

FRBNY BLACKBOOK

RESEARCH AND STATISTICS GROUP

FOMC Background Material

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FRBNY BLACKBOOK

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1. Policy Recommendation and Rationale

Economic and financial market developments since the April Blackbook have led us to revise downward our real activity outlook and most importantly to raise the downside risks to the forecast. We also see greater uncertainty around our central outlook. Against this backdrop, we recommend maintaining the FFR target range at 0-0.25%, which under our forecast remains in this range at least until the end of 2014, and completing the Maturity Extension Program (MEP) as scheduled. In addition, we recommend that the FOMC provide additional policy accommodation through an expansion of the Federal Reserve's balance sheet, implemented at least in part through purchases of MBS. This expansion should be pursued within an integrated policy strategy where forward guidance explicitly links the extent and length of monetary policy accommodation to the convergence of the path of real variables and inflation to their desired long-run values.

Rationale—Outlook. The real activity releases since the April Blackbook generally came in weaker than expected. Based on the second estimate, real GDP grew at 1.9% (annual rate) in the first quarter of 2012. The April and May labor market reports showed that labor market conditions have softened considerably over the past three months. Retail sales were weaker than expected suggesting a slowdown in consumer spending. A number of manufacturing indicators also have softened.

Overall CPI and PCE inflation have come down in recent months due to the decline in energy prices, and underlying inflation appears to be stabilizing at just below the 2% objective.

Rationale—Uncertainty and Risks. The situation in Europe and the probability of high fiscal consolidation in the US (fiscal 'cliff') continue to be major sources of uncertainty and risks for the US and global economies. We have therefore raised our assessment of the uncertainty around our outlook, further widening the probability intervals around the central forecast.

Reflecting the escalation of the European crisis, slower growth in other regions, falling commodity prices, and some deterioration in financial market conditions, we have shifted our risk assessment for both real activity and inflation further to the downside.

Policy Recommendation

Given our outlook and risk assessment, we believe that more policy accommodation is needed. At the same time, policy continues to be constrained by the zero lower bound while the Federal Reserve balance sheet is, by historical standards, quite elevated. Market participants have shifted down their expectations of the path of the FFR and longer yields are at historical lows. The MEP is scheduled to be completed by the end of June, and if it is not continued, forward guidance will be the only active tool of policy accommodation. In this environment, we recommend supporting the forward guidance through an increase in the size of the balance sheet. However, we recommend that a new purchase program should be open-ended, with the ultimate size and duration to be determined over time, depending upon the degree by which economic conditions improve and approach the Committee's long-run goals.

Accordingly, the extent of accommodation should be state-contingent: it would remain in place until particular identified conditions are met. Under such a policy, the FOMC would continue to expand the Fed's balance sheet (and perhaps also adjust its maturity composition) and maintain the FFR in the 0-0.25% range for as long it would take to reach a solid recovery. Moreover, the FOMC would make this strategy explicit, and thus it is important that the FOMC announce the variables it will monitor to assess the conditions that warrant continued extraordinary accommodation – i.e. the extent to which the recovery is not yet well established, as well as the conditions that would warrant its end. Unlike previous LSAPs, the program should explicitly be open-ended, with the FOMC setting a pace for the purchases (billions of dollars per month) rather than an aggregate level: combined with the state-contingent communication, this approach would assure the markets that the FOMC would maintain its accommodative stance at least until the economy is on a solid path to recovery.

There are implementation problems as well as risks in this proposal. The implementation problems, as we have discussed in the past, lay in the proper characterization of the

conditions that would trigger the termination of the program: for the program to be effective, the FOMC must state explicitly how it would judge that a solid recovery is under way. While there is no simple way to characterize such situation, an obvious starting point is gauging economic progress relative to the longer-run goals stated in the January 2012 document. For example, the FOMC could announce that the purchases will continue until the *projected* gap between unemployment and the FOMC estimate of the natural rate has narrowed to 1.5 or 2 percentage points (and is expected to continue to narrow), provided *projections* for the inflation gap are no larger than 1 percentage point. The accommodative policy is then in terms of the miss on the employment goal, provided there is not too large a positive miss in the price stability objective. More nuanced language could define policy not just in terms of levels relative to objectives, but also in terms of speed at which those objectives are expected to be approached.

Despite the fact that the longer-run goals are defined in terms of unemployment, the FOMC may not want to use the unemployment gap as a trigger in this proposal, as the unemployment rate may be a noisy measure of labor market conditions in the current environment. As an alternative the FOMC may chose (we would recommend that it do so) to refer to other measures of labor market conditions, such as growth of payroll employment or the employment/population ratio. Yet another alternative is to specify the policy objective in terms of a level target for nominal GDP.

We have discussed the nominal GDP targeting in past Blackbooks. The advantages of this policy are two-fold. First, based on plausible values of the target growth rate there is still a significant “nominal GDP gap,” thus indicating ample scope for accommodation. Second, an objective stated in terms of a nominal GDP target reflects quite clearly both parts of the Fed’s dual mandate and therefore could be well understood by the public. If the FOMC were to adopt that strategy, it would announce a target path for nominal GDP and condition accommodation to the closing of the gap between the projected path of nominal GDP and the target path.

One risk in a strategy that conditions the removal of policy accommodation to the achievement of a real objective is that the FOMC may overestimate the “potential” of the economy, which could lead to unexpectedly higher inflation and unanchoring of inflation

expectations. However, if most of the desired increase in nominal GDP is realized by higher inflation, rather than in real growth, a nominal GDP targeting policy would naturally lead to the removal of policy accommodation. Similarly, if the objective of accommodation is specified in terms of a closing of the unemployment gap, the inflation ‘tolerance’ clause would mitigate the inflation risks involved in underestimating the natural rate of unemployment. In such situations, the FOMC would have the tools to tighten policy and would be expected to re-assess the unemployment rate consistent with price stability or the target growth rate of nominal GDP once it realized its misstep.

The open ended nature of the proposed program presents some risks. First, the potential of a large increase in the Fed’s balance sheet could lead to dysfunction in financial markets. Indeed high volumes of purchases may not be feasible in the MBS market, and thus some purchases may have to be in longer-term Treasuries. Then there is the risk of capital losses should the Fed have to liquidate its portfolio rapidly. For this latter risk, we continue advocating, as we have in the past, that the Fed accumulates some capital cushion to make up for possible future losses, or alternatively reaches a more formal arrangement with the Treasury about how such contingencies could be met.

Finally, a significant hurdle in changing policy strategy is that a removal of the date currently in the statement could be interpreted as a de facto tightening of policy. We believe that the risks in such sense are likely small, because the balance sheet action and the associated change in communication would speak clearly for the accommodative stance of policy. However, the Committee may indicate a date at which, given current information, the Committee expects that the unemployment or the output ‘gap’ could be significantly reduced if the policy takes effect.

2. Evolution of Outlook and Risks

2.1 Central Forecast

Intermeeting developments. Data released over the intermeeting period tended to be weaker than expected, leading to a downgrading of assessments of the underlying strength of the U.S. economy. The labor report for May was particularly disappointing.

Nonfarm payroll employment rose by just 69,000, well below expectations, and employment gains for March and April were revised downward. The broad-based nature of the slowdown, and the fact that it has persisted for three months, makes it less likely that this is just a temporary payback for unusually mild weather in the first quarter. In addition to the slowing of employment growth, aggregate hours worked fell in May, and the April-May average is unchanged from the first quarter average. Year-over-year growth of average hourly earnings continued to slow, reaching 1.7% in May. Weekly initial claims for unemployment insurance have leveled off in the 375,000 to 380,000 range after declining steadily since the spring of 2009.

Numerous other indicators contributed to the sense that the U.S. economy was losing forward momentum. Light-weight motor vehicle sales in May were 13.78 million units at an annual rate, below the pace of sales in April and the average in 2012Q1. The ISM (Institute for Supply Management) manufacturing composite index retreated 1.3 points to 53.5 in May, essentially reversing a gain of similar magnitude in April. The ISM non-manufacturing headline index for May was essentially unchanged at 53.7. The levels of both indices are associated with positive but relatively sluggish growth. Private nonresidential and public construction activity declined in April. New orders for nondefense capital goods plunged in March and then fell further in April. Oddly enough, about the only good news came from the housing sector. Residential construction rose robustly in April, and the CoreLogic national home price index increased in April for the fourth consecutive month.

Changes in a fairly broad range of financial market indicators and commodity prices over the intermeeting period have been consistent with this loss of momentum. As of this writing, the S&P 500 equity index is down about 5% from its April 25 closing level, while the yield on the 10-year Treasury note is down about 40 basis points, and the spot price of WTI is down about 20%.

At this time, we project that real GDP will grow at just a 2% annual rate in the second quarter, comparable to the most recent estimate of growth for the first quarter and down from an estimate of around 3% in mid-May. Despite a sharp decline of energy prices that has provided a boost to real disposable income, growth of real PCE now looks like it will

be around 2.5% (annual rate) in Q2, down slightly from 2.7% in the first quarter. Real residential investment is expected to expand at a robust 20% annual rate, comparable to the first quarter increase, but this yields a growth contribution of just 0.4 percentage point. Growth of business investment spending will likely be only modestly stronger than the first quarter's relatively dismal 2% (annual rate) gain. Real government spending continued to decline in the second quarter, and the net export growth contribution is expected to be zero. With only data for April available, the pace of inventory accumulation in the second quarter is likely to be somewhat less than in the first quarter.

Regarding inflation, the 12-month change in the overall PCE deflator continued to slow, reaching 1.8% in April, down from 2.1% in March and well below the recent high of 2.9% in 2011Q3. Based on the May CPI data, we expect the 12-month change in the total PCE deflator to slow to 1.5% in May. On a year-over-year basis, energy prices were down in April after rising around 20% for most of the second and third quarters of 2011. Further slowing is expected in the months ahead as year-over-year changes in energy prices turn deeply negative. Given our assumption regarding energy prices, the 12-month change in the total PCE deflator should be down to 1.3% in August and September. It appears that core inflation has peaked, with the 12-month change in the core PCE deflator down to 1.9% in April from 2.0% in March. The May CPI data suggests that the 12-month change in the core PCE deflator will be 1.8% for May.

Conditioning assumptions. Our estimate of potential GDP growth is around 2 ¼%, having been lowered from around 2 ½% based on the revised NIPA data released at the end of July 2011. The Board staff estimates of potential for 2012 and 2013 are 1.8%, and 2.0%, respectively, down from 2.0% and 2.1%, in the April Tealbook.

We expect the lower degree of inflation persistence evident since the early 1990s to continue. This assumption is in contrast to the greater degree of inflation persistence assumed in recent Board staff forecasts. In our central scenario, inflation expectations remain well anchored. This assumption is central to our projection that core PCE deflator inflation will remain near the midpoint of the FOMC's objective of 1.5% to 2.0%. In contrast, the Tealbook forecast expects core PCE inflation to trend downward toward the bottom of that range.

In this forecast round, both the Tealbook and Blackbook projections of global real GDP growth have been downgraded due to the worsening euro area outlook and, to a lesser extent, China and other Asian economies. For 2012 we have lowered global GDP growth from 2.6% in April (Q4/Q4) to 2.3%, while the Board staff forecast has been lowered from 2.2% (GDP weighted) to 1.9%. For 2013, our forecast has been lowered from 3.1% to 2.9%, while the Board forecast has been lowered to from 2.9% to 2.2%.

Reflecting developments over the intermeeting period, the exchange value of the dollar is now expected to appreciate in 2012 and then depreciate in 2013. The Board expects the nominal exchange value of the dollar to rise 3.3% in 2012 versus a decline of 1.2% in April. We expect the dollar to rise 2.0% versus a decline of 1.7% in the April Blackbook. These appreciations are largely reversed in 2013, with exchange rate movements of -2.5% and -2.4% for the Blackbook and the Tealbook, respectively.

Reflecting the downgrading of domestic and global growth prospects, our assumed path of WTI oil prices, based on recent futures quotes, has moved down substantially. We now expect a price of \$86.50 for 2012Q4, down from \$105, and a price of \$88 for 2013Q4, down from \$103. The Board's projected path has moved down by an even larger magnitude, to \$84 in 2012Q4 from \$109, and to \$84 in 2013Q4 from \$105.

As is our standard practice, we adopt the same fiscal assumptions as in the Tealbook, which are essentially unchanged from April. For 2012, the Tealbook expects fiscal (federal, state, and local government combined) drag of 1/2 percentage point, then rising to a full percentage point in 2013. At the federal level, the increase in fiscal drag in 2013 is due to the expiration of the payroll tax cut and Emergency Unemployment Compensation (EUC) at the end of 2012 as well as the spending restraint resulting from the discretionary spending caps enacted last August. In contrast, the 2001-2003 tax cuts that are set to expire at the end of 2012 are assumed to be extended. In addition, the further cuts in spending mandated by the automatic sequestration provisions of the Budget Control Act are assumed to be replaced with a much more gradual spending reduction program.

We continue to adopt the Tealbook assumptions regarding equity and home prices. At this time, equity prices are about 5% lower than when the April Tealbook was assembled. From this lower starting point, equity prices are assumed to be essentially unchanged over the remainder of 2012 and then begin to rise at a 10% annual rate over the forecast horizon, driven primarily by a return of the equity risk premium to more normal levels. Finally, reflecting some additional firming in home prices in March and April, the CoreLogic national home price index is now assumed to rise nearly 5% (up from 2%) in 2012 and then increase 2% in 2013.

The Outlook. In our Blackbook forecast of December 2011, we anticipated a slowing of growth in the first half of 2012 to the 1 ½% to 2% (annual rate) range. However, the major driver of that forecast was the assumption that the payroll tax cut and emergency unemployment benefits would not be extended for 2012, thereby sharply depressing consumer spending over the first half of the year. Of course, those two provisions were extended for 2012, and the rate of growth of real PCE over the first half of 2012 has been about ½ percentage point faster than over the second half of 2011. In addition, residential investment has made a 0.4 percentage point growth contribution over the first half of 2012 versus the zero that was anticipated back in December. Nonetheless, the growth rate of real GDP is likely to still average just 2% over the first half of the year.

Two components of final expenditures are primarily responsible for this weaker than expected performance. The first is inventory investment, which was expected to add about 0.4 percentage point to growth in the first half of the year but now looks likely to contribute nothing. In part, this is due to the fact that consumer spending did not slow but rather grew even faster. For example, the inventory-sales ratio in the motor vehicle sector fell in the first quarter despite the fact that, through April, production has been ramped up very aggressively. Thus, this development should not be viewed as evidence of underlying weakness.

More troubling and less well understood is the tepid growth of business fixed investment (BFI). Last December we projected that, based on the strong performance of mid 2011, BFI would make a growth contribution of about 0.8 percentage points over the first half of 2012. It now looks like that growth contribution will be about half what we expected.

Moreover, there is nothing in the high frequency data to suggest that growth of BFI will pick up over the second half of the year. As mentioned above, new orders for nondefense capital goods plunged in March and then fell further in April, leaving the April level more than 8% below the first quarter average. The Architectural Billings Index declined in both March and April to back below 50. Thus, we have extended the recent weakness of BFI growth over the second half of 2012.

For all of 2012 we now project growth of real GDP at 2.1% (Q4/Q4), down from 2.7% in April. This is a relatively large change over a period of less than two months. However, much of the decline is due to the fact that when the April forecast was compiled we anticipated growth in the first quarter to be near 3% (annual rate) whereas it is now estimated at 1.9%. In addition to the downgrading of expected BFI growth, we have also tempered growth of real PCE over the second half of the year, reflecting the recent weakness in employment data, the downward revisions in labor compensation for 2011Q4 and 2012Q1, and the decline in equity values over the intermeeting period. Export growth is now expected to be somewhat slower, reflecting both the appreciation of the dollar and the downgrading of foreign growth. With growth in the second half of 2012 around our estimate of potential, we anticipate only a relatively modest further reduction of the unemployment rate, to an average of 8.0% for 2012Q4, up somewhat from 7.8% in April despite the fact that the labor force participation rate is likely to be about 0.1 percentage point lower than we had been assuming (63.7 versus 63.8). Given the steep decline in energy prices that has occurred in 2012, the total PCE deflator is expected to rise between 1 ¼% and 1 ½% (Q4/Q4) as opposed to the 2.7% rise that occurred in 2011.

The deterioration of conditioning assumptions over the intermeeting period also resulted in a marking down of projected GDP growth in 2013, although in this case the reduction is a relatively modest ¼ percentage point, to 2.6% (Q4/Q4) from 2.9% in April. This change reflects a continuation of the somewhat slower growth trajectory for BFI and a somewhat lower growth contribution from net exports due to reduced foreign growth and a higher path for the exchange value of the dollar. With growth somewhat stronger than potential, the unemployment rate is likely to fall about ½ percentage point to 7.5% by

2013Q4 (based on the assumption of an unchanged labor force participation rate). With inflation expectations well anchored and oil prices rising only very modestly over the course of 2012, the four-quarter change in the total PCE deflator should rise to the mandate-consistent range of 1 3/4% to 2%.

2.2 Alternative Scenarios and Risks

Since the April Blackbook, we have increased the downward risks to real economic activity and inflation.

The data releases since April led us to lower the probability associated with the most optimistic scenario, namely the *Faster Growth* scenario [Exhibit C-1]. *Faster Growth* is the second most likely scenario. We have increased the likelihood of the *Global Deflation* scenario (now above 5%), and we have also increased the probability of the *Global Credit Crunch* scenario (to close to 20%) to reflect the darker outlook in the European sovereign debt situation since April. We also decreased the probability of the *Productivity Boom* scenario. We have made no significant changes to the likelihood of the remaining scenarios. The *Fiscal Consolidation* scenario, which reflects the risks from fiscal retrenchment and higher inflation in the short-term, remains the most likely alternative scenario although we have slightly reduced its probability.

The *Central* scenario forecasts show lower growth relative to the last Blackbook, and so do the paths for real GDP growth associated with the various scenarios [Exhibit C-2]. In fact, the paths associated with the various scenarios differ from the previous Blackbook only to the extent that the *Central* scenario forecasts have changed, since the risks are defined relative to the *Central* scenario.

Since the April Blackbook, the forecast distribution for core PCE inflation has changed to reflect both an increase in downside risk and a decrease in upside risk. As a result, the forecast distribution is now slightly asymmetric around our model forecast, and there is now a larger mass in deflationary territory. The forecast distribution for real GDP growth has shifted in a similar manner, reflecting an increase in downside risk [Exhibit C-3]. As a consequence, the probability of a recession through the end of 2012 is now 46.1%, up from 39.3% in the previous Blackbook. The “Depth of Recession” chart shows that,

should a recession occur, it would most likely be relatively mild, similar to that of 2001, yet the probability of a moderate or severe recession has increased significantly relative to the last Blackbook.

Exhibit C-3 also shows the baseline forecasts from the FRBNY DSGE model (solid orange line). The mean inflation forecast is somewhat below the expected value of the FRBNY forecast distribution, which in turn is below the *Central* scenario. The DSGE forecasts for real GDP growth are closer to the *Central* scenario through mid-2012, but are more pessimistic thereafter. The dotted orange line is an alternative forecast from the DSGE model obtained under the hypothesis that spreads widen by 300bp in 2012Q2. In this case, GDP growth declines steadily to a trough of -1.1% in 2013Q1, and inflation declines to approximately 0.5%.

3. Forecast Comparison

3.1 Comparison with Private Forecasters¹

Real GDP Growth. The FRBNY near-term projection for real GDP growth is slightly lower than that of private forecasters, with the exception of Macro Advisers. On a year-to-year basis, downgrades to the FRBNY growth projections relative to the previous Blackbook outpaced those of private forecasters in both 2012 and 2013. FRBNY estimates of 2.1% and 2.5% growth in 2012 and 2013, respectively, are now on the pessimistic end of the range of private forecasts in both years.

Inflation. The FRBNY year-to-year inflation projections for 2012 and 2013 are in line with those of private forecasters for core PCE inflation and above private forecasters for core CPI inflation, as upward revisions to the FRBNY core CPI projection since April contrasted with relatively flat private forecasts. In the near-term, upward revisions to the FRBNY core CPI forecast outpaced upward revisions to private forecasts, bringing the FRBNY projection to 2.5%. The near-term core PCE forecast is slightly above private forecasters in the current quarter, though all forecasts converge to 1.7% in 2012Q3.

¹ The details of the forecast comparison are in Exhibit B-8. Quarterly numbers are SAAR.

3.2 FRBNY-DSGE Model Forecast

The FRBNY model forecast is obtained using data released through 2012Q1, augmented for 2012Q2 with the FRBNY staff forecast for real GDP growth, core PCE inflation, growth in total hours, as well as the values of the federal funds rate and the spread between Baa corporate bonds and 10-year Treasury yields based on April and May observations. The expected future federal funds rates are constrained to equal the OIS expected future funds rate through 2014Q2. The model is estimated using per-capita data, but the population measure has been filtered to avoid the large swings due to the fact that the series is not revised backwards.

These projections are broadly similar to those presented in April, as the data came in roughly in line with forecasts in the previous Blackbook [Exhibit E-1]. The model still projects a lackluster recovery in economic activity, with output growth in the neighborhood of 2% throughout the forecast horizon. Output growth forecasts for 2012, 2013, and 2014 (Q4/Q4) are 2.2, 2.3, and 1.8%, respectively, compared to 2.3, 1.9, and 1.4%, respectively, in April [Exhibit B-8]. Relative to the FRBNY central forecast, the DSGE model projects similar growth throughout mid-2013, but is more pessimistic afterwards. The DSGE inflation projections remain subdued throughout the forecast horizon. Projections for 2012, 2013, and 2014 (Q4/Q4) core PCE inflation are 1.4, 1.0, and 1.4%, respectively, compared to 1.5, 1.4, and 1.6%, respectively, in April. These forecasts are below the FRBNY forecasts throughout 2014, and particularly in 2013, where the gap between the two is about 1 percentage point.

The uncertainty around the real activity forecast in the DSGE model, as measured by the width of the 90% probability interval, is lower in the short run relative to the FRBNY forecast distribution (the model ignores the issue of data revisions), comparable in 2013, and higher in 2014, particularly because of the downside risks. The model places a non-negligible probability on negative growth throughout the forecast horizon. Uncertainty around the inflation outlook is also lower relative to the FRBNY forecast distribution through the first half of 2013 and is comparable thereafter. Notably, the DSGE model places little probability on inflation being above 2% in 2012 and 2013, unlike the

FRBNY staff forecast. Consistent with the output forecast distribution, the model sees larger downside risks to inflation toward the end of the forecast horizon.

The DSGE forecast is driven by two main factors [Exhibit E-2]. On the one hand, the headwinds from the financial crisis, as captured by the effect of shocks to credit spreads and to the marginal efficiency of investment, result in a subdued recovery, low real marginal costs, and consequently low inflation. The impact of these shocks on the recovery is long-lasting, and starts to wane only in mid-2013. On the other hand, accommodative monetary policy, and particularly the forward guidance, plays an important role in counteracting the financial headwinds and lifts up output and inflation. The impact of policy on the *level* of output starts to wane by the end of 2012, which implies that the effect of policy on *growth* is actually negative after that. Thus growth is still below trend by the end of 2014 in part because of a “payback” from the current monetary policy stimulus. The model attributes the pickup in core inflation in 2011 and in 2012Q1 to mark-up shocks, which capture temporary swings in inflation, such as those due to oil price fluctuations.

The model views the path of the federal funds rate as mostly driven by the endogenous response of policy to the weak economy. Policy shocks currently keep the federal funds rate 25 to 50 basis points lower than what would be implied by the historical rule. Moreover, the near-zero policy rate through mid-2014 is seen by the model as 50 to 75 basis points more accommodative than what would be implied by the historical rule.

4. Robustness of Policy Recommendation

4.1 Sensitivity to Alternative Scenarios and Policy Rules

As in the last Blackbook, our policy recommendation implies a target range for the federal funds rate at 0–0.25% until late 2014. This accommodation goes beyond what is implied by the *Baseline* policy rule under most scenarios, except for the *Global Deflation* and the *Fiscal Consolidation* scenarios [Exhibit D-1]. This reflects our assessment that under the zero lower bound, standard Taylor-type rules do not characterize optimal

policy. Instead, a commitment to maintain rates low for longer than implied by standard rules is needed to provide appropriate accommodation.

Exhibit D-2 shows the prescription of various policy rules using the expected value of the forecast distribution as an input. Consistent with the last Blackbook, the path implied by the *Baseline* policy rule under the expected paths for output and inflation implies a liftoff in the second half of 2013. The *Nutter* rule, which puts weight only on inflation, is the only rule prescribing a liftoff earlier than 2013Q3. Exhibit D-2 also shows the implied nominal FFR for the *Outcome-based* rule, ignoring the zero bound constraint. Under the expected value of the forecast distribution, the unconstrained nominal FFR almost reaches -8% by the end of 2013.

Exhibit D-3 shows the prescriptions from alternative policy rules under the various scenarios. FFR paths under the *Asymmetric Price Targeting* rule continue to be at the lower bound (0.25%) throughout the forecast horizon. The *Nutter* rule prescribes a liftoff in 2012 under most scenarios, including the *Central* scenario, and before mid-2013 even under the low-inflation scenarios, such as the *Productivity Boom*, *Global Credit Crunch*, and *Global Deflation* scenarios. For the *Outcome-based* rule, ignoring the zero bound, the paths are at or below zero through the end of 2013 for all scenarios, and are through the end of 2014 for most of them, with the exception of the *Faster Recovery* scenario.

4.2 Comparison to Market Expectations

The expected FFR path implied by futures shifted down during the intermeeting period, and it is now lower relative to the April Blackbook. The median modal forecast of Primary dealers' expectation for the timing of the first tightening is 2014Q4 — one quarter later than in the April survey. Finally, the entire distribution of the first policy rate hike shifted towards later dates, with the probability of the first increase being highest in the second half of 2014 (at about 22 %) and with the first half of 2015 being the second highest probability (about 18 %).

5. Significant Developments

5.1 Economic Developments

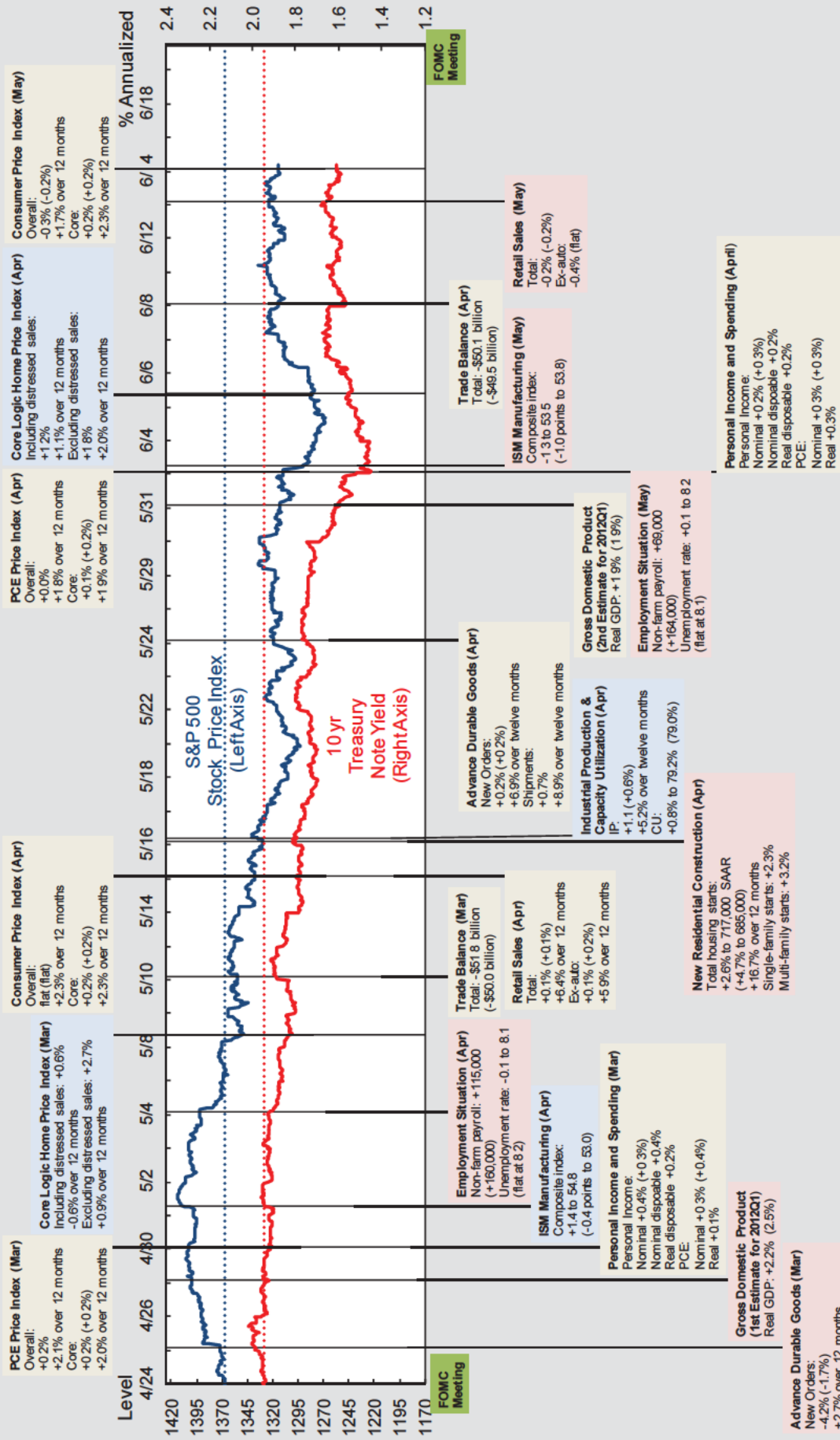
Foreign Data Releases. *Euro area:* GDP was unchanged in Q1 as higher exports, particularly from Germany, offset a 1.7% (saar) decline in domestic demand. Consumer spending was stable while investment spending and inventories were significant drags. Manufacturing showed some life in March, but weak April data showed renewed weakness entering Q2. Both the PMI and the economic sentiment indicator suffered large falls in April and May. The unemployment rate rose to 11.0% in April. The unemployment rate rose to 24.3% in Spain while it fell to 5.4% in Germany.

Japan: Output grew 4.7% in Q1, supported by very strong consumer spending and a pickup in government spending. Industrial production data were strong in the first quarter, but survey data suggest a significant easing in Q2. Export volumes posted the first notable increase in seven months. Confidence measures have been mixed. The manufacturing PMI held steady in May while the services PMI and the Reuters monthly Tankan index fell. The unemployment rate was 4.6% in April, near where it has stayed over the past year.

EM Asia: China's manufacturing PMIs weakened over the intermeeting period while industrial production growth slowed to near a three-year low and electricity demand has slowed sharply. Property transactions and starts continue to contract in response to tighter macro-prudential restrictions in the sector over the past two years. Exports in May partially rebounded from a sharp slowdown in April. Growth is being supported by consumption as workers are benefiting from a still-tight labor market. April export and industrial production were weaker than expected across the rest of emerging Asia.

Latin America: Following weak growth in H2 2011, Brazil grew at a subdued 0.8% pace in Q1, showing weakness in the capital and durables goods sectors. Preliminary Q2 activity indicators contain scant evidence of any acceleration. Manufacturing, which has been persistently soft since early 2010, contracted slightly in April. Demand for nondurables, however, remains fairly firm, buoyed by a tight labor market and brisk real wage growth. Mexico's GDP rose 5.3% in Q1, supported by strong growth in the export-

Key Data Releases



Note
 Blue shading: Data release better than expected.
 Red shading: Data release worse than expected.
 Numbers in parentheses are the median of the Bloomberg survey.

Source: Bloomberg
 On-the-run securities, 8:00AM - 4:00PM.
 S&P 500 Stock Price Index: 9:30AM - 4:00PM.

oriented manufacturing sector and a pick-up from subdued Q4 domestic demand. Recent production and PMI data point to continued manufacturing strength in Q2.

5.2 Financial Markets

Domestic Financial Markets. *Nominal Interest Rates:* The yield on the 10-year Treasury benchmark is down approximately 35 basis points over the intermeeting period in response to increasing concerns about the euro area crisis. Shorter dated yields were little changed owing to the forward policy guidance in the FOMC statement. Option implied volatilities in Treasury and swap markets, as measured by the 3-month MOVE and SMOVE indices, have been on an upward trend since early May. [Exhibit A-3: Treasury Yields]

Inflation Compensation: Long- and short-dated TIPS implied measures of inflation compensation were little changed. Near-term market implied breakeven measures increased modestly, with inflation compensation over the next 5 years rising from 2.31% to 2.51% since the April FOMC. Meanwhile, 5- to 10-year inflation compensation declined slightly from 2.63% to 2.57%. Survey-based measures of medium- to long-term inflation expectations are also little changed. The median 5-year inflation expectations as measured by the University of Michigan's Survey of Consumers fell slightly to 2.7% from 3.0%, well within the range of values observed over the recent past. [Exhibit A-4: Real Yields and Inflation Compensation]

Expected Policy Path and Short-term Funding Markets: The expected fed funds path has not materially changed since the April FOMC meeting. Consistent with the "late-2014" forward guidance, market quotes imply that the federal funds rate will remain in the current range until the second half of 2013, with a small rise before the end of 2014. Survey responses from the Blue Chip Financial Forecasts' June 2012 panel (survey period: May 23-24) were in line with the market implied expectations. Indeed, according to the median forecast, the federal funds rate is expected to trade in its current range until at least the second half of 2013. [Exhibit A-5: Policy Expectations]

Equity Markets: Broad stock market indexes moved lower, with the S&P index 2.5% below its April 10 level. The VIX moved from about 20 on at the time of the April

FOMC, to about 22 on June 12. However, the VIX is still substantially lower than the levels observed in the late summer and early fall of last year. This rise in US equity realized and implied volatility is attributed to concerns about the euro area crisis.

[Exhibits A-6: Equity]

Credit Spreads: Corporate credit spreads rose modestly, although they remain low compared with the peaks during the financial crisis. High-yield corporate bond spreads to comparable maturity Treasuries increased 58 basis points since the last FOMC meeting and are now at 690 basis points. Meanwhile, investment grade corporate bond spreads increased by a smaller magnitude over the same period and are now at 226 basis points.

[Exhibit A-7: Credit]

Foreign Financial Markets. *Euro Area:* Financial tensions increased within the peripheral euro area economies due to the political uncertainty in Greece after its May 6 elections and the subsequent failure of political parties to form a government. Market participants and European leaders view the June 17 second round election as a referendum on continued Greek membership in the euro area. Reports of deposit flight from Greek banks have increased concerns about the Greek banking system and about potential spillovers to other peripheral banks. After taking over Bankia, one of Spain's largest banks, Spanish authorities announced an additional €9 billion capital need for Bankia, surpassing most estimates. On June 9, Spanish authorities announced their intent to officially request aid for Spanish banks from the EFSF and/or ESM. After an initial positive reaction, market participants became increasingly concerned about the potential for subordination of existing private claims on the Spanish sovereign and uncertainty about the ultimate size, form, and timing of European aid. European equities fell about 7%, and the euro declined approximately 5% relative to the U.S. dollar over the intermeeting period.

Japan: External factors continue to affect Japanese financial assets price movements. Since the last FOMC meeting, weaker than expected U.S. employment data and intensifying concerns about the peripheral euro area sovereign debt situation have resulted in increased safe haven flows into Japanese markets. These flows contributed to the Japanese yen appreciating more than 7% against the euro and 2% against the dollar,

as well as 10-year Japanese government bond yield declines of about 6 basis points. Equities fell about 10% on external demand concerns.

Emerging Asia: EM Asian currencies depreciated by 2% on average against the U.S. dollar, and these movements were led by the 6% weakening of the Indian rupee. Analysts attribute the latter decline to a reversal of portfolio flows stemming from recent tax proposals. Also, concerns are growing about India's growth outlook due to the government's failure to implement key structural reforms. EM Asian shares declined about 7% on average and about 12% in China, due to ongoing uncertainty about the pace of the growth slowdown in China.

Latin America: The Brazilian real fell 8% against the dollar and the Mexican peso declined 6% over the intermeeting period. Monetary authorities in these countries intervened to strengthen their currencies. Equities in this region fell on average by about 8%. The drop likely reflects how the euro area crisis continues to cloud the global growth outlook.

5.3 Global Economic Policy

Euro Area: The ECB kept its policy rate at 1.0% after its June meeting, and no further long-term refinancing operations were announced for the coming year. However, its June statement pointed to "increased downside risk to the economic outlook," which led some market participants to judge that a policy cut has become more likely in the near term.

Japan: The Bank of Japan kept its policy rate in a range of 0.0-0.10% at its April and May policy meetings and will continue to do so until its official projections suggest price stabilization in the near-to-medium term. However, at its April 27 policy meeting, the Bank did announce an increase in the size of its Asset Purchase Program by ¥10 trillion to ¥40 trillion. In addition, the scope of the program was increased to include the purchase of Japanese government bonds with maturities of up to 3 years.

EM Asia: Monetary policy in EM Asia has remained largely on hold since the last FOMC meeting. In China, monetary authorities delayed the implementation of higher bank capital requirements, and in a bid to spur loan demand and stabilize growth, they

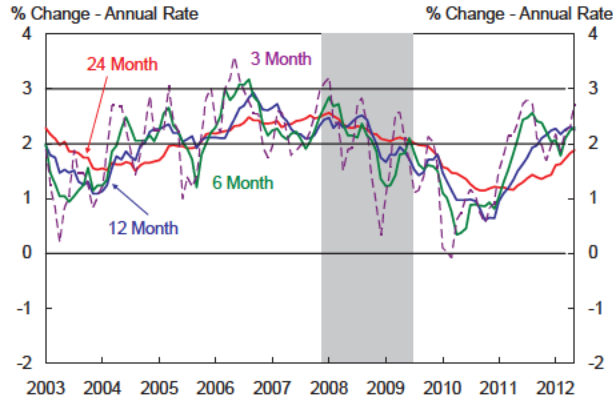
also cut benchmark interest rates in early June for the first time since December 2008. The Reserve Bank of India raised rates on foreign exchange denominated bank accounts in an attempt to ease selling pressure on the rupee. Elsewhere in the region, analysts expect rates to remain on hold through year-end despite easing inflation as regional central banks adopt a wait-and-see stance towards external developments. Currency interventions were relatively modest in the region, although the modest appreciation of the yuan relative to the U.S. dollar may partly reflect a policy decision to restrain Chinese currency appreciation in effective terms.

Latin America: Mexico's central bank kept its policy rate at 4.5% at its June policy meeting, and analysts expect no rate change in 2012. In Brazil, the central bank reduced the policy rate by 50 basis points to 8.5% at its May meeting. Analysts expect a further 50 basis points cut in July as markets start to price in the probability of another cut in August. In response to sharp currency depreciation pressures, the Brazilian central bank has been offering dollar liquidity to the forward market, placing close to \$8 billion through currency swap auctions since late May. In Argentina, foreign exchange liquidity strains have not strongly impacted local funding conditions, with the reference rate of 12% well below last year's high of over 22%.

A. Significant Developments

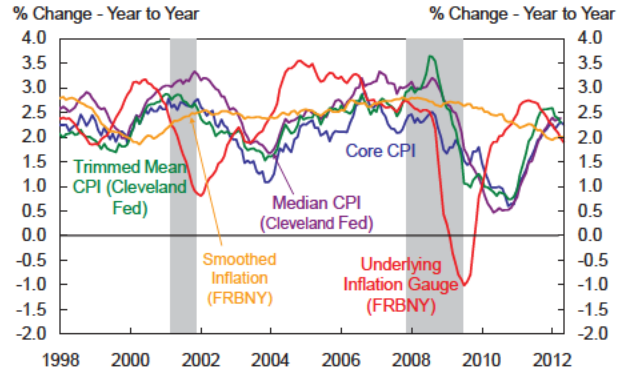
Exhibit A-1: Measures of Trend Inflation

Core CPI Inflation over Various Horizons



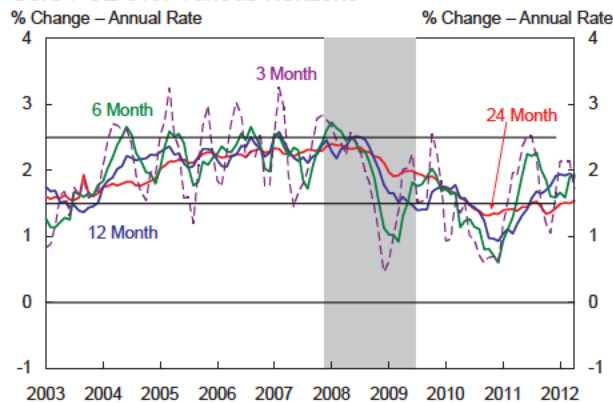
Source: Bureau of Labor Statistics

Alternative Measures of CPI Inflation



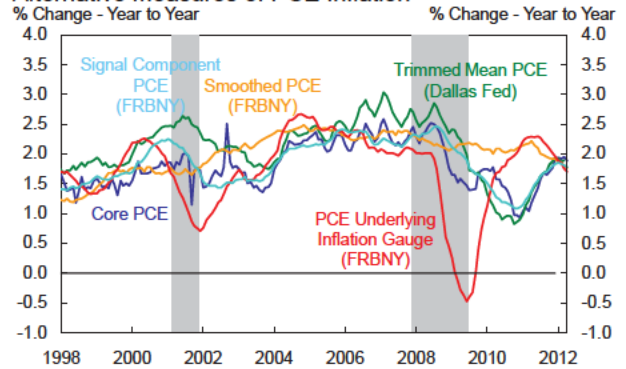
Source: Bureau of Labor Statistics, Cleveland Fed, MMS Function (FRBNY), and Swiss National Bank

Core PCE over Various Horizons



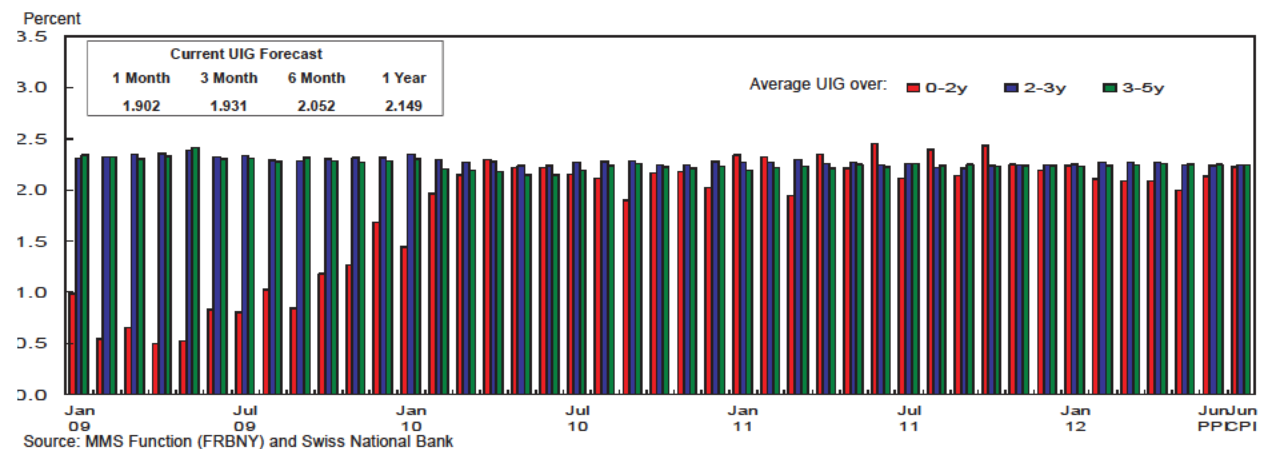
Source: Bureau of Economic Analysis

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**

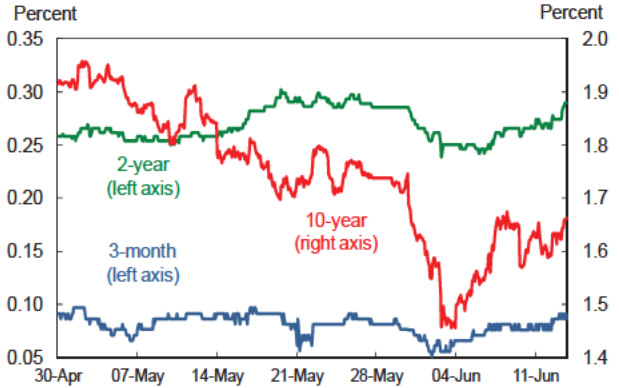
Short- and Long-Term Rates



Source: Bloomberg

Note: Yields of on-the-run securities.

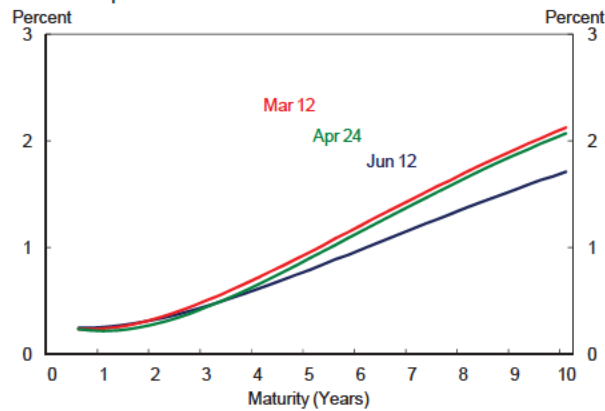
Short- and Long-Term Rates (Intraday)



Source: Bloomberg

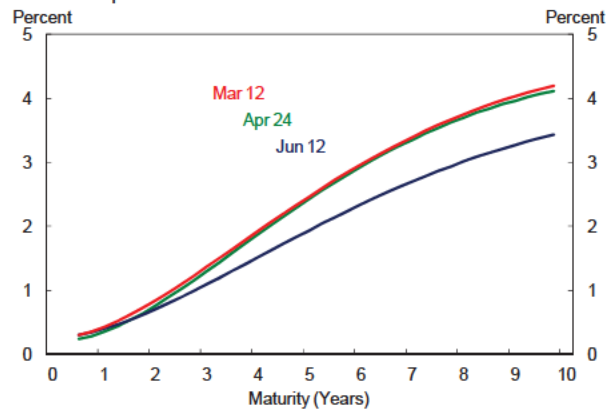
Note: On-the-run securities, 8:00 am to 4:00 pm.

Zero Coupon Yield Curves



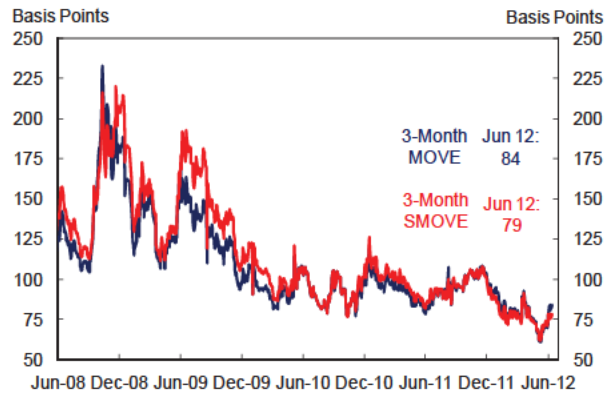
Source: Federal Reserve Board

Zero Coupon Yield Curves: One-Year Forward Rates



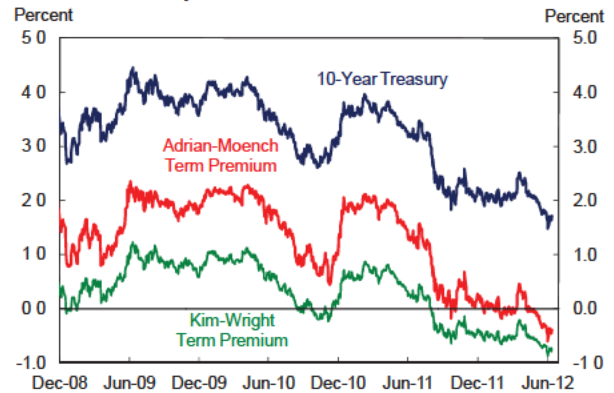
Source: Federal Reserve Board

Option and Swaption Volatility Expectations



Source: Federal Reserve Board, Barclays, and FRBNY staff

10-Year Treasury and Term Premia

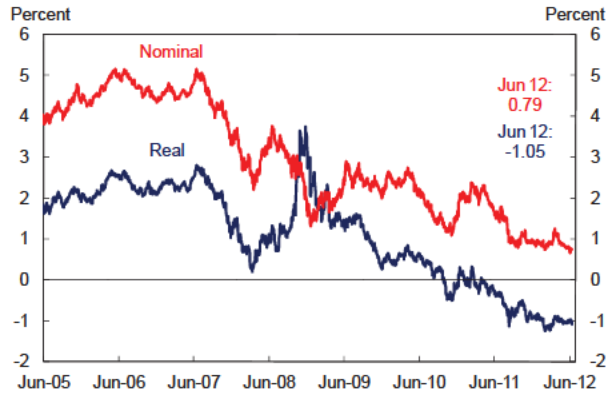


Source: FRBNY calculations, Federal Reserve Board

A. Significant Developments

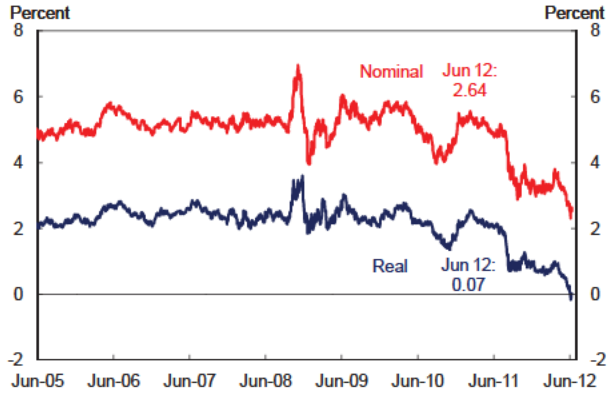
Exhibit A-4: Real Yields and Implied Inflation

5 Year Spot Rate



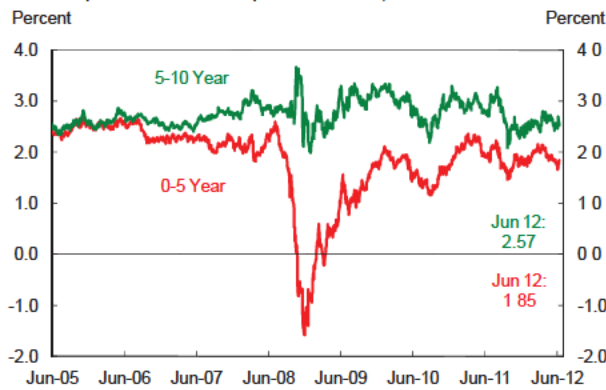
Source: Federal Reserve Board

5-10 Year Forward Rates



Source: Federal Reserve Board

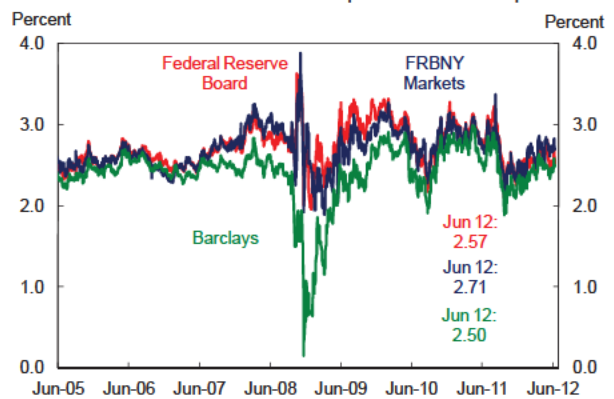
TIPS Implied Inflation Compensation: 0-5, 5-10 Year Horizons



Source: Federal Reserve Board

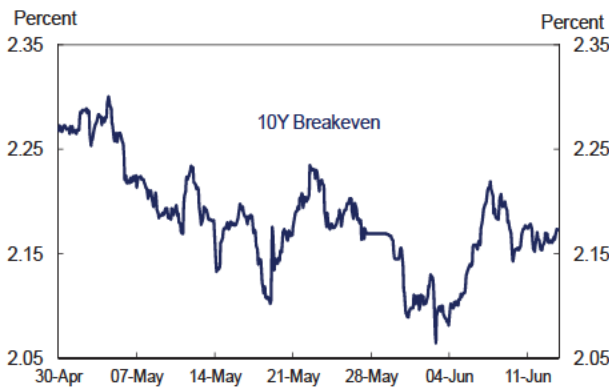
Note: Carry-adjusted.

Alternative Measures of 5-10 Year Implied Inflation Compensation



Source: Federal Reserve Board, Barclays, and FRBNY staff

10-Year Breakeven Inflation Compensation (Intraday)



Source: Bloomberg

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

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

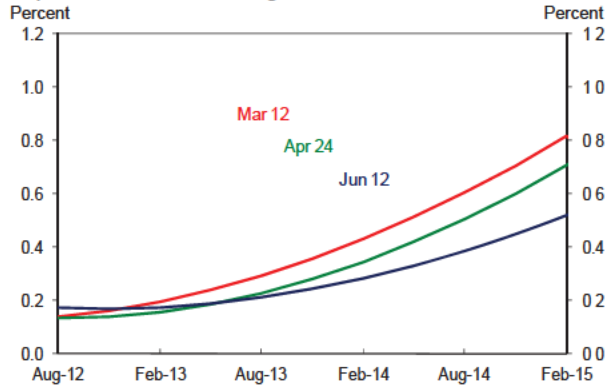


Source: Barclays

A. Significant Developments

**Exhibit A-5:
Policy Expectations**

Expected Fed Funds Target Rate



Source: Federal Reserve Board

Note: Estimated using OIS quotes.

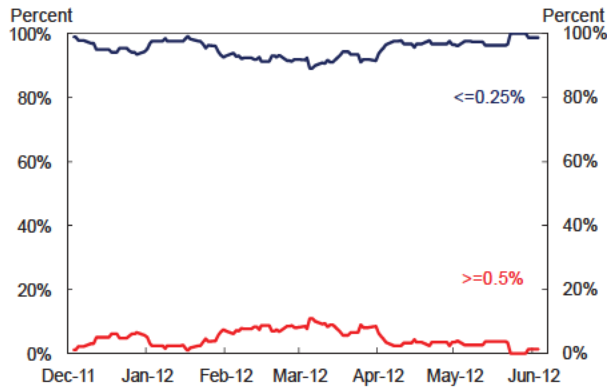
Implied Eurodollar Rates (Intraday)



Source: Bloomberg

Note: 8:00 am to 4:00 pm.

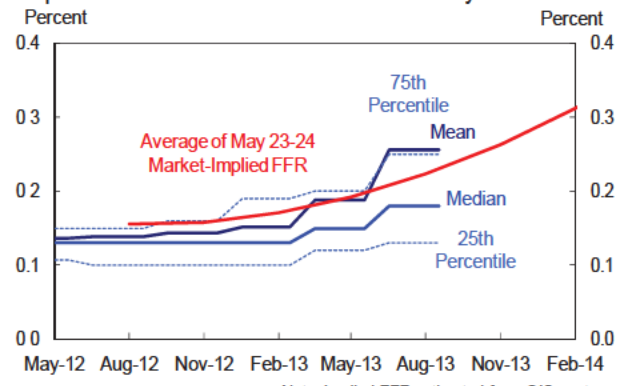
Fed Funds Probabilities December 2012



Source: Bloomberg

Note: Estimated from Fed Funds Futures

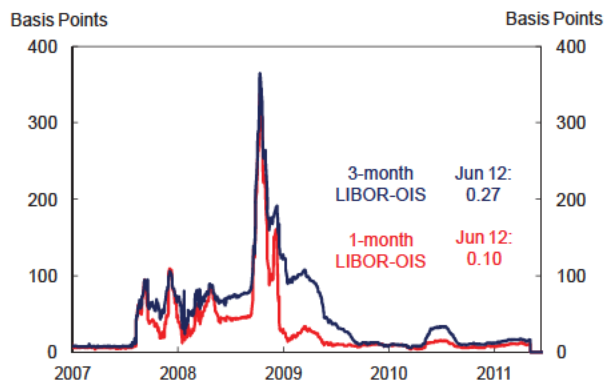
Expected Fed Funds from June 2012 Survey



Note: Implied FFR estimated from OIS quotes.

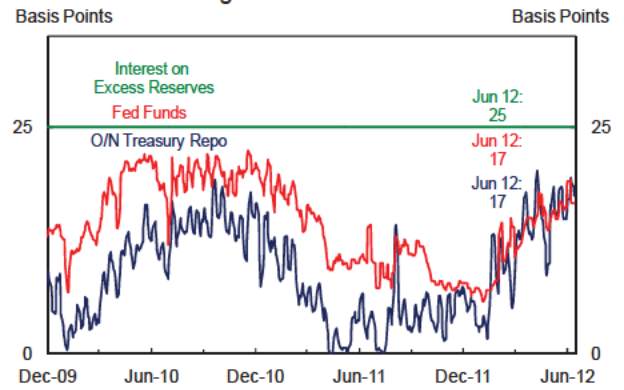
Source: The Blue Chip Financial Forecast conducted on May 23-24.

Libor-OIS Spreads



Source: Bloomberg

Short Term Funding Rates



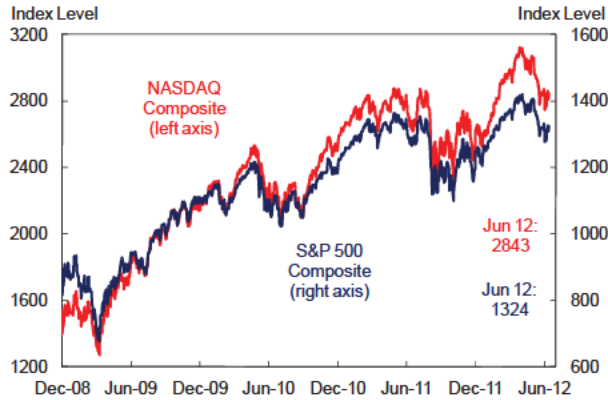
Source: Bloomberg, FRBNY calculations

Note: 1-week moving averages.

A. Significant Developments

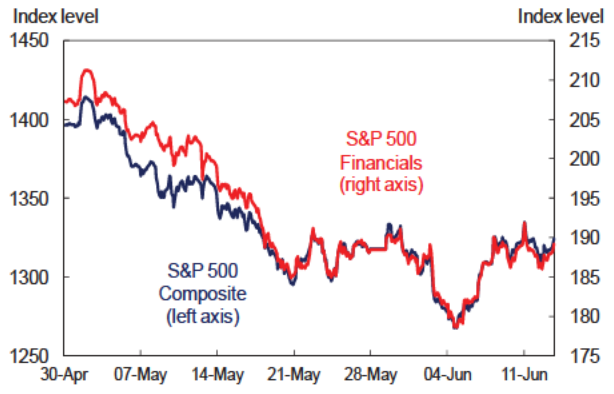
Exhibit A-6:
Equity

Equity Index Levels



Source: Bloomberg

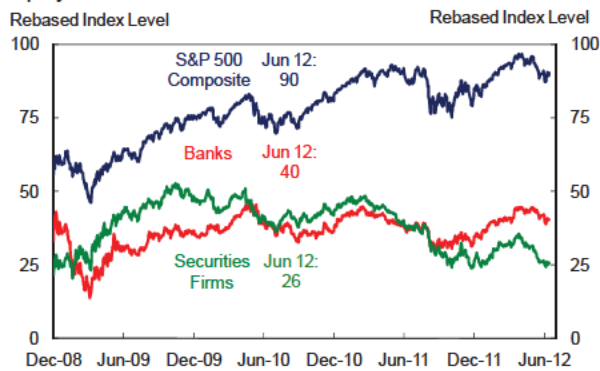
S&P 500 Indices (Intraday)



Source: Bloomberg

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

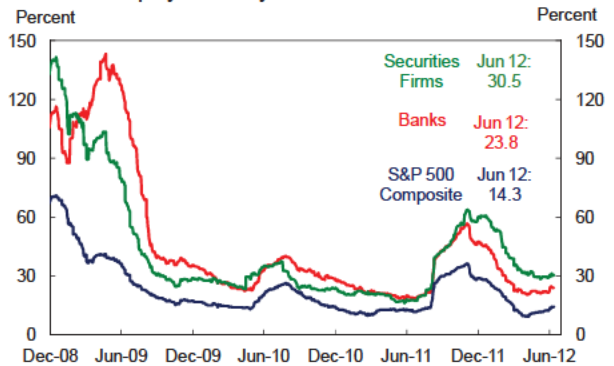
Equity Performance



Source: Bloomberg

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

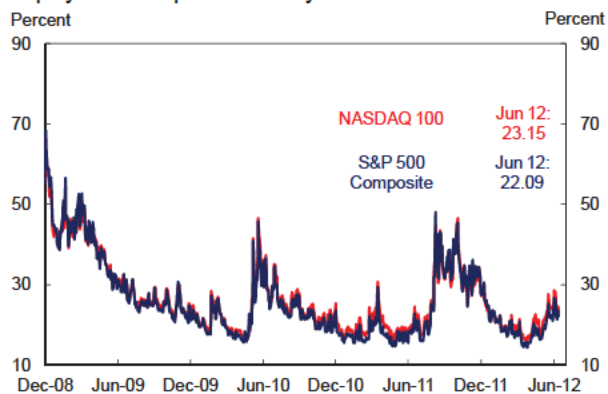
Historical Equity Volatility



Source: Bloomberg

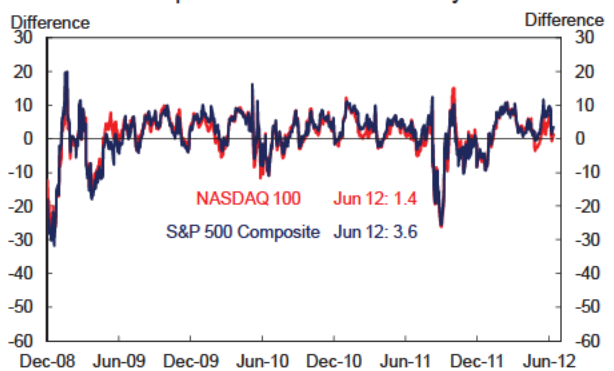
Note: Annualized rolling 3-month standard deviation of daily returns. Banks series is S&P 500 Banks index. Securities Firms series is S&P 500 Investment Banks and Brokerages index.

Equity Index Implied Volatility: 1-Month



Source: Bloomberg

Difference of Implied and Realized Volatility



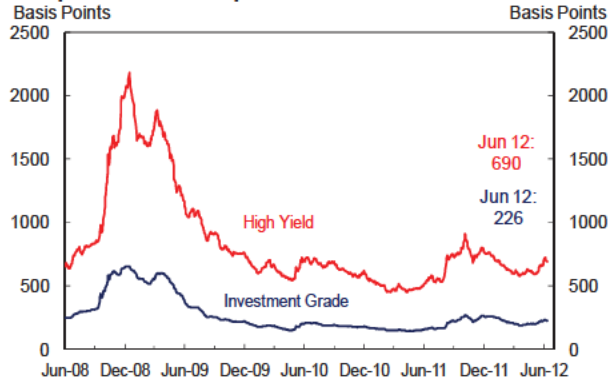
Source: Bloomberg

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

A. Significant Developments

Exhibit A-7: Credit

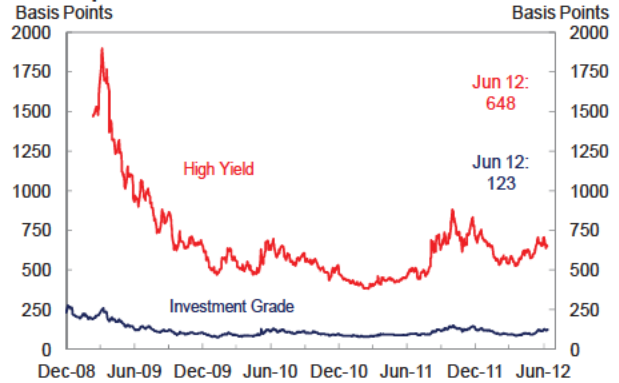
Corporate Credit Spreads



Source: Merrill Lynch

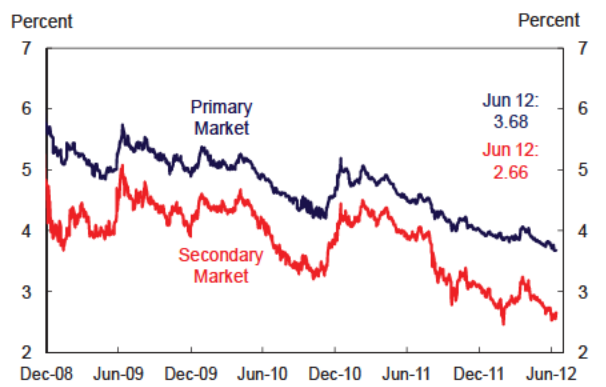
Note: Option-adjusted spreads.

CDS Spreads



Source: Bloomberg

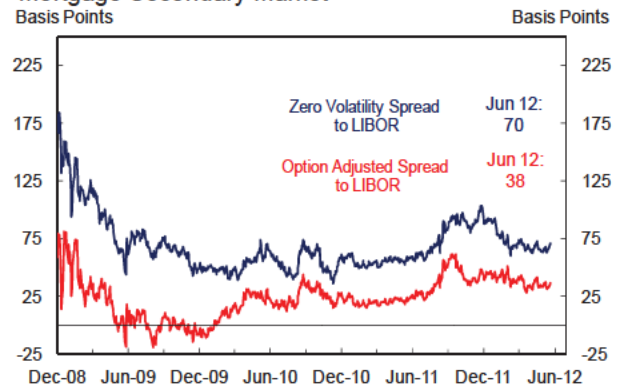
Mortgage Market Rates



Source: Bloomberg

Note: 30-year fixed mortgage rate and Fannie Mae current coupon yield.

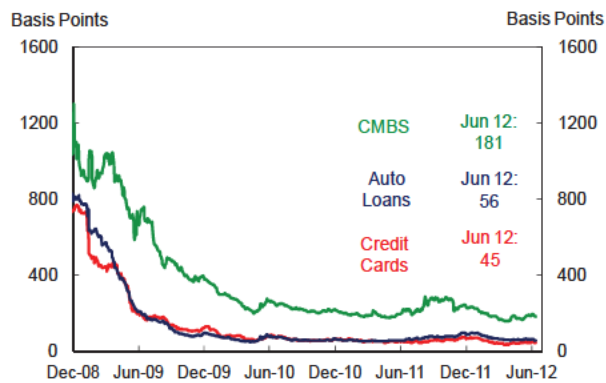
Mortgage Secondary Market



Source: J.P. Morgan

Note: 30 year current coupon Fannie Mae MBS.

AAA-Rated ABS/CMBS Spreads



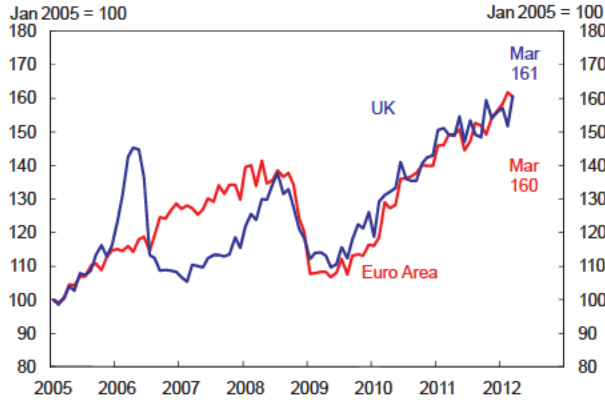
Source: Merrill Lynch

Note: Option-adjusted spreads.

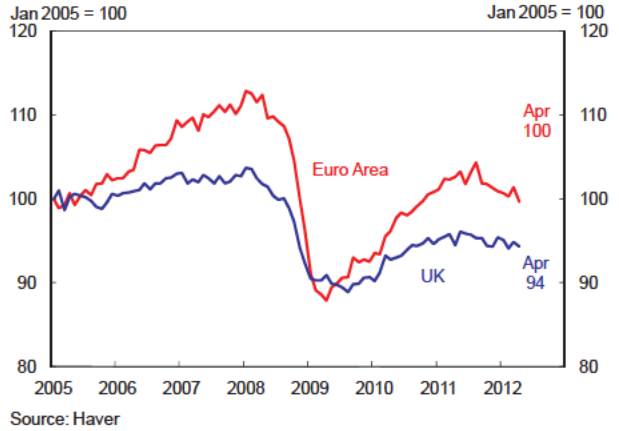
A. Significant Developments

Exhibit A-8: Exports and Industrial Production

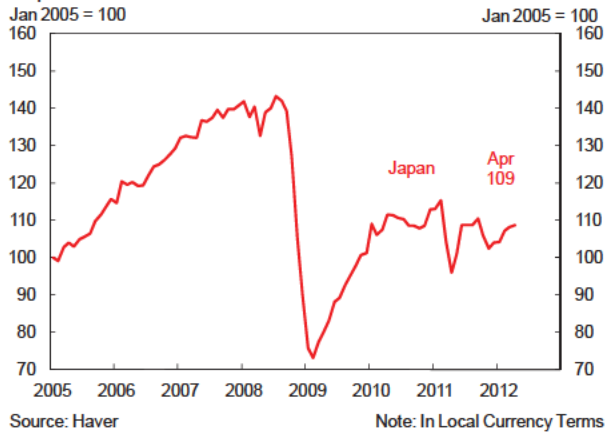
Exports



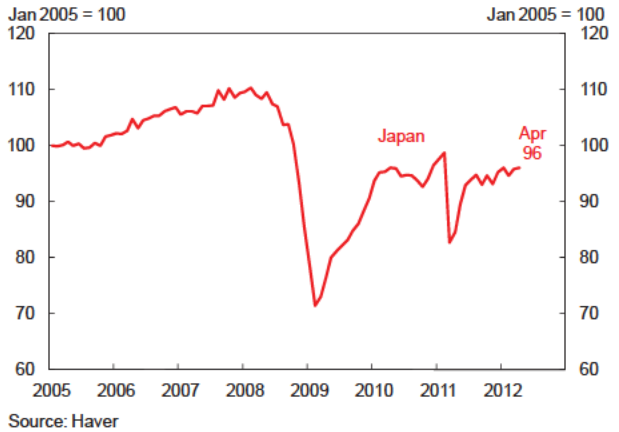
Industrial Production



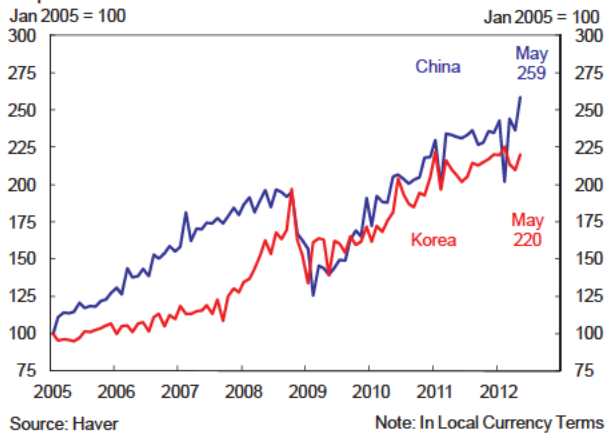
Exports



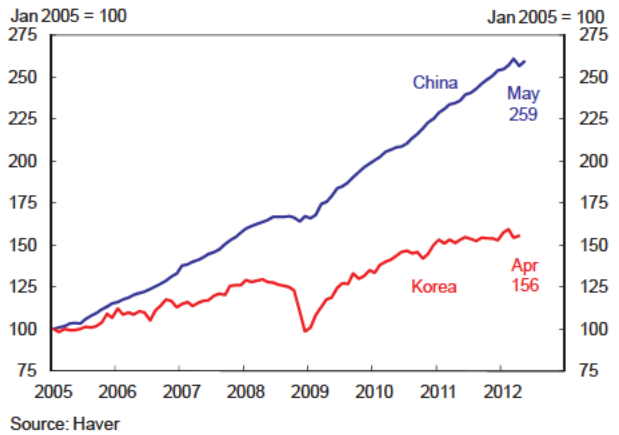
Industrial Production



Exports



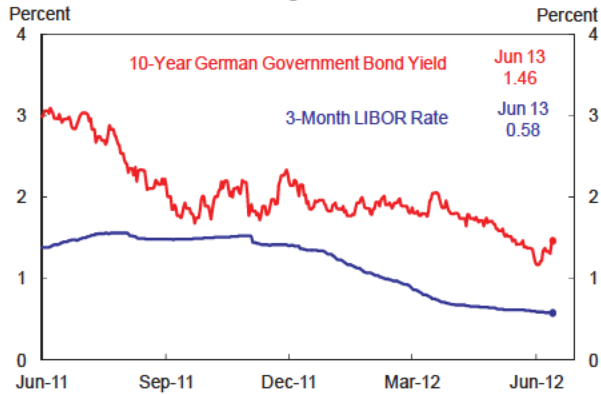
Industrial Production



A. Significant Developments

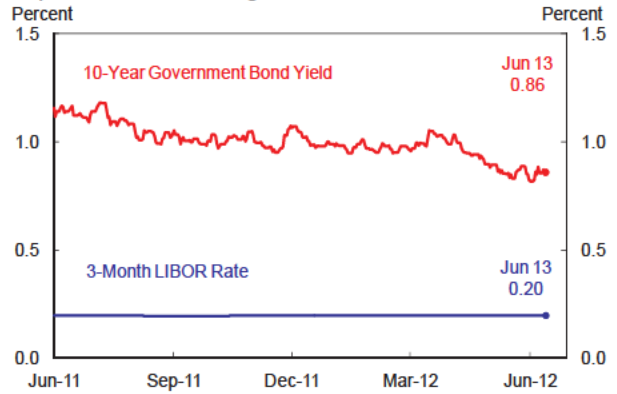
**Exhibit A-9:
Global Interest Rates and Equity Markets**

Euro Area Short- and Long-Term Interest Rates



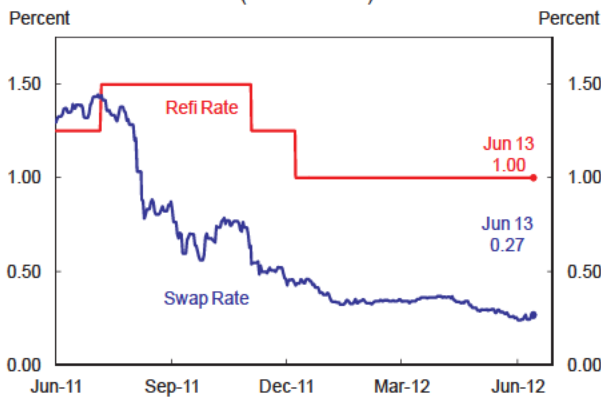
Source: Bloomberg

Japan Short- and Long-Term Interest Rates



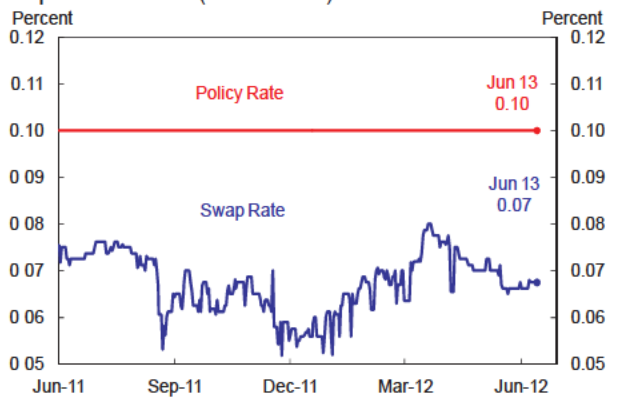
Source: Bloomberg

Euro Area: OIS Rate (Six Months)



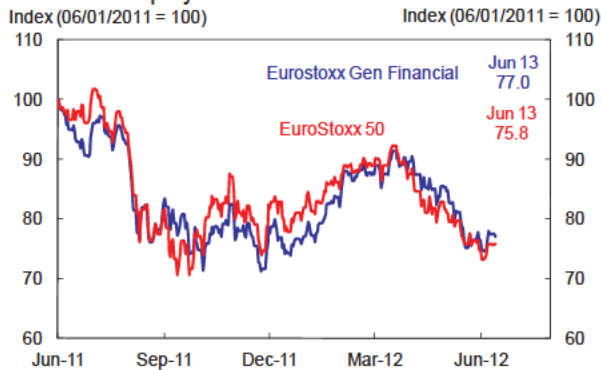
Source: Bloomberg

Japan: OIS Rate (Six Months)



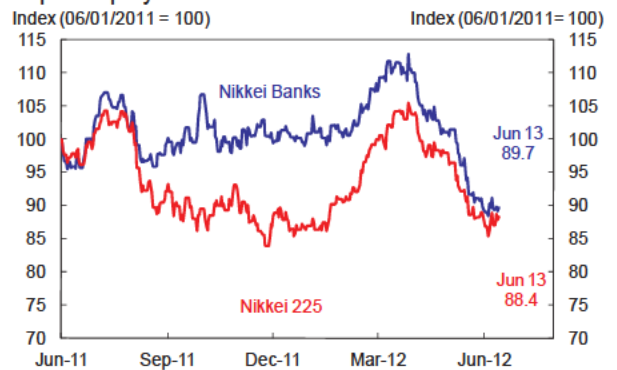
Source: Bloomberg

Euro Area Equity Price Indices



Source: Bloomberg

Japan Equity Price Indices

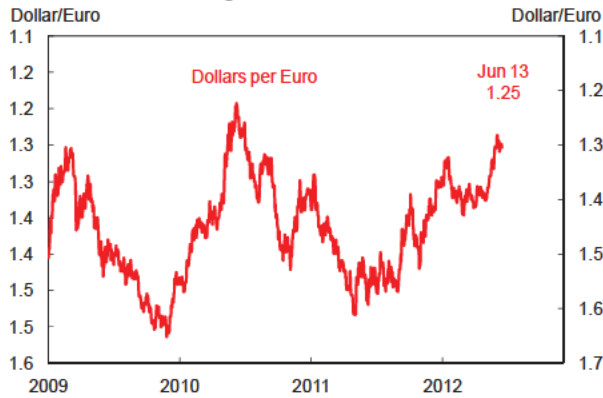


Source: Bloomberg

A. Significant Developments

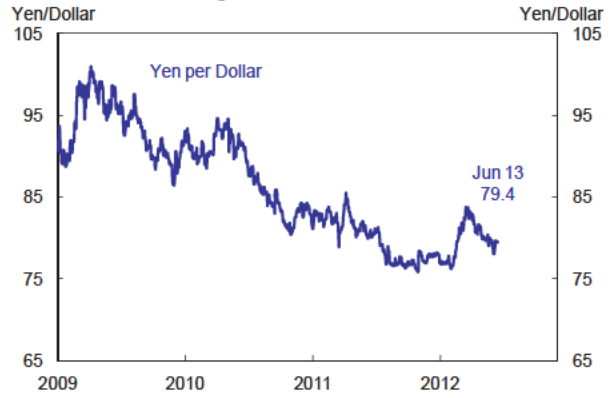
Exhibit A-10:
Exchange Rates

Dollar-Euro Exchange Rate

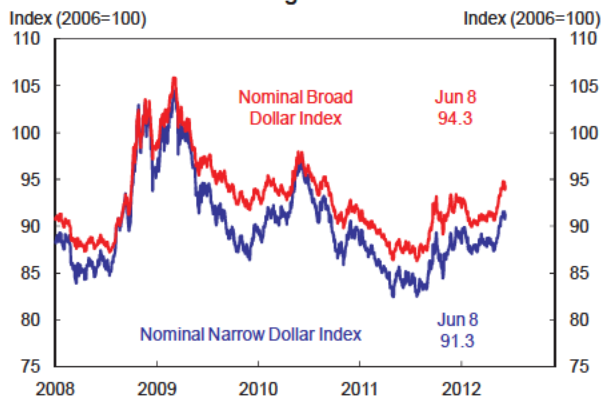


Note: Exchange rate scale is inverted.

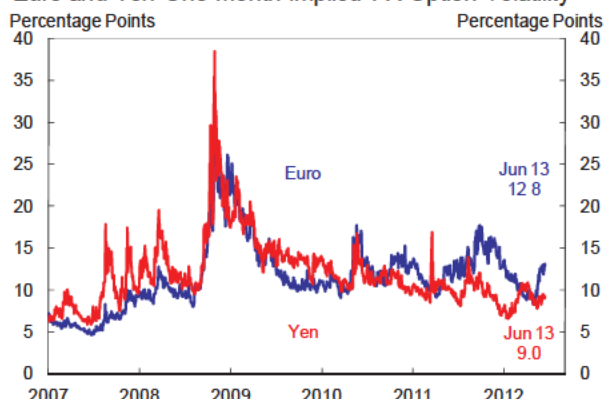
Yen-Dollar Exchange Rate



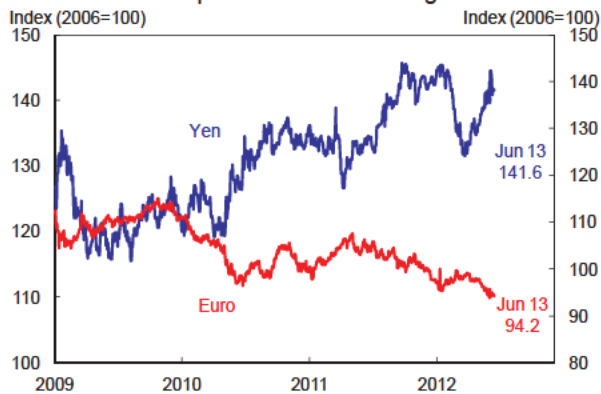
Nominal Effective Exchange Rates



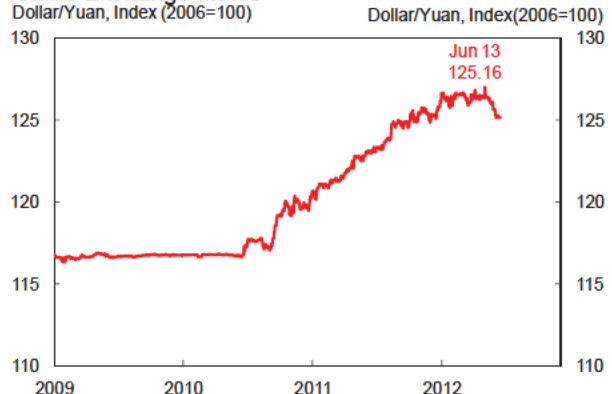
Euro and Yen One-Month Implied FX Option Volatility



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**		
	Jan	Apr	Jun	Jan	Apr	Jun	Jan	Apr	Jun	Jan	Apr	Jun
2011												
Q1	1.5	1.5	1.5	0.4	0.4	0.4	9.0	9.0	9.0	0-0.25	0-0.25	0-0.25
Q2	2.2	2.2	2.2	1.3	1.3	1.3	9.0	9.0	9.0	0-0.25	0-0.25	0-0.25
Q3	2.0	2.0	2.0	1.8	1.8	1.8	9.1	9.1	9.1	0-0.25	0-0.25	0-0.25
Q4	0.9	1.3	1.3	3.2	3.0	3.0	8.7	8.7	8.7	0-0.25	0-0.25	0-0.25
2012												
Q1	1.2	2.2	2.1	1.9	2.9	1.9	8.6	8.3	8.3	0-0.25	0-0.25	0-0.25
Q2	1.2	1.8	1.8	2.6	2.0	1.9	8.4	8.2	8.2	0-0.25	0-0.25	0-0.25
Q3	1.3	1.6	1.7	2.9	2.9	2.1	8.2	8.0	8.1	0-0.25	0-0.25	0-0.25
Q4	1.3	1.6	1.7	3.0	2.9	2.5	8.0	7.8	8.0	0-0.25	0-0.25	0-0.25
2013												
Q1	1.4	1.7	1.7	2.3	2.4	2.1	7.9	7.7	7.9	0-0.25	0-0.25	0-0.25
Q2	1.4	1.8	1.8	2.8	2.7	2.5	7.8	7.6	7.8	0-0.25	0-0.25	0-0.25
Q3	1.5	1.9	1.8	3.6	3.3	3.1	7.6	7.4	7.6	0-0.25	0-0.25	0-0.25
Q4	1.5	2.0	1.9	3.1	3.1	2.9	7.5	7.2	7.5	0-0.25	0-0.25	0-0.25
Q4/Q4												
2010	1.0	1.0	1.0	3.1	3.1	3.1	-0.4	-0.4	-0.4	0.0	0.0	0.0
2011	1.7	1.8	1.8	1.7	1.6	1.6	-1.0	-1.3	-1.3	0.0	0.0	0.0
2012	1.2	1.8	1.8	2.6	2.7	2.1	-0.6	-0.8	-0.8	0.0	0.0	0.0
2013	1.4	1.8	1.8	3.0	2.9	2.6	-0.8	-0.7	-0.5	0.0	0.0	0.0

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

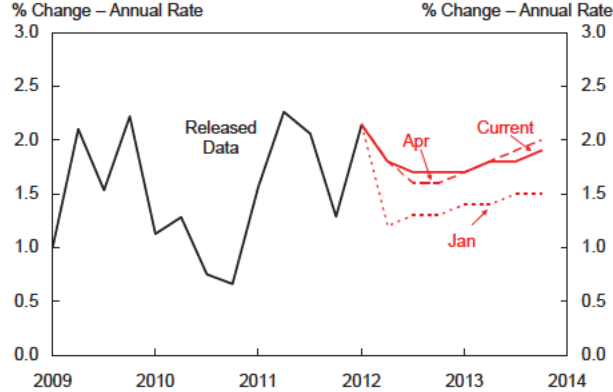
*Quarterly values are the average rate for the quarter. Yearly values are the difference between Q4 of the previous year and Q4 of the listed year.

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

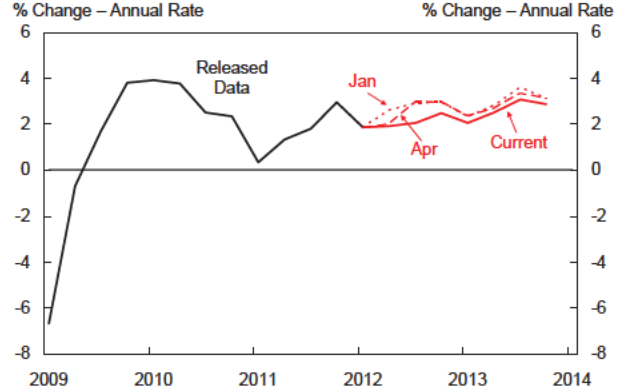
B. FRBNY Forecast Details

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

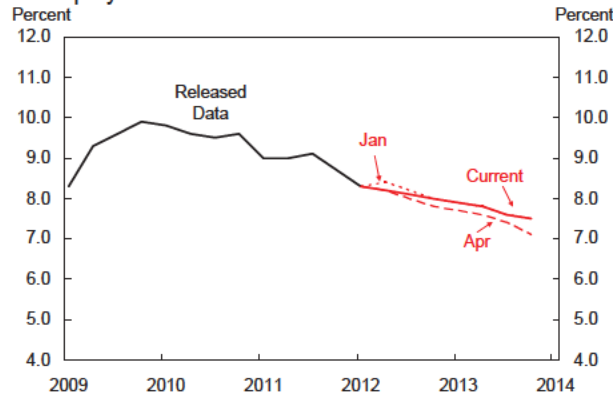
Core PCE Inflation



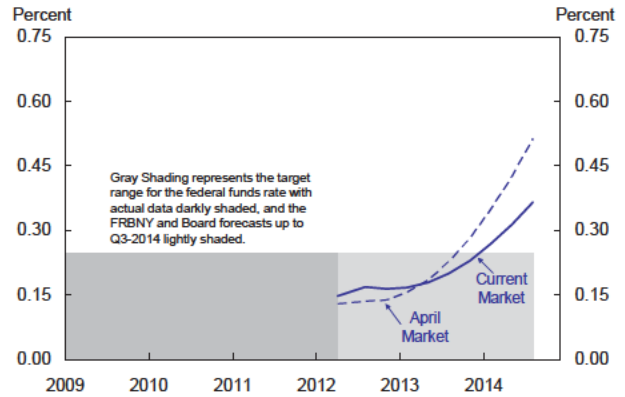
Real GDP Growth



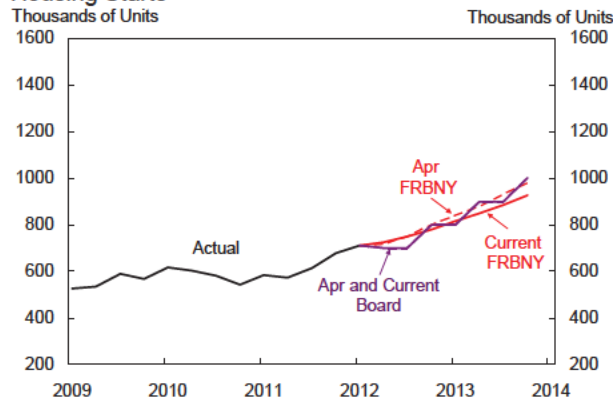
Unemployment Rate



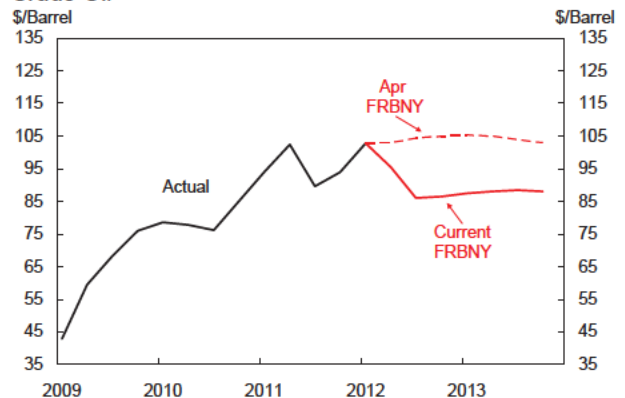
Federal Funds Rate



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)	
	2012Q2	2012Q3	2012Q2	2012Q3
OUTPUT				
Real GDP	1.9 (2.0)	2.1 (2.9)	1.9 (2.0)	2.1 (2.9)
Final Sales to Domestic Purchasers	2.2 (2.3)	1.8 (2.5)	2.2 (2.4)	1.9 (2.6)
Consumption	2.5 (2.2)	2.1 (2.4)	1.7 (1.6)	1.5 (1.7)
BFI: Equipment and Software	5.0 (8.0)	6.0 (10.0)	0.4 (0.6)	0.4 (0.7)
BFI: Nonresidential Structures	0.0 (5.0)	2.0 (8.0)	0.0 (0.1)	0.1 (0.2)
Residential Investment	20.0 (25.0)	15.0 (15.0)	0.4 (0.5)	0.3 (0.3)
Government: Federal	-0.5 (-3.3)	-3.1 (-3.3)	0.0 (-0.3)	-0.2 (-0.3)
Government: State and Local	-2.4 (-1.4)	-1.8 (-1.2)	-0.3 (-0.2)	-0.2 (-0.1)
Inventory Investment	-- --	-- --	-0.3 (-0.6)	-0.1 (-0.0)
Net Exports	-- --	-- --	0.0 (0.2)	0.3 (0.3)
INFLATION				
Total PCE Deflator	0.8 (2.0)	1.1 (1.8)		
Core PCE Deflator	1.8 (1.8)	1.7 (1.6)		
PRODUCTIVITY AND LABOR COSTS*				
Output per Hour	2.2 (0.8)	1.5 (1.5)		
Compensation per Hour	2.5 (2.3)	1.8 (2.5)		
Unit Labor Costs	0.3 (1.5)	0.3 (1.0)		

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		
	2011	2012	2013	2011	2012	2013
OUTPUT						
Real GDP	1.6 (1.6)	2.1 (2.7)	2.6 (2.9)	1.6 (1.6)	2.1 (2.7)	2.6 (2.9)
Final Sales to Domestic Purchasers	1.4 (1.4)	1.9 (2.4)	2.4 (2.4)	1.5 (1.5)	2.0 (2.5)	2.4 (2.5)
Consumption	1.6 (1.6)	2.3 (2.3)	2.1 (2.1)	1.2 (1.2)	1.7 (1.7)	1.5 (1.5)
BFI: Equipment and Software	9.6 (9.6)	5.7 (8.2)	10.0 (10.0)	0.7 (0.7)	0.4 (0.6)	0.8 (0.8)
BFI: Nonresidential Structures	4.4 (4.4)	0.6 (4.5)	6.0 (8.0)	0.1 (0.1)	0.0 (0.1)	0.2 (0.2)
Residential Investment	3.5 (3.5)	16.5 (15.4)	10.0 (10.0)	0.1 (0.1)	0.4 (0.3)	0.3 (0.3)
Government: Federal	-3.2 (-3.2)	-3.2 (-1.5)	-3.1 (-3.3)	-0.3 (-0.3)	-0.3 (-0.1)	-0.2 (-0.3)
Government: State and Local	-2.5 (-2.5)	-2.0 (-1.3)	0.0 (-0.3)	-0.3 (-0.3)	-0.2 (-0.1)	0.0 (-0.0)
Inventory Investment	-- --	-- --	-- --	0.1 (0.1)	0.0 (-0.0)	0.0 (0.1)
Net Exports	-- --	-- --	-- --	0.0 (0.0)	0.1 (0.2)	0.2 (0.3)
INFLATION						
Total PCE Deflator	2.7 (2.7)	1.4 (2.0)	1.9 (2.0)			
Core PCE Deflator	1.8 (1.8)	1.8 (1.8)	1.8 (1.8)			
Total CPI Inflation	3.3 (6.3)	1.9 (2.3)	2.4 (2.3)			
Core CPI Inflation	2.2 (4.4)	2.4 (2.1)	2.3 (2.2)			
GDP Deflator	2.1 (2.1)	2.1 (1.9)	1.7 (1.9)			

Note: Numbers in parentheses are from the previous Blackbook. The 2011 columns are released data.

B. FRBNY Forecast Details

Exhibit B-5: Projections of Other Key Economic Variables

	Q4/Q4 Growth Rates		
	2011	2012	2013
INTEREST RATE ASSUMPTIONS			
Federal Funds Rate (End-of-Year)	0-0.25 0-0.25	0-0.25 0-0.25	0-0.25 0-0.25
10-Year Treasury Yield (Avg. Q4 Level)	2.0 (2.0)	2.0 (3.0)	3.0 (3.5)
PRODUCTIVITY AND LABOR COSTS*			
Output	2.3 (2.3)	2.8 (3.5)	3.4 (3.6)
Hours	1.9 (1.9)	1.7 (2.4)	1.6 (1.8)
Output per Hour	0.4 (0.3)	1.1 (1.1)	1.8 (1.7)
Compensation per Hour	2.5 (3.5)	1.7 (2.3)	2.0 (2.8)
Unit Labor Costs	2.1 (3.1)	0.6 (1.2)	0.3 (1.0)
LABOR MARKET			
Unemployment Rate (Avg. Q4 Level)	8.7 (8.7)	8.0 (7.8)	7.5 (7.2)
Participation Rate (Avg. Q4 Level)	64.0 (64.0)	63.7 (63.8)	63.7 (63.9)
Avg. Monthly Nonfarm Payroll Growth (Thous.)	147 (147)	182 (234)	171 (207)
INCOME			
Personal Income	4.2 (4.6)	3.9 (4.3)	3.2 (3.9)
Real Disposable Personal Income	0.4 (0.8)	1.9 (1.6)	0.8 (1.2)
Personal Saving Rate	4.2 (4.5)	3.8 (3.9)	2.5 (3.0)
Corporate Profits Before Taxes	7.0 (7.0)	2.9 (2.2)	1.1 (1.4)

Note: Numbers in parentheses are from the previous Blackbook. The 2011 column is released data.

*Nonfarm business sector.

B. FRBNY Forecast Details

Exhibit B-6: FRBNY and Tealbook Forecast Comparison

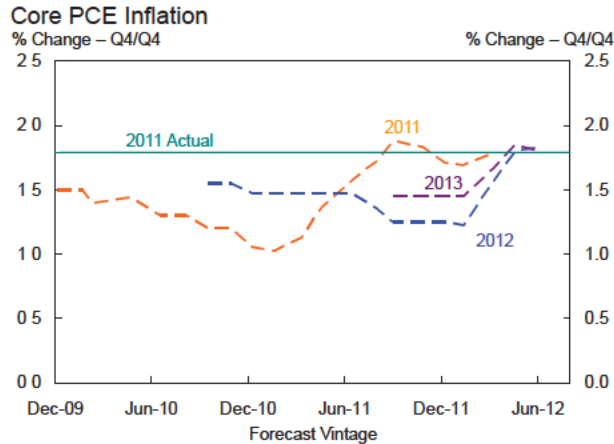
	FRBNY (Q4/Q4)			Board (Q4/Q4)		
	2011	2012	2013	2011	2012	2013
OUTPUT						
Real GDP	1.6	2.1	2.6	1.6	1.9	2.2
	(1.6)	(2.7)	(2.9)	(1.6)	(2.5)	(2.8)
GDP Growth Contributions						
Final Sales to Domestic Purchasers	1.5	2.0	2.4	1.5	1.9	2.1
	(1.5)	(2.5)	(2.5)	(1.5)	(2.5)	(2.5)
Consumption	1.2	1.7	1.5	1.2	1.8	1.7
	(1.2)	(1.7)	(1.5)	(1.2)	(1.9)	(1.9)
BFI	0.8	0.4	0.9	0.8	0.3	0.4
	(0.8)	(0.7)	(1.0)	(0.8)	(0.4)	(0.6)
Residential Investment	0.1	0.4	0.3	0.1	0.3	0.3
	(0.1)	(0.3)	(0.3)	(0.1)	(0.3)	(0.2)
Government	-0.6	-0.5	-0.2	-0.6	-0.5	-0.3
	(-0.6)	(-0.3)	(-0.3)	(-0.6)	(-0.1)	(-0.2)
Inventory Investment	0.1	0.0	0.0	0.1	0.2	0.3
	(0.1)	(0.0)	(0.1)	(0.1)	(0.1)	(0.3)
Net Exports	0.0	0.1	0.2	0.0	-0.2	-0.2
	(0.0)	(0.2)	(0.3)	(0.0)	(0.0)	(0.0)
INFLATION						
Total PCE Deflator	2.7	1.4	1.9	2.7	1.2	1.5
	(2.7)	(2.0)	(2.0)	(2.7)	(1.9)	(1.5)
Core PCE Deflator	1.8	1.8	1.8	1.8	1.7	1.6
	(1.8)	(1.8)	(1.8)	(1.8)	(1.8)	(1.7)
INTREST RATE ASSUMPTION						
Fed Funds Rate (End-of-Year)	0-0.25	0-0.25	0-0.25	0-0.25	0-0.25	0-0.25
	0-0.25	0-0.25	0-0.25	0-0.25	0-0.25	0-0.25
PRODUCTIVITY AND LABOR COSTS*						
Output per Hour	0.4	1.1	1.8	0.4	0.5	1.5
	(0.3)	(1.1)	(1.7)	(0.3)	(1.1)	(1.7)
Compensation per Hour	2.5	1.7	2.0	2.5	1.8	2.7
	(3.5)	(2.3)	(2.8)	(3.5)	(2.5)	(2.9)
Unit Labor Costs	2.1	0.6	0.3	2.1	1.3	1.2
	(3.1)	(1.2)	(1.0)	(3.1)	(1.3)	(1.2)
LABOR MARKET						
Unemployment Rate (Avg. Q4 Level)	8.7	8.0	7.5	8.7	8.2	8.0
	(8.7)	(7.8)	(7.2)	(8.7)	(8.0)	(7.7)
Participation Rate (Avg. Q4 Level)	64.0	63.7	63.7	64.0	63.7	63.7
	(64.0)	(63.8)	(63.9)	(64.0)	(63.8)	(63.7)
Avg. Monthly Nonfarm Payroll Growth (Thous.)	147	182	171	147	142	125
	(147)	(234)	(207)	(147)	(183)	(192)
SAVING						
Personal Saving Rate (Avg. Q4 Level)	4.2	3.8	2.5	4.2	4.2	3.7
	(4.5)	(3.9)	(3.0)	(4.5)	(4.2)	(3.8)
HOUSING						
Housing Starts (Avg. Q4 Level, Thous.)	678	780	925	678	800	1000
	(670)	(800)	(980)	(670)	(800)	(1000)

Note: Numbers in parentheses are from the previous Blackbook. The 2011 columns are released data.

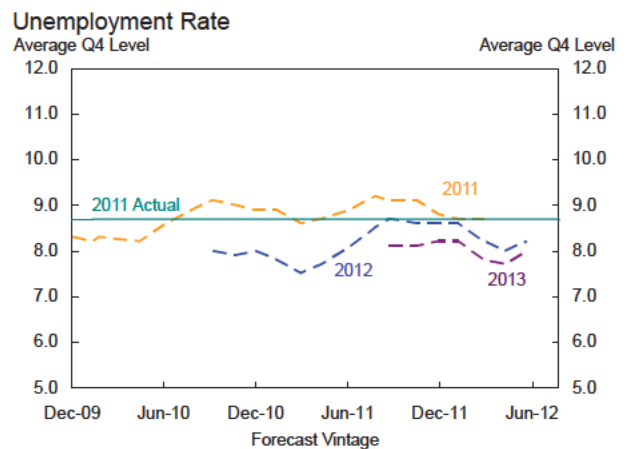
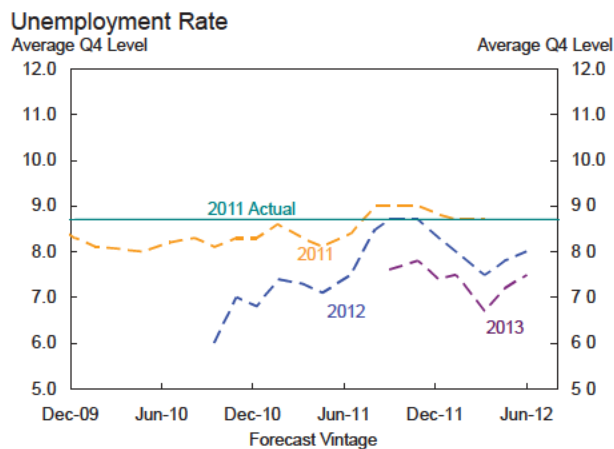
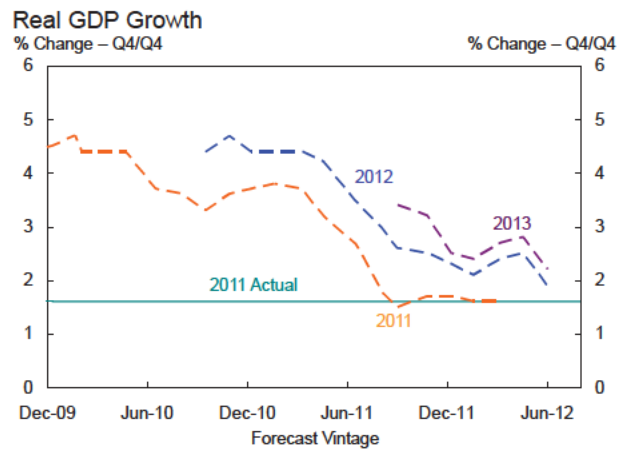
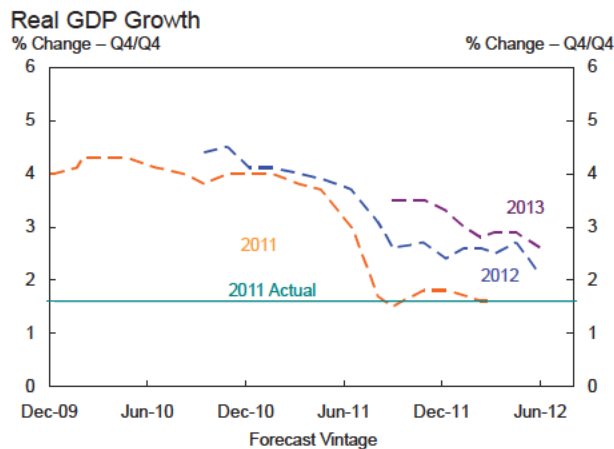
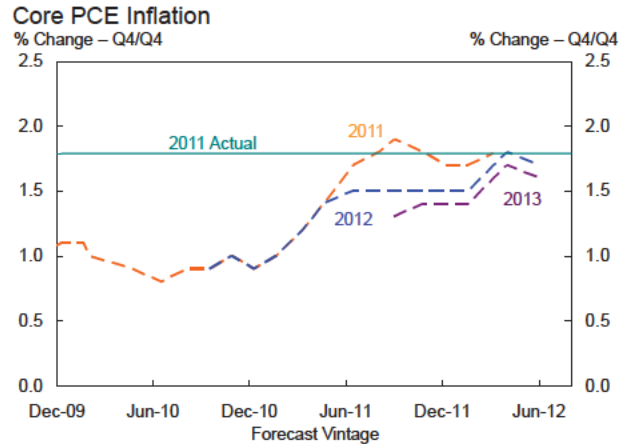
B. FRBNY Forecast Details

Exhibit B-7: Evolution of FRBNY and Board Forecasts since the end of 2009

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	2012Q2	2012Q3	2012 Q4/Q4	2013 Q4/Q4
FRBNY	6/14/2012	1.9 (2.0)	2.1 (2.9)	2.1 (2.7)	2.6 (2.9)
Blue Chip	6/10/2012	2.1 (2.3)	2.2 (2.4)	2.1 (2.4)	2.6 (2.7)
Median SPF	5/11/2012	2.4 (2.3)	2.5 (2.6)	2.5 (2.5)	-- --
Macro Advisers	6/14/2012	2.0 (2.4)	2.3 (2.6)	2.2 (2.6)	3.0 (3.3)
FRBNY-DSGE	6/13/2012	2.1 (2.9)	2.4 (2.6)	2.2 (2.7)	2.3 (1.9)

		Core PCE Inflation			
	Release Date	2012Q2	2012Q3	2012 Q4/Q4	2013 Q4/Q4
FRBNY	6/14/2012	1.8 (1.8)	1.7 (1.6)	1.8 (1.8)	1.8 (1.8)
Median SPF	5/11/2012	1.8 (1.7)	1.7 (1.7)	1.8 (1.6)	1.9 (1.8)
Macro Advisers	6/14/2012	1.7 (1.6)	1.7 (1.7)	1.8 (1.8)	1.8 (1.8)
FRBNY-DSGE	6/13/2012	1.7 (1.6)	1.1 (1.3)	1.4 (1.6)	1.0 (1.4)

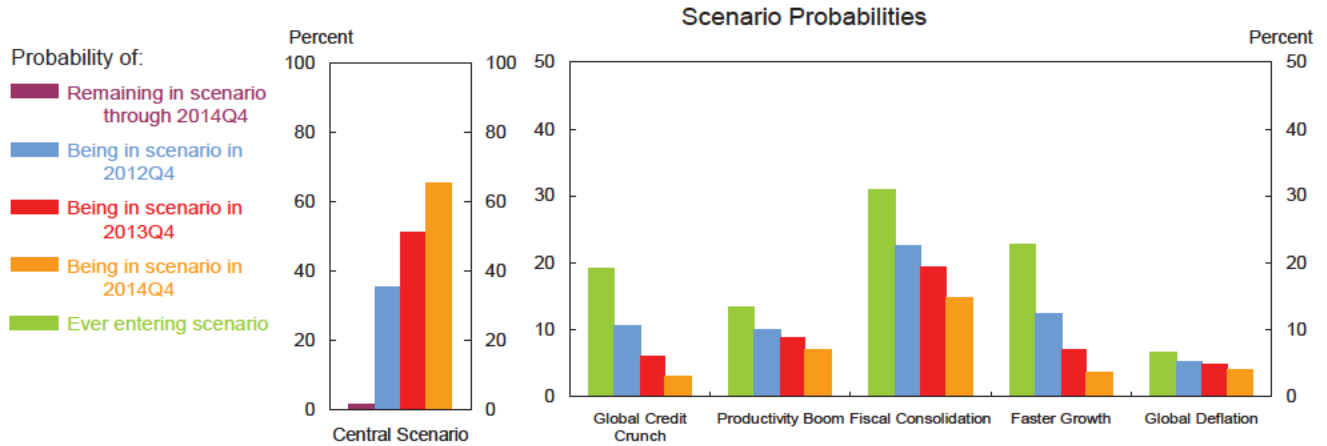
		CPI Inflation			
	Release Date	2012Q2	2012Q3	2012 Q4/Q4	2013 Q4/Q4
FRBNY	6/14/2012	1.0 (2.4)	1.6 (2.3)	1.9 (2.3)	2.4 (2.3)
Blue Chip	6/10/2012	1.6 (2.4)	1.9 (2.2)	2.0 (2.3)	2.2 (2.2)
Median SPF	5/11/2012	2.1 (2.0)	2.3 (2.1)	2.3 (2.0)	2.1 (2.2)
Macro Advisers	6/14/2012	1.2 (2.7)	1.6 (2.0)	1.8 (2.3)	2.1 (2.0)

		Core CPI Inflation			
	Release Date	2012Q2	2012Q3	2012 Q4/Q4	2013 Q4/Q4
FRBNY	6/14/2012	2.5 (2.1)	2.5 (2.2)	2.4 (2.1)	2.3 (2.2)
Median SPF	5/11/2012	2.1 (1.8)	2.0 (1.9)	2.0 (1.9)	2.0 (2.1)
Macro Advisers	6/14/2012	2.4 (1.8)	2.0 (2.1)	2.1 (2.0)	2.1 (2.2)

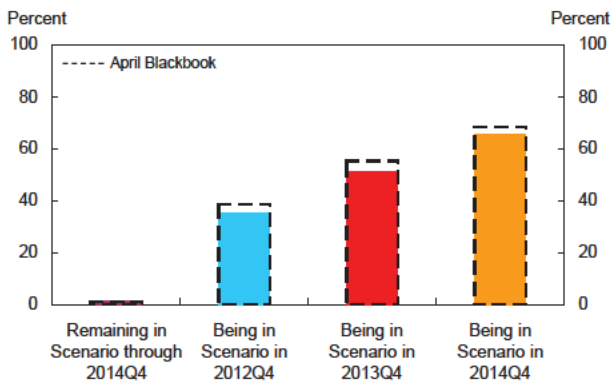
*Note: Numbers in gray are from the previous Blackbook.

C. FRBNY Forecast Distributions

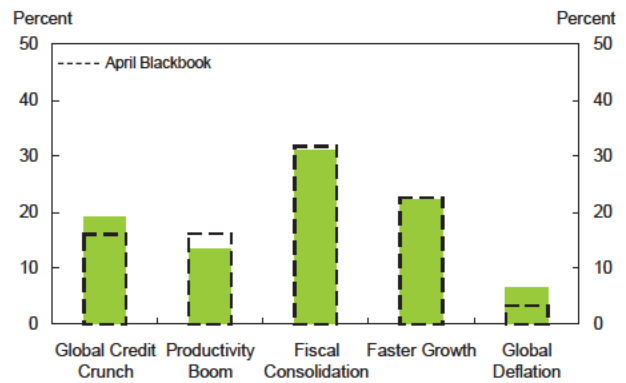
**Exhibit C-1:
Risks**



Change in Central Scenario Probabilities



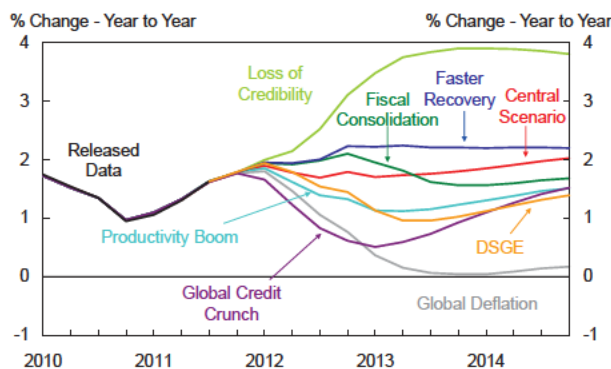
Change in Alternative Scenario Probabilities*



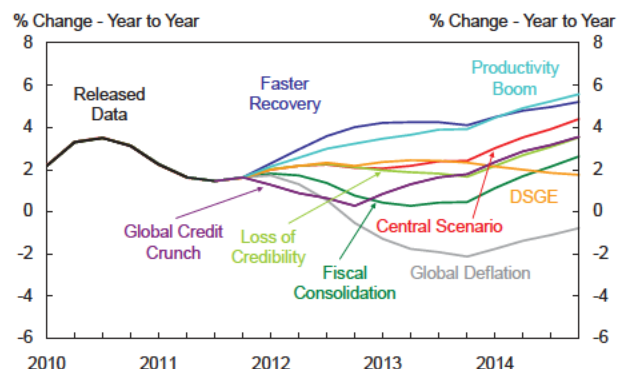
*Probability of ever reaching scenario

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

Core PCE Inflation under Alternative Scenarios



Real GDP Growth under Alternative Scenarios

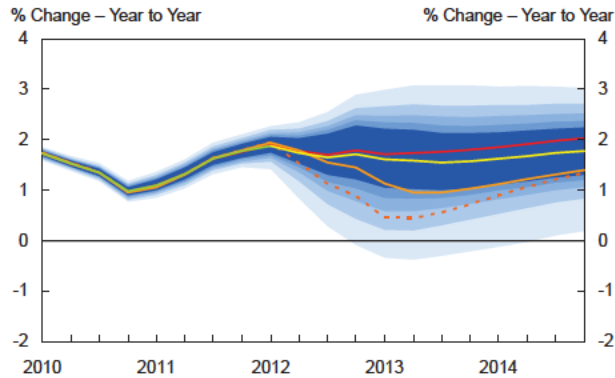


Source: MMS Function (FRBNY)

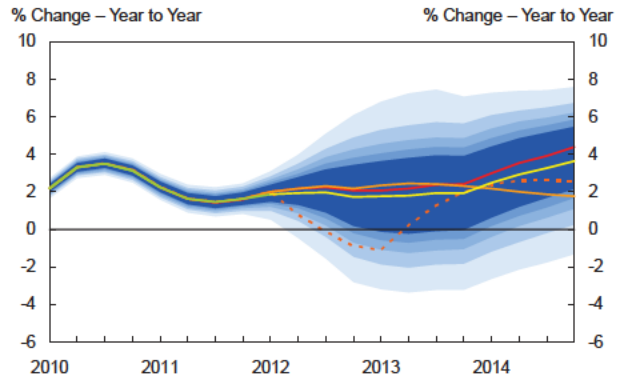
C. FRBNY Forecast Distributions

Exhibit C-3: Inflation and Output Forecast Distributions

Core PCE Inflation Forecast Distribution

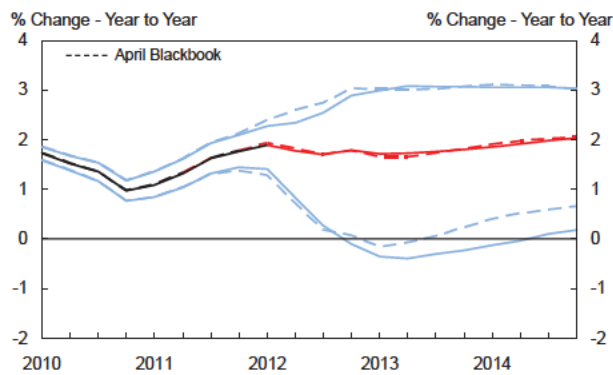


Real GDP Growth Forecast Distribution

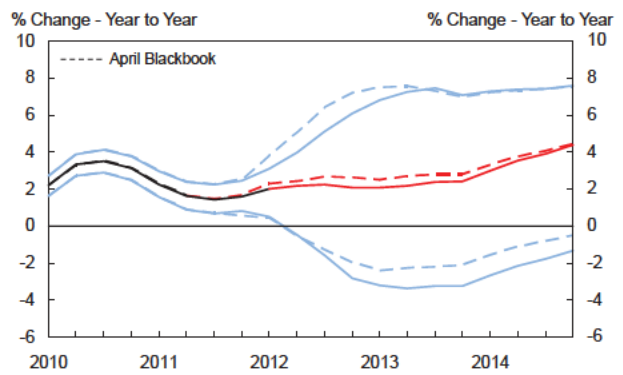


The yellow line is the expected value of the forecast distribution, the red line is the FRBNY central projection, the orange line is the DSGE forecast, the orange dotted line is the DSGE forecast under the assumption of a doubling of the financial spread in 2012Q2, and the green line is released data. 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

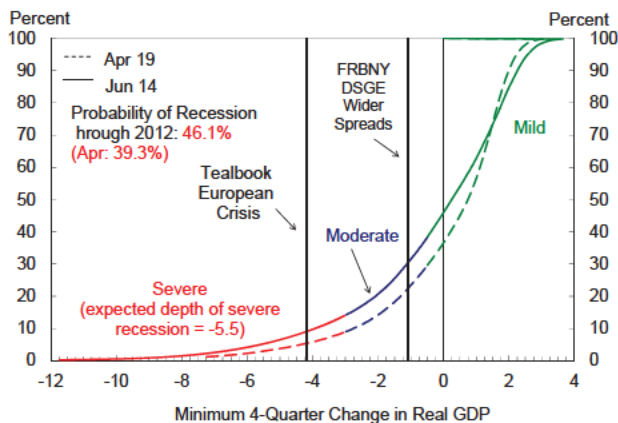


Change in Real GDP Growth Forecast Distribution

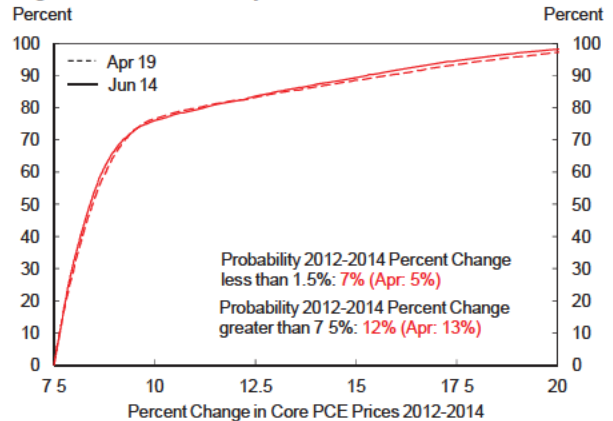


The blue lines are the 90% chance the four-quarter change will be within the lines, the red line is the central scenario projection, and the black line is released data. Dashed lines represent forecasts from the previous Blackbook.

Depth of Recession



High Inflation Probability and Distribution

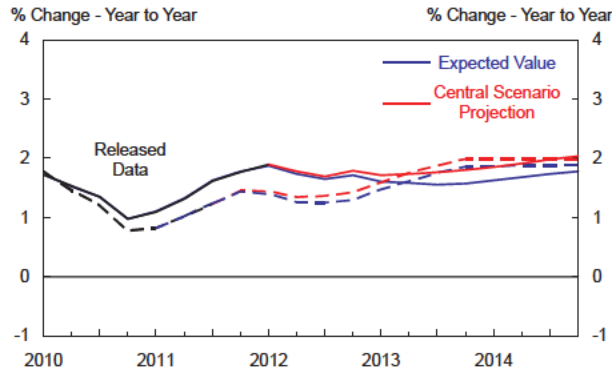


Source: MMS Function (FRBNY)

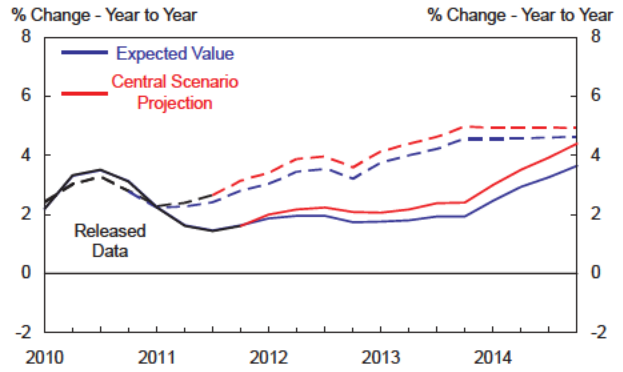
C. FRBNY Forecast Distributions

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

One-Year Comparison of Core PCE Inflation Forecast

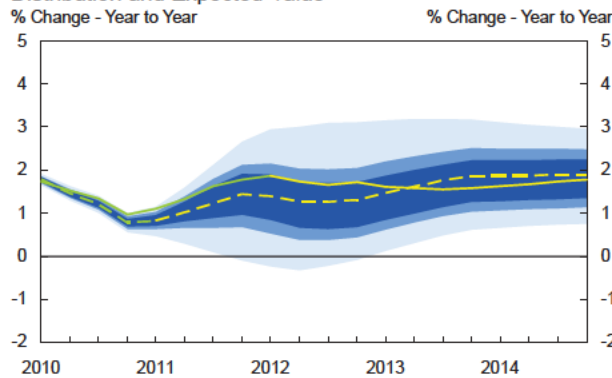


One-Year Comparison of Real GDP Growth Forecast

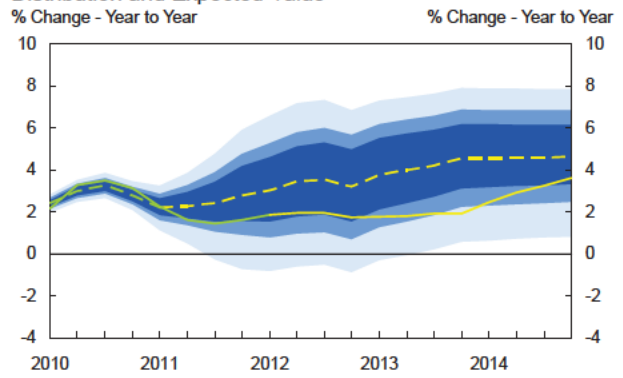


The solid lines represent the current central scenario projection and expected value, while the dashed lines represent those from the year-ago Blackbook.

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



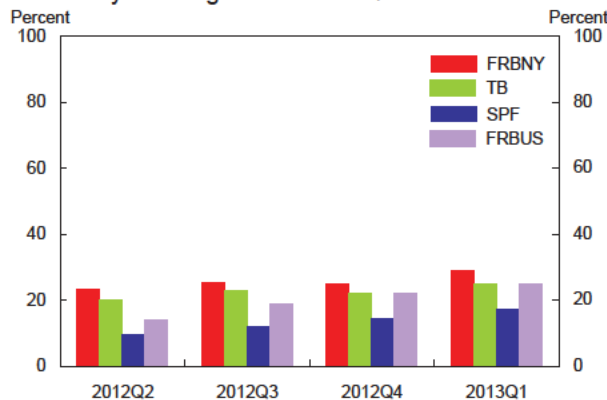
One-Year Comparison of Real GDP Growth Forecast Distribution and Expected Value



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

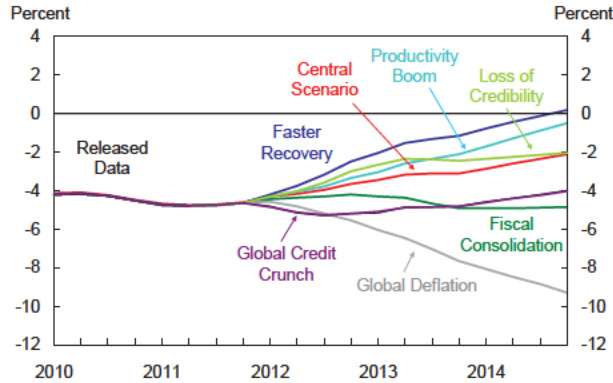


Source: MMS Function (FRBNY)

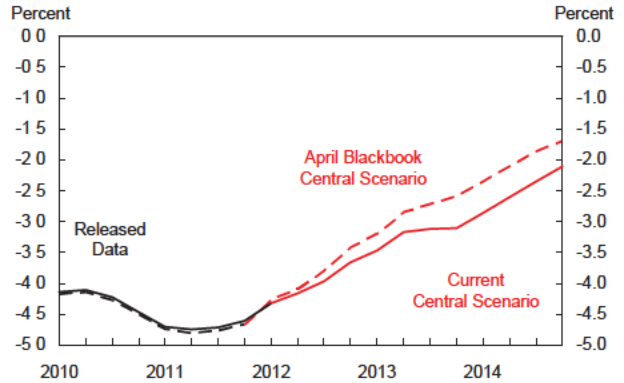
D. FRBNY Fed Funds Rate Projections

Exhibit D-1: *Baseline* Policy Rule Analysis

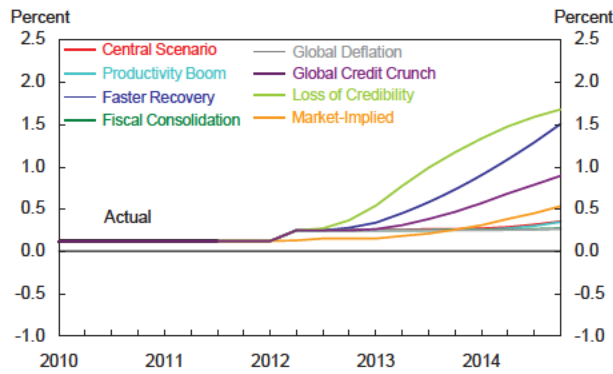
Real FFR under Alternative Scenarios



Change in Central Scenario Real FFR



Nominal FFR under Alternative Scenarios



Change in Central Scenario and Market-Implied Nominal FFR

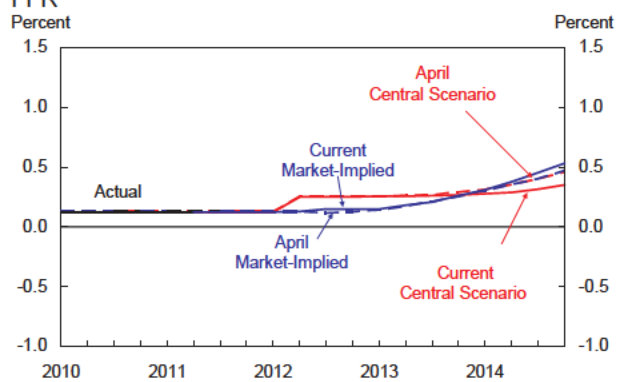
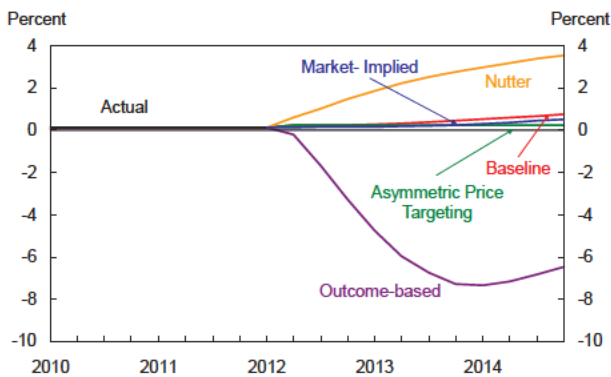


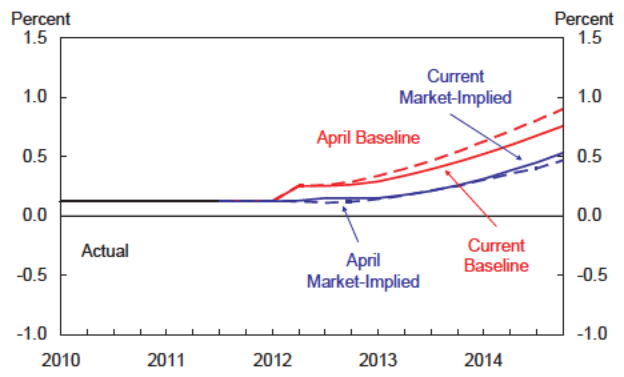
Exhibit D-2: Alternative Policy Rules under Expected Value of Forecast Distribution

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

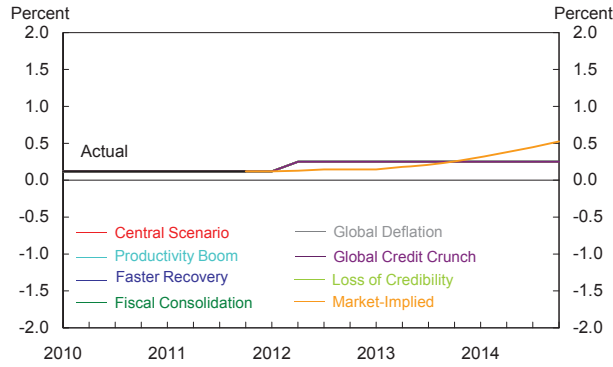
Source: MMS Function (FRBNY)

D. FRBNY Fed Funds Rate Projections

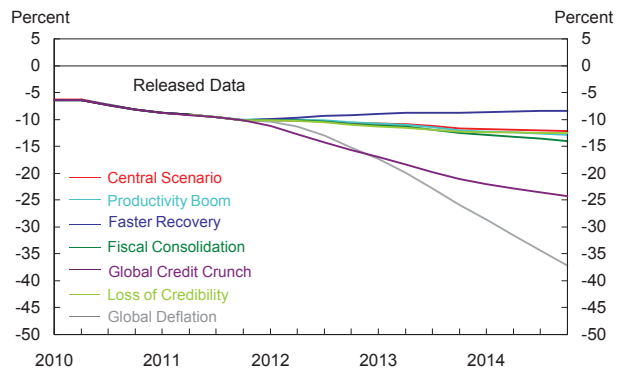
Exhibit D-3: Alternative Policy Rule Analysis

Policy Rule: *Asymmetric Price Targeting*

Nominal FFR under Alternative Scenarios

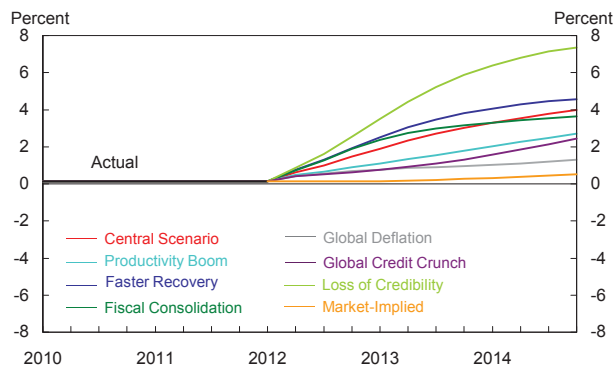


Real FFR under Alternative Scenarios

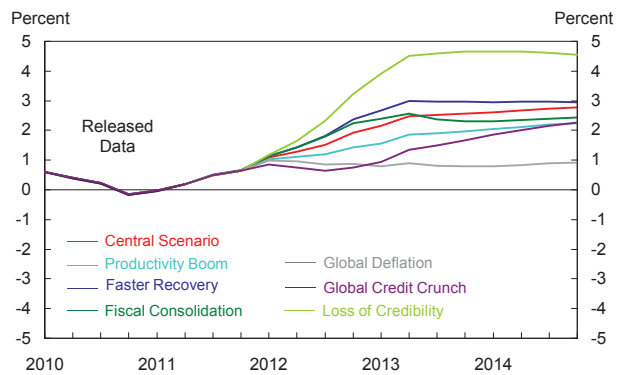


Policy Rule: *Nutter*

Nominal FFR under Alternative Scenarios

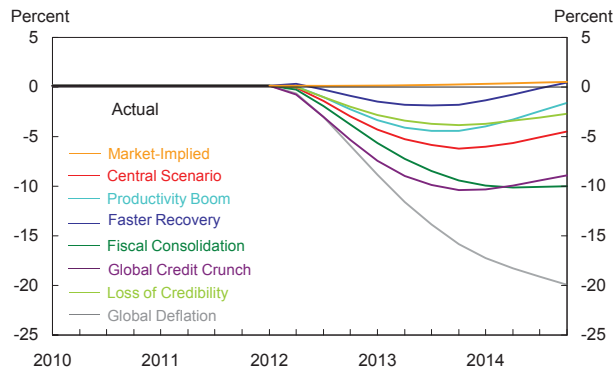


Real FFR under Alternative Scenarios

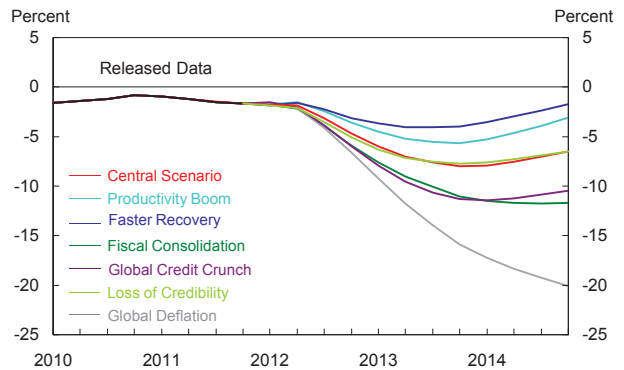


Policy Rule: *Outcome-based*

Nominal FFR under Alternative Scenarios



Real FFR under Alternative Scenarios



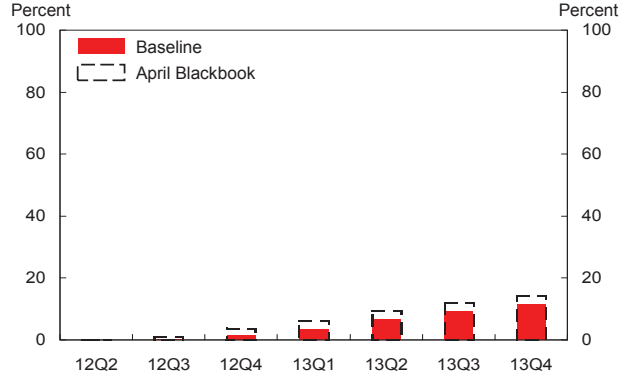
Source: MMS Function (FRBNY)

D. FRBNY Fed Funds Rate Projections

Exhibit D-4: FFR Probabilities

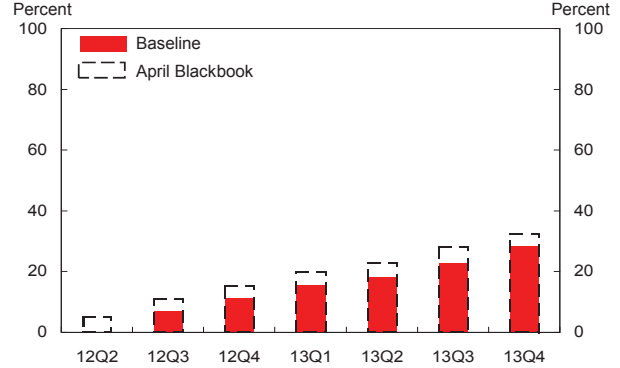
Probability of FFR above 0.5% for Next Year

FRBNY Forecast Distributions

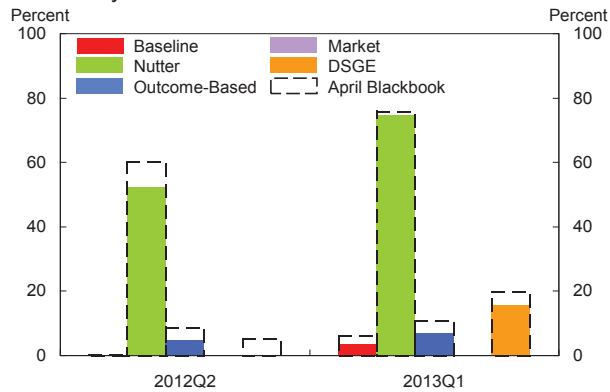


Probability of FFR above 0.5% for Next Year

FRBNY DSGE Model



Probability of FFR above 0.5% for Next Year

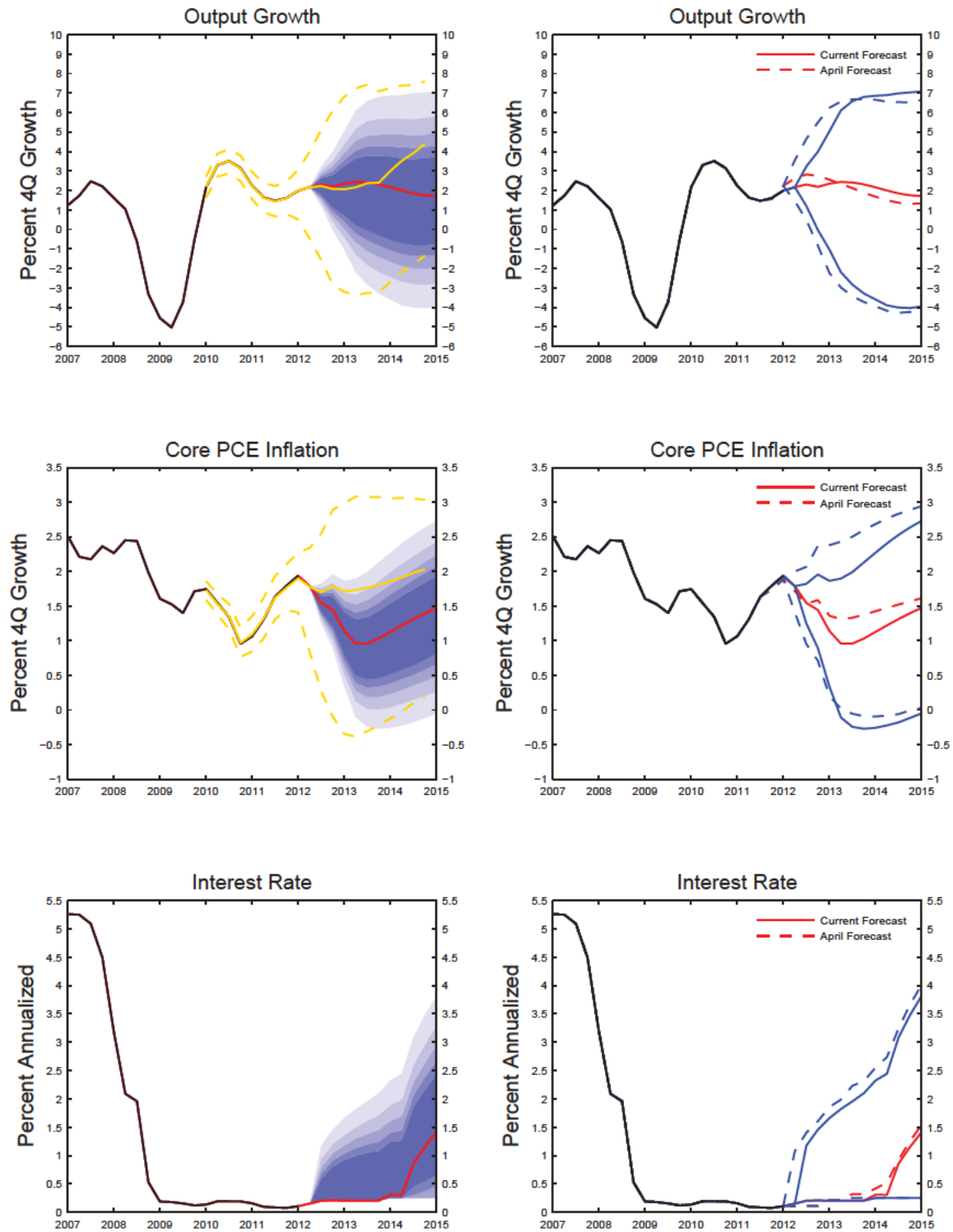


Note: Probability displayed is probability of FFR being above 0.5% in quarter noted and remaining above 0.5% in subsequent four quarters. DSGE results are shown for model including zero bound restriction.

Source: MMS Function (FRBNY)

E. FRBNY-DSGE Model

Exhibit E-1: FRBNY-DSGE Forecasts

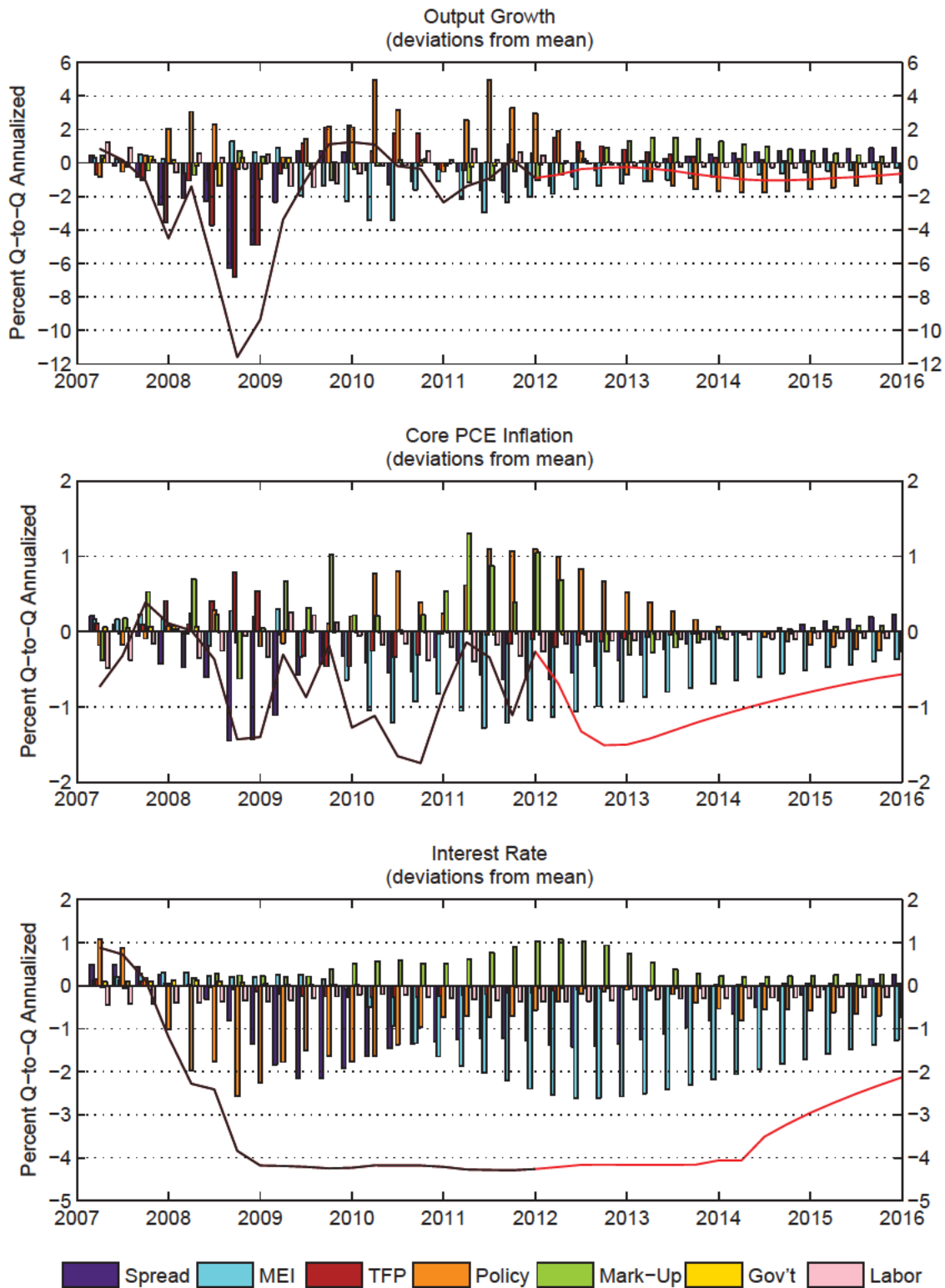


Note: Black lines indicate data, red lines indicate mean forecasts, and shaded areas mark the parameter and shock uncertainty associated with our forecast as 50, 60, 70, 80, and 90 percent probability intervals. For comparison, we report the FRBNY Central Projection for output growth and inflation (solid yellow line) and the 90 percent bands for the FRBNY forecast distribution (dashed yellow lines). Blackbook forecast comparisons (right-hand side charts) display 90 percent bands.

Source: MMS Function (FRBNY)

E. FRBNY-DSGE Model

Exhibit E-2: FRBNY-DSGE Shock Decomposition



Note: The solid lines (black for realized data, red for mean forecast) show each variable in deviation from its steady state. The bars represent the shock contributions; specifically, the bars for each shock represent the counterfactual values for the observables (in deviations from the mean) obtained by setting all other shocks to zero.

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 alternative scenario considers the impact of above-trend productivity growth. Our current assumption of trend productivity growth is around 1.75% on a nonfarm business sector basis. Sustained productivity growth above this assumption would have important consequences for the economy. Typically, because below-trend productivity growth also has important consequences, we have included an alternative scenario that incorporates that assumption (*Productivity Slump*). However, because the near-term consequences of that scenario and the *Fiscal Consolidation* scenario are similar, we have combined those two scenarios into a single revamped *Fiscal Consolidation* scenario, which allows us to add a new scenario (*Faster Growth/Recovery*). We also currently consider four additional scenarios. In one (*Faster Growth/Recovery*), the recent “headwinds” subside more quickly than expected, leading to stronger aggregate demand effects from monetary and fiscal policy. In another (*Loss of Credibility*), the public and investors lose confidence in the current stances of monetary and fiscal 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 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: *Fiscal Consolidation*

Events in Europe in 2010 and so far in 2011 concerning the fiscal position of several euro zone countries raise 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 premia 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. [As stated earlier, the near-term implications of this scenario are similar to those of a supply shock or productivity slump, which is one reason we have folded in the weight of the old *Productivity Slump* scenario into this scenario.] However, after several quarters, with the government embarking on a credible fiscal consolidation, inflation declines below the central forecast as a consequence of the drop in aggregate demand and output growth.

Alternative 3: *Faster Growth/Recovery*

The recovery from the 2007-09 recession has been quite weak, especially given the severe drop in real activity during the recession. Factors behind the slow pace of recovery include the continued stress faced by financial markets and institutions as they slowly mend from the financial crisis and a slow process of repairing household balance sheets damaged in the financial crisis and recession. However, the relative strength in recent real PCE and other aggregate demand indicators raise the possibility that the

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.

process of mending may be beginning to reach an end. The *Faster Growth/Recovery* scenario envisions a situation where these factors that have inhibited growth subside more quickly than anticipated by policymakers. In particular, the diminution of these factors would lead to a stronger impact from accommodative monetary policy and from the fiscal stimulus associated with the fiscal agreement passed in December 2010, leading to faster growth in aggregate demand. In that case, real GDP growth could be higher than anticipated, and inflation pressures could materialize more quickly.

Alternative 4: *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 a rise in inflation and inflation expectations above forecast.

Alternative 5: *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 that 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 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. *Fiscal Consolidation*: inflation initially above and then below central forecast,

- output below central forecast.
3. *Faster Growth/Recovery*: inflation above central forecast, output above central forecast.
 4. *Loss of Credibility*: inflation far above central forecast, output slightly below central forecast.
 5. *Global Credit Crunch*: inflation below central forecast, output significantly 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:

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

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

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

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

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

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

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 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

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

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.