Prefatory Note

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Report to the FOMC on Economic Conditions and Monetary Policy

Book B

Monetary Policy: Strategies and Alternatives

October 23, 2014

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

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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 five different policy rules: the Taylor (1993) rule, the Taylor (1999) rule, an inertial version of the Taylor (1999) rule, a first-difference rule, and a 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 the table shows, the Taylor (1993) and the Taylor (1999) rules call for sizable increases in the federal funds rate right away. The inertial Taylor (1999) rule and the first-difference rule prescribe smaller increases in the federal funds rate in the near term, to about ½ percent by the first quarter of 2015. By contrast, the nominal income targeting rule calls for negative policy rates in the near term. These negative values arise because the nominal income targeting rule responds to the shortfall of the GDP deflator from the level it would have reached had it grown at a pace of 2 percent per year since the fourth quarter of 2007; on average, the growth rate of the GDP deflator has fallen short of 2 percent by nearly ½ percentage point per year since 2007, leading to a cumulative shortfall of 3¼ percent.

The rules' near-term prescriptions are a little lower than in September, reflecting a slightly wider output gap and lower inflation. Beyond this quarter and next, the staff expects the effects of the recent appreciation of the U.S. dollar and decline in stock prices to outweigh those of lower long-term rates, resulting in a ¼ percentage point reduction in the annual pace of real GDP growth through 2017. As the lower-left panel depicts, the output gap is now projected to close at the end of 2016, about two quarters later than in September. The staff also lowered the medium-term outlook for core PCE inflation a touch in response to the weaker outlook for real activity and the pass-through of lower core import and energy prices.

[1] The appendix to this section provides details on each of the five rules. Past Tealbooks also included prescriptions from an outcome-based rule that sought to infer the FOMC's reaction function from its policy decisions. The rule's coefficients were estimated using real-time data from 1988:Q1 to 2006:Q4, a sample period that avoided complications arising from the federal funds rate being subsequently constrained by the effective lower bound. Because the estimation period has not been extended, the interpretation of the outcome-based rule as a description of the Committee's likely behavior going forward has proven increasingly moot.

Strategies

Policy Rules and the Staff Projection

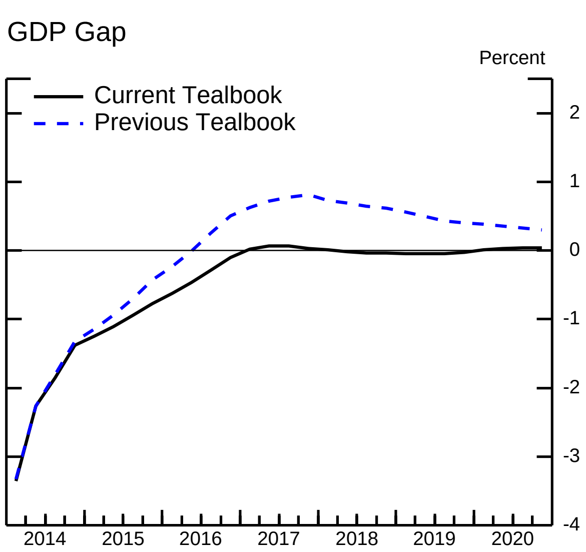
Near-Term Prescriptions of Selected Policy Rules[1]

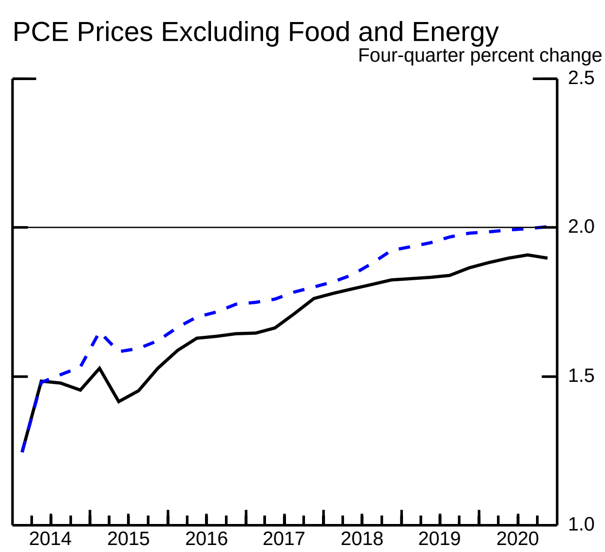
	2014Q4	2015Q1
Taylor (1993) rule	**2.25**	**2.43**
Previous Tealbook	*2.39*	*2.66*
Taylor (1999) rule	**1.57**	**1.81**
Previous Tealbook	*1.73*	*2.09*
Inertial Taylor (1999) rule	**0.34**	**0.56**
Previous Tealbook outlook	*0.37*	*0.63*
First-difference rule	**0.30**	**0.37**
Previous Tealbook outlook	*0.47*	*0.72*
Nominal income targeting rule	**–0.29**	**–0.58**
Previous Tealbook outlook	*–0.22*	*–0.41*

Memo: Equilibrium and Actual Real Federal Funds Rates[2]

	Current Tealbook	*Current Quarter Estimate as of Previous Tealbook*	*Previous Tealbook*
Tealbook-consistent FRB/US *r** estimate	–1.28	–0.84	*–0.85*
Actual real federal funds rate	–1.34		*–1.34*

Key Elements of the Staff Projection





1. These near-term prescriptions are not constrained by the effective lower bound on the federal funds rate. For rules that have a 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 realized value for the policy rate last quarter.

2. Estimates of *r** may change at the beginning of a quarter even when the staff outlook is unchanged because the twelve-quarter horizon covered by the calculation has rolled forward one quarter. Therefore, whenever the Tealbook is published early in the quarter, the memo includes an extra column labeled "Current Quarter Estimate as of Previous Tealbook" to facilitate comparison with the current Tealbook estimate.

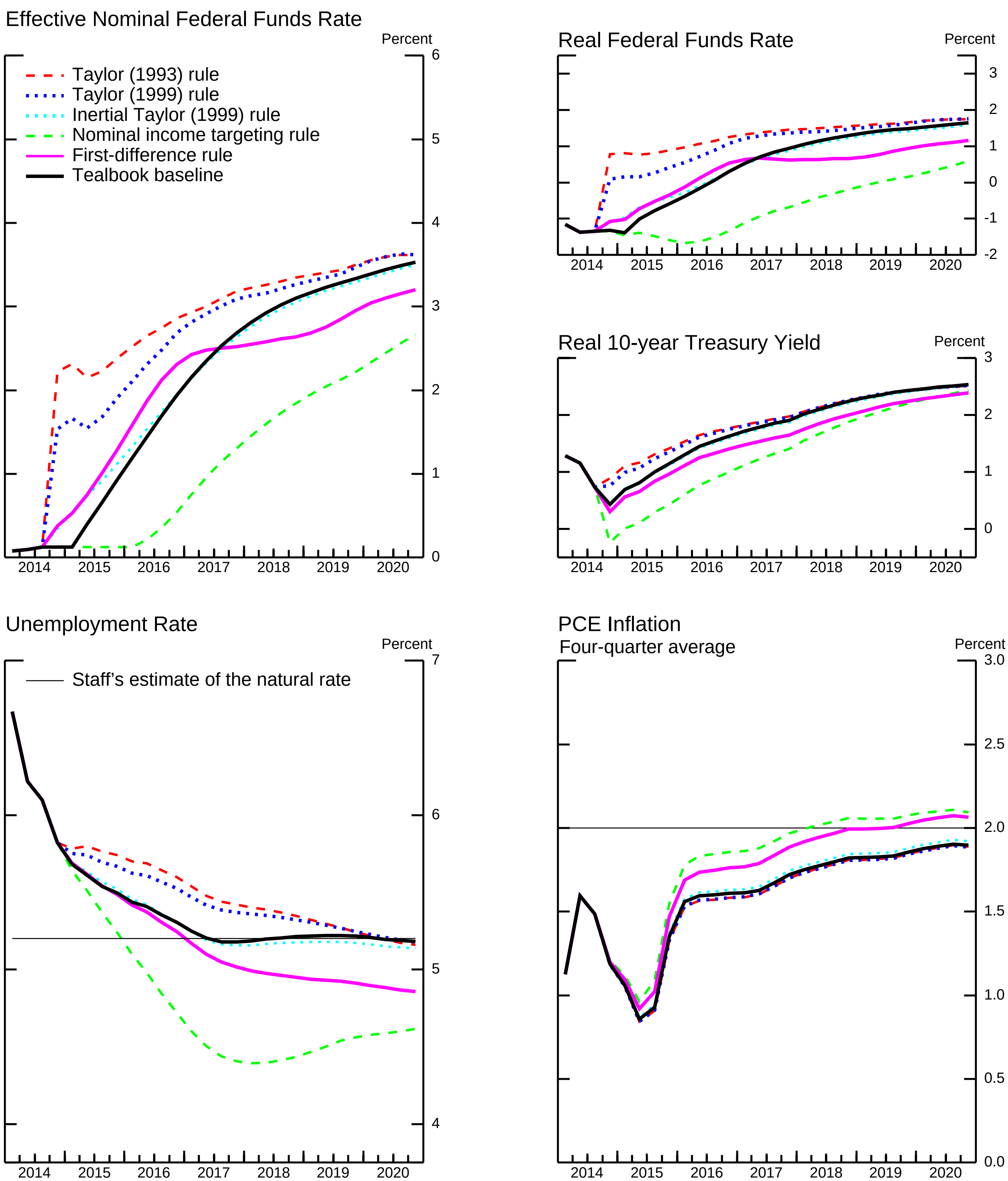
The top panel of the first exhibit also reports the Tealbook-consistent estimate of the equilibrium real federal funds rate, r^*, generated using the FRB/US model after adjusting it to reproduce the staff's baseline forecast. This measure is an estimate of the real federal funds rate that would, if maintained, return output to potential in 12 quarters. The estimated r^*, at –1.28 percent, is about the same as the actual real federal funds rate but about 40 basis points below the current-quarter estimate of r^* as of the September Tealbook, reflecting the staff's weaker medium-term projection.

The second exhibit, "Policy Rule Simulations," reports dynamic simulations of the FRB/US model under each of the policy rules. These simulations reflect the endogenous responses of inflation and the output gap when the federal funds rate follows the paths implied by the different policy rules, under the assumption that the federal funds rate is subject to an effective lower bound of 12½ basis points. The exhibit also displays the implications of following the baseline policy assumptions adopted in this Tealbook.[2] In forming the Tealbook baseline forecast, the staff has assumed that the federal funds rate remains at its effective lower bound for two quarters after the end of the asset purchase program and subsequently follows the prescriptions of the inertial Taylor (1999) rule. The two-quarter lag between the assumed end of asset purchases and the first increase in the baseline path for the federal funds rate is intended to reflect the Committee's forward guidance, reaffirmed in its September statement, 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." The first rate hike under the baseline policy occurs in the second quarter of 2015, the same date as in the previous Tealbook baseline. Thereafter, the federal funds rate increases at a pace of around ¼ percentage point per quarter to reach 2¾ percent in late 2017. The pace of tightening then gradually falls as the federal funds rate climbs to 3½ percent in 2020.

In contrast with the Tealbook baseline, the simulations employing the five policy rules make no attempt to account for the Committee's forward guidance regarding the start of policy firming. (Policy rule simulations that take account of this guidance are discussed below.) With the exception of the nominal income targeting rule, all of the policy rules call for tightening to begin immediately. The Taylor (1993) and the Taylor

[2] 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 simulations embed the assumption that purchases of longer-term Treasury securities and agency MBS will conclude this month, with cumulative purchases since the start of 2013 close to $1.5 trillion.

Policy Rule Simulations



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.

(1999) rules prescribe a path for the real federal funds rate that lies significantly above the Tealbook baseline over the next few years, leading to somewhat higher unemployment rates but leaving the inflation path little changed. The first-difference rule also calls for a relatively rapid increase in the real federal funds rate. However, this initially more rapid tightening is outweighed by a relatively easy stance of monetary policy later in the decade and beyond, promoting a faster closing of the unemployment gap than in the Tealbook baseline and leading to a notable undershooting of the natural rate of unemployment later in the decade. Greater resource utilization in the future under this rule also boosts inflation in the shorter run via forward-looking expectations.

Under the inertial Taylor (1999) rule, the real federal funds rate initially rises above that in the baseline but the difference dissipates too rapidly to materially affect the real longer-term rates that influence economic activity in the model, thus leading to macroeconomic outcomes that are similar to those under the Tealbook baseline.

In contrast with the other simple rules, the nominal income targeting rule prescribes a later departure from the effective lower bound than the Tealbook baseline. This rule keeps the federal funds rate within the Committee's current target range until the second quarter of 2016 and generates a real federal funds rate that runs persistently below the baseline path for the rest of the decade, thereby leading to stronger real activity. Under this rule, inflation is closer to the Committee's 2 percent objective than in the Tealbook baseline over much of the remainder of this decade; inflation runs slightly above that objective for several years starting in 2018, as the rule seeks to compensate for the cumulative shortfall of growth in the GDP deflator from 2 percent since the end of 2007.

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 and the first-difference rule, which generate outcomes in which unemployment runs markedly below the staff's estimate of the natural rate, even after inflation has moved above the Committee's longer-run goal.

As previously noted, the policy rules in the simulations summarized above do not take into account the Committee's forward guidance, and all but one of these rules involve an immediate departure from the effective lower bound. The third exhibit, "Policy Rule Simulations with an Unemployment Rate Threshold," reports results obtained when each policy rule is subject to an unemployment rate threshold intended to capture the Committee's "considerable time" guidance in a data-dependent manner.[3] A threshold of 5.7 percent was chosen because, in the Tealbook baseline, the unemployment rate crosses that level in the quarter before firming begins.[4] (The same unemployment rate threshold is adopted in the alternative scenarios shown in the "Risks and Uncertainty" section of Tealbook, Book A.) Financial market participants and price- and wage-setters are assumed to understand that the Committee will switch to the specified rule in the quarter following the crossing of the threshold and to view this switch as permanent and fully credible.

Imposing the unemployment threshold affects all of the rules except the nominal income targeting rule; for the other rules, the first increase in the federal funds rate is delayed by two quarters and occurs in the second quarter of 2015, as in the Tealbook baseline. Nevertheless, for all of these rules, the delayed departure from the effective lower bound has at most small effects on the unemployment rate and inflation because the initially large difference in the real federal funds rate between the constrained and unconstrained cases is eliminated too quickly to alter significantly the longer-term real rates that influence economic activity in the FRB/US model.

The fourth exhibit, "Optimal Control Policy under Commitment," compares optimal control simulations derived using this Tealbook's baseline forecast with those reported in September.[5] Policymakers are assumed to place equal weights on keeping headline PCE inflation close to the Committee's 2 percent goal, on 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.[6] The optimal control concept presented

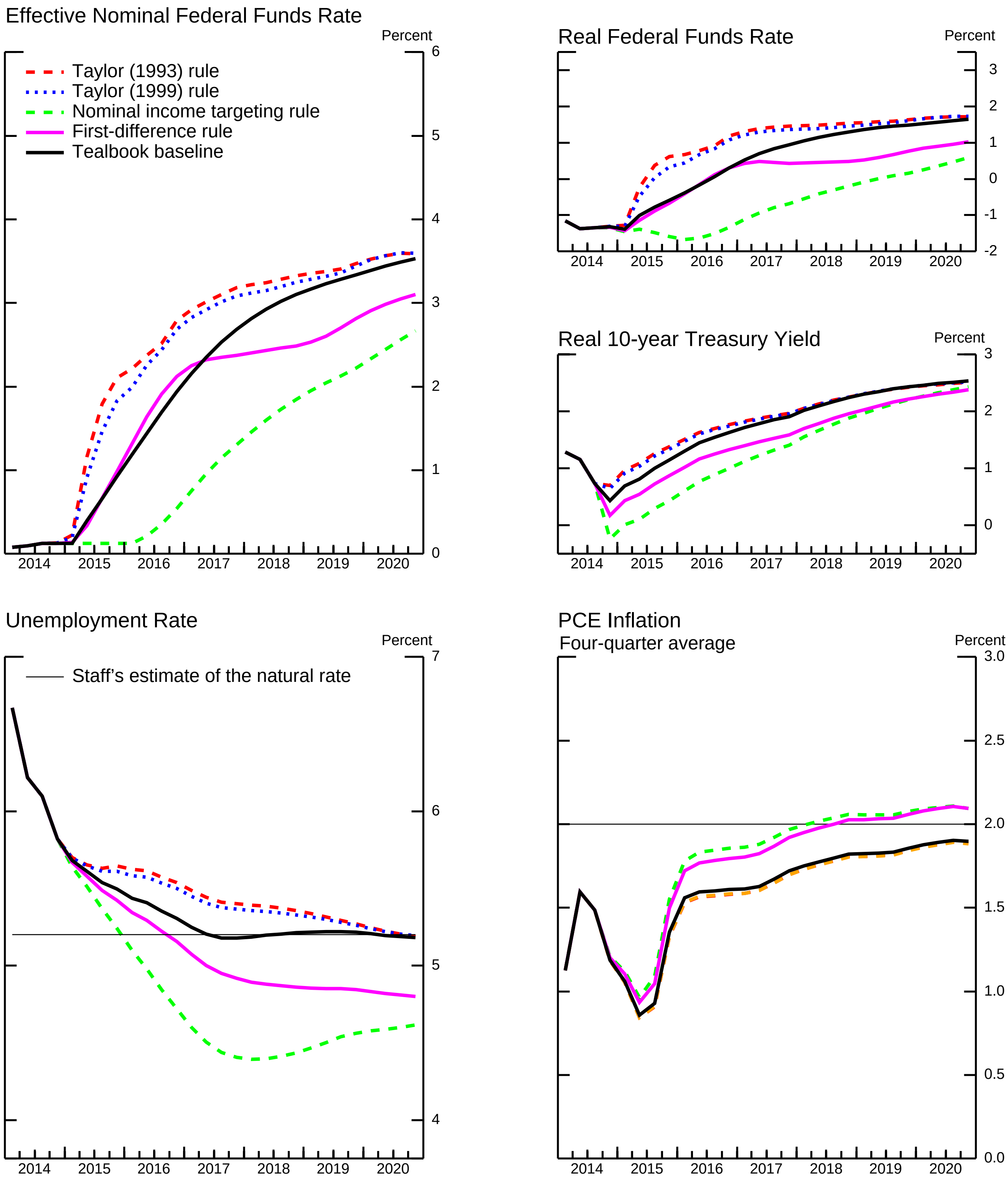
[3] The appended tables, "Outcomes under Alternative Policies" and "Outcomes under Alternative Policies with an Unemployment Rate Threshold," tabulate the dynamic simulation results for the simple policy rules displayed in the second and third exhibits.

[4] For the same reason, the unemployment rate threshold used in the September Tealbook was 5.8 percent.

[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 2. These simulated policies do not incorporate the unemployment rate threshold.

[6] The optimal control simulation posits that policymakers minimize a discounted sum of squared deviations of inflation from 2 percent, of squared deviations of the unemployment rate from the staff's estimate of the natural rate, and of squared changes in the federal funds rate.

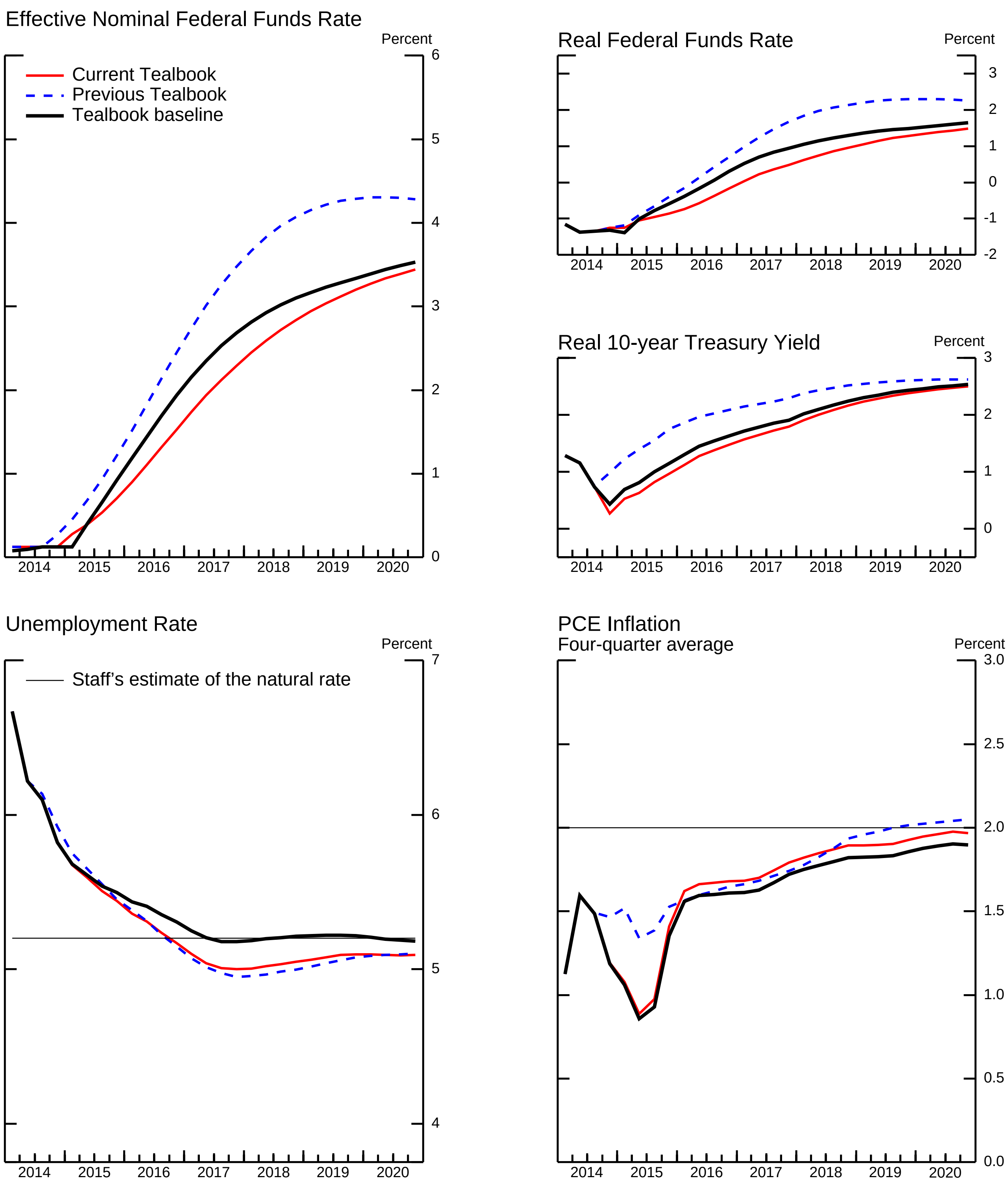
Policy Rule Simulations with an Unemployment Rate Threshold



Note: The policy rule simulations in this exhibit keep the federal funds rate at an effective lower bound of 12½ basis points as long as the unemployment rate is 5.7 percent or more. Thereafter, the federal funds rate follows the prescriptions of the specified rule. A value of 5.7 percent was chosen because, in the Tealbook baseline, the unemployment rate crosses that level just before firming begins. In addition, the simulations are based on rules that respond to core inflation.

Strategies

Optimal Control Policy under Commitment



here corresponds to a commitment policy under which the decisions that policymakers make today constrain future policy choices.[7]

On balance, the optimal control policy delivers moderately more accommodation than the Tealbook baseline—as evidenced by the lower path for real long-term rates. The optimal control policy proposes raising the federal funds rate starting next quarter by about ¾ percentage point per year through 2017, somewhat less than under the baseline. The pace of increases then gradually moderates but less so than in the baseline, so that the federal funds rate climbs to 3½ percent under both policies by 2020. As a consequence of the relatively accommodative stance under optimal control, the unemployment rate is somewhat lower and inflation converges more rapidly to the Committee's objective than in the Tealbook baseline. Although the staff outlook for economic activity is notably weaker than in the September Tealbook, the optimal control policy generates macroeconomic outcomes that are similar to those derived under optimal control in the last round because the prescribed monetary policy stance in the current Tealbook is noticeably more accommodative than was the case in September.

Optimal Control Policy under Asymmetric Preferences

The optimal control simulations discussed above assume that economic losses are symmetric about the staff's estimate of the natural rate of unemployment and the Committee's 2 percent inflation objective. However, policymakers may not view positive and negative deviations from these longer-run values as equally costly.[8] For instance, some policymakers might regard the cost of a decline in the unemployment rate below the natural rate as considerably smaller than an equal-sized increase above the natural rate. This could be so for a variety of reasons, including that high unemployment could lead to skill deterioration and thus to persistently low output, a channel that may not be relevant for economies operating at or below the natural rate. Similarly, some

[7] The results for optimal control policy under discretion (in which policymakers cannot credibly commit to carrying out a plan involving policy choices that would be suboptimal at the time these choices have to be implemented) are similar to those reported in the exhibits for commitment.

[8] For a discussion of some implications of clarifying the Committee's perceived loss function about its inflation objective, see the memo "On Possible Changes to the Consensus Statement" by Todd Clark, Robert Tetlow, and Stacey Tevlin sent to the Committee on October 15, 2014. At a practical level, even if policymakers considered positive and negative deviations as equally costly, their behavior might, in an abstract environment, nonetheless be well approximated in the context of FRB/US (or some other) model, through the specification of asymmetric preferences, in recognition of unmodeled aspects of the economic environment, such as policymakers' financial stability concerns, nonlinear dynamics, or skewness in the distribution of some shocks.

policymakers might perceive the anticipated costs of undershooting the Committee's inflation objective as disproportionately large because of an increased likelihood of outsized disruptions to economic activity stemming from the lower bound on nominal interest rates or from downward nominal price and wage rigidities. Conversely, other policymakers might regard inflation in excess of the Committee's 2 percent objective as more likely to be associated with an unanchoring of longer-term inflation expectations, an outcome that could prove costly to counteract.

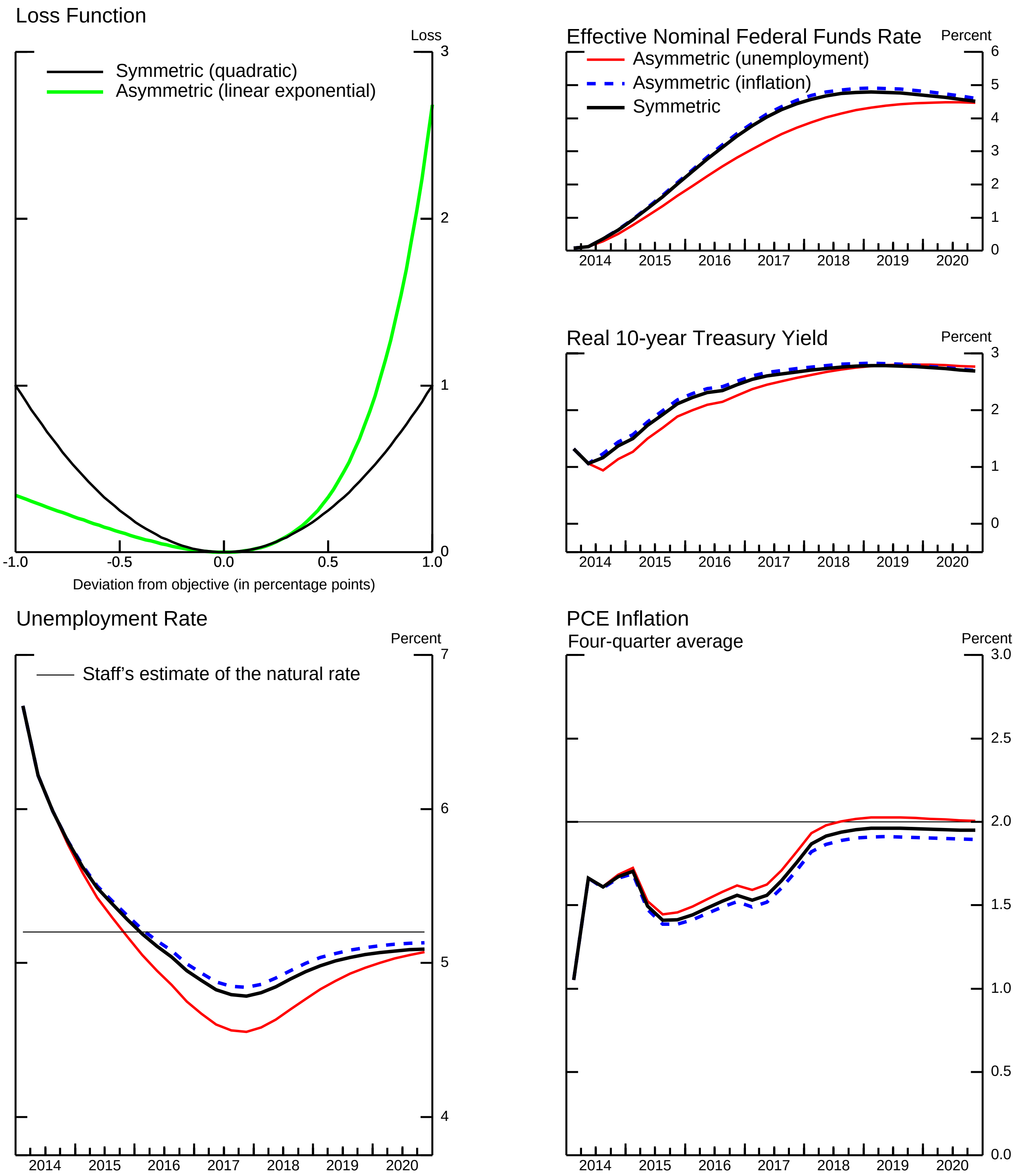
To explore these issues, we perform two sets of alternative optimal control simulations.[9] First, we consider the case of a policymaker who disproportionately dislikes unemployment rates above the natural rate, while being more tolerant of relatively low values, compared with the policymaker in the usual optimal control simulations. Formally, we replace the standard quadratic penalty for unemployment rate deviations (shown under the label "Symmetric (quadratic)" in the upper-left panel of the fifth exhibit) with a function that imposes a greater penalty on deviations above the natural rate and a smaller penalty on deviations below it (shown under the label "Asymmetric (linear exponential)"). Second, in a parallel fashion, we consider the case of a policymaker who disproportionately dislikes high inflation outcomes, but treats low inflation realizations as relatively benign, by replacing the quadratic penalty for inflation deviations with the asymmetric one while retaining quadratic preferences elsewhere.

The extent to which asymmetric preferences for optimal control policy affect macroeconomic outcomes depends importantly on the baseline economic outlook. To illustrate this point, we perform optimal control simulations with two different baseline projections: the July Tealbook and the October Tealbook. Notably, the projected decline in the unemployment rate over the medium run was considerably larger in July than in October.

Beginning with the July 2014 Tealbook, the lower-left panel of the fifth exhibit ("Optimal Control Policy under Asymmetric Preferences (Conditional on July 2014 Tealbook)") shows that the baseline projection implied a decline in the unemployment rate from an average of 6¼ percent in the second quarter of this year to levels as low as 4¾ percent over the medium term. Under these conditions, the assumption of

[9] These simulations are similar to simulations that appeared in the memo "Potential Implications of Alternative Approaches to the Timing and Pace of Tightening" by Christopher Ercerg, Michael Kiley, and Robert Tetlow sent to the Committee on September 5, 2014.

Optimal Control Policy under Asymmetric Preferences
(Conditional on July 2014 Tealbook)



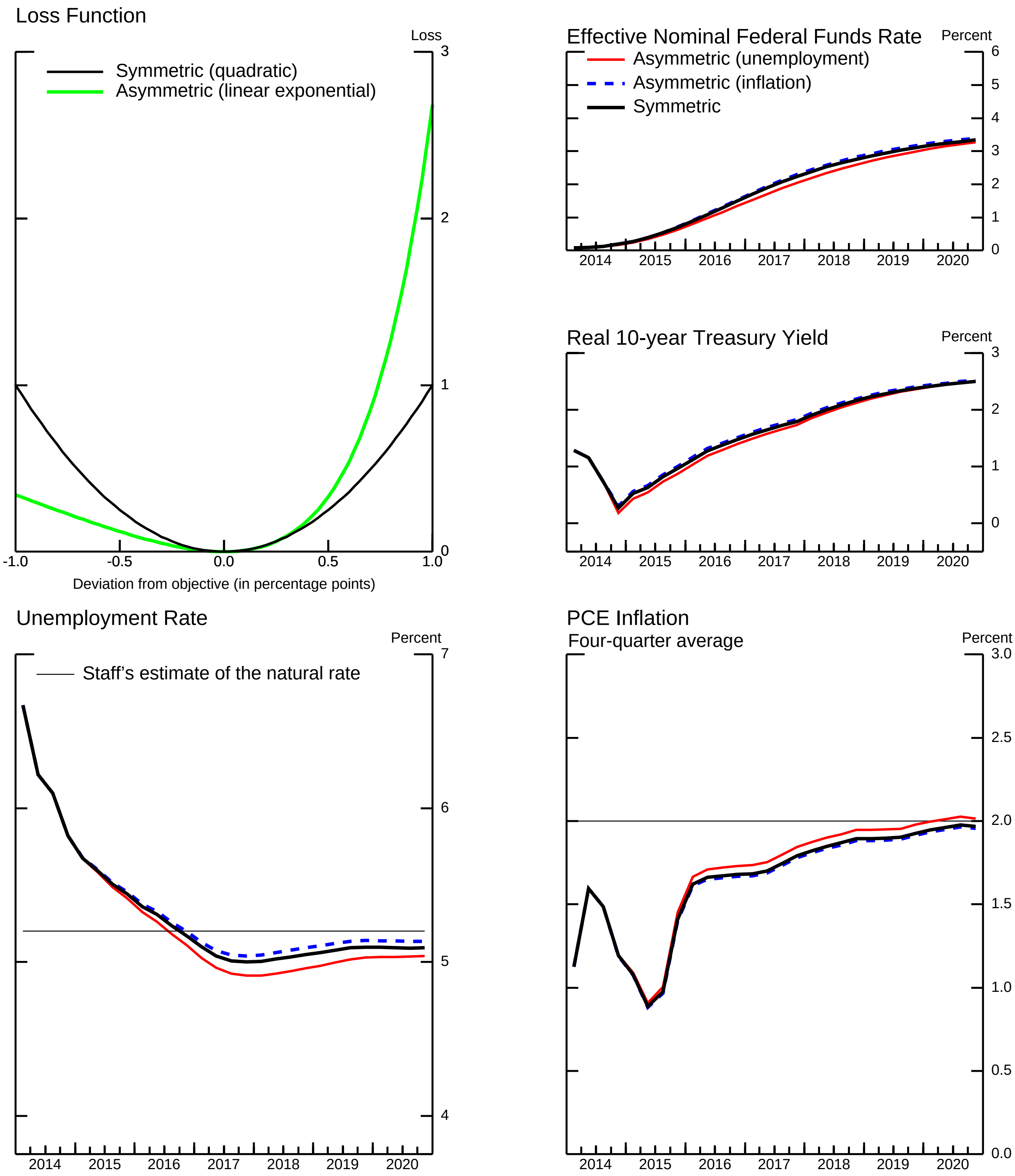
Note: In the simulation labeled ''Symmetric,'' policymakers are assumed to place equal weights on minimizing a discounted sum of squared deviations of inflation from 2 percent and of the unemployment rate from the staff's estimate of the natural rate. In the simulations labeled ''Asymmetric (unemployment)'' and ''Asymmetric (inflation),'' policymakers are assumed to have, in place of the quadratic unemployment rate term and the quadratic inflation term, respectively, a loss function that takes the linear-exponential function form displayed in the upper-left panel under the label ''Asymmetric (linear exponential).'' In addition, all simulations embed the assumption that policymakers' loss function includes a quadratic term that penalizes changes in the federal funds rate.

asymmetric preferences about the unemployment rate has an important effect on outcomes. In particular, the policy prescription is notably more stimulative than under symmetric preferences, as the policymaker is more displeased by the initially high unemployment rate and is more tolerant of low unemployment realizations thereafter. As a result, the unemployment rate falls faster and dips farther below the natural rate before gradually moving back to the natural rate. The more stimulative policy also helps move inflation closer to the Committee's longer-run goal. By contrast, the optimal control policy assuming asymmetric preferences in inflation is only marginally more restrictive over the remainder of this decade, leading to modestly higher unemployment rates and slightly lower inflation realizations than otherwise.

The sixth exhibit presents similar optimal control simulations using the October 2014 Tealbook. Under this baseline, the assumed asymmetries in preferences regarding unemployment rate deviations and inflation deviations have no material effect on the prescribed stance of monetary policy and on macroeconomic outcomes. To some degree, this finding reflects the fact that the projected paths for the unemployment rate and inflation are relatively close to the Committee's objectives in the October baseline, leading to similar losses under the chosen calibration for symmetric and asymmetric preferences.

There are some important caveats to these findings. First, the degree of asymmetry assumed in these simulations should be viewed as illustrative; policymakers may have preferences that are less asymmetric than we have assumed—and thus closer to the standard assumption of quadratic preferences—or more asymmetric. In the latter case, there may be greater differences between the symmetric and asymmetric paths for policy, even with the October baseline outlook. Second, these optimal control simulations are performed under perfect foresight, which means that there is no uncertainty attached to future shocks that could push the unemployment rate and inflation away from their respective longer-run desired levels; these future shocks thus have no influence on the prescribed policies and their associated outcomes. As shown in the "Risks and Uncertainty" section of Tealbook, Book A, confidence intervals around the staff's unemployment rate and inflation projections are sizable, implying non-trivial probabilities that losses under symmetric and asymmetric preferences could differ significantly going forward.

Optimal Control Policy under Asymmetric Preferences
(Conditional on October 2014 Tealbook)



Note: In the simulation labeled ‘‘Symmetric,’’ policymakers are assumed to place equal weights on minimizing a discounted sum of squared deviations of inflation from 2 percent and of the unemployment rate from the staff's estimate of the natural rate. In the simulations labeled ‘‘Asymmetric (unemployment)’’ and ‘‘Asymmetric (inflation),’’ policymakers are assumed to have, in place of the quadratic unemployment rate term and the quadratic inflation term, respectively, a loss function that takes the linear-exponential function form displayed in the upper-left panel under the label ‘‘Asymmetric (linear exponential).’’ In addition, all simulations embed the assumption that policymakers' loss function includes a quadratic term that penalizes changes in the federal funds rate.

Strategies

Outcomes under Alternative Policies

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

Measure and policy	2014		2015	2016	2017	2018
	H1	H2				
Real GDP						
Extended Tealbook baseline[1]	1.2	2.8	2.4	2.6	2.1	2.0
Taylor (1993)	1.2	2.8	1.9	2.5	2.2	2.2
Taylor (1999)	1.2	2.8	2.0	2.5	2.2	2.1
Inertial Taylor (1999)	1.2	2.8	2.3	2.7	2.2	2.0
First-difference	1.2	2.8	2.4	2.8	2.3	2.2
Nominal income targeting	1.2	2.8	3.0	3.3	2.5	2.0
Optimal control	1.2	2.8	2.5	2.8	2.2	2.0
Unemployment rate[2]						
Extended Tealbook baseline[1]	6.2	5.8	5.5	5.3	5.2	5.2
Taylor (1993)	6.2	5.8	5.7	5.6	5.4	5.3
Taylor (1999)	6.2	5.8	5.7	5.5	5.4	5.3
Inertial Taylor (1999)	6.2	5.8	5.5	5.3	5.2	5.2
First-difference	6.2	5.8	5.5	5.2	5.0	5.0
Nominal income targeting	6.2	5.8	5.2	4.7	4.4	4.4
Optimal control	6.2	5.8	5.4	5.2	5.0	5.0
Total PCE prices						
Extended Tealbook baseline[1]	1.9	0.5	1.4	1.6	1.7	1.8
Taylor (1993)	1.9	0.5	1.3	1.6	1.7	1.8
Taylor (1999)	1.9	0.5	1.3	1.6	1.7	1.8
Inertial Taylor (1999)	1.9	0.5	1.4	1.6	1.7	1.8
First-difference	1.9	0.6	1.5	1.8	1.9	2.0
Nominal income targeting	1.9	0.6	1.6	1.9	2.0	2.1
Optimal control	1.9	0.5	1.4	1.7	1.8	1.9
Core PCE prices						
Extended Tealbook baseline[1]	1.6	1.3	1.5	1.6	1.8	1.8
Taylor (1993)	1.6	1.3	1.5	1.6	1.7	1.8
Taylor (1999)	1.6	1.3	1.5	1.6	1.7	1.8
Inertial Taylor (1999)	1.6	1.3	1.5	1.7	1.8	1.8
First-difference	1.6	1.3	1.6	1.8	1.9	2.0
Nominal income targeting	1.6	1.4	1.7	1.9	2.0	2.1
Optimal control	1.6	1.3	1.6	1.7	1.8	1.9
Effective nominal federal funds rate[2]						
Extended Tealbook baseline[1]	0.1	0.1	0.9	1.9	2.7	3.1
Taylor (1993)	0.1	2.2	2.4	2.9	3.2	3.3
Taylor (1999)	0.1	1.5	1.9	2.7	3.1	3.3
Inertial Taylor (1999)	0.1	0.3	1.1	1.9	2.6	3.1
First-difference	0.1	0.4	1.3	2.3	2.5	2.6
Nominal income targeting	0.1	0.1	0.1	0.5	1.3	1.8
Optimal control	0.1	0.2	0.7	1.5	2.2	2.8

1. In the Tealbook baseline, the federal funds rate first departs from an effective lower bound of 12½ basis points two quarters after the end of the asset purchase program. 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 an Unemployment Rate Threshold[1]

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

Measure and policy	2014 H1	2014 H2	2015	2016	2017	2018
Real GDP						
Extended Tealbook baseline	1.2	2.8	2.4	2.6	2.1	2.0
Taylor (1993)	1.2	2.8	2.1	2.4	2.1	2.1
Taylor (1999)	1.2	2.8	2.1	2.5	2.1	2.1
First-difference	1.2	2.8	2.5	2.8	2.3	2.1
Nominal income targeting	1.2	2.8	3.0	3.3	2.5	2.0
Optimal control	1.2	2.8	2.5	2.8	2.2	2.0
Unemployment rate[2]						
Extended Tealbook baseline	6.2	5.8	5.5	5.3	5.2	5.2
Taylor (1993)	6.2	5.8	5.6	5.5	5.4	5.4
Taylor (1999)	6.2	5.8	5.6	5.5	5.4	5.3
First-difference	6.2	5.8	5.4	5.2	4.9	4.9
Nominal income targeting	6.2	5.8	5.2	4.7	4.4	4.4
Optimal control	6.2	5.8	5.4	5.2	5.0	5.0
Total PCE prices						
Extended Tealbook baseline	1.9	0.5	1.4	1.6	1.7	1.8
Taylor (1993)	1.9	0.5	1.3	1.6	1.7	1.8
Taylor (1999)	1.9	0.5	1.3	1.6	1.7	1.8
First-difference	1.9	0.6	1.5	1.8	1.9	2.0
Nominal income targeting	1.9	0.6	1.6	1.9	2.0	2.1
Optimal control	1.9	0.5	1.4	1.7	1.8	1.9
Core PCE prices						
Extended Tealbook baseline	1.6	1.3	1.5	1.6	1.8	1.8
Taylor (1993)	1.6	1.3	1.5	1.6	1.7	1.8
Taylor (1999)	1.6	1.3	1.5	1.6	1.7	1.8
First-difference	1.6	1.4	1.7	1.8	2.0	2.0
Nominal income targeting	1.6	1.4	1.7	1.9	2.0	2.1
Optimal control	1.6	1.3	1.6	1.7	1.8	1.9
Effective nominal federal funds rate[2]						
Extended Tealbook baseline	0.1	0.1	0.9	1.9	2.7	3.1
Taylor (1993)	0.1	0.1	2.1	2.8	3.2	3.3
Taylor (1999)	0.1	0.1	1.8	2.7	3.1	3.2
First-difference	0.1	0.1	1.0	2.1	2.4	2.5
Nominal income targeting	0.1	0.1	0.1	0.5	1.3	1.8
Optimal control	0.1	0.2	0.7	1.5	2.2	2.8

1. With the exception of optimal control, monetary policy is specified to keep the federal funds rate at an effective lower bound of 12½ basis points as long as the unemployment rate is 5.7 percent or more. Once the threshold is crossed, the federal funds rate follows the prescriptions of the specified rule.
2. Percent, average for the final quarter of the period.

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 (gap_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. These assumptions imply that the nominal income gap can be expressed as the sum of the current estimate of the output gap and the shortfall of the GDP deflator from the level it would have attained had it grown at a 2 percent annual pace since 2007:Q4.[10]

Taylor (1993) rule	$R_t = 1.75 + \pi_t + 0.5(\pi_t - \pi^*) + 0.5gap_t$
Taylor (1999) rule	$R_t = 1.75 + \pi_t + 0.5(\pi_t - \pi^*) + gap_t$
Inertial Taylor (1999) rule	$R_t = 0.85R_{t-1} + 0.15(1.75 + \pi_t + 0.5(\pi_t - \pi^*) + gap_t)$
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	$R_t = 0.75R_{t-1} + 0.25(1.75 + \pi_t + yn_t - yn_t^*)$

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.[11] The intercepts of these rules are chosen so that they are consistent with a 2 percent long-run inflation objective and a long-run real interest rate of 1¾ percent, a value used in the FRB/US model. The 1¾ 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 five policy rules are calculated using Tealbook projections for inflation and the output gap. For the rules that include the lagged policy rate as a

[10] That is, these assumptions imply that $yn_t - yn_t^* = gap_t + \frac{1}{4}\sum_{s=2008:Q1}^{t}(\Delta GDPdef_s - 2)$, where $\Delta GDPdef_s$ denotes the annualized quarterly rate of growth of the GDP deflator for quarter *s*.

[11] See Erceg and others (2012).

right-hand-side variable—the inertial Taylor (1999) rule, the first-difference 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

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

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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.

Monetary Policy Alternatives

This Tealbook presents three alternative draft FOMC statements—labeled A, B, and C—for the Committee's consideration. In addition to providing different possibilities for characterizing incoming information and the outlook, these alternatives offer a variety of options for asset purchases and for forward guidance regarding the federal funds rate.

With respect to balance sheet policy, both Alternative B and Alternative C conclude the asset purchase program "this month," citing a "substantial improvement in the outlook for the labor market" since the program began. Under Alternative A, the Committee would maintain the program at its existing pace, pointing to an increase in downside risks and greater uncertainty as the basis for its decision to continue purchases.

The draft statement for Alternative B retains the indication in the September statement that the current target range for the federal funds rate will likely remain in place "for a considerable time" after the asset purchase program ends. Under that alternative, the Committee would specifically state that "a considerable time" begins at the end of October—an approach that the Committee could retain in subsequent postmeeting statements. In Alternative C, "for a considerable time" is replaced by "for a time," in order to signal that the first increase in the target range for the federal funds rate is likely to come sooner than the Committee anticipated in September. New language in the draft statements for both Alternative B and Alternative C emphasizes that the Committee's decisions regarding the federal funds rate target range will depend on its assessment of the outlook. Under Alternative A, the Committee would replace the current qualitative forward guidance with an inflation floor; according to this new guidance, the Committee would anticipate maintaining the current 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."

Under each alternative, the Committee would repeat its intention to take a "balanced approach" when it begins to remove policy accommodation. Under Alternatives A and B, the Committee would also reiterate that it "currently anticipates that, even after employment and inflation are near mandate-consistent levels, economic conditions may, for some time, warrant keeping the target federal funds rate below levels the Committee views as normal in the longer run." In Alternative C, this sentence is rephrased in a manner that emphasizes that the period of below-normal policy rates may end somewhat ahead of the time that the Committee's objectives are achieved; as part of this rephrasing, the words "for some time" are dropped from the sentence.

In their summaries of current economic conditions, the draft statements for all three alternatives characterize the pace of economic activity as "moderate." All of the draft statements make note of further improvement in labor market conditions, particularly the lower unemployment rate; in addition, under Alternatives B and C, the Committee would refer to "solid job gains." In Alternatives A and B, the Committee would state that labor market conditions have improved "somewhat further," but the language for Alternative C omits the modifier "somewhat." Under Alternative A, the Committee would reaffirm that underutilization of labor resources remains "significant." In contrast, under Alternative B, the Committee would point to "gradually diminishing" underutilization, and under Alternative C the Committee would instead simply refer to "diminishing" underutilization. The draft statement for Alternative A retains the September statement's observation that household spending "appears to be rising moderately," but in Alternatives B and C, the words "appears to be" are replaced by the more definitive "is." Under all three alternatives, the Committee would state that business fixed investment is advancing and that the housing recovery remains slow. All of the alternatives would remove the September statement's reference to the restraining effects of fiscal policy.

With respect to recent financial market developments, the Committee would note under Alternative A that financial conditions have "tightened, on balance," since September. In Alternatives B and C, by contrast, there would be no judgment expressed about the overall state of financial conditions. In Alternative A, the Committee would state that market-based measures of longer-term inflation expectations have "declined somewhat," thus implicitly taking the intermeeting decline in market-based measures of inflation compensation as largely reflecting a decline in longer-term inflation expectations. In Alternative B, however, the Committee would cast doubt on whether longer-term inflation expectations have fallen, observing that although "market-based measures of inflation compensation have declined somewhat, survey-based measures of longer-term inflation expectations have remained stable." In Alternative C, no reference is made to the intermeeting decline in market-based measures of inflation compensation.

Under all of the alternatives, the Committee would continue to acknowledge that inflation recently has been running "below" the Committee's longer-run objective. In both Alternative B and Alternative C, the Committee would repeat the judgment expressed in the September statement that "the likelihood of inflation running persistently below 2 percent has diminished somewhat since early this year." In Alternative B, the Committee would additionally note that "lower energy prices and other factors" are likely to hold down inflation in the near term. In Alternative A, by contrast, the Committee would indicate that the economic outlook has become more uncertain because of an increase in downside risks.

Under all three alternatives, the Committee would reaffirm its modal forecast that, with appropriate policy accommodation, economic activity will expand at a moderate pace with labor market indicators and inflation moving toward levels the Committee judges consistent with its dual mandate. However, in Alternative A, the articulation of this modal forecast is immediately qualified by an indication that the downside risks to the outlook have increased. Alternative A traces these risks to "developments in financial markets here and abroad," and these increased downside risks, together with the Committee's decision to assess "incoming information that bears on the outlook for economic activity, the labor market, and inflation," provide the basis for a continuation of the asset purchase program at its present pace. In contrast, under Alternatives B and C, the Committee would continue to state that it sees the "risks to the outlook for economic activity and the labor market as nearly balanced."

Subsequent pages present the September FOMC statement, as well as the complete draft statements for Alternatives A, B, and C, followed by supporting arguments and then draft directives.

SEPTEMBER 2014 FOMC STATEMENT

1. Information received since the Federal Open Market Committee met in July suggests that economic activity is expanding at a moderate pace. On balance, labor market conditions improved somewhat further; however, the unemployment rate is little changed and a range of labor market indicators suggests that there remains significant underutilization of labor resources. Household spending appears to be rising moderately and business fixed investment is advancing, while the recovery in the housing sector remains 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. 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, with labor market indicators and inflation moving toward levels the Committee judges consistent with its dual mandate. The Committee sees the risks to the outlook for economic activity and the labor market as nearly balanced and judges that the likelihood of inflation running persistently below 2 percent has diminished somewhat since early this year.
3. The Committee 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 October, the Committee will add to its holdings of agency mortgage-backed securities at a pace of $5 billion per month rather than $10 billion per month, and will add to its holdings of longer-term Treasury securities at a pace of $10 billion per month rather than $15 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 end its current program of asset purchases at its next meeting. 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 remains appropriate. In determining how long to maintain the current 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. This 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. 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 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 the target federal funds rate below levels the Committee views as normal in the longer run.

FOMC STATEMENT—OCTOBER 2014 ALTERNATIVE A

1. Information received since the Federal Open Market Committee met in ~~July~~ **September** suggests that economic activity is expanding at a moderate pace. ~~On balance,~~ Labor market conditions improved somewhat further~~; however~~, **with a lower** ~~the~~ unemployment rate**.** ~~is little changed and~~ **Even so,** a range of labor market indicators suggests that there remains significant underutilization of labor resources. Household spending appears to be rising moderately and business fixed investment is advancing, while the recovery in the housing sector remains slow. ~~Fiscal policy is restraining economic growth, although the extent of restraint is diminishing.~~ **Financial conditions have tightened, on balance.** Inflation has ~~been running~~ **continued to run** below the Committee's longer-run objective. **Market-based measures of** longer-term inflation expectations have ~~remained stable~~ **declined somewhat**.

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, with labor market indicators and inflation moving toward levels the Committee judges consistent with its dual mandate. **However, developments in financial markets here and abroad have increased** ~~the Committee sees~~ the **downside** risks to the outlook for economic activity, ~~and~~ the labor market, ~~as nearly balanced and judges that the likelihood of inflation running persistently below 2 percent has diminished somewhat since early this year~~ **and inflation, making the outlook more uncertain**.

3. ~~The Committee 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 October,~~ **In light of the increase in downside risks and greater uncertainty,** the Committee will **continue to** add to its holdings of agency mortgage-backed securities at a pace of $5 billion per month ~~rather than $10 billion per month~~, and ~~will add~~ to its holdings of longer-term Treasury securities at a pace of $10 billion per month ~~rather than $15 billion per month~~**, while assessing incoming information that bears on the outlook for economic activity, the labor market, and inflation**. 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 end its current program of asset purchases ~~at its next meeting~~. 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 remains appropriate. In determining how long to maintain the current 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. This 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. The Committee ~~continues to anticipate~~ **anticipates**, based on its assessment of these factors, 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, especially if projected inflation continues to run below the Committee's 2 percent longer-run goal, and~~ **at least as long as inflation between one and two years ahead is projected to be below 2 percent,** 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 the target federal funds rate below levels the Committee views as normal in the longer run.

FOMC STATEMENT—OCTOBER 2014 ALTERNATIVE B

1. Information received since the Federal Open Market Committee met in ~~July~~ **September** suggests that economic activity is expanding at a moderate pace. ~~On balance,~~ Labor market conditions improved somewhat further~~; however~~, **with solid job gains and a lower** ~~the~~ unemployment rate**.** ~~is little changed and~~ **On balance,** a range of labor market indicators suggests that ~~there remains significant~~ underutilization of labor resources **is gradually diminishing**. Household spending ~~appears to be~~ **is** rising moderately and business fixed investment is advancing, while the recovery in the housing sector remains 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. **Although market-based measures of inflation compensation have declined somewhat, survey-based measures of** 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, with labor market indicators and inflation moving toward levels the Committee judges consistent with its dual mandate. The Committee sees the risks to the outlook for economic activity and the labor market as nearly balanced**. Although inflation in the near term will likely be held down by lower energy prices and other factors,** ~~and~~ **the Committee** judges that the likelihood of inflation running persistently below 2 percent has diminished somewhat since early this year.

3. The Committee ~~currently~~ judges that there **has been a substantial improvement in the outlook for the labor market since the inception of its current asset purchase program. Moreover, the Committee continues to see** ~~is~~ sufficient underlying strength in the broader economy to support ongoing ~~improvement in labor market conditions~~ **progress toward maximum employment in a context of price stability**. ~~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 October, the Committee will add to its holdings of agency mortgage-backed securities at a pace of $5 billion per month rather than $10 billion per month, and will add to its holdings of longer-term Treasury securities at a pace of $10 billion per month rather than $15 billion per month.~~ **Accordingly, the Committee decided to conclude its asset purchase program this 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. **This policy, by keeping** the Committee's ~~sizable and still-increasing~~ holdings of longer-term securities **at sizable levels,** should **help** maintain ~~downward pressure on longer-term interest rates, support mortgage markets, and help to make broader~~ **accommodative** 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 end its current program of asset purchases at its next meeting. 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.~~

4. To support continued progress toward maximum employment and price stability, the Committee today reaffirmed its view that ~~a highly accommodative stance of monetary policy~~ **the current 0 to ¼ percent target range for the federal funds rate** remains appropriate. In determining how long to maintain ~~the current 0 to ¼ percent~~ **this** 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. This 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. The Committee ~~continues to anticipate~~ **anticipates**, 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 for a considerable time ~~after~~ **following** the **end of its** asset purchase program ~~ends~~ **this month**, 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. **However, if incoming information indicates faster progress toward the Committee's employment and inflation objectives than the Committee now expects, then increases in the target range for the federal funds rate are likely to occur sooner than currently anticipated. Conversely, if progress proves slower than expected, then increases in the target range are likely to occur later than currently anticipated.**

5. 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 the target federal funds rate below levels the Committee views as normal in the longer run.

Alternatives

Alternatives

FOMC STATEMENT—OCTOBER 2014 ALTERNATIVE C

1. Information received since the Federal Open Market Committee met in ~~July~~ **September** suggests that economic activity is expanding at a moderate pace. ~~On balance,~~ Labor market conditions improved ~~somewhat~~ further~~; however~~, **with solid job gains and a lower** ~~the~~ unemployment rate**.** ~~is little changed and~~ A range of labor market indicators suggests that ~~there remains significant~~ underutilization of labor resources **is diminishing**. Household spending ~~appears to be~~ **is** rising moderately and business fixed investment is advancing, while the recovery in the housing sector remains 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. 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, with labor market indicators and inflation moving toward levels the Committee judges consistent with its dual mandate. The Committee sees the risks to the outlook for economic activity and the labor market as nearly balanced and judges that the likelihood of inflation running persistently below 2 percent has diminished somewhat since early this year.

3. The Committee ~~currently~~ judges that there **has been a substantial improvement in the outlook for the labor market since the inception of its current asset purchase program. Moreover, the Committee continues to see** ~~is~~ sufficient underlying strength in the broader economy to support ongoing ~~improvement in labor market conditions~~ **progress toward maximum employment in a context of price stability**. ~~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 October, the Committee will add to its holdings of agency mortgage-backed securities at a pace of $5 billion per month rather than $10 billion per month, and will add to its holdings of longer-term Treasury securities at a pace of $10 billion per month rather than $15 billion per month.~~ **Accordingly, the Committee decided to conclude its asset purchase program this 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. **This policy, by keeping** the Committee's ~~sizable and still-increasing~~ holdings of longer-term securities **at sizable levels,** should **help** maintain ~~downward pressure on longer-term interest rates, support mortgage markets, and help to make broader~~ **accommodative** 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 end its current program of asset purchases at its next meeting. 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.~~

4. To support continued progress toward maximum employment and price stability, the Committee today reaffirmed its view that ~~a highly accommodative stance of monetary policy~~ **the current 0 to ¼ percent target range for the federal funds rate** remains appropriate. In determining how long to maintain ~~the current 0 to ¼ percent~~ **this** target range ~~for the federal funds rate~~, the Committee will assess progress—both realized and expected—toward its objectives. This 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. The Committee ~~continues to anticipate~~ **anticipates**, 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 for a ~~considerable~~ time ~~after~~ **following** the **end of its** 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. **However, if incoming information indicates faster progress toward the Committee's employment and inflation objectives than the Committee now expects, then increases in the target range for the federal funds rate are likely to occur sooner than currently anticipated. Conversely, if progress proves slower than expected, then increases in the target range are likely to occur later than currently anticipated.**

5. 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~~ **as** employment and inflation ~~are near~~ **approach** mandate-consistent levels, economic conditions may~~, for some time,~~ warrant keeping the target federal funds rate below levels the Committee views as normal in the longer run.

Alternatives

THE CASE FOR ALTERNATIVE B

The Committee may see the situation at its October meeting as insufficiently different from September to justify a departure from the baseline policy path that has been set out in prior FOMC communications. Consequently, policymakers may judge it appropriate to conclude their asset purchase program and keep the forward guidance largely unchanged, as in Alternative B. Although the Committee may regard developments abroad and in financial markets as having increased downside risks somewhat, it may not view these developments as justifying a substantial change in its modal outlook or its assessment that the risks to economic activity and the labor market are broadly balanced.

The Committee may also view information received on the U.S. economy during the intermeeting period as broadly consistent with an assessment that economic activity is expanding at a moderate pace and that there continues to be sufficient underlying strength in the broader economy to generate ongoing improvement in labor market conditions. Indeed, in view of the evidence received since the September meeting of further improvement in labor market conditions, with solid job gains and a lower unemployment rate, members may consider it appropriate to indicate in the Committee's postmeeting statement that the underutilization of labor resources is gradually diminishing and to drop the September statement's reference to the degree of underutilization as "significant." Nonetheless, policymakers may continue to judge that the labor market is not yet close to fully healed. Although the unemployment rate has declined appreciably over the past year, recording a further step down in September, policymakers may view it as still well above the 5.2 to 5.5 percent central tendency of participants' longer-run projections in the September SEP. Policymakers may also judge that the labor force participation rate is atypically low, even after taking into account demographic effects. They may also see the elevated number of part-time workers who would prefer a full-time job, the still-high share of unemployed workers who have been out of work for six months or more, and the modest pace of wage increases as supporting the judgment that there is significant scope for further improvement in labor market conditions. In addition, policymakers might interpret the recent softness in prices for non-energy goods and services as providing further evidence that the pickup in inflation observed during the second quarter was transitory and that inflation may remain below their longer-run objective for quite some time. Thus, policymakers might conclude that a highly accommodative stance of monetary policy is still appropriate in order to promote continued improvement in the labor market and a return of inflation to 2 percent over the medium run.

Some policymakers may view intermeeting developments as having increased the downside risks to the economic outlook. They may see weakness in economic activity abroad and recent dollar appreciation, as well as intermeeting declines in equity prices, as working in this direction. For example, policymakers may be concerned that weakness in economic activity abroad might have significant repercussions for the U.S. economy—especially if that weakness intensified, along the lines of the "Weaker Foreign Growth" scenario in the "Risks and Uncertainty" section of Tealbook, Book A. Or they might worry that the recent volatility in financial markets could resume, becoming a source of sizable downward pressure on aggregate demand, perhaps along the lines of the "Increased Financial Turbulence" scenario. However, like the staff, policymakers may weigh these concerns against the assessment that there has so far been only a modest spillover of weakness abroad to U.S. growth and that the financial market developments observed since September have not been on a scale that justifies a major revision to the outlook.

In addition, while policymakers may see inflation prospects as slightly weaker than in September, they may note that the 12-month inflation rate remains above values recorded in the early part of this year. Moreover, although market-based measures of inflation compensation have declined since the September meeting, policymakers may view this development as insufficient to establish that longer-term inflation expectations have declined appreciably, in view of the fact that survey-based measures of longer-term inflation expectations have remained stable. Although policymakers might see somewhat greater risks of less-favorable outcomes for employment and inflation than they did in September, they might conclude that it would be premature to alter the Committee's forward guidance in a way that could produce a larger change in the expected path for the federal funds rate than has already been factored in by markets.

In contrast, some policymakers may judge that, in light of the further improvement in labor market conditions in September, resource slack is diminishing rapidly. As a consequence, they may view the weakness in inflation observed of late as likely to prove largely transitory. These policymakers might be inclined at the October meeting to announce less-accommodative forward guidance for the federal funds rate, perhaps by removing the indication that the target range will remain at the lower bound for a "considerable time" beyond the conclusion of purchases. These policymakers may be concerned that prolonging near-zero policy rates for a considerable time would risk pushing the unemployment rate well below levels consistent with maximum employment and fueling an undesirably large rise in inflation over the medium run. However, policymakers might regard the continued softness in readings on 12-month PCE inflation (both overall and core), the generally modest pace of wage increases, and the behavior of longer-term inflation expectations, as all suggesting that it is unlikely that inflation will run appreciably above 2 percent over the forecast period. For reasons such as these, policymakers might judge that the costs of waiting another meeting or two before adjusting the forward guidance are likely to be small and consider it desirable to focus the October postmeeting statement on the end of the asset purchase program.

Some policymakers may also worry that stretching out the period of near-zero interest rates could further increase incentives for risk-taking in the financial sector. However, use of short-term financing instruments and indicators of leverage remain at moderate levels, while equity price indexes have recently retraced some of the gains registered during the past year. Furthermore, policymakers may be concerned that a premature tightening of policy also would pose risks to financial stability by undermining the economic recovery and thereby impairing the balance sheets of financial institutions. Policymakers may accordingly conclude that ending asset purchases at the October meeting, ahead of a likely increase in the target range for the federal funds rate next year, will appropriately balance the risks to financial stability, while supporting a return to the Committee's objectives.

Although policymakers may regard it as appropriate to maintain much the same forward guidance for the federal funds rate as that in the September statement, they may favor supplementing this guidance with the additional language at the end of the fourth paragraph of Alternatives B and C. In this additional forward guidance, the Committee states that, if incoming information indicates slower progress toward the Committee's employment and inflation objectives, then "increases in the target range are likely to occur later than currently anticipated;" and, conversely, that firming would come sooner than currently anticipated in the event of faster-than-expected progress toward the Committee's objectives. Members may regard statement language of this kind as better conveying the data-dependence of the Committee's policy decisions and the Committee's willingness to respond appropriately if scenarios different from that associated with the Committee's baseline projection were to emerge.

Market participants would be little surprised by a policy decision like Alternative B. Almost all respondents in the Desk's latest survey of primary dealers and buy-side firms expected the purchase program to be concluded at the October FOMC meeting, and all respondents expected the current target range for the federal funds rate to be maintained in October. The changes in Alternative B to the wording of the first paragraph of the postmeeting statement would also likely not be a major surprise to investors, although the responses to the Desk's survey indicate that the removal of the reference to "significant" labor underutilization would be somewhat unexpected. Forward guidance of the kind laid out in Alternative B would also likely come as little surprise to market participants. Such guidance would be broadly consistent with the expectation of respondents to the Desk's survey that the current target range for the federal funds rate will be maintained until after the first quarter of 2015, with most respondents expecting policy firming to begin in the second or third quarter of next year. Taken as a whole, a decision like Alternative B would likely have only minor effects on interest rates, equity prices, and the foreign exchange value of the dollar.

THE CASE FOR ALTERNATIVE C

Alternatively, policymakers may judge that it is appropriate not only to conclude the purchase program in October but also to indicate that the target range for the federal funds rate is likely to be raised before long. They may believe that the stated goals of the Committee's current program of asset purchases—a substantial improvement in the outlook for the labor market in a context of price stability—have been achieved and also that a solid and durable expansion in economic activity is under way, and that this expansion likely will reduce any remaining slack in labor markets fairly quickly. In support of this view, policymakers might cite the swifter-than-expected reduction in unemployment thus far this year, including in September.

More generally, some policymakers may be concerned that maintaining the policy stance articulated by the Committee in its recent statements would be overly accommodative. Abstracting from recent ups and downs in reported inflation, and focusing on diminishing economic slack, policymakers may judge that under current policy settings inflation is more likely to rise above 2 percent in coming quarters than remain significantly below that rate. While acknowledging recent declines in market-based measures of longer-term inflation compensation, policymakers may be inclined to regard these declines as reflecting transitory factors rather than a fundamental shift in inflation expectations; they may see the balance of the evidence, including information from surveys, as suggesting that longer-run expected inflation is not appreciably below 2 percent. Moreover, they may see a significant danger of expected inflation rising above 2 percent if very low policy rates and extraordinarily elevated levels of reserve balances are maintained. These Committee members might emphasize that the bulk of the simple policy rule prescriptions and the optimal control simulations, as presented in the "Monetary Policy Strategies" section of Tealbook, Book B, call for a policy tightening this quarter. They may consequently view it as desirable to proceed immediately, as in Alternative C, with removing the "considerable time" language from the forward guidance for the federal funds rate. In addition, they may note that the new language proposed in Alternative C gives adequate indication that the Committee would respond appropriately should the outlook for real activity and inflation prove weaker than they currently expect, with the fourth paragraph of the draft statement for Alternative C suggesting that, under such a scenario, "increases in the target range are likely to occur later than currently anticipated."

Policymakers may judge that overall financial conditions have changed only slightly since the September meeting, with modestly lower equity prices and a somewhat higher foreign exchange value of the dollar mostly offset by a decline in longer-term interest rates. In addition, policymakers may argue that a shift by the Committee away from the current highly accommodative stance of monetary policy is the most effective step that policymakers can take to reduce risks to financial stability. Participants may consequently deem it likely to be appropriate to raise the federal funds rate earlier than envisioned under Alternative B. They may correspondingly regard it as desirable to make their intentions clear by changing the forward guidance along the lines laid out in the draft statement for Alternative C.

The Desk's latest survey of primary dealers and buy-side firms suggests that a statement like that in Alternative C would surprise market participants. Although the conclusion of the purchase program would not be a surprise, the change in forward guidance would be unexpected, as the implication that the target range for the federal funds rate will likely be raised in the near future conflicts with the predominant view of market participants, including all respondents to the Desk's latest survey, that the first increase in the target range will not take place until some point after the first quarter of 2015. In response to a statement like that in Alternative C, medium- and longer-term real interest rates would likely rise, inflation compensation would likely fall, equity prices would likely decline, and the dollar would likely appreciate.

THE CASE FOR ALTERNATIVE A

Some policymakers may view developments since the September meeting as calling for a postmeeting statement like that in Alternative A, in which policy accommodation is increased via the introduction of an explicit inflation floor in the forward guidance and the continuation of asset purchases at their present pace. These policymakers may be concerned that inflation will remain significantly below 2 percent over the medium term. They may point to recent softness in the inflation data as well as to further declines in market-based measures of inflation compensation. They might read the drop in inflation compensation as suggesting that inflation expectations have drifted down somewhat and perceive an increased risk that, in the absence of greater policy accommodation, longer-run expected inflation could become unanchored and move significantly below 2 percent. Policymakers may worry that if expected inflation drifts down, a mutually reinforcing pattern could emerge in which declining inflation expectations prompt a further slowing of inflation and a weakening of economic activity, perhaps along the lines of the "Lower Long-Term Inflation Expectations" scenario in the "Risks and Uncertainty" section of Tealbook, Book A. Containing such risks—compared with upside risks—might be a particular concern for policymakers on the grounds that the effective lower bound on policy rates and the Federal Reserve's already-large balance sheet could limit the Committee's flexibility in responding to downside outcomes.

Some policymakers may also be concerned that the information received since the Committee's September meeting has painted a somewhat less favorable picture of growth in demand for goods and services, with some evidence that the sluggishness in household spending has continued. In addition, policymakers may be concerned that the prospects of output growth exceeding that of potential output over coming quarters have been damaged by weakness in key European economies, by recent declines in stock prices, by appreciation of the dollar, and by an increase in risk spreads for many borrowers. Some of these policymakers may have only modestly lowered their modal projections for the growth of real activity, but they may nonetheless regard the risks to the outlook as having shifted appreciably to the downside. Indeed, some other policymakers may regard recent developments not only as having increased downside risks but also as justifying a more-substantial markdown of the modal projection for growth.

Moreover, some policymakers may judge that the economic expansion was already unsatisfactory in some key respects. In particular, they may highlight the fact that the recovery in the housing sector remains slow in spite of highly accommodative financial conditions. In addition, they may see the low labor force participation rate, the still-high share of workers with part-time jobs for economic reasons, and the moderate gains in hourly compensation, as pointing to weaker underlying labor market conditions than suggested by the unemployment rate and payroll employment figures alone.

Because of such worries about the stability of inflation expectations and the strength of the economic recovery, participants may believe that it would be appropriate to shift the forward guidance regarding the path of the federal funds rate in a more-quantitative direction and to do so in a way that points to a longer period of highly accommodative policy than currently anticipated by the public, while reinforcing the message by postponing the end of asset purchases, as in Alternative A. To the extent that the steps envisioned in Alternative A mean that the expected date at which reinvestments are expected to end or begin to be phased out is pushed further into the future, the change in forward guidance would also amplify the accommodation provided by the Committee's holdings of longer-term securities.

Participants who favor prolonging asset purchases may point out that the Committee has repeatedly indicated that asset purchases are not on a preset course and that reductions in the pace of purchases should be conditional on incoming data. And in light of recent developments here and abroad, they may see an end to the purchase program as inappropriate at this time. They may also view a decision that maintains purchases instead of terminating them as leaving the Committee better positioned to move to a more-rapid rate of purchases at a future meeting in the event of a substantial deterioration in the outlook.

Market participants would be surprised by an announcement of the inflation floor in Alternative A. In response to the new inflation-oriented forward guidance, market participants likely would push further into the future their expectation of the date of the first increase in the target range for the federal funds rate, perhaps by an appreciable amount. A flattening of the path that the federal funds rate is expected to take during the firming phase is also conceivable. An announcement of a continuation of the asset purchase program would also be a major surprise to markets. Investors have taken recent Federal Reserve communications as predominantly pointing to an October 2014 conclusion to the purchase program, and this expectation was reflected in the results of the Desk's latest survey. After an announcement along the lines of Alternative A, medium- and longer-term real interest rates would likely decline, inflation compensation and equity prices might rise, and the dollar could depreciate. However, insofar as investors interpreted the statement as reflecting a more downbeat assessment of the outlook for economic growth and inflation, equity prices would not rise as much or could even decline, and inflation compensation could fall.

DIRECTIVE

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

The draft directives for Alternatives B and C instruct the Desk to conclude asset purchases by the end of October. The draft directive for Alternative A, in contrast, instructs the Desk to continue purchases at their recent pace. All three of the draft directives instruct 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. Compared with its position in the September directive, the sentence that authorizes the use of dollar roll and coupon swap transactions to facilitate settlement of purchases is moved down in the draft directives for Alternatives B and C; however, in all three draft directives, the text of this sentence is the same as in the September directive. The reason for the move is that, once transactions associated with the asset purchase program have been settled, dollar roll and coupon swap transactions would be used to settle reinvestment transactions.

Alternatives

September 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 October, the Desk is directed to purchase longer-term Treasury securities at a pace of about $10 billion per month and to purchase agency mortgage-backed securities at a pace of about $5 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 October 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 October,~~ The Desk is directed to purchase longer-term Treasury securities at a pace of about $10 billion per month and to purchase agency mortgage-backed securities at a pace of about $5 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.

Alternatives

Directive for October 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 October~~ The Desk is directed to ~~purchase~~ **conclude the current program of purchases of** longer-term Treasury securities ~~at a pace of about $10 billion per month~~ and ~~to purchase~~ agency mortgage-backed securities ~~at a pace of about $5 billion per month~~ **by the end of October**. ~~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 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 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 October 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 October~~ The Desk is directed to ~~purchase~~ **conclude the current program of purchases of** longer-term Treasury securities ~~at a pace of about $10 billion per month~~ and ~~to purchase~~ agency mortgage-backed securities ~~at a pace of about $5 billion per month~~ **by the end of October**. ~~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 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 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 developed projections of the Federal Reserve's balance sheet and income statement that correspond to Alternatives A and B.[1] The pace and ending date of asset purchases differ across these alternatives, as do cumulative remittances. Projections under each scenario reflect the staff's assumptions about the trajectories of various components of the balance sheet. In particular, the projections embed the assumption that, at the time that normalization of the size of the balance sheet begins, the SOMA portfolio will shrink only through paydowns of principal from agency MBS and redemptions of maturing Treasury securities and agency debt.

For the balance sheet scenario that corresponds to Alternative B, monthly purchases of longer-term Treasury securities and agency MBS are each assumed to cease at the end of October. Under this assumption, which is the same as the policy assumption in the staff baseline forecast presented in Tealbook, Book A, purchases cumulate to a bit less than $1.5 trillion over 2013 and 2014, an amount that is unchanged from Alternative B and the staff forecast in the September Tealbook.[2]

As shown in the exhibit "Total Assets and Selected Balance Sheet Items," total assets peak at about $4.5 trillion in the fourth quarter of 2014, with $2.5 trillion in Treasury securities holdings and $1.7 trillion in agency MBS holdings.[3] Reserve balances peak at about $2.9 trillion in the fourth quarter of 2014. We assume that the first increase in the target range for the federal funds rate is in the second quarter of 2015, consistent with the staff economic forecast and unchanged from Alternative B of the September Tealbook. We also assume that the level of overnight reverse repurchase agreements (ON RRPs) runs at $100 billion through the end of 2018 and then falls to zero

[1] There would be no material difference between the projection for Alternative C and that for Alternative B.

[2] Including MBS purchases in the fourth quarter of 2012, the FOMC purchased $790 billion of Treasury securities and $800 billion of MBS securities, or about $1.6 trillion in total, under the flow-based asset purchase program.

[3] Total assets peak after the end of the purchase program because of delayed settlement of agency MBS purchases.

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

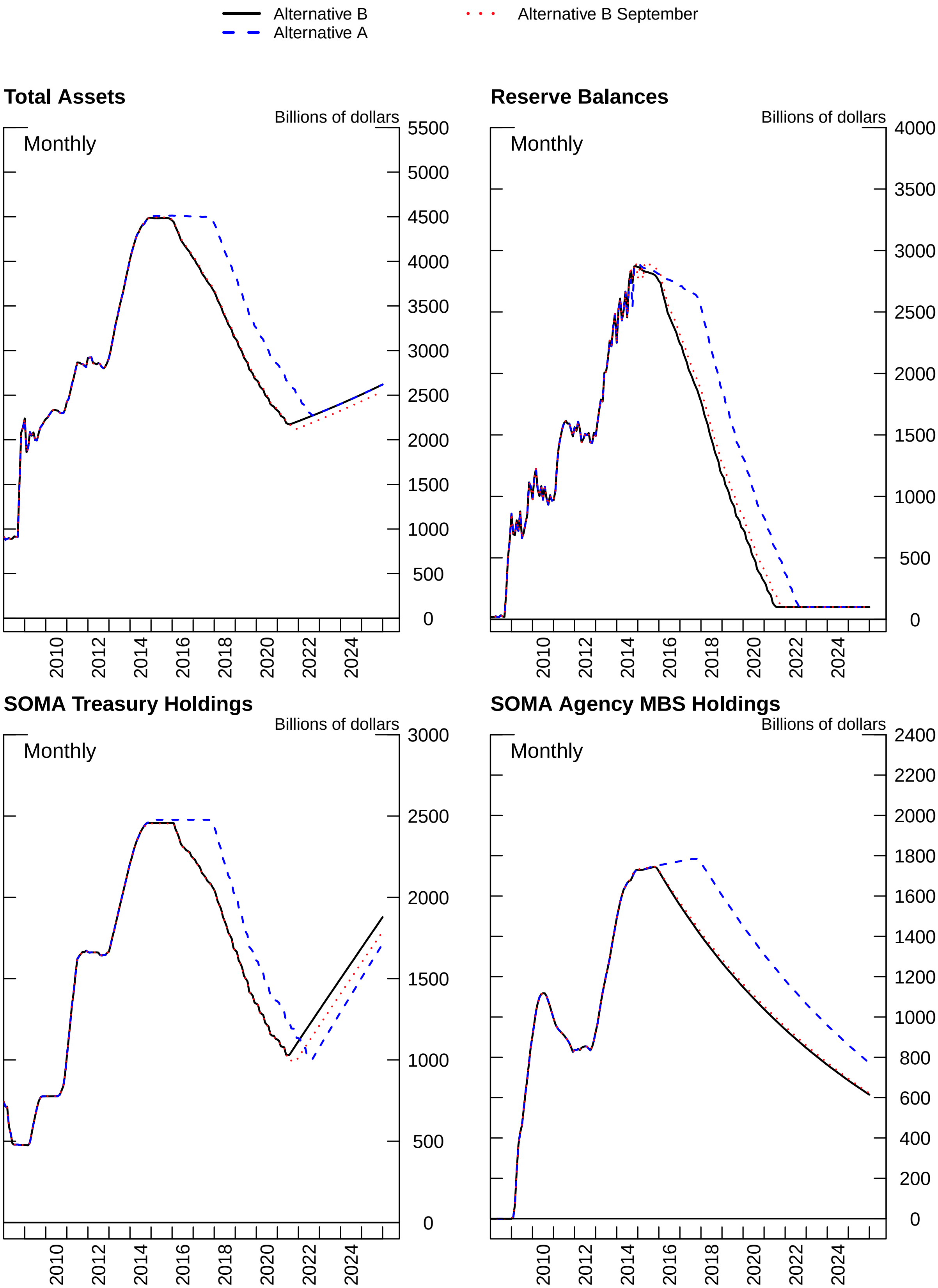
Billions of dollars

	Sep 30, 2014	2015	2017	2019	2021	2023	2025
Total assets	4,450	4,458	3,661	2,671	2,209	2,402	2,620
Selected assets							
Loans and other credit extensions*	2	0	0	0	0	0	0
Securities held outright	4,188	4,213	3,455	2,497	2,056	2,264	2,495
U.S. Treasury securities	2,452	2,457	2,047	1,346	1,115	1,499	1,878
Agency debt securities	40	33	4	2	2	2	2
Agency mortgage-backed securities	1,696	1,723	1,404	1,148	939	763	615
Unamortized premiums	209	191	148	114	90	73	60
Unamortized discounts	-19	-17	-13	-10	-8	-7	-6
Total other assets	69	71	71	71	71	71	71
Total liabilities	4,393	4,399	3,589	2,580	2,093	2,255	2,434
Selected liabilities							
Federal Reserve notes in circulation	1,246	1,351	1,520	1,651	1,797	1,959	2,138
Reverse repurchase agreements	410	210	210	110	110	110	110
Deposits with Federal Reserve Banks	2,728	2,832	1,853	813	180	180	180
Reserve balances held by depository institutions	2,537	2,751	1,773	733	100	100	100
U.S. Treasury, General Account	158	75	75	75	75	75	75
Other Deposits	32	5	5	5	5	5	5
Interest on Federal Reserve Notes due to U.S. Treasury	3	0	0	0	0	0	0
Total capital	56	60	72	92	116	147	186

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

Total Assets and Selected Balance Sheet Items



by the end of 2019.[4] Six months after the federal funds rate is raised above its effective lower bound, all reinvestments and rollovers of securities are assumed to cease; at that time, the SOMA portfolio begins to contract.[5] The size of the portfolio is normalized by the third quarter of 2021.[6] The balance sheet then begins to expand, with increases in SOMA securities holdings essentially matching the growth of currency in circulation and Federal Reserve Bank capital and surplus. Total assets are $2.6 trillion at the end of 2025, with about $2.5 trillion in total SOMA securities holdings, of which about $615 billion are agency MBS.

The exhibit, "Income Projections," shows the implications of these balance sheet developments for Federal Reserve income. Interest income rises over the period in which reinvestment purchases continue; subsequently, it declines for a number of years as the SOMA portfolio contracts through redemptions and paydowns of principal. Although interest expense is currently quite small, it climbs over the next few years as the interest rate on reserve balances increases while those balances are still quite elevated; annual interest expense peaks at about $55 billion in 2017.[7] Putting these pieces together, annual remittances reach about $100 billion this year and then slowly decline over the following four years. Annual remittances reach their trough at about $30 billion in 2018, modestly higher than in the September Alternative B scenario, reflecting the lower federal funds

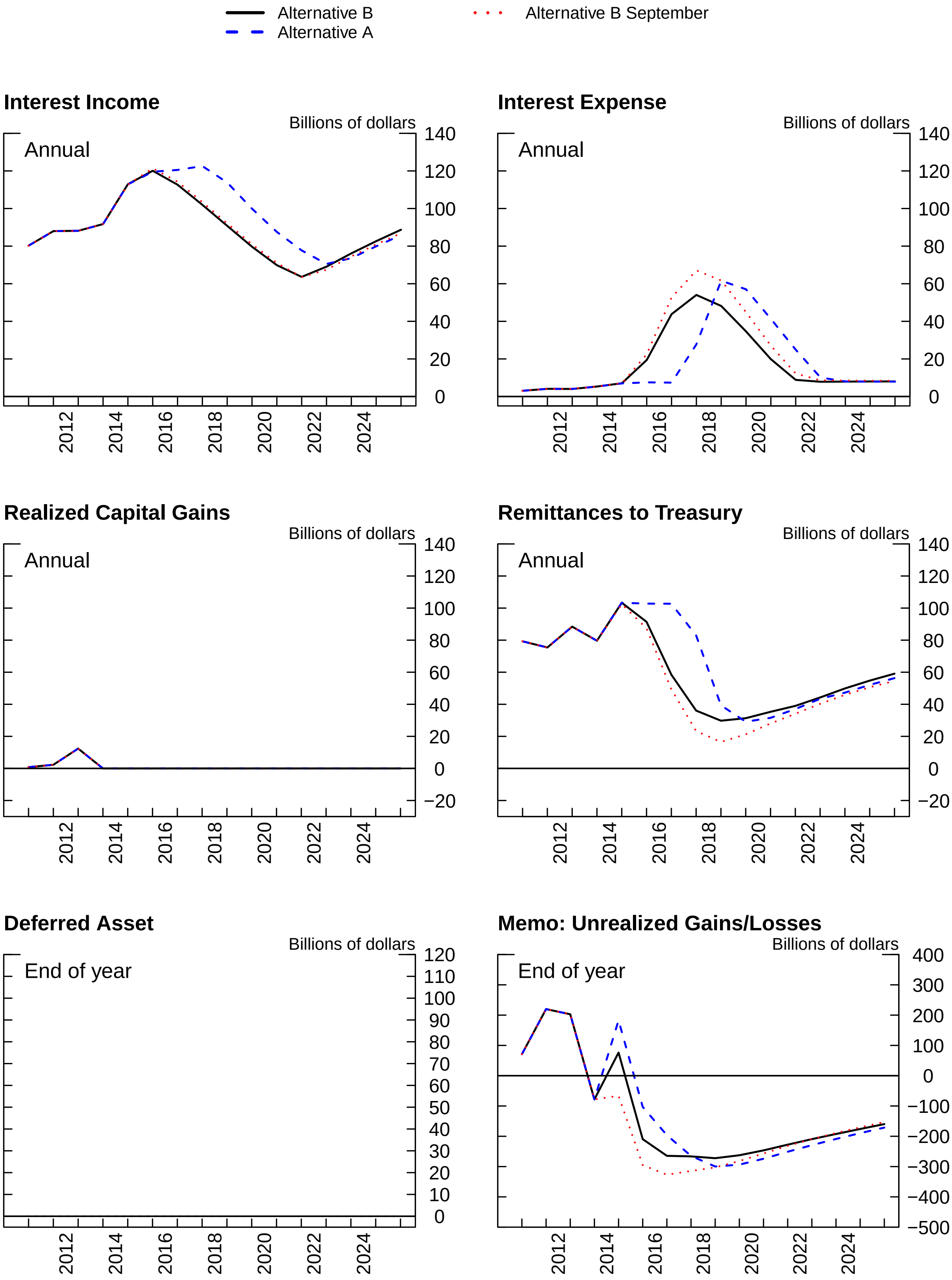
[4] Use of ON RRPs results in a shift in the composition of Federal Reserve liabilities—a decline in reserve balances and a corresponding increase in reverse repurchase agreements—but does not produce an overall change in the size of the balance sheet. The current projections also embed the assumption that RRPs associated with foreign official and international accounts will remain around $110 billion throughout the projection period. We assume that term deposits are not used during normalization; their use would also result in a shift in the composition of liabilities—a decline in reserve balances and a corresponding increase in term deposits.

[5] Projected prepayments of agency MBS reflect interest rate projections as of October 21, 2014.

[6] 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 $100 billion.

[7] We assume the interest rate paid on reserve balances remains 25 basis points as long as the federal funds rate remains at its effective lower bound. In addition, we assume that, once firming of the policy rate begins, the spread between the interest rate paid on reserve balances and the ON RRP rate is 25 basis points. In particular, the rate paid on reserve balances is about 15 basis points above the federal funds rate, and the ON RRP rate is about 10 basis points below it, with the spread sufficient to create conditions in which trading in the federal funds market is at the projected federal funds rate.

Income Projections



Projections

rate path in the Tealbook baseline; no deferred asset is recorded.[8] The Federal Reserve's cumulative remittances from 2009 through 2025 are about $1 trillion, approximately $200 billion above the staff estimate of the level that would have been observed had there been no asset purchase programs.[9]

The unrealized gain or loss position of the SOMA portfolio is influenced importantly by the level of interest rates. The staff estimates that the portfolio was in an unrealized gain position of about $80 billion as of the end of September 2014.[10] Reflecting the assumed rise in long-term interest rates over the next several years, the position is projected to shift to an unrealized loss next year, and projected year-end unrealized losses peak at $275 billion in 2018. At the peak, roughly $150 billion of the unrealized loss can be attributed to the Treasury portfolio and $125 billion to the MBS portfolio. The unrealized loss position narrows through the remainder of the forecast period, as securities acquired under the large-scale asset purchase programs mature and new securities are added to the portfolio at par.

Under the scenario for Alternative A, the current pace of purchases of longer-term Treasury securities and agency MBS is maintained through December 2014.[11] Under these assumptions, purchases total $1.5 trillion from 2013 to 2014, and total assets rise to a peak of about $4.5 trillion during 2015. The first increase in the target federal funds rate is assumed to occur in the second quarter of 2017, consistent with inflation one- to two-years ahead rising above 2 percent at that time, given the staff's economic outlook for this scenario. Reinvestments are assumed to cease six months after the first increase in the federal funds rate, and the SOMA portfolio then begins to contract.[12] The size of

[8] 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.

[9] The staff estimate is obtained by linear interpolation from 2006 to 2025 based on actual 2006 income and projected 2025 income.

[10] 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 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.

[11] Compared with the baseline, the later end to asset purchases and the introduction of an inflation floor is consistent with a view that strength of the expansion in economic activity going forward may not otherwise be sustained and that inflation moving up toward 2 percent over the medium run would otherwise be more gradual.

[12] During the period of reinvestment, holdings of agency MBS rise slightly because paydowns of principal of agency debt and maturing agency MBS are reinvested into agency MBS. Also, even though total assets generally plateau during reinvestment, reserve balances begin to decline during this period to offset the growth in Federal Reserve notes.

the portfolio is normalized one year later than under the scenario corresponding to Alternative B, primarily reflecting the later lift off and, hence, end to reinvestment. As with Alternative B, interest income rises over the period in which reinvestment purchases continue; subsequently, it declines for a number of years as the SOMA portfolio contracts. In addition, the rise in shorter-dated interest rates between 2017 and 2021, while reserve balances remain elevated, leads to an increase in interest expense. Remittances reach their trough at about $30 billion in 2019, and no deferred asset is recorded. Even with this pattern, cumulative remittances from 2009 through 2025 are greater under Alternative A than under the projection for Alternative B because the delayed end of reinvestments results in a slightly higher path for the size of the balance sheet over the next few years, and so higher interest income. Moreover, the later liftoff date decreases the interest paid on reserve balances for a time.

As shown in the exhibit, "Alternative Projections for the 10-Year Treasury Term Premium Effect," the effect of the Federal Reserve's cumulative increase in asset holdings on the term premium embedded in the 10-year Treasury yield in the fourth quarter of 2014 is negative 116 basis points under Alternative B, about the same as in the September Tealbook. Over the projection period, the term premium effect diminishes toward zero at a pace of about 5 basis points per quarter, reflecting the actual and anticipated normalization of the portfolio. Under Alternative A, the term premium effect is negative 133 basis points in the current quarter. In absolute terms, the effect is larger than under Alternative B, primarily because the balance sheet begins to contract later than under Alternative B. In particular, more maturing securities are reinvested during the extended reinvestment period in Alternative A.

As shown in the exhibit, "Alternative Projections for the Monetary Base," the monetary base increases through the beginning of 2015 because the purchase program under Alternative B, which includes rising SOMA holdings beyond October because of the delayed settlement of prior purchases of agency MBS securities, is accompanied by additions to reserve balances. Once the normalization process begins, the monetary base shrinks through 2021, primarily because redemptions of securities cause corresponding reductions in reserve balances. Starting around early 2022, after reserve balances are assumed to have stabilized at $100 billion, the monetary base begins to expand in line with the increase in currency in circulation. Because the contours of the balance sheet are

Alternative Projections for the 10-Year Treasury Term Premium Effect

Date	Alternative B	Alternative A	September Alternative B
Basis Points			
Quarterly Averages			
2014: Q4	–116	–133	–117
2015: Q1	–111	–128	–111
Q2	–106	–124	–106
Q3	–101	–119	–101
Q4	–96	–115	–96
2016: Q1	–91	–111	–91
Q2	–87	–106	–87
Q3	–82	–102	–82
Q4	–78	–98	–78
2017: Q4	–63	–80	–63
2018: Q4	–51	–65	–50
2019: Q4	–42	–52	–41
2020: Q4	–34	–41	–33
2021: Q4	–28	–33	–27
2022: Q4	–24	–26	–22
2023: Q4	–19	–21	–18
2024: Q4	–15	–16	–14
2025: Q4	–10	–11	–10

Projections

Alternative Projections for the Monetary Base

Percent change, annual rate; not seasonally adjusted

Date	Alternative B	Alternative A	September Alternative B
Quarterly			
2014: Q4	31.6	32.4	7.9
2015: Q1	5.3	6.8	0.9
Q2	-0.2	0.1	6.4
Q3	0.0	0.2	2.1
Q4	-0.8	-0.1	-1.0
2016: Q1	-6.4	-0.2	-6.4
Q2	-12.7	-0.4	-13.1
Q3	-10.0	-0.2	-10.3
Q4	-8.4	-0.4	-8.7
Annual			
2017	-9.6	-1.0	-10.1
2018	-14.4	-13.3	-15.2
2019	-13.1	-13.5	-13.9
2020	-13.3	-13.0	-14.6
2021	-7.4	-12.8	-12.4
2022	3.6	-10.2	3.7
2023	3.7	3.7	4.2
2024	3.8	3.8	4.2
2025	3.8	3.8	4.1

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

Projections

similar across the alternatives, the growth rates of the monetary base under Alternative A are broadly similar to those under Alternative B.[13]

[13] The projection for the monetary base depends critically on the FOMC's choice of tools during normalization. If, for example, the FOMC employs additional reverse repurchase agreements or term deposits to drain reserves during normalization, the projected level of reserve balances and the monetary base could decline quite markedly in the out-years of the projection. In this projection, an ON RRP facility is assumed and, therefore, the monetary base is lower until 2019 (when the facility is phased out) than it would otherwise be. Because the size of the ON RRP program is small in relation to reserve balances, the overall contours of the monetary base are not greatly affected.

MONEY

In recent years, M2 has grown considerably faster than would have been anticipated based on its historical relationship with nominal GDP and the opportunity cost of holding money. However, the staff projects that M2 will decline in the coming year and grow slowly thereafter over the forecast horizon. This trajectory for M2 reflects an expected increase in the opportunity cost of holding M2 balances arising from the projected firming of monetary policy.[14] In addition, the forecast incorporates a judgment that businesses and households will reallocate a portion of their elevated M2 balances to other investments as the economic expansion progresses; this process acts as an additional restraint on M2 growth beginning in 2015.[15]

Projections

14 The three-month Treasury bill rate is assumed to begin rising in 2015:Q1—one quarter earlier than the time at which the staff projects the federal funds rate will be raised above its effective lower bound. Subsequently, the Treasury bill rate is assumed to continue rising through the end of the forecast period, implying an increasing opportunity cost of holding M2 balances.

15 The staff projects that only a portion of the elevated M2 balances will be reallocated. This judgment is based on the staff view that depositors may continue to be quite risk averse in their investment decisions for some time. In addition, in light of various regulatory developments, depository institutions may see deposit liabilities as a more attractive funding source than other types of funding going forward than was the case in the past. Of course, there is uncertainty regarding this view, and other regulatory developments, such as higher capital requirements, might tend to constrain the growth of bank balance sheets and deposits.

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

Quarterly		
2014:	Q4	3.6
2015:	Q1	2.3
	Q2	-1.0
	Q3	-3.2
	Q4	-2.2
2016:	Q1	-0.7
	Q2	0.1
	Q3	0.7
	Q4	1.2
2017:	Q1	1.5
	Q2	1.7
	Q3	2.0
	Q4	2.2
Annual		
	2014	5.6
	2015	-1.0
	2016	0.3
	2017	1.9

Actual data through October 13, 2014; projections thereafter.

*Quarterly growth rates are computed from quarter averages. Annual growth rates are fourth quarter over fourth quarter.

Projections

Abbreviations

ABS	asset-backed securities
AFE	advanced foreign economy
BEA	Bureau of Economic Analysis, Department of Commerce
BHC	bank holding company
CDS	credit default swaps
C&I	commercial and industrial
CLO	collateralized loan obligation
CMBS	commercial mortgage-backed securities
CPI	consumer price index
CRE	commercial real estate
Desk	Open Market Desk
ECB	European Central Bank
EME	emerging market economy
FDIC	Federal Deposit Insurance Corporation
FOMC	Federal Open Market Committee; also, the Committee
GCF	general collateral finance
GDI	gross domestic income
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
PCE	personal consumption expenditures
repo	repurchase agreement
RMBS	residential mortgage-backed securities

RRP	reverse repurchase agreement
SCOOS	Senior Credit Officer Opinion Survey on Dealer Financing Terms
SEP	Summary of Economic Projections
SFA	Supplemental Financing Account
SLOOS	Senior Loan Officer Opinion Survey on Bank Lending Practices
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