

**FRBNY BLACKBOOK**

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**RESEARCH AND STATISTICS GROUP**

**FOMC Background Material**

**September 2010**

**CONFIDENTIAL (FR) Class II FOMC**

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# FRBNY BLACKBOOK

September 2010

## CONTENTS

1. Policy Recommendation and Rationale	2
<i>Special Topic: Inflation Budget Accounting (Three Sections)</i>	4
2. Evolution of Outlook and Risks	12
2.1 Central Forecast	12
2.2 Alternative Scenarios and Risks	17
3. Forecast Comparison	19
3.1 Tealbook Comparison	19
3.2 Comparison with Private Forecasters	24
4. Robustness of Policy Recommendation	25
4.1 Sensitivity to Alternative Scenarios and Policy Rules	25
4.2 Comparison to Market Expectations	26
5. Significant Developments	26
5.1 Economic Developments	26
5.2 Financial Markets	31
5.3 Global Economic Policy	34

## EXHIBITS

A. Significant Developments	37
B. FRBNY Forecast Details	49
C. FRBNY Forecast Distributions	57
D. FRBNY Fed Funds Rate Projections	60

## EXHIBIT OVERVIEW

Alternative Scenario Descriptions	63
Policy Rule Descriptions	68

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## 1. Policy Recommendation and Rationale

We recommend that the target range for the federal funds rate (FFR) remains unchanged until the beginning of 2012Q1, which is two quarters later than in the previous Blackbook. This path for the FFR is in line with market expectations.

As the FFR is expected to remain at its effective zero lower bound for some time, the FOMC will face two main options to generate additional monetary stimulus. The first option entails a communication strategy that aims at a further reduction in real interest rates through management of expectations of future nominal short rates and inflation. The second option is an expansion of the balance sheet. The two options could be combined, tying the communication strategy to the evolution of the balance sheet.

Elaborating on the latter point, a balance sheet expansion can affect economic activity either through its impact on long-term interest rates, independently from expectations of future FFR and inflation (the portfolio channel), or by implying a commitment to lower future short rates, as unanticipated increases in short rates entail larger balance sheet losses (the signaling effect). The first channel does not necessarily rely on the operation being carried out within a clear communication framework. The second channel, however, relies to a large extent on how the actions are interpreted, and thus, on the perceived policy framework.

To the extent that we wish the balance sheet to operate through both the signaling channel and the portfolio channel simultaneously, it is important for the FOMC to clarify its policy framework and how its actions are aimed at affecting the evolution of inflation. This seems particularly important if there are constraints on the size of balance sheet expansion.

Specifically, in the design and communication of the appropriate course of action, our view is that additional stimulus is most effective through a strategy that keeps explicit track of the cumulative deviation of actual inflation from the mandate-consistent level, which we see as about 2 percent on a PCE basis and 2½ percent on a CPI basis. FOMC

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communications could then indicate that the Committee is prepared to maintain an easing bias until this discrepancy is eliminated. It is also possible for the Committee to commit to achieving an even higher price level, if it judges that a stronger stimulus is needed. We discuss some of these options and their weaknesses in three separate boxes in the Blackbook.

If credible, the above strategy would provide effective forward guidance and generate expectations that the FFR will remain low for an extended period, depending on the evolution of the economy (i.e., the length of the accommodation period would be state dependent). Furthermore, again assuming that the policy communication is credible, the strategy would have some “automatic stabilizer” properties. In particular, if incoming data indicate further price softness, this news would not trigger a decline in inflation expectations (which would increase the real interest rate and have contractionary repercussions). On the contrary, within our suggested framework bad news about price dynamics would lead market participants to expect an even stronger easing bias going forward, until the price level has recovered sufficiently.

As in the previous Blackbook, we recommend that the current balance sheet policies (specifically, the reinvestment of proceeds from maturing Treasuries and MBS prepayments) remain in place and the size of the balance sheet is maintained at its current level. However, because the economy remains very susceptible to negative shocks, we believe it is important for the FOMC to contemplate further balance sheet expansion if conditions deteriorate or the macroeconomic forecast and risk assessment are revised downward. Most importantly, we believe that the Committee should explicitly link the evolution of the balance sheet to price level developments in line with the communication strategy discussed above. In particular the balance sheet should be a key component of an easing bias if necessary, which would be operative so long as there is softness in the price level, and elevated unemployment.

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# Special Topic

## Inflation Budget Accounting: General Framework

Gauti Eggertsson Redacted

*When the Federal Funds Rate (FFR) is zero, additional policy stimulus can be achieved by changing market expectations about the future path of the FFR and about future inflation.*

If the average expected short-term rate falls and/or if inflation expectations increase, this reduces the real interest rate and stimulates demand.

At the zero FFR floor the main policy problem is that, if new data are deflationary, people revise future inflation expectations downwards. With the short-term nominal interest rate stuck at zero, lower inflation expectations increase real interest rates and contract demand. This puts even more downward pressures on the price level making the problem potentially more severe, and leading to even higher real rates. This is what has been coined as a “deflationary spiral”. One important goal of expectation management at zero interest rate is to prevent these dynamics.

Ideally new deflationary data should not create deflationary expectations. Preferably they should instead trigger expectations of future inflation, reducing the real interest rate thus increasing demand in response to deflationary pressures.

This box outlines a simple communication strategy which could help foster these expectation dynamics. We call it **inflation budget accounting**.

We suggest that the FOMC keeps track of the extent to which it has “missed” its inflation target. Let us call these accumulated misses “inflation debt”. Hence if the inflation target is 2 percent, and inflation is at 1 percent for two years in a row, then the accumulated “inflation debt” is 2 percent.

The FOMC would then announce an “easing bias” until the inflation debt accumulated in the current recession has been extinguished. If this is credible, a deflationary reading of the data would signal a larger “easing bias” going forward. This should extend the period of time over which the interest rate is expected to remain at the zero floor and/or increase inflation expectations.

This strategy would be helpful to generate price dynamics opposite to the deflation spiral mentioned above. Upon observing deflationary data, market participants should then assume that the Fed has a “larger budget” for an extended easing period, and hence maintaining an “easing bias” for longer than was expected prior to the arrival of the new deflationary data.

If the FOMC were always to meet its inflation target, this would then be equivalent to a normal inflation targeting regime. What makes this strategy particularly relevant is the way in which the FOMC reacts when it cannot achieve its inflation target for a long span of time, as is presumably the case going forward (according to, for example, the TealBook forecast).

Some observations:

1) This policy does *not* necessarily imply a new or different long-term inflation goal relative to the one consistent with the dual mandate. Instead, it is an explanation of how the dual mandate will be achieved over the medium and long run, and how the FOMC will react to low inflation readings in the short run. It is possible, however, to augment the accounting scheme with a temporary higher inflation objective going forward.

2) In principle the FOMC could announce that this strategy is only being implemented because of the zero bound. Hence, inflation budget accounting/price level targeting would only be a temporary measure. The rationale for this would be that, under normal circumstances, the FOMC expects to reach its inflation target with such accuracy to eliminate the need to keep track of past misses.

Under current circumstances, however, when inflation is projected to be low over a long period, the Fed should be explicit in communicating the case for a substantial easing bias going forward, beyond what people might expect if the Fed did not act in order to correct cumulative deviations from its inflation target.

3) There are no straightforward criteria on how to measure the inflation debt, since there is no consensus on how best to measure price stability. In fact, there is no compelling reason for the FOMC to commit to one specific measure relative to any other. Any measure will thus only serve as a rough guide (see e.g. ones suggested in the Special Topic Box “Inflation Budget Accounting: Some Numbers”).

# Special Topic

## Inflation Budget Accounting: Some Numbers

Andrea Tambalotti Redacted

*This box presents some calculations of the realized and projected deviations of selected price indices from a price level target (PLT)—what we call inflation budget accounting.*

We work with both the core CPI and the core PCE price index and with two different paths for the price level target. The first target path (PLT2007) has December 2007—the beginning of the recession—as the starting point and rises at a rate of 3% per year for the core PCE deflator. We translate this rate into 3.5% for the core CPI, given an approximate average discrepancy between the inflation rates in the two indexes of 0.5 percentage points. The second target path (PLT2008) has December 2008, when the Federal Funds rate first hit zero, as the starting point and rises at a rate of 2% per year for the core PCE and of 2.5% per year for the core CPI. As a reference, the average inflation rate between January 1993 and July 2010 was 2.3% for core CPI and 1.9% for core PCE (2.5% and 2.1% on headline CPI and PCE respectively). As a result, the long-run average inflation rate implied by PLT2008 is in line with the recent historical experience—as well as with the

SEP's longer run central tendency for PCE inflation of 1.7% to 2%—while that implied by PLT2007 is above these averages.<sup>1</sup>

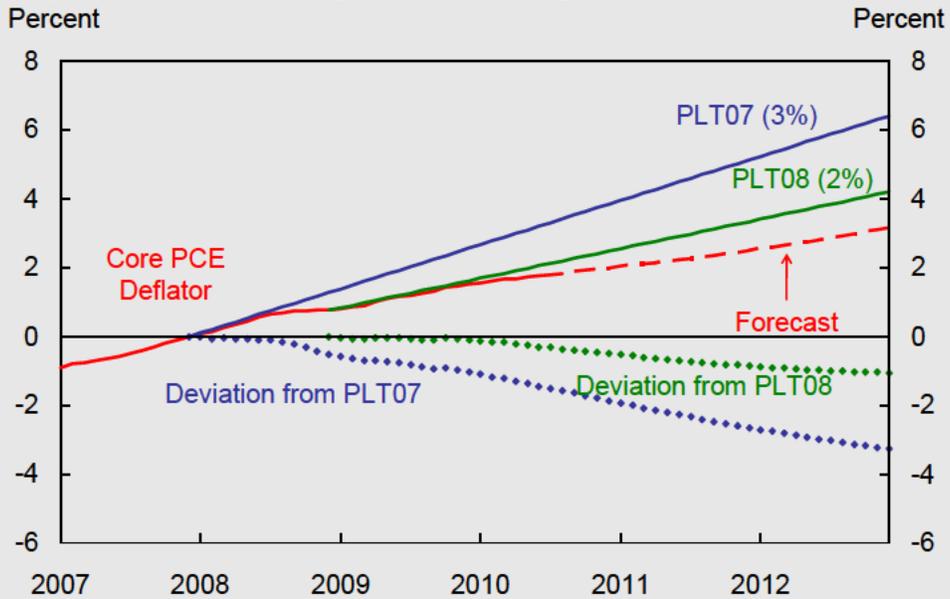
Figures 1 and 2 illustrate the calculations for core PCE and core CPI respectively. The red line in the charts represents the observed path of the price index under consideration, starting in January 2007. The dashed portion of the line represents FRBNY forecasts through the end of 2012. PLT2007 and PLT2008 are in blue and green respectively. The diamonds plot the cumulative inflation gap—what we call inflation “debt”—implied by the two price level targets, blue for PLT2007 and green for PLT2008. As seen in the figures, the inflation debt that has accumulated to date under PLT2008 is not very large. It amounts to 0.3 and 0.7 percentage points for core PCE and CPI respectively. However, under the FRBNY forecast, this debt grows steadily over the next two years and reaches 1.0 and 1.7 percentage points by the end of the forecast horizon. In contrast, the inflation debt under PLT2007 is currently 1.5 and 2.1 percentage points for core PCE and CPI respectively and is projected to rise to 3.3 and 4.1 percentage points by the end of 2012.

<sup>1</sup> We also did similar calculations with headline CPI and PCE inflation, but the results are similar, so we do not report them here.

These calculations suggest that the adoption of a price level target similar to PLT2007 would provide more stimulus than PLT2008, since the former is associated with more inflation debt accumulation. Therefore, PLT2007 would be a more appropriate policy choice if a relatively large amount of additional stimulus were deemed necessary. However, it is worth emphasizing that the adoption of PLT2008 should still prove stimulative with respect to the current policy of (implicit) inflation targeting, since what matters for PLT is the expected evolution of the inflation debt, rather than its current level. As inflation is projected to stay below 2% for a long period, the cumulative inflation gap is expected to increase over time, resulting in substantial "easing bias" relative to current policy. Moreover, PLT2008 would provide some valuable insurance against the possibility of a further deterioration in the inflation outlook. Another advantage of PLT2008 is that it is more consistent with the existing policy framework than PLT2007, since it implies no change in average inflation over sufficiently long periods of time. This continuity with the past might be a source of credibility for PLT2008 and could simplify its communication.

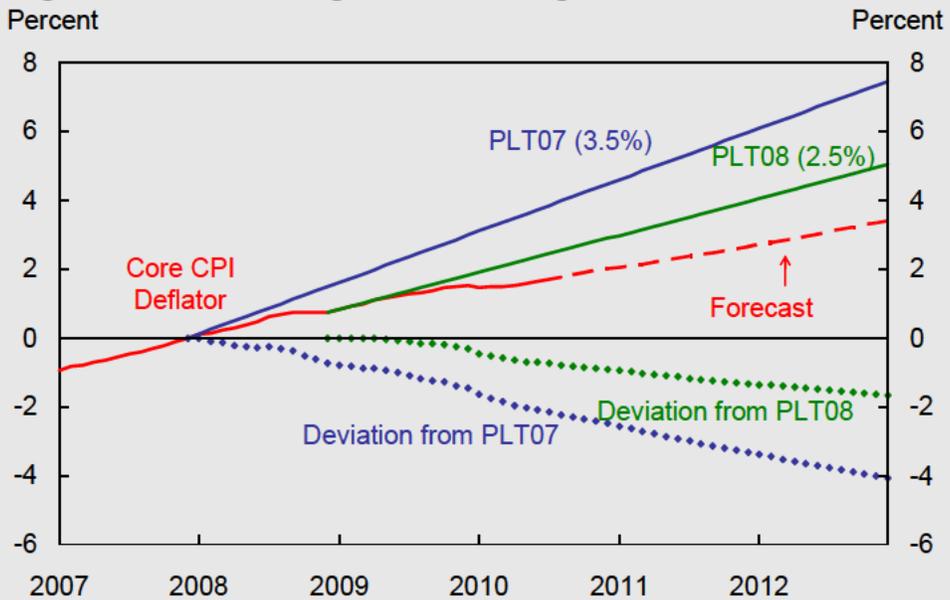
On the other hand, if PLT2008 had only a minor effect on inflation expectations and real rates did not fall enough to bring forth the needed stimulus, inflation might remain below target for quite some time, thus hindering the overall credibility of the policy.

Fig. 1: Inflation Budget Accounting: Core PCE



Source: FRBNY

Fig. 2: Inflation Budget Accounting: Core CPI



Source: FRBNY

# Special Topic

## Does Committing to a Higher Future Price Level Work as an Additional Economic Stimulus?

Gauti Eggertsson Redacted

*Increasing inflation expectations, or creating expectations of lower future nominal interest rates for a given set of inflation expectations, provides additional stimulus at the zero interest rate floor by reducing real interest rates.*

One example of this sort of stimulus is a commitment of increasing the prices to a certain level. In the U.S. the closest precedent for this is from 1933, when Franklin Delano Roosevelt announced a policy of “reflation” which aimed at increasing the general level of prices to pre-depression levels (Eggertsson 2008).

Eggertsson and Woodford (2003) propose a certain type of optimal commitment when the zero bound is binding. The key element of the commitment strategy is to lower the real interest rate by increasing expectations about future inflation and/or lower expectations about future nominal interest rate. In some calibration of their model this is, for example, done by keeping the nominal interest rate at zero until the price level recovers to a certain level. The robust feature of the policy, however, is not just to keep the “nominal interest rate low” but to affect inflation expectations so that the real interest rate is reduced.

What are the weaknesses of this policy prescription?

This box outlines some possible problems with this commitment and how the literature has responded to them.

### Problems

#### 1) Credibility.

The optimal commitment entails a relatively strong dynamic inconsistency problem. It requires keeping the interest rate low even after the deflationary shock is over, so that policy makers eventually face a strong incentive to renege on their promise (see, e.g., Eggertsson 2006). To the extent that market participants anticipate this, communication by the FOMC will have inherent credibility problems.

#### 2) Expectation mechanism.

The optimal commitment relies very heavily on the ability of the FOMC to carefully manage expectations. While lack of credibility is one reason why this might be difficult, it is not hard to imagine several other ways that could make expectation hard to manage, such as irrationality or learning.

#### 3) Demand Specification.

The policy prescription relies very heavily on a forward looking “consumption Euler equation” which is hard to reconcile with empirical evidence.

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At a fundamental level the key assumption underlying the analysis of commitment strategies is that aggregate spending (demand) depends on current and expected future real interest rates. To the extent that this relationship is weak, broken or missing, the channel breaks down.

### **Addressing the problems**

#### 1) Credibility.

- i. To address the credibility problem, the first step should be a clear strategy that outlines what the FOMC is trying to achieve. The most straightforward way of achieving this is to state that the FOMC will make up for any misses of core inflation below its target of, say, 2.5 percent. The Federal Reserve can call the accumulated misses, for example, “inflation debt”. Hence the Fed will keep an easing bias until the “inflation debt” is repaid.
- ii. There should also be a strategy to firm up the “words” with explicit actions. The most straightforward way of doing this is to think of interventions that would make reneging from the words described in (i) costly. Buying various kinds of long-dated securities may be one way to go, as having these securities on its balance sheet implies that the Fed is increasing the cost of an unexpected increase in the Fed funds rate. Other assets, such as purchases of various private securities could serve the same aim.

Those complementary actions, however, would be most forceful if conducted within the context of a clear and coherent overall strategy.

#### 2) Expectations mechanism.

While it is true that the model relies on expectations to be easily manageable, the fact that expectations may not react strongly to the new policy strategy does not necessarily imply that the commitment strategy is not viable. If anything, recent research suggests that the Fed should lean even harder on this mechanism (see e.g. Williams 2006). But overall it underlines the importance of having a clear strategy that is easy to explain and also that manipulation of expectations alone may not be enough.

#### 3) Demand mechanisms.

If aggregate demand does not depend on the real interest rate, there is generally little a central bank can achieve through any interest rate policy. However, it is worth stressing that some other mechanisms could still make a policy of reflation expansionary. For instance, a frequently cited channel relies on inflation to redistribute wealth from creditors to debtors, thus reallocating purchasing power from agents with low propensity to consume to agents with higher propensity. In the end, such reallocation could be expansionary.

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## References

Eggertsson, Gauti and Michael Woodford (2003),  
“The Zero Bound and Optimal Monetary Policy,”  
BPEA. 1, 139-211.

Eggertsson, Gauti (2006), “The Deflation Bias  
and Committing to Being Irresponsible”, JMCB,  
36 (2), 283-322

Eggertsson, Gauti (2008), “Great Expectations  
and the End of the Depression,” American  
Economic Review, 98(4).

Williams, John C. (2006), “Monetary Policy in a  
Low Inflation Economy with Learning,” Seoul:  
Bank of Korea, 199-228.

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## 2. Evolution of Outlook and Risks

### 2.1 Central Forecast

Data released over the intermeeting period have been mixed but, on balance, have led to some marking down of the projected growth over the near term. We expect real GDP to increase at just a 2% annual rate over the second half of 2010, down from 2 <sup>3</sup>/<sub>4</sub>% over the first half of the year. As this is below our estimate of potential, there is significant risk that the unemployment rate will begin to increase again in the months ahead. Indeed, based on data for July and August, hours worked in the nonfarm business sector likely increased 1% (annual rate) in 2010Q3, down from 3 <sup>1</sup>/<sub>2</sub>% in the second quarter. Private employment growth slowed to an average of 87,000 per month, down from 118,000 in the second quarter. And the unemployment rate edged up to 9.6% in August after reaching 9.5% over the preceding two months.

Data on consumer spending has been encouraging. The rate of growth of non-auto retail sales has firmed in recent months. While due in part to higher gasoline prices, it does suggest some increased willingness to spend. Light-weight motor vehicle sales in August were reported to be 11.5 million units at an annual rate, essentially the same as in July but up slightly from the 11.3 million unit average pace of 2010Q2. For the third quarter we now expect real PCE to increase at a 2% to 2 <sup>1</sup>/<sub>4</sub>% annual rate, roughly the same as over the first half of the year.

In contrast, through July, housing market activity remained at quite low levels following the end of eligibility for the home buyer tax credit. And despite the lowest mortgage interest rates since the mid 1950s, mortgage applications for home purchases remained at low levels in August and the first week of September. Reflecting the sharp falloff of single-family housing starts since their recent peak in April, real residential investment is likely to decline at a 30% annual rate in the third quarter, subtracting 3/4ths of a percentage point from growth of real GDP.

Growth of manufacturing output has slowed considerably in recent months, with output up at a 2.2% annual rate over the three months ending in August versus a 7.2%

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annualized growth rate over the past six months. While the auto and parts sector has been a major contributor to this slowing, it has in fact been broad based. Growth of exports appears to be well maintained, suggesting that the slowing of manufacturing output is a response to the recent movement upward in business inventories relative to sales. In addition, a variety of indicators point to a significant slowing in the rate of growth of new orders. For example, while the ISM manufacturing index actually ticked up a bit in August, to 56.3 from 55.5 in July, the new orders subcomponent slipped to 53.1 after having averaged 63.3 in the second quarter. Some decline of the manufacturing ISM index in the months ahead would not be at all surprising.

Business investment in new equipment and software, which had been a major contributor to growth over the first half of the year, also appears to be losing forward momentum. Both new orders and shipments of nondefense capital goods excluding aircraft fell in July after having shown signs of slowing in preceding months. Investment in new nonresidential structures continues to decline, although the rate of decline has slowed.

The service sector of the economy has not been immune to this loss of momentum. The ISM non-manufacturing composite index has declined three months in a row, reaching 51.5 in August after averaging 54.9 in the second quarter. The average monthly change in employment in the private service providing sector declined to 69,000 over July and August from 88,000 in 2010Q2.

Finally, recent price data continue to suggest that trend inflation has stabilized after slowing steadily since 2006. On a year-over-year basis the core CPI was up 1% in August, about where it has been since April of this year. However, in August the 12-month change of core services prices slowed to 0.8% from 1% over the previous two months. In contrast, the 12-month change of core goods prices increased to 1.3% from 1% over the preceding two months, due to a large extent to firming in prices of new and used vehicles.

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**Conditioning assumptions.** We continue to assume that potential GDP growth is around 2 ½%. This is composed of 1% trend hours growth and trend productivity growth of around 1 ½% (on a GDP basis, which is equivalent to about 1 ¾% on a nonfarm business sector basis). The Board staff estimates of potential in the September Tealbook are 2.5% for 2010, up by 0.1 percentage point from August, and 2.5% for 2011, unchanged from August.

We expect the lower degree of inflation persistence evident since the early 1990s to continue. This assumption is in contrast to the greater degree of inflation persistence assumed in recent Board staff forecasts. In our central scenario, inflation expectations remain well anchored. This assumption is central to our projection of a gradual rise of core inflation back toward the midpoint of the FOMC's objective for core PCE inflation of 1.5% to 2.0%.

The FRBNY outlook for foreign real GDP growth in 2010 has been raised modestly, to 3.6% (Q4/Q4 on a GDP-weighted basis) from 3.5% in August. Growth prospects in the Euro Area and Brazil have been marked up somewhat, offsetting modest declines in projected growth for Canada, Japan, and Mexico. For 2011 the foreign growth outlook has also been increased, to 3.2% from 3.1% in August due principally to stronger growth prospects for Brazil. The Board staff projection for foreign GDP growth is 3.5% in 2010 and 3.1% in 2011, also modestly higher than in August.

The projected path of oil prices has been lowered slightly, with an expected WTI price of \$76 per barrel for 2010Q4 and \$82.00 per barrel for 2011Q4. The path for oil prices assumed by the Board staff has also been lowered but is about \$2 per barrel higher than ours through the end of 2011.

As is our usual practice, our assumptions regarding federal fiscal policy are the same as that of the Tealbook. For FY2011 it is assumed that the President's budget proposal is to a large extent enacted, in which case most of the 2001 and 2003 tax cuts are extended except for high income taxpayers. Overall, personal income taxes are expected to

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increase by about \$50 billion (0.3% of GDP). Based on the Board's fiscal impulse measure, fiscal policy will subtract about 0.1 percentage point from growth in 2011 after contributing 1 percentage point in 2010.

Our assumptions for equity prices and the real exchange value of the dollar are also similar to those of the Tealbook. Reflecting the downgrading of growth in the US over the forecast horizon, equity prices are now assumed to increase at a 13% annual rate through the end of 2011 rather than the 16% annual rate assumed in August. The main driver of this increase in equity prices is the return of the equity premium to more normal levels. While the exchange value of the dollar is still expected to decline, its path is somewhat higher in this cycle. The Board now anticipates an appreciation of 1% over the four quarters of 2010 rather than the 0.6% appreciation assumed in August. For 2011 the dollar is expected to depreciate by 1.5% rather than the previous 2.5%.

Finally, our assumption regarding the future path of the Core Logic repeat sales home price index (formerly known as the Loan Performance Home Price Index) is also the same as the Board's. While that index firmed in the second quarter, it fell more than expected in July. With the flow of homes coming onto the market due to foreclosures and short sales still elevated while demand is weaker than expected, it is now assumed that home prices will decline somewhat through mid 2011 and then begin a gradual firming. For 2011Q4 the index is roughly 2% below the level assumed in August.

**The Outlook.** The fact that growth of the US economy has slowed over the past few months has raised concerns about the possibility of a "double dip". While that term is rarely given a precise definition, we view it to mean that real GDP begins to decline again with renewed declines in employment and a rising unemployment rate. While such a scenario cannot be ruled out, we believe that it is not the most likely path for the economy over the next year or two. Rather, we project that the economy will gradually emerge from this soft patch in 2010Q4 and that the recovery will gather momentum in 2011 with growth above potential, the unemployment rate moving steadily lower, and core inflation moving back up toward the mandate consistent range.

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The possibility of a second half of 2010 soft patch has been noted for some time. The growth impulse of the fiscal stimulus bill passed in early 2009 was expected to peak in the second quarter of 2010 and then begin to wane. Moreover, it was recognized that a strong inventory cycle was boosting growth in the early stages of the recovery but that it would also fade as 2010 progressed. Thus, this slowing of growth does not come as a complete surprise, nor is it unprecedented. Recoveries from past recessions, both severe and mild, have experienced such episodes.

But tipping back into recession is not very likely. The interest sensitive sectors of the economy—housing and consumer durables—are already at quite low levels of activity and therefore simply not in a position to contract much further. In addition, aggregate business inventories are relatively lean. The credit cycle appears to have run its course, with several indicators suggesting that credit is more readily available for both consumers and businesses. Finally, exports continue to grow at a rapid pace while growth prospects for many of our important trading partner among the emerging economies are quite bright.

Of course, there remain several structural imbalances in the economy which continue to impede growth and prevent a more vigorous cyclical recovery. But the process of correcting these imbalances is well underway. For example, consumers have boosted their saving and dramatically lowered the share of their after-tax income devoted to long-term financial obligations. As part of that process, the growth of the net stock of consumer durable goods has slowed to a crawl, suggesting that pent up demand is building. Similarly, production of new housing has declined to a level associated with little or no net growth of the housing stock, yet the population continues to increase. And while business investment in new equipment and software has been strong of late, it appears to be primarily intended to simply offset depreciation. Even in commercial real estate there are encouraging signs. Hotel occupancy and room rates are increasing, office vacancy rates appear to have peaked, and apartment rents are reportedly firming. The structural adjustment in the state and local government sector is also farther along than

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one might expect, with employment in that sector down by 280,000 or 1.4% over the past two years.

Over the course of 2011 we expect the underlying fundamentals of the economy to continue to improve, with growth picking up to the 3 ½% to 4% range. This is sufficiently above potential that the unemployment rate should begin to decline in a meaningful way. Further forward momentum is likely to be established in 2012, with 4 ½% to 5% growth in GDP and a fall in the unemployment rate to around 6% by the end of the year. Underlying this projection is the expectation that financial market functioning remains normal and that consumer and business confidence and the general appetite for risk continue to recover. With household income and balance sheets improving and credit flowing more normally, the substantial pent-up demand for consumer durables, housing, and business equipment and software will start to be satisfied. Moreover, the structural adjustments of state and local governments and of the commercial real estate sector will likely have run their course by that time.

Barring a significant decline in the level of the economy's potential output or its potential growth rate, this point forecast implies that a large output gap will persist over most of the forecast horizon. Accordingly, we expect core inflation to slow to around 1% (Q4/Q4) in 2010. But by late 2011 and into 2012, as final demand firms within the context of anchored inflation expectations, we expect core inflation to move up to within the "mandate consistent" range.

**2.2 Alternative Scenarios and Risks.** The risk assessment has not changed significantly since August. The latest data on labor market conditions, retail sales, and industrial production have somewhat alleviated concerns about a double-dip in the economy, but other releases, new orders in particular, have been less encouraging. The state of the housing market remains dismal and domestic demand is still growing at a very slow pace. Financial market conditions have remained substantially invariant in the intermeeting period.

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Exhibit C-1 shows that the *Productivity Boom* scenario is still the most likely scenario, with a roughly unchanged likelihood relative to the last Blackbook. The most notable change in the risk assessment during the intermeeting period consists in the decline of the probability associated with the *Loss of Credibility* scenario, partly reflecting a downward trend in inflation expectations. The *Global Credit Crunch* is the second most likely scenario, and its likelihood is virtually invariant relative to August.

Both the *Central Scenario* forecasts and the paths associated with the various scenarios have changed little since August (Exhibit C-2). The only exception is that the *Central Scenario* real GDP growth projection is slightly more subdued than in the last Blackbook, and as a consequence so are the paths associated with the other scenarios (recall that the alternative scenarios are defined relative to the *Central Scenario*).

As Exhibit C-3 shows, the decrease in the probability associated with the *Loss of Credibility* scenario translates into a downward shift in the 95<sup>th</sup> band of the forecast distribution for Core PCE inflation. The bands for real GDP growth have also shifted downward, but mainly as a result of the aforementioned change in the *Central Scenario* projection. While the “Low Inflation/Deflation Probability and Distribution” chart is virtually unchanged, the “Scale of Recovery Through End of 2011” chart shows that the likelihood of a strong recovery has decreased significantly. Exhibit C-3 also shows, for comparison, the mean forecasts from the FRBNY DSGE model. The forecasts for inflation are nearly identical to the expected value of the FRBNY forecast distribution, and those for output are close to the *Central Scenario* in the short run. Unlike the *Central Scenario* forecast, however, the DSGE model does not foresee a rebound in output in 2011 and 2012.

Finally, Exhibit C-4 shows the evolution of our forecasts relative to 12 months ago. The actual path for output is mostly within the 50% probability bands generated a year before. In contrast, the path for inflation, particularly in 2012, is below the 25<sup>th</sup> percentile of the year-ago forecast distribution.

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### 3. Forecast Comparison

**3.1 Tealbook Comparison.** The Tealbook and Blackbook forecasts for real GDP growth in 2010 and 2011 have been lowered relative to August. The projections for real GDP growth in 2010 (Q4/Q4) in the Tealbook and in the Blackbook are similar, having been revised downward in tandem from 2.7 percent to 2.4 percent. For 2011, the downward revisions in the Tealbook and Blackbook forecasts are also of roughly similar magnitude. As a result, the Tealbook keeps projecting real GDP growth in 2011 approximately half a percentage point lower than the Blackbook.

The Blackbook forecast of core PCE in 2010 has been revised upward slightly and it now coincides with the forecast of the Board's staff. As in August, the Board staff's inflation forecast for 2011 remains lower than ours, both for core and total PCE.

**Conditioning Assumptions.** The Board's staff continues to assume that the target range of the Federal Funds Rate (FFR) will remain at 0 to 0.25 percent until the fourth quarter of 2012. Our forecast still features an earlier liftoff, although we assume that the liftoff begins in the first quarter of 2012, two quarters later than in the August Blackbook. In terms of unconventional policy actions, the Tealbook incorporates the FOMC's decision to reinvest the proceeds from maturing agency debt and MBS and prepayments in longer-term Treasury securities. The Tealbook estimates that the reinvestment policy shaves the 10-year Treasury yield by roughly 10 basis points over the medium term.

The Tealbook assumes a slightly lower path for the 10-year Treasury yield compared to August, though they continue to anticipate that the yield will rise gradually and project it will reach about 4.25 percent by the end of 2012. Relative to August, the Board's staff has also shifted further down the projected path of mortgage rates, which are, however, expected to rise with Treasury yields, reaching just under 6.0 percent by the end of 2012. The Board's staff has lowered the path of equity prices relative to August, down 3.5 percent by the end of 2011, but continues to assume that they will rise over the next few years.

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The Board's staff has introduced minor modifications to their fiscal policy assumptions relative to August. Federal fiscal policy is now expected to provide a touch more impetus to aggregate demand, mostly due to higher federal grants-in-aid to state and local governments in 2011.

The Board staff's outlook for foreign growth has been revised downward relative to August. The Tealbook projects foreign real GDP growth to decline from 5.5 percent in the first half of 2010 to 2.75 percent in the second half, as the boost from the recovery wanes. The Board's staff slightly revised down the depreciation rate of the dollar, which is now expected to be about 3 percent per year in 2011 and 2012. Finally, in response to the recent decline in oil prices, the Tealbook now projects a lower path for oil prices in 2010 and 2011. Our forecast is also revised downwards from August, although at a slightly lower level than the Tealbook.

**Inflation.** The Tealbook forecast for core PCE inflation in 2010 (Q4/Q4) remains at 1.1 percent, which coincides with the Blackbook projection. Our core PCE projections for 2011 continue to differ from the ones of the Board's staff. The Tealbook projects core PCE inflation at 0.9 percent in 2011 (same as in August), while our projection is 1.2 percent (down from 1.3 percent in August).

**Real Activity.** Compared to August, both the Tealbook and Blackbook forecasts for GDP growth in 2010 (Q4/Q4) decreased by 0.3 percentage points to 2.4 percent. The two forecasts continue to coincide with some minor differences in the composition of the growth contributions.

The Tealbook forecast for GDP growth in 2011 (Q4/Q4) has been decreased by 0.3 percentage points to 3.3 percent relative to August. The FRBNY forecast has also been decreased by 0.2 percentage points and is now 3.8 percent. Our forecast continues to remain about half a percentage point above the Board staff's forecast.

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The Tealbook projection for unemployment in 2010Q4 remains at 9.7 percent, 0.1 percentage point lower than the Blackbook projection. For 2011Q4, the Tealbook forecast increased from 8.9 percent to 9.1 percent while our forecast remains at 8.1 percent.

During the intermeeting period, both the FRBNY and the Board staff projections for payroll employment in 2010 were revised downwards. We now forecast payroll employment to increase 1.0 million (compared to 1.7 million in August), while the Tealbook forecast is 0.8 million (compared to 1.2 million in August). For 2011, the FRBNY staff forecasts an increase of 4.2 million (0.3 million above August) while the Board staff expects an increase of 2.4 million, down by 0.7 million relative to August. The difference between the Tealbook and Blackbook projections for 2011 is likely related to the higher growth of average work week assumed by the Board's staff.

**International trade.** The FRBNY forecast for the net export contribution to GDP growth in 2010 is the same as the Board's – a drag of 0.7 percentage point. In 2011, the FRBNY is slightly more optimistic than the Board's forecast: the FRBNY forecast is for net exports to contribute 0.2 percentage points to GDP growth whereas the Board's forecast is for net exports to have a neutral effect. The small difference in 2011 arises from the FRBNY's higher foreign demand elasticity.

**Uncertainty around forecasts.** Both the Tealbook and Blackbook risk assessments have changed relative to August. As in the last FOMC cycle, the FRBNY inflation forecast continues to exhibit more downside risk in 2010, as captured by the lower bound on the 70% confidence intervals. The lower bound of the FRBNY forecast for 2011 is slightly below that of the Board. For 2012, the Board forecast continues to assign a higher probability to lower inflation realizations. The Board staff's inflation rate projections for 2010 and 2011 are in the upper half of our inflation forecast distribution.

The downside risks to our forecast for real activity continue to be somewhat larger than the risks in the Tealbook forecast. The intervals for real GDP growth by the FRBNY

narrowed by 0.3 percentage point, while the range remains unchanged in the Board staff's forecast. The Board staff's projection remains balanced (with similar upside and downside risks), while our forecast continues to have substantially more downside risk. As a result, the Tealbook point forecast in 2010 remains within the right tail of our real GDP forecast distribution.

**Table 1: Comparison of 70% Intervals around FRBNY and Board Forecasts**

	Core PCE Inflation		Real GDP Growth	
	<i>FRBNY</i>	<i>Board</i>	<i>FRBNY</i>	<i>Board</i>
<i>2010</i>	0.4, 1.5 (0.3, 1.6)	0.8, 1.4 (0.7, 1.4)	0.6, 3.5 (0.8, 4.0)	1.5, 3.2 (1.9, 3.6)
<i>2011</i>	0.0, 1.7 (0.1, 1.9)	0.2, 1.6 (0.2, 1.6)	1.1, 5.7 (1.2, 5.9)	1.5, 5.2 (1.8, 5.5)
<i>2012</i>	0.5, 2.1 (0.7, 2.3)	-0.1, 1.9 (0.0, 2.0)	1.7, 6.2 (2.3, 6.8)	2.5, 6.3 (2.9, 6.7)

**Table 2: Percentile of Tealbook Forecast in FRBNY Forecast Distribution**

	Core PCE Inflation	Real GDP Growth
<i>2010</i>	58 (60)	55 (53)
<i>2011</i>	53 (48)	45 (48)
<i>2012</i>	30 (30)	54 (51)

**Alternative Tealbook forecasting scenarios.** The September Tealbook considers six alternative scenarios. Five of these are similar to scenarios examined in the August Tealbook. The last, new scenario features alternative risks arising from the foreign sector, a potential slowdown in emerging economies coupled with appreciation of the U.S. dollar.

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The *Stronger Recovery* scenario considers faster improvements of overall economic conditions, in line with their projections in early 2010. The scenario assumes a stronger recovery, where spending on consumer durables and capital expenditure bounces back more rapidly, driven by optimism and improved financial and labor market conditions. Equity prices are assumed to rise by 11 percent above the baseline, fueled by the strength of financial markets. Real GDP grows 5 percent on average in 2011 and 2012 and the unemployment rate falls to 7 percent by the end of 2012. Given higher output growth and inflation projections, the FFR starts to rise sooner, in late 2011. The *Weaker Recovery* scenario considers the opposite case in which firms reduce capital spending and households increase savings cutting back consumption relative to the baseline scenario. Equity prices are assumed to fall about 10 percent relative to the baseline by the end of 2011. In this scenario, real GDP grows only 1.6 percent in 2011, compared to 3.3 percent in the baseline, and unemployment remains at 9.8 percent until the end of 2011. Inflation is little affected by the alternative scenario. The liftoff of the FFR is delayed until mid-2014.

Another pessimistic scenario is the *Lower Potential*, which assumes that output is only 4 percent below potential rather than 7 percent in the baseline. The scenario examines the consequences of a higher NAIRU and lower potential output as well as lower structural productivity. It reflects the considerable uncertainty about the estimate of the NAIRU in light of the unusually high level of long-duration unemployment and unprecedented distress in the financial system. On average, real GDP grows one percentage point less than in the baseline through 2015. Unemployment stays above the baseline level throughout the forecast horizon and reaches 7.4 percent in 2014-2015, instead of 5.7 percent in the baseline. Prices accelerate faster and core PCE inflation rises to 1.3 percent in 2011 and almost 2.0 percent by 2014. Less slack in the economy and higher inflation imply an earlier liftoff of the FFR in the middle of 2011.

The next two scenarios evaluate contrasting risks to inflation. The *Wage Stagnation* scenario considers a downside risk to the inflation outlook driven by slower growth in

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nominal wages. The scenario assumes that the productivity and cost measure of hourly compensation will remain flat through the end of 2011, rather than growing at 2 percent under the baseline. Inflation falls significantly and core PCE inflation remains below 1.0 percent through 2015. The policy response is to leave the FFR near zero until the end of 2012, spurring economic growth above baseline after 2012. The *Higher Inflation* scenario considers the possibility of higher inflation than suggested by recent inflation readings. With core PCE inflation reaching 1.5 percent in 2011, policy makers respond by increasing the FFR starting in late 2011. Tighter monetary policy leads to somewhat slower GDP growth in 2011 and 2012.

The last scenario considers risks stemming from the foreign sector. The *Weaker Activity Abroad* scenario assumes a further slowdown in growth abroad, in particular in emerging Asia. The scenario assumes lower GDP growth by 1.5 percentage points relative to the baseline over the next two years in emerging economies and by 1 percentage point in advanced foreign economies. The dollar appreciates about 8 percent relative to the baseline. The decline in net exports leads to a decline in GDP growth by 1.0 percentage point in 2011 below the baseline. Core PCE inflation falls by 0.5 percentage point thanks to lower import prices. The decline in both output growth and inflation delays the liftoff of the FFR until mid-2013.

**3.2 Comparison with Private Forecasters<sup>1</sup>.** The FRBNY forecast for GDP growth lies within the range of private forecasts both for 2010Q3 and 2010 (Q4/Q4). Our inflation projections for 2010 are generally consistent with those of private forecasters. For 2011 (Q4/Q4), the FRBNY forecasts of all inflation measures remain above Macro Advisers but they are close or below other private forecasts (Median SPF and Blue Chip).

**GDP Growth.** Relative to the last FOMC, all private forecasts for 2010 (Q4/Q4) have been revised downward. The FRBNY forecast is now 2.4%, down from 2.7% in the August Blackbook. Our projection is the same as that of Blue Chip, slightly above

<sup>1</sup> The details of the forecast comparison are in Exhibit B-8. Release dates of the private forecasts discussed in this section are in parentheses: Blue Chip consensus (9/10), SPF (8/13), Macro Advisers (9/15 for real GDP growth and 9/9 for inflation indicators), and the PSI Model (9/10). Quarterly numbers are SAAR.

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Macro Advisers (2.3%) and below Median SPF (2.8%). Compared to the previous Blackbook, the FRBNY forecast for 2011 (Q4/Q4) has been slightly reduced to 3.8% (down from 4.0%). Our projection remains in line with Macro Advisers (3.7%) but above Blue Chip (2.9%).

**Inflation.** The FRBNY projection for core PCE in 2010 (Q4/Q4) has been slightly revised upward from 1.0% in the August Blackbook to 1.1%. Our projection is consistent with both Macro Advisers and Median SPF. Our 2011 (Q4/Q4) forecast for core PCE inflation (1.2%, down from 1.3% in the last Blackbook) lies between Median SPF (1.5%) and Macro Advisers (0.8%). Our forecasts for headline CPI inflation in 2010 (Q4/Q4) is 0.9%, the same as Median SPF and Blue Chip and slightly above Macro Advisers (0.8%). The FRBNY projection for core CPI in 2010 (Q4/Q4) is 1.0%, close to Median SPF and Macro Advisers, both at 0.9%.

## 4. Robustness of Policy Recommendation

### 4.1 Sensitivity to Alternative Scenarios and Policy Rules

Our current policy recommendation is to maintain the target range for the federal funds rate at 0–0.25% until the beginning of 2012Q1 – two quarters later than in the August Blackbook. This recommendation is consistent with the *Baseline* policy rule under all but the *Loss of Credibility* and the *Global Deflation* scenarios [Exhibit D-1], as well as under the expected value of the forecast distribution [Exhibit D-2]. Under the *Loss of Credibility* scenario, which has become less likely during the intermeeting period, the FFR renormalization starts in 2011Q1. Under all other scenarios the FFR starts increasing no earlier than 2012.

In Exhibit D-2 we show the implied nominal FFR ignoring the zero bound for the *Outcome-based* rule. Under the expected value of the forecast distribution the unconstrained nominal FFR is almost -5% by 2011Q4 and remains below -3% through the end of the forecast horizon. Exhibit D-3 shows the prescriptions from alternative policy rules. The *Nutter* rule, which entails a strong response to inflation and no response to the output gap, prescribes the first rate increase in the current quarter under the *Loss of*

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*Credibility* scenario and in 2011Q2 under the *Central* scenario. The other FFR paths do not differ significantly from our policy recommendation.

Exhibit D-1 shows the real FFR rates implied by the baseline rule under the various scenarios, ignoring the zero bound constraint. The *Baseline* rule under the *Central* scenario implies a real rate of about -4% in the current quarter. Exhibit D-3 shows the real rate (under alternative scenarios) for *Asymmetric Price Targeting*, the *Nutter*, and the *Outcome-based* rules.

We also use the DSGE model to assess the current stance of monetary policy. We perform a counterfactual exercise by eliminating current and past policy shocks. We find that the DSGE model predicts a counterfactual FFR for the current quarter roughly in line with the policy rate.

**4.2 Comparison to Market Expectations.** Both the mode and the mean of the market-implied FFR path shifted down slightly during the intermeeting period. They currently imply a start of the renormalization process between 2011Q4 and 2012Q1 (using the Board's assumptions concerning term premia), roughly consistent with our policy recommendation. The distribution of responses from the primary dealers survey about the timing of the FFR lift-off shifted once again toward later dates. The mode of the distribution moved from 2011Q3 to 2012Q3 or later. Most respondents now believe that rates will not increase before 2012, and only 10 to 15% of the respondents believe that the start of the renormalization will occur before the second half of 2011.

## 5. Significant Developments

### 5.1 Economic Developments

**Real Activity.** *GDP:* Real GDP in Q2 was revised down from 2.4% to 1.6%. Downward revisions for net exports and inventory investment were partially offset by upward revisions to consumption and investment spending on equipment. Profits rose briskly, led by strong gains in the nonfinancial sector.

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*Production:* Manufacturing output increased 0.2% in August after rising 0.7% in July. The 12-month change was 6.3%, somewhat less than that of the past few months and consistent with a more moderate pace of expansion. The overall number was affected by a large drop in auto production fell, although the number may reflect seasonal adjustment problems since many factories did not take their usual summer shutdowns.

*Construction:* Construction spending declined 1.0% in July, reflecting falls in private residential and public construction. Over the year, private residential was up a modest 6% while public construction was down 8%.

*Orders and Shipments:* New orders for manufactured goods increased 0.2% in July after falling 0.6% in June. Shipments of nondefense capital goods excluding aircraft decreased 1.0% indicating a slow start to equipment spending in Q3.

*ISM:* The manufacturing index edged up 0.8 to 56.3 in August. Although the index is below the recent peak of 60.4 in April, the current level is high relative to readings at comparable stages of the prior two recoveries. The specific activity indexes were mixed, though virtually all remained above 50. On the negative side were data on new orders and backlogs while on the positive side were reports for production and employment. The non-manufacturing index was less encouraging, slipping to a 7-month low.

*PCE:* Real personal consumption expenditures were up 0.2% in July, an increase of 1.9% over the year. Light motor vehicle sales slipped slightly to an annual rate of 11.44 million units in August, but were still up from the Q2 pace of 11.34 units. Retail sales rose 0.4% in August, with a strong 0.6% increase excluding autos. An unusual jump in grocery stores sales raises some questions, but for the most part the data suggest consumer spending is on a solid pace in Q3.

*Inventories:* Business inventories increased 1.0% in July, with retail inventories up 0.7%. The inventories-shipment ratio was unchanged at 1.26, which is relatively low but up from the historic lows set in the spring.

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*Home sales/starts:* New single-family homes were sold at a low 276,000 annual rate in July, down 12% from June. The July level is the lowest in the history of this data series which goes back to 1963. Existing home sales plunged 27% in July to an annual rate of 3.83 million units. The drop is tied to the end of the home buyers' tax credit and may not be providing an accurate signal of housing market conditions. Still, with mortgage rates at the lowest levels since the 1950s, the data suggest that there is still a wide gap between what buyers and sellers regard as a fair price.

*Labor:* Nonfarm payrolls decreased 54,000 in August, with private payrolls up 67,000 and government payrolls down 121,000. Revisions to July and June added 123,000 jobs. Key contributors to private employment were the construction and health care industries. The unemployment rate rose from 9.5% to 9.6% due to higher labor force participation.

**Prices and Income.** *CPI:* The consumer price index increased 0.3% in August and 1.2% over the year. The core measure increase was just 0.05%, with core goods up 0.1% and core services flat. The 12-month change of the core index was 1.0% for the fifth consecutive month, suggesting prices continue to be listless throughout the economy.

*PCE deflator:* The PCE deflator rose 0.2% in July after three consecutive monthly declines. Its 12-month change was 1.5%. Core prices were up 1.4%, the same as in June, while the "market-based" core was stable at 1.1%, both on a 12-month basis.

*Personal income:* Personal income rose 0.2% in July, wages and salaries managed solid gains but other income components were weak. Interest income had its largest dollar decline since October.

*Home Prices:* The 20-city Case-Shiller home price index was up 4.2% over the year in June, with the pace of increases slowing. The FHFA purchase-only index was down 1.7%, while in the previous month it was down 1.4%..

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**Trade.** The trade deficit narrowed from a revised \$49.8 billion in June to \$42.8 billion in July. Export volumes rose over the previous month, while import volumes fell. Export volumes rose 2.9 percent, in line with expectations and trend growth. Nonoil import volumes fell 2.7 percent, following unusually high increases of over 5 percent in the previous two months. The oil bill was unchanged. These data suggest the net export contribution to GDP growth will subtract 0.4 percentage points in 2010 Q3.

**Foreign Data Releases.** The foreign outlook is essentially unchanged, with growth slowing in the second half of the year as the inventory cycle ends and various government stimulus policies lose steam.

*Europe:* The euro economy did better than expected in Q2, growing 3.9% (saar). Consumption and investment spending had their first major increases in two years while exports continued to rebound. Manufacturing was up 8% over the year in July, but recent monthly changes have been slightly negative. June orders and export data, though, showed some momentum going into Q3. Business confidence measures were unchanged in August at a relatively positive level. Consumer confidence staged a modest recovery after faltering at the height of the sovereign debt crisis. The unemployment rate held steady at 10.0 percent in July. The number of unemployed has stopped increasing. The UK economy grew 4.9% (saar) in Q2. Inventories accumulation was the main contributor (4.5 percentage points) with an additional modest boost from consumption. Business spending was down, while net exports and government spending were flat. Manufacturing increased in July, putting it up 5 percent over the year. Business surveys, however, declined in July and August, indicating a slowdown in growth in Q3.

*Asia:* Japanese growth slowed significantly to 1.5% (saar) in Q2, as expected. Exports, particularly to the rest of Asia, and business investment spending were the main contributors, while consumption, residential construction and government spending all fell. The latter is a consequence of tighter fiscal policy designed to improve public finances. A survey of producers' forecasts suggests that there will be little production

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growth for Q3 as a whole. The unemployment rate has been increasing gradually in the first half of year but was stable in July at 5.2 percent.

China data show a modest rebound in activity after slowing for several months, suggesting that growth may be stabilizing at a still robust pace. In particular, there was a modest uptick in the manufacturing PMI and strong readings for production, retail sales and fixed investment. Export growth slowed sharply in August, but mostly as payback for unusual strength in earlier months while import growth accelerated. Credit growth also turned up in August but remains on track to hit the government's full-year target of roughly 18 percent. More generally, there are signs that the orientation of policy has become somewhat more growth supportive after concerns about over-tightening earlier this summer.

For the rest of EM Asia, generally lackluster recent readings for exports and production suggest that growth downshifted to a somewhat below-trend pace in Q3, but growth in Q2 came in mostly ahead of expectations.

*Latin America:* The major economies in Latin America grew briskly in Q2 but are showing signs of modest deceleration in Q3 reflecting the weakening of external demand as a driver of growth. However, domestic demand conditions remain supportive in Brazil and Argentina, and are improving in Mexico. Brazil's economy grew at 5.0% (saar) in Q2, a moderation from prior quarters but better than analysts were expecting. Mexico's economy grew 13.5% in Q2, due in part to payback for a contraction in Q1. The economy appears to have entered Q3 with flagging momentum, as investment, retail sales, and industrial production contracted in June. Still, underlying conditions for domestic demand growth – including job creation and confidence – have showed steady improvement.

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## 5.2 Financial Markets

### Domestic Financial Markets

Financial market news was mixed over this intermeeting period. Treasury yields, break-even inflation rates and equity markets declined for the first few weeks of the intermeeting period only to reverse course as better than expected economic data were released at the beginning of September.

*Nominal Interest Rates:* During the intermeeting period Treasury yields fell until the end of August, but have since largely retraced these declines. The yield on a 10-year Treasury note is currently at about 2.75%, approximately 20 basis points above its level at the end of last month, but approximately 10 basis points below its level before the last FOMC meeting. Meanwhile, the yield on a 2-year note, driven more by near- and medium-term policy expectations is currently at about 0.50%, slightly above the new historical low of 0.47% observed at the end of last month.

Option implied yield volatility in Treasury and swap markets as measured by the MOVE and SMOVE indices have edged up over the intermeeting period. The 3-month MOVE and SMOVE indices both stand at about 103, each rising approximately 20% since the last FOMC meeting. However, option implied volatility still stands well below its pre-crisis levels (Exhibit A-3: Treasury Yields).

*Inflation Compensation:* Market-based measures of inflation expectations trended lower in the first few weeks of the intermeeting period, only to reverse course later in the intermeeting period. The 0-5 year inflation compensation, gauging inflation expectations over the next five years, fell from about 1.45% on August 9<sup>th</sup> to 1.16% on August 31<sup>st</sup>, only to rise to about 1.35% in mid-September. Meanwhile, the 5-10 year measure, gauging expected inflation 5-10 years out, fell from about 2.50% on August 9<sup>th</sup> to 2.28% on August 31<sup>st</sup>, only to rise to 2.68% by mid-September. In generally, the overall level of 5-10 year inflation compensation is only slightly above its pre-crisis level. This indicates that inflation expectations remain well-anchored despite the extraordinary monetary policy interventions and especially the large expansion of the Federal Reserve's balance

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sheet since the onset of the financial crisis. Moreover, long-term inflation expectations as measured by the Survey of Professional Forecasters also remain well-anchored. Professional forecasters now expect the Consumer Price Index to grow at 2.0% and 2.4% on average over the next five and ten years, respectively. These forecasts may be compared to growth of 2.2% and 2.5%, respectively, expected in May (Exhibit A-4: Real Yields and Implied Inflation).

*Expected Policy Rate Path:* The expected path of the fed funds rate as inferred from futures markets declined only slightly since the last FOMC meeting. Market expectations currently suggest that the target federal funds rate will remain at 0.0%-0.25% through the majority of 2011 and reach approximately 1.0% at the end of 2012. Professional forecasters have also revised down their expected policy paths over the medium term. The median expectation from the Blue Chip Financial Forecasts Survey for the fourth quarter of 2011 stood at 0.9% in September, down from 1.3% in August (Exhibit A-5: Policy Expectations).

*Equity Markets:* Equity prices followed a similar pattern, declining for the first few weeks after the last FOMC meeting, but then rising since the beginning of the month. The S&P 500 index is now at about 1125, very near its level before the last FOMC meeting but about 7.5% below the recent peak on April 23, 2010.

Similarly, implied equity volatility, as measured by the VIX, rose to around 27 at the end of August but then declined to around 22 during the first few weeks of September. Implied volatility stands well below the recent peak at the end of the second quarter, but at the same time remains well above its pre-crisis levels (Exhibit A-6: Equity).

*Credit Spreads:* The pace of declines in credit spreads slowed during this intermeeting period as compared to the last intermeeting period. The spreads on A-rated financials and all corporate bonds decreased from levels of 244 and 169 basis points on August 9<sup>th</sup>, respectively, to 238 and 167 basis points on September 13<sup>th</sup>. At the same time, BBB-rated spreads on financials and all corporate bonds fell by 6 and 16 basis points,

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respectively. During the intermeeting period credit spreads widened until the end of August, but then narrowed for the rest of the intermeeting period (Exhibit A-7: Credit).

*Money Markets:* Although measures of money market stress ticked up at the end of the second quarter they recently reversed course and continued to improve over the intermeeting period. The 3-month LIBOR-OIS spread currently trades slightly below 10 basis points, which is near the average level observed before the crisis (Exhibit A-9: Money Markets).

### **Foreign Financial Markets**

Global funding conditions remained stable over the intermeeting period, with LIBOR-OIS spreads broadly unchanged in Europe and Japan. European banks' debt issuance has accelerated since the release of the European bank stress tests, particularly in the UK, Netherlands and Spain. The increased issuance totals nearly \$100 billion in debt. Spanish banks regained market access for their funding following the publication of the stress test results, whereas Greek and Portuguese banks' reliance on ECB refinancing facilities remained steady and high. Spreads for peripheral euro area sovereign debt increased since the last FOMC meeting, with the Greek sovereign CDS spreads rising about 150 points. Higher spreads mostly reflected deteriorating risk sentiment amongst investors following the cautious August 10 FOMC statement as well as heightened concerns about the Irish banking system. The latter were due to official announcements that some Irish banks will likely require more government funds than previously expected. Towards the end of the period peripheral sovereign spreads narrowed, as debt issuance conditions improved with well-received public auctions.

Emerging markets' asset prices generally increased since the last FOMC, with EM equities outperforming those in the developed economies. Low yields in the advanced world continued to fuel heavy flows into EM bond markets. This resulted in declining EM bond yields, a trend reinforced by a combination of moderating EM inflation and downgrades in inflation expectations. Emerging Market bond issuances have accelerated, especially in September, with volumes on pace to break last year's record level.

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Bond yields in the advanced economies outside of the U.S. declined significantly over the intermeeting period, in particular at the long end of the yield curve, resulting in a flattening of the respective curves. A downgrade in global growth expectations was the main determinant of these moves, with a number of downbeat central bank statements and downside surprises regarding data releases in other economies.

The trade-weighted U.S. dollar index remained essentially unchanged since the last FOMC meeting. Over the period, the dollar did initially appreciate relative to other major currencies as the August FOMC statement and a number of disappointing data releases resulted in a downgrade of the economic outlook by market participants. Towards the end of the period market sentiments improved, especially on account of better-than-expected euro area data. The dollar depreciated about 50 basis points against the Chinese yuan. However, since the reintroduction of a managed flexible exchange rate regime in June, the yuan has weakened on a trade-weighted basis due to substantial depreciations relative to the euro and the yen.

### **5.3 Global Economic Policy**

Central banks in the euro area, Japan, the U.K. and the U.S. kept their policy stance at a very accommodative level over the intermeeting period. Although elsewhere monetary tightening had become the *modus operandi*, the pace of this tightening has grinded to a halt on account of a more uncertain economic outlook.

The ECB kept its policy rate unchanged at 1.0% at its September meeting, as has been the case since March last year, with a balanced risk around an outlook for its 2011 growth projections that turned more bullish compared to the August meeting. At the September meeting the ECB also decided that access to the 3-month refinancing facility will be without allotment limits through December 2010 and for shorter-term financing facilities through January 2011. The size of the ECB's balance sheet was unchanged at €2.0 trillion since the last FOMC meeting. The pace of sovereign bond purchases under the

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“Securities Markets Program” (SMP) modestly picked up with €1 billion, bringing the total size to €60 billion.

The Bank of Japan continues to maintain its policy rate close to the zero-bound, at 0.10%. In its battle to stop prolonged deflation, the Bank is providing up to ¥20 trillion in liquidity to banks under its 3-month fixed-rate funding facility introduced in December 2009. On August 30 the Bank decided to expand the aforementioned facility with a ¥10 trillion 6-month fixed-rate funds-supplying operation, with (as usual) the fixed rate set at the level of the policy rate. The Bank has started its ¥3 trillion lending program, with banks able to borrow up to ¥150 billion for one year at the policy rate to finance firm investments. The small size of these facilities raises doubts about their effectiveness in battling deflation. On September 15 the Ministry of Finance ordered the Bank to start intervening in the currency markets in an attempt to keep the yen above the ¥82 per dollar threshold. The intervention size appears to be large and if truly unsterilized, the Bank will finally be expanding its balance sheet. The prospect of persistent consumer price deflation might force the Bank of Japan to pursue even more aggressive options to engineer, through higher inflation expectations, a reduction in the currently high real interest rate levels. Continued, unsterilized currency interventions aimed at maintaining a credible dollar-yen level might be one way to achieve that.

Since January, China has initiated a number of monetary tightening measures such as increased reserve requirements and higher managed interest rates. In June, Chinese monetary authorities restarted a crawling appreciation of the yuan exchange rate *vis-à-vis* the U.S. dollar. Recent data releases show a modest rebound in activity after slowing for several months, suggesting that growth may be stabilizing at a still robust pace. Credit growth also turned up in August but remains on track to hit the government’s full-year target of roughly 18 percent. More generally, there are signs that the orientation of policy has become somewhat more growth supportive, reverting the concerns about over-tightening monetary conditions earlier this summer. As a consequence, forward contracts suggest that monetary authorities will only allow for a modest yuan strengthening against the dollar over the next twelve months.

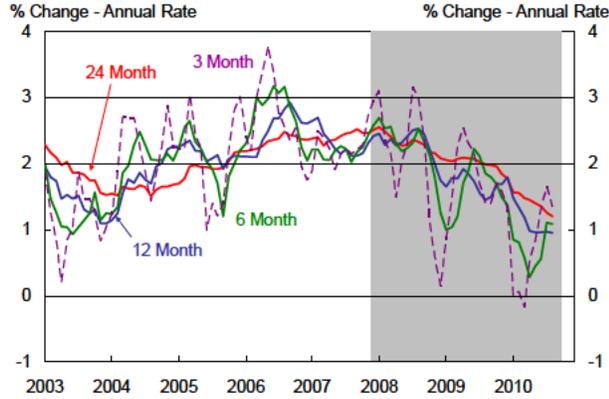
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In the rest of Emerging Asia, the central banks of India and Thailand hiked their rates during the intermeeting period, and the monetary authorities in Indonesia raised the reserve requirements for banks. External growth risks and moderating inflation, except in India, will likely dampen the pace of tightening in this region going forward.

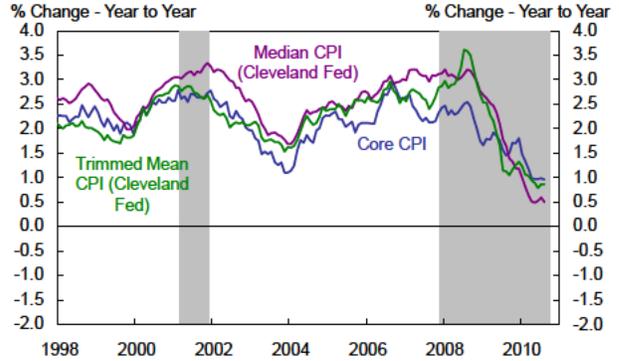
# A. Significant Developments

Exhibit A-1:  
Measures of Trend Inflation

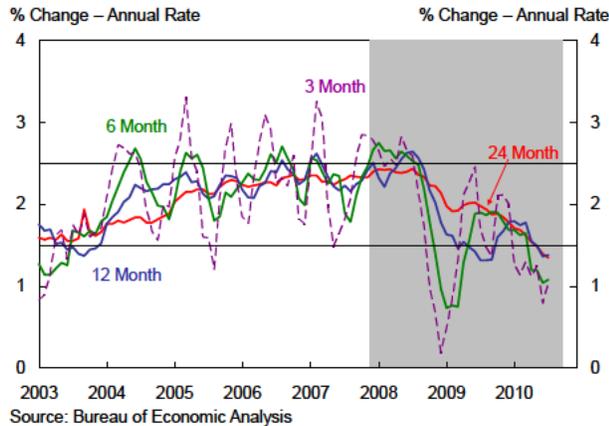
Core CPI Inflation over Various Horizons



Alternative Measures of CPI Inflation



Core PCE over Various Horizons



Alternative Measures of PCE Inflation

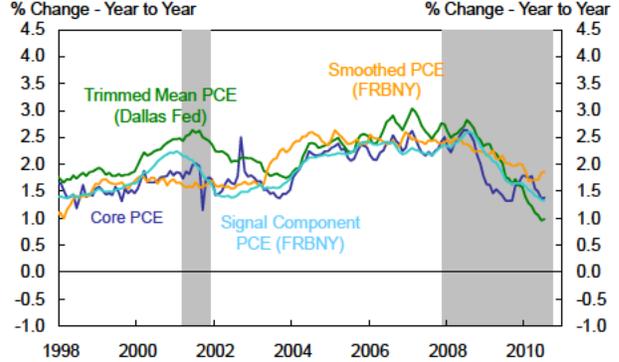
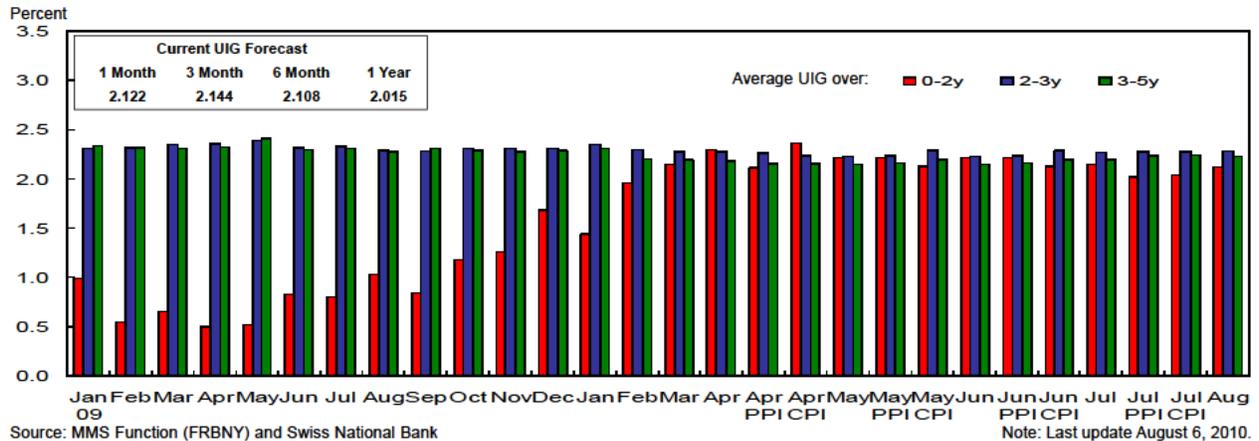


Exhibit A-2:  
Underlying Inflation Gauge (UIG)



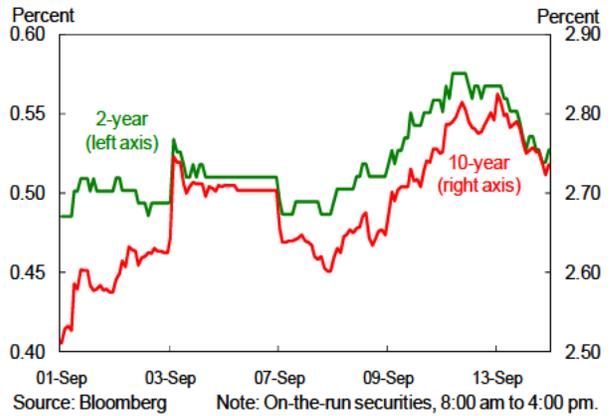
# A. Significant Developments

Exhibit A-3:  
Treasury Yields

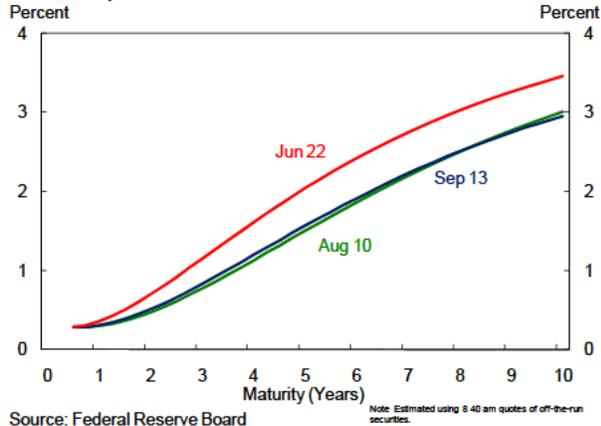
Short- and Long-Term Rates



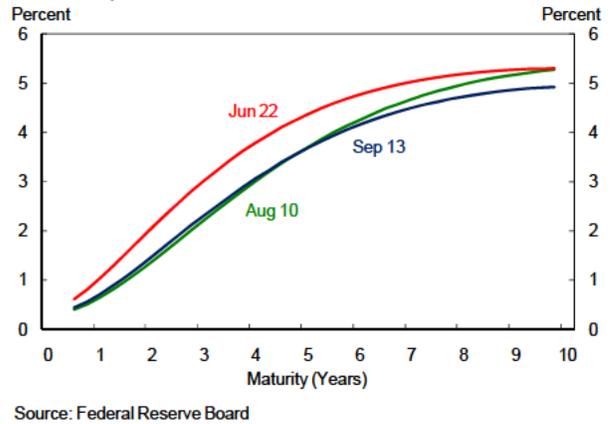
Short- and Long-Term Rates (Intraday)



Zero Coupon Yield Curves



Zero Coupon Yield Curves: One-Year Forward Rates



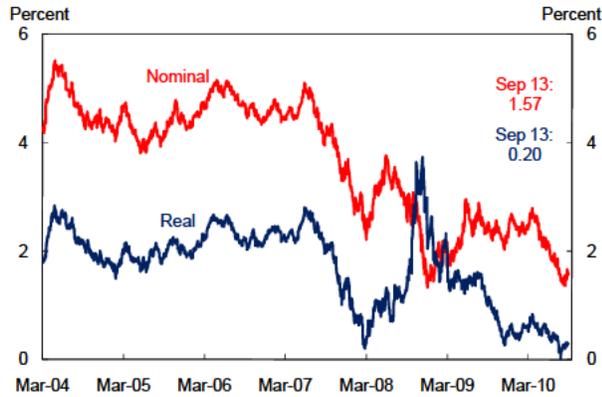
Option and Swaption Volatility Expectations



# A. Significant Developments

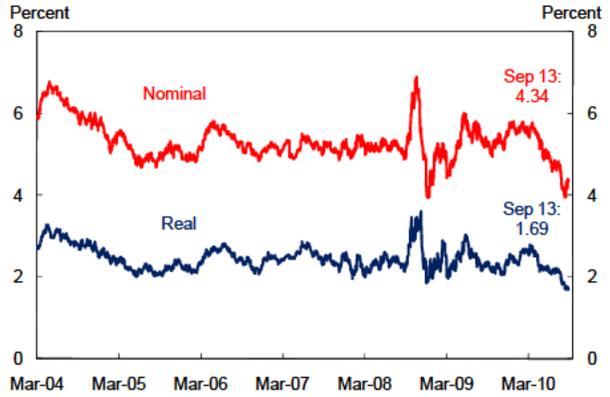
Exhibit A-4:  
Real Yields and Implied Inflation

5 Year Spot Rate



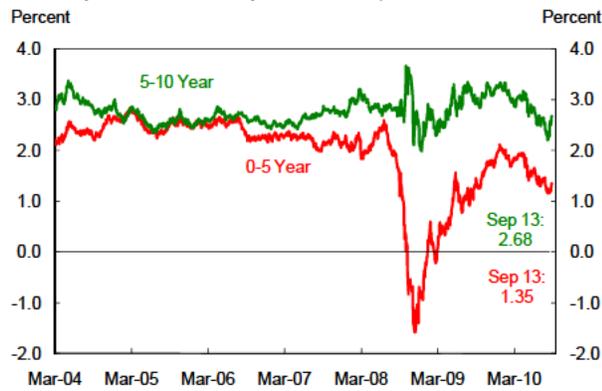
Source: Federal Reserve Board

5-10 Year Forward Rates



Source: Federal Reserve Board

TIPS Implied Inflation Compensation: 0-5, 5-10 Year Horizons



Source: Federal Reserve Board

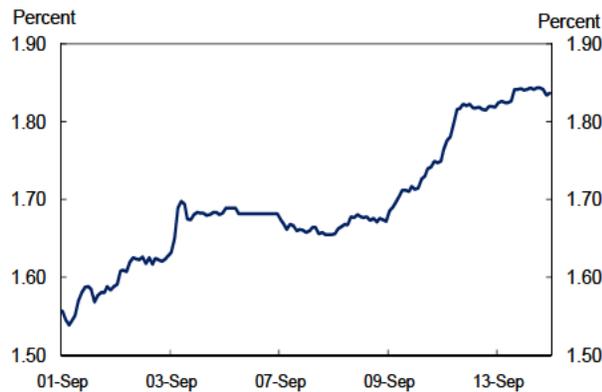
Note: Carry-adjusted.

Alternative Measures of 5-10 Year Implied Inflation Compensation



Source: Federal Reserve Board, Barclays, and FRBNY calculations

10-Year Breakeven Inflation Compensation (Intraday)



Source: Bloomberg

Note: On-the-run securities, 8:00 am to 4:00 pm.

Implied Inflation from Inflation Swaps: 0-5, 5-10 Year Horizon

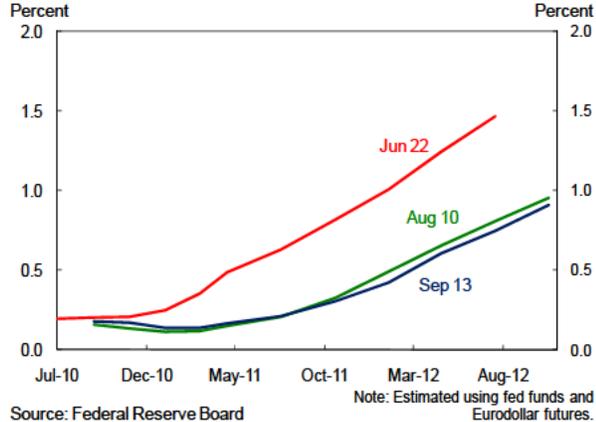


Source: Barclays

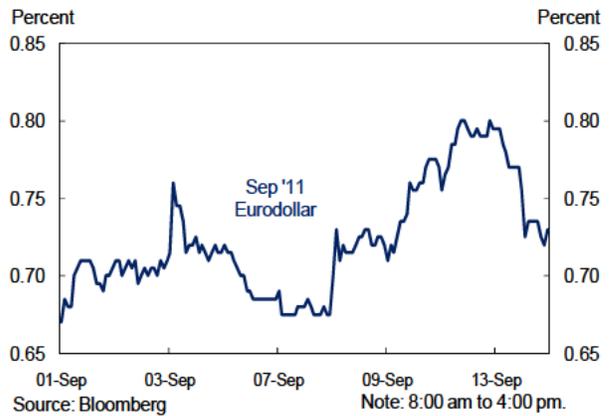
# A. Significant Developments

Exhibit A-5:  
Policy Expectations

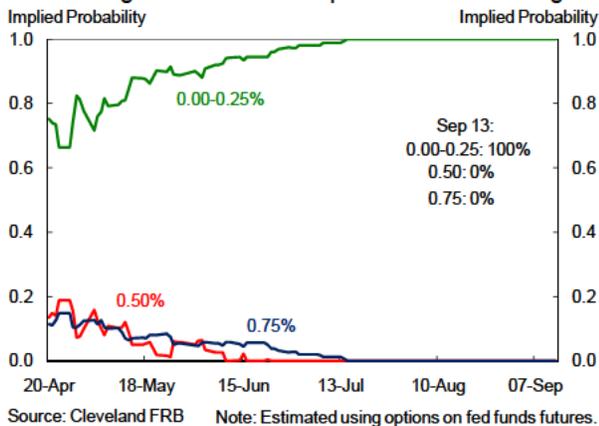
Fed Funds Futures Implied Rates



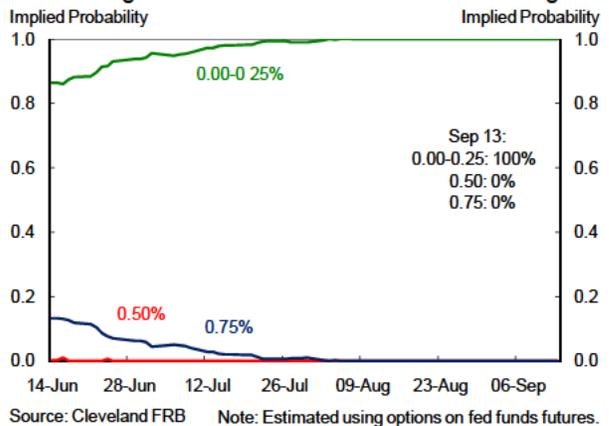
Implied Eurodollar Rates (Intraday)



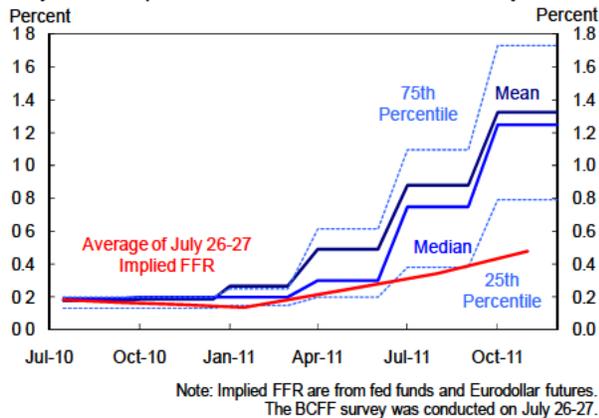
FOMC Target Probabilities: September 2010 Meeting



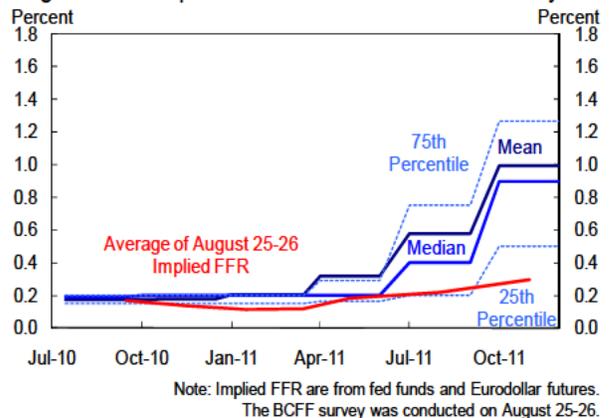
FOMC Target Probabilities: November 2010 Meeting



July 2010: Expected Fed Funds from BCFF Survey



August 2010: Expected Fed Funds from BCFF Survey



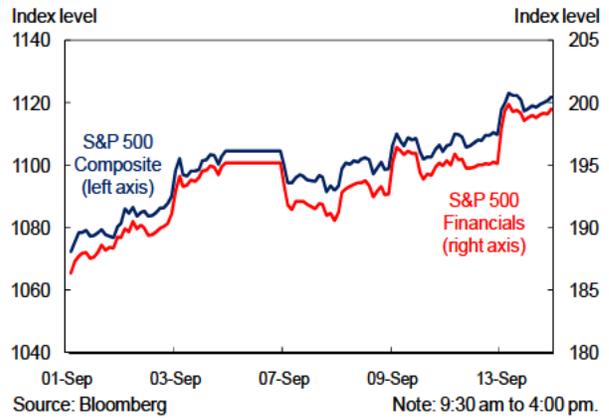
# A. Significant Developments

Exhibit A-6:  
Equity

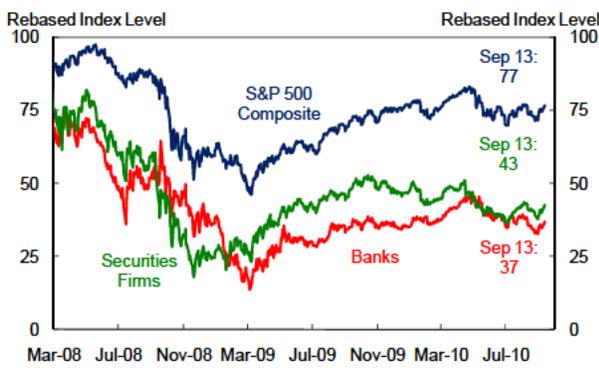
Equity Index Levels



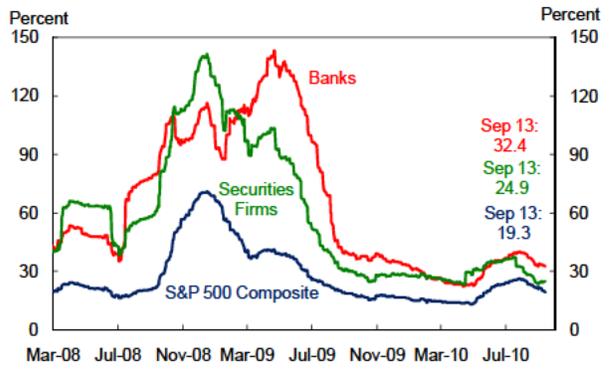
S&P 500 Indices (Intraday)



Equity Performance



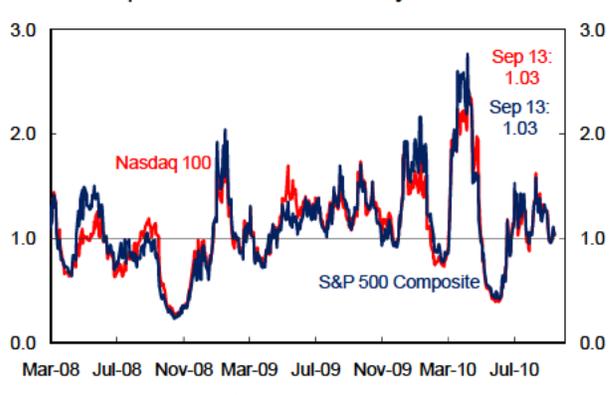
Historical Equity Volatility



Equity Index Implied Volatility: 1-Month



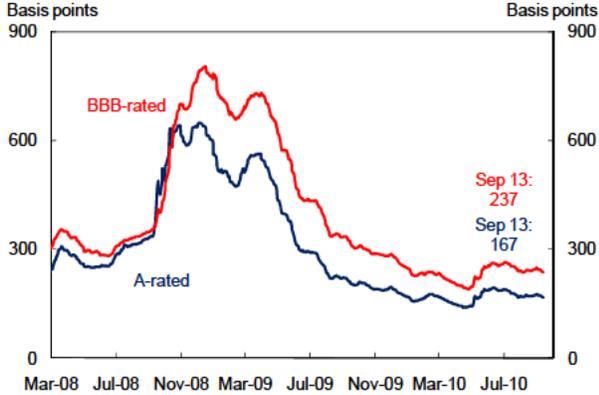
Ratio of Implied to Realized Volatility



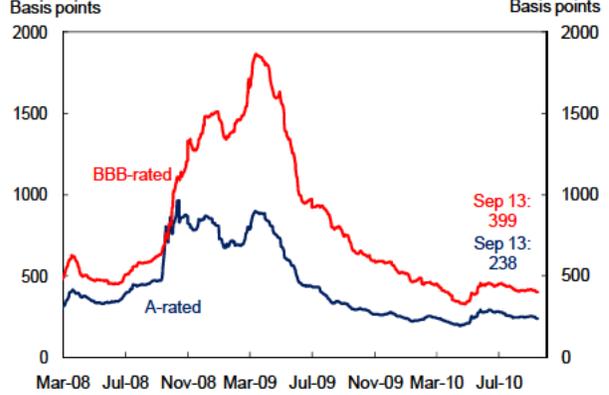
# A. Significant Developments

## Exhibit A-7: Credit

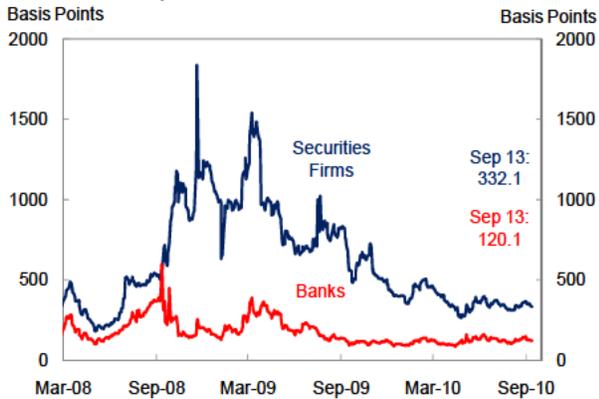
### Credit Spreads - All Corporates



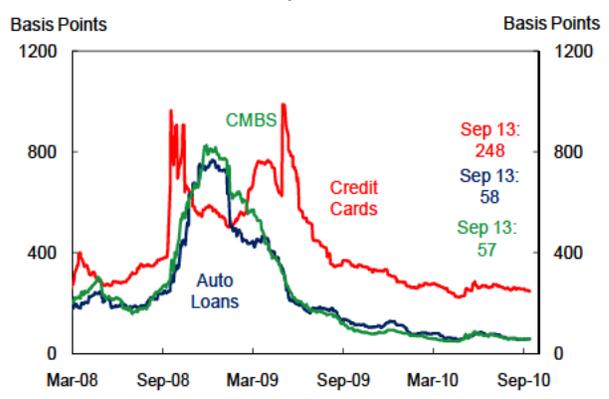
### Credit Spreads - Financials



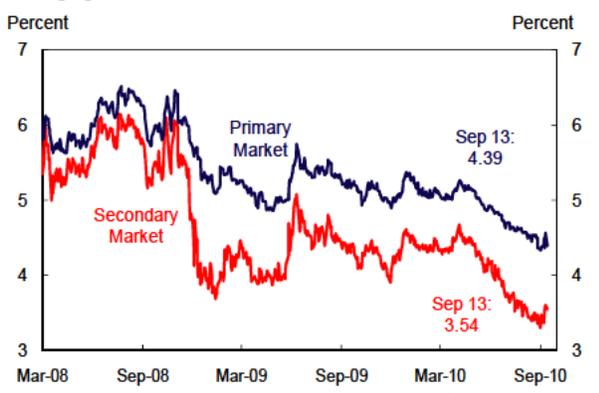
### Sector CDS Spreads



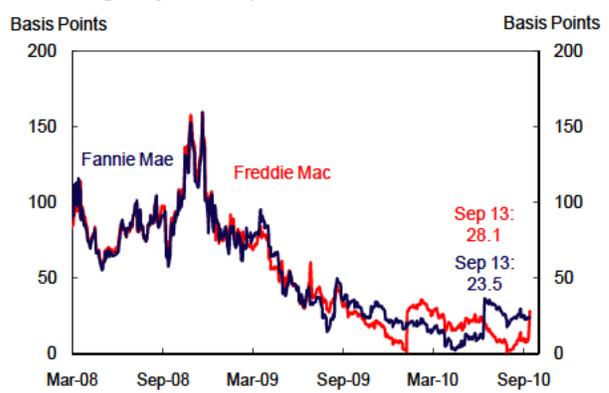
### AAA-Rated ABS/CMBS Spreads



### Mortgage Market Rates



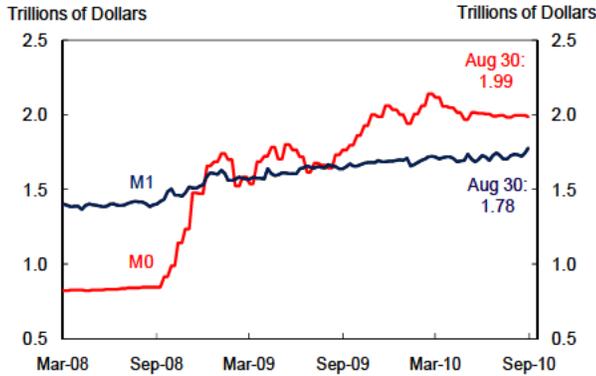
### 5-Year Agency Debt Spreads



# A. Significant Developments

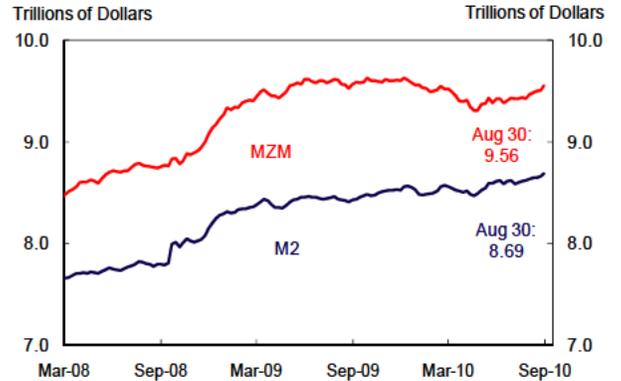
## Exhibit A-8: Money and Banking

### Measures of Money Supply: M0, M1



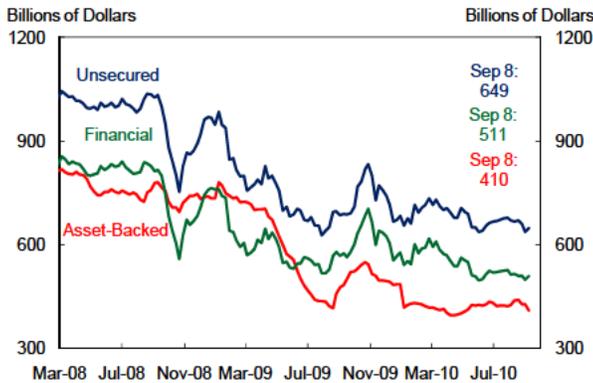
Source: Federal Reserve Board, Haver

### Measures of Money Supply: M2, MZM



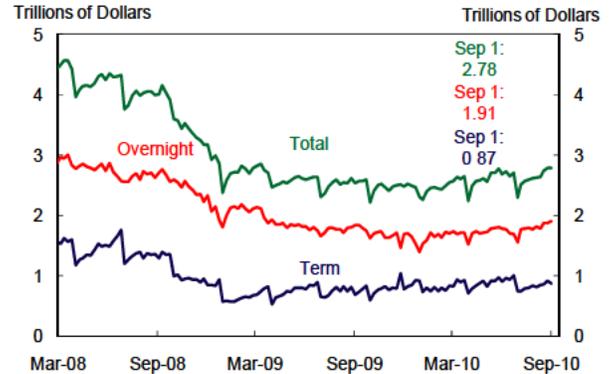
Source: Federal Reserve Board, Haver

### Commercial Paper Outstanding



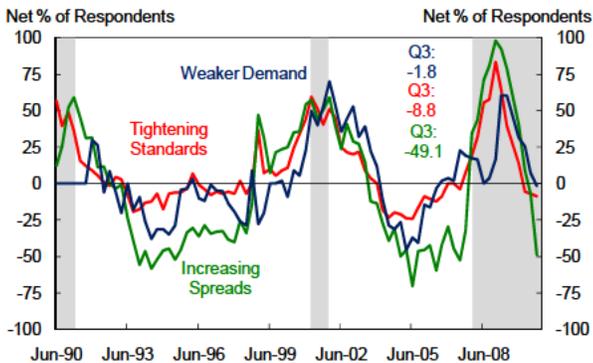
Source: Federal Reserve Board

### Primary Dealer Repurchase Agreements Outstanding



Source: Federal Reserve Board

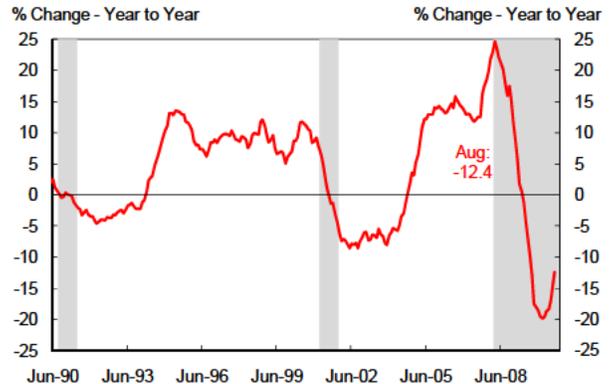
### Bank Lending Practices



Source: Federal Reserve Board

Note: Data cover C&I loans to large- and medium-sized firms.

### Commercial and Industrial Loans Outstanding

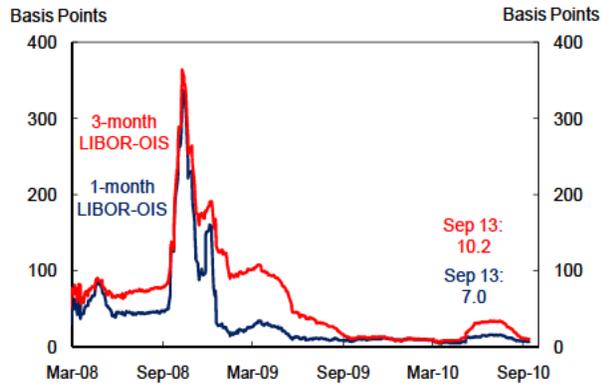


Source: Federal Reserve Board

# A. Significant Developments

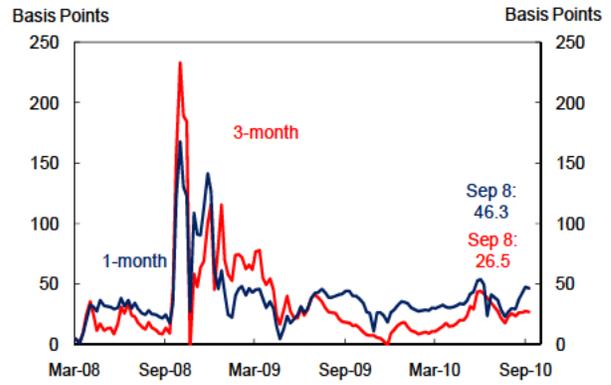
Exhibit A-9:  
Money Markets

Libor to OIS



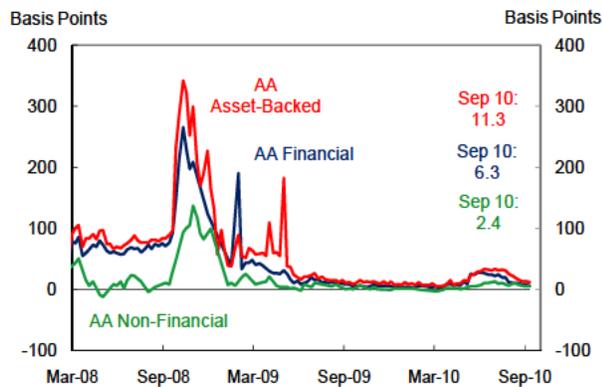
Source: Federal Reserve Board, Bloomberg

Euro-Dollar Swap Implied Basis Spreads



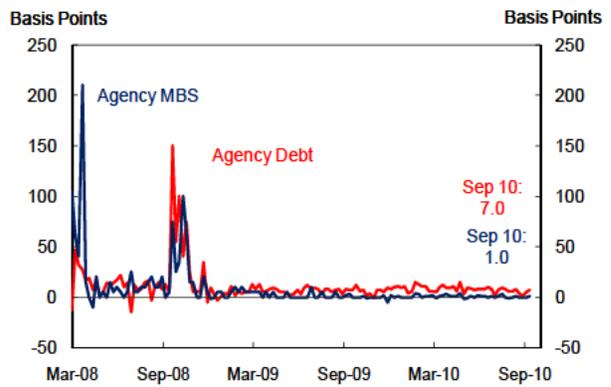
Source: Reuters, Tullett

3-Month CP Rates over OIS



Source: Federal Reserve Board, Haver, Bloomberg

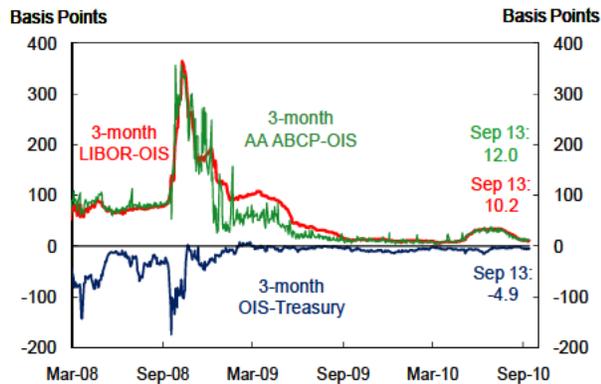
Overnight Financing Spreads



Source: Bloomberg

Note: Spreads are between overnight agency debt and MBS and Treasury general collateral repo rates.

Money Market Spreads



Source: Federal Reserve Board, Bloomberg

# A. Significant Developments

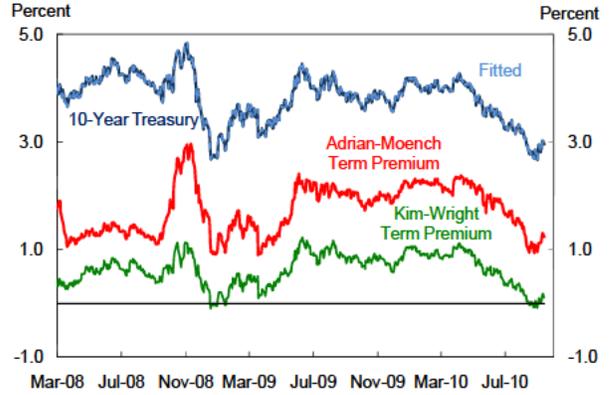
Exhibit A-10:  
Estimates of Term Premia in Treasury Yields

10-Year Treasury and Term Premia



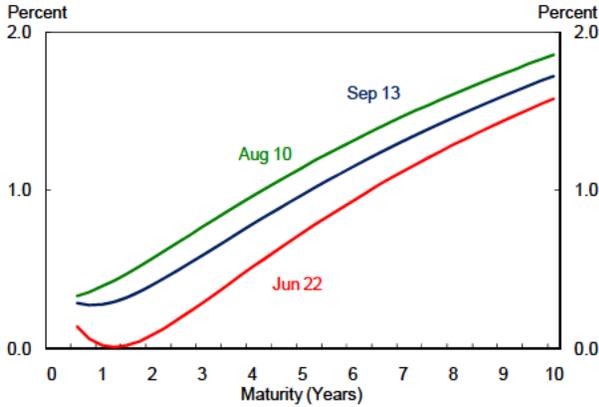
Source: FRBNY calculations, Federal Reserve Board

10-Year Treasury and Term Premia



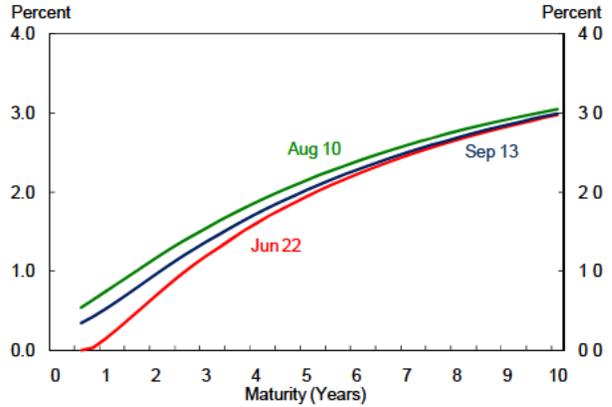
Source: FRBNY calculations, Federal Reserve Board

Risk Neutral Yield Curves



Source: FRBNY calculations

Risk Neutral One-Year Forward Curves



Source: FRBNY calculations

Term Premium for 10-Year Treasury and 6-Month MOVE Index

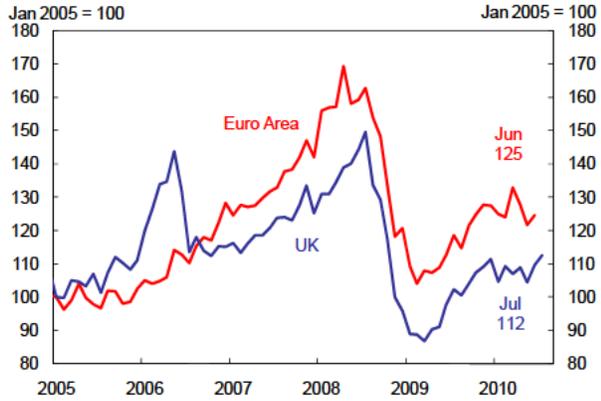


Source: FRBNY calculations, Haver, Merrill Lynch

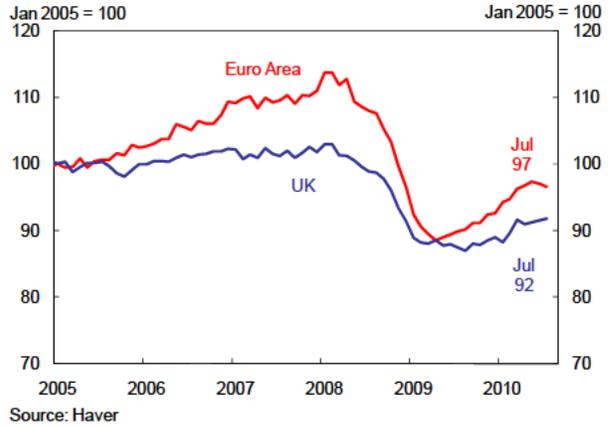
# A. Significant Developments

## Exhibit A-11: Exports and Industrial Production

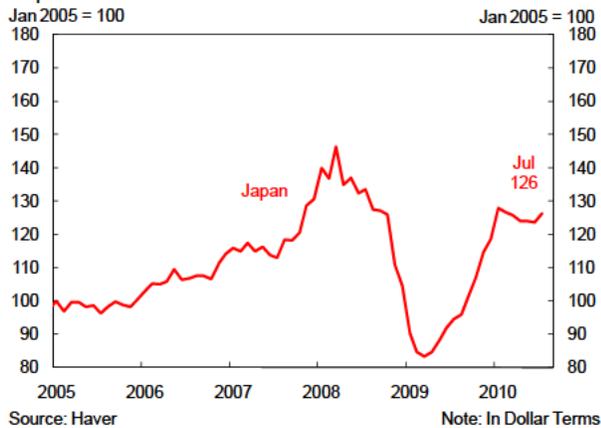
### Exports



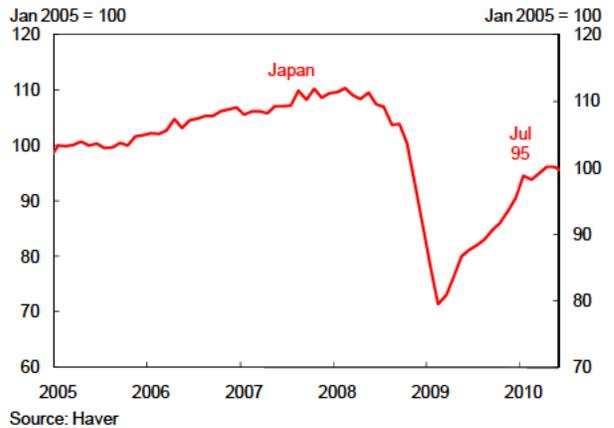
### Industrial Production



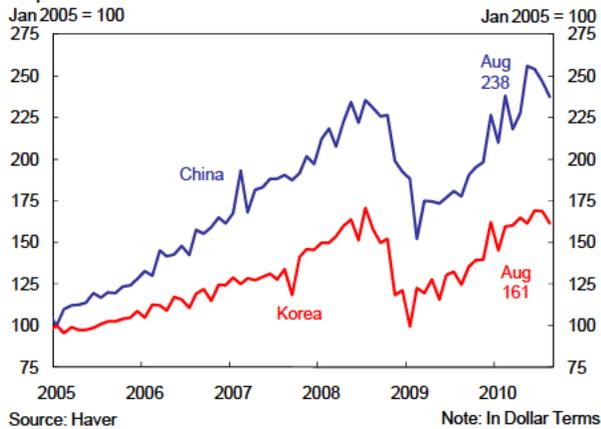
### Exports



### Industrial Production



### Exports



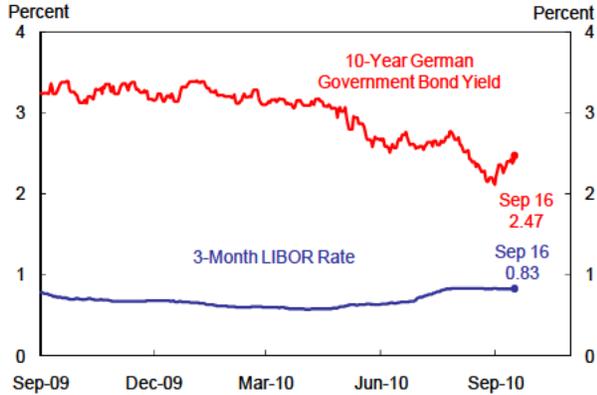
### Industrial Production



# A. Significant Developments

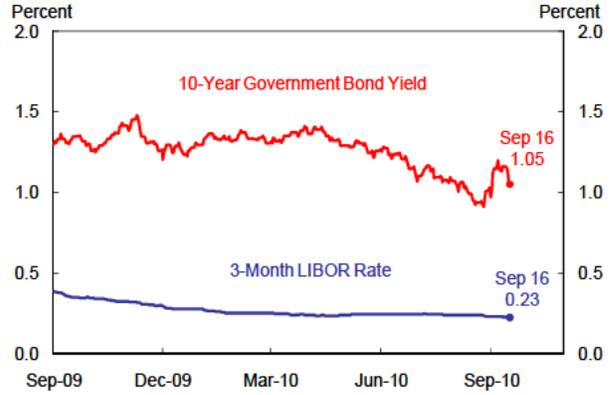
Exhibit A-12:  
Global Interest Rates and Equity Markets

Euro Area Short- and Long-Term Interest Rates



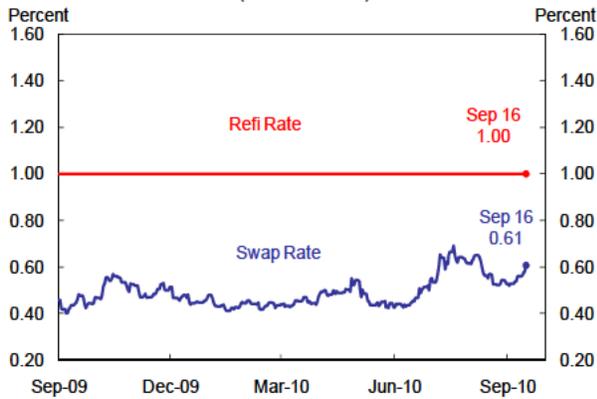
Source: Bloomberg

Japan Short- and Long-Term Interest Rates



Source: Bloomberg

Euro Area: OIS Rate (Six Months)



Source: Bloomberg

Japan: OIS Rate (Six Months)



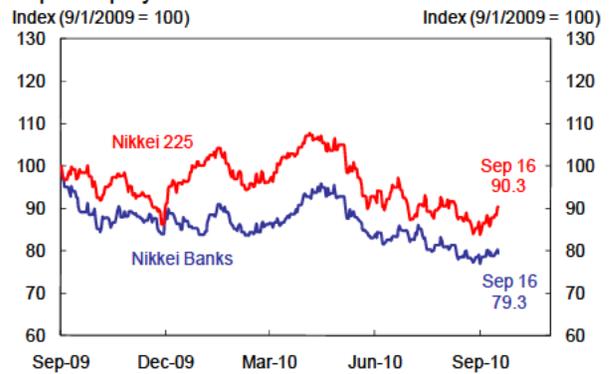
Source: Bloomberg

Euro Area Equity Price Indices



Source: Bloomberg

Japan Equity Price Indices

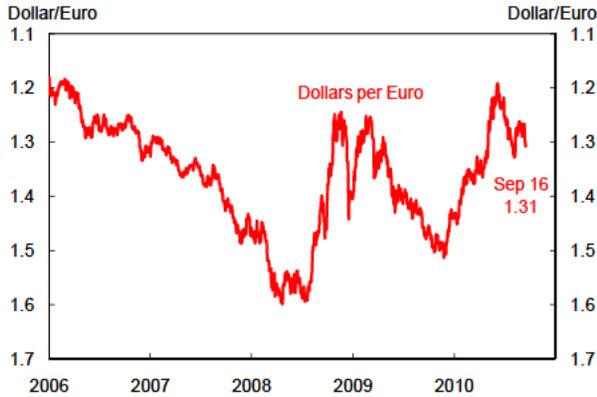


Source: Bloomberg

# A. Significant Developments

Exhibit A-13:  
Exchange Rates

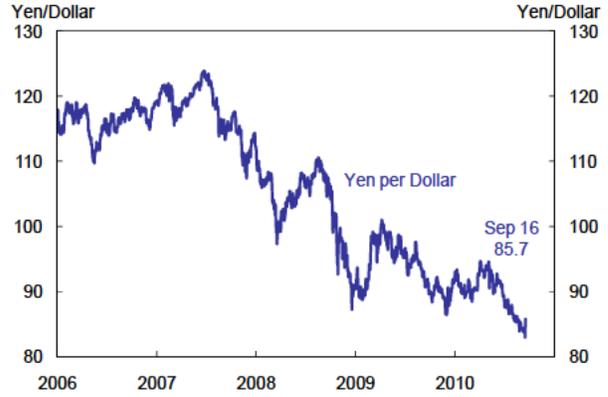
Dollar-Euro Exchange Rate



Source: Bloomberg

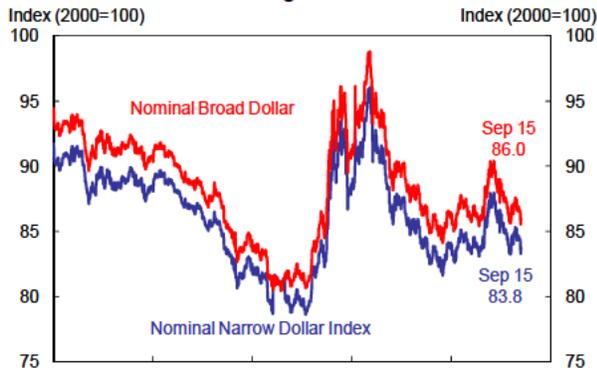
Note: Exchange rate scale is inverted.

Yen-Dollar Exchange Rate



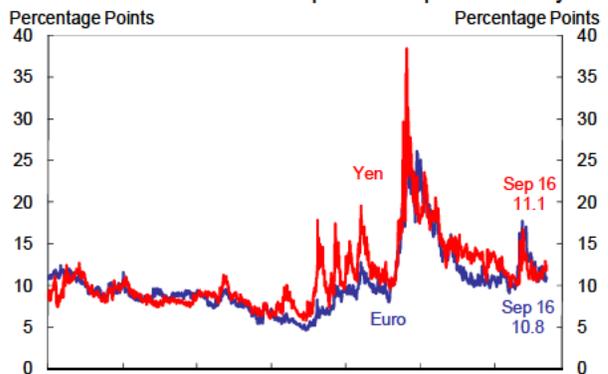
Source: Bloomberg

Nominal Effective Exchange Rates



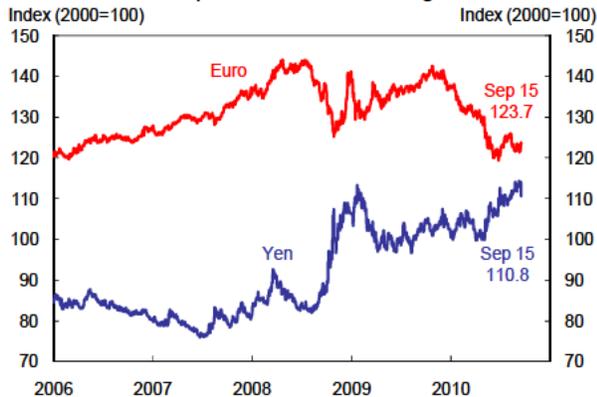
Source: Bloomberg and JPMorgan

Euro and Yen One-Month Implied FX Option Volatility



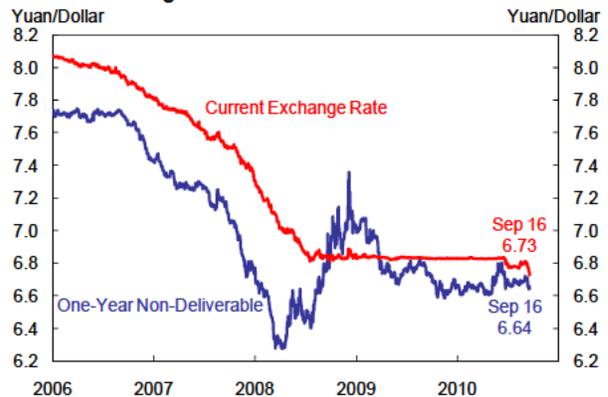
Source: Bloomberg

Euro Area and Japan Effective Exchange Rates



Source: Bloomberg and JPMorgan

China Exchange Rates



Source: Bloomberg

## B. FRBNY Forecast Details

### Exhibit B-1: Quarterly and Annual Projections of Key Variables

	Core PCE Inflation			Real GDP Growth			Unemployment Rate*			Fed Funds Rate**		
	Jun	Aug	Sep	Jun	Aug	Sep	Jun	Aug	Sep	Jun	Aug	Sep
<b>2010</b>												
Q1	<i>0.6</i>	<i>1.2</i>	<i>1.2</i>	<i>3.0</i>	<i>3.7</i>	<i>3.7</i>	<i>9.7</i>	<i>9.7</i>	<i>9.7</i>	<i>0-0.25</i>	<i>0-0.25</i>	<i>0-0.25</i>
Q2	<i>1.3</i>	<i>1.1</i>	<i>1.0</i>	<i>3.2</i>	<i>2.4</i>	<i>1.6</i>	<i>9.9</i>	<i>9.7</i>	<i>9.7</i>	<i>0-0.25</i>	<i>0-0.25</i>	<i>0-0.25</i>
Q3	<i>0.8</i>	<i>0.9</i>	<i>1.1</i>	<i>2.5</i>	<i>1.1</i>	<i>1.6</i>	<i>10.0</i>	<i>9.6</i>	<i>9.7</i>	<i>0-0.25</i>	<i>0-0.25</i>	<i>0-0.25</i>
Q4	<i>0.9</i>	<i>0.9</i>	<i>1.0</i>	<i>3.1</i>	<i>3.7</i>	<i>2.5</i>	<i>9.9</i>	<i>9.5</i>	<i>9.8</i>	<i>0-0.25</i>	<i>0-0.25</i>	<i>0-0.25</i>
<b>2011</b>												
Q1	<i>1.1</i>	<i>1.1</i>	<i>1.0</i>	<i>3.7</i>	<i>3.8</i>	<i>3.4</i>	<i>9.5</i>	<i>9.1</i>	<i>9.4</i>	<i>0-0.25</i>	<i>0-0.25</i>	<i>0-0.25</i>
Q2	<i>1.2</i>	<i>1.2</i>	<i>1.1</i>	<i>3.8</i>	<i>3.5</i>	<i>3.5</i>	<i>9.2</i>	<i>8.8</i>	<i>9.0</i>	<i>0-0.25</i>	<i>0-0.25</i>	<i>0-0.25</i>
Q3	<i>1.3</i>	<i>1.3</i>	<i>1.2</i>	<i>4.3</i>	<i>3.6</i>	<i>3.1</i>	<i>8.7</i>	<i>8.6</i>	<i>8.8</i>	<i>0.5-1.0</i>	<i>0-0.25</i>	<i>0-0.25</i>
Q4	<i>1.4</i>	<i>1.4</i>	<i>1.3</i>	<i>4.6</i>	<i>5.1</i>	<i>5.2</i>	<i>8.2</i>	<i>8.1</i>	<i>8.1</i>	<i>0.5-1.0</i>	<i>0.5-1.0</i>	<i>0-0.25</i>
<b>2012</b>												
Q1	--	<i>1.5</i>	<i>1.4</i>	--	<i>4.9</i>	<i>4.7</i>	--	<i>7.4</i>	<i>7.3</i>	--	<i>0.5-1.0</i>	<i>0.5-1.0</i>
Q2	--	<i>1.6</i>	<i>1.5</i>	--	<i>4.8</i>	<i>3.9</i>	--	<i>6.7</i>	<i>6.9</i>	--	<i>0.5-1.0</i>	<i>0.5-1.0</i>
Q3	--	<i>1.7</i>	<i>1.6</i>	--	<i>4.9</i>	<i>3.4</i>	--	<i>6.1</i>	<i>6.7</i>	--	<i>0.5-1.0</i>	<i>0.5-1.0</i>
Q4	--	<i>1.8</i>	<i>1.7</i>	--	<i>5.3</i>	<i>5.5</i>	--	<i>5.4</i>	<i>6.0</i>	--	<i>0.5-1.0</i>	<i>0.5-1.0</i>
<b>Q4/Q4</b>												
2009	<i>1.5</i>	<i>1.7</i>	<i>1.7</i>	<i>0.1</i>	<i>0.2</i>	<i>0.2</i>	<i>3.1</i>	<i>3.1</i>	<i>3.1</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>
2010	<i>0.9</i>	<i>1.0</i>	<i>1.1</i>	<i>3.0</i>	<i>2.7</i>	<i>2.4</i>	<i>-0.1</i>	<i>-0.5</i>	<i>-0.2</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>
2011	<i>1.3</i>	<i>1.3</i>	<i>1.2</i>	<i>4.1</i>	<i>4.0</i>	<i>3.8</i>	<i>-1.7</i>	<i>-1.4</i>	<i>-1.7</i>	<i>0.5</i>	<i>1.0</i>	<i>1.0</i>
2012	--	<i>1.6</i>	<i>1.5</i>	--	<i>5.0</i>	<i>4.4</i>	--	<i>-2.7</i>	<i>-2.1</i>	--	<i>0.0</i>	<i>0.0</i>

Note: Columns reflect the forecast dates. Numbers in gray are from previous Blackbooks, and numbers in italics are released data.

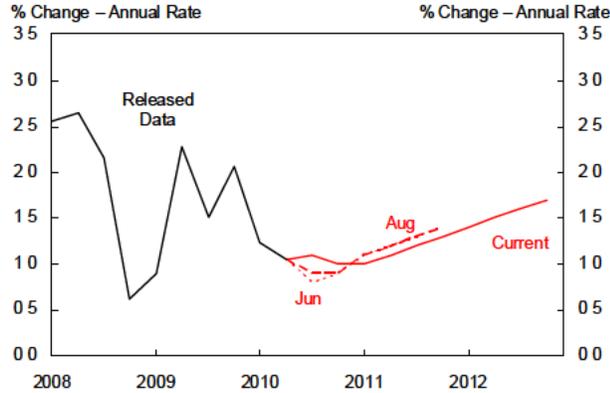
\*Quarterly values are the average rate for the quarter. Yearly values are the difference between Q4 of the previous year and Q4 of the listed year.

\*\*Quarterly values are the end-of-quarter value. Yearly values are the difference between the end-of-year value in the previous year and the end-of-year value in the listed year.

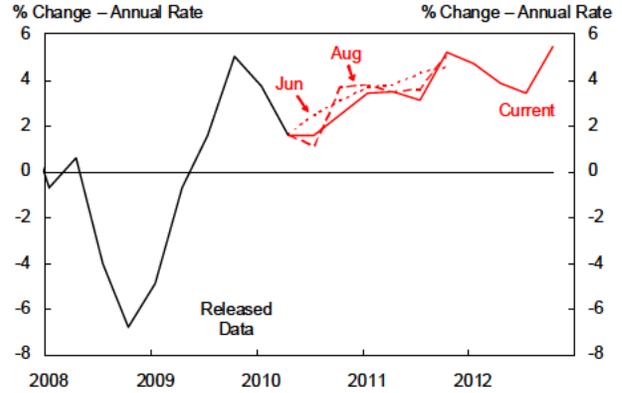
## B. FRBNY Forecast Details

### Exhibit B-2: Evolution of Projected Quarterly Paths of Key Indicators and Forecast Assumptions

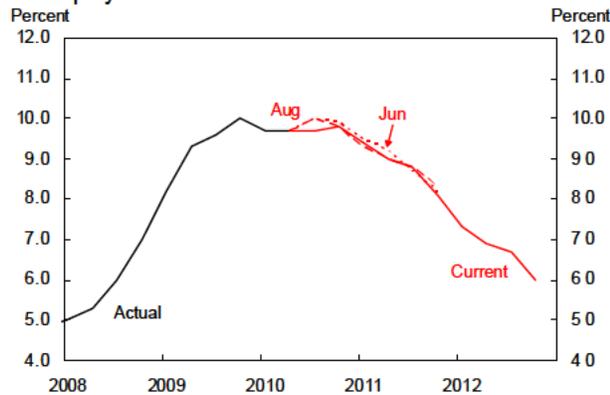
**Core PCE Inflation**



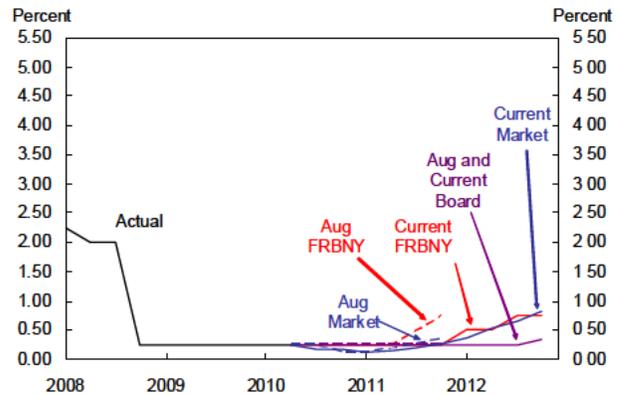
**Real GDP Growth**



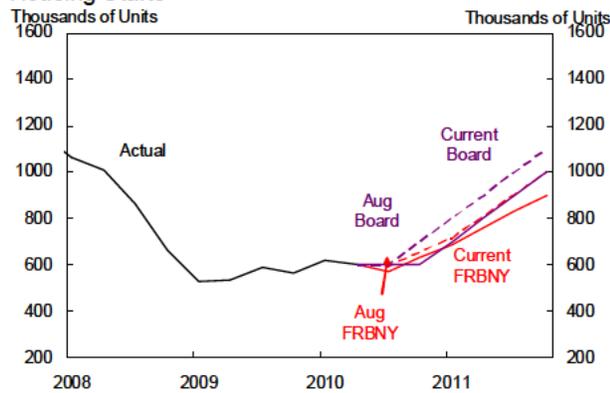
**Unemployment Rate**



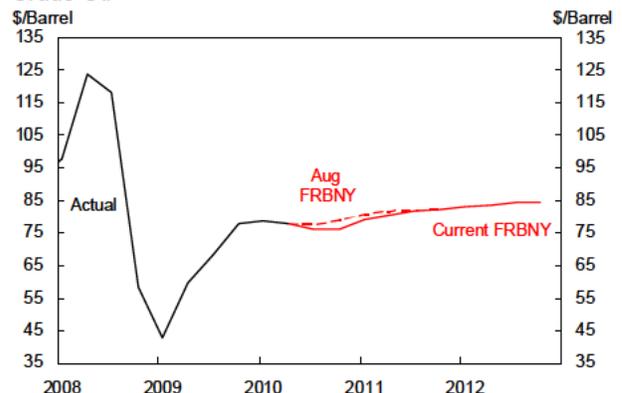
**Federal Funds Rate**



**Housing Starts**



**Crude Oil**



Source: MMS and IR Functions (FRBNY) and Federal Reserve Board

## B. FRBNY Forecast Details

### Exhibit B-3: Near-Term Projections

	Quarterly Growth Rates (AR)		Quarterly Growth Contributions (AR)	
	2010Q3	2010Q4	2010Q3	2010Q4
<b>OUTPUT</b>				
<b>Real GDP</b>	1.6 (1.1)	2.5 (3.7)	1.6 (1.1)	2.5 (3.7)
<b>Final Sales to Domestic Purchasers</b>	1.5 (2.2)	2.1 (2.3)	1.6 (2.2)	2.1 (2.3)
<b>Consumption</b>	2.3 (1.5)	2.2 (2.0)	1.6 (1.0)	1.6 (1.4)
<b>BFI: Equipment and Software</b>	8.0 (18.0)	8.0 (12.0)	0.5 (1.2)	0.6 (0.8)
<b>BFI: Nonresidential Structures</b>	-7.0 (2.0)	0.0 (4.0)	-0.2 (0.1)	0.0 (0.1)
<b>Residential Investment</b>	-30.0 (-14.6)	-12.8 (-12.8)	-0.8 (-0.4)	-0.3 (-0.3)
<b>Government: Federal</b>	5.0 (2.0)	1.7 (1.7)	0.4 (0.2)	0.1 (0.1)
<b>Government: State and Local</b>	0.1 (1.4)	1.3 (1.3)	0.0 (0.2)	0.2 (0.2)
<b>Inventory Investment</b>	-- --	-- --	0.4 (-1.2)	-0.9 (0.1)
<b>Net Exports</b>	-- --	-- --	-0.4 (0.0)	1.3 (1.3)
<b>INFLATION</b>				
<b>Total PCE Deflator</b>	1.0 (1.1)	1.2 (1.2)		
<b>Core PCE Deflator</b>	1.1 (0.9)	1.0 (0.9)		
<b>PRODUCTIVITY AND LABOR COSTS*</b>				
<b>Output per Hour</b>	1.5 (0.4)	1.8 (1.3)		
<b>Compensation per Hour</b>	0.5 (1.3)	1.0 (1.5)		
<b>Unit Labor Costs</b>	-1.0 (0.9)	-0.8 (0.3)		

Note: Numbers in parentheses are from the previous Blackbook.

\*Nonfarm business sector.

## B. FRBNY Forecast Details

### Exhibit B-4: Real GDP and Inflation Projections

	Q4/Q4 Growth Rates			Q4/Q4 Growth Contributions		
	2010	2011	2012	2010	2011	2012
<b>OUTPUT</b>						
<b>Real GDP</b>	2.4 (2.7)	3.8 (4.0)	4.4 (5.0)	2.4 (2.7)	3.8 (4.0)	4.4 (5.0)
<b>Final Sales to Domestic Purchasers</b>	2.3 (2.5)	3.3 (3.3)	4.2 (4.2)	2.4 (2.5)	3.4 (3.4)	4.0 (4.0)
<b>Consumption</b>	2.1 (1.8)	2.6 (2.6)	3.4 (3.4)	1.5 (1.2)	1.8 (1.8)	2.4 (2.4)
<b>BFI: Equipment and Software</b>	15.1 (18.0)	8.0 (8.0)	10.0 (10.0)	1.0 (1.2)	0.6 (0.6)	0.6 (0.6)
<b>BFI: Nonresidential Structures</b>	-6.4 (-2.1)	6.5 (8.0)	8.0 (8.0)	-0.2 (-0.1)	0.2 (0.2)	0.2 (0.2)
<b>Residential Investment</b>	-9.2 (-4.4)	24.8 (24.8)	22.5 (22.5)	-0.2 (-0.1)	0.5 (0.6)	0.6 (0.6)
<b>Government: Federal</b>	4.3 (3.6)	1.5 (1.5)	1.6 (1.6)	0.4 (0.3)	0.1 (0.1)	0.1 (0.1)
<b>Government: State and Local</b>	-0.3 (0.0)	1.1 (1.1)	1.9 (1.9)	0.0 (0.0)	0.1 (0.1)	0.1 (0.1)
<b>Inventory Investment</b>	-- --	-- --	-- --	0.7 (0.6)	0.2 (0.2)	0.3 (0.3)
<b>Net Exports</b>	-- --	-- --	-- --	-0.7 (-0.4)	0.2 (0.3)	0.2 (0.2)
<b>INFLATION</b>						
<b>Total PCE Deflator</b>	1.1 (1.1)	1.4 (1.4)	1.8 (1.8)			
<b>Core PCE Deflator</b>	1.1 (1.0)	1.2 (1.3)	1.5 (1.6)			
<b>Total CPI Inflation</b>	0.9 (0.6)	1.7 (1.6)	1.8 --			
<b>Core CPI Inflation</b>	0.9 (0.9)	1.5 (1.5)	1.7 --			
<b>GDP Deflator</b>	1.4 (1.3)	1.2 (1.3)	1.6 (1.8)			

Note: Numbers in parentheses are from the previous Blackbook.

## B. FRBNY Forecast Details

### Exhibit B-5: Projections of Other Key Economic Variables

	Q4/Q4 Growth Rates		
	2010	2011	2012
<b>INTEREST RATE ASSUMPTIONS</b>			
<b>Federal Funds Rate (End-of-Year)</b>	0-0.25 0-0.25	0-0.25 0.5-1.0	0.5-1.0 0.5-1.0
<b>10-Year Treasury Yield (Avg. Q4 Level)</b>	3.0 (3.2)	3.8 (4.0)	-- --
<b>PRODUCTIVITY AND LABOR COSTS*</b>			
<b>Output</b>	3.1 (3.1)	5.3 (4.9)	6.0 (6.2)
<b>Hours</b>	1.8 (2.1)	3.5 (3.2)	4.3 (4.5)
<b>Output per Hour</b>	1.3 (0.9)	1.7 (1.7)	1.7 (1.7)
<b>Compensation per Hour</b>	0.0 (1.4)	1.6 (1.7)	2.0 (2.0)
<b>Unit Labor Costs</b>	-1.3 (0.4)	-0.1 (0.0)	0.3 (0.3)
<b>LABOR MARKET</b>			
<b>Unemployment Rate (Avg. Q4 Level)</b>	9.8 (9.5)	8.1 (8.1)	6.0 (5.4)
<b>Participation Rate (Avg. Q4 Level)</b>	64.8 (64.9)	65.0 (65.2)	65.3 (65.3)
<b>Avg. Monthly Nonfarm Payroll Growth (Thous.)</b>	90 (151)	350 (322)	446 (480)
<b>INCOME</b>			
<b>Personal Income</b>	3.2 (3.5)	4.9 (4.7)	5.4 (6.1)
<b>Real Disposable Personal Income</b>	2.1 (2.4)	3.3 (3.0)	3.3 (4.1)
<b>Personal Saving Rate</b>	5.6 (6.2)	6.3 (6.6)	6.1 (7.1)
<b>Corporate Profits Before Taxes</b>	19.7 (7.0)	5.9 (4.8)	3.4 (4.8)

Note: Numbers in parentheses are from the previous Blackbook.

\*Nonfarm business sector.

## B. FRBNY Forecast Details

### Exhibit B-6: FRBNY and Tealbook Forecast Comparison

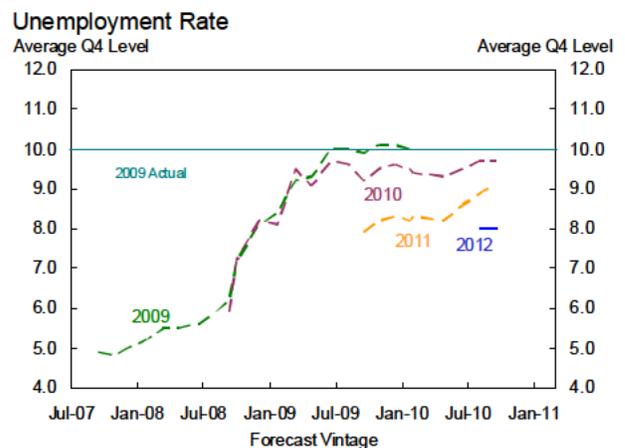
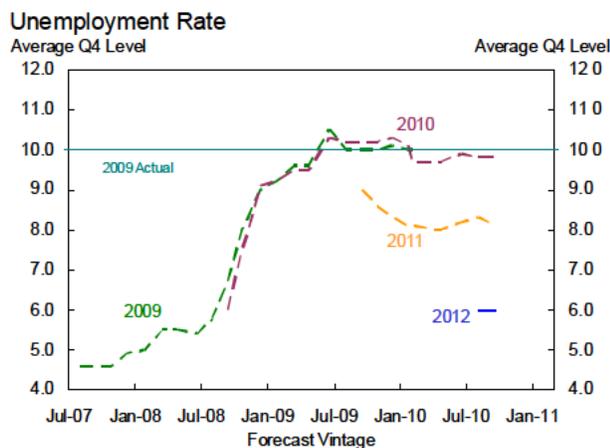
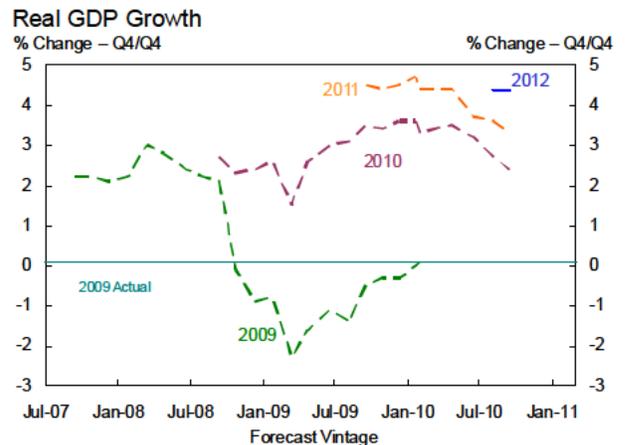
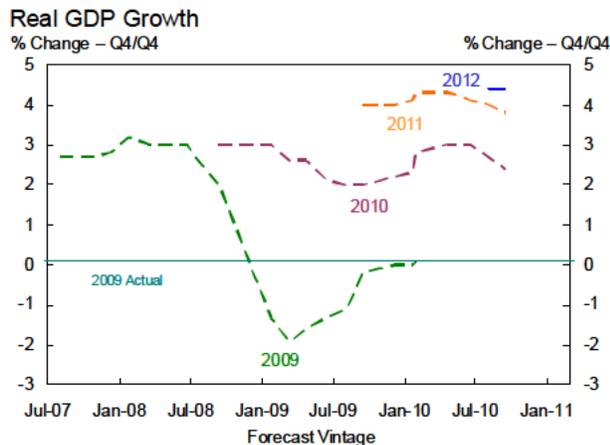
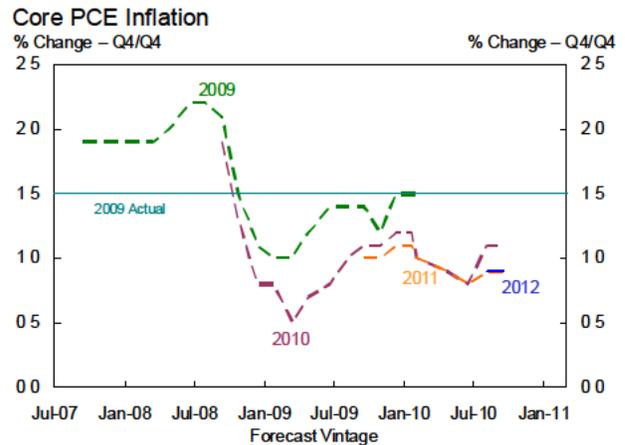
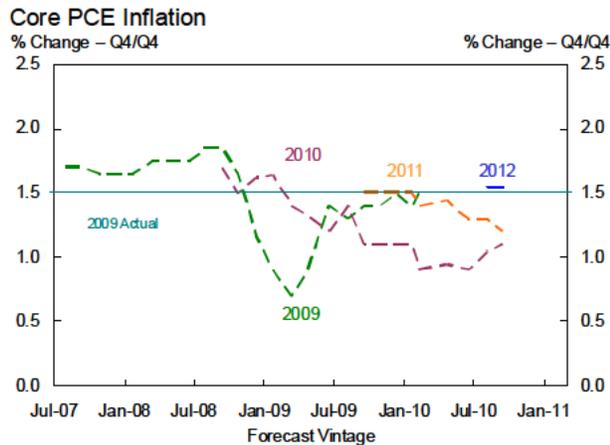
	FRBNY (Q4/Q4)			Board (Q4/Q4)		
	2010	2011	2012	2010	2011	2012
<b>OUTPUT</b>						
Real GDP	2.4 (2.7)	3.8 (4.0)	4.4 (5.0)	2.4 (2.4)	3.3 (3.3)	4.4 --
<b>GDP Growth Contributions</b>						
Final Sales to Domestic Purchasers	2.4 (2.5)	3.4 (3.4)	4.0 (4.0)	2.1 (2.5)	3.3 (3.9)	4.4 --
Consumption	1.5 (1.2)	1.8 (1.8)	2.4 (2.4)	1.4 (1.3)	2.1 (2.5)	2.9 --
BFI	0.8 (1.1)	0.7 (0.8)	0.8 (0.8)	0.6 (0.9)	0.7 (0.8)	0.8 --
Residential Investment	-0.2 (-0.1)	0.5 (0.6)	0.6 (0.6)	-0.1 (0.1)	0.4 (0.5)	0.5 --
Government	0.3 (0.3)	0.3 (0.3)	0.3 (0.3)	0.2 (0.2)	0.1 (0.1)	0.2 --
Inventory Investment	0.7 (0.6)	0.2 (0.2)	0.3 (0.3)	0.9 (0.8)	0.0 (-0.2)	0.1 --
Net Exports	-0.7 (-0.4)	0.2 (0.3)	0.2 (0.2)	-0.7 (-0.5)	0.0 (0.0)	-0.1 --
<b>INFLATION</b>						
Total PCE Deflator	1.1 (1.1)	1.4 (1.4)	1.8 (1.8)	1.2 (1.3)	1.1 (1.1)	1.0 --
Core PCE Deflator	1.1 (1.0)	1.2 (1.3)	1.5 (1.6)	1.1 (1.1)	0.9 (0.9)	0.9 --
<b>INTEREST RATE ASSUMPTION</b>						
Fed Funds Rate (End-of-Year)	0-0.25 0-0.25	0-0.25 0.5-1.0	0.5-1.0 0.5-1.0	0-0.25 0-0.25	0-0.25 0-0.25	0.25 --
<b>PRODUCTIVITY AND LABOR COSTS*</b>						
Output per Hour	1.3 (0.9)	1.7 (1.7)	1.7 (1.7)	1.3 (1.4)	1.6 (1.3)	2.0 --
Compensation per Hour	(0.0) (1.4)	1.6 (1.7)	2.0 (2.0)	0.5 (0.9)	1.8 (2.2)	1.9 --
Unit Labor Costs	-1.3 (0.4)	-0.1 (0.0)	0.3 (0.3)	-0.8 (-0.5)	0.2 (0.8)	-0.1 --
<b>LABOR MARKET</b>						
Unemployment Rate (Avg. Q4 Level)	9.8 (9.5)	8.1 (8.1)	6.0 (5.4)	9.7 (9.7)	9.1 (8.9)	8.0 --
Participation Rate (Avg. Q4 Level)	64.8 (64.9)	65.0 (65.2)	65.3 (65.3)	64.7 (64.7)	64.7 (64.6)	64.6 --
Avg. Monthly Nonfarm Payroll Growth (Thous.)	90 (151)	350 (322)	446 (480)	67 (100)	200 (258)	292 --
<b>SAVING</b>						
Personal Saving Rate (Avg. Q4 Level)	5.6 (6.2)	6.3 (6.6)	6.1 (7.1)	5.6 (6.2)	5.5 (6.2)	5.3 --
<b>HOUSING</b>						
Housing Starts (Avg. Q4 Level, Thous.)	630 (655)	900 (1000)	-- --	600 (600)	800 (900)	1100 --

## B. FRBNY Forecast Details

**Exhibit B-7: Evolution of FRBNY  
and Board Forecasts since Mid-2006**

### FRBNY

### Board



Note: Forecast vintage is the date the forecast was produced.

## B. FRBNY Forecast Details

### Exhibit B-8: Alternative GDP and Inflation Forecasts

		Real GDP Growth			
	Release Date	2010Q3	2010Q4	2010 Q4/Q4	2011 Q4/Q4
<b>FRBNY</b>	9/15/2010	1.6 (1.1)	2.5 (3.7)	2.4 (2.7)	3.8 (4.0)
<b>PSI Model</b>	9/10/2010	0.7 (1.9)	2.4 --	-- --	-- --
<b>Blue Chip</b>	9/10/2010	1.8 (2.7)	2.3 (2.8)	2.4 (2.9)	2.9 (3.0)
<b>Median SPF</b>	8/13/2010	2.3 (3.3)	2.8 (2.8)	2.8 (3.1)	-- --
<b>Macro Advisers</b>	9/15/2010	1.5 (3.0)	2.4 (3.6)	2.3 (3.2)	3.7 (4.0)

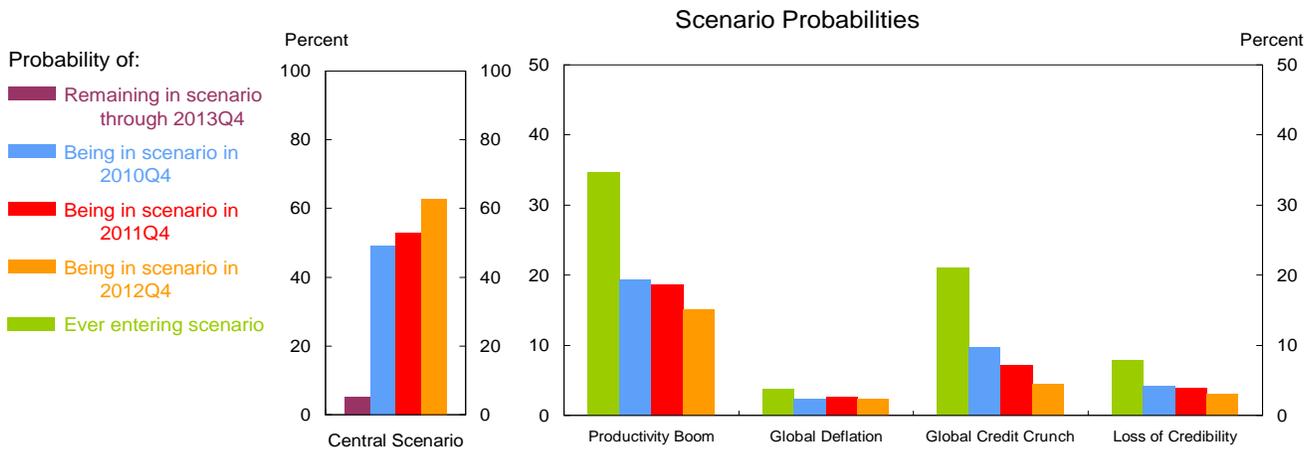
		Core PCE Inflation			
	Release Date	2010Q3	2010Q4	2010 Q4/Q4	2011 Q4/Q4
<b>FRBNY</b>	9/15/2010	1.1 (0.9)	1.0 (0.9)	1.1 (1.0)	1.2 (1.3)
<b>Median SPF</b>	8/13/2010	1.1 (1.2)	1.1 (1.3)	1.1 (1.2)	1.5 (1.6)
<b>Macro Advisers</b>	9/9/2010	1.0 (1.2)	1.1 (0.8)	1.1 (1.0)	0.8 (0.9)

		CPI Inflation			
	Release Date	2010Q3	2010Q4	2010 Q4/Q4	2011 Q4/Q4
<b>FRBNY</b>	9/15/2010	1.4 (0.3)	1.4 (1.2)	0.9 (0.6)	1.7 (1.6)
<b>Blue Chip</b>	9/10/2010	1.2 (1.3)	1.4 (1.5)	0.9 (1.0)	1.7 (1.7)
<b>Median SPF</b>	8/13/2010	1.4 (1.8)	1.6 (1.8)	0.9 (1.6)	1.8 (2.0)
<b>Macro Advisers</b>	9/9/2010	1.4 (1.4)	1.0 (0.8)	0.8 (0.8)	1.0 (1.0)

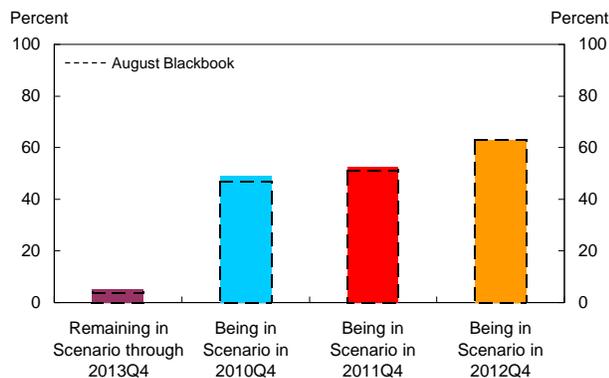
		Core CPI Inflation			
	Release Date	2010Q3	2010Q4	2010 Q4/Q4	2011 Q4/Q4
<b>FRBNY</b>	9/15/2010	1.4 (1.4)	1.4 (1.2)	0.9 (0.9)	1.5 (1.5)
<b>Median SPF</b>	8/13/2010	1.4 (1.4)	1.2 (1.5)	0.9 (1.0)	1.5 (1.6)
<b>Macro Advisers</b>	9/9/2010	1.5 (1.0)	1.1 (0.8)	0.9 (0.6)	0.8 (0.8)

## C. FRBNY Forecast Distributions

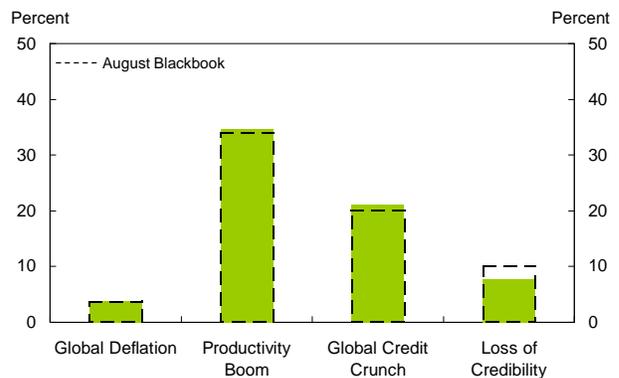
**Exhibit C-1:  
Risks**



**Change in Central Scenario Probabilities**



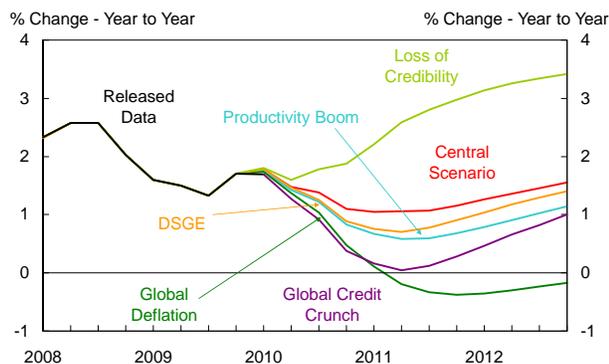
**Change in Alternative Scenario Probabilities\***



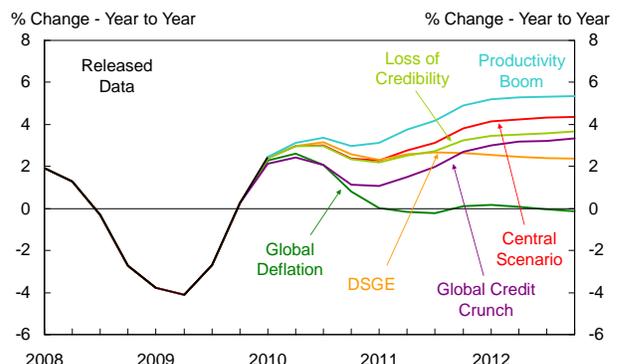
\*Probability of ever reaching scenario

**Exhibit C-2: Projections  
under Alternative Scenarios**

**Core PCE Inflation under Alternative Scenarios**



**Real GDP Growth under Alternative Scenarios**

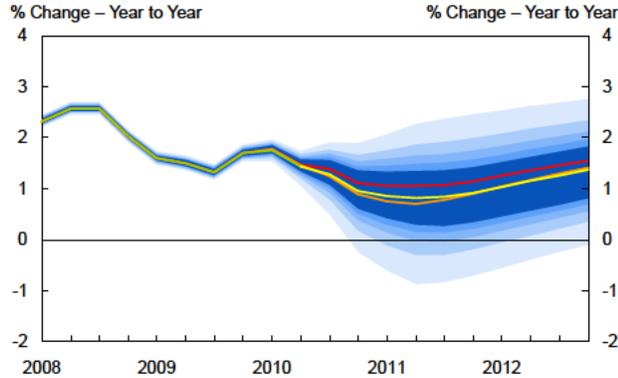


Source: MMS Function (FRBNY)

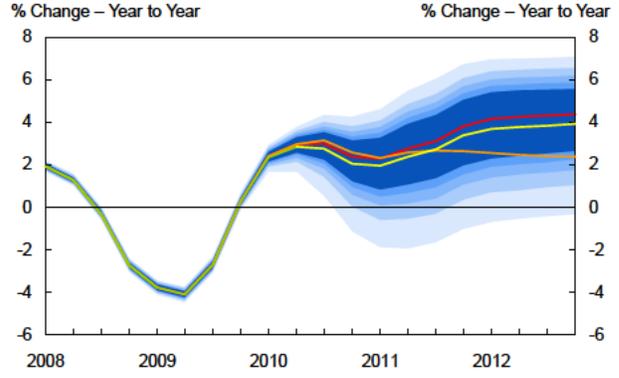
## C. FRBNY Forecast Distributions

### Exhibit C-3: Inflation and Output Forecast Distributions

**Core PCE Inflation Forecast Distribution**

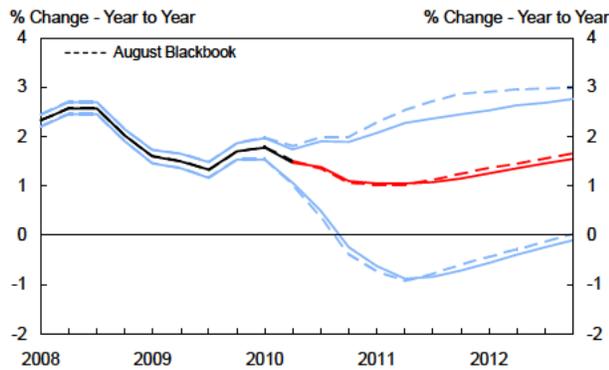


**Real GDP Growth Forecast Distribution**

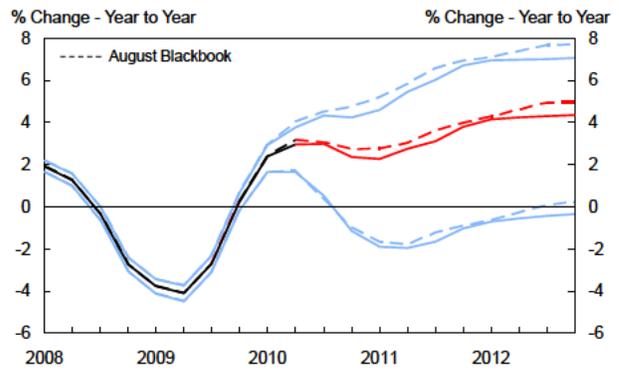


The yellow line represents the expected value of the forecast distribution, the red line represents the FRBNY central projection, the orange line represents the DSGE forecast, and the green line represents released data. The shading represents the 50, 60, 70, 80 and 90 percent probability that the four-quarter change will be within the respective range.

**Change in Core PCE Inflation Forecast Distribution**

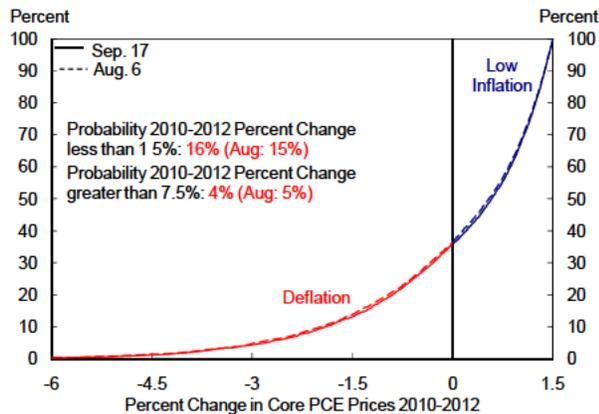


**Change in Real GDP Growth Forecast Distribution**

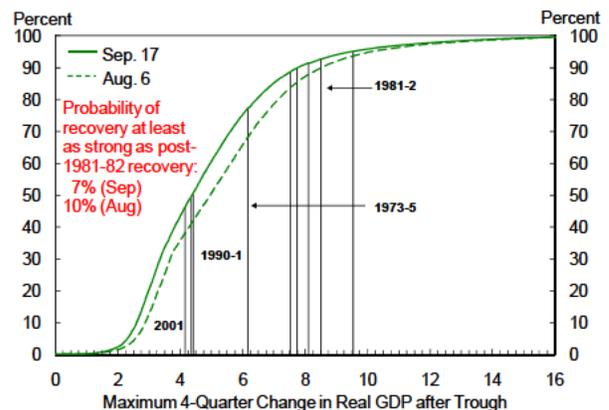


The blue lines are the 90% chance the four-quarter change will be within the lines, the red line is the central scenario projection, and the black line is released data. Dashed lines represent forecasts from the previous Blackbook.

**Low Inflation/Deflation Probability and Distribution**



**Scale of Recovery Through End of 2011**

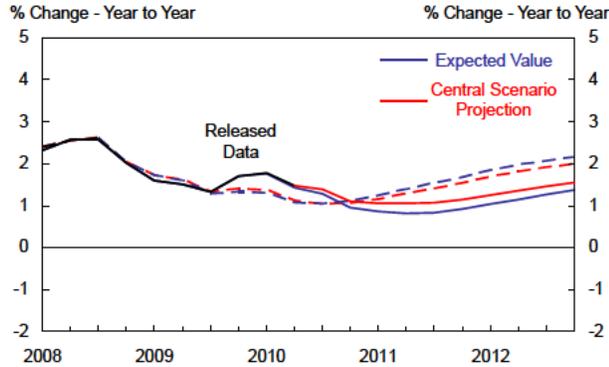


Source: MMS Function (FRBNY)

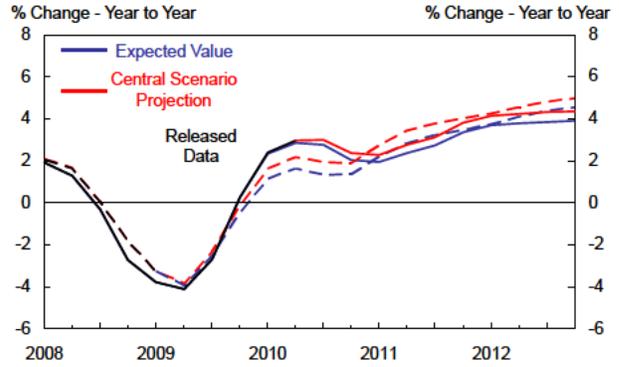
## C. FRBNY Forecast Distributions

### Exhibit C-4: Evolution and Performance of Inflation and Output Forecast Distributions

#### One-Year Comparison of Core PCE Inflation Forecast

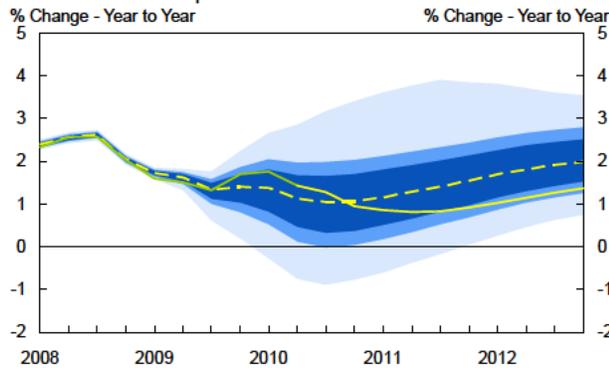


#### One-Year Comparison of Real GDP Growth Forecast

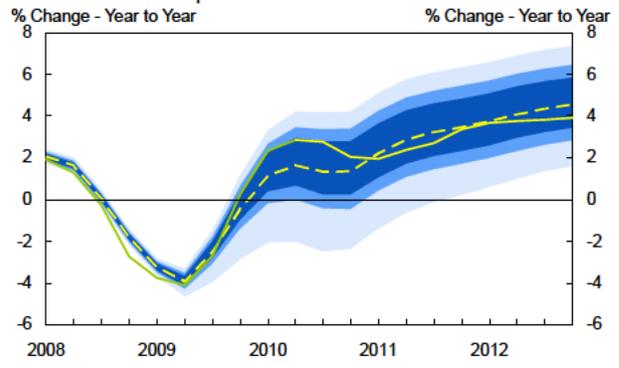


The solid lines represent the current central scenario projection and expected value, while the dashed lines represent those from the year-ago Blackbook.

#### One-Year Comparison of Core PCE Inflation Forecast Distribution and Expected Value



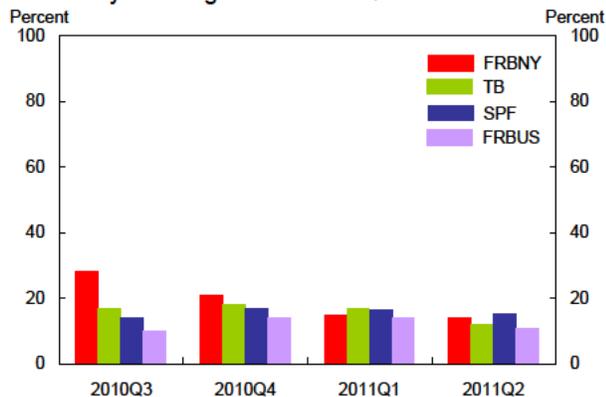
#### One-Year Comparison of Real GDP Growth Forecast Distribution and Expected Value



The solid yellow line is the **current** expected value of the forecast distribution, while the dashed yellow line is the expected value from the year-ago Blackbook. The shading represents the 50, 70 and 90 percent probability intervals from the year-ago forecast. The green lines are released data.

### Exhibit C-5: Probability of a Negative Growth Quarter

#### Probability of a Negative-Growth Quarter

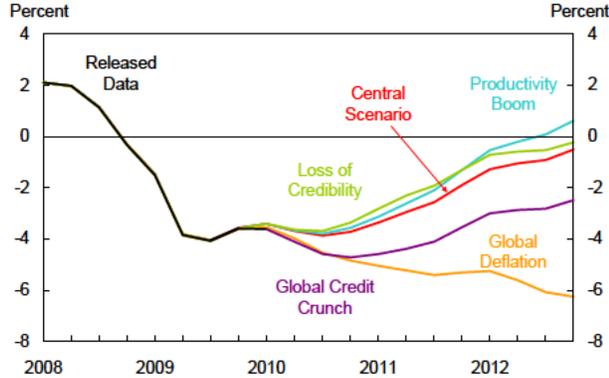


Source: MMS Function (FRBNY)

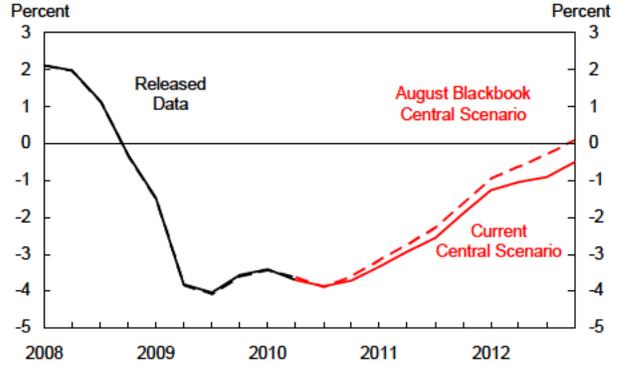
## D. FRBNY Fed Funds Rate Projections

**Exhibit D-1: *Baseline*  
Policy Rule Analysis**

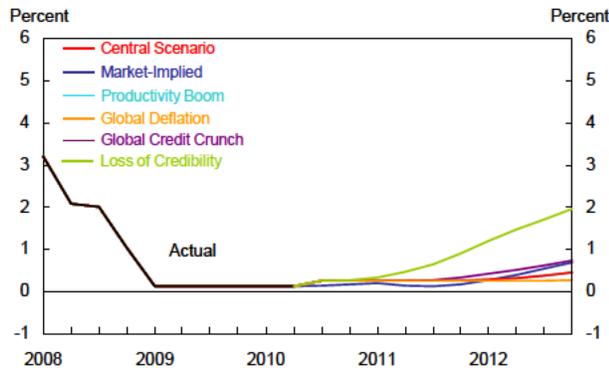
**Real FFR under Alternative Scenarios**



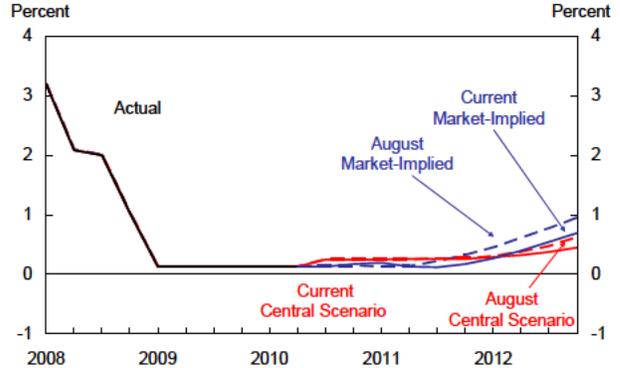
**Change in Central Scenario Real FFR**



**Nominal FFR under Alternative Scenarios**

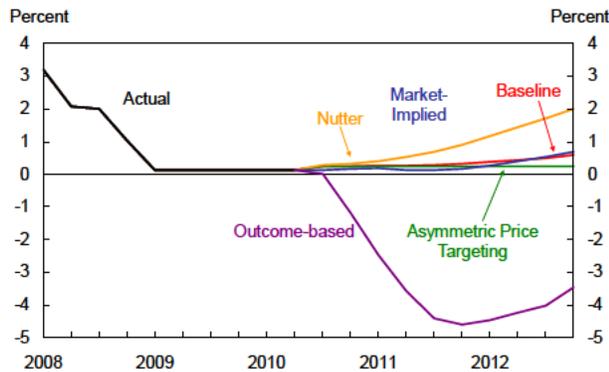


**Change in Central Scenario and Market-Implied Nominal FFR**



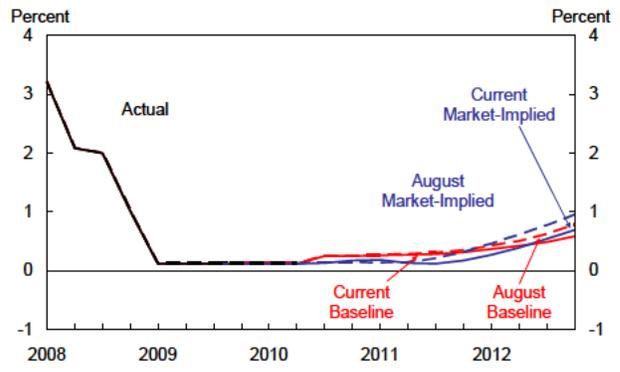
**Exhibit D-2: Alternative Policy Rules under  
Expected Value of Forecast Distribution**

**Nominal FFR using Alternative Policy Rules\***



\*Evaluated using yellow line from C-3

**Change in *Baseline*\* and Market-Implied Nominal FFR**



\*Evaluated using yellow line from C-3

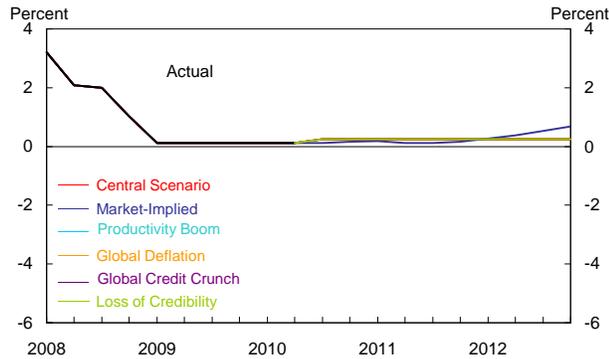
Source: MMS Function (FRBNY)

# D. FRBNY Fed Funds Rate Projections

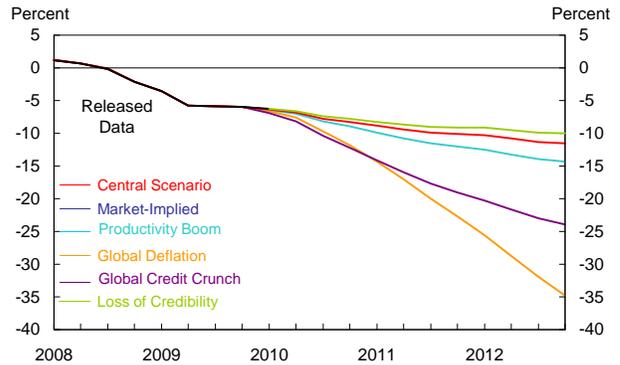
## Exhibit D-3: Alternative Policy Rule Analysis

### Policy Rule: *Asymmetric Price Targeting*

Nominal FFR under Alternative Scenarios

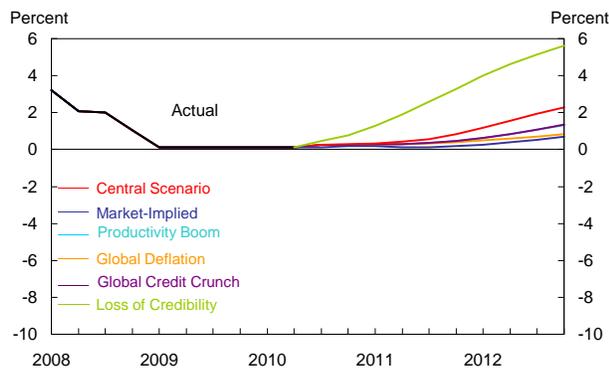


Real FFR under Alternative Scenarios

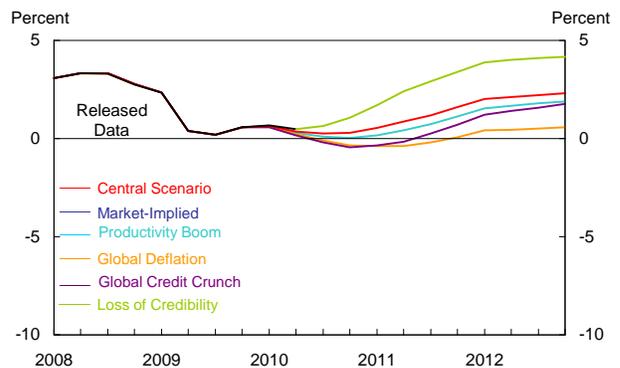


### Policy Rule: *Nutter*

Nominal FFR under Alternative Scenarios

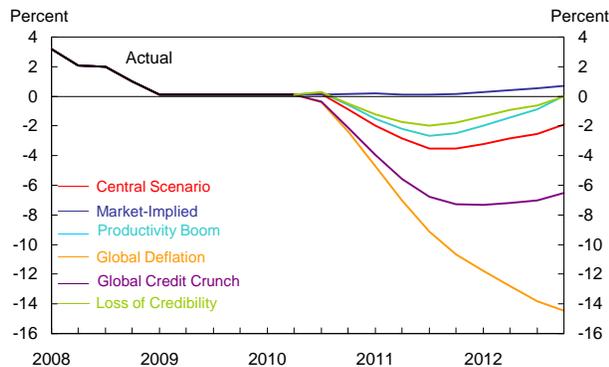


Real FFR under Alternative Scenarios

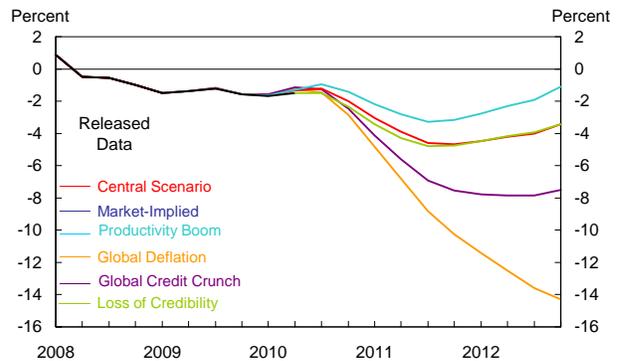


### Policy Rule: *Outcome-based*

Nominal FFR under Alternative Scenarios



Real FFR under Alternative Scenarios

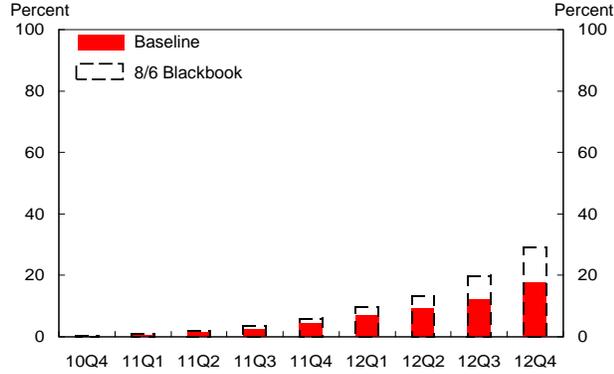


Source: MMS Function (FRBNY)

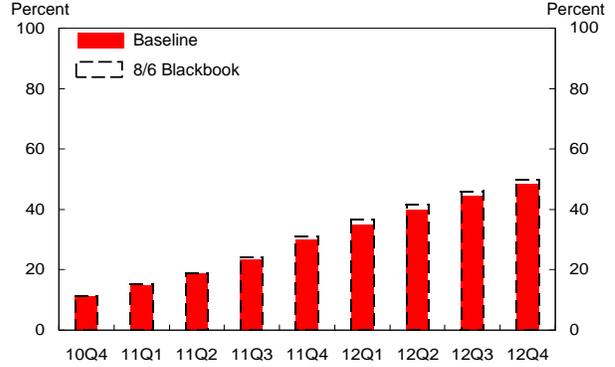
# D. FRBNY Fed Funds Rate Projections

## Exhibit D-4: FFR Probabilities

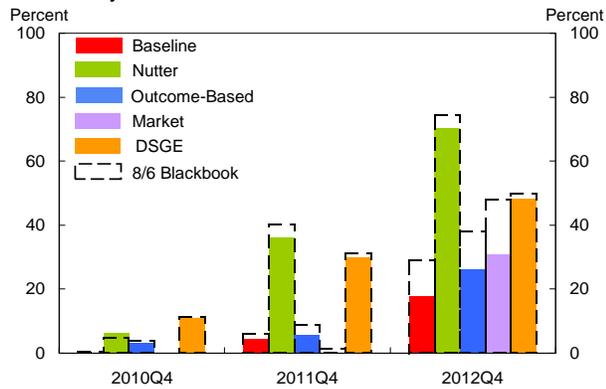
Probability of FFR above 0.5% for Next Year  
FRBNY Forecast Distributions



Probability of FFR above 0.5% for Next Year  
FRBNY DSGE Model



Probability of FFR above 0.5% for Next Year



Note: Probability displayed is probability of FFR being above 0.5% in quarter noted and remaining above 0.5% in subsequent four quarters. DSGE results are shown for model including zero bound restriction.

Source: MMS Function (FRBNY)

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## Alternative Scenario Descriptions

In this abbreviated version of the Exhibit C documentation, we include brief descriptions of the alternative scenarios used in this Blackbook. Full documentation, including a description of the methodology, is included in the Appendix.

Our first two alternative scenarios consider the impact of above- and below-trend productivity growth, respectively. Our current assumption of trend productivity growth is around 1.75% on a nonfarm business sector basis. Sustained productivity growth above or below this assumption would have important consequences for the economy; consequently these alternative scenarios are expected to be included in almost all periods.

### **Alternative 1: *Productivity Boom***

After a lull in the mid-2000s, productivity growth has been robust and above our current estimate of trend productivity growth. This rapid growth raises the possibility that the lull in productivity growth in mid-decade was a cyclical development and that medium- and long-term productivity growth will be closer to that of previous post-WWII periods of high productivity growth (pre-1973 and the mid-1990s through the mid-2000s). As such, we could see persistent productivity growth above our assumed trend, implying a higher potential growth rate for output and thus expected real output growth that is higher than our current estimate. (A higher potential growth rate may also imply that the output gap that opened during the 2007-2009 recession is larger than we currently estimate). Strong productivity growth would also limit labor cost pressures and thereby help to subdue inflation.

### **Alternative 2: *Productivity Slump***

Despite the recent surge in productivity growth, there are a number of reasons that productivity growth could slow substantially in the future. First, the recent rise may reflect a new cyclical pattern whereby firms protective of their profit margins reduce labor input in anticipation of slower profit growth. The massive declines in hours worked that have been associated with recent strong productivity growth lend supporting evidence to this view. Second, it is possible that the IT developments that drove the longer-term upswing in productivity that began in the mid-1990s may have run their

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course. Third, a renewed increase in the level and volatility of energy and commodity prices could lead to lower productivity growth, as occurred in the 1970s. In any case, if the rapid gains in productivity seen during the recession prove to be only transitory, there could be an extended period of productivity growth below the trend in our central forecast. Below-trend productivity growth would imply a lower estimate of potential output growth (and therefore a smaller output gap) and would also push inflation above the level projected in our central forecast.

We also currently consider four additional scenarios. In two of them (*Fiscal Consolidation* and *Loss of Credibility*), the public and investors lose confidence in the current stances of fiscal or monetary policy. In the other two (*Global Credit Crunch* and *Global Deflation*), the recent stresses in global financial and economic conditions continue to have an impact on U.S. economic conditions; the differences between the two mainly reflect differing assessments of how protracted the negative effects could be.

**Alternative 3: *Fiscal Consolidation***

Events in Europe in early and mid-2010 concerning the fiscal position of several euro zone countries raises issues about the possible economic consequences if similar concerns were to develop about the sustainability of the U.S. government's fiscal position. The *Fiscal Consolidation* scenario envisions a situation in which concerns on the part of investors about the fiscal sustainability of the United States leads to an increase in long term interest rates and term premiums that contribute to a decline in output growth below that of the central forecast. As the U.S. government responds to those concerns by reducing government spending and/or raising taxes, the consequent decline in aggregate demand would imply that growth of real activity continues to be weak. In this scenario inflation temporarily rises above the central forecast, in part due to a likely depreciation of the dollar and possible increases in inflation expectations<sup>2</sup>. However, after several quarters, with the government embarking on a credible fiscal

<sup>2</sup> Some economic models imply that if the public and investors see the fiscal situation as unsustainable, they could raise inflation expectations because of the possibility that part of the long-term fiscal budget gap is closed through higher inflation.

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consolidation, inflation declines below the central forecast as a consequence of the drop in aggregate demand and output growth.

**Alternative 4:** *Global Credit Crunch*

Although financial markets are generally notably healthier than they were during the most extreme periods of the financial crisis, continued impairments in some markets as well as general economic uncertainty may be keeping credit availability very tight. In addition, consumers suffered wealth losses during the crisis, of which only a small part has been recovered, and volatility in equity markets is still elevated. Most central banks are maintaining what would appear to be very accommodative policy stances. This combination of factors suggests the neutral rate is still lower than it was before the financial turmoil began (we estimate it to be between 3.00% and 3.75% over the near-term). Even though the current FFR is well below our lower estimate of the neutral rate, tight credit conditions, continued stresses in global financial markets, and a still-significant chance of a further deterioration in global economic conditions create a risk that output growth will fall significantly below the level projected in the central forecast; this development would likely be accompanied by inflation below the level in the central forecast. Nevertheless, under this scenario we assume that financial markets will begin to function more normally and that, as they do, the economy will exit the *Global Credit Crunch* scenario and begin growing faster than its potential growth rate. The strong output growth experienced when the economy leaves the scenario should result in a closing of the output gap over time.

**Alternative 5:** *Loss of Credibility*

In the wake of the monetary and fiscal stimulus used to combat the 2007-2009 recession, some commentary has focused on the possibility that these policies could lead to higher inflation expectations and eventually to higher inflation. The continued elevated levels of some commodity prices are consistent with such commentary. Even though the FOMC has made its commitment to low rates contingent on “subdued inflation trends” and “stable inflation expectations,” it is possible that market participants may begin to believe that the FOMC is not credibly committed to keeping inflation around the presumed implicit target level, especially if the unemployment rate remains high. In addition,

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concerns about the possible influence of continued high fiscal deficits on monetary policy could lead investors and the public to question FOMC credibility on inflation: FRBNY survey evidence suggests that, for at least some market participants, increases in government debt lead to higher inflation expectations, regardless of the reason for the increased debt. If the concerns about credibility were to become widespread, they would likely cause rises in inflation and inflation expectations above forecast.

**Alternative 6: *Global Deflation***

Recent price level indicators point to low inflation in many regions of the world. With inflation at such levels, sluggish growth in some parts of the world, concerns about the future of the euro zone, and continued financial market uncertainty suggest that there is some risk of global deflation going forward. This possibility is further exacerbated as many central banks around the world have their policy rates at or very near their lower bounds. The *Global Deflation* scenario reflects the possibility that the U.S. and the rest of the world may get mired in a liquidity trap for a prolonged period of time, resulting in both inflation and output growth far below the levels projected in the central forecast. Because of the difficulty of exiting such a situation, we see the *Global Deflation* scenario as quite persistent. Unlike the *Global Credit Crunch* scenario, the economy does not generally “bounce back” from *Global Deflation* to close the output gap. Instead, the U.S. is much more likely to experience a prolonged period of essentially no growth, and in many simulations in which the economy enters the *Global Deflation* scenario the level of output in 2013 does not surpass the 2009Q2 peak.

The implications for inflation and output of the various scenarios can be summarized as follows:

1. *Productivity Boom*: inflation below central forecast, output above central forecast.
2. *Productivity Slump*: inflation above central forecast, output below central forecast.
3. *Fiscal Consolidation*: inflation initially above and then below central forecast, output below central forecast.
4. *Global Credit Crunch*: inflation below central forecast, output significantly below central forecast.

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5. *Loss of Credibility*: inflation far above central forecast, output slightly below central forecast.
  6. *Global Deflation*: inflation far below central forecast, output far below central forecast.

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## Policy Rule Descriptions

In this abbreviated version of the Exhibit D documentation, we include a description of policy rules used in this Blackbook. Full documentation, including the methodology description, is included in the Appendix.

In both our *Baseline* and alternative policy rule specifications, the policy rate responds to deviations of inflation from target and of output from potential (except for the *Nutter* rule, which ignores output deviations), while incorporating some degree of inertia. For each of the FFR paths and each of the policy rules, we determine these deviations using the inflation and output paths generated in Exhibit C.

*Baseline Policy Rule Specification:*

$$i_t = \rho i_{t-1} + (1 - \rho) \left[ i^* + \varphi_\pi (\pi_t - \pi^*) + \varphi_x x_t \right]$$

$\rho = 0.8$  (interest rate smoothing parameter)

$i^* = 3.75$  in short - term, moving to 4.25 (neutral FFR)

$\pi^* = 1.75$  (core PCE inflation target)

$\varphi_\pi = 1.5$  (weight on inflation deviations)

$\varphi_x = 0.5$  (weight on output gap)

$\pi_t$  : core PCE, 4 - quarter average

$x_t$  : output gap, using 2.7% potential growth rate, moving to 2.6%

$i_{t-1}$  : interest rate in previous quarter

The two variants of the *Baseline* rule that we use are the *Asymmetric Price Targeting* and *Nutter* rules. The *Asymmetric Price Targeting* rule is designed to combat deflation by instituting price-level targeting. This rule reacts more slowly than the *Baseline* rule to initial increases in inflation, maintaining a lower policy rate for a longer period of time.<sup>3</sup> In each quarter over the forecast horizon, the rule reacts to the cumulative gap between a 1.5% price level path and the actual path on the downside; the rule is asymmetric because price-level targeting is only implemented on the downside. When the cumulative gap in

<sup>3</sup> All of the policy rules are subject to an effective lower bound of 0.25%.

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inflation is greater than 1.5% per year, the policy rule reverts to targeting the gap between four-quarter changes in inflation and the inflation objective, just as in the *Baseline* rule.

The *Nutter* rule reacts more strongly than the *Baseline* rule to changes in inflation. Specifically, the *Nutter* rule increases the weight on deviations of core PCE inflation from the target ( $\varphi_{\pi} = 2$  instead of 1.5). The *Nutter* rule does not react to changes in the output gap.

In addition to the *Baseline* rule and the two variants, we also consider the FFR paths generated by the Board staff's *Outcome-based* rule. The most significant difference between the three FRBNY rules and the *Outcome-based* rule is that the FRBNY rules offer a prescription for future behavior based on policymaker preferences and views of the economy, whereas the *Outcome-based* rule is a statistical description of the average of past FOMC behavior. Specifically, the *Outcome-based* rule calculates an FFR for a given quarter as a function of the FFR in the previous two quarters, the current quarter's four-quarter core PCE inflation, and the output gap for the current and the previous quarter using parameters estimated from real-time historical data (1988-2006)<sup>4</sup>.

We also want to compare the policy paths and distributions calculated using these rules with the market-implied path and distribution. In these charts, we use the standard path of market policy expectations derived from fed funds and Eurodollar futures contracts that is pictured in Exhibit A-5. For Exhibit D-4, we construct a distribution for the market-implied path by assuming it has a normal distribution centered at the standard, market-implied path, with a standard deviation derived from options markets (pictured in Exhibit A-6).

Using a weighting scheme, it is possible to combine the *Baseline* and the two variants into an *Average* rule that may better reflect market beliefs about FOMC preferences and views of the structure of the economy than does any individual rule. (That is, we can think of the market-implied path as reflecting an amalgam of different perceived FOMC

<sup>4</sup> *Outcome-based* rule:  $i_t = 1.20*i_{t-1} - 0.39*i_{t-2} + 0.19*(1.17 + 1.73*\pi_t + 3.66*x_t - 2.72*x_{t-1})$

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preferences, etc.) Each cycle we construct the *Average* rule by taking the weighted average of the *Baseline* rule and the two FRBNY-derived variants that matches the market-implied path as closely as possible. (We do not currently display the *Average* rule or the weights used to calculate the *Average* rule in the Blackbook). Examining the change in the weights used to construct the *Average* rule from one cycle to the next can provide insight into the reasons behind shifts in the market path not explained by changes in the outlook.