Desk to maintain its existing policies of rolling over maturing Treasury securities into new issues and of reinvesting principal payments on all agency debt and agency mortgage-backed securities in the System Open Market Account in agency mortgage-backed securities ~~in order to maintain the total face value of domestic securities at approximately \$2.6 trillion.~~ The Committee directs the Desk to engage in dollar roll **and coupon swap** transactions as necessary to facilitate settlement of the Federal Reserve's agency MBS transactions. 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.

March 2012 Directive—Alternative B

The Federal Open Market Committee seeks monetary and financial conditions that will foster price stability and promote sustainable growth in output. To further its long-run objectives, the Committee seeks conditions in reserve markets consistent with federal funds trading in a range from 0 to ¼ percent. The Committee directs the Desk to continue the maturity extension program it began in September to purchase, by the end of June 2012, Treasury securities with remaining maturities of approximately 6 years to 30 years with a total face value of \$400 billion, and to sell Treasury securities with remaining maturities of 3 years or less with a total face value of \$400 billion. The Committee also directs the Desk to maintain its existing policies of rolling over maturing Treasury securities into new issues and of reinvesting principal payments on all agency debt and agency mortgage-backed securities in the System Open Market Account in agency mortgage-backed securities in order to maintain the total face value of domestic securities at approximately \$2.6 trillion. The Committee directs the Desk to engage in dollar roll transactions as necessary to facilitate settlement of the Federal Reserve's agency MBS transactions. 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.

March 2012 Directive—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 ~~continue~~ **modify** the maturity extension program it began in September **so as** to purchase, by the end of ~~June~~ **March** 2012, Treasury securities with remaining maturities of approximately 6 years to 30 years with a total face value of ~~\$400~~ **\$250** billion, and to sell Treasury securities with remaining maturities of 3 years or less with a total face value of ~~\$400~~ **\$250** billion. The Committee also directs the Desk to maintain its existing policies of rolling over maturing Treasury securities into new issues and of reinvesting principal payments on all agency debt and agency mortgage-backed securities in the System Open Market Account in agency mortgage-backed securities in order to maintain the total face value of domestic securities at approximately \$2.6 trillion. The Committee directs the Desk to engage in dollar roll transactions as necessary to facilitate settlement of the Federal Reserve's agency MBS transactions. 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.

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Explanatory Notes

A. Policy Rules Used in “Monetary Policy Strategies”

The table below gives the expressions for the selected policy rules used in “Monetary Policy Strategies.” In the table, R_t denotes the nominal federal funds rate for quarter t , while the right-hand-side variables include the staff’s projection of trailing four-quarter core PCE inflation for the current quarter and three quarters ahead (π_t and $\pi_{t+3|t}$), the output gap estimate for the current period as well as its one quarter ahead forecast (gap_t and $gap_{t+1|t}$) and the forecast of the three-quarter-ahead annual change in the output gap (i.e., $\Delta^4 gap_{t+3|t}$). The value of policymakers’ long-run inflation objective, denoted π^* , is 2 percent. The nominal income targeting rule responds to the nominal income gap, which is defined as 100 times the difference between nominal income yn_t , (the log of the level of nominal GDP) and a target value yn_t^* , (the log of potential nominal GDP), where potential nominal GDP is defined as potential real GDP multiplied by a price target equal to the actual GDP deflator in the fourth quarter of 2007 and growing thereafter at a steady rate of 2 percent per year.¹

Taylor (1993) rule	$R_t = 2.25 + \pi_t + 0.5(\pi_t - \pi^*) + 0.5gap_t$
Taylor (1999) rule	$R_t = 2.25 + \pi_t + 0.5(\pi_t - \pi^*) + gap_t$
Outcome-based rule	$R_t = 1.2R_{t-1} - 0.39R_{t-2} + 0.19[0.79 + 1.73\pi_t + 3.66gap_t - 2.72gap_{t-1}]$
First-difference rule	$R_t = R_{t-1} + 0.5(\pi_{t+3 t} - \pi^*) + 0.5\Delta^4 gap_{t+3 t}$
Nominal income targeting rule	$R_t = 0.75R_{t-1} + 0.25(2.25 + \pi^* + y_n - y_n^*)$

The first two of the selected rules were studied by Taylor (1993, 1999). The outcome-based rule uses policy reactions estimated using real-time data over the sample 1988:Q1–2006:Q4. The intercept of the outcome-based rule was chosen so that the real interest rate consistent with normal resource utilization over the medium term implied by the rule corresponded to the 2¼ percent rate that is embedded in the FRB/US model. The intercepts of the Taylor (1993, 1999) rules are set at 2¼ percent—instead of Taylor’s original value of 2

¹ See Christopher Erceg, Michael T. Kiley, and J. David López-Salido (2011) for analysis of this rule. The nominal GDP targeting rule in “Monetary Policy Strategies” differs slightly from the rule studied in that memo in setting the target equal to potential nominal GDP (rather than applying a growth rate to actual nominal GDP for the final quarter of 2007) and in having an interest-rate smoothing coefficient of 0.75 (a more standard value than the 0.9 value employed in the memo). Background on the relationship between simple interest-rate rules and nominal income targeting is provided in Bennett T. McCallum and Edward Nelson (1999) and Athanasios Orphanides (2003).

percent—for the same reason. The 2¼ percent real rate estimate also enters the long-run intercept of the nominal income targeting rule. The prescriptions of the first-difference rule do not depend on assumptions regarding r^* or the level of the output gap; see Orphanides (2003).

Near-term prescriptions from these rules are calculated using Tealbook projections for inflation and the output gap. The first-difference rule, the estimated outcome-based rule, and the nominal income targeting rule include the lagged policy rate as a right-hand-side variable. When the Tealbook is published early in the quarter, the lines denoted “Previous Tealbook” report rule prescriptions based on the previous Tealbook’s staff outlook, jumping off from the actual value of the lagged funds rate in the previous quarter. When the Tealbook is published late in the quarter, the lines denoted “Previous Tealbook Outlook” report rule prescriptions based on the previous Tealbook’s staff outlook, but jumping off from the average value for the policy rate thus far this quarter.

REFERENCES

Erceg, Christopher, Michael Kiley, and David López-Salido (2011). “Alternative Monetary Policy Frameworks.” Memo sent to the Committee on October 6, 2011.

McCallum, Bennett T., and Edward Nelson (1999). “Nominal Income Targeting in an Open-Economy Optimizing Model,” *Journal of Monetary Economics*, Vol. 43(June), pp. 553–578.

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

Taylor, John B. (1993). “Discretion versus Policy Rules in Practice,” *Carnegie-Rochester Conference Series on Public Policy*, Vol. 39 (December), pp. 195–214.

Taylor, John B. (1999). “A Historical Analysis of Monetary Policy Rules,” in John B. Taylor, ed., *Monetary Policy Rules*. University of Chicago Press, pp. 319–341.

B. Estimates of the Equilibrium and Actual Real Rates

An estimate of the equilibrium real rate appears as a memo item in the first exhibit, “Policy Rules and the Staff Projection.” The concept of the short-run equilibrium real rate underlying the estimate corresponds to the level of the real federal funds rate that is consistent with output reaching potential in twelve quarters using the projection for the economy of FRB/US, the staff’s large-scale econometric model of the U.S. economy. This estimate depends on a very broad array of economic factors, some of which take the form of projected values of the model’s exogenous variables. The estimate reported is the “Tealbook-consistent” estimate of r^* , which is generated after the paths of exogenous variables in the FRB/US model are adjusted so that they match those in the extended Tealbook forecast. Model simulations then determine the value of the real federal funds rate that closes the output gap conditional on the exogenous variables in the extended baseline forecast.

The estimated actual real federal funds rate reported in the exhibit is constructed as the difference between the federal funds rate and the trailing four-quarter change in the core PCE price index. The federal funds rate is specified as the target federal funds rate on the Tealbook Book B publication date.

C. FRB/US Model Simulations

The second, third, and fifth exhibits of “Monetary Policy Strategies” report results from simulations of the FRB/US model using a set of simple policy rules as well as optimal control. These are computed using dynamic simulations of the FRB/US model, implemented as though the rule were followed over the period covered by the simulation. For the optimal control simulations, the dotted line labeled “Previous Tealbook” is based on the current specification of the policy rule, applied to the previous Tealbook projection.

D. Long-Run Projections of the Balance Sheet and Monetary Base

This explanatory note presents the assumptions underlying the projections provided in the section titled “Long-Run Projections of the Balance Sheet and Monetary Base,” as well as projections for each major component of the balance sheet.

GENERAL ASSUMPTIONS

The balance sheet projections are constructed at a monthly frequency from March 2012 to December 2020. The few balance sheet items that are not discussed below are assumed to be constant over the projection period at the level observed on February 29, 2011. The projections for all major asset and liability categories under each scenario are summarized in the tables that follow the bullet points.

The Tealbook projections for the scenarios corresponding to Alternatives A and B assume that the target federal funds rate begins to increase in October 2014, consistent with the statements’ language that the federal funds rate will be at exceptionally low levels “at least through late 2014.” This date of liftoff is the same as that used in the January Tealbook for the Alternative A and B balance sheet projections, but later than that assumed in the March Tealbook financial projection.² The projection for the scenario corresponding to Alternative C assumes the target rate lifts off in January 2013. The balance sheet projections assume that no use of short-term draining tools is necessary to achieve the projected path for the federal funds rate.³

ASSETS

Treasury Securities, Agency Mortgage-Backed Securities (MBS), and Agency Debt Securities

- The assumptions under Alternative B are:
 - Over the nine months beginning in October 2011, the FOMC is assumed to purchase \$400 billion in par value of Treasury securities with remaining maturities of six years or more and sell the same par amount of Treasury securities with remaining maturities of three years or less. The FOMC will reinvest the proceeds from principal payments on its agency securities holdings

² The federal funds rate remains below 25 basis points through September 2014, then moves up gradually over time and converges to the March Tealbook financial projections by 2019. The projected path of the 10-year Treasury yield in each alternative is the March Tealbook financial projection adjusted for the expectations effect of a later target federal funds rate lift off (see the box on “Forward Rate Guidance and Policy Expectations” from the January Tealbook Book B) and for the term premium effect associated with a larger SOMA portfolio than would be projected using the current Tealbook’s lift off date.

³ If term deposits or reverse repurchase agreements were used to drain reserves prior to raising the federal funds rate, the composition of liabilities would change: Increases in term deposits and reverse repurchase agreements would be matched by corresponding declines in reserve balances. Presumably, these draining tools would be wound down as the balance sheet returns to its steady state growth path, so that the projected paths for Treasury securities presented in the Tealbook remain valid.

in agency MBS. Treasury securities are rolled over at auction according to the Desk's current practice (that is, reinvesting roughly proportionally across all Treasury securities that are being issued on the date the securities mature).

- Principal payments from Treasury securities and agency MBS and agency debt securities are reinvested until April 2014—six months prior to the assumed increase in the target federal funds rate.⁴
 - The Federal Reserve begins to sell agency MBS and agency debt securities in April 2015, roughly six months after the assumed date of the first increase in the target federal funds rate. Holdings of agency securities are reduced over five years and reach zero by March 2020.
 - For agency MBS, the rate of prepayment is based on staff models using estimates of housing market factors from one of the program's investment managers, long-run average prepayment speeds of MBS, and interest rate projections from the Tealbook.⁵ The projected rate of prepayment is sensitive to these underlying assumptions.
- In the scenario corresponding to Alternative A, the Committee is assumed to begin purchasing current coupon agency MBS in April 2012 at a rate of about \$40 billion per month through March 2013 for a total \$500 billion. In addition, the Committee is expected to complete the MEP and maintain its policies of reinvesting principal payments from its holdings of agency securities into agency MBS and of rolling over maturing Treasury securities at auction. As in the baseline, reinvestment ends in April 2014—six months prior to the assumed increase in the federal funds rate—and sales of agency securities begin in April 2015 and continue for five years.
 - In the scenario corresponding to Alternative C, the Committee is expected to limit its previously announced MEP so that it purchases \$250 billion in long-term securities and sells \$250 billion in short-term securities, completing operations in March 2012. Principal payments from Treasury securities continue to be reinvested at auction, and principal payments from agency MBS and agency debt securities are reinvested in agency MBS until July 2012, six months prior to the assumed increase in the federal funds rate. Sales of agency securities begin in July 2013 and continue for five years.
 - Because current and expected near-term rates are below the average coupon rate on outstanding Treasury securities, the market value at which these securities are purchased will generally exceed their face value, with a larger premium for longer-maturity securities. As a result, although the par value of securities holdings remains constant

⁴ Projected prepayments of agency MBS reflect interest rates as of March 6, 2012.

⁵ Projected prepayments on the existing stock of agency MBS are from an FRBNY staff model that is based on the prepayment model of one of the investment managers; projected prepayments associated with agency MBS expected to be purchased in the future rely on a Board model that is based on the Bond Market Association prepayment model.

- under the MEP, premiums associated with the securities, and hence total assets, will rise by about \$55 billion. Reserve balances will increase by the same amount.
- The large-scale asset purchase program in Alternative A would put downward pressure on market interest rates, in particular mortgage rates, and result in more MBS prepayments than in the baseline. The lower path for interest rates also leads to purchases of Treasury securities made at prices that include a greater net premium relative to their face value than in the baseline.
 - The current and near-term market value of agency MBS is assumed to be four percent above its face value. As a result, for Alternative A, premiums will rise by roughly \$20 billion relative to the baseline, reflecting the \$500 billion LSAP program. This will boost total assets and reserve balances by the same amount.
 - The level of central bank liquidity swaps is assumed to go down gradually through April, as the recent foreign central bank swap auctions mature, and then return to zero in May 2012.
 - In all scenarios, a minimum level of \$25 billion is set for reserve balances. Once reserve balances drop to this level, the Desk first purchases Treasury bills to maintain this level of reserve balances going forward. Purchases of bills continue until such securities comprise one-third of the Federal Reserve's total Treasury securities holdings—about the average share prior to the crisis. Once this share is reached, the Federal Reserve buys coupon securities in addition to bills to maintain an approximate composition of the portfolio of one-third bills and two-thirds coupon securities.

Liquidity Programs and Credit Facilities

- Credit through the Term Asset Backed Securities Loan Facility (TALF) declines to zero by the end of 2015, reflecting loan maturities and prepayments.
- The assets held by TALF LLC remain at about \$1 billion through 2014 before declining to zero the following year. Assets held by TALF LLC consist of investments of commitment fees collected by the LLC and the U.S. Treasury's initial funding. In this projection, the LLC does not purchase any asset-backed securities received by the Federal Reserve Bank of New York in connection with a decision of a borrower to not repay a TALF loan.
- The Maiden Lane II account falls to zero in March 2012, reflecting the recent multiple sales of the assets.
- The assets held by Maiden Lane LLC and Maiden Lane III LLC decline to zero gradually over time.

LIABILITIES AND CAPITAL

- Federal Reserve notes in circulation grow in line with the staff forecast for money stock currency through the last quarter of 2013. Afterwards, Federal Reserve notes in

circulation grow at the same rate as nominal GDP, as in the extended Tealbook projection.

- The level of reverse repurchase agreements is assumed to remain around \$70 billion, about the average level observed over the past three years.
- Balances held in the U.S. Treasury's General Account (TGA) follows recent patterns until the assumed increase in the target federal funds rate in each alternative. At that point, the TGA slowly drops back to its historical target level of \$5 billion as it is assumed that the Treasury will implement a new cash management system and invest funds in excess of \$5 billion. The TGA remains constant at \$5 billion over the remainder of the forecast period.
- We maintain the Supplementary Financing Account (SFA) balance at its current level of zero throughout the forecast.
- Federal Reserve capital grows 15 percent per year, in line with the average rate of the past ten years.
- In general, increases in the level of Federal Reserve assets are matched by higher levels of reserve balances. All else equal, increases in the levels of liability items, such as Federal Reserve notes in circulation or other liabilities, or increases in the level of Reserve Bank capital, drain reserve balances. When increases in these liability or capital items would otherwise cause reserve balances to fall below \$25 billion, purchases of Treasury securities are assumed in order to maintain that level of reserve balances.
- In the event that a Federal Reserve Bank's earnings fall short of the amount necessary to cover operating costs, pay dividends, and equate surplus to capital paid-in, a deferred asset would be recorded. This deferred asset is recorded in lieu of reducing the Reserve Bank's capital and is reported on the liability side of the balance sheet as "Interest on Federal Reserve notes due to U.S. Treasury." This liability takes on a positive value when weekly cumulative earnings have not yet been distributed to the Treasury, while this liability takes on a negative value when earnings fall short of the expenses listed above. In the projections, System-wide earnings are always sufficient to cover these expenses, and this line item is set to zero.

Federal Reserve Balance Sheet End-of-Year Projections -- Alternative A

Billions of dollars

	<u>Feb 29, 2012</u>	<u>2012</u>	<u>2014</u>	<u>2016</u>	<u>2018</u>	<u>2020</u>
Total assets	2,930	3,157	3,201	2,281	1,793	1,992
Selected assets						
Liquidity programs for financial firms	108	0	0	0	0	0
Primary, secondary, and seasonal credit	0	0	0	0	0	0
Central bank liquidity swaps	108	0	0	0	0	0
Lending through other credit facilities	11	3	1	0	0	0
Term Asset-Backed Securities Loan Facility (TALF)	11	3	1	0	0	0
Support for specific institutions	31	20	16	12	7	4
Credit extended to AIG	0	0	0	0	0	0
Net portfolio holdings of Maiden Lane LLC, Maiden Lane II LLC, and Maiden Lane III LLC	31	20	16	12	7	4
Securities held outright	2,603	2,918	2,984	2,102	1,646	1,863
U.S. Treasury securities	1,662	1,653	1,599	1,231	1,315	1,863
Agency debt securities	101	77	39	16	2	0
Agency mortgage-backed securities	841	1,189	1,346	855	329	0
Net portfolio holdings of TALF LLC	1	1	1	0	0	0
Total other assets	177	215	199	166	140	125
Total liabilities	2,876	3,096	3,119	2,173	1,649	1,802
Selected liabilities						
Federal Reserve notes in circulation	1,050	1,113	1,241	1,382	1,530	1,683
Reverse repurchase agreements	77	70	70	70	70	70
Deposits with Federal Reserve Banks	1,727	1,893	1,789	702	30	30
Reserve balances held by depository institutions	1,620	1,808	1,784	697	25	25
U.S. Treasury, General Account	63	86	5	5	5	5
Other Deposits	45	0	0	0	0	0
Interest on Federal Reserve Notes due to U.S. Treasury	2	0	0	0	0	0
Total capital	55	62	82	108	143	189

Source: Federal Reserve H.4.1 statistical releases and staff calculations.
Note: Components may not sum to totals due to rounding.

Explanatory Notes

Federal Reserve Balance Sheet End-of-Year Projections -- Alternative B

Billions of dollars

	<u>Feb 29, 2012</u>	<u>2012</u>	<u>2014</u>	<u>2016</u>	<u>2018</u>	<u>2020</u>
Total assets	2,930	2,836	2,703	1,963	1,793	1,992
Selected assets						
Liquidity programs for financial firms	108	0	0	0	0	0
Primary, secondary, and seasonal credit	0	0	0	0	0	0
Central bank liquidity swaps	108	0	0	0	0	0
Lending through other credit facilities	11	3	1	0	0	0
Term Asset-Backed Securities Loan Facility (TALF)	11	3	1	0	0	0
Support for specific institutions	31	20	16	12	7	4
Credit extended to AIG	0	0	0	0	0	0
Net portfolio holdings of Maiden Lane LLC, Maiden Lane II LLC, and Maiden Lane III LLC	31	20	16	12	7	4
Securities held outright	2,603	2,613	2,507	1,798	1,654	1,867
U.S. Treasury securities	1,662	1,653	1,599	1,231	1,439	1,867
Agency debt securities	101	77	39	16	2	0
Agency mortgage-backed securities	841	884	869	551	212	0
Net portfolio holdings of TALF LLC	1	1	1	0	0	0
Total other assets	177	200	179	152	132	121
Total liabilities	2,876	2,774	2,621	1,854	1,649	1,802
Selected liabilities						
Federal Reserve notes in circulation	1,050	1,113	1,241	1,382	1,530	1,683
Reverse repurchase agreements	77	70	70	70	70	70
Deposits with Federal Reserve Banks	1,727	1,572	1,291	384	30	30
Reserve balances held by depository institutions	1,620	1,487	1,286	379	25	25
U.S. Treasury, General Account	63	86	5	5	5	5
Other Deposits	45	0	0	0	0	0
Interest on Federal Reserve Notes due to U.S. Treasury	2	0	0	0	0	0
Total capital	55	62	82	108	143	189

Explanatory Notes

Source: Federal Reserve H.4.1 statistical releases and staff calculations.
Note: Components may not sum to totals due to rounding.

Federal Reserve Balance Sheet End-of-Year Projections -- Alternative C

Billions of dollars

	<u>Feb 29, 2012</u>	<u>2012</u>	<u>2014</u>	<u>2016</u>	<u>2018</u>	<u>2020</u>
Total assets	2,930	2,666	2,101	1,608	1,792	1,991
Selected assets						
Liquidity programs for financial firms	108	0	0	0	0	0
Primary, secondary, and seasonal credit	0	0	0	0	0	0
Central bank liquidity swaps	108	0	0	0	0	0
Lending through other credit facilities	11	3	1	0	0	0
Term Asset-Backed Securities Loan Facility (TALF)	11	3	1	0	0	0
Support for specific institutions	31	20	16	12	7	4
Credit extended to AIG	0	0	0	0	0	0
Net portfolio holdings of Maiden Lane LLC, Maiden Lane II LLC, and Maiden Lane III LLC	31	20	16	12	7	4
Securities held outright	2,603	2,469	1,940	1,476	1,681	1,890
U.S. Treasury securities	1,662	1,598	1,382	1,237	1,681	1,890
Agency debt securities	101	77	39	16	0	0
Agency mortgage-backed securities	841	795	518	222	0	0
Net portfolio holdings of TALF LLC	1	1	1	0	0	0
Total other assets	177	173	144	120	104	97
Total liabilities	2,876	2,604	2,019	1,500	1,649	1,802
Selected liabilities						
Federal Reserve notes in circulation	1,050	1,112	1,240	1,381	1,529	1,682
Reverse repurchase agreements	77	70	70	70	70	70
Deposits with Federal Reserve Banks	1,727	1,402	690	30	30	30
Reserve balances held by depository institutions	1,620	1,316	685	25	25	25
U.S. Treasury, General Account	63	86	5	5	5	5
Other Deposits	45	0	0	0	0	0
Interest on Federal Reserve Notes due to U.S. Treasury	2	0	0	0	0	0
Total capital	55	62	82	108	143	189

Source: Federal Reserve H.4.1 statistical releases and staff calculations.
Note: Components may not sum to totals due to rounding.

Explanatory Notes

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