Prefatory Note

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Please note that some material may have been redacted from this document if that material was received on a confidential basis. Redacted material is indicated by occasional gaps in the text or by gray boxes around non-text content. All redacted passages are exempt from disclosure under applicable provisions of the Freedom of Information Act.

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Report to the FOMC on Economic Conditions and Monetary Policy

Book B

Monetary Policy: Strategies and Alternatives

September 11, 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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Strategies

Monetary Policy Strategies

The top panel of the first exhibit, "Policy Rules and the Staff Projection," provides near-term prescriptions for the federal funds rate from six different policy rules: the Taylor (1993) rule, the Taylor (1999) rule, an inertial version of the Taylor (1999) rule, an outcome-based 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 shown in the table, the Taylor (1993) rule, the Taylor (1999) rule, and the outcome-based rule all call for sizable increases in the federal funds rate over the next two quarters. The inertial Taylor (1999) rule and the first-difference rule prescribe smaller increases in the federal funds rate in the near term, to just below ¾ percent by the first quarter of 2015. In contrast, the nominal income targeting rule calls for negative policy rates in the near term. This more-accommodative prescription arises because the rule responds not only to the staff's estimates of the output gap and inflation in the current quarter but also is calibrated to respond to the cumulative shortfall of inflation from the Committee's 2 percent longer-run objective since the end of 2007; currently, this cumulative shortfall is about 3 percentage points.

All of the simple rules call for somewhat lower policy rates in the near term than under the previous Tealbook forecast, reflecting the staff's projections of somewhat lower resource utilization and slightly lower inflation than in the July Tealbook. The revisions in the output gap projections, shown in the lower-left panel of the exhibit, reflect the staff's view that, while the growth of real GDP was not quite as slow in the first half of 2014 as estimated in July, growth in economic activity is likely to be weaker in the medium term than predicted in July due to a stronger dollar and modestly slower house price growth. The staff now anticipates that the output gap will close by mid-2016, three quarters later than in the July Tealbook, and that real GDP will subsequently overshoot potential GDP by considerably less than projected in July. The output gap is expected to peak at about ¾ percent of potential GDP in 2017 and then decline thereafter. Reflecting these projections of lower resource utilization, the staff's forecast for core

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

Strategies

Policy Rules and the Staff Projection

Near-Term Prescriptions of Selected Policy Rules

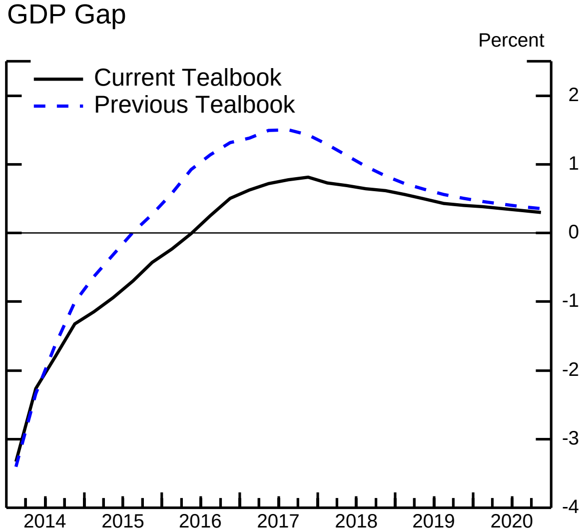
	2014Q4	2015Q1
Taylor (1993) rule	**2.39**	**2.66**
Previous Tealbook	*2.66*	*3.04*
Taylor (1999) rule	**1.73**	**2.09**
Previous Tealbook	*2.16*	*2.73*
Inertial Taylor (1999) rule	**0.37**	**0.63**
Previous Tealbook outlook	*0.43*	*0.77*
Outcome-based rule	**0.68**	**1.26**
Previous Tealbook outlook	*0.84*	*1.66*
First-difference rule	**0.47**	**0.72**
Previous Tealbook outlook	*0.77*	*1.23*
Nominal income targeting rule	**–0.22**	**–0.41**
Previous Tealbook outlook	*–0.16*	*–0.26*

Memo: Equilibrium and Actual Real Federal Funds Rates

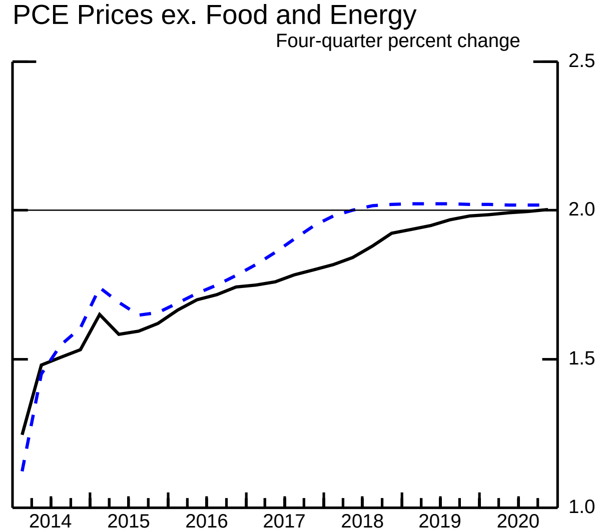
	Current Tealbook	*Previous Tealbook*
Tealbook-consistent FRB/US *r** estimate	–0.85	*–0.29*
Actual real federal funds rate	–1.34	*–1.31*

Key Elements of the Staff Projection

GDP Gap



PCE Prices ex. Food and Energy



Note: The lines denoted "Previous Tealbook outlook" in the upper panel report rule prescriptions based on the previous Tealbook's staff outlook using the current rule specifications. Rules that have the lagged policy rate as a right-hand-side variable jump off from the average value of the policy rate thus far in the current quarter.

inflation, shown in the lower-right panel of the exhibit, settles near 2 percent in 2020, two years later than in the July Tealbook.

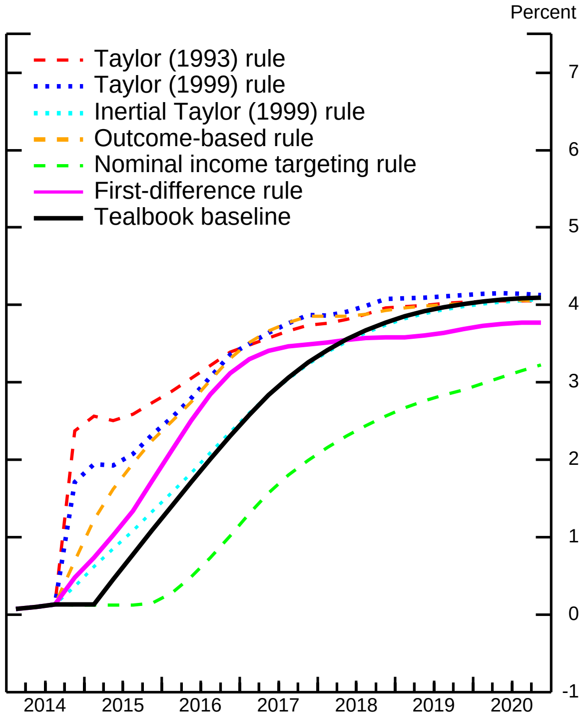
The top panel of the first exhibit also reports the Tealbook-consistent estimate of the equilibrium real federal funds rate, r^*, generated using the FRB/US model after adjusting it to reproduce the staff's baseline forecast. This measure is an estimate of the real federal funds rate that would, if maintained, return output to potential in 12 quarters. The estimated r^*, at –0.85 percent, is about 50 basis points above the actual real federal funds rate but 60 basis points below the current-quarter estimate as of the July Tealbook, reflecting the staff's new, lower, projection of resource utilization.

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 would remain at its effective lower bound for two quarters after the end of the asset purchase program, and subsequently would follow 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 July 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." As in the July projections, the first rate hike under the baseline policy occurs in the second quarter of 2015. Thereafter, the federal funds rate increases gradually over the next few years, reaching 2 percent in mid-2016 and 4 percent by the end of 2019. In contrast to the Tealbook baseline, the simulations employing the six 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.)

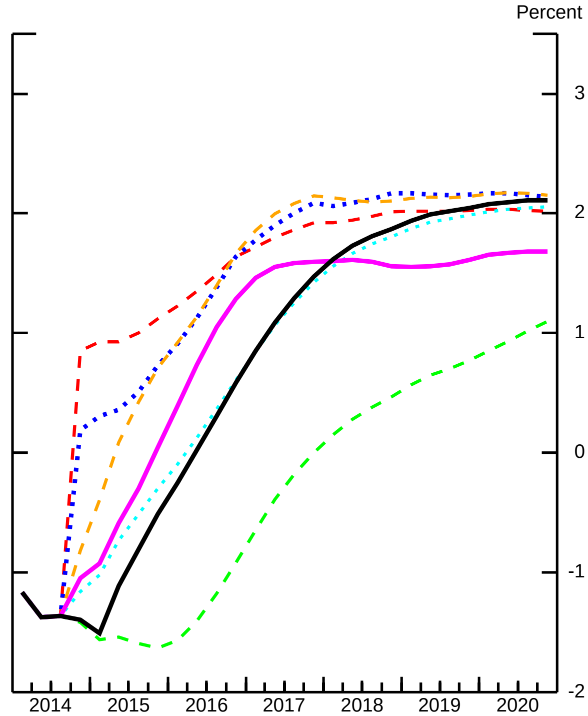
[2] The policy rule simulations discussed here and below incorporate the macroeconomic effects of the FOMC's large-scale asset purchase programs. For the current program, the simulations embed the assumption that purchases of longer-term Treasury securities and agency MBS will conclude in October, with cumulative purchases since the start of 2013 close to $1.5 trillion.

Policy Rule Simulations

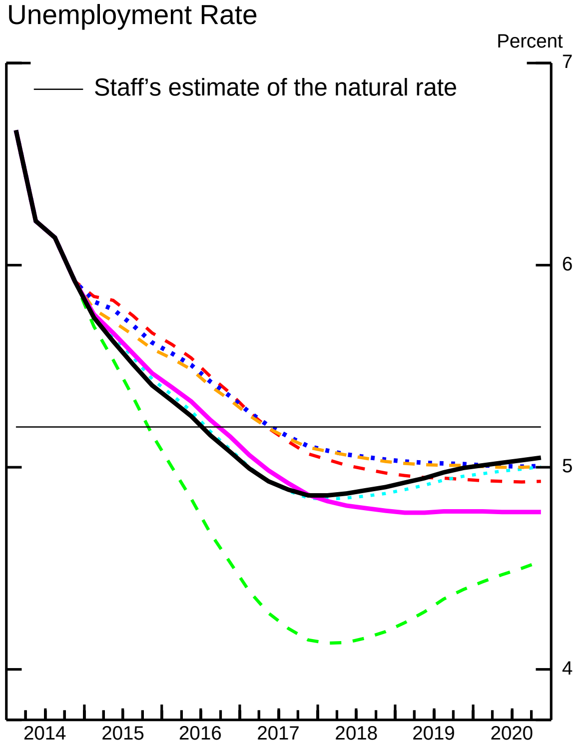
Effective Nominal Federal Funds Rate



Real Federal Funds Rate

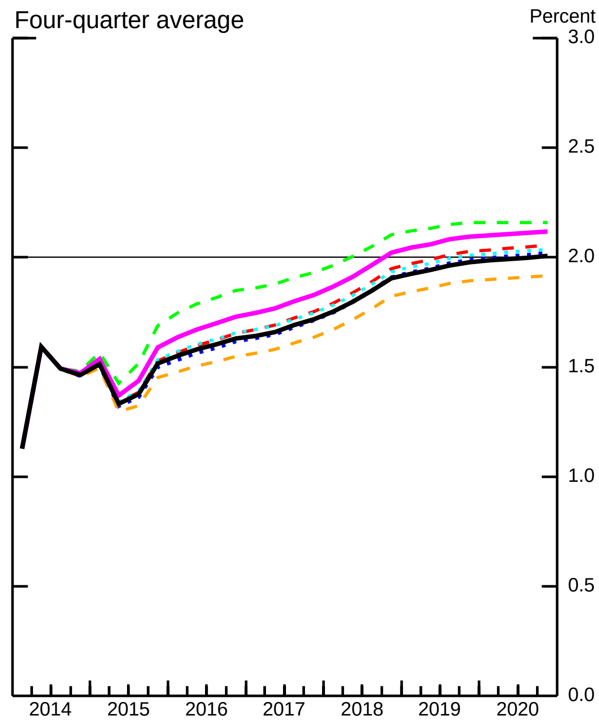


Unemployment Rate



PCE Inflation

Four-quarter average



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

Ignoring the forward guidance, five of the rules—the Taylor (1993), Taylor (1999), inertial Taylor (1999), outcome-based, and first-difference rules—call for tightening to begin immediately. Except for the inertial Taylor (1999) rule, each of these rules prescribes a real federal funds rate path that lies significantly above the baseline over the next few years, leading to somewhat higher unemployment rates over that period. Reflecting the low sensitivity of inflation to slack in the FRB/US model, the inflation paths produced by these rules are similar to those in the Tealbook baseline.[3] The inertial Taylor (1999) rule calls for tightening to commence two quarters earlier than in the Tealbook baseline, but its prescriptions for the federal funds rate converge to those in the staff baseline by mid-2016 and are nearly identical thereafter. As a result, this rule results in very similar longer-term interest rates and macroeconomic outcomes.

The first-difference rule also initially implies a higher nominal funds rate than the baseline. However, the effect on unemployment of this more-rapid tightening is attenuated because the first-difference rule also calls for an easier stance of policy later in the decade, as the pace of economic activity moderates, than do the other rules. After 2017, the more-accommodative monetary policy stance also promotes a larger and more-persistent undershooting of the unemployment rate with respect to its natural rate than most of the other rules; this greater resource utilization in the future in turn boosts inflation in the shorter run via forward-looking expectations.

The nominal income targeting rule implies a later departure from the effective lower bound than assumed in the Tealbook baseline. This rule keeps the federal funds rate within the Committee's current target range until the first 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 objective than in the Tealbook baseline through 2018, but it runs modestly above 2 percent for several years thereafter, as the rule seeks to compensate for the cumulative shortfall of inflation from 2 percent since the end of 2007.

[3] Long-term inflation expectations in all of these simulations are assumed to follow the same trajectory as in the staff baseline. The small differences in inflation outcomes across the rules reflect the different federal funds rate paths that each rule prescribes and the resulting paths for longer-term real rates and current and expected real activity. For alternative assumptions on long-term inflation expectations and their implications, see the memo, "Long-Term Inflation Expectations and Risks to the Outlook," by Thomas Laubach, John M. Roberts, Jae W. Sim, and Brad E. Strum, sent to the Committee on September 5, 2014.

The results for each rule presented in these and subsequent simulations depend importantly on the assumptions that policymakers will adhere to that rule in the future and that the private sector fully understands the policy that will be pursued and its implications for real activity and inflation. These assumptions play a particularly critical role in the case of the nominal income targeting rule, which generates 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.

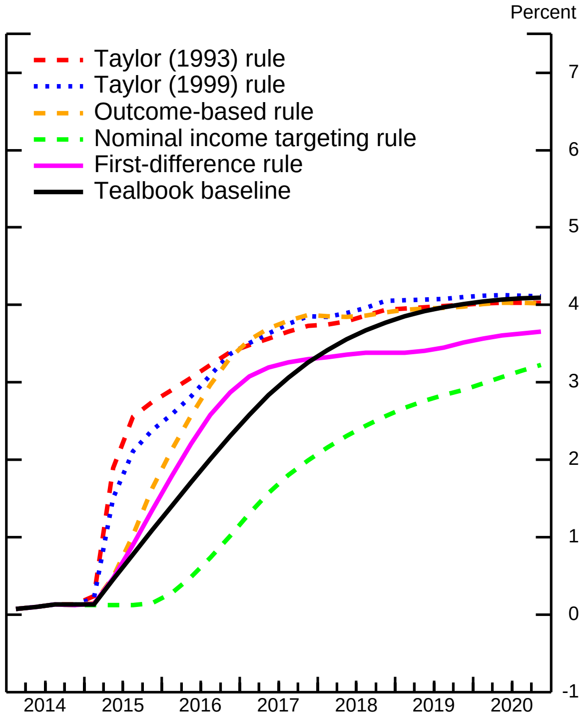
As previously noted, the policy rules in the simulations summarized above do not take into account the Committee's forward guidance, and all but one of these rules involve departures from the effective lower bound about two quarters earlier than in the staff baseline. The third exhibit, "Policy Rule Simulations with an Unemployment Rate Threshold," reports results obtained when each policy rule is subject to an unemployment rate threshold that is intended to capture the Committee's "considerable time" guidance in a data-dependent manner. A threshold of 5.8 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. For most rules, the delayed departure from the effective lower bound has small macroeconomic effects because the longer-term real rates that influence economic activity in the FRB/US model are not appreciably altered. Only for the first-difference rule does the threshold imply significantly different outcomes for unemployment and inflation. Imposing the unemployment rate threshold on the first-difference rule results in a more-accommodative policy path, delivering a lower trajectory for unemployment throughout the projection period and slightly higher inflation than in the case without the threshold.

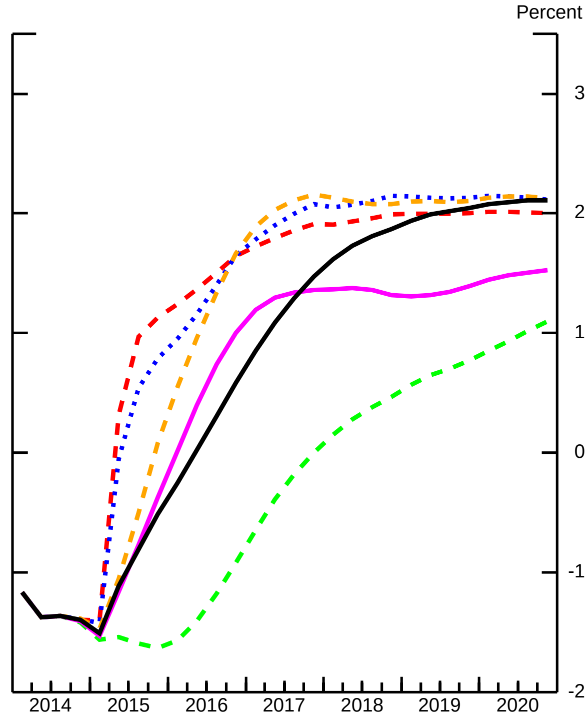
[4] For the same reason, the unemployment rate threshold used in July was 5.6 percent.

Policy Rule Simulations with an Unemployment Rate Threshold

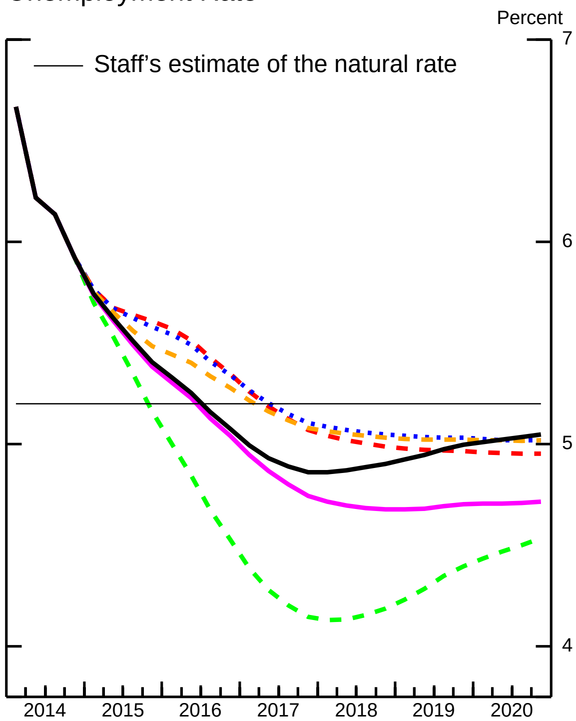
Effective Nominal Federal Funds Rate



Real Federal Funds Rate

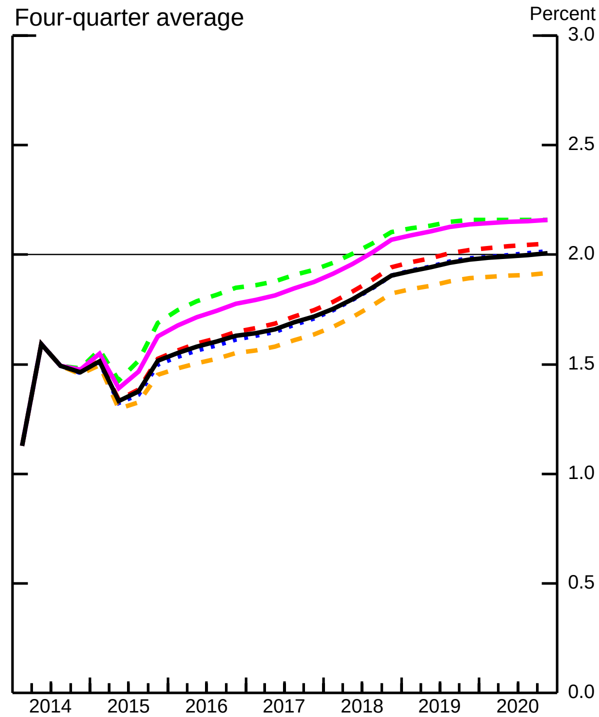


Unemployment Rate



PCE Inflation

Four-quarter average



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 5.8 percent or more. Thereafter, the federal funds rate follows the prescriptions of the specified rule. A value of 5.8 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.

The fourth exhibit, "Optimal Control Policy under Commitment," compares optimal control simulations derived using this Tealbook's baseline forecast with those reported in July.[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. The optimal control concept presented here corresponds to a commitment policy under which policymakers make decisions today that have the effect of constraining policy choices in future periods.[6]

The policy rate under optimal control rises above the Committee's current target range next quarter—the first quarter of the projection. The real federal funds rate through 2020 averages about 1 percentage point lower than in July, largely reflecting the somewhat weaker underlying trend in aggregate demand now seen in the staff projection. The federal funds rate departs from the effective lower bound two quarters earlier than in the Tealbook baseline. The real federal funds rate remains fairly close to the Tealbook baseline until early 2017, runs around 30 basis points higher than the baseline for about five years, but drops below the baseline in the distant future (not shown). As a result, the two policies imply roughly the same degree of accommodation, and the unemployment and inflation paths under the optimal control policy are similar to those in the baseline.[7]

A feature of these optimal control simulations under commitment is that the nominal federal funds rate rises gradually to 4 percent before slowly converging to its long-run value of 3¾ percent. The gradual increase reflects a number of factors, among them adverse economic and financial conditions that imply that aggregate demand would be persistently weak if the federal funds rate were to be adjusted promptly to its steady-state level, and the fact that the objective function assumed for these simulations

[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.

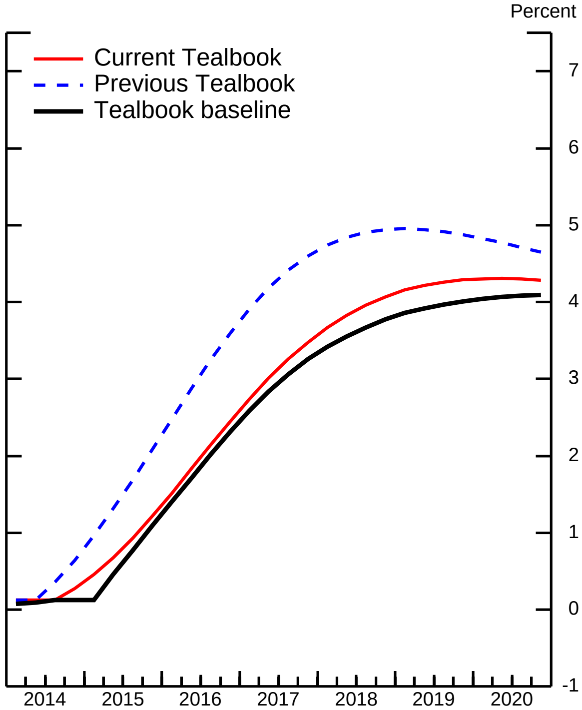
[6] The results for optimal control policy under discretion (in which policymakers cannot credibly commit to carrying out a plan involving policy choices that would be suboptimal at the time these choices have to be implemented) are similar to those reported in the exhibits for commitment.

[7] These results depend on a number of factors and could vary under alternative modeling assumptions, including asymmetries in the specification of policymakers' preferences, the presence of asymmetric risks to the outlook, and uncertainties in gauging economic slack. For more details, see the memo, "Potential Implications of Alternative Approaches to the Timing and Pace of Tightening," by Christopher J. Erceg, Michael T. Kiley, and Robert J. Tetlow, sent to the Committee on September 5, 2014.

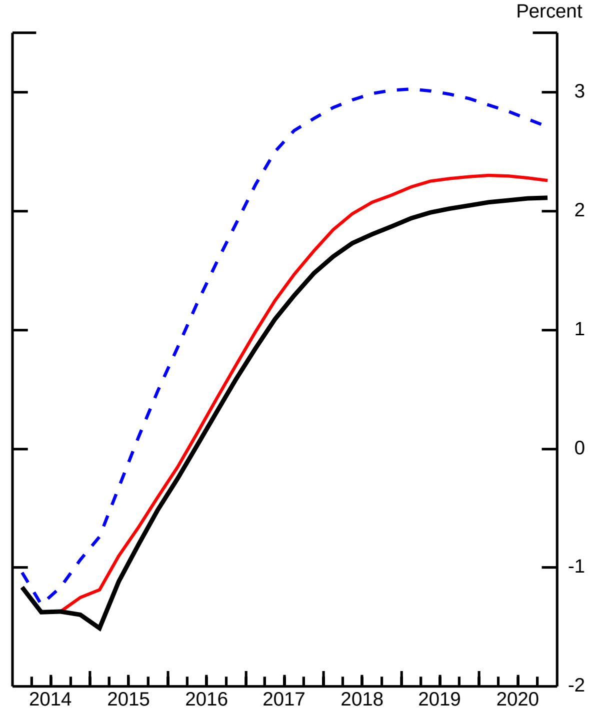
Strategies

Optimal Control Policy under Commitment

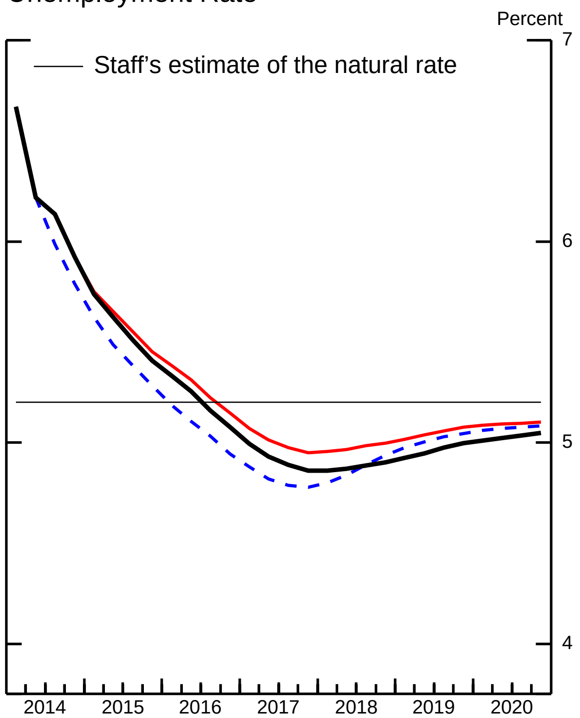
Effective Nominal Federal Funds Rate



Real Federal Funds Rate

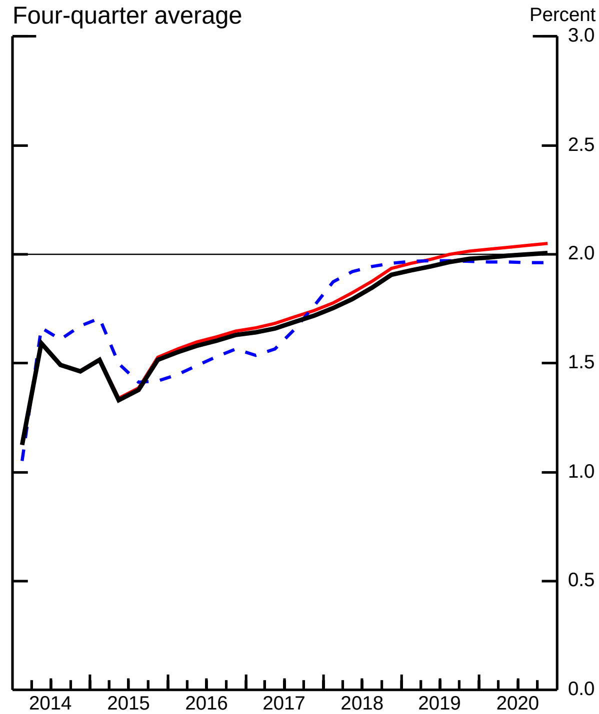


Unemployment Rate



PCE Inflation

Four-quarter average



penalizes changes in the federal funds rate and thereby encourages interest-rate smoothing.[8]

To ascertain the role played by interest-rate smoothing, the special exhibit, "Optimal Control Policy under Commitment with Lower Weight on Interest-Rate Smoothing," compares these results with the outcomes from an alternative optimal control simulation under commitment featuring a smaller penalty on the change in the federal funds rate.[9]

With the smaller penalty, optimal control implies a policy in which the federal funds rate is raised above the lower bound about one year later than in the standard case but then rises more steeply. The resulting path of longer-term interest rates is slightly above the standard case, as the effect of the higher level of the funds rate in the intermediate term more than offsets the effect of the lower federal funds rate in the near term. Because changes in federal funds rate policy in the FRB/US model are primarily transmitted to aggregate demand via longer-term interest rates, unemployment in this case runs a little above its trajectory in the standard case, although inflation is little changed.

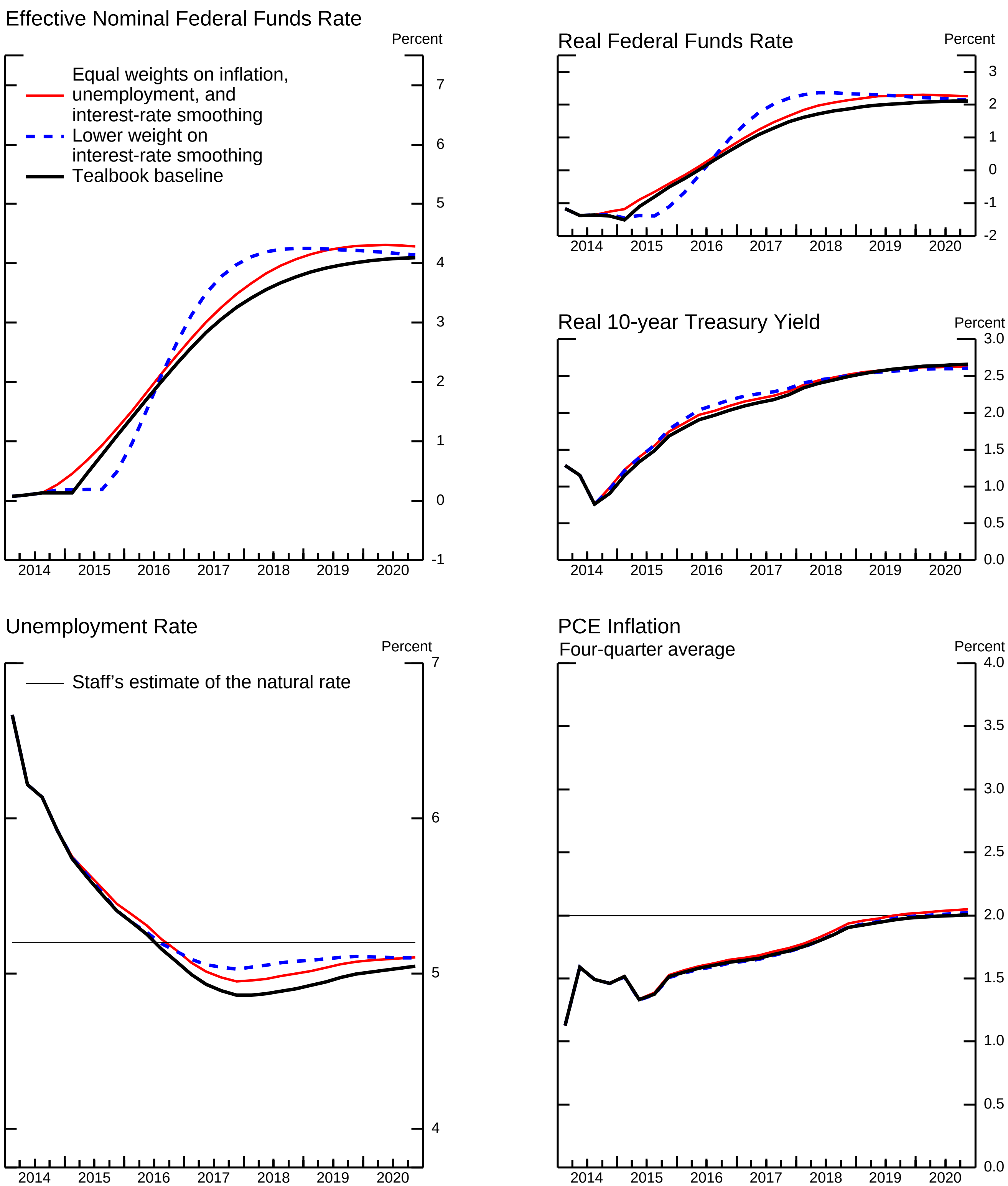
These results suggest that, in current circumstances, policies associated with various degrees of interest-rate smoothing could serve equally well in achieving the Committee's dual mandate of price stability and maximum employment. It deserves emphasis, however, that in practice the communication strategies associated with the two

[8] In addition, the gradual increase reflects the fact that inflation responds only weakly to economic conditions and depends on an exogenous measure of inflation expectations that remains below 2 percent far into the next decade.

[9] In the standard case, equal weights are placed on minimizing deviations of inflation and unemployment from the Committee's assumed objectives and on changes in the federal funds rate. The inclusion of a desire for interest-rate smoothing in the assumed loss function could be motivated in several ways. Such smoothing implies policy prescriptions that more closely resemble the observed persistence in the actual federal funds rate in the past. More substantively, policymakers may put considerable weight on interest-rate smoothing as a hedge against model uncertainty or out of concerns for not-perfectly-rational expectations formation (such as learning behavior). In the case of low interest-rate smoothing, the weight placed on changes in the funds rate is lowered to a level equal to 7½ percent of the weight on the inflation and unemployment deviations. Lowering the weight further would lead to convergence problems for the simulations of the FRB/US model.

Strategies

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



optimal control policies shown in the exhibit would likely need to be different, each presenting its own challenges.[10]

Arguably, an increase in the federal funds rate next quarter, as prescribed by the standard optimal control simulation, would come as a substantial surprise to market participants in light of the Committee's "considerable time" guidance. Moreover, market participants might misinterpret such an early tightening as a signal that the Committee intends to pursue a more-restrictive monetary policy over the medium term than is implied by the sequence of relatively modest policy-rate increases featured under the optimal control policy. To avoid confusing market participants, the Committee might well need to convey that an earlier-than-expected start of policy-rate firming would likely be accompanied by a more-gradual-than-expected subsequent pattern of federal funds rate increases. The somewhat later commencement of policy firming associated with the optimal control policy under a lower weight on interest-rate smoothing could prove less challenging to communicate, as the kind of forward guidance currently used by the Committee might be well suited for such communication. However, if the Committee planned to raise rates rapidly in its tightening phase, communication of this intention would presumably be called for. If market participants were surprised by the more-rapid increases depicted in this simulation, the adjustments in financial markets could potentially be disorderly.[11]

The final two exhibits, "Outcomes under Alternative Policies" and "Outcomes under Alternative Policies with an Unemployment Rate Threshold," tabulate the simulation results for key variables under each of the policy rules described above.

[10] See also the memo, "Potential Implications of Alternative Approaches to the Timing and Pace of Tightening," by Christopher J. Erceg, Michael T. Kiley, and Robert J. Tetlow, sent to the Committee on September 5, 2014.

[11] Specifically, this policy implies increasing the federal funds rate by about 400 basis points over a period of two years, as opposed to four years in the case with a substantial weight on interest-rate smoothing. While the pace of increases under the more-gradual trajectory appears more aligned with current market expectations, the pace of increases under the steeper policy-rate trajectory is similar to the 400 basis-point increase in the federal funds rate observed during the "measured pace" period from mid-2004 to mid-2006.

Strategies

Outcomes under Alternative Policies

(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]	1.1	2.9	2.7	2.9	2.3	1.9
Taylor (1993)	1.1	2.9	2.2	2.8	2.4	2.1
Taylor (1999)	1.1	2.9	2.2	2.8	2.4	2.1
Inertial Taylor (1999)	1.1	2.9	2.6	2.9	2.3	1.9
Outcome-based	1.1	2.9	2.3	2.7	2.3	2.1
First-difference	1.1	2.9	2.6	2.9	2.4	2.1
Nominal income targeting	1.1	2.9	3.2	3.5	2.6	1.9
Optimal control	1.1	2.9	2.6	2.8	2.3	1.9
Unemployment rate[2]						
Extended Tealbook baseline[1]	6.2	5.9	5.4	5.1	4.9	4.9
Taylor (1993)	6.2	5.9	5.7	5.4	5.1	5.0
Taylor (1999)	6.2	5.9	5.6	5.4	5.1	5.0
Inertial Taylor (1999)	6.2	5.9	5.4	5.1	4.8	4.9
Outcome-based	6.2	5.9	5.6	5.3	5.1	5.0
First-difference	6.2	5.9	5.5	5.2	4.9	4.8
Nominal income targeting	6.2	5.9	5.2	4.5	4.1	4.2
Optimal control	6.2	5.9	5.5	5.1	5.0	5.0
Total PCE prices						
Extended Tealbook baseline[1]	1.8	1.1	1.5	1.6	1.7	1.9
Taylor (1993)	1.8	1.1	1.5	1.7	1.8	1.9
Taylor (1999)	1.8	1.1	1.5	1.6	1.7	1.9
Inertial Taylor (1999)	1.8	1.1	1.5	1.7	1.7	1.9
Outcome-based	1.8	1.1	1.5	1.5	1.6	1.8
First-difference	1.8	1.1	1.6	1.7	1.8	2.0
Nominal income targeting	1.8	1.1	1.7	1.8	1.9	2.1
Optimal control	1.8	1.1	1.5	1.6	1.7	1.9
Core PCE prices						
Extended Tealbook baseline[1]	1.6	1.5	1.6	1.7	1.8	1.9
Taylor (1993)	1.6	1.5	1.6	1.8	1.8	2.0
Taylor (1999)	1.6	1.5	1.6	1.7	1.8	1.9
Inertial Taylor (1999)	1.6	1.5	1.6	1.8	1.8	2.0
Outcome-based	1.6	1.5	1.6	1.7	1.7	1.8
First-difference	1.6	1.5	1.7	1.8	1.9	2.0
Nominal income targeting	1.6	1.5	1.8	2.0	2.0	2.1
Optimal control	1.6	1.5	1.6	1.8	1.8	2.0
Effective nominal federal funds rate[2]						
Extended Tealbook baseline[1]	0.1	0.1	1.1	2.3	3.3	3.8
Taylor (1993)	0.1	2.4	2.7	3.4	3.7	4.0
Taylor (1999)	0.1	1.7	2.3	3.4	3.9	4.1
Inertial Taylor (1999)	0.1	0.4	1.3	2.4	3.2	3.7
Outcome-based	0.1	0.7	2.3	3.3	3.9	3.9
First-difference	0.1	0.5	1.7	3.1	3.5	3.6
Nominal income targeting	0.1	0.1	0.1	1.0	2.0	2.6
Optimal control	0.1	0.3	1.2	2.4	3.4	3.9

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	1.1	2.9	2.7	2.9	2.3	1.9
Taylor (1993)	1.1	2.9	2.3	2.7	2.4	2.1
Taylor (1999)	1.1	2.9	2.3	2.7	2.3	2.1
Outcome-based	1.1	2.9	2.5	2.7	2.3	2.0
First-difference	1.1	2.9	2.7	3.0	2.4	2.1
Nominal income targeting	1.1	2.9	3.2	3.5	2.6	1.9
Optimal control	1.1	2.9	2.6	2.8	2.3	1.9
Unemployment rate[2]						
Extended Tealbook baseline	6.2	5.9	5.4	5.1	4.9	4.9
Taylor (1993)	6.2	5.9	5.6	5.3	5.1	5.0
Taylor (1999)	6.2	5.9	5.6	5.3	5.1	5.0
Outcome-based	6.2	5.9	5.5	5.3	5.1	5.0
First-difference	6.2	5.9	5.4	5.0	4.7	4.7
Nominal income targeting	6.2	5.9	5.2	4.5	4.1	4.2
Optimal control	6.2	5.9	5.5	5.1	5.0	5.0
Total PCE prices						
Extended Tealbook baseline	1.8	1.1	1.5	1.6	1.7	1.9
Taylor (1993)	1.8	1.1	1.5	1.6	1.7	1.9
Taylor (1999)	1.8	1.1	1.5	1.6	1.7	1.9
Outcome-based	1.8	1.1	1.5	1.6	1.6	1.8
First-difference	1.8	1.1	1.6	1.8	1.9	2.1
Nominal income targeting	1.8	1.1	1.7	1.8	1.9	2.1
Optimal control	1.8	1.1	1.5	1.6	1.7	1.9
Core PCE prices						
Extended Tealbook baseline	1.6	1.5	1.6	1.7	1.8	1.9
Taylor (1993)	1.6	1.5	1.6	1.8	1.8	2.0
Taylor (1999)	1.6	1.5	1.6	1.7	1.8	1.9
Outcome-based	1.6	1.5	1.6	1.7	1.7	1.8
First-difference	1.6	1.5	1.7	1.9	2.0	2.1
Nominal income targeting	1.6	1.5	1.8	2.0	2.0	2.1
Optimal control	1.6	1.5	1.6	1.8	1.8	2.0
Effective nominal federal funds rate[2]						
Extended Tealbook baseline	0.1	0.1	1.1	2.3	3.3	3.8
Taylor (1993)	0.1	0.1	2.7	3.4	3.7	3.9
Taylor (1999)	0.1	0.1	2.4	3.4	3.9	4.1
Outcome-based	0.1	0.1	1.6	3.3	3.9	3.9
First-difference	0.1	0.1	1.3	2.9	3.3	3.4
Nominal income targeting	0.1	0.1	0.1	1.0	2.0	2.6
Optimal control	0.1	0.3	1.2	2.4	3.4	3.9

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 5.6 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 as well as its one-quarter-ahead forecast (gap_t and $gap_{t+1|t}$), and the forecast of the three-quarter-ahead annual change in the output gap ($\Delta^4 gap_{t+3|t}$). The value of policymakers' long-run inflation objective, denoted π^*, is 2 percent. The nominal income targeting rule responds to the nominal income gap, which is defined as the difference between nominal income yn_t (100 times the log of the level of nominal GDP) and a target value yn_t^* (100 times the log of target nominal GDP). Target nominal GDP in 2007:Q4 is set equal to the staff's current estimate of potential real GDP in that quarter multiplied by the GDP deflator in that quarter; subsequently, target nominal GDP grows 2 percentage points per year faster than the staff's estimate of potential GDP.

Taylor (1993) rule	$R_t = 1.75 + \pi_t + 0.5(\pi_t - \pi^*) + 0.5gap_t$
Taylor (1999) rule	$R_t = 1.75 + \pi_t + 0.5(\pi_t - \pi^*) + gap_t$
Inertial Taylor (1999) rule	$R_t = 0.85R_{t-1} + 0.15(1.75 + \pi_t + 0.5(\pi_t - \pi^*) + gap_t)$
Outcome-based rule	$R_t = 1.2R_{t-1} - 0.39R_{t-2} + 0.19[1.75 + \pi_t + 0.73(\pi_t - \pi^*) + 3.66gap_t - 2.72gap_{t-1}]$
First-difference rule	$R_t = R_{t-1} + 0.5(\pi_{t+3\|t} - \pi^*) + 0.5\Delta^4 gap_{t+3\|t}$
Nominal income targeting rule	$R_t = 0.75R_{t-1} + 0.25(1.75 + \pi_t + yn_t - yn_t^*)$

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.[1] The outcome-based rule uses policy reactions estimated using real-time data over the sample 1988:Q1–2006:Q4. The intercept of the outcome-based rule was chosen so that it is consistent with a 2 percent long-run inflation objective and a long-run real interest rate of 1¾ percent, a value used in the FRB/US model. The intercepts of the Taylor (1993, 1999) rules and the long-run intercept of the inertial Taylor (1999) rule are set at 1¾ percent for the same reason. The 1¾ percent real rate estimate also enters the long-run intercept of the nominal income targeting rule.

[1] See Erceg and others (2012).

The prescriptions of the first-difference rule do not depend on the level of the output gap or the long-run real interest rate; see Orphanides (2003).

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

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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.

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Monetary Policy Alternatives

This Tealbook presents three alternative draft FOMC statements—labeled A, B, and C—for the Committee's consideration. These alternatives offer options for asset purchases and forward guidance, along with different possibilities for characterizing incoming information and the outlook.

With respect to balance sheet policy, Alternatives A and B reduce monthly purchases of agency MBS and Treasury securities by another $5 billion each and indicate that the program will "likely" be concluded at the Committee's next meeting in October. In contrast, Alternative C announces that asset purchases will conclude this month, noting the Committee's judgment that there has been "a substantial improvement in the outlook for the labor market" and its anticipation "that inflation will move toward the Committee's longer-run objective."

Alternative B retains the June statement's forward guidance for the federal funds rate, indicating that the current range for the federal funds rate will likely remain in place "for a considerable time after the asset purchase program ends." Alternative C replaces the entire phrase with "for some time." Alternative A replaces the current date-based guidance with an inflation floor; according to this state-dependent 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. In all three alternatives, 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 their descriptions of current economic conditions, all three alternatives characterize the pace of economic activity as "moderate," and they note that labor market conditions improved "somewhat further," albeit with little change in the unemployment rate. While Alternatives A and B reaffirm that underutilization of labor resources remained "significant," Alternative C points to "diminishing" underutilization. As in the July statement, all three alternatives observe that household spending appears to be rising moderately, business fixed investment is advancing, and the housing recovery remains slow. Alternatives A and B maintain the reference to the restraining effects of fiscal policy; that reference is removed from the statement language proposed by Alternative C. Alternatives A and B further acknowledge that inflation recently has been running "somewhat below" (Alternative B) or "somewhat further below" (Alternative A) the Committee's longer-run objective. In contrast, Alternative C offers a judgment that inflation "appears to be moving gradually toward" that objective. Data to be received between the publication of this Tealbook and the second day of the September FOMC meeting—in particular readings on retail sales and the CPI in August—could lead to revisions in the first paragraph of each of the draft statements.

The alternatives all reaffirm the Committee's 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, although Alternative A notes that convergence is expected to be gradual. All of the alternatives state that the Committee sees the "risks to the outlook for economic activity and the labor market as nearly balanced." Alternatives B and C indicate that the risk of inflation running persistently below 2 percent has diminished "since early this year." In contrast, Alternative A notes that risks to the outlook for inflation are "tilted somewhat to the downside."

Subsequent pages present the July FOMC statement, as well as complete drafts of Alternatives A, B, and C followed by supporting arguments and then draft directives.

JULY 2014 FOMC STATEMENT

1. Information received since the Federal Open Market Committee met in June indicates that growth in economic activity rebounded in the second quarter. Labor market conditions improved, with the unemployment rate declining further. However, 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 moved somewhat closer to 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.
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 August, the Committee will add to its holdings of agency mortgage-backed securities at a pace of $10 billion per month rather than $15 billion per month, and will add to its holdings of longer-term Treasury securities at a pace of $15 billion per month rather than $20 billion per month. The Committee is maintaining its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction. The Committee's sizable and still-increasing holdings of longer-term securities should maintain downward pressure on longer-term interest rates, support mortgage markets, and help to make broader financial conditions more accommodative, which in turn should promote a stronger economic recovery and help to ensure that inflation, over time, is at the rate most consistent with the Committee's dual mandate.
4. The Committee will closely monitor incoming information on economic and financial developments in coming months and will continue its purchases of Treasury and agency mortgage-backed securities, and employ its other policy tools as appropriate, until the outlook for the labor market has improved substantially in a context of price stability. If incoming information broadly supports the Committee's expectation of ongoing improvement in labor market conditions and inflation moving back toward its longer-run objective, the Committee will likely reduce the pace of asset purchases in further measured steps at future meetings. However, asset purchases are not on a preset course, and the Committee's decisions about their pace will remain contingent

on the Committee's outlook for the labor market and inflation as well as its assessment of the likely efficacy and costs of such purchases.

5. To support continued progress toward maximum employment and price stability, the Committee today reaffirmed its view that a highly accommodative stance of monetary policy 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—SEPTEMBER 2014 ALTERNATIVE A

1. Information received since the Federal Open Market Committee met in ~~June~~ **July** ~~indicates~~ **suggests** that ~~growth in~~ economic activity ~~rebounded~~ **is expanding at a moderate pace** ~~in the second quarter~~. **On balance,** labor market conditions improved ~~with~~ **somewhat further; however,** the unemployment rate ~~declining further~~ **is little changed**~~. However~~, **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 moved somewhat ~~closer to~~ **further below** the Committee's longer-run objective **even though** longer-term inflation expectations have remained stable.
2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee expects that, with appropriate policy accommodation, economic activity will expand at a moderate pace, with labor market indicators and inflation moving **gradually** 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~~ **the risks to the outlook for inflation as tilted somewhat to the downside**.
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 ~~August~~ **October**, the Committee will add to its holdings of agency mortgage-backed securities at a pace of ~~$10~~ **$5** billion per month rather than ~~$15~~ **$10** billion per month, and will add to its holdings of longer-term Treasury securities at a pace of ~~$15~~ **$10** billion per month rather than ~~$20~~ **$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 likely ~~reduce the pace of~~ **end its current**

Alternatives

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

5. To support continued progress toward maximum employment and price stability, the Committee today reaffirmed its view that a highly accommodative stance of monetary policy 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**s**, based on its assessment of these factors, that it likely will be appropriate to maintain the current target range for the federal funds rate ~~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.

Alternatives

FOMC Statement—September 2014 Alternative B

1. Information received since the Federal Open Market Committee met in ~~June~~ **July** ~~indicates~~ **suggests** that ~~growth in~~ economic activity ~~rebounded~~ **is expanding at a moderate pace** ~~in the second quarter~~. **On balance,** labor market conditions improved ~~with~~ **somewhat further; however,** the unemployment rate ~~declining further~~ **is little changed**~~. However~~, **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 ~~moved~~ **been running** somewhat ~~closer to~~ **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 ~~August~~ **October**, the Committee will add to its holdings of agency mortgage-backed securities at a pace of ~~$10~~ **$5** billion per month rather than ~~$15~~ **$10** billion per month, and will add to its holdings of longer-term Treasury securities at a pace of ~~$15~~ **$10** billion per month rather than ~~$20~~ **$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 likely ~~reduce the pace of~~ **end its current program of** asset purchases ~~in further measured steps~~ at ~~future~~ **its next** meeting~~s~~.

Alternatives

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—SEPTEMBER 2014 ALTERNATIVE C

1. Information received since the Federal Open Market Committee met in ~~June~~ **July** ~~indicates~~ **suggests** that ~~growth in~~ economic activity ~~rebounded~~ **is expanding at a moderate pace** ~~in the second quarter~~. **On balance,** labor market conditions improved ~~with~~ **somewhat further, although** the unemployment rate ~~declining further~~ **is little changed**. ~~However~~ **Moreover**, a range of labor market indicators suggests that ~~there remains significant~~ underutilization of labor resources **is diminishing**. 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 moved somewhat closer to~~ **appears to be moving gradually toward** 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~~ **has been a substantial improvement in the outlook for the labor market since the inception of its current asset purchase program and continues to anticipate that inflation will move toward the Committee's longer-run objective. Moreover, the Committee sees** 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~~ **Accordingly**, the Committee decided to ~~make a further measured reduction in the pace of its asset purchases~~ **conclude its purchase program this month**. ~~Beginning in August, the Committee will add to its holdings of agency mortgage-backed securities at a pace of $10 billion per month rather than $15 billion per month, and will add to its holdings of longer-term Treasury securities at a pace of $15 billion per month rather than $20 billion per month.~~

4. 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~~ **help keep** 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~~.

Alternatives

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

5. To support continued progress toward maximum employment and price stability, the Committee today reaffirmed its view that a highly accommodative stance of monetary policy 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**s**, based on its assessment of these factors, that it likely will be appropriate to maintain the current target range for the federal funds rate for ~~a considerable~~ **some** time ~~after the asset purchase program ends~~, especially if projected inflation continues to run below the Committee's 2 percent longer-run goal, and provided that longer-term inflation expectations remain well anchored.

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.

THE CASE FOR ALTERNATIVE B

Notwithstanding some softness in recent spending and labor market data, the Committee, like the staff, might see the information received during the intermeeting period as broadly consistent with an assessment that economic activity is expanding at a moderate pace. Furthermore, policymakers may judge that there continues to be sufficient underlying strength in the broader economy to generate ongoing improvement in labor market conditions, with moderate growth in employment and economic activity supported by diminishing restraint from fiscal policy and continued monetary accommodation. Nonetheless, in light of the smaller-than-expected gains in payroll employment during July and August, and with most measures of labor utilization little changed, policymakers may continue to judge that there remains significant underutilization of labor resources. Although the unemployment rate has appreciably declined over the year and is also somewhat lower than expected at the start of year, it is still well above the central tendency of participants' longer-run projections in the June SEP. Moreover, policymakers may regard the labor force participation rate as 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 modest wage increases, as supporting the judgment that there is significant scope for improvement in labor market conditions. In addition, policymakers might interpret the recent softness in inflation as indicating that the pickup in earlier months was in part transitory and that inflation may remain below their longer-run objective for some time. 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. Even so, in light of the cumulative improvements in the labor market in recent years and their expectation that progress toward their objectives will continue, policymakers may judge it appropriate to make another measured reduction in the pace of asset purchases, and to prepare markets for the likely end of the purchase program in October, while maintaining the current target range for the federal funds rate and forward guidance, as in Alternative B.

Some policymakers, however, may judge that more accommodation will likely be appropriate before long. They may be concerned not only about downside risks to inflation, but also that the persistent shortfall of inflation from the Committee's longer-run objective poses downside risks to growth. Moreover, they may worry that recent softness in a number of indicators—including spending, payroll gains, and consumer prices—might foreshadow further weakness. That said, the recently softer inflation readings have evolved along the lines of earlier Tealbook projections, and longer-term inflation expectations have remained within the range observed in recent years. While they may see somewhat greater risks of less favorable outcomes for employment and inflation than in July, those policymakers might conclude that it would be premature to alter the Committee's forward guidance regarding the likely path of the federal funds rate in the direction of providing additional accommodation.

Taking into account the cumulative gains in payroll employment since the inception of the current program of asset purchases, some policymakers may judge that the second-quarter acceleration in prices and economic activity signals rapidly diminishing slack and might prefer to conclude asset purchases at the current meeting. However, in light of the somewhat disappointing labor market data received during the intermeeting period, policymakers may be reluctant to deviate from the balance sheet path suggested by past FOMC communications, which suggested that the Committee would end the program at its October meeting. Other policymakers may be concerned that maintaining near-zero rates for a considerable time risks pushing the unemployment rate well below levels consistent with maximum employment and fueling an undesirably large rise in inflation over the medium run. These policymakers might point to prescriptions derived from several simple policy rules and the optimal control simulations shown in the "Monetary Policy Strategies" section of Tealbook, Book B. However, policymakers might question a number of the assumptions that underlie those simulation results—including the sizable penalty on changes in the federal funds rate, the assumption that policymakers have symmetric preferences, the absence of any role for considerations such as the risk of derailing a fragile housing recovery, and the asymmetric risks posed by proximity to the zero lower bound.[1,2] They might further observe that readings on 12-month PCE inflation, both overall and core, are little

[1] Under symmetric preferences, policymakers see positive and negative deviations of unemployment from the natural rate as equally costly, and also consider positive and negative deviations of inflations from 2 percent as equally costly.

[2] Further discussion of the implications of these assumptions is provided in the memo, "Potential Implications of Alternative Approaches to the Timing and Pace of Tightening," by Christopher J. Erceg, Michael T. Kiley, and Robert J. Tetlow, sent to the Committee on September 5, 2014, as well as the "Monetary Policy Strategies" section of Tealbook, Book B.

changed, while wage increases have generally been modest, and longer-term inflation expectations have remained stable.

Relatedly, some policymakers may worry that maintaining highly accommodative policies for a long period of time could lead to excessive risk-taking in the financial sector; they might point to the low levels of realized and implied volatility in financial markets, evidence of reaching-for-yield behavior, and stretched valuations in some asset markets. However, use of short-term financing instruments and indicators of leverage remain well below levels observed ahead of the financial crisis. And while prices of real estate and broad equity indexes have risen further, policymakers may still see valuation metrics as generally in line with historical norms. Furthermore, policymakers may be concerned that a premature tightening would pose risks to financial stability by impairing the economic recovery. Policymakers may accordingly conclude that ending asset purchases at the October meeting and beginning to increase the federal funds rate next year will appropriately balance the risks to financial stability.

Market participants would probably not be surprised by the asset purchase decision or forward guidance laid out in Alternative B. According to the Desk's latest survey, all but one dealer and one buy-side respondent expect the Committee to announce another $10 billion cut in the pace of asset purchases next week and are virtually certain of that outcome. Most respondents did not anticipate any major changes to the Committee's forward guidance in September, although a few pointed to a possibility that the "considerable time" language may be modified at this meeting or in the near future. With regard to the statement's description of the economic situation, most dealers did not anticipate changes to the statement's language other than modest updates of its summary of current conditions; a couple of dealers, however, expected the Committee to remove or modify the language indicating that there remains significant underutilization of labor resources. Accordingly, a statement along the lines of Alternative B would likely cause little change in asset prices.

THE CASE FOR ALTERNATIVE C

Policymakers may judge 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. Furthermore, some policymakers may be convinced that a solid and durable expansion in economic activity is underway, and that this expansion likely will reduce any remaining slack in labor markets fairly quickly. In support of this view, they might cite the broad-based and swifter-than-expected reduction in unemployment, including long-term unemployment, so far this year. Accordingly, these policymakers may judge it appropriate to conclude asset purchases by the end of 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 with longer-run expected inflation remaining near 2 percent, policymakers may see inflation as much more likely to run at or above 2 percent than persistently below that rate. They may worry that a trajectory for the federal funds rate similar to that in the Tealbook baseline forecast would create an appreciable risk that inflation might persistently exceed the Committee's longer-run goal in coming years, possibly even more than shown in the alternative scenario "Higher Inflation with Unanchored Inflation Expectations" in the "Risks and Uncertainty" section of Tealbook, Book A. These policymakers might emphasize that most simple policy rule prescriptions and the optimal control simulations, as presented in the "Monetary Policy Strategies" section of Tealbook, Book B, call for policy tightening to begin immediately. Moreover, some participants may view the moderate strengthening in the growth of credit to households and nonfinancial businesses that has occurred this year as an indication that the Committee's accommodative interest-rate and balance-sheet policies are beginning to generate a broad-based increase in credit supply that will eventually prove inflationary if those policies are not shifted toward more neutral settings relatively soon. Some participants may also view high stock market valuations, low credit spreads, and very low levels of implied volatility as reflecting the highly accommodative stance of monetary policy and potentially posing risks to financial stability. For all these reasons, participants may deem it appropriate to raise the federal funds rate sooner than under Alternative B, and so find the proposed changes to the forward guidance in the fifth paragraph of Alternative C desirable.

Furthermore, policymakers may perceive some restraining effects from fiscal policy on economic growth—possibly along the lines of the box "Fiscal Policy Restraint and Government Budget Conditions" in Tealbook, Book A. But they may deem these effects to be sufficiently small to warrant dropping from the statement the previously-used reference to restraining effects from fiscal policy, as proposed in the first paragraph of Alternative C.

Based on the Desk's latest surveys of primary dealers and buy-side firms, a decision to adopt a statement like Alternative C would surprise market participants, as none of the respondents to those surveys expect asset purchases to be terminated at this meeting. The announcement of an immediate termination of the Committee's current program of asset purchases in combination with Alternative C's modified policy guidance likely would lead market participants to pull forward their forecasts of the date at which the Committee will first increase its target for the federal funds rate. In addition, the expected federal funds rate path for the subsequent tightening phase might steepen, particularly if the changes announced in Alternative C were interpreted as implying a shift in the Committee's reaction function and if the reference to a diminishing rate of underutilization of labor resources was taken to signal a larger-than-expected improvement in the Committee's assessment of the labor market. In response, medium- and longer-term real interest rates would rise, equity prices and inflation compensation likely fall, and the dollar appreciate. However, if investors read the statement in Alternative C as reflecting a more optimistic assessment of the outlook for economic growth, equity prices would not fall as much or could even rise, and inflation compensation might increase. The shift in policy expectations might be accompanied by a rise in the volatility of fixed-income instruments and other securities, as investors could become more uncertain about the timing and pace of normalization.

THE CASE FOR ALTERNATIVE A

In light of recent softness in the inflation data, some policymakers may worry that the pickup in inflation seen in the second quarter will prove short-lived, and that inflation will remain significantly below 2 percent over the medium term. Participants might point to measures of inflation compensation derived from TIPS, which have declined toward the bottom of the range of values recorded over the last few years. While policymakers may regard current levels of inflation compensation as still consistent with stable longer-term inflation expectations, they might also see the decline in inflation compensation as suggesting greater odds that inflation expectations will become unanchored. If expected inflation were to drift down, mutually reinforcing dynamics could arise between declining inflation expectations, inflation slowing further, and economic activity remaining weak.[3] Policymakers who attach a sizable probability to such outcomes may

[3] In particular, policymakers may be concerned about possibly unstable inflation dynamics that might even go beyond the alternative paths for long-term inflation expectations shown in the memo,

see merit in a statement like Alternative A because it seeks to quell such risks by introducing an explicit inflation floor into the Committee's forward guidance.

Some policymakers may also be concerned that, over the first half of this year, economic activity expanded only modestly, on net, and that the future pace of expansion may not be all that strong. In addition, they might find it troubling that the housing recovery is not regaining momentum and that improvements in mortgage finance have stalled in spite of highly accommodative financial conditions. Because of these worries about the strength of the economic recovery, participants may believe that it would be appropriate to provide updated, state-dependent, forward guidance regarding the path of the federal funds rate in order to provide more explicit scope for extending the period of highly accommodative policy.

Alternatives

Policymakers may note that recent payroll gains fell well short of expectations and thus may remain skeptical about whether further significant gains in employment can be achieved in the absence of a persistent pickup in growth of economic activity. They also may see the low labor force participation rate, the still-high share of part-time workers for economic reasons, and the relatively moderate gains in hourly compensation as indicative of weaker underlying labor market conditions than is evident from the unemployment rate and payroll employment figures, possibly along the lines of the alternative scenario "Higher Trend Labor Force Participation Rate" in the "Risks and Uncertainty" section of Tealbook, Book A.

While participants may want to provide additional monetary accommodation, they may nonetheless judge that there has been a sufficiently substantial improvement in the outlook for labor markets since the inception of the current asset purchase program to bring the program to a close relatively soon, possibly after the October meeting. To the extent that the proposed inflation floor also pushes out the date on which reinvestments are expected to end or begin to be phased out, the change in forward guidance would also amplify the accommodation provided by the Committee's holdings of longer-term securities. Participants may thus prefer to add an inflation floor to the statement language in conjunction with a signal that asset purchases will likely end in October, but with a reaffirmation that asset purchases are not on a preset course and that future reductions in

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"Long-Term Inflation Expectations and Risks to the Inflation Outlook," by Thomas Laubach, John M. Roberts, Jae W. Sim, and Brad E. Strum, sent to the Committee on September 5, 2014.

the pace of purchases remain conditional on incoming data, as proposed in the fourth paragraph of Alternative A.

Market participants would be surprised by an announcement like Alternative A. In response to the new inflation-oriented forward guidance for the policy rate in the fifth paragraph of Alternative A, market participants might push back the date of the first increase in the federal funds rate, perhaps appreciably; a flattening of the expected path for the federal funds rate after liftoff is also conceivable. 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 a statement like that in Alternative A 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. The shift in policy expectations might also make investors more uncertain about the timing and pace of normalization, leading to increased volatility of fixed-income instruments and other securities.

DIRECTIVE

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

The directive for Alternatives A and B instructs the Desk to purchase, beginning in October, longer-term Treasury securities at a pace of about $10 billion per month and to continue purchasing agency mortgage-backed securities at a pace of about $5 billion per month. The draft directive for Alternative C instructs the Desk to conclude the current purchase program by the end of September. 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.

July 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 August, the Desk is directed to purchase longer-term Treasury securities at a pace of about $15 billion per month and to purchase agency mortgage-backed securities at a pace of about $10 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 September 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 ~~August~~ **October**, the Desk is directed to purchase longer-term Treasury securities at a pace of about ~~$15~~ **$10** billion per month and to purchase agency mortgage-backed securities at a pace of about ~~$10~~ **$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 September 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 ~~August~~ **October**, the Desk is directed to purchase longer-term Treasury securities at a pace of about ~~$15~~ **$10** billion per month and to purchase agency mortgage-backed securities at a pace of about ~~$10~~ **$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 September 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 August~~ The Desk is directed to ~~purchase~~ **conclude the current program of purchases of** longer-term Treasury securities ~~at a pace of about $15 billion per month~~ and ~~to purchase~~ agency mortgage-backed securities ~~at a pace of about $10 billion per month~~ **by the end of September**. 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.

Projections

BALANCE SHEET, INCOME, AND MONETARY BASE

The staff has prepared a projection of the Federal Reserve's balance sheet and income statement that corresponds to Alternative B.[1] The projection reflects the staff's assumptions about the trajectories of various components of the balance sheet. In particular, the projection embeds the assumption that, at the time that the process of 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.

In the projection, monthly purchases of longer-term Treasury securities and agency MBS are each reduced by another $5 billion at the beginning of October, and by $10 and $5 billion (to zero), respectively, following the October meeting. 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 July Tealbook.[2]

As shown in the exhibit, "Total Assets and Selected Balance Sheet Items," total assets peak at about $4.5 trillion in the first quarter of 2015, 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 federal funds rate is in the second quarter of 2015, consistent with the staff

[1] As there are only small differences in the purchase programs across Alternatives A, B, and C, the contours of the balance sheet projections would be similar for the other two alternatives. The size of the Federal Reserve's balance sheet would normalize a bit later under Alternative A because the period over which the federal funds rate remains at the effective lower bound, and hence the period over which reinvestments continue, is stretched further into the future by the forward guidance added under that alternative. There would be no material difference in the projection for Alternative C relative to Alternative B.

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

[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

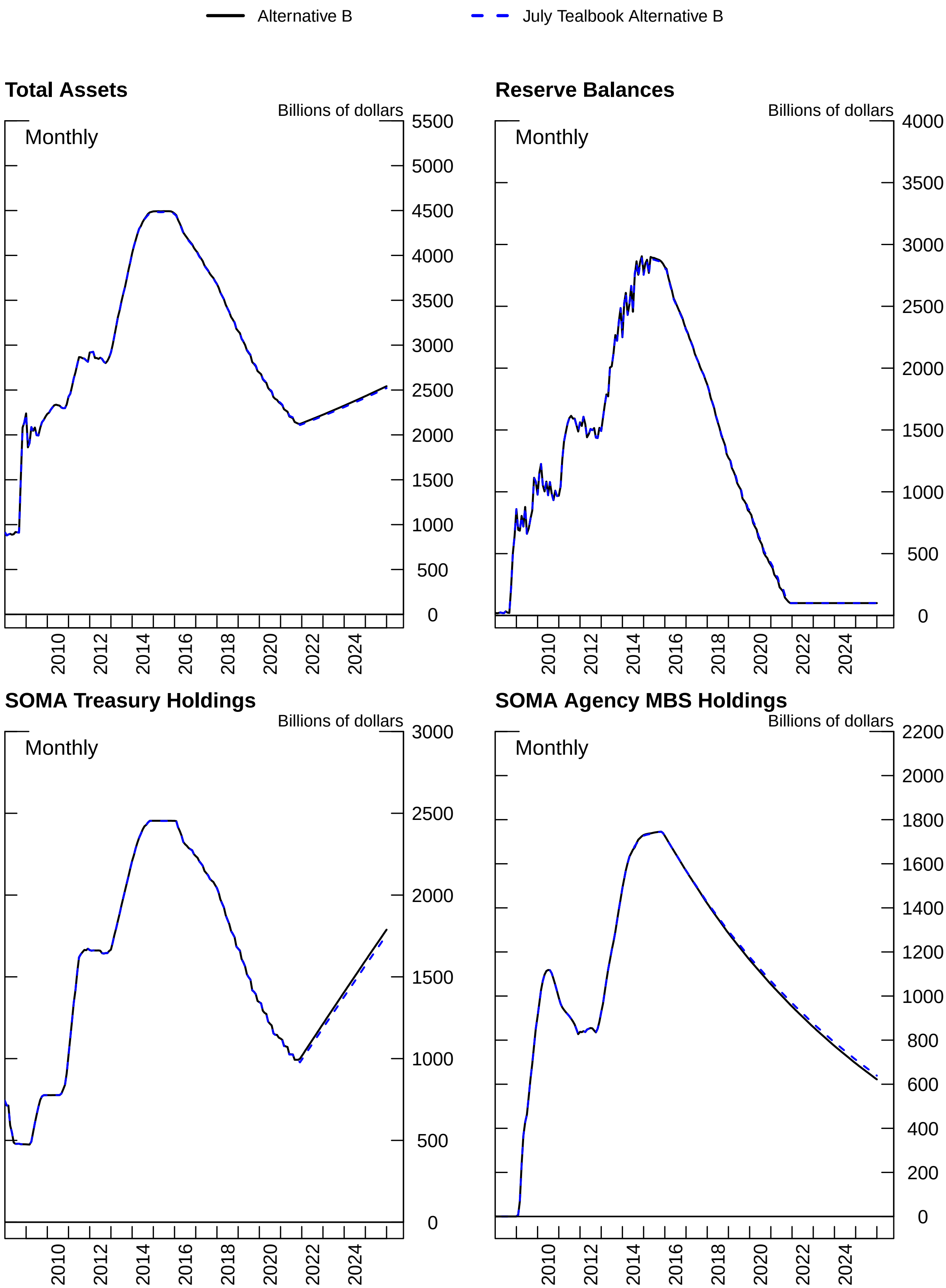
Billions of dollars

	Jul 31, 2014	2015	2017	2019	2021	2023	2025
Total assets	4,405	4,467	3,682	2,693	2,130	2,326	2,542
Selected assets							
Loans and other credit extensions*	2	0	0	0	0	0	0
Securities held outright	4,137	4,213	3,468	2,512	1,970	2,183	2,413
U.S. Treasury securities	2,420	2,454	2,043	1,345	1,016	1,406	1,788
Agency debt securities	42	33	4	2	2	2	2
Agency mortgage-backed securities	1,674	1,727	1,420	1,164	953	774	622
Unamortized premiums	209	192	149	114	90	72	58
Unamortized discounts	-19	-17	-13	-11	-8	-7	-6
Total other assets	76	78	78	78	78	78	78
Total liabilities	4,349	4,401	3,598	2,588	1,997	2,157	2,329
Selected liabilities							
Federal Reserve notes in circulation	1,242	1,356	1,504	1,626	1,770	1,931	2,102
Reverse repurchase agreements	211	211	211	111	111	111	111
Deposits with Federal Reserve Banks	2,890	2,829	1,880	847	112	112	112
Reserve balances held by depository institutions	2,747	2,818	1,868	835	100	100	100
U.S. Treasury, General Account	127	5	5	5	5	5	5
Other Deposits	16	7	7	7	7	7	7
Interest on Federal Reserve Notes due to U.S. Treasury	2	0	0	0	0	0	0
Total capital	56	66	83	105	133	168	213

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



Projections

economic forecast and unchanged from Alternative B of the July 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 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 fourth quarter of 2021, the same as in the July Tealbook.[6] The balance sheet then begins to expand, with increases in SOMA holdings essentially matching the growth of currency in circulation and Federal Reserve Bank capital and surplus. Total assets are $2.5 trillion at the end of 2025, with about $2.4 trillion in total SOMA securities holdings, of which $620 billion are agency MBS.

The second 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 $70 billion in 2017.[7] Putting these pieces together, annual remittances reach about $100 billion this year and then slowly decline

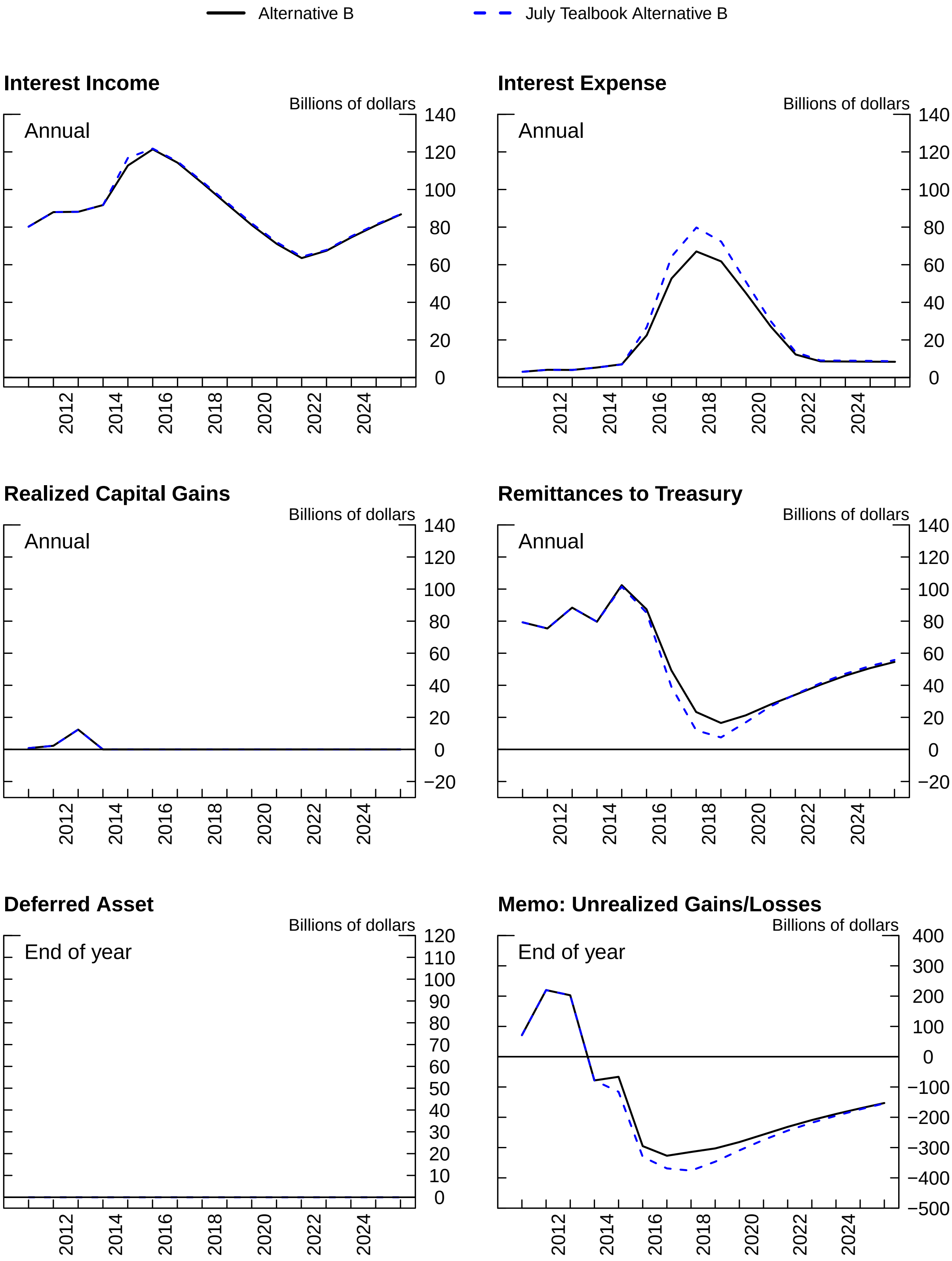
[4] Use of ON RRPs results in a shift in the composition of Federal Reserve liabilities—a decline in reserve balances and a corresponding increase in reverse repurchase agreements—but does not produce an overall change in the size of the balance sheet. The current projections also embed the assumption 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 September 8, 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 between 12.5 and 17.5 basis points above the federal funds rate, and the ON RRP rate is 12.5 to 7.5 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

over the following four years. Annual remittances reach their trough at about $15 billion in 2018, about $10 billion higher than in the July Alternative B scenario; no deferred asset is recorded.[8] The Federal Reserve's cumulative remittances from 2009 through 2025 are about $925 billion, approximately $175 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 $120 billion as of the end of August 2014.[10] Reflecting the assumed rise in interest rates over the next several years, the position is projected to shift to an unrealized loss in the near term and projected year-end unrealized losses peak at $325 billion in 2016. At the peak, $175 billion of the unrealized loss can be attributed to the Treasury portfolio and $150 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.

As shown in the exhibit, "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 third quarter of 2014 is negative 122 basis points, about the same as in the July 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.

As shown in the final exhibit, "Projections for the Monetary Base," the monetary base increases through the middle of 2015 because the purchase program 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 mid-2022, after reserve

[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.

Projections for the 10-Year Treasury Term Premium Effect

Date	Alternative B	July Alternative B
	Basis Points	
	Quarterly Averages	
2014: Q3	–122	–122
Q4	–117	–117
2015: Q1	–111	–112
Q2	–106	–107
Q3	–101	–101
Q4	–96	–96
2016: Q1	–91	–92
Q2	–87	–87
Q3	–82	–82
Q4	–78	–78
2017: Q4	–63	–63
2018: Q4	–50	–51
2019: Q4	–41	–41
2020: Q4	–33	–33
2021: Q4	–27	–27
2022: Q4	–22	–22
2023: Q4	–18	–18
2024: Q4	–14	–13
2025: Q4	–10	–10

Projections for the Monetary Base

Percent change, annual rate; not seasonally adjusted

Date	Alternative B	July Alternative B
Quarterly		
2014: Q3	10.8	32.3
Q4	7.9	10.1
2015: Q1	0.9	1.1
Q2	6.4	6.2
Q3	2.1	2.2
Q4	-1.0	-0.8
2016: Q1	-6.4	-6.0
Q2	-13.1	-12.3
Q3	-10.3	-9.5
Q4	-8.7	-8.1
Annual		
2017	-10.1	-9.3
2018	-15.2	-14.0
2019	-13.9	-12.5
2020	-14.6	-13.0
2021	-12.4	-11.3
2022	3.7	2.8
2023	4.2	3.7
2024	4.2	3.7
2025	4.1	3.7

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

balances are assumed to have stabilized at $100 billion, the monetary base begins to expand in line with the increase in currency in circulation.[11]

[11] 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 this period of unusual strength in M2 growth is likely to end and that the growth of M2 will decline markedly over the forecast horizon, even turning negative for a time. This forecast trajectory for M2 growth reflects an expected increase in the opportunity cost of holding M2 balances arising from the projected firming of monetary policy.[12] Compared with last round, the staff forecast for M2 growth is somewhat higher over most of the forecast period. After assessing recent regulatory developments, staff judged that depository institutions may see deposit liabilities as a more attractive funding source, compared with other liabilities, than was the case in the past. Consequently, staff lowered its projection of the amount of exceptional M2 balances that is likely to unwind as the economy continues to recover.[13]

[12] 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 projection period, implying an increasing opportunity cost of holding M2 balances.

[13] With the introduction of the Basel III Liquidity Coverage Ratio, depository institutions may prefer deposits to many other means of funding because the run-off rate for retail deposits used in the calculation of the liquidity coverage ratio is low relative to that of many other liabilities. Of course, there is uncertainty regarding this assessment, 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:	Q3	5.7
	Q4	4.3
2015:	Q1	1.9
	Q2	-2.9
	Q3	-2.8
	Q4	-1.6
2016:	Q1	-0.3
	Q2	0.5
	Q3	0.9
	Q4	1.3
2017:	Q1	1.7
	Q2	1.9
	Q3	2.2
	Q4	2.4
Annual		
	2014	6.0
	2015	-1.4
	2016	0.6
	2017	2.1

Actual data through September 1, 2014; projections thereafter.
* Quarterly growth rates are computed from quarter averages. Annual growth rates are fourth quarter over fourth quarter.

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Abbreviations

ABS	asset-backed securities
AFE	advanced foreign economy
BEA	Bureau of Economic Analysis, Department of Commerce
BHC	bank holding company
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