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

September 6, 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 six policy rules: the Taylor (1993) rule, the Taylor (1999) rule, the inertial Taylor (1999) rule, the outcome-based rule, the first-difference rule, and the nominal income targeting rule.[1] These prescriptions take as given the staff's baseline projections for real activity and inflation in 2012 and 2013. Medium-term prescriptions derived from dynamic simulations of each rule are discussed below. 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 through the first quarter of 2013. The exception is the Taylor (1993) rule, which has a relatively low response to the output gap; it prescribes a funds rate target of about 150 basis points for the fourth quarter of 2012 and 130 basis points for the first quarter of 2013. The right-hand columns display the rule prescriptions that arise in the absence of the lower-bound constraint. The outcome-based rule, the first-difference rule, and the inertial Taylor (1999) rule prescribe funds rates that are near 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 immediate 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." The outlook for inflation is about the same as in the previous Tealbook. The staff outlook for the output gap from 2012 through 2017 is 20 to 60 basis points narrower than in July, but little changed thereafter. The narrower output gap in part reflects the fact that the staff, as detailed in Book A of the Tealbook, now estimates that economic activity increased at a somewhat faster pace during the first half of this year than had been estimated in the July Tealbook. In addition, the staff slightly revised up its outlook for real GDP growth in

[1] Details for each rule appear in Explanatory Note A. This is the first Tealbook that has presented near-term prescriptions for the inertial Taylor (1999) rule. This rule uses the same long-run coefficients on the inflation and output gaps as Taylor (1999) and includes a coefficient of 0.85 on the lagged nominal federal funds rate. Its properties are discussed in the memo by C. Erceg, J. Faust, M. Kiley, J.P. Laforte, D. López-Salido, S. Meyer, E. Nelson, D. Reifschneider, and R. 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.

Strategies

Policy Rules and the Staff Projection

Near-Term Prescriptions of Selected Policy Rules

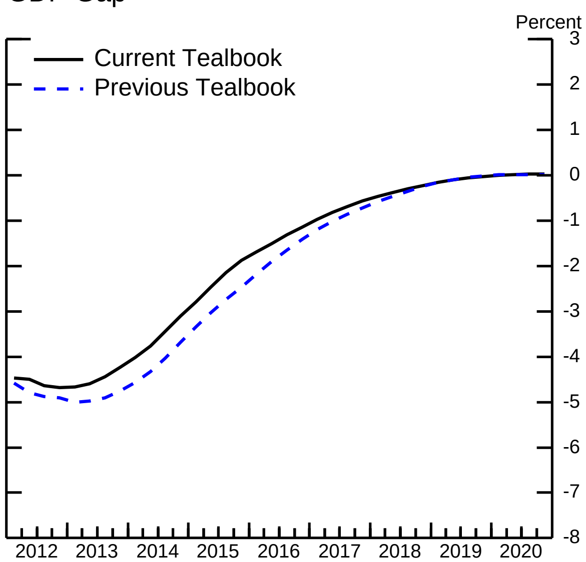
	Constrained Policy		Unconstrained Policy	
	2012Q4	2013Q1	2012Q4	2013Q1
Taylor (1993) rule	**1.53**	**1.30**	**1.53**	**1.30**
Previous Tealbook	*1.55*	*1.23*	*1.55*	*1.23*
Taylor (1999) rule	**0.13**	**0.13**	**-0.76**	**-0.98**
Previous Tealbook	*0.13*	*0.13*	*-0.84*	*-1.21*
Inertial Taylor (1999) rule	**0.13**	**0.13**	**0.01**	**-0.14**
Previous Tealbook Outlook	*0.13*	*0.13*	*-0.01*	*-0.19*
Outcome-based rule	**0.13**	**0.13**	**-0.02**	**-0.23**
Previous Tealbook Outlook	*0.13*	*0.13*	*-0.02*	*-0.31*
First-difference rule	**0.13**	**0.13**	**0.03**	**0.04**
Previous Tealbook Outlook	*0.13*	*0.13*	*-0.09*	*-0.21*
Nominal income targeting rule	**0.13**	**0.13**	**-0.41**	**-0.86**
Previous Tealbook Outlook	*0.13*	*0.13*	*-0.52*	*-1.06*

Memo: Equilibrium and Actual Real Federal Funds Rate

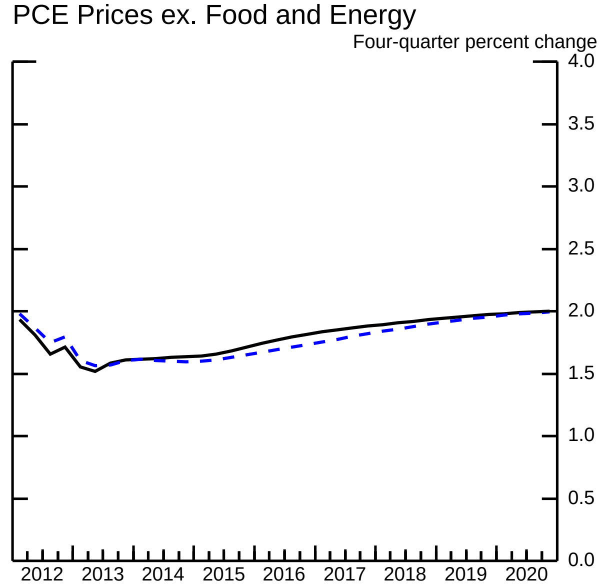
	Current Tealbook	*Previous Tealbook*
Tealbook-consistent FRB/US *r** estimate	-2.39	*-2.79*
Actual real federal funds rate	-1.67	*-1.73*

Key Elements of the Staff Projection

GDP Gap



PCE Prices ex. Food and Energy



Note: For rules which have the lagged policy rate as a right-hand-side variable, the lines denoted "Previous Tealbook Outlook" report rule prescriptions based on the previous Tealbook's staff outlook, but jumping off from the average value for the policy rate thus far in the quarter.

2013. Because of the narrowing in the output gap projection, the near-term prescriptions from the unconstrained rules have risen a bit compared with those in the July Tealbook.

The top panel of 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 potential in twelve quarters. Reflecting the narrower staff projections for the output gap, the r^* estimate is 40 basis points higher than in the July Tealbook. However, at −2.4 percent, it remains well below the estimated actual real federal funds rate of −1.7 percent.

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 six 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 policy rules. Each rule is implemented from the third quarter of 2012 onward, under the assumption that private agents fully understand and anticipate the implications of the 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.

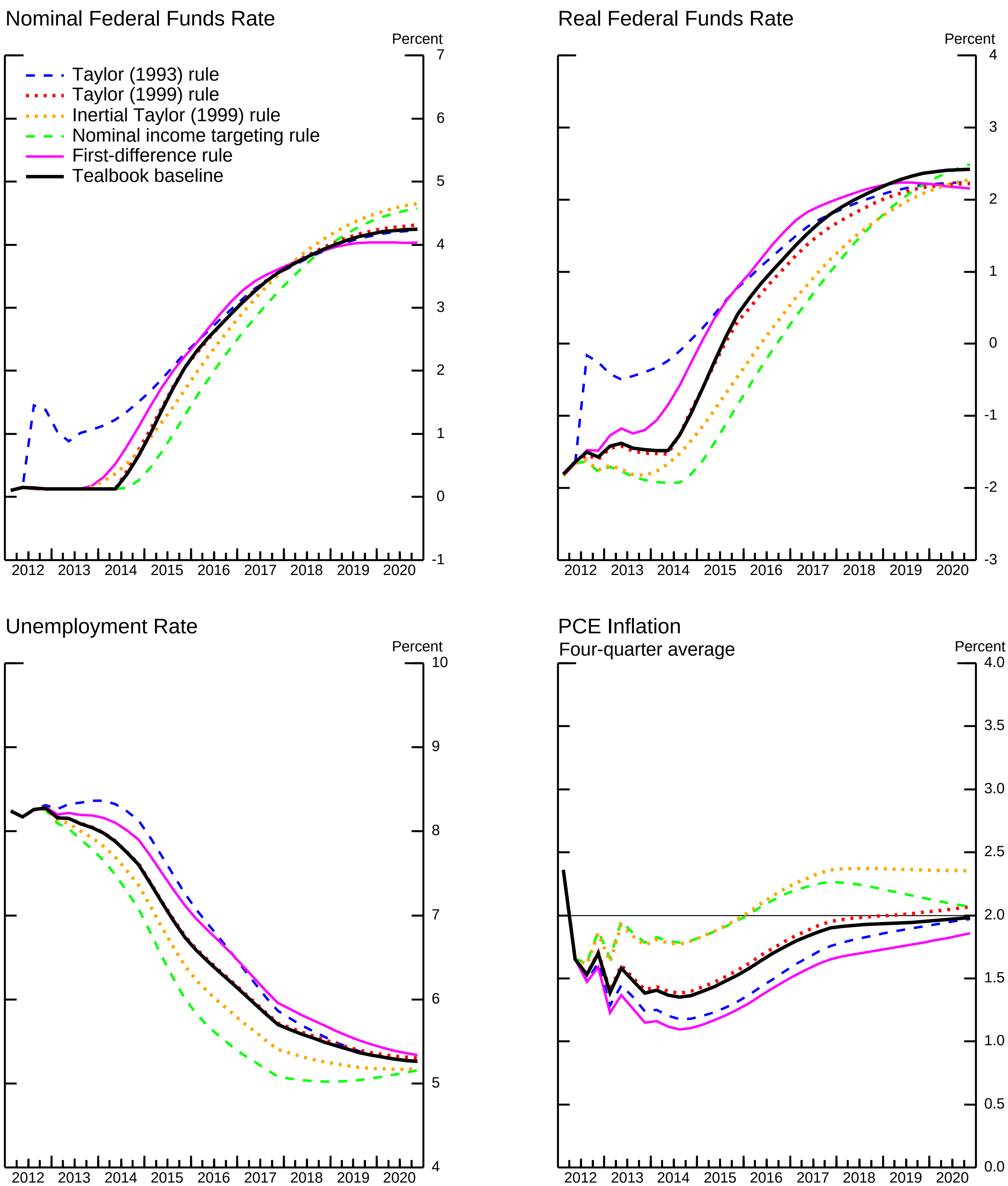
In the Tealbook baseline, the federal funds rate departs from the effective lower bound in the third quarter of 2014, one quarter earlier than in the July Tealbook, and then increases gradually to just above 4 percent by the end of the decade. The Taylor (1999) rule leads to a path for the federal funds rate that nearly replicates the baseline path.[3] The

[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.

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.

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 1.4 percent, gradually increases to the 2 percent goal.

Under the nominal income targeting rule, the initial increase in the funds rate occurs in the fourth quarter of 2014, 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 the unemployment rate with inflation fluctuating near 2 percent from mid-2013 onward.

As both the Taylor (1993) rule and the first-difference rule prescribe tighter funds rate paths than 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 130 basis point increase in the funds rate leads real activity and inflation to be weaker than under the baseline, prompting a partial reversal of the initial rate hike. While the first-difference rule does not call for an increase in the funds rate until the first quarter of 2014, it implies policy rates from mid-2015 onwards that are about the same as under the Taylor (1993) rule. Reflecting the forward-looking price- and wage-setting behavior assumed in these simulations, the Taylor (1993) rule and the first-difference rule thus generate fairly similar outcomes for inflation, despite the initial differences in their funds rate prescriptions.

Under the inertial Taylor (1999) rule, the first tightening of the funds rate occurs in the second quarter of 2014, one quarter before the initial tightening prescribed by the Taylor (1999) rule and in the baseline simulation. This earlier tightening reflects the fact that the inertial Taylor (1999) rule subsequently prescribes a slower pace of policy tightening, generating a lower path for the real federal funds rate in the near term and therefore a quicker pickup in real activity and a lower path for the unemployment rate than for the Taylor (1999) rule simulation.

[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.

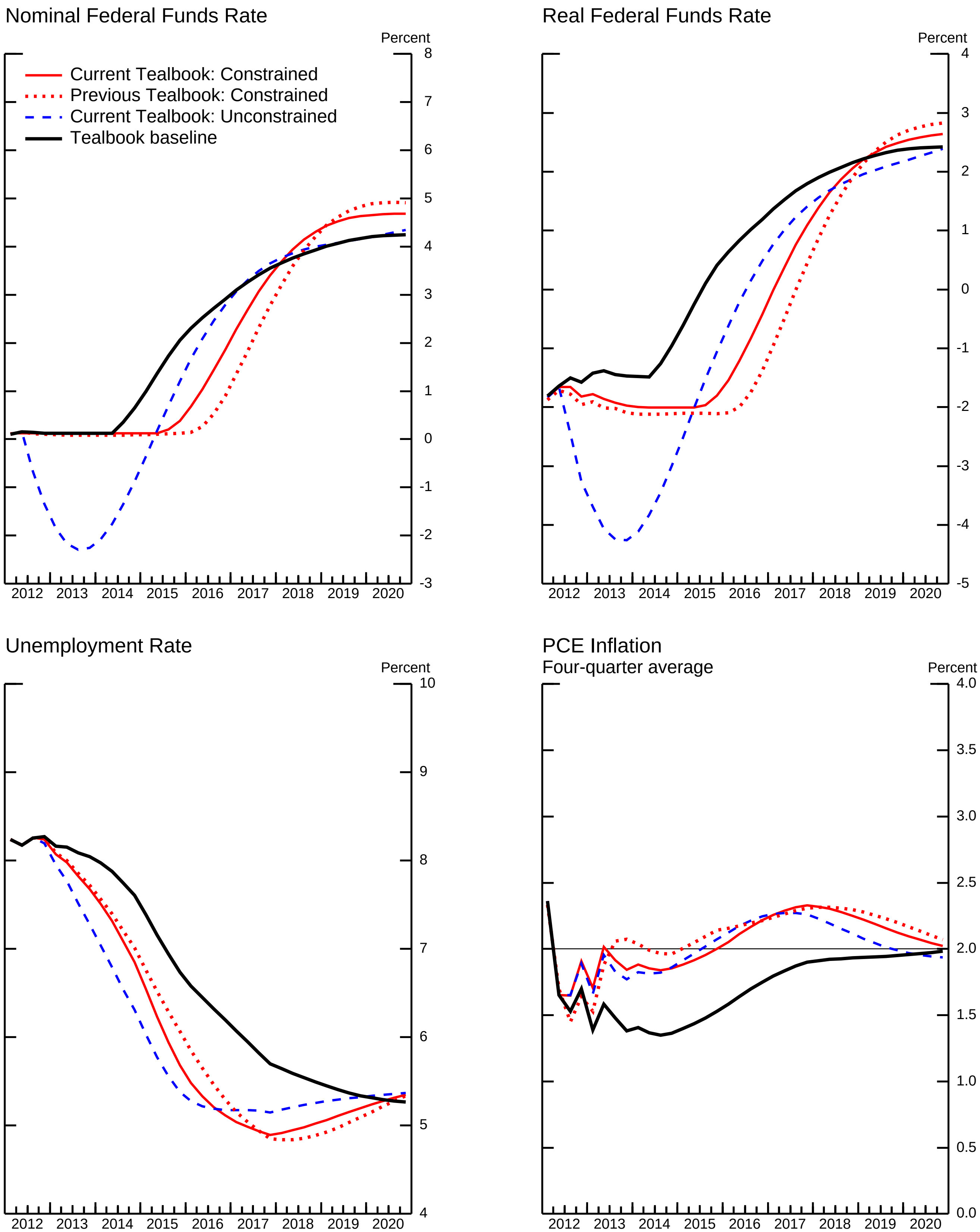
The implications of the staff's revisions to economic fundamentals can be seen in the next exhibit, "Constrained vs. Unconstrained Optimal Control Policy," which compares optimal control simulations derived for this Tealbook with those shown in July.[5] In these simulations, policymakers are assumed to place equal weights on keeping headline PCE inflation close to the Committee's 2 percent goal, on keeping the unemployment rate close to the staff's estimate of the 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 fourth quarter of 2015, two quarters earlier than the path reported in the July Tealbook.[6] The earlier funds rate firming is primarily a consequence of a modest downward revision to the staff's medium-term outlook for the unemployment rate.

The constrained optimal control policy keeps the funds rate lower for longer than any of the 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 set of simulations, the gap between the unemployment rate and the staff's estimate of the effective natural rate of unemployment is closed by the end of 2015, and the unemployment rate subsequently runs slightly below its natural rate for a few years. Inflation initially exhibits a smaller decline than in the Tealbook baseline before increasing to the 2 percent objective by the fourth quarter of 2015 and then overshooting slightly, peaking at 2.3 percent in the fourth quarter of 2017 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 initial years of the simulation.

[5] 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.

[6] Although the loss function uses headline inflation instead of core inflation, the real federal funds rate shown in the upper right panel of the exhibit 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.

Constrained vs. Unconstrained Optimal Control Policy



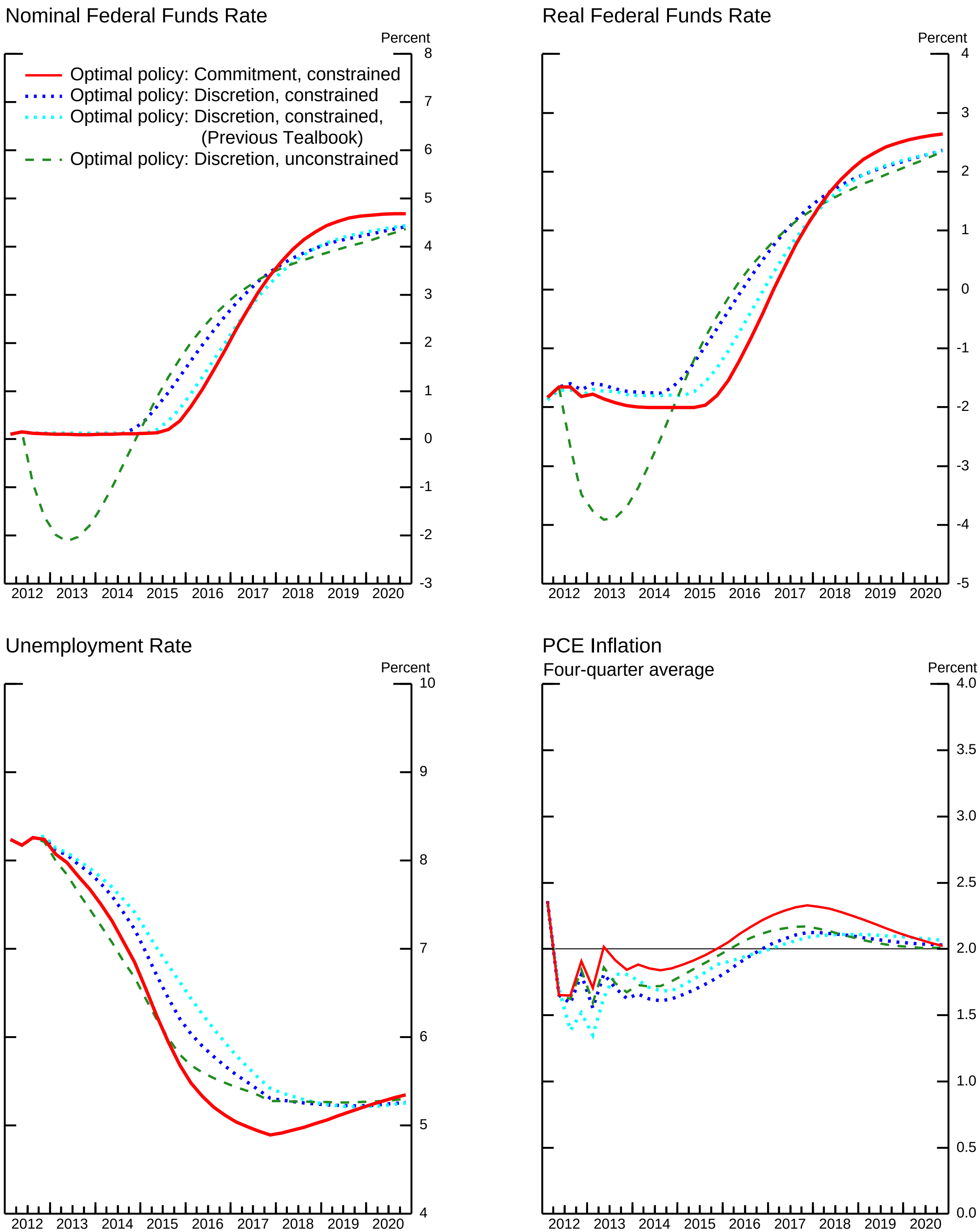
If the nominal federal funds rate could fall below zero, the funds rate, under the optimal unconstrained policy, would decrease to –2.3 percent in the third quarter of 2013 and return to positive territory by the second quarter of 2015. Under these conditions, the unemployment rate would decline more rapidly than under the optimal constrained policy and would reach the estimated natural rate of unemployment by early 2015. Inflation would rise back to 2 percent by the third quarter of 2015, 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 2.25 percent by 2017 before returning to the 2 percent mark by the end of 2019.

The optimal control simulations discussed above assume that policymakers can credibly commit to future policy actions, constraining the choices of future policymakers. A potential difficulty with commitment-based strategies is that their effectiveness depends on influencing the private sector's expectation of the policy strategy likely to be in place several years ahead. Policymakers' scope to manage expectations via a commitment policy thus hinges on the private sector's belief that the Committee will continue to choose accommodative policy well after the point at which the unemployment rate has returned to a level consistent with full employment and inflation has risen somewhat above its target. The private sector may instead judge that the Committee would reoptimize at that point and choose less stimulative policy. As a result, monetary policy would have less scope to provide stimulus via funds rate policy under discretion than under commitment, and as the exhibit "Optimal Control Policy: Commitment vs. Discretion" shows, the federal funds rate would depart from the effective lower bound in the first quarter of 2015, three quarters earlier than in the commitment case. Accordingly, the unemployment rate would decline more slowly, and inflation would rise more gradually, back to the 2 percent goal.[7]

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

[7] These simulations take the staff's baseline assumption about SOMA portfolio policy as given and so treat the federal funds rate as the sole instrument that the Committee adjusts in response to the state of the economy. If policymakers wished to provide additional policy stimulus but saw little remaining scope to lower private sector expectations of the funds rate path because of limits on their ability to commit to future policy, they could still provide stimulus by expanding the Federal Reserve's holdings of securities.

Optimal Control Policy: Commitment vs. Discretion



Strategies

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	1.8	1.5	2.4	3.2	3.6	3.0
Taylor (1993)	1.8	1.1	1.8	2.9	3.7	3.4
Taylor (1999)	1.8	1.5	2.4	3.2	3.5	3.0
Inertial Taylor (1999)	1.8	1.6	2.7	3.4	3.7	3.0
First-difference	1.8	1.4	2.1	2.9	3.5	3.1
Nominal income targeting	1.8	1.7	3.0	3.7	3.9	3.0
Constrained optimal control	1.8	1.8	3.2	3.9	4.1	2.9
Unemployment rate[1]						
Extended Tealbook baseline	8.2	8.3	8.0	7.6	6.7	6.2
Taylor (1993)	8.2	8.3	8.4	8.1	7.3	6.5
Taylor (1999)	8.2	8.3	8.0	7.6	6.8	6.2
Inertial Taylor (1999)	8.2	8.3	7.9	7.4	6.4	5.8
First-difference	8.2	8.3	8.2	7.9	7.1	6.5
Nominal income targeting	8.2	8.3	7.8	7.1	6.0	5.4
Constrained optimal control	8.2	8.2	7.7	6.9	5.7	5.1
Total PCE prices						
Extended Tealbook baseline	1.6	1.8	1.4	1.4	1.5	1.8
Taylor (1993)	1.6	1.6	1.2	1.2	1.3	1.6
Taylor (1999)	1.6	1.8	1.4	1.4	1.6	1.8
Inertial Taylor (1999)	1.6	2.1	1.8	1.8	2.0	2.2
First-difference	1.6	1.6	1.1	1.1	1.3	1.5
Nominal income targeting	1.6	2.2	1.8	1.8	2.0	2.2
Constrained optimal control	1.6	2.2	1.8	1.9	2.0	2.2
Core PCE prices						
Extended Tealbook baseline	2.0	1.4	1.6	1.6	1.7	1.8
Taylor (1993)	2.0	1.3	1.5	1.5	1.5	1.6
Taylor (1999)	2.0	1.5	1.6	1.7	1.8	1.9
Inertial Taylor (1999)	2.0	1.8	2.0	2.1	2.2	2.3
First-difference	2.0	1.2	1.4	1.4	1.4	1.5
Nominal income targeting	2.0	1.8	2.0	2.1	2.1	2.2
Constrained optimal control	2.0	1.9	2.1	2.1	2.2	2.3
Federal funds rate[1]						
Extended Tealbook baseline	0.2	0.1	0.1	0.6	2.1	2.9
Taylor (1993)	0.2	1.4	1.1	1.5	2.3	3.0
Taylor (1999)	0.2	0.1	0.1	0.7	2.1	2.9
Inertial Taylor (1999)	0.2	0.1	0.2	0.7	1.7	2.7
First-difference	0.2	0.1	0.2	1.1	2.2	3.1
Nominal income targeting	0.2	0.1	0.1	0.3	1.3	2.4
Constrained optimal control	0.2	0.1	0.1	0.1	0.4	1.9

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

Monetary Policy Alternatives

This Tealbook presents five policy alternatives—labeled A, B, B′, 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 are quite similar in their characterization of the incoming data. The draft statements for each alternative begin by noting that "economic activity has continued to expand at a moderate pace in recent months." Alternative A and each of the B alternatives observe that employment has "increased somewhat" and note that the unemployment rate remains elevated. Alternative C does not describe unemployment as elevated, and it characterizes employment growth as having "picked up." Alternative A and each of the B alternatives indicates that household spending has "continued to advance," but that growth in business fixed investment "appears to have slowed." In contrast, Alternative C characterizes private domestic demand as having "continued to advance." Likewise, Alternative A and each of the B alternatives note some further signs of improvement in the housing sector, albeit from a depressed level; Alternative C notes only the improvement. With respect to inflation, Alternative A and each of the B alternatives indicate that it has been subdued but qualify that characterization by noting recent increases in "the prices of some key commodities." Alternative C says that inflation has declined since earlier this year while also noting the significant increase in some commodity prices. Each statement indicates that longer-term inflation expectations have remained stable.

Alternative A and each of the B alternatives also differ from Alternative C in their approach to communicating the medium-term outlook for real activity and employment. The language describing the outlook in Alternative A and the B alternatives has been changed significantly from the August statement. These draft alternatives give a conditional outlook based on the absence of further policy action; this approach aims to convey clearly why additional policy accommodation is forthcoming. Specifically, the statements indicate that "without further policy accommodation" economic growth either likely would not or might not (in the case of B′) "be strong enough to generate sustained improvement in labor market conditions." In contrast, the characterization of the outlook in Alternative C is unconditional and differs only slightly from that in the August statement. All of the draft statements continue to highlight the significant downside risks to the outlook from strains in global financial markets. With respect to the outlook for inflation, Alternative A and each of the B alternatives indicate that the Committee anticipates that inflation over the medium term "likely would run at or below" 2 percent, while Alternative C includes a projection that inflation over the medium term will run "near" the Committee's 2 percent objective.

The alternatives offer a range of different approaches to balance sheet policies. Alternatives A, B, and B′ highlight a choice between two types of asset purchase programs. Alternative A describes an LSAP that is discrete in nature, announcing new purchases that will cumulate to \$750 billion of longer-term Treasury securities and \$500 billion of agency mortgage-backed securities (MBS) by early 2014.[1] Alternatives B and B′ embody incremental, flow-based approaches. In particular, Alternative B indicates that the Committee will start purchasing \$45 billion of longer-term Treasury securities per month and \$30 billion of agency MBS per month and will continue adding to its holdings "until it has observed substantial ongoing improvement in labor market conditions," provided that projected inflation over the medium term is "close to 2 percent" and longer-term inflation expectations remain stable. Under either Alternative A or B, the Committee would end the maturity extension program (MEP) and reinstitute the policy of rolling over maturing Treasury securities at auction. Alternative B′ continues the MEP through year-end and adds \$30 billion per month in purchases of agency MBS; this alternative indicates that the Committee will undertake additional asset purchases if "it does not observe substantial ongoing improvement in labor market conditions" in coming months. Neither Alternative B″ nor Alternative C initiates additional asset purchases at the September meeting. Alternative B″ continues the MEP through the end of the year, and indicates that the Committee "will engage in further asset purchases" if it does not observe substantial ongoing improvement in labor market conditions over coming months. In contrast, Alternative C would only continue the MEP through year-end, as announced in June. All five alternatives envision the Committee continuing its policy of reinvesting principal payments on its holdings of agency debt and agency MBS.

[1] 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 see the memo 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 titled "Market Functioning and Limits on Asset Purchases" sent to the Committee on July 25, 2012.

Under all five alternatives, the Committee would maintain the 0 to ¼ percent target range for the federal funds rate. Alternatives A, B, and B′ extend the period over which the Committee anticipates maintaining exceptionally low levels of the funds rate to "at least through mid-2015." Except for Alternative C, the statements also give the forward guidance a more positive tone by replacing the reference to "low rates of resource utilization and a subdued outlook for inflation" with language that conveys the Committee's intention to keep the federal funds rate low until after the recovery has clearly strengthened. Specifically, statements associated with Alternatives A and B say, "the Committee expects that a highly accommodative stance of monetary policy will remain appropriate for a considerable time after the conclusion of this asset-purchase program." The wording under Alternatives B′ and B″ replace "after the conclusion of this asset-purchase program" with "after the economic recovery strengthens." Alternative B″ aims to provide additional accommodation by introducing new forward guidance, indicating that the Committee will keep the target range for the federal funds rate at 0 to ¼ percent "at least as long as the unemployment rate exceeds 6½ percent" provided that inflation stays close to the Committee's 2 percent objective and longer-term inflation expectations continue to be well anchored. Alternative C offers the choice of 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 first 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 alternative statements. The table is followed by complete draft statements and then by a summary of the arguments for each alternative.

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Table 1: Overview of Policy Alternatives for the September 13 FOMC Statement

<table>
<tr><th rowspan="2">Selected Elements</th><th rowspan="2">August Statement</th><th colspan="5">September Alternatives</th></tr>
<tr><th>A</th><th>B</th><th>B′</th><th>B″</th><th>C</th></tr>
<tr><td colspan="6">Economic Outlook</td><td></td></tr>
<tr><td rowspan="3">Growth and employment</td><td rowspan="3">growth to remain moderate over coming quarters and then to pick up very gradually; unemployment rate will decline only slowly</td><td colspan="2">expects that,
without further policy accommodation, growth…</td><td>concerned that, without further policy accommodation, growth…</td><td>expects that,
without further policy accommodation, growth...</td><td rowspan="3">growth to remain moderate over coming quarters and then to pick up gradually; unemployment rate will decline slowly</td></tr>
<tr><td colspan="2">…likely would not be…</td><td>…might not be…</td><td>…likely would not be…</td></tr>
<tr><td colspan="4">strong enough to generate sustained improvement in labor market conditions</td></tr>
<tr><td>Inflation</td><td>will run at or below rate judged most consistent with dual mandate</td><td colspan="4">likely would run at or below 2 percent</td><td>will run near 2 percent</td></tr>
<tr><td colspan="6">Balance Sheet Policies</td><td></td></tr>
<tr><td>MEP</td><td>continue through the end of the year… as announced in June</td><td colspan="2">ended</td><td colspan="3">unchanged
(continue MEP)</td></tr>
<tr><td rowspan="2">Securities Reinvestment</td><td>principal payments of agency debt and MBS into agency MBS</td><td colspan="5">maintained</td></tr>
<tr><td>Directive: suspend Treasury rollovers during MEP</td><td colspan="2">reinstituted</td><td colspan="3">unchanged
(no Treasury rollovers)</td></tr>
<tr><td>Asset Purchases</td><td>none</td><td>begin new program: [$750] billion of longer-term Treasury securities and [$500] billion of agency MBS by early 2014; combined pace of about [$75] billion/month</td><td>begin new program: [$45] bil/month longer-term Treasury securities and [$30] bil/month agency MBS; purchase until observe substantial ongoing improvement in labor market, with inflation close to 2 percent and inflation expectations stable; program will continue at least through mid-2013</td><td>[$30] billion/month agency MBS, so holdings of longer-term securities will increase [$75] billion/month</td><td colspan="2">unchanged
(none)</td></tr>
</table>

Table 1: Overview of Policy Alternatives for the September 13 FOMC Statement

(*continued*)

Selected Elements	August Statement	September Alternatives				
		A	**B**	**B′**	**B″**	**C**
Balance Sheet Guidance						
Guidance	will closely monitor incoming information;	will regularly review size and composition of balance sheet;	will regularly review pace and composition of purchases in light of actual and projected progress, efficacy and costs	will closely monitor incoming information in coming months;	will closely monitor incoming information;	will regularly review size and composition of securities holdings;
	will provide additional accommodation as needed	remains prepared to make adjustments as appropriate	n.a.	if do not observe substantial ongoing improvement in labor market, will undertake additional purchases; will take account of efficacy and costs	if do not observe substantial ongoing improvement in labor market in coming months, will engage in further purchases; will take account of efficacy and costs	is prepared to adjust holdings as necessary
Forward Rate Guidance						
Rationale	to support stronger recovery and help ensure inflation is at rate most consistent with dual mandate…	to support continued progress toward goals…			to support more rapid improvement in labor market conditions and help ensure inflation (unchanged)…	to support *the*… ***OR*** to support *sustainable* recovery and help ensure inflation (unchanged)…
Guidance	…at least through late 2014	…for a considerable time after conclusion of asset-purchase program... at least through mid-2015		…for a considerable time after recovery strengthens… at least through mid-2015	…for a considerable time after recovery strengthens… at least as long as quantitative conditions for unemployment rate and projected inflation are met, with inflation expectations well anchored (no date)	…at least through late [2013 | 2014] ***OR*** give conditions for timing of first rate increase (no date)

AUGUST FOMC STATEMENT

1. Information received since the Federal Open Market Committee met in June suggests that economic activity decelerated somewhat over the first half of this year. Growth in employment has been slow in recent months, and the unemployment rate remains elevated. Business fixed investment has continued to advance. Household spending has been 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 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 as announced in June, 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 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.

SEPTEMBER FOMC STATEMENT—ALTERNATIVE A

1. Information received since the Federal Open Market Committee met in ~~June~~ **August** suggests that economic activity ~~decelerated somewhat over the first half of this year~~ **has continued to expand at a moderate pace in recent months**. ~~Growth in~~ **Although** employment has ~~been slow in recent months~~ **increased somewhat**, ~~and~~ the unemployment rate remains elevated. Household spending has ~~been rising at a somewhat slower pace than earlier in the year~~ **continued to advance, but growth in** business fixed investment ~~has continued to advance~~ **appears to have slowed**. ~~Despite some further signs of improvement,~~ The housing sector ~~remains~~ **has shown some further signs of improvement, albeit from a** depressed **level**. Inflation has ~~declined since earlier this year, mainly reflecting lower prices of crude oil and gasoline~~ **been subdued, although the prices of some key commodities have increased recently**. ~~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 **that, without further policy accommodation,** economic growth ~~to remain moderate over coming quarters and then to pick up very gradually~~ **likely would not be strong enough to generate sustained improvement in labor market conditions**. ~~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 **also** anticipates that inflation over the medium term ~~will~~ **likely would** run at or below ~~the rate that it judges most consistent with its dual mandate~~ **its 2 percent objective**.

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~~ **close to 2 percent**, the Committee ~~expects to maintain a highly accommodative stance for monetary policy~~ **decided today to begin a new asset-purchase program**. **Specifically, the Committee now intends to purchase [$750 billion] of longer-term Treasury securities and [$500 billion] of agency mortgage-backed securities by early 2014, a combined pace of about [$75] billion per month. These increases in its securities holdings should put downward pressure on longer-term interest rates, support mortgage markets, and help to make broader financial conditions more accommodative.** The Committee will ~~closely monitor incoming information on~~ **regularly review the size and composition of its balance sheet in light of** economic and financial developments and ~~will provide additional accommodation as needed~~ **remains prepared to make adjustments as appropriate** to promote a stronger economic recovery and sustained improvement in labor market conditions in a context of price stability.

4. **This new asset-purchase program replaces the previously announced maturity extension program. In particular, 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 ~~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, 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.

5. **To support continued progress toward maximum employment and price stability, the Committee expects that a highly accommodative stance of monetary policy will remain appropriate for a considerable time after the conclusion of this asset-purchase program.** In particular, the Committee **also** 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 **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 September 20, 2012.***

Alternatives

SEPTEMBER FOMC STATEMENT—ALTERNATIVE B

1. Information received since the Federal Open Market Committee met in ~~June~~ **August** suggests that economic activity ~~decelerated somewhat over the first half of this year~~ **has continued to expand at a moderate pace in recent months**. ~~Growth in~~ **Although** employment has ~~been slow in recent months~~ **increased somewhat**, ~~and~~ the unemployment rate remains elevated. Household spending has ~~been rising at a somewhat slower pace than earlier in the year~~ **continued to advance, but growth in** business fixed investment ~~has continued to advance~~ **appears to have slowed**. ~~Despite some further signs of improvement,~~ The housing sector ~~remains~~ **has shown some further signs of improvement, albeit from a** depressed **level**. Inflation has ~~declined since earlier this year, mainly reflecting lower prices of crude oil and gasoline~~ **been subdued, although the prices of some key commodities have increased recently**. ~~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 **that, without further policy accommodation,** economic growth ~~to remain moderate over coming quarters and then to pick up very gradually~~ **likely would not be strong enough to generate sustained improvement in labor market conditions**. ~~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 **also** anticipates that inflation over the medium term ~~will~~ **likely would** run at or below ~~the rate that it judges most consistent with its dual mandate~~ **its 2 percent objective**.
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~~ **decided today to begin a new asset-purchase program**. **Specifically, the Committee now intends to increase its holdings of longer-term Treasury securities at a pace of about [$45] billion per month and increase its holdings of agency mortgage-backed securities at a pace of about [$30] billion per month. This new asset-purchase program replaces the previously announced maturity extension program. In particular, 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 ~~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, 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 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.~~

4. **The Committee will continue this new asset-purchase program until it has observed substantial ongoing improvement in labor market conditions, provided that the Committee projects that inflation over the medium term will be close to its 2 percent objective and longer-term inflation expectations remain stable. Given its current assessment of the economic outlook, the Committee anticipates that this program will continue at least through mid-2013. These increases in its securities holdings should put downward pressure on longer-term interest rates, support mortgage markets, and help to make broader financial conditions more accommodative. The Committee will regularly review the pace and composition of its securities purchases in light of actual and projected progress toward its objectives and its ongoing assessments of the efficacy and costs of the purchases.**

5. **To support continued progress toward maximum employment and price stability, the Committee expects that a highly accommodative stance of monetary policy will remain appropriate for a considerable time after the conclusion of this asset-purchase program.** In particular, the Committee **also** 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 **are likely to be warranted** at least through ~~late 2014~~ **mid-2015**.

Alternatives

SEPTEMBER FOMC STATEMENT—ALTERNATIVE B′

1. Information received since the Federal Open Market Committee met in ~~June~~ **August** suggests that economic activity ~~decelerated somewhat over the first half of this year~~ **has continued to expand at a moderate pace in recent months**. ~~Growth in~~ **Although** employment has ~~been slow in recent months~~ **increased somewhat**, ~~and~~ the unemployment rate remains elevated. Household spending has ~~been rising at a somewhat slower pace than earlier in the year~~ **continued to advance, but growth in** business fixed investment ~~has continued to advance~~ **appears to have slowed**. ~~Despite some further signs of improvement,~~ The housing sector ~~remains~~ **has shown some further signs of improvement, albeit from a** depressed **level**. Inflation has ~~declined since earlier this year, mainly reflecting lower prices of crude oil and gasoline~~ **been subdued, although the prices of some key commodities have increased recently**. ~~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~~ **is concerned that, without further policy accommodation,** economic growth ~~to remain moderate over coming quarters and then to pick up very gradually~~ **might not be strong enough to generate sustained improvement in labor market conditions**. ~~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 **also** anticipates that inflation over the medium term ~~will~~ **likely would** run at or below ~~the rate that it judges most consistent with its dual mandate~~ **its 2 percent objective**.

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~~ **agreed today to increase policy accommodation by purchasing additional agency mortgage-backed securities at a pace of [$30] billion per month.** The Committee also ~~decided to~~ **will** continue through the end of the year its program to extend the average maturity of its holdings of securities as announced in June, 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. **These actions, which together will increase the Committee's holdings of longer-term securities by about $75 billion each month, should put downward pressure on longer-term interest rates, support mortgage markets, and help to make broader financial conditions more accommodative.**

4. The Committee will closely monitor incoming information on economic and financial developments ~~and will provide additional accommodation as needed to promote~~ **in coming months**. **If it does not observe** ~~a stronger economic recovery and sustained~~ **substantial ongoing** improvement in labor market conditions ~~in a context of price stability~~**, the Committee will continue its purchases of agency mortgage-backed securities and undertake additional asset purchases until such improvement is achieved**. **In determining the pace and composition of its asset purchases, the Committee will take appropriate account of the likely efficacy and costs of additional purchases.**

5. **To support continued progress toward maximum employment and price stability, the Committee expects that a highly accommodative stance of monetary policy will remain appropriate for a considerable time after the economic recovery strengthens.** In particular, the Committee **also** 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 **are likely to be warranted** at least through ~~late 2014~~ **mid-2015**.

Alternatives

SEPTEMBER FOMC STATEMENT—ALTERNATIVE B′

1. Information received since the Federal Open Market Committee met in ~~June~~ **August** suggests that economic activity ~~decelerated somewhat over the first half of this year~~ **has continued to expand at a moderate pace in recent months**. ~~Growth in~~ **Although** employment has ~~been slow in recent months~~ **increased somewhat**, ~~and~~ the unemployment rate remains elevated. Household spending has ~~been rising at a somewhat slower pace than earlier in the year~~ **continued to advance, but growth in** business fixed investment ~~has continued to advance~~ **appears to have slowed**. ~~Despite some further signs of improvement,~~ The housing sector ~~remains~~ **has shown some further signs of improvement, albeit from a** depressed **level**. Inflation has ~~declined since earlier this year, mainly reflecting lower prices of crude oil and gasoline~~ **been subdued, although the prices of some key commodities have increased recently**. ~~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 **that, without further policy accommodation,** economic growth ~~to remain moderate over coming quarters and then to pick up very gradually~~ **likely would not be strong enough to generate sustained improvement in labor market conditions**. ~~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 **also** anticipates that inflation over the medium term ~~will~~ **likely would** run at or below ~~the rate that it judges most consistent with its dual mandate~~ **its 2 percent objective**.

3. To support ~~a stronger economic recovery~~ **more rapid improvement in labor market conditions** and to help ensure that inflation, over time, is at the rate most consistent with its dual mandate, the Committee ~~expects~~ **intends** to maintain a highly accommodative stance for monetary policy **for a considerable time after the economic recovery strengthens**. 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~~ **this exceptionally low range for the federal funds rate will be appropriate at least as long as the unemployment rate exceeds 6½ percent, provided that inflation [at a one- to two-year horizon is projected to be no more than a half percentage point above the Committee's 2 percent objective | is projected to be close to the Committee's 2 percent objective in the medium term] and longer-term inflation expectations continue to be well anchored**.

4. **The threshold value for unemployment given in the previous paragraph should not be interpreted as representing the Committee's longer-term objective for maximum employment. In particular, because monetary policy actions affect the economy only with a lag, the process of removing policy accommodation must begin before the unemployment rate has returned to its longer-run normal level.**

5. 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, 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.

6. The Committee 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. **In particular, if the Committee does not observe substantial ongoing improvement in labor market conditions over coming months, it will engage in further asset purchases until such improvement is achieved. In determining the pace and composition of any new asset-purchase program, the Committee will take appropriate account of the likely efficacy and costs of additional purchases.**

Alternatives

SEPTEMBER FOMC STATEMENT—ALTERNATIVE C

1. Information received since the Federal Open Market Committee met in ~~June~~ **August** suggests that economic activity ~~decelerated somewhat over the first half of this year~~ **has continued to expand at a moderate pace in recent months**. Growth in employment has ~~been slow in recent months, and the unemployment rate remains elevated~~ **picked up**. ~~Business fixed investment~~ **Private domestic demand** has continued to advance, ~~Household spending has been rising at a somewhat slower pace than earlier in the year. Despite some further signs of improvement,~~ **and** the housing sector ~~remains depressed~~ **has shown some further 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**, but prices of some key commodities recently have increased significantly**.

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~~ **near** the ~~rate that it judges most consistent with its dual mandate~~ **Committee's 2 percent objective**.

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.

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, 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 will ~~closely monitor incoming information on economic and financial developments and will provide additional accommodation as needed~~ **regularly review the size and composition of its securities holdings and is prepared to adjust those holdings as necessary** to promote ~~a stronger economic recovery and sustained improvement in labor market conditions in a context of~~ **maximum employment and** price stability.

THE CASE FOR ADDITIONAL ACCOMMODATION

The Committee may believe that without additional policy accommodation economic growth will not be adequate to return the unemployment rate to its mandate-consistent level within the next few years. Members might also expect the inflationary pressures from recent increases in oil and grain prices to be temporary and moderate, and they might see inflation expectations as well anchored, leaving little risk that inflation would surprise to the upside. The general contours of this outlook have persisted for quite some time. Although some of the incoming data during the intermeeting period suggested modest increases in household spending and employment, and the housing sector showed some further signs of improvement, other data, such as those for business spending and consumer confidence, remained soft. Therefore, policymakers also may judge that it would be unlikely that even a couple of months of stronger-than-expected economic activity could reduce the amount of slack in labor markets or alter the trajectory of expected inflation to a degree that would obviate the need for a further easing of monetary policy. With the inflation outlook subdued and the employment outlook unsatisfactory, some policymakers may argue that a balanced approach to achieving both sides of the dual mandate requires significant additional monetary stimulus.

In addition to an unsatisfactory modal projection, policymakers may also judge that downside risks to that outlook—particularly from the European crisis and issues relating to U.S. fiscal policy—remain quite elevated. 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 and the Administration 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. Some members may want to add accommodation in advance to insure against such an event, so that the economy is stronger before encountering those headwinds. Moreover, continued uncertainty about those scenarios could restrain household spending and business investment over the rest of this year more significantly than appears to have been the case thus far. With a substantial fraction of unemployed workers having been jobless for long periods, some FOMC participants also 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.

These draft alternatives provide four approaches to providing additional accommodation. Alternatives A, B, and B′ describe three different strategies for additional asset purchases. If the Committee decided to ease policy through a substantial expansion of its balance sheet, it might choose one of Alternative A, which describes a standard fixed asset-purchase program, or Alternative B, which describes an open-ended, flow-based asset-purchase program. Each of those new asset-purchase programs would replace the existing MEP. Alternative B′ proposes a more incremental change to the Committee's policy by adding agency MBS purchases of $30 billion per month while the MEP is completed and then assessing progress toward the Committee's goals over coming months. Alternative B″ completes the MEP and strengthens the forward guidance by providing explicit quantitative guidance for the unemployment rate and inflation that suggests the first increase in the target range for the federal funds rate will be further in the future than market participants currently expect rather than specifying a date. Alternative B″ also indicates that the Committee would engage in further asset purchases if it does not "observe substantial ongoing improvement in labor market conditions over coming months."

Each of Alternatives A, B, and B′ increases 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 and easing financial conditions in general while also directly supporting mortgage markets. In part, the split between Treasury securities and agency MBS is designed to achieve a higher combined monthly rate of purchases while minimizing the possibility that the program will affect market functioning. Although purchases of agency MBS would typically remove less duration from the market than purchases of longer-term Treasury securities, MBS purchases also may depress somewhat the spread between MBS and Treasury yields, perhaps because of the associated removal of prepayment risk and volatility. As such, those purchases would likely place slightly more downward pressure on residential mortgage interest rates than would a similarly sized program focused solely on Treasury securities. Indeed, some participants may judge that providing additional support to the housing market may help firm the emerging recovery in that sector, a development that they might see as generating wider-ranging benefits, such as higher consumer confidence, given the prominence of the contribution of that sector to the downturn.

Alternative B

The Committee may favor a flow-based purchase program to its previous strategy of announcing a large, discrete total purchase amount, because an open-ended policy conveys that it is willing to do whatever it can to make progress toward its dual objectives. If so, members may wish to announce an incremental, open-ended purchase program like the one included in Alternative B. The Committee could choose to implement such a flow-based 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 "until it has observed substantial ongoing improvement in labor market conditions," provided that the Committee projects that inflation over the medium term "will be close to its 2 percent objective and longer-term inflation expectations remain stable." The new purchase program would replace the existing MEP and the policy of rolling over maturing Treasury securities at auction would be reinstituted.

Policymakers may feel that such a clear indication of the Committee's resolve could boost consumer and business sentiment to a greater degree than announcing another fixed program with a defined end date. 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 shore up economic activity in the face of unanticipated adverse shocks or dampen concerns that the purchases would generate excessive inflation by persisting too long after the outlook strengthened sufficiently. Members may judge that conveying the goals of the program and the Committee's reaction function or "stopping rule" by using qualitative language such as that in paragraph 4 of the draft statement for Alternative B will give investors enough information to enable them to form a reasonable expectation of how long the program is likely to continue, particularly if that language were to be supplemented by the Chairman's press conference remarks and the minutes of the FOMC meeting.[2] Conveying the Committee's anticipation of the minimum length of the program, currently stated as "at least through mid-2013" in Alternative B, could also help anchor market expectations.[3] Staff models suggest that a program ending in July 2013

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[2] Additional considerations related to the effects of a flow-based purchase program on the economic outlook can be found in the memo by J.-P. Laforte, D. López-Salido, S. Meyer, E. Nelson, and J. Roberts titled "Flow-Based Balance-Sheet Policies: Communication Issues and Macroeconomic Effects," sent to the Committee on August 29, 2012.

[3] The date also provides an additional aspect of policy that can be changed to help communicate the evolution of the Committee's outlook for economic activity and inflation.

might result in a ½ percentage point decline in the unemployment rate over the next two years relative to a simulation without an LSAP and would leave inflation running close to the Committee's 2 percent objective.

Policymakers may judge not only that the persistence and extent of weakness in the economic outlook warrant a new asset-purchase program, but also that many of the costs of nontraditional policies relative to more-standard policy appear manageable. In the memo, "Market Functioning and Limits on Asset Purchases," the staff presented analysis indicating that a new LSAP of around $1 trillion—an amount corresponding to a decision to conclude purchases of about $75 billion per month in the fourth quarter of 2013—likely would not cause meaningful disruptions in market functioning.[4] Moreover, staff concluded that the Committee probably could accumulate considerably more securities than is currently envisioned before such concerns materialized. Moreover, the memo "The effect of an additional $1 trillion LSAP on the exit strategy," concludes that a $1 trillion program would not require a change to the stated exit principles when the Committee believes that it is time to tighten policy.[5]

Some policymakers may judge that the pace of economic recovery is unsatisfactory and insufficient to make steady progress toward the Committee's dual mandate, but have concerns about whether the expected benefits of additional asset purchases are large enough to offset the costs and risks of such a policy. These members may favor a flow-based policy because it offers the opportunity, as indicated in the statement, to regularly review the efficacy and costs of the new program, and to make appropriate adjustments to the pace and composition of its purchases. If the benefits of the new policy turn out to be greater than expected and the costs remain manageable, the Committee may find it easier, if necessary, to provide additional accommodation by continuing its purchases or increasing the pace of purchases under the open-ended program than it would be to design and announce another discrete program. In contrast, should policymakers suspect that the program is contributing to undesired outcomes—such as impaired market functioning, excessive risk taking by financial institutions, or a

[4] Additional considerations related to the effects of significant additional asset purchases on market functioning can be found in the memo titled "Market Functioning and Limits on Asset Purchases" noted above.

[5] Additional considerations related to the effects of significant additional asset purchases on the Committee's exit strategy can be found in the memo 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 titled "The Effect of an Additional $1 Trillion LSAP on the Exit Strategy," sent to the Committee on August 28, 2012.

rise in longer-term inflation expectations—they may feel that it would be easier for the Committee to slow the pace of purchases or shorten the horizon over which purchases continue under a flow-based program than to interrupt a discrete program.

The same assessment of the economic outlook and inflation over the medium run that might lead policymakers to undertake a new purchase program could also argue in favor of extending the forward guidance on the federal funds rate in the statement to "at least through mid-2015." Some members might have pushed out the period over which they see unemployment remaining elevated and so with inflation still likely to be subdued, they now anticipate that near-zero federal funds rates are likely to be warranted for somewhat longer than when the Committee last changed the forward guidance in January. Moreover, policymakers may judge that it is appropriate to extend the anticipated period of near-zero funds rates in concert with the new LSAP to reinforce the Committee's commitment to provide additional accommodation until the economic recovery strengthens. Furthermore, the statement introduces a new rationale for providing forward guidance—"to support continued progress toward maximum employment and price stability…a highly accommodative stance…will remain appropriate for a considerable time after the conclusion of this asset-purchase program." Policymakers may view the new formulation as more positive than the language in the August statement and as better reflecting their desire to leave the funds rate unchanged for longer than might be prescribed by policy rules developed when interest rates were not constrained by the zero lower bound.

According to the Desk's latest survey, a statement along the lines of the one associated with Alternative B would likely be somewhat more accommodative than market participants expect. About three-fourths of the dealers in the Desk survey expect the Committee to extend the forward guidance at the September meeting, and a majority anticipate that the first increase in the target federal funds rate will most likely occur in mid-2015. That expectation is roughly consistent with market-implied measures of the path of the federal funds rate. In addition, dealers appear to be assigning slightly greater than even odds to the announcement of a new asset-purchase program at the September meeting and very high odds on additional easing through the SOMA portfolio within one year. Most of the dealers that expected the Committee to increase its securities holdings believed that a new purchase program would be between $400 billion and $600 billion, with a roughly equal split of Treasury securities and agency MBS. Thus, despite the language in the August statement indicating that the Committee would provide "additional accommodation as needed," dealers do not appear to have priced in additional purchases of the magnitude of Alternative B. Therefore, investors would likely revise up their estimates of the ultimate size of a purchase program over the coming year, though the indication that the Committee is concerned about the costs of the program could result in a smaller revision than otherwise. 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. The end of the sales of short-term Treasuries under the MEP and expansion in reserve balances would also put some downward pressure on short-term interest rates. However, market participants might find an open-ended purchase program difficult to interpret because it would be a notable departure from past purchase programs, making the size of the effect on asset prices more uncertain than usual.

Alternative B′

As in the case for Alternative B, members may view the information received since their last meeting as insufficient to change what they see as an unsatisfactory modal economic outlook and so wish to increase the amount of accommodation at this meeting. Given the positive tone of some recent economic indicators and improved market sentiment toward Europe, however, some FOMC participants may view the risks to the economic outlook as somewhat more balanced. Members also might want to postpone more dramatic action until they receive additional information about the underlying strength of the economic recovery, in order to better evaluate the extent to which temporary factors and seasonal-adjustment difficulties contributed to the weak data received earlier this year. In addition, some policymakers may want to evaluate the effects of the ongoing MEP and move cautiously in adding to the size of the SOMA portfolio given attendant costs and risks of nontraditional policy tools.

Therefore, the Committee might consider a staged approach to providing additional accommodation, as in Alternative B′, and begin by purchasing $30 billion per month of agency MBS while completing the MEP, leaving ample time to assess the need for, as well as the benefits and costs of, a larger expansion of the balance sheet. The statement would then indicate that the Committee will undertake additional asset purchases if it does not observe "substantial ongoing improvement in labor market conditions" over coming months. Policymakers might favor such an approach because the MEP is already adding long-term Treasuries to the SOMA portfolio at about the rate and of the same net duration as indicated in Alternative B, and, as noted above, purchases of MBS would likely place slightly more downward pressure on residential mortgage interest rates than purchases of Treasury securities. The Committee could also adopt, as noted in the statement, the more accommodative language associated with the forward guidance for the federal funds rate and extend to "at least through mid-2015" the anticipated period during which rates will remain exceptionally low, for reasons described in the case for Alternative B.

Because of the many new components of the statement associated with Alternative B′, including the open-ended nature of the purchases and the relatively short time frame for evaluating whether to continue or expand the program, the statement could leave market participants uncertain about the likely future path of policy. This uncertainty might damp the announcement effect of the program unless subsequent communications by policymakers were to convey a likelihood that the cumulative total of additional purchases will be quite large. As a result, it is even more difficult than usual to forecast the reaction of financial markets to the release of a statement like the one associated with Alternative B′. The extension of the forward guidance would, all else equal, put downward pressure on long-term interest rates. Strictly speaking, the amount of MBS purchases during the rest of 2012 would be somewhat more than the median expected over that period according to the Desk survey, but markets still may be disappointed in the relatively small amount of purchases to which the Committee is willing to commit at this time. Therefore, equity prices might decline somewhat on the announcement and the dollar could strengthen. Indeed, markets may be unsettled until further communications—such as the release of the SEP and the press conference—are forthcoming.

Alternative B″

In contrast, some members who would like to increase the extent of policy accommodation may see an extension and strengthening of the forward guidance as a more effective or lower cost nontraditional tool at this time than the other options available to the Committee, and so may wish to consider a statement along the lines of B″. Important factors that might guide policymakers' preference for relying more heavily on forward guidance than on asset purchases at this time could include their assessments of the degree to which additional transparency by the FOMC will be viewed as a credible commitment and thereby translate into meaningful financial and economic effects, and the extent to which they are concerned about the costs of a further expansion of the Federal Reserve's balance sheet.

For instance, participants may at this time judge that a modification of the forward guidance would provide at least as much accommodation as the amount of asset purchases they would be willing to support. Policymakers may also believe that a credible extension of the forward guidance could provide insurance against downside risks and compensate for limits to policy accommodation when conducting policy near the effective lower bound on interest rates. Members may find the explicit communication of the rates of unemployment and inflation associated with the conditional forward guidance contained in paragraph 3 of the proposed statement particularly attractive. To the extent that providing quantitative guidance reduces the public's uncertainty about the Committee's economic outlook and its policy reaction function, a statement along those lines could reduce market volatility, and, in current circumstances, foster more accommodative financial conditions. By giving market participants greater clarity about the economic conditions that the Committee judges would be likely to warrant raising the target for the federal funds rate, a statement using this sort of conditional forward guidance could also reduce the chance that medium- and longer-term rates will rise too soon or too quickly as the recovery progresses.

In order to clarify the forward guidance, the statement associated with B″ could indicate that the Committee would maintain "this exceptionally low range" for the federal funds rate rather than the somewhat less specific language, "exceptionally low levels" for the federal funds rate, used in the other alternatives. The statement might then go on to indicate that, conditional on projected inflation over the medium term remaining close to 2 percent and inflation expectations staying well anchored, the Committee would maintain the current target range for "at least as long as the unemployment rate exceeds 6½ percent." The Desk's most recent survey indicated that most primary dealers expect the first increase in the federal funds rate target to occur in the middle of 2015 or later, reflecting the significant odds the dealers place on the Committee extending the forward guidance at the September meeting. For most dealers, their associated forecasts of the unemployment rate remain above 6½ percent through the end of 2015. Thus, a statement along the lines of Alternative B″ might be viewed as a significantly longer-than-expected extension of the forward guidance. As in Alternative B′, the statement also indicates in paragraph 6 that additional asset purchases would be forthcoming if labor market conditions had not improved substantially by the end of the year. With a majority of market participants expecting the Committee to announce additional asset purchases at the September meeting, it is difficult to judge the extent to which a significant change in the forward guidance combined with the language indicating that an asset purchase program is still a distinct possibility would affect asset markets. Thus, the reaction of interest rates, equity prices, and the dollar might depend importantly on other communications, including the Chairman's press conference.

Alternative A

Some members might judge that the flow purchase programs in Alternatives B and B′ are likely to result in too small and uncertain an improvement in the economic outlook, and that additional asset purchases are an important complement to an extension of the forward guidance. If so, participants may wish to provide a much stronger signal of the Committee's willingness to substantially increase its holdings of securities in order to help make greater progress toward its dual mandate. Furthermore, some participants may judge that the outlook is unusually uncertain, with risks that are heavily weighted to the downside, and see that as a reason not to adopt an incremental approach but instead to act more forcefully. In addition, members may view the consequences of a new adverse shock while the economy remains weak as significantly more costly than the possibility that the Committee would fail to tighten policy as needed should economic performance surprise to the upside.

These participants may want to adopt a statement such as the one presented in Alternative A that expands the balance sheet through a large, discrete purchase program as in previous LSAP operations, and also extends the date in the forward rate guidance to "at least through mid-2015." Specifically, the Committee could choose to announce its intention to purchase an additional $750 billion of longer-term Treasury securities and $500 billion of agency MBS at a combined pace of about $75 billion per month through early 2014. The new purchase program would also replace the existing MEP and the policy of rolling over maturing Treasury securities at auction would be reinstituted.

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. For instance, policymakers may decide that articulating all of the conditions that might lead them to end a flow-based program could undermine the public's understanding of the Committee's intentions and so dampen the announcement effect. Moreover, members might also point out that the type of LSAP envisioned in Alternative A is not truly "fixed;" the Committee has, in fact, made adjustments during earlier LSAP programs, as well as to its reinvestment policies, when conditions warranted. Thus, participants may believe that the moderate additional flexibility of a flow-based program is outweighed by the relative ease of communicating a discrete LSAP program to the public.

Policymakers also may see the benefits of a reduction in the interest rate paid on required and excess reserve balances to 15 basis points as likely to outweigh the costs.[6] 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. Indeed, some short-term rates are nearer to the top of the federal funds target range than they were at other times the Committee has considered this option. Lower compensation for reserve balances would also provide a modest increase in the incentive for banks to expand lending or their holdings of securities. In addition, it could mitigate uneasiness about the Federal Reserve appearing to subsidize banks by remunerating reserves at a rate noticeably above that on other short-term investments. Although 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 any significant disruptions in European money markets. That said, it may be premature to draw conclusions from the European experience, both because insufficient time has passed since the cut and because of the important differences that exist between money markets in the United States and Europe. Cutting the rate paid on reserve balances also would reduce depository institutions' incentive to borrow and hold excess 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.

Although most dealers in the Desk's survey anticipated a change in the forward guidance at this meeting, their expectations for additional purchases were significantly below the size proposed in Alternative A. Thus, a statement along the lines of Alternative A would come as a surprise to investors and longer-term interest rates would

[6] Additional considerations related to possible changes in the remuneration rate on excess reserves can be found in the memo by M. Gilles DeBoer, M. DePooter, and S. Hilton titled "Reducing the Interest Rate Paid on Excess Reserves," sent to the Committee on September 6, 2012.

be expected to fall. 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 September meeting was notably smaller. Thus, if the interest rate on excess reserves were reduced, shorter-term yields would likely decline several basis points, in addition to the effects of the 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

Some participants may see the recent data as suggesting that the underlying pace of economic recovery and growth in employment have remained moderate in recent months. This view could be reinforced by further improvement in some indicators of conditions in the housing sector. Indeed, smoothing through the month-to-month fluctuations in the data, some policymakers may see the economic recovery as continuing on a sustainable course. Furthermore, they may judge that overall financial conditions in the United States remain supportive of economic growth and view financial strains in Europe as having eased of late. Members might note that while inflation has declined since earlier this year and inflation expectations remain well anchored, the prices of oil and other key commodities have increased recently. In addition, some participants may see little risk of significant disinflation or deflation given the current outlook.

Some policymakers may believe that monetary policy actions taken to date are sufficient to support a near-term pick up in the underlying pace of growth in output 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. Some 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 assessment of the risks to that outlook have not changed significantly since the August meeting might think it imprudent to change policy substantially at this juncture, particularly if they anticipate a quicker convergence toward full employment and 2 percent inflation than envisioned in the staff forecast. Therefore, they may prefer again to forego additional policy accommodation while leaving the forward guidance unchanged, as offered in one option in paragraph 3. In contrast, the stronger tone of some incoming data may have led some participants to mark up their outlook for economic growth or to see some of the downside risks to that outlook as having become more manageable. As a result, those members may now anticipate a significantly earlier first increase in the funds rate than was indicated by the Committee's statements so far this year, and 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 appropriately their assessments of the likely timing of the first increase in the target funds rate as these factors change over time.

Some members may note that the outlook over the medium term has not improved despite the better tone of incoming data during this intermeeting period, especially if they believe that downside risks to the outlook remain elevated. Thus, they may be inclined to provide additional monetary accommodation 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 as well as the efficacy and costs 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 those purchases could have adverse effects on inflation or negative implications for financial market functioning or financial stability. Alternatively, some members may be concerned that a significant expansion of the balance sheet, whether via an open-ended or discrete asset purchase program, could result in the Federal Reserve having to suspend remittances to the Treasury and book a sizeable deferred asset, especially if interest rates increased unexpectedly.[7] Additionally,

[7] For a broader discussion of the effects of additional asset purchases on the Federal Reserve's balance sheet and income see the memo by staff in the Division of Monetary Affairs at the Board of

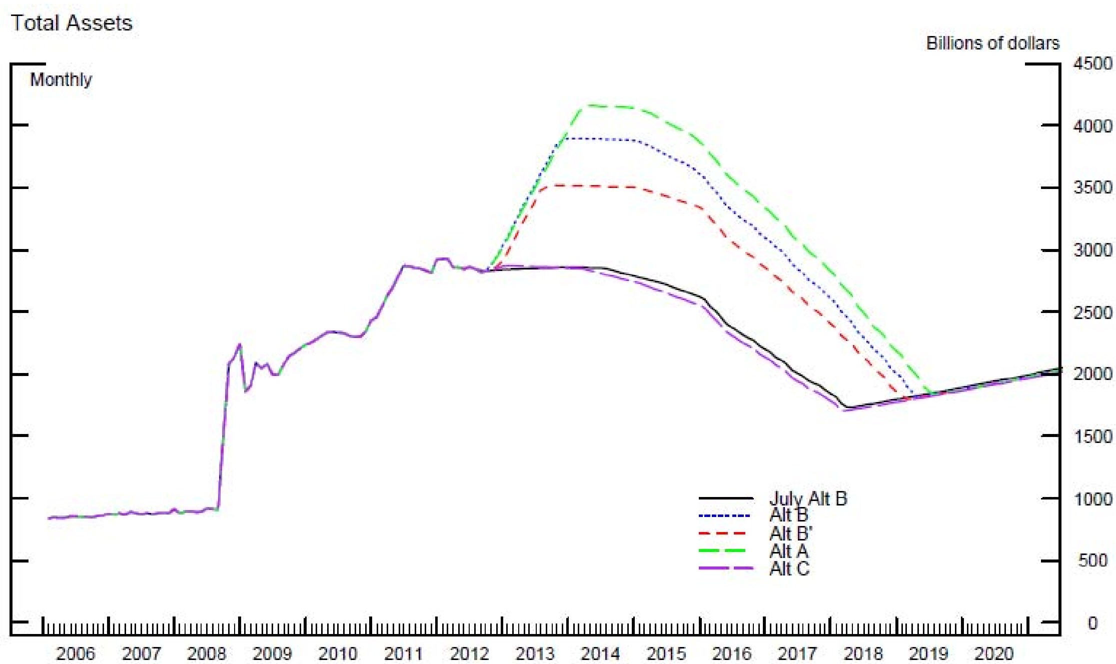
some participants may be worried that providing quantitative guidance about the unemployment rate and inflation to convey the likely timing of the first increase in the target range for the federal funds rate could lead the public to view the specified values as representative of the Committee's goals rather than interim targets to be reached in furtherance of those goals. In light of such concerns, those participants may want additional time to evaluate the potential costs and benefits of policy alternatives.

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, and so result 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 a substantial probability that the Committee will move the expected date of the first policy firming further into the future at this meeting and zero probability that it will be brought closer. Hence, moving the projected date of the first increase in the funds rate 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 without providing a clear indication of the specific economic conditions that would cause the Committee to begin raising the target rate, 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 forward guidance) would be read as a signal that such action was very 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.

Governors and in the Markets Group at the Federal Reserve Bank of New York titled "Options for an Additional LSAP Program" sent to the Committee on August 28, 2012.

LONG-RUN PROJECTIONS OF THE BALANCE SHEET AND MONETARY BASE

The staff has prepared four scenarios for the Federal Reserve's balance sheet that correspond to the policy alternatives A, B, B′, and C.[1] Alternatives A, B, and B′ include new asset purchase programs and extend the period over which the Committee anticipates maintaining an exceptionally low funds rate to June 2015, while Alternative C continues the MEP through year-end with no additional purchase program and has the federal funds rate lift off from its lower bound in August 2014. 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, the Committee is assumed to end the MEP at the end of September and begin a flow-based purchase program that ultimately expands the SOMA portfolio's holdings of longer-term securities by $1 trillion.[2] This scenario is roughly consistent with the open-ended purchase

[1] A balance sheet projection for Alternative B″ will be provided under separate cover.

[2] This scenario is nearly identical to the $1 trillion LSAP scenario presented in FOMC memo "Options for an Additional LSAP Program" by Board and FRBNY staff. The scenario is also similar to the example presented in the memo to the FOMC "Flow-Based Balance-Sheet Policies: Communication Issues

program detailed in the Alternative B statement if purchases last, and are expected to last, for a little more than a year. The program is assumed to include purchases of $600 billion of Treasury securities at a pace of about $45 billion per month and purchases of $400 billion of agency MBS at a pace of about $30 billion per month. Purchases are completed in October 2013. The Committee reinstitutes its policy of reinvesting principal payments from Treasury securities at auction and continues reinvesting principal payments from agency MBS and agency debt securities into agency MBS. Overall, under this scenario, SOMA securities holdings increase to about $3.6 trillion by the end of 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 mid-2015," we assume that the first increase in the target federal funds rate is in June 2015.[3] The date of liftoff is a key determinant of the trajectory of the balance sheet. In December 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. In December 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 November 2020.[4, 5] Through these redemptions and sales, the size of the portfolio is normalized by April 2019.[6, 7] The balance sheet then begins to

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and Macroeconomic Effects" by Laforte, et al. in which the flow-based program has a 7.8 percent unemployment stopping rule.

[3] This liftoff date for the federal funds rate is six months later than that assumed in the balance sheet projections from the July Tealbook Book B, and is ten months later than 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 sell only agency securities during the exit period in order to promote a timely return to an all-Treasury SOMA portfolio. In Alternative B, MBS are sold over a five-year period, and the size of the portfolio normalizes three years and five months after sales begin—somewhat longer than the timeframe anticipated in the exit strategy principles. However, as discussed in the FOMC memo "The effect of an additional $1 trillion LSAP on the exit strategy" by staff of the Board and FRBNY, sales over 3½ years would result in the portfolio being normalized in three years, within the timeframe anticipated in the exit principles.

[5] Under Reserve Bank accounting, losses and gains on securities held by the SOMA portfolio are only realized when securities are sold. In Alternative B, in 2018, realized losses from MBS sales and interest expense are projected to be almost as large as earnings. Considerable uncertainty surrounds these projections, however, and under plausible assumptions, losses could exceed earnings; in that case, remittances to the Treasury would cease, and a deferred asset would be booked.

[6] 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

expand, with increases in SOMA holdings essentially matching the growth of Federal Reserve Bank capital and currency in circulation. Total assets reach a size of $2 trillion by the end of 2020.

In the scenario for Alternative B′, the Committee is assumed to continue the MEP and to begin purchasing agency MBS at a rate of $30 billion per month in October. We further assume that after the MEP reaches its conclusion, the Committee continues purchases of Treasury securities at $45 billion per month and agency MBS at $30 billion per month through July 2013. Overall, this scenario includes purchases of longer-term Treasury securities of $450 billion and purchases of agency MBS of $300 billion between October 2012 and mid-2013. The Committee continues reinvesting principal payments from agency MBS and agency debt securities into agency MBS. In this scenario, total assets peak at $3.5 trillion in July 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 liftoff of the federal funds rate, sales of agency securities begin and continue for five years. The size of the portfolio is normalized by February 2019.

In the scenario for Alternative A, the Committee is assumed to end the MEP and begin a $1.25 trillion LSAP program in October. Under the program, the Desk purchases $750 billion of Treasury securities at a pace of about $45 billion per month and $500 billion of agency MBS at a pace of about $30 billion per month. Purchases are completed by the end of February 2014. The Committee reinstitutes its policy of reinvesting 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 $4.2 trillion in April 2014. 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 additional purchases of securities in this scenario substantially boost the volume of reserve balances. As a result, as interest rates rise, the interest expense on

repurchase agreements or term deposits—but would not produce an overall change in the size of the balance sheet.

[7] 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.

reserve balances is likewise boosted. This expense, combined with the realized losses on sales of agency MBS, imply that the Federal Reserve has an operating loss and, as a result, a deferred asset is recorded on the balance sheet in 2018, 2019, and 2020. The size of the portfolio is normalized by July 2019.

For the scenario that corresponds to Alternative C, the Committee is assumed to complete the current MEP in December 2012. In this scenario, the federal funds rate is assumed to lift off in August 2014, ten months 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 February 2014, and the portfolio begins to contract. Sales of agency securities commence in February 2015 and last for five years. Total assets in this scenario peak at \$2.9 trillion, and the size of the balance sheet is normalized in March 2018, more than a year earlier than under Alternative B.

Across scenarios, the volume of reserve balances is directly related to the assumed purchase programs. Under Alternative A, reserve balances peak at about \$2.8 trillion, while under Alternatives B and B′, reserve balances peak at \$2.5 and \$2.2 trillion, respectively. Under Alternative C, reserve balances do not rise from their current level of roughly \$1.6 trillion.

In the scenarios corresponding to Alternatives B, B′, and A, the monetary base increases from 2012 to 2013, due to the purchase programs. Once exit begins, the monetary base shrinks through the second quarter of 2019, primarily reflecting a decline in reserve balances as securities are redeemed or sold. Starting in the third quarter of 2019, 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. Under Alternative C, the monetary base is roughly flat from 2012 to 2013, rising only with the assumed increase in currency, and then contracts until the size of the portfolio is normalized.

Growth Rates for the Monetary Base

Date	Alternative B	Alternative B'	Alternative A	Alternative C	July Alt B
Percent, annual rate					
Monthly					
Apr-12	-12.2	-12.2	-12.2	-12.2	-12.2
May-12	-8.7	-8.7	-8.7	-8.7	-8.7
Jun-12	-5.1	-5.1	-5.1	-5.1	-4.6
Jul-12	7.7	7.7	7.7	7.7	6.2
Aug-12	18.7	18.7	19.0	18.7	12.2
Sep-12	6.0	6.0	6.4	5.7	-4.3
Oct-12	8.5	-1.1	7.6	-2.0	-11.9
Nov-12	33.4	16.0	31.4	12.4	8.8
Dec-12	32.5	17.3	30.9	8.7	1.2
Quarterly					
2011 Q3	21.0	21.0	21.0	21.0	21.0
2011 Q4	-5.9	-5.9	-5.9	-5.9	-5.9
2012 Q1	5.5	5.5	5.5	5.5	5.5
2012 Q2	-3.9	-3.9	-3.9	-3.9	-3.9
2012 Q3	5.3	5.3	5.4	5.2	2.3
2012 Q4	17.6	8.6	16.7	6.4	-1.5
2013 Q1	30.6	22.8	29.5	1.5	-2.2
2013 Q2	25.3	25.3	24.3	-8.8	-2.4
Annual - Q4 to Q4					
2010	0.9	0.9	0.9	0.9	0.9
2011	32.9	32.9	32.9	32.9	32.9
2012	6.2	3.9	6.0	3.3	0.6
2013	32.6	23.6	32.6	0.0	0.6
2014	0.5	-0.7	7.8	-2.4	-1.8
2015	-5.1	-3.2	-4.9	-7.2	-4.4
2016	-14.7	-14.5	-14.2	-16.7	-16.6
2017	-16.7	-16.7	-16.1	-18.2	-18.0
2018	-24.2	-23.9	-23.6	-5.0	-7.3

Note: Not seasonally adjusted.

Alternatives

DEBT, BANK CREDIT, AND MONEY FORECASTS

Domestic nonfinancial sector debt is projected to expand at an annual rate of 4½ percent over the second half of this year, driven by a significant expansion in federal government debt and a modest rise in private nonfinancial debt. For the remainder of the forecast period, 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 forecast to increase at a modest pace over the projection period, reflecting favorable financing conditions and an increase in capital expenditures. The level of home mortgage debt is projected to bottom out this year and edge up only a little 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 throughout the forecast period, accelerating from a pace of about 5 percent over the second half of this year to about 7½ percent in 2014, 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 increase modestly for the remainder of 2012 and to pick up somewhat in 2013 and 2014. C&I loans have increased robustly so far this year, and are projected to continue to expand rapidly in the near term before slowing to a pace closer to that of nominal GDP by the end of the forecast period. Growth in both residential real estate and consumer loans is anticipated to pick up throughout the forecast period, reflecting improvements in borrowers' credit quality and further gradual easing of standards and terms on such loans. In contrast, commercial real estate loans are projected to contract through mid-2013, and only edge up 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 rise at a moderate pace, with growth in this category slowing, on balance, over 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 will expand more slowly than nominal income, on balance, in 2013 and 2014. Ongoing concerns about the European situation 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 in early 2013, M2 growth will be dampened somewhat due to the expiration of the unlimited FDIC insurance on noninterest-bearing transaction deposits.[1] M2 growth is forecast to slow further 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 and to slow significantly in 2013 and the beginning of 2014 before contracting in the second half of 2014 in response to the projected increase in yields on alternative assets. Continuing a trend seen in recent years, retail money market funds and small time deposits are projected to shrink further through mid-2014 and then increase slowly as the rates paid on these products adjust upward in response to tighter monetary policy. Currency growth is anticipated to gradually decline to a pace consistent with its long-term average of 6 percent by mid-2013 and to continue at that pace over the rest of the projection period.

[1] 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. Deposits in these types of accounts are estimated to have grown nearly 56 percent from December 31, 2010, and currently make up about 16 percent of M2 or about $1.6 trillion. (See the box “Bank Funding Consultations” in the Financial Developments section of this Tealbook, Part A.)

Growth Rates for M2

(Percent, seasonally adjusted annual rate)

Monthly Growth Rates	Tealbook Forecast*
Jan-12	16.4
Feb-12	3.7
Mar-12	4.2
Apr-12	5.8
May-12	4.3
Jun-12	5.7
Jul-12	9.2
Aug-12	3.7
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	6.2
2012 Q4	4.0
2013 Q1	2.1
2013 Q2	2.5
2013 Q3	3.6
2013 Q4	3.9
2014 Q1	3.3
2014 Q2	2.7
2014 Q3	-0.4
2014 Q4	-2.2
Annual Growth Rates	
2012	6.1
2013	3.1
2014	0.8

* This forecast is consistent with nominal GDP and interest rates in the Tealbook forecast. Actual data through August 27, 2012; projections thereafter.

DIRECTIVE

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

The directives for Alternatives A, B, and B′ direct the Desk to expand the SOMA portfolio. The directives for Alternatives A and B would instruct the Desk to begin new asset purchase programs. Under Alternative A, the Committee would direct the Desk to execute purchases of $750 billion of longer-term Treasury securities and $500 billion of agency MBS by early 2014, at a combined pace of $75 billion per month. Under Alternative B, the Desk would be instructed 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. Alternative B′ directs the desk to begin purchasing agency MBS at a pace of about $30 billion per month and to take appropriate steps to complete by the end of December 2012 the MEP of $267 billion that was announced in June. The directives for Alternatives B″ and C leave the total face value of domestic securities in the SOMA about unchanged and instruct the Desk to take appropriate steps to complete by the end of December 2012 the MEP of $267 billion that was announced in June. 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 A and B would reinstitute the policy of rolling over maturing Treasuries at auction, while Alternatives B′, B″, and C would continue the practice of redeeming maturing Treasury securities at auction.

August 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 announced in June 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.

September 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 announced in June 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,~~ **begin a new asset-purchase program**. **This program replaces the previously announced maturity extension program. Specifically, the Desk is directed to purchase $750 billion of longer-term Treasury securities and $500 billion of agency mortgage-backed securities by early 2014, a combined pace of about $75 billion per month.** The ~~Committee directs the~~ Desk ~~to suspend its current~~ **is also directed to reinstitute 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~~ **increase** the total face value of domestic securities ~~at~~ **to** approximately ~~$2.6~~ **$3.9** 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.

Alternatives

Alternatives

September 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 announced in June 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,~~ **begin a new 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 ~~Committee directs the~~ Desk ~~to suspend its current~~ **is also directed to reinstitute 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.

September 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 announced in June 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. **The Desk is also directed to begin purchasing agency mortgage-backed securities at a pace of about $30 billion per month.** ~~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.

September 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 announced in June 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.

September 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 announced in June 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.

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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	$R_t = 2.25 + \pi_t + 0.5(\pi_t - \pi^*) + gap_t$
Inertial Taylor (1999) rule	$R_t = 0.85R_{t-1} + 0.15(2.25 + \pi_t + 0.5(\pi_t - \pi^*) + gap_t)$
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	$R_t = R_{t-1} + 0.5(\pi_{t+3\|t} - \pi^*) + 0.5\Delta^4 gap_{t+3\|t}$
Nominal income targeting rule	$R_t = 0.75R_{t-1} + 0.25(2.25 + \pi^* + yn_t - yn_t^*)$

The first two of the selected rules were studied by Taylor (1993, 1999), while the inertial Taylor (1999) rule has featured prominently in recent analysis by Board staff.[1] The outcome-based rule uses policy reactions estimated using real-time data over the sample 1988:Q1–2006:Q4. The intercept of the outcome-based rule was chosen so that it is consistent with a 2 percent long-run inflation objective and a long-run, quarterly real interest rate of 2¼ percent, a value used in the FRB/US model. The intercepts of the Taylor (1993, 1999) rules, and the long-run intercept of the inertial Taylor (1999) rule, are set at 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

[1] See Erceg and others (2012).

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 inertial Taylor (1999) rule, 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 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

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

Erceg, Christopher, Michael Kiley, and David López-Salido (2011). "Alternative Monetary Policy Frameworks." Memo sent to the Committee on October 6, 2011.

McCallum, Bennett T., and Edward Nelson (1999). "Nominal Income Targeting in an Open-Economy Optimizing Model," *Journal of Monetary Economics*, Vol. 43 (June), pp. 553–578.

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

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

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

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 August 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 July 31, 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 scenarios corresponding to Alternatives B, B′ and A assume that the target federal funds rate begins to increase in June 2015, 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 mid-2015."[2] This date of liftoff is six months later than that assumed in the balance sheet projections from the July Tealbook Book B for Alternative B and is ten months later than the current staff forecast in Tealbook Book A. The projection for the scenario corresponding to Alternative C assumes the target federal funds rate lifts off in August 2014, consistent with the draft statement language "at least through late [2013 | 2014]" and ten months earlier than in Alternative B. 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.[3]

Explanatory Notes

[2] The federal funds rate paths in Alternatives B, B′, and A are adjusted to reflect their assumed liftoff dates, which 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 yields in Alternatives B, B′, and A are the yields assumed in the September 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.

[3] 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 Committee is assumed to halt the MEP at the end of September and begin a $1 trillion purchase program in October 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 into the fourth quarter of 2013. The Treasury securities purchased are assumed to have an average duration of about nine years, roughly the net duration of purchases and sales under the MEP.
  - The FOMC continues to reinvest the proceeds from principal payments on its agency securities holdings in agency MBS and reinstitutes its policy of rolling over maturing Treasury securities at auction.
  - Starting in December 2014—six months prior to the assumed increase in the target federal funds rate—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 December 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 November 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.[4] The projected rate of prepayment is sensitive to these underlying assumptions.

- In the scenario corresponding to Alternative B′, the Committee is assumed to continue the MEP program and begin a $750 billion purchase program in October 2012 under which it purchases $450 billion in Treasury securities at a pace of about $45 billion per month and $300 billion in current coupon agency MBS at a pace of about $30 billion per month into the third quarter of 2013. The Treasury security purchases are assumed to include the remaining MEP purchases through December 2012 plus an additional $45 billion per month from January 2013 to July 2013. The Treasury purchase distribution through December 2012 will remain consistent with previous MEP purchases. Beginning in January 2013, purchases are assumed to have an average duration of 9 years. After the completion of the MEP at the end of the year, 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

[4] Projected prepayments of agency MBS reflect interest rate projections as of September 4, 2012.

Explanatory Notes

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 December 2015 and continue for five years.

- In the scenario corresponding to Alternative A, the Committee is assumed to end the MEP at the end of this month and begin a $1.25 trillion LSAP program in October 2012 under which it purchases $750 billion in Treasury securities at a pace of about $45 billion per month and $500 billion in current coupon agency MBS at a pace of about $30 billion per month into the first quarter of 2014. The Treasury security purchase distribution is assumed to have an average duration of nine years. In addition, the Committee is assumed to reinstitute its policy of rolling over maturing Treasury securities at auction, and 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 December 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. The FOMC continues to reinvest the proceeds from principal payments on its agency securities holdings in agency MBS until February 2014—six months prior to the assumed increase in the target federal funds rate. Starting in February 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 February 2015. Holdings of agency securities are reduced over five years and reach zero by January 2020.

- 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, each alternative will add premiums to the balance sheet. In Alternative C, where the MEP is assumed to continue to year end, premiums net of amortization will increase an additional $25 billion. In Alternatives B′, B and A, where an additional $450 billion, $600 billion, and $750 billion in Treasury securities are purchased, respectively, premiums are boosted by roughly an additional $65 billion, $75 billion, and $85 billion, respectively, at the end of each program. The increase in premiums is reflected in higher total assets and in higher reserve balances.

- The asset purchase programs in Alternatives B, B′, and 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 Alternatives B′, B, and A, the $300 billion, $400 billion and $500 billion of agency MBS purchases, respectively, will cause unamortized premiums on the Federal Reserve's balance sheet to rise by roughly $12 billion, $16 billion, and $20 billion, respectively, 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 December 2013.
- 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.
- 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 III LLC reach zero around the end of 2012 and the assets held by Maiden Lane LLC decline to zero by the end of 2015.

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.[5]
- 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.
- 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 Alternative A, a small deferred asset is recorded at year-end in 2018, 2019, and 2020.

TERM PREMIUM EFFECTS[6]

- Under Alternative B, the current staff estimates of the contemporaneous term premium effect on the yield of the ten-year Treasury note is negative 102 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 term premium is more negative than it was in July Alternative B because of the $1 trillion purchase program and a later liftoff date, which imply securities remain out of the hands of the public for longer than in the last Tealbook.
- Under Alternative B′, the term premium effect is negative 93 basis points. The effect is less negative than in Alternative B because of the smaller assumed purchase program.
- Under Alternative A, the term premium effect is negative 111 basis points. The effect is more negative than in Alternative B because of the larger assumed purchase program.
- Under Alternative C, the term premium effect is negative 64 basis points. The effect is less negative than in Alternative B because there is no purchase program and the liftoff date is earlier.

Explanatory Notes

[5] 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.

[6] 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 B'	Alternative A	Alternative C	*July Alternative B*
			Basis Points Quarterly Averages		
2012 Q4	-102	-93	-111	-64	-66
2013 Q1	-99	-89	-108	-60	-63
2013 Q2	-95	-86	-104	-56	-59
2013 Q3	-91	-81	-100	-52	-55
2013 Q4	-86	-76	-96	-48	-51
2014 Q1	-81	-71	-90	-44	-47
2014 Q2	-75	-66	-85	-40	-43
2014 Q3	-70	-61	-79	-37	-40
2014 Q4	-64	-57	-73	-33	-36
2015 Q1	-59	-52	-67	-30	-33
2015 Q2	-54	-48	-62	-27	-29
2015 Q3	-50	-43	-57	-24	-26
2015 Q4	-45	-39	-52	-22	-24
2016 Q1	-41	-35	-47	-19	-21
2016 Q2	-37	-32	-42	-17	-19
2016 Q3	-33	-29	-38	-15	-17
2016 Q4	-30	-25	-34	-13	-15
2017 Q1	-26	-23	-30	-12	-13
2017 Q2	-23	-20	-27	-10	-11
2017 Q3	-20	-17	-24	-9	-10
2017 Q4	-18	-15	-21	-8	-9
2018 Q1	-16	-13	-18	-7	-8
2018 Q2	-14	-12	-16	-6	-7
2018 Q3	-12	-10	-14	-6	-7
2018 Q4	-10	-9	-12	-5	-6
2019 Q1	-9	-8	-11	-5	-6
2019 Q2	-8	-7	-9	-5	-6
2019 Q3	-7	-6	-8	-5	-5
2019 Q4	-6	-6	-7	-5	-5
2020 Q1	-6	-5	-6	-4	-5
2020 Q2	-5	-5	-6	-4	-4
2020 Q3	-5	-5	-5	-4	-4
2020 Q4	-4	-4	-5	-3	-4

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

Billions of dollars

	Jul 31, 2012	2012	2014	2016	2018	2020
Total assets	2,849	3,030	3,878	3,101	2,009	1,977
Selected assets						
Liquidity programs for financial firms	31	25	0	0	0	0
Primary, secondary, and seasonal credit	0	0	0	0	0	0
Central bank liquidity swaps	31	25	0	0	0	0
Term Asset-Backed Securities Loan Facility (TALF)	5	2	0	0	0	0
Net portfolio holdings of Maiden Lane LLC, Maiden Lane II LLC, and Maiden Lane III LLC	9	1	0	0	0	0
Securities held outright	2,589	2,753	3,600	2,876	1,831	1,834
U.S. Treasury securities	1,645	1,777	2,237	1,917	1,367	1,834
Agency debt securities	91	77	39	16	2	0
Agency mortgage-backed securities	853	899	1,324	943	461	0
Net portfolio holdings of TALF LLC	1	1	1	0	0	0
Total other assets	214	248	277	225	178	142
Total liabilities	2,795	2,969	3,797	2,993	1,866	1,788
Selected liabilities						
Federal Reserve notes in circulation	1,072	1,104	1,245	1,379	1,516	1,662
Reverse repurchase agreements	70	70	70	70	70	70
Deposits with Federal Reserve Banks	1,637	1,778	2,454	1,519	257	34
Reserve balances held by depository institutions	1,523	1,729	2,405	1,510	248	25
U.S. Treasury, General Account	90	44	44	5	5	5
Other Deposits	23	4	4	4	4	4
Interest on Federal Reserve Notes due to U.S. Treasury	4	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 B '

Billions of dollars

	Jul 31, 2012	2012	2014	2016	2018	2020
Total assets	2,849	2,911	3,503	2,858	1,863	1,972
Selected assets						
Liquidity programs for financial firms	31	25	0	0	0	0
Primary, secondary, and seasonal credit	0	0	0	0	0	0
Central bank liquidity swaps	31	25	0	0	0	0
Term Asset-Backed Securities Loan Facility (TALF)	5	2	0	0	0	0
Net portfolio holdings of Maiden Lane LLC, Maiden Lane II LLC, and Maiden Lane III LLC	9	1	0	0	0	0
Securities held outright	2,589	2,632	3,236	2,641	1,689	1,832
U.S. Treasury securities	1,645	1,656	1,973	1,753	1,261	1,832
Agency debt securities	91	77	39	16	2	0
Agency mortgage-backed securities	853	899	1,225	871	426	0
Net portfolio holdings of TALF LLC	1	1	1	0	0	0
Total other assets	214	250	265	217	174	140
Total liabilities	2,795	2,849	3,421	2,750	1,720	1,782
Selected liabilities						
Federal Reserve notes in circulation	1,072	1,104	1,245	1,379	1,516	1,662
Reverse repurchase agreements	70	70	70	70	70	70
Deposits with Federal Reserve Banks	1,637	1,663	2,086	1,283	116	34
Reserve balances held by depository institutions	1,523	1,614	2,038	1,273	107	25
U.S. Treasury, General Account	90	44	44	5	5	5
Other Deposits	23	4	4	4	4	4
Interest on Federal Reserve Notes due to U.S. Treasury	4	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

	Jul 31, 2012	2012	2014	2016	2018	2020
Total assets	2,849	3,020	4,143	3,338	2,188	1,973
Selected assets						
Liquidity programs for financial firms	31	25	0	0	0	0
Primary, secondary, and seasonal credit	0	0	0	0	0	0
Central bank liquidity swaps	31	25	0	0	0	0
Term Asset-Backed Securities Loan Facility (TALF)	5	2	0	0	0	0
Net portfolio holdings of Maiden Lane LLC, Maiden Lane II LLC, and Maiden Lane III LLC	9	1	0	0	0	0
Securities held outright	2,589	2,743	3,849	3,101	2,001	1,825
U.S. Treasury securities	1,645	1,771	2,387	2,067	1,500	1,825
Agency debt securities	91	77	39	16	2	0
Agency mortgage-backed securities	853	895	1,424	1,018	498	0
Net portfolio holdings of TALF LLC	1	1	1	0	0	0
Total other assets	214	248	292	237	187	148
Total liabilities	2,795	2,958	4,061	3,230	2,045	1,784
Selected liabilities						
Federal Reserve notes in circulation	1,072	1,104	1,245	1,379	1,516	1,662
Reverse repurchase agreements	70	70	70	70	70	70
Deposits with Federal Reserve Banks	1,637	1,768	2,714	1,753	437	34
Reserve balances held by depository institutions	1,523	1,719	2,666	1,743	427	25
U.S. Treasury, General Account	90	44	44	5	5	5
Other Deposits	23	4	4	4	4	4
Interest on Federal Reserve Notes due to U.S. Treasury	4	0	0	0	-6	-3
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

	Jul 31, 2012	2012	2014	2016	2018	2020
Total assets	2,849	2,869	2,744	2,136	1,774	1,966
Selected assets						
Liquidity programs for financial firms	31	25	0	0	0	0
Primary, secondary, and seasonal credit	0	0	0	0	0	0
Central bank liquidity swaps	31	25	0	0	0	0
Term Asset-Backed Securities Loan Facility (TALF)	5	2	0	0	0	0
Net portfolio holdings of Maiden Lane LLC, Maiden Lane II LLC, and Maiden Lane III LLC	9	1	0	0	0	0
Securities held outright	2,589	2,600	2,530	1,962	1,633	1,846
U.S. Treasury securities	1,645	1,656	1,655	1,436	1,451	1,846
Agency debt securities	91	77	39	16	2	0
Agency mortgage-backed securities	853	868	836	510	179	0
Net portfolio holdings of TALF LLC	1	1	1	0	0	0
Total other assets	214	239	212	174	142	120
Total liabilities	2,795	2,807	2,662	2,028	1,631	1,777
Selected liabilities						
Federal Reserve notes in circulation	1,072	1,104	1,245	1,379	1,516	1,662
Reverse repurchase agreements	70	70	70	70	70	70
Deposits with Federal Reserve Banks	1,637	1,620	1,334	568	34	34
Reserve balances held by depository institutions	1,523	1,571	1,325	559	25	25
U.S. Treasury, General Account	90	44	5	5	5	5
Other Deposits	23	4	4	4	4	4
Interest on Federal Reserve Notes due to U.S. Treasury	4	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