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.

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

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Report to the FOMC on Economic Conditions and Monetary Policy

Book B

Monetary Policy: Strategies and Alternatives

July 26, 2012

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

Monetary Policy Strategies

The top panel of the first exhibit, "Policy Rules and the Staff Projection," provides near-term prescriptions for the federal funds rate from five selected policy rules: the Taylor (1993) rule, the Taylor (1999) rule, the outcome-based rule, the first-difference rule, and the nominal income targeting rule.[1] These prescriptions take as given the staff's baseline projections for real activity and inflation in the second half of this year. Medium-term prescriptions derived from dynamic simulations of each rule are discussed below. Because the revisions to the staff outlook for inflation and the output gap are small, the near-term and medium-term prescriptions from these policy rules—as well as the prescriptions from optimal control policy that are discussed below—are similar to those reported in the June Tealbook.

As shown in the left-hand columns, the near-term prescriptions from all but one of the rules keep the federal funds rate at the effective lower bound in both the third and fourth quarters of this year. The exception is the Taylor (1993) rule, which embeds a relatively small response to the output gap; it prescribes a funds rate target of about 150 basis points for the second half of the year. The right-hand columns display the rule prescriptions that arise in the absence of the lower-bound constraint. The outcome-based rule and the first-difference rule prescribe fund rates that are somewhat below zero for the next two quarters, whereas the Taylor (1999) rule and the nominal income targeting rule prescribe rates well below zero. The more accommodative prescriptions under these two rules reflect their stronger contemporaneous response to the staff estimate of a sizable negative output gap. The Tealbook baseline projections for the output gap and inflation are shown in the bottom half of the exhibit, titled "Key Elements of the Staff Projection." Compared with the previous Tealbook, the staff outlook for the output gap is slightly wider in 2012 and 2013, but little changed thereafter; the outlook for inflation is about the same as last time. The slight widening in the near-term output gap projection has nudged down the near-term prescriptions from the unconstrained rules a bit.

The first exhibit also reports the Tealbook-consistent estimate of short-run r^*, which is generated by the FRB/US model when conditioned on the staff's outlook for the economy. The short-run r^* estimate corresponds to the real federal funds rate that, if maintained, would return output to its potential in twelve quarters. With the staff's

[1] Details for each rule appear in Explanatory Note A.

Strategies

Policy Rules and the Staff Projection

Near-Term Prescriptions of Selected Policy Rules

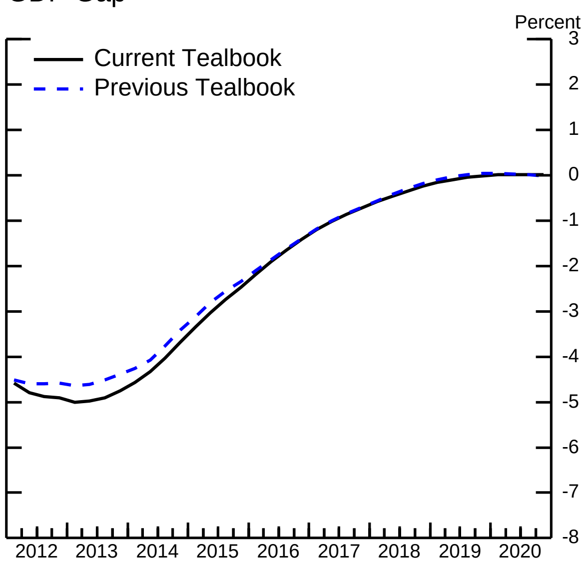
	Constrained Policy		Unconstrained Policy	
	2012Q3	2012Q4	2012Q3	2012Q4
Taylor (1993) rule	**1.50**	**1.55**	**1.50**	**1.55**
Previous Tealbook	*1.52*	*1.59*	*1.52*	*1.59*
Taylor (1999) rule	**0.13**	**0.13**	**-0.88**	**-0.84**
Previous Tealbook	*0.13*	*0.13*	*-0.73*	*-0.64*
Outcome-based rule	**0.13**	**0.13**	**-0.02**	**-0.21**
Previous Tealbook	*0.13*	*0.13*	*0.04*	*-0.08*
First-difference rule	**0.13**	**0.13**	**-0.15**	**-0.37**
Previous Tealbook	*0.13*	*0.13*	*-0.07*	*-0.24*
Nominal income targeting rule	**0.13**	**0.13**	**-0.49**	**-0.99**
Previous Tealbook	*0.13*	*0.13*	*-0.41*	*-0.86*

Memo: Equilibrium and Actual Real Federal Funds Rate

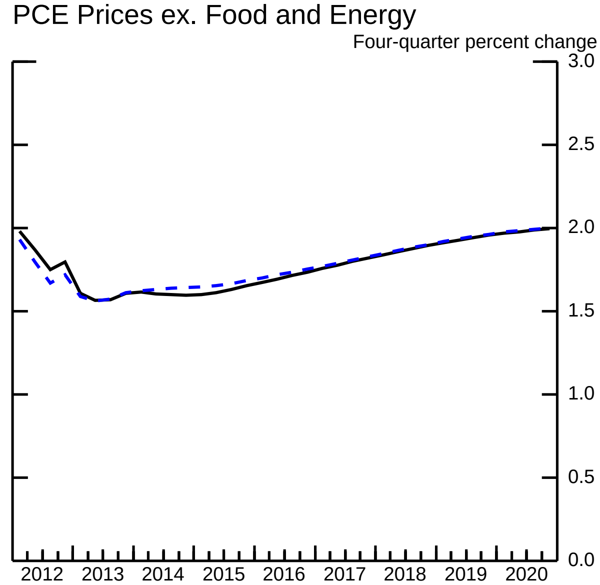
	Current Tealbook	*Current Quarter Estimate as of Previous Tealbook*	*Previous Tealbook*
Tealbook-consistent FRB/US r^* estimate	-2.79	*-2.71*	*-2.93*
Actual real federal funds rate	-1.73		*-1.79*

Key Elements of the Staff Projection

GDP Gap



PCE Prices ex. Food and Energy



Note: Estimates of r^* may change at the beginning of a quarter even when the staff outlook is unchanged because the twelve-quarter horizon covered by the calculation has rolled forward one quarter. Therefore, whenever the Tealbook is published early in the quarter, the memo includes a third column labeled "Current Quarter Estimate as of Previous Tealbook."

medium-term projection for the output gap little changed since the June Tealbook, the current-quarter estimate of r^* remains near –2.75 percent, well below the estimated actual real federal funds rate.

The second exhibit, "Policy Rule Simulations," reports dynamic simulations using the FRB/US model that incorporate the endogenous responses of inflation and the output gap to the different paths of the federal funds rate prescribed by the constrained versions of the five policy rules described above. The model is adjusted to match the staff's baseline outlook for the economy and then simulated using each of the respective policy rules. Each rule is implemented from now onward, under the assumption that private agents fully understand and anticipate the implications of each rule for future real activity, inflation, and interest rates.[2] For comparison, the exhibit also displays the Tealbook baseline paths, which are conditioned on the prescriptions of the outcome-based rule.

The Tealbook baseline path and the simulated outcomes under the other four rules are similar to those shown in June. In the Tealbook baseline, the federal funds rate is at the effective lower bound until the fourth quarter of 2014, one quarter later than in the June Tealbook, and then increases gradually to just above 4 percent by the end of the decade. The Taylor (1999) rule leads to a path for the federal funds rate that nearly replicates the baseline path.[3] The Taylor (1999) rule and the outcome-based policy rule therefore produce very similar economic conditions, characterized by a slow convergence of the unemployment rate to the staff's estimate of the effective natural rate of unemployment by 2020.[4] In addition, inflation, after declining initially to below 1.5

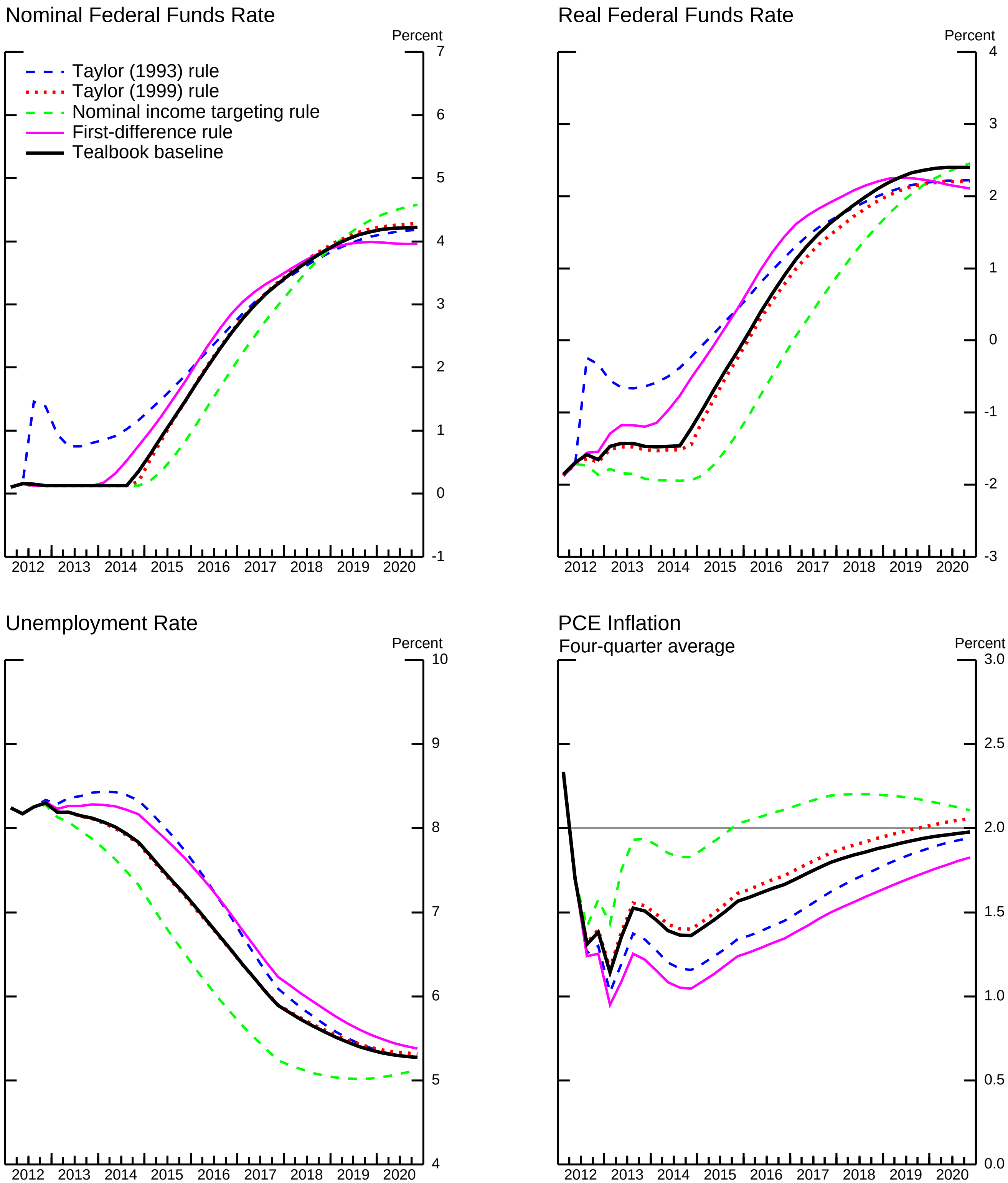
[2] The staff's baseline forecast incorporates the effects of the large-scale asset purchase programs that the FOMC undertook in past years, as well as the effects of the ongoing maturity extension program and the modifications to the Federal Reserve's reinvestment policies that were announced last September. Via this procedure, the policy rule simulations incorporate the effects of these balance sheet policies; the rules themselves are not directly adjusted for the effects of balance sheet policies.

[3] The outcome-based rule and the Taylor (1999) rule have similar longer-run properties, especially with respect to the response to the level of the output gap; however, their short-run responses are typically more distinct. Currently, two offsetting forces lead to the similar funds rate prescriptions: On the one hand, the outcome-based rule includes a term for the change in the output gap which, because of the projected pickup in output growth in 2014 and beyond, tends to prescribe faster increases in the funds rate relative to the Taylor (1999) rule. On the other hand, the outcome-based rule includes lags of the federal funds rate whose presence tends to slow the pace of increase in the funds rate. Currently, these two forces are almost precisely offsetting each other, leading, on net, to similar funds rate prescriptions.

[4] The staff's estimate of the effective natural rate of unemployment declines from 6.2 percent in the third quarter of 2012 to 5.25 percent by the end of 2017.

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.

percent—due in part to the transitory effects of energy price movements—gradually increases to the 2 percent goal.[5]

Under the nominal income targeting rule, the initial tightening of the funds rate occurs at the beginning of 2015, and policy remains more accommodative than under the other rules for several years thereafter. This more accommodative policy is reflected in a more rapid decline in unemployment with inflation hovering near 2 percent from mid-2013 onward.

As both the Taylor (1993) rule and the first-difference rule lead to increases in the federal funds rate that occur earlier than those under the other rules, these two rules are associated with a higher path for the unemployment rate and lower inflation through the end of the decade. As noted above, because the Taylor (1993) rule does not respond strongly to the level of the output gap, this rule implies an immediate departure of the funds rate from its effective lower bound; the prescribed 135 basis point increase in the funds rate causes real activity and inflation to slow relative to the baseline, prompting a partial reversal of the initial rate hike. While the first-difference rule does not prescribe an increase in the funds rate until the second quarter of 2014, it implies policy rates for the following years that run a bit higher than under the other rules. Reflecting the forward-looking price- and wage-setting behavior assumed in these simulations, the Taylor (1993) and the first-difference rule thus generate fairly similar outcomes for inflation, despite the differences in their funds rate prescriptions.

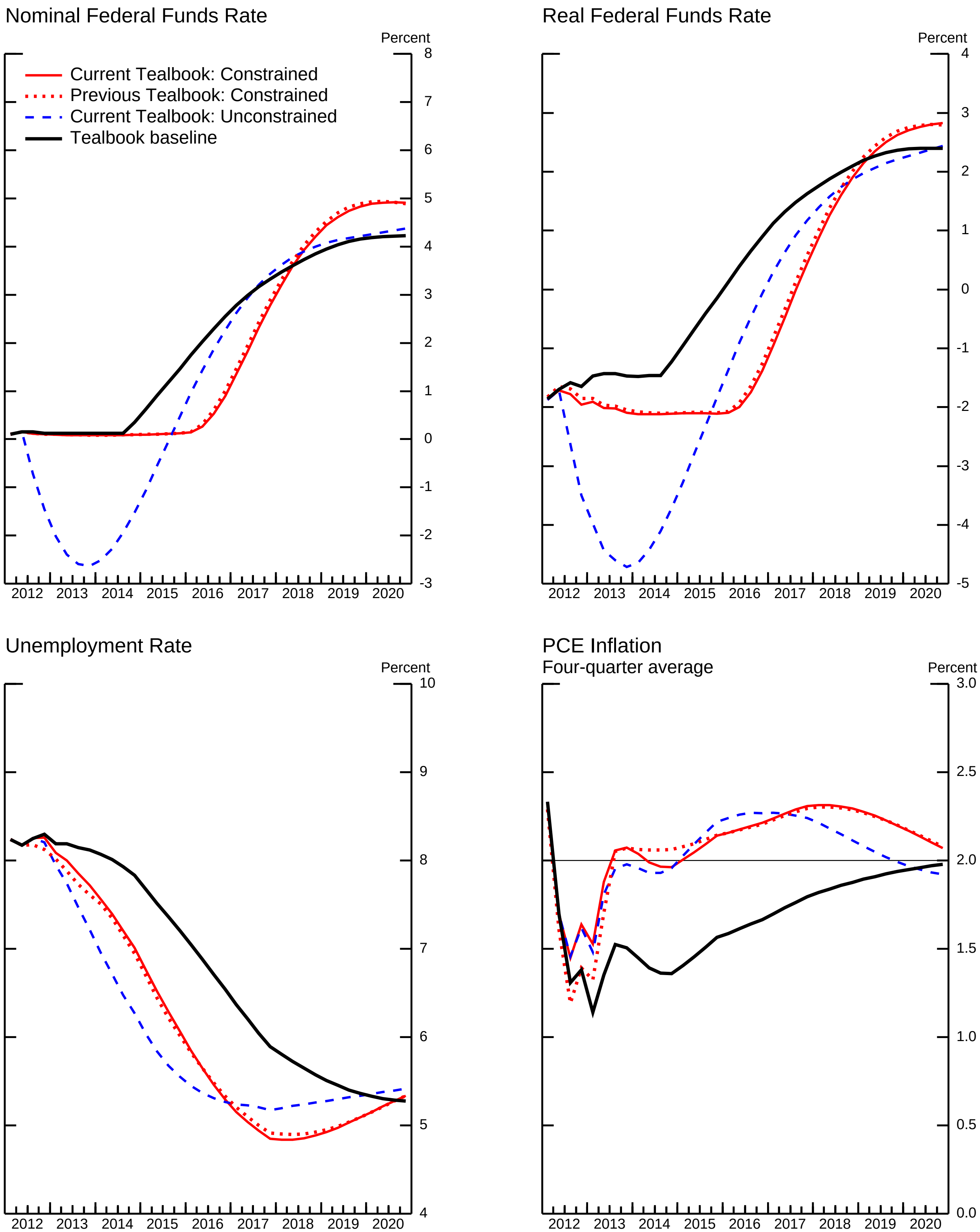
As shown in the third exhibit, "Constrained vs. Unconstrained Optimal Control Policy," the largely unchanged outlook for real activity and inflation imply that funds rate prescriptions from optimal control simulations of the FRB/US model are very similar to those reported in June.[6] In these simulations, policymakers are assumed to place equal

[5] If the Taylor (1999) rule were modified to incorporate a response to the lagged federal funds rate, the prescribed funds rate would rise more slowly, implying a more accommodative policy stance than either the outcome-based policy rule or the Taylor (1999) rule without lagged adjustment. The outcomes under this "inertial Taylor rule" are similar to the nominal income targeting rule except that the unemployment path is slightly higher and there is a bit more overshooting of inflation in the second half of the decade. The "inertial Taylor rule" is discussed more extensively in the memo by Christopher Erceg, Jon Faust, Michael Kiley, Jean-Philippe Laforte, David López-Salido, Steve Meyer, Edward Nelson, David Reifschneider, and Robert Tetlow titled "An Overview of Simple Policy Rules and Their Use in Policymaking in Normal Times and Under Current Conditions," sent to the Committee on July 18, 2012.

[6] The optimal policy simulations incorporate the assumptions about underlying economic conditions used in the staff's baseline forecast, including the assumptions about balance sheet policy described above.

Strategies

Constrained vs. Unconstrained Optimal Control Policy



weights on keeping headline PCE inflation close to the Committee's 2 percent goal, on keeping the unemployment rate close to the staff's estimate of the effective natural rate of unemployment, and on minimizing changes in the federal funds rate. The simulations indicate that, with the federal funds rate constrained to remain positive, the optimal path for the federal funds rate does not rise above the effective lower bound until the second quarter of 2016, unchanged from the path reported in the June Tealbook.[7]

The constrained optimal control policy keeps the funds rate lower for longer than any of the other policy rules discussed above, and this policy would promote a faster pace of economic recovery than in the staff's baseline outlook, in addition to keeping inflation close to the Committee's goal of 2 percent. In this simulation, the gap between the unemployment rate and the staff's estimate of the effective natural rate of unemployment is closed by mid-2016, and the unemployment rate subsequently runs slightly below its natural rate for a few years. Inflation initially exhibits a marginally smaller decline than in the Tealbook baseline before increasing to the 2 percent objective by mid-2013 and then overshooting slightly, peaking at 2.3 percent in 2018 and gradually returning to the 2 percent objective thereafter. The more rapid convergence to the Committee's assumed objectives (and the subsequent temporary overshooting) occur because policymakers respond to the lower bound constraint by promising to keep interest rates low for an extended period of time. As this policy is assumed to be completely credible, it boosts inflation expectations and reduces real interest rates during the first years of the simulation.

If the nominal federal funds rate could fall below zero, the funds rate, under the optimal unconstrained policy, would decrease to −2.6 percent in the fourth quarter of 2013 and return to positive territory by the end of 2015. Under these conditions, the unemployment rate would decline more rapidly than under the optimal constrained policy and close the gap with the estimated natural rate of unemployment by early 2015. Inflation would rise back to 2 percent by mid-2013, a pattern much like that in the constrained simulation. In subsequent years, inflation would slightly overshoot the 2 percent objective—but less persistently than in the constrained case—moving up to

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

2.25 percent by mid-decade before returning to the 2 percent mark by the beginning of 2020.

The optimal control simulations discussed above assume that policymakers can credibly commit to future policy actions, which constrains the choices of future policymakers. If instead, policymakers lack the ability to commit (that is, they must set policy under discretion), their ability to manage private sector expectations of inflation and other variables would be greatly limited because they cannot bind future policymakers to carry out their plan. Under such circumstances, monetary policy would be less stimulative than under commitment, and the federal funds rate would depart from the effective lower bound in the third quarter of 2015 (not shown), three quarters earlier than in the commitment case depicted in the exhibit. Accordingly, the unemployment rate would decline more slowly, and inflation would rise more gradually back to the 2 percent goal.

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

Outcomes under Alternative Policies

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

Measure and scenario	2012 H1	2012 H2	2013	2014	2015	2016
Real GDP						
Extended Tealbook baseline	1.4	1.6	2.1	3.2	3.6	3.5
Taylor (1993)	1.4	1.3	1.5	2.9	3.7	3.7
Taylor (1999)	1.4	1.6	2.1	3.2	3.6	3.4
First-difference	1.4	1.5	1.7	2.9	3.5	3.5
Nominal income targeting	1.4	1.9	2.7	3.7	3.9	3.5
Constrained optimal control	1.4	2.0	3.0	4.0	4.2	3.6
Unemployment rate[1]						
Extended Tealbook baseline	8.2	8.3	8.1	7.8	7.2	6.5
Taylor (1993)	8.2	8.3	8.4	8.3	7.7	6.9
Taylor (1999)	8.2	8.3	8.1	7.8	7.2	6.5
First-difference	8.2	8.3	8.3	8.2	7.6	7.0
Nominal income targeting	8.2	8.3	7.9	7.3	6.5	5.8
Constrained optimal control	8.2	8.3	7.7	7.0	6.1	5.3
Total PCE prices						
Extended Tealbook baseline	1.6	1.1	1.5	1.4	1.6	1.7
Taylor (1993)	1.6	1.0	1.3	1.2	1.3	1.5
Taylor (1999)	1.6	1.2	1.5	1.4	1.6	1.7
First-difference	1.6	0.9	1.2	1.0	1.2	1.3
Nominal income targeting	1.6	1.5	1.9	1.8	2.0	2.1
Constrained optimal control	1.6	1.6	2.1	2.0	2.1	2.2
Core PCE prices						
Extended Tealbook baseline	2.1	1.5	1.6	1.6	1.7	1.7
Taylor (1993)	2.1	1.4	1.4	1.4	1.4	1.5
Taylor (1999)	2.1	1.6	1.6	1.6	1.7	1.8
First-difference	2.1	1.3	1.3	1.3	1.3	1.4
Nominal income targeting	2.1	1.9	2.0	2.1	2.1	2.2
Constrained optimal control	2.1	2.1	2.2	2.2	2.2	2.3
Federal funds rate[1]						
Extended Tealbook baseline	0.2	0.1	0.1	0.4	1.5	2.6
Taylor (1993)	0.2	1.4	0.8	1.2	1.9	2.7
Taylor (1999)	0.2	0.1	0.1	0.2	1.5	2.6
First-difference	0.2	0.1	0.1	0.8	1.8	2.9
Nominal income targeting	0.2	0.1	0.1	0.1	0.8	2.0
Constrained optimal control	0.2	0.1	0.1	0.1	0.1	0.9

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

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Monetary Policy Alternatives

This Tealbook presents three policy alternatives—labeled A, B, and C—for the Committee's consideration. As always, the Committee could blend elements of the draft statements to construct its desired statement.

The alternatives differ in their characterization of the incoming data. The draft statements for Alternatives A and B begin by noting that "economic activity decelerated somewhat over the first half of this year." In contrast, Alternative C offers the more upbeat depiction that "the economy has been expanding moderately this year." Alternatives A and B observe that employment growth has been slow in recent months and note that the unemployment rate remains elevated. Alternative C does not describe unemployment as elevated; instead, it points to further gains in employment. Alternatives A and B note, as in the previous statement, that business fixed investment has "continued to advance" but that household spending "appears to be rising at a somewhat slower pace than earlier in the year." Alternative C simply states that private domestic demand has continued to advance. Alternatives A and B remark, as in the previous statement, that the housing sector remains depressed, while Alternative C drops this reference. With respect to prices, Alternatives B and C mention the recent decline in inflation and attribute it mainly to lower prices of crude oil and gasoline. Alternative A says that inflation has been "subdued" in recent months. Each statement notes that longer-term inflation expectations have remained stable.

All three alternatives contain the same characterization of the medium-term outlook for real activity as the June statement, indicating that the Committee expects economic growth to be "moderate over coming quarters and then to pick up very gradually." The draft statements continue to highlight the downside risks to the outlook from strains in global financial markets; they also offer the option of pointing to downside risks stemming from issues relating to U.S. fiscal policy. Some participants may see the fiscal risks as likely to increase as the "fiscal cliff" at the end of the year approaches, and so want to note them directly in the statement for this meeting. However, others may want to avoid involving the Committee in fiscal debates at this time and also may be concerned that the fiscal issues will not be clearly resolved for some time, making the reference in the statement difficult to remove at a future meeting. With respect to the outlook for inflation, Alternatives A and B retain the language indicating that the Committee expects that inflation over the medium term will "run at or below the rate that it judges most consistent with its dual mandate," while Alternative C includes a projection that inflation over the medium term will run at "about" the mandate-consistent level.

The alternatives provide different options regarding balance sheet policies. Alternative A offers the Committee a choice between two new large-scale asset purchase programs. The first reflects an incremental, open-ended approach, calling for the purchase of $45 billion of longer-term Treasury securities per month and $30 billion of agency mortgage-backed securities (MBS) per month and continuing at least until the Committee observes sustained improvement in labor market conditions, provided that projected medium-term inflation is close to target and longer-term inflation expectations remain stable. The second is discrete in nature, with purchases of $600 billion of longer-term Treasury securities and $400 billion of agency MBS by the end of the third quarter of 2013 at a combined pace of about $75 billion per month.[1] Under either version of Alternative A, the Committee would end the maturity extension program (MEP) and reinstate the policy of rolling over maturing Treasury securities at auction. In contrast, Alternative B and Alternative C would simply continue the MEP through year-end, as announced in June, and maintain the Committee's existing policies of reinvesting principal payments on agency debt and agency MBS and redeeming maturing Treasury securities.

Under all three alternatives, the Committee would maintain the 0 to ¼ percent target range for the federal funds rate. The B version of the statement offers the option of extending the anticipated period of exceptionally low federal funds rates to mid-2015. Alternative A extends the expected date of policy liftoff to at least mid-2015; it also alters the forward guidance by replacing the specific reference to "low rates of resource utilization and a subdued outlook for inflation"—which some may find too negative in tone—with more positive language: "To support sustained improvement in labor market conditions and to help ensure that inflation is close to its mandate-consistent level over the medium run, the Committee expects to maintain a highly accommodative stance for

[1] See the memo "Market Functioning and Limits on Asset Purchases" by staff in the Division of Monetary Affairs at the Board of Governors and in the Markets Group at the Federal Reserve Bank of New York for an assessment of the amount of additional Treasury securities and agency MBS that the Federal Reserve could purchase over the next two years without causing a meaningful deterioration in market functioning.

monetary policy as the economic recovery strengthens." Under Alternative C the Committee could alter the forward guidance either by making the anticipated date of the first increase in the funds rate a year earlier, or by replacing the current forward guidance—including the date—with new language that describes the factors the Committee will consider in deciding when to raise its target for the funds rate.

Finally, Alternative A notes the possibility of a reduction in the remuneration rate on excess reserves from 25 basis points to 15 basis points in order to provide a modest amount of additional policy stimulus.

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

Table 1: Overview of Policy Alternatives for the August 1 FOMC Statement

Selected Elements	June Statement	August Alternatives		
		A	B	C
Balance Sheet				
MEP	continue to purchase at current pace Treasury securities with remaining maturities of 6 to 30 years and sell or redeem equal amount with remaining maturities of approx. 3 years or less through the end of 2012	end the program	continue the program through the end of the year as announced in June	
Additional Purchases	none	$45 billion of Treasury securities per month and $30 billion of agency MBS per month, until Committee observes sustained improvement in labor market conditions, as long as projected medium-term inflation is close to its mandate-consistent level and longer-term inflation expectations remain stable ***OR*** $600 billion of longer-term Treasury securities and $400 billion of agency MBS by end of third quarter of 2013	none	none
Reinvestment Policies	principal payments of agency debt and MBS into agency MBS; suspend Treasury rollovers	reinstitute the policy of rolling over maturing Treasury securities at auction	unchanged	unchanged

Table 1: Overview of Policy Alternatives for the August 1 FOMC Statement
(*continued*)

Selected Elements	**June Statement**	**August Alternatives**		
		A	**B**	**C**
Forward Rate Guidance				
Guidance	at least through late 2014	at least through mid-2015	unchanged ***OR*** at least through mid-2015	at least through late 2013 ***OR*** unchanged ***OR*** consider range of factors, including actual and projected labor market conditions, medium-term outlook for inflation, & risks to achievement of Committee objectives
Rationale	economic conditions—including low rates of resource utilization and a subdued outlook for inflation over the medium run—are likely to warrant	to support sustained improvement in labor market conditions and to help ensure that inflation is close to its mandate-consistent level over the medium run, … as the economic recovery strengthens	unchanged	unchanged ***OR*** unchanged ***OR*** none
Future Policy Action				
Future Actions	none	regularly review the pace and composition of its securities purchases in light of the economic outlook and its ongoing assessments of the efficacy and costs of the program ***OR*** regularly review the size and composition of its balance sheet in light of the outlook for inflation and labor market conditions	closely monitor incoming information on economic and financial developments	regularly review size and composition of securities holdings;
	prepared to take further action as appropriate	prepared to make adjustments as appropriate	will provide additional accommodation as needed	prepared to adjust holdings as necessary
	to promote a stronger economic recovery & sustained improvement in labor market conditions in a context of price stability	unchanged	unchanged	to promote maximum employment and price stability

JUNE FOMC STATEMENT

1. Information received since the Federal Open Market Committee met in April suggests that the economy has been expanding moderately this year. However, growth in employment has slowed in recent months, and the unemployment rate remains elevated. Business fixed investment has continued to advance. Household spending appears to be rising at a somewhat slower pace than earlier in the year. Despite some signs of improvement, the housing sector remains depressed. Inflation has declined, mainly reflecting lower prices of crude oil and gasoline, and longer-term inflation expectations have remained stable.
2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee expects economic growth to remain moderate over coming quarters and then to pick up very gradually. Consequently, the Committee anticipates that the unemployment rate will decline only slowly toward levels that it judges to be consistent with its dual mandate. Furthermore, strains in global financial markets continue to pose significant downside risks to the economic outlook. The Committee anticipates that inflation over the medium term will run at or below the rate that it judges most consistent with its dual mandate.
3. To support a stronger economic recovery and to help ensure that inflation, over time, is at the rate most consistent with its dual mandate, the Committee expects to maintain a highly accommodative stance for monetary policy. In particular, the Committee decided today to keep the target range for the federal funds rate at 0 to ¼ percent and currently anticipates that economic conditions—including low rates of resource utilization and a subdued outlook for inflation over the medium run—are likely to warrant exceptionally low levels for the federal funds rate at least through late 2014.
4. The Committee also decided to continue through the end of the year its program to extend the average maturity of its holdings of securities. Specifically, the Committee intends to purchase Treasury securities with remaining maturities of 6 years to 30 years at the current pace and to sell or redeem an equal amount of Treasury securities with remaining maturities of approximately 3 years or less. This continuation of the maturity extension program should put downward pressure on longer-term interest rates and help to make broader financial conditions more accommodative. 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. The Committee is prepared to take further action as appropriate to promote a stronger economic recovery and sustained improvement in labor market conditions in a context of price stability.

AUGUST FOMC STATEMENT—ALTERNATIVE A

1. Information received since the Federal Open Market Committee met in ~~April~~ **June** suggests that ~~the economy has been expanding moderately~~ **economic activity decelerated somewhat over the first half of** this year. ~~However,~~ Growth in employment has ~~slowed~~ **been slow** in recent months, and the unemployment rate remains elevated. Business fixed investment has continued to advance. Household spending appears to be rising at a somewhat slower pace than earlier in the year. Despite some signs of improvement, the housing sector remains depressed. Inflation has ~~declined~~ **been subdued in recent months**, mainly reflecting lower prices of crude oil and gasoline, and longer-term inflation expectations have remained stable.
2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee expects economic growth to ~~remain~~ **be** moderate over coming quarters and then to pick up very gradually. Consequently, the Committee anticipates that the unemployment rate will decline only slowly toward levels that it judges to be consistent with its dual mandate. Furthermore, strains in global financial markets **[** continue to **|** **and issues relating to U.S. fiscal policy]** pose significant downside risks to the economic outlook. The Committee anticipates that inflation over the medium term will run at or below the rate that it judges most consistent with its dual mandate.
3. To support a stronger economic recovery and to help ensure that inflation, over time, is at the rate most consistent with its dual mandate, the Committee ~~also~~ decided to ~~continue through the end of the year its program to extend the average maturity of its holdings of securities~~ **begin a new large-scale asset purchase program**. Specifically, the Committee **now** intends to ~~purchase Treasury securities with remaining maturities of 6 years to 30 years at the current pace and to sell or redeem an equal amount of Treasury securities with remaining maturities of approximately 3 years or less~~ **increase its holdings of longer-term Treasury securities at a pace of about [$45] billion per month and of agency mortgage-backed securities at a pace of about [$30] billion per month**. **The Committee anticipates continuing to add to its holdings at least until it observes sustained improvement in labor market conditions, as long as projected medium-term inflation is close to its mandate-consistent level and longer-term inflation expectations remain stable.** ~~This continuation of the maturity extension program~~ **The increase in the Committee's securities holdings** should put downward pressure on longer-term interest rates**, support mortgage markets,** and help to make broader financial conditions more accommodative. **This new purchase program replaces the previously announced maturity extension program; therefore, the Committee is ending its sales of shorter-term Treasury securities and reinstituting its policy of rolling over maturing Treasury securities at auction.** 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. The Committee **will regularly review the pace and composition of its securities purchases in light of the economic outlook and its ongoing assessments of the efficacy and costs of the program, and** is prepared to ~~take further action~~

Alternatives

make adjustments as appropriate to promote a stronger economic recovery and sustained improvement in labor market conditions in a context of price stability.

OR

3'. To support a stronger economic recovery and to help ensure that inflation, over time, is at the rate most consistent with its dual mandate, the Committee ~~also~~ decided to ~~continue through the end of the year its program to extend the average maturity of its holdings of securities~~ **begin a new large-scale asset purchase program**. Specifically, the Committee **now** intends to purchase ~~Treasury securities with remaining maturities of 6 years to 30 years at the current pace and to sell or redeem an equal amount of Treasury securities with remaining maturities of approximately 3 years or less~~ **[$600 billion] of longer-term Treasury securities and [$400 billion] of agency mortgage-backed securities by the end of the third quarter of 2013, a combined pace of about [$75] billion a month**. ~~This continuation of the maturity extension program~~ **This action** should put downward pressure on longer-term interest rates**, support mortgage markets,** and help to make broader financial conditions more accommodative. **This new purchase program replaces the previously announced maturity extension program; therefore, the Committee is ending its sales of shorter-term Treasury securities and reinstituting its policy of rolling over maturing Treasury securities at auction.** 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. The Committee **will regularly review the size and composition of its balance sheet in light of the outlook for inflation and labor market conditions and** is prepared to ~~take further action~~ **make adjustments** as appropriate to promote a stronger economic recovery and sustained improvement in labor market conditions in a context of price stability.

4. The Committee **also** decided today to keep the target range for the federal funds rate at 0 to ¼ percent ~~and~~. **To support sustained improvement in labor market conditions and to help ensure that inflation is close to its mandate-consistent level over the medium run,** the Committee expects to maintain a highly accommodative stance for monetary policy **as the economic recovery strengthens**. In particular, **the Committee** currently anticipates that ~~economic conditions—including low rates of resource utilization and a subdued outlook for inflation over the medium run—are likely to warrant~~ exceptionally low levels for the federal funds rate **are likely to be warranted** at least through ~~late 2014~~ **mid-2015**.

Note: If policymakers decide that it is appropriate to reduce the remuneration rate on reserve balances, the Board of Governors would issue an accompanying statement that might read:

In a related action, the Board of Governors voted today to reduce the interest rate paid on required and excess reserve balances from 25 basis points to 15 basis points effective with the reserve maintenance period that begins on August 9, 2012.

AUGUST FOMC STATEMENT—ALTERNATIVE B

1. Information received since the Federal Open Market Committee met in ~~April~~ **June** suggests that ~~the economy has been expanding moderately~~ **economic activity decelerated somewhat over the first half of** this year. ~~However,~~ Growth in employment has ~~slowed~~ **been slow** in recent months, and the unemployment rate remains elevated. Business fixed investment has continued to advance. Household spending appears to be rising at a somewhat slower pace than earlier in the year. Despite some **further** signs of improvement, the housing sector remains depressed. Inflation has declined **since earlier this year**, mainly reflecting lower prices of crude oil and gasoline, and longer-term inflation expectations have remained stable.

2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee expects economic growth to ~~remain~~ **be** moderate over coming quarters and then to pick up very gradually. Consequently, the Committee anticipates that the unemployment rate will decline only slowly toward levels that it judges to be consistent with its dual mandate. Furthermore, strains in global financial markets **[** continue to **| and issues relating to U.S. fiscal policy]** pose significant downside risks to the economic outlook. The Committee anticipates that inflation over the medium term will run at or below the rate that it judges most consistent with its dual mandate.

3. To support a stronger economic recovery and to help ensure that inflation, over time, is at the rate most consistent with its dual mandate, the Committee expects to maintain a highly accommodative stance for monetary policy. In particular, the Committee decided today to keep the target range for the federal funds rate at 0 to ¼ percent and currently anticipates that economic conditions—including low rates of resource utilization and a subdued outlook for inflation over the medium run—are likely to warrant exceptionally low levels for the federal funds rate at least through **[** late 2014 **| mid-2015]**.

4. The Committee also decided to continue through the end of the year its program to extend the average maturity of its holdings of securities **as announced in June,** ~~Specifically, the Committee intends to purchase Treasury securities with remaining maturities of 6 years to 30 years at the current pace and to sell or redeem an equal amount of Treasury securities with remaining maturities of approximately 3 years or less. This continuation of the maturity extension program should put downward pressure on longer-term interest rates and help to make broader financial conditions more accommodative. The Committee~~ **and it** 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. The Committee ~~is prepared to take further action as appropriate~~ **will closely monitor incoming information on economic and financial developments and will provide additional accommodation as needed** to promote a stronger economic recovery and sustained improvement in labor market conditions in a context of price stability.

AUGUST FOMC STATEMENT—ALTERNATIVE C

1. Information received since the Federal Open Market Committee met in ~~April~~ **June** suggests that the economy has been expanding moderately this year. ~~However, growth in employment has slowed in recent months, and the unemployment rate remains elevated.~~ **Employment has shown further gains.** ~~Business fixed investment~~ **Private domestic demand** has continued to advance, ~~Household spending appears to be rising at a somewhat slower pace than earlier in the year. Despite~~ **and** the housing sector ~~remains depressed~~ **has shown** some signs of improvement. Inflation has declined **since earlier this year**, mainly reflecting lower prices of crude oil and gasoline, and longer-term inflation expectations have remained stable.

2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee expects economic growth to remain moderate over coming quarters and then to pick up very gradually. Consequently, the Committee anticipates that the unemployment rate will decline only slowly toward levels that it judges to be consistent with its dual mandate. Furthermore, strains in global financial markets **[** continue to **|** **and issues relating to U.S. fiscal policy** **]** pose significant downside risks to the economic outlook. The Committee anticipates that inflation over the medium term will run at ~~or below~~ **about** the rate that it judges most consistent with its dual mandate.

3. To support ~~a stronger~~ **the** economic recovery and to help ensure that inflation, over time, is at the rate most consistent with its dual mandate, the Committee expects to maintain a highly accommodative stance for monetary policy. In particular, the Committee decided today to keep the target range for the federal funds rate at 0 to ¼ percent and currently anticipates that economic conditions—including low rates of resource utilization and a subdued outlook for inflation over the medium run—are likely to warrant exceptionally low levels for the federal funds rate at least through late **[** **2013** **|** 2014 **]**.

OR

3'. To support a ~~stronger~~ **sustainable** economic recovery and to help ensure that inflation, over time, is at the rate most consistent with its dual mandate, the Committee expects to maintain a highly accommodative stance for monetary policy. In particular, the Committee decided today to keep the target range for the federal funds rate at 0 to ¼ percent ~~and currently anticipates that economic conditions—including low rates of resource utilization and a subdued outlook for inflation over the medium run—are likely to warrant exceptionally low levels for the federal funds rate at least through late 2014~~. **As rates of resource utilization rise toward levels consistent with maximum employment, the Committee eventually will need to make monetary policy less accommodative in order to ensure that the economy expands at a sustainable pace and to prevent inflation from persistently exceeding its longer-run objective. In determining the appropriate time to increase its target for the federal funds rate, the Committee will consider a range of factors, including actual and projected labor market conditions, the medium-term outlook for inflation, and the risks to the achievement of the Committee's objectives.**

Alternatives

4. The Committee also decided to continue through the end of the year its program to extend the average maturity of its holdings of securities **as announced in June** ~~Specifically, the Committee intends to purchase Treasury securities with remaining maturities of 6 years to 30 years at the current pace and to sell or redeem an equal amount of Treasury securities with remaining maturities of approximately 3 years or less. This continuation of the maturity extension program should put downward pressure on longer-term interest rates and help to make broader financial conditions more accommodative. The Committee is maintaining~~ **and to maintain** its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities. The Committee **will regularly review the size and composition of its securities holdings and** is prepared to ~~take further action as appropriate~~ **adjust those holdings as necessary** to promote **maximum employment and** ~~a stronger economic recovery and sustained improvement in labor market conditions in a context of~~ price stability.

THE CASE FOR ALTERNATIVE B

The Committee might interpret the available information as indicating that, despite some weakness in recent economic data, neither the modal economic outlook nor the risks to the outlook have worsened materially since it last met, and conclude that it is appropriate to make no significant change in the stance of monetary policy at this meeting. However, members may feel that further policy accommodation would be called for if the current situation, including little if any progress in reducing elevated levels of unemployment and underlying inflation that is running below levels consistent with its dual mandate, were to persist much longer. If so, members may wish to adopt a statement that announces no new policy action and contains language similar to that of the June statement, but suggests that additional policy accommodation may become necessary fairly soon, as in Alternative B.

More specifically, FOMC participants, like the staff, may see the recent data as suggesting that the pace of economic recovery has slowed somewhat in recent months. Nevertheless, policymakers may continue to view this deceleration as reflecting, in part, temporary factors and therefore anticipate that growth will strengthen going forward, albeit very gradually, without additional policy action. Indeed, the Committee's assessment of the prospects for economic growth and inflation beyond the near term may not have changed materially over the intermeeting period, and thus members may not see the threshold for further policy action at this meeting as having been met. The Committee may, however, still see a sizable risk that the deceleration in economic activity could prove more pronounced or more protracted than currently expected. Participants may also see significant downside risks from strains in global financial markets as well as from issues relating to U.S. fiscal policy. Given these concerns, the Committee might think it appropriate to signal that it will provide additional monetary accommodation if economic conditions do not begin to improve soon. Consistent with this assessment, Alternative B ends by stating that the Committee "will provide additional accommodation as needed to promote a stronger economic recovery and sustained improvement in labor market conditions in a context of price stability." Such concerns might also lead policymakers to extend the forward guidance in the statement to "at least through mid-2015." However, other participants may see a benefit to making a change in the expected liftoff date in conjunction with the introduction of a new purchase program, if such a program becomes appropriate, since the additional asset purchases would limit the possibility that the change in the liftoff date could undermine business and consumer confidence by emphasizing the deterioration in the economic outlook.

Some members may note that the outlook has not improved despite the action they took in June, as the effects of the continuation of the MEP have been offset by a weakening in the likely underlying trajectory for economic activity; or they may think that downside risks to the outlook have increased. In either case, they may be inclined toward further balance sheet actions to foster more rapid progress toward the dual mandate. Nevertheless, they may want to wait for additional information about the trajectory of output and inflation to gauge the extent to which growth is likely to pick up in response to policy actions already in place before undertaking a new policy action, especially given the higher-than-normal uncertainty about the economic outlook and the efficacy of those policy actions, as well as the potential costs and risks associated with various policy easing measures. Indeed, some participants may have a high threshold for additional action, either because they expect that additional asset purchases would likely have only a very modest effect on the economic outlook or because they are concerned that additional asset purchases could have adverse effects on inflation or negative implications for financial stability. In light of such concerns, the Committee may want additional time to evaluate potential policy alternatives before taking a further easing step.

In contrast, some participants may judge that the economic recovery remains on a sustainable path despite some temporary dampening factors and that moving toward a somewhat less accommodative stance of policy earlier than indicated by the Committee's June statement will likely be appropriate to limit the risks of an undesirable increase in inflation over the medium run. However, they may judge that, with unemployment having leveled off and inflation having slowed from its earlier rapid pace, there is less urgency in seeking an immediate reduction in policy accommodation. Given that the uncertainty regarding the economic outlook is currently quite high, these participants may also prefer to wait for further information to confirm the strength of the expansion before making a change in the forward guidance that might have to be reversed later.

A policy decision along the lines of Alternative B would be largely in line with the expectations of market participants. According to the Desk's latest survey, primary dealers do not see major changes in the statement language as the most likely outcome at this meeting, though they anticipate some recognition of the disappointing economic data. The dealers anticipate that the first increase in the target federal funds rate will most likely occur in early 2015, broadly consistent with the existing forward guidance. Moreover, dealers place relatively low odds on the Committee engaging in further balance-sheet action at this meeting, although they reportedly put material odds on additional easing through the size of the SOMA portfolio within one year. Even though its language points to "additional accommodation" without specifically mentioning LSAPs, the statement of Alternative B would likely lead investors to price in higher odds that additional LSAPs will be implemented by the Committee, perhaps as soon as at the September meeting. As a consequence, longer-term interest rates would likely fall somewhat, stock prices would rise, and the foreign exchange value of the dollar would decline. Investors appear to see less than even odds of an extension of the expected liftoff date in the forward guidance; as a result, if the Committee decided to adopt that option, the effects in asset markets would likely be somewhat larger.

THE CASE FOR ALTERNATIVE A

FOMC participants may view the information received since their last meeting as pointing to a somewhat weaker modal economic outlook or an increase in downside risks to the outlook, or both. Accordingly, they may feel that additional monetary policy easing is called for at this meeting. More specifically, some participants may interpret recent weak economic data as evidence that slow growth of consumer and business spending is quite likely to persist and so conclude that the underlying trajectory for economic growth is inadequate to return the unemployment rate to its mandate-consistent level within the next few years. They may also be concerned that the continuing overhang of foreclosed and vacant properties will restrain recovery in this sector for some time to come. Moreover, with the inflationary effects of the earlier run-up in oil and gasoline prices having subsided, and with inflation expectations well anchored, participants may judge that the upside risks to inflation are small. Indeed, they may forecast, like the staff, that the inflation rate will remain, for a few years, somewhat below the Committee's long-run objective of 2 percent.

These policymakers might point out that the unconstrained optimal control simulations and four of five of the unconstrained near-term policy rule prescriptions presented in the "Monetary Policy Strategies" section of the Tealbook continue to call for negative federal funds rates, even with the continuation of the MEP included in the staff's baseline scenario. As a result, the Committee might anticipate that near-zero federal funds rates are likely to be warranted for somewhat longer than had been thought and change the forward guidance in the statement accordingly. However, participants may worry that providing forward guidance for the path of policy appreciably further ahead may not be viewed as credible by markets and may thus have only a limited impact on longer-term interest rates. Thus, they may judge that a new LSAP program is appropriate instead of, or in addition to, an extension of the anticipated period of near-zero funds rates, reflecting an assessment that an LSAP would not require credibility regarding future Committee policy and would likely have larger macroeconomic effects. These considerations may lead them to favor Alternative A.

In addition to judging that the baseline outlook for the economy is unsatisfactory, policymakers may also judge that downside risks to that outlook, particularly from the European crisis and issues relating to U.S. fiscal policy, have increased considerably of late, and so prefer the policy easing contained in Alternative A. Specifically, they may see non-trivial odds that the European crisis could ultimately impose a very substantial drag on the U.S. recovery. In addition, some policymakers may also see a sizable probability that the Congress will be unable to resolve contentious fiscal issues before the turn of the year, and that fiscal policy could consequently tighten sharply at that time. Moreover, continued uncertainty about U.S. fiscal policy and the European crisis could restrain household spending and business investment more significantly later this year. In addition, with a substantial fraction of unemployed workers having been jobless for long periods, some FOMC participants might want to guard against the risk that this high level of long-term unemployment will persist long enough to permanently depress labor supply and potential output.

Furthermore, some participants may view the unusually large amount of uncertainty about the outlook as a reason not to wait but instead to act aggressively—both to reduce the likelihood that severely adverse scenarios will emerge and to provide greater assurance to the public that policymakers are willing to act as needed to support the recovery. This perspective could be reinforced if policymakers also saw the risks to the economic outlook as asymmetric and weighted substantially to the downside.

Should the Committee decide to provide further monetary stimulus through balance sheet expansion, it might increase the SOMA's holdings of both longer-term Treasury securities and agency MBS with the aim of putting downward pressure on longer-term interest rates in general while also directly supporting mortgage markets. In particular, Alternative A provides the Committee with an option to expand the balance sheet either through an incremental, open-ended purchase program or through a large, discrete purchase program as in previous LSAP operations. The Committee could choose to implement an incremental, open-ended purchase program by specifying initial monthly rates of purchases—for example \$45 billion per month of longer-term Treasury securities and \$30 billion per month of agency MBS—and by stating that it anticipates continuing to expand the SOMA portfolio "at least until it observes sustained improvement in the labor market," as long as "projected medium-term inflation is close to its mandate-consistent level and longer-term inflation expectations remain stable." Alternatively, the Committee could choose to announce a fixed program to purchase an additional \$600 billion of longer-term Treasury securities and \$400 billion of agency MBS by the end of the third quarter of 2013, as in paragraph 3′ of Alternative A. In either case, the new purchase program would replace the existing MEP.

The Committee might prefer to implement a large, discrete purchase program if it believes that investor uncertainty about the ultimate size of an open-ended program would make it less effective than a discrete program. In contrast, members might opt for an open-ended purchase program if they judged that such a program would boost business and consumer confidence by emphasizing that the Committee is ready to provide the accommodation needed to support a stronger recovery. Moreover, an open-ended program, if well understood by the public, would lead market participants to revise their expectations about the total size of the purchase program in response to incoming economic data, and so could help to buffer the economy in the face of unanticipated shocks. Policymakers might also prefer an open-ended program if they anticipated that greater flexibility would make it easier to calibrate the ultimate amount of purchases to evolving economic conditions. However, if the Committee announced an open-ended purchase program, it might want to be clear in the statement that such purchases might not be continued indefinitely even if the economy remained weak. For example, the Committee might choose to end the program if incoming information suggested that the economic effects of the purchases were smaller than anticipated and that the associated costs and risks were more substantial.

Policymakers also may see some additional benefit from reducing the interest rate paid on required and excess reserve balances to 15 basis points; in that case, the Board could adopt such a reduction, and that step could be noted in the press release containing the FOMC statement. Such a reduction in the rate paid on reserve balances would put modest downward pressure on a range of money market rates, and so lower medium-term and perhaps longer-term rates, at least to some degree. It also could mitigate concern about the Federal Reserve appearing to subsidize banks by remunerating reserves at a rate noticeably above that on other short-term investments. However, participants might be concerned that a further reduction in money market rates could disrupt money markets and so have adverse effects on the economy. The ECB's recent decision to cut its deposit rate to zero does not appear, thus far, to have caused severe disruptions in European money markets, as discussed in the box "The Effects of the European Central Bank's Deposit Rate Cut" in Tealbook A; however, the short period of time since the announcement of the decision and differences in the structures of U.S. and European money markets suggest that it may be premature to draw conclusions about the implications of a cut in remuneration rate on reserve balances in the United States. Cutting the rate paid on reserve balances also would reduce depository institutions' incentive to borrow and hold excess reserves to earn the rate paid on such reserves, likely resulting in a further reduction in trading volume in the federal funds market and potentially in greater volatility in the effective federal funds rate. Moreover, banks might impose greater fees on deposit accounts, a development that could lead to a negative response by the public. These risks would be reduced by keeping the rate paid on reserve balances at 15 basis points rather than reducing it to zero.[2]

In the Desk's survey, dealers placed only about 25 percent odds on the Committee expanding the SOMA portfolio through additional securities purchases at this meeting and about 65 percent odds on such an expansion sometime within the next year. With regard to the forward guidance, only about 40 percent of dealers anticipated a change at this meeting. Thus, a statement along the lines of Alternative A would come as a surprise to investors and longer-term interest rates would be expected to fall. Market participants might find an open-ended purchase program along the lines of paragraph 3 difficult to interpret because it would be a notable departure from past purchase programs, making the size of the effect on longer-term interest rates more than usually uncertain. Primary dealers, on average, saw about a 25 percent probability of a cut in the remuneration rate on required and excess reserves at some point within a year, but the probability of such a change at the August meeting was notably smaller. Thus, if the

[2] Additional considerations related to possible changes in the remuneration rate on excess reserves can be found in the memo, "Reconsidering Lowering the IOER Rate," sent to the Committee on October 25, 2011.

interest rate on excess reserves were reduced, shorter-term yields would likely decline several basis points, in addition to the effects of any other actions the Committee announced. The impact could be amplified by the increase in reserve balances generated by the new purchase program and the end of sales of short-term Treasury securities under the MEP. With any combination of the options in Alternative A, equity prices would probably increase, and the foreign exchange value of the dollar would likely decline.

THE CASE FOR ALTERNATIVE C

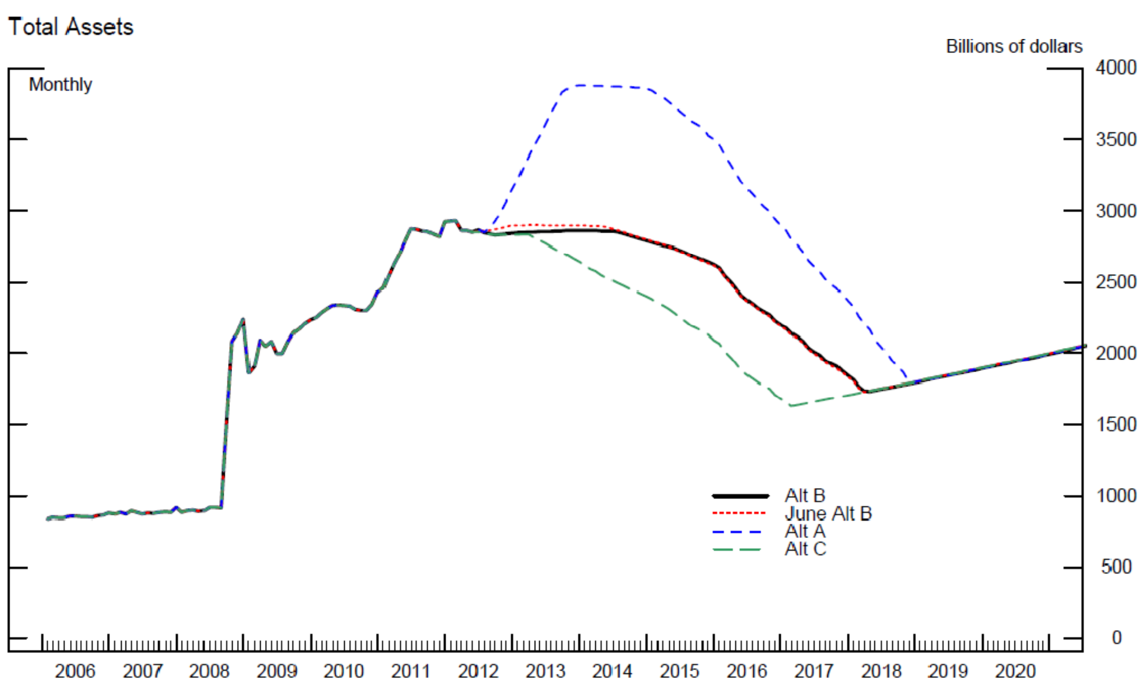
Smoothing through the month-to-month fluctuations in the data, FOMC participants may see the economic recovery as continuing on a sustainable course. Labor-market and spending data have decelerated from earlier in the year, but participants may view this slowing as primarily attributable to temporary factors, including possible seasonal and weather-related distortions. They may also be encouraged by the nearly one percentage point decline in the unemployment rate since last summer. Meanwhile, household spending and business fixed investment have continued to advance, and some indicators of conditions in the housing sector have continued to show improvement. Policymakers may judge that overall financial conditions in the United States remain supportive of economic growth even though financial strains in Europe have intensified of late. Furthermore, policymakers may believe that monetary policy actions taken to date are sufficient to support sustained economic recovery and may conclude that the underlying pace of growth in output will pick up in the near-term to a rate somewhat above their assessment of the growth rate of potential output, and so might view the projected pace of improvement in the labor market as adequate. If so, they may prefer to maintain a policy stance similar to that at the previous meeting and make no further changes to the Federal Reserve's balance sheet or the Committee's forward guidance, or they may even wish to begin scaling back the public's expectations for the duration of the current low range of the federal funds rate. These possibilities would be consistent with a statement like that in Alternative C.

Committee members whose outlook for the economy and whose assessment of the risks has not changed significantly since the June meeting might think it imprudent to change policy substantially at this juncture, and so may prefer to leave the forward guidance unchanged, as offered in one option in paragraph 3. In contrast, participants whose evolving views on the economic outlook and the appropriate path for the federal funds rate have led them to anticipate a significantly earlier first increase in the funds rate than was indicated by the Committee's statements so far this year, and who see the downside risks to the outlook as manageable, might want to adjust the forward guidance at this meeting. Alternatively, as in paragraph 3′, the FOMC could eliminate the calendar date from its forward guidance and replace it with new language that describes in somewhat greater detail the key economic factors that the Committee will consider in deciding when to first increase its target for the federal funds rate. If the public understood this new language, investors would modify their assessments of the likely timing of the first increase in the target funds rate as these factors change over time.

A statement like those included in Alternative C, even with the option that retains the late 2014 date, would strike market participants as likely signaling a faster removal of policy accommodation, resulting in higher interest rates and a decline in equity prices. A statement that moved forward the expected date of the first increase in the funds rate—or that included language that investors read as indicating that the date was likely to be substantially earlier than previously thought—would greatly surprise financial market participants. According to the Desk's survey, the primary dealers see zero probability that the Committee will move forward its expected date of liftoff at this meeting. Hence, moving projected liftoff closer would likely cause a sizable adjustment in market participants' expectations of the policy rate path, leaving market interest rates significantly higher at maturities beyond a year or so. If the Committee were to drop the date from its forward guidance, investors might well be quite uncertain about the Committee's intentions, at least until policymakers provided additional information about the likely path for policy. Furthermore, participants have priced in significant odds of additional asset purchases in the near future, and the statement in Alternative C (with or without a change in the expected liftoff date) would be read as a signal that such action was unlikely to be forthcoming, putting further upward pressure on longer-term rates and weighing on equity prices. Any statement along the lines of Alternative C would likely lead to an appreciation of the dollar.

LONG-RUN PROJECTIONS OF THE BALANCE SHEET AND MONETARY BASE

The staff has prepared three scenarios for the Federal Reserve's balance sheet that correspond to the policy alternatives A, B, and C. The scenario corresponding to Alternative A ends the maturity extension program (MEP) immediately, expands holdings of longer-term securities by $1 trillion by the end of the third quarter of 2013, and pushes the first increase of the target federal funds rate to mid-2015. The details of this scenario mimic the language in paragraph 3' of that statement and are also roughly consistent with the open-ended purchase program in paragraph 3 if purchases last, and are expected to last, for a little more than a year. The scenario corresponding to Alternative B incorporates a continuation of the MEP as announced in June and has the first increase in the federal funds rate in December 2014. The third scenario corresponds to Alternative C, in which the MEP is also completed as scheduled, but the federal funds rate rises above the current target range in late 2013, one year earlier than in Alternative B. Projections under each scenario are based on assumptions about the trajectory of various components of the balance sheet. Details of these assumptions, as well as projections for each major component of the balance sheet, can be found in Explanatory Note D.



For the balance sheet scenario that corresponds to Alternative B, essentially all Treasury securities with remaining maturities of approximately three years or less are either allowed to mature without reinvestment or are sold and the same amount of Treasury securities with remaining maturities of six years to thirty years are purchased under the MEP. The Committee's program to reinvest principal payments from its holdings of agency debt and MBS into agency MBS remains unchanged. These policy choices would keep the System Open Market Account (SOMA) securities holdings roughly constant at about $2.6 trillion until mid-2014.

In this scenario, consistent with the statement language that the federal funds rate is expected to be at exceptionally low levels "at least through late 2014," we assume that the first increase in the target federal funds rate is in December 2014.[3] The date of liftoff is a key determinant of the trajectory of the balance sheet. In June 2014, six months before the first increase in the target federal funds rate, all reinvestment is assumed to cease, and the balance sheet begins to contract. Because the MEP is assumed to remove virtually all short-dated Treasury securities from the portfolio, in 2014 and in the first half of 2015 the only contraction in the balance sheet is a result of maturing or prepaying agency MBS and agency debt. In June 2015, six months after the initial increase in the target federal funds rate, the Committee begins to sell its holdings of agency securities at a pace that reduces the amount of these securities in the portfolio to zero in five years, that is, by May 2020.[4] Through these redemptions and sales, the size of the balance sheet is normalized by April 2018.[5,6] The balance sheet then begins to expand, with increases in SOMA holdings essentially matching the growth of Federal Reserve Bank capital and currency in circulation. The balance sheet reaches a size of $2 trillion by the end of 2020.

[3] This liftoff date for the federal funds rate is two months later than that assumed in the balance sheet projections from the June Tealbook Book B but is the same as the current staff forecast in Tealbook Book A.

[4] Consistent with the exit principles the Committee announced in the minutes of the June 2011 FOMC meeting, we assume the Committee directs the Desk to only sell agency securities during the exit period in order to promote a timely return to an all-Treasury SOMA portfolio.

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

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

In the scenario for Alternative A, the Committee is assumed to end the MEP immediately and begin a $1 trillion LSAP program in August. The LSAP program is assumed to include purchases of $600 billion in Treasury securities at a pace of about $45 billion per month and $400 billion in agency MBS at a pace of about $30 billion per month. Purchases are completed by the end of the third quarter of 2013. The Committee reinstitutes its policy to reinvest principal payments from Treasury securities at auction and continues reinvesting principal payments from agency MBS and agency debt securities into agency MBS. In this scenario, total assets peak at $3.9 trillion in December 2013. In December 2014, six months prior to the assumed first increase in the federal funds rate in June 2015, all reinvestment is assumed to cease, and the balance sheet begins to contract. Six months after the lift off of the federal funds rate, sales of agency securities begin and continue for five years. The balance sheet is normalized by December 2018.

For the scenario that corresponds to Alternative C, the Committee completes the current MEP as in Alternative B. In this scenario, the federal funds rate is assumed to lift off in December 2013, one year earlier than in Alternative B. Corresponding to this earlier increase in the federal funds rate, reinvestment of principal from maturing or prepaying securities ends in June 2013, after which time all securities are allowed to roll off the portfolio. Finally, sales of agency securities commence in June 2014 and last for five years.[7] Because of the earlier redemptions and sales, the size of the balance sheet is normalized in November 2017, five months earlier than under Alternative B.

On the liability side of the balance sheet, the forecasted path for reserve balances for Alternatives B and C remains at $1.5 trillion until the exit strategy begins, roughly the same level as in the June Tealbook's Alternative B. The level of reserve balances under Alternative A peaks at $2.5 trillion—noticeably higher than in Alternative B—because of the $1 trillion LSAP program.

In the scenario corresponding to Alternative B, the monetary base is roughly flat from 2012 to 2013, given the trajectory for the portfolio. Once exit begins, the monetary

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

base shrinks through the second quarter of 2018, primarily reflecting a decline in reserve balances as the balance sheet contracts. Starting in the third quarter of 2018, after reserve balances are assumed to have stabilized at $25 billion, the monetary base begins to expand again, in line with the growth of Federal Reserve notes in circulation. The monetary base under Alternative A expands more rapidly in the near term than under Alternative B due to the LSAP program and then declines at a faster pace beginning in 2015 because of a larger amount of securities redemptions and a larger volume of sales of agency securities. The resumption in the expansion of the monetary base in Alternative A begins in the second quarter of 2019. Under Alternative C, the monetary base contracts faster than under Alternative B because of the assumed earlier liftoff.

Alternatives

Growth Rates for the Monetary Base

Date	Alternative B	Alternative A	Alternative C	June Alt B
	Percent, annual rate			
	Monthly			
Apr-12	-12.2	-12.2	-12.2	-12.2
May-12	-8.7	-8.7	-8.7	-8.8
Jun-12	-4.6	-4.6	-4.6	7.9
Jul-12	6.2	6.9	6.2	22.5
Aug-12	12.2	21.6	12.0	10.7
Sep-12	-4.3	15.8	-4.4	-3.4
Oct-12	-11.9	14.5	-12.1	-10.0
Nov-12	8.8	38.5	8.6	7.9
Dec-12	1.2	31.3	1.1	5.8
	Quarterly			
2011 Q3	21.0	21.0	21.0	21.0
2011 Q4	-5.9	-5.9	-5.9	-5.9
2012 Q1	5.5	5.5	5.5	5.5
2012 Q2	-3.9	-3.9	-3.9	-2.5
2012 Q3	2.3	6.9	2.2	10.3
2012 Q4	-1.5	23.3	-1.7	-0.5
2013 Q1	-2.2	28.9	-2.2	-1.0
2013 Q2	-2.4	27.5	-2.4	-2.8
	Annual - Q4 to Q4			
2010	0.9	0.9	0.9	0.9
2011	32.9	32.9	32.9	32.9
2012	0.6	8.1	0.5	3.2
2013	0.6	28.9	-1.6	0.2
2014	-1.8	-0.2	-5.0	-1.0
2015	-4.4	-6.9	-7.9	-6.6
2016	-16.6	-17.7	-17.6	-16.6
2017	-18.0	-19.8	-18.6	-18.1
2018	-7.3	-27.4	3.7	-6.3

Note: Not seasonally adjusted.

DEBT, BANK CREDIT, AND MONEY FORECASTS

Domestic nonfinancial sector debt is projected to expand at an annual rate of 4¾ percent this year, driven by a significant expansion in federal government debt and a modest rise in private nonfinancial debt. In the next two years, domestic nonfinancial debt growth is expected to slow to about 4 percent, on average, as federal debt rises less rapidly and private debt accelerates only gradually. Nonfinancial business debt is forecasted to increase at a modest pace over the projection period, reflecting favorable financing conditions and increasing capital expenditures. Home mortgage debt is projected to decline again this year and edge up in the next two years, as financing conditions are expected to remain tight, demand for owner-occupied housing is expected to stay weak, and house prices are forecasted to increase only slowly. Meanwhile, consumer credit is projected to expand at an annual rate of more than 7 percent, on average, throughout the forecast period, driven by a gradual easing of credit conditions as well as modestly rising demand for student loans and for loans to finance purchases of consumer durables.

Commercial bank credit is expected to increase moderately over the forecast period. Core loans—the sum of commercial and industrial (C&I), real estate, and consumer loans—are projected to expand modestly during the remainder of 2012 mainly due to continued strength in C&I lending. Though C&I loans are expected to grow more slowly after this year, core loan growth picks up somewhat in 2013 and 2014 as real estate and consumer loan growth rises in line with the anticipated gradual improvements in economic activity, credit quality, and banks' willingness to lend. In contrast, commercial real estate loans are projected to contract through mid-2013—and only rise slightly thereafter—as high vacancy rates, depressed prices for commercial properties, and the poor credit quality of existing loans are likely to suppress activity in this sector for some time. Banks' securities holdings are projected to expand at a moderate pace in 2012, with growth slowing in 2013 and 2014 as deposit growth ebbs and loan demand strengthens.

Staff anticipates that M2 will continue to grow faster than nominal income through the remainder of 2012 but expand more slowly than nominal income, on balance, in 2013 and 2014. Ongoing concerns about developments in Europe and the U.S. growth outlook will likely encourage investors to add to their already elevated allocations of M2 assets in 2012. Staff expects that a portion of the high level of M2 balances will begin to unwind early in 2013 because of the expiration of the unlimited FDIC insurance on noninterest-bearing transaction deposits.[8] M2 balances are forecasted to continue to unwind in 2014 as investors reallocate their portfolios toward riskier assets in line with the projected firming in economic growth and monetary policy. Turning to the components of M2, liquid deposits are expected to grow at a brisk pace for the remainder of 2012 but then slow significantly in 2013 and 2014. In contrast, retail money market funds and small time deposits are projected to decline throughout the forecast period. Currency growth is expected to gradually decline to a pace consistent with its historical average of 6 percent by mid-2013 and continue at that pace over the rest of the projection period.

[8] The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 provides unlimited deposit insurance coverage for noninterest-bearing transaction accounts in excess of $250,000 from December 31, 2010, through December 31, 2012. These deposits are estimated to have grown nearly 50 percent from December 31, 2010, and currently make up about 15 percent of M2 or about $1.5 trillion.

Growth Rates for M2

(Percent, seasonally adjusted annual rate)

Monthly Growth Rates	Tealbook Forecast*
Jan-12	16.4
Feb-12	3.7
Mar-12	4.3
Apr-12	5.8
May-12	4.3
Jun-12	5.7
Jul-12	6.2
Aug-12	4.1
Sep-12	4.2
Oct-12	3.9
Nov-12	4.0
Dec-12	4.0
Quarterly Growth Rates	
2012 Q1	8.7
2012 Q2	4.9
2012 Q3	5.2
2012 Q4	4.0
2013 Q1	1.8
2013 Q2	2.3
2013 Q3	3.1
2013 Q4	3.4
2014 Q1	3.5
2014 Q2	3.5
2014 Q3	3.5
2014 Q4	0.6
Annual Growth Rates	
2012	5.8
2013	2.7
2014	2.8

* This forecast is consistent with nominal GDP and interest rates in the Tealbook forecast. Actual data through July 16, 2012; projections thereafter.

Alternatives

DIRECTIVE

The directive that was issued in June appears on the next page, followed by drafts for an August directive that correspond to each of the policy alternatives.

The directives for Alternatives B and C would instruct the Desk to leave the total face value of domestic securities in the SOMA about unchanged and to take appropriate steps to complete by the end of December 2012 the MEP of $267 billion that was announced in June. Under Alternative A, the Committee would direct the Desk to begin a new large-scale asset purchase program. This purchase program would replace the previously announced maturity extension program. Specifically, the Desk would be directed either to execute purchases of $600 billion of longer-term Treasury securities and $400 billion of agency MBS by the end of the third quarter of 2013, or to begin purchasing longer-term Treasury securities at a pace of about $45 billion per month and agency MBS at a pace of about $30 billion per month. Each of the draft directives would also instruct the Desk to continue the current practice of reinvesting principal payments on all agency debt and agency MBS in agency MBS. Alternatives B and C would continue the practice of redeeming maturing Treasury securities at auction, while Alternative A would reinstate the policy of rolling over maturing Treasuries at auction.

June 2012 Directive

The Federal Open Market Committee seeks monetary and financial conditions that will foster price stability and promote sustainable growth in output. To further its long-run objectives, the Committee seeks conditions in reserve markets consistent with federal funds trading in a range from 0 to ¼ percent. The Committee directs the Desk to continue the maturity extension program it began in September to purchase, by the end of June 2012, Treasury securities with remaining maturities of 6 years to 30 years with a total face value of $400 billion, and to sell Treasury securities with remaining maturities of 3 years or less with a total face value of $400 billion. Following the conclusion of these purchases, the Committee directs the Desk to purchase Treasury securities with remaining maturities of 6 years to 30 years with a total face value of about $267 billion by the end of December 2012, and to sell or redeem Treasury securities with remaining maturities of approximately 3 years or less with a total face value of about $267 billion. For the duration of this program, the Committee directs the Desk to suspend its current policy of rolling over maturing Treasury securities into new issues. The Committee directs the Desk to maintain its existing policy of reinvesting principal payments on all agency debt and agency mortgage-backed securities in the System Open Market Account in agency mortgage-backed securities. These actions should maintain the total face value of domestic securities at approximately $2.6 trillion. The Committee directs the Desk to engage in dollar roll transactions as necessary to facilitate settlement of the Federal Reserve's agency MBS transactions. The System Open Market Account Manager and the Secretary will keep the Committee informed of ongoing developments regarding the System's balance sheet that could affect the attainment over time of the Committee's objectives of maximum employment and price stability.

Alternatives

August 2012 Directive—Alternative A

The Federal Open Market Committee seeks monetary and financial conditions that will foster price stability and promote sustainable growth in output. To further its long-run objectives, the Committee seeks conditions in reserve markets consistent with federal funds trading in a range from 0 to ¼ percent. The Committee directs the Desk to ~~continue the maturity extension program it began in September to purchase, by the end of June 2012, Treasury securities with remaining maturities of 6 years to 30 years with a total face value of $400 billion, and to sell Treasury securities with remaining maturities of 3 years or less with a total face value of $400 billion. Following the conclusion of these purchases, the Committee directs the Desk to purchase Treasury securities with remaining maturities of 6 years to 30 years with a total face value of about $267 billion by the end of December 2012, and to sell or redeem Treasury securities with remaining maturities of approximately 3 years or less with a total face value of about $267 billion~~ **begin a new large-scale asset purchase program**. **This program replaces the previously announced maturity extension program. Specifically, [the Desk is directed to purchase longer-term Treasury securities at a pace of about $45 billion per month and to purchase agency mortgage-backed securities at a pace of about $30 billion per month. | the Desk is directed to purchase $600 billion of longer-term Treasury securities and $400 billion of agency mortgage-backed securities by the end of the third quarter of 2013.]** ~~For the duration of this program, the Committee directs the Desk to suspend its current~~ **The desk is also directed to reinstate the** policy of rolling over maturing Treasury securities into new issues. The Committee directs the Desk to maintain its existing policy of reinvesting principal payments on all agency debt and agency mortgage-backed securities in the System Open Market Account in agency mortgage-backed securities. ~~These actions should maintain the total face value of domestic securities at approximately $2.6 trillion.~~ The Committee directs the Desk to engage in dollar roll **and coupon swap** transactions as necessary to facilitate settlement of the Federal Reserve's agency MBS transactions. The System Open Market Account Manager and the Secretary will keep the Committee informed of ongoing developments regarding the System's balance sheet that could affect the attainment over time of the Committee's objectives of maximum employment and price stability.

August 2012 Directive—Alternative B

The Federal Open Market Committee seeks monetary and financial conditions that will foster price stability and promote sustainable growth in output. To further its long-run objectives, the Committee seeks conditions in reserve markets consistent with federal funds trading in a range from 0 to ¼ percent. The Committee directs the Desk to continue the maturity extension program it ~~began~~ **announced** in **June** ~~September to purchase, by the end of June 2012, Treasury securities with remaining maturities of 6 years to 30 years with a total face value of \$400 billion, and to sell or redeem Treasury securities with remaining maturities of 3 years or less with a total face value of \$400 billion. Following the conclusion of these purchases, the Committee directs the Desk~~ to purchase Treasury securities with remaining maturities of 6 years to 30 years with a total face value of about \$267 billion by the end of December 2012, and to sell or redeem Treasury securities with remaining maturities of approximately 3 years or less with a total face value of about \$267 billion. For the duration of this program, the Committee directs the Desk to suspend its current policy of rolling over maturing Treasury securities into new issues. The Committee directs the Desk to maintain its existing policy of reinvesting principal payments on all agency debt and agency mortgage-backed securities in the System Open Market Account in agency mortgage-backed securities. These actions should maintain the total face value of domestic securities at approximately \$2.6 trillion. The Committee directs the Desk to engage in dollar roll transactions as necessary to facilitate settlement of the Federal Reserve's agency MBS transactions. The System Open Market Account Manager and the Secretary will keep the Committee informed of ongoing developments regarding the System's balance sheet that could affect the attainment over time of the Committee's objectives of maximum employment and price stability.

Alternatives

August 2012 Directive—Alternative C

The Federal Open Market Committee seeks monetary and financial conditions that will foster price stability and promote sustainable growth in output. To further its long-run objectives, the Committee seeks conditions in reserve markets consistent with federal funds trading in a range from 0 to ¼ percent. The Committee directs the Desk to continue the maturity extension program it ~~began~~ **announced** in **June** ~~September to purchase, by the end of June 2012, Treasury securities with remaining maturities of 6 years to 30 years with a total face value of $400 billion, and to sell or redeem Treasury securities with remaining maturities of 3 years or less with a total face value of $400 billion. Following the conclusion of these purchases, the Committee directs the Desk~~ to purchase Treasury securities with remaining maturities of 6 years to 30 years with a total face value of about $267 billion by the end of December 2012, and to sell or redeem Treasury securities with remaining maturities of approximately 3 years or less with a total face value of about $267 billion. For the duration of this program, the Committee directs the Desk to suspend its current policy of rolling over maturing Treasury securities into new issues. The Committee directs the Desk to maintain its existing policy of reinvesting principal payments on all agency debt and agency mortgage-backed securities in the System Open Market Account in agency mortgage-backed securities. These actions should maintain the total face value of domestic securities at approximately $2.6 trillion. The Committee directs the Desk to engage in dollar roll transactions as necessary to facilitate settlement of the Federal Reserve's agency MBS transactions. The System Open Market Account Manager and the Secretary will keep the Committee informed of ongoing developments regarding the System's balance sheet that could affect the attainment over time of the Committee's objectives of maximum employment and price stability.

Explanatory Notes

A. Policy Rules Used in "Monetary Policy Strategies"

The table below gives the expressions for the selected policy rules used in "Monetary Policy Strategies." In the table, R_t denotes the nominal federal funds rate for quarter *t*, while the right-hand-side variables include the staff's projection of trailing four-quarter core PCE inflation for the current quarter and three quarters ahead (π_t and $\pi_{t+3|t}$), the output gap estimate for the current period as well as its one-quarter-ahead forecast (gap_t and $gap_{t+1|t}$), and the forecast of the three-quarter-ahead annual change in the output gap ($\Delta^4 gap_{t+3|t}$). The value of policymakers' long-run inflation objective, denoted π^*, is 2 percent. The nominal income targeting rule responds to the nominal income gap, which is defined as the difference between nominal income yn_t (100 times the log of the level of nominal GDP) and a target value yn_t^* (100 times the log of potential nominal GDP). Target nominal GDP in 2007:Q4 is set equal to potential real GDP in that quarter multiplied by the GDP deflator in that quarter; subsequently, target nominal GDP grows 2 percentage points per year faster than potential GDP.

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

The first two of the selected rules were studied by Taylor (1993, 1999). The outcome-based rule uses policy reactions estimated using real-time data over the sample 1988:Q1–2006:Q4. The intercept of the outcome-based rule was chosen so that it is consistent with a 2 percent long-run inflation objective and a long-run, quarterly real interest rate of 2¼ percent, a value used in the FRB/US model. The intercepts of the Taylor (1993, 1999) rules are set at 2¼ percent—instead of Taylor's original value of 2 percent—for the same reason. The 2¼ percent real rate estimate also enters the long-run intercept of the nominal income targeting rule. The prescriptions of the first-difference rule do not depend on the level of the output gap or the long-run, quarterly real interest rate; see Orphanides (2003).

Near-term prescriptions from these rules are calculated using Tealbook projections for inflation and the output gap. The first-difference rule, the estimated outcome-based rule, and the nominal income targeting rule include the lagged policy rate as a right-hand-side variable. When

Explanatory Notes

the Tealbook is published early in the quarter, the lines denoted "Previous Tealbook" report rule prescriptions based on the previous Tealbook's staff outlook, jumping off from the actual value of the lagged funds rate in the previous quarter. When the Tealbook is published late in the quarter, the lines denoted "Previous Tealbook Outlook" report rule prescriptions based on the previous Tealbook's staff outlook, but jumping off from the average value for the policy rate thus far this quarter.

REFERENCES

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

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

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

B. Estimates of the Equilibrium and Actual Real Rates

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

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

C. 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. The simulated policy rule is assumed to be in force over the whole period covered by the simulation. For the optimal control simulations, the dotted line labeled “Previous Tealbook” is derived from the optimal control simulations, when applied to the previous Tealbook projection.

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

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

GENERAL ASSUMPTIONS

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

The Tealbook projections for the scenario corresponding to Alternative B assume that the target federal funds rate begins to increase in December 2014, consistent with the forward guidance in the FOMC’s statement that the target federal funds rate is expected to be at exceptionally low levels “at least through late 2014.” This date of liftoff is two months later than that assumed in the balance sheet projections from the June Tealbook Book B for Alternative B but is the same as the current staff forecast in Tealbook Book A. In the scenario corresponding to Alternative A, it is assumed that the target federal funds rate begins to increase in June 2015, consistent with the FOMC statement for this alternative that the Committee currently anticipates that exceptionally low levels for the target federal funds rate are likely to be warrented “at least through mid 2015.” The projection for the scenario corresponding to Alternative C assumes the target federal funds rate lifts off in December 2013, one year earlier than in Alternative B.[1] The balance sheet projections assume that no use of short-term draining tools is necessary to achieve the projected path for the target federal funds rate.[2]

[1] The federal funds rate paths in Alternatives A and C are adjusted to reflect their assumed liftoff dates that are different from the staff forecast. By the end of the forecast horizon, all federal funds rate paths converge to the projection assumed in the July Tealbook staff forecast. The projected path of the 10-year Treasury yield in Alternative A is the yield assumed in the July Tealbook staff forecast adjusted for the expectations effect of a later target federal funds rate liftoff (see the box on “Forward Rate Guidance and Policy Expectations” from the January 2012 Tealbook Book B) and for the term premium effect associated with the LSAP program as well as the later liftoff date for the federal funds rate which triggers a later start to asset redemptions and sales. For the projected path in Alternative C, we adjust the 10-year Treasury yield to account for the change in term premiums due to the earlier lift off of the federal funds rate.

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

ASSETS

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

- The assumptions under Alternative B are:
  - The FOMC is assumed to continue the MEP as announced in June at its current pace through the end of 2012, directing the Desk to purchase Treasury securities with remaining maturity of 6 years to 30 years and to sell or redeem Treasury securities with remaining maturity of approximately 3 years or less. In total, the FOMC purchases an additional $267 billion in longer-term Treasury securities as a result of the MEP extension that started in July 2012.
  - The FOMC continues to reinvest the proceeds from principal payments on its agency securities holdings in agency MBS until June 2014—six months prior to the assumed increase in the target federal funds rate. Starting in June 2014, all securities are allowed to roll off the portfolio as they mature or prepay.
  - The Federal Reserve begins to sell agency MBS and agency debt securities in June 2015, roughly six months after the assumed date of the first increase in the target federal funds rate. Holdings of agency securities are reduced over five years and reach zero by May 2020.
  - For agency MBS, the rate of prepayment is based on staff models using estimates of housing market factors from one of the program's analytical providers, long-run average prepayment speeds of MBS, and interest rate projections from the Tealbook. The projected rate of prepayment is sensitive to these underlying assumptions.

- In the scenario corresponding to Alternative A, the Committee is assumed to begin a $1 trillion LSAP program in August 2012 under which it purchases $600 billion in Treasury securities at a pace of about $45 billion per month and $400 billion in current coupon agency MBS at a pace of about $30 billion per month through the third quarter of 2013. The Treasury security purchase distribution is assumed to be identical to the distribution used for the $600 billion Treasury security LSAP program announced in November 2010, where the maturity of securities purchased ranged from 1.5 years to 30 years. In addition, the Committee is assumed to end its sales of shorter-term Treasury securities and reinstitute its policy of rolling over maturing Treasury securities at auction. The Committee is also assumed to maintain its existing policy of reinvesting principal payments from its holdings of agency debt and agency MBS in agency MBS. In December 2014, six months prior to the assumed increase in the federal funds rate in June 2015, principal payments from all securities are allowed to roll off the portfolio. Sales of agency securities begin in June 2015 and continue for five years.

- In the scenario corresponding to Alternative C, the Committee is expected to continue the MEP at its current pace through the end of 2012 as in Alternative B. The FOMC continues to reinvest the proceeds from principal payments on its agency securities holdings in agency MBS until June 2013—six months prior to the assumed increase in the target federal funds rate.[3] Starting in June 2013, all securities are allowed to roll off the portfolio as they mature or prepay. The Federal Reserve begins to sell agency MBS and agency debt securities in June 2014. Holdings of agency securities are reduced over five years and reach zero by May 2019.

- Because current and expected interest rates in the near term are below the average coupon rate on outstanding Treasury securities, the market value at which these securities are purchased will generally exceed their face value, with a larger premium for longer-maturity securities. As a result, although the par value of securities holdings remains constant under the MEP, premiums associated with securities purchases in this program, and hence total assets, will have risen. Through July 2012, on net, premiums associated with the MEP are about $60 billion. In Alternatives B and C, where the MEP is assumed to continue to year end, premiums will increase on net an additional $31 billion. In Alternative A, where an additional $600 billion in Treasury securities are purchased, premiums are boosted by an additional $10 billion relative to the scenarios without these Treasury securities purchases. The increase in premiums is reflected in higher total assets and in higher reserve balances.
- The large-scale asset purchase program in Alternative A would put downward pressure on market interest rates, in particular primary and secondary mortgage rates.
- The current and near-term market value of agency MBS is assumed to be four percent above its face value. As a result, for Alternative A, the $400 billion MBS purchases will cause unamortized premiums on the Federal Reserve's balance sheet to rise by roughly $16 billion relative to a scenario without these MBS purchases. The increase in premiums is reflected in higher total assets and in higher reserve balances.
- The level of central bank liquidity swaps is assumed to decline gradually, as the recent foreign central bank swap auctions mature, and then return to zero in September 2012.
- In all scenarios, a minimum level of $25 billion is set for reserve balances. Once reserve balances drop to this level, the Desk first purchases Treasury bills to maintain this level of reserve balances going forward. Purchases of bills continue until such securities comprise one-third of the Federal Reserve's total Treasury securities holdings—about the average share prior to the crisis. Once this share is reached, the Federal Reserve buys coupon securities in addition to bills to maintain an approximate composition of the portfolio of one-third bills and two-thirds coupon securities.

Liquidity Programs and Credit Facilities

- Credit through the Term Asset-Backed Securities Loan Facility (TALF) declines to zero by the end of 2015, reflecting loan maturities and prepayments.

[3] Projected prepayments of agency MBS reflect interest rate projections as of July 24, 2012.

- The assets held by TALF LLC remain at about $1 billion through 2014 before declining to zero the following year. Assets held by TALF LLC consist of investments of commitment fees collected by the LLC and the U.S. Treasury's initial funding. In this projection, the LLC does not purchase any asset-backed securities received by the Federal Reserve Bank of New York in connection with a decision of a borrower not to repay a TALF loan.
- The assets held by Maiden Lane LLC and Maiden Lane III LLC decline to zero gradually over time.

LIABILITIES AND CAPITAL

- Federal Reserve notes in circulation grow in line with the staff forecast for money stock currency through the last quarter of 2014. Afterwards, Federal Reserve notes in circulation grow at the same rate as nominal GDP, as in the extended Tealbook projection.
- The level of reverse repurchase agreements (RRPs) is assumed to remain around $70 billion, about the average level of RRPs associated with foreign official and international accounts observed over the past three years.
- Balances held in the U.S. Treasury's General Account (TGA) follow recent patterns until the assumed increase in the target federal funds rate in each alternative. At that point, the TGA slowly drops back to its historical target level of $5 billion as it is assumed that the Treasury will implement a new cash management system and invest funds in excess of $5 billion. The TGA remains constant at $5 billion over the remainder of the forecast period.
- We maintain the Supplementary Financing Account (SFA) balance at its current level of zero throughout the forecast.
- Federal Reserve capital grows 15 percent per year, in line with the average rate of the past ten years.[4]
- In general, increases in the level of Federal Reserve assets are matched by higher levels of reserve balances. All else equal, increases in the levels of liability items, such as Federal Reserve notes in circulation or other liabilities, or increases in the level of Reserve Bank capital, drain reserve balances. When increases in these liability or capital items would otherwise cause reserve balances to fall below $25 billion, purchases of Treasury securities are assumed in order to maintain that level of reserve balances.

[4] The annual growth rate of capital affects the date of normalization of the size of the balance sheet and the size of the SOMA portfolio. Growth in Reserve Bank capital has been modest over the past two years; however, even if Federal Reserve capital were assumed to be constant, normalization only would be pushed later by about a quarter.

- In the event that a Federal Reserve Bank's earnings fall short of the amount necessary to cover operating costs, pay dividends, and equate surplus to capital paid-in, a deferred asset would be recorded. This deferred asset is recorded in lieu of reducing the Reserve Bank's capital and is reported on the liability side of the balance sheet as "Interest on Federal Reserve notes due to U.S. Treasury." This liability takes on a positive value when weekly cumulative earnings have not yet been distributed to the Treasury and takes on a negative value when earnings fall short of the expenses listed above. In all scenarios, System-wide earnings are always sufficient to cover these expenses, and this line item is set to zero.

TERM PREMIUM EFFECTS[5]

- Under Alternative B, the current staff estimates of the contemporaneous term premium effect on the yield of the ten-year Treasury note is negative 70 basis points. Based on the projection for the balance sheet, that term premium effect converges slowly toward zero over the forecast period as the portfolio normalizes. The path of the term premium effect is a bit more negative than in the June Tealbook Alternative B because of the later liftoff date of the federal funds rate, which implies securities remain out of the hands of the public for longer than in the last Tealbook.
- Under Alternative A, the term premium effect is negative 89 basis points. The effect is more negative than in Alternative B because of the assumed $1 trillion LSAP program and later lift off date of the federal funds rate.
- Under Alternative C, the term premium effect is negative 63 basis points. The effect is less negative than in Alternative B because of the earlier assumed increase in the federal funds rate which, in turn, leads to earlier asset redemptions and sales that push securities back into the hands of the public sooner.

Explanatory Notes

[5] Staff estimates use the model outlined in the appendix of the January 18, 2012, memo "Possible MBS Large-Scale Asset Purchase Program" written by staff at the Federal Reserve Bank of New York and the Board of Governors. More details of the model can be found in "Term Structure Modeling with Supply Factors and the Federal Reserve's Large Scale Asset Purchase Programs" by Li and Wei, FEDS working paper # 37, 2012.

10-Year Treasury Term Premium Effect				
Date	Alternative B	Alternative A	Alternative C	*June Alternative B*
Basis Points Quarterly Averages				
2012 Q3	-70	-89	-63	-68
2012 Q4	-66	-86	-60	-65
2013 Q1	-63	-82	-56	-62
2013 Q2	-59	-78	-52	-58
2013 Q3	-55	-74	-47	-54
2013 Q4	-51	-69	-44	-50
2014 Q1	-47	-64	-40	-47
2014 Q2	-43	-59	-36	-43
2014 Q3	-40	-54	-33	-40
2014 Q4	-36	-50	-30	-37
2015 Q1	-33	-45	-27	-34
2015 Q2	-29	-40	-24	-31
2015 Q3	-26	-36	-21	-28
2015 Q4	-24	-32	-19	-26
2016 Q1	-21	-29	-17	-24
2016 Q2	-19	-25	-15	-22
2016 Q3	-17	-22	-13	-20
2016 Q4	-15	-20	-11	-18
2017 Q1	-13	-17	-10	-16
2017 Q2	-11	-15	-9	-15
2017 Q3	-10	-13	-8	-14
2017 Q4	-9	-11	-7	-13
2018 Q1	-8	-9	-6	-12
2018 Q2	-7	-8	-6	-11
2018 Q3	-7	-7	-6	-10
2018 Q4	-6	-6	-5	-10
2019 Q1	-6	-5	-5	-9
2019 Q2	-6	-5	-5	-9
2019 Q3	-5	-5	-5	-8
2019 Q4	-5	-4	-5	-8
2020 Q1	-5	-4	-4	-7
2020 Q2	-4	-4	-4	-7
2020 Q3	-4	-3	-4	-6
2020 Q4	-4	-3	-3	-6

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

Billions of dollars

	Jun 29, 2012	2012	2014	2016	2018	2020
Total assets	2,862	2,841	2,790	2,201	1,796	1,993
Selected assets						
Liquidity programs for financial firms	28	0	0	0	0	0
Primary, secondary, and seasonal credit	0	0	0	0	0	0
Central bank liquidity swaps	28	0	0	0	0	0
Term Asset-Backed Securities Loan Facility (TALF)	6	3	1	0	0	0
Net portfolio holdings of Maiden Lane LLC, Maiden Lane II LLC, and Maiden Lane III LLC	15	2	0	0	0	0
Securities held outright	2,606	2,594	2,570	2,022	1,652	1,873
U.S. Treasury securities	1,660	1,654	1,654	1,435	1,413	1,873
Agency debt securities	91	77	39	16	2	0
Agency mortgage-backed securities	855	863	878	571	237	0
Net portfolio holdings of TALF LLC	1	1	1	0	0	0
Total other assets	206	242	218	178	144	120
Total liabilities	2,808	2,779	2,708	2,092	1,653	1,804
Selected liabilities						
Federal Reserve notes in circulation	1,070	1,108	1,250	1,390	1,535	1,687
Reverse repurchase agreements	70	70	70	70	70	70
Deposits with Federal Reserve Banks	1,647	1,584	1,372	616	32	32
Reserve balances held by depository institutions	1,524	1,492	1,365	610	25	25
U.S. Treasury, General Account	91	90	5	5	5	5
Other Deposits	32	2	2	2	2	2
Interest on Federal Reserve Notes due to U.S. Treasury	3	0	0	0	0	0
Total capital	55	62	82	108	143	189

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

Explanatory Notes

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

Billions of dollars

	Jun 29, 2012	2012	2014	2016	2018	2020
Total assets	2,862	3,144	3,856	2,899	1,798	1,995
Selected assets						
Liquidity programs for financial firms	28	0	0	0	0	0
Primary, secondary, and seasonal credit	0	0	0	0	0	0
Central bank liquidity swaps	28	0	0	0	0	0
Term Asset-Backed Securities Loan Facility (TALF)	6	3	1	0	0	0
Net portfolio holdings of Maiden Lane LLC, Maiden Lane II LLC, and Maiden Lane III LLC	15	2	0	0	0	0
Securities held outright	2,606	2,901	3,617	2,714	1,656	1,884
U.S. Treasury securities	1,660	1,868	2,249	1,751	1,190	1,884
Agency debt securities	91	77	39	16	2	0
Agency mortgage-backed securities	855	956	1,329	947	463	0
Net portfolio holdings of TALF LLC	1	1	1	0	0	0
Total other assets	206	238	237	185	142	111
Total liabilities	2,808	3,082	3,774	2,791	1,655	1,805
Selected liabilities						
Federal Reserve notes in circulation	1,070	1,108	1,250	1,390	1,535	1,687
Reverse repurchase agreements	70	70	70	70	70	70
Deposits with Federal Reserve Banks	1,647	1,886	2,435	1,312	32	32
Reserve balances held by depository institutions	1,524	1,794	2,344	1,306	25	25
U.S. Treasury, General Account	91	90	90	5	5	5
Other Deposits	32	2	2	2	2	2
Interest on Federal Reserve Notes due to U.S. Treasury	3	0	0	0	0	0
Total capital	55	62	82	108	143	189

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

Explanatory Notes

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

Billions of dollars

	Jun 29, 2012	2012	2014	2016	2018	2020
Total assets	2,862	2,839	2,587	1,995	1,796	1,993
Selected assets						
Liquidity programs for financial firms	28	0	0	0	0	0
Primary, secondary, and seasonal credit	0	0	0	0	0	0
Central bank liquidity swaps	28	0	0	0	0	0
Term Asset-Backed Securities Loan Facility (TALF)	6	3	1	0	0	0
Net portfolio holdings of Maiden Lane LLC, Maiden Lane II LLC, and Maiden Lane III LLC	15	2	0	0	0	0
Securities held outright	2,606	2,594	2,376	1,825	1,658	1,874
U.S. Treasury securities	1,660	1,654	1,654	1,435	1,592	1,874
Agency debt securities	91	77	39	16	2	0
Agency mortgage-backed securities	855	863	683	374	64	0
Net portfolio holdings of TALF LLC	1	1	1	0	0	0
Total other assets	206	240	209	170	138	119
Total liabilities	2,808	2,777	2,505	1,887	1,653	1,804
Selected liabilities						
Federal Reserve notes in circulation	1,070	1,108	1,250	1,390	1,535	1,687
Reverse repurchase agreements	70	70	70	70	70	70
Deposits with Federal Reserve Banks	1,647	1,582	1,168	411	32	32
Reserve balances held by depository institutions	1,524	1,490	1,162	405	25	25
U.S. Treasury, General Account	91	90	5	5	5	5
Other Deposits	32	2	2	2	2	2
Interest on Federal Reserve Notes due to U.S. Treasury	3	0	0	0	0	0
Total capital	55	62	82	108	143	189

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

Explanatory Notes