

FRBNY BLACKBOOK

RESEARCH AND STATISTICS GROUP

FOMC Background Material

June 2010

CONFIDENTIAL (FR) Class II FOMC

FRBNY BLACKBOOK

June 2010

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1. Policy Recommendation and Rationale

Our policy recommendation is to maintain the target range for the federal funds rate at 0.00–0.25% until the end of 2011Q2 – one quarter later than that in the April Blackbook – and to retain the current “extended period” language in the FOMC statement. We also recommend a change in the large scale asset holdings policy. The principal and interest payments of maturing agency debt and MBS should be reinvested to maintain the current size of the balance sheet and gain more flexibility going forward.

Developments in the intermeeting period led us to make only relatively minor changes to our central outlook, but resulted in bigger downside risks to both real activity and inflation.

On net, data releases during the intermeeting period indicated stronger GDP growth in 2010Q2 than anticipated in the April Blackbook, in part reflecting better-than-expected data on consumption and investment in equipment and software. However, the May labor market report and retail sales are consistent with slower real growth in the second half of the year, raising concerns about the future pace of the recovery. Consequently, these developments contributed to the increased downside risks to real activity. In addition, the possibility of weaker-than-expected demand from Europe also raises the downside real activity risks for the US economy.

Data released during the intermeeting period indicated that underlying inflationary pressures remained subdued. In addition, TIPS-implied forward inflation compensation fell over the intermeeting period, although part of this decline was the result of an increase in the liquidity premium for TIPS. Short- and medium-run inflation expectations from the Michigan survey were within their recent ranges. On balance, the data still suggest the presence of considerable slack in the economy. Furthermore, the sovereign debt turmoil in euro area peripheral countries led to a significant appreciation of the US dollar vis-à-vis the euro that raises the downside risks for US inflation through import prices. Weak European demand is a potential source of further disinflationary pressures.

These downside risks are partly mitigated by strong growth in emerging market economies, such as Brazil and China, which could put upward pressures on commodity and import prices. Moreover, it is possible that inflationary pressures could emerge as economic conditions improve even with conventional measures of slack at high levels. Financial sector impairment, skill/location mismatches, and job skill losses of the long-term unemployed could all contribute to slow down the reallocation of capital and labor across sectors and regions and thus lead to greater bottlenecks.

The major factor behind our assessment of greater downside risks to output and inflation is that financial conditions deteriorated during the intermeeting period. Since the last Blackbook, volatility measures and credit spreads increased while equity indices and interest rates on perceived low-risk debt (US Treasuries, German Bunds) fell quite substantially. These developments are consistent with an increased probability that the euro area debt crisis could escalate into a more general European banking crisis with ramifications for global financial and economic conditions. Furthermore, the continued uncertainty about regulatory changes to the financial system added to fundamental volatility in financial markets.

In light of our outlook and risk assessment, we recommend maintaining the current accommodative stance of monetary policy until there is more confidence that the economy is on a self-sustained and balanced recovery path. Because of the greater downside risks discussed above, in particular the deterioration of financial conditions, we now advise that the fed funds rate be maintained at its effective zero bound until the end of 2011Q2, one quarter later than our recommendation in the April Blackbook. This shift in our expected path appears to be in line with the change in market expectations.

FOMC communications should point out that the shift in market expectations is consistent with the anticipation of the Committee and so we recommend retaining the “extended period” language in the next FOMC statement. An additional communication tool would be an explicit commitment to reopen some of the liquidity facilities in the case of intensified pressures in money markets and dysfunction in credit markets. In this

situation, it can be emphasized that the prior Federal Reserve operational experience with the facilities allows for quick implementation if needed. The re-establishment of the U.S. dollar liquidity swap facilities between the Federal Reserve and several major international central banks provided one signal of this type of commitment.

Finally, we recommend some adjustment to the policies concerning the large scale asset holdings. The current policy of reinvesting the proceeds of maturing Treasuries but not of maturing agency debt and MBS implies that the Fed's balance sheet will begin to shrink. Because of the greater downside risks to the real activity and inflation outlooks as well as the continued constraint of the zero lower bound, we see such shrinkage as undesirable as it reduces the flexibility to expand the balance sheet in the event of a significant deterioration of economic and financial conditions. Consequently, we recommend that the proceeds of maturing agency debt and MBS be reinvested. Since the functioning of mortgage markets has not deteriorated recently, the proceeds should be invested in Treasuries. This strategy would be consistent with eventually returning the composition of Federal Reserve assets to that of Treasuries primarily. At the same time, to address concerns about the impact of the balance sheet on Federal Reserve independence and its ability to tighten policy when needed, FOMC communications also should provide the Committee with sufficient flexibility to reduce the size and adjust the composition of the balance sheet if downside risks subside or economic and financial conditions improve more quickly than expected.

2. Evolution of Outlook and Risks

2.1 Central Forecast

Following a post WWII record decline of nearly 4% over the period from 2008Q3 through 2009Q2, real GDP in the US expanded at a 3.6% annual rate over the period from 2009Q3 through 2010Q1. Over that period real final sales increased at a rather tepid 1.5% annual rate while an unusually strong inventory cycle contributed the remaining 2.1 percentage points of growth. Output per hour in the nonfarm business sector increased at a remarkable 5.6% annual rate over those three quarters, with hours worked declining at a 1.2% annual rate. Trend inflation continued to slow over the

period, with the core PCE deflator increasing at a 1.2% annual rate.

At this writing, it appears that real GDP is increasing at a 3% to 3 ½% annual rate in 2010Q2. While comparable to the annualized growth rate of the preceding three quarters, the composition of growth appears to have changed in a significant way. Final sales to domestic purchases is expected to increase nearly 3.5% (annual rate), up from an average of 1.9% over the preceding three quarters. Consumer spending, residential investment, business investment in equipment and software, and government spending all appear to be increasing at a solid pace while the inventory growth contribution will be minimal if not negative. While exports continue to rise at a robust pace, growth of imports has increased along with the firming of final demand, such that the growth contribution from net exports is likely to be around negative 0.5 percentage point.

Conditions in labor markets also made a marked change over the second quarter, with productivity growth slowing and hours worked in the nonfarm business sector increasing around 3.0% to 3.25% (annual rate). Growth of private nonfarm payrolls averaged 130,000 per month in April and May, up from 80,000 per month in the first quarter. Employment growth would have been stronger had the average work week not increased. Finally, while core inflation remains very low, there has been a hint of stabilization in the recent data. As of May, the three month change in the core CPI was 0.8% (annual rate) while the six month change was 0.4%. While some data have disappointed, it appears the recovery has achieved a more solid footing as we move into the second half of 2010.

Conditioning assumptions. We continue to assume that potential GDP growth is between 2.50% and 2.75%. This is composed of 1.0% to 1.25% trend hours growth (although we assume this growth will begin to decline in 2010) and trend productivity growth of around 1.5% (on a GDP basis, which is equivalent to about 1.75% on a nonfarm business sector basis). The Board staff estimates of potential in the June Tealbook are 2.3% for 2010 and 2.4% for 2011, down from 2.5% in April.

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%.

The FRBNY outlook for foreign GDP growth in 2010 is unchanged at 3.4% (Q4/Q4, on a GDP-weighted basis). Growth in the euro area has been marked down somewhat, while prospects in Japan and Canada have improved. For 2011, the foreign growth outlook has declined to 3.2% from 3.4% reflecting a more substantial decline of projected growth in the euro area. The Board staff projection for foreign GDP growth in 2010 is equal to ours. However, for 2011 they have lowered projected foreign growth more than we have, to 2.9% from 3.3% in April.

The projected path of oil prices has been lowered by an average of \$12 per barrel for 2010 and \$8.50 per barrel in 2011. We now expect an average of \$77.00 per barrel by 2010Q4 and \$81.50 per barrel by 2011Q4. Our assumed path for oil prices is quite close to that of the Tealbook.

Our assumptions regarding fiscal policy are the same as that of the Tealbook. As has been the case for the past few cycles, it is assumed that emergency unemployment benefits will be extended. However, reflecting increased concerns about large deficits and the rising debt to GDP ratio, the expectation for the amount of additional grants to state and local governments has been further scaled back to \$25 billion from the \$35 billion assumed in April. In addition, the assumption that another \$12 billion of subsidies to help recently unemployed persons pay for health insurance under the COBRA program has been removed. For FY2011 it is assumed that something like the President's budget proposal is enacted, in which case most of the 2001 and 2003 tax cuts are extended but with taxes overall increasing by about \$50 billion (0.3% of GDP). Federal fiscal policy is anticipated to provide a boost of about 0.75 percentage point to GDP in 2010 but then be essentially neutral in 2011.

As is our usual practice, our assumptions for equity prices and the real exchange value of the dollar are similar to those of the Tealbook. Given the substantial decline in equity prices over the intermeeting period, it is now assumed that they will rise at an annual rate of 17 percent over the forecast horizon rather than the 13 percent annual rate assumed in April. This increase in equity values is driven to a large extent by an assumed normalization of the equity premium.

Given events over the intermeeting period, the path of the trade weighted exchange value of the dollar has changed. The Board now anticipates an appreciation of 4% over the four quarters of 2010, rather than a 0.6% depreciation, followed by a 4.9% decline in 2011, rather than a 2.4% decline. The 2011Q4 level is roughly comparable to what was assumed in April.

Finally, our assumption regarding the future path of the Loan Performance Home Price Index is also the same as the Board's. For 2010 that index is projected to decline 2.6% as further increases in distressed sales put renewed downward pressure on prices. This is a modestly smaller decline than assumed in April. In 2011, the index is expected to rise 0.6% as housing demand firms and the supply of distressed properties declines. In April the assumption had been a 1.0% increase.

The Outlook. For some time our modal forecast for 2010 and 2011 has been based on the assessment that the current cycle is qualitatively different from the typical post-WWII cycle such that we are unlikely to experience the robust recovery like that seen in the initial stages of previous severe recessions. This implies that the excessive slack in overall resource utilization will be absorbed only gradually and that trend inflation is likely to remain below the mandate consistent range for much of the forecast horizon. With the first year of recovery under our belts, this expectation appears to have been well founded.

A key reason for expecting a relatively muted recovery is that consumer spending faces substantial headwinds. The household sector has suffered very large negative shocks to

both income and wealth and has a substantial debt overhang. The stimulus bill increased transfer payments and lowered taxes in an attempt to offset these negative impulses, but that stimulus is now waning. While equity and home prices have recovered somewhat, as of 2010Q1 the ratio of household net worth to disposable income remained nearly 25 percent below its peak. And even though financial conditions appear to be gradually easing, we expect credit availability to remain tight relative to the standards of the recent past.

A second key feature of our modal forecast is that while it appears the correction in housing production is over, it is unlikely that we will experience the surge of residential investment typical of the early stages of post-WWII recoveries. By our estimates there are currently nearly 3 million excess vacant housing units, with more coming onto the market over the forecast horizon due to the unusually high volume of homes in the foreclosure process. At the same time, mortgage underwriting standards have been significantly tightened, with even high credit quality borrowers being required to make substantial down payments. Finally, the housing sector has been given a significant boost by the first-time home buyer tax credit combined with the large scale purchases of mortgage backed securities by the Federal Reserve. Both of these effects are expected to wane over the next few months.

In addition to relatively tepid growth of consumer spending and residential investment, there are substantial structural adjustments underway in the state and local government sector and the commercial real estate sector. In both cases the adjustment process is likely to extend into early 2011, if not longer. Finally, we have marked down foreign growth in 2011 with a corresponding decline in US export growth in response to the euro area debt crisis.

Going into 2011 we expect the underlying fundamentals of the recovery to improve, with growth picking up to around 4%. This is sufficiently above potential that the unemployment rate should begin to decline in a meaningful way. Further forward momentum is likely to be established in 2012, with 5% growth in GDP and a fall in the unemployment rate to around 7% by the end of the year. Underlying this projection is

the expectation that financial market functioning remains normal and that consumer and business confidence and the general appetite for risk recovers. With household income and balance sheets improving and credit flowing more normally, the substantial pent-up demand for consumer durables, housing, and business equipment and software will start to be satisfied. Moreover, the structural adjustments of state and local governments and of the commercial real estate sector will likely have run their course by that time.

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

Events over the intermeeting period have skewed the risks to our central projection for growth and inflation to the downside. Most likely, the sovereign debt crisis of euro area peripheral countries will be contained and have a modest impact on the US. However, the risk of broader contagion is significant, in which case the negative impact on the US would be more substantial. In addition to the risks from abroad, another significant downside risk is that the loss of wealth suffered by the household sector induces a steeper-than-expected increase of the personal saving rate, keeping consumer spending weaker for longer. The sharp decrease in the prime age employment to population ratio during the current cycle, combined with the large share of workers nearing retirement age and the possibility of fiscal consolidation, makes this risk particularly acute.

An important risk over the medium term is the uncertainty surrounding our assumption of the economy's potential growth rate. Given the weakness of business investment and the necessary reallocation of labor and capital, the economy's potential growth rate may have slowed significantly. Yet, current estimates of labor productivity continue to surprise to the upside. Another source of risk to the forecast is fiscal policy. Our assumption is that most of the 2001 and 2003 tax cuts will be extended but with some increase in tax rates for high-income taxpayers such that federal taxes overall increase by about \$50 billion or

0.3% of GDP. It is certainly possible that the amount of the change in taxes could be quite different from that assumption. Finally, relatively modest changes in variables such as productivity growth, the participation rate, and the average work week could have a significant impact on the path of the unemployment rate.

The risks around the central scenario for inflation are relatively balanced. Clearly, the remaining downside risks to the growth projection combined with the possibility of no meaningful decline in potential implies downside risks to the inflation projection. In contrast, with the aggressive global monetary response to the financial crisis and the possibility of a stronger-than-expected rebound, there is a risk of higher inflation.

The heightened uncertainty associated with the shape of recoveries from periods of banking and financial crisis as well as the uncertainty associated with the timing and synchronization of the removal of global policy accommodation result in greater uncertainty around our central projection compared to typical levels over the last twenty years.

2.2 Alternative Scenarios and Risks

The risk assessment has an increase in downside risks for output and inflation as a consequence of the euro area debt crisis and the relatively weak May labor market report. Such risks are captured by an increase in the likelihood of the *Global Credit Crunch* scenario and, most importantly, by a return of the *Global Deflation* scenario. This scenario captures the risks of deflation coming from rapid fiscal consolidation in European countries and implies prolonged Japan-like deflation accompanied by near-zero growth.

Exhibit C-1 shows that the *Productivity Boom* scenario is still by far the most likely scenario, although its associated probability has declined somewhat. Similarly, the likelihood of the *Loss of Credibility* scenario has decreased following the retrenchment of TIPS breakeven rates and low inflation readings. The substantial (about 5%) increase in the probability associated with the *Global Credit Crunch* scenario makes this the second

most likely scenario with a likelihood of almost 20%. The increase in the probability of the *Global Deflation* scenario is not as large, but has a considerable effect on the forecast distribution because the paths for core PCE inflation and GDP growth associated with it entail prolonged deflation and anemic growth through the end of the forecast horizon [Exhibit C-2]. The *Fiscal Consolidation* scenario is still present, but its probability has decreased and is no longer shown in the charts. This is because this scenario – which captures fiscal consolidation in the U.S. as opposed to Europe -- entails a substantial dollar depreciation which is at odds with recent developments. Exhibit C-2 also shows, for comparison, the mean forecasts from the FRBNY DSGE model. In the short run these forecasts are quite similar to the paths associated with the *Productivity Boom* scenario: lower inflation and stronger growth than the *Central Scenario*.

While the forecasts associated with the *Central Scenario* have not changed dramatically relative to April, the increase in downside risks implies a large downward shift in the 5th percentile of the forecast distribution for core PCE inflation and GDP growth. For both inflation and output growth the 5th percentiles are below zero through 2011, indicating that the chances of deflation and a relapse of the economy have increased in the intermeeting period. These changes in the forecast distribution are reflected in both the “Large Price Level Deviations” and “Scale of Recovery Through End of 2011” charts. The probability of average inflation in 2010-2012 less than 1.5% has increased from 6 to 16%. The likelihood of a strong recovery has also decreased, albeit less dramatically.

Finally, Exhibit C-4 shows the evolution of our forecasts relative to 12 months ago. The actual paths for output and inflation are mostly within the 50% probability bands generated a year before, indicating that in mid-2009 the probability distribution embedded in the forecasts appropriately reflected the risks the U.S. economy was to face in the following 12 months. The beginning of the current year is the main exception, in that the forecasts under-predicted the strength of the recovery in output.

3. Forecast Comparison

3.1 Tealbook Comparison The Board's staff projections for output and inflation have been lowered relative to April. The Tealbook forecast for output growth is now closer to our projection for 2010, although the Board remains marginally more optimistic. For 2011, both the Tealbook and the Blackbook forecasts have been revised downward. However, the Board's staff revision has been more substantial and the Tealbook now projects GDP growth almost half a percent lower than the Blackbook.

The Tealbook and the Blackbook forecasts of core PCE in 2010 are little changed while the forecasts of total PCE inflation in 2010 have been reduced by similar magnitudes. As in April, the Board staff's inflation forecast is similar to ours for 2010 while it remains lower for 2011.

Conditioning Assumptions. The Board staff projects a later start of the renormalization process for the Federal Funds Rate (FFR) relative to April. The Tealbook now assumes the FFR to remain in the current target range of 0–0.25% until the summer of 2012, two quarters later than in April. The Blackbook also assumes a later start for the tightening cycle but only by one quarter (2011Q3). Our central forecast still assumes that the FFR will reach 1.50% by the end of 2011 (unchanged since April). In terms of non-traditional policy actions, the Tealbook now assumes that the Federal Reserve will start selling agency debt and MBS at a gradual pace at the beginning of 2013, implying a smaller balance sheet that will be more concentrated in Treasury securities.

The Tealbook assumes a lower, albeit steeper, path for the 10-year Treasury yield compared to April. This change partly reflects the evolution of financial market conditions during the intermeeting period but also incorporates new assumptions about the size and composition of the Federal Reserve's balance sheet. The Board's staff has also changed the projected path of mortgage rates in response to recent market movements. For similar reasons, the Tealbook now expects a steeper path for equity prices, but starting at a lower level than previously forecasted.

The Tealbook fiscal policy assumptions have changed as well. Due to concerns about fiscal deficits and less appetite for stimulus measures, the Board's staff has reduced projections about federal transfers to state and local governments and removed the health insurance subsidies for recently unemployed workers previously assumed.

The recent fiscal turmoil in peripheral euro area countries has led the Board's staff to change the foreign outlook assumptions. Foreign growth is now expected to grow 0.5 percentage point slower in the second half of this year and in 2011 than forecasted in April. Similar concerns also affected the expected path for the dollar, which is above the April projections for both this and next year. Finally, in response to recent declines, the Tealbook now projects a lower path for oil and other commodities prices from now until the end of 2011.

Inflation. The Tealbook forecast for core PCE inflation in 2010 (Q4/Q4) is just a touch lower than in April at 0.8% while the Blackbook projection is unchanged, at 0.9%. As in April, we disagree with the Board Staff on the core PCE projections for 2011. The Tealbook projects core PCE inflation to stay at 0.8% in 2011 (down from 0.9% in April), while the FRBNY expects it to increase to 1.3% (down from 1.4% in April).

Real Activity. Compared to April, the Tealbook forecast for GDP growth in 2010 (Q4/Q4) decreased by 0.3% to 3.2% while the Blackbook forecast is unchanged at 3.0%. The changes mean that the two forecasts (and the decomposition of the growth contributions) for 2010 are now very similar.

The Tealbook forecast for GDP growth in 2011 (Q4/Q4) has been decreased by 0.7% to 3.7%. The FRBNY forecast is now at 4.1%, also lowered from April, but only by 0.2%. In term of expenditure components, the main difference is that the Tealbook projects a smaller contribution from business fixed investment than our forecasts.

Both the Board staff and the FRBNY project a higher path for unemployment relative to April. For 2010Q4, the Tealbook forecasts an unemployment rate of 9.5% (from 9.3%)

while the Blackbook forecast is 9.9% (from 9.7%). The Tealbook forecast for 2011Q4 increased from 8.2% to 8.6% while our forecast moved up from 8.0% to 8.2%.

During the intermeeting period, both the FRBNY and the Board staff projections for payroll employment in 2010 were revised, but in opposite directions. We now forecast payroll employment to increase 1.3 million (compared to 1.0 million in April), while the Tealbook forecast is 1.6 million (compared to 1.9 million in April). For 2011, the FRBNY staff forecasts an increase of 4.1 million (0.2 million above April) while the Board staff expects an increase of 3.4 million, down by 0.7 million relative to April. Part of the difference in employment projections is coming from the change in Board's view about the contribution of intensive/extensive margins to total hours. The Board Staff now projects a higher contribution of increased work week to total hours on the expectation that ongoing uncertainty will further delay hiring and lead to an increase in the average hours of existing workers.

International trade. The FRBNY forecast for the net export contribution to GDP growth for 2010 and 2011 is slightly more optimistic than the Board's forecast. The FRBNY forecast is for net exports to subtract 0.2 percentage point from GDP growth in 2010 whereas the Board's forecast is for a drag of 0.3 percentage point. In 2011, the FRBNY forecast is for net exports to have a neutral effect and the Board's forecast is for a small drag of 0.2 percentage point. These small differences correspond to the FRBNY assumption of weaker domestic demand in 2010 and stronger foreign GDP growth in 2011.

Uncertainty around forecasts. There were some changes in both ours and the Board staff's risk assessment relative to April. As in the last FOMC cycle, the FRBNY forecast continues to have somewhat more downside risk to inflation in 2010 as captured by the lower bounds on the 70% confidence intervals. In contrast, for 2011 the Board forecast assigns a higher probability to lower inflation realizations. The Board staff's low inflation rate projections for 2011 and 2012 continue to be in the lower half of our inflation forecast distribution, even though there is some convergence relative to April.

Our forecast for real activity continues to have somewhat more downside risk than the Tealbook forecast. Despite similar reductions in the 70% intervals for real activity, the Board's projection remains balanced (with similar upside and downside risks), while our forecast continues to have substantially more downside risk. As a result, the Tealbook's point forecast remains in the right tail of our output forecast distribution. Tealbook's relatively more pessimistic point forecasts for 2011 and 2012 are close to the center of our output forecast distribution.

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

| | Core PCE Inflation | | Real GDP Growth | |
|-------------|---------------------|---------------------|---------------------|---------------------|
| | <i>FRBNY</i> | <i>Board</i> | <i>FRBNY</i> | <i>Board</i> |
| <i>2010</i> | 0.0, 1.4 (0.1, 1.6) | 0.3, 1.3 (0.4, 1.3) | 0.8, 4.5 (1.0, 4.8) | 1.9, 4.5 (2.2, 4.8) |
| <i>2011</i> | 0.2, 1.9 (0.5, 2.1) | 0.1, 1.6 (0.2, 1.7) | 1.4, 6.0 (2.0, 6.3) | 1.8, 5.5 (2.6, 6.2) |
| <i>2012</i> | 0.8, 2.4 (1.1, 2.6) | n/a (n/a) | 2.5, 6.8 (2.7, 6.9) | n/a (n/a) |

Table 2: Percentile of Tealbook Forecast in FRBNY Forecast Distribution

| | Core PCE Inflation | Real GDP Growth |
|-------------|--------------------|-----------------|
| <i>2010</i> | 55 (53) | 58 (60) |
| <i>2011</i> | 43 (34) | 47 (52) |
| <i>2012</i> | 22 (14) | 50 (46) |

Alternative Tealbook forecasting scenarios. The June Tealbook considers eight alternative scenarios. Five of these are similar to the April scenarios but there is now one additional scenario featuring high inflation and two related to the risks emerging from the current turmoil in Europe. The scenario featuring a *Severe European Sovereign Debt Crisis* is considered as a tail risk type of event but with non-negligible consequences. In

this scenario the fiscal strains in the periphery of the euro area lead to higher premia on both government and private interest rates in Europe coupled with a substantial fall in equity prices. Government spending in Europe is forced to contract in order to address the fiscal crisis. These factors push Europe back to recession leading to weaker international demand for US exports. Coupled with a flight to quality, faltering foreign demand causes the US dollar to appreciate against most currencies. Furthermore, the financial conditions in Europe have spillover effects to the US, leading to increases in risk spreads and lower equity prices in the US. In this scenario the US falls back to recession in 2010H2 with a contraction in real GDP of about 3% for 2010 (Q4/Q4). As a consequence, unemployment rate peaks at 11% and core PCE inflation falls below zero in 2011. The FFR is kept at the current target range through the end of 2013 and the accommodative policy eventually causes output to be above its potential, pushing core PCE inflation above 2% in 2016.

The more optimistic scenario is the *Normalization in Europe*, which assumes that confidence is restored more quickly than in the baseline projection, leading the US dollar to depreciate immediately by 8% relative to baseline. Stock prices increase and interest rate spreads fall in response to improved conditions. Real GDP would move above the baseline by as much as a 1 percentage point through 2011 and core PCE inflation increases by half of a percentage point more than the baseline through the first half of 2011. As a consequence of improved conditions, tightening process starts earlier.

The next two scenarios evaluate opposite risks to aggregate demand. In the *Strong Recovery* scenario financial conditions improve more quickly than baseline, leading to higher spending by both firms and consumers. The tightening process begins in mid 2011, one year earlier than baseline, in response to inflationary pressures. GDP growth is significantly higher than baseline through 2011, but somewhat lower in later years because of tighter monetary conditions. On net, the amount of economic slack and the unemployment rate are lower than the baseline through the forecasting horizon. In the *Weaker Consumption* scenario, consumer uncertainty and further deleveraging push the saving rate up to 6% in 2011 instead of the baseline 4%. This has a negative impact on

both economic activity and financial conditions, with adverse feedback effects on spending. The recovery is delayed, with the unemployment rate still at 9.3% by 2011 (as opposed to 8.6% in the baseline) and with core PCE below 1% through 2013. As a consequence, the FFR remains at the current target range until the first half of 2013.

The *Jobless Recovery* scenario assumes a faster pace of labor productivity growth at its trend rate of 2.5% per year. In addition, firms are reluctant to hire new workers due to ongoing uncertainty. Households' confidence is lower in the short run but the faster pace of labor productivity leads to higher GDP growth in later periods. In this scenario, the unemployment rate peaks at 10% at the end of 2010 and remains above the baseline through 2013. The core PCE inflation remains below 1% throughout the forecast horizon. As a consequence, the FFR remains near zero through the first half of 2013.

The *Lower Potential* scenario features opposite risks to those in the *Jobless Recovery*. This case considers the possibility of a higher NAIRU and a lower level of structural productivity. These factors lead to a much lower reading of the output gap at -3.25%, instead of the baseline -6.5%. These conditions are associated with lower long-run income and weaker consumption and investment over time. As a consequence real GDP is on average 1.25% lower than baseline through 2014, and core inflation is higher. In response to higher inflation monetary tightening begins in early 2011.

The *Greater Disinflation* scenario features a mild deflation generated by unanchored inflation expectations. Inflation turns negative starting in 2012. As a response, the FFR remains near zero until 2013, spurring economic growth above baseline. Finally, the *Higher Inflation* scenario considers the symmetric risk to the inflation outlook. In this case, higher underlying inflation or above trend growth causes inflation to be higher, in line with current outside forecasters' consensus. As a consequence, core PCE inflation exceeds 1% in 2010H2, but remains below 2% through the forecast horizon. The policy makers respond with increasing FFR starting in mid 2011 and tighter policy leads to slower GDP growth in 2012.

3.2 Comparison with Private Forecasters¹

The FRBNY forecast for GDP growth in 2010 is in line with the Median SPF and Blue Chip but below Macro Advisers. This difference appears to be due to stronger growth of domestic final demand in Macro Advisers' forecast. Conversely, our projection for GDP growth in 2011 is higher than all private forecasts. Our inflation projections for 2010 are generally consistent with those of Macro Advisers. For 2011, the FRBNY inflation forecasts remain significantly above the Macro Advisers' projections, but closer to the other private forecasts (Median SPF and Blue Chip). The difference between our inflation forecast and that of Macro Advisers for 2011 likely reflects a more persistent effect of economic slack in the Macro Advisers' projections.

GDP Growth. Relative to the last FOMC, all private forecasts for 2010 (Q4/Q4) have been slightly revised upwards. The FRBNY forecast for 2010 (Q4/Q4) is unchanged at 3.0%, in line with Median SPF and Blue Chip (both at 3.1%) but still below Macro Advisers (3.7%). Compared to the previous Blackbook, the FRBNY forecast for 2011 (Q4/Q4) has been slightly reduced to 4.1% (down from 4.3%). Our projection remains higher than the Macro Advisers' (3.7%) and Blue Chip (3.1%) forecasts.

Inflation. The FRBNY projection for core PCE in 2010 (Q4/Q4) is 0.9% (unchanged from the April Blackbook), is between the Macro Advisers (0.8%) and the Median SPF (1.2%). Our 2011 (Q4/Q4) forecast for core PCE inflation (1.3%, down 0.1% relative to the last Blackbook) lies between the Median SPF (1.6%) and Macro Advisers (0.8%). Our forecasts for core and headline CPI inflation in 2010 (Q4/Q4) are 0.6% and 0.9% respectively, in line with Macro Advisers but about half percentage point below the Median SPF. For 2011 (Q4/Q4) our CPI inflation projections (core at 1.5% and headline at 1.6%) are similar to the Median SPF, but considerably above Macro Advisers'.

¹ The details of the forecast comparison are in Exhibit B-8. Release dates of the private forecasts discussed in this section are in parentheses: Blue Chip consensus (6/10), SPF (5/14), Macro Advisers (6/16), and the PSI Model (6/14). Quarterly numbers are SAAR.

4. Robustness of Policy Recommendation

4.1 Sensitivity to Alternative Scenarios and Policy Rules

Our current policy recommendation is to maintain the target range for the federal funds rate at 0–0.25% until the end of 2011Q2 – one quarter later than in the April Blackbook. This recommendation is consistent with the *Baseline* policy rule under all but the *Loss of Credibility* scenario [Exhibit D-1], as well as under the expected value of the forecast distribution [Exhibit D-2]. Under the *Loss of Credibility* scenario the FFR renormalization starts in 2011Q1, since inflation under this scenario rises above target. Under all other scenarios the FFR starts increasing no earlier than 2011Q3.

Exhibit D-3 shows the prescriptions from alternative policy rules. The *Nutter* rule under the *Loss of Credibility* scenario, which entails a strong response to inflation and no response to the output gap, is the only case where the FFR path differs significantly from our policy recommendation, with the first rate increase in 2010Q3. The *Nutter* rule under the *Central Scenario* implies a FFR path close to market expectations. The *Asymmetric Price Targeting* rule results in FFR paths close to zero until the end of the forecast horizon for all scenarios. For the *Outcome-based* rule we show the implied nominal FFR ignoring the zero bound. Under the expected value of the forecast distribution the unconstrained nominal FFR is about -2.5% by the end of 2011 and remains below zero through the end of 2012 [Exhibit D-2].

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

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

4.2 Comparison to Market Expectations

The market-implied FFR path shifted down during the intermeeting period and now implies a start of the renormalization process (using the Board's assumptions concerning term premia) in 2011Q2. This is consistent with the average forecast from primary dealers regarding the timing of the first FFR increase as well as with our policy recommendation. The distribution of responses from the primary dealers survey about the timing of the FFR lift-off shifted considerably toward later dates, mirroring the evolution of the market-implied FFR path. While the distribution was bimodal in April, with a roughly equal number of respondents believing the first FFR hike would occur in 2010Q3 and in 2011Q1, now the vast majority of respondents forecasts a hike no sooner than 2011Q1.

Special Topic

The Effect of Policy Induced Shifts in FFR Market Expectations at the Zero Bound

Marco Del Negro ^{Redacted}, Dan Greenwald

The removal of the “extended period” language from the FOMC statement would most likely result in an upward shift of market expectations for the near-term path of the federal funds rate.

The magnitude of this shift will depend on several factors including the extent to which the removal of the “extended period” language is anticipated by the market and by the language that will replace it. Here we take the magnitude as given and investigate the size of its contractionary effects on the economy.

The empirical macro literature provides substantial evidence on the macroeconomic impact of changes in the policy rate.

Unfortunately, this literature has two limitations for our purpose: 1) It focuses on the effect of contemporaneous policy shocks while we are concerned about the consequence of shifts in the future FFR path. For example, removing the “extended period” language today will have small effects on the FFR today or next month, but will likely change the expectations of the FFR two quarters down the road and beyond.

2) It neglects the presence of the Zero Lower Bound (ZLB). The bottom line of this exercise is that these two considerations, particularly the ZLB, greatly amplify the impact of policy shocks on output and inflation relative to standard estimates.

Reduced form models have a hard time addressing the question at hand. This is mainly because we have very few observations, if any, pertaining to the ZLB regime. Moreover, even in absence of the ZLB, identifying changes in market expectations for the federal funds rate that are due to exogenous policy surprises can be challenging. (From the literature on “announcements” effects, we know that the impact on the yield curve from changes in the FOMC statement language can be substantial). Here we sidestep these problems by using an estimated DSGE model. The advantage of the DSGE model is that it can be used as a laboratory to address the question at hand, as we are able to incorporate both the effect of anticipation and of the ZLB. Importantly, this model is estimated on U.S. data (namely output, inflation, hours, the labor share, and the FFR), which implies that its parameters are chosen to fit these data. Indeed, the model impulse responses to a contemporaneous policy shock largely resemble those from the VAR literature.

The table below compares the mean estimated impact effect of a 100 basis points contemporaneous increase in the FFR (the typical “policy shock” studied in the VAR literature) with a shift in the FFR of similar magnitude that occurs 5 quarters down the road but is anticipated by the markets today and hence results in a shift in market expectations. In addition, this takes place when the FFR is constrained by the ZLB for quarters 1 through 4. Note that this simple experiment by no means claims to capture all the implications of the shift in market expectations due to the removal of the “extended period” language. However, it has the advantage of being directly comparable to the policy shocks that have been studied in the literature. The table shows that the effects are an order of magnitude larger for the 5-quarter ahead shift relative to the contemporaneous one. The next page shows the impulse responses to the two kinds of shocks. Note that these responses should be interpreted as deviation from a baseline path. These impulse responses show that the effects are not only larger, but also much more persistent and uncertain.

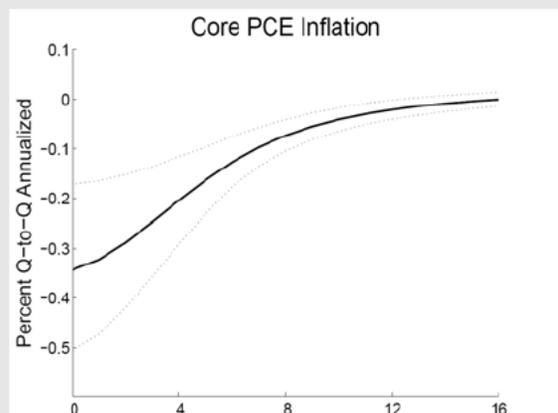
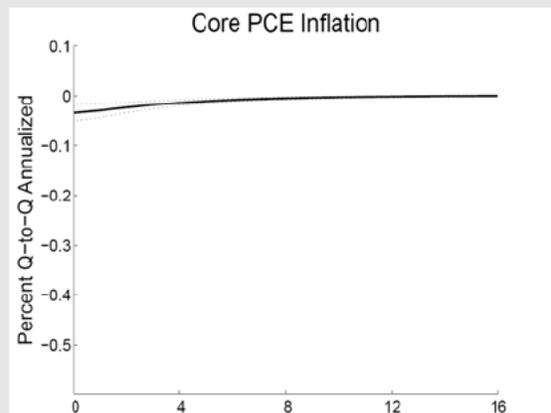
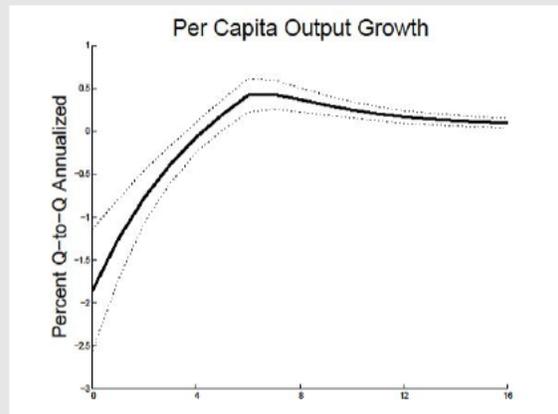
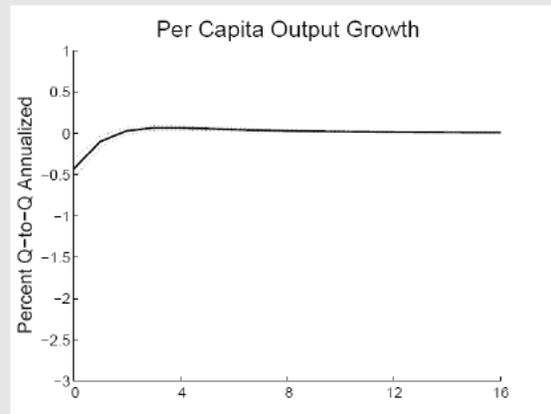
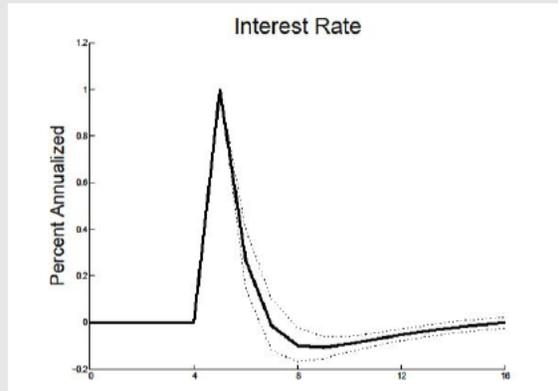
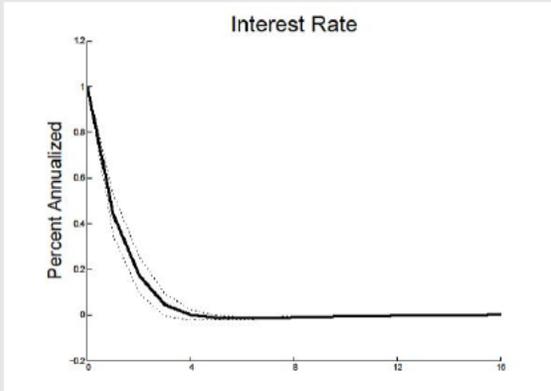
| | Output Growth | Inflation |
|-----------------|----------------------|------------------|
| Contemporaneous | -40bp | -4bp |
| 5Q-Ahead w ZB | -200bp | -40bp |

Why are shifts in market expectations of the federal funds rate so powerful at the ZLB? The ZLB literature has shown that the effect of shocks on output and inflation when the FFR is at the ZLB can be extremely large, but that commitment to future policy accommodation when the economy is out of the ZLB can substantially ameliorate the effect of the ZLB. This future policy accommodation can be interpreted as a sequence of anticipated expansionary policy shocks – as they are deviations from the business-as-usual reaction function that would trigger a downward shift in market expectations for the federal funds rate. The exercise conducted here can be loosely interpreted as a removal of this future accommodation which leads to an increase in market expectations for the federal funds rate. In this sense, there is an analogy between the results here and the effect of the so-called “Mistake of 1937” analyzed by Eggertsson.

This analysis is subject to a number of caveats. Perhaps the most important one is that we do not account for the fragility of the financial system in considering the impact of a policy-induced shift in market expectations. This caveat suggests that the effects of a shift in FFR expectations at the zero bound can be even larger, and more uncertain, than estimated here.

Contemporaneous 100bp Increase

5Q-Ahead 100bp Increase at Zero Bound



Special Topic

Modifying the “Extended Period” Language to Reflect Increased Deflationary Risk

Argia M. Sbordone Redacted

Should the Committee decide to push back the beginning of policy re-normalization to reflect an increase in deflationary risk? It may consider modifying the current statement language to condition the length of policy accommodation to the recovery of the price level path.

The FOMC statement has incorporated ‘extended period’ language since March 2009 even though the statement’s assessment of financial and economic conditions has become more optimistic in recent FOMC cycles. Because of the improvement in financial and economic conditions, market participants have become more attuned to the possibility of changes in the extended period language in preparation of the exit from policy accommodation.

During this inter-meeting period, however, the downside risks to activity and inflation have increased, reflecting concerns about the impact of the euro area debt crisis and some weak data releases—in particular, the May labor market report. In response, we have moved the recommended beginning of policy re-normalization back to the third quarter of 2011. Market expectations of the policy rate appear to have shifted similarly.

Whereas the Blackbook recommendation is for no change to the extended period language, I argue that this could be an opportune time to change that language because market participants have reduced considerably their probability of a possible near-term exit. The goal of any modification is to clarify the FOMC’s assessment of the extent and duration of policy accommodation. In this special topic, I first discuss the risks to changing the language. I then propose a modification that potentially provides more guidance to the medium term policy stance.

Risks to changing the “extended period” language

The primary risk to changing the extended period language is that market participants may perceive the change as moving forward a re-normalization of the FFR. As shown in the DSGE simulations presented in the special topic “The Effect of Policy Induced Shifts in FFR Market Expectations at the Zero Bound,” the potential effects of an anticipated policy tightening when the FFR is at the zero bound can be substantial. Output and inflation fall more in this circumstance because the zero bound prevents easing monetary policy. Consequently, a change in the statement language that induces expectations of an earlier removal of policy accommodation raises the risk of a double dip recession and deflation.

In the current circumstances – an effective tightening of financial conditions due to the euro area debt crisis and continued deceleration of inflation – the FOMC would want to communicate that it will maintain its accommodative policy stance for an even longer period than anticipated in April. Therefore, any change from the “extended period” language must give a clearer guide to the conditionality of monetary policy.

Proposed modification of the language

The current “extended period” language can be interpreted in two ways. One interpretation is that it is a conditional commitment: a promise to maintain the FFR near zero as long as economic slack remains and inflation and inflation expectations are subdued. The other interpretation is a conditional forecast: the FFR path consistent with the FOMC’s current outlook and policy rule.

Under both interpretations the FFR is expected to remain near zero as long as economic conditions warrant it. However, the first interpretation, together with the common view of “extended period” as a six-month horizon, suggests that a loss of credibility may result should the language not be dropped with sufficient anticipation on the exit. The memo “What threshold for removing the ‘extended period’ language?” suggested that such a situation is likely to arise.

Therefore, a change in the language should include sufficient conditionality for the FOMC to restate its accommodative policy stance in the medium term as needed. But to avoid unintended changes in policy expectations, the FOMC should make it clear that it is taking some insurance against a further fall of inflation below the long term objective.

One possibility, that we have raised in the past, would be to state that policy accommodation will be maintained until “average inflation”, defined over a two-to-three year window, is not lower than the central tendency of the long-term FOMC inflation projection. Average inflation targeting is a way of approximating a “price level targeting” regime. Such a regime is desirable when the policy rate is at the zero lower bound because negative inflation shocks would be expected to be followed by higher-than-average inflation, in order for the price level to return to its previous path. The increase in expected inflation then reduces the real interest rate, which helps to stimulate the economy even though the nominal rate remains constrained by the zero bound.

¹ This argument has been formally made by Eggertsson and Woodford (2003) “The Zero Interest-Rate Bound and Optimal Monetary Policy”, *Brookings Papers on Economic Activity* 1: 139-211

Although price level targeting would be most desirable, a shift to price-level targeting may be viewed as too abrupt a regime change. It may be that stating its objective in terms of ‘average inflation’ targeting poses a lesser communication challenge to the FOMC.

The suggested language change would clarify the conditions underpinning the length of the policy accommodation, providing a specific guidance that is missing in the ‘extended period’ wording. Moreover, by making explicit that a temporary increase of inflation above the long-term goal would not elicit an interest rate increase, the FOMC would ensure that long-term inflation expectations remain well anchored.

5. Significant Developments

5.1 Economic Developments

U.S. Data Releases Overview. Data releases on activity and inflation during the intermeeting period were mostly in line with expectations. Indicators are consistent with somewhat higher-than-expected growth for the current quarter and a loss of momentum going into the second half of the year. Measures of underlying inflation suggest that trend inflation remains subdued.

Real Activity.

GDP: Real GDP increased 3.0% (saar) in 2010Q1, according the second estimate, following a 5.6% increase in 2009Q4. The main drivers of growth were personal consumption, business fixed investment in equipment and software, and inventory investment with growth contributions of 2.4, 0.8, and 1.7 percentage points, respectively.

Productivity: Output per hour in the nonfarm business sector increased 2.8% (saar) in 2010Q1. The four-quarter change was 5.8%. Despite the slowdown in 2010Q1, productivity increased 6.1% over year-ago levels. Unit labor costs declined 1.3% over the quarter and 4.2% over the year.

Production: Industrial production rose by 0.8% in April and 1.2% in May. Manufacturing output increased by 1.0% and 0.9% in April and May, respectively. The capacity utilization rate in manufacturing rose from 70.1% in March to 71.5% in May, the highest it has been since October 2008.

Manufacturing orders, shipments and inventories: New orders for durable goods manufacturers increased by 1.7% in March and 1.2% in April. Manufacturers' inventories rose 0.5%. The inventories-shipments ratio was unchanged at 1.24.

Personal income and consumption: Personal income rose by 0.3% and 0.4% in March and April, respectively. The rise in income was largely in wages and salaries. Strong consumer spending in March (0.6% increase) was followed by flat spending in April.

The personal saving rate is somewhat higher than earlier figures showed. April's figure was 3.6%, and the number for March was revised up from 2.7% to 3.1%.

Retail sales: Consumer spending moderated in April with retail sales increasing by 0.4% overall and 0.4% ex-autos. This moderate gain was followed by a decline in May of 1.2% overall and 1.1% ex-autos. Although the sales figures are still consistent with reasonably well-sustained consumer spending for Q2, there does appear to be some loss in momentum going into the second half of the year.

Motor vehicle sales: According to Autodata Corporation, light motor vehicle sales were 11.63 million units at an annual rate, somewhat above the pace of sales in April. Nevertheless, motor vehicle sales remain lackluster relative to the pace of the past decade and consistent with fairly sluggish growth in consumer spending.

Consumer credit: Total consumer credit outstanding rose 0.5% (annual rate) in April following a decrease of 2.7% in March. Consumer credit has been relatively flat in 2010.

Flow of Funds: According to the Flow of Funds, debt in the household sector declined again in 2010Q1, while it was essentially unchanged in the business sector. Net worth in the household sector increased, reflecting higher financial asset prices, but it still remains well below the 2007Q2 peak.

Housing market. Housing-market-related indicators were generally strong in April. However, more recent readings from the housing market were much weaker, indicating that the home buyer tax credit pulled forward a substantial amount of housing market activity.

Home sales: New home sales rose sharply by 14.8% in April following March's 29.9% gain. This two-months sale surge brought the level of inventories to its lowest level since 1968. Existing home sales rose 7.6% in April following March's 7.0% increase. The strong home sales data seem to partly reflect the expiration of home buyer tax credit.

House prices: The FHFA purchase-only home price index rose 0.3% in March. The index was down 2.3% over the year. The S&P/Case Shiller 20-city composite home price index decreased by 0.5% in March, its 6th consecutive monthly decline. Over the past six months, this index is down at a 4.5% annual rate.

Housing starts: Total housing starts fell 10% in May from 659,000 to 593,000. Housing permits fell 5.9% in May following a 10.9% decline in April.

Construction: The aggregate value of construction put in place increased 0.4% in March and 2.7% in April.

Labor market.

Establishment survey: Nonfarm payroll employment increased by 290,000 and 431,000 in April and May, respectively. The April employment gains were concentrated in the private sector (218,000) while most of the increase in May came from the hiring of temporary workers for Census 2010 (411,000). The aggregate hours index increased 0.4% in April and 0.3% in May while average hours worked increased to 34.2, its level in January 2009. Average weekly earnings were strong, increasing by 0.4% and 0.6% in April and May, respectively.

Household survey: The unemployment rate increased from 9.7% (its 2010Q1 average) to 9.9% in April and went back to 9.7% in May. There were offsetting changes in the employment-population ratio and the labor force participation rate in April and May, bringing both indicators to levels slightly above March numbers. The most recent estimates of employment-to-population ratio and the labor force participation rate are 58.7% and 65.0%. The average duration of unemployment reached a new record high of 34.4 weeks.

Unemployment insurance claims: New claims for unemployment insurance rose 12,000 in the week ending June 12 to 472,000 and the four-week moving average was 463,000.

Since the beginning of the year, initial claims have been fairly flat with the four-week moving average staying between 450,000 and 480,000. Since bleak job-finding prospects and the extension of benefits increased the likelihood of unemployed workers to file for unemployment insurance benefits, initial claims are likely to stay at elevated levels for a while. Continuing claims were 4.57 million in the week ending June 5 and the insured unemployment rate was 3.6%. Extended and emergency benefits (not seasonally adjusted) fell to 4.8 million after peaking at 5.9 million in March.

Trade.

The trade deficit widened slightly from a revised \$40.0 billion in March to \$40.3 billion in April. Both export and import volumes declined in April, only partially offsetting strong growth in March. Oil volumes also fell, following a big jump in the previous month. An offsetting increase in oil prices left the oil bill unchanged. These data suggest the net export contribution to GDP growth will subtract 0.5 percentage point in 2010Q2.

Inflation.

CPI: The overall CPI fell 0.2% in May, following April's 0.1% decline, while the index less food and energy rose 0.1% after being virtually unchanged in both March and April. Both rents and medical care prices were unchanged. Core CPI rose 1.0% over the year in May, unchanged from April. Recent CPI readings suggest that underlying inflation is stable at a very low rate.

PCE deflator: The overall PCE price index rose just by 0.1% in March and was flat in April. The core measure increased 0.1% in March and April.

Surveys.

ISM surveys: The ISM surveys suggested stronger growth in the manufacturing and non-manufacturing sectors for April and May. The ISM non-manufacturing composite index

remained at a 4-year high for the third straight month in May, while the employment index moved above 50 for the first time in 2½ years.

Consumer surveys: The Reuters/Michigan consumer sentiment index climbed up to 75.5 in early June—its best level since the beginning of 2008. The median expected 5-year-ahead inflation rate stood at 2.9% for the full month of May and slipped from 2.9% to 2.7% in June—back to where it had been in the three prior months. The median 1 year ahead rate also receded—from 3.2% to 2.8%—back down to about where it was in Q1. The Conference Board's Consumer Confidence Index rose 5.6 points to 63.3 in May—its highest level since March 2008—following on a similar increase in April.

Foreign Macroeconomic Conditions

Data over the intermeeting period were mostly positive, in line with the recovery in global exports and production. Business confidence measures continue to improve. Foreign output is expected to increase 3.4% (Q4/Q4) in 2010 after rising 0.4% in 2009. The downside risks from the euro area debt crisis lowered the foreign outlook for 2011 by 0.2 percentage point to 3.2%.

Europe: The manufacturing index rose 17 percent (saar) in Q1 and increased again in April. Exports have been a key driver, with a big jump in March. Confidence measures for the industry improved in May, despite the debt crisis. Credit to non-financial firms fell again in Q1, but at a much slower pace. Consumer credit also appears to be stabilizing while the pace of workers entering unemployment eased considerably in April. Production in the U.K. remains depressed although business surveys signal an expansion in the near future. Housing prices are moving higher.

Asia: Production grew in April, continuing a steady recovery that started in early 2009. Survey data, though, suggest only minimal increases in May and June coinciding with a recent slowing in export growth. Consumer price deflation accelerated in large part because high school tuition fees were eliminated. Core prices fell 1.6% over the year.

Indicators suggest that China's growth remains strong and that inflation remains in check. Exports jumped in May and PMI readings are at robust levels. The property sector appears to be cooling in response to government efforts to discourage speculation. Elsewhere in Asia, countries have reported strong data on both exports and domestic demand.

Latin America: Brazil's economy grew 11% (saar) in Q1 with very strong investment spending. Unemployment is at a record low. Mexico's GDP fell slightly in Q1 as weak domestic demand offset strong export sales. The weak labor market, though, appears to be improving.

5.2 Financial Markets

Domestic Financial Markets

Financial markets were volatile over the intermeeting period. Treasury yields, breakeven inflation expectations, the expected path of policy rate expectations, and equity markets all moved lower. Concerns over spillover effects from the euro area peripheral debt crisis, ongoing weakness in the U.S. labor market, low inflation readings, as well as uncertainty over the potential impact of financial market regulation reform are all likely to have contributed to these declines.

Nominal Interest Rates. After being fairly stable over the first few months of 2010, the yield curve has flattened somewhat since the April FOMC meeting. Continued downside risks to inflation and real activity along with flight to quality moves into U.S. Treasuries over euro area debt concerns mainly drove the flattening. The 10-year Treasury note is currently at about 3.3% and hence back to a level last observed in November 2009. The yield on the 2-year note, driven more by near- and medium-term policy expectations, has also declined, from about 1% in April to 0.75%. (Exhibit A-3: Treasury Yields).

Option implied yield volatility in Treasury and swap markets as measured by the 3-month MOVE and SMOVE indices has increased over the last few weeks from levels of 95 and 99 respectively on the day of the April FOMC meeting to levels of 114 and 121 in early May, their highest levels since December 2009. While both indices have since retraced

some of the increase in the last few weeks, expectations of future Treasury yield volatility currently remain well above their levels seen at the beginning of the year (Exhibit A-6: Implied Volatility).

Inflation Compensation. While nominal Treasury yields have declined sharply since April, real yields have not seen as pronounced a decline. As a consequence, market-based measures of inflation expectations have trended lower in recent weeks. The 0-5 year inflation compensation, gauging inflation expectations over the next five years, has declined from 1.87% around the time of the last FOMC meeting to currently 1.61%. The 5-10 year measure, gauging expected inflation 5 to 10 years out, has fallen from 3.00% in mid April to a current level of 2.85% (Exhibit A-4: Real Yields and Implied Inflation). While the recent decline in market-based measures of inflation compensation expectations is in line with low inflation readings and recently increased concerns about the global growth outlook, it also indicates that inflation expectations remain well anchored despite the extraordinary monetary policy interventions and the expansion of the Federal Reserve's balance sheet since the onset of the financial crisis.

Expected Policy Rate Path. The expected path of the fed funds rate inferred from futures markets has shifted down considerably since the April FOMC meeting. Market expectations currently suggest that the target fed funds rate will remain unchanged through 2010, and then rise to about 0.5% in May 2011, 0.8% in late 2011, and about 1.5% in mid-2012. It seems noteworthy that professional forecasters expect the path of the fed funds rate to be considerably steeper over the next year. Indeed, the median expectation from the Blue Chip Financial Forecasts survey for the third quarter of 2011 was 1.5% in June, down from 1.75% in April (Exhibit A-5: Policy Expectations).

Equity Markets. While equity markets extended the strong recovery that had started in March 2009 into the first months of 2010, they reached a peak in mid April and have since declined noticeably. While part of that drop has been retraced over the past week, as of June 15 the S&P 500 Composite was still 8% below its April high (Exhibit A-7: Equity and Credit). Uncertainty about spillover risks from the euro area peripheral

sovereign debt crisis reportedly was the main driver of the price move. However, the unknown impact of future financial regulation and questions about the strength of the economic recovery also weighed on valuations.

Implied equity volatility as measured by the VIX spiked up considerably in the intermeeting period, mainly due to heightened euro area sovereign risk concerns. After reaching its lowest level in 2½ years in early April, the VIX moved up to 46% on May 20, a level last seen in October 2009. Since then, the S&P 500 implied volatility has reversed much of the increase, but at a level of 26% on June 15 remains somewhat above the levels observed in March and April (Exhibit A-6: Implied Volatility).

Credit Spreads. Improved economic and financial market conditions had caused credit spreads to narrow considerably over much of 2009 and into the second quarter of 2010. Recently, however, credit spreads have reversed course and increased from levels of 209 and 144 basis points for financials and all corporate, respectively, around the April FOMC meeting, to 286 and 192 basis points on June 15 (Exhibit A-7: Equity and Credit). The Federal Reserve's Senior Loan Officer Opinion Survey provides some additional color on the status of credit market conditions. Its latest release, published on May 3, suggests that the cycle of tightening that started in 2007 has finally come to an end, even though lending standards remain relatively tight (Exhibit A-10: Money and Banking).

Money Markets. Money market functioning had been largely restored since the significant dislocations at the height of the financial crisis with Libor-OIS spreads returning to pre-crisis levels in late 2009 after peaking in October 2008. In the intermeeting period, however, measures of money market stress have ticked up again with the 3-month LIBOR-OIS spread currently being at 33 basis points, 23 basis points above its level on April 27, but still below the peaks seen during the financial crisis (Exhibit A-8: Liquidity Facilities).

Euro area sovereign debt risks have been identified as the main driver of the recent increases in dollar funding spreads, with smaller institutions from euro area peripheral

countries reportedly facing the highest rates. While the policy measures undertaken by the European Central Bank and the European Union in response to the crisis seem to have helped alleviate the funding strains somewhat, market participants remain attuned to the developments in money markets. As part of the policy responses to the sovereign debt crisis, the Federal Reserve and the ECB as well as other foreign central banks have recently re-established the temporary U.S. dollar liquidity swap arrangement that had first been introduced in December 2007. However, demand for dollar funds provided through these arrangements has been modest, soliciting a maximum demand of \$9.2 billion on May 19, and a current level of \$1.2 billion (Exhibit A-8: Liquidity Facilities).

Foreign Financial Markets

The ongoing sovereign debt crisis in peripheral euro area nations resulted in deteriorating global funding conditions over the intermeeting period. Spreads for peripheral euro area sovereign debt reached new highs and credit rating agencies downgraded their ratings of these nations' government bonds, with Greek debt now having junk bond status. The peripheral sovereign debt woes also pose systemic risks to the euro area and U.K. banking sectors. According to BIS data, the balance sheet exposure of British, Dutch, French and German banks to peripheral euro members' sovereign debt has reached a ratio of, respectively, 81, 111, 130 and 153 percent relative to their Tier 1 capital. As a consequence there were renewed tensions in the interbank funding markets, with both the euro area 3-month LIBOR-OIS spread and the implied FX swap rate reaching levels not seen since the end of 2009. This prompted the Federal Reserve to reactivate its dollar swap lines with the ECB, the Bank of Canada, Bank of England, the Bank of Japan and the Swiss National Bank. These arrangements have been authorized through January 2011. In Spain, the Bank of Spain took over a regional savings bank with the government actively inducing the remaining regional savings banks to clean up their balance sheets and join forces through mergers.

On May 3 and May 10, the EU announced a number of measures aimed at stabilizing the euro area fiscal crisis. These entailed a joint euro area-IMF €110 billion support package for Greece spread out over a three year period conditional on fiscal consolidation as well

as the creation of a European Financial Stabilization Fund (EFSF). The EFSF will be funded through a special purpose vehicle that issues debt guaranteed by the national governments. It can use its funds to help governments in distress under strict conditionality and in the context of joint EU/IMF programs. Finally, EU governments decided on June 17 to publish their bank stress tests in order to provide more transparency regarding the state of their respective banking sectors.

Inflows to emerging market bond and equity funds reversed over the intermeeting period, as investors paired back risk in reaction to the euro area debt crisis. This resulted in declines across all Emerging market asset classes – particularly in Emerging Europe given the potential of a spillover from the euro area fiscal crisis. Emerging Market local debt issuances, however, have been relatively resilient and broadly consistent with recent averages.

The trade-weighted U.S. dollar index gained about 4% since the last FOMC meeting. In particular, the dollar strengthened against the euro. More broadly, the euro depreciated compared to all major currencies in response to a lower expected growth path for the euro area relative to other economies as well as concerns about how the euro area is dealing with the fiscal crisis within its peripheral member countries. In trade-weighted terms, the Japanese yen appreciated on account of deteriorating global risk appetite. The dollar remained stable against the Chinese yuan.

5.3 Global Economic Policy

Central banks in the euro area, Japan, the U.K. and the U.S. kept their policy stance at a very accommodative level over the intermeeting period. However, monetary tightening has become the modus operandi in emerging market and commodities-orientated economies.

As has been the case since March last year, the ECB kept its policy rate unchanged at 1.0% at its June meeting, with a balanced risk outlook for their, rather modest, 2011 growth projections albeit with “unusually high uncertainty”. The size of the ECB’s

balance sheet increased from €1.9 trillion to €2.1 trillion since the last FOMC meeting, due to larger refinancing operations and asset purchases. To mitigate financial stability risks due to the sovereign debt crises in peripheral euro area member states, the ECB's 3-month refinancing operations will accept as much collateral as banks offer through September. In addition, Greek sovereign debt can be used as collateral without regard to credit ratings until further notice. Furthermore, the ECB commenced on May 10 a "Securities Markets Program" (SMP) to "address the severe tensions in certain market segments which are hampering the monetary policy transmission mechanism". Under the SMP, the ECB has to date purchased €47 billion in assets, primarily Greek, Irish and Portuguese sovereign debt, with the ECB sterilizing the interventions through its term deposit facility.

The Bank of Japan is keeping its policy rate close to the zero-bound, at 0.10%. In its battle to stop prolonged deflation, the Bank is providing up to ¥20 trillion in liquidity to banks under its 3-month fixed-rate funding facility introduced in December 2009. The Bank decided at its June meeting to start implementing in August a ¥3 trillion lending program under which banks can borrow each up to ¥150 billion for one year at the current policy rate conditional on them using the funds to finance firm investments. The small size of these facilities relative to the Bank's ¥120 trillion balance sheet, however, raises doubts about their effectiveness in battling structural deflation. The prospect of persistent consumer price deflation and yen strengthening might force the Bank of Japan to pursue more aggressive options. These include a further expansion of current funding facilities, a duration commitment for a near-zero policy rate combined with an inflation target, currency interventions, and an increase in its outright purchases of government bonds.

Since January, China has initiated a number of monetary tightening measures such as increased reserve requirements and higher managed interest rates. More recently, Chinese monetary authorities have scaled back the pace of tightening in reaction to the ongoing financial turmoil in Europe. Consequently, markets only expect a gradual upward adjustment in the exchange rate with yuan forward contracts predicting a 1

percent gain against the dollar over the next 12 months. Going forward, further rate and reserve requirement hikes remain likely but only after there is some sort of stabilization of global financial markets. Thus, even in the context of gradual tightening, China's monetary policy stance will remain relatively loose in 2010.

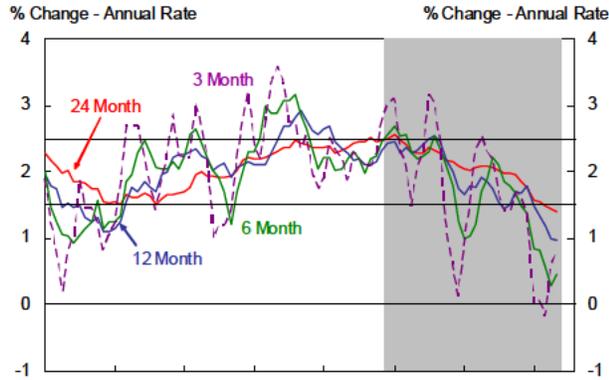
Elsewhere in Emerging Asia, the pace of monetary tightening also slowed down with the possible exception of India. Indian growth and inflation releases continued to surprise on the upside and therefore another rate hike, after two hikes in the run-up to the last FOMC meeting, by the Reserve Bank of India is likely next month. Increased risk aversion over the period has led to a sharp fall-off in capital flows to Emerging Asia, resulting in less appreciation pressures and a slowdown in the rate of reserve accumulation outside of China.

The economic recovery in commodities-orientated economies remains exceptionally robust, which is in large part driven by demand from Emerging Asia. The Reserve Bank of Australia raised its policy rate further in May by 25 basis points to 4.50%, and the New Zealand Reserve Bank similarly hiked its rate in June with 25 basis points to 2.75%. The Australian central bank kept the policy rate unchanged in June, however, as the fall-out from the European sovereign debt crisis caused it to be more cautious regarding monetary tightening. Robust commodities exports also made for a solid growth prospect in Canada. The Bank of Canada became on June 1 the first G7 central bank to raise its policy rate, with 25 basis points move to 0.50%. The Canadian rate hike was expected after Q1's strong growth data and the removal of the policy rate commitment in April. In Brazil, after surprising markets by leaving rates on hold in March, the central bank began a tightening cycle with 75 basis points increase in April and June, bringing the policy rate to 10.25%. The local yield curve is pricing in an additional 150 basis points of rate increases before the end of the year. Expectations of policy rate increases in Mexico have been pushed back, with surveys suggesting that an initial hike will not occur before March 2011. Some 150 basis points in total tightening for Mexico are expected by the end of 2011. The remaining central banks, like the Bank of England and the Swiss National Bank, kept their policy rates unchanged at historically low levels.

A. Significant Developments

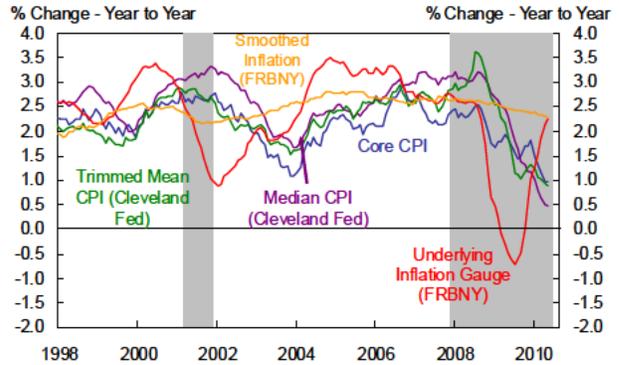
Exhibit A-1: Measures of Trend Inflation

Core CPI Inflation over Various Horizons



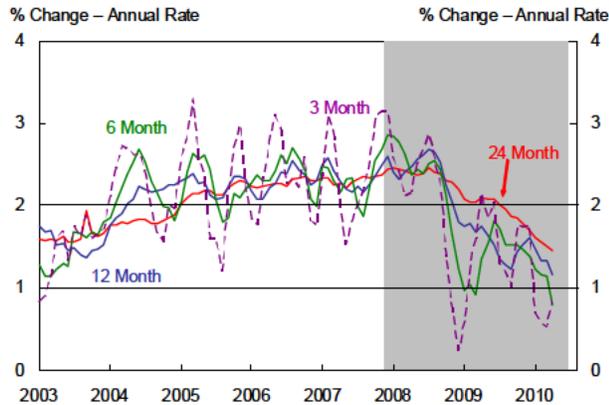
Source: Bureau of Labor Statistics

Alternative Measures of CPI Inflation



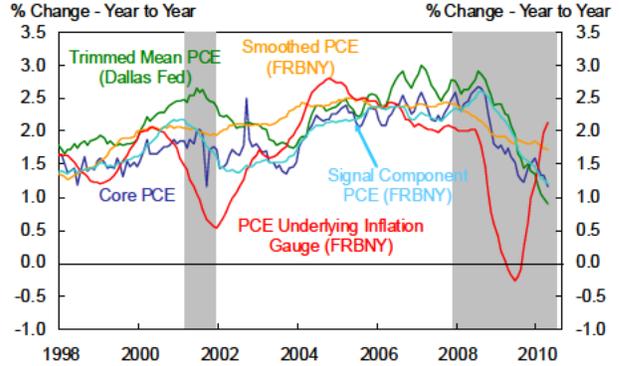
Source: Bureau of Labor Statistics, Cleveland Fed, MMS Function (FRBNY), and Swiss National Bank

Core PCE over Various Horizons



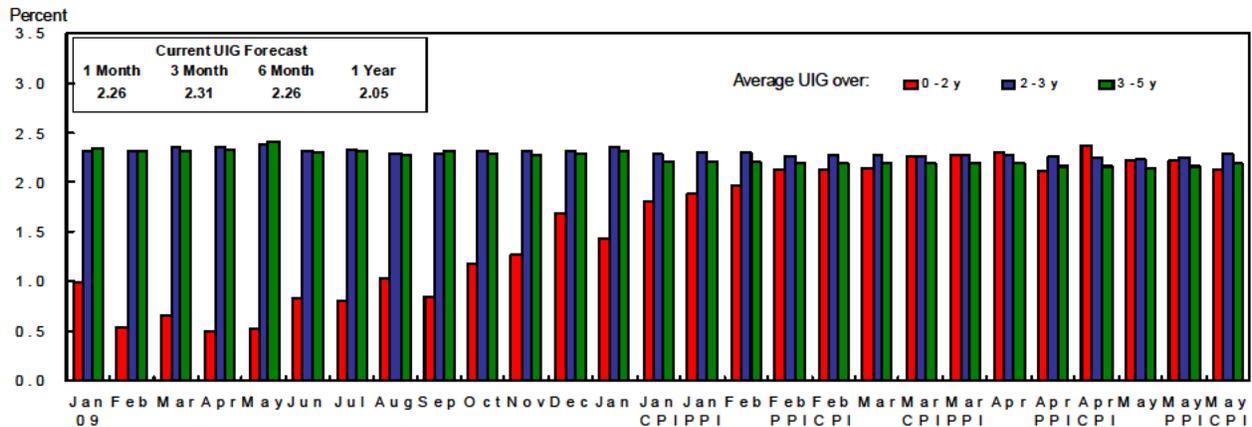
Source: Bureau of Economic Analysis

Alternative Measures of PCE Inflation



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

Exhibit A-2: Underlying Inflation Gauge (UIG)



Source: MMS Function (FRBNY) and Swiss National Bank

A. Significant Developments

Exhibit A-3:
Treasury Yields

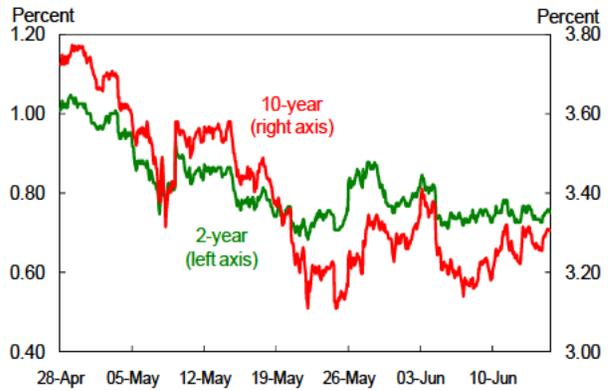
Short- and Long-Term Rates



Source: Bloomberg

Note: Yields of on-the-run securities.

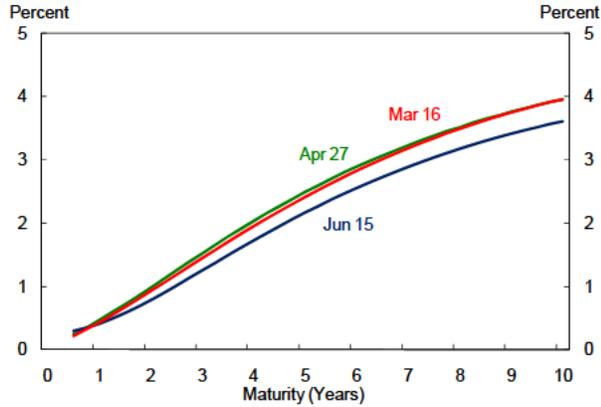
Short- and Long-Term Rates (Intraday)



Source: Bloomberg

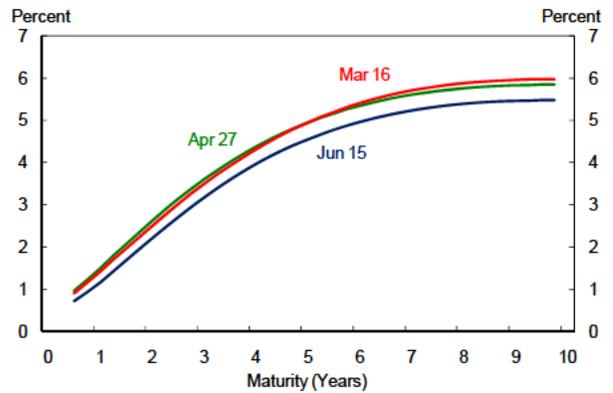
Note: On-the-run securities, 8:00 am to 4:00 pm.

Yield Curves



Source: Federal Reserve Board

Yield Curves: One-Year Forward Rates

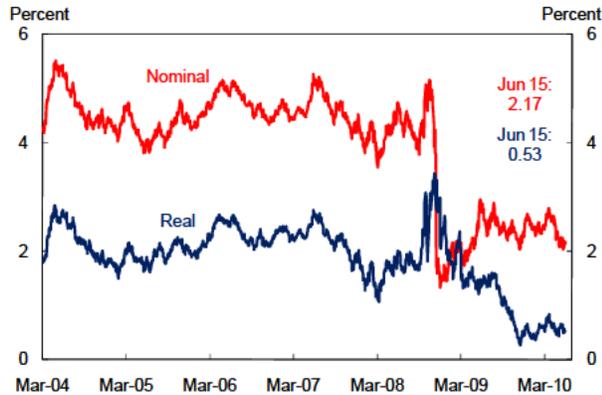


Source: Federal Reserve Board

A. Significant Developments

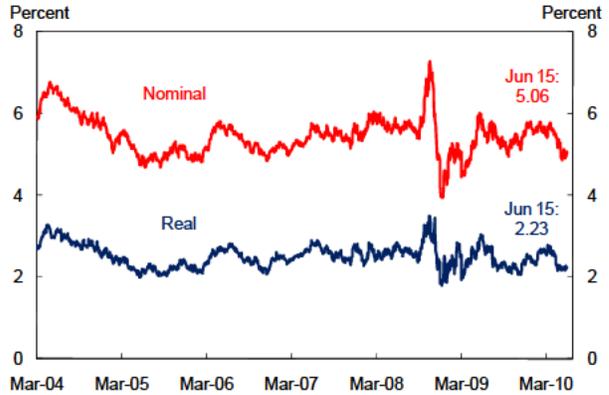
Exhibit A-4:
Real Yields and Implied Inflation

5 Year Spot Rate



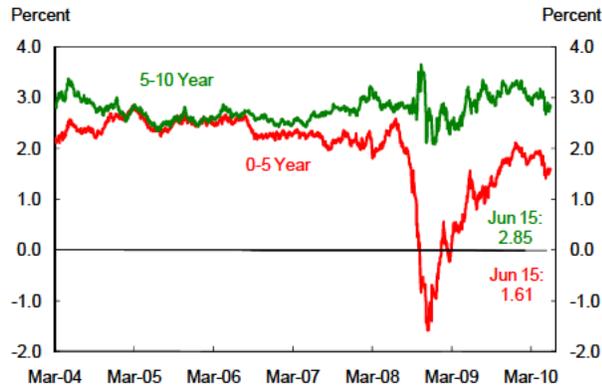
Source: Federal Reserve Board

5-10 Year Forward Rates



Source: Federal Reserve Board

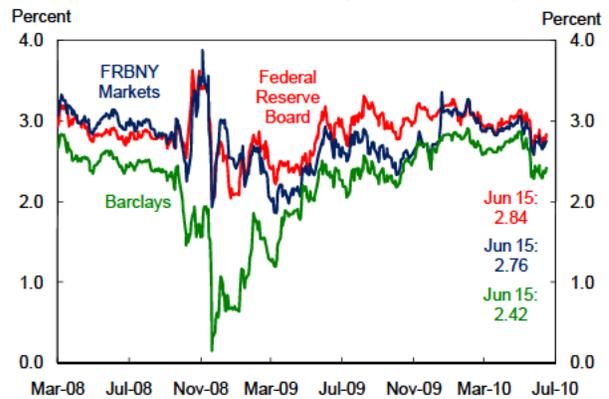
TIPS Implied Inflation Compensation: 0-5, 5-10 Year Horizons



Source: Federal Reserve Board

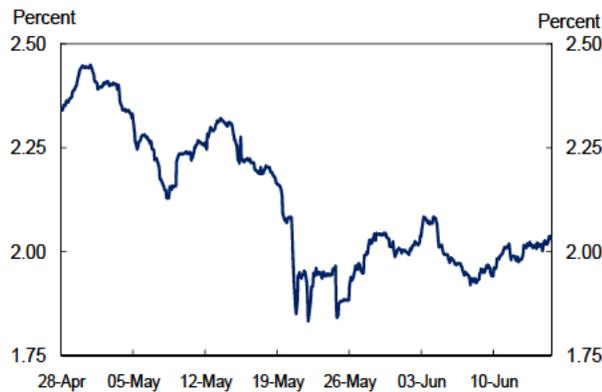
Note: Carry-adjusted.

Alternative Measures of 5-10 Year Implied Inflation Compensation



Source: Federal Reserve Board, Barclays, and FRBNY calculations

10-Year Breakeven Inflation Compensation (Intraday)



Source: Bloomberg

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

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

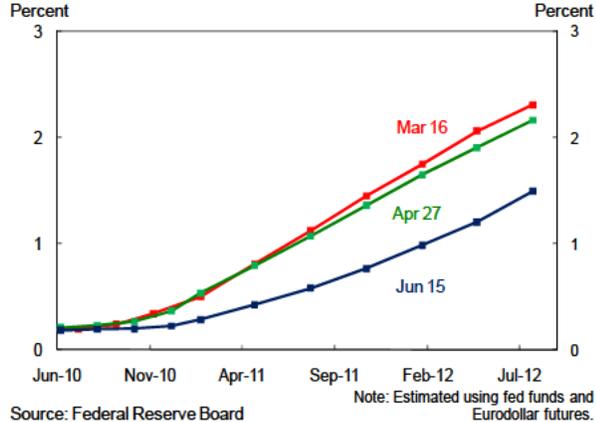


Source: Barclays

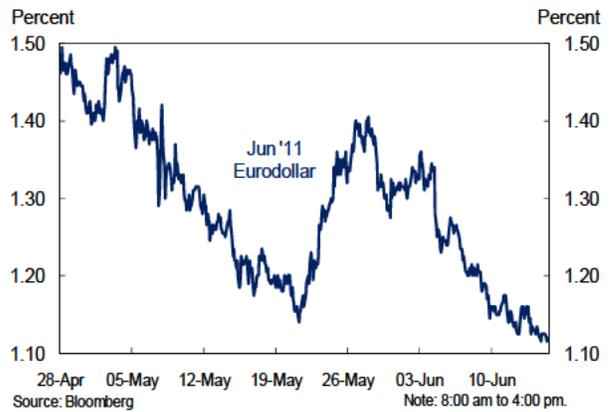
A. Significant Developments

Exhibit A-5:
Policy Expectations

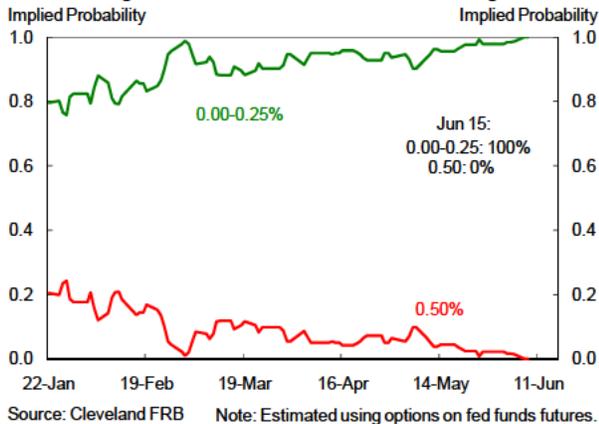
Fed Funds Futures Implied Rates



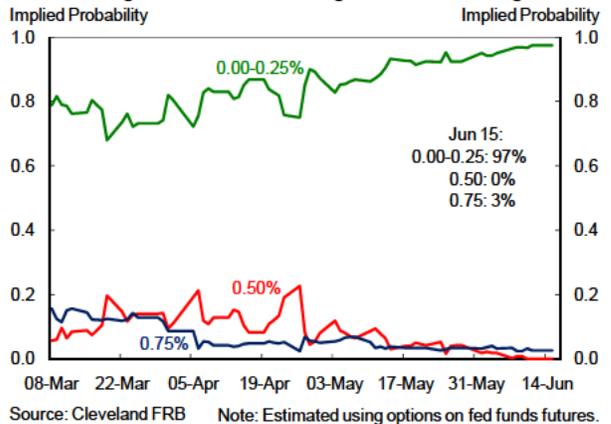
Implied Eurodollar Rates (Intraday)



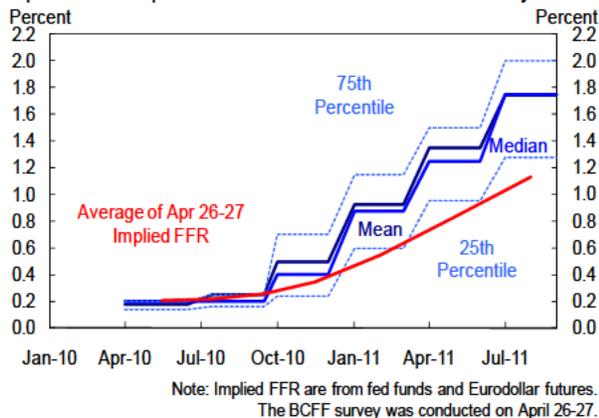
FOMC Target Probabilities: June 2010 Meeting



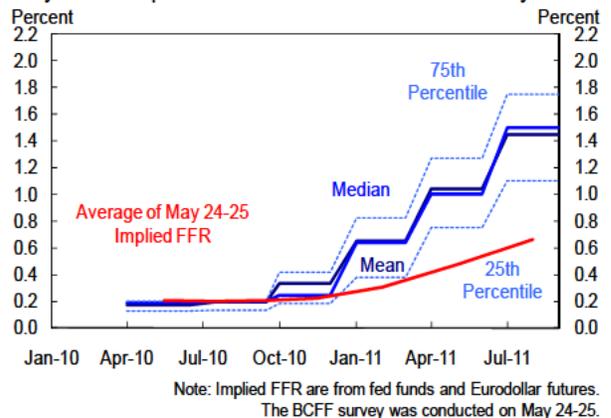
FOMC Target Probabilities: August 2010 Meeting



April 2010: Expected Fed Funds from BCFF Survey



May 2010: Expected Fed Funds from BCFF Survey



A. Significant Developments

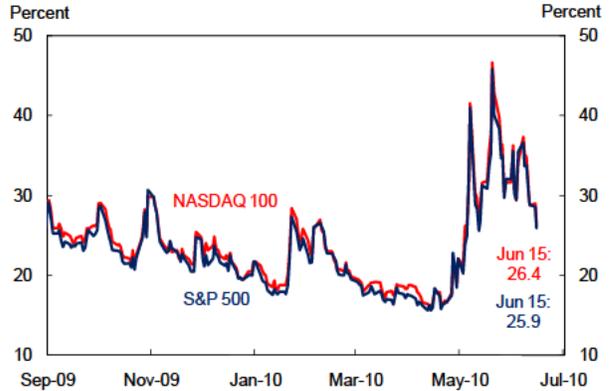
Exhibit A-6:
Implied Volatility

Equity Index Implied Volatility: 1-Month



Source: Datastream

Equity Index Implied Volatility: 1-Month



Source: Datastream

Short-Term Interest Rate Volatility

Width of 90% Confidence Interval Implied by Eurodollar Options



Source: Datastream, FRBNY calculations

Long-Term Interest Rate Volatility

Width of 90% Confidence Interval Implied by Swaptions



Source: Datastream, FRBNY calculations

Option and Swaption Volatility Expectations



Source: Merrill Lynch, Haver

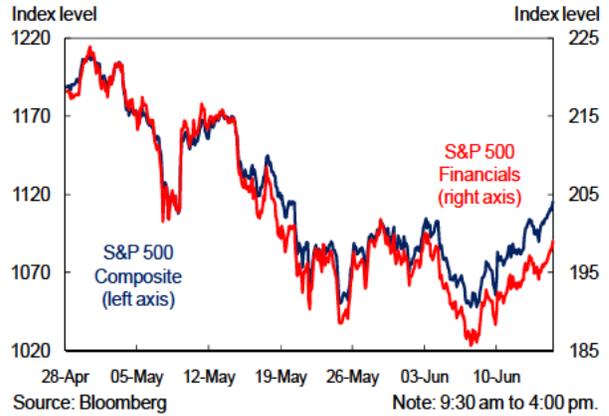
A. Significant Developments

Exhibit A-7: Equity and Credit

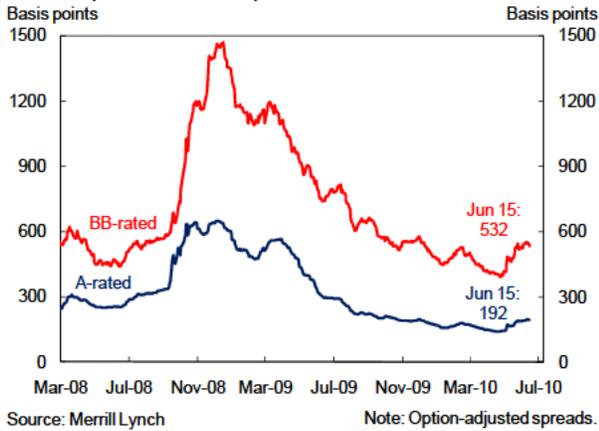
Equity Index Levels



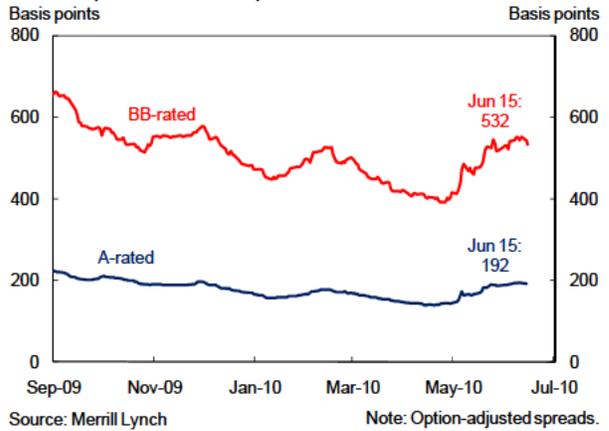
S&P 500 Indices (Intraday)



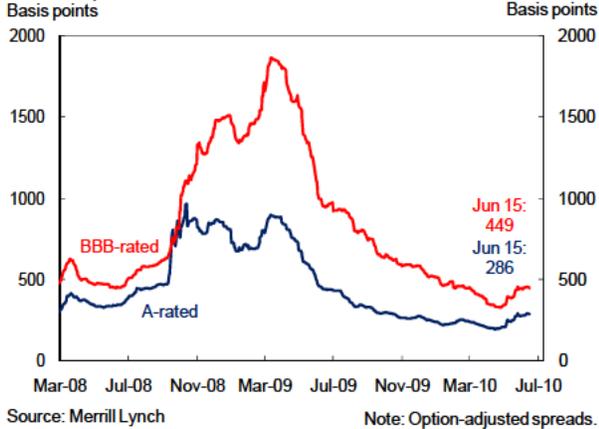
Credit Spreads - All Corporates



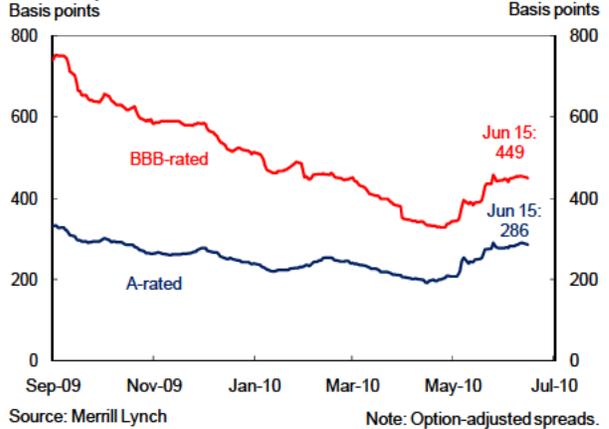
Credit Spreads - All Corporates



Credit Spreads - Financials



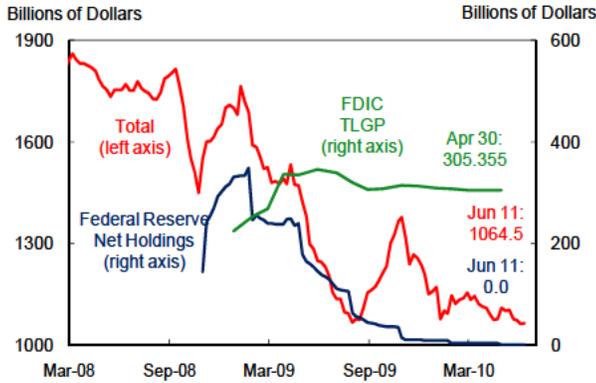
Credit Spreads - Financials



A. Significant Developments

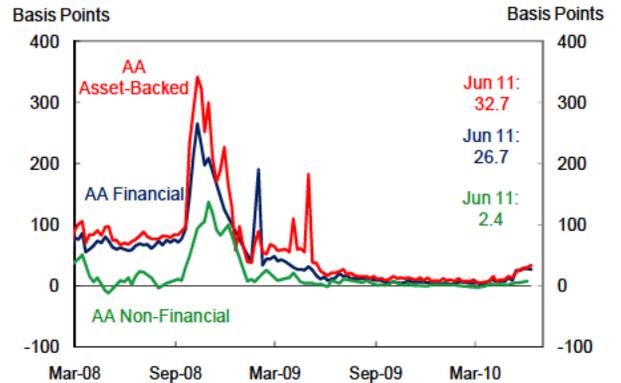
Exhibit A-8: Liquidity Facilities

CPFF and Commercial Paper Outstanding



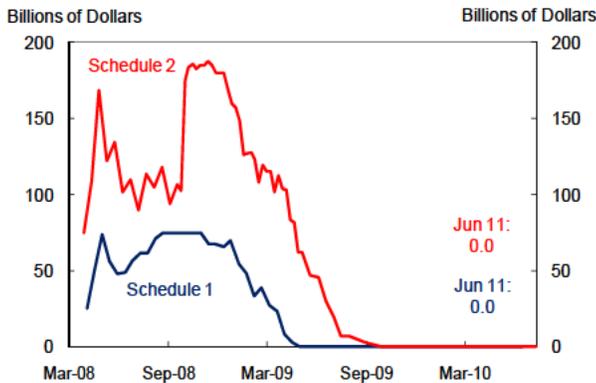
Source: Federal Reserve Board, Haver

3-Month CP Rates over OIS



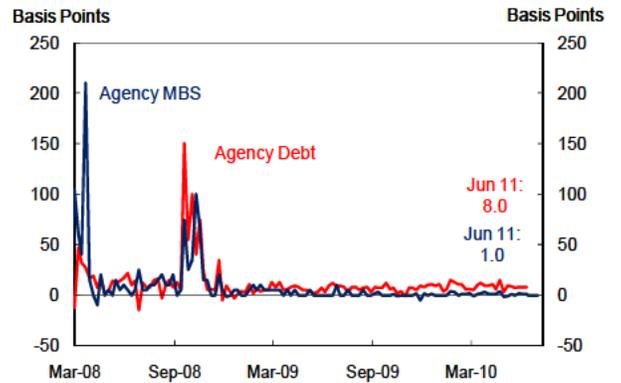
Source: Federal Reserve Board, Haver, Bloomberg

TSLF Outstanding



Source: Federal Reserve Bank of New York

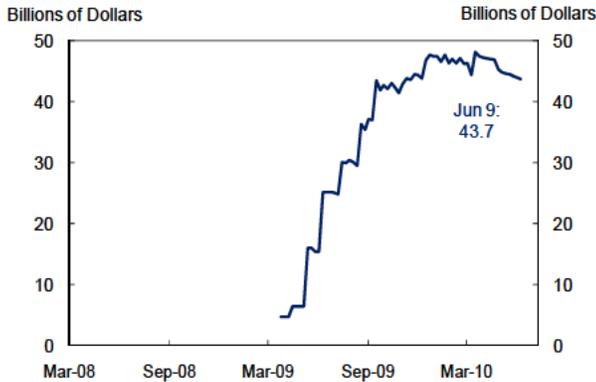
Overnight Financing Spreads



Source: Bloomberg

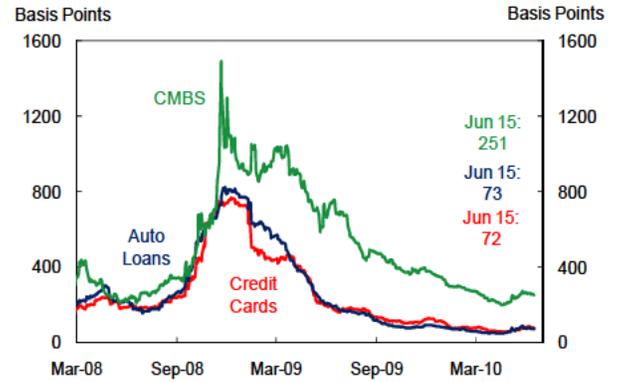
Note: Spreads are between overnight agency debt and MBS and Treasury general collateral repo rates.

TALF Outstanding



Source: Federal Reserve Board

AAA-Rated ABS/CMBS Spreads



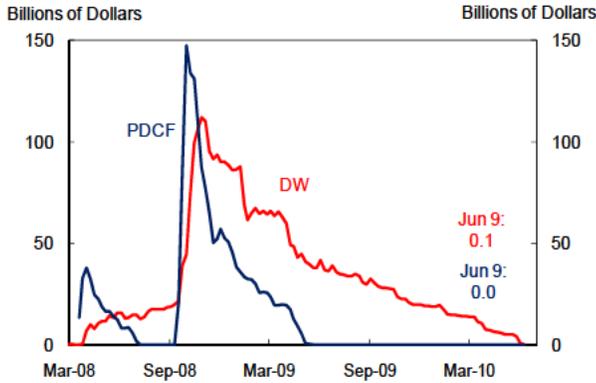
Source: Merrill Lynch

Note: Option-adjusted spreads.

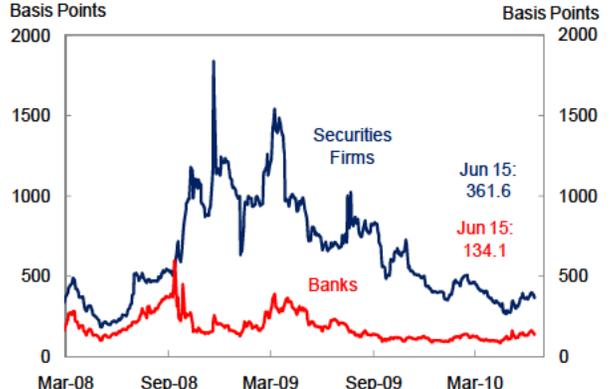
A. Significant Developments

Exhibit A-8: Liquidity Facilities

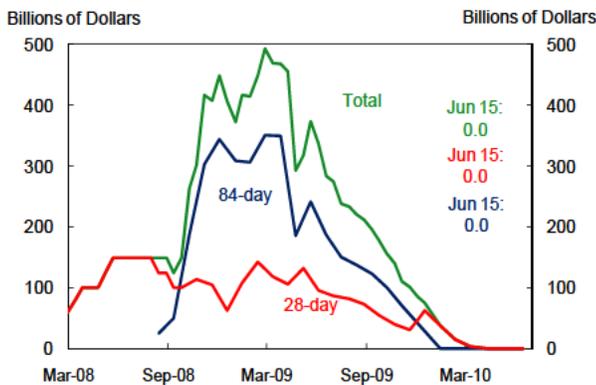
Discount Window and PDCF Borrowing



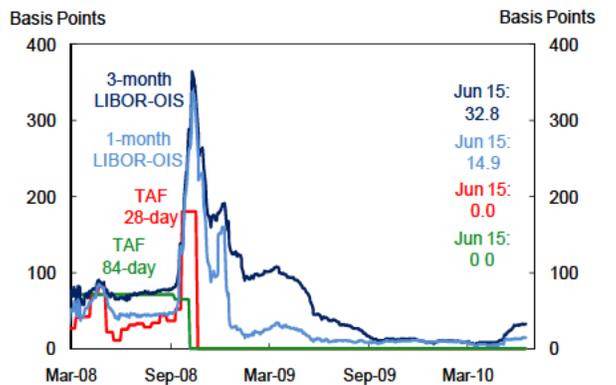
Sector CDS Spreads



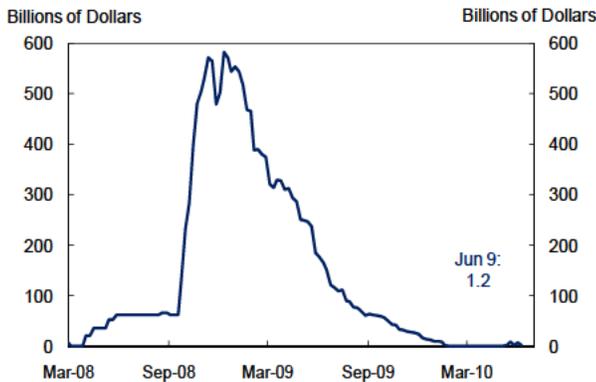
TAF Outstanding



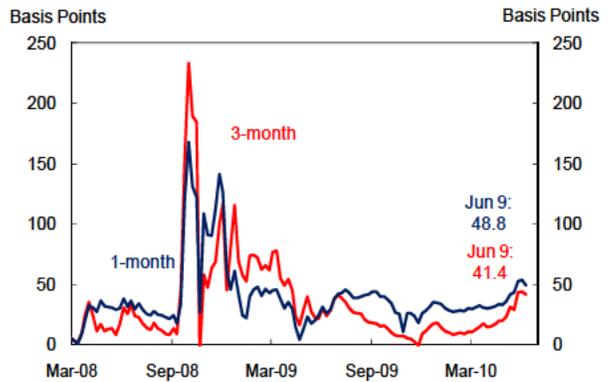
TAF Spreads and Libor to OIS



Central Bank Liquidity Swaps



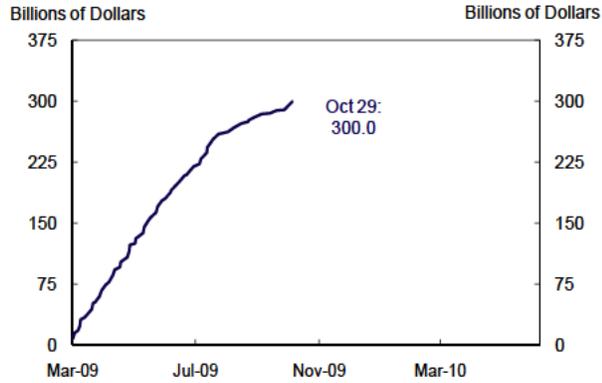
Euro-Dollar Swap Implied Basis Spreads



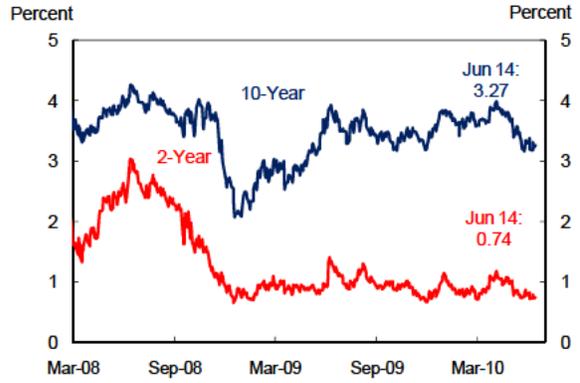
A. Significant Developments

Exhibit A-9: Outright Purchase Program

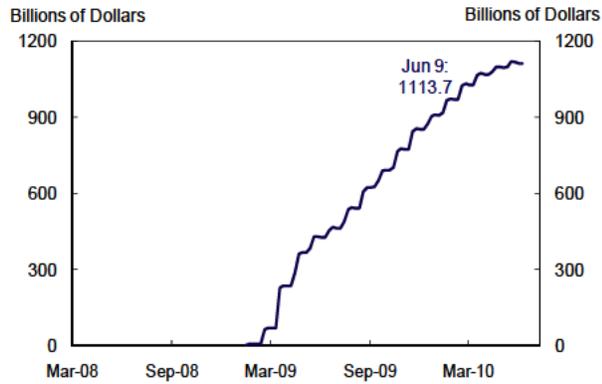
Treasury Outright Purchases



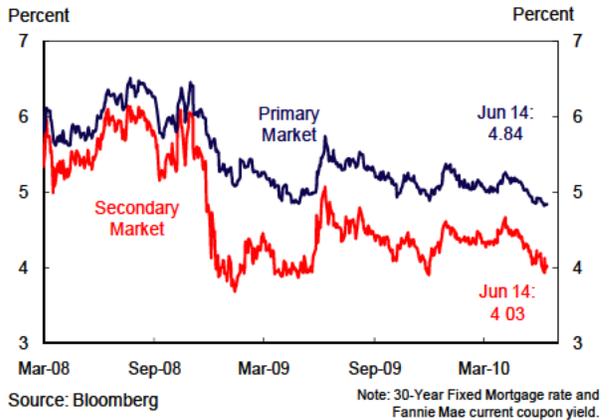
Treasury Rates



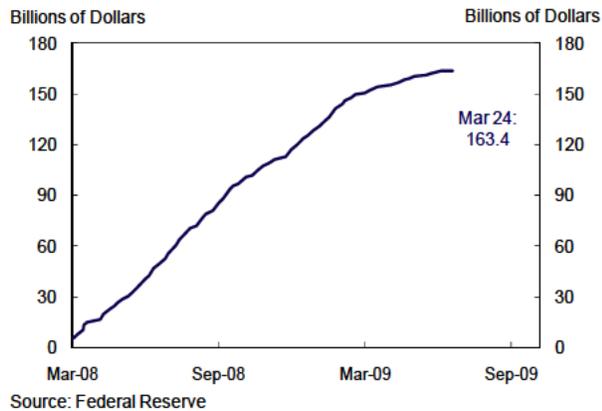
Agency MBS Net Outright Purchases



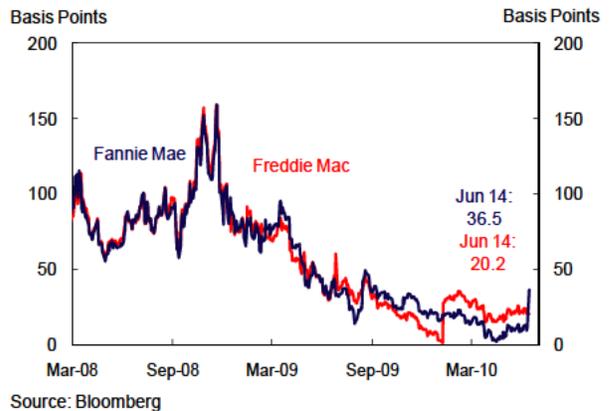
Mortgage Market Rates



Agency Coupon Debt Outright Purchases



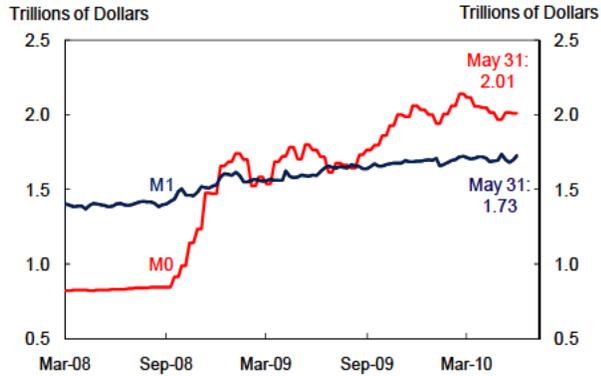
5-Year Agency Debt Spreads



A. Significant Developments

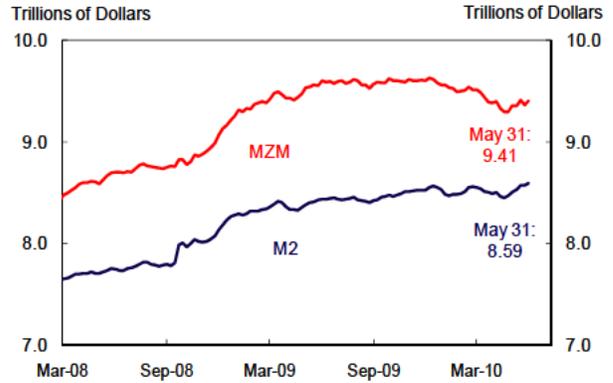
Exhibit A-10:
Money and Banking

Measures of Money Supply: M0, M1



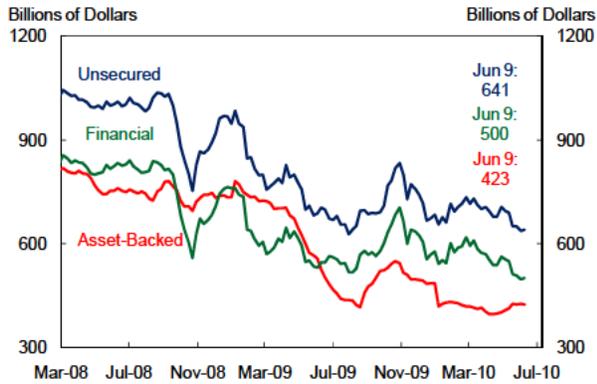
Source: Federal Reserve Board, Haver

Measures of Money Supply: M2, M2M



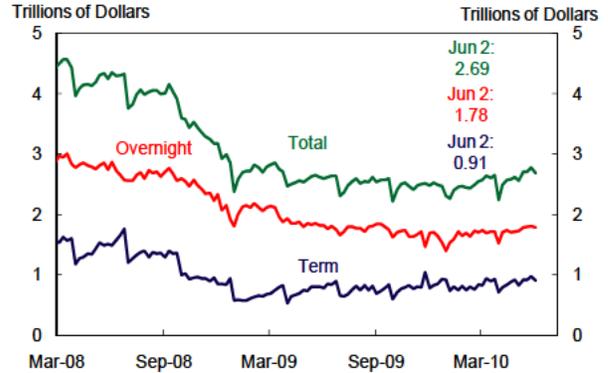
Source: Federal Reserve Board, Haver

Commercial Paper Outstanding



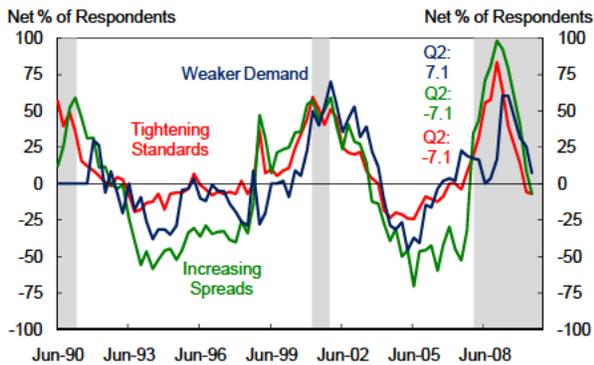
Source: Federal Reserve Board

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:
Estimates of Term Premia in Treasury Yields

10-Year Treasury and Term Premia



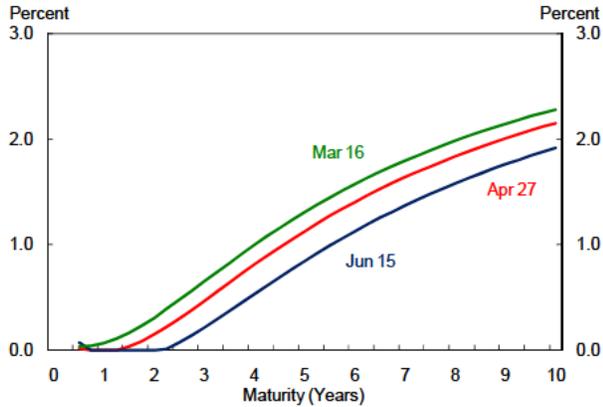
Source: FRBNY calculations, Federal Reserve Board

10-Year Treasury and Term Premia



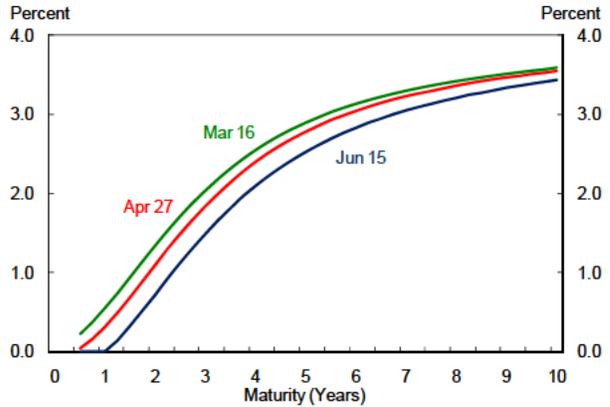
Source: FRBNY calculations, Federal Reserve Board

Risk Neutral Yield Curves



Source: FRBNY calculations

Risk Neutral One-Year Forward Curves

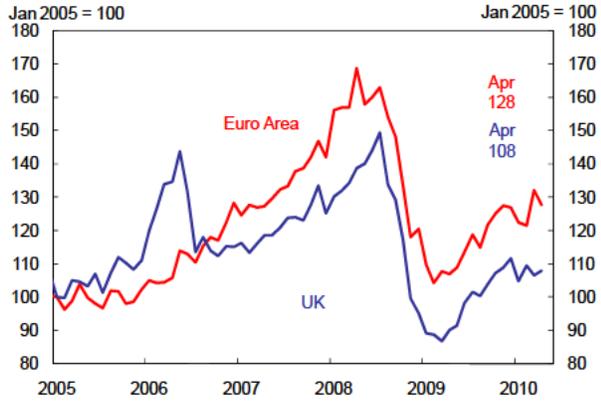


Source: FRBNY calculations

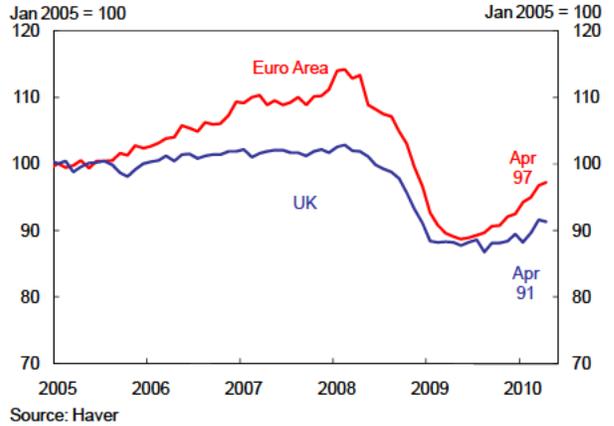
A. Significant Developments

Exhibit A-12: Exports and Industrial Production

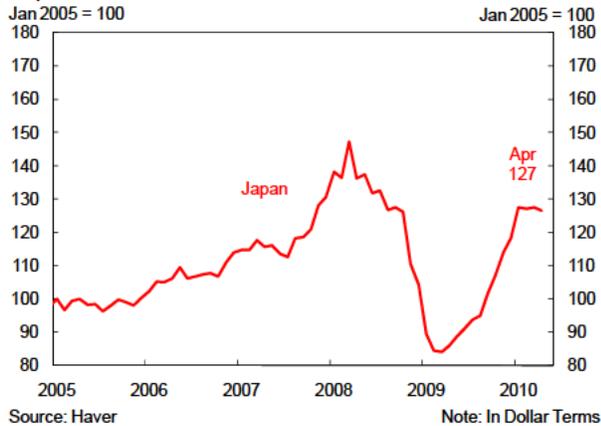
Exports



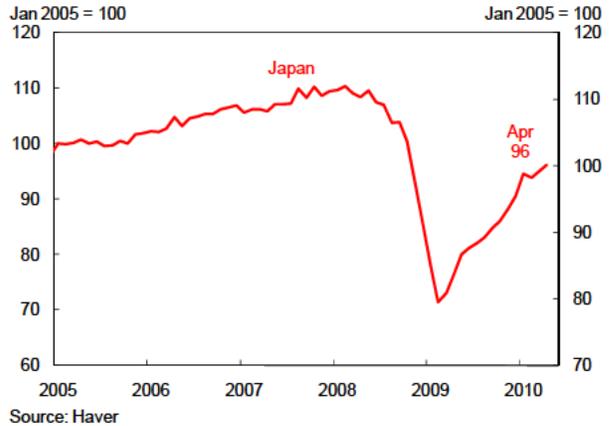
Industrial Production



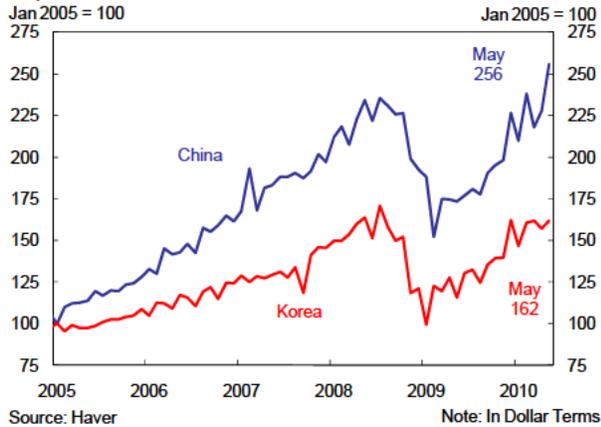
Exports



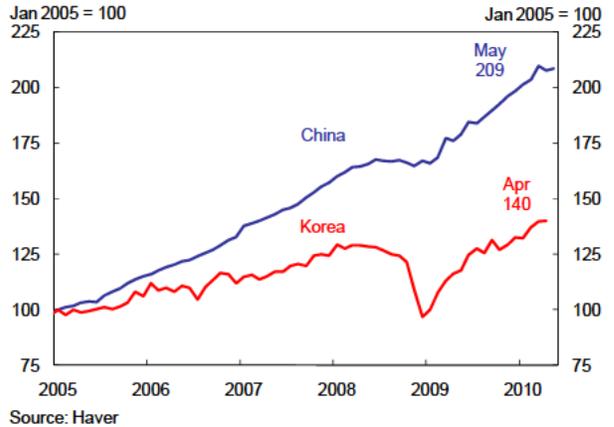
Industrial Production



Exports



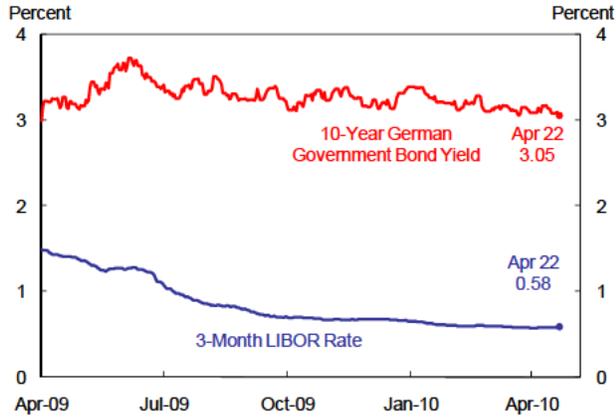
Industrial Production



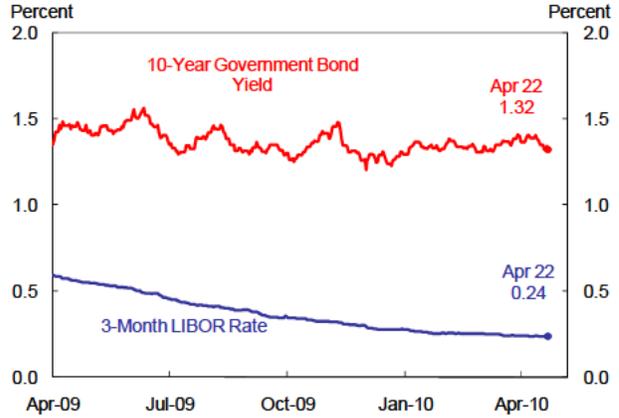
A. Significant Developments

Exhibit A-13:
Global Interest Rates and Equity Markets

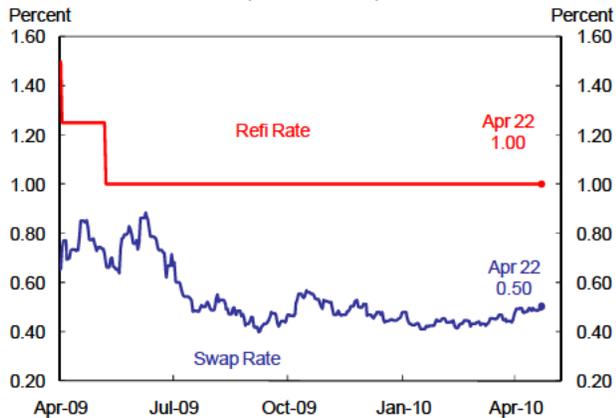
Euro Area Short- and Long-Term Interest Rates



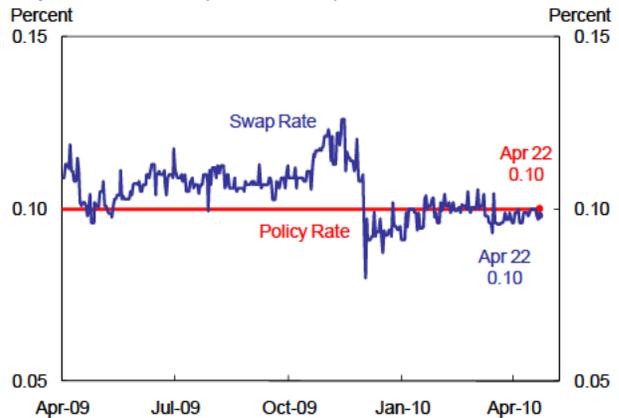
Japan Short- and Long-Term Interest Rates



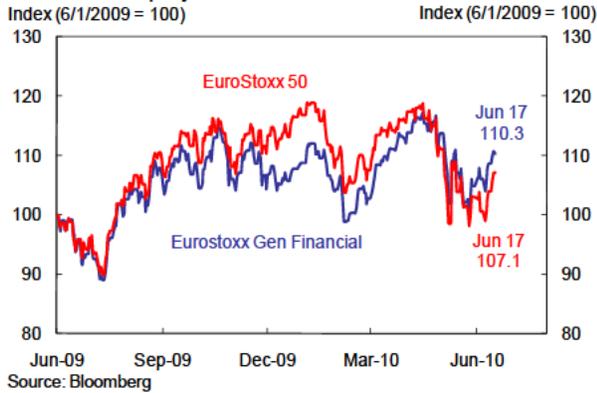
Euro Area: OIS Rate (Six Months)



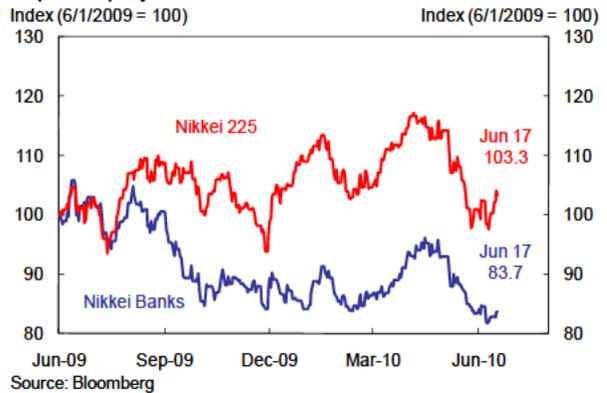
Japan: OIS Rate (Six Months)



Euro Area Equity Price Indices



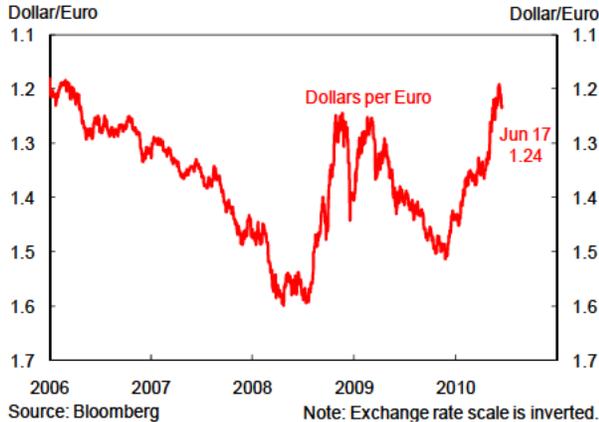
Japan Equity Price Indices



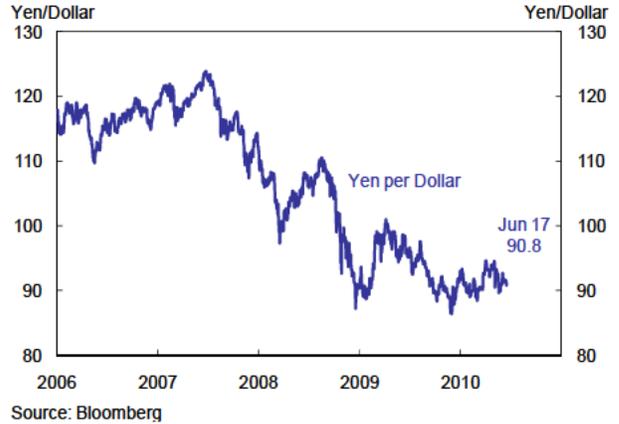
A. Significant Developments

Exhibit A-14:
Exchange Rates

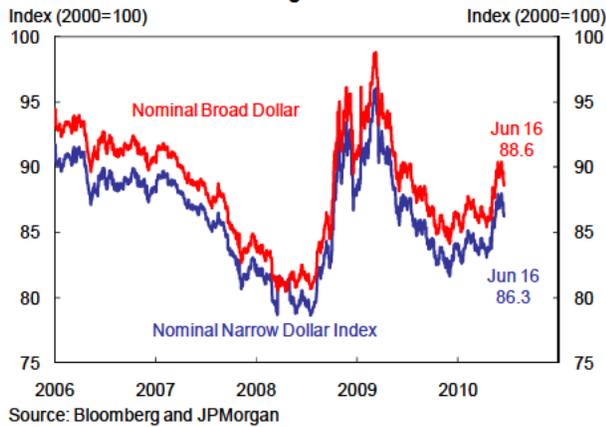
Dollar-Euro Exchange Rate



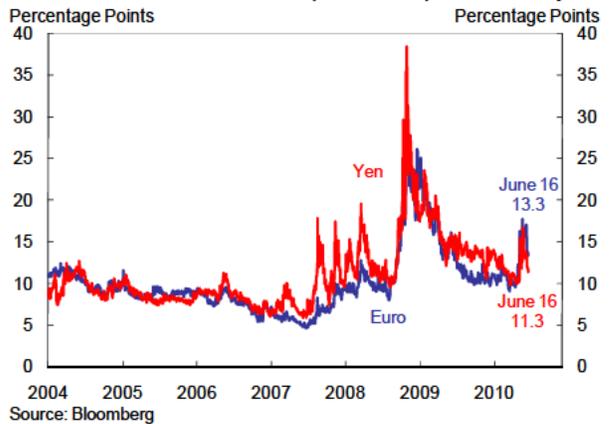
Yen-Dollar Exchange Rate



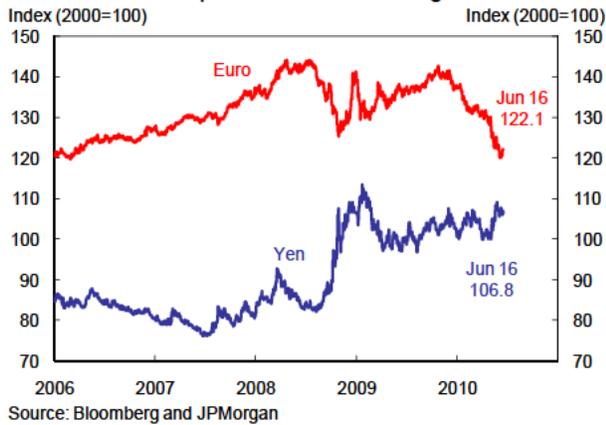
Nominal Effective Exchange Rates



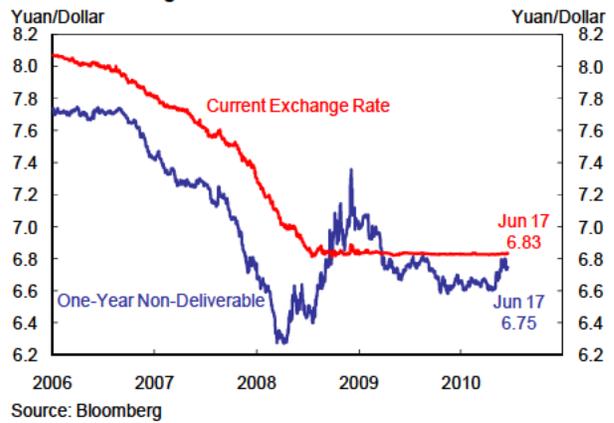
Euro and Yen One-Month Implied FX Option Volatility



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 |
| 2009 | | | | | | | | | | | | |
| Q1 | <i>1.1</i> | <i>1.1</i> | <i>1.1</i> | <i>-6.4</i> | <i>-6.4</i> | <i>-6.4</i> | <i>8.2</i> | <i>8.2</i> | <i>8.2</i> | <i>0-0.25</i> | <i>0-0.25</i> | <i>0-0.25</i> |
| Q2 | <i>2.0</i> | <i>2.0</i> | <i>2.0</i> | <i>-0.7</i> | <i>-0.7</i> | <i>-0.7</i> | <i>9.3</i> | <i>9.3</i> | <i>9.3</i> | <i>0-0.25</i> | <i>0-0.25</i> | <i>0-0.25</i> |
| Q3 | <i>1.2</i> | <i>1.2</i> | <i>1.2</i> | <i>2.2</i> | <i>2.2</i> | <i>2.2</i> | <i>9.6</i> | <i>9.6</i> | <i>9.6</i> | <i>0-0.25</i> | <i>0-0.25</i> | <i>0-0.25</i> |
| Q4 | <i>1.5</i> | <i>1.7</i> | <i>1.7</i> | <i>5.9</i> | <i>5.6</i> | <i>5.6</i> | <i>10.0</i> | <i>10.0</i> | <i>10.0</i> | <i>0-0.25</i> | <i>0-0.25</i> | <i>0-0.25</i> |
| 2010 | | | | | | | | | | | | |
| Q1 | 0.6 | 0.6 | 0.6 | 2.3 | 2.9 | 3.0 | 9.9 | 9.7 | 9.7 | 0-0.25 | 0-0.25 | 0-0.25 |
| Q2 | 0.9 | 0.9 | 1.3 | 2.3 | 2.8 | 3.2 | 9.9 | 9.6 | 9.9 | 0-0.25 | 0-0.25 | 0-0.25 |
| Q3 | 1.1 | 1.1 | 0.8 | 2.9 | 2.8 | 2.5 | 10.0 | 9.9 | 10.0 | 0-0.25 | 0-0.25 | 0-0.25 |
| Q4 | 1.2 | 1.2 | 0.9 | 3.6 | 3.6 | 3.1 | 9.9 | 9.7 | 9.9 | 0-0.25 | 0-0.25 | 0-0.25 |
| 2011 | | | | | | | | | | | | |
| Q1 | 1.3 | 1.3 | 1.1 | 3.8 | 4.0 | 3.7 | 9.5 | 9.3 | 9.5 | 0-0.25 | 0-0.25 | 0-0.25 |
| Q2 | 1.4 | 1.4 | 1.2 | 4.5 | 4.2 | 3.8 | 8.9 | 8.9 | 9.2 | 0.5 | 0.5 | 0-0.25 |
| Q3 | 1.5 | 1.5 | 1.3 | 4.0 | 4.5 | 4.3 | 8.6 | 8.4 | 8.7 | 1.0 | 1.0 | 0.5-1.0 |
| Q4 | 1.6 | 1.6 | 1.4 | 4.9 | 4.6 | 4.6 | 8.1 | 8.0 | 8.2 | 1.5 | 1.5 | 0.5-1.0 |
| Q4/Q4 | | | | | | | | | | | | |
| 2008 | 2.0 | 2.0 | 2.0 | -1.9 | -1.9 | -1.9 | 2.2 | 2.2 | 2.2 | -4.0 | -4.0 | -4.0 |
| 2009 | 1.5 | 1.5 | 1.5 | 0.1 | 0.1 | 0.1 | 3.1 | 3.1 | 3.1 | 0.0 | 0.0 | 0.0 |
| 2010 | 0.9 | 0.9 | 0.9 | 2.8 | 3.0 | 3.0 | -0.3 | -0.3 | -0.1 | 0.0 | 0.0 | 0.0 |
| 2011 | 1.4 | 1.4 | 1.3 | 4.3 | 4.3 | 4.1 | -2.3 | -1.7 | -1.7 | 1.3 | 1.3 | 0.5 |

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

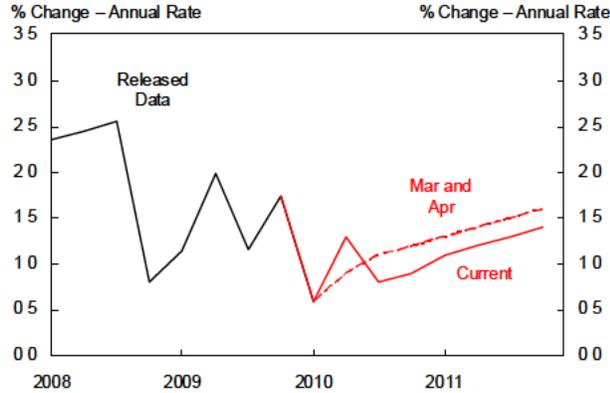
*Quarterly values are the average rate for the quarter. Yearly values are the difference between Q4 of the previous year and Q4 of the listed year.

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

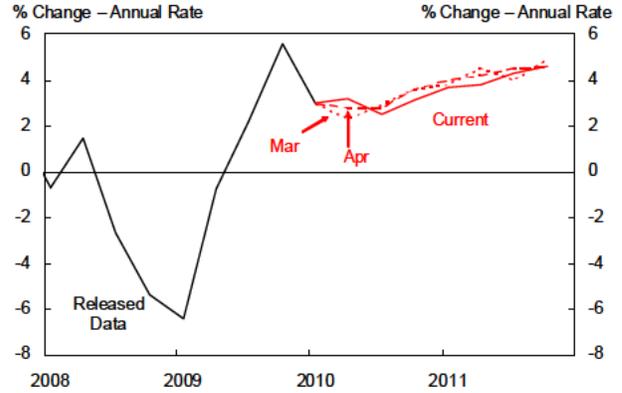
B. FRBNY Forecast Details

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

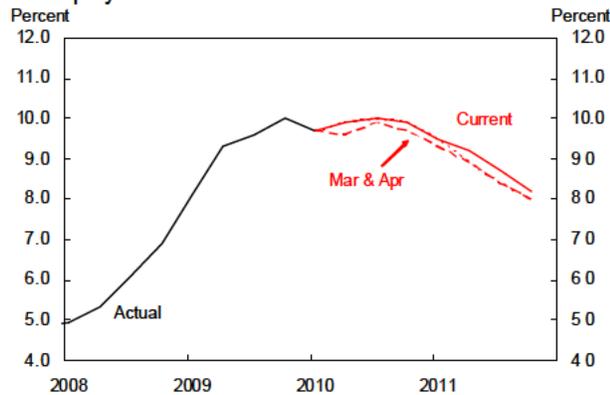
Core PCE Inflation



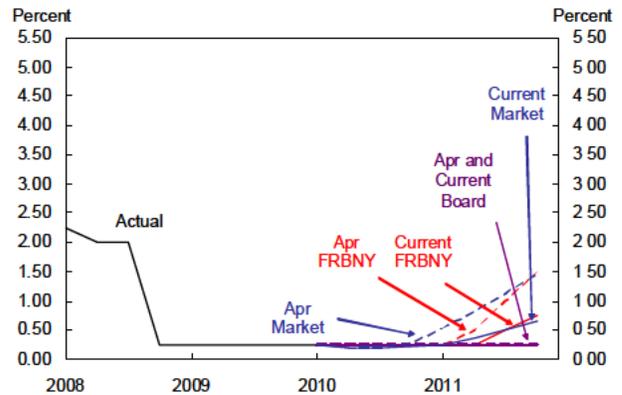
Real GDP Growth



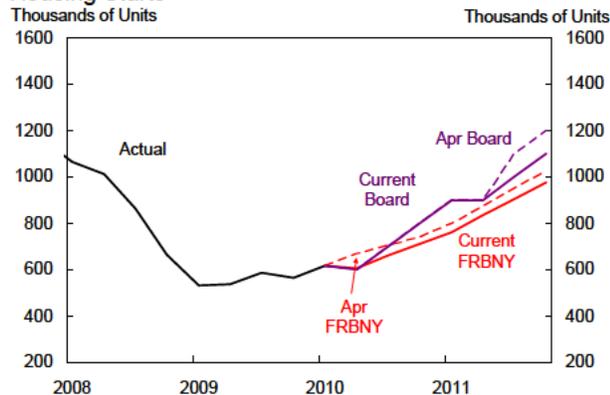
Unemployment Rate



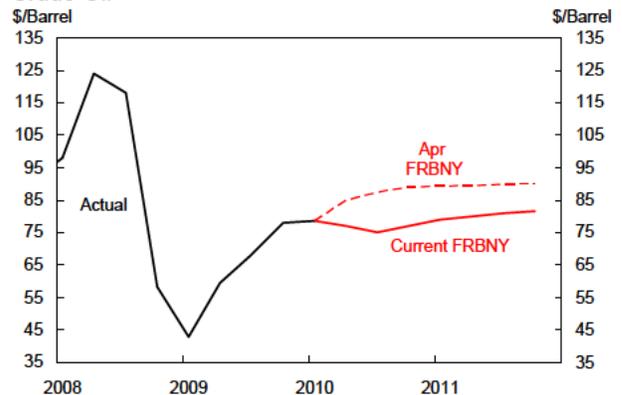
Federal Funds Rate



Housing Starts



Crude Oil



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

B. FRBNY Forecast Details

Exhibit B-3: Near-Term Projections

| | Quarterly Growth Rates (AR) | | Quarterly Growth Contributions (AR) | |
|---|-----------------------------|----------------|-------------------------------------|---------------|
| | 2010Q2 | 2010Q3 | 2010Q2 | 2010Q3 |
| OUTPUT | | | | |
| Real GDP | 3.2 (2.8) | 2.5 (2.8) | 3.2 (2.8) | 2.5 (2.8) |
| Final Sales to Domestic Purchasers | 3.4 (2.0) | 2.3 (2.5) | 3.5 (2.1) | 2.4 (2.5) |
| Consumption | 2.7 (2.2) | 2.4 (2.4) | 1.9 (1.5) | 1.7 (1.7) |
| BFI: Equipment and Software | 14.0 (5.0) | 10.0 (5.0) | 0.9 (0.3) | 0.6 (0.3) |
| BFI: Nonresidential Structures | -2.0 (-7.5) | 2.0 (-5.0) | -0.1 (-0.2) | 0.1 (-0.1) |
| Residential Investment | 10.6 (10.2) | -7.5 (14.8) | 0.2 (0.2) | -0.2 (0.4) |
| Government: Federal | 6.0 (2.0) | 2.0 (1.8) | 0.5 (0.2) | 0.2 (0.1) |
| Government: State and Local | 0.3 (0.4) | 0.4 (1.4) | 0.0 (0.0) | 0.0 (0.2) |
| Inventory Investment | -- -- | -- -- | 0.2 (0.5) | 0.3 (0.1) |
| Net Exports | -- -- | -- -- | -0.5 (0.3) | -0.2 (0.1) |
| INFLATION | | | | |
| Total PCE Deflator | 0.5 (1.4) | 1.1 (1.3) | | |
| Core PCE Deflator | 1.3 (0.9) | 0.8 (1.1) | | |
| PRODUCTIVITY AND LABOR COSTS* | | | | |
| Output per Hour | 1.0 (1.8) | 1.3 (1.8) | | |
| Compensation per Hour | 1.3 (1.3) | 1.3 (1.3) | | |
| Unit Labor Costs | 0.3 (-0.5) | 0.0 (-0.5) | | |

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 | | |
|---|--------------------|----------------|----------------|----------------------------|----------------|--------------|
| | 2009 | 2010 | 2011 | 2009 | 2010 | 2011 |
| OUTPUT | | | | | | |
| Real GDP | 0.1 (0.1) | 3.0 (3.0) | 4.1 (4.3) | 0.1 (0.1) | 3.0 (3.0) | 4.1 (4.3) |
| Final Sales to Domestic Purchasers | -1.0 (-1.0) | 2.6 (2.2) | 3.7 (3.8) | -1.0 (-1.0) | 2.7 (2.3) | 3.9 (3.9) |
| Consumption | 1.0 (1.0) | 2.8 (2.7) | 2.7 (2.6) | 0.7 (0.7) | 2.0 (1.9) | 1.9 (1.8) |
| BFI: Equipment and Software | -7.5 (-7.5) | 11.2 (6.0) | 13.0 (14.2) | -0.5 (-0.5) | 0.7 (0.4) | 0.9 (0.9) |
| BFI: Nonresidential Structures | -25.3 (-25.3) | -3.1 (-6.8) | 9.0 (8.1) | -1.1 (-1.1) | -0.1 (-0.2) | 0.3 (0.2) |
| Residential Investment | -12.6 (-12.6) | -1.4 (5.6) | 21.7 (20.2) | -0.4 (-0.4) | 0.0 (0.1) | 0.5 (0.5) |
| Government: Federal | 3.6 (3.6) | 2.7 (0.9) | 1.5 (1.5) | 0.3 (0.3) | 0.2 (0.1) | 0.1 (0.1) |
| Government: State and Local | -0.1 (-0.1) | -0.7 (0.2) | 1.4 (2.5) | 0.0 (0.0) | -0.1 (0.0) | 0.2 (0.3) |
| Inventory Investment | -- -- | -- -- | -- -- | 0.1 (0.1) | 0.5 (0.5) | 0.2 (0.2) |
| Net Exports | -- -- | -- -- | -- -- | 1.0 (1.0) | -0.2 (0.2) | 0.0 (0.2) |
| INFLATION | | | | | | |
| Total PCE Deflator | 1.2 (1.2) | 1.1 (1.4) | 1.4 (1.5) | | | |
| Core PCE Deflator | 1.5 (1.5) | 0.9 (0.9) | 1.3 (1.4) | | | |
| Total CPI Inflation | 1.5 (1.5) | 0.9 (1.4) | 1.6 (1.9) | | | |
| Core CPI Inflation | 1.7 (1.7) | 0.6 (0.8) | 1.5 (1.7) | | | |
| GDP Deflator | 0.7 (0.7) | 1.4 (1.2) | 1.4 (1.5) | | | |

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 | | |
|---|--------------------|------------------|------------------|
| | 2009 | 2010 | 2011 |
| INTEREST RATE ASSUMPTIONS | | | |
| Federal Funds Rate (End-of-Year) | 0-0.25 0-0.25 | 0-0.25 0-0.25 | 0.5-1.0 (1.5) |
| 10-Year Treasury Yield (Avg. Q4 Level) | 3.5 (3.5) | 3.8 (4.1) | 4.2 (4.3) |
| PRODUCTIVITY AND LABOR COSTS* | | | |
| Output | -0.3 (-0.3) | 3.7 (3.6) | 5.1 (5.3) |
| Hours | -5.6 (-5.7) | 2.1 (1.8) | 3.4 (3.5) |
| Output per Hour | 5.6 (5.6) | 1.6 (1.8) | 1.7 (1.7) |
| Compensation per Hour | 0.2 (0.8) | 1.4 (1.4) | 1.7 (1.7) |
| Unit Labor Costs | -5.1 (-4.6) | -0.2 (-0.4) | 0.1 (0.0) |
| LABOR MARKET | | | |
| Unemployment Rate (Avg. Q4 Level) | 10.0 (10.0) | 9.9 (9.7) | 8.2 (8.0) |
| Participation Rate (Avg. Q4 Level) | 64.8 (64.8) | 65.1 (64.8) | 65.2 (64.8) |
| Avg. Monthly Nonfarm Payroll Growth (Thous.) | -448 (-448) | 103 (66) | 342 (322) |
| INCOME | | | |
| Personal Income | -1.3 (-1.1) | 4.5 (4.1) | 5.7 (6.1) |
| Real Disposable Personal Income | 0.7 (0.9) | 3.4 (2.2) | 4.1 (4.4) |
| Personal Saving Rate | 3.7 (3.9) | 4.3 (3.4) | 5.7 (5.2) |
| Corporate Profits Before Taxes | 30.6 (30.6) | 8.7 (7.0) | 4.5 (4.8) |

Note: Numbers in parentheses are from the previous Blackbook.

*Nonfarm business sector.

B. FRBNY Forecast Details

Exhibit B-6: FRBNY and Tealbook Forecast Comparison

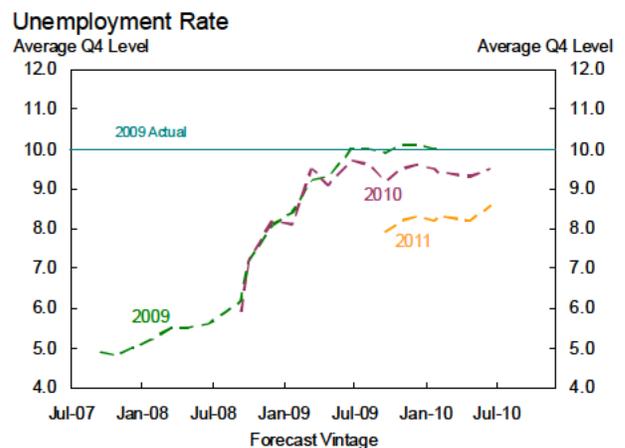
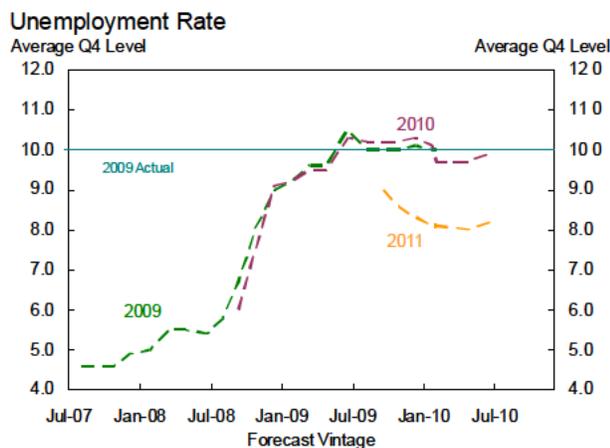
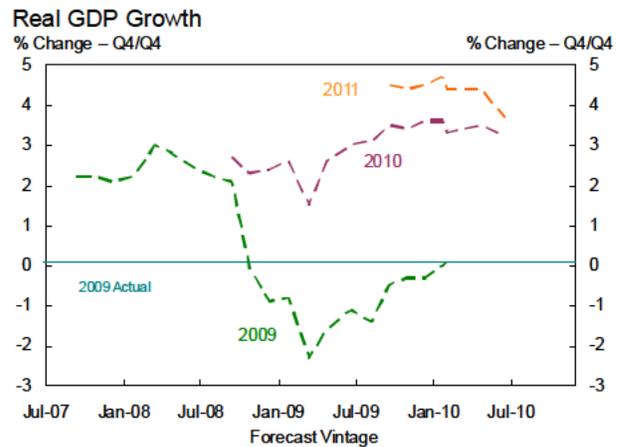
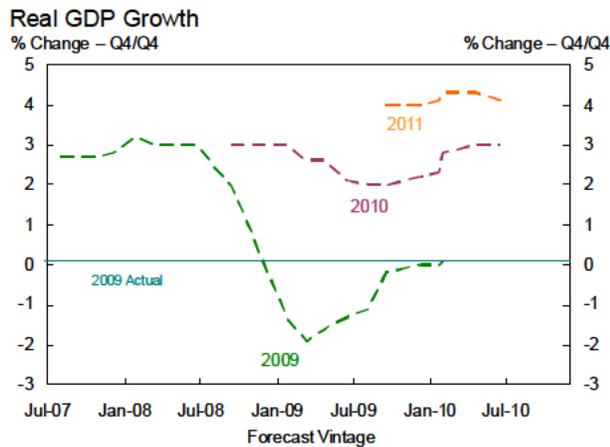
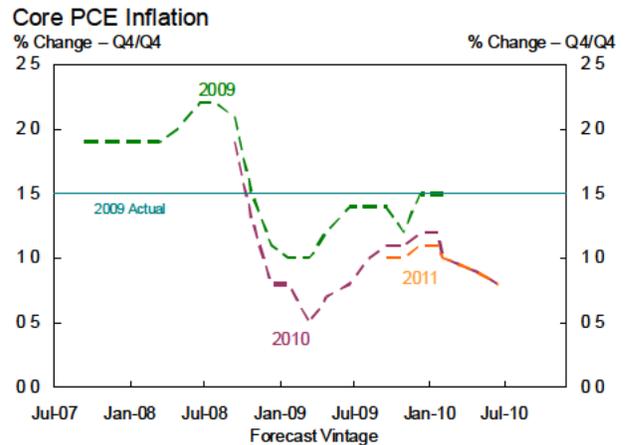
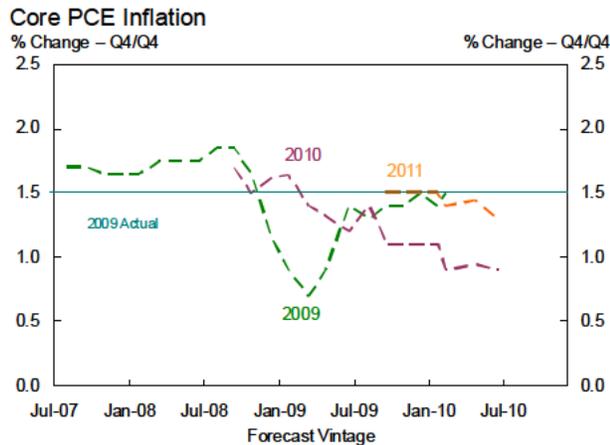
| | FRBNY (Q4/Q4) | | | Board (Q4/Q4) | | |
|--|------------------|------------------|----------------|------------------|------------------|------------------|
| | 2009 | 2010 | 2011 | 2009 | 2010 | 2011 |
| OUTPUT | | | | | | |
| Real GDP | 0.1 (0.1) | 3.0 (3.0) | 4.1 (4.3) | 0.1 (0.1) | 3.2 (3.5) | 3.7 (4.4) |
| GDP Growth Contributions | | | | | | |
| Final Sales to Domestic Purchasers | -1.0 (-1.0) | 2.7 (2.3) | 3.9 (3.9) | -1.0 (-1.0) | 2.9 (3.2) | 3.5 (4.0) |
| Consumption | 0.7 (0.7) | 2.0 (1.9) | 1.9 (1.8) | 0.7 (0.7) | 1.9 (2.0) | 2.2 (2.5) |
| BFI | -1.6 (-1.6) | 0.6 (0.2) | 1.1 (1.1) | -1.6 (-1.6) | 0.7 (0.9) | 0.7 (0.9) |
| Residential Investment | -0.4 (-0.4) | 0.0 (0.1) | 0.5 (0.5) | -0.4 (-0.4) | 0.1 (0.1) | 0.4 (0.5) |
| Government | 0.3 (0.3) | 0.1 (0.1) | 0.3 (0.4) | 0.3 (0.3) | 0.2 (0.2) | 0.2 (0.1) |
| Inventory Investment | 0.1 (0.1) | 0.5 (0.5) | 0.2 (0.2) | 0.1 (0.1) | 0.6 (0.5) | 0.3 (0.3) |
| Net Exports | 1.0 (1.0) | -0.2 (0.2) | 0.0 (0.2) | 1.0 (1.0) | -0.3 (-0.1) | -0.2 (0.0) |
| INFLATION | | | | | | |
| Total PCE Deflator | 1.2 (1.2) | 1.1 (1.4) | 1.4 (1.5) | 1.2 (1.2) | 0.9 (1.3) | 1.0 (1.0) |
| Core PCE Deflator | 1.5 (1.5) | 0.9 (0.9) | 1.3 (1.4) | 1.5 (1.5) | 0.8 (0.9) | 0.8 (0.9) |
| INTEREST RATE ASSUMPTION | | | | | | |
| Fed Funds Rate (End-of-Year) | 0-0.25 0-0.25 | 0-0.25 0-0.25 | 1.5 (1.5) | 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 | 5.6 (5.6) | 1.6 (1.8) | 1.7 (1.7) | 5.6 (5.6) | 1.2 (1.3) | 0.9 (0.8) |
| Compensation per Hour | 0.2 (0.8) | 1.4 (1.4) | 1.7 (1.7) | 0.2 (0.8) | 1.7 (2.2) | 2.3 (2.5) |
| Unit Labor Costs | -5.1 (-4.6) | (0.2) (-0.4) | 0.1 (-0.0) | -5.1 (-4.6) | 0.5 (0.9) | 1.5 (1.7) |
| LABOR MARKET | | | | | | |
| Unemployment Rate (Avg. Q4 Level) | 10.0 (10.0) | 9.9 (9.7) | 8.2 (8.0) | 10.0 (10.0) | 9.5 (9.3) | 8.6 (8.2) |
| Participation Rate (Avg. Q4 Level) | 64.8 (64.8) | 65.1 (64.8) | 65.2 (64.8) | 64.9 (64.9) | 64.8 (64.7) | 64.7 (64.7) |
| Avg. Monthly Nonfarm Payroll Growth (Thous.) | -448 (-448) | 103 (66) | 342 (322) | -450 (-450) | 133 (158) | 283 (342) |
| SAVING | | | | | | |
| Personal Saving Rate (Avg. Q4 Level) | 3.7 (3.9) | 4.3 (3.4) | 5.7 (5.2) | 3.7 (3.9) | 3.8 (3.7) | 4.1 (3.7) |
| HOUSING | | | | | | |
| Housing Starts (Avg. Q4 Level, Thous.) | 565 (559) | 710 (740) | 975 (1025) | 600 (600) | 700 (700) | 1000 (1000) |

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 | 2010Q2 | 2010Q3 | 2010 Q4/Q4 | 2011 Q4/Q4 |
| FRBNY | 6/18/2010 | 3.2 (2.8) | 2.5 (2.8) | 3.0 (3.0) | 4.1 (4.3) |
| PSI Model | 6/14/2010 | 3.5 (1.3) | 2.9 -- | -- -- | -- -- |
| Blue Chip | 6/10/2010 | 3.5 (3.0) | 3.0 (2.8) | 3.1 (2.9) | 3.1 (3.2) |
| Median SPF | 5/14/2010 | 3.3 (2.7) | 3.3 (2.7) | 3.1 (2.7) | -- -- |
| Macro Advisers | 6/17/2010 | 3.5 (4.3) | 3.7 (3.4) | 3.7 (3.6) | 3.7 (3.9) |

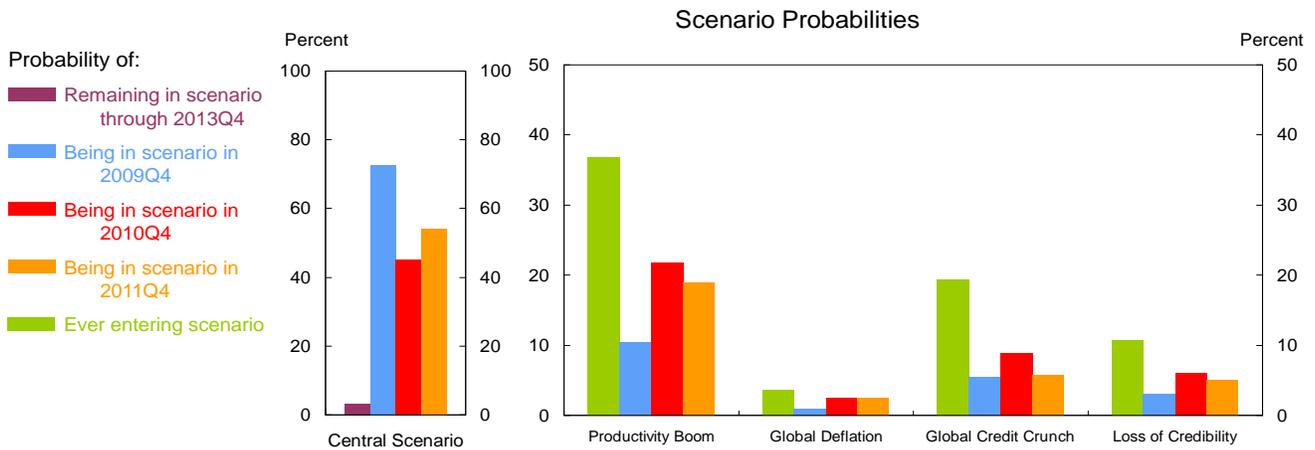
| | | Core PCE Inflation | | | |
|-----------------------|--------------|--------------------|--------------|--------------|--------------|
| | Release Date | 2010Q2 | 2010Q3 | 2010 Q4/Q4 | 2011 Q4/Q4 |
| FRBNY | 6/18/2010 | 1.3 (0.9) | 0.8 (1.1) | 0.9 (0.9) | 1.3 (1.4) |
| Median SPF | 5/14/2010 | 1.1 (1.3) | 1.2 (1.3) | 1.2 (1.3) | 1.6 (1.5) |
| Macro Advisers | 6/8/2010 | 1.0 (0.9) | 1.0 (0.9) | 0.8 (0.8) | 0.8 (0.9) |

| | | CPI Inflation | | | |
|-----------------------|--------------|---------------|--------------|--------------|--------------|
| | Release Date | 2010Q2 | 2010Q3 | 2010 Q4/Q4 | 2011 Q4/Q4 |
| FRBNY | 6/18/2010 | -0.3 (1.0) | 1.1 (1.4) | 0.9 (1.4) | 1.6 (1.9) |
| Blue Chip | 6/10/2010 | 0.3 (1.3) | 1.5 (1.8) | 1.3 (1.7) | 1.9 (2.0) |
| Median SPF | 5/14/2010 | 1.4 (1.4) | 1.8 (1.8) | 1.6 (1.7) | 2.0 (2.1) |
| Macro Advisers | 6/8/2010 | 0.4 (0.4) | 1.2 (1.0) | 0.8 (1.0) | 1.0 (1.0) |

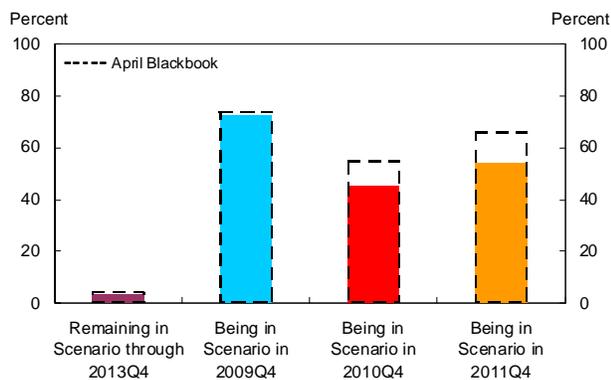
| | | Core CPI Inflation | | | |
|-----------------------|--------------|--------------------|--------------|--------------|--------------|
| | Release Date | 2010Q2 | 2010Q3 | 2010 Q4/Q4 | 2011 Q4/Q4 |
| FRBNY | 6/18/2010 | 0.8 (0.9) | 0.8 (1.1) | 0.6 (0.8) | 1.5 (1.7) |
| Median SPF | 5/14/2010 | 1.0 (1.4) | 1.4 (1.5) | 1.0 (1.4) | 1.6 (1.7) |
| Macro Advisers | 6/8/2010 | 0.7 (0.8) | 0.9 (1.1) | 0.6 (0.7) | 0.9 (1.0) |

C. FRBNY Forecast Distributions

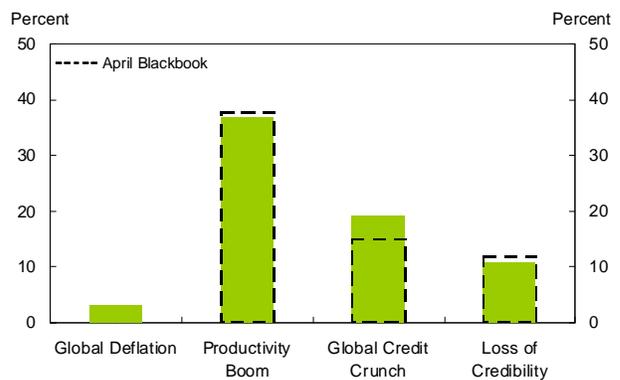
Exhibit C-1:
Risks



Change in Central Scenario Probabilities



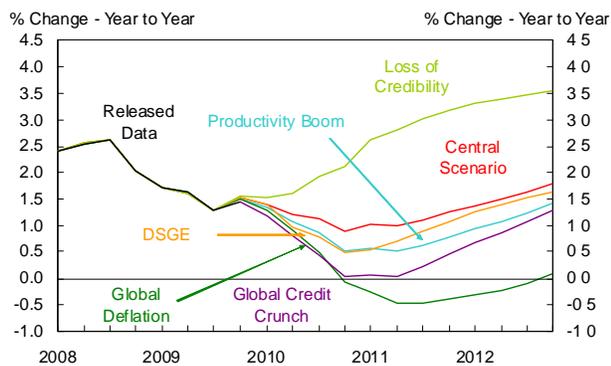
Change in Alternative Scenario Probabilities*



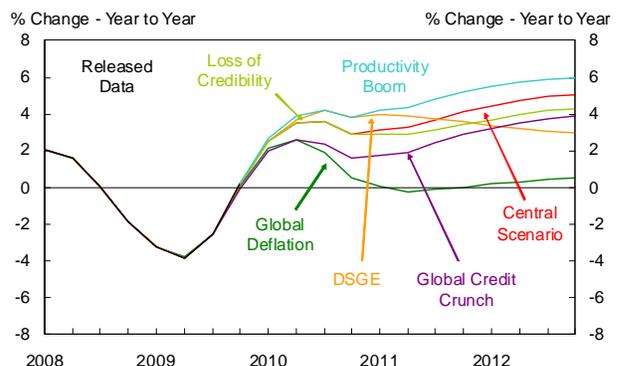
*Probability of ever reaching scenario

Exhibit C-2: Projections
under Alternative Scenarios

Core PCE Inflation under Alternative Scenarios



Real GDP Growth under Alternative Scenarios

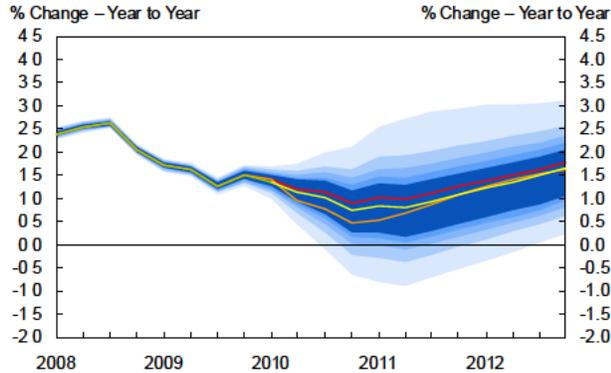


Source: MMS Function (FRBNY)

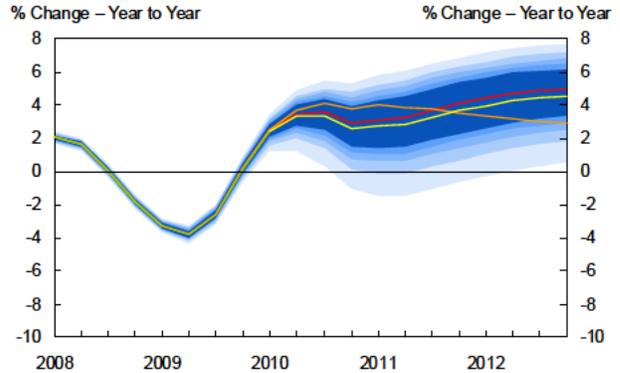
C. FRBNY Forecast Distributions

Exhibit C-3: Inflation and Output Forecast Distributions

Core PCE Inflation Forecast Distribution

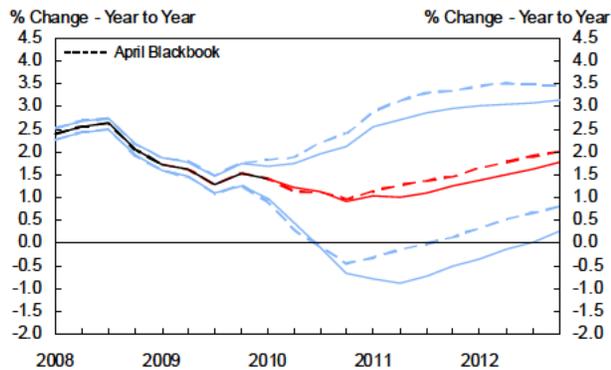


Real GDP Growth Forecast Distribution

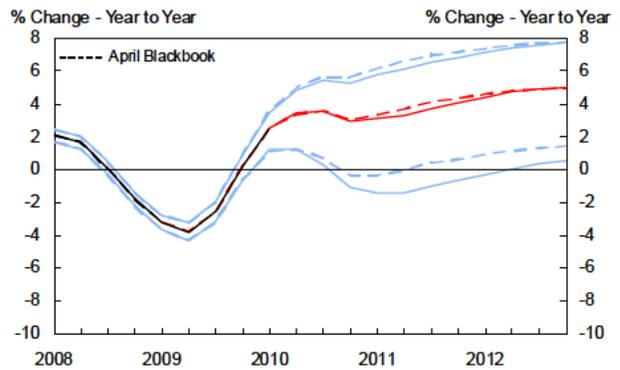


The yellow line represents the expected value of the forecast distribution, the red line represents the FRBNY central projection, the orange line represents the DSGE forecast, and the green line represents released data. The shading represents the 50, 60, 70, 80 and 90 percent probability that the four-quarter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

Change in Core PCE Inflation Forecast Distribution

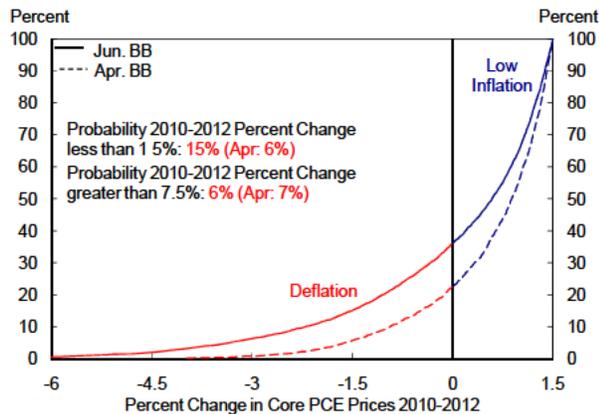


Change in Real GDP Growth Forecast Distribution

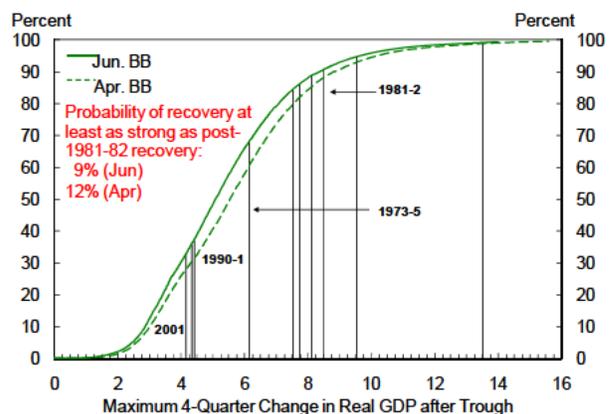


The blue lines are the 90% chance the four-quarter change will be within the lines, the red line is the central scenario projection, and the black line is released data. Dashed lines represent forecasts from the previous Blackbook.

Low Inflation/Deflation Probability and Distribution



Scale of Recovery Through End of 2011

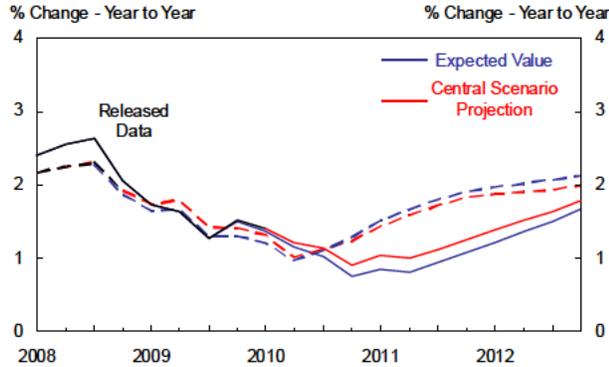


Source: MMS Function (FRBNY)

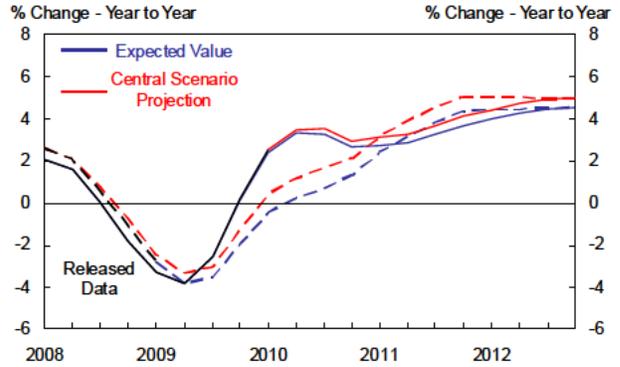
C. FRBNY Forecast Distributions

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

One-Year Comparison of Core PCE Inflation Forecast

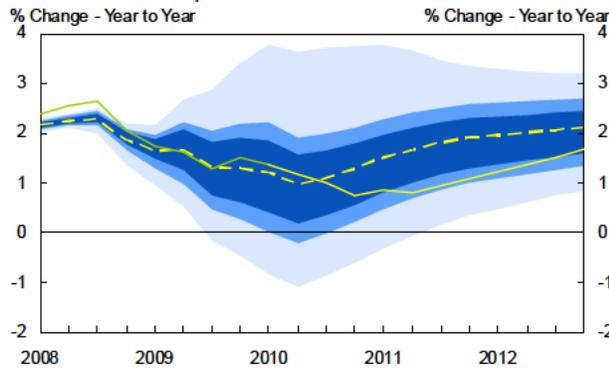


One-Year Comparison of Real GDP Growth Forecast

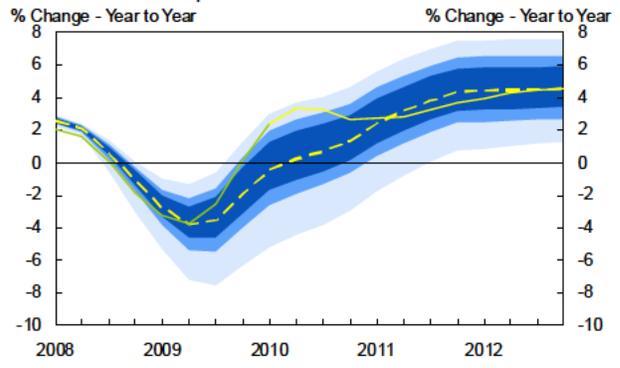


The solid lines represent the current central scenario projection and expected value, while the dashed lines represent those from the year-ago Blackbook.

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



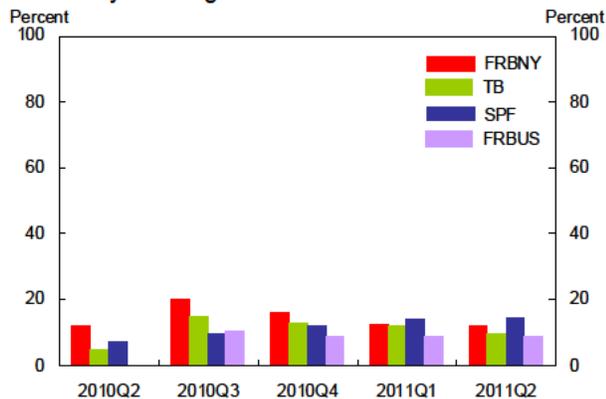
One-Year Comparison of Real GDP Growth Forecast Distribution and Expected Value



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

Exhibit C-5: Probability of a Negative Growth Quarter

Probability of a Negative-Growth Quarter

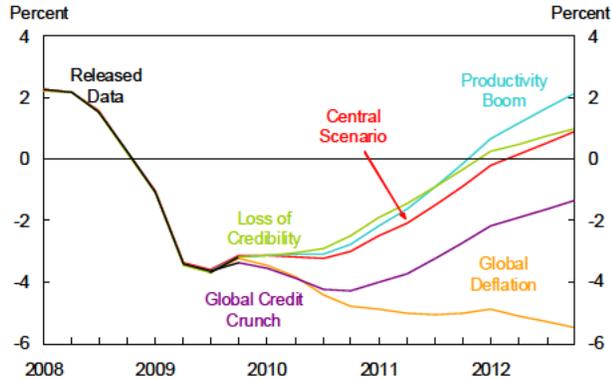


Source: MMS Function (FRBNY)

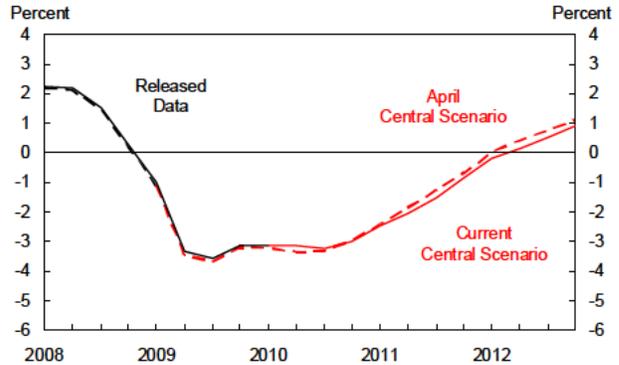
D. FRBNY Fed Funds Rate Projections

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

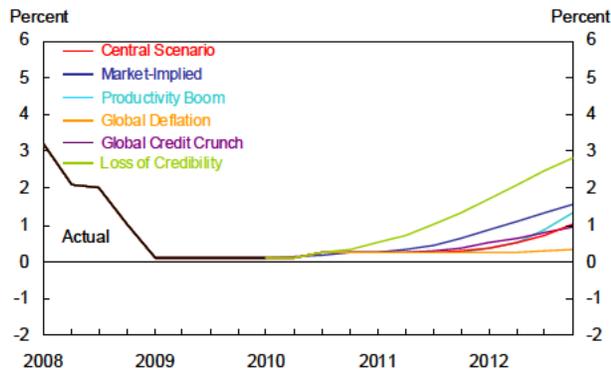
Real FFR under Alternative Scenarios



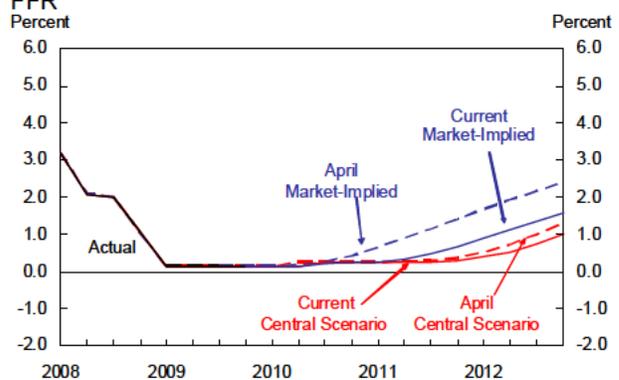
Change in Central Scenario Real FFR



Nominal FFR under Alternative Scenarios

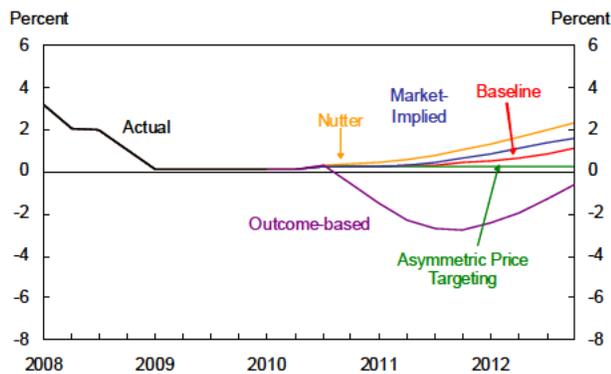


Change in Central Scenario and Market-Implied Nominal FFR



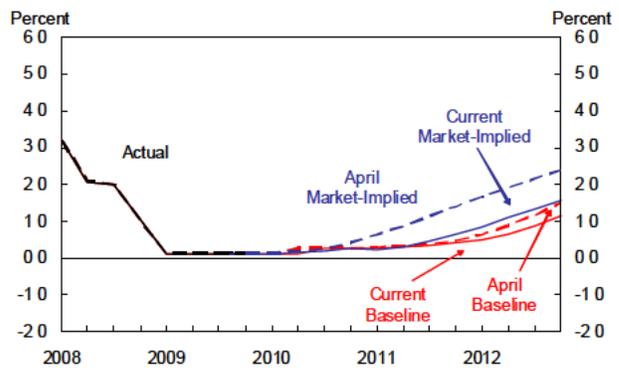
**Exhibit D-2: Alternative Policy Rules under
Expected Value of Forecast Distribution**

Nominal FFR using Alternative Policy Rules*



*Evaluated using yellow line from C-3

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



*Evaluated using yellow line from C-3

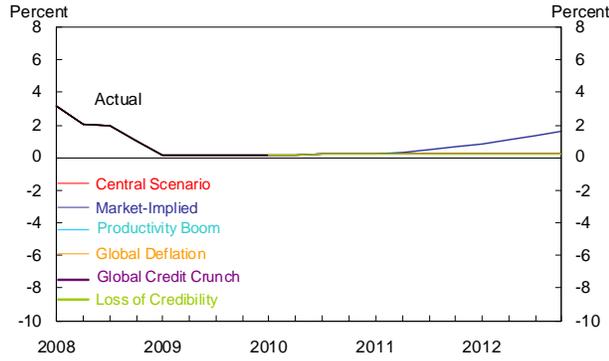
Source: MMS Function (FRBNY)

D. FRBNY Fed Funds Rate Projections

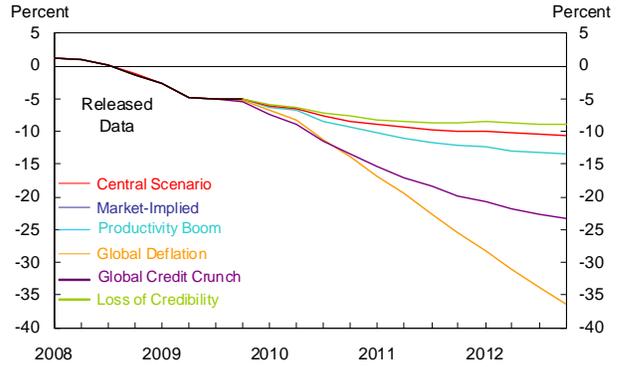
Exhibit D-3: Alternative Policy Rule Analysis

Policy Rule: *Asymmetric Price Targeting*

Nominal FFR under Alternative Scenarios

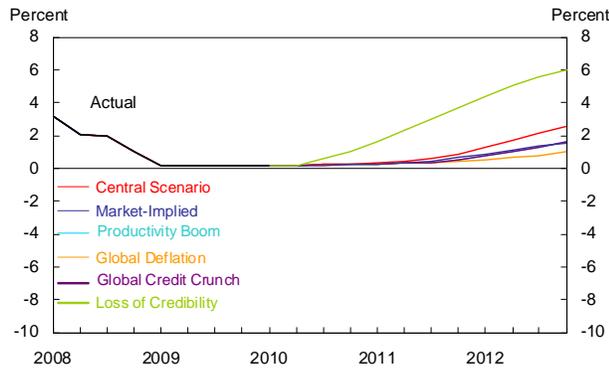


Real FFR under Alternative Scenarios

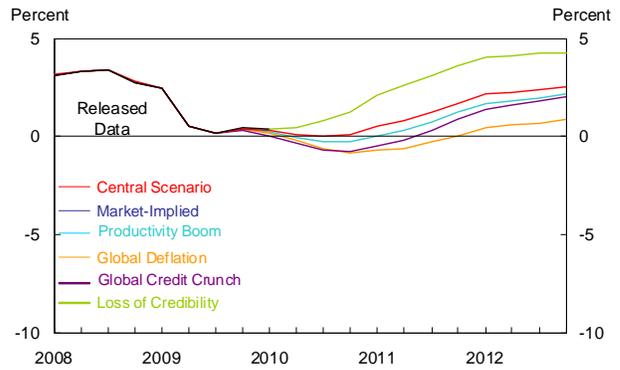


Policy Rule: *Nutter*

Nominal FFR under Alternative Scenarios

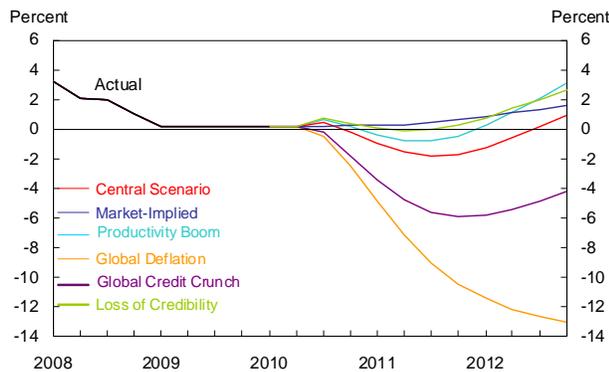


Real FFR under Alternative Scenarios

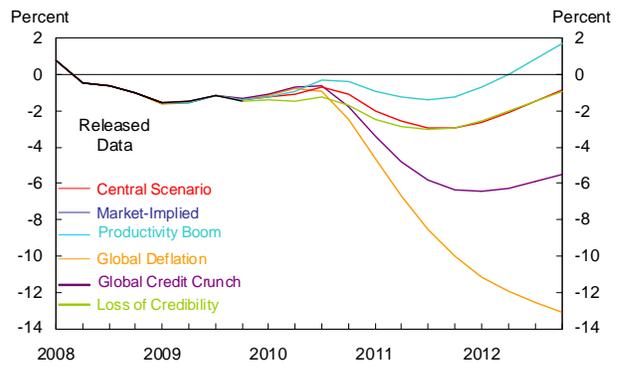


Policy Rule: *Outcome-based*

Nominal FFR under Alternative Scenarios



Real FFR under Alternative Scenarios

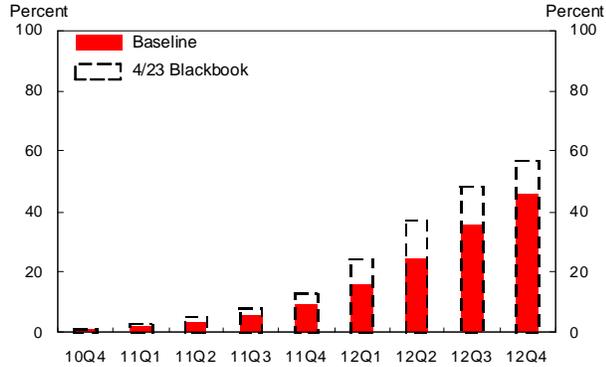


Source: MMS Function (FRBNY)

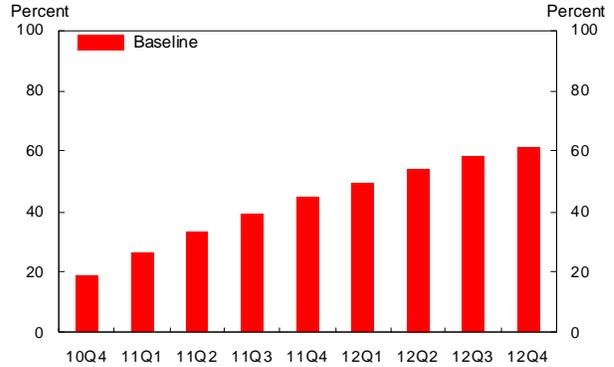
D. FRBNY Fed Funds Rate Projections

Exhibit D-4: FFR Probabilities

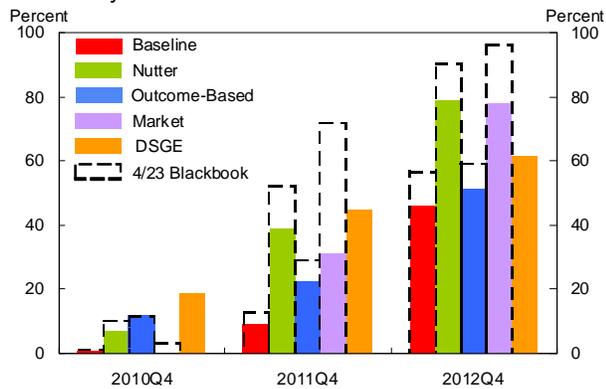
Probability of FFR above 0.5% for Next Year
FRBNY Forecast Distributions



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



Probability of FFR above 0.5% for Next Year



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

Source: MMS Function (FRBNY)

Alternative Scenario Descriptions

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

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

Alternative 1: *Productivity Boom*

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

Alternative 2: *Productivity Slump*

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

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

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

Alternative 3: *Fiscal Consolidation*

Events in Europe in early and mid-2010 concerning the fiscal position of several euro zone countries raises issues about the possible economic consequences if similar concerns were to develop about the sustainability of the U.S. government's fiscal position. The *Fiscal Consolidation* scenario envisions a situation in which concerns on the part of investors about the fiscal sustainability of the United States leads to an increase in long term interest rates and term premiums that contribute to a decline in output growth below that of the central forecast. As the U.S. government responds to those concerns by reducing government spending and/or raising taxes, the consequent decline in aggregate demand would imply that growth of real activity continues to be weak. In this scenario inflation temporarily rises above the central forecast, in part due to a likely depreciation of the dollar and possible increases in inflation expectations². However, after several quarters, with the government embarking on a credible fiscal

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

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

Alternative 4: *Global Credit Crunch*

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

Alternative 5: *Loss of Credibility*

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

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

Alternative 6: *Global Deflation*

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

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

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

-
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 (except for the *Nutter* rule, which ignores output deviations), while incorporating some degree of inertia. For each of the FFR paths and each of the policy rules, we determine these deviations using the inflation and output paths generated in Exhibit C.

Baseline Policy Rule Specification:

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

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

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

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

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

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

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.³ 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

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

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

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

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

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

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

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

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