FRBNY BLACKBOOK

RESEARCH AND STATISTICS GROUP

FOMC Background Material

December 2012

CONFIDENTIAL (FR) Class II FOMC

FRBNY BLACKBOOK

December 2012

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1. Policy Recommendation and Rationale

Economic and financial developments since the October Blackbook Update have led us to make minor changes to our medium-term forecasts of real activity and inflation as well as to our risk assessment. Sifting through the noise, including that associated with the disruptions from superstorm Sandy, data released since the October Blackbook Update indicate improvement in some sectors and continued weakness in others. On the one hand, the housing sector appears to be finally recovering, with home values up through the first ten months of 2012 and home building gaining traction. In addition, consumers appear to be feeling better, with consumer confidence at its highest level in four years and households continuing to make marked progress in their deleveraging process. On the other hand, business investment remains extremely sluggish, likely reflecting uncertainty associated with the November election and the fiscal cliff. Moreover, uncertainties about the Euro area and global growth have not been resolved.

Although real GDP growth is expected to be weak in the fourth quarter, we anticipate that the pace of recovery in the US will improve – with growth picking up steadily in 2013 and rising above potential in mid-2013. As a consequence, unemployment is expected to decline from its current elevated levels through 2013 and beyond. While we anticipate that inflation will run below its objective during 2013H1, underlying inflation is projected to rise subsequently to around mandate consistent rates. We continue to see the risks to real activity to be skewed to the downside and the risks to inflation to be roughly balanced.

Because changes to the outlook and risks during the intermeeting period are relatively small, we maintain our recommendation of an accommodative policy stance and of a continuation of the shift to the “whatever it takes” approach adopted by the FOMC at its last two meetings. While this aggressive policy stance has shown initial signs of success, there are aspects of this strategy that can be improved. For example, the Committee should further emphasize the integrated nature of its different tools: both asset purchases and guidance regarding the path of policy rates should be seen as complements for providing accommodation. Another important feature of this integrated policy strategy is its conditionality on the state of the economy. We reiterate our view of stating qualitative, rather than quantitative thresholds when communicating this conditionality. In addition, we maintain our call for more explicit forward guidance, not only by indicating that the policy rate will remain low for a longer time period than prescribed by standard policy rules, but also by expressing a tolerance for an inflation rate temporarily above the FOMC's long-run objective. Moreover, we recommend to frame any guidance we may eventually give regarding the exit strategy in terms of a balanced approach so as not to blunt some of the accommodative force of the current statement.

Given our recommended strategy – and with the Maturity Extension Program (MEP) due to expire at the end of this year – we also believe that purchases of longer-term securities should remain at a pace of $85 billion per month. This has the advantage of reinforcing our "whatever it takes" approach and avoids any misperception that a lesser amount would act as a signal or hint of an early exit strategy. Moreover, market participants generally expect purchases to continue at a rate of $45 billion per month in long-term Treasuries and $40 billion per month in agency-backed securities (MBS). Provided that it does not impair market functionality, we believe the composition of purchases could be slightly tilted toward more MBS purchases.

At this point, we should highlight the current discrepancy between the dealer survey and the Tealbook expectations concerning the ultimate size and duration of the asset purchase program. Even though dealers and the Tealbook anticipate purchases at an initial pace similar to our recommendation, dealers currently expect the balance sheet to expand through the end of 2013, while the Tealbook projects balance sheet expansion to end in mid-2013. There are several possible explanations for this discrepancy (and, admittedly, more work needs to be done to evaluate the merits of each explanation). First, it could simply reflect differences in the models being used to generate forecasts of output and inflation. Alternatively, it could be related to a misperception on the part of dealers concerning the FOMC's policy reaction function. Finally, it could reflect differences in the economic impact of the open-ended flow approach to asset purchases. Because we view the open-ended approach – and its conditionality on outcomes – as providing insurance, we may be positing a larger economic impact from the purchases compared to the dealers' projections. In the case of the latter argument, however, communication venues such as speeches would provide opportunities for Committee participants to reiterate that policy will remain as accommodative as needed – thus strengthening business and consumer sentiment. Expressing confidence in the success of the ongoing policy strategy may result in a better appreciation by market participants of its impact and efficacy, and subsequently contribute to align their expectations more closely to the Tealbook's current projection for the end of balance sheet expansion.

Finally, we would like to point to the nature of recent policy discussions and the asymmetry associated with framing the inflation threshold in terms of a forecast value and the unemployment threshold in terms of a current value (or an assessment of current labor market conditions based on a variety of indicators). In particular, we believe there is a need to provide a better basis to solicit the Committee's projections for inflation. The formulation of the Summary of Economic Projections (SEP) is problematic because it allows each policymaker's projection of inflation (and other variables) to be based on their individual assumptions concerning appropriate policy. Because policy discussions and prescriptions should be based on a consensus forecast of the voting majority of the FOMC, one approach might be to try to improve the SEP and base it on a different trimming of participants' forecasts. For example, rather than relying on the trimming of individual forecasts for each variable separately, one recommendation would be to develop a metric that would allow for a trimming of forecasters based on the composite of their reported forecasts across multiple dimensions. We recognize, however, that even if the SEP could be enhanced as a tool for conveying the views of the Committee, it will remain an inherently imperfect tool for this purpose. Therefore, for an inflation threshold expressed in terms of a forecast to be effective, the Committee needs to consider alternative ways of expressing its consensus view about the likelihood of crossing the threshold at a given horizon (conditional on policy as of the last meeting). One such option would be to require FOMC participants to provide simple statements on this respect during the policy go-round, and then use this information to give a qualitative consensus assessment of the voting FOMC members.

Special Topic: November Labor Market Report

Ayşegül Şahin

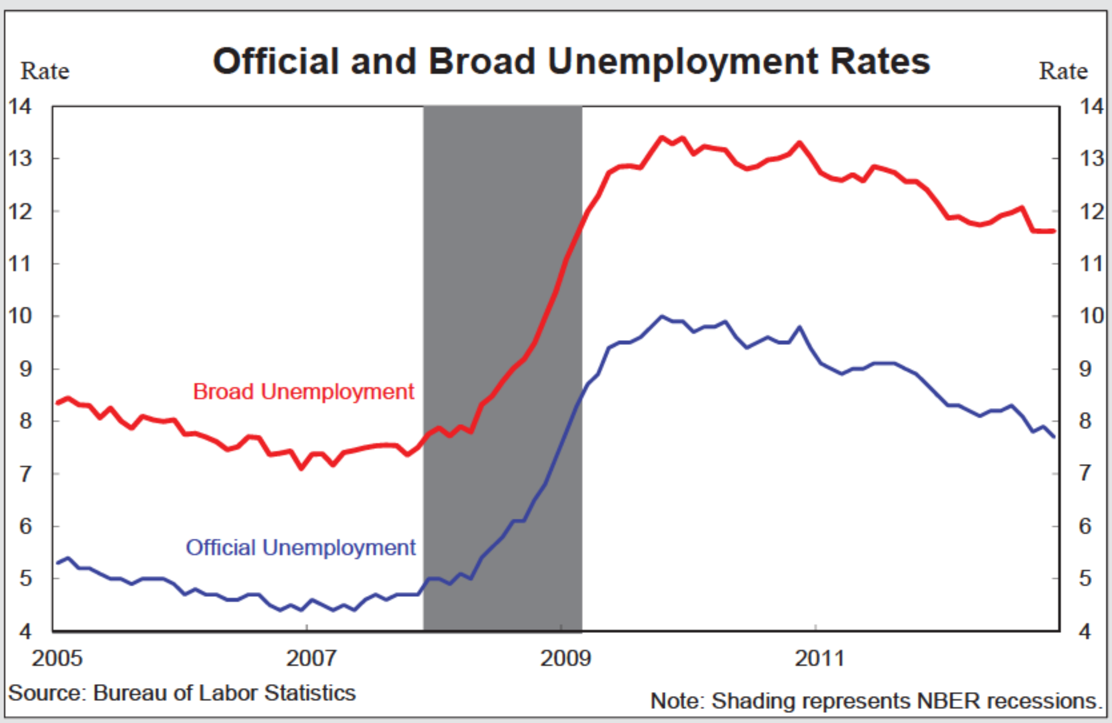
- **In November, nonfarm payrolls increased by 146,000 as private payroll employment increased by 147,000 and government payrolls went down by 1,000.**
- **Hours worked by all private sector employees went up by 0.2%.**
- **The unemployment rate declined from 7.9% to 7.7%. The employment-to-population ratio declined from 58.8% to 58.7% and the labor force participation rate went down from 63.8% to 63.6%.**
- **The BLS commissioner stated that according to BLS analysis Hurricane Sandy did not substantively impact the national employment and unemployment estimates for November.**

Nonfarm payroll employment increased 146,000 in November while private payroll employment rose 147,000. These changes were better than private sector expectations: The Bloomberg median forecast for the total employment change was +85,000 (range: +15,000 to +145,000). The revisions to the October and September payroll employment estimates were -33,000 and -16,000 respectively, resulting in a net revision of -49,000.

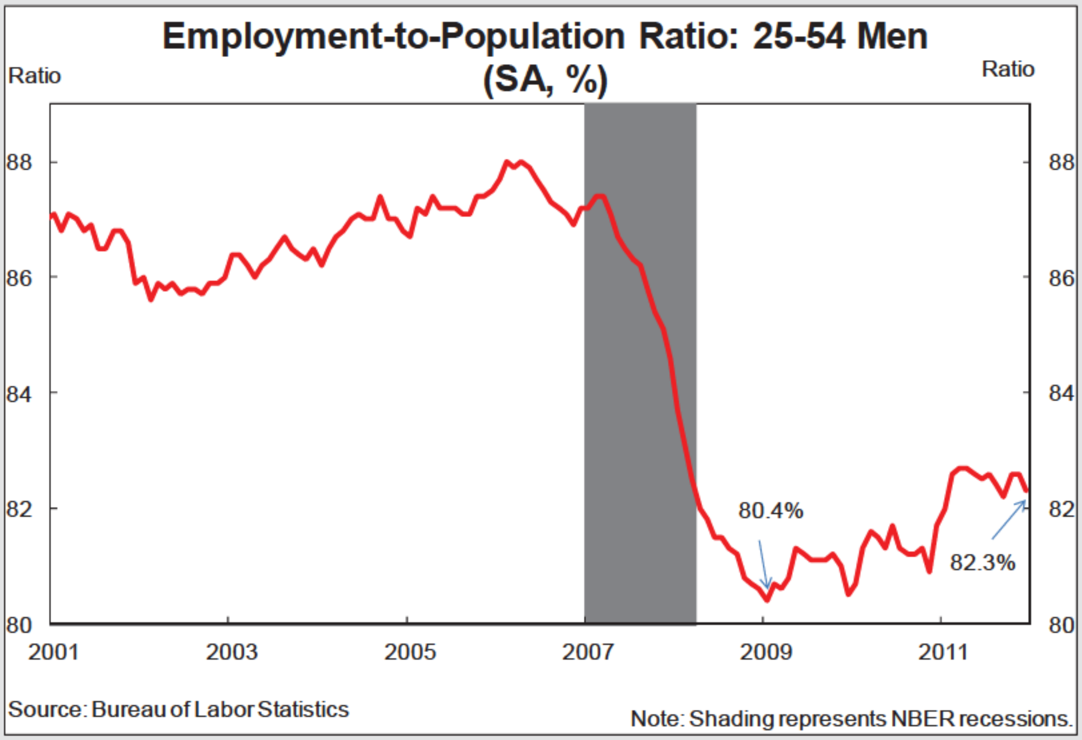
Employment in the goods-producing sector fell 22,000 in November. Manufacturing employment went down by 7,000 jobs, following October's increase of 10,000. Construction employment declined 20,000 in November after increasing 15,000 in October. Employment in the private service-providing sector increased 169,000. Employment increased in all broad industry groups with trade, transportation, and utilities (+69,000; within this sector, employment at clothing stores increased 33,000), professional and business services (+43,000; within this sector, employment at temporary help services increased 18,000), and leisure and hospitality (+23,000) accounting for most of the increase in private services payroll employment. **Government employment** went down by 1,000, due to declines in federal and local government. The **one-month diffusion index**—reflecting the balance of industries increasing and decreasing employment over the month—was 59.0 in November, slightly down from 63.0 in October.

Average weekly hours were unchanged at 34.4 hours. Average hours in manufacturing went up from 40.5 to 40.6 hours. **Aggregate hours** worked by all private employees rose 0.2% after declining 0.1% in October. **Average hourly earnings** increased by 0.2% to $23.63. The 12-month change in average hourly earnings was 1.7%, remaining within the narrow range that has generally prevailed since November 2009.

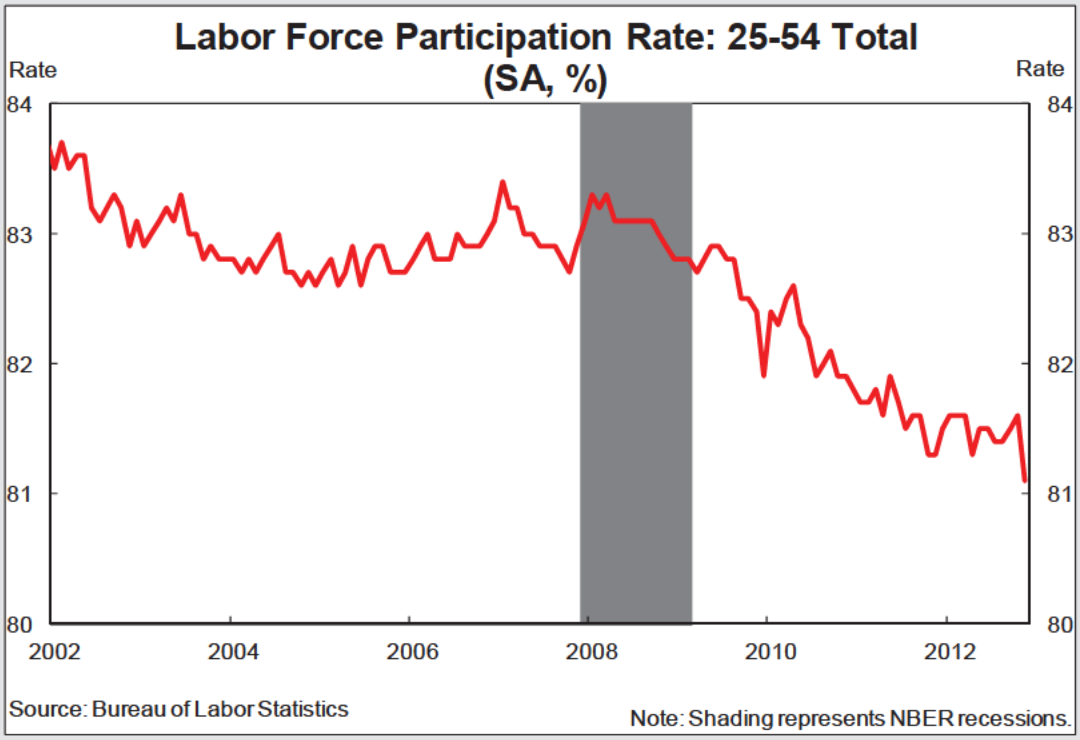
The **unemployment rate** declined from 7.9% to 7.7% in November. This was the lowest unemployment rate since December 2008. The unemployment rate went down from 6.8% to 6.7% for prime-age (age 25-54) men and from 6.9% to 6.7% for prime-age women. All alternative measures of the unemployment rate improved with U6, which includes marginally attached workers and workers who hold part-time jobs but prefer full-time jobs instead, declining from 14.6% to 14.4%. An alternative unemployment rate which treats nonparticipants who report that they want a job as unemployed, was unchanged at 11.6%. This measure of unemployment, which we call the broad unemployment rate, suggests that some of the decline in the official unemployment rate in November could be attributable to the behavior of marginally attached workers who transition between unemployment and nonparticipation frequently.



Despite the decline in the unemployment rate, household employment declined by 350,000, after increasing by 578,000 and 418,000 in October and September, respectively. The employment-to-population ratio went down from 58.8% to 58.7%. The employment-to-population ratio declined from 82.6% to 82.3% for prime-age men. Still, this ratio has improved substantially from 80.4% in December 2009 to 82.3% in November. The employment-to-population ratio went down from 69.6% to 69.4% for prime-age women.

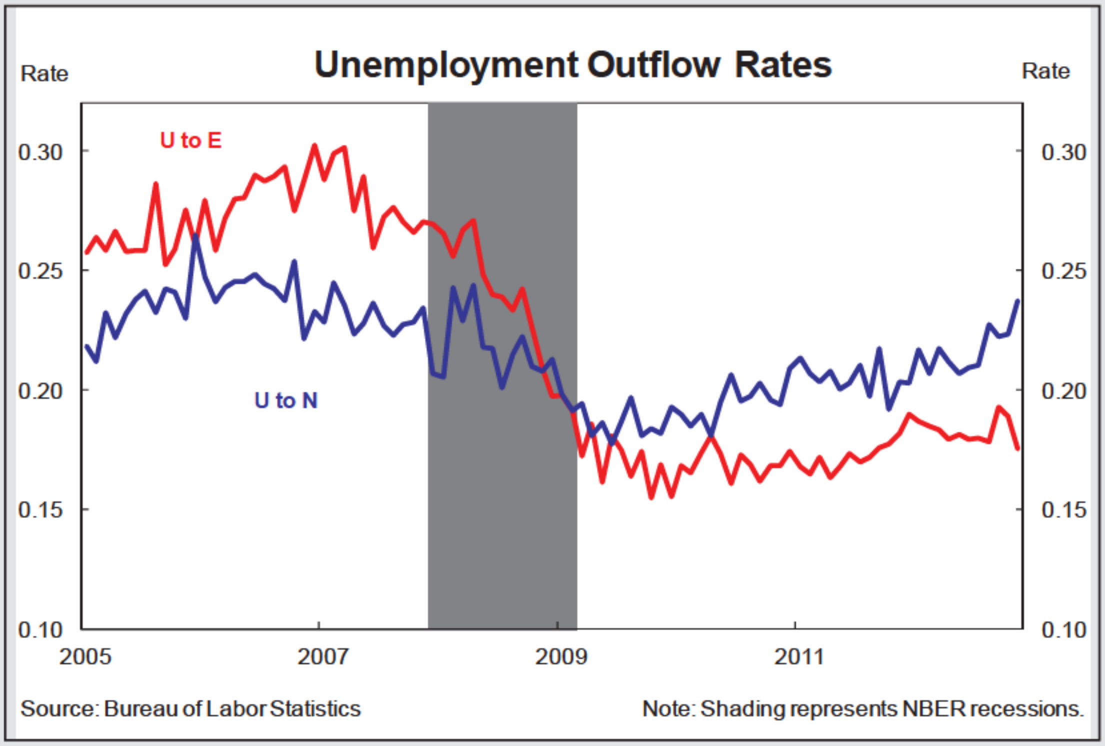


The labor force participation rate declined from 63.8% to 63.6%. This drop was due to a substantial drop in the participation rate of prime-age workers from 81.6% to 81.1%; the decline was similar for prime-age males and females. The median duration of unemployment decreased from 19.6 to 19.0 weeks while the percentage of unemployed workers unemployed 27 weeks or more edged down slightly from 40.6% to 40.1%.



The table below shows the flow-consistent unemployment rates using the 2-and 3-state models as well as unemployment outflow rate (f) and inflow rate (s) for November. The unemployment outflow rate improved substantially in November and the inflow rate was essentially unchanged. As the figure below shows, the improvement in the outflow rate was mostly due to an increase at the rate unemployed workers dropped out of the labor force and was not accompanied by an increase in the job-finding rate, consistent with the declines in the employment-to-population ratio and the labor force participation rate. The flow-consistent unemployment rate stands at 7.4% according to our 2-state model and at 7.9% according to the 3-state model.

	f	*s*	*u*(2-state)*	*u*(3-state)*	*u*
November	30.5%	2.4%	7.4%	7.9%	7.7%



Given the rise in initial claims in early November and the ADP report, most forecasters expected Hurricane Sandy to have had a negative impact on today's employment situation release. However, the November labor market report was better than expectations. According to the BLS, Hurricane Sandy did not substantively impact the national employment and unemployment estimates for November. Workers would need to be off work for the entire pay period that includes the 12th of the month in order for weather conditions to reduce the payroll estimates. As for the household estimates, persons with a job who miss work for weather-related events are still counted as employed even if they do not get paid for that period.

In summary, the November labor market report generally indicated an improvement in labor market conditions. Payroll employment rose 146,000 bringing the total payroll employment increase in the last five months to 789,000. The unemployment rate went down from 7.9% to 7.7%, the lowest level in the last four years. However, this decline was accompanied by a decrease in participation and household employment, mitigating somewhat the positive signal from the unemployment decline.

2. Evolution of Outlook and Risks

2.1 Central Forecast

Intermeeting developments. The rate of growth of real GDP in 2012Q3 was revised upward, to 2.7% (annual rate) from the first estimate of 2.0%. However, the rate of growth of real final sales was revised down to 1.9% from 2.1%. In contrast, the growth contribution from inventory investment was revised up to +0.8 percentage point from the initial estimate of -0.1 percentage point. Also of note, the rate of growth of real personal consumption expenditures was revised down to 1.4% (annual rate) from the first estimate of 2.0%. Despite the lower level of real PCE, the personal saving rate was revised down, to 3.6% from 3.7%, due to downward revisions of labor compensation in both the second and third quarters. Taken together, the revised third quarter data leave the starting conditions for the fourth quarter weaker than we previously expected.

Many of the high frequency indicators for October were quite soft, but no doubt were subject to negative impacts from Hurricane Sandy. Real PCE fell 0.3% in October, led by a 1.7% decline in spending on durable goods. Motor vehicle sales, which have been on an uptrend for nearly three years, fell to a 14.3 million annual rate in October from 14.9 million in September. Household consumption of electricity and natural gas fell sharply in October, despite the fact that the average temperature was somewhat below the average of the preceding five Octobers. Also providing evidence of a storm effect were declines in real consumption of intracity mass transit and casino gambling. In addition, manufacturing output fell 0.9% in October, with the Board of Governors staff indicating that it would have been unchanged absent the storm. The housing starts data for October may also have been depressed somewhat by the storm, although trying to isolate such effects in a series that is normally quite volatile is very speculative. Nonetheless, after rising strongly in August and September, single-family starts were essentially unchanged in October, with single-family starts in the Northeast down 21% (monthly rate).

Motor vehicle sales rebounded sharply in November, to 15.5 million (annual rate) from October’s 14.3 million. Sorting through the volatility, the three month moving average of motor vehicle sales was 14.9 million in November, the highest since April of 2008 and up nearly 12% from the year-ago level. But even building in rebounds in other categories of consumer spending, at this juncture it looks as though the growth rate of real consumer spending for the fourth quarter will come in around 1 ½% (annual rate), about the same as in the preceding two quarters. Even that relatively muted growth rate would be associated with some further decline of the personal saving rate given the sluggish income data for October.

In contrast, the recovery of the housing sector appears to be gaining momentum. In addition to the uptrend in total housing starts and permits, the National Association of Realtors' Pending Home Sales Index, an indicator of the volume of signed sales contracts in the market for existing homes, increased 5.2% in October and was up 13.2% over the past year. The CoreLogic national home price index rose 0.9% in October, its eleventh consecutive monthly increase, bringing the 12-month change to +6.3%. The results of the Conference Board's survey of consumers for the month of November indicated a pronounced movement upward in the percent of households indicating that they planned to buy a house. We expect growth of real residential investment of 20 to 25% (annual rate) in the fourth quarter, contributing 0.5 percentage points to the overall growth rate.

Based on the October data and recent trends, we expect the final three months of 2012 to be another quarter of very sluggish growth of real business fixed investment. Shipments of nondefense capital goods continued to decline in October. Private nonresidential construction put in place rose 0.3% in October after declining in the third quarter, but this translates to only a low single-digit quarterly growth rate in real expenditures. For the entire second half of 2012, business fixed investment is likely to be essentially unchanged. Government spending is expected to contract in the fourth quarter. Spending at the federal level rose at a nearly 10% annual rate in the third quarter. A growth rate of that magnitude in a series that we know is on a downward trend is very likely to be followed by a decline. In addition, based on both employment and construction data for October, state and local government spending is continuing to decline, although the rate of decline has subsided somewhat.

Growth of real exports has slowed notably over the past year, to a four-quarter change of just 3.0% as of 2012Q3 from 6 ½% as of the third quarter of 2011. However, growth of imports, at 2.7% as of the third quarter, is also down sharply from what it was in 2010 and the first half of 2011. The net export growth contribution in 2012Q4 is expected to be 0.2 percentage points, roughly the average of the preceding two quarters.

Based on available data, we expect growth of final sales of about 1 ¾ % (annual rate) in the fourth quarter, comparable to the average of the preceding two quarters. However, a sharp slowing of the rate of inventory accumulation from that which occurred in the third quarter is expected to hold the overall GDP growth rate to between ½% and 1% (annual rate). If realized, that would bring the growth rate of real GDP for the second half of the year to 1.6% (annual rate), the same as over the first half of the year, but below the 1.8% growth rate expected in the October Blackbook.

Recent data on the manufacturing sector is consistent with a much slower pace of inventory accumulation. While up in November, the October-November average of hours worked in manufacturing is down at almost a 1% annual rate relative to the third quarter. The ISM manufacturing index, which averaged just 50.5 over the period from June through October, fell to 49.5 in November. While the production component was up slightly, the bulk of the decline of the overall index was due to the new orders and inventories components.

Hurricane Sandy occurred too late in the month of October to have much impact on the employment data for that month. But it does appear that the employment data for November were adversely affected. Initial claims for unemployment insurance, which had averaged 360,000 over the preceding two weeks, shot up to 451,000 during the second week of November. (Claims fell back to 370,000 over the final week of the month.) As the week or pay period including the 12th of the month is the so-called "survey week," this likely held down measured employment and hours worked for the month. The ISM manufacturing and nonmanufacturing indices for November also lend support to this view. The employment component of the ISM manufacturing index dipped 3.7 points in November to below 50 for the first time since September of 2009.

The employment component of the ISM nonmanufacturing index fell a relatively large 4.6 points to 50.3. Nonetheless, payroll employment rose by 146,000 in November, and the index of aggregate hours worked rose at a 2 ½% annual rate, both above expectations. Employment in the goods-producing sector fell by 22,000 in November, a bigger decline than one would have expected based on recent trends. However, employment in the private service-providing sector rose by 169,000, a major step up from the 143,000 monthly average of the third quarter. Employment in retail trade rose by 53,000 in November versus an average of 19,000 per month in the third quarter.

Finally, both total and core PCE deflator inflation over the second half of 2012 are likely to be somewhat lower than projected in October. The total PCE deflator inflation rate for the third quarter was revised down to 1.6% (annual rate) from the first estimate of 1.8%. The core PCE deflator rose at a 1.1% annual rate, a downward revision from the previous estimate of 1.3%. All of the downward revision was attributable to the nonmarket components of those price indices.

In October, the total PCE deflator rose 0.13%, as did the core PCE deflator. A 0.2% decline of energy prices was offset by a 0.3% increase of food prices. The October increase in the core measure was above the average monthly increase of the third quarter. For the fourth quarter as a whole, we expect the total PCE deflator to rise around 1 ¾% (annual rate) while the core PCE deflator increases around 1 ¼% (annual rate). The 12-month change of the total PCE deflator was 1.7% in October, up from a recent low of 1.3% in July. However, that growth rate is likely to begin slowing to around 1 ½% over the next few months. As of November, consumers' near term and longer-term inflation expectations remain in the middle of the narrow ranges in which they have prevailed since September 2008.

Conditioning assumptions. Our estimate of potential GDP growth is around 2 ¼%, reflecting trend growth of productivity of 1 ¼% and trend growth of hours worked of 1%. The Board staff estimates of potential for 2012, 2013, and 2014 are 1.8%, 2.0%, and 2.1%, respectively, all unchanged from the previous 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 gradually move up over the forecast horizon to the FOMC's objective of 2.0%. In contrast, the Tealbook forecast expects core PCE deflator inflation to remain closer to 1.5% over the forecast horizon.

There have been only modest changes in both the Tealbook and Blackbook projections of global real GDP growth in 2012—to 1.6% (Q4/Q4) from 1.7% (Q4/Q4) in the case of the Tealbook and to 1.7% from 1.9% in the case of the Blackbook. In our case, projected growth in Japan in 2012 has been marked down a full percentage point. For 2013, our forecast for global growth is unchanged at 2.8% as is the Board's at 2.4%. In both cases there is some firming of growth in Japan and the Euro Area, with more substantial improvement is much of the rest of the world. In 2014, we anticipate global growth to remain near the 2013 pace while the Board staff anticipates a strengthening to 3.0%.

The exchange value of the dollar is projected to decline somewhat less than previously expected in both 2012 and 2013, and about as previously expected in 2014. The net result is a modestly higher path of the dollar over the forecast horizon. The Board expects the nominal exchange value of the dollar to fall 0.4% (Q4/Q4) in 2012 versus a decline of 0.7% in the last Tealbook. Similarly, we expect the dollar to fall 0.6% versus 0.8%. For 2013, the Tealbook assumption is a depreciation of 0.5% versus 1.4% in October. Our projection is also a depreciation of 0.5% versus 1.5% in October. Finally, for 2014 the Tealbook forecast assumes a depreciation of 1.9%, unchanged from October, while we expect a depreciation of 2.0%, somewhat more than the 1.8% depreciation assumed in the last Blackbook.

Over the intermeeting period oil prices have trended downward, reflecting some down grading of global growth prospects and some accumulation of oil inventories. Our assumed path of WTI oil prices over the forecast horizon, based on recent futures quotes, has moved $2 to $3 dollars lower through 2013, but is unchanged in 2014. We now expect a price of $88 for 2012Q4 and a price of $91 for 2013Q4. The WTI price per barrel is then expected to ease to $90 by 2014Q4. The Board's projected path is quite similar to ours.

As is our standard practice, we adopt the same federal fiscal assumptions as in the Tealbook, which are unchanged from October. For 2013, those assumptions include the expiration of the payroll tax cut and Emergency Unemployment Compensation (EUC) 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 additional 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. These changes in policy exert a fiscal drag of 1.2 percentage points of GDP in 2013, declining to 0.5 percentage points in 2014. Taking developments at the state and local level into account, fiscal drag in 2013 is estimated at 1.1 percentage points, declining to -0.4 percentage points in 2014.

We also adopt the Tealbook assumptions regarding equity and home prices. Equity prices are currently about 3% below the level expected to prevail in the October Tealbook. From that lower starting point, equity prices are expected to rise at a 10% annual rate in 2013 and 2014, the same as assumed in October. This improvement is attributed to a modest easing of investor concerns about economic conditions in the Euro Area and about the US fiscal situation. As of October, the CoreLogic national home price index has increased for eleven consecutive months and is now up 6.3% from year ago levels. However, the rate of increase of this index is expected to slow to around 2 ½% (annual rate) in 2013 and 2014, reflecting continued tight mortgage lending standards and an increased supply of distressed properties. On balance, the path of home prices over the forecast horizon is somewhat higher than in October.

The Outlook. The conceptual underpinnings of our forecast for growth and inflation in 2013 and 2014 are unchanged. As mentioned above, the fiscal policy assumptions of our modal forecast are that fiscal drag will increase substantially in 2013 as the payroll tax cut and extended unemployment benefits are allowed to expire at the end of 2012. This depresses the growth rate of real PCE and the personal saving rate over the first half of the year. At the same time, however, the effects of the drought on farm output will be subsiding and rebuilding after Hurricane Sandy will be ramping up. Growth of real GDP over the first half of 2013 is likely to be around 2%, with average monthly gains of payroll employment around 170,000.

By the second half of 2013, we expect a firming of growth to around 2 ¾% (annual rate) as the headwinds that have been restraining growth over the past few years, such as household deleveraging and restricted access to credit, more fully subside. Also contributing to this firming of growth is the turnaround in the housing market, leading not only to sustained gains in residential investment but also greater confidence in stable to rising home values, with a positive impact on consumer spending. Uncertainty about the US fiscal path is likely to diminish somewhat as the year progresses while world growth picks up as the Euro area emerges from recession and growth in the developing world responds to fresh policy stimulus. Finally, the substantial monetary accommodation begins to have a more substantial impact on the US economy. For all of 2013, we expect growth of real GDP of around 2 ½%, with the unemployment rate ending the year around 7 ½%.

By 2014, fiscal drag is expected to be greatly diminished, allowing the full force of monetary accommodation and the natural healing of the economy to be realized. Growth in that year is likely to be around 3 ½%, with the unemployment rate declining by about one full percentage point to 6 ½%.

The increase of the total PCE deflator in 2012 is now expected to be 1.6%, down from 1.9% in the October forecast, reflecting larger declines in energy prices than previously expected. The projected increase of the core PCE deflator in 2012 is essentially unchanged at 1.6%. In 2013 and 2014, as the economy begins to establish greater forward momentum, we expect both total and core inflation to move gradually higher, with total PCE deflator inflation moving to around 1.8% in 2013 and 2 ¼% in 2014. The gradual decline of slack in the economy along with the expected decline of the exchange value of the dollar and resulting more rapid increase of nonpetroleum import prices contribute to this increase.

2.2 Alternative Scenarios and Risks

The assessment of risks to our outlook has not changed substantially over the intermeeting period, except that the downside risks to real activity have increased slightly over the medium term. The risks to inflation are roughly balanced, while the balance of risks to output is skewed somewhat to the downside over the medium term. As discussed in previous Blackbooks, the assessment of risks to our outlook is dependent upon the assumed path of policy in our recommendation. Consequently, our policy recommendation removes some of the downside risks to the outlook, while there is some enhancement to the upside risks.

Both the lack of resolution to the U.S. fiscal situation and the effects of superstorm Sandy have increased uncertainty. The former event – the fiscal cliff -- represents a substantial headwind to the recovery and, along with the latter, may also be temporarily reducing the signal of some data releases. Consequently, we have raised the likelihood of the *Fiscal Consolidation* scenario, which remains the most likely alternative scenario with a probability that now stands around 35 percent [Exhibit C-1]. The probabilities associated with the *Faster Growth* scenario, which is the second most likely alternative scenario with a probability just below 30 percent, and the *Global Credit Crunch* scenario have been reduced. Changes in the other scenarios are relatively minor. The forecasts under the *Central* scenario have changed only modestly from those in the October Blackbook Update. Because the paths under the alternative scenarios are defined relative to the *Central* scenario outlook, they have also changed very little from the last Blackbook Update [Exhibit C-2].

As a result of the changes in the scenario probabilities, downside risks to real activity have increased slightly at the medium run relative to the last Blackbook Update [Exhibit C-3]. Both upside and downside risks to real activity and inflation are lower in the short-run, but this results principally from the fact that we have more information about the current state of the economy than in October.

Exhibit C-3 also displays the baseline forecasts from the FRBNY-DSGE model (orange line). The DSGE forecasts are near the mean and modal forecasts over near-term horizons, but are noticeably below the expected values in 2014-15, particularly for real GDP growth.

3. Forecast Comparison

3.1 Comparison with Private Forecasters[1]

Real GDP Growth. The FRBNY projection for real GDP growth is lower than that of private forecasters for 2012Q4 and marginally higher than that of private forecasters for 2013Q1. On a year-to-year basis, the FRBNY growth projection for 2012 was revised down by 0.1% relative to the previous FOMC meeting, while the projection for 2013 was revised up by the same amount. FRBNY estimates of 1.6% and 2.4% growth in 2012 and 2013, respectively, are within the range of private forecasts for both years.

Inflation. The FRBNY year-to-year core CPI inflation projections for 2012 and 2013 remain at 2.0% – largely in line with those of private forecasters. After a small downward revision, the FRBNY year-to-year projections of 1.6% and 1.7% for core PCE inflation in 2012 and 2013, respectively, remain at the lower end of the range of private forecasts. The near term FRBNY core PCE inflation projections for 2012Q4 and 2013Q1 of 1.3% and 1.4%, respectively, continue to be significantly lower than those of private forecasters. The FRBNY has made significant downward revisions on its 2012 CPI inflation projections – with values of 2.1% for 2012Q4 and 1.9% for 2012Q4/Q4. After upward revisions by private forecasters and downward revisions by the FRBNY, the 2012 CPI inflation projections are now more closely aligned. CPI projections for 2013 were not revised – with FRBNY projections generally above those of private forecasters for 2013Q1 and 2013Q4/Q4.

[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 2012Q3, augmented for 2012Q4 with FRBNY staff forecasts for real GDP growth, core PCE inflation, and growth in total hours, and with values of the federal funds rate and the spread between Baa corporate bonds and 10-year Treasury yields based on 2012Q4 observations. The expected future federal funds rates are constrained to equal market expectations for the federal funds rate, as measured by the OIS rates, through 2015Q2.

Output growth in 2012Q3 was roughly in line with the DSGE model forecasts produced in September, while growth in 2012Q4 (as projected by the FRBNY staff) was a bit weaker than our forecast. Output growth projections for 2013 are somewhat weaker than those produced in September, but otherwise quite similar [Exhibit E-1]. In particular, the model still projects a lackluster recovery in economic activity, with output growth in the neighborhood of 2 percent throughout the forecast horizon. Growth forecasts for 2013, 2014 and 2015 (Q4/Q4) are 1.9, 1.8 and 1.3 percent, respectively, versus 2.4, 1.8 and 1.3 percent, respectively, reported in September [Exhibit B-8]. Core PCE inflation in 2012Q3 and 2012Q4 (again, as projected by the FRBNY staff) turned out slightly different than the DSGE projections, being weaker in Q3 and just a bit stronger in Q4. The model attributes the over-prediction in Q3 to having over-estimated the impact of forward guidance on inflation and the under-prediction in Q4 to a mark-up shock, which captures high frequency movements in inflation such as those due to energy prices. Since the impact of mark-up shocks on inflation is very transient, and forward guidance has a more persistent effect, the projections for inflation are weaker than in September. The model predicts core PCE inflation to remain below the FOMC long-run goal of 2 percent throughout the forecast horizon. Specifically, core PCE inflation projections for 2013, 2014 and 2015 (Q4/Q4) are 0.9, 1.2 and 1.5 percent, respectively, compared to 1.3, 1.5 and 1.6 percent, respectively, in September. Relative to the FRBNY central forecast, the DSGE model has a similar forecast for output through mid-2013, but is far less optimistic afterwards. The inflation forecasts are 50 to 75 basis points below the FRBNY staff forecasts throughout the forecast horizon.

There is significant uncertainty around real GDP forecasts, with 68 percent bands covering the interval -1.0 to 3.9 percent in 2013 (Q4/Q4), -1.8 to 4.5 percent in 2014 (Q4/Q4), and -2.1 to 4.4 percent in 2015 (Q4/Q4). The forecast distribution for inflation moved down relative to September, and the 68 percent probability bands are still within the 0-2.1 percent interval throughout 2014. The uncertainty around the real activity forecast in the DSGE model, as measured by the width of the 90% probability interval, is slightly lower through 2013 relative to the FRBNY forecast distribution, but has more downside risk beginning in 2014. Correspondingly, uncertainty around the inflation forecast also shows more downside risk beginning in 2014.

The FRBNY forecast is driven by two main factors. On the one hand, the headwinds from the financial crisis, as captured by the effect of both spread and MEI (marginal efficiency of investment) shocks, 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. This largely explains why growth is still below trend by the end of 2014.

The model views the federal funds rate at the zero lower bound as mostly driven by the endogenous response of policy to the weak economy. In fact, by the end of 2012 the historical rule would imply a rate that is slightly lower than 25 basis points. However, by the end of the forecast horizon the policy accommodation provided by forward guidance becomes noticeable, implying a deviation of the federal funds rate path of about one percentage point from the historical rule.

4. Robustness of Policy Recommendation

4.1 Sensitivity to Alternative Scenarios and Policy Rules

Our current policy recommendation implies a target range for the federal funds rate at 0 – 0.25% until mid-2015. This accommodation goes beyond what is implied by the *Baseline* policy rule under all scenarios [Exhibit D-1]. This pattern reflects our assessment that when policy is constrained by the zero lower bound, standard Taylor-type rules are not good approximations of optimal policy. Instead, a commitment to maintain rates at a low level for longer than prescribed by standard rules is necessary to provide the appropriate level of accommodation.

Exhibit D-2 shows the prescriptions of various policy rules using the expected value of the forecast distribution as an input. The path implied by the Baseline policy rule shows a liftoff around mid-2014, slightly later than the liftoff date shown in the September Blackbook. The *Nutter* rule, which puts weight on inflation only, prescribes a policy rate close to 0.75% by 2013Q1. Exhibit D-2 also shows the implied nominal FFR under the *Outcome-based* rule ignoring the zero bound constraint. Under the expected value of the forecast distribution, the unconstrained nominal FFR remains negative throughout the forecast horizon – reaching -6% by mid-2014.

Exhibit D-3 displays the prescriptions from alternative policy rules under the various alternative 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 the first half of 2013 under all scenarios. For the *Outcome-based* rule, which ignores the zero lower bound, the paths are at or below zero through the end of 2015 for most scenarios; one exception is the Faster Recovery scenario, where the path moves above zero in 2015Q2.

4.2 Comparison to Market Expectations

The expected FFR path derived from overnight index swaps (OIS) quotes shifted down noticeably from that recorded at the time of the October Blackbook Update. The median of the modal forecasts from the Primary Dealers Survey for the timing of the first increase in the FFR target is 2015Q2, the same as in the previous survey. The average distribution of the timing of the first increase in the FFR target remained largely unchanged, although its dispersion was reduced with some probability moving mostly to 2015H2 from later dates. The mode of the distribution remained at 2015 H2 with a probability above 25%, while a more than 20% probability was placed on 2015H1, and a slightly less than 20% probability was placed on 2016H1. Other dates received a probability of 10% or less.

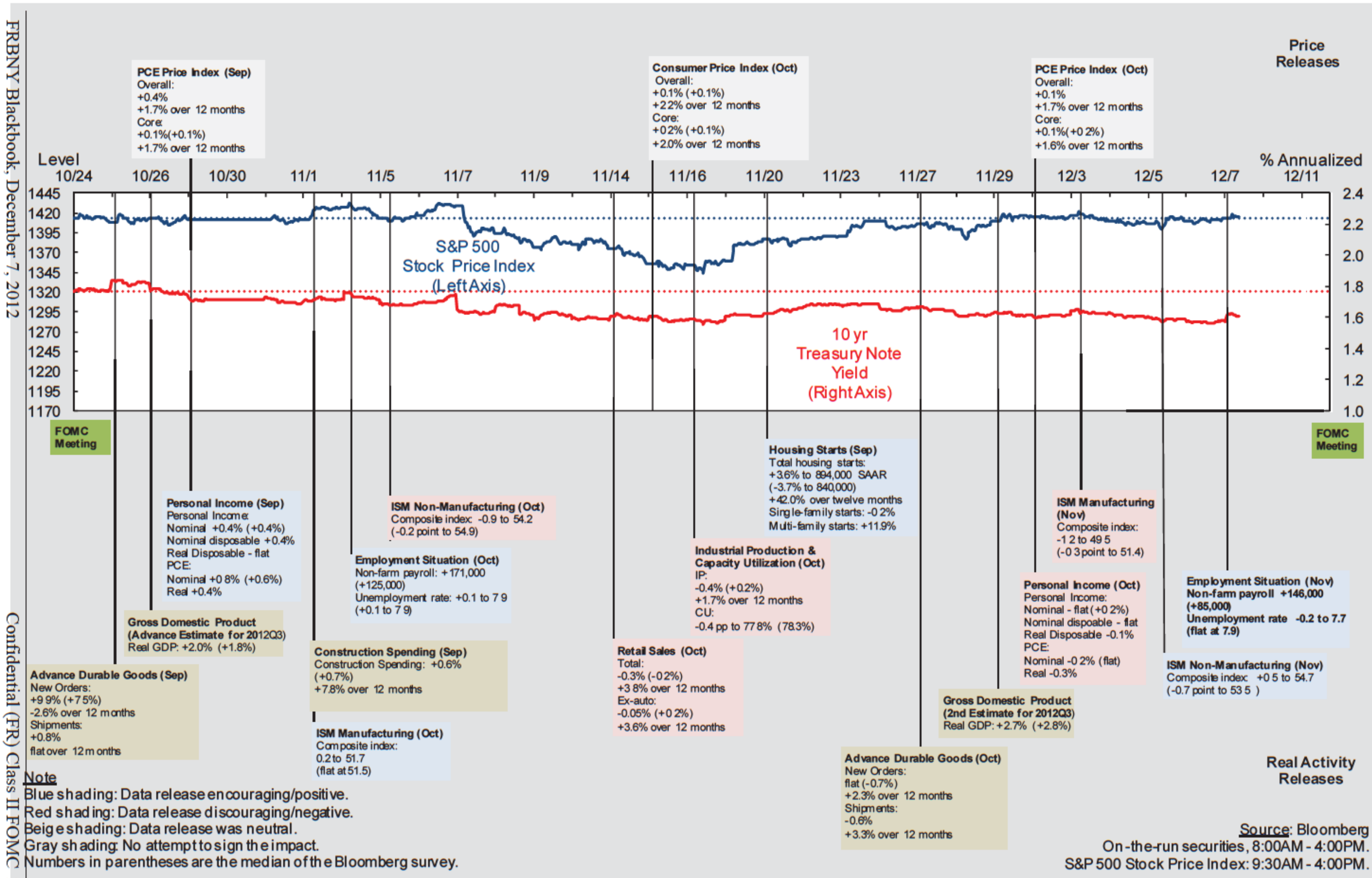
With regard to the date dealers expect purchases associated with the flow-based asset purchase program to end, the mode of this distribution shifted during the intermeeting period from 2014Q1 to 2013Q4. In addition, there is no probability currently attached to 2013Q2 which corresponds to the date the Tealbook projects for the balance sheet expansion to end (there was a 10% probability placed on 2013Q2 at the time of the last survey). Dealers were also solicited on the likelihood that the FOMC will adopt quantitative or qualitative thresholds for forward guidance. The median probability of adoption of quantitative versus qualitative thresholds was similar across subsequent FOMC meetings, with dealers assigning a 10%, 20%, and 30% probability that the initial adoption will occur, respectively, 1-, 2- and 3 meetings ahead. The median probability that the FOMC will not adopt a quantitative threshold within the next two years was 30%, while it stood at 20% in the case of a qualitative threshold.

5. Significant Developments

5.1 Economic Developments

Foreign Data Releases. *Euro area*: Output contracted 0.2% (saar) in Q3, with drops in consumption and investment spending offset by higher exports. Industrial production declined in September, putting the index 3 percent below its year-ago level. Merchandise exports were up 8 percent over this period. Business confidence measures rose modestly in November from low levels. The unemployment rate reached an all-time high of 11.7% in October.

Key Data Releases



Japan: GDP fell 3.5% (saar) in Q3, pulled down by drops in exports and consumption. The dip in output was much greater than expected. Production ticked up in October, but was still down 7% over the year. Export volumes were also down 7% over this period. Sales to Europe and China were markedly below year-ago levels, while sales to the United States were roughly the same. The unemployment rate has been relatively stable over the past year, staying at 4.2 percent in October, though survey data show some weakness developing.

Asia: China's manufacturing PMI measures rose for the third straight month in November, while remaining below long-term averages. October activity data strengthened, supported by increased spending on government-directed infrastructure projects and a continued stabilization in the residential housing sector. Trade data suggest a pickup in exports while a relatively strong labor market continues to buoy consumption. Firmer PMI readings in the NIE countries suggest that growth bottomed out in Q3, but point to only a modest acceleration in growth in Q4. In contrast, the resilient domestic demand in the ASEAN countries offset weakness in exports.

Latin America: Brazil's economy expanded 2.4% (saar) in Q3, much slower than expected. Investment spending weighed heavily on Q3 growth, contracting at a 7.5 percent annualized pace. Mexico grew at a relatively subdued 1.8 percent rate in Q3 as agricultural output suffered from drought conditions and manufacturing output moderated on weaker global demand.

5.2 Financial Markets

Domestic Financial Markets. *Nominal Interest Rates*: Treasury bond yields of all maturities except very short ones decreased markedly compared to their levels in the September Blackbook. 10-year Treasury yields remained unchanged from September until the October 24 FOMC meeting, but saw an 18 basis point decrease since then. Intermediate maturity yields saw about half of their decline before the October 24 FOMC meeting. Shorter dated yields up to 5 years decreased between 1 and 5 basis points between September and late October, but have remained stable since then.

Option implied volatilities in Treasury and swap markets as measured by the 3-month MOVE and SMOVE indices are at their lowest level since before the financial crisis and continue their downward trend, having decreased about 15 basis points since the September Blackbook. [Exhibit A-3: Treasury Yields]

Inflation Compensation: Long-dated TIPS implied measures of inflation compensation declined about 10 basis points since the last FOMC meeting, while short-dated ones increased by 10 basis points. Compared to the September Blackbook, both near- and longer-term breakevens remained roughly constant, with inflation compensation over the next 5 years at 2.35% and over the next 5- to 10-years at 2.72%. Both measures remain close to their recent historical averages (excluding the crisis period), suggesting that inflation expectations remain well-anchored. [Exhibit A-4: Real Yields and Implied Inflation]

Expected Policy Path and Short-term Funding Markets: The expected path of the federal funds rate as inferred from market data has changed since the September Blackbook to reflect the "mid-2015" forward policy guidance introduced in the September FOMC statement. Market quotes imply that the federal funds rate will remain in the current range until early 2015, and then gradually increase to about 1% by late 2016.
Survey responses from the Blue Chip Financial Forecasts' December 2012 panel (survey period: November 26-27) were in line with the market implied expectations until mid-2014, which is the end of the forecasting horizon for survey participants.
During brief periods since the September Blackbook, the O/N Treasury repo rate exceeded the interest on excess reserves for the first time since the crisis. Current levels of the O/N Treasury repo rate are now below interest on excess reserves, but remain elevated (at 20 basis points) when compared to their previous 12-month levels. [Exhibit A-5: Policy Expectations]

Equity Markets: Broad stock market indices declined around 2% since the September Blackbook. The S&P500 experienced a steep 4% decline throughout the week of the US presidential elections, but mostly recovered afterwards.

Implied equity volatility, as measured by the VIX, is below its long-run mean and has remained subdued since September. Despite high uncertainty levels reported by market participants and the press regarding US fiscal negotiations, and relatively high intra-day realized volatility in equity markets, neither VIX current levels nor futures reflect substantial expectations of high future implied volatility. [Exhibit A-6: Equity]
Credit Spreads: Broad measures of corporate credit spreads increased slightly since September. The overall levels remain low compared to post-crisis averages. Investment grade corporate bond spreads to comparable maturity Treasuries increased 10 bps since the last FOMC meeting and are now at 160 basis points. High yield corporate bond spreads to comparable maturity Treasuries, which increased 20 basis points since the last FOMC meeting, are now at 558 basis points. Both primary and secondary mortgage market rates have continued to decline, although the spread between them has seen little change since the last Blackbook. [Exhibit A-7: Credit]

Foreign Financial Markets. *Euro Area*: Over the intermeeting period, the possibility of outright purchases of peripheral euro area member states' sovereign bonds by the ECB continues to support pricing in euro area financial markets. Two-year Spanish and Italian yields declined by 31 and 4 basis points, respectively, over the period and remain approximately 370 and 315 basis points lower since President Draghi outlined the potential for bond purchases in late July. Greece passed €13.5 billion in budget measures for 2013-14 in mid-November, followed by an agreement among euro area Finance Ministers to grant the disbursement of €43.7 billion in aid funding to Greece. Finance Ministers also agreed to several measures to reduce Greece's longer-term debt burden, including interest rate concessions, extensions of maturities, and deferrals on interest payments on aid funding, as well as the return of Eurosystem profits on holdings of Greek sovereign debt. Greece is also conducting a discounted buyback of privately-held Greek debt, closing on December 7, which is expected to reduce debt by around €20 billion (11 percent of GDP). As a result, Greek ten-year yields declined by 180 basis points over the intermeeting period.

Japan: Price action in Japanese financial markets has been dominated by domestic political developments, as the parliamentary elections of December 16th are approaching.

In mid-November Shinzo Abe, leader of the opposition Liberal Democratic Party and likely next prime minister, called for “unlimited easing” of monetary policy by the Bank of Japan in close coordination with the government to achieve a “2 – 3 percent inflation target,” including a cut in the Bank’s policy rate to “zero or into negative territory.” As a consequence, the yen depreciated against most major currencies since the last FOMC meeting, including a 3 percent drop relative to the U.S. dollar, and equity values rose by about 5 percent. Government bond yields, however, exhibited much more limited price action.

Emerging Asia: Ongoing accommodation by the Federal Reserve and more stable euro area financial markets resulted in EM Asian shares increasing by 2 percent over the intermeeting period, despite a decline of 7 percent in Chinese equities. Emerging Asian currencies appreciated at a modest 1 percent against the U.S. dollar over this period. The Chinese yuan has been broadly unchanged against the dollar over the intermeeting period, but is up 2 percent since July.

Latin America: Since the last FOMC meeting, Latin American currencies depreciated against the dollar by about 2 percent, a move that was led by a 4 percent weakening of the Brazilian real. Spreads on Argentine sovereign bonds widened by 285 basis points as a U.S. Appeals Court upheld the claims of “holdout creditors" from the sovereign’s 2001 default.

5.3 Global Economic Policy

Euro Area: The ECB has been keeping its policy rate unchanged after cutting it 25 basis points to 0.75 percent at its July meeting. At the accompanying press conference, President Draghi welcomed tentative signs of improvement in some recent survey indicators, but acknowledged that the risks to the economic outlook remain on the downside. The ECB staff projections were revised down, but not enough to deliver a rate cut at this time. Market participants seem to view this on-hold position of the ECB as reflecting its preference to observe the impact on policy transmission of the potential of Outright Monetary Transactions (OMTs) prior to taking any action on rates. The OMTs indeed seemed to have provided an undercurrent of support to euro area financial assets over the intermeeting period.

Japan: The Bank of Japan kept its policy rate in a range of 0.0-0.10 percent at its October and November policy meetings and will continue to do so until its official projections suggest price stabilization in the near-to-medium term. However, it did decide to increase the size of its Asset Purchase Program at the October meeting by ¥11 trillion to ¥66 trillion. In addition, at this meeting the Bank also decided to introduce a new unlimited loan facility to stimulate bank lending. After the October policy meeting, the Bank released its Semi-Annual Growth and Inflation Outlook Report, in which both growth and CPI inflation projections were revised downwards. The Bank kept the amount of asset purchases unchanged after the November policy meeting.

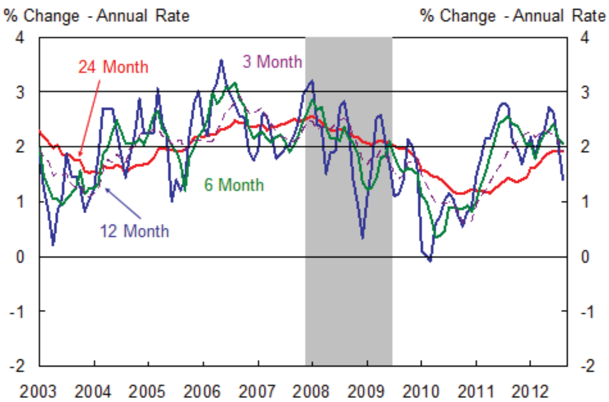
EM Asia: Monetary policy in the EM Asia region remained largely on hold since the last FOMC meeting. Overall, the easing in the region has remained modest with a weighted-average of policy rates down 50 basis points from its peak last fall. Asian central banks outside China resumed foreign exchange reserve purchases in Q3 after net sales in Q2. A further pick up in the pace of accumulation in October points to stronger capital inflows. China’s central bank made no net reserve purchases in Q3 against a trade surplus of almost $80 billion, pointing to still substantial hot money outflows.

Latin America: Mexico’s central bank kept its policy rate at 4.5 percent at its November meeting and analysts expect no rate change until 2014. In Brazil, the central bank remained on hold, leaving its policy rate at a historically low 7.25 percent, signaling an end to the easing cycle begun in August 2011. The central bank intervened in currency markets to support the Brazilian real relative to the U.S. dollar after the currency weakened over the period.

A. Significant Developments

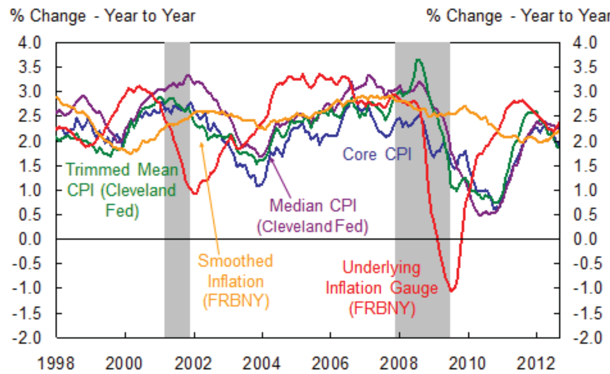
Exhibit A-1:
Measures of Trend Inflation

Core CPI Inflation over Various Horizons



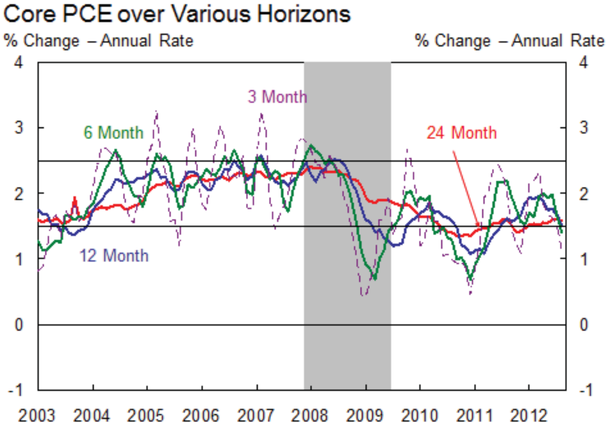
Source: Bureau of Labor Statistics

Alternative Measures of CPI Inflation



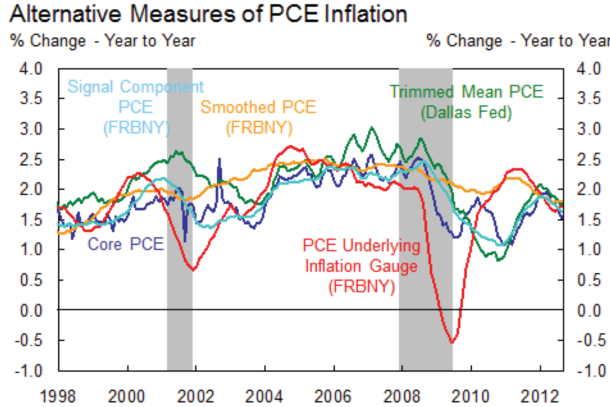
Source: Bureau of Labor Statistics, Cleveland Fed, MMS Function (FRBNY), and Swiss National Bank

Core PCE over Various Horizons



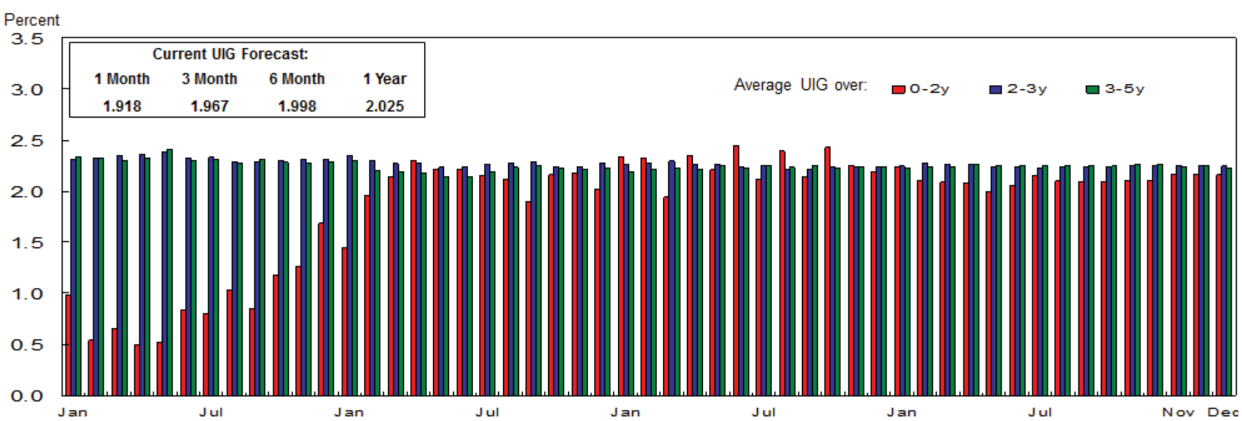
Source: Bureau of Economic Analysis

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)

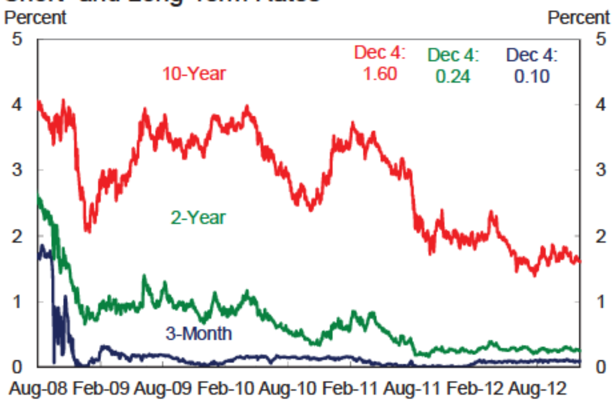


Source: MMS Function (FRBNY) and Swiss National Bank

A. Significant Developments

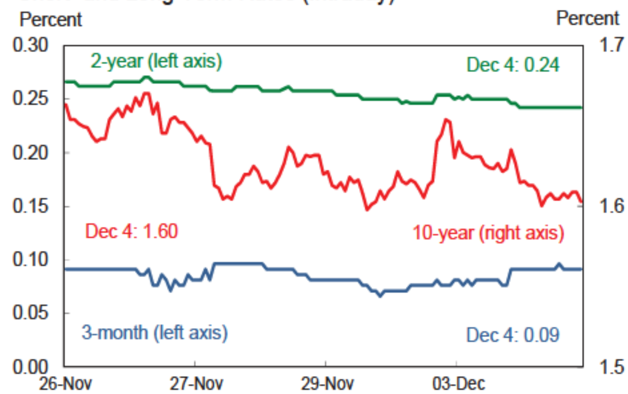
Exhibit A-3:
Treasury Yields

Short- and Long-Term Rates



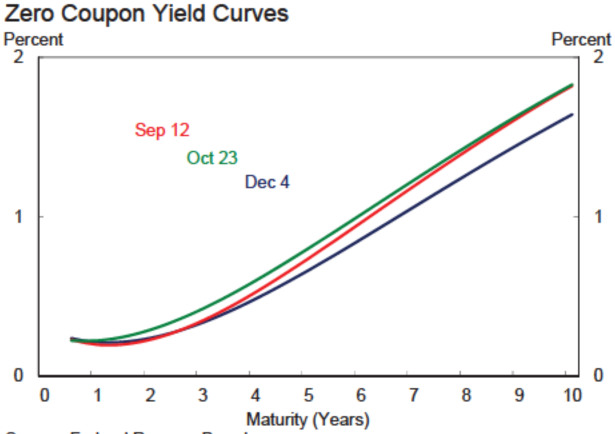
Source: Bloomberg Note: Yields of on-the-run securities.

Short- and Long-Term Rates (Intraday)



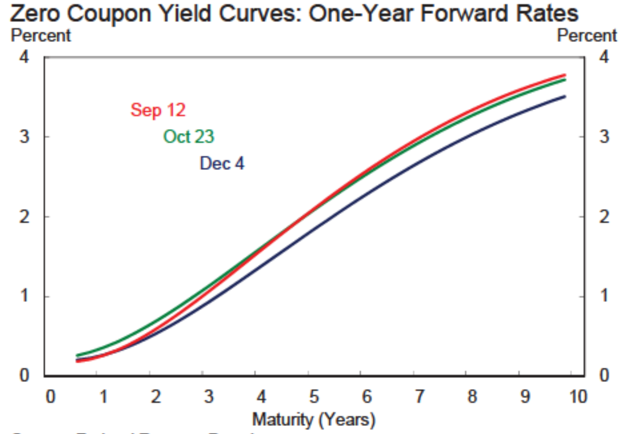
Source: Bloomberg Note: On-the-run securities, 8 00 am to 4:00 pm.

Zero Coupon Yield Curves



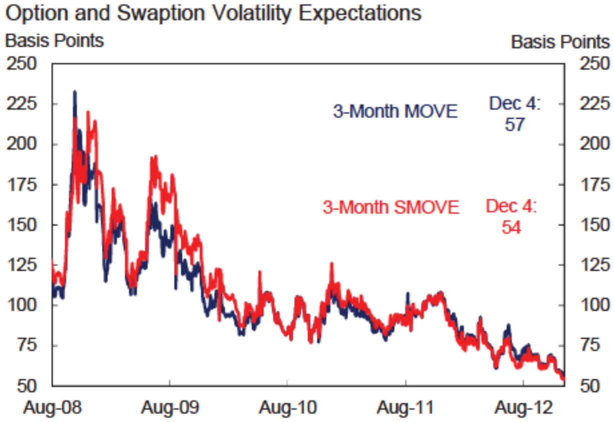
Source: Federal Reserve Board

Zero Coupon Yield Curves: One-Year Forward Rates



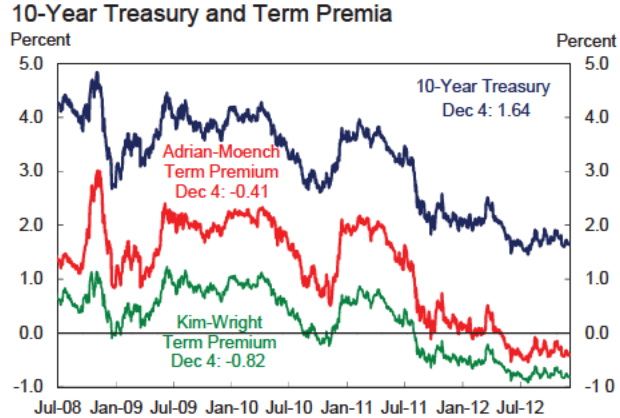
Source: Federal Reserve Board

Option and Swaption Volatility Expectations



Source: Federal Reserve Board, Barclays, and FRBNY staff

10-Year Treasury and Term Premia

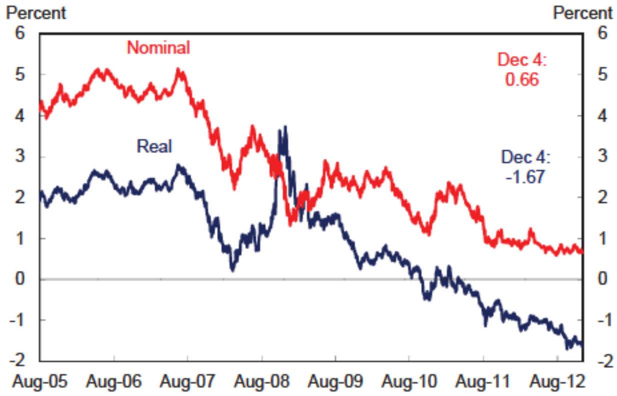


Source: FRBNY calculations, Federal Reserve Board

A. Significant Developments

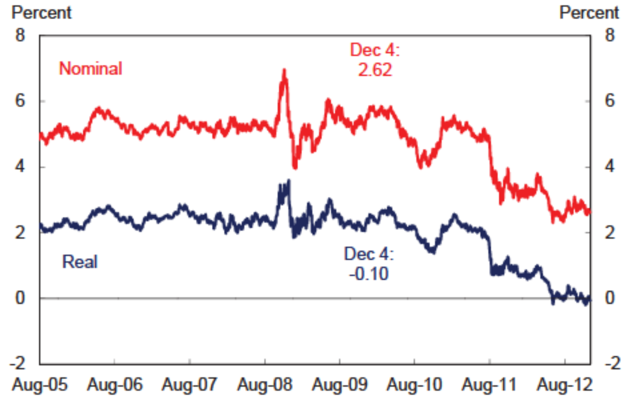
Exhibit A-4:
Real Yields and Implied Inflation

5 Year Spot Rate



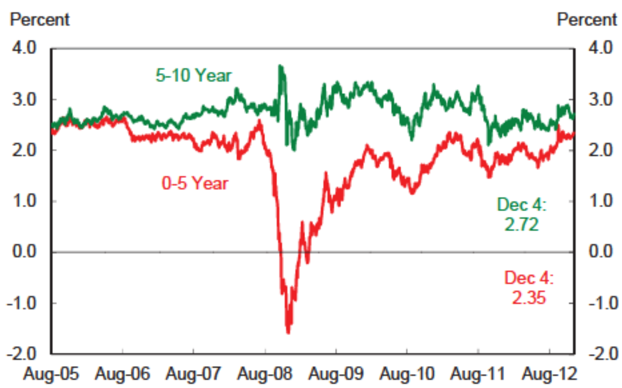
Source: Federal Reserve Board

5-10 Year Forward Rates



Source: Federal Reserve Board

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



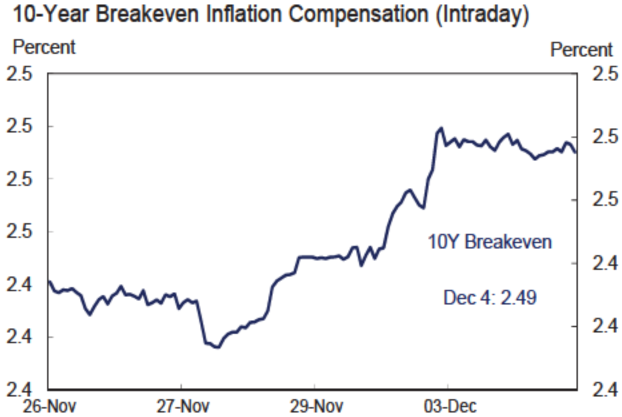
Source: Federal Reserve Board

Note: Carry-adjusted.

Alternative Measures of 5-10 Year Implied Inflation Compensation

Source: Federal Reserve Board, Barclays, and FRBNY calculations

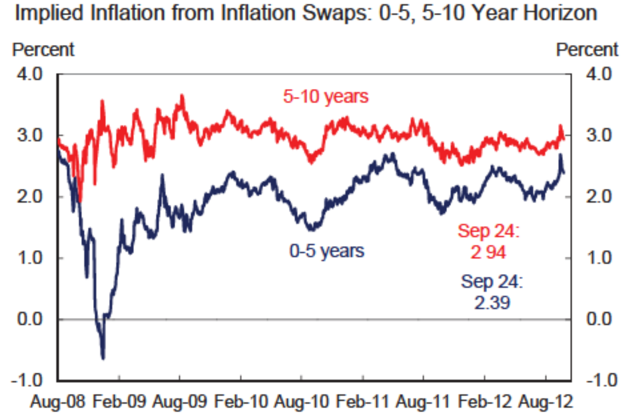
10-Year Breakeven Inflation Compensation (Intraday)



Source: Bloomberg

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

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

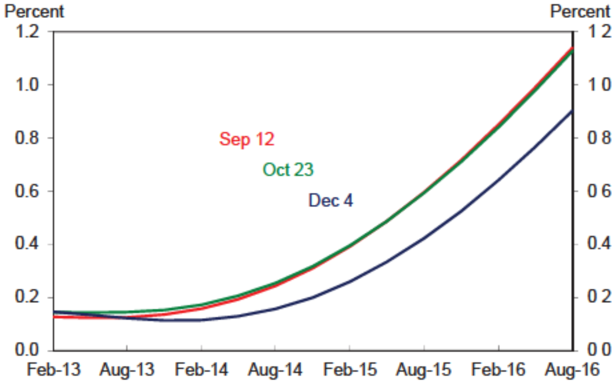


Source: Barclays

A. Significant Developments

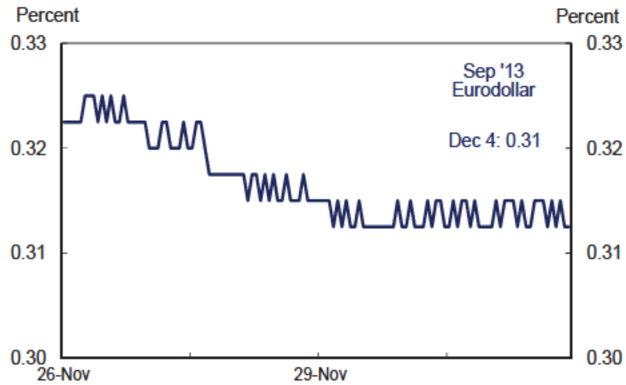
Exhibit A-5:
Policy Expectations

Expected Fed Funds Target Rate



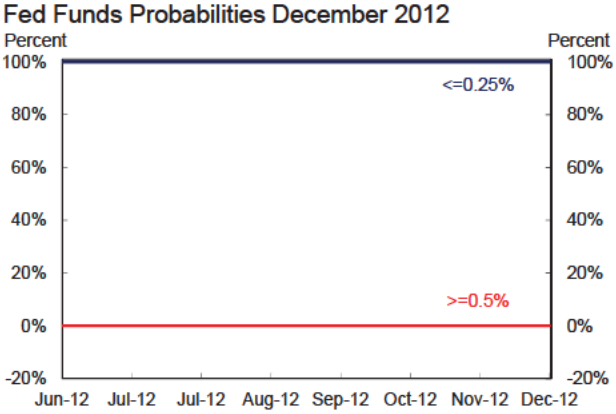
Source: Federal Reserve Board   Note: Estimated using OIS quotes.

Implied Eurodollar Rates (Intraday)



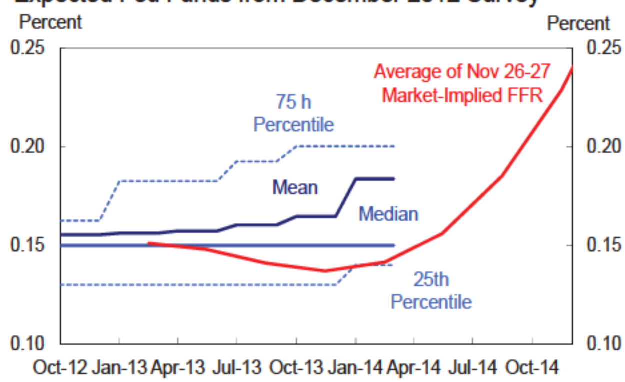
Source: Bloomberg   Note: 8:00 am to 4:00 pm.

Fed Funds Probabilities December 2012



Source: Bloomberg   Note: Estimated from Fed Funds Futures

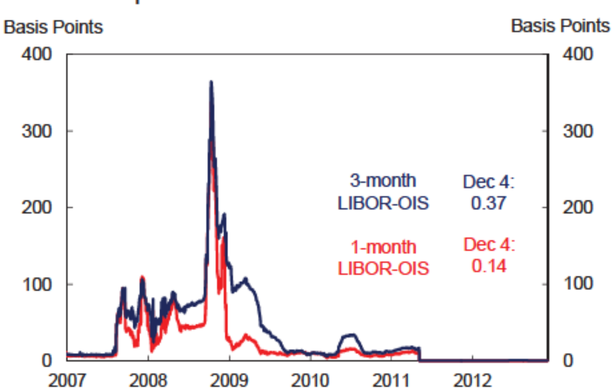
Expected Fed Funds from December 2012 Survey



Note: Implied FFR estimated from OIS quotes.

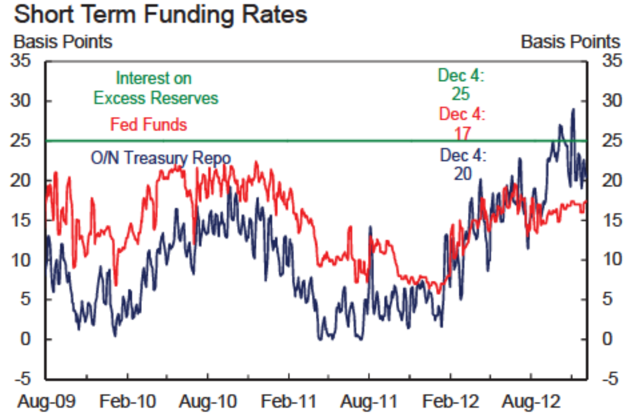
Source: The Blue Chip Financial Forecast conducted on Nov 26-27.

Libor-OIS Spreads



Source: Bloomberg

Short Term Funding Rates

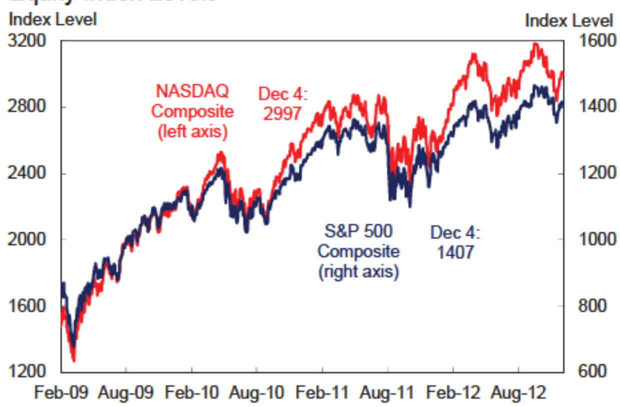


Source: Bloomberg, FRBNY calculations   Note: 1-week moving averages.

A. Significant Developments

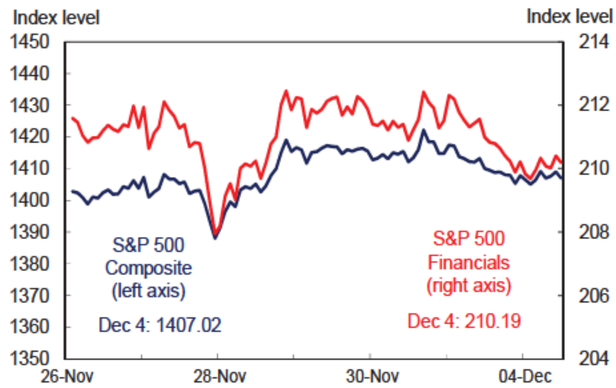
Exhibit A-6: Equity

Equity Index Levels



Source: Bloomberg

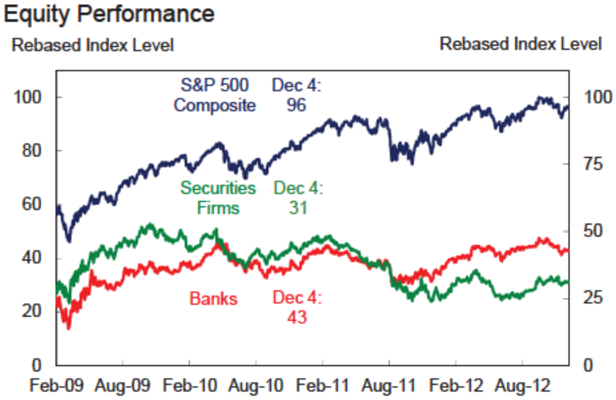
S&P 500 Indices (Intraday)



Source: Bloomberg

Note: 9:30 am to 4 00 pm.

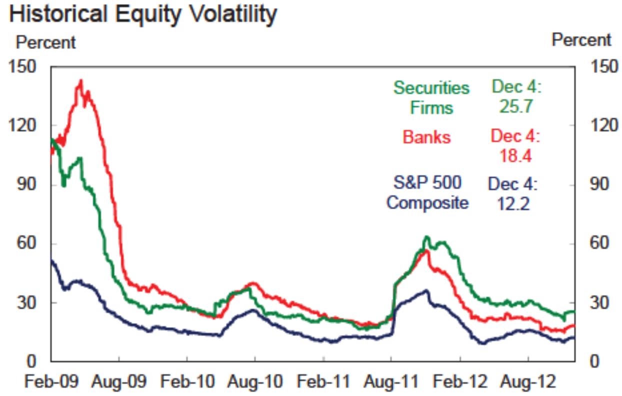
Equity Performance



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.

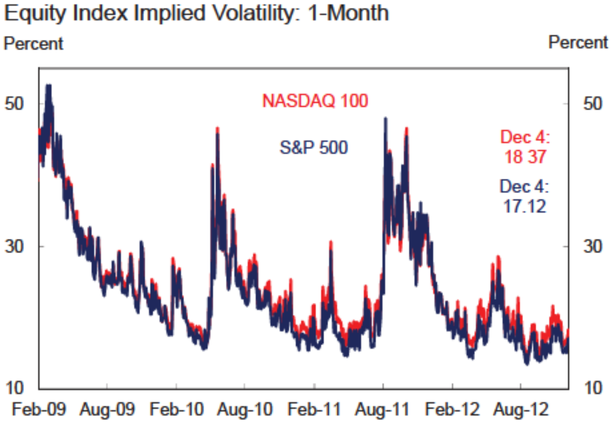
Historical Equity Volatility



Source: Bloomberg

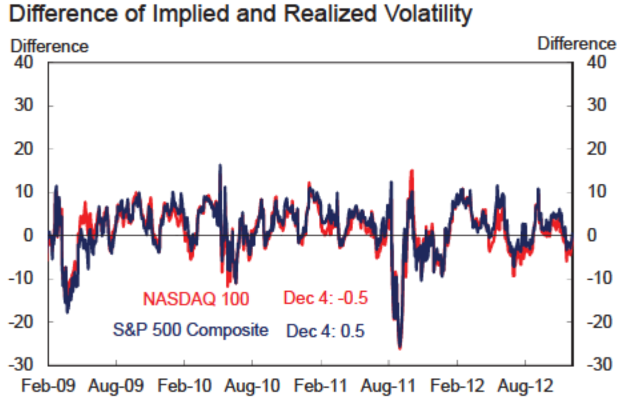
Note: Annualized rolling 3-month standard deviation of daily returns. Banks series is S&P 500 Banks index. Securities Firms series is S&P 500 Investment Banks and Brokerages index.

Equity Index Implied Volatility: 1-Month



Source: Bloomberg

Difference of Implied and Realized Volatility

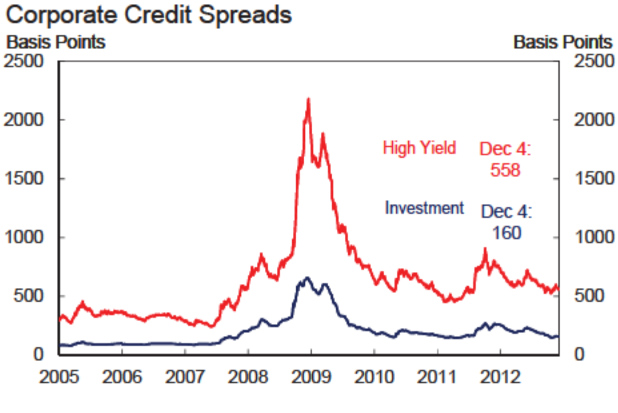


Source: Bloomberg

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

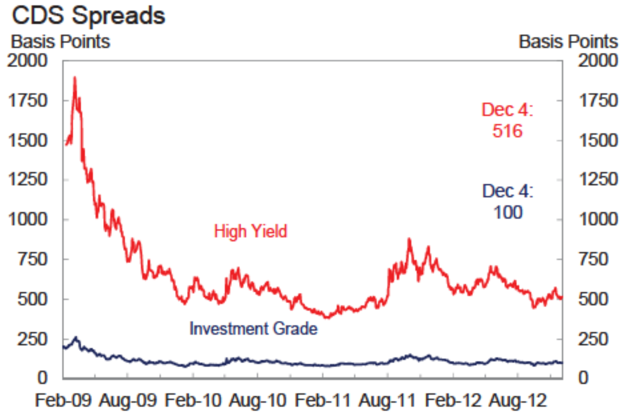
A. Significant Developments

Exhibit A-7: Credit

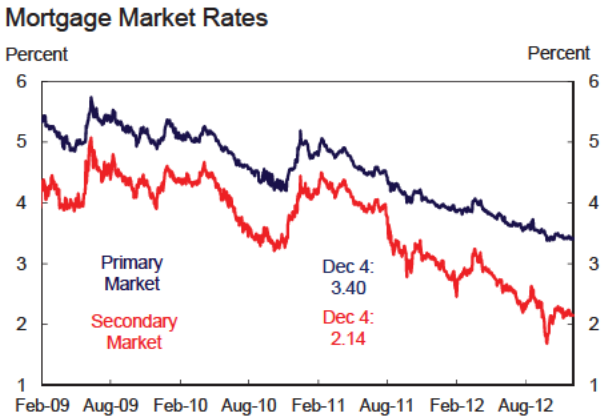


Source: Bloomberg

Note: Option-adjusted spreads.

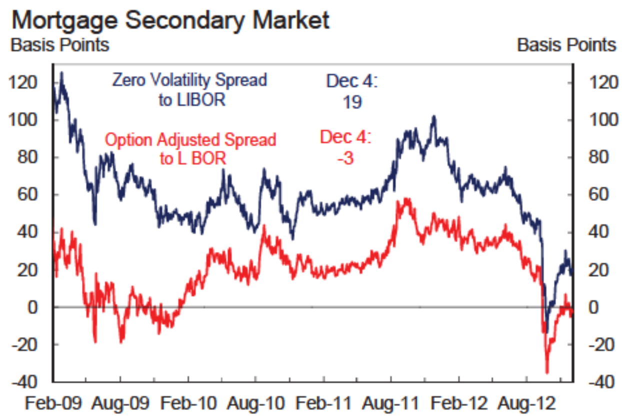


Source: Bloomberg



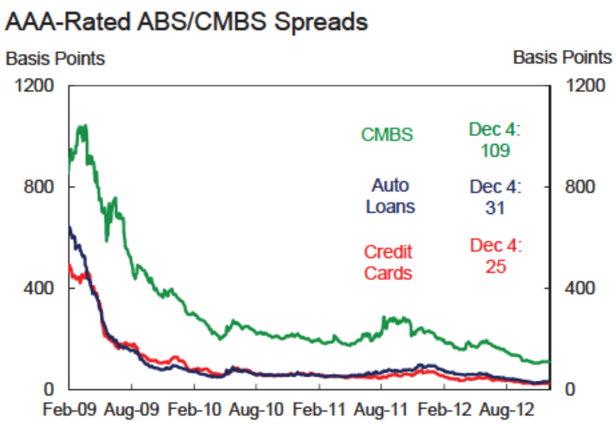
Source: Bloomberg

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



Source: J.P. Morgan

Note: 30 year current coupon Fannie Mae MBS.



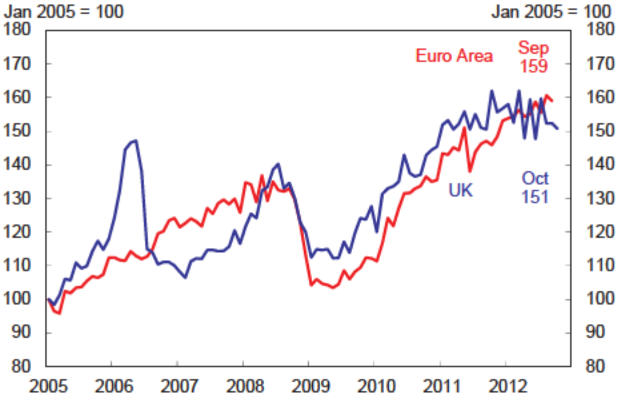
Source: Merrill Lynch

Note: Op ion-adjusted spreads.

A. Significant Developments

Exhibit A-8: Exports and Industrial Production

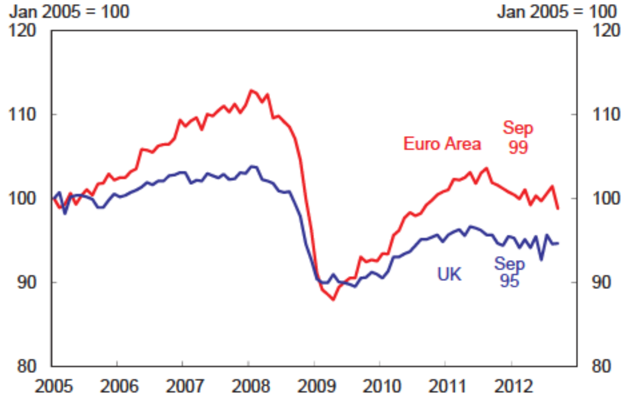
Exports



Source: Haver

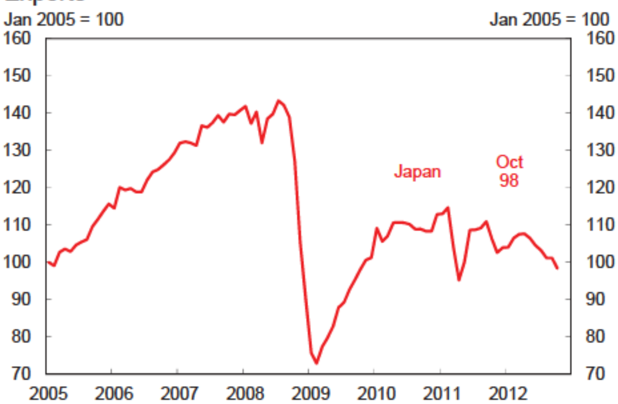
Note: In Local Currency Terms

Industrial Production



Source: Haver

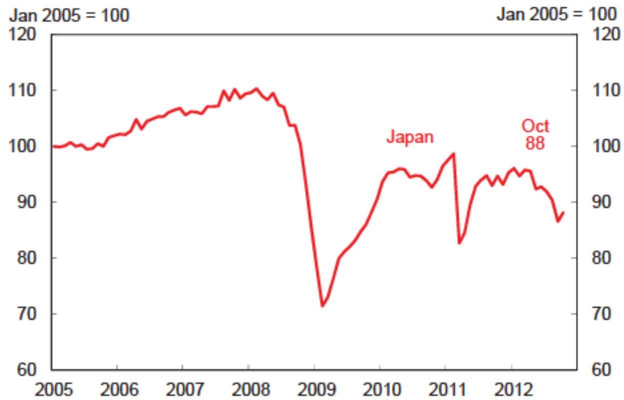
Exports



Source: Haver

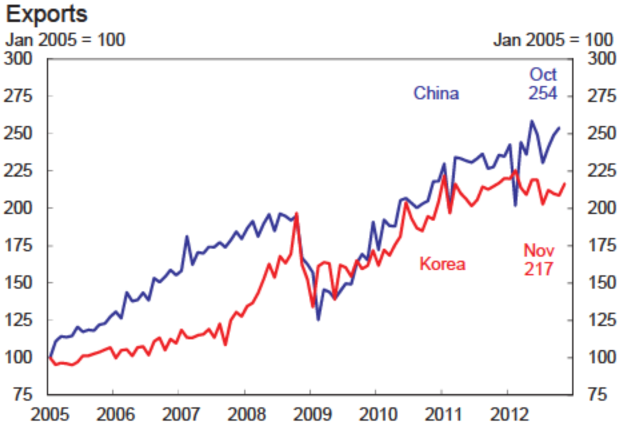
Note: In Local Currency Terms

Industrial Production



Source: Haver

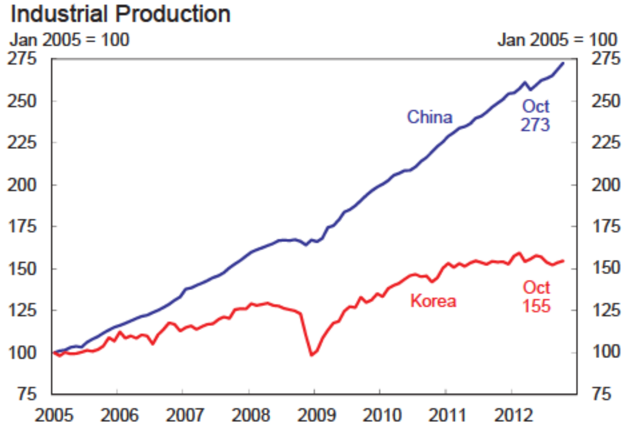
Exports



Source: Haver

Note: In Local Currency Terms

Industrial Production

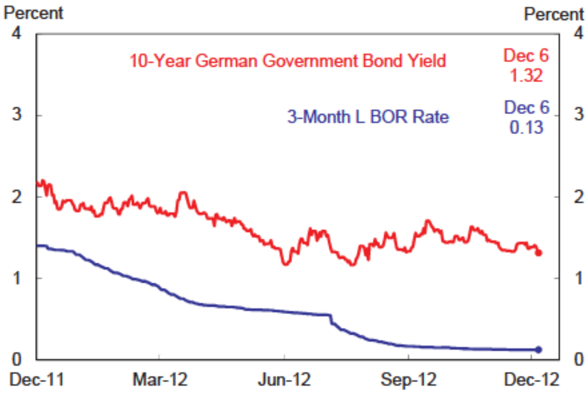


Source: Haver

A. Significant Developments

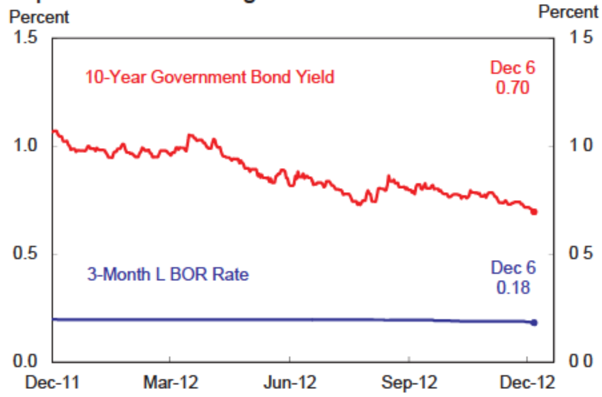
Exhibit A-9:
Global Interest Rates and Equity Markets

Euro Area Short- and Long-Term Interest Rates



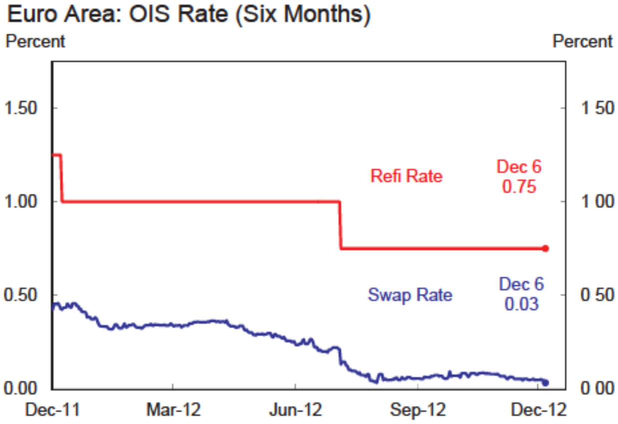
Source: Bloomberg

Japan Short- and Long-Term Interest Rates



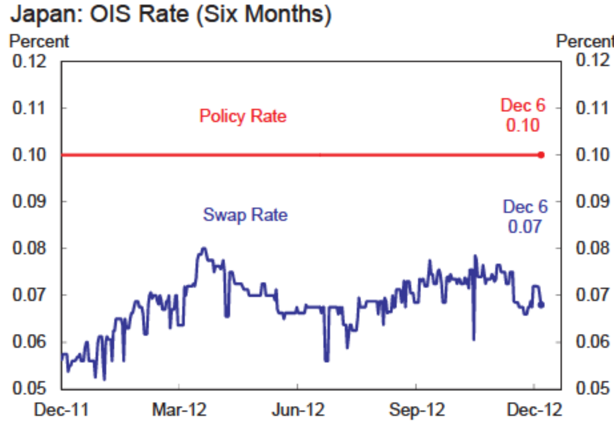
Source: Bloomberg

Euro Area: OIS Rate (Six Months)



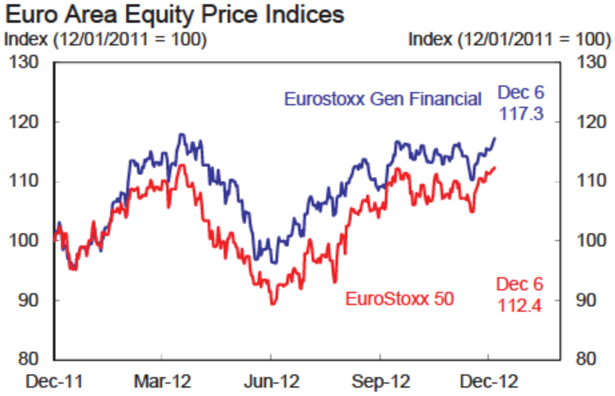
Source: Bloomberg

Japan: OIS Rate (Six Months)



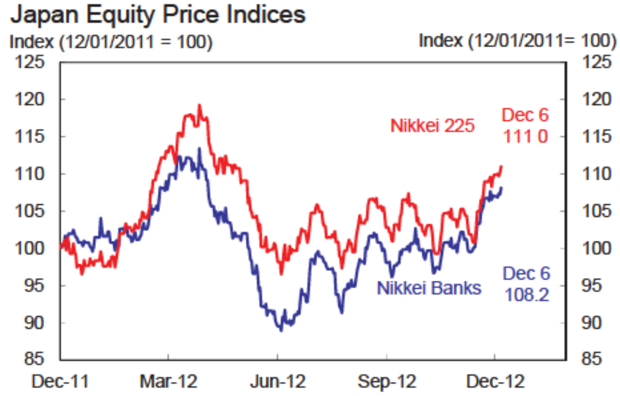
Source: Bloomberg

Euro Area Equity Price Indices



Source: Bloomberg

Japan Equity Price Indices

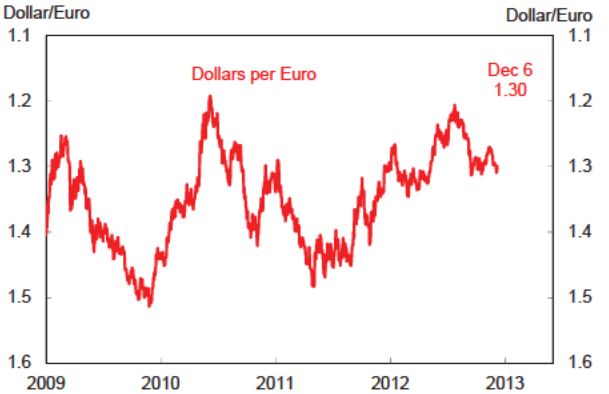


Source: Bloomberg

A. Significant Developments

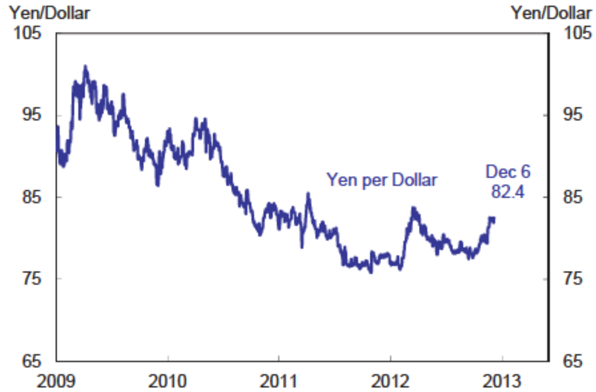
Exhibit A-10:
Exchange Rates

Dollar-Euro Exchange Rate



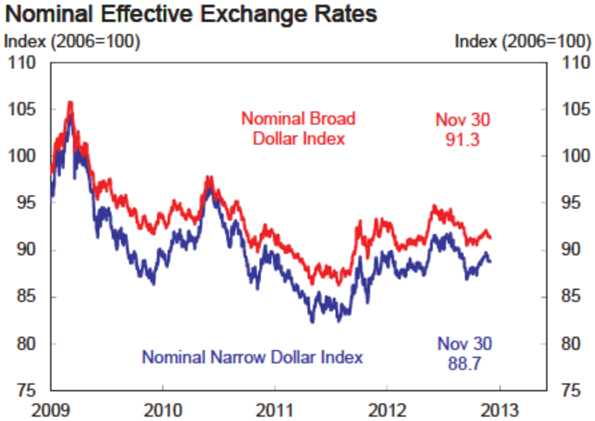
Source: Bloomberg Note: Exchange rate scale is inverted.

Yen-Dollar Exchange Rate



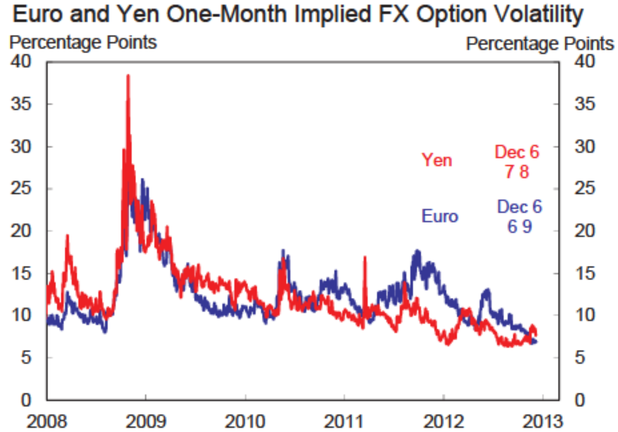
Source: Bloomberg

Nominal Effective Exchange Rates



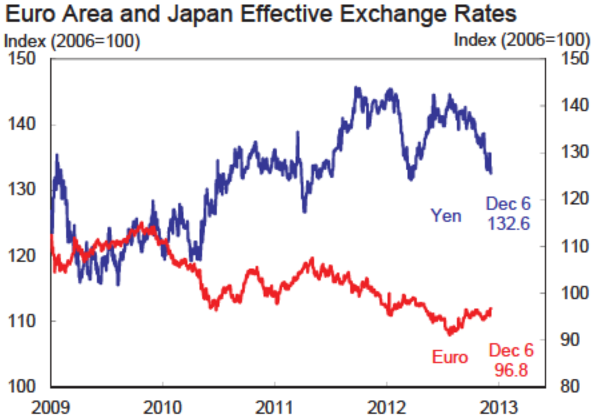
Source: Board of Governers

Euro and Yen One-Month Implied FX Option Volatility



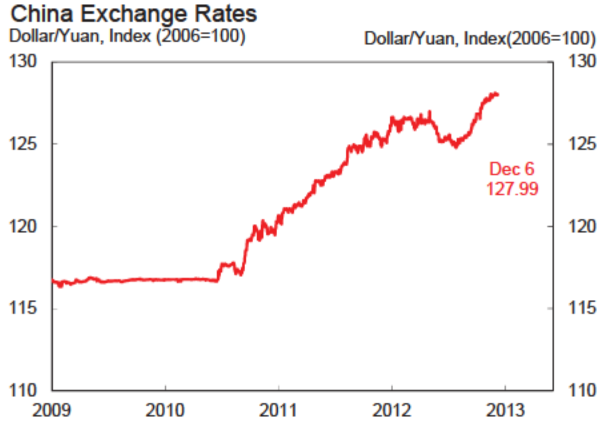
Source: Bloomberg

Euro Area and Japan Effective Exchange Rates



Source: Bloomberg and JPMorgan

China Exchange Rates



Source: Bloomberg

B. FRBNY Forecast Details

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

	Core PCE Inflation			Real GDP Growth			Unemployment Rate*			Fed Funds Rate**		
	Sep	Oct	Dec	Sep	Oct	Dec	Sep	Oct	Dec	Sep	Oct	Dec
2012												
Q1	*2.2*	*2.2*	*2.2*	*2.0*	*2.0*	*2.0*	*8.3*	*8.3*	*8.3*	*0-0.25*	*0-0.25*	*0-0.25*
Q2	1.8	*1.7*	*1.7*	1.7	*1.3*	*1.3*	8.2	*8.2*	*8.2*	0-0.25	*0-0.25*	*0-0.25*
Q3	1.2	1.3	*1.1*	2.0	2.5	*2.7*	8.2	8.1	*8.1*	0-0.25	0-0.25	0-0.25
Q4	1.4	1.4	1.3	2.0	0.9	0.5	8.2	8.1	7.8	0-0.25	0-0.25	0-0.25
2013												
Q1	1.6	1.6	1.4	2.1	1.7	1.9	8.3	8.1	7.8	0-0.25	0-0.25	0-0.25
Q2	1.7	1.7	1.6	2.4	2.4	2.4	8.1	8.0	7.7	0-0.25	0-0.25	0-0.25
Q3	1.8	1.8	1.8	2.7	2.6	2.7	7.8	7.8	7.6	0-0.25	0-0.25	0-0.25
Q4	1.9	1.9	1.9	2.9	2.7	2.7	7.5	7.7	7.5	0-0.25	0-0.25	0-0.25
2014												
Q1	1.9	1.9	1.9	3.8	3.6	3.5	7.3	7.4	7.3	0-0.25	0-0.25	0-0.25
Q2	2.0	2.0	2.0	3.5	3.5	3.3	7.1	7.2	7.1	0-0.25	0-0.25	0-0.25
Q3	2.1	2.1	2.1	4.1	3.9	3.6	6.8	6.8	6.8	0-0.25	0-0.25	0-0.25
Q4	2.1	2.1	2.1	4.1	4.1	4.0	6.5	6.4	6.4	0-0.25	0-0.25	0-0.25
Q4/Q4												
2011	*1.7*	*1.7*	*1.7*	*2.0*	*2.0*	*2.0*	*-1.3*	*-1.3*	*-1.3*	*0.0*	*0.0*	*0.0*
2012	1.6	1.7	1.6	1.9	1.6	1.6	-0.8	-0.8	-0.8	0.0	0.0	0.0
2013	1.8	1.8	1.7	2.5	2.4	2.4	-0.2	-0.3	-0.6	0.0	0.0	0.0
2014	1.8	2.0	2.0	2.5	3.8	3.6	-0.2	-0.9	-0.7	0.0	0.0	0.0

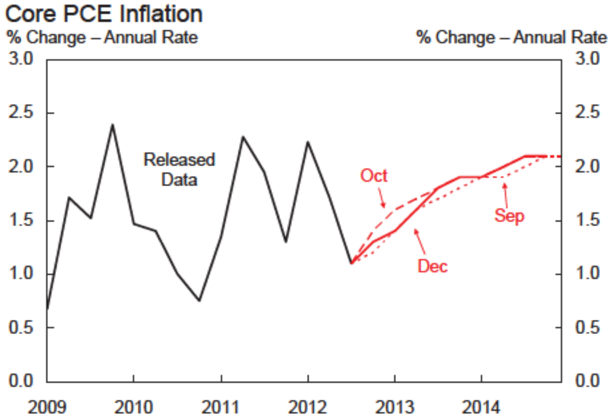
Note: Columns reflect the forecast dates. Numbers in gray are from previous Blackbooks, and numbers in italics are released data.
*Quarterly values are the average rate for the quarter. Yearly values are the difference between Q4 of the previous year and Q4 of the listed year.
**Quarterly values are 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

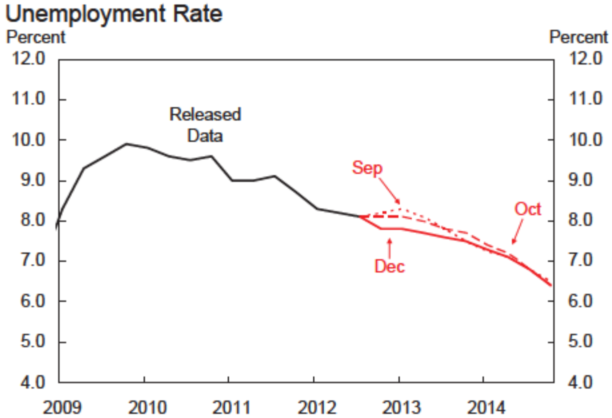
Exhibit B-2: Evolution of Projected Quarterly Paths

Key Indicators

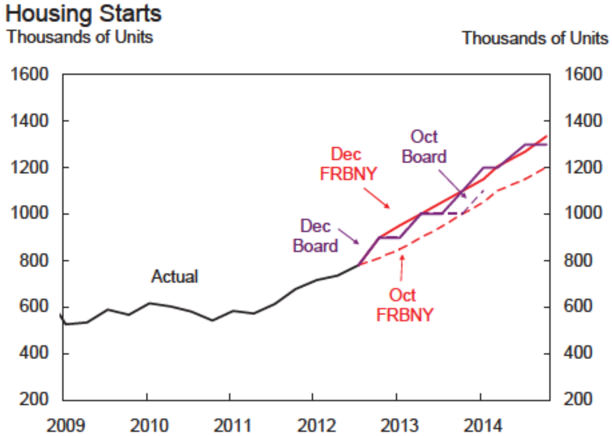
Core PCE Inflation



Unemployment Rate

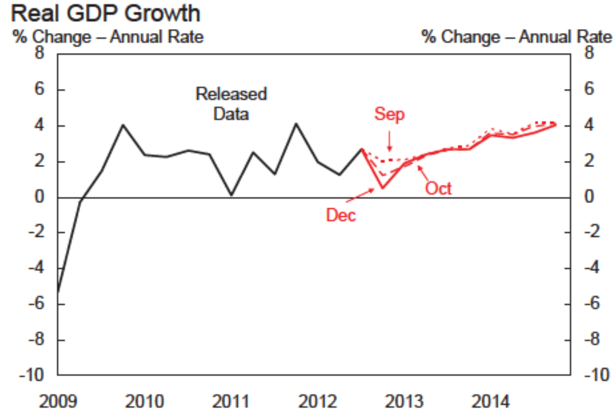


Housing Starts

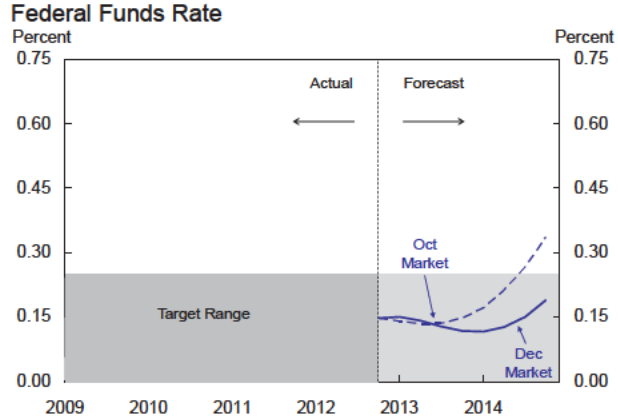


Forecast Assumptions

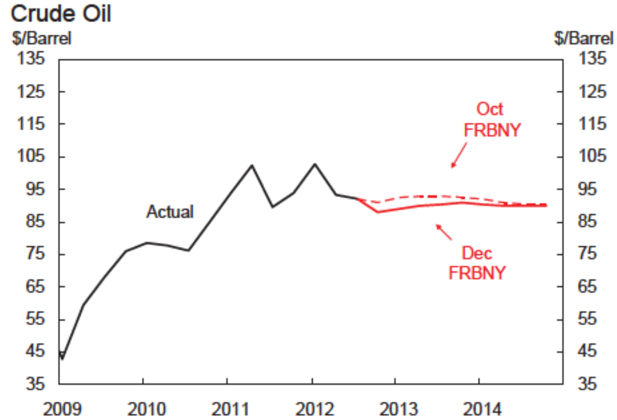
Real GDP Growth



Federal Funds Rate



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)	
	2012Q4	2013Q1	2012Q4	2013Q1
OUTPUT				
Real GDP	0.5	1.9	0.5	1.9
	(0.9)	(1.7)	(0.9)	(1.7)
Final Sales to Domestic Purchasers	1.4	1.3	1.4	1.3
	(1.6)	(1.3)	(1.6)	(1.3)
Consumption	1.5	1.2	1.1	0.8
	(1.8)	(1.2)	(1.3)	(0.8)
BFI: Equipment and Software	2.0	4.0	0.1	0.3
	(3.0)	(5.0)	(0.2)	(0.4)
BFI: Nonresidential Structures	1.0	2.0	0.0	0.1
	(2.0)	(4.0)	(0.1)	(0.1)
Residential Investment	24.0	20.0	0.5	0.5
	(18.0)	(16.0)	(0.4)	(0.4)
Government: Federal	-3.1	-4.0	-0.3	-0.3
	(-3.2)	(-4.0)	(-0.2)	(-0.3)
Government: State and Local	-1.0	-0.4	-0.1	0.0
	(-1.0)	(-0.8)	(-0.1)	(-0.1)
Inventory Investment	--	--	-1.1	0.0
	--	--	(-0.8)	(-0.1)
Net Exports	--	--	0.2	0.6
	--	--	(0.2)	(0.5)
INFLATION				
Total PCE Deflator	1.5	1.4		
	(2.8)	(2.0)		
Core PCE Deflator	1.3	1.4		
	(1.4)	(1.6)		
PRODUCTIVITY AND LABOR COSTS*				
Output per Hour	0.0	1.5		
	(2.0)	(1.5)		
Compensation per Hour	1.5	1.6		
	(1.6)	(1.8)		
Unit Labor Costs	1.5	0.1		
	(-0.4)	(0.3)		

Note: Numbers in parentheses are from the previous FOMC meeting.
*Nonfarm business sector.

B. FRBNY Forecast Details

Exhibit B-4: Medium-Term Projections

	Q4/Q4 Growth Rates			Q4/Q4 Growth Contributions		
	2012	2013	2014	2012	2013	2014
OUTPUT						
Real GDP	1.6	2.4	3.6	1.6	2.4	3.6
	(1.6)	(2.4)	(3.8)	(1.6)	(2.4)	(3.8)
Final Sales to Domestic Purchasers	1.7	1.9	4.0	1.7	1.9	4.1
	(1.7)	(1.9)	(4.0)	(1.8)	(2.0)	(4.1)
Consumption	1.7	1.6	2.8	1.2	1.1	2.0
	(2.0)	(1.6)	(2.8)	(1.4)	(1.1)	(2.0)
BFI: Equipment and Software	2.3	7.5	15.5	0.2	0.5	1.2
	(2.8)	(8.7)	(15.5)	(0.2)	(0.6)	(1.2)
BFI: Nonresidential Structures	3.2	5.0	13.0	0.1	0.1	0.4
	(2.4)	(5.7)	(13.0)	(0.1)	(0.2)	(0.4)
Residential Investment	16.7	17.5	16.0	0.4	0.5	0.5
	(16.6)	(16.0)	(16.0)	(0.4)	(0.4)	(0.5)
Government: Federal	0.3	-4.0	-2.5	0.0	-0.3	-0.2
	(-1.2)	(-4.0)	(-2.5)	(-0.1)	(-0.3)	(-0.2)
Government: State and Local	-1.1	-0.1	2.2	-0.1	0.0	0.3
	(-1.3)	(-0.2)	(2.2)	(-0.2)	(-0.0)	(0.3)
Inventory Investment	--	--	--	-0.4	0.2	0.2
	--	--	--	(-0.3)	(0.1)	(0.3)
Net Exports	--	--	--	0.2	0.3	-0.7
	--	--	--	(0.1)	(0.3)	(-0.6)
INCOME						
Personal Income	3.6	3.3	5.8			
	(4.1)	(3.2)	(5.9)			
Real Disposable Personal Income	1.9	0.9	3.3			
	(1.9)	(0.6)	(3.4)			
Personal Saving Rate	3.5	2.9	3.4			
	(3.3)	(2.5)	(3.1)			
Corporate Profits Before Taxes	2.2	2.3	3.7			
	(2.9)	(2.1)	(3.8)			

Note: Numbers in parentheses are from the previous FOMC meeting.

B. FRBNY Forecast Details

Exhibit B-5: Medium-Term Projections, Continued

	Q4/Q4 Growth Rates		
	2012	2013	2014
INFLATION			
Total PCE Deflator	1.6	1.8	2.2
	(1.9)	(2.1)	(2.2)
Core PCE Deflator	1.6	1.7	2.0
	(1.7)	(1.8)	(2.0)
Total CPI Inflation	1.9	2.4	--
	(2.4)	(2.4)	--
Core CPI Inflation	2.0	2.0	--
	(2.0)	(2.0)	--
GDP Deflator	1.9	1.8	2.2
	(2.2)	(2.0)	(2.3)
PRODUCTIVITY AND LABOR COSTS*			
Output	2.5	3.2	4.6
	(2.7)	(3.0)	(4.9)
Hours	1.5	1.7	2.6
	(1.2)	(1.5)	(2.9)
Output per Hour	1.0	1.5	2.0
	(1.5)	(1.5)	(2.0)
Compensation per Hour	2.4	1.7	2.3
	(3.1)	(2.1)	(2.7)
Unit Labor Costs	1.3	0.2	0.3
	(1.6)	(0.6)	(0.7)
LABOR MARKET			
Unemployment Rate (Avg. Q4 Level)	7.8	7.5	6.4
	(8.1)	(7.7)	(6.4)
Participation Rate (Avg. Q4 Level)	63.6	63.6	63.7
	(63.5)	(63.5)	(63.6)
Avg. Monthly Nonfarm Payroll Growth (Thous.)	151	177	270
	(116)	(155)	(302.2)

Note: Numbers in parentheses are from the previous FOMC meeting.
*Nonfarm business sector.

B. FRBNY Forecast Details

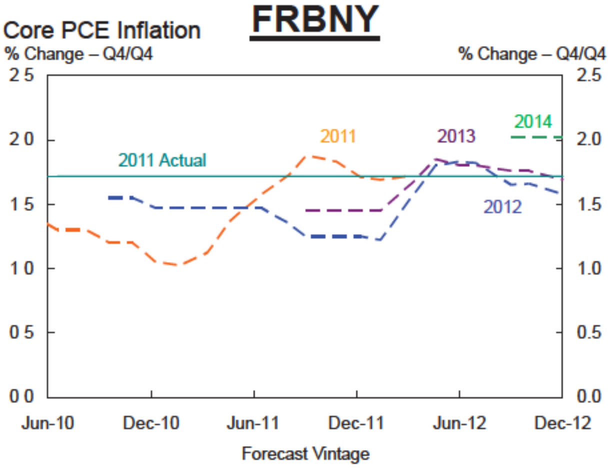
Exhibit B-6: FRBNY and Tealbook Forecast Comparison

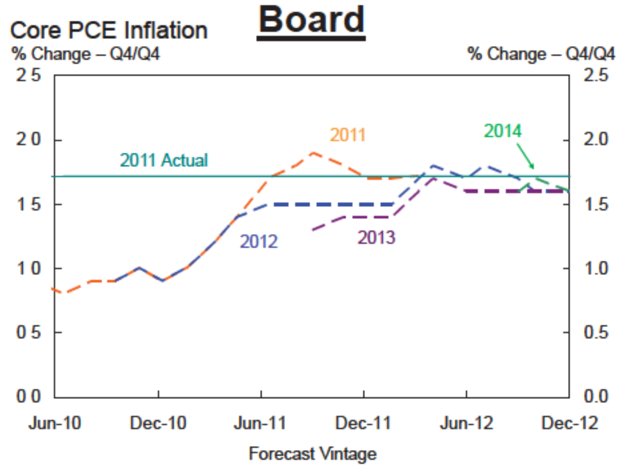
	FRBNY (Q4/Q4)			Board (Q4/Q4)		
	2012	2013	2014	2012	2013	2014
OUTPUT						
Real GDP	1.6	2.4	3.6	1.7	2.5	3.2
	(1.6)	(2.4)	(3.8)	(1.8)	(2.6)	(3.5)
GDP Growth Contributions						
Final Sales to Domestic Purchasers	1.7	1.9	4.1	2.0	2.5	3.3
	(1.8)	(2.0)	(4.1)	(2.2)	(2.7)	(3.6)
Consumption	1.2	1.1	2.0	1.3	1.6	2.3
	(1.4)	(1.1)	(2.0)	(1.7)	(2.0)	(2.7)
BFI	0.3	0.7	1.6	0.4	0.5	0.6
	(0.3)	(0.8)	(1.6)	(0.2)	(0.4)	(0.6)
Residential Investment	0.4	0.5	0.5	0.3	0.4	0.3
	(0.4)	(0.4)	(0.5)	(0.3)	(0.4)	(0.4)
Government	-0.1	-0.3	0.1	-0.2	-0.3	-0.2
	(-0.2)	(-0.3)	(0.1)	(-0.2)	(-0.3)	(-0.2)
Inventory Investment	-0.4	0.2	0.2	-0.2	0.2	0.1
	(-0.3)	(0.1)	(0.3)	(-0.2)	(0.2)	(0.0)
Net Exports	0.2	0.3	-0.7	0.1	0.0	0.0
	(0.1)	(0.3)	(-0.6)	(0.0)	(0.0)	(0.0)
INFLATION						
Total PCE Deflator	1.6	1.8	2.2	1.6	1.3	1.4
	(1.9)	(2.1)	(2.2)	(1.7)	(1.3)	(1.4)
Core PCE Deflator	1.6	1.7	2.0	1.7	1.5	1.5
	(1.7)	(1.8)	(2.0)	(1.6)	(1.5)	(1.6)
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	1.0	1.5	2.0	0.9	1.0	1.8
	(1.5)	(1.5)	(2.0)	(0.9)	(1.3)	(1.6)
Compensation per Hour	2.4	1.7	2.3	2.4	2.7	3.0
	(3.1)	(2.1)	(2.7)	(3.5)	(2.8)	(3.1)
Unit Labor Costs	1.3	0.2	0.3	1.5	1.7	1.2
	(1.6)	(0.6)	(0.7)	(2.6)	(1.5)	(1.5)
LABOR MARKET						
Unemployment Rate (Avg. Q4 Level)	7.8	7.5	6.4	8.0	7.8	7.4
	(8.1)	(7.7)	(6.4)	(8.0)	(7.8)	(7.2)
Participation Rate (Avg. Q4 Level)	63.6	63.6	63.7	63.8	63.7	(63.7)
	(63.5)	(63.5)	(63.6)	(63.7)	(63.6)	(63.6)
Avg. Monthly Nonfarm Payroll Growth (Thous.)	151	177	270	155	158	200.0
	(116)	(155)	(302.2)	(147)	(170)	(249)
SAVING						
Personal Saving Rate (Avg. Q4 Level)	3.5	2.9	3.4	3.6	2.6	3.2
	(3.3)	(2.5)	(3.1)	(3.8)	(3.1)	(3.5)
HOUSING						
Housing Starts (Avg. Q4 Level, Thous.)	900	1100	1335	800	1000	1200
	(830)	(1025)	(1225.0)	(600)	(800)	(1000)

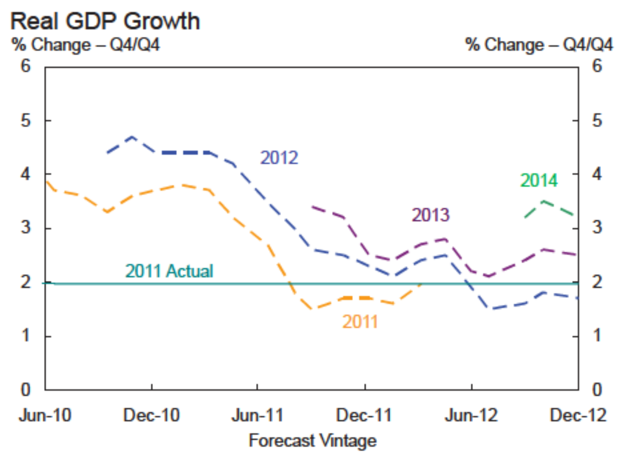
Note: Numbers in parentheses are from the previous Blackbook.

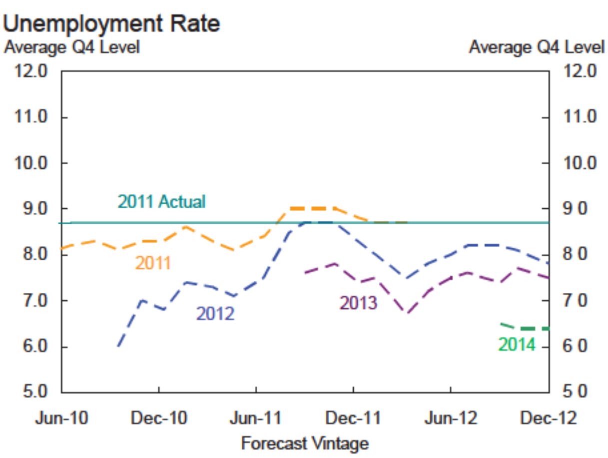
B. FRBNY Forecast Details

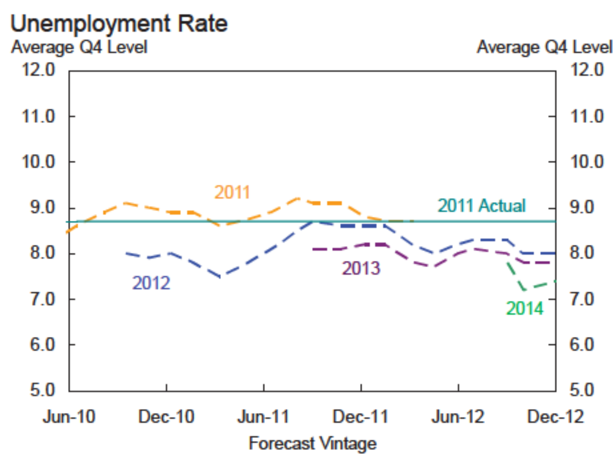
Exhibit B-7: Evolution of FRBNY and Board Forecasts since the end of 2009











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	2012Q4	2013Q1	2012 Q4/Q4	2013 Q4/Q4
FRBNY	12/6/2012	0.5	1.9	1.6	2.4
		(1.2)	(1.7)	(1.7)	(2.3)
Blue Chip	11/10/2012	1.7	1.6	1.7	2.3
		(1.8)	(1.7)	(1.7)	(2.3)
Median SPF	11/9/2012	1.8	1.7	2.6	2.3
		(2.2)	(1.8)	(1.8)	--
Macro Advisers	12/6/2012	0.5	1.8	1.6	2 9
		(2.1)	(2.3)	(1.6)	(3 2)
FRBNY-DSGE	12/4/2012	0.7	1.6	1.7	1 9
		(2.3)	(2.4)	(2.0)	(2.4)

Core PCE Inflation

	Release Date	2012Q4	2013Q1	2012 Q4/Q4	2013 Q4/Q4
FRBNY	12/6/2012	1.3	1.4	1.6	1.7
		(1.4)	(1.6)	(1.7)	(1.8)
Median SPF	11/9/2012	1.6	1.8	1.7	1 9
		(1.8)	(1.9)	(1.9)	(2.0)
Macro Advisers	12/6/2012	1.5	1.7	1.7	1.7
		(1.6)	(1.6)	(1.7)	(1.8)
FRBNY-DSGE	12/4/2012	1.3	0.9	1.6	0.9
		(1.3)	(1.2)	(1.7)	(1.3)

CPI Inflation

	Release Date	2012Q4	2013Q1	2012 Q4/Q4	2013 Q4/Q4
FRBNY	12/6/2012	2.1	2.3	1.9	2.4
		(4.0)	(2.3)	(2.4)	(2.4)
Blue Chip	11/10/2012	2.5	1.8	2.0	2.0
		(2.4)	(1.8)	(1.9)	(2.1)
Median SPF	11/9/2012	2.3	2.1	1.9	2.2
		(2.0)	(2.1)	(1.8)	(2.2)
Macro Advisers	12/6/2012	3.0	0.9	2.1	1.3
		(2.8)	(0.6)	(2.1)	(1.5)

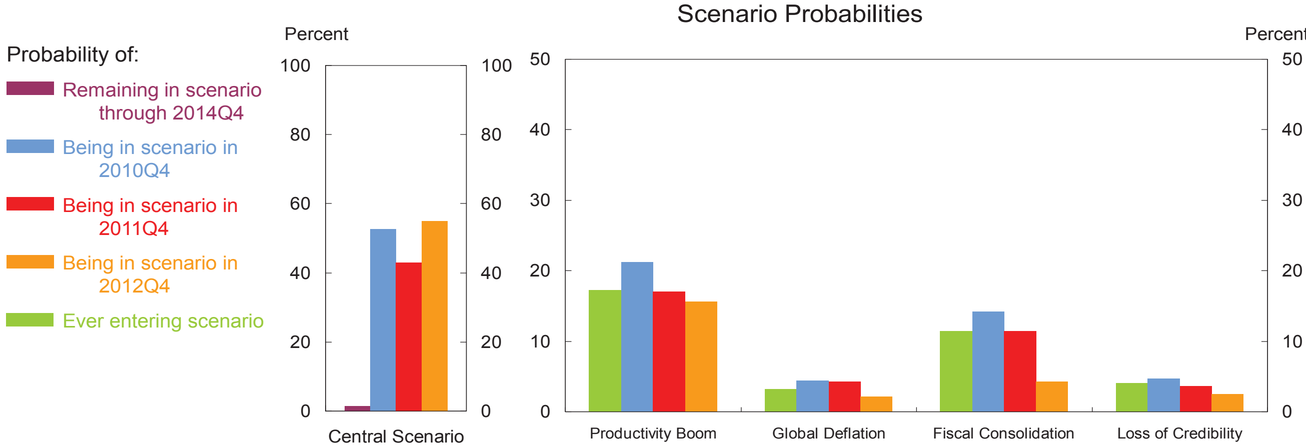
Core CPI Inflation

	Release Date	2012Q4	2013Q1	2012 Q4/Q4	2013 Q4/Q4
FRBNY	12/6/2012	1.8	1.9	2.0	2.0
		(1.7)	(1.9)	(2.0)	(2.0)
Median SPF	11/9/2012	1.8	1.9	2.0	2.0
		(2.0)	(2.0)	(2.2)	(2.0)
Macro Advisers	12/6/2012	1.7	1.9	2.0	1.8
		(1.7)	(1.6)	(2.0)	(1.8)

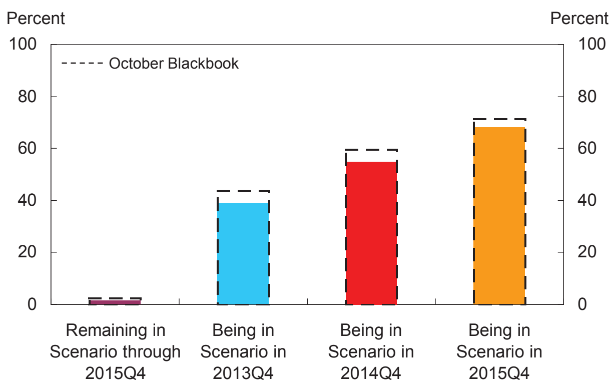
C. FRBNY Forecast Distributions

Exhibit C-1:
Risks

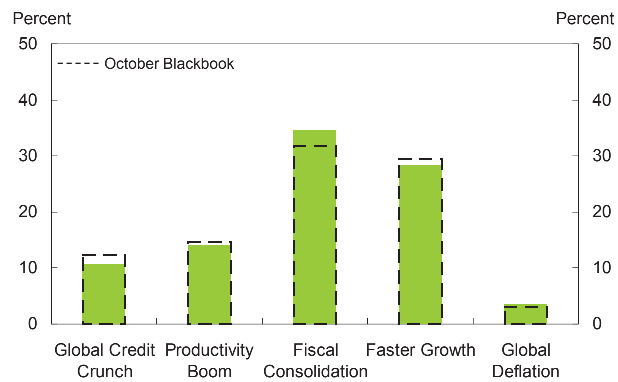
Scenario Probabilities



Change in Central Scenario Probabilities



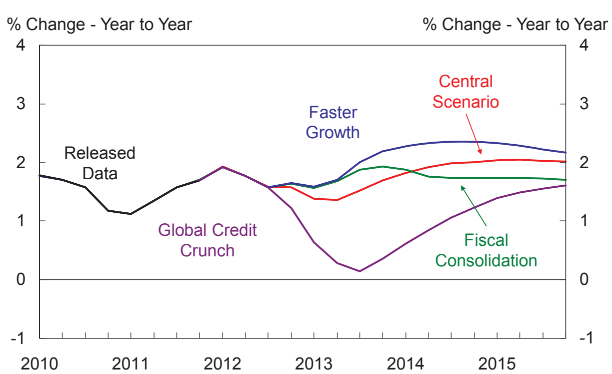
Change in Alternative Scenario Probabilities*



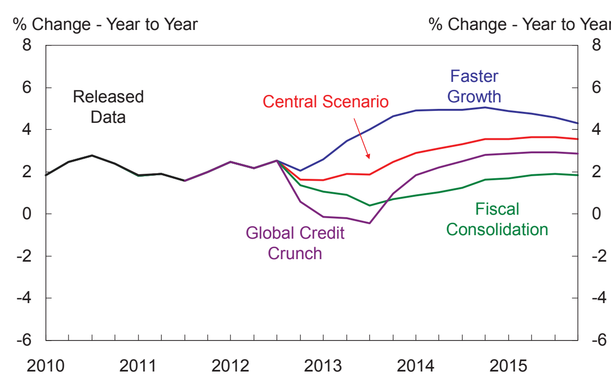
*Probability of ever reaching scenario

Exhibit C-2: Projections under Alternative Scenarios

Core PCE Inflation under Alternative Scenarios Selected



Real GDP Growth under Alternative Scenarios Selected

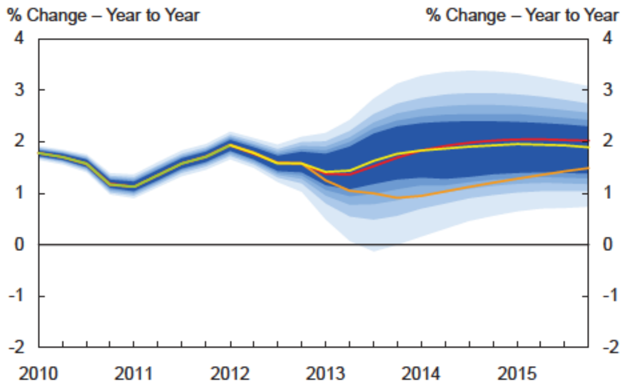


Source: MMS Function (FRBNY)

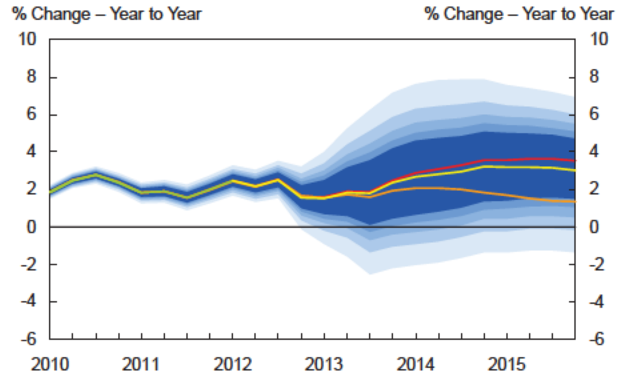
C. FRBNY Forecast Distributions

Exhibit C-3: Inflation and Output Forecast Distributions

Core PCE Inflation Forecast Distribution

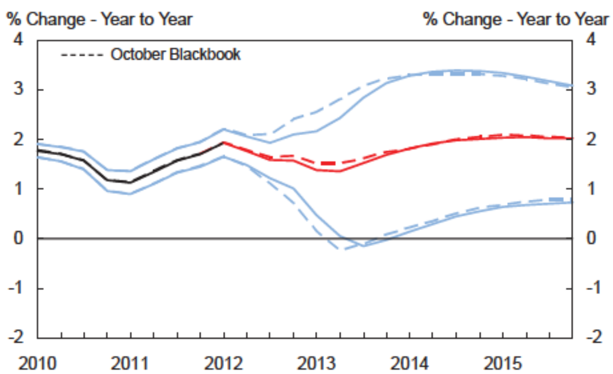


Real GDP Growth Forecast Distribution

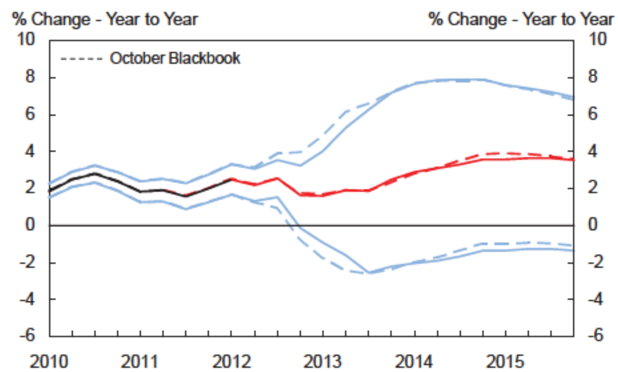


The yellow line is the expected value of the forecast distribution, the red line is the FRBNY central projection, the orange line is the DSGE forecast, and the green line is released data. The shading represents the 50, 60, 70, 80 and 90 percent probability that the four-quarter change will be within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

Change in Core PCE Inflation Forecast Distribution

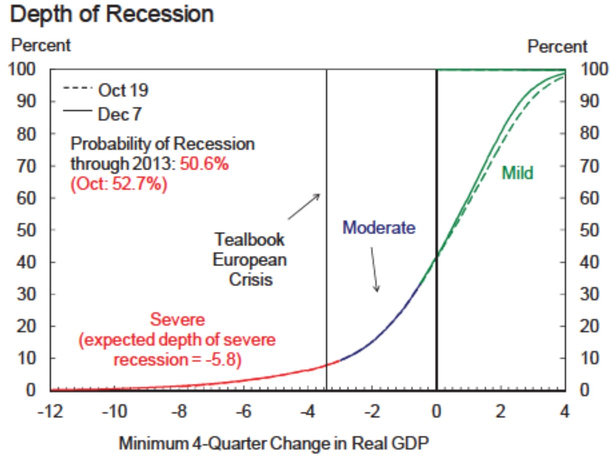


Change in Real GDP Growth Forecast Distribution

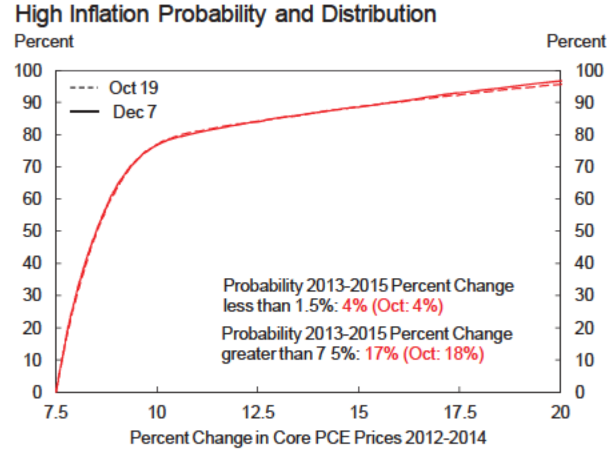


The blue lines are the 90% chance the four-quarter change will be within the lines, the red line is the central scenario projection, and the black line is released data. Dashed lines represent forecasts from the previous Blackbook.

Depth of Recession



High Inflation Probability and Distribution

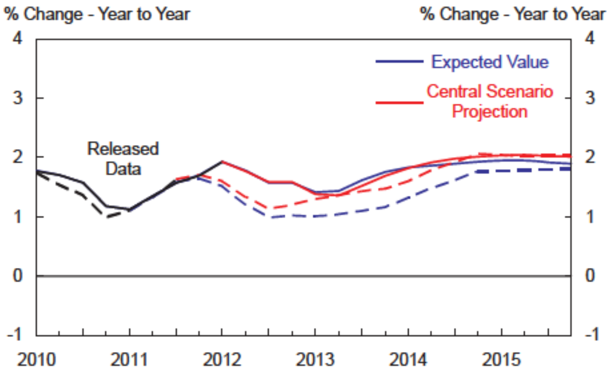


Source: MMS Function (FRBNY)

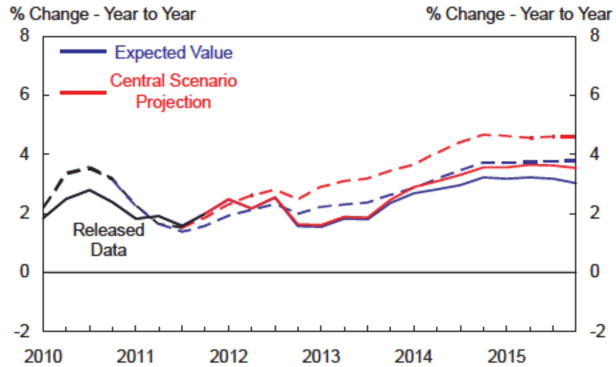
C. FRBNY Forecast Distributions

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

One-Year Comparison of Core PCE Inflation Forecast

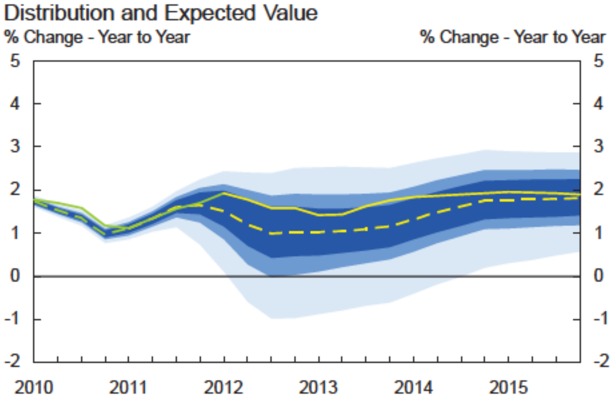


One-Year Comparison of Real GDP Growth Forecast

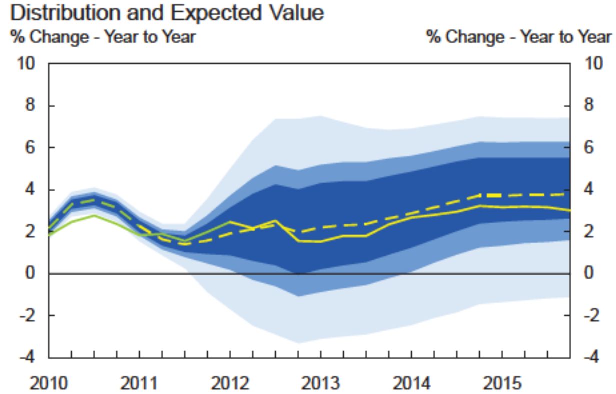


The solid lines represent the current central scenario projection and expected value, while the dashed lines represent those from the year-ago Blackbook.

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



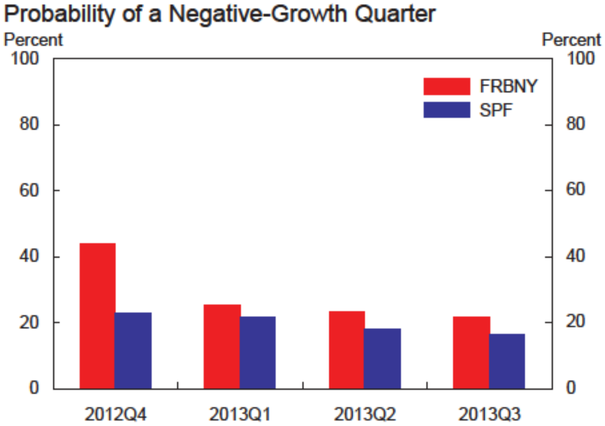
One-Year Comparison of Real GDP Growth Forecast Distribution and Expected Value



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

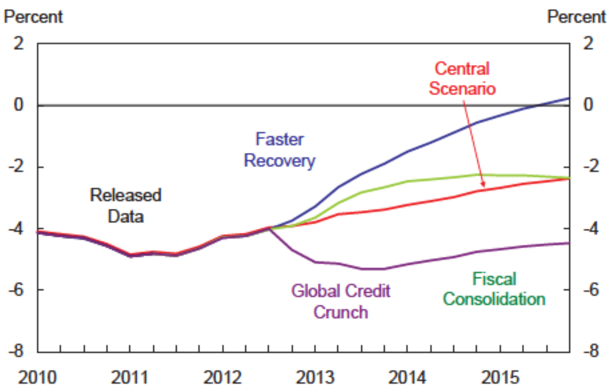


Source: MMS Function (FRBNY)

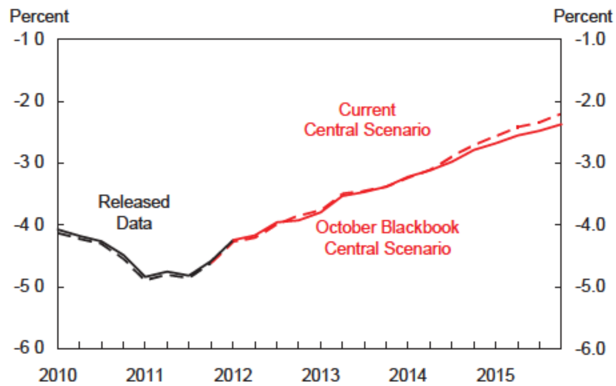
D. FRBNY Fed Funds Rate Projections

Exhibit D-1: *Baseline*
Policy Rule Analysis

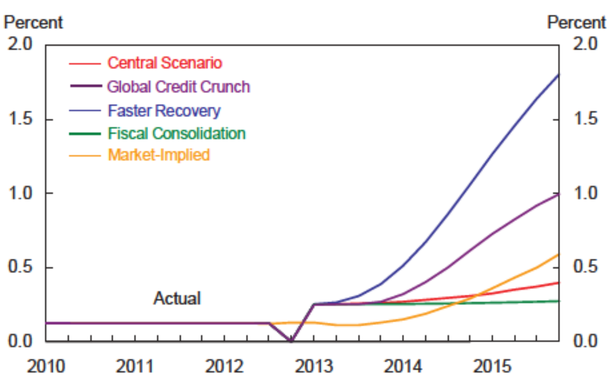
Real FFR under Alternative Scenarios



Change in Central Scenario Real FFR



Nominal FFR under Alternative Scenarios



Change in Central Scenario and Market-Implied Nominal FFR

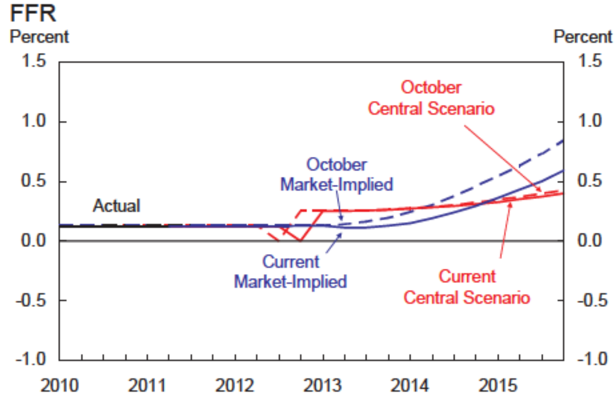
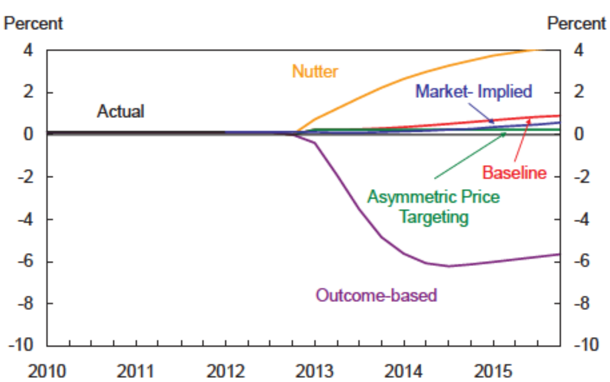


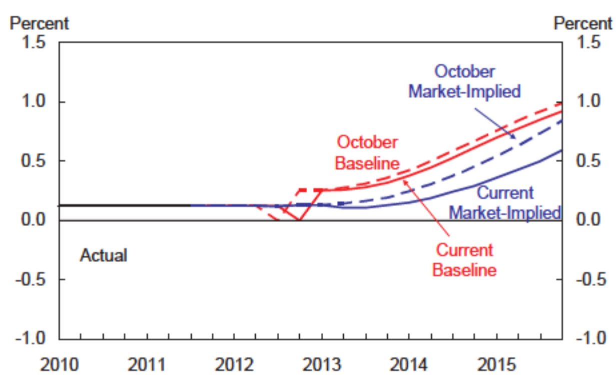
Exhibit D-2: Alternative Policy Rules under Expected Value of Forecast Distribution

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

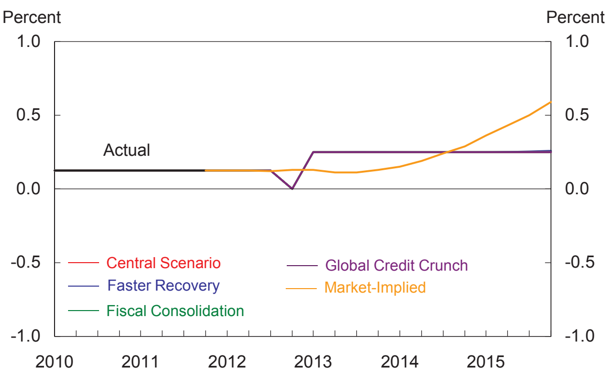
Source: MMS Function (FRBNY)

D. FRBNY Fed Funds Rate Projections

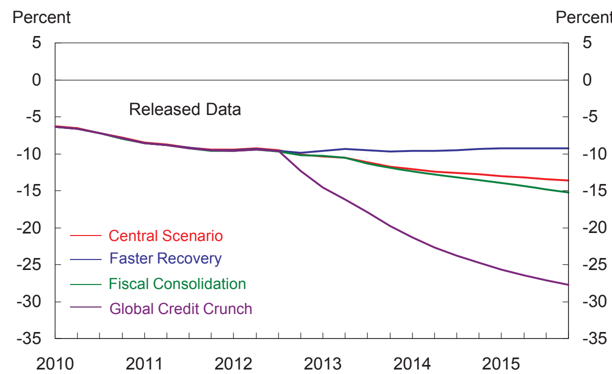
Exhibit D-3: Alternative Policy Rule Analysis

Policy Rule: *Asymmetric Price Targeting*

Nominal FFR under Alternative Scenarios

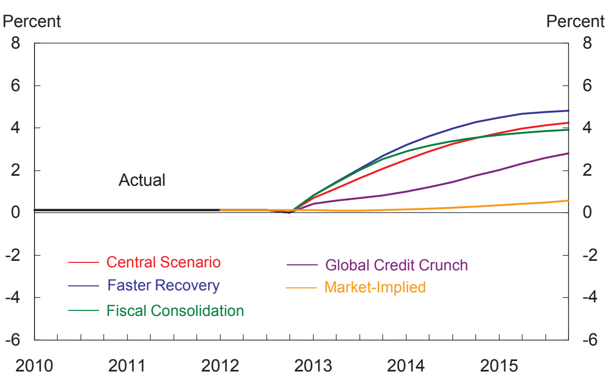


Real FFR under Alternative Scenarios

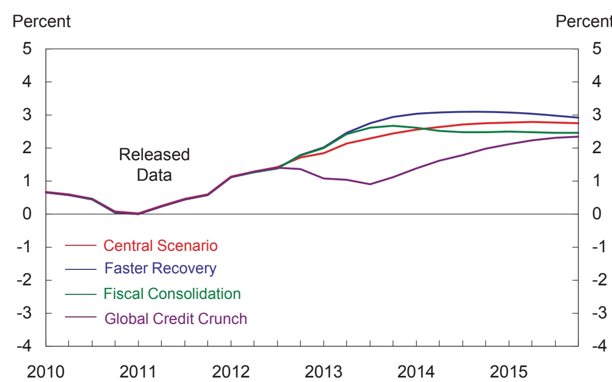


Policy Rule: *Nutter*

Nominal FFR under Alternative Scenarios

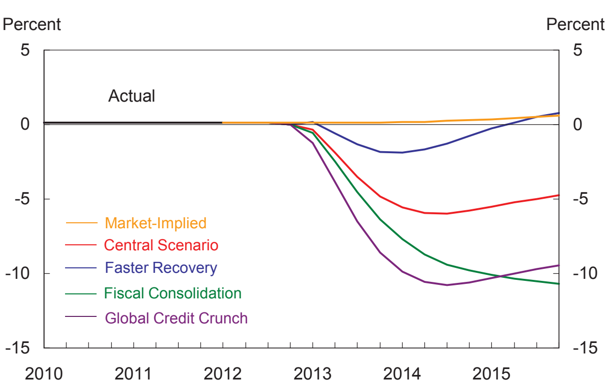


Real FFR under Alternative Scenarios

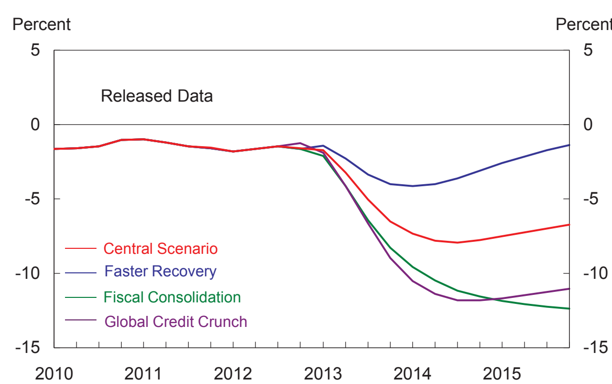


Policy Rule: *Outcome-based*

Nominal FFR under Alternative Scenarios



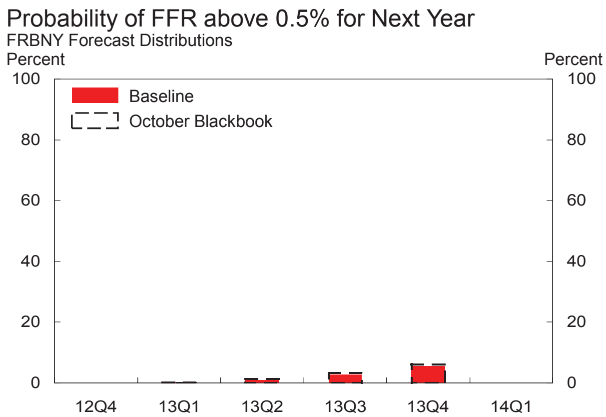
Real FFR under Alternative Scenarios

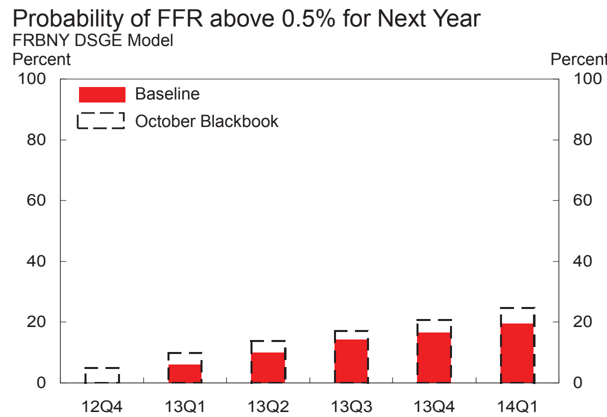


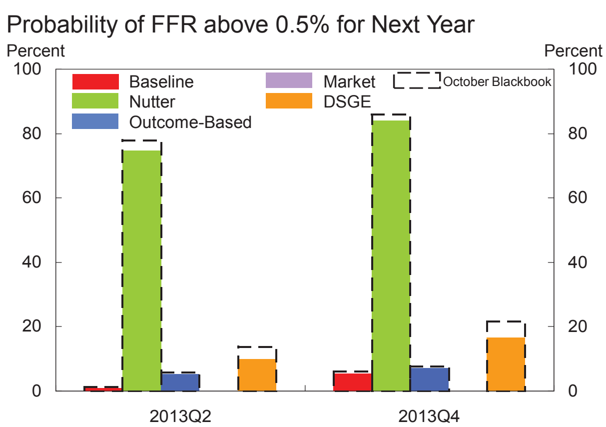
Source: MMS Function (FRBNY)

D. FRBNY Fed Funds Rate Projections

Exhibit D-4: FFR Probabilities





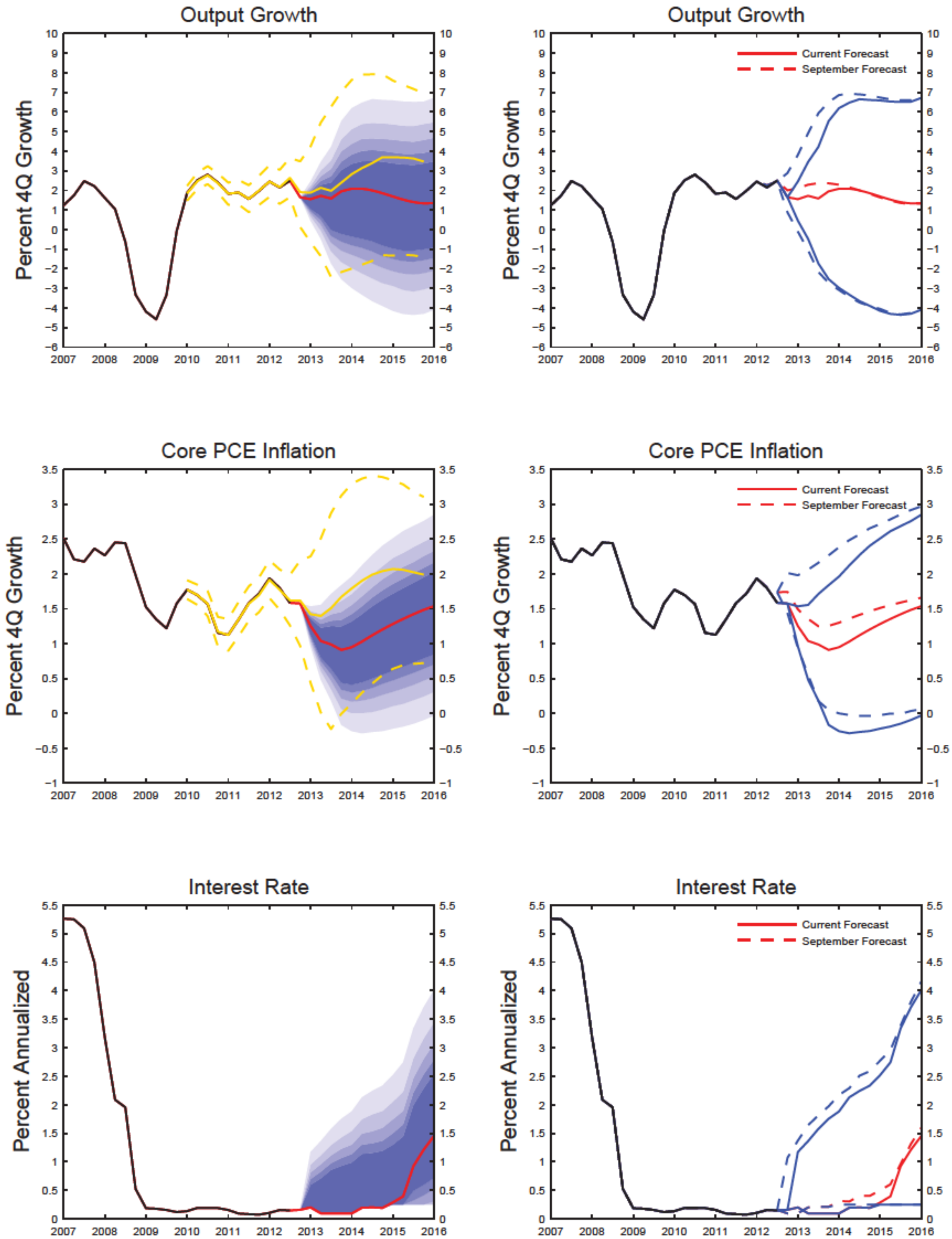


Note: Probability displayed is probability of FFR being above 0.5% in quarter noted and remaining above 0.5% in subsequent four quarters. DSGE results are shown for model including zero bound restriction.

Source: MMS Function (FRBNY)

E. FRBNY-DSGE Model

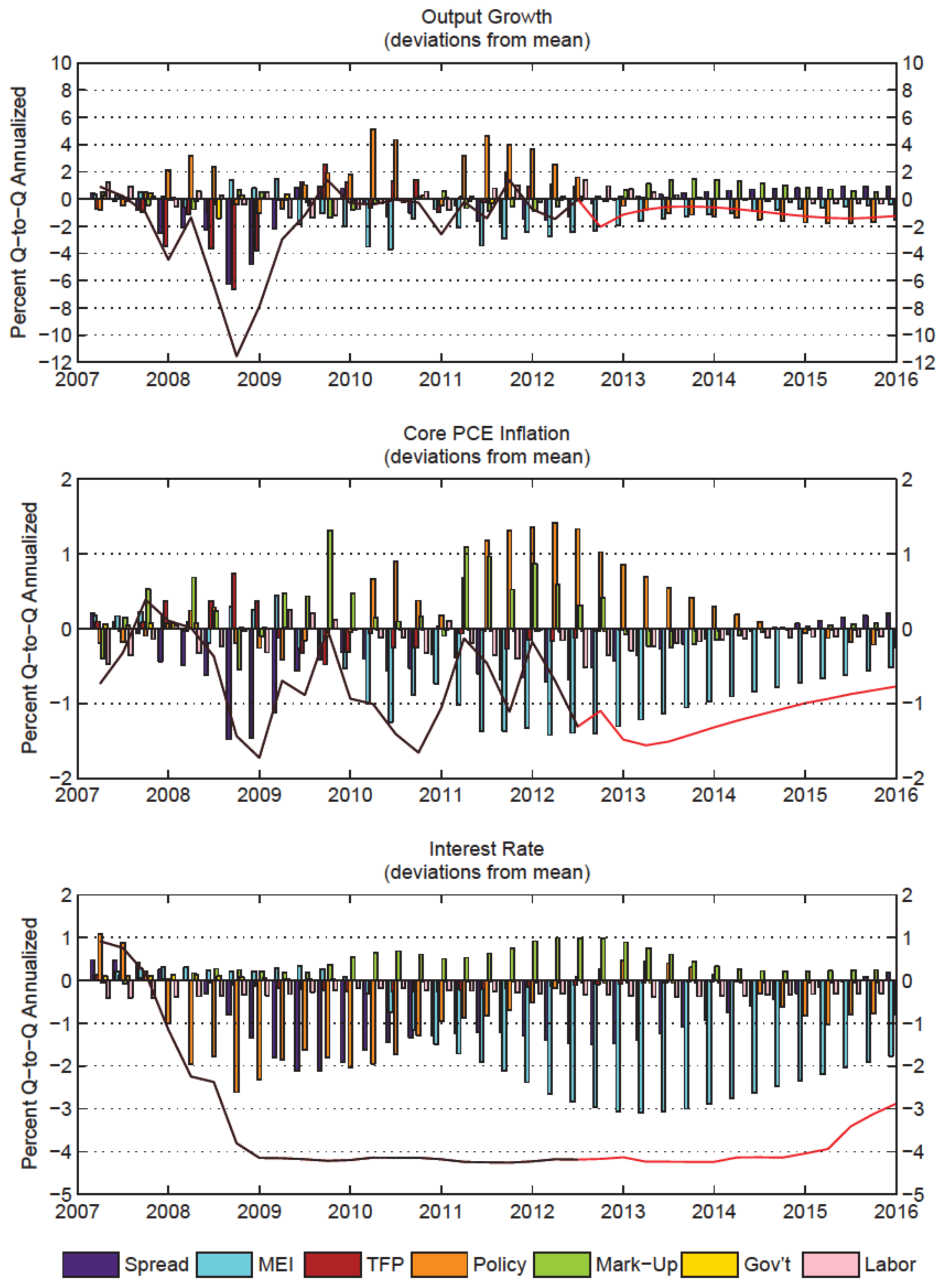
Exhibit E-1: FRBNY-DSGE Forecasts



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 expectations[2]. [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 process of

[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.

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:

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

$\rho = 0.8$ (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: $i_t = 1.20*i_{t-1} - 0.39*i_{t-2} + 0.19*(1.17 + 1.73*\pi_t + 3.66*x_t - 2.72*x_{t-1})$

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.