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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Authorized for Public Release

Class I FOMC – Restricted Controlled (FR)

Report to the FOMC on Economic Conditions and Monetary Policy

Book B

Monetary Policy:
Strategies and Alternatives

September 15, 2011

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

Strategies

Monetary Policy Strategies

All of the staff's estimates of short-run r^*—the real federal funds rate that, if maintained, would return output to its potential in twelve quarters—declined over the intermeeting period. By historical standards, these estimates of the equilibrium real federal funds rate remain low, and all except the EDO model's estimate of short-run r^* are below the estimated actual real federal funds rate. As shown in the last two columns of the table in the exhibit, "Equilibrium Real Federal Funds Rate," the estimates of short-run r^* generated by the FRB/US model and the EDO model that are conditioned on the staff outlook for the economy (that is, the "Tealbook-consistent" estimates) decreased 60 and 140 basis points, respectively. The downward revisions to these r^* estimates reflect the staff's assessment that the economic outlook has weakened, resulting in a more negative trajectory for the output gap than in the August Tealbook.[1] The r^* estimates from the single-equation and small structural models, which condition on the staff's assessment of the current output gap, have both decreased by 10 basis points. In addition, estimates of short-run r^* from the FRB/US and EDO models based on the models' own economic projections have declined by 70 and 20 basis points, respectively.

The exhibit "Constrained vs. Unconstrained Monetary Policy" shows the results of optimal control simulations of the FRB/US model. In these simulations, policymakers are assumed to place equal weights on keeping headline PCE inflation close to a 2 percent inflation goal, on keeping unemployment close to the staff's estimate of the effective natural rate of unemployment, and on minimizing changes in the federal funds rate. As has been true for some time, the simulations indicate that the optimal path of the policy rate is affected significantly by the zero lower-bound constraint on the nominal federal funds rate. In the constrained simulation, the only way that policymakers can provide additional stimulus is by delaying and slowing down future increases in the federal funds rate.[2] Consequently, the policy prescriptions from optimal control simulations of the FRB/US model call for the federal funds rate to remain near zero through the end of 2015, four quarters later than in the previous Tealbook and five quarters later than assumed in the staff's current baseline forecast (not shown). By committing to keep the funds rate

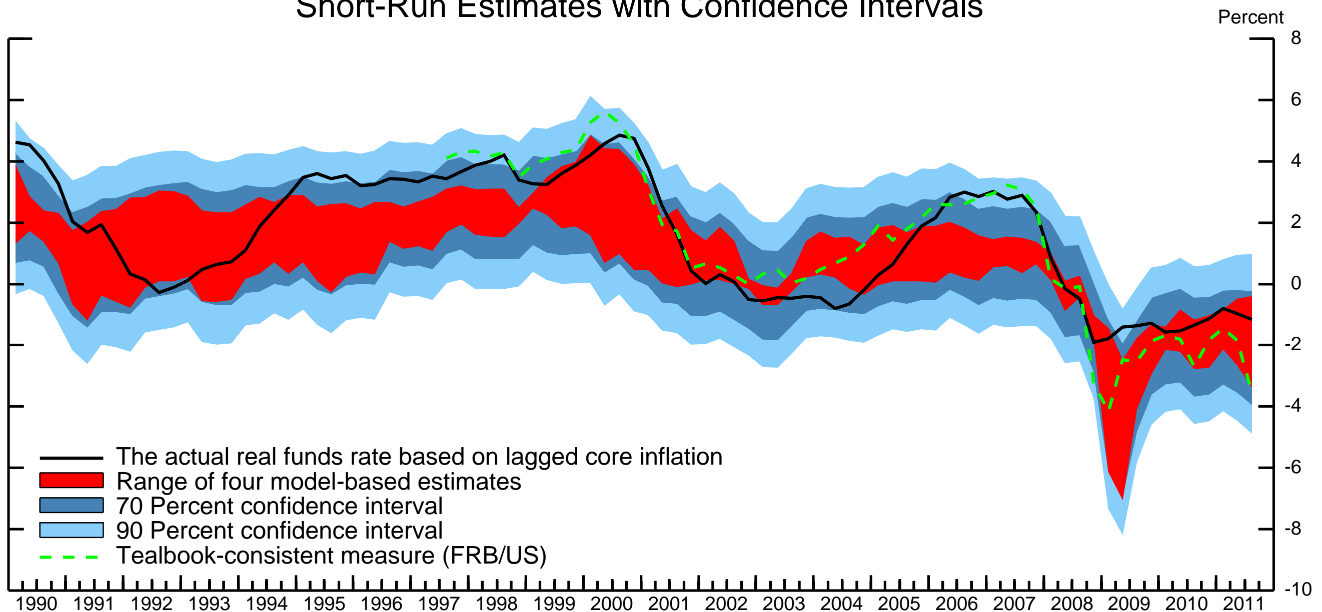
[1] For a discussion of these revisions, see Book A of the Tealbook.

[2] The staff's baseline forecast incorporates the effects of the large-scale asset purchase program that was completed at the end of June, as well as the maturity extension program included in Alternative B, and these same effects have been incorporated into the optimal policy simulations.

Strategies

Equilibrium Real Federal Funds Rate

Short-Run Estimates with Confidence Intervals



Short-Run and Medium-Run Measures

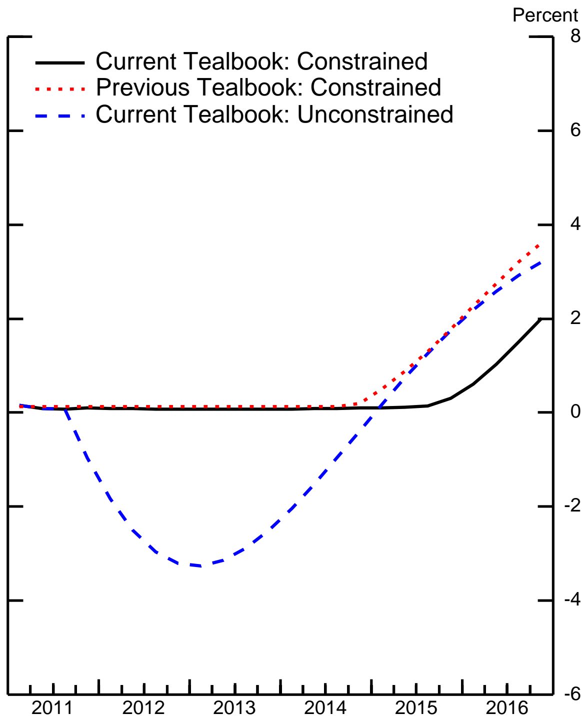
	Current Tealbook	*Previous Tealbook*
Short-Run Measures		
Single-equation model	-2.4	*-2.3*
Small structural model	-2.2	*-2.1*
EDO model	-0.4	*-0.2*
FRB/US model	-3.4	*-2.7*
Confidence intervals for four model-based estimates		
70 percent confidence interval	-3.9 to -0.2	
90 percent confidence interval	-4.9 to 1.0	
Tealbook-consistent measures		
EDO model	-4.7	*-3.3*
FRB/US model	-3.5	*-2.9*
Medium-Run Measures		
Single-equation model	0.9	*1.0*
Small structural model	0.7	*0.8*
Confidence intervals for two model-based estimates		
70 percent confidence interval	-0.1 to 1.7	
90 percent confidence interval	-0.7 to 2.4	
TIPS-based factor model	1.7	*1.8*
Memo		
Actual real federal funds rate	-1.1	*-1.1*

Note: Explanatory Note A provides background information regarding the construction of these measures and confidence intervals. The actual real federal funds rate shown is generated using lagged core inflation as a proxy for inflation expectations. For information regarding alternative measures, see Explanatory Note A.

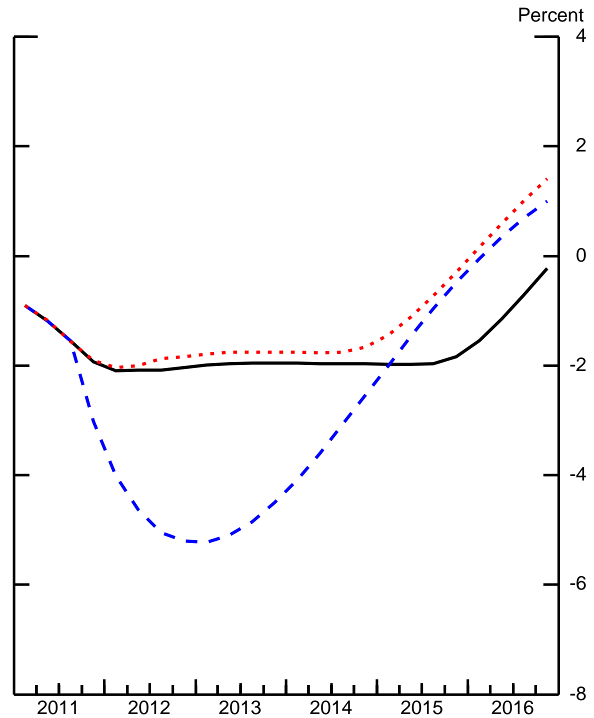
Strategies

Constrained vs. Unconstrained Monetary Policy
(2 Percent Inflation Goal)

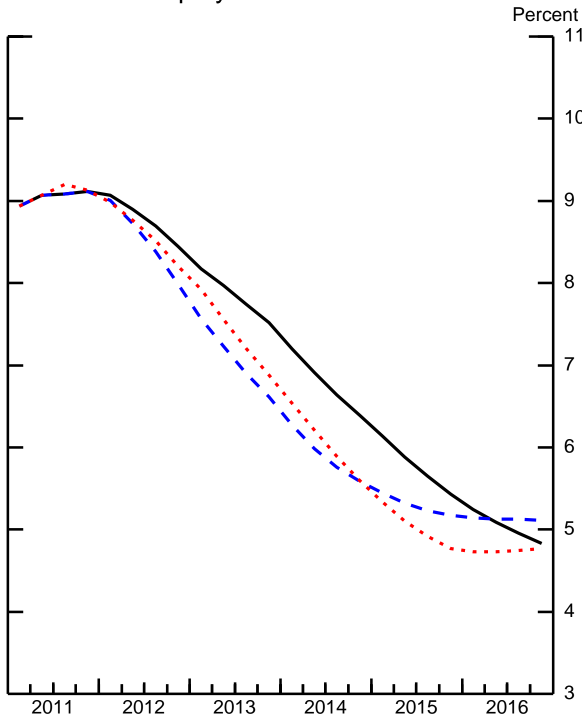
Nominal Federal Funds Rate



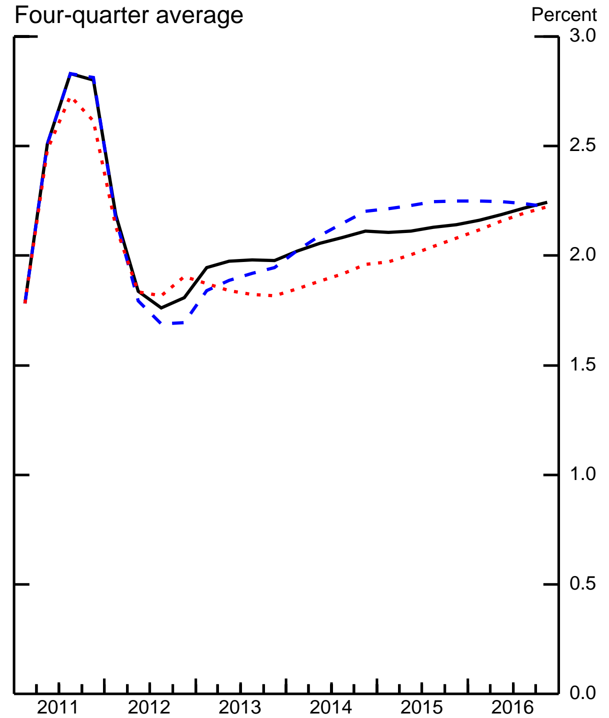
Real Federal Funds Rate



Civilian Unemployment Rate



PCE Inflation
Four-quarter average



Note: The optimal control simulations are derived from a loss function that uses headline inflation and the lower right panel displays the behavior of simulated headline inflation.

near zero for such a long stretch of time, optimal policy would promote a faster pace of economic recovery and somewhat higher inflation. Specifically, the unemployment rate would fall to 5 percent in 2016 (compared to 6 percent in the baseline), while headline inflation would average a bit above 2 percent from 2012 through 2016 (compared to 1.4 percent in the baseline). That said, projected outcomes under this strategy are estimated to be less favorable than they were at the time of the August Tealbook, because the staff now foresees greater weakness in labor and product markets—a development that constrained optimal policy only partially offsets.

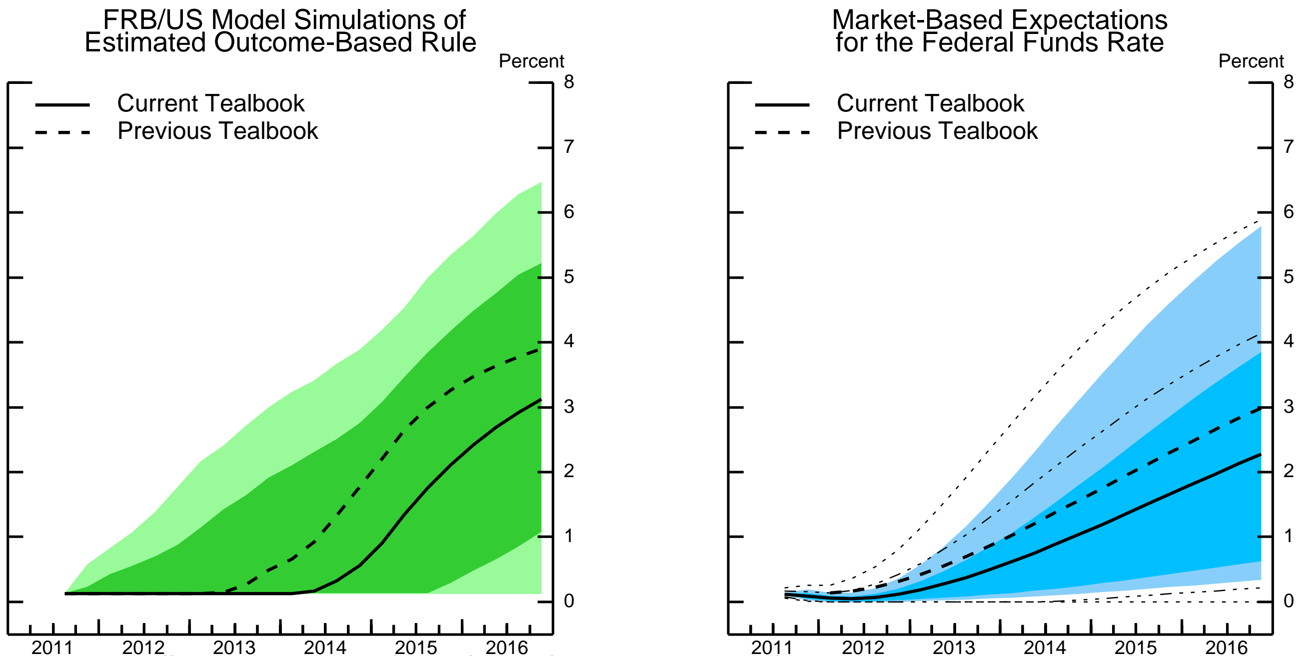
If the nominal funds rate could fall below zero, the optimal federal funds rate would decline to minus 3¼ percent in the first quarter of 2013, and not turn positive until the first quarter of 2015. Under this unconstrained policy, the unemployment rate would gradually decline from its current 9.1 percent level to just above 5 percent by the end of 2016, falling slightly below the staff estimate of the effective natural rate of unemployment in the third quarter of 2014—more than a year earlier than under the constrained policy. Projected inflation through mid-decade is broadly similar, however, primarily because the private sector anticipates that the FOMC will tolerate somewhat higher average inflation for a time after 2016 under constrained optimal policy as a means of lowering the path of real interest rates, thereby providing stimulus to the economy in the presence of the lower bound constraint.

As shown in the exhibit "Policy Rules and Market-Based Expectations for the Federal Funds Rate," the expected funds rate implied by the estimated outcome-based policy rule moves above its effective lower bound only in the third quarter of 2014, four quarters later than in the previous Tealbook.[3] This change reflects the staff's projection of a wider output gap and slower real GDP growth relative to the last Tealbook. The estimated rule prescribes a considerably lower path for the policy rate from 2013 through 2016 than in the August Tealbook.

As shown to the right, information from financial markets suggests that investors' current expectations for the path of the federal funds rate imply that the funds rate will remain within its current target range until the second quarter of 2013 before rising gradually to 2 percent by the end of 2016. Compared with the August Tealbook, the distribution of the federal funds rate implied by financial market data has narrowed, particularly over the next two years.

[3] This rule is used to set the longer-run path for the federal funds rate in the Tealbook baseline forecast.

Policy Rules and Market-Based Expectations for the Federal Funds Rate



Note: The staff baseline projection for the federal funds rate is derived from the outcome-based policy rule shown in the top-left panel. The top-right panel depicts the mean path and confidence intervals of future federal funds rates derived from market quotes as of September 14. In both panels, dark and light shadings represent the 70 and 90 percent confidence intervals respectively. Explanatory Note B provides further background information.

Near-Term Prescriptions of Simple Policy Rules

	Constrained Policy		Unconstrained Policy	
	2011Q4	2012Q1	2011Q4	2012Q1
Taylor (1993) rule	**0.72**	**0.74**	**0.72**	**0.74**
Previous Tealbook	*0.76*	*0.81*	*0.76*	*0.81*
Taylor (1999) rule	**0.13**	**0.13**	**-2.37**	**-2.35**
Previous Tealbook	*0.13*	*0.13*	*-2.20*	*-2.12*
Estimated outcome-based rule	**0.13**	**0.13**	**-0.23**	**-0.57**
Previous Tealbook Outlook	*0.13*	*0.13*	*-0.15*	*-0.40*
Estimated forecast-based rule	**0.13**	**0.13**	**-0.30**	**-0.77**
Previous Tealbook Outlook	*0.13*	*0.13*	*-0.21*	*-0.53*
First-difference rule	**0.13**	**0.13**	**-0.07**	**-0.14**
Previous Tealbook Outlook	*0.13*	*0.25*	*0.12*	*0.25*

Memo	2011Q4	2012Q1
Staff assumption	0.13	0.13
Fed funds futures	0.07	0.07
Median expectation of primary dealers	0.13	0.13
Blue Chip forecast (September 1, 2011)	0.10	0.10

Note: In calculating the near-term prescriptions of these simple policy rules, policymakers' long-run inflation objective is assumed to be 2 percent. Explanatory Note B provides further background information. 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.

The lower panel of the exhibit provides near-term prescriptions from simple policy rules.[4] The right-hand columns display the prescriptions that would arise from these rules in the absence of the lower-bound constraint. As a consequence of the staff's forecasts of wider output gaps and slower growth, all the rules prescribe a lower funds rate than in August, and all the unconstrained prescriptions except for the Taylor (1993) rule, which places relatively less weight on the output gap, take values that are below the effective lower bound.

[4] In contrast to the optimal control simulations, which use headline inflation in the policymakers' objective function, the policy rule prescriptions use core inflation as the measure of 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. Thus, the use of headline inflation in the optimal control simulations and of core inflation in the policy rules are both consistent with the notion that policymakers are concerned with the medium-term behavior of headline inflation.

Monetary Policy Alternatives

This Tealbook presents three policy alternatives—labeled A, B, and C—for the Committee's consideration. Both structure and content differ more substantially across the alternatives than usually is the case.

Alternative A contains a new paragraph that offers more explicit definitions of mandate-consistent longer-run rates of inflation and unemployment than the Committee has heretofore included in its statement. Alternative A also replaces the qualitative portion of the forward guidance that the FOMC included in the policy paragraph of its August statement—the declaration that "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 mid-2013"—with numerical thresholds for inflation and the unemployment rate. These features of Alternative A reflect the illustrative language in the recent memo on clarifying forward guidance.[1] Given the staff's baseline forecast, neither of the threshold values specified in Alternative A would be met before 2015, suggesting that the Committee could extend the projected period of exceptionally low rates to "at least through 2014." Alternatives B and C retain the qualitative forward guidance language from the August statement.

The three alternatives include a wide range of policy tools and options. Alternative A includes a large-scale asset purchase program modeled on the one that the Committee implemented from late-2010 to mid-2011. Under Alternative A, the Committee would buy, over a period of 12 months, $1 trillion of longer-term Treasury securities with remaining maturities of 1½ to 30 years.[2] Alternative B includes two variants of a maturity extension program. Under the first, the Committee would indicate that it intends to purchase, over 9 months, $400 billion of Treasury securities with remaining maturities of 6 to 30 years, and to sell an equal amount of Treasury securities with remaining maturities of 3 years or less. Under the second, the Committee would announce that it is initiating purchases of Treasury securities with remaining maturities of

[1] "Approaches to Clarifying the Conditionality in the Committee's Forward Guidance," sent to the Committee on September 12, 2011.

[2] Relative to the previous program, the new purchases would be concentrated more heavily at the longer end of the term structure, with two-thirds at maturities of 5½ years and longer. As a result, the average maturity of securities purchased under the new program would be longer than the average maturity of those purchased under the previous program.

6 to 30 years at a pace of about $45 billion per month, and that it will sell Treasury securities with remaining maturities of 3 years or less at the same pace; the Committee also would announce that it anticipates continuing this maturity extension program for up to 9 months.[3] Any of these programs would extend the average maturity of the SOMA portfolio and reduce the quantity of longer-term securities held by the public. Alternative A would expand the Federal Reserve's balance sheet and the supply of reserve deposits, while Alternative B would keep the size of the balance sheet and the level of reserve deposits roughly unchanged. Alternative B raises the possibility of reducing the interest rate paid on required and excess reserve balances from 25 to 10 basis points in order to align those rates with current and projected levels of overnight market rates. This step could be incorporated into Alternative A as well. Alternative C includes no new policy action; instead, it introduces language saying that the Committee will regularly assess the implications of incoming information for the economic outlook and suggesting a greater willingness to act before mid-2013 if necessary to foster its objectives.

Each alternative acknowledges the weak incoming information on output and employment, though with somewhat different emphases. No alternative attributes much of the current softness in activity to earlier commodity price increases or supply chain disruptions. To the contrary, Alternatives A and B note that household spending has increased at only a modest pace in recent months despite a recovery in auto sales as supply-chain disruptions eased. Alternative C, however, points to the recovery in production and sales of motor vehicles as contributing to modest growth in consumer spending. The draft statements also differ in their treatment of inflation: Alternative C notes the pickup in inflation earlier this year as well as its more recent moderation; Alternatives A and B focus on the moderation. Turning to the outlook, the drafts of Alternatives A and B indicate that the Committee continues to expect some pickup in the pace of recovery over coming quarters, but highlight downside risks to the economic outlook, including strains in global financial markets. The draft of Alternative C notes the presence of downside risks but emphasizes the projection of some pickup in growth.

The next three pages contain a table that shows key elements of the alternatives. The table is followed by complete draft statements, then by a summary of the arguments for each alternative.

[3] The asset purchase programs in Alternatives A and B are analyzed in "Possible Approaches to Providing Monetary Accommodation: Reinvestment Maturity Extension Program, SOMA Portfolio Maturity Extension Program, and Long-Maturity LSAP," also sent to the Committee on September 12.

Table 1: Overview of Alternatives for the Sept. 21 FOMC Statement

Key Components	August Statement	September Alternatives		
		A	B	C
Economic Activity				
Economic Recovery	economic growth so far this year has been considerably slower than Committee had expected	economic growth remains quite slow	economic growth remains slow	
Labor Market	indicators suggest deterioration in overall labor market conditions	indicators point to continuing weakness in overall labor market conditions, and unemployment rate remains elevated		
Temporary Factors Influencing Recovery	appear to account for only some of the recent weakness in economic activity	some recovery in sales of motor vehicles as supply-chain disruptions eased		sales of new motor vehicles recovering after auto manufacturers made progress in restoring supply chains and increased production
Household Spending	has flattened out	has been increasing at only a modest pace in recent months		increased at a modest pace in recent months
Inflation				
Recent Developments	Inflation picked up earlier in the year, mainly reflecting higher prices for some commodities and imported goods, as well as supply chain disruptions.	n.a.	n.a.	Inflation picked up earlier in the year, mainly reflecting higher prices for some commodities and imported goods, as well as supply chain disruptions.
	More recently, inflation has moderated as prices of energy and some commodities have declined from their earlier peaks.	Inflation has moderated since earlier in the year as prices of energy and some commodities have declined from their peaks.		More recently, inflation has moderated as prices of energy and some commodities have declined from their peaks.
Longer-term expectations	Longer-term inflation expectations have remained stable	Longer-term inflation expectations have remained stable		
Longer-run Goals				
Inflation	n.a.	The Committee judges that inflation of 2 percent as measured by the price index for personal consumption expenditures is most consistent, over the longer run, with the dual mandate.	n.a.	n.a.
Employment	n.a.	Currently, the Committee projects that, in the absence of further shocks to the economy, the unemployment rate would converge over time to a level around [5 to 6] percent; this projection is subject to considerable uncertainty.	n.a.	n.a.

Table 1: Overview of Alternatives for the Sept. 21 FOMC Statement
(*continued*)

Key Components	**August Statement**	**September Alternatives**		
		A	**B**	**C**
Outlook				
Economic Activity	The Committee now expects a somewhat slower pace of recovery over coming quarters and anticipates that the unemployment rate will decline only gradually	Committee continues to expect some pickup in pace of recovery over coming quarters but anticipates that the unemployment rate will decline only slowly	Committee continues to expect some pickup in pace of recovery over coming quarters but anticipates that the unemployment rate will decline only gradually	Committee continues to expect some pickup in pace of recovery over coming quarters and anticipates that the unemployment rate will decline gradually
Inflation	The Committee also anticipates that inflation will settle, over coming quarters, at or below levels consistent with the dual mandate as the effects of past energy and other commodity price increases dissipate further.	The Committee also anticipates that inflation will settle, over coming quarters, at or below levels consistent with the dual mandate as the effects of past energy and other commodity price increases dissipate further.		
	the Committee will continue to pay close attention to the evolution of inflation and inflation expectations	the Committee will continue to pay close attention to the evolution of inflation and inflation expectations		
Federal Funds Rate Target Range				
Intermeeting Period	0 to ¼ percent	0 to ¼ percent		
Forward Guidance	Committee currently anticipates that economic conditions—including low rates of resource utilization and a subdued outlook for inflation over the medium-term—are likely to warrant exceptionally low levels for the federal funds rate at least through mid-2013	Committee anticipates that this exceptionally low range for the federal funds rate will be appropriate at least as long as unemployment exceeds [7] percent, inflation is projected to remain at or below [2½] percent in the medium term, and longer-term inflation expectations continue to be well anchored at mandate-consistent levels. On the basis of currently available information, the Committee expects these conditions to prevail [at least through 2014].	Committee currently anticipates that economic conditions—including low rates of resource utilization and a subdued outlook for inflation over the medium-term—are likely to warrant exceptionally low levels for the federal funds rate at least through mid-2013	

Table 1: Overview of Alternatives for the Sept. 21 FOMC Statement
(*continued*)

Key Components	August Statement	September Alternatives		
		A	B	C
SOMA Portfolio Policy				
Asset purchases/holdings	n.a.	The Committee decided to expand its holdings of longer-term Treasury securities by [by a further $1 trillion] at a pace of $80 to $85 billion over the next [12] months.	The Committee intends to purchase, over 9 months, $400 billion of Treasury securities with maturities of 6 to 30 years and to sell an equal amount with maturities of 3 years or less. ***OR*** The Committee is initiating purchases of Treasury securities with remaining maturities of 6 years to 30 years at a pace of about $45 billion per month and will sell Treasury securities with remaining maturities of 3 years or less at the same pace; the Committee anticipates continuing this maturity-extension program for up to 9 months.	n.a.
Reinvestment Policy	maintain existing reinvestment policy	maintain existing policy of rolling over maturing Treasury securities at auction; reinvest MBS principal in longer-term Treasury securities	maintain existing policy of rolling over maturing Treasury securities at auction; reinvest MBS principal in Treasury securities with remaining maturities of 6 to 30 years	maintain existing reinvestment policy
Future Policy Action				
Asset Purchases / Holdings	will regularly review size and composition of securities holdings and is prepared to adjust as appropriate	will regularly review the pace of its securities purchases and the overall size of the purchase program in light of incoming information and will adjust the program as needed to best foster maximum employment and price stability	will regularly review the pace of its securities transactions and the overall size of the maturity extension program in light of incoming information and will adjust the program as needed to best foster maximum employment and price stability	n.a.
Overall	will continue to assess the economic outlook in light of incoming information and is prepared to employ these tools as appropriate	will continue to assess the economic outlook in light of incoming information and is prepared to employ its policy tools as appropriate	will continue to assess the economic outlook in light of incoming information and is prepared to employ its policy tools as appropriate	will regularly assess the implications of incoming information for the economic outlook and will employ its policy tools as necessary to foster maximum employment and price stability

AUGUST 2011 FOMC STATEMENT

1. Information received since the Federal Open Market Committee met in June indicates that economic growth so far this year has been considerably slower than the Committee had expected. Indicators suggest a deterioration in overall labor market conditions in recent months, and the unemployment rate has moved up. Household spending has flattened out, investment in nonresidential structures is still weak, and the housing sector remains depressed. However, business investment in equipment and software continues to expand. Temporary factors, including the damping effect of higher food and energy prices on consumer purchasing power and spending as well as supply chain disruptions associated with the tragic events in Japan, appear to account for only some of the recent weakness in economic activity. Inflation picked up earlier in the year, mainly reflecting higher prices for some commodities and imported goods, as well as the supply chain disruptions. More recently, inflation has moderated as prices of energy and some commodities have declined from their earlier peaks. 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 now expects a somewhat slower pace of recovery over coming quarters than it did at the time of the previous meeting and anticipates that the unemployment rate will decline only gradually toward levels that the Committee judges to be consistent with its dual mandate. Moreover, downside risks to the economic outlook have increased. The Committee also anticipates that inflation will settle, over coming quarters, at levels at or below those consistent with the Committee's dual mandate as the effects of past energy and other commodity price increases dissipate further. However, the Committee will continue to pay close attention to the evolution of inflation and inflation expectations.

3. To promote the ongoing economic recovery and to help ensure that inflation, over time, is at levels consistent with its mandate, the Committee decided today to keep the target range for the federal funds rate at 0 to ¼ percent. The Committee currently anticipates that economic conditions—including low rates of resource utilization and a subdued outlook for inflation over the medium run—are likely to warrant exceptionally low levels for the federal funds rate at least through mid-2013. The Committee also will maintain its existing policy of reinvesting principal payments from its securities holdings. The Committee will regularly review the size and composition of its securities holdings and is prepared to adjust those holdings as appropriate.

4. The Committee discussed the range of policy tools available to promote a stronger economic recovery in a context of price stability. It will continue to assess the economic outlook in light of incoming information and is prepared to employ these tools as appropriate.

SEPTEMBER 2011 FOMC STATEMENT—ALTERNATIVE A

1. Information received since the Federal Open Market Committee met in **August** indicates that economic growth **remains quite slow**. **Recent** indicators **point to continuing weakness** in overall labor market conditions, and the unemployment rate **remains elevated**. Household spending has **been increasing at only a modest pace in recent months despite some recovery in sales of motor vehicles as supply-chain disruptions eased**. Investment in nonresidential structures is still weak, and the housing sector remains depressed. However, business investment in equipment and software continues to expand. Inflation has moderated **since earlier in the year** as prices of energy and some commodities have declined from their peaks. 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 judges that inflation of 2 percent as measured by the price index for personal consumption expenditures is most consistent, over the longer run, with the dual mandate. Whereas monetary policy can determine the longer-run inflation rate, monetary policy does not determine the longer-run equilibrium rate of unemployment, which depends on structural economic factors that may vary over time. Currently, the Committee projects that, in the absence of further shocks to the economy, the unemployment rate would converge over time to a level around [5 to 6] percent; this projection is subject to considerable uncertainty.**

3. The Committee **continues to expect some pickup** in the pace of recovery over coming quarters **but** anticipates that the unemployment rate will decline only **slowly** toward **its longer-run equilibrium level**. Moreover, **there are significant** downside risks to the economic outlook**, including strains in global financial markets**. The Committee also anticipates that inflation will settle, over coming quarters, at levels at or below those consistent with the Committee's dual mandate as the effects of past energy and other commodity price increases dissipate further. However, the Committee will continue to pay close attention to the evolution of inflation and inflation expectations.

4. To promote **a stronger** economic recovery and to help ensure that inflation, over time, is consistent with **the dual** mandate, the Committee decided today to keep the target range for the federal funds rate at 0 to ¼ percent. The Committee anticipates that **this** exceptionally low **range for** the federal funds rate **will be appropriate at least as long as the unemployment rate exceeds [7] percent, inflation is projected to remain at or below [2½] percent in the medium term, and longer-term inflation expectations continue to be well anchored at mandate-consistent levels**. **On the basis of currently available information, the Committee expects these conditions to prevail [at least through 2014].**

5. **In addition, the Committee decided to expand its holdings of longer-term Treasury securities [by a further $1 trillion] at a pace of $80 to $85 billion per month over the next [12] months. This program should put downward pressure on longer-term interest rates and help make broader financial conditions more**

Alternatives

accommodative. The Committee will regularly review the **pace of its securities purchases and the overall size of the purchase program in light of incoming information and will adjust the program as needed to best foster maximum employment and price stability**. The Committee will maintain its existing policy of **rolling over maturing Treasury securities at auction and will reinvest principal payments from its holdings of agency securities in longer-term Treasury securities**.

6. The Committee will continue to assess the economic outlook in light of incoming information and is prepared to employ **its** policy tools as appropriate to promote a stronger economic recovery in a context of price stability.

SEPTEMBER 2011 FOMC STATEMENT—ALTERNATIVE B

1. Information received since the Federal Open Market Committee met in **August** indicates that economic growth **remains slow**. **Recent** indicators **point to continuing weakness** in overall labor market conditions, and the unemployment rate **remains elevated**. Household spending has **been increasing at only a modest pace in recent months despite some recovery in sales of motor vehicles as supply-chain disruptions eased**. Investment in nonresidential structures is still weak, and the housing sector remains depressed. However, business investment in equipment and software continues to expand. Inflation has moderated **since earlier in the year** as prices of energy and some commodities have declined from their peaks. 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 **continues to expect some pickup** in the pace of recovery over coming quarters **but** anticipates that the unemployment rate will decline only gradually toward levels that the Committee judges to be consistent with its dual mandate. Moreover, **there are significant** downside risks to the economic outlook**, including strains in global financial markets**. The Committee also anticipates that inflation will settle, over coming quarters, at levels at or below those consistent with the Committee's dual mandate as the effects of past energy and other commodity price increases dissipate further. However, the Committee will continue to pay close attention to the evolution of inflation and inflation expectations.

3. To **support a stronger** economic recovery and to help ensure that inflation, over time, is at levels consistent with **the dual** mandate, the Committee decided today to **extend the average maturity of its holdings of securities**. **The Committee intends to purchase, over the next 9 months, $400 billion of Treasury securities with remaining maturities of 6 years to 30 years and to sell an equal amount of Treasury securities with remaining maturities of 3 years or less. This program should put downward pressure on longer-term interest rates and help make broader financial conditions more accommodative.** The Committee will regularly review the **pace of its securities transactions and the overall size of the maturity extension program in light of incoming information and will adjust the program as needed to best foster maximum employment and price stability**. The Committee will maintain its existing policy of **rolling over maturing Treasury securities at auction and will reinvest principal payments from its holdings of agency securities in Treasury securities with remaining maturities of 6 years to 30 years**.

OR

3'. To **support a stronger** economic recovery and to help ensure that inflation, over time, is at levels consistent with **the dual** mandate, the Committee decided today to **extend the average maturity of its holdings of securities**. **The Committee is initiating purchases of Treasury securities with remaining maturities of 6 years to 30 years at a pace of about $45 billion per month and will sell Treasury securities with**

Alternatives

remaining maturities of 3 years or less at the same pace; the Committee anticipates continuing this maturity-extension program for up to 9 months. This program should put downward pressure on longer-term interest rates and help make broader financial conditions more accommodative. The Committee will regularly review the **pace of its securities transactions and the overall size of the maturity extension program in light of incoming information and will adjust the program as needed to best foster maximum employment and price stability**. The Committee will maintain its existing policy of **rolling over maturing Treasury securities at auction and will reinvest principal payments from its holdings of agency securities in Treasury securities with remaining maturities of 6 years to 30 years**.

4. The Committee **also** decided 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 mid-2013.

5. The Committee **[** discussed the range of policy tools available to promote a stronger economic recovery in a context of price stability. It **]** will continue to assess the economic outlook in light of incoming information and is prepared to employ **its** tools as appropriate.

Alternatives

Note: *If policymakers decide 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 10 basis points effective with the reserve maintenance period that begins on October 6, 2011.

SEPTEMBER 2011 FOMC STATEMENT —ALTERNATIVE C

1. Information received since the Federal Open Market Committee met in **August** indicates that economic growth **remains slow**. **Recent** indicators **point to continuing weakness** in overall labor market conditions, and the unemployment rate **remains elevated**. Household spending has **increased at a modest pace in recent months, with sales of new motor vehicles recovering after auto manufacturers made progress in restoring their supply chains and increased production**. Investment in nonresidential structures is still weak, and the housing sector remains depressed. However, business investment in equipment and software continues to expand. Inflation picked up earlier in the year, mainly reflecting higher prices for some commodities and imported goods, as well as the supply chain disruptions. More recently, inflation has moderated as prices of energy and some commodities have declined from their peaks. Longer-term inflation expectations have remained stable.

2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. **Though** downside risks to the economic outlook **remain**, the Committee **continues to expect some pickup in the** pace of recovery over coming quarters and anticipates that the unemployment rate will decline gradually toward levels that the Committee judges to be consistent with its dual mandate. The Committee also anticipates that inflation will settle, over coming quarters, at levels at or below those consistent with the Committee's dual mandate as the effects of past energy and other commodity price increases dissipate further. However, the Committee will continue to pay close attention to the evolution of inflation and inflation expectations.

3. To promote the ongoing economic recovery and to help ensure that inflation, over time, is at levels consistent with its mandate, the Committee decided today to keep the target range for the federal funds rate at 0 to ¼ percent. The Committee currently anticipates that economic conditions—including low rates of resource utilization and a subdued outlook for inflation over the medium run—are likely to warrant exceptionally low levels for the federal funds rate at least through mid-2013. The Committee also will maintain its existing policy of reinvesting principal payments from its securities holdings. The Committee will **regularly** assess **the implications of incoming information for the economic outlook and will employ its policy tools as necessary to foster maximum employment and price stability**.

The Case For Alternative B

The Committee, like the staff, may see the information received during the intermeeting period as pointing to an even more gradual pickup in economic activity over the medium run—and so to an even slower reduction in the unemployment rate—than was expected at the time of the August meeting. In particular, policymakers may note that growth remains quite modest even with a reversal of temporary factors that were seen as restraining activity earlier in the year. They also may view the sharp drop in consumer confidence in recent months, the tepid growth in employment, and the increasing strains in global financial markets as posing substantial downside risks to the economic outlook. Moreover, they may judge that the U.S. economy is operating well below potential and anticipate that, with energy and commodity prices generally having declined from earlier peaks, inflation is likely to subside to levels at or below those judged to be most consistent with the dual mandate. Accordingly, policymakers might conclude that additional policy stimulus is appropriate at this meeting.

Committee members might judge that an adjustment in fiscal policy would be most helpful in supporting the economic recovery, but see a negligible chance of timely action on that front. Hence, they may think it beneficial to provide further monetary stimulus by increasing the SOMA's holdings of longer-term Treasuries in order to put further downward pressure on longer-term interest rates and contribute to more accommodative financial conditions. Even so, policymakers might be concerned that a significant further expansion of the Federal Reserve's balance sheet and the supply of reserve balances could pose an upside risk to inflation expectations because it might make the public doubt that the Committee will be able to withdraw accommodation in a timely fashion. If so, the Committee may see Alternative B, which would increase the average maturity of the Federal Reserve's securities holdings while avoiding a significant expansion of the Federal Reserve's balance sheet, as appropriately balancing the potential benefits and costs of additional monetary stimulus.[4]

[4] As is the Committee's usual practice, the draft directive for Alternative B expresses purchases and sales in terms of the face value of securities. Given current and expected market interest rates, the market prices of most newly purchased longer-term securities likely would exceed their face value; that is, their prices would include a premium. Total premiums on the longer-term securities the Desk would buy likely would be about $50 billion larger than the net unamortized premiums on the securities that the Desk would sell. Although buying and selling the same face value of securities would keep the face value of securities held in the SOMA portfolio constant at about $2.6 trillion, the supply of reserve balances would increase by an amount equal to the difference in premiums. If it preferred to avoid an increase in reserve balances, the

Staff estimates suggest that purchasing $400 billion of Treasury securities with remaining maturities of 6 years to 30 years and selling an equal amount of Treasury securities with maturities of 3 years or less (along with reinvesting principal payments from agency MBS held in the SOMA entirely in Treasury securities with maturities of 6 years or more) would push down the level of longer-term private interest rates and ease financial conditions enough to reduce the unemployment rate by ¼ to ½ percentage point at the end of 2013. Staff also estimates that it would increase PCE inflation by about ¼ percentage point over the medium-run. These estimates, though subject to considerable uncertainty, are almost as large as the estimated effects of the $1 trillion unsterilized Treasury purchase program included in Alternative A. The smaller maturity extension program of Alternative B is estimated to have nearly the same effects as the larger asset purchase program of Alternative A because the former is structured to buy more securities at the longer end of the term structure and thus results in a more persistent reduction in the average maturity of the publicly held debt.[5] While the Desk's sales of shorter-term Treasury securities under the maturity extension program might put some upward pressure on short-term money market rates, any increase would likely be small so long as the Committee maintains its forward guidance about the likely future path of the federal funds rate.

Members may be concerned that a maturity extension program could delay normalizing the Federal Reserve's balance sheet after the Committee stops reinvesting principal payments, because the runoff of Treasury securities would be much slower. However, once it begins moving to a less accommodative stance of policy, the Committee could, of course, instruct the Desk to sell securities in order to put total holdings on a more rapid downward path. In addition, policymakers might find undesirable the increase in the Federal Reserve's exposure to unrealized capital losses that would result if the Federal Reserve were to hold a longer-duration portfolio. Nonetheless, they may consider the maturity extension program in Option B appropriate, and be willing to accept the increased risk of capital losses, if they project persistent

Committee could direct the Desk to purchase $400 billion in face value of longer-term securities and to sell enough shorter-term securities to leave the level of reserve balances essentially unchanged. Doing so would decrease the face value of the SOMA portfolio by about $50 billion.

[5] For additional information about the transmission mechanism and estimated effects of these programs, see the memo titled "Possible Approaches to Providing Monetary Accommodation: Reinvestment Maturity Extension Program, SOMA Portfolio Maturity Extension Program, and Long-Maturity LSAP" that was distributed to the Committee on September 12.

economic weakness and lower-than-target inflation in the absence of further stimulus—particularly if they see the risks to the already weak outlook as tilted to the downside.

Staff analysis and academic research suggests that more forceful forward guidance such as that included in Alternative A could also reduce longer-term rates and provide economic stimulus. Policymakers may, however, find it premature to alter the forward guidance in such a significant manner; they may want to consider possible changes to their forward guidance in the context of a broader discussion of the Committee's policy framework before making any changes. They may also believe that any change in forward guidance that involves explicit numerical values for the mandate-consistent rates of inflation and unemployment over the longer-term will need to be explained carefully, a process that could take some time. In particular, policymakers might worry that the forward guidance in Alternative A, if adopted without careful prior communication, would be more likely to result in higher expected and actual inflation than in faster real growth. If so, they might anticipate that a statement along the lines of Alternative A would quickly raise longer-run inflation expectations, or that the inflation threshold in Alternative A would be triggered in fairly short order.

Some Committee members may see potential benefits from reducing the interest rate paid on required and excess reserve balances to 10 basis points. Doing so would better align that rate with short-term money market rates and thus might serve as a useful complement to the Committee's forward guidance. In addition, reducing this rate probably would put downward pressure on a range of overnight and very-short-term money market rates, potentially leading some investors to buy somewhat-longer-term money market instruments; such behavior could lessen any upward pressure on short-term rates that might result from the sales associated with the maturity extension program. However, other members may see a further reduction in very-short-term rates as likely to accelerate outflows from money market mutual funds, potentially reducing firms' ability to issue commercial paper or fund securities holdings. Cutting the remuneration rate on excess reserves clearly would reduce depository institution's incentive to borrow federal funds 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, while banks might respond by making more loans as excess reserves became a less attractive investment, they might instead impose greater fees on deposit accounts. If participants generally thought that a reduction in the remuneration rates would be helpful, on balance, the Board could adopt

such a reduction and that step could be noted in the press release containing the FOMC statement.

A statement along the lines of Alternative B would be broadly in line with market expectations. Most respondents to the Desk's recent survey of primary dealers indicated that they expect the FOMC to announce a maturity extension program, most likely in the form of buying longer-term and selling shorter-term Treasury securities rather than solely by adjusting the reinvestment policy. On average, respondents saw about a 75 percent probability that the Committee would announce a maturity extension program within a year. Averaging across respondents, the expected size of a maturity extension program, conditional on one being put in place, was $375 billion spread over 6½ months.[6] In contrast, they assigned about a 30 percent probability to a change in the forward guidance within a year. On average respondents saw a 30 percent probability of a cut in the remuneration rate on required and excess reserves. Conditional on a cut occurring, respondents anticipated that the new level would be 10 basis points. While some market participants would be surprised by the timing of a statement like that in Alternative B, the responses to the dealer survey, along with market commentary, suggest that investors have already priced in much of the effect of a maturity extension program. Accordingly, an announcement along the lines of Alternative B likely would have only a modest further effect on asset prices—bond yields might decline a bit, the foreign exchange value of the dollar slip, and equity prices edge higher—unless the Desk's announcement of the details of the maturity exchange program indicated that the Committee would remove appreciably more or appreciably less duration from the public's portfolio than investors expected. If the interest rate on excess reserves were reduced, or if the statement included the bracketed language in the final paragraph—language that suggests the likelihood of additional steps to spur a stronger recovery if growth does not pick up noticeably, the decline in yields likely would be somewhat larger.

THE CASE FOR ALTERNATIVE A

Policymakers may view the information received since the August meeting as confirming that additional policy accommodation is needed to promote outcomes that are more consistent with the Federal Reserve's dual mandate. In particular, they may regard

[6] On average, respondents also anticipated that an "operation twist" maturity extension program would involve buying securities with maturities of 6 to 26 years and selling securities with maturities of 6 months to roughly 3 years. These parameters are close to those in Alternative B.

the recent data on household spending and labor markets as strong evidence that the reasons for slow economic growth in 2011 go well beyond the transitory factors noted in recent statements. They may also see a tightening of fiscal policy as likely and be concerned about its adverse effects on economic activity and employment in the medium run. Against this backdrop, policymakers may have significantly downgraded their assessments of the near- and medium-term economic outlook, perhaps even to the point of projecting that the U.S. economy could slip into a new downturn, as in the "Recession" alternative simulation of Tealbook Part A. Moreover, the risk of a significant financial dislocation in Europe appears to have increased in recent weeks, and the Committee may judge that such an outcome could spill over to the U.S. financial system and have important negative implications for the U.S. outlook, as detailed in the "Very Severe Financial Stress in Europe" simulation.

In addition, some participants may now anticipate little reduction in slack in labor markets over coming quarters, and so may expect greater restraint on wages and prices than they anticipated earlier. If they also see large negative risks to the outlook for growth, they may now view the main risk to inflation over the projection period as being to the downside, with significant odds that inflation will fall below mandate-consistent levels for a substantial period.

Committee members may judge that an unsterilized asset purchase program would be more effective in spurring growth and keeping inflation close to mandate-consistent levels than would a maturity extension program. Members might, for example, anticipate that increased reserve balances would impart some further downward pressure on money market rates and encourage banks to expand lending. Moreover, policymakers may be confident that a larger balance sheet would not preclude a timely increase in the federal funds rate when economic conditions warrant a less accommodative stance of policy.

Accordingly, policymakers may conclude that both the maximum employment and price stability elements of the dual mandate justify action along the lines of Alternative A. That is, they may judge that not only is increased monetary policy accommodation necessary, but that with the federal funds rate constrained by the zero lower bound and with downside risks to both output and inflation rising, it would be prudent to undertake a third large-scale asset purchase program and to issue stronger forward guidance. If policymakers see growing public uncertainty that the expansion

will continue—much less strengthen—as contributing significantly to the weakness in household spending and to firms' continuing reluctance to hire new workers, they may judge that the policy actions in Alternative A, in combination, would reinforce the public's confidence in the Committee's commitment to strengthen the recovery.

As noted in the discussion of Alternative B, staff analysis of various asset purchase programs suggests that the program in Alternative A might be expected to ease financial conditions enough to reduce the unemployment rate by ¼ to ½ percentage point at the end of 2013, and to increase PCE inflation by about ¼ percentage point over the medium run. Adding the estimated effects of the asset purchase program to the extended version of the staff's baseline forecast results in projected paths for unemployment and inflation that have the unemployment rate at or above 6 percent at the end of 2015 and that leave PCE inflation somewhat below 2 percent. These estimates and the staff forecast are, of course, subject to considerable uncertainty, and there clearly is some risk that inflation could rise above 2 percent over the medium run. Policymakers may find that risk acceptable if they project that inflation is more likely to decline than to increase, and that progress toward maximum employment is likely to be unacceptably slow, in the absence of further monetary stimulus.

Staff analysis suggests that forward guidance could provide significant additional stimulus if it credibly signaled that the Committee would be more accommodative than the public already anticipated. To a degree, more stimulus could result from giving economic agents information that changes their views about the conditions that will govern the onset of tightening, if that additional information leads them to anticipate a more prolonged period of near-zero rates than they now expect. (Forward guidance could reduce longer-term yields more, and thus have larger macroeconomic effects, if the Committee also were to indicate that, once it begins to tighten, it intends to raise rates less rapidly than the public now anticipates.) Although the staff forecast of economic activity and inflation, in combination with the estimated outcomes-based rule, suggests that the target range for the federal funds rate will be unchanged through mid-2014, more than half of the respondents to the Desk survey indicated that they expect the first increase in the federal funds rate target to occur by the end of 2013. On average, respondents to the latest dealer survey indicated that they expected the unemployment rate to be 8 percent and the 12-month PCE inflation rate to be a bit above 2 percent when the Committee first raises its target for the funds rate. Thus, if the Committee were to state that it currently does not anticipate raising the federal funds rate before the

Alternatives

unemployment rate reaches 7 percent or the inflation rate reaches 2½ percent, and that it does not expect those thresholds to be breached before the end of 2014, as in the draft of Alternative A, that announcement could lower market expectations of short-term interest rates beyond 2013 and so put downward pressure on longer-term interest rates and upward pressure on asset prices. In addition, 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 along the lines of Alternative A could prevent medium- and longer-term rates from rising too soon or too quickly as the recovery progresses.

The combination of more aggressive forward guidance and the initiation of another unsterilized large-scale asset purchase program would come as a significant surprise to market participants. Respondents to the Desk's dealer survey saw a roughly 30 percent chance of a substantial change in the Committee's forward guidance within a year, and they assigned a probability of about 40 percent to the Committee undertaking a new large-scale asset-purchase program over the same period. Moreover, conditional on the FOMC adopting an unsterilized asset-purchase program, respondents expected, on average, that purchases would total about $600 billion, significantly less than the $1 trillion in Alternative A. Accordingly, the combination of policy actions in Alternative A likely would result in a drop in longer-term yields, although the decline might be restrained if investors perceived the statement as adding to the upside risks to inflation. Equity prices probably would rise, and the foreign exchange value of the dollar likely decline. The asset purchase program alone likely would have much smaller effects, given that investors appear to have already priced in a maturity extension program that would reduce the average duration of the publicly held debt nearly as much as would the asset purchases contained in Alternative A.

THE CASE FOR ALTERNATIVE C

Although information received since the August meeting suggests that the pace of recovery has picked up only modestly, Committee members may see the increase in motor vehicle production and sales that accompanied the easing of supply side constraints as supporting the view that growth will increase more substantially as the temporary factors that damped growth earlier in the year continue to fade. In particular, they may continue to think it highly likely that output and employment growth will strengthen more than projected in the staff's baseline forecast, perhaps along the lines of the "Faster

Snapback" alternative simulation, though perhaps not as quickly as they had anticipated at the time of the August FOMC meeting. Alternatively, they may judge that it would be prudent to gauge the extent to which growth picks up before deciding whether to undertake new asset purchases.

Even if policymakers see the downside risks to the outlook for economic growth as having increased, they may believe that it is prudent to wait for additional information bearing on the medium-term outlook before acting to increase the degree of policy accommodation. Moreover, Committee members may judge that liquidity facilities are better tools for addressing financial strains and the downside risks that such strains pose to the economy than are asset purchases or forward guidance about monetary policy. If so, they may judge that further monetary policy stimulus is, currently, not appropriate and so favor a statement along the lines of Alternative C.

Policymakers may believe that monetary policy actions taken over the past year have already put in place sufficient support for the economic recovery. Moreover, they might be concerned that a significant further expansion of the Federal Reserve's balance sheet and the supply of reserve balances would pose too large a risk that the Committee might be unable to withdraw accommodation in a timely fashion. In addition, some Committee members may see a sizable risk that further monetary stimulus would be more likely to result in higher inflation than in faster growth because they judge that the housing and financial shocks the economy suffered in recent years have resulted in a persistent structural mismatch in labor markets that has made both the level of potential output and its growth rate over the medium term lower than the staff estimates, as in the "Greater Supply-Side Damage" simulation. Some members might see the increase in measures of core inflation earlier this year as consistent with this assessment. Some may also be concerned that additional monetary accommodation would result in distortions of asset prices that could have adverse consequences for monetary and financial stability.

Committee members may judge that the most important contribution monetary policy can make at this point is to ensure that longer-term inflation expectations remain stable. They may see this as helping not only to ensure that inflation is at mandate-consistent levels over the medium term but also to provide a stable background for a sustainable recovery in real activity. Moreover, they may judge that the Committee's past actions are likely to leave inflation, over the medium run, at the high end of the range that is consistent with the dual mandate. And they may conclude that further large-

scale asset purchases, whether sterilized or not, or statements indicating that the Committee will accept higher than 2 percent inflation even temporarily, would pose an unacceptably large risk to the stability of inflation expectations, as in the "Greater Supply-Side Damage with Higher Inflation Expectations" alternative simulation.

Some Committee members may believe that maintaining the current stance of policy is appropriate even though they anticipate only a gradual recovery. They might judge that the potential costs of providing more specific forward guidance or of increasing the size or average maturity of the SOMA portfolio, outweigh the likely benefits. Even if the Committee's forward guidance contained numerical thresholds, policymakers might be concerned that extending the date in that forward guidance could make it difficult to adjust policy sufficiently rapidly if growth picks up quickly and inflation does not decline as expected. Similarly, they may worry that it would be difficult to reverse a new asset purchase program or a maturity extension program in such circumstances.

If Committee members anticipate a stronger medium-term pickup in real activity than envisioned by the staff's baseline scenario, or if they judge it likely that the level and growth rate of potential output are appreciably lower than the staff estimates, they may see a significant risk that inflation will increase even without further monetary stimulus. If so, they may judge it appropriate to modify the statement so as to provide a greater degree of flexibility to tighten policy in response to economic developments. In particular, if growth picks up strongly and rates of resource utilization increase steadily, some members may judge it appropriate to begin withdrawing monetary policy accommodation well before mid-2013 even though unemployment, at the time, might not yet be approaching the staff's estimate of its longer-run, mandate-consistent level. These policymakers may favor a statement that includes the final sentence of Alternative C, in which the Committee would state that it "will regularly assess the implications of incoming information for the economic outlook and will employ its policy tools as necessary to foster maximum employment and price stability," rather than a statement that indicates the Committee is prepared to employ its policy tools to promote a stronger recovery.

A statement like that in Alternative C would surprise market participants, who appear to expect that the Committee will either act to provide more stimulus or indicate that it is preparing to take such action soon unless the recovery strengthens. Longer-term

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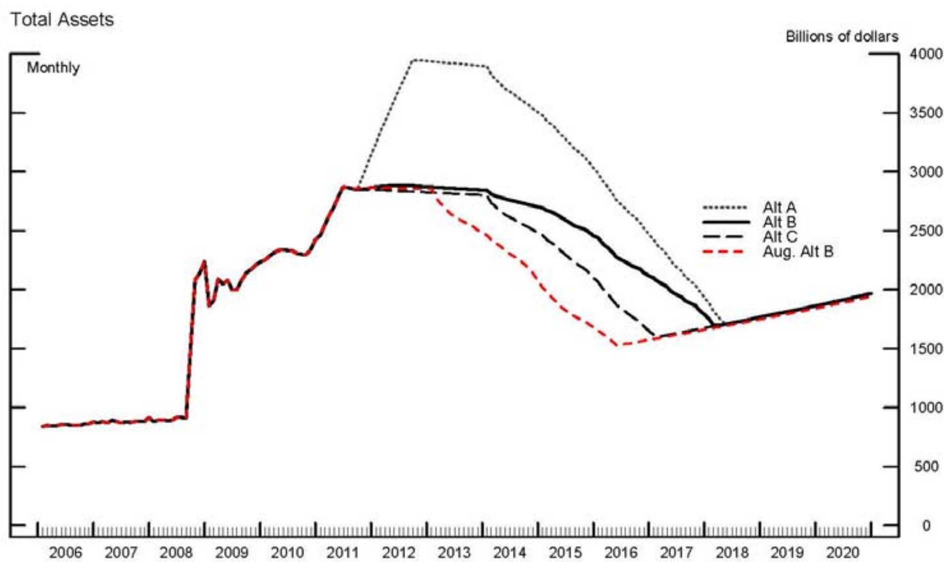
interest rates likely would increase. Stock prices likely would decline, and the foreign exchange value of the dollar probably would increase.

LONG-RUN PROJECTIONS OF THE BALANCE SHEET AND MONETARY BASE

The staff has prepared three scenarios for the Federal Reserve's balance sheet that correspond to the policy alternatives presented above: A baseline scenario corresponding to Alternative B, and two additional scenarios corresponding to Alternatives A and C. Projections under each scenario are based on assumptions about 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 C. Consistent with the staff's forecast, the three scenarios assume that the target federal funds rate lifts off in the third quarter of 2014.



For the scenario that corresponds to Alternative B, the Committee is assumed to sell $400 billion (par value) of Treasury securities with remaining maturities of 3 years or less and purchase the same amount of securities with remaining maturities of 6 years or more over a nine-month period. It is also assumed that the Committee reinvests the proceeds from principal repayments from its holdings of agency securities into Treasury securities with remaining maturities of 6 years or more, while Treasury securities that mature are reinvested at auction following the Desk's current practice to purchase proportionally across all securities that are being issued until March 2014. Until that time, System Open Market Account (SOMA) security holdings remain constant at roughly $2.6 trillion, and the size of the balance sheet, which includes other assets in addition to the SOMA portfolio, holds roughly steady at about $2.9 trillion. In March 2014, six months before the assumed first increase in the target federal funds rate, reinvestment ceases, and the balance sheet begins to contract. In March 2015, roughly

six months after the assumed first increase in the target federal funds rate, the Committee begins to sell its remaining holdings of agency MBS and agency debt securities at a pace that reduces the amount of these securities in the portfolio to zero in five years—that is, by February 2020.[7,8] This action, along with the cessation of reinvestment, normalizes the size of the balance sheet by March 2018.[9]

After reserve balances have reached the assumed $25 billion floor, the balance sheet begins to expand, with increases in holdings of Treasury securities essentially matching the growth of Federal Reserve capital and notes in circulation. The balance sheet reaches a size of $2 trillion by the end of 2020.

In the scenario corresponding to Alternative A, the Committee is assumed to purchase an additional $1 trillion of longer-term Treasury securities over twelve months. In addition, until six months prior to the lift off in the target federal funds rate, it is assumed that principal payments on agency securities are reinvested in longer-term Treasuries, while Treasury securities that mature are reinvested at auction. Sales of agency securities commence six months after the lift off in the target federal funds rate and reduce holdings to zero over five years. As a result of this policy action, SOMA holdings peak at $3.6 trillion and total assets reach $4 trillion in September 2012. The higher path for SOMA under Alternative A postpones the normalization of the size of the balance sheet relative to the baseline.

For the scenario that corresponds to Alternative C, we assume that the Committee continues to reinvest the proceeds from maturing Treasury securities at auction and reinvests payments of principal from agency securities in Treasury securities using the Desk’s current maturity distribution for purchases. Reinvestment of principal from maturing or prepaying securities ends at the same time as in the baseline. Likewise, sales of agency securities under Alternative C commence at the same time as in the baseline,

[7] Given the maturity schedule for agency debt securities, the volume of sales necessary to reduce holdings of these securities to zero over the five-year period is minimal.

[8] The tools to drain reserve balances (reverse repurchase agreements and the Term Deposit Facility) 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 term reverse repurchase agreements or term deposits—but would not produce an overall change in the size of the balance sheet.

[9] The assumed timing of the normalization of the size of the balance sheet depends importantly on the assumed level of reserve balances that is consistent with the conduct of monetary policy, which we take as $25 billion. A higher level of such reserve balances would, all else equal, lead to an earlier normalization of the size of the balance sheet.

and these sales also last for five years. However, because the portfolio is made up of relatively shorter-term Treasury securities under Alternative C than in the baseline, the pace at which securities roll off the portfolio is a bit faster. The normalization of the size of the balance sheet occurs in March 2017, twelve months sooner than in the baseline.

Compared with the August Tealbook baseline projection, total assets in the current projections do not begin to decline noticeably until March 2014, thirteen months later than the August baseline, because of the projected later lift off of the target federal funds rate, which determines when reinvestment of principal is assumed to cease and when asset sales are assumed to begin. For Alternative C, the path for total assets roughly parallels that of the August Tealbook baseline. Under Alternative B, the Treasury portfolio has a longer weighted average maturity and therefore runs off more slowly than in the August Tealbook. Finally, the path for total assets under Alternative A remains noticeably above the trajectory in the August Tealbook because of the large scale asset purchase program. From June 2018 onward, the paths for total assets in the current projections align with the path in the August Tealbook.

Consistent with the higher level of assets, on the liability side of the balance sheet, the forecasted paths for reserve balances are higher in the current projections than in the previous Tealbook until reserve balances fall to $25 billion. Under Alternative A, reserve balances peak at $2.7 trillion—roughly $1 trillion higher than in all other scenarios—by the end of the large scale asset purchase program. Subsequently, the path for reserve balances under Alternative A falls to $25 billion in May 2018—three months later than under Alternative B and fifteen months later than under Alternative C.

In the scenario corresponding to Alternative B, the monetary base is projected to start contracting in the fourth quarter of 2012 and it continues to contract through the second quarter of 2018, reflecting the decline in reserve balances. Starting in the middle of 2018, after reserve balances are assumed to have stabilized at $25 billion, the monetary base expands again, in line with the growth of Federal Reserve capital and notes in circulation.

Growth Rates for the Monetary Base				
Date	Alternative B	Alternative A	Alternative C	*Memo* : August Tealbook
		Percent, annual rate		
		Monthly		
Aug-10	-2.4	-2.4	-2.4	-2.4
Sep-10	-10.2	-10.2	-10.2	-10.2
Oct-10	-9.8	-9.8	-9.8	-9.8
Nov-10	3.2	3.2	3.2	3.2
Dec-10	16.8	16.8	16.8	16.8
Jan-11	23.3	23.3	23.3	23.3
Feb-11	57.6	57.6	57.6	57.6
Mar-11	97.8	97.8	97.8	97.8
Apr-11	74.4	74.4	74.4	74.4
May-11	42.1	42.1	42.1	42.1
Jun-11	35.9	35.9	35.9	35.9
Jul-11	27.0	27.0	27.0	26.9
Aug-11	3.6	3.6	3.6	16.2
Sep-11	-10.3	-9.9	-10.2	-0.5
Oct-11	2.2	23.4	1.0	-2.9
Nov-11	15.2	55.3	12.1	10.2
Dec-11	4.5	42.2	0.7	-1.0
		Quarterly		
2010 Q3	-6.4	-6.4	-6.4	-6.4
2010 Q4	-3.2	-3.2	-3.2	-3.2
2011 Q1	36.8	36.8	36.8	36.8
2011 Q2	69.4	69.4	69.4	69.4
2011 Q3	21.4	21.5	21.5	25.5
2011 Q4	2.7	23.4	1.2	2.9
2012 Q1	12.5	49.4	8.6	6.6
2012 Q2	7.7	39.1	4.2	3.9
		Annual - Q4 to Q4		
2009	52.5	52.5	52.5	52.5
2010	0.9	0.9	0.9	0.9
2011	35.9	42.9	35.4	37.3
2012	5.0	37.0	2.6	2.3
2013	-1.2	-1.2	-1.2	-12.5
2014	-4.9	-8.3	-9.4	-15.4
2015	-9.3	-13.2	-15.0	-22.1

Note: Not seasonally adjusted.

DEBT, BANK CREDIT, AND MONEY FORECASTS

Domestic nonfinancial sector debt is projected to increase at an annual rate of about 5 percent over the second half of the year, driven by significant expansion in federal government debt and a modest rise in private nonfinancial debt. Over 2012 and 2013, domestic nonfinancial sector debt is expected to rise at about a 4½ percent pace, on average, led by 8 percent growth in government debt (federal and state and local). Nonfinancial business debt is forecasted to rise at a moderate pace over the projection period, in part reflecting further increases in capital expenditures. Despite low mortgage rates, home mortgage debt is projected to contract further in 2011 and then to be about flat through 2013. The outlook for mortgage debt reflects the expected continued weakness in the housing sector and tight lending standards that are anticipated to ease only slowly. Consumer credit is projected to post small gains this quarter and next, limited by tepid growth in consumer durables expenditures, but then to gradually accelerate over the remainder of the forecast period.

Commercial bank credit is expected to increase modestly over the second half of 2011, supported by a moderate expansion in banks' securities holdings and somewhat weaker growth in loans. Core loans—which include commercial and industrial (C&I) loans, real estate loans, and consumer loans—are expected to expand very slowly until the middle of 2012. The sluggish expansion in core loans reflects weakness in real estate lending that partially offsets moderate gains in C&I and consumer loans against the backdrop of ongoing balance sheet adjustments, still-stringent lending standards, and a lack of loan demand from high-quality borrowers. Over the rest of the forecast period, however, these restraining factors are expected to abate, supporting a gradual acceleration of bank credit. C&I loans are projected to increase steadily through 2013 as a result of a continued rise in outlays on equipment and software as well as a further gradual easing of banks' lending standards and terms for such loans. In contrast, lending to businesses backed by commercial real estate is expected to contract through 2013, primarily reflecting poor market fundamentals and the weak credit quality of existing loans that is projected to improve only slowly over time. Turning to household lending, residential real estate loans are expected to remain about flat through 2012 and to edge up in 2013 amid continued weakness in housing demand and relatively tight lending standards. Consumer loans are projected to increase modestly through 2012 and to strengthen over the rest of the forecast horizon, driven largely by a pickup in spending on consumer

durables. Banks' securities holdings are anticipated to expand at a moderate pace through the forecast period.

After growing rapidly in July and August, mostly because of factors that are expected to reverse eventually (as discussed in the Financial Developments section in Tealbook Book A), M2 is projected to grow at an annual rate of about 2½ percent over the forecast period. This forecast assumes that households, institutional investors, and asset managers slowly shift their portfolios away from M2 assets and toward riskier assets outside of M2 as the economic recovery gains traction. However, continued turmoil in global financial markets could slow projected flows out of monetary assets and into riskier investments over the next several months. Within M2, liquid deposits are projected to expand at a moderate pace over the forecast period, while retail money market mutual funds and small time deposits are anticipated to contract. Currency is expected to expand at around its long-run average rate over the forecast period.

M2 Growth Rates
(percent, seasonally adjusted annual rate)

Monthly Growth Rates	Tealbook Forecast*
Jan-11	3.3
Feb-11	8.4
Mar-11	3.8
Apr-11	4.8
May-11	7.5
Jun-11	12.2
Jul-11	26.6
Aug-11	29.8
Sep-11	3.9
Oct-11	-2.1
Nov-11	-2.2
Dec-11	-2.1
Quarterly Growth Rates	
2011 Q1	5.0
2011 Q2	6.4
2011 Q3	19.8
2011 Q4	2.7
Annual Growth Rates	
2010	3.2
2011	8.7
2012	1.9
2013	3.2

* This forecast is consistent with nominal GDP and interest rates in the Tealbook forecast. Actual data through August 2011; projections thereafter.

Alternatives

DIRECTIVE

The August directive appears below. Drafts for a September directive corresponding to each of the three policy alternatives appear on subsequent pages. The directive for Alternative A would instruct the Desk to purchase longer-term Treasury securities to increase the total face value of domestic securities holdings to approximately $3.6 trillion. The Directive for Alternative B would instruct the Desk to take appropriate steps to purchase $400 billion of Treasury securities with remaining maturities of 6 to 30 years and to sell an equal amount of existing Treasury holdings with remaining maturities of 3 years or less so as to increase the average maturity of the SOMA portfolio while leaving the total face value of domestic securities in the SOMA about unchanged. The Directives for Alternatives A and B also would instruct the Desk to continue the current practice of rolling over maturing Treasury securities into new issues at auction, but would instruct the Desk to reinvest principal payments from agency MBS in longer-term Treasury securities. The directive for Alternative C would instruct the Desk to keep the total face value of domestic securities holdings at approximately $2.6 trillion and to continue the current policy of reinvesting principal payments.

August 2011 FOMC 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 1/4 percent. The Committee also directs the Desk to maintain its existing policy of reinvesting principal payments on all domestic securities in the System Open Market Account in Treasury securities in order to maintain the total face value of domestic securities at approximately $2.6 trillion. 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 2011 FOMC 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 1/4 percent. **The Committee directs the Desk to purchase, by the end of September 2012, longer-term Treasury securities with a total face value of $1 trillion in order to increase the total face value of domestic securities in the System Open Market Account to approximately $3.6 trillion.** The Committee also directs the Desk to maintain its existing policy of rolling over maturing Treasury securities into new issues and to reinvest principal payments on all agency securities in the System Open Market Account in **longer-term** Treasury securities. The System Open Market Account Manager and the Secretary will keep the Committee informed of ongoing developments regarding the System's balance sheet that could affect the attainment over time of the Committee's objectives of maximum employment and price stability.

6HSWHPEHU 2011 FOMC 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 1/4 percent. **The Committee directs the Desk to purchase, by the end of June 2012, Treasury securities with remaining maturities of approximately 6 years to 30 years with a total face value of $400 billion, and to sell Treasury securities with remaining maturities of 3 years or less with a total face value of $400 billion.** The Committee also directs the Desk to maintain its existing policy of rolling over maturing Treasury securities into new issues and to reinvest principal payments on all agency securities in the System Open Market Account in Treasury securities **with remaining maturities of approximately 6 years to 30 years** in order to maintain the total face value of domestic securities at approximately $2.6 trillion. 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.

OR

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 1/4 percent. **The Committee directs the Desk to purchase approximately $45 billion (face value) per month of Treasury securities with remaining maturities of approximately 6 years to 30 years, and to sell approximately the same amount of Treasury securities with remaining maturities of 3 years or less.** The Committee also directs the Desk to maintain its existing policy of rolling over maturing Treasury securities into new issues and to reinvest principal payments on all agency securities in the System Open Market Account in Treasury securities **with remaining maturities of approximately 6 years to 30 years** in order to maintain the total face value of domestic securities at approximately $2.6 trillion. 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 2011 FOMC 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 1/4 percent. The Committee also directs the Desk to maintain its existing policy of reinvesting principal payments on all domestic securities in the System Open Market Account in Treasury securities in order to maintain the total face value of domestic securities at approximately $2.6 trillion. The System Open Market Account Manager and the Secretary will keep the Committee informed of ongoing developments regarding the System's balance sheet that could affect the attainment over time of the Committee's objectives of maximum employment and price stability.

Explanatory Notes

A. Measures of the Equilibrium Real Rate

The concepts of the equilibrium real rate reported in the exhibit "Equilibrium Real Federal Funds Rate," are defined as the level of the real federal funds rate that is consistent with output at potential within a specified time horizon. The short-run equilibrium rate is defined as the rate that would close the output gap in twelve quarters given the corresponding model's projection of the economy. The medium-run concept is the value of the real federal funds rate projected to prevail in seven years, under the assumption that monetary policy acts to bring actual and potential output into line in the short run and then keeps them equal thereafter.

Measure	Description
Single-equation Model	The measure of the equilibrium real rate in the single-equation model is based on an estimated aggregate-demand relationship between the current value of the output gap and its lagged values as well as the lagged values of the real federal funds rate.
Small Structural Model	The small-scale model of the economy consists of equations for six variables: the output gap, the equity premium, the federal budget surplus, the trend growth rate of output, the real bond yield, and the real federal funds rate.
EDO Model	Estimates of the equilibrium real rate using EDO—an estimated dynamic-stochastic-general-equilibrium (DSGE) model of the U.S. economy—depend on data for major spending categories, prices and wages, and the federal funds rate as well as the model's structure and estimate of the output gap.
FRB/US Model	Estimates of the equilibrium real rate using FRB/US—the staff's large-scale econometric model of the U.S. economy—depend on a very broad array of economic factors, some of which take the form of projected values of the model's exogenous variables.
Tealbook-consistent	Two measures are presented based on the FRB/US and the EDO models. Both models are matched to the extended Tealbook forecast. Model simulations determine the value of the real federal funds rate that closes the output gap conditional on the extended baseline.

Measure	Description
TIPS-based Factor Model	Yields on TIPS (Treasury Inflation-Protected Securities) reflect investors' expectations of the future path of real interest rates. The TIPS-based measure of the equilibrium real rate is constructed using the seven-year-ahead instantaneous real forward rate derived from TIPS yields as of the Tealbook publication date. This forward rate is adjusted to remove estimates of the term and liquidity premiums based on a three-factor, arbitrage-free term-structure model applied to TIPS yields, nominal yields, and inflation.

The actual real federal funds rate 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 target federal funds rate on the Tealbook Book B publication date.

Estimates of the real federal funds rate depend on the proxies for expected inflation used. The table below shows estimates of the real federal funds rates using alternative proxies: lagged core PCE inflation, which is used to construct the actual real federal funds rate shown in the table that displays the *r** measures; lagged four-quarter headline PCE inflation; and projected four-quarter headline PCE inflation beginning with the next quarter. The table also displays the Tealbook-consistent FRB/US-based measure of the short-run equilibrium real rate and the average of the projected real federal funds rate over the next twelve quarters using each of the different proxies for expected inflation.

Proxy used for expected inflation	Actual real federal funds rate (current value)	Tealbook-consistent FRB/US-based measure of the equilibrium real funds rate (current value)	Projected real funds rate (twelve-quarter-ahead average)
Lagged core inflation	−1.1	−3.5	−1.4
Lagged headline inflation	−2.4	−3.7	−1.5
Projected headline inflation	−1.0	−3.4	−1.2

Explanatory Notes

B. Analysis of Policy Paths and Confidence Intervals

RULE SPECIFICATIONS

For the following rules, i_t denotes the federal funds rate for quarter t, while the right-hand-side variables include the staff's projection of trailing four-quarter core PCE inflation (π_t), inflation two and three quarters ahead ($\pi_{t+2|t}$ and $\pi_{t+3|t}$), the output gap in the current period and one quarter ahead ($y_t - y_t^*$ and $y_{t+1|t} - y_{t+1|t}^*$), and the forecast of three-quarter-ahead annual average GDP growth relative to potential ($\Delta^4 y_{t+3|t} - \Delta^4 y_{t+3|t}^*$), and $\pi*$ denotes an assumed value of policymakers' long-run inflation objective. The outcome-based and forecast-based rules were estimated using real-time data over the sample 1988:1–2006:4; each specification was chosen using the Bayesian information criterion. Each rule incorporates a 75 basis point shift in the intercept, specified as a sequence of 25 basis point increments during the first three quarters of 1998. The first two simple rules were proposed by Taylor (1993, 1999). The prescriptions of the first-difference rule do not depend on assumptions regarding $r*$ or the level of the output gap; see Orphanides (2003).

Outcome-based rule	$i_t = 1.20 i_{t-1} - 0.39 i_{t-2} + 0.19[1.17 + 1.73\pi_t + 3.66(y_t - y_t^*) - 2.72(y_{t-1} - y_{t-1}^*)]$
Forecast-based rule	$i_t = 1.18 i_{t-1} - 0.38 i_{t-2} + 0.20[0.98 + 1.72\pi_{t+2\|t} + 2.29(y_{t+1\|t} - y_{t+1\|t}^*) - 1.37(y_{t-1} - y_{t-1}^*)]$
Taylor (1993) rule	$i_t = 2 + \pi_t + 0.5(\pi_t - \pi^*) + 0.5(y_t - y_t^*)$
Taylor (1999) rule	$i_t = 2 + \pi_t + 0.5(\pi_t - \pi^*) + (y_t - y_t^*)$
First-difference rule	$i_t = i_{t-1} + 0.5(\pi_{t+3\|t} - \pi^*) + 0.5(\Delta^4 y_{t+3\|t} - \Delta^4 y_{t+3\|t}^*)$

FRB/US MODEL SIMULATIONS

Prescriptions from the outcome-based rule are computed using dynamic simulations of the FRB/US model, implemented as though the rule were followed starting at this FOMC meeting. The dotted line labeled "Previous Tealbook" is based on the current specification of the policy rule, applied to the previous Tealbook projection. Confidence intervals are based on stochastic simulations of the FRB/US model with shocks drawn from the estimated residuals over 1969–2008.

INFORMATION FROM FINANCIAL MARKETS

The expected funds rate path is based on quotes for federal funds and Eurodollar futures as well as implied three-month forward rates from swaps, and the confidence intervals for this path are constructed using prices of interest rate caps. The computations use the staff's baseline assumptions about term premiums.

NEAR-TERM PRESCRIPTIONS OF SIMPLE POLICY RULES

These prescriptions are calculated using Tealbook projections for inflation and the output gap. The first-difference rule, the estimated outcome-based rule, and the estimated forecast-based 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

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C. 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 September 2011 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 August 31, 2011. The projections for all major asset and liability categories under each scenario are summarized in the tables that follow the bullet points.

The Tealbook projection assumes that the target federal funds rate begins to increase in September 2014, thirteen months later than in the August Tealbook. The balance sheet projections assume that no use of short-term draining tools is necessary to achieve the projected path for the federal funds rate.[1]

ASSETS

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

- The assumptions under Alternative B are:
    - Beginning in October 2011, the FOMC is assumed to sell $400 billion in par value of Treasury securities with remaining maturities of 3 years or less and to purchase the same par amount of Treasury securities with remaining maturities of 6 years or more. This activity takes place over 9 months. It is also assumed that the FOMC will reinvest the proceeds from principal repayments from its agency securities holdings into Treasury securities with remaining maturities of 6 years or more, while Treasury securities are rolled over at auction.
    - Principal payments from Treasury securities and agency MBS and agency debt securities are reinvested in longer-term Treasury securities until March 2014—six months prior to the assumed increase in the target federal funds rate.[2]
    - The Federal Reserve begins to sell agency MBS and agency debt securities in March 2015, roughly six months after the assumed date of the first increase in the

[1] 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: Reserve balances would fall as term deposits and reverse repurchase agreements rose. Presumably, these draining tools would be wound down as the balance sheet returned to its steady state growth path, so that the projected paths for Treasury securities presented in the Tealbook remain valid.

[2] Projected prepayments of agency MBS reflect interest rates as of September 14, 2011.

Explanatory Notes

target federal funds rate. Holdings of agency securities are reduced over five years and reach zero by February 2020.

- For agency MBS, the rate of prepayment is based on estimates of housing market factors from one of the program's investment managers and interest rate projections from the Tealbook. The projected rate of prepayment is sensitive to these underlying assumptions.

- In the scenario corresponding to Alternative A, the Committee is assumed to purchase an additional $1 trillion of longer-term Treasury securities over twelve months. In addition, it is assumed that the principal payments on agency MBS and agency debt securities are reinvested in longer-term Treasury securities, while Treasury securities that mature are reinvested at auction.

- In the scenario corresponding to Alternative C, principal payments from Treasury securities continue to be reinvested at auction and principal payments from agency MBS and agency debt securities are reinvested in Treasury securities using the Desk's current maturity distribution for purchases.

- Because current and expected near-term rates 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. As a result, although the par value of securities holdings remains constant under Alternative B, total assets, which include the premiums associated with the securities, will rise by about $50 billion. Reserve balances will increase by the same amount.

- The lower paths for interest rates under the scenarios corresponding to Alternatives A and B implies more MBS prepayments and therefore reduced MBS holdings over the forecast period relative to Alternative C. The lower paths for interest rates also implies that purchases of Treasury securities in Alternatives A and B will be made at prices that include a premium above their face value that exceeds the premium under Alternative C.

- 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 going forward. Purchases of bills continue until these securities comprise one-third of the Federal Reserve's total Treasury security holdings–about the average share prior to the crisis. Once this level is reached, the Federal Reserve buys notes and bonds 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

- Loans through the Term Asset-Backed Securities Loan Facility (TALF) peaked at $48 billion in December 2009. Credit extended through this facility 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 to not repay a TALF loan.

- The assets held by Maiden Lane LLC and Maiden Lane III LLC decline gradually over time. The assets of Maiden Lane II LLC are assumed to be constant at the level as of August 31, 2011; sales of assets in the LLC's portfolio is assumed to resume after the first increase in the target federal funds rate, and holdings gradually fall to zero by June 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 2013. Afterwards, Federal Reserve notes in circulation grow at the same rate as nominal GDP, as projected in the extended Tealbook projection.
- Over the next six months, the level of reverse repurchase agreements is assumed to decline to $70 billion, about the average level observed over the past three years.
- The U.S. Treasury's General Account (TGA) follows the staff forecast through December 2011.[3] Then, the TGA slowly drops back to its historical target level of $5 billion by March 2012 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.
- In general, increases in the level of Federal Reserve assets are matched by higher levels of reserve balances. 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 will be recorded. This deferred asset is recorded in lieu of reducing the Reserve

[3] The staff forecast for end-of-month U.S. Treasury operating cash balances includes forecasts of both the TGA and balances associated with the U.S. Treasury's Tax and Loan program. Because balances associated with the Tax and Loan program are only $2 billion, for the time being, this forecast is used as a proxy for the level of TGA balances.

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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, while this liability takes on a negative value when earnings fall short of the expenses listed above. In the projections, System-wide earnings are always sufficient to cover these expenses and this line item is set to zero.

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

Billions of dollars

	Aug 31, 2011	2012	2014	2016	2018	2020
Total assets	2,857	3,946	3,563	2,512	1,785	1,987
Selected assets						
Liquidity programs for financial firms	0	0	0	0	0	0
Primary, secondary, and seasonal credit	0	0	0	0	0	0
Central bank liquidity swaps	0	0	0	0	0	0
Lending through other credit facilities	12	4	0	0	0	0
Term Asset-Backed Securities Loan Facility (TALF)	12	4	0	0	0	0
Support for specific institutions	50	48	34	18	7	4
Credit extended to AIG	0	0	0	0	0	0
Net portfolio holdings of Maiden Lane LLC, Maiden Lane II LLC, and Maiden Lane III LLC	50	48	34	18	7	4
Securities held outright	2,647	3,639	3,334	2,348	1,660	1,879
U.S. Treasury securities	1,652	2,982	2,828	2,039	1,550	1,879
Agency debt securities	110	77	39	16	2	0
Agency mortgage-backed securities	885	579	468	293	108	0
Net portfolio holdings of TALF LLC	1	1	1	0	0	0
Total other assets	148	254	193	145	117	104
Total liabilities	2,806	3,876	3,470	2,389	1,622	1,772
Selected liabilities						
Federal Reserve notes in circulation	996	1,080	1,212	1,361	1,504	1,654
Reverse repurchase agreements	105	70	70	70	70	70
Deposits with Federal Reserve Banks	1,637	2,708	2,171	942	33	33
Reserve balances held by depository institutions	1,592	2,701	2,164	935	25	25
U.S. Treasury, General Account	42	5	5	5	5	5
U.S. Treasury, Supplementary Financing Account	0	0	0	0	0	0
Other balances	3	3	3	3	3	3
Interest on Federal Reserve Notes due to U.S. Treasury	1	0	0	0	0	0
Total capital	52	70	93	123	162	215

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

	Aug 31, 2011	2012	2014	2016	2018	2020
Total assets	2,857	2,902	2,740	2,130	1,785	1,987
Selected assets						
Liquidity programs for financial firms	0	0	0	0	0	0
Primary, secondary, and seasonal credit	0	0	0	0	0	0
Central bank liquidity swaps	0	0	0	0	0	0
Lending through other credit facilities	12	4	0	0	0	0
Term Asset-Backed Securities Loan Facility (TALF)	12	4	0	0	0	0
Support for specific institutions	50	48	34	18	7	4
Credit extended to AIG	0	0	0	0	0	0
Net portfolio holdings of Maiden Lane LLC, Maiden Lane II LLC, and Maiden Lane III LLC	50	48	34	18	7	4
Securities held outright	2,647	2,639	2,532	1,975	1,667	1,886
U.S. Treasury securities	1,652	1,982	2,026	1,666	1,557	1,886
Agency debt securities	110	77	39	16	2	0
Agency mortgage-backed securities	885	579	468	293	108	0
Net portfolio holdings of TALF LLC	1	1	1	0	0	0
Total other assets	148	210	173	137	111	97
Total liabilities	2,806	2,832	2,648	2,007	1,622	1,772
Selected liabilities						
Federal Reserve notes in circulation	996	1,080	1,212	1,361	1,504	1,654
Reverse repurchase agreements	105	70	70	70	70	70
Deposits with Federal Reserve Banks	1,637	1,664	1,349	560	33	33
Reserve balances held by depository institutions	1,592	1,657	1,341	553	25	25
U.S. Treasury, General Account	42	5	5	5	5	5
U.S. Treasury, Supplementary Financing Account	0	0	0	0	0	0
Other balances	3	3	3	3	3	3
Interest on Federal Reserve Notes due to U.S. Treasury	1	0	0	0	0	0
Total capital	52	70	93	123	162	215

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

	Aug 31, 2011	2012	2014	2016	2018	2020
Total assets	2,857	2,826	2,533	1,694	1,785	1,987
Selected assets						
Liquidity programs for financial firms	0	0	0	0	0	0
Primary, secondary, and seasonal credit	0	0	0	0	0	0
Central bank liquidity swaps	0	0	0	0	0	0
Lending through other credit facilities	12	4	0	0	0	0
Term Asset-Backed Securities Loan Facility (TALF)	12	4	0	0	0	0
Support for specific institutions	50	48	34	18	7	4
Credit extended to AIG	0	0	0	0	0	0
Net portfolio holdings of Maiden Lane LLC, Maiden Lane II LLC, and Maiden Lane III LLC	50	48	34	18	7	4
Securities held outright	2,647	2,639	2,388	1,588	1,700	1,910
U.S. Treasury securities	1,652	1,950	1,840	1,252	1,580	1,910
Agency debt securities	110	77	39	16	2	0
Agency mortgage-backed securities	885	612	510	319	118	0
Net portfolio holdings of TALF LLC	1	1	1	0	0	0
Total other assets	148	135	109	88	77	73
Total liabilities	2,806	2,756	2,440	1,572	1,622	1,772
Selected liabilities						
Federal Reserve notes in circulation	996	1,080	1,212	1,361	1,504	1,654
Reverse repurchase agreements	105	70	70	70	70	70
Deposits with Federal Reserve Banks	1,637	1,589	1,141	125	33	33
Reserve balances held by depository institutions	1,592	1,581	1,134	117	25	25
U.S. Treasury, General Account	42	5	5	5	5	5
U.S. Treasury, Supplementary Financing Account	0	0	0	0	0	0
Other balances	3	3	3	3	3	3
Interest on Federal Reserve Notes due to U.S. Treasury	1	0	0	0	0	0
Total capital	52	70	93	123	162	215

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

Explanatory Notes

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