

FRBNY BLACKBOOK

June 2009

FRBNY Blackbook

RESEARCH AND STATISTICS GROUP

FOMC Background Material

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CONTENTS

1. Policy Recommendation and Rationale	2
<i>Special Topic: The Mistake of 1937</i>	3
2. Evolution of Outlook and Risks	7
2.1 Central Forecast	7
2.2 Alternative Scenarios and Risks	11
3. Forecast Comparison	13
3.1 Greenbook Comparison	13
3.2 Comparison with Private Forecasters	19
4. Robustness of Policy Recommendation	21
4.1 Sensitivity to Alternative Scenarios and Policy Rules	21
4.2 Comparison to Market Expectations	22
<i>Special Topic: Decomposing the Rise in Treasury Yields since 3/18/2009</i>	24
<i>Special Topic: Federal Reserve Net Income Simulation Analysis</i>	31
5. Significant Developments	39
5.1 Economic Developments	39
5.2 Financial Markets	43
5.3 Global Economic Policy	47

EXHIBITS

A. Significant Developments	48
B. FRBNY Forecast Details	63
C. FRBNY Forecast Distributions	72
D. FRBNY Fed Funds Rate Projections	75

EXHIBIT OVERVIEW

Alternative Scenario Descriptions	79
Policy Rule Descriptions	83

1. Policy Recommendation and Rationale

Our policy recommendation is to maintain the target range for the federal funds rate at 0-0.25% until the end of 2010. We also suggest continuing the asset purchase program at the current pace with a slight increase in the overall size of the Treasury purchase program to synchronize its termination with that of the agency LSAP program.

The policy recommendation is based on an improved outlook for economic activity and inflation. We also note continued improvement in financial and credit market conditions. However, the outlook for economic growth remains very weak with a higher forecasted path for unemployment relative to the previous FOMC cycle. In addition, while the risk of deflation has lessened, concerns about very low inflation persist. Taken together, these considerations justify a reaffirmation of the contingent commitment to keep the target rate at its effective lower bound for an extended period.

Since the April FOMC meeting, we have observed more signs that the asset purchase program has helped improve financial market conditions. However, there has been a steepening in market-based measures of the expected path for the federal funds rate over the medium-term horizon and a rise in long-term yields. We recommend maintaining the current pace of purchases for Treasuries while extending the length of the program. Increasing the size of the program would better align it with the FOMC's contingent commitment as well as the agency LSAP. To guarantee the maximum efficacy of the asset purchase program, the FOMC might state that "The committee is altering the size and composition of the Treasury asset purchase program to reduce short-term (one- to two-year) yields toward a level consistent with its anticipated target range for the policy rate in 2010."

The challenge is to maintain flexibility to deal with a potential rise in long-term inflation expectations to levels inconsistent with price stability. In light of the current size of the Fed's balance sheet and concerns over the large projected fiscal deficits, the committee needs to describe the tools available for an earlier exit and to reiterate its capability and willingness to undertake all appropriate policy actions if necessary.

Special Topic

The Mistake of 1937

Gauti Eggertsson Redacted

The Mistake of 1937 reversed the tide of recovery during the period 1933-37 into a short but sharp recession from 1937-38.

There are important similarities between the economic circumstances of the spring of 1937 and those of today. For example, interest rates were close to zero in 1937 and banks were holding large excess reserves, with several commentators warning of the implications for inflation. In addition, commodity markets were rallying, giving ammunition to those warning against future inflation. Lastly, even if unemployment was still above 10 percent, there was a perception among policy makers and the public that the worst of the Great Depression was over. These three factors set the stage for one of the most spectacular policy mistakes in US economic history: “the Mistake of 1937”. This special topic discusses the Mistake of 1937 and some possible lessons for current policy makers.

The Mistake of 1937 reversed the tide of recovery during the period 1933-37 into a short but sharp recession from 1937-38. Between May 1937 and June 1938 GNP contracted by 9 percent and industrial production fell by 32 percent.

The general price level declined sharply as well. The index of wholesale prices, for example, fell by more than 11 percent, several leading commodity prices collapsed and the stock market lost almost half of its value.

What was responsible for these events? To gain perspective, it is useful to stipulate a hypothesis of the recovery in 1933-37, an episode that registers the strongest four year growth in GDP in United States history, outside of times of war. The start of the 1933-37 recovery can be traced back to March 1933 when FDR was inaugurated president (see figure 1). The recovery was triggered by several policies: (i) the US abandoned the gold standard, paving the way for a monetary expansion; (ii) banks were cleaned up and several banking legislations passed; (iii) the government explicitly stated that it wanted to inflate the price level to pre-depression levels; (iv) there was a substantial fiscal expansion at the federal level which helped make the policy of reflation credible.

The recession in 1937-38 did not involve a banking crisis, nor did it involve any variations in the dollar price of gold. The government did, however, abandon two elements of the recovery plan set in motion in 1933. First, there was a retrenchment in the fiscal expansions.

Second, the government started to sound warnings about inflation, even though the price level had not reached its pre-depression levels. This contradicted the earlier commitment to inflate the price level to pre-depression levels.

One hypothesis for the contraction during 1937-38 (Eggertsson and Pugsley [2006]) is that it was the result of the administration communicating its abandonment of the policy of inflating the price level and the reduction in government spending. A key element of the hypothesis is that these actions exerted a strong effect on expectations about future policy, raising deflation expectations, increasing the real interest rate, and thereby causing the collapse. Interestingly, the recession only ended in 1938 when FDR again announced that he was aiming to inflate the price level to pre-depression levels and again increased government spending to back up this goal.

Underlying Eggertsson and Pugsley's hypothesis is a model that predicts that expectations of future policy have strong effects on output and prices, a feature shared by the FRBNY model. These expectation effects are particularly strong at a zero interest rate. The main reason for this is that a policy mistake that shifts beliefs cannot be counteracted by interest rate cuts, as under normal circumstances. This is what gives rise to "contractionary" spirals in Eggertsson and Pugsley's model.

An obvious policy implication of this is that a conservative policymaker who has to choose between a mistake that results in excess inflation or, alternatively, a mistake that creates some excess deflation, should err on the side of some excess inflation, because that mistake can be more easily counteracted in the future by interest rate increases.

It should be noted that there are also important differences between the policy environment today and in 1937. The most important difference is that the Federal Reserve has not made as strong a commitment to reflate the price level as the FDR administration did during the period 1933-37. This may suggest that any warnings of a "dramatic" rise in inflation would not cause as strong a reversal in expectations of future policy as was observed in 1937. However, the main lesson for policymakers is that perceptions about future policy can have very large impacts on output and prices at zero interest rates. This suggests extra care is needed when communicating future policy.

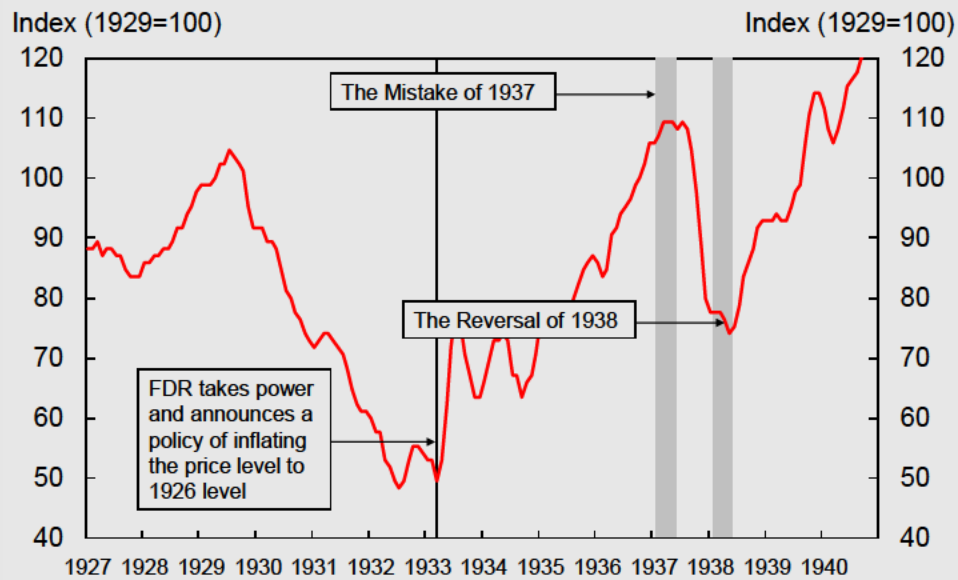
Today, the main policy commitment has been in the form of the various liquidity facilities, the fiscal expansions and a commitment to keep the nominal interest rate low. How could the "Mistake of 1937" then be repeated?

It seems that the main danger would be to create a perception that the Federal Reserve and the government are no longer committed to use these policies to battle the recession. The prediction of the model cited above is that changes in perception of future policy can have large impacts at a zero interest rate, and that they can be more costly to correct than under usual circumstances. Moving forward, it seems of principal importance to communicate that the government is committed to use the liquidity facilities and the fiscal expansion as long as is needed to battle the recession, and to reaffirm the commitment to low interest rates for the time being.

Reference:

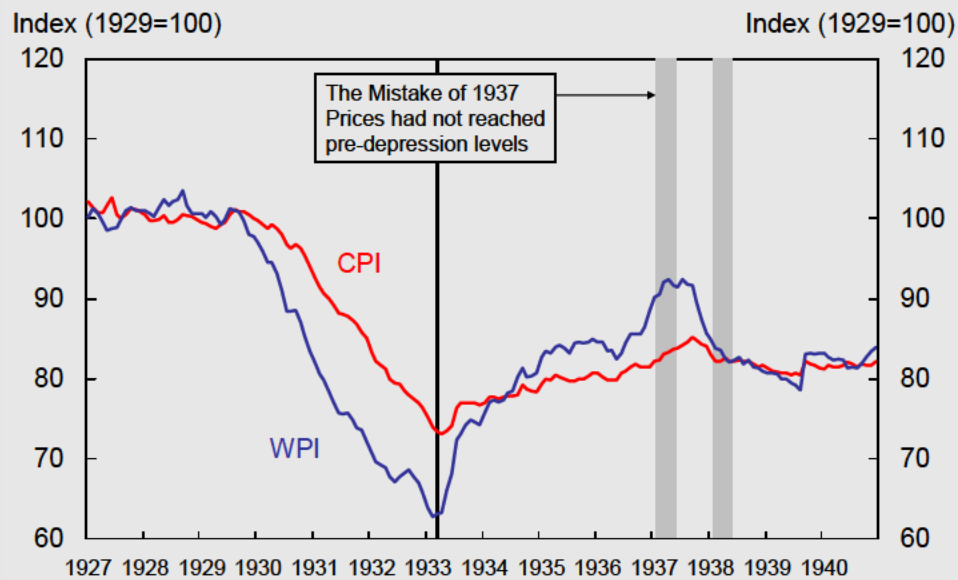
Eggertsson, Gauti and Benjamin Pugsley, "The Mistake of 1937: A General Equilibrium Analysis", *Monetary and Economic Studies*, December 2006.

Figure 1: Industrial Production



Source: Federal Reserve Board

Figure 2: Price Indices



Source: NBER Macroeconomy Database

2. Evolution of Outlook and Risks

2.1 Central Forecast

Conditioning Assumptions. Data received over the inter-meeting period have been generally consistent with our central scenario. In this projection, the US economy remains in recession through mid-2009, making this the longest recession of the post-WWII period. At the trough, the level of real GDP is about 2 ½% below the NBER peak, only modestly less than the most severe recessions of the post-WWII period. By the second half of 2009 a tepid recovery is expected to take hold, aided by the preemptive path of monetary policy, various initiatives to foster financial market stability, and aggressive fiscal stimulus measures. Growth returns to just above its potential rate by the second half of 2010 and then accelerates to about 2 ½ % above its potential rate in 2011. Barring a significant decline in the economy's potential growth rate, this point forecast implies that a large output gap will persist over this entire period. At the trough, the unemployment rate is expected to be around 10%, an increase of 5 percentage points above the level at the peak. The unemployment rate is expected to continue rising over the first year of recovery, likely to around 10 ½ %, as growth remains relatively sluggish. Thereafter, the unemployment rate moves down only gradually. The peak unemployment rate is about 1 percentage point higher than in our April forecast due to the unexpected increase in the labor force participation rate in recent months. Core inflation, which has been higher than expected over the first half of 2009 following a lower than expected performance in the second half of 2008, is expected to average under 1% (annual rate) in the second half of 2009 as the excess capacity in the economy exerts downward pressure on prices and wages. The risks to this modal forecast for growth are skewed to the downside with an uncomfortably high probability that the current downturn will end up of similar depth and duration to pre-WWII contractions.

Given that the central projection envisions a sizeable output gap over the entire forecast horizon with associated downward pressure on wages and prices and that the risks to this projection are still viewed as skewed toward even weaker growth, the central projection assumes that the path of the federal funds rate is unchanged at 0 to 0.25% over the entire forecast horizon. [Exhibit B-2] Moreover, an explicit underlying assumption of our

forecast is that various Fed and Treasury initiatives to improve liquidity and restore more normal functioning of financial markets will have increasingly beneficial effects over time and thereby ease overall financial conditions.

The outlook for foreign growth is essentially unchanged since April. Foreign GDP (on a GDP-weighted basis) is expected to contract by 1.1% in 2009 (Q4/Q4) and then to recover to around 2% in 2010. Due to some increased confidence of a global recovery as well as a contraction in supply, oil prices have moved notably higher over the intermeeting period. We expect the price of West Texas Intermediate grade oil to average \$60 per barrel in 2009Q2, \$10 higher than in April. Consistent with recent futures quotes, we expect a modest rise in oil prices from current levels through the end of 2010, with the 2010Q4 average price at \$76.50 per barrel. The current assumed path of oil prices averages about \$10/barrel above the path assumed in April. Our assumed path for oil prices is quite similar to that of the Greenbook.

The assumptions regarding fiscal policy in this Blackbook are unchanged from April. The fiscal stimulus bill (The American Recovery and Reinvestment Act of 2009) enacted earlier this year is estimated to increase outlays and reduce taxes by a combined amount equaling about 1% of GDP in FY2009 and a little over 2% of GDP in FY2010. In our view this fiscal impulse modestly raises the modal forecast for real GDP above what it otherwise would be but has a more pronounced effect on the balance of risks. Moreover, we expect the legislation to have meaningful impacts on the income side of the NIPAs. Specifically, increases in transfer payments and decreases in individual income taxes are expected to contribute to an increase of the personal saving rate to around 5 ½% by the end of 2009, after which it edges lower to around 3 ¾% by the end of 2010.

As is our usual practice, our assumptions for equity prices, the real exchange value of the dollar, and home prices are similar to those of the Greenbook. Equity prices are assumed to increase at an annual rate of about 15% over the forecast horizon, although from a higher starting point than in April. The real exchange value of the dollar (trade-weighted basis) is assumed to decline about 4% (Q4/Q4) in 2009 and another 1% in 2010. While

the path of this decline is slightly different than that assumed in the Greenbook, the cumulative decline over the forecast horizon is similar. Due to higher than expected volumes of homes going into foreclosure, the Board has on net lowered the projected path of home prices through the end of 2010. The Board anticipates a further 17% decline of the Loan Performance home price index by the end of 2010, for a total peak to trough decline of 33%.

We maintain our estimate of potential GDP growth at between 2 ½% and 2 ¾%. This is composed of 1% to 1 ¼% trend hours growth (although we assume this growth will begin to decline in 2010) 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). As always, there is substantial uncertainty around our estimate of potential GDP growth. The Board staff has maintained their estimate of potential over the forecast horizon at 2.0%.

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 the gradual rise of core inflation back toward the midpoint of the FOMC's objective for core PCE inflation of 1.5% to 2.0%.

Inflation. In the central scenario, total consumer price inflation is essentially flat over the first half of 2009 as the effects of the sharp declines in energy and other commodity prices during 2008Q4 work their way through the system. Core inflation, which was somewhat volatile over the second half of 2008 and first half of 2009, is expected to remain relatively low over the second half of 2009 and first half of 2010, reflecting the significant slack in the US economy. By the second half of 2010 both total and core inflation gradually increase as final demand firms within the context of anchored inflation expectations. However, it will likely take until 2011 before inflation returns to the mandate consistent range.

The risks around the central scenario for inflation are relatively balanced. Clearly, the significant downside risk to the growth projection combined with the possibility of no meaningful decline in potential implies downside risk to the inflation projection.

However, with the aggressive global monetary and fiscal policy response to the ongoing financial crisis, there is some risk of higher inflation if the economy proves more resilient than in our central scenario while potential slows .

Real Activity. The broad outlines of this central projection are as follows. Consumer spending remains sluggish as households boost saving in response to a massive decline in their net worth and credit conditions that, while gradually easing, remain relatively tight. The correction in housing production is expected to be largely completed by mid-2009, bringing to an end the large drag it exerted on growth for the past four years. Thereafter, housing production is likely to improve, but the surge of residential investment experienced in the early stages of most post-WWII recoveries is unlikely. Mortgage underwriting standards are expected to remain relatively tight. Moreover, high volumes of existing homes will continue to come onto the market through the foreclosure process. Indeed, the correction in house prices is expected to continue through the end of 2010, with a cumulative peak-to-trough decline in the Case-Shiller 10 city composite home price index of around 40%. Through 2009Q1 that index was down 31% from its 2006Q2 peak. Business investment in new equipment and software and new structures is expected to decline sharply in 2009 as capacity utilization rates remain at historic lows and retail and office vacancy rates rise. In typical business cycle fashion, these components of final demand do not begin to recover until the second half of 2010. In addition, with persistent weak demand, businesses pare inventories over the course of 2009, but the rate of decline slows such that inventories provide a modest boost to growth in the second half of the year. In 2010, as growth of final demand becomes somewhat better established, businesses begin to build inventories once again. Exports, which plunged from 2008Q4 through mid-2009, are expected to rise modestly in the second half of 2009 and then grow more rapidly in 2010 as global growth recovers. Imports also begin increasing again in the second half of 2009, and are likely to increase considerably faster than exports, reflecting the high income elasticity of demand for imports and the

fact that the business cycle in the US is proceeding somewhat ahead of that in many of our major trading partners. Accordingly, net exports exert a drag on growth in the second half of 2009 and in 2010. Finally, the growth contribution of the government sector begins to rebound in the second half of 2009 as the effects of the stimulus legislation begin to take hold. Underlying this projected path of final demand is the expectation that financial market functioning returns to more normal conditions, that consumer and business confidence is gradually restored, and that the appetite for risk gradually improves.

The risks to our central projection for real activity are substantial and are skewed to the downside. In the near-term, the key risk is that financial market conditions and consumer and business confidence do not improve as assumed. This in turn leads to lower than expected asset prices, less recovery in the supply of credit and, therefore, an even weaker path for final demand. A related risk is that, even if financial markets and asset prices behave as assumed, the decline of household net worth embedded in this central projection induces a steeper-than-expected increase of the personal saving rate, keeping consumer spending weaker for longer. The sharp increase in the prime-age male unemployment rate during the current cycle, combined with the large share of workers nearing retirement age, make this risk particularly acute. Finally, an important risk over the medium term is the uncertainty surrounding our assumption of the economy's potential growth rate. There is considerable concern that with the weakness of business investment and the reallocation of labor and capital that needs to occur, the economy's potential growth rate has slowed significantly. Yet, over the past year productivity growth has been well maintained at roughly 2 percent. Moreover, in recent months the labor force participation rate has moved significantly higher, suggesting more labor supply going forward than previously thought. These trends indicate that the economy's potential growth rate has not declined, and may in fact have moved higher.

2.2 Alternative Scenarios and Risks

This is the second consecutive Blackbook in which the risk assessment of the output

forecast has improved significantly. To be clear, the risks to the output forecast still remain firmly to the downside. The *Global Credit Crunch* is still the most likely scenario, with an associated probability of about 35%. [Exhibit C-1] Nonetheless, the extreme negative tail risk associated with our forecasts since September 2008 has been partially removed. In particular, the likelihood of the *Global Credit Crunch* scenario has decreased by about 7% relative to the last Blackbook, and the probability of the *Global Deflation* scenario has also been substantially reduced. The rationale for these changes stems from the following developments during the intermeeting period: i) increased evidence of stabilization in economic activity; ii) much weaker evidence of deflation, and in particular of global deflation, than at the time of the last FOMC; iii) improved financial markets conditions; iv) largely benign reactions to the SCAP program so far. In sum, all of these developments suggest that policy actions taken by the Federal Reserve and the Treasury appear to have effectively reduced the downside tail risk to the economy.

On the inflation front, the balance of risks has moved from being mostly on the downside to being broadly balanced. This is the result of the decreased probability associated with the *Global Credit Crunch* and *Global Deflation* scenarios, but also of the increase in the likelihood of the *Loss of Credibility* scenario, which now stands at about 15% over the forecast horizon. The increase in the likelihood of the *Loss of Credibility* scenario reflects greater concerns associated with the unwinding of the Fed's balance sheet and the projection of large fiscal deficits, as well as the increase in inflation compensation in the Treasury market over the intermeeting period.

Exhibit C-2 not only shows that the likelihood of the *Global Credit Crunch* and *Global Deflation* scenarios has decreased, but also that their associated paths for Core PCE inflation have changed. Specifically, the path associated with the *Global Credit Crunch* scenario no longer involves deflation. Moreover, the length of the deflation period associated with the *Global Deflation* scenario is shorter than in the last Blackbook, with the peak decline in four-quarter core PCE no longer as severe. The path associated with the *Loss of Credibility* scenario has also changed since the last FOMC. Under this scenario core PCE inflation is about the same as in the last Blackbook at the beginning of

2010, but it is almost 100 bp higher by the end of 2011, indicating that the inflation risks associated with this scenario have mainly increased in the medium run. The GDP growth paths associated with the various scenarios have not changed noticeably since the last Blackbook.

The changes in the probabilities and the paths associated with the various scenarios have substantially affected the forecast distributions for inflation, but mostly in terms of tail risk. [Exhibit C-3] While the changes in the 5th and especially the 95th quintiles of the forecast distribution for inflation are noticeable, the bulk of the distribution (e.g., the 15th and 85th quintiles) has moved much less. Movements in these quintiles are mainly a result of changes in the central scenario. The 5th quintile shifted up substantially as a consequence of the diminished downside risks: deflation is now both less likely and, if it were to occur, less severe. The 95th quintile of the forecast distribution also moved up, both in the short- and the medium-term. The short-run increase is in large part due to the increase in the *Central* scenario forecast (recall that the alternative scenarios are defined relative to the *Central* scenario), while the medium-run increase reflects the increased likelihood of the *Loss of Credibility* scenario. The changes in the forecast distribution for output mainly involve the removal of some of the downside risk: the trough in the 5th quintile shifted up by about 2% relative to the last Blackbook.

Not surprisingly, the “Depth of Deflation” chart [Exhibit C-3] shows that the probability of low inflation/deflation (defined as average annual inflation lower than 1.5% during the 2009-2011 period) has decreased from 16% to 10%. Similarly, the “Depth of Recession” chart shows that the likelihood of a “severe” recession, defined as a four-quarter drop in output larger than 3%, has also decreased since the last Blackbook.

3. Forecast Comparison

3.1 Greenbook Comparison

The Greenbook and Blackbook have the same path for the FFR. Both project the FFR remaining in the current target range of 0.00 - 0.25% at least until the end of 2010.

The differences between the FRBNY and the Board's staff forecasts have become more substantial since the April Blackbook. The Greenbook forecast for economic activity is now more optimistic than our forecast with higher government spending for 2009 and a less pessimistic outlook for net exports in 2010. The Board's projection for inflation is lower than ours despite a higher growth forecast.

Conditioning Assumptions. The Board's staff assumes more favorable conditions in financial markets relative to the previous Greenbook. In particular, the path of equity prices is above the April forecast while spreads between yields on BBB-rated corporate bonds and long-term Treasury yields are assumed to narrow. The Board staff assumes short-term rates adjust downward towards their baseline forecast and long-term rates increase slightly reflecting improved economic conditions. The size of the asset purchase programs is assumed to remain unchanged from the April Greenbook.

The Board's staff outlook for foreign economic activity has improved since the last FOMC. The path for the broad real dollar is below the April forecast.

International. The Greenbook forecast is for net exports to add 0.5 percentage point to 2009 GDP growth, close to the Board's forecast of 0.7 percentage point. For 2010, the Greenbook expects a drag of 0.6 percentage point on growth, while the Board expects a 0.3 percentage point drag. This difference arises from the FRBNY expecting faster import growth than the Board.

Inflation. We increased our forecast for core PCE inflation in 2009 from 0.9% to 1.4%, which is now aligned with the Greenbook forecast (which increased from 1.2% to 1.4%). A large discrepancy remains for the 2010 forecast. Our projection is still considerably higher than the Greenbook's projection (1.2% versus 0.8%, respectively). The two forecasts for total PCE inflation in 2010 differ by a similar amount.

Real Activity. The Board staff growth forecast is above our forecast for both 2009 (Q4/Q4) and 2010 (Q4/Q4). Our forecast for 2009 is now slightly higher and has

increased to -1.3% from -1.6%, while the Greenbook forecast was revised up from -1.6% to -1.1%. For 2010 the Board staff forecast was increased to 3.0% (from 2.6%), while our forecast was revised downwards from 2.6% to 2.1%.

Both forecasts have substantially increased the path of unemployment. As in the recent past FOMC cycles, the Board staff predicts unemployment to be lower than our forecast in both 2009 Q4 (10.0% versus 10.7%) and 2010 Q4 (9.7% versus 10.3%). The difference is partly explained by the lower participation rate assumed in the Greenbook.

Uncertainty around forecasts. As in April, our forecast has significantly greater inflation and output uncertainty than the Greenbook, particularly for 2009. The Blackbook still assigns more probability to lower inflation this year than the Greenbook, but the gap has narrowed as our staff has revised the bottom of the forecast probability interval to +0.3% (from -0.5%) versus +0.9% in the Greenbook (roughly unchanged). The bottom of the inflation forecast probability interval for 2010 is still lower in the Greenbook (0.0%) than in our forecast (0.2%). This reflects the lower path for core inflation assumed by the Board's staff. For GDP growth, the Blackbook continues to incorporate substantially more downside risk than the Greenbook. The lower end of our 70% forecast interval is now -4.0% for 2009 and -0.7% for 2010, while the corresponding numbers in the Greenbook are -2.3% and 1.3%.

To assess the importance of the differences between our outlook and the Greenbook forecasts, we calculate the percentile of the Greenbook forecasts for core PCE inflation and GDP growth in our forecast distribution. The results are shown in Table 2, with the April values in parentheses. The difference between the output growth forecasts of the Greenbook and the Blackbook is slightly more pronounced than it was in April. Concerning core inflation, the forecasts for 2009 are fairly aligned, but the Board's staff forecast for 2010 remains in the lower end of our staff 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>
2009	0.3, 2.2 (-0.5, 1.6)	0.9, 1.9 (0.8, 1.7)	-4.0, 0.4 (-5.3, 0.2)	-2.3, 0.2 (-2.8, -0.3)
2010	0.2, 2.1 (0.2, 2.1)	0.0, 1.5 (-0.1, 1.4)	-0.7, 3.6 (-0.7, 4.0)	1.3, 4.6 (1.0, 4.3)
2011	1.0, 2.6 (0.9, 2.4)	n/a (n/a)	2.5, 6.5 (2.3, 6.5)	n/a (n/a)

Table 2: Percentile of Greenbook Forecast in FRBNY Forecast Distribution

	Core PCE Inflation	Real GDP Growth
2009	57 (71)	60 (59)
2010	34 (29)	76 (62)
2011	8 (11)	54 (55)

Alternative Greenbook forecasting scenarios. The June Greenbook explores seven alternative scenarios. In five of them, the outlook for either GDP or inflation (or both) is more pessimistic than in the extended Greenbook baseline forecast and the Fed Funds Rate (FFR) remains unchanged at the effective lower bound (0.125%) at least until the end of 2011.

Three of the more pessimistic scenarios (False Dawn, Labor Market Damage and Deflation) were already present in the April Greenbook. The June Greenbook adds new scenarios in which demand fails to gain momentum (Slow Recovery) and in which inflation expectations drift up (Higher Inflation Expectations).

One of the optimistic scenarios (Typical Recovery) was also present in the April Greenbook. The June Greenbook adds a new scenario (Early Liftoff) in which a rapid recovery is associated with a pickup in inflation expectations.

Pessimistic Scenarios

False Dawn: This scenario considers a reversal of the recent positive signals from financial markets. The stock market falls 30% below baseline and the spread of corporate bonds over the 10-year note widens by 100 basis points. Additional strains come from banks tightening lending terms and standards, faltering consumer and business sentiment and a weaker demand for U.S. exports.

As a consequence, GDP contracts by about 3% in 2009H2. The recovery only starts in 2010 at a subdued pace. Unemployment peaks at 11% in 2010 and remains above NAIRU through 2013. Core PCE falls to 0.5% by 2011 and remains below baseline throughout the forecast horizon. The FFR remains at the lower bound until late 2012.

Slow Recovery: In this scenario, the weak financial system hampers the recovery. Poor balance sheet conditions and limited credit availability weigh on economic activity. Real GDP is flat in 2009H2 and its growth rate remains below baseline in 2010 and 2011. Unemployment peaks above 10.5% by the end of 2010. The evolution of core PCE and the path of the FFR are similar to the previous case.

Labor Market Damage: The hypothesis behind this scenario is that the depth of the current downturn impairs labor market efficiency. The NAIRU reaches 6.5% in 2010, possibly due to large adjustments across sectors or the adverse effect of the unemployment spell on workers' skills.

This negative supply shock adversely affects household income and corporate profits. As a consequence, consumption and investment are weaker than in the baseline. Real GDP stays flat in 2009H2 and grows by 2% next year. As in the *False Dawn* scenario, unemployment peaks at over 11% in 2010. However, the gap between actual unemployment and the NAIRU is smaller than in the baseline, implying slightly higher core PCE inflation (+0.1%). These inflationary pressures nevertheless only materialize

toward the end of the forecast horizon. This scenario is comparable to our staff projections.

Higher Inflation Expectations: The motivation for this scenario is that concerns due to the expansion of the Federal Reserve's balance sheet might translate into long-run inflationary pressures. Hence, this scenario considers the possibility that inflation expectations move up to 3% in early 2010.

Inflation expectations drive up actual inflation to 1.5% in 2010 and 2.5% in 2013. The renormalization of the FFR starts in 2010, one year earlier than in baseline. The short run reduction of real rates provides a small boost to real activity (+0.2-0.3% over the medium term).

Deflation: FRB/US and alternative pricing models suggest a more pronounced decline in inflation than in the baseline forecast. Therefore, this scenario considers the possibility that core prices remain flat through 2011 and only gradually rise thereafter.

The higher implied path of the real interest rate increases the real burden of nominal debt, with negative consequences for default risk and corporate bond spreads. These factors restrain aggregate spending and lead to a marginally slower recovery of real activity.

Optimistic Scenarios

Typical Recovery: Recent developments in financial markets and economic activity might be suggestive of a faster recovery than previously anticipated. This scenario considers a path for the recovery of real activity comparable to previous post-war episodes.

In this case, real GDP grows at 5.25% in 2009H2 and in 2010. The unemployment rate drops to 8.25% in 2010. Core PCE inflation is slightly higher than in the baseline

projection (+0.1-0.2%) over the entire forecast horizon. The renormalization process of the FFR starts almost two years earlier than in the baseline (late 2010).

Early Liftoff: This scenario combines the assumptions of the *Typical Recovery* and the *Higher Inflation Expectations* scenarios. The combination of stronger GDP growth and higher inflation expectations over the long run imply a faster renormalization process for the FFR which resembles more closely the market-implied path.

3.2 Comparison with Private Forecasters¹

The FRBNY forecast for 2009 (Q4/Q4) is similar to the median SPF, PSI model, Blue Chip, and Macro Advisers forecasts. The differences for 2010 (Q4/Q4) are more pronounced, with our forecast more pessimistic than the others. Macro Advisers still forecasts inflation in 2010 (Q4/Q4) to be significantly lower than our projection. Forecasts are reported in Exhibit B-8.

GDP Growth.

The FRBNY has the least negative forecast for GDP growth in 2009Q2 at -0.8%. The corresponding PSI model, Blue Chip, median SPF and Macro Advisers estimates are -1.6%, -1.8%, -1.5%, and -1.3% (saar), respectively. In contrast, our GDP growth forecast for 2009Q3 is 0.7%, while the corresponding PSI model, Blue Chip, median SPF and Macro Advisers forecasts are 1.2%, 0.6%, 0.4% and 1.1%, respectively. Overall, we project 2009 (Q4/Q4) growth of -1.3%, compared to -1.3%, -1.4% and -0.9% for Blue Chip, median SPF and Macro Advisers, respectively. The downward revision to our projection for 2010 (Q4/Q4) from 2.6% to 2.1% contrasts with the upward revision of private forecasts, including that of Macro Advisers who increased their projection from 3.0% to 3.4%. Consequently, there was an increase in forecast dispersion over the medium horizon.

¹ Release dates of the private forecasts discussed in this section are in parentheses: Blue Chip consensus (06/10), SPF (05/15), Macro Advisers (06/17 for real GDP growth; 06/09 for inflation measures), and the PSI Model (06/15).

Core PCE Inflation. Our forecast for 2009Q2 has changed significantly from 0.6% to 2.4%. Both Macro Advisers and the median SPF increased their projections, from 0.8% to 2.0% and from 1.1% to 1.5%, respectively. We have a low forecast of 0.9% for 2009Q3 (up from 0.7%), while both Macro Advisers and the median SPF moved up their projections to 1.3% and 1.2%, respectively (from 0.6% and 1.1%). On balance, the 2009 (Q4/Q4) forecasts are very similar. The discrepancy with Macro Advisers' forecast for 2010 (Q4/Q4) remains, although the gap with our projection has narrowed. Our estimate is now 1.2%, while Macro Advisers' has increased their projection from 0.2% to 0.6%.

CPI Inflation. For 2009Q2 our forecast is aligned with Blue Chip and Macro Advisers at 1.0%, while the median SPF expects a slightly lower reading of 0.7%. For 2009Q3 the dispersion increases. Our forecast of 2.9% lies in the middle of the distribution, with median SPF and Blue Chip (1.6% and 2.0%, respectively) on the lower side and Macro Advisers (4.0%) on the higher side. This ranking also applies to the 2009 (Q4/Q4) readings. Our forecast of 0.7% is higher than the median SPF (0.4%) and Blue Chip (0.5%), but is lower than Macro Advisers (1.0%). Our forecast for 2010 (Q4/Q4) essentially coincides with the median SPF and Blue Chip, while Macro Advisers expects a much smaller inflation rate of 1.0%.

Core CPI Inflation. The picture for core CPI inflation is similar to that of core PCE inflation. We now expect the highest reading for 2009Q2 at 2.3%, compared to 1.9% for Macro Advisers and 1.5% for the median SPF. Conversely, while both our projection and the median SPF for 2009Q3 are basically unchanged relative to the April Blackbook at 0.9% and 1.3%, respectively, Macro Advisers have revised their forecast upward to 1.3% (from 0.5%). On balance, the forecasts for 2009 (Q4/Q4) are now quite close at about 1.4%. For 2010 (Q4/Q4), Macro Advisers' forecast of 0.9% (up from 0.3%) is still significantly lower than the 1.4% that both we and the median SPF forecast expect.

4. Robustness of Policy Recommendation

4.1 Sensitivity to Alternative Scenarios and Policy Rules

Our current policy recommendation is to keep the target federal funds rate in the 0-0.25% range through 2010. As has been the case for the last few Blackbooks, this recommendation is consistent with the *Baseline* policy rule under *all* scenarios except the *Loss of Credibility* scenario [Exhibit D-1], as well as under the expected value of the forecast distribution [Exhibit D-2]. In contrast, the market-implied path for the federal funds rate has increased substantially in the intermeeting period, and is now above 2% by the beginning of 2011. Even under the *Loss of Credibility* scenario, the increase in the FFR implied by the *Baseline* rule is gradual and only reaches 1% by the end of 2010.

In order to rationalize market expectations, we have introduced the *Nutter* rule (as in “inflation nutter”), which places high emphasis on inflation and none on output. Under the expected value of the forecast distribution, this new rule produces a FFR path that is comparable to that implied by federal funds futures [Exhibit D-2]. Under the expected value of the forecast distribution, all other rules (*Asymmetric Price Targeting* and *Outcome-based*) result in a FFR path that is close to zero until the end of 2011. For the *Outcome-based* rule, we show the nominal FFR ignoring the zero bound. This rule, again under the expected value of the forecast distribution, has the nominal FFR reaching -7% by the end of 2010.

Because there is no change in the nominal FFR paths for all rules except for the *Nutter*, given that they are all constrained by the zero bound, most of the information provided in this section is about the *shadow* real rates - that is, the real FFR rates implied by the various rules under the various scenarios *ignoring* the zero bound constraint. Exhibit D-1 shows that, under the different scenarios, the “shadow” real rate implied by the *Baseline* rule ranges from about -2% to -4% in the current quarter, and from -3% to -6% in 2009Q4, depending on the scenario. These figures can be interpreted as indicating the desired level of expected inflation under each scenario, given that the nominal FFR is constrained at zero.

The prescription from the alternative policy rules, namely the *Asymmetric Price Targeting*, *Nutter*, and *Outcome-based* rules, differ from that of the *Baseline* rule to the extent that the alternative rules tend to be either more reactive to inflation (i.e. *Nutter* rule) or more averse to disinflation (i.e. the *Asymmetric Price Targeting* rule) [Exhibit D-3]. The policy paths under the *Asymmetric Price Targeting* rule are not that different from those under the *Baseline* rule except for the two scenarios that envision very low inflation (*Global Credit Crunch* and *Global Deflation*). The *Nutter* rule implies FFR paths that are quite different from those implied by the *Baseline* rule under most scenarios. Under the *Central* scenario, rates would begin to rise rapidly by the end of 2010, reaching 2.5% by the end of 2011. Not surprisingly, the *Nutter* rule under the *Loss of Credibility* scenario implies that the FFR rate should be increased at this meeting and should reach 2% by the beginning of 2010. For the *Outcome-based* rule, we show the nominal FFR ignoring the zero bound. This rule therefore has the nominal FFR reaching -4% under the *Central Scenario* late in 2010 and then, as conditions improve, rising to -2% by the end of 2011.

As a robustness check, we also use the DSGE-VAR and the DSGE models to assess the current stance of monetary policy. We perform a counterfactual exercise eliminating past policy shocks and find that both models predict a counterfactual FFR of about 75bp in 2009-Q2. This follows from the facts that the historical policy rule mainly responds to inflation and is also characterized by strong gradualism.

4.2 Comparison to Market Expectations

The intermeeting period witnessed a large change in market perceptions of how long the FOMC will keep the target rate at its effective lower bound. The current market-implied FFR is now at about 1% by 2010Q1, and at 3% by the end of 2011, about 100bp higher than in April. While it is difficult to accurately measure the change in the market's expected FFR path due to fluctuating term premia, the large increase in implied volatility since the last FOMC meeting suggests that the market's uncertainty about future monetary policy has risen substantially. Forecasts from the primary dealers are more in line with our policy recommendation. Nonetheless, the majority of primary dealers

currently expect the FOMC to start raising rates in 2010Q4, as opposed to 2011Q1 as in the April survey. If we ignore measurement issues, then the market path can be reconciled with our outlook by assuming that the market places more weight on the *Loss of Credibility* scenario and/or the *Nutter* policy rule.

Special Topic

Decomposing the Rise in Treasury Yields since 3/18/2009

Michael Fleming and Nicholas Klagge

Yields on Treasury coupon securities fell sharply across the curve following the FOMC's announcement of the Fed's \$300 billion outright Treasury purchase program on March 18, 2009.

Since March 18, however, yields have recovered and are now higher than they were prior to the FOMC announcement. There are several competing explanations for this subsequent rise, including market disappointment with the Fed's purchase operations, reaction to increased Treasury supply, and improving macroeconomic conditions. This note attempts to decompose the changes in yields attributable to these various factors by using high-frequency data covering the period from March 19 – June 12.

We begin by identifying key informational events during the period that are relevant to each potential explanation.

Macroeconomic announcements: the monthly employment report, weekly initial jobless claims, CPI, PPI, retail sales, Case-Shiller home price index, housing starts, GDP, Conference Board consumer confidence, University of Michigan consumer confidence, and industrial production.

Fed announcements: tentative purchase schedule announcements, results of purchase operations, the release of the FOMC minutes for the March and April meetings, and the April 29 FOMC statement.

Treasury announcements: auction size announcements, auction result announcements, marketable borrowing estimates, and the April 29 Quarterly Refunding Statement.

We divide the sample period into thirty-minute intervals, demarcated at 25 and 55 minutes past each hour. We select these particular breakpoints because most of our announcements occur on or shortly after either the hour or the half-hour and allowing for a five-minute lead ensures that our initial quote does not reflect any reaction to the announcement. We then mark each interval in which a pertinent announcement occurred. This gives us 36 macro announcement events, 37 Fed announcement events, and 21 Treasury announcement events.¹

¹ There were five cases in which an announcement of Fed purchase operation results coincided with an announcement of future Treasury auction size. In these cases, we classified the periods as Fed announcements, since Treasury auction size announcements tend not to contain significant new information. Our results do not change significantly, however, if we count these intervals as Treasury events.

Table 1 below lists the half-hour windows during the period in which the yield on the 10-year note moved by at least 5bp in either direction, along with any relevant informational event occurring during the given period.

As Table 1 indicates, several of the sharpest moves in the 10-year yield were associated with an identified informational event, but others were not. Chart 1 shows the decomposition of net yield changes over the period for the on-the-run 2-year, 5-year, 10-year, and 30-year issues based on these event windows. Chart 2 shows the same data expressed as average per-period signed changes for each announcement type.

The decomposition in Chart 1 reveals several interesting pieces of information. First, the majority of the rise in yields in each security is due to information and events other than the ones we capture. If we have succeeded in making a comprehensive selection of Fed and Treasury announcements, then this suggests that initial market reactions to announcements regarding the Fed's purchase program and Treasury's refunding needs have not played a large role in the recent rise in yields.² In the 30-year bond, which has seen the strongest effects from the events we capture, Fed announcement periods accounted for only 11bp of yield increase and Treasury announcement periods accounted for only 18bp, together explaining only 25% of the net increase of 112bp.

For the issues at other maturities, these events accounted for even less movement, in both absolute and proportional terms.

Second, although the economy has generally been seen as improving over the sample period, the net response to the macro announcements we capture was largely negative. It is possible that macroeconomic upside surprises have largely come in other forms, such as corporate earnings announcements or the results of the stress tests.³

To focus in particular on the market's evaluation of the Fed's outright purchase program, we compare the yield movements around the initial program announcement with net yield movements around subsequent Fed announcements.

² Our framework does not account for any lagged yield adjustment to announcements that may have occurred beyond the half-hour periods surrounding releases.

³ Although the release of the stress test results was a significant informational event during the sample period, we judged that too much of the information content of the release was leaked slowly over the days preceding the announcement to make the announcement window a meaningful discrete event. There was indeed very little yield movement during the half-hour period surrounding the release, consistent with this interpretation.

For each of the four on-the-run securities that we consider, Table 2 shows the following: the yield movement on March 18 in the one-hour interval surrounding the FOMC announcement and the Desk's subsequent clarifying announcement; the yield movement in the half hour surrounding the April 29 FOMC statement; the net yield movement around all the other Fed announcements in our sample; and the net-net sum of all of these components.

Table 2 demonstrates several key findings about the Fed's purchase program. First, the net-net total move indicates that the Fed's actions since mid-March have exerted a significant and sustained downward pressure on yields across the curve, particularly on the shorter end. Second, of the yield movements around Fed announcements since the March FOMC, much of the net increase is attributable to movement around the April FOMC statement, when no change to the program was announced. Market commentary suggests that participants expected a low probability of a program increase and took short-term positions in preparation for that small possibility, which they subsequently unwound. Outside of the two FOMC statements, yields have been essentially stable around Fed announcements, indicating that the Fed has followed through on market expectations induced by the initial program announcement.

Finally, we conducted an exercise to evaluate the relative importance of different information types for explaining yield variation over this period. If macro announcements, for instance, were a primary driver, but had both positive and negative effects, then the announcements could be quite important at explaining yield variation while having a modest effect on net yield changes over the period.

For this exercise, we kept the same thirty-minute intervals, but excluded all overnight, weekend, and holiday periods (considering the New York trading session to last from 7:55am to 4:55pm). We then calculated the squared and absolute yield changes for each security in each 30-minute period. Chart 3 below shows the percentage of yield variation (measured by squared changes) explained by periods of each announcement type and by non-announcement periods. Chart 4 below shows the average per-period absolute yield change for each category in order to control for the differing number of periods.

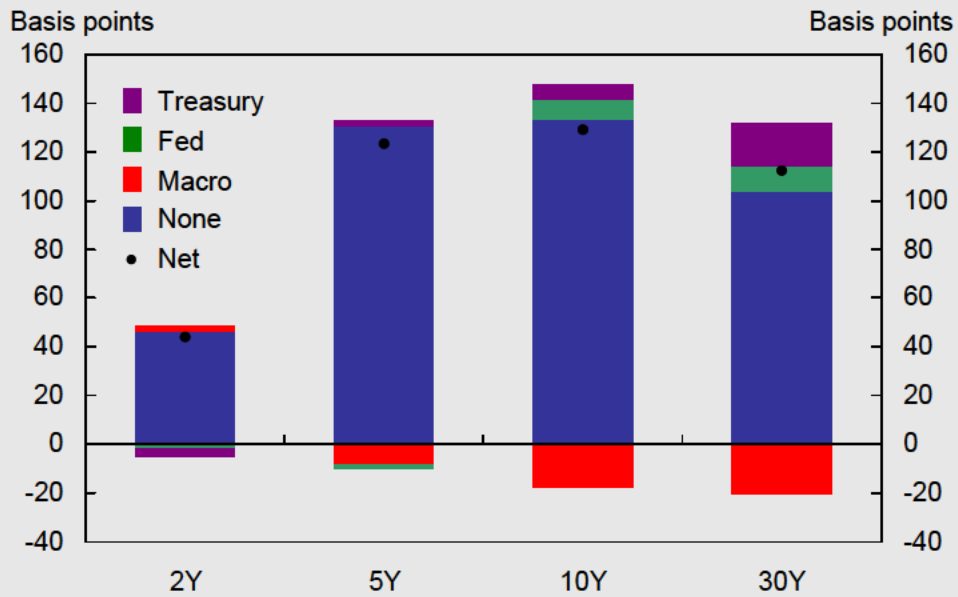
Macro, Fed, and Treasury announcements all appear to have induced larger absolute yield changes than non-announcement periods on average. Despite the larger per-period yield changes around macro, Fed, and Treasury announcements, most of the yield variation over the sample period is attributable to non-announcement periods.

Robustness Check

To test the robustness of our specification, we repeated the same exercises using broadened event intervals. In particular, we took our existing method for classifying 30-minute intervals by the events they contained, and extended that classification to the 30-minute interval following the event interval (to account for lagged adjustment effects) and to the 30-minute interval preceding the event interval (to account for anticipatory action or leaked information). Not surprisingly, this method attributes more of the net yield changes to the various event types. Nonetheless, more than 50% of the net yield change for each of the four securities still occurs outside even the broadened event windows. Results change similarly for the analysis of yield variation, with the expanded event intervals accounting for a larger share, but still a minority, of overall yield variation. The window-broadening also results in macro announcement intervals having a net *positive* contribution to yield movements for each of the four securities (where it had previously been *negative*).

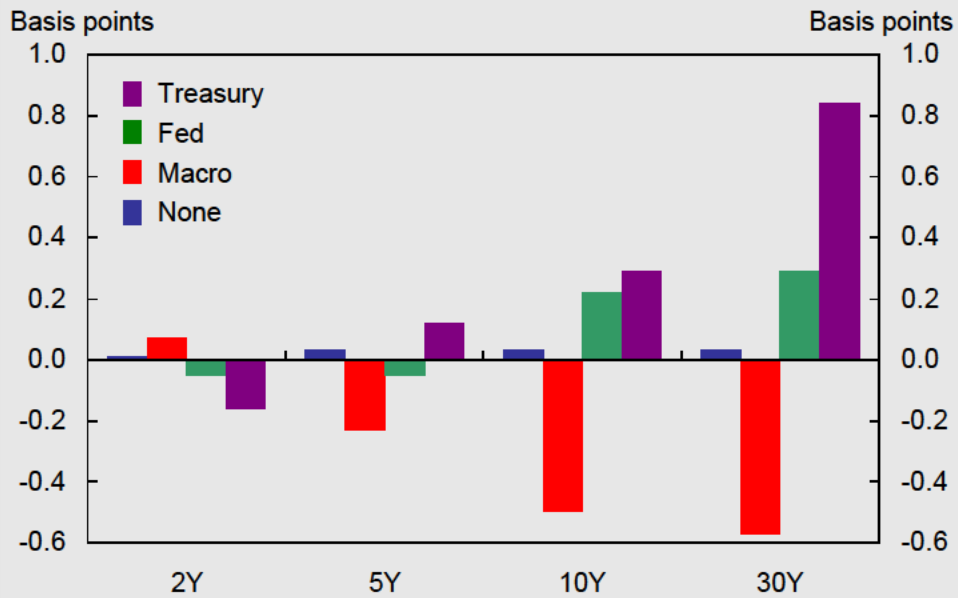
⁴ Although the release of the stress test results was a significant informational event during the sample period, we judged that too much of the information content of the release was leaked slowly over the days preceding the announcement to make the announcement window a meaningful discrete event. There was indeed very little yield movement during the half-hour period surrounding the release, consistent with this interpretation.

Figure 1: Net Yield Changes 3/18/09 - 6/12/09



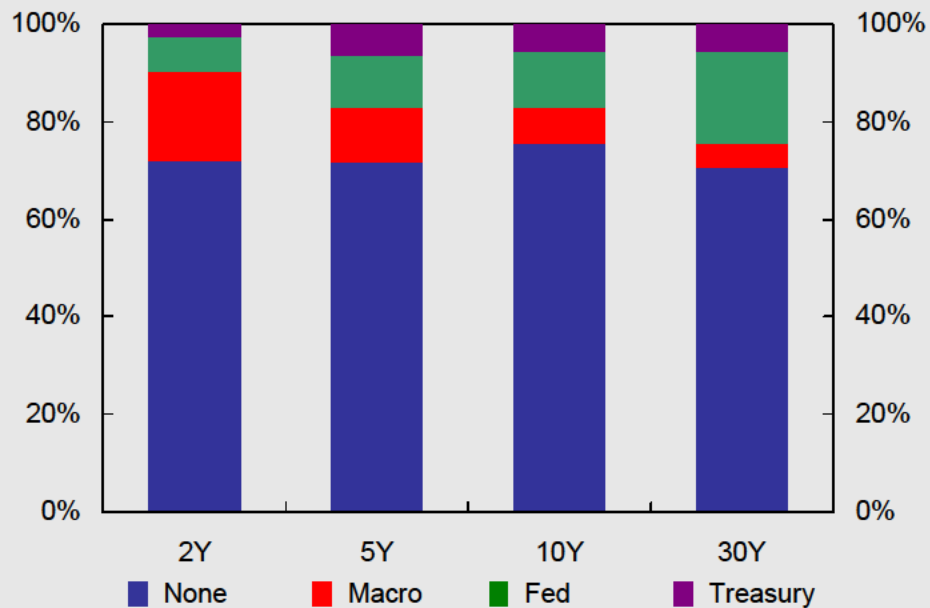
Source: Bloomberg, FRBNY, U.S. Treasury

Figure 2: Average Per-Period Yield Change



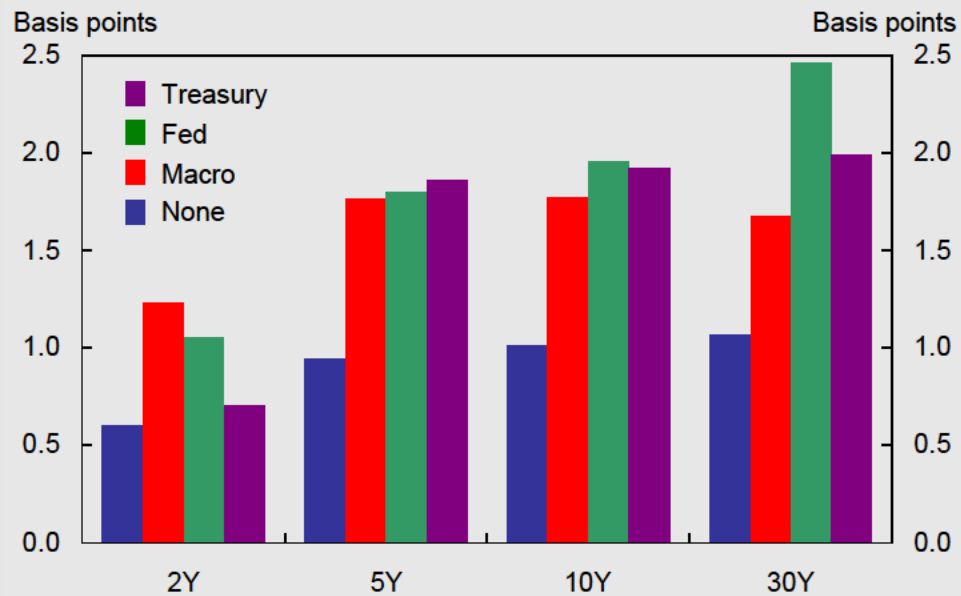
Source: Bloomberg, FRBNY, U.S. Treasury

Figure 3: Percent of Total Yield Variation



Source: Bloomberg, FRBNY, U.S. Treasury

Figure 4: Average Per-Period Absolute Yield Change



Source: Bloomberg, FRBNY, U.S. Treasury

Table 1: Top Absolute Yield Changes (10Y Note)

Yield Change	Date	Time	Event
-9bp	3/24	14:25 - 14:55	FED Purchase Schedule
+8bp	5/27	13:25 - 13:55	none
+7bp	4/29	13:55 - 14:25	FED FOMC Statement
-7bp	5/28	8:55 - 9:35	none
-6bp	6/11	12:55 - 13:25	TSY 30Y Note Auction (Reopen)
+6bp	5/21	10:55 - 11:25	FED Purchase Operation (4y - 7y)
+6bp	4/2	10:55 - 11:25	FED Purchase Operation (4y - 7y)
+6bp	6/11	13:25 - 13:55	none
+5bp	6/1	12:25 - 12:55	none
+5bp	6/1	9:55 - 10:25	none

Table 2: Yield Changes Around Fed Announcements

	2-year	5-year	10-year	30-year
Program announcement	-15	-35	-35	-18
April FOMC	3	7	7	8
All other Fed announcements	-5	-9	1	3
Fed announcements net	-17	-37	-27	-7

Special Topic

Federal Reserve Net Income Simulation Analysis

Michael Fleming, Dan Greenwald, Nick Klagge and Marco Del Negro

This memo describes projections for the Federal Reserve's net income under a Baseline and an Escalated evolution scenario for the Fed's Balance Sheet.

The Baseline scenario is shown in Table 1.

The Escalated scenario is obtained by increasing the size of the Fed's large-scale asset purchase programs and TALF loans by 50% relative to the Baseline.

In this exercise we also take as given the FRBNY forecast distributions for core PCE inflation and output growth.¹ Figures 1 and 2 depict the median 4-quarter inflation and output growth forecasts, respectively, as well as the 67% and 90% bands.

We use a standard Taylor rule to map the forecasts for the macro variables into nominal Fed Funds rate paths:

$$R_t = r_t + \pi^* + \psi_\pi (\pi_t - \pi^*) + \psi_y y_t$$

where R_t is the nominal Fed Funds rate, r_t is the real rate, π^* is the inflation objective, π_t is 4-quarter core PCE inflation, and y_t is the output gap which is constructed from the output growth forecasts assuming a 2.7% annual growth of potential output.

The real rate r_t is assumed to increase gradually from 1% to 2% over the forecast horizon and the inflation objective is set at 2%.

In the Benchmark Rule we assume that the response of inflation and output are as in the original Taylor paper, namely $\psi_\pi = 1.5$ and $\psi_y = .5$. We also consider a High Inflation Response Rule where we set $\psi_\pi = 2$ and $\psi_y = 0$. We also assume that the Fed Funds rate for 2009 is set at 0.125% regardless of the outcome of the Taylor rule, consistent with the commitment to low rates implicit in recent FOMC statements. Finally, note that our rule has no gradualism, that is, no dependence on the lagged Fed Funds rate. While the lack of gradualism is inconsistent with estimates over the past 20 years, it is consistent with the Fed's response to the recent crisis. Figure 3 shows the median nominal Fed Funds rate under the Benchmark Rule, as well as the 67% and 90% bands.

Given the size of the balance sheet, and in particular the size of reserves, expenses at any point in time are largely determined by the Fed Funds rate paths, as we assume that the interest paid on reserves coincides with R_t . Income is far less dependent on the Fed Funds rate paths, and is mainly a function of the evolution of the asset side of the balance sheet.

¹ The simulations use 60,000 draws.

An earlier memo by Michael Fleming and Nick Klagge provides details on the computation of income and expenses as a function of the Fed Funds rate paths.² Important assumptions/caveats of the current analysis are: i) we ignore credit risk; ii) we assume assets are held to maturity; and iii) we assume the prepayment schedule for MBS does not vary with the interest rate paths. Finally, while the frequency of the forecast distributions and the associated Fed Funds rate paths is quarterly, the computation of inflows and outflows is done at an annual level. We therefore generate an annual time series for the Fed Funds rate via a geometric average of the quarterly figures.

Figure 4 shows the yearly projections for net income under the Benchmark Rule for the Baseline scenario. For these calculations we define net income as the Fed's interest income less net operating expenses, dividends to member banks, and transfers to surplus; therefore, a zero net income according to our definition implies zero remittances to Treasury. The figure shows that net income is likely to be substantial in the near future, and well above zero from 2011 onward, under the vast majority of simulations. The tail risk of negative net income is non-negligible, however. In 2010, and especially in 2011, the 90% lower band crosses zero, reaching \$10 billion in 2011 under the Baseline scenario. Not surprisingly, the risks under the Escalated scenario are greater with the 90% band approaching \$40 billion in 2011.

The first row of Table 2 shows the percentage of macroeconomic projections under which net income falls below zero during any year between 2010 and 2016 for the Baseline scenario. For the Benchmark and the High Inflation Response Rules, the results show that the percentage of draws for which net income is negative are 8% and 9%, respectively. For the Escalated scenario, these figures are 9% and 11% under the Benchmark and the High Inflation Response Rules, respectively.

Figure 5 shows the percentage of draws that generate negative net income in each year under the Benchmark Rule for the Baseline scenario. The figure shows that the chances of observing negative net income are higher in 2010 and 2011 and decrease thereafter. This is partly the result of the FRBNY forecast distribution, where the inflation risks are highest from 2010 to 2012, but decline considerably thereafter (see Figure 1). This is also partly due to the fact that the size of the balance sheet in the near future is still unusually large, exposing the Fed to considerable interest rate risk.

Next, we ask whether the Fed Funds rate paths (and the associated inflation paths) that produce negative net income are at all unreasonable.

² Fleming and Klagge, "Modeling Future Federal Reserve Interest Income", 5/8/2009.

For each year and among all the draws from the forecast distribution, Table 3 shows the minimum average Fed Funds rate that generate negative net income under the Benchmark Rule for the Baseline scenario, as well as the associated levels of inflation and the output gap. Such threshold average Fed Funds rates are 6.6%, 6.3%, and 6.9% in 2010, 2011, and 2012, respectively. The same figures for the Escalated scenario are 5.6%, 5.5%, and 5.8% in 2010, 2011, and 2012, respectively.⁴

An input for the net income projections is the duration of the assets purchased under the Treasury and agency debt purchase programs. In the results so far, we assume that the allocation of purchases across different maturity buckets mirrors the current allocation. In lines 2 and 3 of Table 2 we investigate the sensitivity of the results to changes in the duration of the assets. The long/short duration scenarios assume that the Fed only purchases assets with maturities longer/shorter than 7 years in the Treasury and agency debt purchase programs.

It is important to note that all the results are very much dependent on the features of the forecast distribution. The risks of negative net income mainly reflect the tail risk of high inflation during the 2010-2012 period, and the probability of such tail risk is very hard to assess.

While we have not yet been able to replicate our results using the draws from the Greenbook forecast distribution (those used to compute the uncertainty bands), inspection of the 90% bands for the inflation distribution in the April Greenbook leads us to suspect that the risks of negative net income would be much smaller, and probably negligible, under such a distribution. This is partly a result of the fact that the Greenbook forecasts assume higher inflation persistence than the FRBNY forecasts, and hence the chances of a spike in inflation in the near future are considerably lower.

Finally, we assess the magnitude of losses experienced by the Fed in case negative income should arise. Such results are helpful, for example, in gauging the size of the capital buffer that would be necessary to offset such losses, should it be determined that such a buffer would be useful.

⁴ An important caveat is that the income in a given year depends on the entire path of the Fed Funds rate in the following periods, since that determines the prices at which new securities are purchased. Therefore there are a few simulations where the Fed Funds rate is above the threshold but net income is still positive. For 2010 and 2011 there are very few such draws, so that the caveat does not really apply to those years. In any case, we believe that the threshold figures still provide valuable information as to the level of the Fed Funds rate at which negative net income becomes an issue.

For each forecast path generating a loss during any year between 2010 and 2016 we compute the present discounted value (PDV) of the losses – that is, the PDV of net income whenever this is negative -- using the associated Fed Funds rate as the discount factor. Figure 6 shows the cumulative distribution function (CDF) of such shortfalls. The figure shows, for instance, that 30% of paths generating negative net income result in a PDV of shortfalls that is less than \$28 billion.

Table 1: Balance Sheet Path (Baseline Scenario)

Assets	2010	2011	2012	2013	2014	2015	2016
Legacy Treasuries	475	475	475	475	475	475	475
Long-Term Treasury Purchases	300	286	278	201	161	114	108
Agency Debt	200	164	124	103	73	51	44
Agency MBS	1250	1117	1058	999	943	888	835
TALF	125	175	175	75	50	25	0
Liquidity Facilities	301	1	1	1	1	1	1
Systemic Lending	102	74	50	28	16	3	0
Other & Repos	84	84	84	84	84	84	84
TOTAL	2837	2376	2245	1966	1802	1640	1547
Liabilities	2010	2011	2012	2013	2014	2015	2016
Federal Reserve Notes	886	917	967	1034	1106	1165	1218
All Other	227	110	118	128	139	151	166
Total Reserves	1724	1349	1159	804	558	324	163
TOTAL	2837	2376	2245	1966	1802	1640	1547

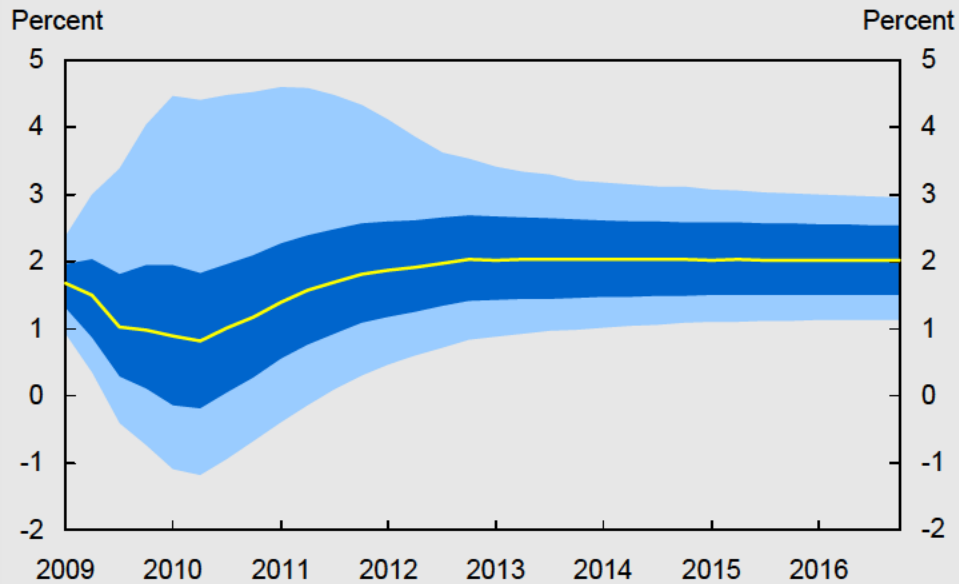
Table 2: Percentage of Projections with Negative Net Income (Baseline Scenario)

	Benchmark Taylor Rule	High Inflation Response Taylor Rule
1) Current Allocation	8.0%	9.0%
2) Long Duration	7.7%	8.6%
3) Short Duration	8.1%	9.0%

Table 3: Threshold Fed Funds Rate by Year and Associated Macro Conditions under the *Benchmark* Taylor Rule (Baseline Scenario)

Year	Fed Funds Rate	PCE	Output Gap
2010	6.6	4.4	-0.1
2011	6.3	3.7	-0.4
2012	6.9	3.5	0.6
2013	8.9	5.2	1.1
2014	11.7	7.0	0.4

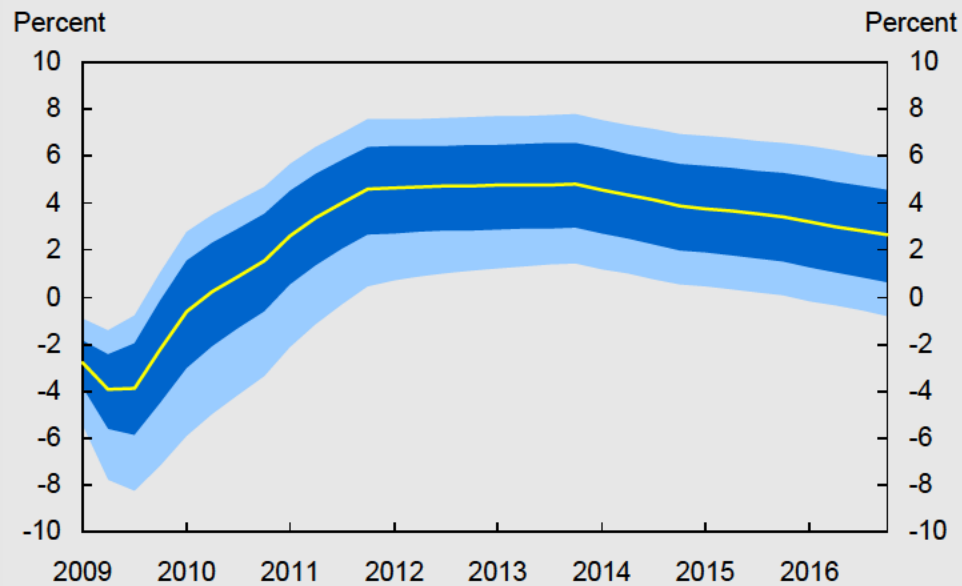
Figure 1: Projected Four-Quarter Core PCE Inflation Paths



Source: FRBNY Calculations

Note: The probability interval shows the 67% and 90% confidence bands.

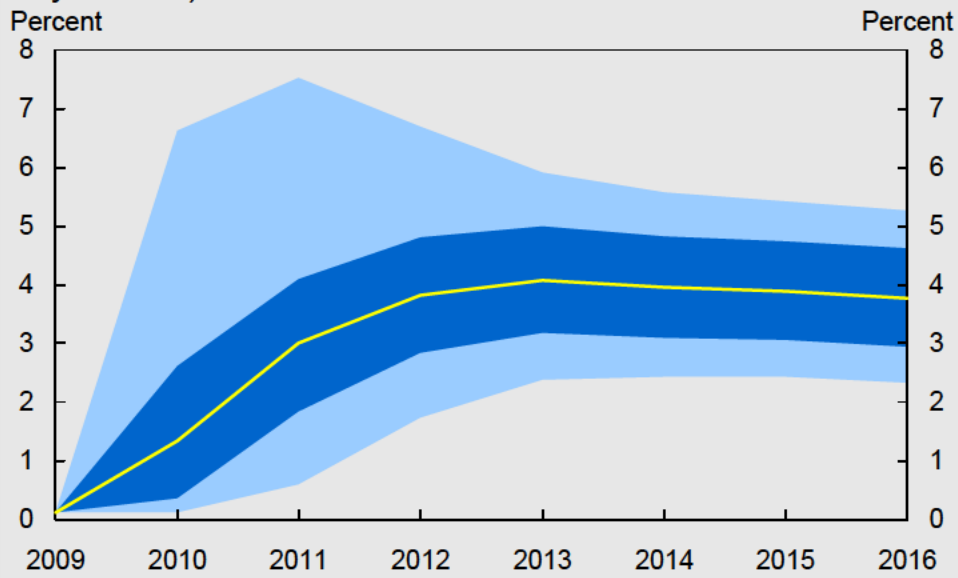
Figure 2: Projected Four-Quarter GDP Growth Paths



Source: FRBNY Calculations

Note: The probability interval shows the 67% and 90% confidence bands.

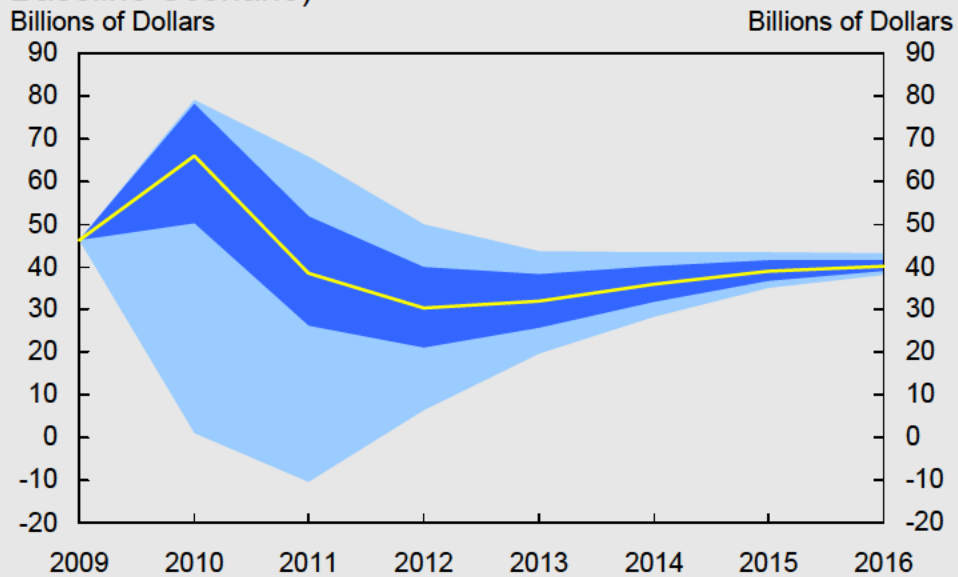
Figure 3: Projected Fed Funds Rate Paths (Benchmark Taylor Rule)



Source: FRBNY Calculations

Note: The probability interval shows the 67% and 90% confidence bands.

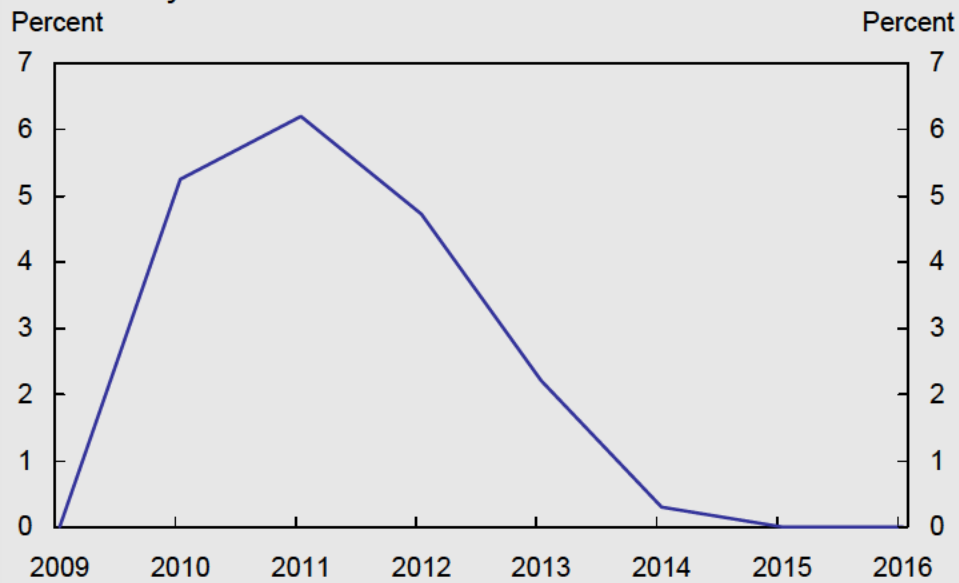
Figure 4: Projected Net Income Paths (Benchmark Rule, Baseline Scenario)



Source: FRBNY Calculations

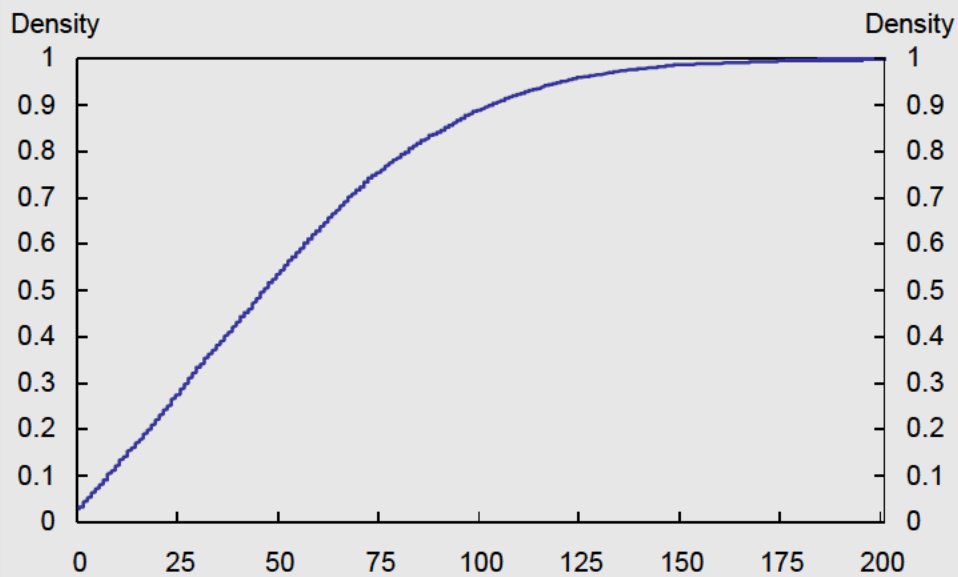
Note: The probability interval shows the 67% and 90% confidence bands.

Figure 5: Percentage of Draws with Negative Net Income by Year



Source: FRBNY Calculations

Figure 6: CDF of Total Present Discounted Value of Shortfalls in Net Income Conditional on Losses Occurring (Baseline Scenario)



Source: FRBNY Calculations

5. Significant Developments

5.1 Economic Developments

U.S. Data Releases. Data over the intermeeting period largely were in line with expectations and indicate a slowing rate of contraction with tentative signs of stabilization in some sectors.

Real activity. *GDP Revision:* Q1 output was revised up slightly to -5.7% (saar) from the initial estimate of -6.1%. The revision was due almost entirely to a lower estimate of the rate of inventory liquidation. Profits increased 3.4% from Q4, driven by improved results in the financial sector.

Production: Industrial production declined 1.1% in May, putting it 13% below its year-ago level. Capacity utilization fell to 65.0%, the lowest reading in the series' 61-year history.

Orders and Shipments: Orders for manufactured goods increased 0.7% in April and have shown some stability over the past few months. Orders and shipments of nondefense capital goods declined 2.8% and 2.4%, respectively, in April. These declines suggest that business investment in equipment and software will again fall at a rapid pace in 2009Q2.

Retail Sales: Retail sales rose 0.5% in May, with sales excluding autos also increasing 0.5%. Both were firmer than expected. However, sales excluding autos, building materials and gas stations were unchanged, and several discretionary categories of spending exhibited declines. The numbers point to little if any growth in consumption in Q2.

Inventories: Business inventories fell 1.1% in April, marking the sixth consecutive month of declines exceeding 1.0%. While inventories declined more rapidly than sales, the inventory-sales ratio remains elevated.

Productivity: Productivity growth in Q1 was revised from 0.8% (annual rate) to 1.6% due to the upward revision in GDP. Over the year, productivity increased 1.9% and has continued to display surprising strength during the current economic downturn.

Home Sales/Starts: Housing starts rose a brisk 17% in May, significantly above expectations. The increase was led by a 62% rise in the volatile multi-family segment, following declines of 49% and 26% in April and March, respectively. Single-family starts rose for a third consecutive month and registered a 7.5% increase.

Sales of existing homes rose 2.9% to 4.68 million units (saar) in April, modestly above expectations. New single-family home sales were essentially unchanged in April at 352,000 (saar). Inventories of new unsold homes continue to decline rapidly, although at 10.1 months' supply, they remain high relative to sales.

House Prices: After increases in both January and February, the FHFA index fell 1.1% in March and was down 7% over the year. The Case-Shiller index for 20 large metropolitan areas dropped 2.2% in March, and is now down 32% from its peak in July 2006.

Construction Spending: Aggregate construction spending unexpectedly rose by 0.8% in April, with private residential expenditure rising by 0.7%. This was the first increase in this measure since August 2008.

Flow of Funds: Household net worth dropped by \$1.3 trillion in Q1, a substantially smaller decline than in Q3 and Q4 of 2008. The ratio of household wealth to income reached its lowest reading since mid-1992. Nonfinancial debt continued to grow, increasing by 4% (annual rate), but this was less than the 6.3% increase in Q4. Household and nonfinancial business debt contracted.

Labor market. *Nonfarm Payrolls:* Nonfarm payrolls dropped by 345,000 in May, significantly less severe than expected. However, the unemployment rate jumped from

8.9% to 9.4% reflecting both employment losses and a continued rise in the labor force participation rate. The prime-age male unemployment rate increased to 9.5%, resulting in the first occurrence in which it exceeded the overall unemployment rate. Aggregate hours worked fell a hefty 0.7% in May with little change in average hourly earnings from April. Initial claims rose slightly to 608,000, but continued to decline when calculated as a four-week moving average. Continuing claims showed their first drop since early January, falling 148,000, although the level remains extremely high at 6.6 million.

Employment Cost Index: The ECI rose only 0.2% over the three months ending in March, putting it 0.9% above its year-ago level. The growth in Q1 was the lowest ever reported in the series which dates back to 1982.

Trade. The trade deficit widened slightly to \$29.2 billion in April, up from \$28.5 billion (revised) in March. Both import and export volumes declined. The April trade data led to a slight revision of our forecast of the net export contribution to GDP growth for 2009Q2 from 0.7 percentage point to 0.9 percentage point.

Inflation. *CPI:* The CPI increased 0.1% (annual rate) in May, well below expectations. Over the year, the index was down 1.3%, the largest decline since the early 1950s. Core CPI rose 0.1%. Over the year, core prices slowed a bit in May and eased from 1.9% to 1.8%. Rent measures continued to slow, with rent of primary residences and owners' equivalent rent rising 1.5% (saar) and 1.8% (saar), respectively, versus 12-month changes of 3.0% and 2.1%.

PCE Deflator: The PCE deflator rose 0.1% in April, and is 0.4% above its year-ago reading. Core PCE increased 0.3% in April and was 1.9% higher over the year. Similarly to the CPI, recent numbers for the March and April PCE deflator have been swelled by sharp increases in tobacco prices.

Surveys. *ISM Manufacturing:* The index posted increases in both April and May and now stands at 42.8. The reading is still at a level historically associated with recessionary episodes, but it does suggest manufacturing activity may be leveling off.

ISM Non-Manufacturing: The index increased slightly to 44 in May, reaching its highest level in 6 months. The level of the index is slightly below the value at the previous recession's trough.

Foreign Data Releases. There are signs that the global downturn is easing, with Asian exports and production stabilizing and confidence measures around the world improving modestly in April and May.

Europe: GDP declined 9.8% (saar) in Q1, with large drops in consumption, investment spending, inventories and exports. Euro area industrial production fell again in April, putting it down 20% over the year. Exports were stable in March, but at a level almost 25% below last year's level. Business and consumer confidence measures improved modestly in April and May from record lows. The unemployment rate reached 9.2% in April with the number of unemployed up 27% over the year.

U.K. GDP contracted 7.5% (saar) in Q1. Q2 data have been better with production and exports registering small increases in April and house prices moving up slightly.

Asia: Japan's GDP fell 14.2% (saar) in Q1. Japanese production improved significantly in March and April as did exports, but both are still substantially below year-ago levels. Surveys suggest that production continued to improve in May.

China is enjoying a domestic-led recovery with strong production, investment spending, imports and auto sales data. Exports remain weak, although they are above the lows seen at the beginning of the year. Production and export data for Korea and Taiwan are improving, with better sales to China.

Latin America: Mexico's economy contracted 22.0% (saar) in 2009Q1, pulled down by large declines in manufacturing output and exports, while Brazil's economy fell by a milder-than-expected 3.3% due to a rebound in consumption.

5.2 Financial Markets

U.S. Markets. The intermeeting period was characterized by two main developments. First, conditions in short-term funding and credit markets continued to improve. Second, Treasury yields as well as mortgage rates rose significantly, and the expected path of policy steepened. At the same time, the composition of the Fed's balance sheet has continued to shift from short-term lending facilities to outright holdings of Treasury and agency securities.

The U.S. dollar-denominated 3-month LIBOR rate has declined from 104 basis points at the time of the April FOMC meeting to 61 basis points currently. Over the same period, the 3-month LIBOR-OIS spread has fallen to a current level of 37 basis points. This is still above its historical average, but well below the values observed between August 2007 and September 2008. [Exhibit A-8]

Credit market conditions have also improved since the April FOMC meeting with single-A corporate bond spreads narrowing 178 basis points to 2.96% and BB-rated corporate bond spreads narrowing 198 basis points to 7.58%. Supported by the positive reaction to the Supervisory Capital Assessment Program (SCAP) results, financial sector credit spreads have also generally declined over the intermeeting period. However, this downward trend has shown some slight signs of reversal in recent days. [Exhibit A-7]

Equity markets increased over the intermeeting period, continuing their upward trend since the lows reached in March 2009. Of note, the financial sector sub-index has slightly underperformed the broad market index since the release of the SCAP results. [Exhibit A-7]

Nominal Treasury yields have increased notably in the second half of the intermeeting period. The yield on the 10-year Treasury note has increased from 3.00% at the time of the April FOMC meeting to 3.83% currently. Along partially reflecting an improved macroeconomic outlook, the rise in long-term yields can also be attributed to several technical factors. In particular, convexity-related selling of longer maturity Treasury securities on the part of mortgage investors was repeatedly cited as one reason for the run-up in yields. [Exhibit A-3]

Medium-term nominal Treasury yields as well as Fed Funds and Eurodollar futures experienced a sharp increase after the release of the May employment report on June 5th. While they have reversed some of their strong initial moves in recent days, the implied path of expected future policy has steepened notably since the March and April FOMC meetings. After an adjustment for constant risk premiums in the futures markets, the Fed Funds rate is currently expected to reach 1% by August 2010. [Exhibit A-5]

Along with the hike in rates, volatility in the treasury and the futures markets has also risen sharply over the past few weeks. Several measures of implied volatility show a strong increase in the uncertainty surrounding interest rates at various horizons going forward. [Exhibit A-6]

The term structure of real rates has steepened over the intermeeting period, with longer maturity TIPS yields significantly higher than at the April FOMC meeting. Implied breakeven inflation rates have increased accordingly. Expected inflation at the 5-year horizon is now 79 basis points above its April FOMC level, while the 5-year forward breakeven inflation rate increased by 34 basis points over the same period. [Exhibit A-4]

Paralleling the rise in Treasury yields, primary and secondary market mortgage rates have increased notably over the past few weeks. The 30-year fixed rate mortgage rate is currently at 5.4%, about 60 basis points above its level at the April FOMC meeting. Over the same period, the Fannie Mae current coupon MBS yield has risen from below 4% and is currently at 4.9%. [Exhibit A-9]

While the Federal Reserve has continued its outright purchases of Treasury, Agency MBS and Agency debt securities at a relatively constant pace, demand for most liquidity facilities has declined over the intermeeting period, reflecting improved funding conditions. Most notably, there has been no usage in recent weeks of the Primary Dealer Credit Facility or of Schedule 1 auctions of the Term Securities Lending Facility. In addition, usage of the Commercial Paper Funding Facility and the Central Bank Liquidity Swaps has declined markedly since the April FOMC meeting. Except for a brief uptick prior to the release of the SCAP results, demand for short-term funding through the Term Auction Facility has also decreased. [Exhibit A-9]

In contrast, the Term Asset-Backed Securities Loan Facilities (TALF) has continued to expand and now covers \$25.2 billion in total loans outstanding. While a number of different classes of ABS deals have been submitted to TALF, the majority of funded deals remain concentrated in credit card and auto loans. While spreads on AAA-rated ABS in these sectors have continued to tighten over past weeks, the decline of AAA-rated CMBS spreads has stalled recently. This occurrence has been associated with uncertainty regarding the future credit rating of a potentially large number of CMBS deals after Standard & Poor's announced a change of their rating methodology. Of note, the first TALF CMBS operation received no submissions on June 16th. [Exhibit A-8]

Foreign Markets. Global funding conditions improved over the intermeeting period, as LIBOR-OIS spreads declined 10 and 27 basis points in the euro area and the U.K., respectively. There remain, however, concerns about the adequacy of the capital positions of European banks.

Participation in both the 28-day and 84-day U.S. dollar auctions by the ECB, the Swiss National Bank, the Bank of England and the Bank of Japan declined significantly since the last FOMC meeting. Banks now seem to be able to fund themselves at more attractive levels in the market, given that borrowing at these central bank dollar auctions costs 100 basis points above LIBOR.

In the June issue of its Financial Stability Review, the ECB suggested that European banks could face another \$283 billion in losses from bad loans by the end of 2010.

In emerging markets, sovereign debt spreads continued to decline over the intermeeting period. Emerging market bond issuance accelerated substantially, but it remains dominated by public-sector borrowing. Liquidity conditions in emerging markets improved with a decreasing need for liquidity support.

In Korea, the Bank of Korea reduced its swap line with the Federal Reserve to \$10 billion, allowing \$6.35 billion to roll off since mid-March. Mexico made only one draw on its swap line, which was established in April, of \$3.2 billion. In addition, Brazil's central bank withdrew some of the dollar liquidity it injected towards the end of 2008.

Devaluation rumors put pressure on Latvia's currency peg earlier in June. These pressures eased when further fiscal tightening was announced. A possibly disorderly exchange rate adjustment in Latvia could have serious implications for the financial stability of the region and the health of highly-exposed Austrian and Swedish banks.

Better economic data and declining risk aversion resulted in higher global equities, long-term interest rates and oil prices since the last FOMC meeting. The increase in global long term interest rates was also driven by a continued deterioration of government finances in major economies.

In Europe and Japan, equities were up between 4% and 10%, while emerging market equities showed even larger gains. European financials also gained substantially – for example, Barclays and BNP Paribas rose, respectively, 16% and 26%. European 10-year government bond yields increased over 30 basis points since the last FOMC meeting. Additionally, oil spot prices increased 45% over the intermeeting period.

The trade-weighted U.S. dollar index fell over the period, with the dollar down against the euro and the yen by 6% and 2%, respectively. The dollar remained broadly

unchanged against the Chinese yuan and forward contracts suggest modest dollar weakening over the next 12 months.

5.3 Global Economic Policy

Central banks around the world continued to ease their policies over the intermeeting period, although there are signs that the global loosening cycle is nearing an end.

The ECB lowered its policy rate on May 7th by 25 basis points to 1.0% and kept it unchanged on June 4th. In addition, the ECB will start to buy up to 60 billion euro worth of covered bonds and to conduct 12-month refinancing operations at a fixed rate of 1% later in June.

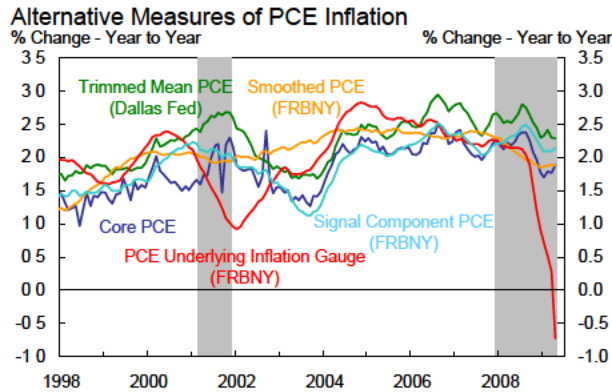
The Bank of England kept its policy rate unchanged, but decided at its May 7th meeting to increase the total amount of asset purchases financed with central bank reserves by GBP 50 billion to GBP 125 billion. As of June 11th, the Bank has spent about GBP 86 billion and is expected to have reached the 125 billion mark by July.

The remaining G-20 central banks, in particular those of Canada, Sweden and Switzerland, kept their policy rates unchanged. The Swiss National Bank nonetheless reiterated its commitment towards continued liquidity support, the outright purchase of Swiss franc bonds and interventions to prevent the Swiss currency from appreciating against the euro.

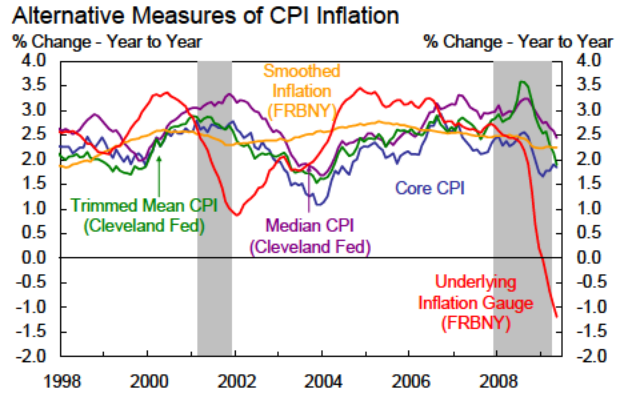
Elsewhere, central banks in Brazil, Chile, Mexico, Peru and Russia lowered their respective policy rates between 25 and 100 basis points each. In Emerging Asia outside China, monetary easing looks largely complete.

A. Significant Developments

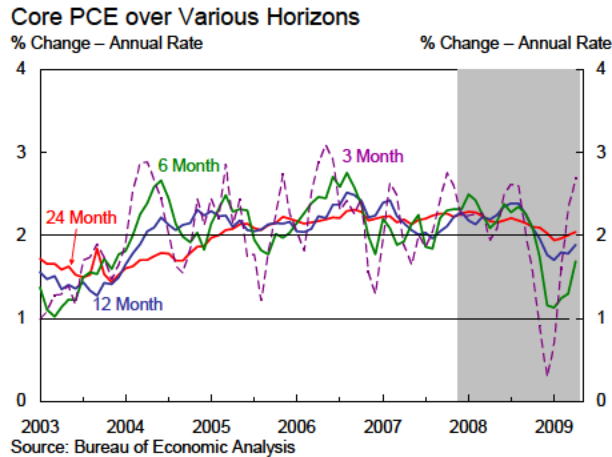
Exhibit A-1:
Measures of Trend Inflation



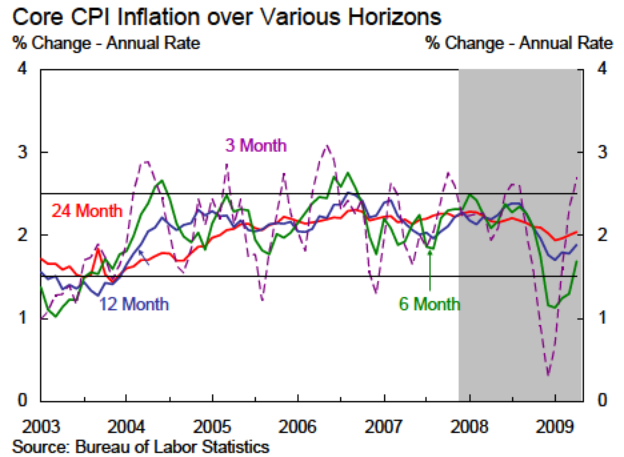
Source: Bureau of Economic Analysis, Cleveland Fed, MMS Function (FRBNY), and Swiss National Bank



Source: Bureau of Labor Statistics, Cleveland Fed, MMS Function (FRBNY), and Swiss National Bank

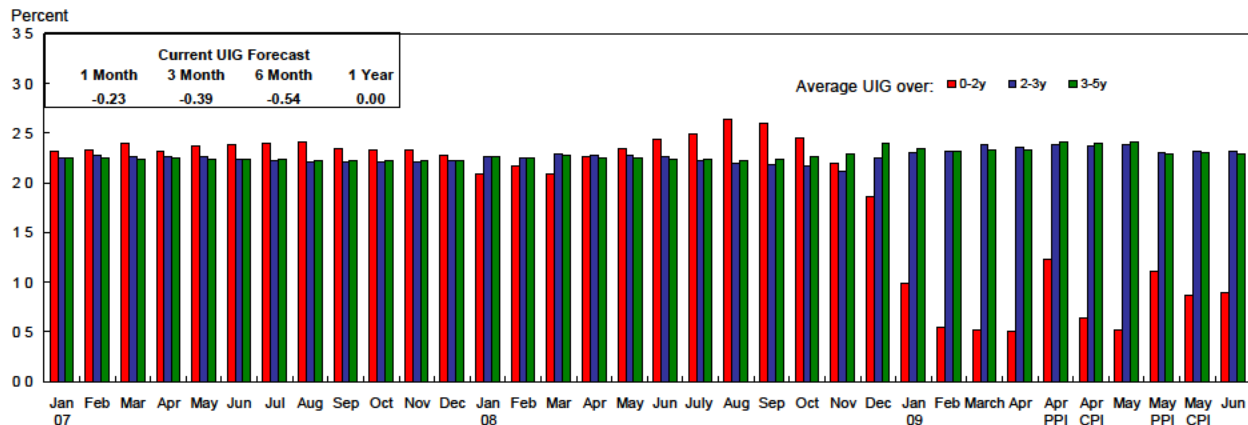


Source: Bureau of Economic Analysis



Source: Bureau of Labor Statistics

Exhibit A-2:
Underlying Inflation Gauge (UIG)



Source: MMS Function (FRBNY) and Swiss National Bank

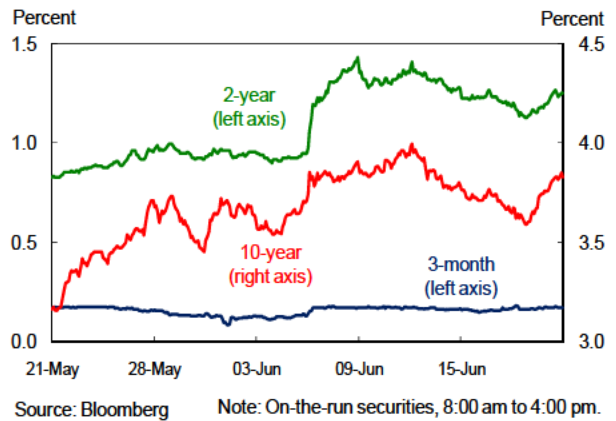
A. Significant Developments

Exhibit A-3:
Treasury Yields

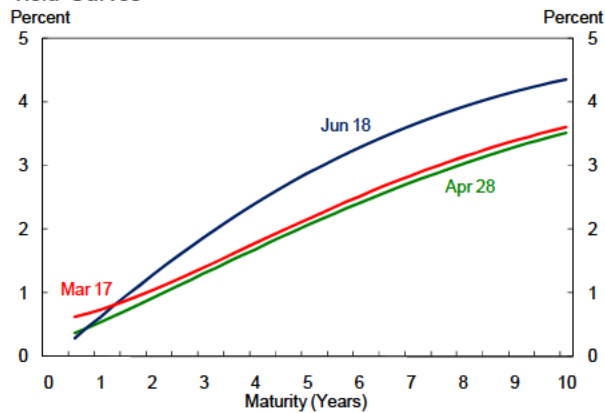
Short- and Long-Term Rates



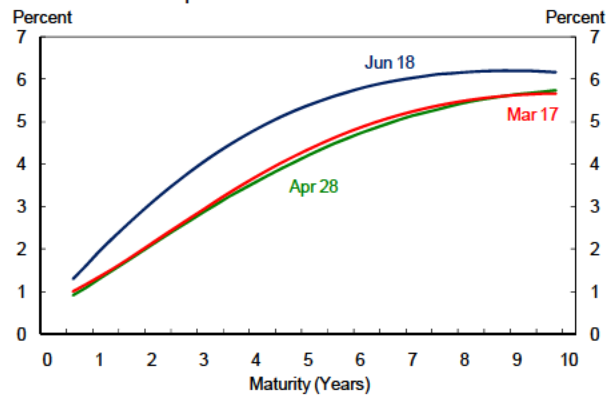
Short- and Long-Term Rates (Intraday)



Yield Curves



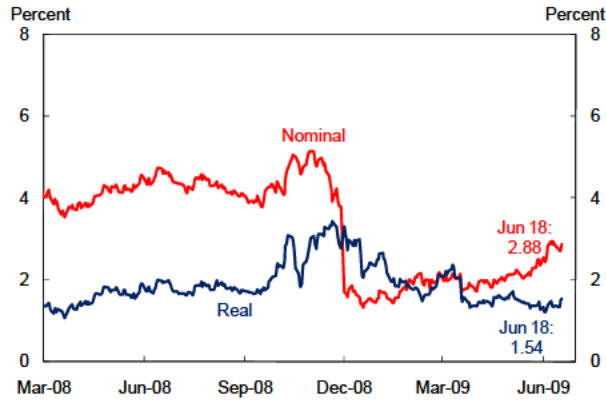
Yield Curves: Implied One-Year Forward Rates



A. Significant Developments

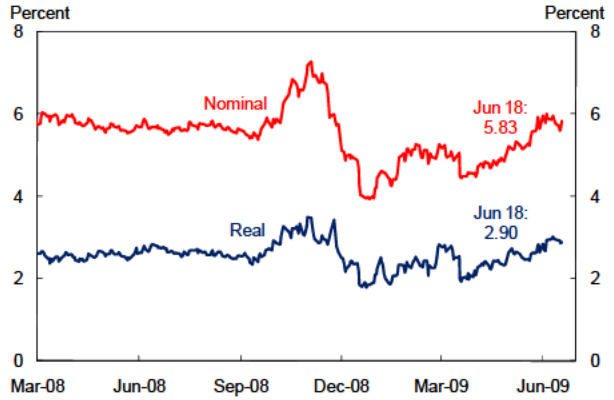
Exhibit A-4: Real Yields and Implied Inflation

5 Year Spot Rate



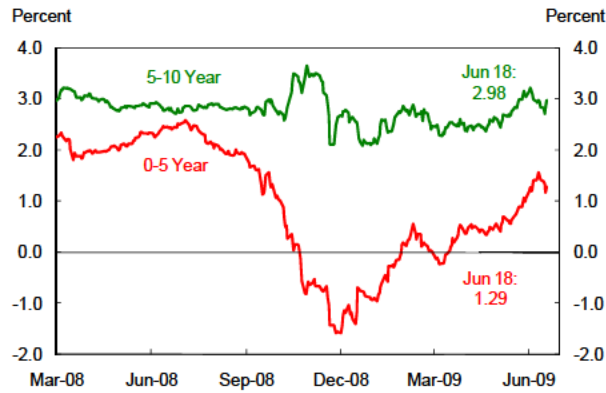
Source: Federal Reserve Board

5-10 Year Forward Rates



Source: Federal Reserve Board

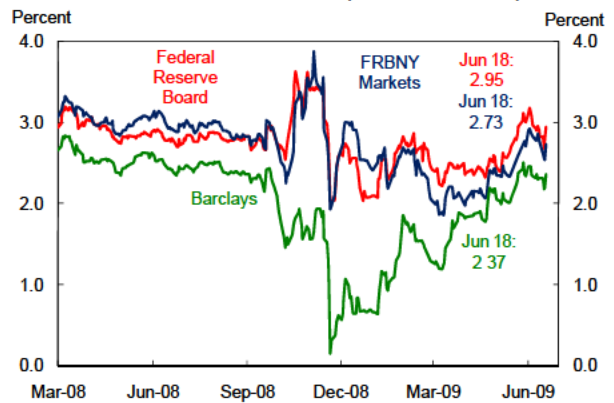
TIPS Implied Inflation Compensation: 0-5, 5-10 Year Horizons



Source: Federal Reserve Board

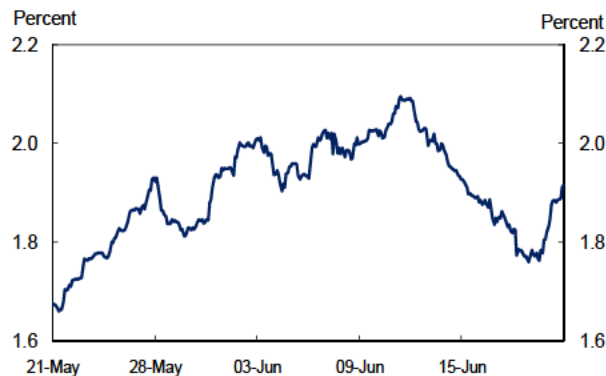
Note: Carry-adjusted

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

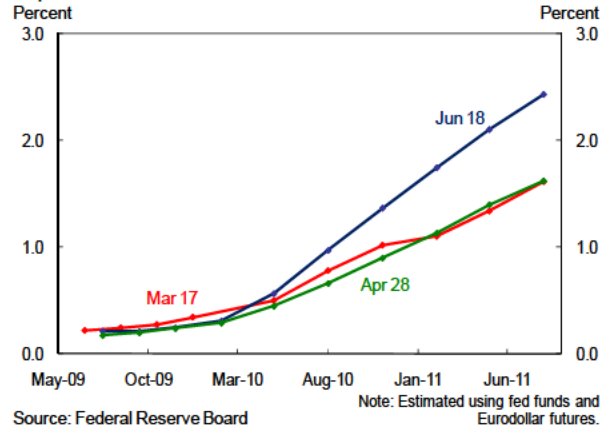


Source: Barclays

A. Significant Developments

**Exhibit A-5:
Policy Expectations**

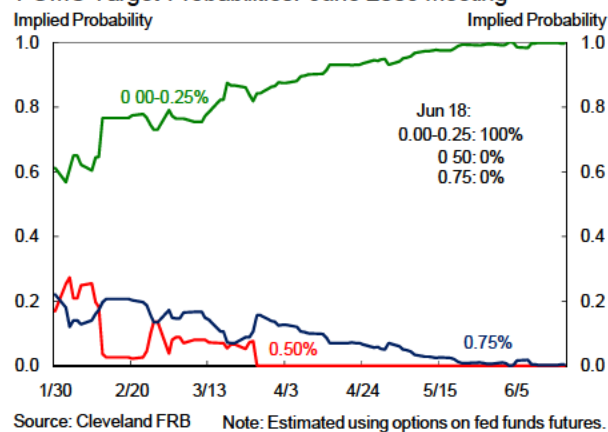
Expected Fed Funds



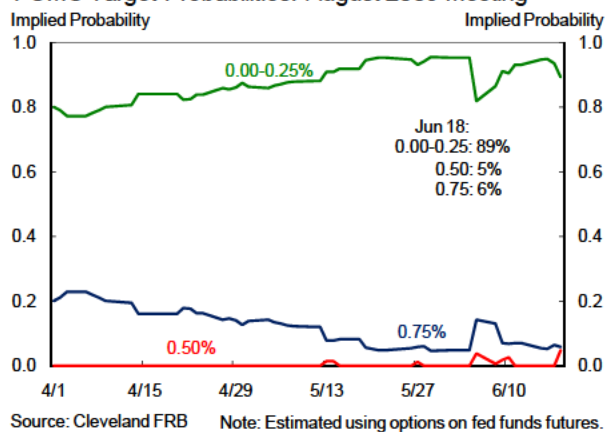
Implied Eurodollar Rates (Intraday)



FOMC Target Probabilities: June 2009 Meeting



FOMC Target Probabilities: August 2009 Meeting



A. Significant Developments

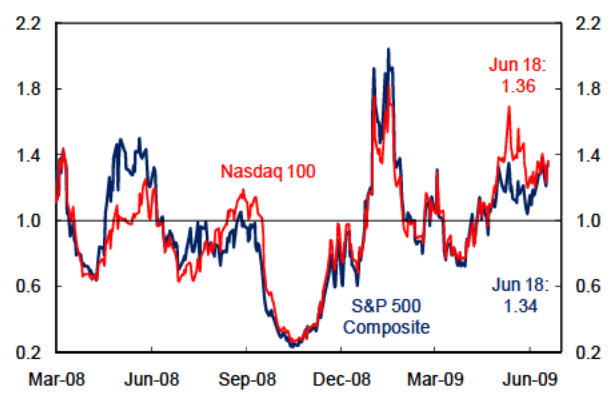
Exhibit A-6:
Implied Volatility

Equity Index Implied Volatility: 1-Month



Source: Datastream

Ratio of Implied to Realized Volatility



Source: Datastream

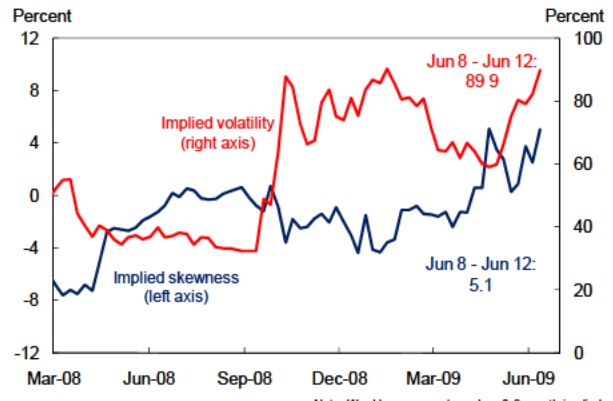
Note: Realized volatility is annualized 1-month rolling standard deviation of daily returns (360-day year) for S&P 500 and Nasdaq 100.

Option and Swaption Volatility Expectations



Source: Merrill Lynch, Haver

Eurodollar Options: Implied Skewness and Volatility



Source: CME and FRBNY calculations

Note: Weekly averages based on 3-9 month implied volatilities from Eurodollar futures options.

Short-Term Interest Rate Expectations

Width of 90% Confidence Interval Implied by Eurodollar Options



Source: Datastream, FRBNY calculations

Long-Term Interest Rate Expectations

Width of 90% Confidence Interval Implied by Swaptions

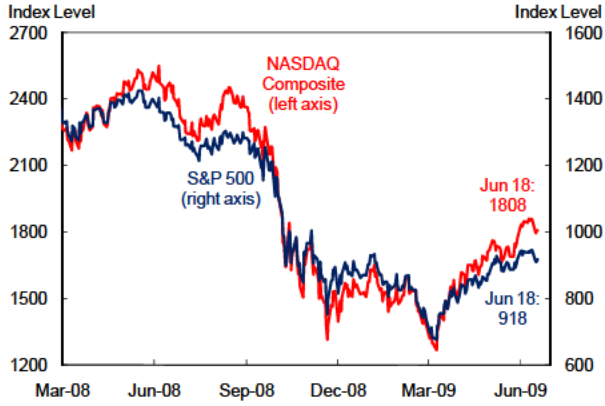


Source: Datastream, FRBNY calculations

A. Significant Developments

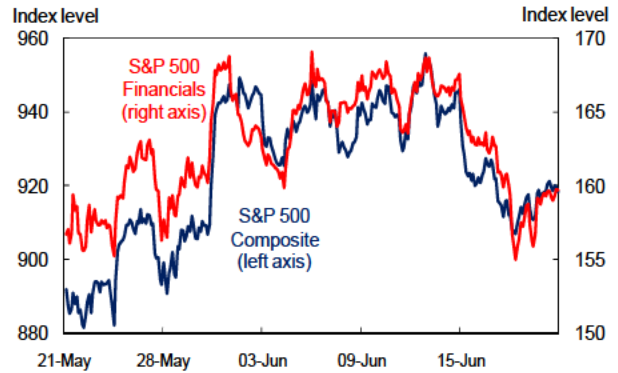
Exhibit A-7: Equity and Credit

Equity Index Levels



Source: Datastream

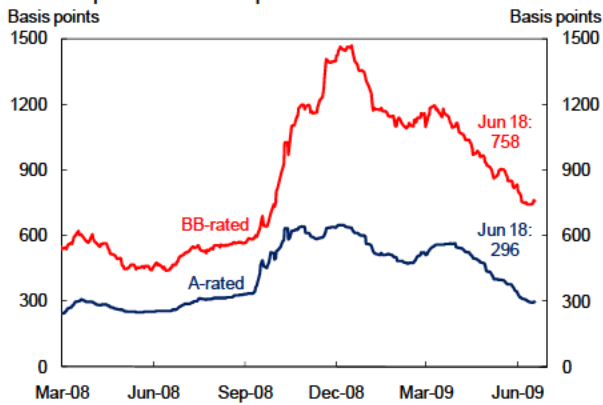
S&P 500 Indices (Intraday)



Source: Bloomberg

Note: 9:30 am to 4:00 pm.

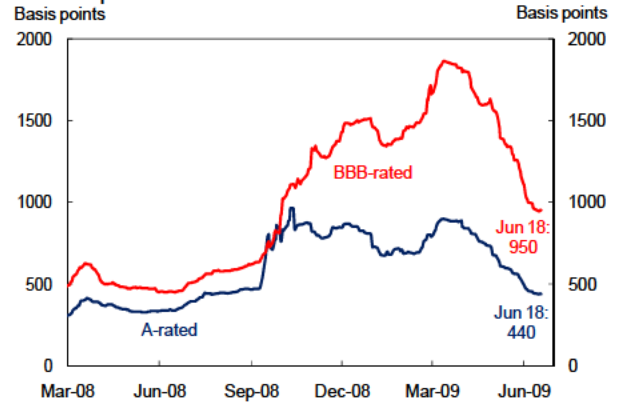
Credit Spreads - All Corporates



Source: Merrill Lynch

Note: Option-adjusted spreads.

Credit Spreads - Financials



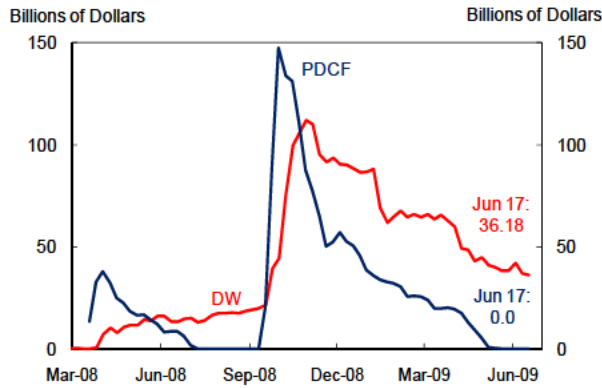
Source: Merrill Lynch

Note: Option-adjusted spreads.

A. Significant Developments

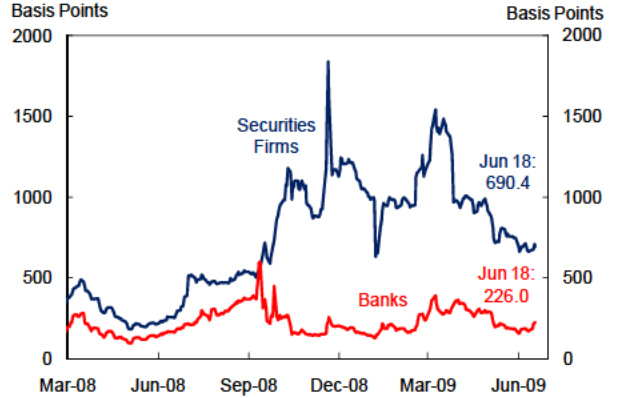
Exhibit A-8: Liquidity Facilities

Discount Window and PDCF Borrowing



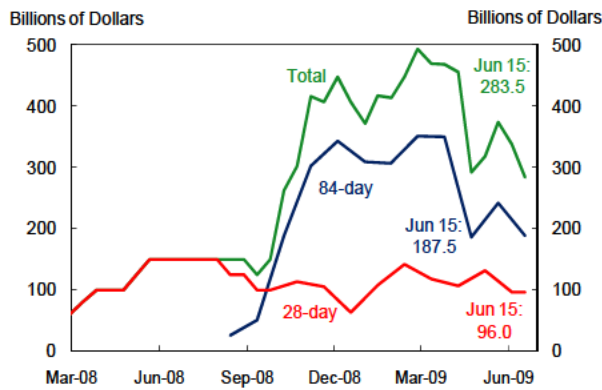
Source: Federal Reserve Board

Sector CDS Spreads



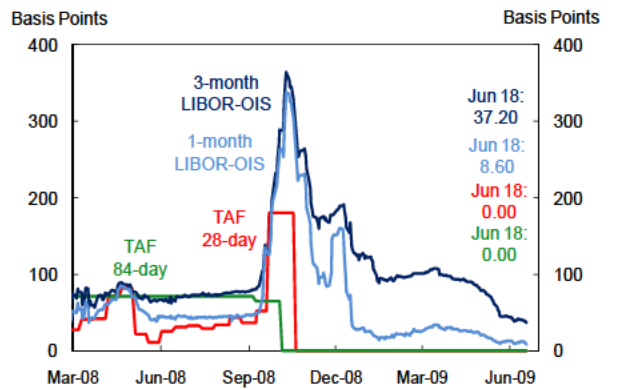
Source: Datastream

TAF Total Outstanding



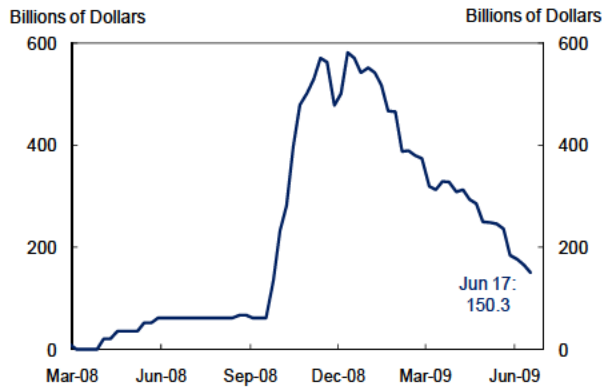
Source: Federal Reserve Board

TAF Spreads and Libor to OIS



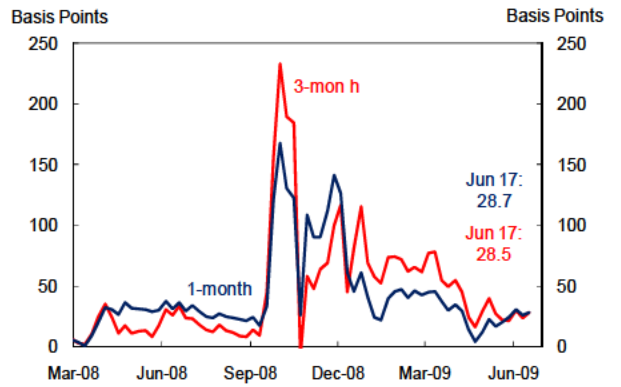
Source: Federal Reserve Board, Bloomberg
Note: The TAF spread is defined as the stop-out rate less the minimum bid rate.

Central Bank Liquidity Swaps



Source: Federal Reserve Board, Bloomberg

Euro-Dollar Swap Implied Basis Spreads

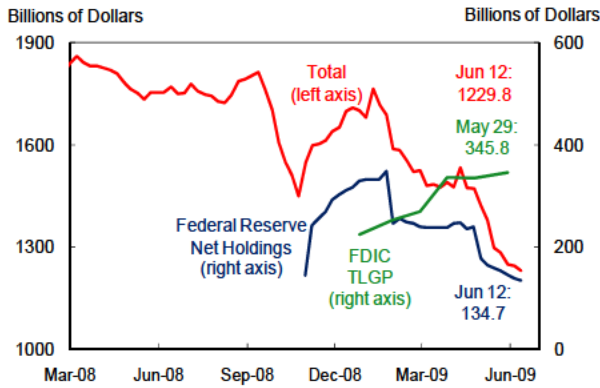


Source: Reuters, Tullett

A. Significant Developments

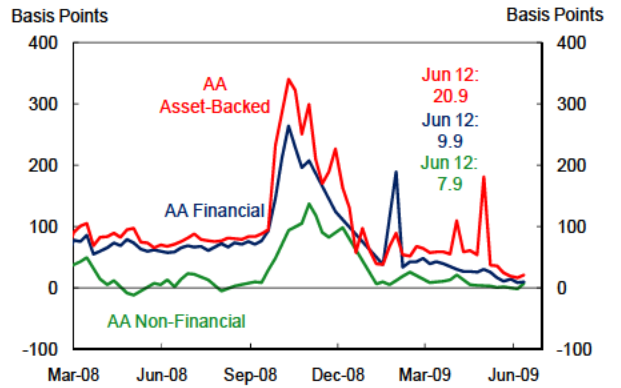
Exhibit A-8: Liquidity Facilities

CPFF and Commercial Paper Outstanding



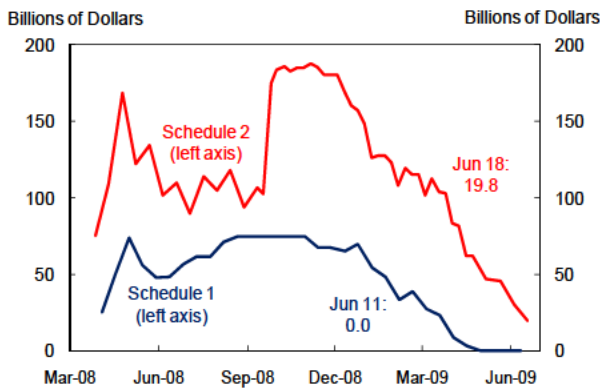
Source: Federal Reserve Board, Haver

3-month CP Rates over OIS



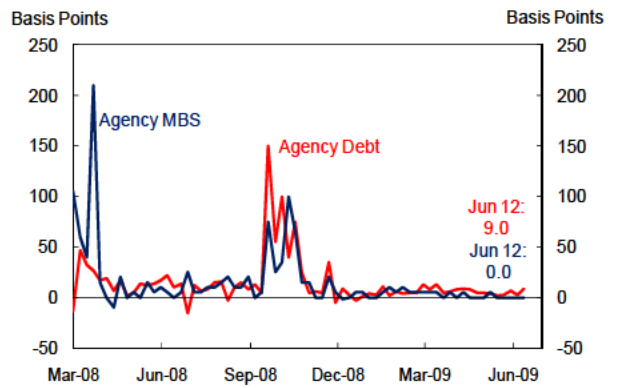
Source: Federal Reserve Board, Haver, Bloomberg

TSLF Total Outstanding



Source: Federal Reserve Bank of New York

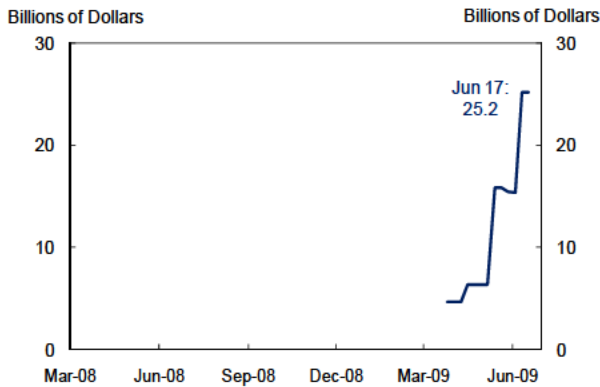
Overnight Financing Spreads



Source: Bloomberg

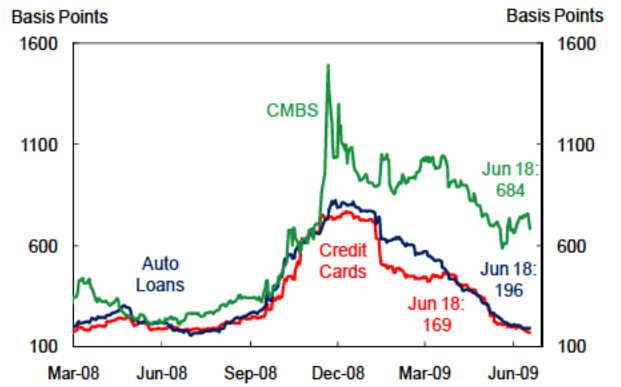
Note: Spreads are between overnight agency debt and MBS and Treasury general collateral repo rates

TALF Total Outstanding



Source: Federal Reserve Board

AAA-Rated ABS/CMBS Spreads



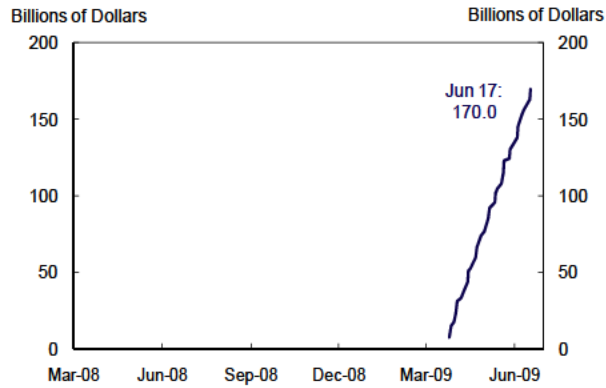
Source: Merrill Lynch

Note: Option-adjusted spreads.

A. Significant Developments

Exhibit A-9: Outright Purchase Program

Treasury Outright Purchases



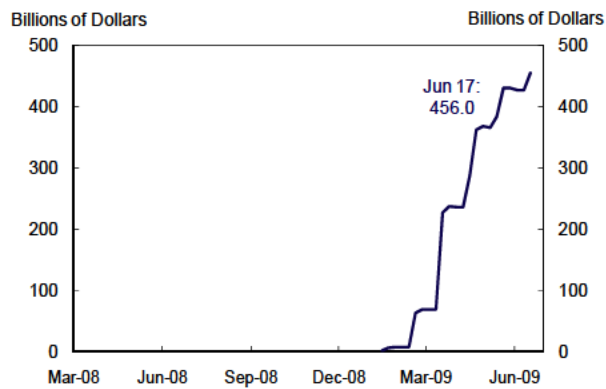
Source: Federal Reserve

Treasury Rates



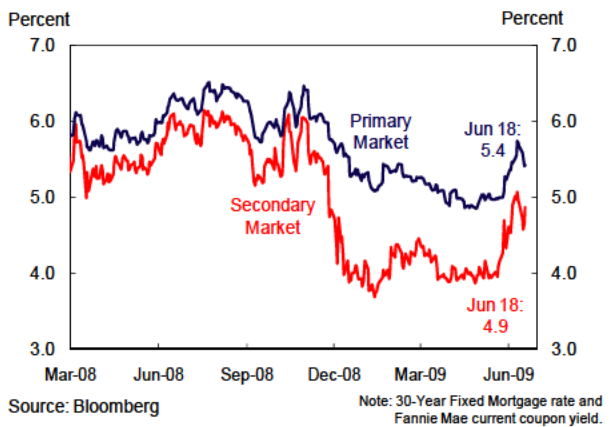
Source: Wall Street Journal, Haver

Agency MBS Net Outright Purchases



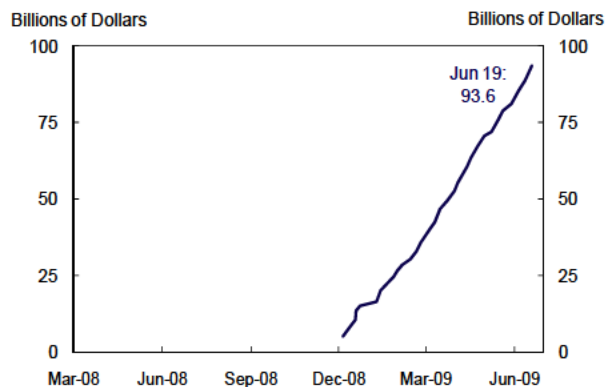
Source: Federal Reserve

Mortgage Market Rates



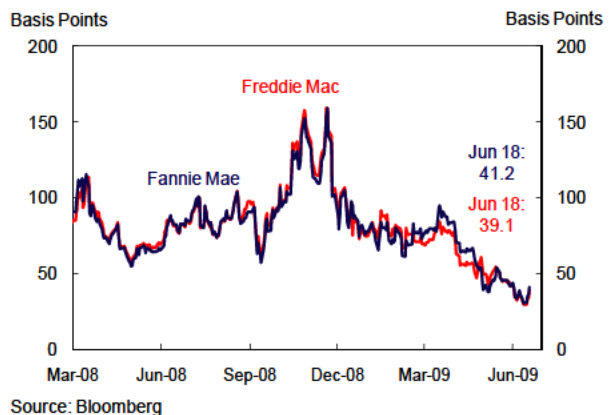
Source: Bloomberg

Agency Coupon Debt Outright Purchases



Source: Federal Reserve

5-Year Agency Debt Spreads

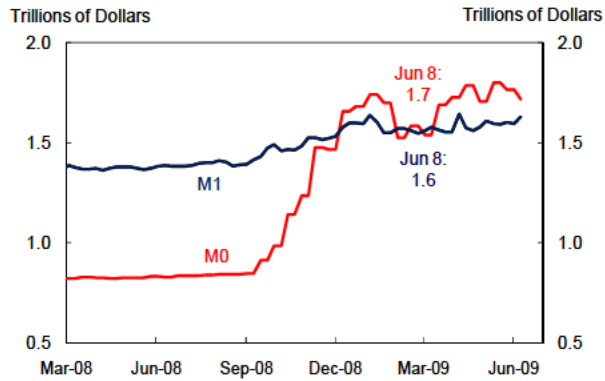


Source: Bloomberg

A. Significant Developments

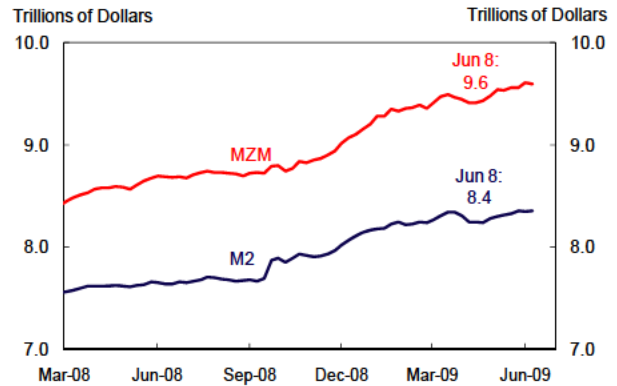
Exhibit A-10: Money and Banking

Measures of Money Supply: M0, M1



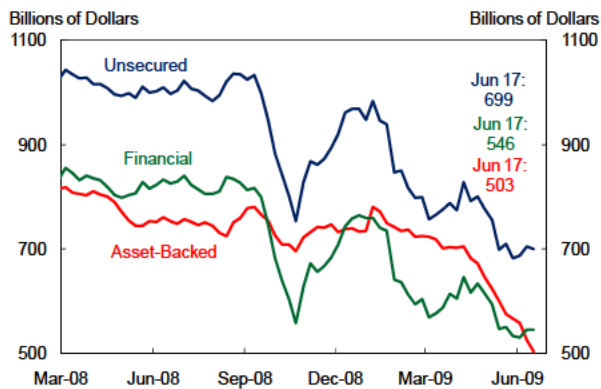
Source: Federal Reserve Board, Haver

Measures of Money Supply: M2, M2M



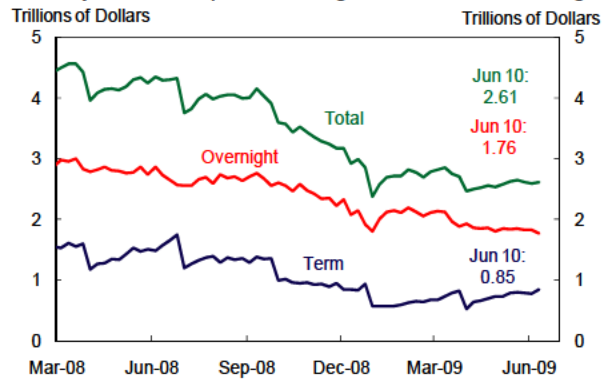
Source: Federal Reserve Board, Haver

Commercial Paper Outstanding



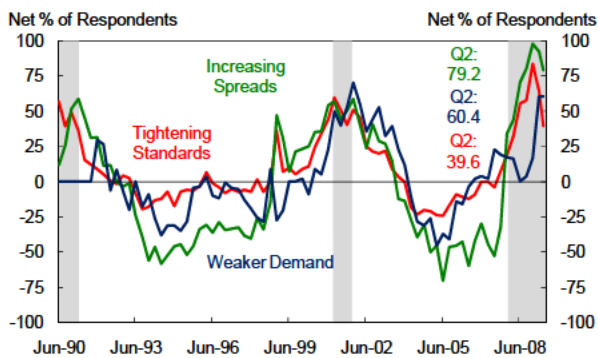
Source: Federal Reserve Board

Primary Dealer Repurchase Agreements Outstanding



Source: Federal Reserve Board

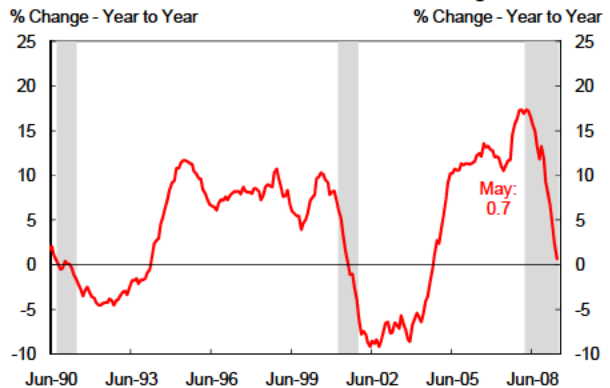
Bank Lending Practices



Source: Federal Reserve Board

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

Commercial and Industrial Loans Outstanding

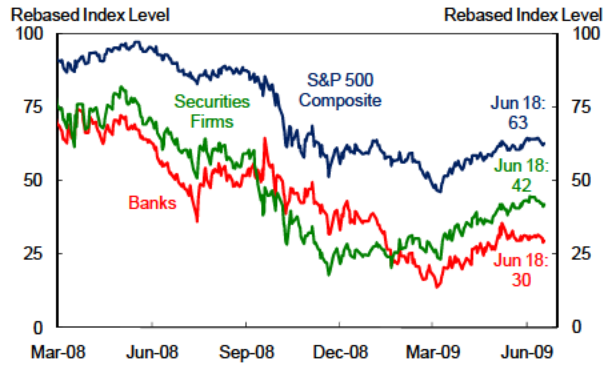


Source: Federal Reserve Board

A. Significant Developments

Exhibit A-11: Financial Intermediaries

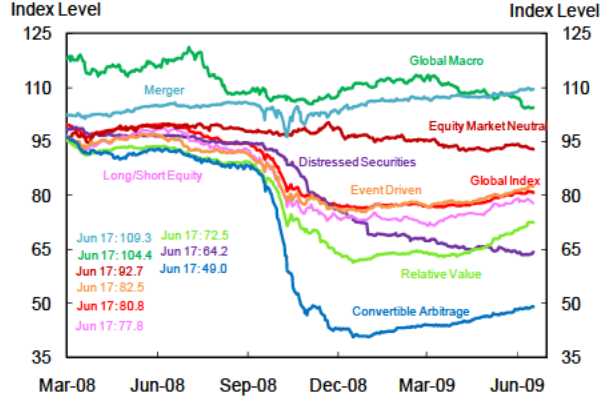
Equity Performance



Note: Rebased to equal 100 on August 1, 2007. Banks series is S&P 500 Banks index. Securities Firms series is S&P 500 Investment Banks and Brokerages index.

Source: Datastream

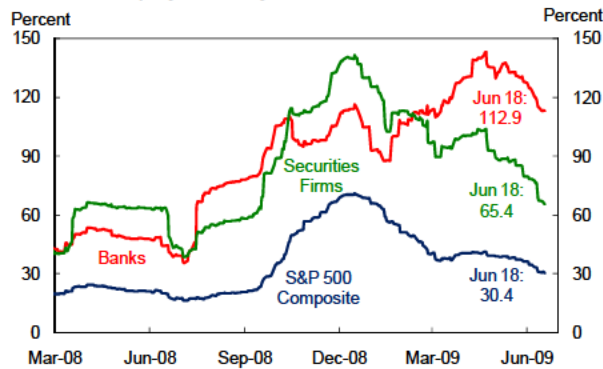
HFRX Hedge Fund Indices



Note: Rebased to equal 100 on August 1, 2007.

Source: HFR

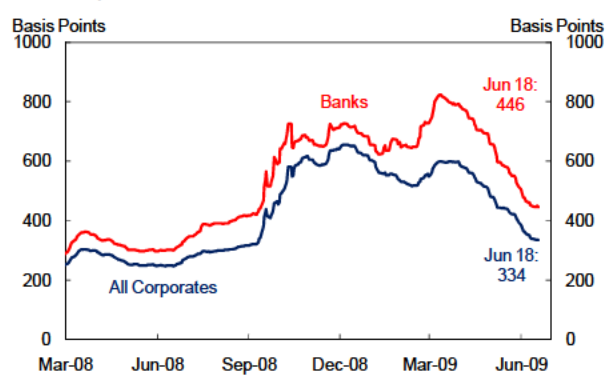
Historical Equity Volatility



Note: Annualized rolling 3-month standard deviation of daily returns. Banks series is S&P 500 Banks index. Securities Firms series is S&P 500 Investment Banks and Brokerages index.

Source: Datastream

Credit Spreads



Note: Option-adjusted spreads. Banks series is Merrill Lynch Corporates, Banks bond index. Securities Firms series is Merrill Lynch Corporates, Brokerages bond index.

Source: Merrill Lynch

A. Significant Developments

Exhibit A-12: Interbank Funding Stress Index

	Current level (Jun 18)	Change since last FOMC (Apr 28)	Change since Mar FOMC (Mar 17)	1-year low	1-year high
Interbank funding stress index					
Overall index	3.03	-1.40	-3.21	2.51	10.67
Banking sector credit risk	6.61	-2.54	-4.76	3.56	12.22
Fed lending facilities use	1.73	-0.65	-2.15	1.72	8.80
Cost of funds in the interbank market	0.74	-1.01	-2.71	0.51	12.75

Overall interbank funding stress index



Source: New York Fed calculations

Banking sector credit risk



Source: New York Fed calculations

Fed lending facilities use



Source: New York Fed calculations

Cost of funds in the interbank market



Source: New York Fed calculations

A. Significant Developments

Exhibit A-13: Income Effects of Fed Balance Sheet Changes

Recent Developments

- Total facility interest income over the last four weeks was \$713mn, down from \$882mn over the previous four weeks. The difference is largely driven by smaller outstanding amounts in the FX swaps and CPFF.
- 2009 pro-forma income from the liquidity facilities has declined commensurately and is now \$8.7bn.
- Pro forma income from all sources going forward is \$51.8bn (based on the 6/3/09 balance sheet), with declining income from the facilities more than offset by increased income from securities held outright.

Income Effects of Liquidity Facilities

Period	Interest/Fee Income	Interest Foregone	Difference
2008	11,685	3,636	8,049
2009 YTD	5,722	840	4,882
2009 Pro Forma	10,084	1,390	8,694
Last 4 weeks	713	105	608
Total since 8/8/07	17,525	4,555	12,970

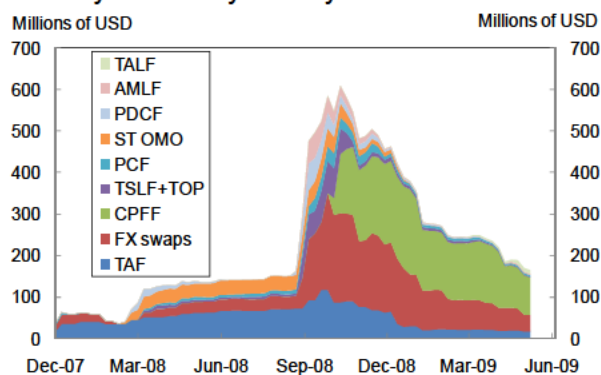
Note: Figures in millions of USD.

Pro Forma Income, Next 12 Months

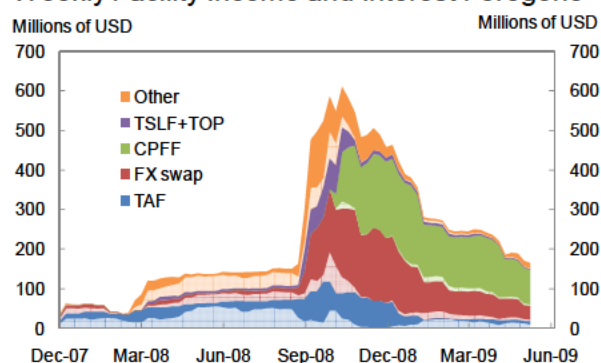
Line Item	Balance Sheet		
	8/8/07	6/3/09	Difference
Sec. Held Outright	24,243	43,808	19,565
Liquidity Facilities	0	7,442	7,442
Firm-Specific Loans	0	2,236	2,236
Other	830	802	-28
Liabilities	-44	-2,531	-2,487
Net	25,030	51,759	26,729

Note: Estimates based on 8/8/07 and 6/3/09 balance sheets along with common (and current) assumptions about policy and market interest rates. Figures in millions of USD.

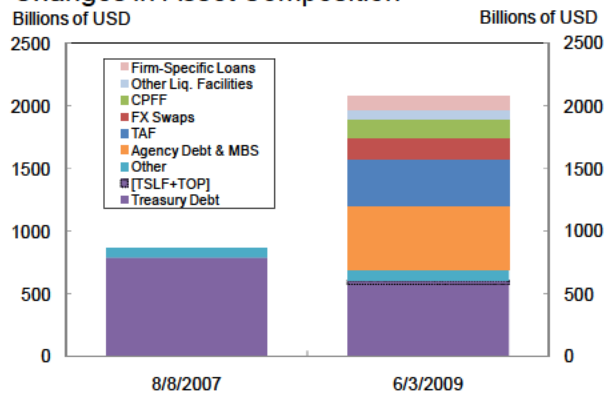
Weekly Income by Facility



Weekly Facility Income and Interest Foregone



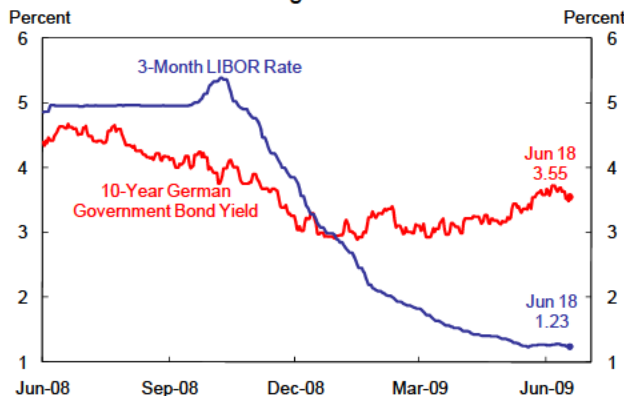
Changes in Asset Composition



A. Significant Developments

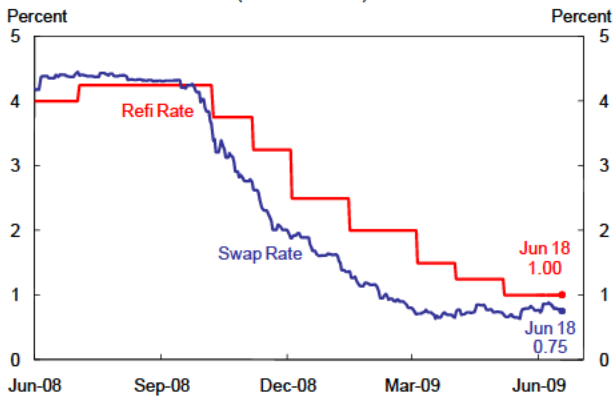
Exhibit A-14: Global Interest Rates and Equity Markets

Euro Area Short- and Long-Term Interest Rates



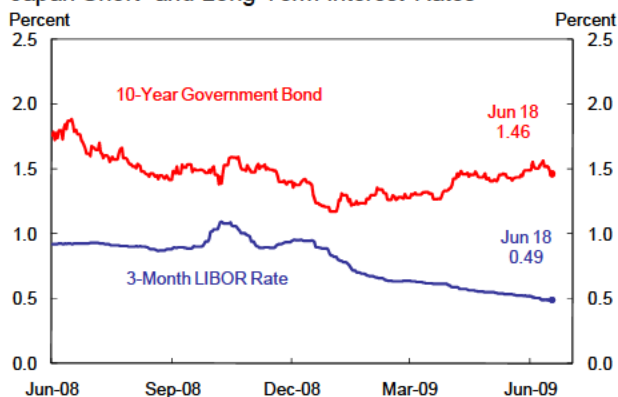
Source: Bloomberg

Euro Area: OIS Rate (Six Months)



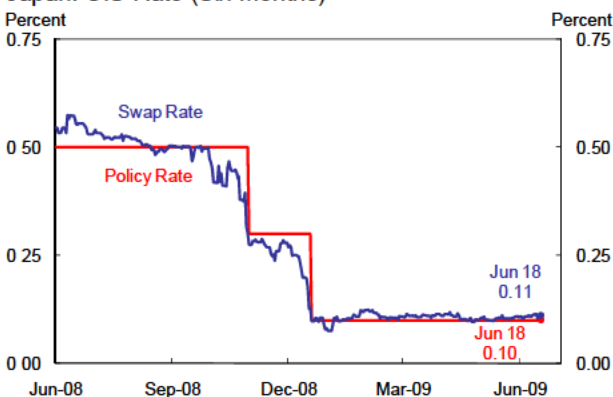
Source: Bloomberg

Japan Short- and Long-Term Interest Rates



Source: Bloomberg

Japan: OIS Rate (Six Months)



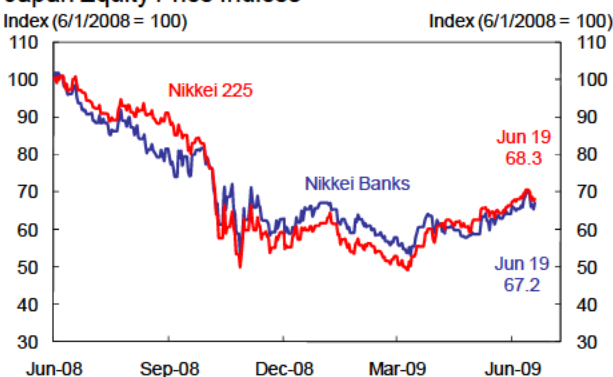
Source: Bloomberg

Euro Area Equity Price Indices



Source: Bloomberg

Japan Equity Price Indices

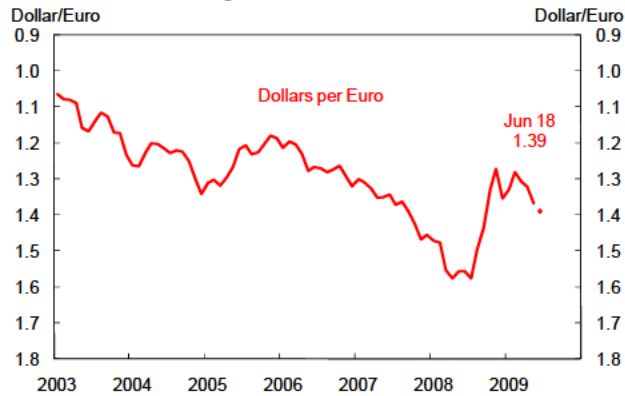


Source: Bloomberg

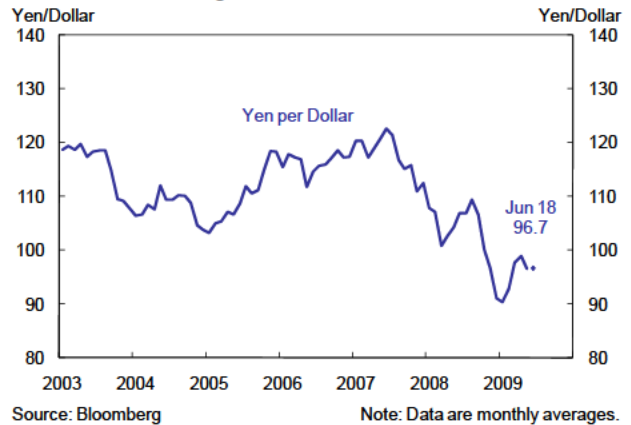
A. Significant Developments

Exhibit A-15:
Exchange Rates

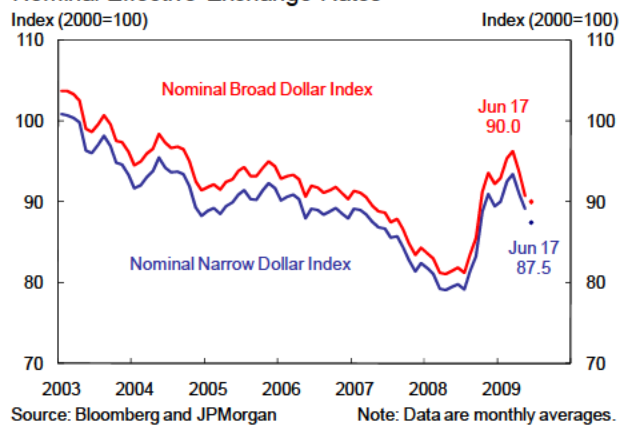
Dollar-Euro Exchange Rate



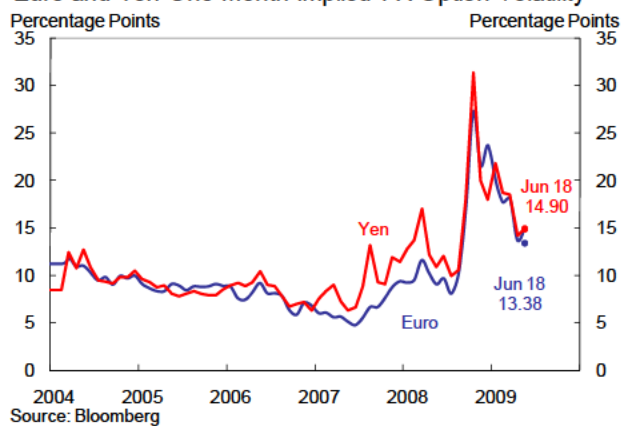
Yen-Dollar Exchange Rate



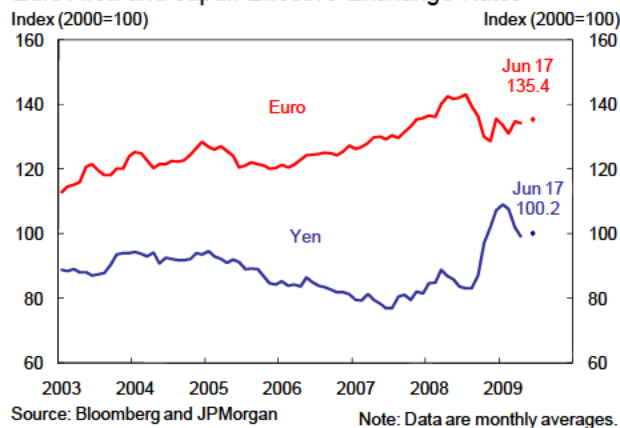
Nominal Effective Exchange Rates



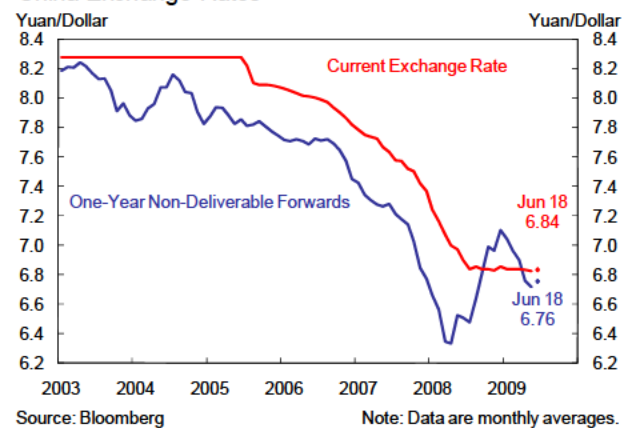
Euro and Yen One-Month Implied FX Option Volatility



Euro Area and Japan Effective Exchange Rates



China Exchange Rates



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**		
	Mar	Apr	Jun	Mar	Apr	Jun	Mar	Apr	Jun	Mar	Apr	Jun
2008												
Q1	2.2	2.2	2.2	0.9	0.9	0.9	4.9	4.9	4.9	2.3	2.3	2.3
Q2	2.1	2.1	2.1	2.8	2.8	2.8	5.4	5.4	5.4	2.0	2.0	2.0
Q3	2.4	2.4	2.4	-0.5	-0.5	-0.5	6.1	6.1	6.1	2.0	2.0	2.0
Q4	0.8	0.9	0.9	-6.2	-6.3	-6.3	6.9	6.9	6.9	0-0.25	0-0.25	0-0.25
2009												
Q1	0.6	1.5	1.5	-6.3	-6.2	-5.7	8.0	8.1	8.1	0-0.25	0-0.25	0-0.25
Q2	0.5	0.6	2.4	-2.4	-1.2	-0.8	8.8	8.7	9.3	0-0.25	0-0.25	0-0.25
Q3	0.8	0.7	0.9	0.6	0.3	0.7	9.3	9.3	10.0	0-0.25	0-0.25	0-0.25
Q4	1.0	0.9	0.8	0.7	1.0	0.6	9.6	9.6	10.5	0-0.25	0-0.25	0-0.25
2010												
Q1	1.2	1.1	1.0	1.8	1.6	0.9	9.7	9.7	10.7	0-0.25	0-0.25	0-0.25
Q2	1.4	1.3	1.2	2.4	2.5	2.1	9.8	9.7	10.6	0-0.25	0-0.25	0-0.25
Q3	1.5	1.4	1.3	2.9	2.9	2.5	9.7	9.7	10.5	0-0.25	0-0.25	0-0.25
Q4	1.6	1.5	1.4	3.1	3.2	3.0	9.5	9.5	10.3	0-0.25	0-0.25	0-0.25
Q4/Q4												
2007	2.2	2.2	2.2	2.3	2.3	2.3	0.4	0.4	0.4	-1.0	-1.0	-1.0
2008	1.9	1.9	1.9	-0.8	-0.8	-0.8	2.1	2.1	2.1	-4.0	-4.0	-4.0
2009	0.7	0.9	1.4	-1.9	-1.6	-1.3	2.7	2.7	3.6	0.0	0.0	0.0
2010	1.4	1.3	1.2	2.6	2.6	2.1	-0.1	-0.1	-0.2	0.0	0.0	0.0

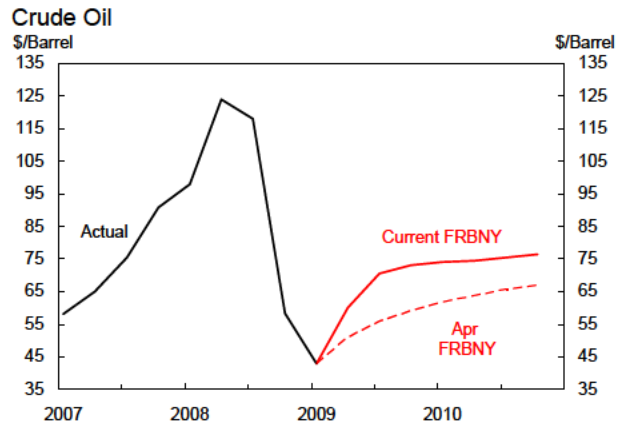
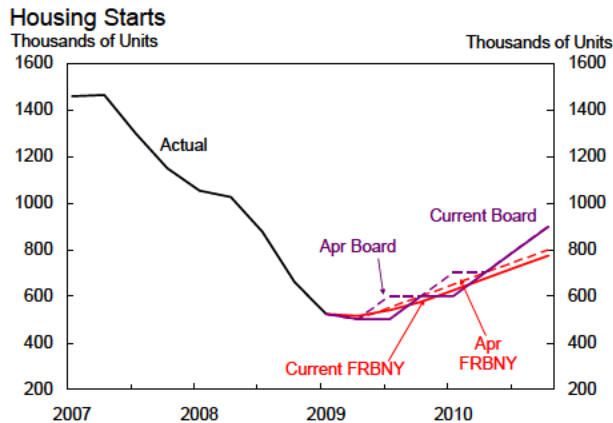
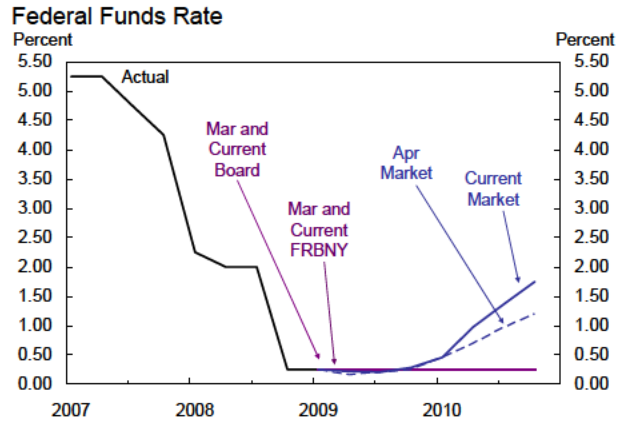
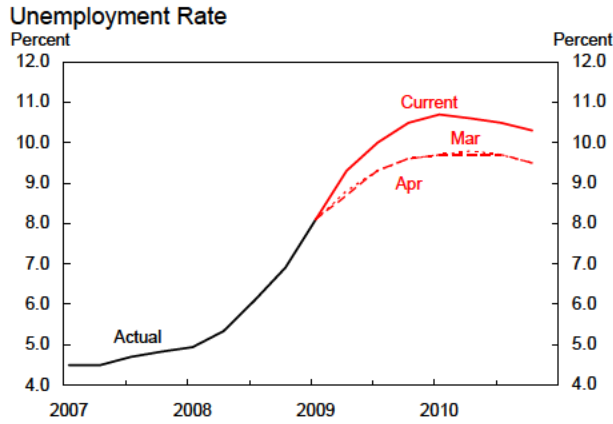
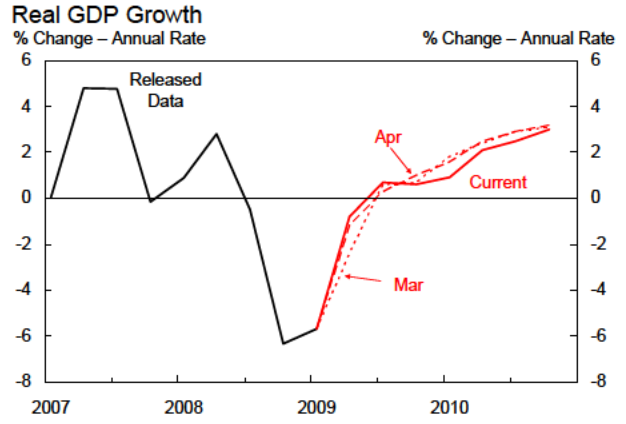
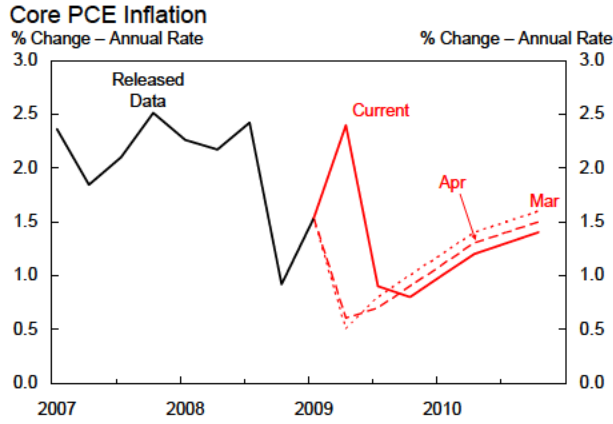
Note: Columns reflect the forecast dates. Numbers in gray are from previous Blackbooks, and numbers in italics are released data.

*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



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)	
	2009Q2	2009Q3	2009Q2	2009Q3
OUTPUT				
Real GDP	-0.8 (-1.2)	0.7 (0.3)	-0.8 (-1.2)	0.7 (0.3)
Final Sales to Domestic Purchasers	-2.5 (-2.9)	-0.7 (-1.5)	-2.6 (-3.0)	-0.7 (-1.6)
Consumption	0.0 (0.5)	1.0 (1.0)	0.0 (0.4)	0.7 (0.7)
BFI: Equipment and Software	-22.5 (-30.0)	-15.0 (-20.0)	-1.5 (-2.1)	-0.9 (-1.2)
BFI: Nonresidential Structures	-10.0 (-20.0)	-10.0 (-15.0)	-0.4 (-0.8)	-0.4 (-0.6)
Residential Investment	-25.0 (-15.9)	-15.0 (-21.8)	-0.8 (-0.5)	-0.4 (-0.7)
Government: Federal	2.0 (1.5)	1.5 (1.5)	0.2 (0.1)	0.1 (0.1)
Government: State and Local	-1.2 (-1.0)	1.0 (0.5)	-0.2 (-0.1)	0.1 (0.1)
Inventory Investment	--	--	1.0 (1.4)	1.8 (1.6)
Net Exports	--	--	0.9 (0.4)	-0.4 (0.2)
INFLATION				
Total PCE Deflator	2.2 (0.8)	2.1 (1.1)		
Core PCE Deflator	2.4 (0.6)	0.9 (0.7)		
PRODUCTIVITY AND LABOR COSTS*				
Output per Hour	3.5 (1.5)	0.5 (0.5)		
Compensation per Hour	2.3 (2.3)	2.0 (2.0)		
Unit Labor Costs	-1.3 (0.8)	1.5 (1.5)		

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		
	2008	2009	2010	2008	2009	2010
OUTPUT						
Real GDP	-0.8 (-0.8)	-1.3 (-1.6)	2.1 (2.6)	-0.8 (-0.8)	-1.3 (-1.6)	2.1 (2.6)
Final Sales to Domestic Purchasers	-1.7 (-1.7)	-2.2 (-2.1)	2.8 (2.6)	-1.8 (-1.8)	-2.2 (-2.2)	2.8 (2.7)
Consumption	-1.5 (-1.5)	0.9 (1.0)	2.7 (2.7)	-1.1 (-1.1)	0.6 (0.7)	2.0 (2.0)
BFI: Equipment and Software	-11.0 (-11.0)	-20.8 (-24.0)	1.2 (-2.7)	-0.8 (-0.8)	-1.4 (-1.6)	0.1 (-0.1)
BFI: Nonresidential Structures	6.3 (6.3)	-19.0 (-15.9)	2.6 (2.6)	0.2 (0.2)	-0.8 (-0.6)	0.1 (0.1)
Residential Investment	-19.4 (-19.4)	-23.0 (-20.9)	8.7 (8.7)	-0.8 (-0.8)	-0.7 (-0.6)	0.2 (0.2)
Government: Federal	8.2 (8.2)	0.1 (0.5)	1.5 (1.5)	0.6 (0.6)	0.0 (0.0)	0.1 (0.1)
Government: State and Local	0.4 (0.4)	-0.6 (-0.9)	3.1 (3.1)	0.0 (0.0)	-0.1 (-0.1)	0.4 (0.4)
Inventory Investment	-- --	-- --	-- --	-0.2 (-0.2)	0.5 (0.4)	-0.1 (0.1)
Net Exports	-- --	-- --	-- --	1.1 (1.1)	0.5 (0.3)	-0.6 (-0.3)
INFLATION						
Total PCE Deflator	1.9 (1.9)	1.2 (0.6)	1.6 (1.7)			
Core PCE Deflator	1.9 (1.9)	1.4 (0.9)	1.2 (1.3)			
Total CPI Inflation	1.5 (1.5)	0.7 (0.3)	1.8 (1.7)			
Core CPI Inflation	2.0 (2.0)	1.4 (1.2)	1.4 (1.5)			
GDP Deflator	2.0 (2.0)	1.3 (0.6)	1.6 (1.3)			

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		
	2008	2009	2010
INTEREST RATE ASSUMPTIONS			
Federal Funds Rate (End-of-Year)	0-0.25 (0-0.25)	0-0.25 (0-0.25)	0-0.25 (0-0.25)
10-Year Treasury Yield (Avg. Q4 Level)	3.3 (3.3)	3.7 (3.0)	3.8 (3.4)
PRODUCTIVITY AND LABOR COSTS*			
Output	-1.8 (-1.8)	-2.2 (-2.6)	2.3 (2.9)
Hours	-4.0 (-4.0)	-3.6 (-3.0)	1.4 (1.9)
Output per Hour	2.2 (2.2)	1.5 (0.5)	0.9 (1.0)
Compensation per Hour	3.9 (4.1)	2.6 (2.0)	1.6 (1.6)
Unit Labor Costs	1.6 (1.8)	1.1 (1.5)	0.7 (0.6)
LABOR MARKET			
Unemployment Rate (Avg. Q4 Level)	6.9 (6.9)	10.5 (9.6)	10.3 (9.5)
Participation Rate (Avg. Q4 Level)	65.8 (65.8)	65.8 (65.4)	65.8 (65.5)
Avg. Monthly Nonfarm Payroll Growth (Thous.)	-189 (-189)	-382 (-333)	137 (127)
INCOME			
Personal Income	2.1 (2.2)	0.7 (0.4)	2.6 (2.8)
Real Disposable Personal Income	0.9 (0.8)	3.2 (2.7)	0.4 (0.5)
Corporate Profits Before Taxes	-21.5 (-21.5)	12.3 (-6.1)	1.6 (2.7)

Note: Numbers in parentheses are from the previous Blackbook.

*Nonfarm business sector.

B. FRBNY Forecast Details

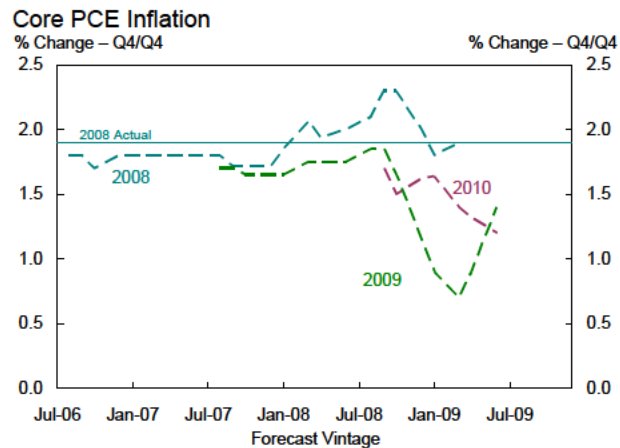
Exhibit B-6: FRBNY and Greenbook Forecast Comparison

	FRBNY			Board		
	2008	2009	2010	2008	2009	2010
OUTPUT						
Real GDP	-0.8 (-0.8)	-1.3 (-1.6)	2.1 (2.6)	-0.8 (-0.8)	-1.1 (-1.6)	3.0 (2.6)
GDP Growth Contributions						
Final Sales to Domestic Purchasers	-1.8 (-1.8)	-2.2 (-2.2)	2.8 (2.7)	-1.9 (-1.9)	-1.8 (-1.9)	2.9 (2.9)
Consumption	-1.1 (-1.1)	0.6 (0.7)	2.0 (2.0)	-1.1 (-1.1)	0.6 (0.4)	2.0 (1.9)
BFI	-0.6 (-0.6)	-2.1 (-2.2)	0.1 (-0.0)	-0.6 (-0.6)	-2.0 (-2.2)	0.3 (0.3)
Residential Investment	-0.8 (-0.8)	-0.7 (-0.6)	0.2 (0.2)	-0.8 (-0.8)	-0.7 (-0.6)	0.2 (0.3)
Government	0.6 (0.6)	-0.1 (-0.1)	0.5 (0.5)	0.6 (0.6)	0.3 (0.5)	0.4 (0.4)
Inventory Investment	-0.2 (-0.2)	0.5 (0.4)	-0.1 (0.1)	-0.2 (-0.2)	0.0 (0.1)	0.4 (0.3)
Net Exports	1.1 (1.1)	0.5 (0.3)	-0.6 (-0.3)	1.1 (1.1)	0.7 (0.1)	-0.3 (-0.5)
INFLATION						
Total PCE Deflator	1.9 (1.9)	1.2 (0.6)	1.6 (1.7)	1.9 (1.9)	1.4 (0.7)	1.1 (1.0)
Core PCE Deflator	1.9 (1.9)	1.4 (0.9)	1.2 (1.3)	1.9 (1.9)	1.4 (1.2)	0.8 (0.7)
INTEREST RATE ASSUMPTION						
Fed Funds Rate (End-of-Year)	0-0.25 (0-0.25)	0-0.25 (0-0.25)	0-0.25 (0-0.25)	0-0.25 (0-0.25)	0-0.25 (0-0.25)	0-0.25 (0-0.25)
PRODUCTIVITY AND LABOR COSTS*						
Output per Hour	2.2 (2.2)	1.5 (0.5)	0.9 (1.0)	2.2 (2.2)	2.2 (1.3)	1.4 (2.1)
Compensation per Hour	3.9 (4.1)	2.6 (2.0)	1.6 (1.6)	3.9 (4.1)	2.6 (2.3)	1.2 (1.3)
Unit Labor Costs	1.6 (1.8)	1.1 (1.5)	0.7 (0.6)	1.7 (1.8)	0.4 (1.0)	-0.2 (-0.7)
LABOR MARKET						
Unemployment Rate (Avg. Q4 Level)	6.9 (6.9)	10.5 (9.6)	10.3 (9.5)	6.9 (6.9)	10.0 (9.3)	9.7 (9.1)
Participation Rate (Avg. Q4 Level)	65.8 (65.8)	65.8 (65.4)	65.8 (65.5)	65.9 (65.9)	65.6 (65.3)	65.3 (65.1)
Avg. Monthly Nonfarm Payroll Growth (Thous.)	-189 (-189)	-382 (-333)	137 (127)	-192 (-192)	-358 (-342)	150 (125)
HOUSING						
Housing Starts (Avg. Q4 Level, Thous.)	658 (660)	575 (600)	775 (800)	700 (700)	600 (600)	900 (900)

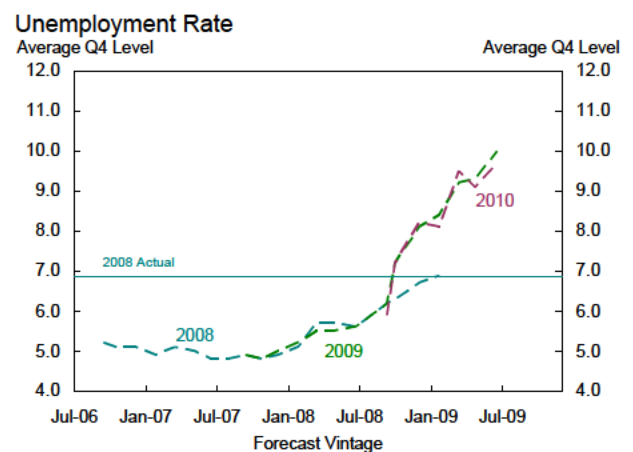
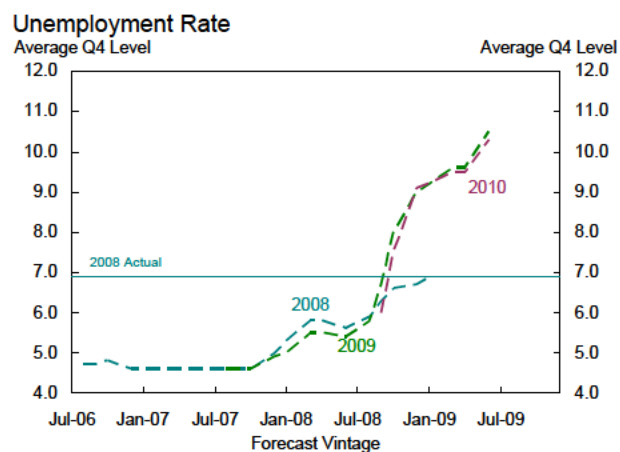
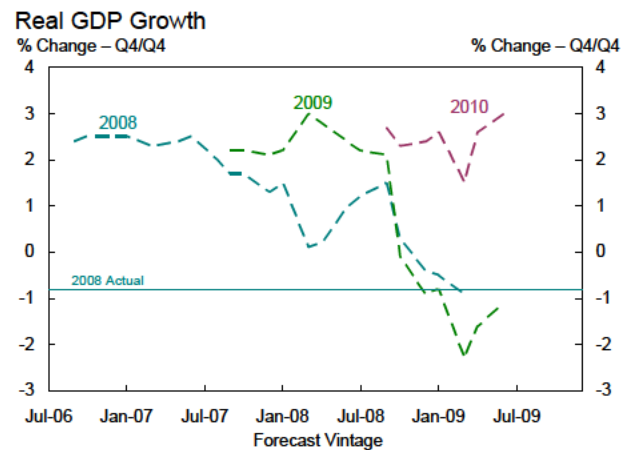
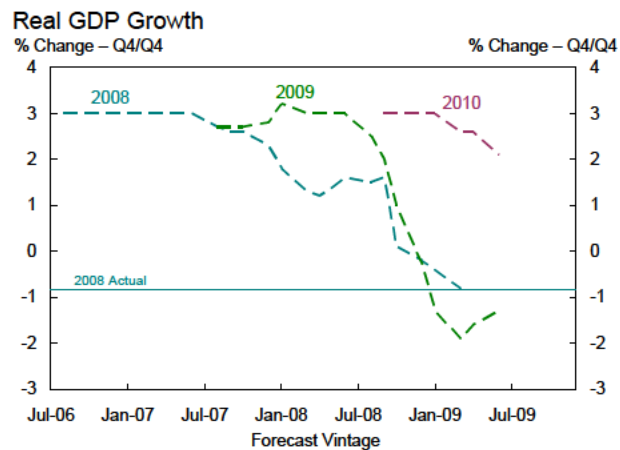
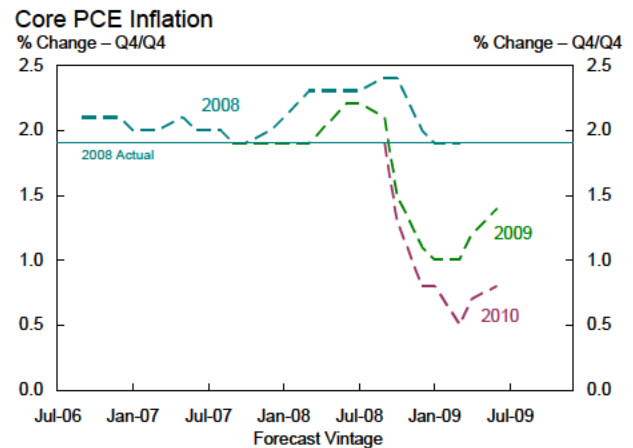
B. FRBNY Forecast Details

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

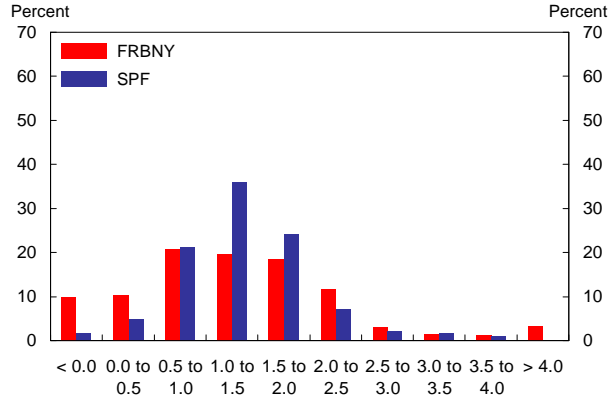
Exhibit B-8: Alternative GDP and Inflation Forecasts

		Real GDP Growth			
	Release Date	2009Q2	2009Q3	2009 Q4/Q4	2010 Q4/Q4
FRBNY	6/19/2009	-0.8 (-1.2)	0.7 (0.3)	-1.3 (-1.6)	2.1 (2.6)
PSI Model	6/15/2009	-1.6 (-2.8)	1.2 --	-- --	-- --
Blue Chip	6/10/2009	-1.8 (-2.1)	0.6 (0.4)	-1.3 (-1.3)	2.8 (2.7)
Median SPF	5/15/2009	-1.5 (-1.8)	0.4 (1.0)	-1.4 (-1.1)	-- --
Macro Advisers	6/17/2009	-1.3 (-0.6)	1.1 (0.9)	-0.9 (-0.9)	3.4 (3.0)
		Core PCE Inflation			
	Release Date	2009Q2	2009Q3	2009 Q4/Q4	2010 Q4/Q4
FRBNY	6/19/2009	2.4 (0.6)	0.9 (0.7)	1.4 (0.9)	1.2 (1.3)
Median SPF	5/15/2009	1.5 (1.1)	1.2 (1.1)	1.3 (1.1)	1.4 (1.5)
Macro Advisers	6/9/2009	2.0 (0.8)	1.3 (0.6)	1.4 (0.8)	0.6 (0.2)
		CPI Inflation			
	Release Date	2009Q2	2009Q3	2009 Q4/Q4	2010 Q4/Q4
FRBNY	6/19/2009	1.0 (0.8)	2.9 (1.3)	0.7 (0.3)	1.8 (1.7)
Blue Chip	6/10/2009	1.0 (0.6)	2.0 (1.4)	0.5 (0.4)	1.9 (1.9)
Median SPF	5/15/2009	0.7 (0.8)	1.6 (1.7)	0.4 (0.2)	1.8 (1.9)
Macro Advisers	6/9/2009	1.0 (0.5)	4.0 (1.2)	1.0 (0.0)	1.0 (0.5)
		Core CPI Inflation			
	Release Date	2009Q2	2009Q3	2009 Q4/Q4	2010 Q4/Q4
FRBNY	6/19/2009	2.3 (1.1)	0.9 (1.0)	1.4 (1.2)	1.4 (1.5)
Median SPF	5/15/2009	1.5 (1.2)	1.3 (1.3)	1.3 (1.2)	1.4 (1.6)
Macro Advisers	6/9/2009	1.9 (0.8)	1.3 (0.5)	1.5 (0.8)	0.9 (0.3)

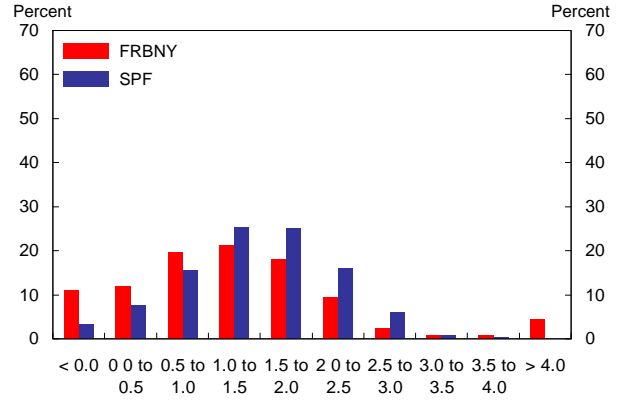
B. FRBNY Forecast Details

Exhibit B-9: FRBNY, SPF, and Board Forecast Comparison

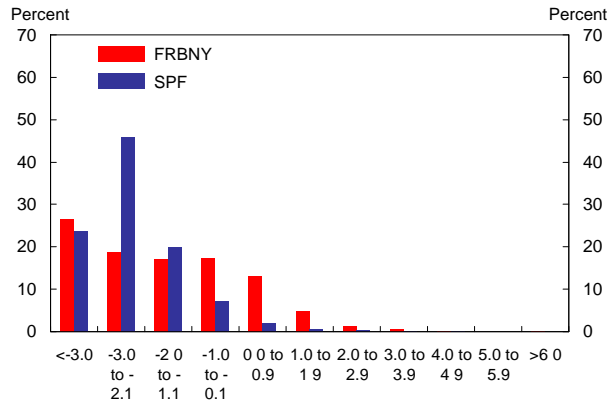
2009Q4/Q4 Core PCE Inflation Probabilities



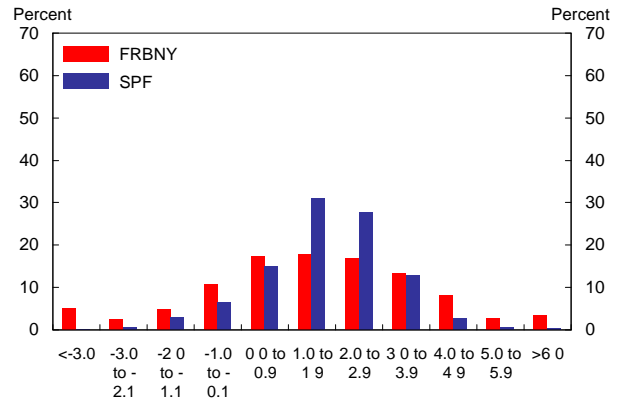
2010Q4/Q4 Core PCE Inflation Probabilities



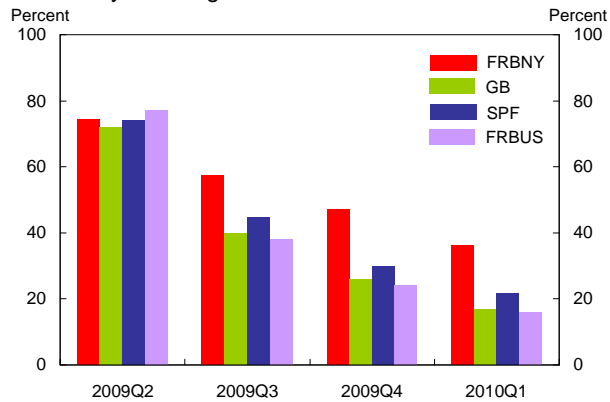
2009/2008 Real GDP Growth Probabilities



2010/2009 Real GDP Growth Probabilities

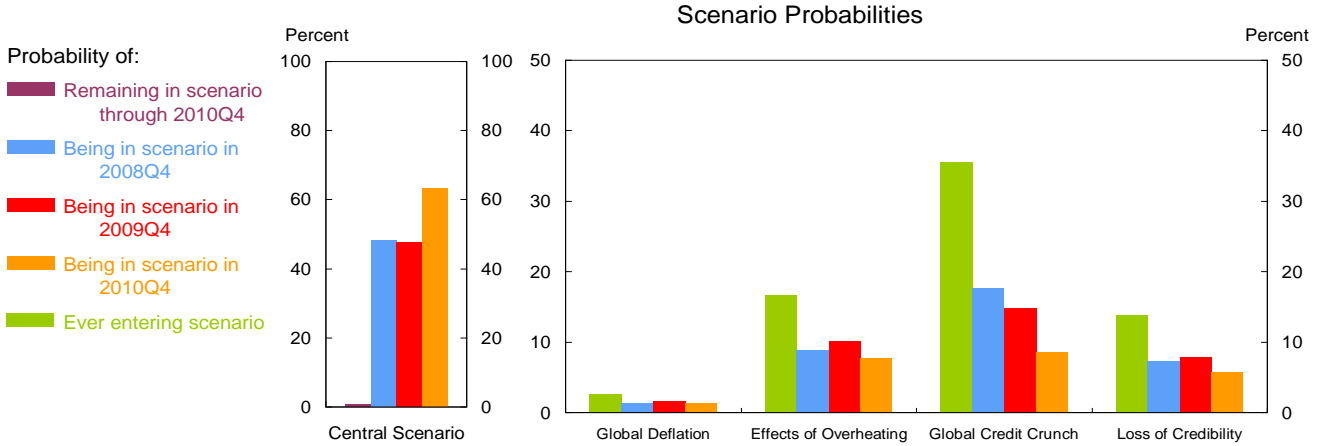


Probability of a Negative-Growth Quarter

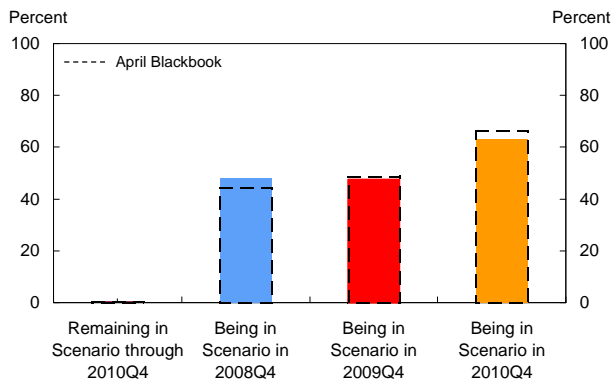


C. FRBNY Forecast Distributions

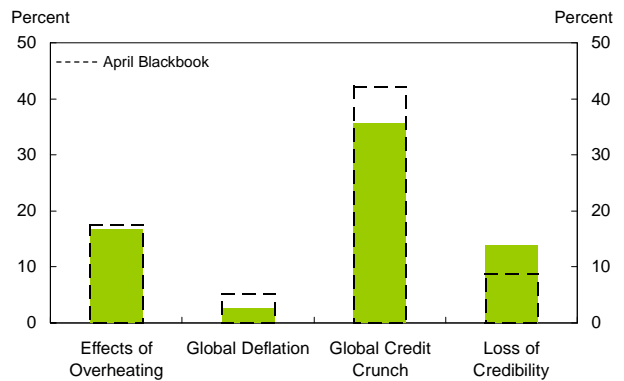
Exhibit C-1: Risks



Change in Central Scenario Probabilities



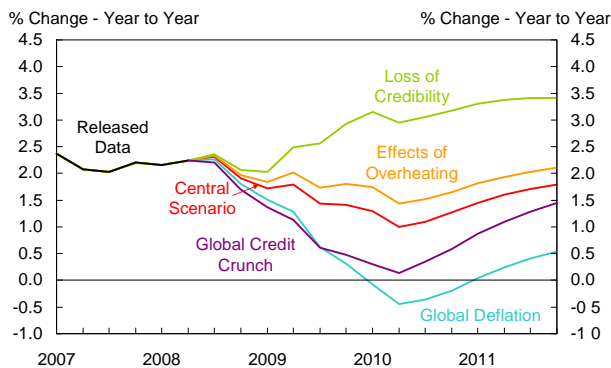
Change in Alternative Scenario Probabilities*



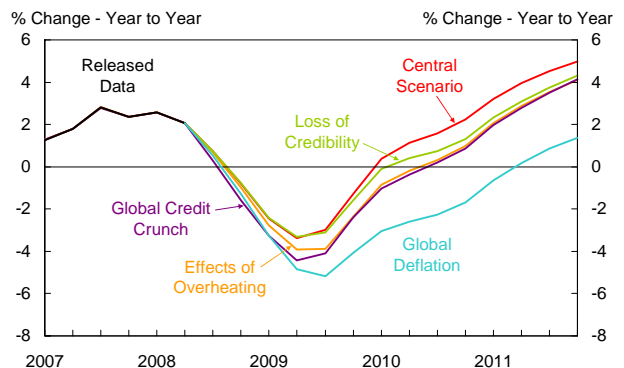
*Probability of ever reaching scenario

Exhibit C-2: Projections under Alternative Scenarios

Core PCE Inflation under Alternative Scenarios



Real GDP Growth under Alternative Scenarios

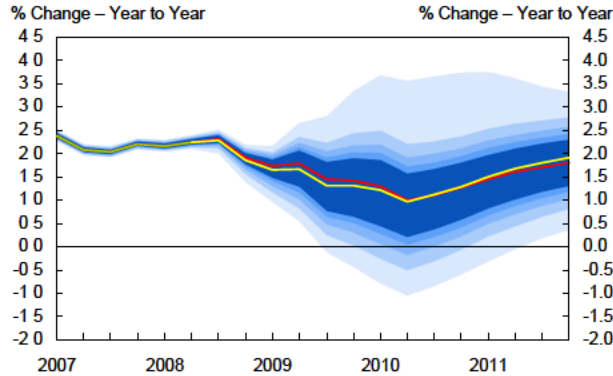


Source: MMS Function (FRBNY)

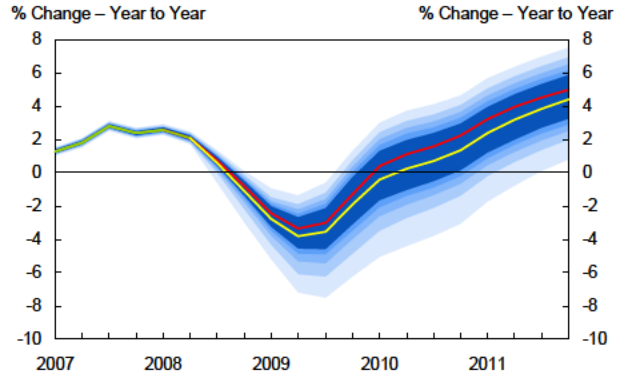
C. FRBNY Forecast Distributions

Exhibit C-3: Inflation and Output Forecast Distributions

Core PCE Inflation Forecast Distribution

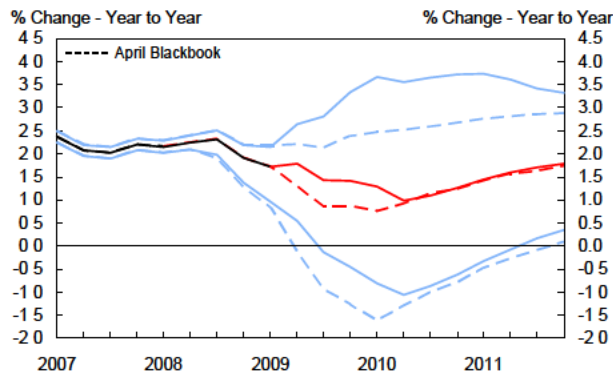


Real GDP Growth Forecast Distribution

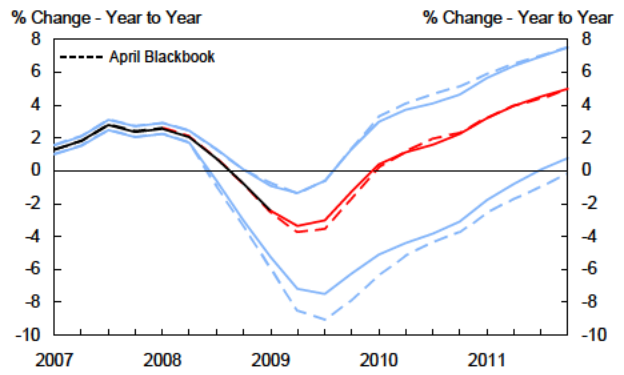


The yellow line is the expected value of the forecast distribution, the red line is the central scenario projection, and the green line is released data. The shading represents the 50, 60, 70, 80, and 90 percent chance that the four-quarter change will be within the respective range.

Change in Core PCE Inflation Forecast Distribution

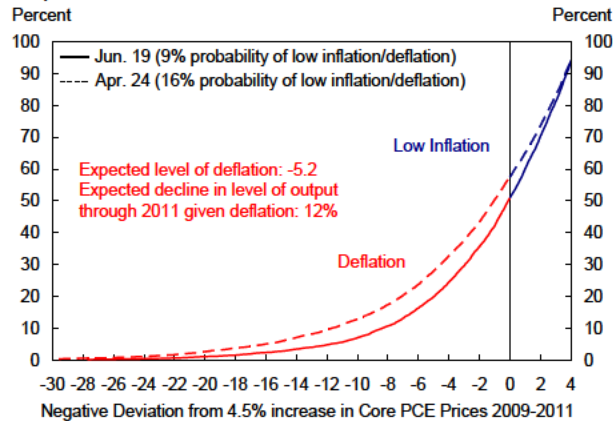


Change in Real GDP Growth Forecast Distribution

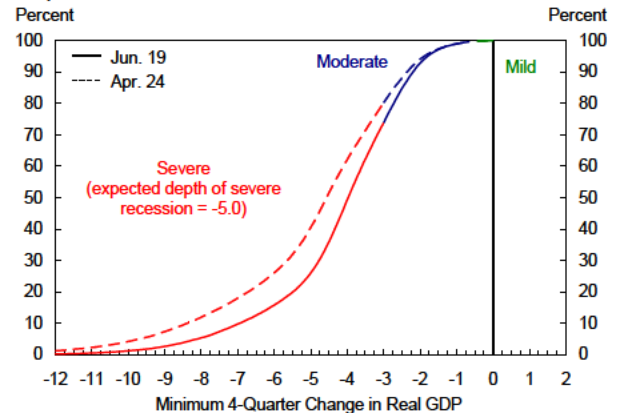


The blue lines are the 90% chance the four-quarter change will be within the lines, the red line is the central scenario projection, and the black line is released data. Dashed lines represent forecasts from previous Blackbook.

Depth of Deflation



Depth of Recession

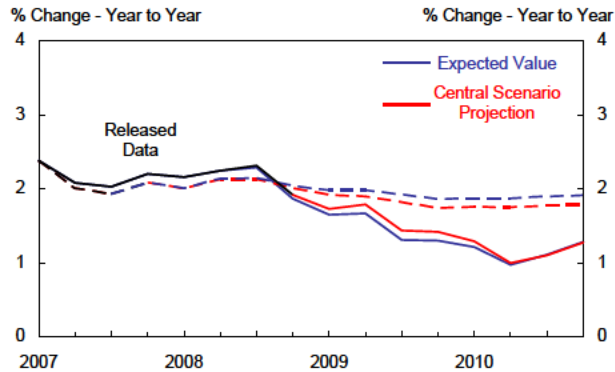


Source: MMS Function (FRBNY)

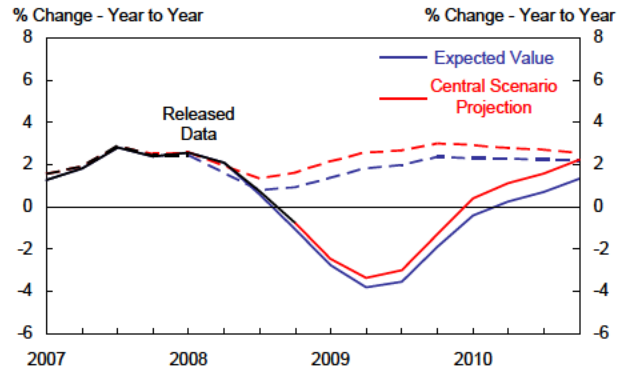
C. FRBNY Forecast Distributions

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

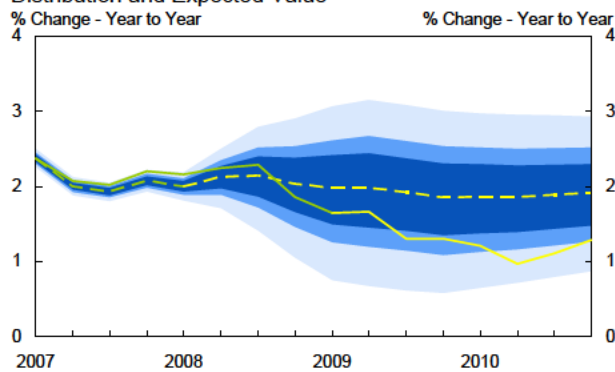
One-Year Comparison of Core PCE Inflation Forecast



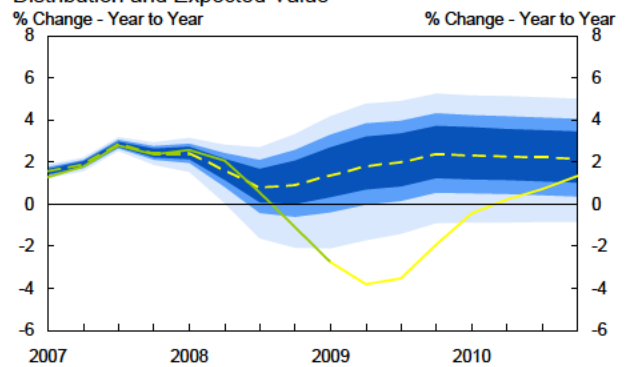
One-Year Comparison of Real GDP Growth Forecast



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



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



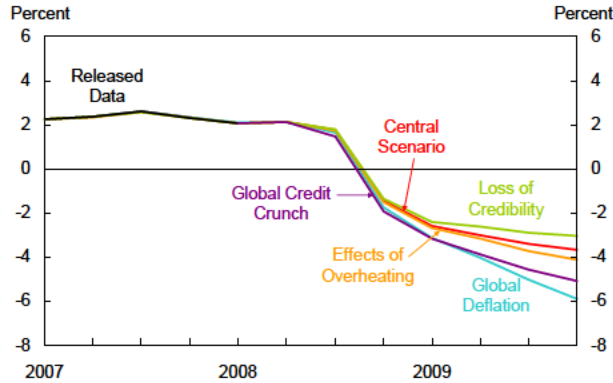
The solid yellow line is the **current** expected value of the forecast distribution, while the dashed yellow line is the **June 2008** expected value. The shading represents the 50, 70 and 90 percent probability intervals from the **June 2008** forecast. The green lines are released data.

Source: MMS Function (FRBNY)

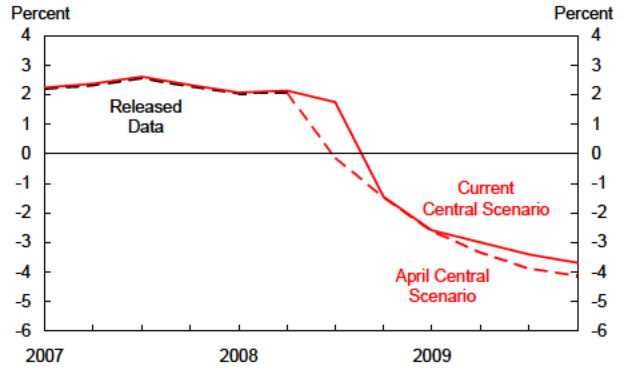
D. FRBNY Fed Funds Rate Projections

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

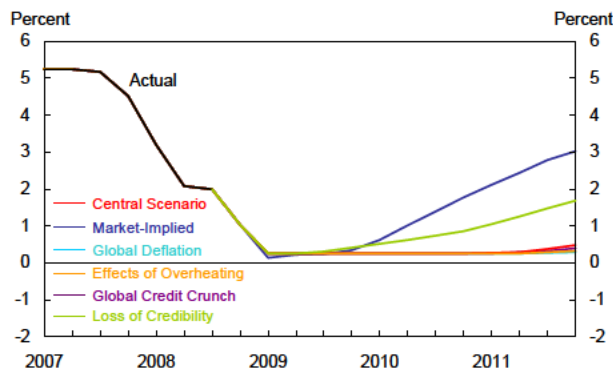
Real FFR under Alternative Scenarios



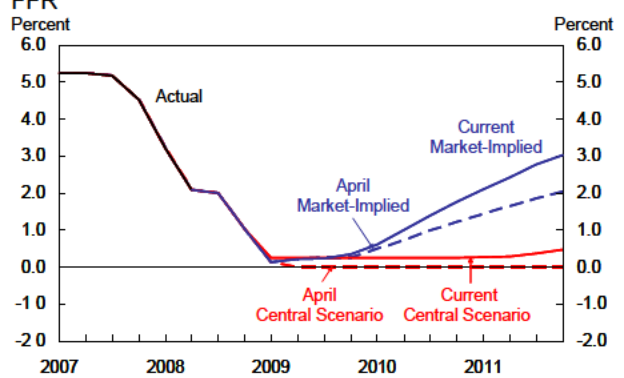
Change in Central Scenario Real FFR



Nominal FFR under Alternative Scenarios

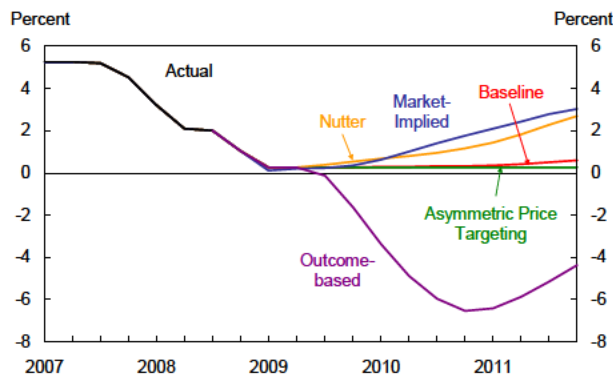


Change in Central Scenario and Market-Implied Nominal FFR



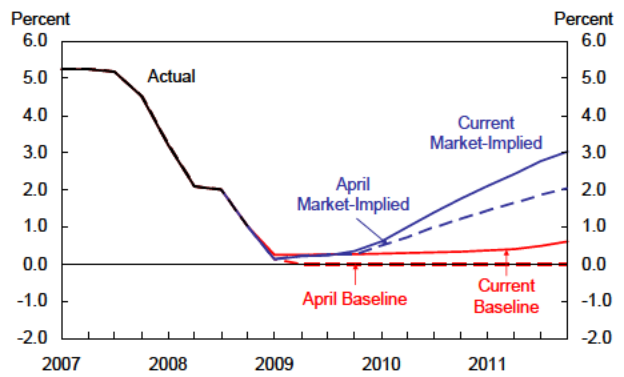
**Exhibit D-2: Alternative Policy Rules under
Expected Value of Forecast Distribution**

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

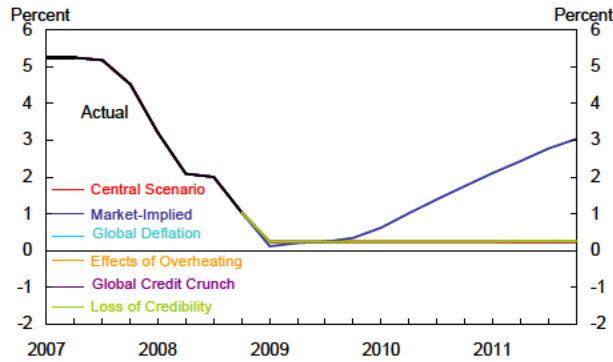
Source: MMS Function (FRBNY)

D. FRBNY Fed Funds Rate Projections

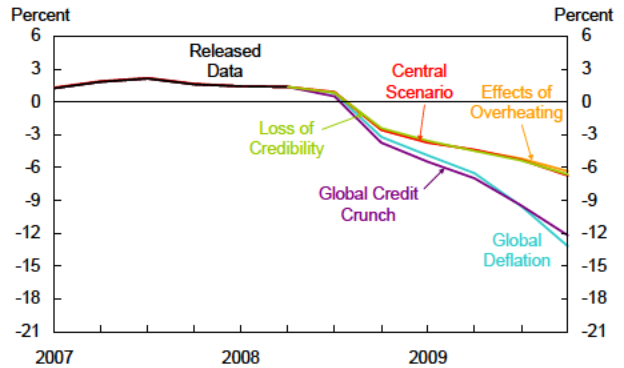
Exhibit D-3: Alternative Policy Rule Analysis

Policy Rule: *Asymmetric Price Targeting*

Nominal FFR under Alternative Scenarios

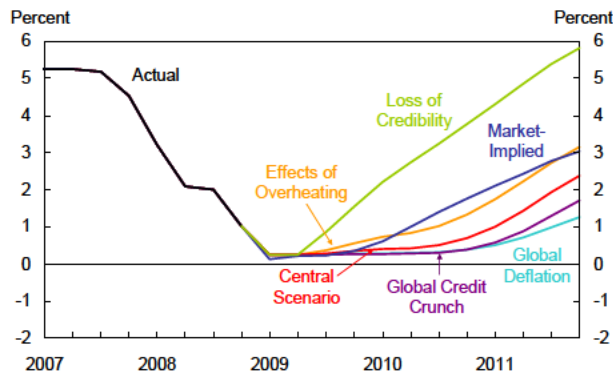


Real FFR under Alternative Scenarios

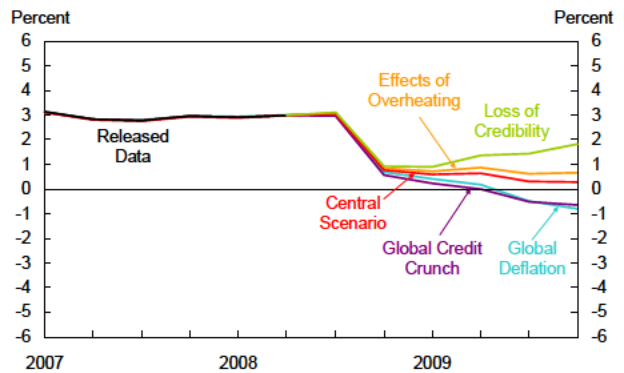


Policy Rule: *Nutter*

Nominal FFR under Alternative Scenarios

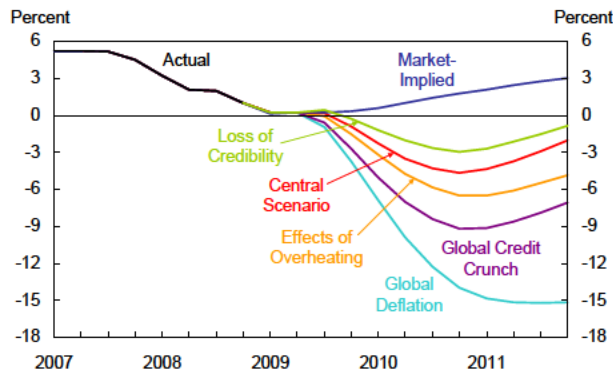


Real FFR under Alternative Scenarios

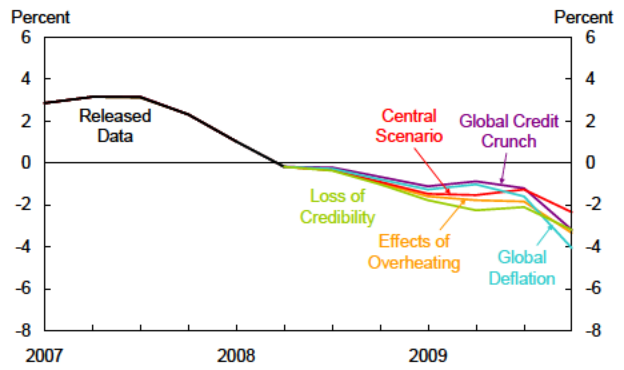


Policy Rule: *Outcome-based*

Nominal FFR under Alternative Scenarios



Real FFR under Alternative Scenarios



Source: MMS Function (FRBNY)

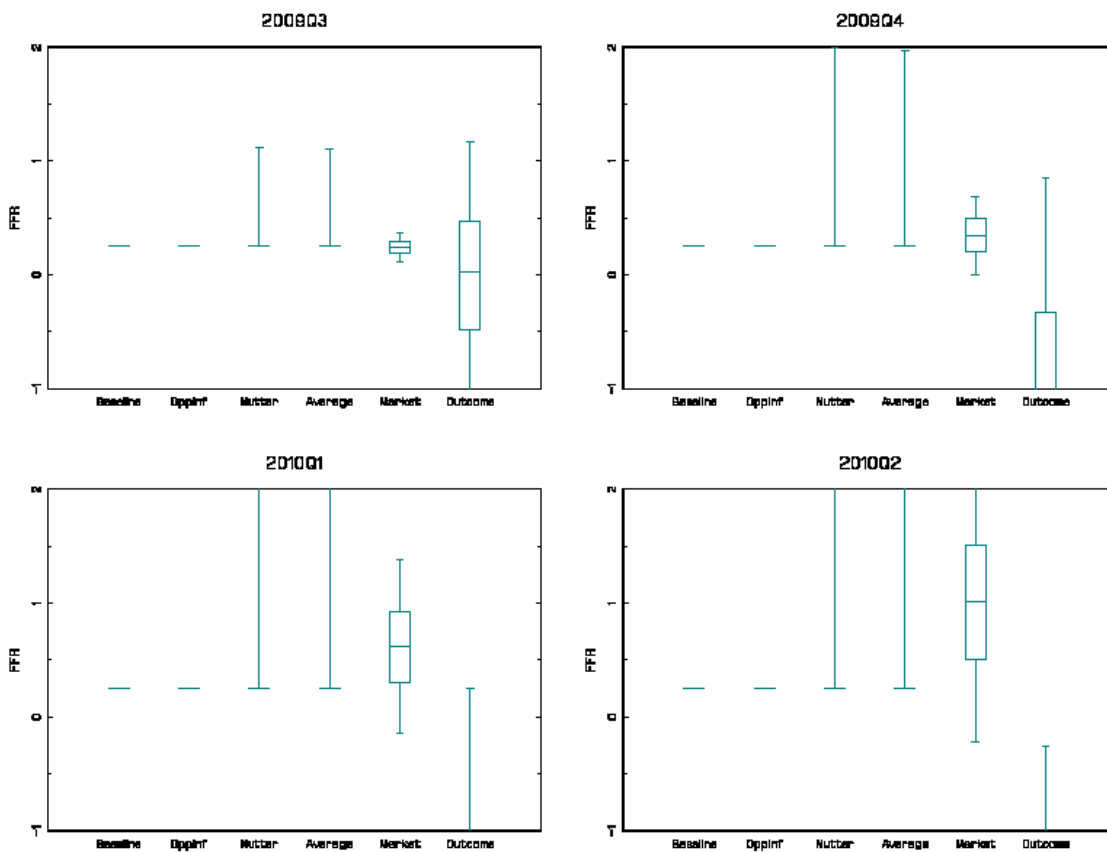
D. FRBNY Fed Funds Rate Projections

Exhibit D-4: Comparison between Market and Policy Rule FFR Expectations: 2009Q1

“Average” Weights:

Rule	Current	April Blackbook
<i>Baseline</i>	0.01	0.32
<i>Opportunistic Disinflation</i>	0.01	0.02
<i>Nutter</i>	0.98	n/a

Exhibit D-5: FFR Distributions



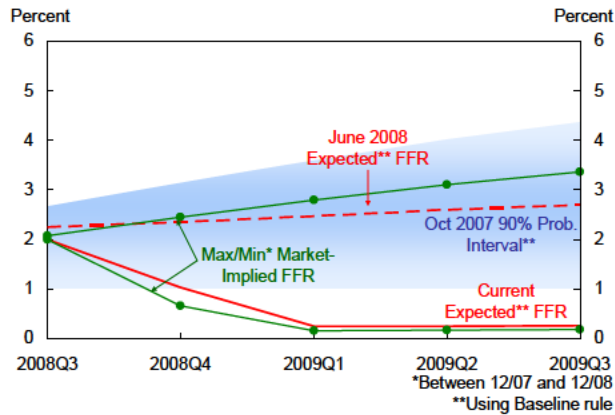
Note: The box represents the 50% probability interval, the line in the box the median, and the tails the 90% probability interval.

Source: MMS Function (FRBNY)

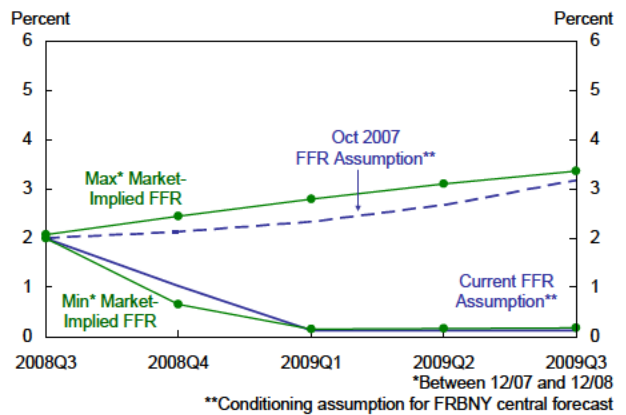
D. FRBNY Fed Funds Rate Projections

Exhibit D-6: Evolution of FFR Expectations and Assumption

FFR Forecast Distribution and Market-Implied FFR



FFR Conditioning Assumption and Market-Implied FFR



Source: MMS Function (FRBNY)

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. In the post-war era, the United States has experienced three productivity epochs (pre-1973, High I; 1973 to mid-1990s, Low I; and mid-1990s to 2004, High II). The NIPA revisions in July 2006 and 2007 prompted us to reduce our estimate of potential output growth; thus our current central projection for medium- and long-term productivity growth is somewhat lower than that of the pre-1973 epoch.

Alternative 1: *Productivity Boom*

After a lull from 2004 through early 2007, productivity growth since has been robust and above our current estimate of trend productivity growth. Our projections for 2008Q2 productivity indicate that this pattern should continue. These patterns raise 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 the High II epoch, with some mixture of IT-driven production and applications leading the way. Support for this view comes from Moore's law on the doubling of computing power every 18 months. As such, we could see persistent productivity growth above our assumed trend, implying a higher potential growth rate and thus expected real growth that is higher than our current estimate (as well as a possible development of a larger output gap in 2008). Strong productivity growth would also limit labor cost pressures and thereby help to subdue inflation.

Alternative 2: *Productivity Slump*

The recent surge in productivity growth may reflect a new cyclical pattern whereby firms protective of their profit margins reduce labor input in anticipation of slower profit growth. Furthermore, it is possible that the longer-term upswing in productivity that began in the mid-1990s has ended as the IT-driven surge has run its course. If so, there

could be an extended period of productivity growth below the trend in our central forecast. In addition, the increase in the level and volatility of energy and commodity prices could continue and lead to lower productivity growth, as occurred in the 1970s. Below-trend growth would not only imply a lower estimate of potential growth, but would also push inflation above the level projected in our central forecast.

We also consider four additional scenarios. Three are related to the impact of monetary policy on the economy and financial markets as well as possible FOMC misperceptions of its past and current policy stances. The other is related to the impact of developments in the global economy.

Alternative 3: *Effects of Overheating*

Motivated principally by concerns over the prospect of deflation, the FOMC adopted a deliberately accommodative policy stance in the aftermath of the global slowdown of 2000-2003. It is possible the FOMC markedly underestimated the equilibrium real interest rate (i.e. overestimated the degree of slack in the real resources) during this period. In this case, their accommodative policy would have stimulated aggregate demand growth in excess of potential and, ultimately, triggered inflation. The above-potential output growth from 2004 through mid-2006 and the persistent above-target inflation are consistent with such a scenario, as is the abrupt slowdown in real output growth that began in mid-2006. If this overheating episode occurred, it has likely passed already in the U.S.; however, there is a risk its effects will linger in the form of slightly above-forecast inflation and slightly below-forecast output growth.

Developments in the global economy during this period may have contributed to the economic conditions that motivated the initial policy and may also have made it more difficult for the FOMC to identify the overheating in real time. For example, one likely factor contributing to the deflation scare in the early part of this decade was the downward pressure on global goods prices triggered largely by growth in emerging economies' labor forces. Another critical factor may have been the exchange rate policies that a number of emerging market central banks adopted over this period. These

policies and the associated dollar reserve accumulation, which were aimed at maintaining the dollar strong relative to their domestic currency, may have put significant downward pressure on long-term interest rates both in the U.S. and around the world, and in doing so, may have made it more difficult to correctly assess the equilibrium real interest rate during this period.

Alternative 4: *Global Credit Crunch*

The financial turmoil that started in the summer of 2007 has continued to put a significant strain on the availability of credit. In the U.S., financial conditions have tightened significantly and financial market stress has reached record high levels in recent months. 30-year fixed rate mortgage rates remain near their one-year high. In addition, global data for 2003Q3 have been largely negative. The intensification of the financial crisis together with global slowing of economic growth has led to significant wealth losses and increased volatility in equity markets. Policy-makers worldwide have enacted measures to address the freezing of interbank markets and implemented a coordinated cut in policy rates. This combination of factors suggests the neutral rate is lower than 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 below our lower estimate of the neutral rate, tighter credit conditions and continued stresses in global financial markets, along with increased risk of a further deterioration in global economic conditions, create a risk that output growth will slow significantly below the level projected in the central forecast; this would likely be accompanied by inflation below the level in the central forecast.

Alternative 5: *Loss of Credibility*

One interpretation of recent higher inflation, higher financial market inflation compensation, higher commodity prices, and dollar depreciation is that inflation expectations have risen despite the FOMC continuing to state its price stability mandate, raising concern that the FOMC has started to lose its credibility on inflation. Although some FOMC communications have placed more emphasis on the upside inflation risks, the FOMC also has communicated continued concern about growth risks, thus providing signals that the FFR may remain low that have further fueled such concerns. It is possible that these statements and actions of the FOMC may lead to further increases in

inflation and inflation expectations, such that firms and households begin to see the FOMC as not credible in regard to inflation. Such developments are likely to cause further rises in inflation and inflation expectations above forecast.

Alternative 6: *Global Deflation*

Recent price level indicators point to slowing or decreasing inflation in many regions of the world. Domestic measures of implied inflation have fallen sharply, suggesting that inflation expectations are also declining. These signals, coupled with falling global output as a result of financial market turmoil, suggest that there is an increased risk of global deflation going forward. This possibility is further exacerbated as central banks around the world cut interest rates and target rates approach 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. These factors would result in both inflation and output growth far below the levels projected in the central forecast. Although the onset of this slowdown would be later compared to other scenarios, global factors would cause these conditions to be more persistent.

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. *Effects of Overheating*: inflation slightly above central forecast, output slightly below central forecast.
4. *Global Credit Crunch*: inflation below central forecast, output significantly below central forecast.
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.

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, while incorporating some degree of inertia. For each of the FFR paths and each of the policy rules, we determine these deviations using the corresponding inflation and output paths.

Policy Rule – Baseline Specification:

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

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

$i^* = 2.00 - 3.00$ 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)

π_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.² 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 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.

² All of the policy rules are subject to an effective lower bound of 0.25%.

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)³.

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 Exhibits D-4 and D-5, 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).

³ *Outcome-based rule*: $i_t = 1.20*i_{t-1} - 0.39*i_{t-2} + 0.19*(1.17 + 1.73*\pi_t + 3.66*x_t - 2.72*x_{t-1})$