Prefatory Note

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

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Authorized for Public Release

Class I FOMC – Restricted Controlled (FR)

Report to the FOMC on Economic Conditions and Monetary Policy

Book B

Monetary Policy: Strategies and Alternatives

March 13, 2014

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 first exhibit, "Policy Rules and the Staff Projection," provides near-term prescriptions for the federal funds rate from six different policy rules: the Taylor (1993) rule, the Taylor (1999) rule, the inertial Taylor (1999) rule, the outcome-based rule, the first-difference rule, and the nominal income targeting rule.[1] These prescriptions take as given the staff's baseline projections for real activity and inflation in the near term. (Medium-term prescriptions derived from dynamic simulations of the rules are discussed below.) As shown in the left-hand columns, the prescriptions from four of the six rules are above the Committee's current target range for the federal funds rate. Specifically, the first-difference rule, the Taylor (1999) rule, and the outcome-based rule prescribe increases in the federal funds rate to values above ¼ percent in the second quarter and to levels between ¾ and 1¼ percent in the third quarter. The Taylor (1993) rule, which places considerably less weight on the output gap than the other rules, calls for the federal funds rate to be about 1¾ percent in the second quarter and 2 percent in the third quarter. The inertial Taylor (1999) rule prescribes a federal funds rate of ¼ percent by the third quarter.

The right-hand columns display the near-term prescriptions in the absence of the lower-bound constraint on the federal funds rate.[2] Of the six rules, only the nominal income targeting rule calls for negative policy rates in the coming two quarters. This more-accommodative prescription arises because this rule responds not only to the staff's estimates of the current output gap and current inflation but also to the cumulative shortfall of inflation from the Committee's 2 percent objective since the end of 2007.

As shown in the two lower panels of the exhibit, the staff changed its outlook for the output gap and inflation only a little relative to the January Tealbook. Consequently, the near-term prescriptions for all of the rules are likewise little changed.

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[1] The appendix to this section provides detail on each of the six rules.

[2] Four of the rules—the inertial Taylor (1999) rule, the outcome-based rule, the nominal income targeting rule, and the first-difference rule—place substantial weight on the lagged federal funds rate. Because the rule prescriptions are conditioned on the actual level of the nominal federal funds rate observed thus far for the current quarter, the unconstrained prescriptions shown in the table are indirectly affected by the presence of the effective lower bound.

Strategies

Policy Rules and the Staff Projection

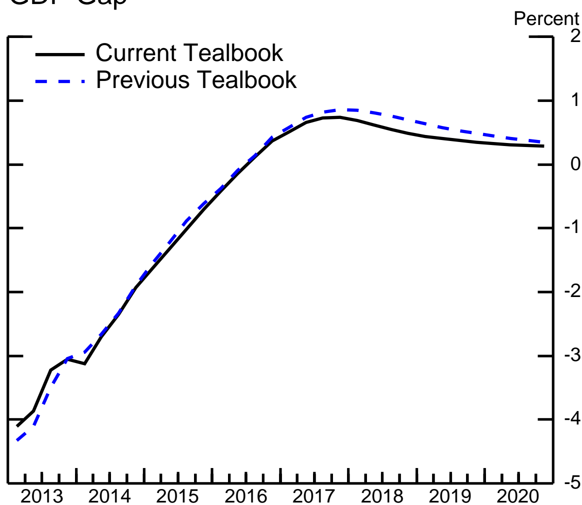
Near-Term Prescriptions of Selected Policy Rules

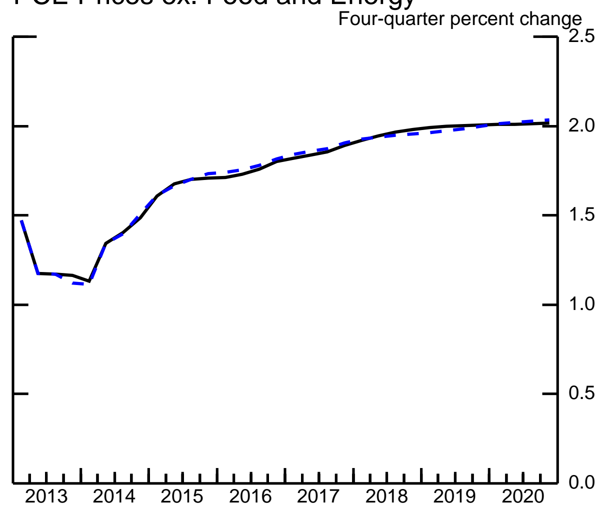
	Constrained Policy		Unconstrained Policy	
	2014Q2	2014Q3	2014Q2	2014Q3
Taylor (1993) rule	**1.69**	**1.94**	**1.69**	**1.94**
Previous Tealbook	*1.70*	*1.95*	*1.70*	*1.95*
Taylor (1999) rule	**0.35**	**0.78**	**0.35**	**0.78**
Previous Tealbook	*0.39*	*0.80*	*0.39*	*0.80*
Inertial Taylor (1999) rule	**0.16**	**0.25**	**0.16**	**0.25**
Previous Tealbook outlook	*0.16*	*0.26*	*0.16*	*0.26*
Outcome-based rule	**0.39**	**0.75**	**0.39**	**0.75**
Previous Tealbook outlook	*0.33*	*0.67*	*0.33*	*0.67*
First-difference rule	**0.66**	**1.18**	**0.66**	**1.18**
Previous Tealbook outlook	*0.61*	*1.16*	*0.61*	*1.16*
Nominal income targeting rule	**0.13**	**0.13**	**-0.55**	**-0.97**
Previous Tealbook outlook	*0.13*	*0.13*	*-0.55*	*-0.98*

Memo: Equilibrium and Actual Real Federal Funds Rates

	Current Tealbook	*Previous Tealbook*
Tealbook-consistent FRB/US r^* estimate	-0.74	*-0.67*
Actual real federal funds rate	-1.03	*-0.99*

Key Elements of the Staff Projection





Note: For rules that 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 current quarter.

The top panel of the first exhibit also reports the Tealbook-consistent estimate of the equilibrium real federal funds rate, r^*, generated using the FRB/US model after adjusting it to reproduce the staff's baseline forecast. The estimated r^* corresponds to the real federal funds rate that would, if maintained, return output to potential in 12 quarters. As in the January Tealbook, the r^* estimate for the first quarter of 2014 is near –¾ percent, slightly higher than the –1 percent estimate of the current real federal funds rate.

The second exhibit, "Policy Rule Simulations without Thresholds," reports dynamic simulations of the FRB/US model.[3] These simulations incorporate the endogenous responses of inflation and the output gap when the federal funds rate follows the paths prescribed by the different policy rules, under the assumption that the federal funds rate is constrained by the effective lower bound and without regard to the Committee's threshold-based forward guidance related to inflation and the unemployment rate.[4] (Alternative policy rule simulations that take account of the thresholds are discussed below.) Each rule is applied from the second quarter of 2014 onward, under the assumptions that financial market participants as well as price- and wage-setters believe that the FOMC will follow that rule and that agents fully understand and anticipate the implications of the rule for future real activity, inflation, and interest rates.

The second exhibit also displays the implications of following the baseline policy assumption adopted in this Tealbook. As discussed in Tealbook Book A, this policy begins raising the federal funds rate from the assumed effective lower bound of 12½ basis points in the second quarter of 2015—the same quarter as in the January Tealbook and two quarters after the projected end of the FOMC's current program of large scale asset purchases. The assumed two-quarter lag between the end of asset purchases and the departure from the effective lower bound is intended to be consistent with the guidance in

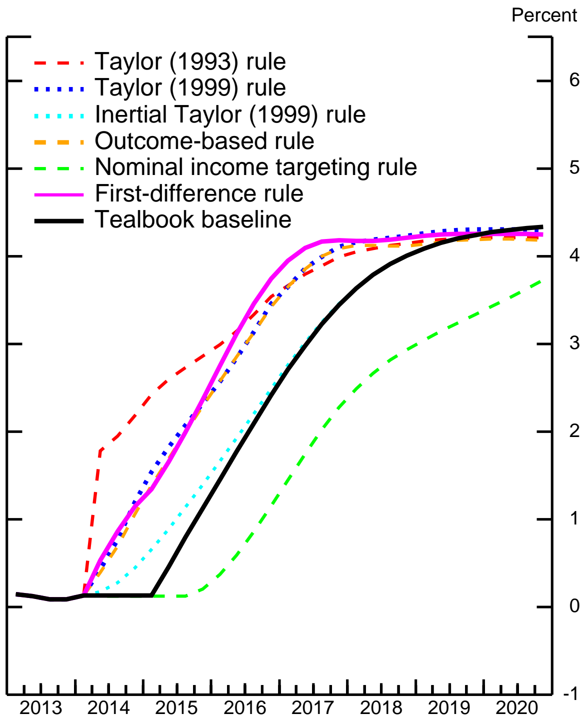
[3] A few changes have been introduced to the FRB/US model for this Tealbook; however, these changes have only small effects on the simulations of the simple policy rules as well as the optimal control simulations discussed below. Among the changes is the inclusion of gross domestic income as a variable in the model, changes in the specification of the equations determining the unemployment rate, and a change to the way interest on the federal debt is forecast.

[4] The policy rule simulations discussed here and below incorporate the macroeconomic effects of the FOMC's large-scale asset purchase programs. For the current program, the baseline forecast embeds the assumption that purchases of longer-term Treasury securities and agency MBS continue to be reduced gradually, end in the second half of 2014, and total a bit less than $1.5 trillion over 2013 and 2014.

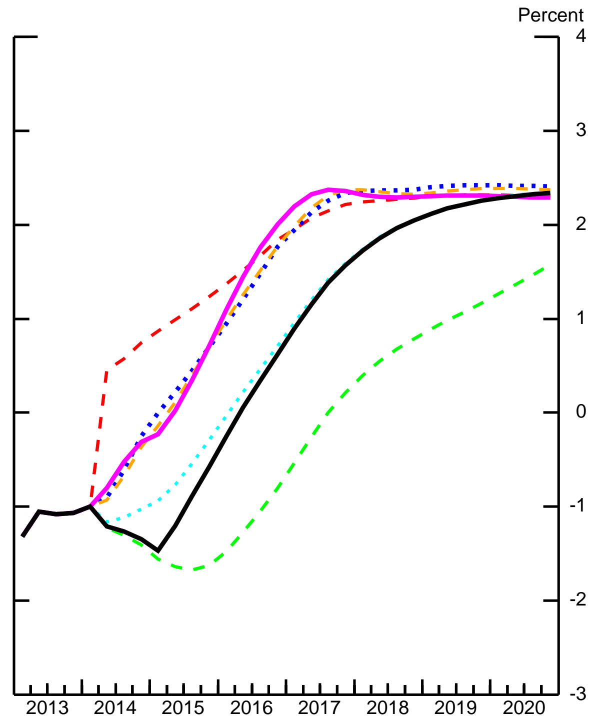
Strategies

Policy Rule Simulations without Thresholds

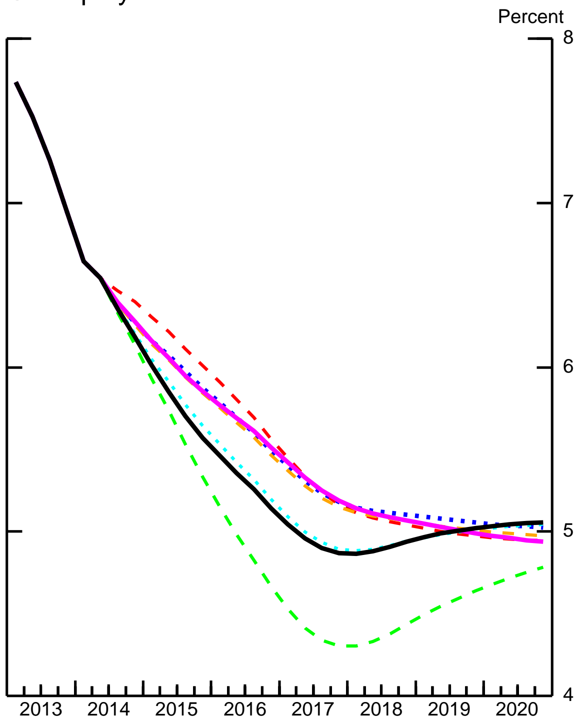
Effective Nominal Federal Funds Rate



Real Federal Funds Rate

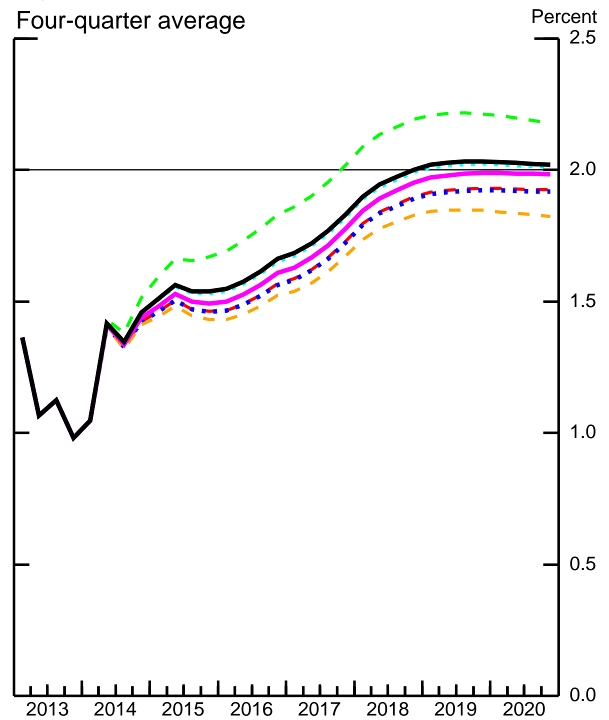


Unemployment Rate



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.

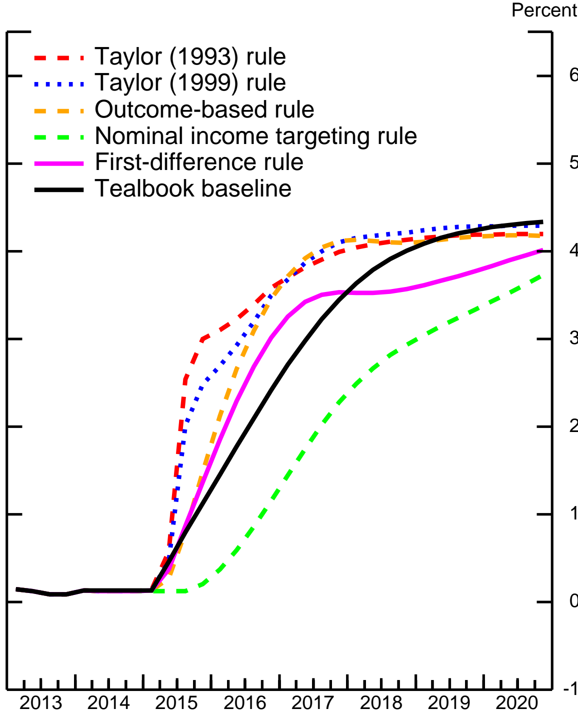
the FOMC's recent postmeeting statement indicating that "a highly accommodative stance of monetary policy will remain appropriate for a considerable time after the asset purchase program ends." Once it rises above the effective lower bound, the baseline path for the federal funds rate follows the prescriptions of the inertial Taylor (1999) rule. After the initial firming in the second quarter of 2015, the federal funds rate steadily increases by a little more than ¼ percentage point per quarter over the next few years, reaching almost 2½ percent at the end of 2016 and 4 percent by late 2018. The unemployment rate reaches the staff's estimate of the long-term natural rate of unemployment of 5.2 percent by the end of 2016. Headline inflation rises gradually, reaching 2 percent only in 2018.

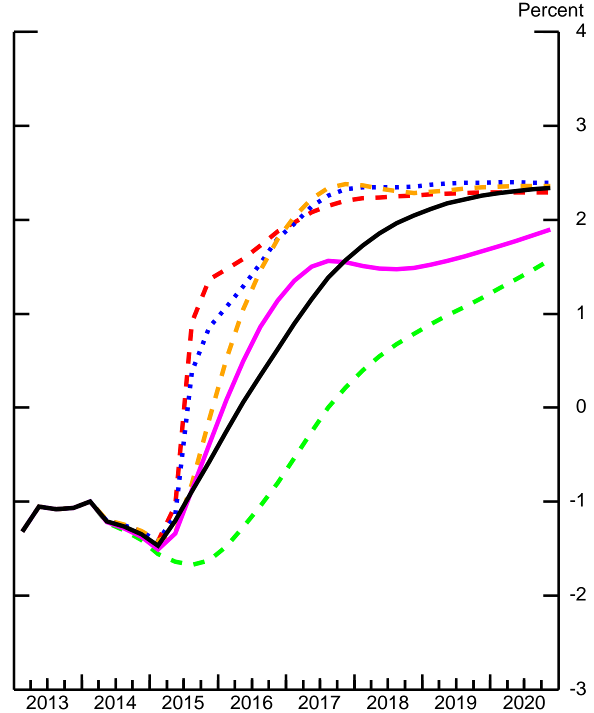
Without the thresholds, most of the policy rules call for policy tightening to begin over the next couple of quarters. Four of the rules put the real federal funds rate appreciably above the path implied by the baseline forecast, leading to higher unemployment and lower inflation than in the baseline through most of the decade. The inertial Taylor (1999) rule calls for only a very gradual tightening beginning in the middle of this year; its prescriptions are nearly identical to the baseline from late 2016 onward and the associated macroeconomic outcomes are similar to those in the baseline. Only the nominal income targeting rule prescribes a later onset of tightening than that in the Tealbook baseline. This rule keeps the federal funds rate at the effective lower bound until late 2015 and generates a real federal funds rate persistently below the baseline for the rest of the decade, thereby leading to a stronger path for real activity as well as higher inflation.

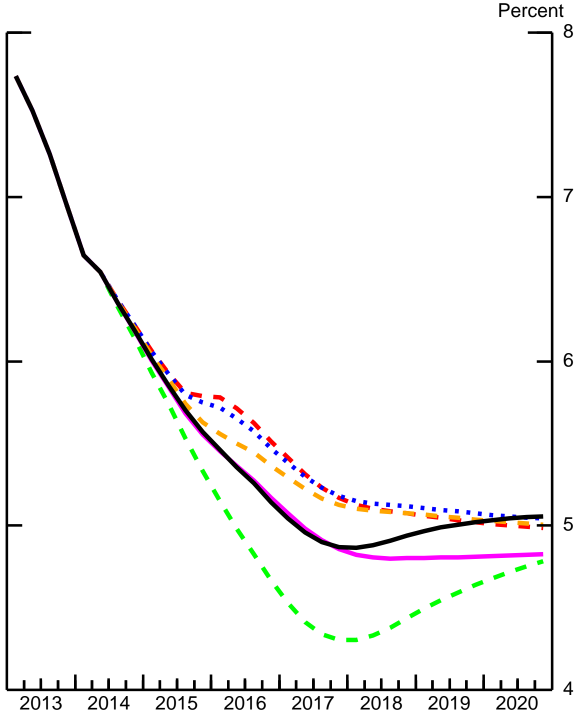
The results for each rule presented in these and subsequent simulations depend importantly on the assumptions that policymakers will adhere to that rule in the future and that the private sector fully understands the policy that will be pursued and its implications for real activity and inflation. These assumptions play a particularly critical role in the case of the nominal income targeting rule, which is associated with outcomes in which inflation runs somewhat above the 2 percent longer-run goal for some years, even after the output gap has closed.

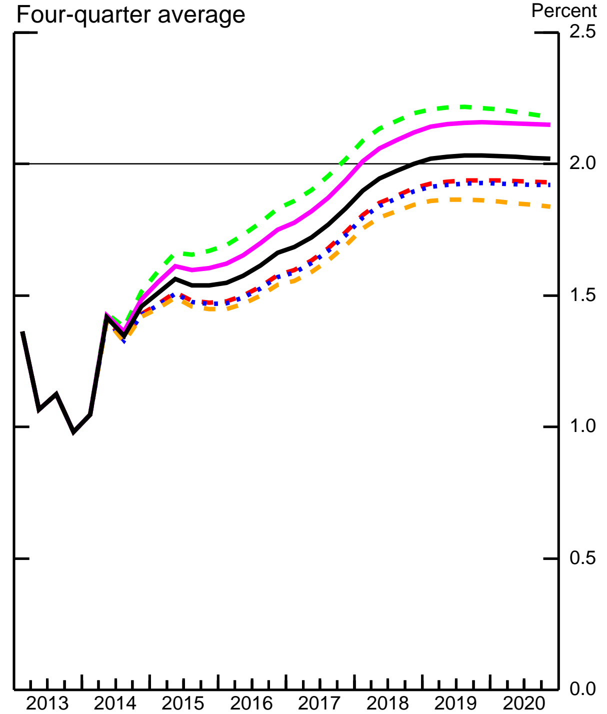
The third exhibit, "Policy Rule Simulations with Current Thresholds and Forward Guidance," displays simulations in which the policy rules are subject to the thresholds that the Committee adopted in December 2012, which have been implemented with an assumption about the enhanced forward guidance provided in the last two postmeeting

Policy Rule Simulations with Current Thresholds and Forward Guidance









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.

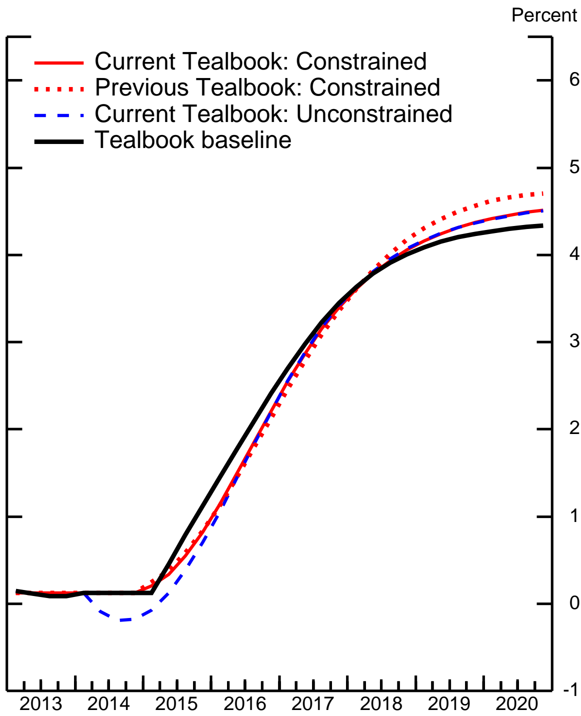
statements. In particular, for each of the rules, the federal funds rate is constrained to stay at the effective lower bound of 12½ basis points as long as the unemployment rate is 6 percent or higher, the level of the unemployment rate that, in the baseline, also prevails in the quarter before the federal funds rate departs from the effective lower bound. (This constraint is meant to be consistent with the Committee's recent statement from January that "it likely will be appropriate to maintain the current target range for the federal funds rate well past the time that the unemployment rate declines below 6½ percent, especially if projected inflation continues to run below the Committee's 2 percent longer-run goal.") In subsequent quarters, the federal funds rate follows the prescriptions of the specified rule. As in the simulations without thresholds, financial market participants and price- and wage-setters are assumed to understand that the Committee will switch to the specified rule once this condition is satisfied or the threshold for projected inflation has been crossed, and to view this switch as permanent and fully credible. For all of the simulations discussed below, the decline in the unemployment rate turns out to be the catalyst for the shift to the specified rule; projected inflation between one and two years ahead remains below 2 percent at the time of departure of the federal funds rate from the effective lower bound in each simulation.

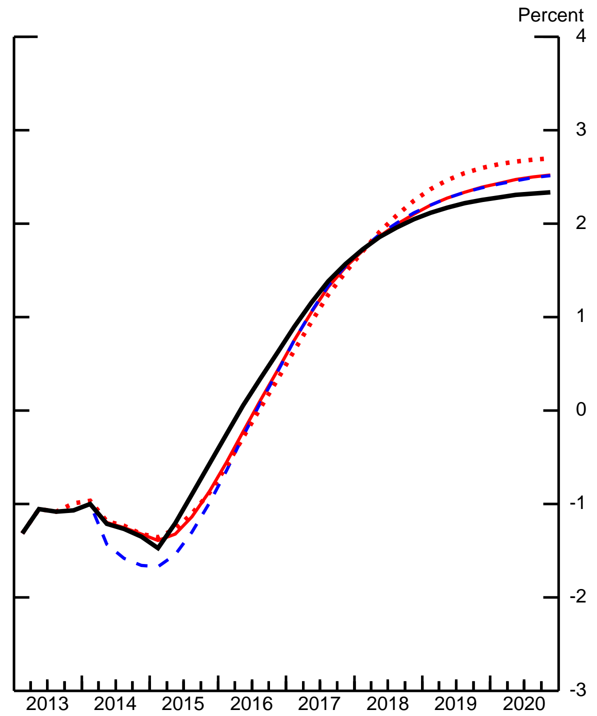
For most rules, the imposition of the thresholds and additional forward guidance leads to a departure of the federal funds rate from the effective lower bound in the second quarter of 2015, the same quarter as in the January Tealbook and the staff's current baseline. The thresholds are not binding for the nominal income targeting rule: Under this rule, the unemployment rate declines below 6 percent considerably ahead of the time that the federal funds rate is raised above its effective lower bound. For the other rules, imposing the thresholds and additional forward guidance postpones the departure of the federal funds rate from the effective lower bound by about a year compared with the case of no thresholds and no additional forward guidance. As a result, the unemployment rate generally declines a bit more rapidly, and inflation is a touch higher.

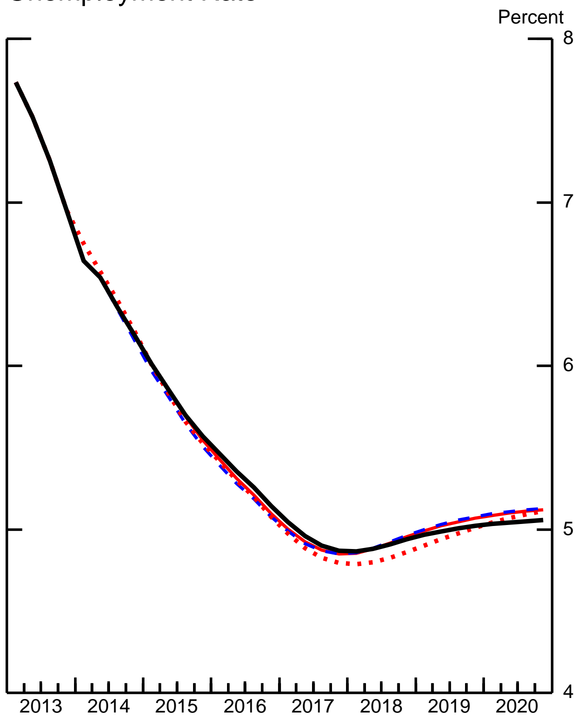
The fourth exhibit, "Constrained versus Unconstrained Optimal Control Policy," compares the optimal control simulations derived using this Tealbook's baseline forecast with those reported in the January Tealbook.[5] Policymakers are assumed to place equal weights on keeping headline PCE inflation close to the Committee's 2 percent goal, on

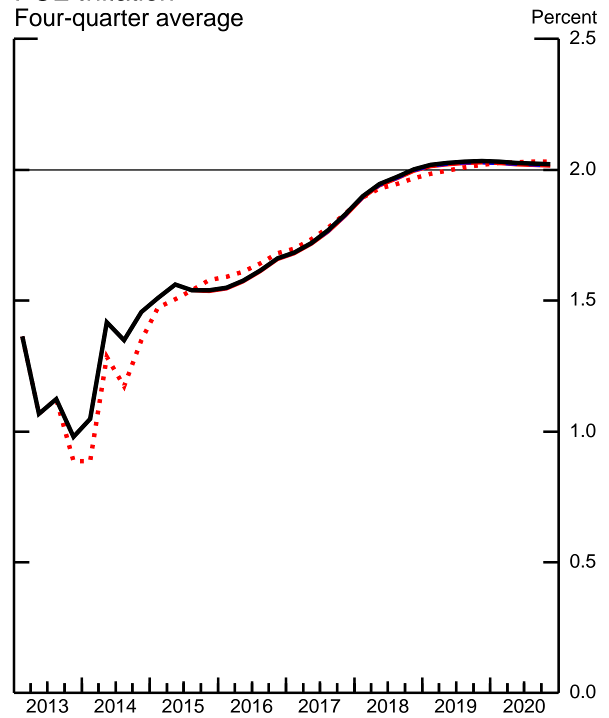
[5] The optimal control policy simulations incorporate the assumptions about underlying economic conditions used in the staff's baseline forecast, as well as the assumptions about balance sheet policies described in footnote 4. The simulated policies do not incorporate thresholds.

Constrained versus Unconstrained Optimal Control Policy









keeping the unemployment rate close to the staff's estimate of the natural rate of unemployment, and on minimizing changes in the federal funds rate. The optimal control concept presented here corresponds to a commitment policy under which policymakers make decisions today that effectively constrain policy choices in future periods.

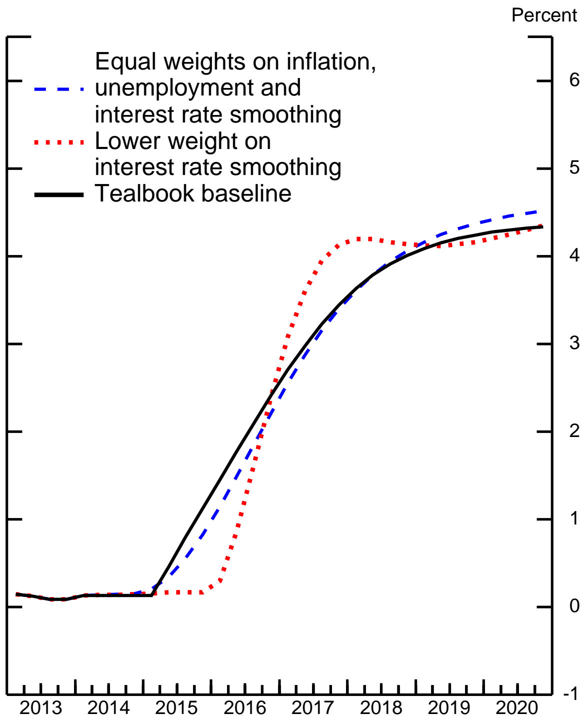
Reflecting the fact that the staff outlook for inflation and slack in the economy is largely unchanged, the federal funds rate under the constrained optimal control path is almost identical to its counterpart in the January Tealbook. As in January, the outcomes derived from the optimal control simulations are also similar to those associated with policy under the staff baseline. In the simulations, which are subject to the usual caveats regarding expectations and commitment, the optimal federal funds rate departs from the lower bound in the second quarter of 2015, as in the staff's baseline forecast, but rises relatively more slowly over subsequent years. The constrained optimal control policy implies a slightly lower path for the real federal funds rate over the next few years than in the staff's baseline outlook; thereafter the optimal-control path is slightly higher than the baseline path, implying, on net, only small differences in the outcomes for the unemployment rate and inflation.[6]

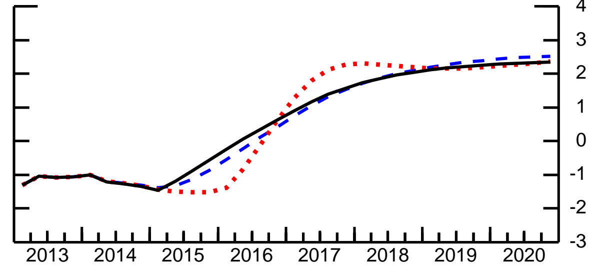
As in the January Tealbook, the presence of the lower-bound constraint has only minor effects on the outcomes under optimal control policy. In the absence of the lower-bound constraint, the optimal federal funds rate would reach a minimum of only about negative 20 basis points in the second half of 2014 and subsequently rise to levels that are similar to those in the constrained simulations. Accordingly, the path for the real federal funds rate is only slightly lower than in the constrained policy rate path, and the unconstrained policy would bring down the unemployment rate at about the same speed as the constrained policy and lead to a nearly identical path for inflation. This result depends importantly on the presence of the penalty on changes in the federal funds rate in policymakers' quadratic objective function. An objective function with a substantially smaller interest-rate smoothing term would imply a federal funds rate path that falls

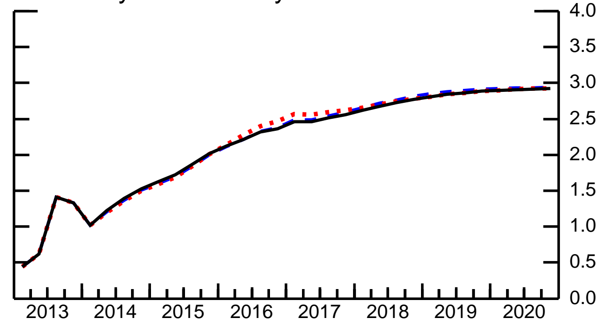
[6] Although the loss function uses headline inflation instead of core inflation, the real federal funds rate shown in the upper-right panel of the exhibit, as in the other simulations reported in this section, is calculated as the difference between the nominal federal funds rate and a four-quarter moving average of core PCE inflation. Core PCE inflation is used to compute the real interest rate for this illustrative purpose because it provides a less volatile measure of inflation expectations than does a four-quarter moving average of headline inflation.

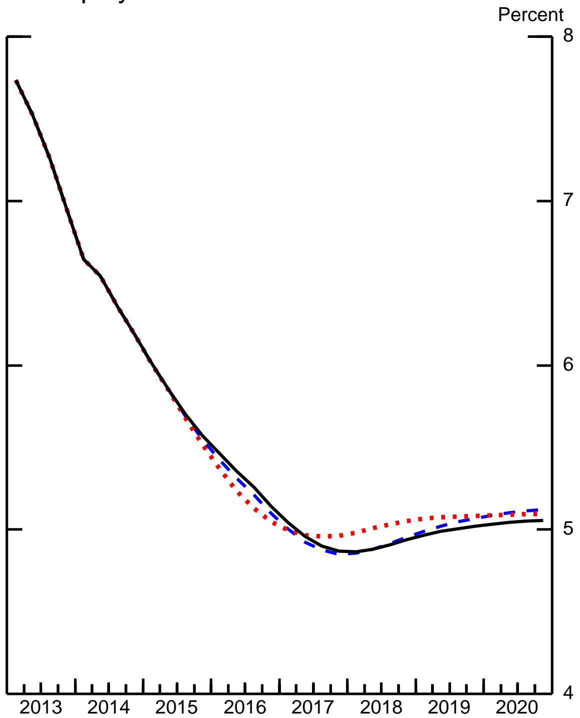
Strategies

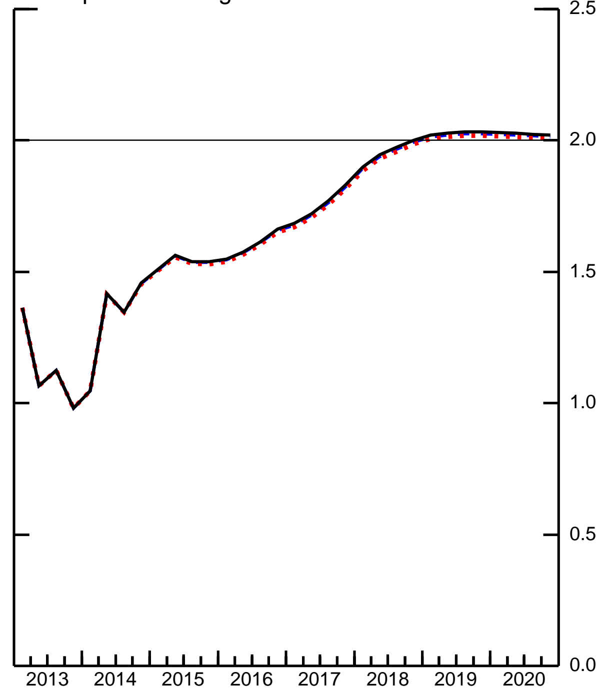
Optimal Control Policy with Minimal Weight on Interest-Rate Smoothing under Commitment











considerably below zero under the unconstrained optimal policy, leading to a more rapid decline in the unemployment rate than under the constrained policy.

The staff has included interest-rate smoothing in the assumed loss function for the optimal control policy simulations in large part because the assumption helps to keep the simulated variation and persistence of the federal funds rate close to their observed historical ranges. The federal funds rate may have typically moved gradually and persistently in the past because policymakers, for a number of possible reasons, prefer not to adjust the rate sharply. Different policymakers may have different tolerances for funds rate fluctuations, and thus they might consider different penalties on interest-rate smoothing as being more appropriate. The fifth exhibit, "Optimal Control Policy with Minimal Weight on Interest-Rate Smoothing under Commitment," examines how outcomes differ between an optimal control simulation that features a substantially lower weight on the change in the federal funds rate and the standard (equal-weight) parameterization of the objective function.[7]

A lower weight on interest-rate smoothing implies an optimal policy in which the federal funds rate is raised above the lower bound about a year later than in the standard case but then rises more steeply. However, the profile of longer-term interest rates is essentially unchanged, as the effect of the lower federal funds rate in the near term is about offset by the effect of the higher level of the funds rate in the intermediate-term. Because changes in federal funds rate policy in the FRB/US model are primarily transmitted to aggregate demand via longer-term interest rates, the differences in the effects on the unemployment rate and on inflation are also small.[8]

[7] In the case of minimal interest-rate smoothing, the weight placed on changes in the funds rate is lowered to an essentially negligible value. Specifically, while the standard simulations place a weight of one-third on minimizing changes in the federal funds rate in the objective function, the minimal-smoothing case corresponds to a weight of about one fortieth on this term. Lowering the weight any further would lead to convergence problems for the simulations of the FRB/US model. Simulations of optimal control under discretion with the alternate weights on interest-rate smoothing considered here yield very similar results to the respective results under commitment.

[8] This result is specific to conditions, such as in the current situation, in which the optimal funds rate path is constrained by the lower bound at least for some time to come. In general, the effects of altering the weight placed on interest-rate smoothing can have material effects on the optimal control paths for the unemployment rate and inflation as illustrated in the memo by Robert Tetlow, "Optimal Control Simulations with Minimal Penalty on the Change in the Funds Rate" (sent to the Committee on January 27, 2014), which considered optimal control simulations in the absence of the lower-bound constraint.

Taken at face value, these results suggest that, in current circumstances, the policies associated with greater and lesser degrees of interest-rate smoothing would serve equally well in achieving the Committee's dual mandate of price stability and maximum employment. It deserves emphasis, however, that in practice the communication strategies associated with these two objective-function settings would likely need to be decidedly different, each presenting its own challenges.

For the case with less interest-rate smoothing, the first increase in the federal funds rate is shifted further into the future; with more interest rate smoothing, the first increase occurs earlier and is followed by a period of relatively gradual tightening. Arguably, communications about the conditions that would be associated with the later onset of tightening in the less-interest-rate smoothing case might pose less-formidable challenges than the provision of conditional guidance about the gradual firming of the federal funds rate once rate increases have begun in the more-interest-rate-smoothing case, as that gradual tightening sequence continues into the more distant future. However, if the post-lower-bound behavior of policy with less interest rate smoothing constitutes a more substantial break from past behavior, intensive communication efforts could be required for its successful implementation as well.[9] If market participants did not expect such a steep increase after departing from the lower bound, current longer-term rates would be different from those implied by the simulations and may not achieve the intended outcomes for real activity and inflation. In addition, if market participants were surprised by the swift increases prescribed in this simulation, the adjustments in markets could potentially be quite disorderly. Considering the standard case with a high degree of interest-rate smoothing, effective communication would need to emphasize the conditions under which the slow pattern of increases in the federal funds rate would be appropriate in order to avoid a false sense of security among market participants. If investors were to underestimate the extent to which future policy actions remain sensitive to surprises in incoming data under this state-contingent policy path, investors might take on excessively risky projects in their search for high yields, thereby undermining financial stability.

[9] Specifically, this policy implies increasing the federal funds rate by about 400 basis points over a period of two years, as opposed to four years in the case with a substantial weight on interest-rate smoothing. While the more gradual trajectory appears more aligned with current market expectations, the pace of increases prescribed by the simulations with less interest-rate smoothing is also consistent with the 400 basis points increase in the federal funds rate seen most recently over the two-year period from mid-2004 to mid-2006.

The final two exhibits, "Outcomes under Alternative Policies without Thresholds" and "Outcomes under Alternative Policies with Current Thresholds and Forward Guidance," tabulate the simulation results for key variables under each of the policy rules discussed above, both for the cases without thresholds and with current thresholds and forward guidance.

Outcomes under Alternative Policies without Thresholds

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

Measure and scenario	2013 H2	2014	2015	2016	2017	2018
Real GDP						
Extended Tealbook baseline[1]	3.2	2.9	3.2	3.0	2.5	2.0
Taylor (1993)	3.2	2.6	2.7	3.0	2.8	2.3
Taylor (1999)	3.2	2.7	2.8	2.9	2.6	2.2
Inertial Taylor (1999)	3.2	2.9	3.2	3.1	2.6	2.0
Outcome based	3.2	2.8	2.9	2.9	2.6	2.2
First difference	3.2	2.7	2.9	2.9	2.7	2.3
Nominal income targeting	3.2	3.1	3.7	3.4	2.7	1.8
Constrained optimal control	3.2	2.9	3.3	3.1	2.5	1.9
Unemployment rate[2]						
Extended Tealbook baseline[1]	7.0	6.2	5.6	5.1	4.9	4.9
Taylor (1993)	7.0	6.4	6.0	5.6	5.2	5.0
Taylor (1999)	7.0	6.3	5.9	5.5	5.2	5.1
Inertial Taylor (1999)	7.0	6.2	5.6	5.2	4.9	4.9
Outcome based	7.0	6.3	5.8	5.5	5.2	5.1
First difference	7.0	6.3	5.9	5.5	5.2	5.1
Nominal income targeting	7.0	6.1	5.3	4.7	4.3	4.4
Constrained optimal control	7.0	6.2	5.5	5.1	4.9	5.0
Total PCE prices						
Extended Tealbook baseline[1]	1.5	1.5	1.5	1.7	1.8	2.0
Taylor (1993)	1.5	1.4	1.5	1.6	1.7	1.9
Taylor (1999)	1.5	1.4	1.5	1.6	1.7	1.9
Inertial Taylor (1999)	1.5	1.5	1.5	1.7	1.8	2.0
Outcome based	1.5	1.4	1.4	1.5	1.7	1.8
First difference	1.5	1.4	1.5	1.6	1.8	2.0
Nominal income targeting	1.5	1.5	1.7	1.8	2.0	2.2
Constrained optimal control	1.5	1.5	1.5	1.7	1.8	2.0
Core PCE prices						
Extended Tealbook baseline[1]	1.3	1.5	1.7	1.8	1.9	2.0
Taylor (1993)	1.3	1.5	1.6	1.7	1.8	1.9
Taylor (1999)	1.3	1.5	1.6	1.7	1.8	1.9
Inertial Taylor (1999)	1.3	1.5	1.7	1.8	1.9	2.0
Outcome based	1.3	1.4	1.6	1.7	1.7	1.8
First difference	1.3	1.5	1.7	1.7	1.8	1.9
Nominal income targeting	1.3	1.5	1.8	2.0	2.1	2.2
Constrained optimal control	1.3	1.5	1.7	1.8	1.9	2.0
Effective nominal federal funds rate[2]						
Extended Tealbook baseline[1]	0.1	0.1	1.1	2.4	3.4	4.0
Taylor (1993)	0.1	2.2	2.9	3.5	4.0	4.1
Taylor (1999)	0.1	1.2	2.3	3.5	4.1	4.2
Inertial Taylor (1999)	0.1	0.4	1.4	2.5	3.5	4.0
Outcome based	0.1	1.1	2.3	3.4	4.1	4.1
First difference	0.1	1.1	2.4	3.7	4.2	4.2
Nominal income targeting	0.1	0.1	0.2	1.2	2.3	2.9
Constrained optimal control	0.1	0.2	0.8	2.2	3.3	3.9

1. Policy in the Tealbook baseline keeps the federal funds rate at an effective lower bound of 12.5 basis points until two quarters after the projected end of the FOMC's current program of large scale asset purchases. Thereafter, the federal funds rate follows the prescriptions of the inertial Taylor (1999) rule.

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

Strategies

Outcomes under Alternative Policies with Current Thresholds and Forward Guidance[1]

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

Measure and scenario	2013 H2	2014	2015	2016	2017	2018
Real GDP						
Extended Tealbook baseline[1]	3.2	2.9	3.2	3.0	2.5	2.0
Taylor (1993)	3.2	2.8	2.9	2.8	2.7	2.2
Taylor (1999)	3.2	2.8	2.9	2.8	2.6	2.2
Outcome based	3.2	2.9	3.1	2.8	2.5	2.1
First difference	3.2	2.9	3.3	3.0	2.6	2.1
Nominal income targeting	3.2	3.1	3.7	3.4	2.7	1.8
Constrained optimal control	3.2	2.9	3.3	3.1	2.5	1.9
Unemployment rate[2]						
Extended Tealbook baseline[1]	7.0	6.2	5.6	5.1	4.9	4.9
Taylor (1993)	7.0	6.2	5.8	5.5	5.2	5.1
Taylor (1999)	7.0	6.2	5.7	5.5	5.2	5.1
Outcome based	7.0	6.2	5.6	5.4	5.1	5.1
First difference	7.0	6.2	5.6	5.2	4.9	4.8
Nominal income targeting	7.0	6.1	5.3	4.7	4.3	4.4
Constrained optimal control	7.0	6.2	5.5	5.1	4.9	5.0
Total PCE prices						
Extended Tealbook baseline[1]	1.5	1.5	1.5	1.7	1.8	2.0
Taylor (1993)	1.5	1.4	1.5	1.6	1.7	1.9
Taylor (1999)	1.5	1.4	1.5	1.6	1.7	1.9
Outcome based	1.5	1.4	1.4	1.5	1.7	1.8
First difference	1.5	1.5	1.6	1.8	1.9	2.1
Nominal income targeting	1.5	1.5	1.7	1.8	2.0	2.2
Constrained optimal control	1.5	1.5	1.5	1.7	1.8	2.0
Core PCE prices						
Extended Tealbook baseline[1]	1.3	1.5	1.7	1.8	1.9	2.0
Taylor (1993)	1.3	1.5	1.6	1.7	1.8	1.9
Taylor (1999)	1.3	1.5	1.6	1.7	1.8	1.9
Outcome based	1.3	1.4	1.6	1.7	1.8	1.8
First difference	1.3	1.5	1.8	1.9	2.0	2.1
Nominal income targeting	1.3	1.5	1.8	2.0	2.1	2.2
Constrained optimal control	1.3	1.5	1.7	1.8	1.9	2.0
Effective nominal federal funds rate[2]						
Extended Tealbook baseline[1]	0.1	0.1	1.1	2.4	3.4	4.0
Taylor (1993)	0.1	0.1	3.0	3.6	4.0	4.1
Taylor (1999)	0.1	0.1	2.5	3.5	4.1	4.2
Outcome based	0.1	0.1	1.5	3.5	4.1	4.1
First difference	0.1	0.1	1.4	3.0	3.5	3.6
Nominal income targeting	0.1	0.1	0.2	1.2	2.3	2.9
Constrained optimal control	0.1	0.2	0.8	2.2	3.3	3.9

1. With the exception of constrained optimal control, monetary policy is specified to keep the federal funds rate at an effective lower bound of 12.5 basis points as long as the unemployment rate is above 6.0 percent and projected one-year-ahead inflation is less than 2.5 percent. Once either of these thresholds is crossed, the federal funds rate follows the prescriptions of the specified rule. Policy in the Tealbook baseline is consistent with these threshold conditions.
2. Percent, average for the final quarter of the period.

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Strategies

Appendix

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 effective 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 ($\Delta^4 gap_{t+3|t}$). 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 the difference between nominal income yn_t (100 times the log of the level of nominal GDP) and a target value yn_t^* (100 times the log of target nominal GDP). Target nominal GDP in 2007:Q4 is set equal to the staff's current estimate of potential real GDP in that quarter multiplied by the GDP deflator in that quarter; subsequently, target nominal GDP grows 2 percentage points per year faster than the staff's estimate of potential GDP.

Taylor (1993) rule	$R_t = 2 + \pi_t + 0.5(\pi_t - \pi^*) + 0.5gap_t$
Taylor (1999) rule	$R_t = 2 + \pi_t + 0.5(\pi_t - \pi^*) + gap_t$
Inertial Taylor (1999) rule	$R_t = 0.85R_{t-1} + 0.15(2 + \pi_t + 0.5(\pi_t - \pi^*) + gap_t)$
Outcome-based rule	$R_t = 1.2R_{t-1} - 0.39R_{t-2} + 0.19[0.54 + 1.73\pi_t + 3.66gap_t - 2.72gap_{t-1}]$
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	$R_t = 0.75R_{t-1} + 0.25(2 + \pi_t + yn_t - yn_t^*)$

The first two of the selected rules were studied by Taylor (1993, 1999), while the inertial Taylor (1999) rule has been featured prominently in recent analysis by Board staff.[1] 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 it is consistent with a 2 percent long-run inflation objective and a long-run real interest rate of 2 percent, a value used in the FRB/US model.[2] The intercepts of the Taylor (1993, 1999) rules and the long-run

[1] See Erceg and others (2012).

[2] For the January 2013 Tealbook, the staff revised the long-run value of the real interest rate from 2¼ percent to 2 percent. The FRB/US model as well as the intercepts of the different policy rules have been adjusted to reflect this change.

intercept of the inertial Taylor (1999) rule are set at 2 percent for the same reason. The 2 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 the level of the output gap or the long-run real interest rate; see Orphanides (2003).

Near-term prescriptions from the different policy rules are calculated using Tealbook projections for inflation and the output gap. For the rules that include the lagged policy rate as a right-hand-side variable—the inertial Taylor (1999) rule, the first-difference rule, the estimated outcome-based rule, and the nominal income targeting rule—the lines denoted “Previous Tealbook outlook” report prescriptions derived from the previous Tealbook projections for inflation and the output gap, while using the same lagged funds rate value as in the prescriptions computed for the current Tealbook. When the Tealbook is published early in the quarter, this lagged funds rate value is set equal to the actual value of the lagged funds rate in the previous quarter, and prescriptions are shown for the current quarter. When the Tealbook is published late in the quarter, the prescriptions are shown for the next quarter, and the lagged policy rate, for each of these rules, including those that use the “Previous Tealbook outlook,” is set equal to the average value for the policy rate thus far in the quarter. For the subsequent quarter, these rules use the lagged values from their simulated, unconstrained prescriptions.

References

Erceg, Christopher, Jon Faust, Michael Kiley, Jean-Philippe Laforte, David López-Salido, Stephen Meyer, Edward Nelson, David Reifschneider, and Robert Tetlow (2012). “An Overview of Simple Policy Rules and Their Use in Policymaking in Normal Times and Under Current Conditions.” Memo sent to the Committee on July 18, 2012.

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.

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 12 quarters using an output projection from 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 memo item in the exhibit reports 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 midpoint of the target range for the federal funds rate on the Tealbook Book B publication date.

FRB/US MODEL SIMULATIONS

The exhibits of "Monetary Policy Strategies" that report results from simulations of alternative policies are derived from dynamic simulations of the FRB/US model. Each simulated policy rule is assumed to be in force over the whole period covered by the simulation. For the optimal control simulations, the dotted line labeled "Previous Tealbook" is derived from the optimal control simulations, when applied to the previous Tealbook projection.

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Monetary Policy Alternatives

This Tealbook presents three policy alternatives—labeled A, B, and C—for the Committee's consideration. The alternatives differ in their path for asset purchases and forward guidance and in their characterization of the outlook for economic activity and inflation. With the unemployment rate nearing 6½ percent, all three alternatives feature significant revisions to the forward guidance for the federal funds rate. Alternative A offers an inflation floor. Alternatives B and C offer qualitative guidance that links the first increase in the federal funds rate to progress toward the Committee's employment and inflation objectives, with the draft statement for Alternative B also expressing the Committee's view that the new guidance is fully consistent with that in its previous statement.

Under Alternative B, the Committee reduces monthly purchases of both agency MBS and Treasury securities each by another $5 billion starting in April and signals that further reductions of that size are likely at future meetings. Under Alternative C, the Committee announces larger reductions in monthly asset purchases and indicates that further reductions are likely. For both of these alternatives, the draft statement includes a new sentence indicating that the Committee judges that there is "sufficient" underlying strength in the broader economy to support "ongoing improvement in labor market conditions." Under Alternative A, the Committee would continue asset purchases at their current pace on the grounds that information received since late January suggests a somewhat greater downside risk to the outlook for the labor market and inflation.

The forward guidance for the federal funds rate under Alternatives B and C includes new language for the fifth paragraph; it states that, in determining how long to maintain the 0 to ¼ percent target range for the federal funds rate, the Committee will "assess progress—both realized and expected—toward its objectives of maximum employment and 2 percent inflation." Under both of these alternatives the Committee would go on to state that its assessment will "take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial developments."

However, Alternatives B and C offer different language to replace the "well past the time that the unemployment rate declines below 6½ percent" qualitative guidance that the Committee added to the December statement to indicate its thinking about the likely

path of the federal funds rate after the unemployment rate declines below 6½ percent. Alternative B indicates that the Committee continues to anticipate maintaining the current target range "for a considerable time" after the asset purchase program ends, while Alternative C says "for some time" after purchases end.

In contrast, Alternative A replaces the threshold-based forward guidance language with an inflation floor, indicating that the Committee will maintain the current 0 to ¼ percent target range for the federal funds rate "at least as long as inflation between one and two years ahead is projected to be below 2 percent and longer-term inflation expectations continue to be well anchored." Alternative A also contains language indicating that the Committee likely will maintain the current target for the federal funds rate "for a considerable time after the asset purchase program ends."

All of the alternatives reiterate that the Committee will take a "balanced approach" when it begins to remove policy accommodation, consistent with its longer-run goals. Alternative B provides additional guidance, in a new sixth paragraph, stating that the Committee "currently anticipates that, even after employment and inflation are near mandate-consistent levels, economic conditions may, for some time, warrant keeping short-term interest rates below levels the Committee views as normal in the longer run." This language not only provides some guidance about the federal funds rate after liftoff, it also opens the option of targeting some short-term interest rate or rates other than the federal funds rate during normalization. The new final paragraph of Alternative B states that the Committee's "new guidance" is "fully consistent" with the "guidance in its previous statement."

The three policy alternatives have as backdrops different assessments of recent and prospective economic conditions. Alternative B presents the view that the economic outlook has changed only modestly since the January meeting. The draft statement for Alternative B observes that growth in economic activity "slowed during the winter months, in part reflecting adverse weather conditions." As in the January statement, the text for Alternative B states that "labor market indicators were mixed but on balance showed further improvement," while again observing that inflation "has been running below" the Committee's longer-run objective but that longer-term inflation expectations have remained stable. However, in order to emphasize that the Committee's assessment of the labor market situation depends on many variables, the outlook paragraph in Alternative B no longer focuses on the unemployment rate; it now indicates that the

Committee expects that, with appropriate policy accommodation, economic activity will expand at a moderate pace, and "labor market conditions will continue to improve gradually, moving toward those the Committee judges consistent with its dual mandate." The statement for Alternative B describes the risks to the outlook for the economy and the labor market as "nearly balanced" and it again notes the risks to economic performance posed by inflation being persistently below the Committee's 2 percent objective.

The draft statement for Alternative C offers a somewhat stronger characterization of the economic situation and outlook, setting up the larger reduction in the pace of purchases. The first paragraph of Alternative C observes that labor market conditions have shown further improvement, pointing in particular to payroll employment having expanded "at a solid pace," and it puts greater emphasis on the diminution of fiscal restraint. In addition, Alternative C downplays the recent softness in economic growth by indicating that "much of [it] likely reflected adverse weather conditions." Under this alternative, the Committee would emphasize the stability of longer-term inflation expectations and place less emphasis on actual inflation running below 2 percent. The outlook paragraph for Alternative C, like that for Alternative B, omits the reference to the gradual decline in the unemployment rate, replacing it with a broader reference to improvement in labor market conditions toward those consistent with the dual mandate. Alternative C further indicates that the Committee "continues to anticipate" that inflation will move back toward 2 percent over the medium term rather than suggesting that it is looking for evidence of such movement.

Under Alternative A, the Committee would express greater concern about lackluster economic growth, low inflation, and the downside risks to the outlook for the labor market and inflation. In particular, Alternative A says that the housing recovery "slowed further" while Alternative B says that it "remained slow." The statement for Alternative A goes on to observe that inflation has continued to run "well below" 2 percent "even though" longer-term inflation expectations have been stable.

The following table summarizes key elements of the three alternative statements, followed by complete drafts of the statements and arguments for each alternative.

Alternatives

Table 1: Overview of Policy Alternatives for March FOMC Statement

Selected Elements	January Statement	March Alternatives		
		A	B	C
Economic Conditions, Outlook, and Risks				
Economic Conditions	growth in economic activity picked up in recent quarters	growth slowed		growth slowed somewhat
		adverse weather conditions: in part		adverse weather conditions: likely much
	labor market indicators were mixed but on balance showed further improvement	unchanged		
	unemployment rate declined but remains elevated	unemployment rate, however, remains elevated		payroll employment expanded at solid pace
	fiscal policy is restraining growth, although extent of restraint is diminishing	unchanged		fiscal policy **has been** restraining growth, **but** extent is diminishing
	inflation has been running below the longer-run objective, but inflation expectations have remained stable	inflation has **continued to run well** below objective, **even though**…	unchanged	**although** inflation has been running below objective, inflation expectations have remained stable
Outlook	economic activity will expand at moderate pace and unemployment rate will gradually decline	unchanged	economic activity will expand at moderate pace and labor market conditions will continue to…	
			improve gradually	improve
Risks	risks have become more nearly balanced	risks tilted slightly to the downside	risks nearly balanced	risks balanced
Balance Sheet Policies				
Agency MBS	$30 billion per month	unchanged	$25 billion per month	$20 billion per month
Treasuries	$35 billion per month	unchanged	$30 billion per month	$25 billion per month
Rationale for Pace of Purchases	improvement in economic activity and labor market conditions [since inception of program] consistent with growing underlying strength in broader economy	information received about spending and inflation suggests somewhat greater risk to outlook	sufficient underlying strength in the broader economy to support ongoing improvement in labor market conditions	
Purchase Guidance	if incoming information broadly supports Committee's expectations, will likely reduce pace in further measured steps	. . . will likely reduce pace **in measured steps**…	unchanged	. . . will likely **continue to** reduce pace . . .
Federal Funds Rate				
Target	0 to ¼ percent	unchanged		
Rate Guidance	at least as long as thresholds (6½ percent; 2½ percent) are not crossed and inflation expectations continue to be well anchored	*Inflation floor:* at least as long as projected inflation is below 2 percent and inflation expectations continue to be well-anchored	*Qualitative:* in determining how long to maintain current target range, will assess progress—both realized and expected—toward objectives of maximum employment and 2 percent inflation	
	maintain current target range well past time that unemployment rate threshold is crossed, especially if projected inflation continues to run below 2 percent	maintain current target range for…		
		…**a considerable time** after asset purchase program ends…		…**some time** after asset purchase program ends…
		n.a.	…especially if projected inflation continues to run below 2 percent, and provided that inflation expectations remain well anchored	
	when begin to remove accommodation, will take balanced approach	unchanged		
	n.a.	n.a.	economic conditions may, for some time, warrant keeping short-term rates below longer-run normal levels; new guidance is fully consistent with previous guidance	n.a.

JANUARY FOMC STATEMENT

1. Information received since the Federal Open Market Committee met in December indicates that growth in economic activity picked up in recent quarters. Labor market indicators were mixed but on balance showed further improvement. The unemployment rate declined but remains elevated. Household spending and business fixed investment advanced more quickly in recent months, while the recovery in the housing sector slowed somewhat. Fiscal policy is restraining economic growth, although the extent of restraint is diminishing. Inflation has been running below the Committee's longer-run objective, but 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, with appropriate policy accommodation, economic activity will expand at a moderate pace and the unemployment rate will gradually decline toward levels the Committee judges consistent with its dual mandate. The Committee sees the risks to the outlook for the economy and the labor market as having become more nearly balanced. The Committee recognizes that inflation persistently below its 2 percent objective could pose risks to economic performance, and it is monitoring inflation developments carefully for evidence that inflation will move back toward its objective over the medium term.
3. Taking into account the extent of federal fiscal retrenchment since the inception of its current asset purchase program, the Committee continues to see the improvement in economic activity and labor market conditions over that period as consistent with growing underlying strength in the broader economy. In light of the cumulative progress toward maximum employment and the improvement in the outlook for labor market conditions, the Committee decided to make a further measured reduction in the pace of its asset purchases. Beginning in February, the Committee will add to its holdings of agency mortgage-backed securities at a pace of $30 billion per month rather than $35 billion per month, and will add to its holdings of longer-term Treasury securities at a pace of $35 billion per month rather than $40 billion per month. The Committee is maintaining its existing policy 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's sizable and still-increasing holdings of longer-term securities should maintain downward pressure on longer-term interest rates, support mortgage markets, and help to make broader financial conditions more accommodative, which in turn should promote a stronger economic recovery and help to ensure that inflation, over time, is at the rate most consistent with the Committee's dual mandate.
4. The Committee will closely monitor incoming information on economic and financial developments in coming months and will continue its purchases of Treasury and agency mortgage-backed securities, and employ its other policy tools as appropriate, until the outlook for the labor market has improved substantially in a context of price stability. If incoming information broadly supports the Committee's expectation of ongoing improvement in labor market conditions and inflation moving back toward

its longer-run objective, the Committee will likely reduce the pace of asset purchases in further measured steps at future meetings. However, asset purchases are not on a preset course, and the Committee's decisions about their pace will remain contingent on the Committee's outlook for the labor market and inflation as well as its assessment of the likely efficacy and costs of such purchases.

5. To support continued progress toward maximum employment and price stability, the Committee today reaffirmed its view that a highly accommodative stance of monetary policy will remain appropriate for a considerable time after the asset purchase program ends and the economic recovery strengthens. The Committee also reaffirmed its expectation that the current exceptionally low target range for the federal funds rate of 0 to ¼ percent will be appropriate at least as long as the unemployment rate remains above 6½ percent, inflation between one and two years ahead is projected to be no more than a half percentage point above the Committee's 2 percent longer-run goal, and longer-term inflation expectations continue to be well anchored. In determining how long to maintain a highly accommodative stance of monetary policy, the Committee will also consider other information, including additional measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial developments. The Committee continues to anticipate, based on its assessment of these factors, that it likely will be appropriate to maintain the current target range for the federal funds rate well past the time that the unemployment rate declines below 6½ percent, especially if projected inflation continues to run below the Committee's 2 percent longer-run goal. When the Committee decides to begin to remove policy accommodation, it will take a balanced approach consistent with its longer-run goals of maximum employment and inflation of 2 percent.

FOMC STATEMENT—MARCH 2014 ALTERNATIVE A

1. Information received since the Federal Open Market Committee met in ~~December~~ **January** indicates that growth in economic activity ~~picked up in recent quarters~~ **slowed during the winter months, in part reflecting adverse weather conditions**. Labor market indicators were mixed but on balance showed further improvement. The unemployment rate ~~declined but~~**, however,** remains elevated. Household spending and business fixed investment advanced ~~more quickly in recent months~~, while the recovery in the housing sector slowed ~~somewhat~~ **further**. Fiscal policy is restraining economic growth, although the extent of restraint is diminishing. Inflation has ~~been running~~ **continued to run well** below the Committee's longer-run objective, ~~but~~ **even though** 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, with appropriate policy accommodation, economic activity will expand at a moderate pace and the unemployment rate will gradually decline toward levels the Committee judges consistent with its dual mandate. The Committee sees the risks to the outlook for the economy and the labor market as ~~having become more nearly balanced~~ **tilted slightly to the downside**. The Committee recognizes that inflation persistently below its 2 percent objective ~~could~~ pose**s** risks to economic performance, and it is monitoring inflation developments carefully for evidence that inflation will move back toward its objective over the medium term.

3. ~~Taking into account the extent of federal fiscal retrenchment since the inception of its current asset purchase program, the Committee continues to see the improvement in economic activity and labor market conditions over that period as consistent with growing underlying strength in the broader economy. In light of the cumulative progress toward maximum employment and the improvement in the outlook for labor market conditions, the Committee decided to make a further measured reduction in the pace of its asset purchases.~~ **Information about spending and inflation received since the Committee met in January suggests a somewhat greater risk that the pace of improvement in the labor market might slow and that inflation will not return, over the medium run, to the 2 percent rate that the Committee judges most consistent with its dual mandate.** ~~Beginning in February~~ **For this reason**, the Committee will **continue to** add to its holdings of agency mortgage-backed securities at a pace of $30 billion per month ~~rather than $35 billion per month~~, and ~~will add~~ to its holdings of longer-term Treasury securities at a pace of $35 billion per month ~~rather than $40 billion per month~~. The Committee is maintaining its existing policy 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's sizable and still-increasing holdings of longer-term securities should maintain downward pressure on longer-term interest rates, support mortgage markets, and help to make broader financial conditions more accommodative, which in turn should promote a stronger economic recovery and help to ensure that inflation, over time, is at the rate most consistent with the Committee's dual mandate.

4. The Committee will closely monitor incoming information on economic and financial developments in coming months and will continue its purchases of Treasury and agency mortgage-backed securities, and employ its other policy tools as appropriate, until the outlook for the labor market has improved substantially in a context of price stability. If incoming information broadly supports the Committee's expectation of ongoing improvement in labor market conditions and inflation moving back toward its longer-run objective, the Committee will likely reduce the pace of asset purchases in ~~further~~ measured steps at future meetings. However, ~~asset purchases are not on a preset course, and~~ the Committee's decisions about ~~their~~ **the** pace **of purchases** will remain contingent on the Committee's outlook for the labor market and inflation as well as its assessment of the likely efficacy and costs of such purchases.

5. To support continued progress toward maximum employment and price stability, the Committee today reaffirmed its view that a highly accommodative stance of monetary policy ~~will~~ remain**s** appropriate ~~for a considerable time after the asset purchase program ends and the economic recovery strengthens~~. ~~The Committee also reaffirmed its expectation that the current exceptionally low target range for the federal funds rate of 0 to ¼ percent will be appropriate at least as long as the unemployment rate remains above 6½ percent, inflation between one and two years ahead is projected to be no more than a half percentage point above the Committee's 2 percent longer-run goal, and longer-term inflation expectations continue to be well anchored.~~ In determining how long to maintain a highly accommodative stance of monetary policy, the Committee will ~~also~~ consider ~~other~~ **a wide range of** information, including ~~additional~~ measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial developments. The Committee ~~continues to~~ anticipate**s**, based on its assessment of these factors, that it likely will be appropriate to maintain the current **0 to ¼ percent** target range for the federal funds rate ~~well past the time that the unemployment rate declines below 6½ percent if projected inflation continues to run below the Committee's 2 percent longer-run goal~~ **at least as long as inflation between one and two years ahead is projected to be below 2 percent and longer-term inflation expectations continue to be well anchored**. **In particular, the Committee expects to maintain the 0 to ¼ percent target range for a considerable time after the asset purchase program ends.** When the Committee decides to begin to remove policy accommodation, it will take a balanced approach consistent with its longer-run goals of maximum employment and inflation of 2 percent.

FOMC STATEMENT—MARCH 2014 ALTERNATIVE B

1. Information received since the Federal Open Market Committee met in ~~December~~ **January** indicates that growth in economic activity ~~picked up in recent quarters~~ **slowed during the winter months, in part reflecting adverse weather conditions**. Labor market indicators were mixed but on balance showed further improvement. The unemployment rate ~~declined but~~**, however,** remains elevated. Household spending and business fixed investment **continued to** advance~~d more quickly in recent months~~, while the recovery in the housing sector ~~slowed somewhat~~ **remained slow**. Fiscal policy is restraining economic growth, although the extent of restraint is diminishing. Inflation has been running below the Committee's longer-run objective, but 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, with appropriate policy accommodation, economic activity will expand at a moderate pace and ~~the unemployment rate will gradually decline toward levels~~ **labor market conditions will continue to improve gradually, moving toward those** the Committee judges consistent with its dual mandate. The Committee sees the risks to the outlook for the economy and the labor market as ~~having become more~~ nearly balanced. The Committee recognizes that inflation persistently below its 2 percent objective could pose risks to economic performance, and it is monitoring inflation developments carefully for evidence that inflation will move back toward its objective over the medium term.

3. ~~Taking into account the extent of federal fiscal retrenchment since the inception of its current asset purchase program,~~ The Committee ~~continues to see the improvement in economic activity and labor market conditions over that period as consistent with growing~~ **currently judges that there is sufficient** underlying strength in the broader economy **to support ongoing improvement in labor market conditions**. In light of the cumulative progress toward maximum employment and the improvement in the outlook for labor market conditions **since the inception of the current asset purchase program**, the Committee decided to make a further measured reduction in the pace of its asset purchases. Beginning in ~~February~~ **April**, the Committee will add to its holdings of agency mortgage-backed securities at a pace of ~~$30~~ **$25** billion per month rather than ~~$35~~ **$30** billion per month, and will add to its holdings of longer-term Treasury securities at a pace of ~~$35~~ **$30** billion per month rather than ~~$40~~ **$35** billion per month. The Committee is maintaining its existing policy 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's sizable and still-increasing holdings of longer-term securities should maintain downward pressure on longer-term interest rates, support mortgage markets, and help to make broader financial conditions more accommodative, which in turn should promote a stronger economic recovery and help to ensure that inflation, over time, is at the rate most consistent with the Committee's dual mandate.

4. The Committee will closely monitor incoming information on economic and financial developments in coming months and will continue its purchases of Treasury and

agency mortgage-backed securities, and employ its other policy tools as appropriate, until the outlook for the labor market has improved substantially in a context of price stability. If incoming information broadly supports the Committee's expectation of ongoing improvement in labor market conditions and inflation moving back toward its longer-run objective, the Committee will likely reduce the pace of asset purchases in further measured steps at future meetings. However, asset purchases are not on a preset course, and the Committee's decisions about their pace will remain contingent on the Committee's outlook for the labor market and inflation as well as its assessment of the likely efficacy and costs of such purchases.

5. To support continued progress toward maximum employment and price stability, the Committee today reaffirmed its view that a highly accommodative stance of monetary policy ~~will~~ remain**s** appropriate ~~for a considerable time after the asset purchase program ends and the economic recovery strengthens~~. ~~The Committee also reaffirmed its expectation that the current exceptionally low target range for the federal funds rate of 0 to ¼ percent will be appropriate at least as long as the unemployment rate remains above 6½ percent, inflation between one and two years ahead is projected to be no more than a half percentage point above the Committee's 2 percent longer-run goal, and longer-term inflation expectations continue to be well anchored.~~ In determining how long to maintain ~~a highly accommodative stance of monetary policy~~ **the current 0 to ¼ percent target range for the federal funds rate**, the Committee will ~~also consider other information,~~ **assess progress—both realized and expected—toward its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information**, including ~~additional~~ measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial developments. The Committee continues to anticipate, based on its **[current]** assessment of these factors, that it likely will be appropriate to maintain the **[** current **|** **0 to ¼ percent** **]** target range for the federal funds rate ~~well past the time that the unemployment rate declines below 6½ percent~~ **for a considerable time after the asset purchase program ends**, especially if projected inflation continues to run below the Committee's 2 percent longer-run goal, **and provided that longer-term inflation expectations remain well anchored**.

6. When the Committee decides to begin to remove policy accommodation, it will take a balanced approach consistent with its longer-run goals of maximum employment and inflation of 2 percent. **The Committee currently anticipates that, even after employment and inflation are near mandate-consistent levels, economic conditions may, for some time, warrant keeping short-term interest rates below levels the Committee views as normal in the longer run.**

7. **With the unemployment rate approaching its 6½ percent threshold and projected inflation likely to run well below its 2½ percent threshold for some time, the Committee has updated its forward guidance. The Committee sees its new guidance as fully consistent with the guidance in its previous statement, including the anticipation that it likely will be appropriate to maintain the current target range for the federal funds rate well past the time that the unemployment rate declines below 6½ percent.**

FOMC STATEMENT—MARCH 2014 ALTERNATIVE C

1. Information received since the Federal Open Market Committee met in ~~December~~ **January** indicates that growth in economic activity ~~picked up in recent quarters~~ **slowed somewhat during the winter months; however, much of that softness likely reflected adverse weather conditions**. Labor market indicators were mixed but on balance showed further improvement**;** ~~the unemployment rate declined but remains elevated~~ **payroll employment expanded at a solid pace**. Household spending and business fixed investment advanced ~~more quickly in recent months~~, while the recovery in the housing sector ~~slowed somewhat~~ **remained slow**. Fiscal policy ~~is~~ **has been** restraining economic growth, ~~although~~ **but** the extent of restraint is diminishing. **Although** inflation has been running below the Committee's longer-run objective, ~~but~~ 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, with appropriate policy accommodation, economic activity will expand at a moderate pace and ~~the unemployment rate will gradually decline toward levels~~ **labor market conditions will continue to improve, moving toward those** the Committee judges consistent with its dual mandate. The Committee sees the risks to the outlook for the economy and the labor market as ~~having become more nearly~~ balanced. The Committee recognizes that inflation persistently below its 2 percent objective could pose risks to economic performance, and it is monitoring inflation developments carefully ~~for evidence~~**, but it continues to anticipate** that inflation will move back toward its objective over the medium term.

3. ~~Taking into account the extent of federal fiscal retrenchment since the inception of its current asset purchase program,~~ The Committee ~~continues to see the improvement in economic activity and labor market conditions over that period as consistent with growing~~ **currently judges that there is sufficient** underlying strength in the broader economy **to support significant ongoing improvement in labor market conditions**. In light of the cumulative progress toward maximum employment and the improvement in the outlook for labor market conditions **since the inception of the current asset purchase program**, the Committee decided to make a further ~~measured~~ reduction in the pace of its asset purchases. Beginning in ~~February~~ **April**, the Committee will add to its holdings of agency mortgage-backed securities at a pace of ~~$30~~ **$20** billion per month rather than ~~$35~~ **$30** billion per month, and will add to its holdings of longer-term Treasury securities at a pace of ~~$35~~ **$25** billion per month rather than ~~$40~~ **$35** billion per month. The Committee is maintaining its existing policy 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's sizable and still-increasing holdings of longer-term securities should maintain downward pressure on longer-term interest rates, support mortgage markets, and help to make broader financial conditions more accommodative, which in turn should promote a stronger economic recovery and help to ensure that inflation, over time, is at the rate most consistent with the Committee's dual mandate.

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4. The Committee will closely monitor incoming information on economic and financial developments in coming months and will continue its purchases of Treasury and agency mortgage-backed securities, and employ its other policy tools as appropriate, until the outlook for the labor market has improved substantially in a context of price stability. If incoming information broadly supports the Committee's expectation of ongoing improvement in labor market conditions and inflation moving back toward its longer-run objective, the Committee will likely **continue to** reduce the pace of asset purchases ~~in further measured steps~~ at future meetings. However, asset purchases are not on a preset course, and the Committee's decisions about their pace will remain contingent on the Committee's outlook for the labor market and inflation as well as its assessment of the likely efficacy and costs of such purchases.

5. To support continued progress toward maximum employment and price stability, the Committee today reaffirmed its view that a highly accommodative stance of monetary policy ~~will~~ remain**s** appropriate ~~for a considerable time after the asset purchase program ends and the economic recovery strengthens~~. ~~The Committee also reaffirmed its expectation that the current exceptionally low target range for the federal funds rate of 0 to ¼ percent will be appropriate at least as long as the unemployment rate remains above 6½ percent, inflation between one and two years ahead is projected to be no more than a half percentage point above the Committee's 2 percent longer-run goal, and longer-term inflation expectations continue to be well anchored.~~ In determining how long to maintain ~~a highly accommodative stance of monetary policy~~ **the current 0 to ¼ percent target range for the federal funds rate**, the Committee will ~~also consider other information,~~ **assess progress—both realized and expected—toward its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information**, including ~~additional~~ measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial developments. The Committee ~~continues to~~ **now** anticipate**s**, based on its assessment of these factors, that it likely will be appropriate to maintain the current target range for the federal funds rate ~~well past the time that the unemployment rate declines below 6½ percent~~ **for some time after the asset purchase program ends**, especially if projected inflation continues to run below the Committee's 2 percent longer-run goal, **and provided that longer-term inflation expectations remain well anchored**. When the Committee decides to begin to remove policy accommodation, it will take a balanced approach consistent with its longer-run goals of maximum employment and inflation of 2 percent.

THE CASE FOR ALTERNATIVE B

Policymakers might judge that information received during the intermeeting period, after allowing for weather-related distortions in the data, is broadly consistent with their expectations at the times of the December and January FOMC meetings, and share the staff's assessment that the medium-term outlook for economic activity has changed only modestly. In addition, policymakers may remain confident that there has not only been considerable cumulative progress toward maximum employment but also an appreciable improvement in the outlook for labor market conditions since the inception of the Committee's current asset purchase program. Moreover, although inflation has remained below the Committee's longer-run objective, participants may note that indicators of medium- and longer-run inflation expectations have continued to be relatively stable over the intermeeting period. With the unemployment rate nearing the 6½ percent threshold, participants may find it necessary and appropriate to clarify the Committee's intentions regarding adjustments to the federal funds rate after the 6½ percent unemployment rate threshold is reached, in order to ensure the continued effectiveness of the Committee's forward guidance. Accordingly, policymakers may see the March meeting as an opportune occasion for introducing new forward guidance, especially in view of the fact that the meeting will be followed by a press conference and that the unemployment rate could fall below 6½ percent prior to the April meeting. As proposed under Alternative B, the Committee may therefore choose to combine a modest further reduction in the pace of asset purchases with a revision to its forward guidance.

In place of the current threshold-based forward guidance, policymakers may prefer to use qualitative language to communicate the Committee's intentions about the federal funds rate, thereby maintaining flexibility about the timing and size of future adjustments in their target for that rate. If policymakers favor qualitative guidance, they may want to point to the Committee's assessment of "progress—both realized and expected—toward its objectives of maximum employment and 2 percent inflation" as the key factor that will influence their decision about when to raise the federal funds rate above its effective lower bound. This wording might also be seen as desirable because it adopts a characterization of the Committee's policy decisionmaking that is not focused on a single labor market indicator, but focuses more broadly on the goals of "maximum employment" and 2 percent inflation. Such a reference would be consistent with the dual mandate and the Committee's Statement on Longer-Run Goals and Monetary Policy Strategy (hereafter, Consensus Statement).

The message that the amount of policy accommodation depends on progress toward the Committee's goals is reinforced by adding that it likely will be appropriate to maintain the current target range for the federal funds rate "for a considerable time after the asset purchase program ends." In particular, because the asset purchases are themselves linked to economic progress, the indication that firming of the federal funds rate will not occur until after the purchase program ends underscores the state-dependent nature of federal funds rate decisions even as it adds an element of calendar dependence.

A new sixth paragraph in the draft statement for Alternative B expands the Committee's description of its conduct of policy once the federal funds rate has been raised above its lower bound. The paragraph retains the reference to taking a "balanced approach" to removing policy accommodation, as in the Consensus Statement and previous FOMC statements, allowing for the possibility that the Committee may face a tradeoff in achieving the dual mandate goals when it begins to remove policy accommodation. In light of the important economic role of expectations for the path of interest rates, and with the first increase in the federal funds rate gradually approaching, the Committee may want to provide additional information about the likely course of the federal funds rate once it has left the lower bound. As suggested by the Summary of Economic Projections released after the December FOMC meeting, policymakers may judge that it will be appropriate to keep the federal funds rate well below its longer-run normal level for the next several years—perhaps reflecting one or more of the following factors: a lower-than-normal equilibrium real interest rate, the asymmetric risks posed by the effective lower bound on the federal funds rate, a commitment to keeping the federal funds rate low in the medium term in order to spur more rapid economic growth in the near term, or a judgment that the Committee should reduce the size of the balance sheet as it raises the funds rate. If so, policymakers might wish to provide such additional guidance by noting that "even after employment and inflation are near mandate-consistent levels, economic conditions may, for some time, warrant keeping short-term interest rates below levels the Committee views as normal in the longer run."

Some participants may view the use of the phrase "short-term interest rates," instead of specifically referring to the federal funds rate, as an appropriate way of opening the option of targeting a different short-term interest rate or rates during normalization. However, other policymakers, while supporting the policy action embodied in Alternative B, may regard it as inappropriate for the Committee, at this stage, to add to the perception—in a way that will surely be noticed by market

participants—that it might not continue to target the federal funds rate. These policymakers may see further detailed Committee deliberation as warranted before any signal about the future operation of monetary policy is provided in the statement. If so, they might favor language like that in Alternative B, but with "short-term interest rates" replaced by "the target federal funds rate."

The revisions to the forward guidance in Alternative B are not intended to indicate a change in the Committee's thinking about the conditions that will warrant raising the federal funds rate or the time at which it likely will become appropriate to do so. The seventh paragraph of the draft statement of Alternative B makes this point explicitly by stating that the revised forward guidance is "fully consistent" with the previous statement's guidance. Participants may view this paragraph as useful in limiting possible misinterpretations by market participants of the new forward guidance and thereby reducing the likelihood of undesired changes in financial conditions in response to the release of the statement.

Some policymakers may wish to emphasize that inflation has stayed low in recent months or, while acknowledging recent growth in payroll employment, may judge that adverse weather conditions likely account for only part of the recent softness in economic activity, suggesting that the outlook for the labor market may have deteriorated. In either case, participants may believe that it has become appropriate to provide greater monetary policy accommodation, perhaps by strengthening the forward guidance and continuing asset purchases at their current pace, as in Alternative A, rather than reducing the pace again as market participants expect. Participants may see the inflation-floor form of forward guidance as desirable because it implies that, even if employment is nearing the Committee's assessment of its mandate-consistent level, accommodation will remain in place if necessary to ensure that inflation will move up to 2 percent. They may believe that in response to this language, investors would push back the date of the first hike in the federal funds rate, perhaps considerably, if inflation were to continue to run below 2 percent. However, other policymakers may see financial market expectations regarding the future path of the federal funds rate as appropriately aligned with the Committee's thinking at this time. Consequently, they may be concerned that the adoption of an inflation floor, as in paragraph A.5, could confuse financial market participants about the Committee's intentions, with possible unwelcome volatility in financial markets. In addition, some participants may be concerned that an inflation floor would not provide an indication regarding the implications for policy of an unexpected above-target inflation

rate. These policymakers may therefore judge that, as the economy transitions from extraordinary conditions to more ordinary times, it is appropriate for their forward guidance to shift from reliance on numerical thresholds to qualitative language that reflects the Committee's Consensus Statement.

Alternatively, some policymakers may be concerned that maintaining very low rates for as long as suggested by the new forward guidance language in paragraph B.6 could risk a rise in longer-term inflation expectations and an undesirably large increase in inflation over the medium run. They may also worry that this forward guidance could lead to excessive risk-taking in the financial sector. For these reasons, they may be inclined toward an earlier increase in the federal funds rate than envisioned in Alternative B. However, increases in medium- and longer-term interest rates since the middle of last year appear to have reduced risk-taking at least to some extent by spurring market participants to pare back some of their leveraged positions in fixed-income markets. Moreover, as valuations in most asset markets appear to be broadly in line with historical norms, and the level of vulnerability of the financial system to potential adverse shocks is apparently at moderate levels, policymakers may think it unlikely that sizable financial imbalances will arise from current policy settings. Consequently, with the unemployment rate still elevated, inflation below 2 percent, and expected inflation well anchored, these policymakers may judge that the risks of an increase in inflation to a level persistently above the Committee's 2 percent longer-term goal currently remains small and that the risks to financial stability of maintaining highly accommodative policy remain manageable. Moreover, they may judge that the language in paragraph B.5 indicating that the Committee will consider financial conditions, inflation pressures, and inflation expectations in determining how long to maintain a highly accommodative stance of monetary policy provides the Committee with sufficient flexibility for attaining its long-run objectives.

The likely market reaction to a statement like Alternative B is difficult to predict with confidence, particularly in light of the substantial of changes to the Committee's forward guidance. According to the Desk's latest survey, all of the primary dealers expect the Committee to announce a third $10 billion cut in the pace of asset purchases next week. Moreover, most dealers expect this reduction to be accompanied by a modification of the forward guidance for the federal funds rate—either by deemphasizing the unemployment rate threshold or dropping it and replacing it with qualitative guidance. Therefore, market participants may not be surprised by a statement like

Alternative B and may view the stance of policy as broadly unchanged. In that case, the effects of the announcement on financial market prices would be small. There is a risk, however, that the move to more-qualitative forward guidance could be read by investors as suggesting that the Committee is pulling back from its earlier guidance, potentially boosting both the level and volatility of longer-term interest rates through increased uncertainty about the expected path of future short-term rates as well as higher term premiums. The risk of this scenario is reduced by the inclusion in the postmeeting statement of paragraph B.7; it might be reduced still further if the postmeeting press conference emphasized that the Committee's outlook for policy had not changed significantly and if this unchanged outlook was confirmed by the March Summary of Economic Projections.

THE CASE FOR ALTERNATIVE C

Policymakers may view the expansion of payroll employment observed in recent months as establishing that the economy and the labor market have sufficient momentum to continue making significant progress toward the Committee's objective of maximum employment. They may view adverse weather conditions as masking the underlying strength in private-sector demand, and thus place more weight on strong consumer and business confidence, as in the "Faster Recovery" scenario in Tealbook Book A. Participants may further cite last year's moderate economic expansion in the face of significant fiscal restraint as evidence that the recovery has become self-sustaining and is set to strengthen in the coming year as fiscal restraint continues to wane. Alternatively, policymakers may have concluded that the slower-than-anticipated improvement in output and employment over much of the current recovery largely reflects a step-down in trend productivity growth from its pre-crisis norm (a possibility suggested by the "Supply-Side Damage" alternative scenario in Tealbook Book A), coupled with a downward trend in the labor force participation rate and a persistent increase in the natural rate of unemployment. If so, they may judge that the level of potential output is significantly lower than the staff currently estimates and that the unemployment rate is not much above its longer-run normal level. In addition, policymakers may view the recent stability of inflation readings as a sign that the temporary factors that put downward pressure on inflation for a time have begun to diminish; if so, they may anticipate that inflation will firm toward 2 percent in coming quarters, provided that longer-term inflation expectations remain stable. Consequently, policymakers may opt to issue a statement like that in Alternative C.

Some policymakers may worry that maintaining a highly accommodative stance of policy for a protracted period could raise the risk of an undesirable increase in inflation. Thus, they may prefer making a larger reduction in asset purchases at this meeting than under Alternative B, thereby moving up the end of the purchase program and raising the federal funds rate sooner than under Alternative B. In addition, some policymakers may not want to indicate that short-term interest rates are likely to be below average for some time. Policymakers may simply judge that short-term interest rates will not be below average, or they may be concerned that such a forecast, if interpreted as an unconditional statement about future policy, could undermine the stability of financial markets over time or limit the Committee's scope to tighten policy more rapidly than under the baseline projection should such a tightening become appropriate.

Based on the Survey of Primary Dealers, a decision to adopt a statement like Alternative C would surprise market participants, as all dealers expect a third $10 billion cut in the pace of total asset purchases. A $20 billion reduction in the pace of purchases, along with the removal of the "measured steps" language from the fourth paragraph of the statement, likely would be interpreted by investors as a signal that the Committee is moving to end the asset purchase program more quickly than previously anticipated. In conjunction with the solidly positive characterization of the economy in the first paragraph of the draft statement for Alternative C, a larger-than-expected cut in the pace of purchases would probably lead market participants to pull forward their forecasts of the date on which the Committee will first increase its target for the federal funds rate and perhaps also lead them to anticipate a steeper path for the federal funds rate during the period of policy firming. In response, longer-term interest rates likely would rise, equity prices and inflation compensation would fall, and the dollar would appreciate. If, however, a statement like that in Alternative C led investors to become more confident about the economic outlook, interest rates and the dollar could rise more, and equity prices might not decline, and could even increase.

The Case For Alternative A

Inasmuch as inflation has lingered below the Committee's longer-run objective for almost two years and has shown little sign of moving back toward 2 percent, policymakers might be concerned that monetary policy is not sufficiently accommodative. They also may see recent data as again disappointing their expectations that the economic recovery will strengthen. In particular, they may point to weaker-than-

expected fourth-quarter real GDP growth and argue that unusually severe weather can account for only a portion of the softness in the first-quarter data. Although policymakers may be encouraged by recent gains in private payroll employment, they could remain skeptical that significant growth in employment can be sustained in the absence of a broader pickup in economic activity. Moreover, they may judge that the fall in the unemployment rate in recent quarters overstates the degree to which labor market slack has been removed, and see other indicators—for example, the number of individuals who are either long-term unemployed or working part time for economic reasons—as pointing toward the existence of considerable unused labor resources. All told, policymakers may judge that there has not been sufficient progress towards the Committee's objectives for the labor market and inflation to warrant reducing the pace of purchases at this meeting. If so, they may prefer Alternative A.

Policymakers may see a statement like that in Alternative A as desirable because it maintains the pace of asset purchases and explicitly introduces a floor to inflation that is expressed in terms of the projected inflation between one and two years ahead, stating that the federal funds rate will not be increased until inflation over that time frame is projected to be back at its mandate-consistent level. They may view such a policy decision as appropriate in order to put additional downward pressure on longer-term interest rates, thus helping to ensure that the recovery gains traction and that inflation moves up toward the Committee's longer-run goal. In addition, some participants may view an explicit inflation floor as desirable because it provides assurance to the public and financial market participants that the Committee is committed to returning inflation to its 2 percent goal.

Some participants may judge not only that the modal outlook is unsatisfactory but also that downside risks to the outlook for inflation, while modest, remain large enough to be a concern. In particular, with underlying inflation continuing to run well below 2 percent, some policymakers may be particularly concerned by the possibility that persistently low inflation could eventually lead to declines in longer-run inflation expectations, resulting in mutually reinforcing downward dynamics for inflation and economic activity along the lines of the "Low Inflation" alternative scenario in Tealbook Book A. If so, then they might favor the inflation-floor language in Alternative A because it would reinforce the Committee's intention to defend its 2 percent inflation goal from below, and so help to avoid a sustained decline in inflation. In addition, some participants may judge that a further reduction in inflation in current circumstances would

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have larger-than-usual adverse implications for the economy because the effective lower bound on interest rates limits the Committee's scope to respond. As a result, these participants may prefer to wait to reduce asset purchases further until they have clear evidence that the first-quarter slowdown in economic growth will prove temporary and that inflation will move back toward the Committee's 2 percent longer-run goal.

An announcement like Alternative A would come as a considerable surprise to market participants. Investors likely would mark up their expectations for total asset purchases and push back the date of the first hike in the federal funds rate, perhaps by a considerable amount. Therefore, longer-term interest rates likely would decline, inflation compensation and equity prices might rise, and the dollar could depreciate. However, if investors read the statement in Alternative A as reflecting a more downbeat assessment of the outlook for economic growth and inflation, equity prices might not rise or could even decline, and inflation compensation could fall. In addition, introducing new forward guidance language only in terms of inflation might create significant confusion among investors about the extent to which the Committee feels bound by its earlier forward guidance, a development that could increase the volatility of asset prices.

DIRECTIVE

The directive that was issued after the January meeting appears on the next page, followed by drafts for a March directive that correspond to each of the three policy alternatives. Each draft includes changes to make it consistent with the corresponding postmeeting statement.

The directive for Alternative A instructs the Desk to continue purchasing additional agency mortgage-backed securities at a pace of about $30 billion per month and to continue purchasing longer-term Treasury securities at a pace of about $35 billion per month. The draft directive for Alternative B instructs the Desk to purchase agency mortgage-backed securities at a pace of about $25 billion per month, and to purchase longer-term Treasury securities at a pace of about $30 billion per month, beginning in April. The draft directive for Alternative C instructs the Desk to purchase agency mortgage-backed securities at a pace of about $20 billion per month, and to purchase longer-term Treasury securities at a pace of about $25 billion per month, also beginning in April. All three of the draft directives direct the Desk to maintain the current policy 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 into new issues.

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January 2014 Directive

Consistent with its statutory mandate, the Federal Open Market Committee seeks monetary and financial conditions that will foster maximum employment and price stability. In particular, 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 undertake open market operations as necessary to maintain such conditions. Beginning in February, the Desk is directed to purchase longer-term Treasury securities at a pace of about $35 billion per month and to purchase agency mortgage-backed securities at a pace of about $30 billion per month. The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions. The Committee directs the Desk to maintain its policy of rolling over maturing Treasury securities into new issues and its policy of reinvesting principal payments on all agency debt and agency mortgage-backed securities in agency mortgage-backed securities. 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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Directive for March 2014 Alternative A

Consistent with its statutory mandate, the Federal Open Market Committee seeks monetary and financial conditions that will foster maximum employment and price stability. In particular, 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 undertake open market operations as necessary to maintain such conditions. ~~Beginning in February,~~ The Desk is directed to ~~purchase~~ **continue purchasing** longer-term Treasury securities at a pace of about $35 billion per month and to ~~purchase~~ **continue purchasing** agency mortgage-backed securities at a pace of about $30 billion per month. The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions. The Committee directs the Desk to maintain its policy of rolling over maturing Treasury securities into new issues and its policy of reinvesting principal payments on all agency debt and agency mortgage-backed securities in agency mortgage-backed securities. 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.

Directive for March 2014 Alternative B

Consistent with its statutory mandate, the Federal Open Market Committee seeks monetary and financial conditions that will foster maximum employment and price stability. In particular, 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 undertake open market operations as necessary to maintain such conditions. Beginning in ~~February~~ **April**, the Desk is directed to purchase longer-term Treasury securities at a pace of about ~~$35~~ **$30** billion per month and to purchase agency mortgage-backed securities at a pace of about ~~$30~~ **$25** billion per month. The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions. The Committee directs the Desk to maintain its policy of rolling over maturing Treasury securities into new issues and its policy of reinvesting principal payments on all agency debt and agency mortgage-backed securities in agency mortgage-backed securities. 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.

Directive for March 2014 Alternative C

Consistent with its statutory mandate, the Federal Open Market Committee seeks monetary and financial conditions that will foster maximum employment and price stability. In particular, 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 undertake open market operations as necessary to maintain such conditions. Beginning in ~~February~~ **April**, the Desk is directed to purchase longer-term Treasury securities at a pace of about ~~$35~~ **$25** billion per month and to purchase agency mortgage-backed securities at a pace of about ~~$30~~ **$20** billion per month. The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions. The Committee directs the Desk to maintain its policy of rolling over maturing Treasury securities into new issues and its policy of reinvesting principal payments on all agency debt and agency mortgage-backed securities in agency mortgage-backed securities. 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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Projections

BALANCE SHEET, INCOME, AND MONETARY BASE

The staff has prepared three scenarios for the Federal Reserve's balance sheet that correspond to Alternatives A, B, and C. All three alternatives include additional asset purchases, though the pace and cumulative amount of purchases differ across the alternatives. Projections under each scenario are based on the staff's assumptions about the trajectory of various components of the balance sheet and the balance sheet normalization strategy.[1] The projections associated with each of the policy alternatives assume that when the time comes to normalize the balance sheet, the SOMA portfolio shrinks only through redemptions of Treasury securities and agency debt and paydowns of principal from agency MBS; consistent with the strategy outlined in the press conference statement following the June 2013 FOMC meeting, no sales of agency MBS are contemplated.

For the balance sheet scenario that corresponds to Alternative B, monthly purchases of longer-term Treasury securities and of agency MBS are reduced by $5 billion each in April. Thereafter, monthly purchases of Treasury securities and agency MBS are each reduced further by $5 billion after subsequent FOMC meetings; purchases wind down to zero early in the fourth quarter of 2014. Under these assumptions, which are consistent with the staff baseline forecast assumption, purchases total a bit less than $1.5 trillion over 2013 and 2014, unchanged from Alternative B and the staff forecast in the January Tealbook.

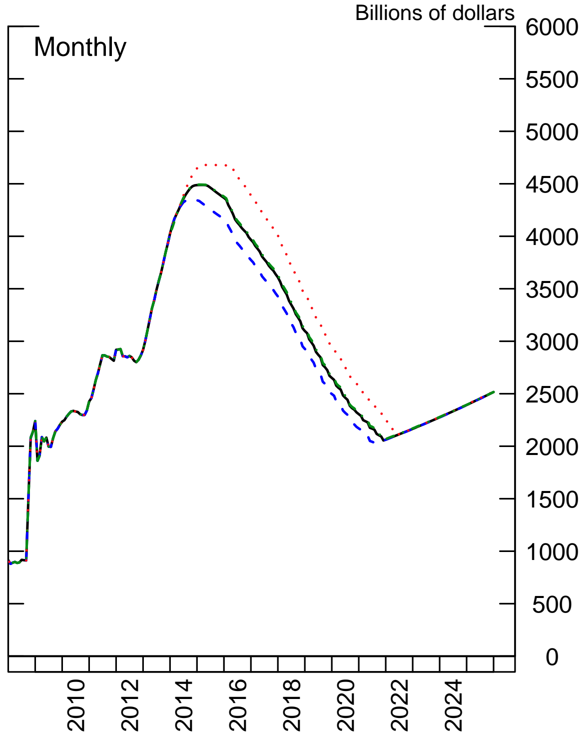
As shown in the exhibit "Total Assets and Selected Balance Sheet Items," total assets under the purchase program assumed for Alternative B peak at about $4.5 trillion in the first quarter of 2015, with $2.4 trillion in Treasury securities holdings and $1.7 trillion in agency MBS holdings.[2] We assume that the first increase in the target federal funds rate is in the second quarter of 2015, consistent with the staff forecast and unchanged from Alternative B of the January Tealbook. At the time of liftoff, all reinvestments and rollovers of securities are assumed to cease, and the SOMA portfolio

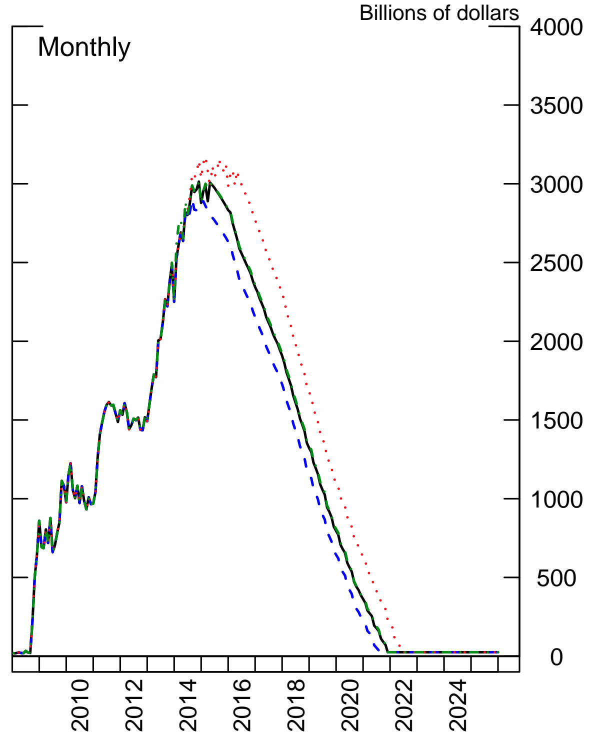
[1] Further information on the assumptions regarding asset and liability categories not discussed here can be referenced in the appendix of the December 2013 Tealbook, Book B.

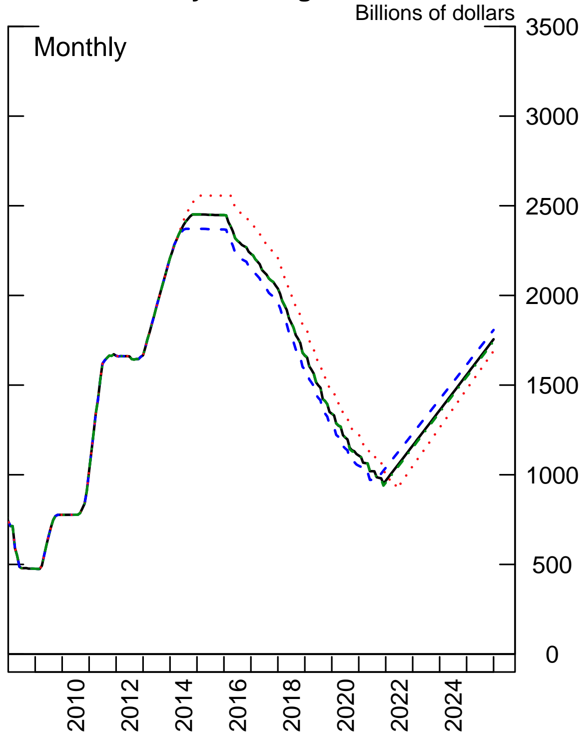
[2] Total assets peak after the end of the purchase program due to delayed settlement of agency MBS purchases.

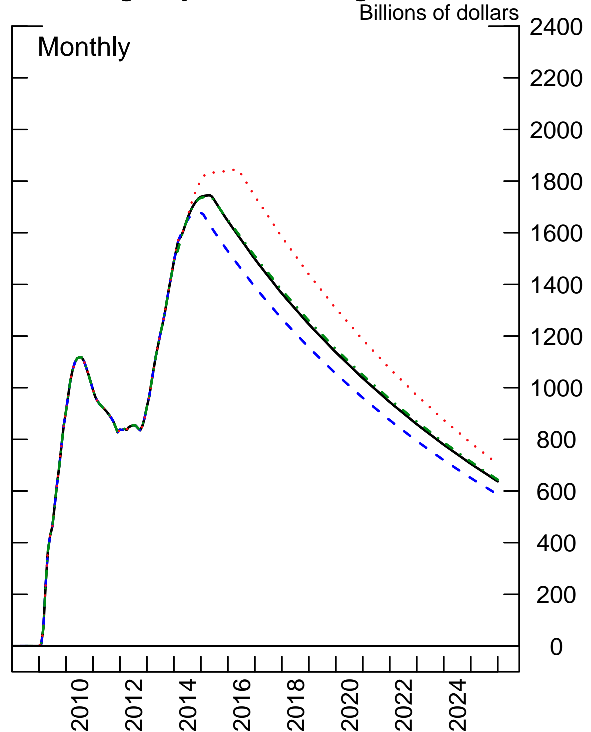
Total Assets and Selected Balance Sheet Items

Alternative B
Alternative C
Alternative A
January Tealbook Alternative B









Projections

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begins to contract.[3,4] The size of the portfolio is normalized by late 2021, as in the January Tealbook.[5] The balance sheet then begins to expand, with increases in SOMA holdings essentially matching the growth of currency in circulation and Federal Reserve Bank capital. Total assets are $2.5 trillion at the end of 2025, with about $640 billion in agency MBS holdings remaining in the SOMA portfolio.

The second exhibit, "Income Projections," shows the implications of balance sheet developments for Federal Reserve income. Under Alternative B, interest income rises while purchases are ongoing, and subsequently declines for a number of years as the SOMA portfolio contracts through redemptions and paydowns of principal. Although interest expense is quite small in the near term, when the federal funds rate rises with reserve balances still quite elevated, interest expense climbs. As a result, Federal Reserve remittances to the Treasury remain robust in the near term but then decline markedly over the period from 2016 to 2018; nevertheless, remittances are projected to remain positive over the entire projection period. Annual remittances peak at about $100 billion in 2014 and trough at about $15 billion later in the decade, and no deferred asset is recorded.[6] The Federal Reserve's cumulative remittances from 2009 through 2025 are about $950 billion, well above the level that would have been observed in the absence of the asset purchase programs.

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[3] Temporary reserve draining tools—reverse repurchase agreements (RRPs) and term deposits—are not modeled in any of the scenarios presented, although the model does assume RRPs associated with foreign official and international accounts will remain around $100 billion throughout the forecast period. 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.

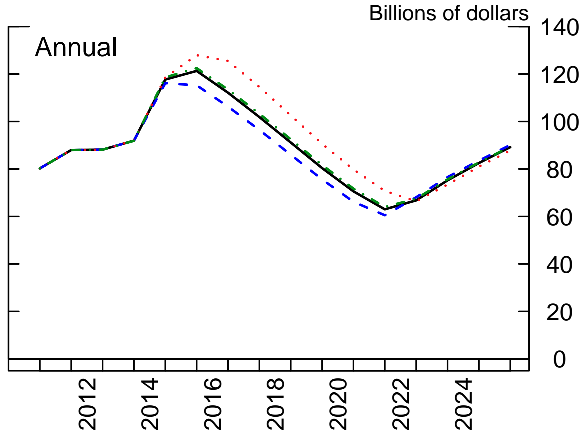
[4] Projected prepayments of agency MBS reflect interest rate projections as of March 10, 2014.

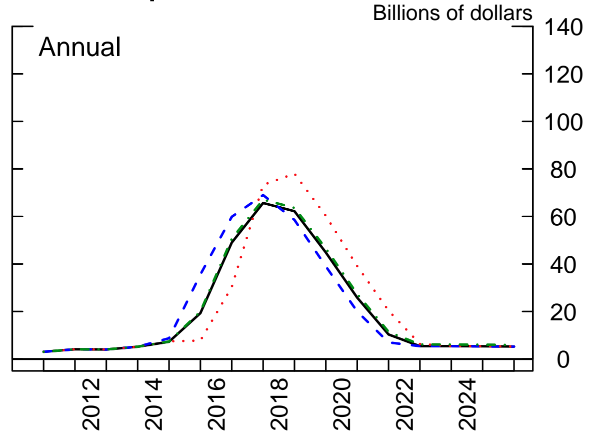
[5] The size of the balance sheet is assumed to be normalized when the securities portfolio reverts to its longer-run trend level, which is determined largely by currency in circulation plus Federal Reserve capital and a projected steady-state level of reserve balances. The projected timing of the normalization 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 in the long run; currently, we assume that level of reserve balances to be $25 billion, about where these balances stood prior to the crisis. However, ongoing regulatory and structural changes could lead to a higher demand for reserve balances in the new steady state. A higher steady-state level for reserve balances would, all else equal, imply an earlier normalization of the size of the balance sheet. In addition, if the Committee were to select a different operating regime for monetary policy than was used prior to the crisis, the new normal size of the balance sheet could potentially be quite different than it was prior to the crisis.

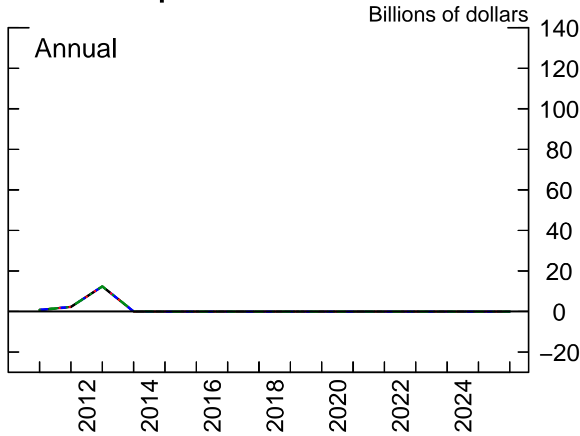
[6] In the event that a Federal Reserve Bank's earnings fall short of the amount necessary to cover its operating costs, pay dividends, and equate surplus to capital paid-in, a deferred asset would be recorded. In this Tealbook, none of the alternatives results in the need to record a deferred asset.

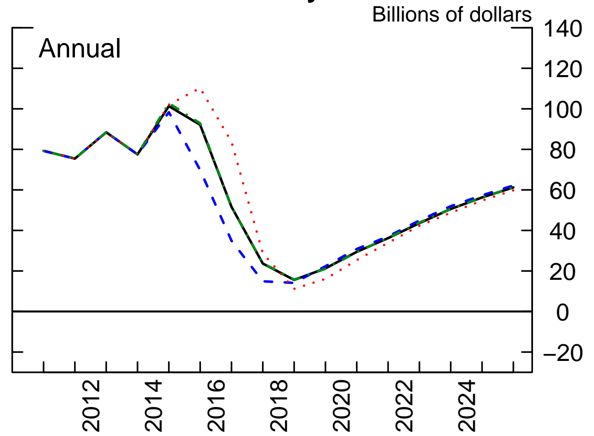
Income Projections

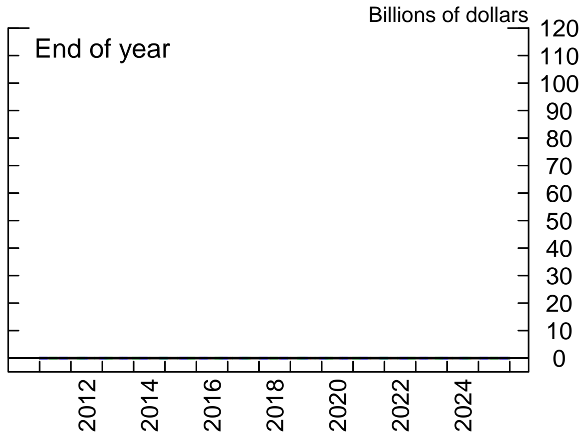
Alternative B
Alternative C
Alternative A
January Tealbook Alternative B

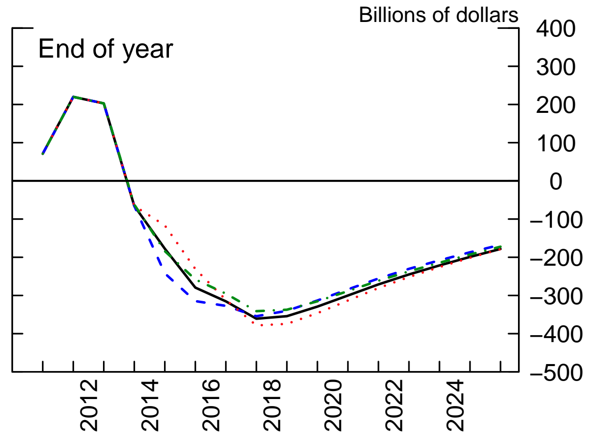












Projections

The unrealized gain/loss position of the SOMA portfolio is importantly influenced by the level of interest rates. Staff estimates that the portfolio was in an unrealized gain position of about $35 billion as of the end of February 2014.[7] Reflecting the rise in interest rates over the projection period, the position under Alternative B shifts to an unrealized loss in the near term and reaches a peak unrealized loss of about $360 billion at year-end 2017. The unrealized loss position narrows through the remainder of the forecast period as securities mature and new securities are added at par.

Under Alternative C, in April, the monthly pace of purchases of longer-term Treasury securities is reduced by $10 billion; the same is true of purchases of agency MBS. Purchases are assumed to wind down to zero by mid-2014.[8] Under this balance sheet scenario, purchases total about $1.3 trillion over 2013 and 2014, and the federal funds rate is assumed to lift off in late 2014. Reinvestment of principal from maturing or prepaying securities ends and redemptions begin in the fourth quarter of 2014 concurrent with the first increase in the federal funds rate. Total assets in this scenario peak at about $4.3 trillion in the third quarter of 2014, and the size of the balance sheet is normalized around the same time as in Alternative B. Federal Reserve remittances to the Treasury are projected to remain positive throughout the projection period, and no deferred asset is recorded. Cumulative remittances from 2009 to 2025 are slightly lower than under Alternative B.

In the scenario for Alternative A, the current pace of purchases of longer-term Treasury securities and agency MBS is maintained in the near term and then is reduced gradually, with purchases ending in early 2015.[9] Under these assumptions, purchases total about $1.7 trillion from 2013 to 2015. In this scenario, total assets increase to a peak of about $4.7 trillion in the first quarter of 2015. The first increase in the target federal funds rate is assumed to occur in the second quarter of 2016, consistent with the

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[7] The Federal Reserve reports the level and the change in the quarter-end net unrealized gain/loss position of the SOMA portfolio to the public with a lag in the "Federal Reserve Banks Combined Quarterly Financial Report," available on the Board's website at http://www.federalreserve.gov/monetarypolicy/bst_fedfinancials.htm#quarterly.

[8] The assumption that purchases will end by mid-2014 is consistent with a view that the recovery is proceeding more strongly than in the staff forecast or that the level of potential output is lower than the current staff estimate. It is also consistent with a concern about the possible costs or risks associated with asset purchases and keeping interest rates very low for a protracted period of time.

[9] This later conclusion to the purchases would be consistent with progress toward the Committee's objectives for the labor market and inflation occurring more gradually in the near term than in the staff forecast, or with a desire on the part of policymakers to return employment and inflation to mandate-consistent levels more rapidly than in the baseline.

Projections

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

Billions of dollars

	Feb 28, 2014	2015	2017	2019	2021	2023	2025
Total assets	4,166	4,366	3,609	2,651	2,063	2,276	2,516
Selected assets							
Loans and other credit extensions*	3	0	0	0	0	0	0
Securities held outright	3,905	4,126	3,407	2,480	1,913	2,141	2,395
U.S. Treasury securities	2,283	2,448	2,038	1,340	967	1,360	1,755
Agency debt securities	51	33	4	2	2	2	2
Agency mortgage-backed securities	1,570	1,645	1,365	1,137	944	779	637
Unamortized premiums	209	192	150	117	93	76	62
Unamortized discounts	-16	-18	-15	-12	-9	-8	-7
Total other assets	64	66	66	66	66	66	66
Total liabilities	4,109	4,304	3,531	2,553	1,939	2,118	2,317
Selected liabilities							
Federal Reserve notes in circulation	1,208	1,351	1,507	1,643	1,802	1,984	2,183
Reverse repurchase agreements	217	100	100	100	100	100	100
Deposits with Federal Reserve Banks	2,677	2,846	1,921	809	38	38	38
Reserve balances held by depository institutions	2,609	2,833	1,908	796	25	25	25
U.S. Treasury, General Account	46	5	5	5	5	5	5
Other Deposits	23	8	8	8	8	8	8
Interest on Federal Reserve Notes due to U.S. Treasury	3	0	0	0	0	0	0
Total capital	56	62	78	98	124	157	199

Source: Federal Reserve H.4.1 statistical releases and staff calculations.
Note: Components may not sum to totals due to rounding.
* Loans and other credit extensions includes primary, secondary, and seasonal credit; central bank liquidity swaps; Term Asset-Backed Securities Loan Facility (TALF); net portfolio holdings of Maiden Lane LLC, Maiden Lane II LLC, and Maiden Lane III LLC; and net portfolio holdings of TALF LLC.

Projections

expectation that inflation one to two years ahead is projected to be below 2 percent through at least this time. All reinvestments are assumed to cease at the time of the first increase in the federal funds rate, and then the SOMA portfolio begins to contract. The size of the portfolio is normalized about two quarters later than in the scenario corresponding to Alternative B, reflecting the larger amount of asset purchases. Federal Reserve remittances to the Treasury are projected to remain positive over the entire projection period, and no deferred asset is recorded. Cumulative remittances from 2009 through 2025 are slightly higher than under Alternative B.

As shown in the exhibit, “Alternative Projections for the 10-Year Treasury Term Premium Effect,” under Alternative B, the effect of the Federal Reserve’s cumulative increase in asset holdings on the term premium in ten-year yields in the first quarter of 2014 is negative 126 basis points, about the same as under Alternative B in the January Tealbook. Over the remainder of the projection period, the term premium effect declines slowly toward zero, reflecting the actual and anticipated normalization of the portfolio. Under Alternative C, the contemporaneous term premium effect is negative 119 basis points. The effect is less negative than in Alternative B because there are fewer securities purchased than under Alternative B and the balance sheet begins to contract sooner. Under Alternative A, the term premium effect is about negative 138 basis points in the current quarter. The effect is more negative than in Alternative B because more securities are purchased and the balance sheet begins to contact later than under Alternative B.

The differences across the scenarios regarding the projected peak amount of reserve balances and the level of reserve balances at liftoff are directly related to the magnitude of assumed asset purchases and the timing of the liftoff of the federal funds rate, although the level of reserve balances is also contingent on the evolution of other balance sheet items. Reserve balances peak at about $3.2 trillion and $3.0 trillion in early 2015 under Alternatives A and B, respectively. For Alternative C, reserve balances peak at about $2.9 trillion in the third quarter of 2014.

As shown in the final exhibit, “Alternative Projections for the Monetary Base,” in the scenario corresponding to Alternative B, the monetary base increases on balance through the middle of 2015 because the purchase program is accompanied by an increase in reserve balances. Once exit begins, the monetary base shrinks, on net, through 2021, primarily because redemptions of securities cause corresponding reductions in reserve balances. Starting around mid-2022, after reserve balances are assumed to have

Alternative Projections for the 10-Year Treasury Term Premium Effect

Date	Alternative B	Alternative C	Alternative A	January Alternative B
	Basis Points			
	Quarterly Averages			
2014: Q1	–126	–119	–138	–127
Q2	–121	–114	–134	–123
Q3	–116	–109	–129	–117
Q4	–111	–103	–124	–112
2015: Q1	–106	–98	–119	–107
Q2	–101	–93	–114	–102
Q3	–95	–88	–108	–96
Q4	–90	–83	–103	–91
2016: Q1	–86	–79	–98	–87
Q2	–81	–75	–93	–82
Q3	–77	–71	–88	–78
Q4	–73	–67	–84	–74
2017: Q4	–58	–53	–67	–59
2018: Q4	–46	–42	–53	–47
2019: Q4	–37	–34	–42	–37
2020: Q4	–29	–27	–33	–29
2021: Q4	–24	–22	–26	–23
2022: Q4	–19	–18	–20	–19
2023: Q4	–15	–14	–16	–15
2024: Q4	–12	–11	–12	–11
2025: Q4	–8	–8	–9	–8

Projections

stabilized at $25 billion, the monetary base begins to expand in line with the growth of currency in circulation. Because the contours of the balance sheet are similar across the alternatives, the growth rates of the monetary base in Alternatives C and A are broadly similar to those under Alternative B.[10]

[10] The projections for the monetary base depend critically on the FOMC's use of various tools during the exit. If, for example, the FOMC employs reverse repurchase agreements or term deposits extensively during the exit, the projected level of reserve balances and the monetary base could decline quite markedly in the out years.

Alternative Projections for the Monetary Base

Percent change, annual rate; not seasonally adjusted

Date	Alternative B	Alternative C	Alternative A	January Alternative B
Quarterly				
2014: Q1	18.3	18.4	18.4	55.0
Q2	18.9	17.9	20.3	17.7
Q3	19.3	12.9	23.7	14.2
Q4	6.8	3.4	12.4	6.1
2015: Q1	-0.3	3.2	5.1	1.4
Q2	5.6	-4.6	-4.3	4.7
Q3	-2.1	-4.7	5.9	-2.9
Q4	-4.6	-4.6	0.2	-4.0
2016: Q1	-6.8	-6.9	-1.4	-6.1
Q2	-12.6	-13.0	1.2	-11.5
Q3	-9.9	-10.1	-6.9	-9.1
Q4	-8.3	-8.4	-8.1	-7.6
Annual				
2017	-9.5	-9.7	-9.2	-8.8
2018	-14.5	-15.0	-14.1	-13.3
2019	-15.8	-16.2	-15.6	-14.4
2020	-15.0	-15.3	-14.6	-13.6
2021	-12.7	-8.0	-13.9	-11.9
2022	3.3	4.8	-7.2	1.7
2023	4.8	4.8	4.9	4.2
2024	4.8	4.8	4.9	4.3
2025	4.8	4.8	4.9	4.3

Note: For years, Q4 to Q4; for quarters, calculated from corresponding average levels.

MONEY

After having grown significantly faster than nominal GDP for several years, M2 is projected to increase at nearly the same rate as nominal GDP throughout the remainder of this year and then to contract modestly in 2015 and 2016.[11] This pattern results primarily from the assumed increase in the target federal funds rate over the forecast horizon and the associated rise in the opportunity cost of holding M2. In addition, the staff assumes that investors will shift their portfolios away from the safe and liquid assets in M2 toward riskier non-M2 assets as the economic recovery progresses.[12]

M2 Monetary Aggregate Projections
(Percent change, annual rate; seasonally adjusted)*

Quarterly			
	2014:	Q1	6.2
		Q2	5.1
		Q3	5.0
		Q4	5.2
	2015:	Q1	-0.2
		Q2	-1.7
		Q3	-2.3
		Q4	-2.1
	2016:	Q1	-1.5
		Q2	-1.1
		Q3	-0.4
		Q4	0.2
Annual			
		2014	5.5
		2015	-1.6
		2016	-0.7

Note: This forecast is consistent with nominal GDP and interest rates in the Tealbook forecast. Actual data through March 3, 2014; projections thereafter.

* Quarterly growth rates are computed from quarter averages. Annual growth rates are calculated using the change from fourth quarter of previous year to fourth quarter of year indicated.

[11] The staff's M2 forecast is constructed using the staff's forecast of nominal income growth and model-based estimates of interest rate effects with judgmental adjustments.

[12] The monetary aggregates could be affected by tools that the Federal Reserve employs during the normalization period, although the size and direction of such effects are difficult to judge. In these projections, we do not take account of such effects.

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Abbreviations

ABS	asset-backed securities
AFE	advanced foreign economy
BEA	Bureau of Economic Analysis, Department of Commerce
BHC	bank holding company
BOE	Bank of England
BOJ	Bank of Japan
CDS	credit default swaps
C&I	commercial and industrial
CMBS	commercial mortgage-backed securities
CP	commercial paper
CPI	consumer price index
CRE	commercial real estate
Desk	Open Market Desk
ECB	European Central Bank
EME	emerging market economy
ETF	exchange-traded fund
FDIC	Federal Deposit Insurance Corporation
FOMC	Federal Open Market Committee; also, the Committee
G-7	Group of Seven (Canada, France, Germany, Italy, Japan, U.K., U.S.)
G-20	Group of Twenty (Argentina, Australia, Brazil, Canada, China, European Union, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Turkey, U.K., U.S.)
GCF	general collateral finance
GDP	gross domestic product
LIBOR	London interbank offered rate
LSAP	large-scale asset purchase
MBS	mortgage-backed securities
NIPA	national income and product accounts

OIS	overnight index swap
ON RRP	overnight reverse repurchase agreement
OTC	over-the-counter
PCE	personal consumption expenditures
REIT	real estate investment trust
REO	real estate owned
repo	repurchase agreement
RMBS	residential mortgage-backed securities
RRP	reverse repurchase agreement
SCOOS	Senior Credit Officer Opinion Survey on Dealer Financing Terms
SFA	Supplemental Financing Account
SOMA	System Open Market Account
S&P	Standard & Poor’s
TALF	Term Asset-Backed Securities Loan Facility
TBA	to be announced (for example, TBA market)
TGA	U.S. Treasury’s General Account
TIPS	Treasury inflation-protected securities
TPE	Term premium effects