Prefatory Note

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

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Authorized for Public Release

Class I FOMC – Restricted Controlled (FR)

Report to the FOMC on Economic Conditions and Monetary Policy

Book B

Monetary Policy: Strategies and Alternatives

October 22, 2015

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

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Monetary Policy Strategies

The top panel of the first exhibit, "Policy Rules and the Staff Projection," provides near-term prescriptions for the federal funds rate from four policy rules: the Taylor (1993) rule, the Taylor (1999) rule, an inertial version of the Taylor (1999) rule, and a first-difference rule.[1] These prescriptions take as given the staff's baseline projections for real activity and inflation in the near term, shown in the middle panels. All of the Taylor-type rules prescribe an immediate increase in the federal funds rate. The Taylor (1993) and Taylor (1999) rules call for sizable adjustments in the policy rate to values higher than 2 percent over the near term. By contrast, the inertial Taylor (1999) rule counsels a level of the federal funds rate of only ½ percent in the fourth quarter of 2015 because this rule places a considerable weight on keeping the federal funds rate close to its lagged value. The first-difference rule, which responds to the projected inflation gap and to expected changes in the output gap, calls for the policy rate to edge above the current target range next quarter. These prescriptions are generally a little higher than in the September Tealbook, reflecting the staff's upward revision to the trajectory of inflation in the short run.

The bottom panel of the first exhibit reports the Tealbook-consistent estimate of one notion of the equilibrium real federal funds rate, *r**, generated using the FRB/US model. This measure is an estimate of the real federal funds rate that, if maintained, closes the output gap in 12 quarters. The current estimate of *r**, at 0.74 percent, is similar to the corresponding estimate in September, reflecting the fact that the staff forecast for resource utilization and the path of the real federal funds rate are similar to those in the September Tealbook. The panel also reports a measure of the current real federal funds rate constructed as the difference between the current federal funds rate and the trailing four-quarter change in the core PCE price index. The current real federal funds rate is -1.17 percent, almost unchanged from the September Tealbook. To facilitate comparisons with *r**, the panel further reports the average of the real federal funds rate

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

Strategies

Policy Rules and the Staff Projection

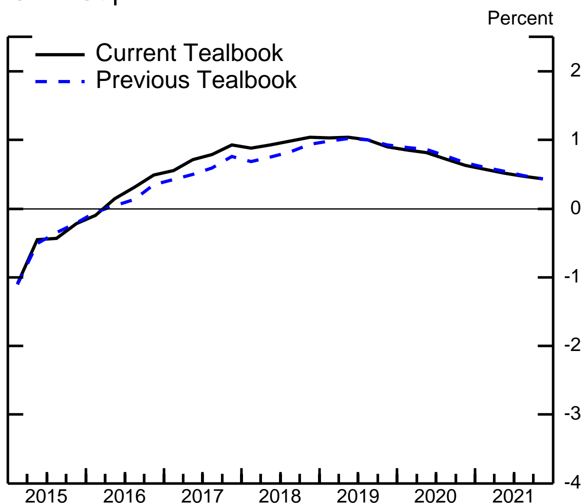
Near-Term Prescriptions of Selected Policy Rules[1]

(Percent)

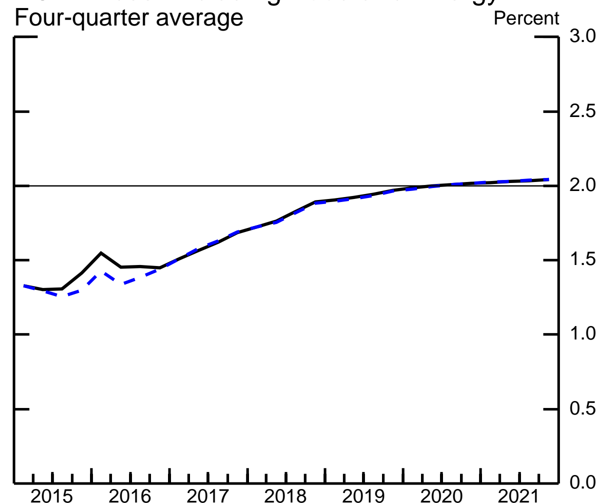
	2015:Q4	2016:Q1
Taylor (1993) rule	**2.28**	**2.53**
Previous Tealbook	*2.11*	*2.37*
Taylor (1999) rule	**2.18**	**2.48**
Previous Tealbook	*2.01*	*2.34*
Inertial Taylor (1999) rule	**0.44**	**0.75**
Previous Tealbook outlook	*0.44*	*0.73*
First-difference rule	**0.23**	**0.31**
Previous Tealbook outlook	*0.13*	*0.13*

Key Elements of the Staff Projection

GDP Gap



PCE Prices Excluding Food and Energy
Four-quarter average



Real Federal Funds Rate Estimates[2]

(Percent)

	Current Tealbook	*Current Quarter Estimate as of Previous Tealbook*	*Previous Tealbook*
Tealbook-consistent FRB/US *r**	0.74	0.71	0.47
Current real federal funds rate	–1.17		–1.16
Average projected real federal funds rate[3]	0.21	0.28	0.09

1. For rules that have a lagged policy rate as a right-hand-side variable, the column denoted "Previous Tealbook outlook" reports rule prescriptions based on the previous Tealbook's staff outlook, but jumping off from the realized value for the policy rate last quarter.
2. Estimates of *r** and of the average projected real federal funds rate may change at the beginning of a quarter even when the staff outlook is unchanged because the 12-quarter horizon covered by the calculation has rolled forward one quarter. Therefore, whenever the Tealbook is published early in the quarter, the memo includes an extra column labeled "Current Quarter Estimate as of Previous Tealbook" to facilitate comparison with the current Tealbook estimate.
3. The average projected real federal funds rate is the 12-quarter average of the current real federal funds rate and its projected values under the Tealbook baseline over the next 11 quarters.

over the 12 quarters beginning in the current quarter under the Tealbook baseline.[2] This average is currently 0.21 percent, 0.53 percentage point below the current estimate of *r**.

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, subject to an effective lower bound of 12½ basis points for the federal funds rate.[3] The results for each rule presented in these and subsequent simulations depend importantly on the assumptions that policymakers will adhere to the rule in the future and that the private sector fully understands the policy that will be pursued as well as its implications for real activity and inflation.

The second exhibit also displays the implications of following the baseline monetary policy assumptions in the current staff forecast.[4] As discussed in Tealbook A, the staff assumes that the first increase in the federal funds rate will occur at the December FOMC meeting. After departing from its effective lower bound, the federal funds rate is assumed to follow the prescriptions of the inertial version of the Taylor (1999) rule. The federal funds rate increases about 25 basis points per quarter for the first three years after liftoff, reaching about 3¼ percent by the end of 2018. The pace of tightening subsequently slows, and the federal funds rate moves close to 4 percent in 2020—consistent with the higher projected level of resource utilization around that time—before eventually returning to its longer-run normal level of 3¼ percent later in the decade.

All of the policy rules in these dynamic simulations call for policy rates above the current target range in the fourth quarter of 2015, the first period in the simulation, though the increases prescribed by the inertial Taylor (1999) rule and by the first-difference rule are small. The unemployment rate in all the simulations runs near or

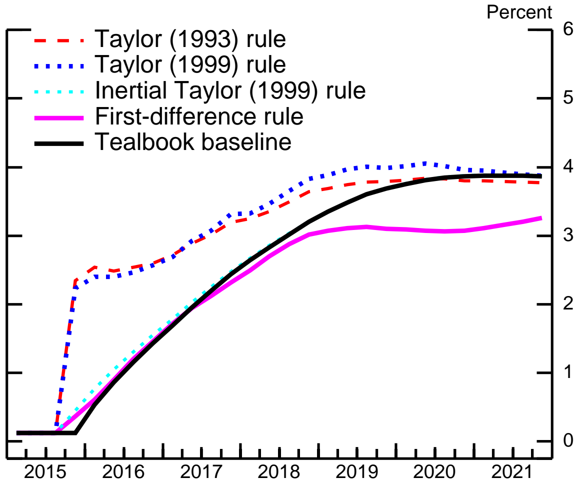
[2] While *r** and the average projected real federal funds rate are calculated over the same 12-quarter period, they need not be associated with the same macroeconomic outcomes even when their values are identical. The reason is that, in the *r** simulations, the real federal funds rate is held constant over the entire 12-quarter period whereas, in the Tealbook baseline, the real federal funds rate can vary over time. Distinct paths of real short-term rates can, in turn, generate differing paths for inflation and economic activity.

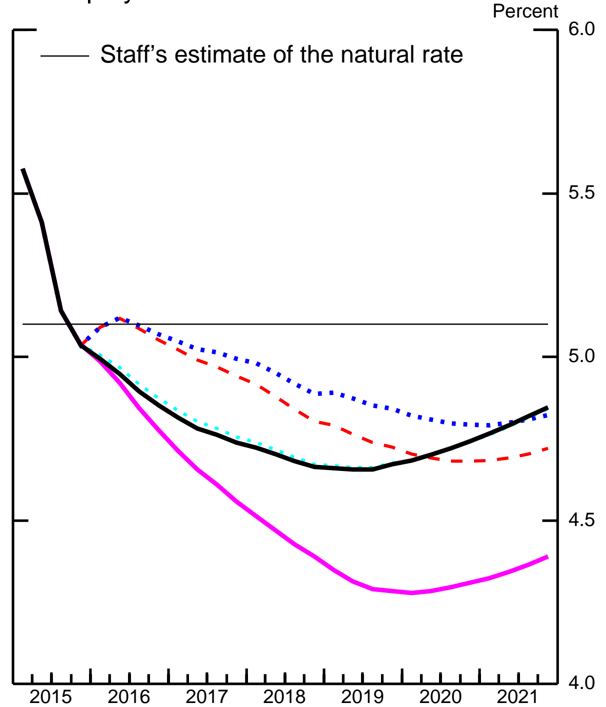
[3] Because of these endogenous responses, prescriptions from the dynamic simulations can differ from those shown in the top panel of the first exhibit.

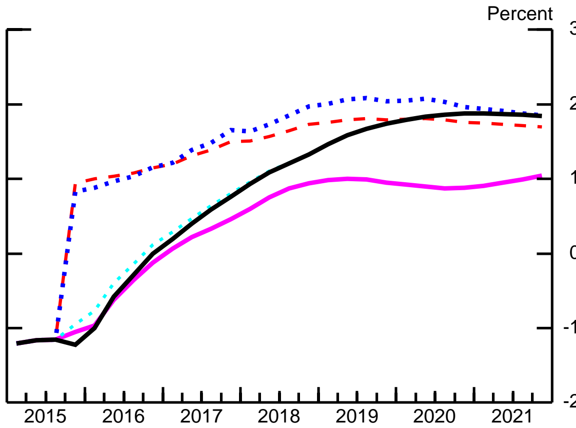
[4] The dynamic simulations discussed here and below incorporate the assumptions about underlying economic conditions that are used in the staff's baseline forecast, including the macroeconomic effects of the Committee's asset holdings from the large-scale asset purchase programs.

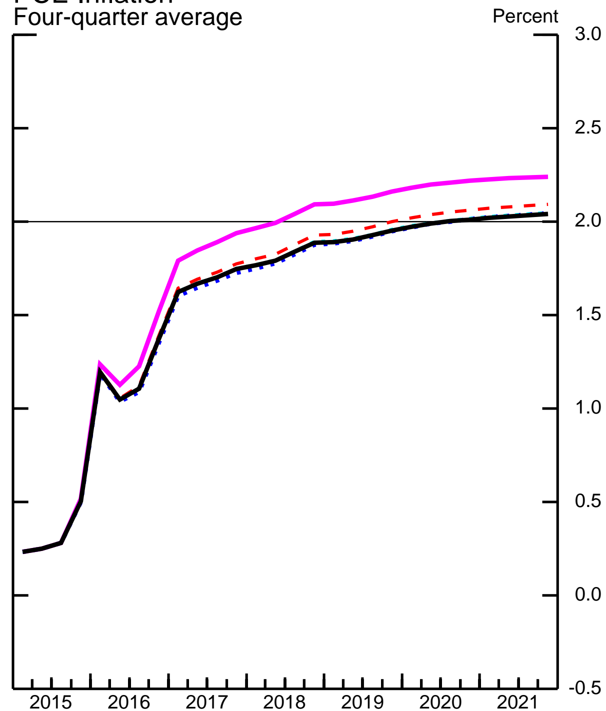
Strategies

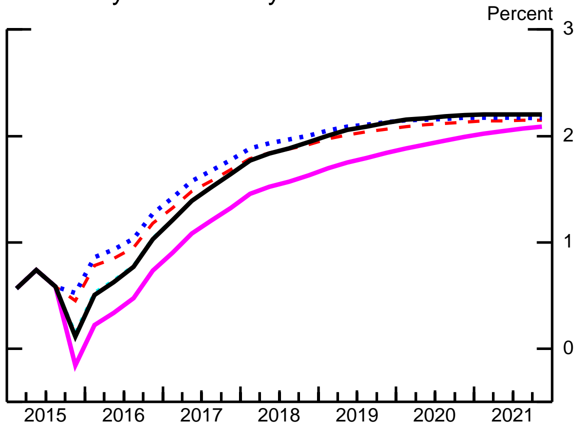
Policy Rule Simulations











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

below the staff's estimate of the natural rate through 2021. The Taylor (1993) and Taylor (1999) rules produce paths for the real federal funds rate that lie significantly above the Tealbook baseline over the next few years, leading to higher unemployment rates (that is, less undershooting of the natural rate) than in the baseline. Later in the simulation period, the Taylor (1993) rule, which places less weight on the output gap than the Taylor (1999) rule, calls for slightly less overshooting of the nominal policy rate's longer-run value of 3¼ percent. As a consequence, the Taylor (1993) rule generates a lower trajectory of the unemployment rate than the Taylor (1999) rule. Because price- and wage-setters anticipate a slightly more accommodative policy trajectory and this has implications for resource utilization, inflation is a touch higher under the Taylor (1993) rule over the medium term relative to the Taylor (1999) rule and the baseline projection. Under the inertial Taylor (1999) rule, the federal funds rate initially rises a bit above the baseline but subsequently tracks the baseline path almost exactly.[5] Macroeconomic outcomes are essentially the same as under the Tealbook baseline.

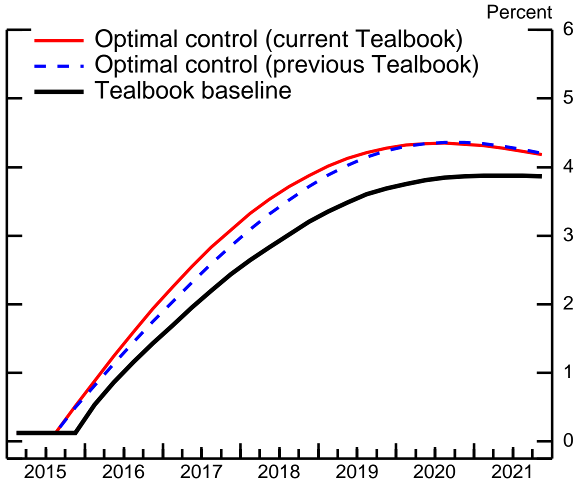
Starting in 2016, the first-difference rule prescribes a pace of increases in the federal funds rate that is similar to the Tealbook baseline through 2018. At that point, under the first-difference rule, the federal funds rate levels off. This divergence results from the slower pace of economic growth expected to occur late in the decade because the first-difference rule responds to the expected change in the output gap rather than to its level. That lower path of the federal funds rate in the medium run under the first-difference rule, in conjunction with expectations of higher price and wage inflation in the future, leads to a lower path of long-term real rates and to higher levels of resource utilization and inflation in the short run. The first-difference rule generates outcomes for the unemployment rate over the forecast period that are markedly below the staff's estimate of the natural rate and the unemployment rate paths generated under the other policy rules. Relative to the other simple policy rules, inflation runs a bit closer to the Committee's 2 percent longer-run inflation objective over the next few years before overshooting the target by a greater margin later in the decade.

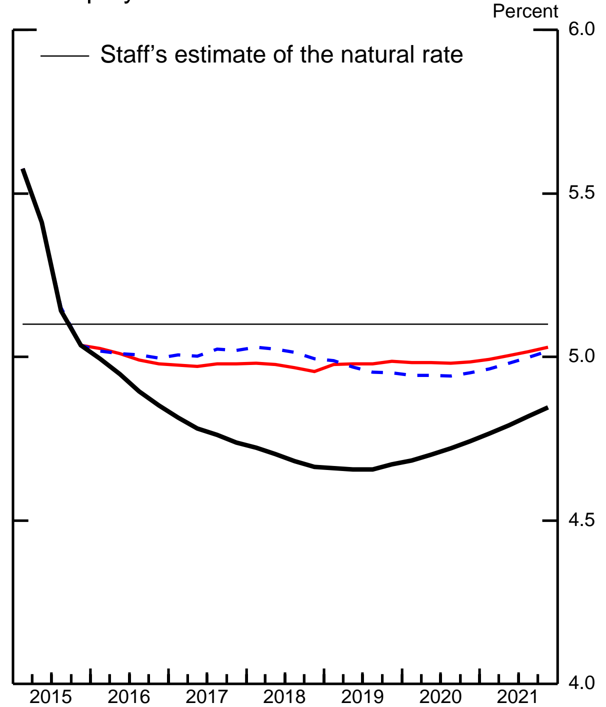
The third exhibit, "Optimal Control Policy under Commitment," compares optimal control simulations for this Tealbook's baseline forecast with those reported in September. Policymakers are assumed to place equal weights on keeping headline PCE

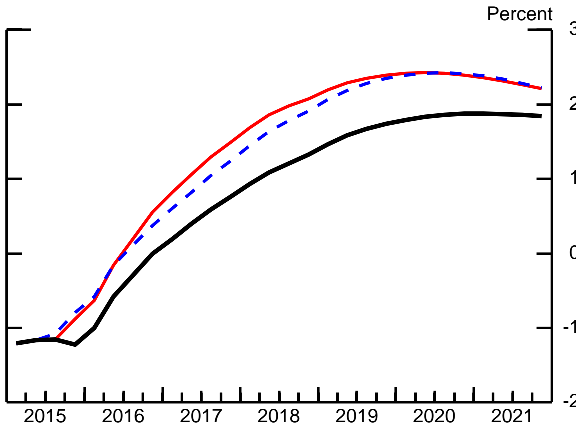
[5] As noted, policy firming begins in December under the Tealbook baseline policy; however, because the December meeting is late in the fourth quarter, the average value for the federal funds rate remains within the current target range until the first quarter of 2016.

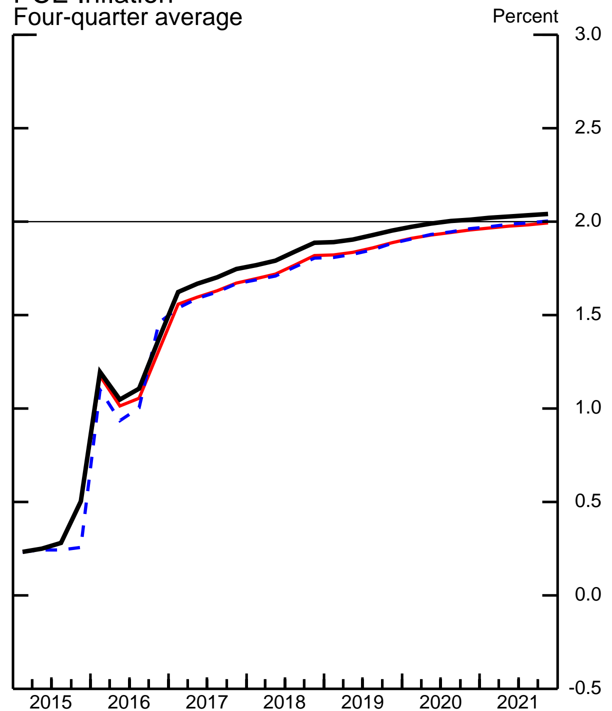
Strategies

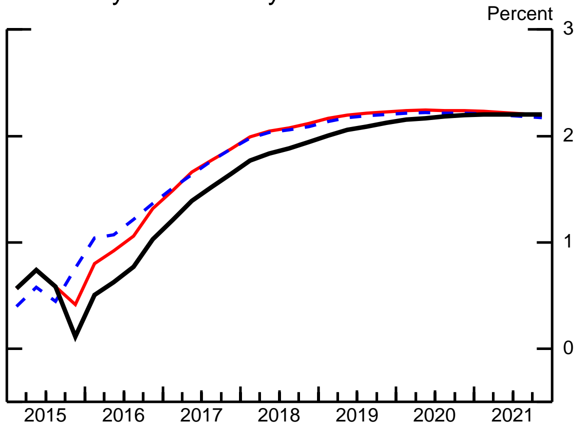
Optimal Control Policy under Commitment











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 concept of optimal control that is employed here corresponds to a commitment policy under which the plans that policymakers make today are assumed to constrain future policy choices.[6]

Under the optimal control policy, the path for the real federal funds rate is more than ½ percentage point higher on average than the Tealbook baseline path. The trajectory for the real 10-year Treasury yield is accordingly also higher. The tighter policy under optimal control is associated with a path of the unemployment rate that is much closer to the staff's estimate of the natural rate than the Tealbook baseline projection. Headline PCE inflation is slightly lower than in the baseline over the simulation period, consistent with lower levels of resource utilization under optimal control policy.

The optimal control path for the nominal federal funds rate is only modestly higher than in the September Tealbook largely because the staff now forecasts a marginally higher level of resource utilization over the next few years. The outcomes for the unemployment rate and inflation are little changed with respect to the September Tealbook.

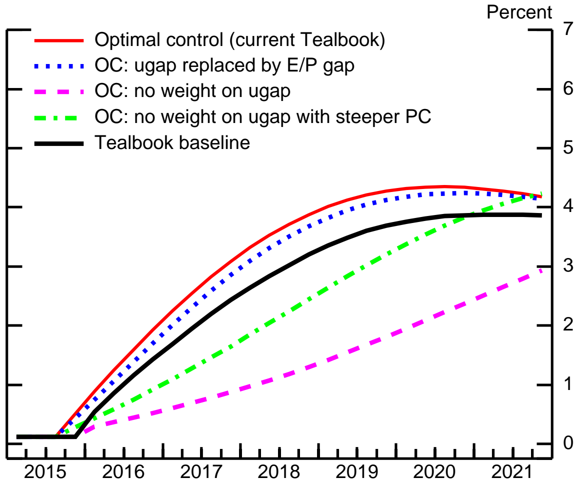
Optimal Control with Alternative Labor Market Objectives

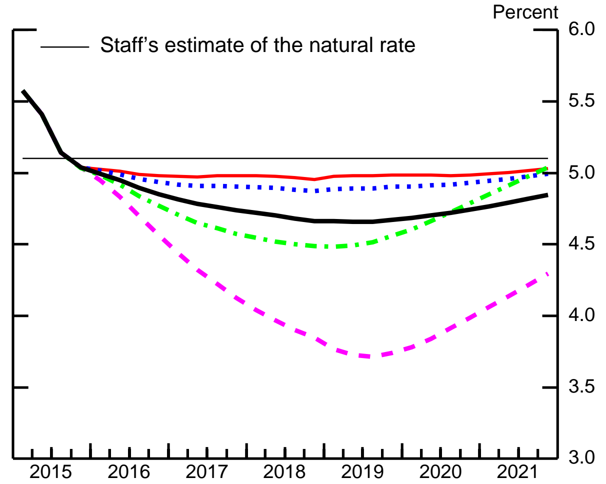
In the standard optimal control simulations discussed above, welfare losses arise from deviations, positive or negative, of the unemployment rate from the staff's estimate of the natural rate. However, some policymakers may believe that broader measures of labor market outcomes better capture their assessment of the amount of slack remaining in the labor market and the attendant welfare losses. Others may place no weight on unemployment deviations on the grounds that the welfare cost of low-to-moderate unemployment outcomes is small, or as a pragmatic response to uncertainty about estimates of the natural rate of unemployment and the risk that poorly estimated unemployment gaps could lead to policy mistakes. The exhibit "Optimal Control with

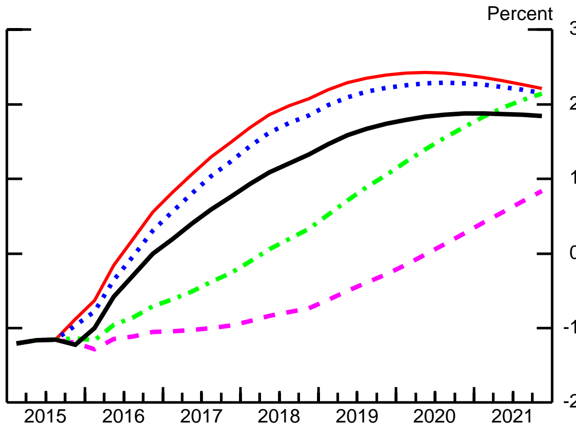
[6] The results for optimal control policy under discretion (in which policymakers cannot credibly commit to carrying out a plan involving policy choices that would be suboptimal at the time that these choices have to be implemented) are similar.

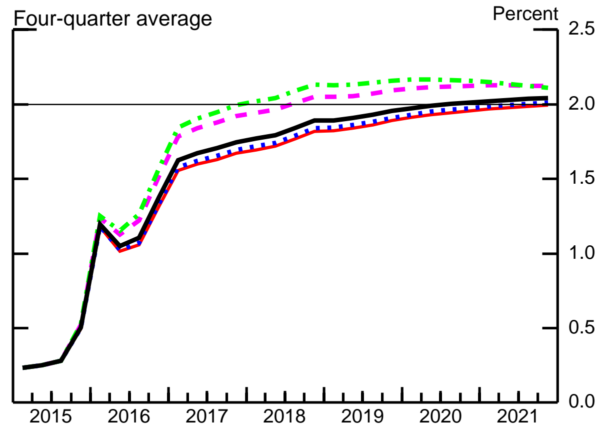
Strategies

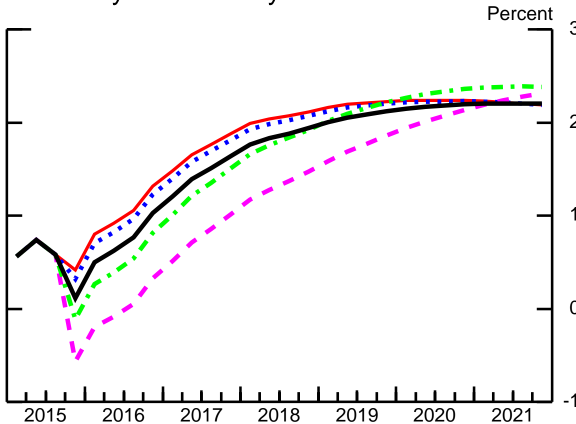
Optimal Control with Alternative Labor Market Objectives

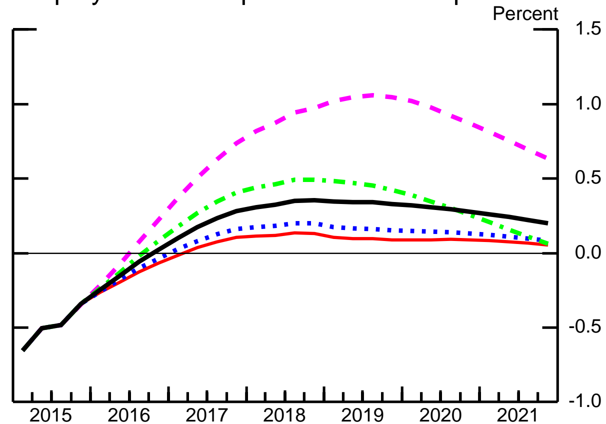












Note: The lines labeled "Optimal control (current Tealbook)" correspond to the baseline optimal control policy under commitment shown in the previous exhibit. The lines labeled "OC: ugap replaced by E/P gap" correspond to an optimal control policy that substitutes the unemployment gap in the loss function with the deviation of the employment-to-population ratio from its trend. The lines labeled "OC: no weight on ugap" correspond to optimal control with a loss function that places no weight on the unemployment gap; the lines labeled "OC no weight on ugap with steeper PC" further posit a wage Phillips curve that is steeper than under the baseline.

Alternative Labor Market Objectives" displays optimal control simulations for alternative interpretations of losses associated with slack in the labor market.

The blue dotted lines in the exhibit show optimal control policy simulations under the assumption that policymakers penalize the deviation of the employment-to-population ratio from the staff's estimate of its trend rather than the unemployment gap, on the argument that the former measure encompasses both the unemployment gap and the deviation of the labor force participation rate from its estimated trend.[7] The employment-to-population ratio this quarter is 0.3 percentage point below its estimated trend, compared with a current unemployment gap that is essentially closed. These estimates suggest that there is only limited extra slack in the labor market along the labor force participation margin and, accordingly, policy is only modestly more accommodative than under the standard optimal control simulations (the solid red lines) through 2021.[8] As a result, the unemployment rate falls a touch below the standard optimal control outcomes. The bottom-right panel shows that policymakers are willing to accept a slightly more pronounced overshooting of the trend in the employment-to-population ratio in the medium run in exchange for a moderately lower amount of slack in the short run and for inflation outcomes that are a touch closer to 2 percent than under the standard optimal control policy.[9]

The magenta dashed lines show the optimal control simulation under the assumption that policymakers place no weight on measures of labor market slack in their loss function. In this scenario, policy is considerably more accommodative than in the standard optimal control case or in the case in which policymakers target the employment-to-population ratio gap. The lower policy path stems from the willingness of policymakers who place no weight on labor market outcomes to tolerate undershooting

[7] To the extent that all margins of slack move in proportion, including only the unemployment gap in the loss function is equivalent to penalizing all margins of slack and adjusting the relative weights in the loss function accordingly.

[8] The employment-to-population ratio gap was appreciably larger than the unemployment gap earlier in the recovery when there was extra slack in the labor market along the labor force participation margin. Replacing the unemployment gap with the employment-to-population ratio gap was more consequential for policy at that time. See "Assessing the Recent Decline in the Unemployment Rate and its Implications for Monetary Policy" sent to the FOMC on June 7th, 2013 by Stephanie Aaronson, Bruce Fallick, Charles Fleischman, and Robert Tetlow.

[9] If policymakers were to replace the employment-to-population ratio gap in the loss function with the deviation of aggregate hours from the staff's estimate of its trend, then policy would be less accommodative than otherwise. The reason is that hours per worker are currently above the staff's estimate of their potential level.

of the natural rate of unemployment. These policymakers are inclined to ease policy aggressively to close the inflation gap more quickly.

A key assumption underlying the results from this simulation is the low sensitivity of inflation to resource slack in the FRB/US model. This low sensitivity limits the effects of monetary policy on inflation. To demonstrate the role of this assumption, the green dash-dotted lines in the exhibit show an optimal control policy simulation in which policymakers place no weight on measures of labor market slack, but wage inflation is more sensitive to the unemployment rate gap. In this case, the standard wage Phillips curve in the FRB/US model is replaced with one in which wage inflation is four times more responsive to labor market slack. While the calibration is meant to be illustrative, it is within the range of conventional estimates.[10]

Under this alternative specification of the wage Phillips curve, policy is noticeably less accommodative and closes the inflation gap two quarters earlier than in the case in which policymakers place no weight on the unemployment gap with the standard specification of the wage Phillips curve. The less accommodative policy results in a smaller undershooting of the natural rate of unemployment and a slightly larger overshooting of the inflation target.[11]

The final exhibit, “Outcomes under Alternative Policies,” tabulates the simulation results for key variables under dynamic simulations of the FRB/US model for each of the policy rules shown in the exhibit “Policy Rule Simulations” and for optimal control under commitment.

[10] Under this alternative calibration, a 1 percentage point negative unemployment gap leads to an immediate increase in annualized nominal wage inflation of 0.06 percentage point. This response is within two standard deviations of the FRB/US model estimate informed by the 1985–2007 subsample. Using a different model specification, Kumar and Orrenius (2014) report a significantly larger response of wage inflation to a fall in the unemployment rate when the unemployment rate is low. A similar alternative calibration was used for a special exhibit in the Monetary Policy Strategies section of Tealbook B in March 2015.

[11] This larger overshooting of the inflation target also implies that the time inconsistency problem is more severe for policymakers facing the steeper wage Phillips curve.

Strategies

Outcomes under Alternative Policies

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

Measure and policy	2015		2016	2017	2018	2019
	H1	H2				
Real GDP						
Extended Tealbook baseline[1]	2.3	1.7	2.2	2.0	1.8	1.7
Taylor (1993)	2.3	1.7	1.8	2.0	1.9	1.8
Taylor (1999)	2.3	1.7	1.8	1.9	1.8	1.8
Inertial Taylor (1999)	2.3	1.7	2.2	2.0	1.8	1.7
First-difference	2.3	1.7	2.4	2.3	2.0	1.8
Optimal control	2.3	1.7	1.9	1.8	1.7	1.7
Unemployment rate[2]						
Extended Tealbook baseline[1]	5.4	5.0	4.9	4.7	4.7	4.7
Taylor (1993)	5.4	5.0	5.1	4.9	4.8	4.7
Taylor (1999)	5.4	5.0	5.1	5.0	4.9	4.8
Inertial Taylor (1999)	5.4	5.0	4.9	4.8	4.7	4.7
First-difference	5.4	5.0	4.8	4.6	4.4	4.3
Optimal control	5.4	5.0	5.0	5.0	5.0	5.0
Total PCE prices						
Extended Tealbook baseline[1]	0.1	0.9	1.4	1.7	1.9	2.0
Taylor (1993)	0.1	0.9	1.4	1.8	1.9	2.0
Taylor (1999)	0.1	0.9	1.4	1.7	1.9	2.0
Inertial Taylor (1999)	0.1	0.9	1.4	1.8	1.9	2.0
First-difference	0.1	0.9	1.5	1.9	2.1	2.2
Optimal control	0.1	0.9	1.3	1.7	1.8	1.9
Core PCE prices						
Extended Tealbook baseline[1]	1.4	1.4	1.4	1.7	1.9	2.0
Taylor (1993)	1.4	1.4	1.5	1.7	1.9	2.0
Taylor (1999)	1.4	1.4	1.4	1.7	1.9	2.0
Inertial Taylor (1999)	1.4	1.4	1.4	1.7	1.9	2.0
First-difference	1.4	1.4	1.6	1.9	2.1	2.2
Optimal control	1.4	1.4	1.4	1.6	1.8	1.9
Effective nominal federal funds rate[2]						
Extended Tealbook baseline[1]	0.1	0.2	1.4	2.4	3.2	3.7
Taylor (1993)	0.1	2.3	2.6	3.2	3.6	3.8
Taylor (1999)	0.1	2.2	2.6	3.3	3.8	4.0
Inertial Taylor (1999)	0.1	0.5	1.6	2.5	3.2	3.7
First-difference	0.1	0.4	1.5	2.3	3.0	3.1
Optimal control	0.1	0.5	1.9	3.1	3.9	4.3

1. In the Tealbook baseline, the federal funds rate first departs from an effective lower bound of 12½ basis points in December of 2015. 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

Appendix

POLICY RULES USED IN "MONETARY POLICY STRATEGIES"

The table below gives the expressions for the selected policy rules used in "Monetary Policy Strategies." In the table, R_t denotes the effective nominal federal funds rate for quarter t, while the right-hand-side variables include the staff's projection of trailing four-quarter core PCE inflation for the current quarter and three quarters ahead (π_t and $\pi_{t+3|t}$), the output gap estimate for the current period (gap_t), and the forecast of the three-quarter-ahead annual change in the output gap ($\Delta^4 gap_{t+3|t}$). The value of policymakers' longer-run inflation objective, denoted π^{LR}, is 2 percent.

Taylor (1993) rule	$R_t = r^{LR} + \pi_t + 0.5(\pi_t - \pi^{LR}) + 0.5gap_t$
Taylor (1999) rule	$R_t = r^{LR} + \pi_t + 0.5(\pi_t - \pi^{LR}) + gap_t$
Inertial Taylor (1999) rule	$R_t = 0.85R_{t-1} + 0.15(r^{LR} + \pi_t + 0.5(\pi_t - \pi^{LR}) + gap_t)$
First-difference rule	$R_t = R_{t-1} + 0.5(\pi_{t+3|t} - \pi^{LR}) + 0.5\Delta^4 gap_{t+3|t}$

The first two of the selected rules were studied by Taylor (1993, 1999), while the inertial version of the Taylor (1999) rule has been featured prominently in analysis by Board staff.[1] The intercepts of these rules are chosen so that they are consistent with a 2 percent longer-run inflation objective and a longer-run real interest rate, denoted r^{LR}, of 1¼ percent, a value used in the FRB/US model. The prescriptions of the first-difference rule do not depend on the level of the output gap or the longer-run real interest rate; see Orphanides (2003).

Near-term prescriptions from the four 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 and the first-difference rule—the lines labeled "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 a 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 a 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.

[1] See, for example, Erceg and others (2012).

Real Federal Funds Rate Estimates

The bottom panel of the exhibit "Policy Rules and the Staff Projection" provides an estimate of one notion of the equilibrium real federal funds rate, *r**. 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 "Tealbook-consistent" estimate of *r** depends on a very broad array of economic factors, some of which take the form of projected values of the model's exogenous variables. It 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 current real federal funds rate reported in the panel 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 B publication date.

The estimated average projected real federal funds rate reported in the panel is constructed as the 12-quarter average of the current real federal funds rate described above and its projections over the next 11 quarters under the Tealbook baseline. This calculation is comparable to the one used to generate *r**. However, while r* and the average projected real federal funds rate are calculated over the same 12-quarter period, they need not be associated with the same macroeconomic outcomes even when their values are identical. The reason is that, in the r* simulations, the real federal funds rate is held constant over the entire 12-quarter period to close the output gap at the end of this timeframe whereas, in the Tealbook baseline, the real federal funds rate can vary over time. Distinct paths of real short-term rates can, in turn, generate differing paths for inflation and economic activity.

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; this period extends several decades beyond the time horizon shown in the exhibits. The simulations are conducted under perfect foresight and are predicated on the staff's extended Tealbook projection, which includes the macroeconomic effects of the Committee's large-scale asset purchase programs. When the Tealbook is published early in a quarter, all of the simulations begin in that quarter. However, when the Tealbook is published late in a quarter, all of the simulations begin in the subsequent quarter.

Computation of the Optimal Control Policy Under Commitment

The optimal control simulations posit that policymakers minimize a discounted sum of weighted squared deviations of four-quarter headline PCE inflation (π_t^{pce}) from the Committee's 2 percent objective, of squared deviations of the unemployment rate from the staff's estimate of the natural rate (this difference is also known as the unemployment rate gap, $ugap_t$), and of squared changes in the federal funds rate. The resulting loss function, shown below, embeds the assumptions that policymakers discount the future using a quarterly discount factor $\beta = 0.9963$ and place equal weights on squared deviations of inflation, the unemployment gap, and federal funds rate changes (that is, $\lambda_\pi = \lambda_{ugap} = \lambda_R$).

$$\boldsymbol{L_t} = \sum_{\tau=0}^{T} \boldsymbol{\beta^\tau} \{\lambda_\pi (\pi_{t+\tau}^{pce} - \pi^{LR})^2 + \lambda_{ugap}(ugap_{t+\tau})^2 + \lambda_R(R_{t+\tau} - R_{t+\tau-1})^2\}$$

The optimal control policy is the path for the federal funds rate that minimizes the above loss function in the FRB/US model, subject to the effective lower bound constraint on nominal interest rates, under the assumption of perfect foresight, and conditional on the staff's extended Tealbook projection. Policy tools other than the federal funds rate are taken as given and subsumed within the Tealbook baseline. The path chosen by policymakers today is assumed to be credible, meaning that decision makers in the model see this path as being a binding commitment on the future Committees; the optimal control policy takes as given the lagged value of the federal funds rate but is otherwise unconstrained by policy decisions made prior to the simulation period. The discounted losses are calculated over a period that ends sufficiently far into the future that extending that period farther would not affect the policy prescriptions shown in the exhibits.

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Monetary Policy Alternatives

On the eve of the September FOMC meeting, market participants had placed odds of about 30 percent on liftoff at that meeting, the highest such reading before any FOMC meeting in recent years. Against a backdrop of turbulence in financial markets and concerns about likely and potential spillovers from an economic slowdown in China and other foreign economies, the Committee decided in September not to change the target range for the federal funds rate or the forward guidance for when the first increase might occur. In response, financial market participants shifted expectations about the likely timing of liftoff toward October and December of this year and later. Following the September employment report, the perceived probability of liftoff at dates in 2016 increased substantially. Nevertheless, market- and survey-based measures now suggest that market participants consider the December meeting to be the most likely time of liftoff, and that they see negligible odds of a rate hike in October.[1] Furthermore, the expected path for the federal funds rate over the next couple of years, derived from market and survey data, has flattened somewhat. Market participants continue to expect that normalization of the stance of monetary policy will proceed more gradually than during the 1994 and 2004 tightening cycles, and more gradually than was anticipated at the onset of those episodes. Possibly, this shallower path of expected future policy rates could reflect, at least in part, downward revisions to the path of anticipated equilibrium real rates as evidenced in the responses to the Desk's Survey of Primary Dealers and its Survey of Market Participants.

In its March statement, the Committee introduced two criteria for increasing the target range: It stated that it wanted to see "further improvement" in the labor market (amended in July to "some further improvement") and that it would need to be "reasonably confident" that inflation will move back to 2 percent over the medium term. Since then, labor market conditions have improved, on balance, with nonfarm payroll gains averaging around 190,000 per month and the unemployment rate declining from 5.5 percent in February (the most recent reading available to the Committee in March) to

[1] Roughly speaking, futures contracts on the federal funds rate are consistent with mean probabilities of liftoff in December around 25 percent, while respondents to the Desk's Survey of Primary Dealers and Survey of Market Participants on average estimate that probability to be around 35 percent. The perceived probability of liftoff in March 2016 or later has increased appreciably during the intermeeting period; the mean probability from the Desk surveys has risen to around 50 percent and the odds implied by market-based measures have increased to about 60 percent. The "Financial Developments" section of Tealbook A provides more details.

5.1 percent in August and September. However, the pace of payroll gains slowed to about 140,000 per month in August and September, and the broad range of labor market indicators, taken together, showed little, if any, improvement in labor market conditions. Even though industrial production has been weak and net exports have continued to decline, real GDP has been expanding at a moderate pace, on average, with notable strength in domestic final sales, suggesting labor market conditions are likely to continue to improve. During the intermeeting period, core and headline inflation have continued to run below 2 percent, and market-based measures of longer-term inflation compensation declined slightly further, while longer-term survey expectations remained stable.

The three draft alternative statements presented below—labeled Alternative A, Alternative B, and Alternative C—offer different assessments of realized and expected progress toward the Committee's dual mandate objectives and its two criteria for liftoff, along with a range of corresponding policy choices. While noting some softness in recent labor market data, Alternative B would convey that the Committee is less worried about global economic and financial developments than it was in September. The Committee would reaffirm that the current target range remains appropriate, and the liftoff criteria would remain unchanged. However, instead of focusing on "how long to maintain this target range" (as in recent statements), the Committee would, under Alternative B, indicate that it will consider whether to increase the target range "later this year" (or "at its next meeting"), "based on incoming data." Under Alternative C, the Committee would state that both of the criteria for raising the federal funds rate have been met and would therefore announce an increase in the target range; this Alternative would also indicate that the observed improvement in the labor market this year supports the Committee's expectation for a rise in inflation over the medium run. Furthermore, Alternative C would shift the emphasis of policy communication from "how long to maintain" the target range to "the timing and size of future adjustments" to the target range. While that new language would be read, initially, as pointing to the likelihood of further increases in the target range, it would also allow for reductions in the target range, if necessary. By contrast, Alternative A would signal that the Committee believes the conditions for policy firming are unlikely to be met in the near future, primarily because inflation continues to run appreciably below 2 percent, may well decline further, and now seems likely to remain below 2 percent longer than previously expected.

Alternative B indicates that recent data suggest that economic activity "has been expanding at a moderate pace," and provides a slightly more upbeat assessment of

household spending and business fixed investment than in September. The statement for Alternative B acknowledges that the pace of job gains "slowed" while the unemployment rate "held steady" but states that, "Nonetheless, labor market indicators, on balance, show that underutilization of labor resources has diminished since early this year." Against these guardedly optimistic descriptions of economic activity and the labor market, Alternative B observes that inflation "has continued to run below" 2 percent, in part because of recent and earlier declines in energy prices and in prices of non-energy imports. The statement also recognizes that market-based measures of inflation compensation "moved lower" or "moved slightly lower" while reiterating that survey-based measures of longer-term inflation expectations have remained stable. Alternative B leaves the Committee's characterization of expected economic conditions over the medium run unchanged relative to September. It downgrades the concerns about the implications of recent global economic and financial developments expressed in the September statement, but notes that the Committee "is monitoring" these developments. Finally, Alternative B points to the possibility of liftoff at the December meeting, depending on the implications of "incoming data" for realized and expected progress toward the Committee's objectives of maximum employment and 2 percent inflation. Taken as a whole, Alternative B likely would be read by market participants as indicating that a December liftoff is still on the table but is not locked in.

In Alternative C, the Committee would announce that its criteria for policy firming have been met and that it is increasing the target range for the federal funds rate by 25 basis points. The Committee would retain the assessment that economic activity has been "expanding at a moderate pace." Moreover, it would upgrade its characterization of labor market developments, stating that labor market indicators have shown "further improvement," which "confirms" that underutilization of labor resources has diminished "appreciably" since early this year. Alternative C would acknowledge that inflation "has continued" to run below 2 percent, that it will likely remain low in the near term, and that market-based measures of inflation compensation "remain near the low end of the range seen in recent years." Despite these concerns, the Committee would emphasize that the factors that have been generating below-target inflation will dissipate, and that, with the labor market continuing to improve and surveys of longer-term inflation expectations remaining stable, it is "reasonably confident" that inflation will rise to 2 percent over the medium term.

Alternative A provides largely the same characterization of recent data on economic activity, unemployment, and payroll employment as Alternative B. However,

Alternative A notes that net exports and inventory investment have been "a drag on economic growth" (instead of just net exports having been "soft"). In addition, Alternative A sees the unemployment rate as having "leveled out." Also, Alternative A signals that the Committee is still a long way from being reasonably confident that inflation will move back to 2 percent over the medium run. In particular, Alternative A notes that "gains in labor compensation have remained subdued" despite the reduction in underutilization of labor resources; that "overall and core inflation" have been running below 2 percent; and that measures of inflation compensation are "at" or "near" multiyear lows. In response to the lack of progress on the inflation front and the risk that inflation might linger below the Committee's objective, Alternative A states that "If incoming information does not soon indicate that inflation is beginning to move back toward 2 percent, the Committee is prepared to use all tools necessary to return inflation to 2 percent within one to two years." Alternative A would also indicate that economic and financial developments abroad have "tilted somewhat to the downside" the risks to the Committee's outlook for economic activity and the labor market.

Under Alternative A and Alternative B, the Committee would retain the "balanced approach" language that it has provided for quite some time to characterize how it plans to conduct policy once tightening begins. Under Alternative C, the Committee would state that, in determining future adjustments to the target range, it will assess "realized and expected economic conditions" relative to its mandated objectives, and that the path of the federal funds rate will "depend on the incoming data." This draft statement also offers the option of indicating that the Committee "will take a balanced approach" to pursuing its objectives. Regarding the Committee's balance sheet policies, Alternatives A and B would continue the Committee's existing reinvestment policy, while Alternative C would indicate that the Federal Reserve will continue to roll over maturing Treasury securities and to reinvest principal payments from its agency debt and mortgage-backed security holdings "at least during the early stages of normalizing the level of the federal funds rate." All three alternatives retain language indicating that, even once employment and inflation are close to mandate-consistent levels, economic conditions may, for some time, warrant keeping the federal funds rate below levels the Committee views as normal in the longer run.

The next pages contain the September postmeeting statement, the three alternative draft statements, and summaries of the arguments for each alternative statement. These elements are followed by the draft directive for Alternative A and Alternative B, a draft "Implementation Note" that includes the directive for Alternative C, as well as a "Desk

Statement" regarding overnight reverse repurchase operations that would be released shortly after the FOMC postmeeting statement if the Committee adopted Alternative C.

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SEPTEMBER 2015 FOMC STATEMENT

1. Information received since the Federal Open Market Committee met in July suggests that economic activity is expanding at a moderate pace. Household spending and business fixed investment have been increasing moderately, and the housing sector has improved further; however, net exports have been soft. The labor market continued to improve, with solid job gains and declining unemployment. On balance, labor market indicators show that underutilization of labor resources has diminished since early this year. Inflation has continued to run below the Committee's longer-run objective, partly reflecting declines in energy prices and in prices of non-energy imports. Market-based measures of inflation compensation moved lower; survey-based measures of longer-term inflation expectations have remained stable.

2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. Recent global economic and financial developments may restrain economic activity somewhat and are likely to put further downward pressure on inflation in the near term. Nonetheless, the Committee expects that, with appropriate policy accommodation, economic activity will expand at a moderate pace, with labor market indicators continuing to move toward levels the Committee judges consistent with its dual mandate. The Committee continues to see the risks to the outlook for economic activity and the labor market as nearly balanced but is monitoring developments abroad. Inflation is anticipated to remain near its recent low level in the near term but the Committee expects inflation to rise gradually toward 2 percent over the medium term as the labor market improves further and the transitory effects of declines in energy and import prices dissipate. The Committee continues to monitor inflation developments closely.

3. To support continued progress toward maximum employment and price stability, the Committee today reaffirmed its view that the current 0 to ¼ percent target range for the federal funds rate remains appropriate. In determining how long to maintain this target range, 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 and international developments. The Committee anticipates that it will be appropriate to raise the target range for the federal funds rate when it has seen some further improvement in the labor market and is reasonably confident that inflation will move back to its 2 percent objective over the medium term.

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. This policy, by keeping the Committee's holdings of longer-term securities at sizable levels, should help maintain accommodative financial conditions.

5. When the Committee decides to begin to remove policy accommodation, it will take a balanced approach consistent with its longer-run goals of maximum employment and inflation of 2 percent. The Committee currently anticipates that, even after

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

ALTERNATIVE A FOR OCTOBER 2015

1. Information received since the Federal Open Market Committee met in ~~July~~ **September** suggests that economic activity ~~is~~ **has been** expanding at a moderate pace. Household spending and business fixed investment have been increasing ~~moderately~~ **at solid rates in recent months**, and the housing sector has improved further; however, net exports ~~have been soft~~ **and inventory investment have been a drag on economic growth**. ~~The labor market continued to improve, with solid job gains and declining unemployment.~~ On balance, labor market indicators show that underutilization of labor resources has diminished since early this year**, but the pace of job gains has slowed and the unemployment rate has leveled out**. **Both overall and core** inflation ~~has~~ **have** continued to run below the Committee's longer-run objective, partly reflecting declines in energy prices and in prices of non-energy imports. Market-based measures of inflation compensation ~~moved lower~~ **are [at | near] multiyear lows**; survey-based measures of longer-term inflation expectations have remained stable.

2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. Recent global economic and financial developments may restrain economic activity somewhat and are likely to put further downward pressure on inflation in the near term. Nonetheless, the Committee expects that, with appropriate policy accommodation, economic activity will expand at a moderate pace, with labor market indicators continuing to move toward levels the Committee judges consistent with its dual mandate. **However, in light of economic and financial developments abroad,** the Committee ~~continues to see~~ **sees** the risks to the outlook for economic activity and the labor market as ~~nearly balanced~~ **tilted somewhat to the downside** ~~but is monitoring developments abroad~~. Inflation is anticipated to remain near its recent low level in the near term but the Committee expects inflation to rise gradually toward 2 percent over the medium term as the labor market improves further and the transitory effects of declines in energy and import prices dissipate. The Committee continues to monitor inflation developments closely.

3. ~~To support continued progress toward maximum employment and price stability~~ **With inflation, core inflation, and gains in labor compensation all subdued, and with market-based measures of inflation compensation very low**, the Committee ~~today reaffirmed its view~~ **judges** that the current 0 to ¼ percent target range for the federal funds rate remains appropriate. In determining how long to maintain this target range, 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 and international developments. ~~The Committee anticipates that it will be appropriate to raise the target range for the federal funds rate when it has seen some further improvement in the labor market and is reasonably confident that inflation will move back to its 2 percent objective over the medium term.~~ **If incoming information does not soon indicate that inflation is beginning to move back toward 2 percent, the Committee is prepared to use all tools necessary to return inflation to 2 percent within one to two years.**

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. This policy, by keeping the Committee's holdings of longer-term securities at sizable levels, should help maintain accommodative financial conditions.

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

ALTERNATIVE B FOR OCTOBER 2015

1. Information received since the Federal Open Market Committee met in ~~July~~ **September** suggests that economic activity ~~is~~ **has been** expanding at a moderate pace. Household spending and business fixed investment have been increasing ~~moderately~~ **at solid rates in recent months**, and the housing sector has improved further; however, net exports have been soft. The ~~labor market continued to improve, with solid~~ **pace of** job gains **slowed** and ~~declining~~ **the** unemployment **rate held steady**. ~~On balance~~ **Nonetheless**, labor market indicators**, on balance,** show that underutilization of labor resources has diminished since early this year. Inflation has continued to run below the Committee's longer-run objective, partly reflecting declines in energy prices and in prices of non-energy imports. Market-based measures of inflation compensation moved **[slightly]** lower; survey-based measures of longer-term inflation expectations have remained stable.

2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. ~~Recent global economic and financial developments may restrain economic activity somewhat and are likely to put further downward pressure on inflation in the near term. Nonetheless,~~ The Committee expects that, with appropriate policy accommodation, economic activity will expand at a moderate pace, with labor market indicators continuing to move toward levels the Committee judges consistent with its dual mandate. The Committee continues to see the risks to the outlook for economic activity and the labor market as nearly balanced but is monitoring **global economic and financial** developments ~~abroad~~. Inflation is anticipated to remain near its recent low level in the near term but the Committee expects inflation to rise gradually toward 2 percent over the medium term as the labor market improves further and the transitory effects of declines in energy and import prices dissipate. The Committee continues to monitor inflation developments closely.

3. To support continued progress toward maximum employment and price stability, the Committee today reaffirmed its view that the current 0 to ¼ percent target range for the federal funds rate remains appropriate. In determining ~~how long to maintain this target range~~ **whether it will be appropriate to raise the target range [later this year | at its next meeting]**, the Committee will**, based on incoming data,** 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 and international developments. The Committee anticipates that it will be appropriate to raise the target range for the federal funds rate when it has seen some further improvement in the labor market and is reasonably confident that inflation will move back to its 2 percent objective over the medium term.

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. This policy, by keeping the Committee's holdings of longer-term securities at sizable levels, should help maintain accommodative financial conditions.

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

ALTERNATIVE C FOR OCTOBER 2015

1. Information received since the Federal Open Market Committee met in ~~July~~ **September** suggests that economic activity ~~is~~ **has been** expanding at a moderate pace. Household spending and business fixed investment have been increasing ~~moderately~~ **at solid rates in recent months**, and the housing sector has improved further; however, net exports have been soft. ~~The labor market continued to improve, with solid job gains and declining unemployment. On balance, labor market indicators show~~ **A range of recent labor market indicators, including ongoing job gains, shows further improvement and confirms** that underutilization of labor resources has diminished **appreciably** since early this year. Inflation has continued to run below the Committee's longer-run objective, partly reflecting declines in energy prices and in prices of non-energy imports. **Although** market-based measures of inflation compensation ~~moved lower;~~ **remain near the low end of the range seen in recent years,** survey-based measures of longer-term inflation expectations have remained stable.

2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. ~~Recent global economic and financial developments may restrain economic activity somewhat and are likely to put further downward pressure on inflation in the near term. Nonetheless,~~ The Committee expects that, with appropriate **adjustments in the stance of monetary** policy ~~accommodation~~, economic activity will expand at a moderate pace~~, with~~ **and** labor market indicators ~~continuing to move toward~~ **will reach** levels the Committee judges consistent with its dual mandate. The Committee ~~continues to see~~ **sees** the risks to the outlook for **both** economic activity and the labor market as ~~nearly~~ balanced ~~but is monitoring developments abroad~~. Inflation is anticipated to remain near its recent low level in the near term**, reflecting declines in energy prices and in prices of non-energy imports,** but the **transitory effects on inflation of these declines will dissipate. With the labor market continuing to improve, and with survey measures of longer-term inflation expectations remaining stable, the** Committee ~~expects~~ **is reasonably confident that** inflation ~~to~~ **will** rise ~~gradually toward~~ **to** 2 percent over the medium term. ~~as the labor market improves further and the transitory effects of declines in energy and import prices dissipate. The Committee continues to monitor inflation developments closely.~~

3. ~~To support continued progress toward maximum employment and price stability, the Committee today reaffirmed its view that the current 0 to ¼ percent target range for the federal funds rate remains appropriate.~~ **In light of the improvement in labor market conditions this year, and the Committee's expectation that inflation will rise, over the medium term, to its 2 percent objective, the Committee decided to raise the target range for the federal funds rate to ¼ to ½ percent.**

4. In determining ~~how long to maintain this~~ **the timing and size of future adjustments to the** target range, the Committee will assess ~~progress—both~~ realized and expected~~—toward~~ **economic conditions relative to** its objectives of maximum employment and 2 percent inflation **[, and will take a balanced approach to pursuing those objectives]**. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation

pressures and inflation expectations, and readings on financial and international developments. ~~The Committee anticipates that it will be appropriate to raise the target range for the federal funds rate when it has seen some further improvement in the labor market and is reasonably confident that inflation will move back to its 2 percent objective over the medium term.~~ 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**; however, the actual path of the target for the federal funds rate will depend on the incoming data**.

5. 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**, and anticipates doing so at least during the early stages of normalizing the level of the federal funds rate**. This policy, by keeping the Committee's holdings of longer-term securities at sizable levels, should help maintain accommodative financial conditions.

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 directive for Alternative C appears later in this section of Tealbook B as part of a draft "Implementation Note" that would be released as an addendum to the Committee's postmeeting statement at the time of liftoff. That directive directs the Desk to undertake open market operations as necessary to maintain the federal funds rate in the new ¼ to ½ percent target range, including overnight reverse repurchase operations at an offering rate of 0.25 percent "and in amounts limited only by the value of Treasury securities held outright in the System Open Market Account that are available for such operations." The Implementation Note is followed by a draft of a Desk statement regarding overnight reverse repurchase agreements that provides an estimate of "the value of Treasury securities held outright in the System Open Market Account" that will be available to support reverse repurchase operations in the aftermath of the initial increase in the target range. If the Committee adopts Alternative C, the Desk would release that statement shortly after the FOMC issues its postmeeting statement.

THE CASE FOR ALTERNATIVE B

The Committee might see information received during the intermeeting period as suggesting a continuation of moderate growth in real GDP, supported by solid gains in household spending, business investment, and the housing sector, but with ongoing drag from the external sector. In the labor market, while gains in payroll employment slowed somewhat over the last two months, other indicators—the number of people who were unemployed for 15 weeks or longer and who were employed part time for economic reasons, in particular—showed further improvement, and the unemployment rate continues to lie in the central tendency of FOMC participants' assessment of its longer-run normal level as reported in the September Summary of Economic Projections. Nonetheless, the Committee may see room for further improvement in the labor market along margins such as labor force participation or the number of persons employed part time for economic reasons, and may judge that such a reduction in labor underutilization will help speed the return of inflation to the 2 percent objective. Furthermore, policymakers may judge that headline inflation is likely to remain below 2 percent for a while, and they may remain concerned that the tightening in domestic financial conditions over the last few months, in conjunction with recent global financial developments related to worries about economic activity in emerging markets, may put downward pressure on U.S. inflation in the near term through their influence on commodity prices and the exchange rate. Although policymakers may expect the effects of foreign developments on the U.S. economy to be limited, they might still want to see whether the data that will be released during the coming intermeeting period appear consistent with their projections that the economic expansion will support further improvement in the labor market and that inflation will return to 2 percent over the medium term. For these reasons, participants may deem it appropriate to continue a meeting-by-meeting approach and preserve policy options going forward. If so, they may choose to issue a statement like Alternative B, which acknowledges the positive data on spending and investment, notes steady labor market conditions and remaining concerns about foreign developments, and reaffirms the Committee's medium-run outlook and characterization of associated risks.

With the unemployment rate at 5.1 percent, some policymakers may judge that the economy is already at maximum sustainable employment. With moderate growth in real GDP and appreciable improvement in labor market conditions since earlier this year, these policymakers may deem it likely that a solid economic expansion is under way, which, together with stable longer-run inflation expectations, should move inflation back

to 2 percent over the medium term. But with both headline and core inflation still running below the Committee's objective, the softening in the most recent readings of payroll gains and retail sales, and remaining concerns about the risks for domestic economic activity posed by global economic and financial developments, policymakers may prefer to monitor economic data a little longer before taking the first step in raising rates. Moreover, signs of excessive risk-taking are not widespread, and indicators of leverage and of reliance on short-term financing instruments have, to date, remained at moderate levels. Policymakers might therefore judge that a statement like Alternative B, including the new language in paragraph 3, preserves the Committee's ability to tighten policy at upcoming meetings without appreciably elevating the risks to financial stability.

Other participants may be concerned that inflation will not move back to 2 percent over the medium term, perhaps because they judge that there is still appreciable slack in labor markets and anticipate only a slow reduction in that slack. Alternatively, they may point out that substantial improvement in labor markets over the past few years has not prevented inflation compensation from falling, and argue that the seemingly low sensitivity of price and wage inflation to slack might require a period of unemployment well below its longer-run normal rate to ensure a return of inflation to the Committee's longer-run goal. And with U.S. financial conditions somewhat tighter than earlier this year and foreign demand for U.S. exports likely to remain weak, some participants may see a non-negligible probability that the Committee will eventually need to provide further policy accommodation to achieve its mandate. These participants may nonetheless judge that, with GDP expanding moderately and the labor market improving, it would be premature to announce additional stimulus. Moreover, they may take some reassurance from the observation that survey measures of longer-term inflation expectations remain within the range observed in recent years. These policymakers may thus choose to forego additional accommodation for now, but be alert to the possibility that the economy might require further support at a later date.

Respondents to the Desk's Survey of Primary Dealers and its Survey of Market Participants currently perceive only a negligible probability that the Committee will raise the target range for the federal funds rate in October, but they see a 35 percent chance of liftoff in December and see the December meeting as the most likely time of liftoff. While most respondents expect only small changes to the Committee's statement and its forward guidance, many expect the Committee to downgrade its assessment of labor market conditions a little and to acknowledge an increase in downside risks to the outlook for economic growth. Accordingly, market participants could read a statement like

Alternative B, especially the new language in paragraph 3, as suggesting a somewhat higher likelihood of liftoff at the December meeting than they currently perceive. To the extent that statement language as in Alternative B raises the perceived likelihood that policy firming will begin before the end of the year, medium- and longer-term real interest rates might rise somewhat, and the dollar could appreciate a bit. If investors read the statement as suggesting more confidence in economic conditions, equity prices and inflation compensation might rise; otherwise they might fall.

The Case for Alternative C

Policymakers may view the ongoing job gains and the improvements in a range of labor market indicators, as well as solid consumer spending, the pickup in business fixed investment, and improvements in the housing sector as confirmation that recent global economic and financial developments are not putting in jeopardy the expansion currently under way in the domestic economy. Furthermore, with the unemployment rate at 5.1 percent, policymakers may conclude that slack in the labor market has essentially been absorbed and that tighter resource utilization will soon begin to put at least some upward pressure on inflation. Policymakers may be reasonably certain that, with stable longer-run inflation expectations and the recent uptick in core inflation, headline inflation will move back to the Committee's 2 percent objective over the medium term as the downward pressure on domestic consumer prices from the pass-through of broad-based declines in global commodity prices and appreciation of the dollar dissipates. That is, policymakers might view the two criteria for policy firming introduced in the Committee's March statement and amended during the summer as having been met. In addition, policymakers may note that, for about a year now, most of the simple policy rules and the optimal control simulations in the "Monetary Policy Strategies" section of Tealbook B have called for policy tightening to begin. Therefore, they may support Alternative C, which announces a 25 basis point increase in the target range for the federal funds rate to ¼ to ½ percent.

Given the lags in the transmission of monetary policy, some policymakers may be concerned that delaying the initial firming of policy any longer could unduly raise the risks of overshooting the Committee's maximum employment and 2 percent inflation objectives. They may expect that, with the economy at or near full employment, wage pressures will build, contributing to a fairly prompt increase in inflation to 2 percent or higher. Because trend productivity growth appears to have stepped down from its

pre-crisis value, some policymakers may argue that price and wage pressures could arise even if economic activity were to continue to expand at what is a modest pace by historical standards. Some policymakers may be particularly concerned that, if the unemployment rate is allowed to undershoot its longer-run normal level appreciably, inflation could rise persistently above 2 percent—for example, along the lines of the alternative scenario "Fast Growth with Higher Inflation" in the "Risks and Uncertainty" section of Tealbook A—and seemingly well-anchored longer-run inflation expectations could begin drifting up. Moreover, some policymakers might judge that delaying tightening longer will make it necessary to raise the federal funds rate rapidly in the future to prevent too-high inflation, and that a steeper path for the policy rate would increase the risks of a period of very slow economic growth and rising unemployment. Policymakers might also worry that further delaying the firming of policy could exacerbate risks to financial stability. In particular, they may see the path for the federal funds rate currently expected by market participants as too shallow, a situation that could leave leveraged investors unduly exposed should interest rates rise faster than they anticipated. Although these risks may not feature prominently in policymakers' baseline forecasts, they might judge that the adverse consequences would be sufficiently severe to justify policy firming at this time.

According to the Desk's Survey of Primary Dealers and its Survey of Market Participants, the average of respondents' perceptions of the probability of tightening at this meeting is slightly below 5 percent. A decision to increase the target range at this meeting would thus be surprising. Medium- and longer-term real interest rates would most likely rise, equity prices and inflation compensation would likely decline, and the dollar would appreciate. If market participants conclude that the Committee is intent on pursuing a less accommodative stance of policy going forward than had been expected, then the market reaction could be sizable. However, if investors see a statement like Alternative C as reflecting a more upbeat assessment for global economic conditions, then equity prices and inflation compensation might increase.

THE CASE FOR ALTERNATIVE A

Some policymakers may see substantial risk that inflation will not rise over the medium term to the Committee's longer-run goal. Both core and headline inflation have run below 2 percent over the past few years, and continued declines in global commodity prices, along with downward pressure on import prices from the appreciation of the

dollar, suggest that headline inflation will linger at very low levels well into 2016. Furthermore, these policymakers may point to the absence of broad-based wage pressures, and the depressed labor force participation rate, as evidence that, in the current environment, measures of the unemployment rate understate the amount of slack in the labor market. In addition, they may consider the slowing job gains in recent months and disappointing data on retail sales in September as signs of some loss of momentum in the economy. Overall, these policymakers may see average GDP growth during this economic recovery as having been lackluster, and judge that the already prolonged period of low inflation indicates that the economic expansion is not sufficiently robust to support further improvement in the labor market and raise inflation to 2 percent. Some policymakers may also point to the fact that a number of survey-based measures of longer-run inflation expectations have been clustering on the low end of their historical ranges, and that measures of inflation compensation are close to multiyear lows, as signs that the credibility of the FOMC's commitment to achieving 2 percent inflation is at risk.

Moreover, for some policymakers, mounting concerns about a slowdown in the global economy might have tilted to the downside their perception of the balance of risks to the outlook for the economic activity and the labor market. These policymakers may worry that deteriorating financial conditions and consumer confidence in China could cause a marked slowdown in real output growth throughout Asia, which would then lower the demand for U.S. exports and cause the dollar to appreciate. In fact, these policymakers may point to disappointing incoming data on economic activity in emerging markets and declines in commodity prices as a sign that global demand is already weakening. Additionally, these policymakers may fear a resurgence of financial stresses in Europe and beyond. As such, they might see the alternative scenarios "Emerging Market Economy Slump" or "Financial Turbulence" in the "Risks and Uncertainty" section of Tealbook A as encompassing some of the risks that they have in mind. If either scenario plays out, policymakers may judge that the Federal Reserve will need to provide greater policy accommodation in order to offset the likely adverse effects on the domestic economy. Participants might therefore favor including language as in the second paragraph of Alternative A, which indicates that, "in light of economic and financial developments abroad, the Committee sees the risks to the outlook for economic activity and the labor market as tilted somewhat to the downside."

For all the above reasons, some policymakers may see the unemployment rate falling below its longer-run normal level for a while as desirable to achieve the dual mandate and thus may want to offer a more stringent criterion for policy firming than

those in past FOMC statements and in Alternative B. Furthermore, they may support a statement like Alternative A, which emphasizes that the Committee "is prepared to use all tools necessary" to achieve its inflation objective within one to two years if "incoming information does not soon indicate that inflation is beginning to move back toward 2 percent."

No respondent to the Desk's Survey of Primary Dealers or its Survey of Market Participants anticipates that the Committee would indicate the possibility of greater accommodation. In response to a statement along the lines of Alternative A, investors would likely push out their expectations about the most probable date of the first increase in the target range for the federal funds rate; they would also likely revise down their expectations of how quickly the Committee will raise the target range thereafter. Longer-term real yields would likely decline, and equity prices and inflation compensation could rise. However, if investors see a statement like Alternative A as reflecting a downbeat assessment for global economic conditions, equity prices and inflation compensation might increase less than otherwise, or even fall.

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SEPTEMBER 2015 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. The Committee directs the Desk to maintain its policy of rolling over maturing Treasury securities into new issues and its policy of reinvesting principal payments on all agency debt and agency mortgage-backed securities in agency mortgage-backed securities. The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions. The System Open Market Account manager and the secretary will keep the Committee informed of ongoing developments regarding the System's balance sheet that could affect the attainment over time of the Committee's objectives of maximum employment and price stability.

DIRECTIVE FOR OCTOBER 2015 ALTERNATIVE A AND 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. The Committee directs the Desk to maintain its policy of rolling over maturing Treasury securities into new issues and its policy of reinvesting principal payments on all agency debt and agency mortgage-backed securities in agency mortgage-backed securities. The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions. The System Open Market Account manager and the secretary will keep the Committee informed of ongoing developments regarding the System's balance sheet that could affect the attainment over time of the Committee's objectives of maximum employment and price stability.

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IMPLEMENTATION NOTE AND DESK STATEMENT FOR OCTOBER 2015 ALTERNATIVE C

The draft directive for Alternative C, which raises the target range, is included in an implementation note, shown on the next page, that would be released with the FOMC's policy statement to communicate actions the Federal Reserve was taking to implement the Committee's decision.[1] This implementation note is the same as the note that was shown in the July Tealbook for Alternative C, except that the dates have been changed from July to October. (Struck-out text indicates language deleted from the current directive; bold-red-underlined text indicates language added to the current directive.) The Desk would release, separately, a statement regarding overnight reverse repurchase agreements; a draft of the Desk statement is shown on a following page.

[1] The July Tealbook was the first to include a draft implementation note for Alternative C, and that Tealbook included some explanatory information regarding the evolution of the text of the note since it was first proposed to the Committee in June (see the memo sent to the Committee on June 10, 2015, titled "Proposal for Communicating Details Regarding the Implementation of Monetary Policy at Liftoff and After" by Deborah Leonard and Gretchen Weinbach).

Implementation Note for October 2015 Alternative C

Release Date: October 28, 2015

Actions to Implement Monetary Policy

The Federal Reserve has taken the following actions to implement the monetary policy stance adopted and announced by the Federal Open Market Committee on October 28, 2015:

- The Board of Governors of the Federal Reserve System voted [unanimously] to raise the interest rate paid on required and excess reserve balances to [0.50] percent, effective October 29, 2015.
- As part of its policy decision, the Federal Open Market Committee voted to authorize and direct the Open Market Desk at the Federal Reserve Bank of New York, until instructed otherwise, to execute transactions in the System Open Market Account in accordance with the following domestic policy 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.~~ **Effective October 29, 2015,** the Committee directs the Desk to undertake open market operations as necessary to maintain ~~such conditions~~ **the federal funds rate in a target range of [¼ to ½] percent, including: (1) overnight reverse repurchase operations (and reverse repurchase operations with maturities of more than one day when necessary to accommodate weekend, holiday, or similar trading conventions) at an offering rate of [0.25] percent and in amounts limited only by the value of Treasury securities held outright in the System Open Market Account that are available for such operations; and (2) term reverse repurchase operations as authorized in the resolution on term RRP operations approved by the Committee at its March 17–18, 2015, meeting.**

  "The Committee directs the Desk to ~~maintain its policy of~~ **continue** rolling over maturing Treasury securities into new issues and ~~its policy of~~ **to continue** reinvesting principal payments on all agency debt and agency mortgage-backed securities in agency mortgage-backed securities. The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions." ~~The System Open Market Account manager and the secretary will keep the Committee informed of ongoing developments regarding the System's balance sheet that could affect the attainment over time of the Committee's objectives of maximum employment and price stability.~~

  More information regarding open market operations may be found on the Federal Reserve Bank of New York's website.[1]

- The Board of Governors of the Federal Reserve System voted [unanimously] to approve a [¼] percentage point increase in the primary credit rate to [1.00] percent, effective October 29, 2015. In taking this action, the Board approved requests submitted by the Boards of Directors of the Federal Reserve Banks of….

This information will be updated as appropriate to reflect decisions of the Federal Open Market Committee or the Board of Governors regarding details of the Federal Reserve's operational tools and approach used to implement monetary policy.

[1] When this document is released to the public, the blue text will be a link to the relevant page on the FRBNY website.

Alternatives

Authorized for Public Release

Alternatives

Desk Statement for October 2015 Alternative C

Release Date: October 28, 2015

Statement Regarding Overnight Reverse Repurchase Agreements

During its meeting on October 27-28, 2015, the Federal Open Market Committee (FOMC) authorized and directed the Open Market Trading Desk (the Desk) at the Federal Reserve Bank of New York, effective October 29, 2015, to undertake open market operations as necessary to maintain the federal funds rate in a target range of ¼ to ½ percent, including overnight reverse repurchase operations (ON RRPs) at an offering rate of 0.25 percent and in amounts limited only by the value of Treasury securities held outright in the System Open Market Account (SOMA) that are available for such operations.

To determine the value of Treasury securities available for such operations, several factors need to be taken into account, as not all Treasury securities held outright in the SOMA will be available for use in ON RRP operations. First, some of the Treasury securities held outright in the SOMA are needed to conduct reverse repurchase agreements with foreign official and international accounts.[1] Second, some Treasury securities are needed to support the securities lending operations[2] conducted by the Desk. Additionally, buffers are needed to provide for possible changes in demand for these activities and for possible changes in the market value of the SOMA's holdings of Treasury securities.

After estimating the effects of these factors, the Desk anticipates that around $2 trillion of Treasury securities will be available for ON RRP operations to fulfill the FOMC's domestic policy directive.[3] In the highly unlikely event that the value of bids received in an ON RRP operation exceeds the amount of available collateral, the Desk will allocate awards using a single-price auction based on the "stop-out" rate at which the overall size limit is reached, with all bids below this rate awarded in full at the stop-out rate and all bids at this rate awarded on a pro rata basis at the stop-out rate.

The operations will be open to all eligible RRP counterparties, will settle same-day, and will have an overnight tenor unless a longer term is warranted to accommodate weekend, holiday, and similar trading conventions. Each day, individual counterparties are permitted to submit one proposition in a size not to exceed $30 billion and at a rate not to exceed the specified offering rate. The operations will take place from 12:45 p.m. to 1:15 p.m. (Eastern Time). Any changes to these terms will be announced with at least one business day's prior notice on the New York Fed's website.

The results of these operations will be posted on the New York Fed's website. The outstanding amount of RRPs is reported on the Federal Reserve's H.4.1 statistical release as a factor absorbing reserves in Table 1 and as a liability item in Tables 5 and 6.

[1] The outstanding amount of RRPs with foreign official and international accounts is reported as a factor absorbing reserves in Table 1 in the Federal Reserve's H.4.1 statistical release and as a liability item in Tables 5 and 6 of that release.

[2] When this document is released to the public, the blue text will be a link to the relevant page on the FRBNY website.

[3] This amount will be reduced by any term RRP operations outstanding at the time of each ON RRP operation.

Projections

Balance Sheet, Income, and Monetary Base

The staff has developed a projection of the Federal Reserve's balance sheet and income statement that is broadly consistent with the monetary policy assumptions incorporated in the staff's forecast presented in Tealbook A. We assume that the Committee will decide to commence policy normalization at its December meeting and that reinvestments of maturing Treasury securities and the reinvestment of principal received on agency debt and agency MBS will continue through the second quarter of 2016. Once reinvestments cease, the SOMA portfolio shrinks through redemptions of maturing Treasury and agency debt securities as well as paydowns of principal from agency MBS. Regarding the Federal Reserve's use of its policy normalization tools, we 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, and that term deposits and term RRPs are not used during the normalization period.[1,2] The bullets below highlight some key features of the projections for the Federal Reserve's balance sheet and income statement under these assumptions.

- ***Balance sheet.*** As shown in the exhibit "Total Assets and Selected Balance Sheet Items" and in the table that follows, the size of the portfolio is normalized in the second quarter of 2021, nearly unchanged from the September Tealbook.[3] Once reserve balances reach their steady-state level, total assets stand at $2.4 trillion, with about $2.2 trillion in total SOMA securities holdings. Total assets and SOMA holdings increase thereafter, keeping pace with growth in currency in circulation and Federal Reserve Bank capital and surplus.

- ***Federal Reserve remittances.*** The exhibit "Income Projections" shows the implications of the balance sheet projection and interest rate assumptions for

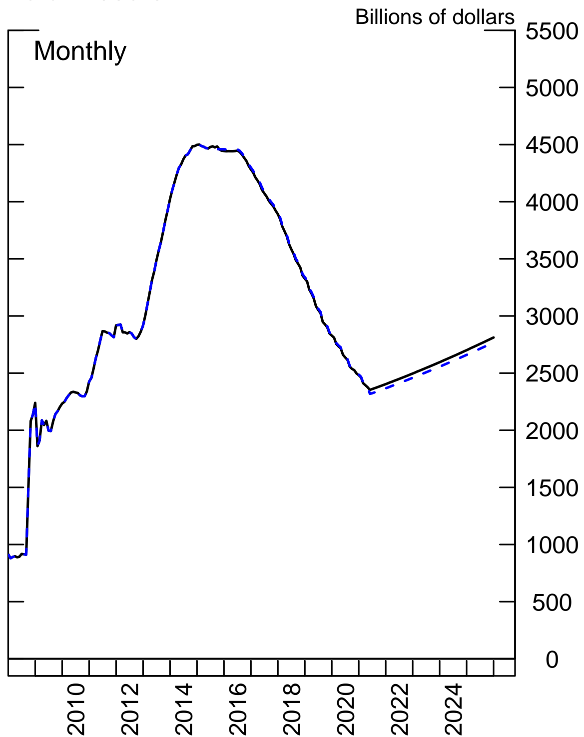
[1] Use of term RRPs or term deposits would result in a shift in the composition of Federal Reserve liabilities—a decline in reserve balances and an equal increase in term RRPs or term deposits—but would not produce an overall change in the size of the balance sheet.

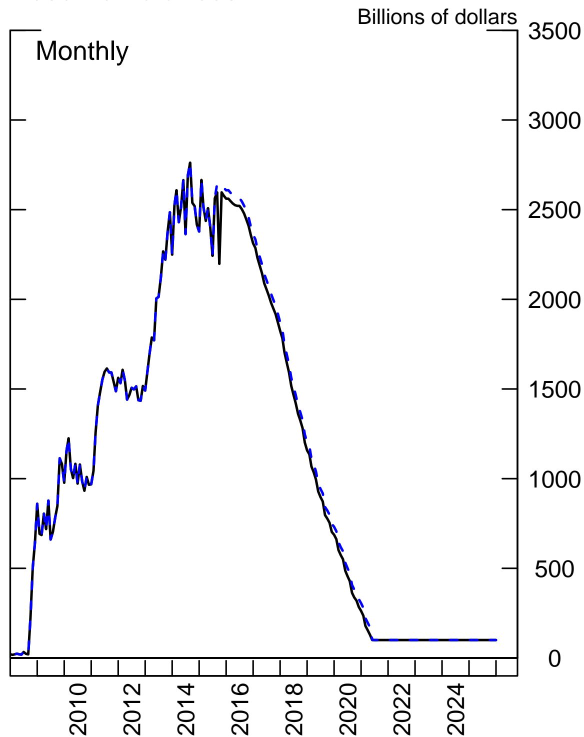
[2] We also assume that RRPs associated with foreign official and international accounts remain around (their September 30, 2015 level of) $191 billion throughout the projection period.

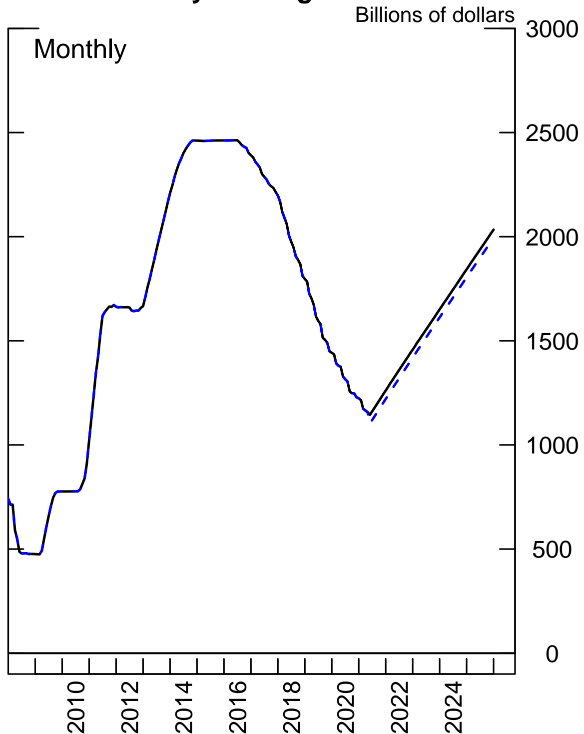
[3] The size of the balance sheet is considered normalized when reserve balances reach an assumed $100 billion steady-state level.

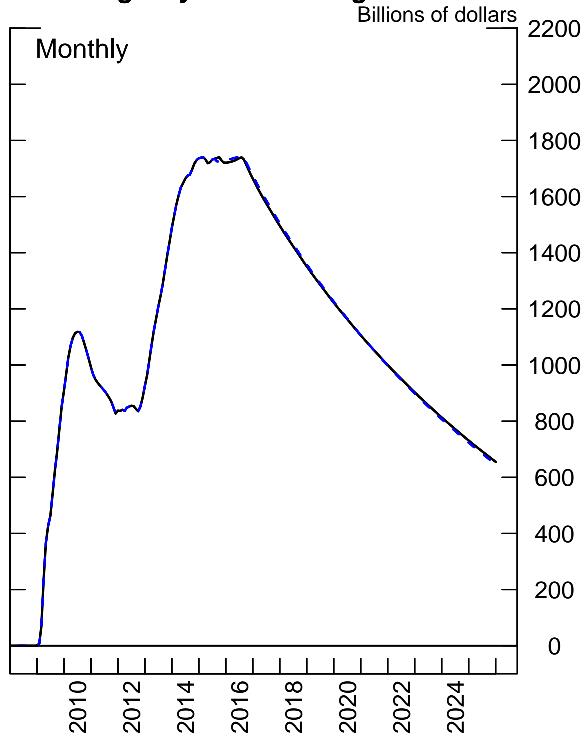
Total Assets and Selected Balance Sheet Items

October Tealbook — September Tealbook









Projections

Federal Reserve Balance Sheet
End-of-Year Projections -- October Tealbook
(Billions of dollars)

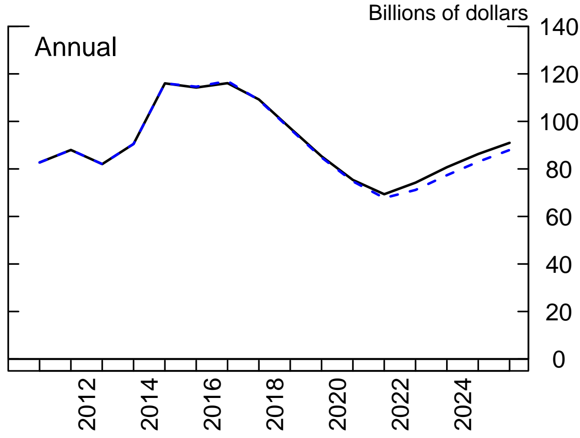
	Sep 30, 2015	2015	2017	2019	2021	2023	2025
Total assets	4,484	4,444	3,891	2,829	2,404	2,596	2,812
Selected assets							
Loans and other credit extensions*	3	0	0	0	0	0	0
Securities held outright	4,238	4,216	3,698	2,666	2,263	2,466	2,691
U.S. Treasury securities	2,462	2,462	2,198	1,442	1,261	1,651	2,034
Agency debt securities	35	33	4	2	2	2	2
Agency mortgage-backed securities	1,741	1,721	1,495	1,222	999	813	655
Unamortized premiums	194	189	151	117	93	81	71
Unamortized discounts	-17	-17	-13	-10	-8	-7	-6
Total other assets	47	48	48	48	48	48	48
Total liabilities	4,426	4,385	3,822	2,742	2,295	2,457	2,637
Selected liabilities							
Federal Reserve notes in circulation	1,342	1,370	1,544	1,702	1,841	2,004	2,184
Reverse repurchase agreements	641	291	291	191	191	191	191
Deposits with Federal Reserve Banks	2,435	2,718	1,982	843	256	256	256
Reserve balances held by depository institutions	2,198	2,561	1,825	687	100	100	100
U.S. Treasury, General Account	199	150	150	150	150	150	150
Other deposits	38	6	6	6	6	6	6
Interest on Federal Reserve Notes due to U.S. Treasury	2	0	0	0	0	0	0
Total capital	59	59	68	86	109	138	175

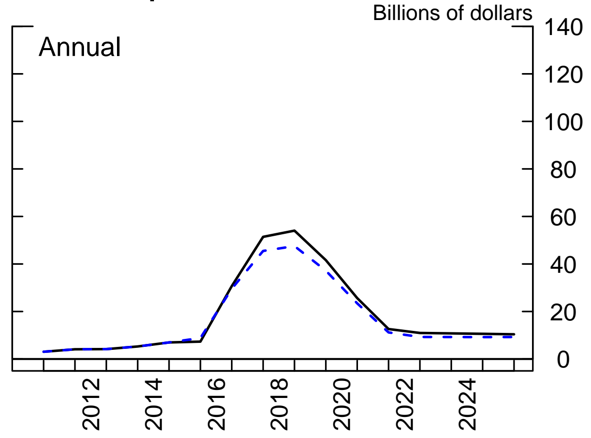
Source: Federal Reserve H.4.1 statistical releases and staff calculations.
Note: Components may not sum to totals due to rounding.
*Loans and other credit extensions includes primary, secondary, and seasonal credit; central bank liquidity swaps; and net portfolio holdings of Maiden Lane LLC.

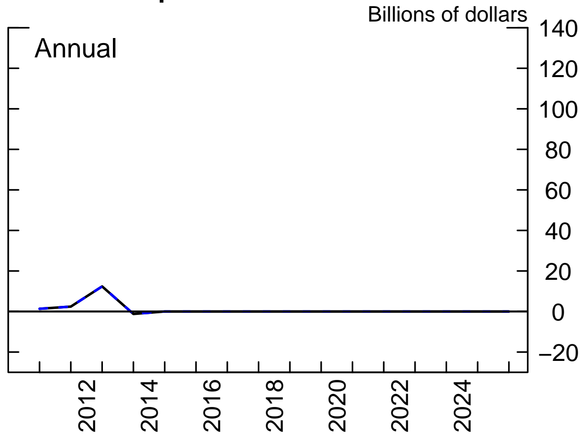
Projections

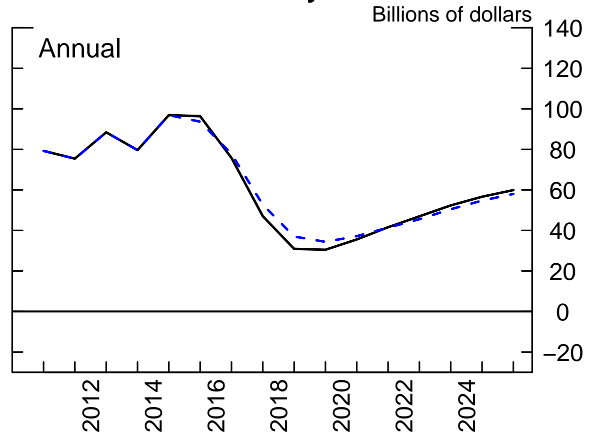
Income Projections

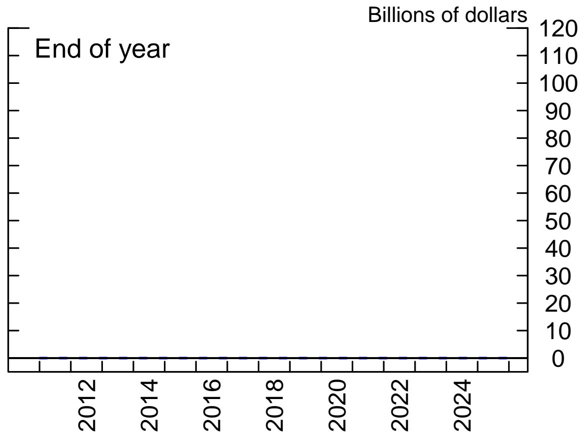
October Tealbook — September Tealbook

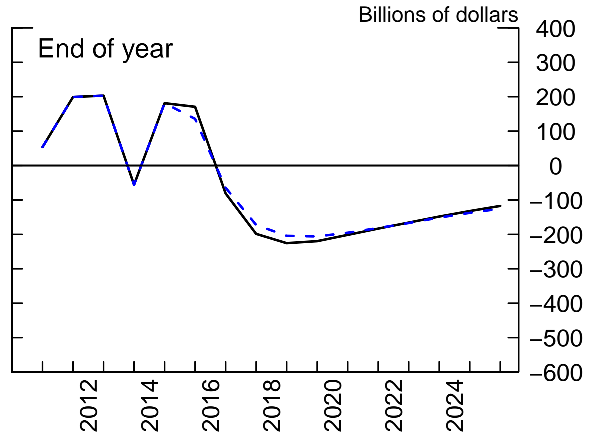












Projections

Federal Reserve income.[4] Remittances to the Treasury are projected to be about $98 billion this year, close to their $100 billion peak in 2014, and then to decline further over the next few years. Annual remittances reach their trough of roughly $30 billion in 2019; no deferred asset is recorded.[5] The Federal Reserve's cumulative remittances from 2009 through 2025 are about $1 trillion, approximately $250 billion above the staff estimate of the amount that would have been observed had there been no asset purchase programs; the projection for cumulative remittances is nearly unchanged from the September Tealbook projection.[6]

- ***Unrealized gains or losses.*** 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 $165 billion as of the end of September.[7] Reflecting the assumed rise in longer-term interest rates over the next several years, the position is projected to shift to an unrealized loss by late 2016 and record a peak unrealized loss of about $225 billion in 2018, little changed from the September Tealbook. At the end of 2018, roughly $100 billion of the unrealized losses can be attributed to the portfolio of Treasury securities and $125 billion to the portfolio of agency MBS. The unrealized loss position then narrows through 2025, as the value of securities acquired under the large-scale asset purchase programs returns to par when these securities approach maturity and then mature, and new securities are added to the portfolio at par.

[4] We assume the interest rate paid on reserve balances remains at 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. Moreover, we assume that the effective federal funds rate will average about 15 basis points below the interest rate paid on reserve balances and about 10 basis points above the ON RRP rate.

[5] 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 for interest on Federal Reserve notes would be recorded.

[6] The staff estimate of remittances had there been no asset purchase programs is based on a linear interpolation from 2006 to 2025 of actual 2006 income and projected 2025 income.

[7] The Federal Reserve reports the level and the change in the quarter-end net unrealized gain/loss position of the SOMA portfolio to the public in the "Federal Reserve Banks Combined Quarterly Financial Reports," 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
(Basis Points)

Date	October Tealbook	September Tealbook
Quarterly Averages		
2015:Q4	-108	-109
2016:Q1	-103	-104
Q2	-99	-100
Q3	-94	-95
Q4	-90	-91
2017:Q4	-74	-75
2018:Q4	-62	-62
2019:Q4	-52	-52
2020:Q4	-44	-44
2021:Q4	-37	-37
2022:Q4	-32	-32
2023:Q4	-26	-26
2024:Q4	-20	-20
2025:Q4	-15	-15

- ***Term premium effects.*** As shown in the table "Projections for the 10-Year Treasury Term Premium Effect," the Federal Reserve's elevated stock of longer-term securities is estimated to hold down the term premium embedded in the 10-year Treasury yield in the fourth quarter of 2015 by 108 basis points. Over the next couple of years, the estimated term premium effect diminishes at a pace of about 5 basis points per quarter, reflecting in part the projected shrinking of the portfolio. This projection is roughly unchanged from the September Tealbook.

- ***Monetary base.*** As shown in the final table, "Projections for the Monetary Base," once policy firming begins in the fourth quarter of 2015, the monetary base still increases during that quarter, but shrinks starting from the third quarter of 2016 through the second quarter of 2021, primarily because redemptions of securities generate corresponding reductions in reserve balances. Starting around mid-2021, after reserve balances are assumed to have stabilized at $100 billion, the monetary base begins to expand in line with the increase in currency in circulation.[8]

[8] The projection for the monetary base depends critically on the FOMC's choice of tools during normalization. In this projection, a steady $100 billion take-up in an ON RRP facility is assumed, and therefore, the level of the monetary base is lower than it would be absent this take-up until 2019 (when the facility is assumed to be phased out). The projected growth rate of the monetary base, however, is generally unaffected by this assumption. If the FOMC employs additional reserve-draining tools during normalization or ON RRP take-up is larger than assumed, the projected level of reserve balances and the monetary base could decline quite markedly.

Projections for the Monetary Base
(Percent change, annual rate; not seasonally adjusted)

Date	October Tealbook	September Tealbook
Quarterly		
2015:Q4	39.0	4.6
2016:Q1	5.3	-0.2
Q2	0.0	-0.1
Q3	-2.1	-2.5
Q4	-8.0	-8.4
Annual		
2017	-9.3	-10.2
2018	-14.3	-15.9
2019	-13.1	-14.8
2020	-12.4	-14.4
2021	-5.1	-8.0
2022	3.2	3.9
2023	3.3	4.0
2024	3.4	4.0
2025	3.4	4.0

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

MONEY

M2 is expected to increase more rapidly than nominal GDP in the fourth quarter of 2015, in part reflecting a large, albeit temporary, surge in deposit balances related to debt ceiling concerns.[9] The contour of the path for money growth thereafter is about unchanged relative to the projection in the September Tealbook: We continue to project that M2 will contract for several quarters in response to increases in the opportunity cost of holding money (M2OC) related to the assumed increase in the target range for the federal funds rate. This restraint is expected to continue to hold M2 growth below that of nominal GDP in 2017 and 2018, although the restraint is projected to diminish over this horizon. In contrast with the September projection, however, we now expect that the rise in M2OC will not begin to notably restrain money demand until the beginning of 2016, in line with the later projected timing of liftoff in the current forecast.

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

Quarterly			
	2015:	Q3	6.2
		Q4	6.2
	2016:	Q1	-0.5
		Q2	-4.3
		Q3	-3.0
		Q4	-0.1
	2017:	Q1	1.0
		Q2	1.2
		Q3	1.4
		Q4	1.9
	2018:	Q1	2.1
		Q2	2.4
		Q3	2.5
		Q4	2.9
Annual			
		2015	6.3
		2016	-2.0
		2017	1.4
		2018	2.5

Note: This forecast is consistent with nominal GDP and interest rates in the Tealbook forecast. Actual data through October 12, 2015; projections thereafter.
*Quarterly growth rates are computed from quarterly averages. Annual growth rates are calculated from quarterly averages using the change from fourth quarter of previous year to fourth quarter of year indicated.

[9] This projected rise in deposits stemming from debt ceiling concerns is based on the deposit flows that are estimated to have been associated with the 2013 debt ceiling episode. See Tealbook A box "Debt Ceiling Update and Review of 2013 Episode" for additional detail on these dynamics.

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Abbreviations

ABS	asset-backed securities
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
EDO	Estimated, dynamic, optimization-based model
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
GSIBs	globally systemically important banking organizations
HQLA	high-quality liquid assets
ISM	Institute for Supply Management
LIBOR	London interbank offered rate
MBS	mortgage-backed securities
MMFs	money market funds
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
TBA	to be announced (for example, TBA market)
TGA	U.S. Treasury’s General Account
TIPS	Treasury inflation-protected securities
TPE	Term premium effects