FRBNY BLACKBOOK

RESEARCH AND STATISTICS GROUP

FOMC Background Material

September 2011

CONFIDENTIAL (FR) Class II FOMC

FRBNY BLACKBOOK

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EXHIBIT OVERVIEW

1. Policy Recommendation and Rationale

Economic and financial market developments since the August Blackbook have led us to lower our real activity outlook and raise the downside risks to the forecast. We also see somewhat greater uncertainty around our central outlook. Consistent with our forecast, we recommend adopting more explicit forward guidance on the FFR framed in terms of state-contingent triggers rather than a time commitment. In particular, we recommend providing guidance on monetary policy accommodation through the specification of policy adjustments under alternative scenarios, which would help clarify the FOMC's reaction function. We further recommend supporting this commitment by an expansion of the Federal Reserve's balance sheet, implemented in part through purchases of MBS.

Rationale—Outlook. The real activity releases since the August Blackbook came in somewhat weaker than expected. Labor market conditions remained sluggish at best. Consumer confidence fell and consumer spending continued to be weak. Business survey indicators generally fell, with some down to levels that typically signal a downturn in activity. Nonfarm labor productivity growth was negative for the second consecutive quarter, although we expect it to pick up in the second part of the year. Consequently, we have again lowered our real GDP growth forecasts for this year (1.5% (Q4/Q4) vs. 1.7% in the August Blackbook) and next year (2.6% compared to 3.1%), while our projected path for the unemployment rate is roughly the same. The outlook for inflation is slightly changed since the August Blackbook: we project total PCE to be somewhat higher in 2011 (2.8% (Q4/Q4) vs. 2.4% in the August Blackbook) and to slow down to 1.4% (Q4/Q4) in 2012 (down from 1.6% in the August Balckbook).

Rationale—Uncertainty and Risks. The economic and financial market developments during the inter-meeting period—including the worsening of financial conditions in Europe and broad declines in global equity markets—have led us to increase the uncertainty around our central outlook and to shift the balance of risks for real activity and inflation further to the downside. Indicators of fiscal stress in Europe have worsened, with renewed pressure on government debt yields in peripheral countries. European banks have also experienced tighter funding conditions. These factors can potentially affect financial conditions in the US, impairing households and firms' balance sheet adjustment, with negative consequences for growth. In addition, they raise the risks of lower global growth, which have been reflected in the decline of global equity prices and in long-term real interest rates, and could also lead to weaker than expected external demand for US exports.

Policy Recommendation

Given our outlook and risk assessment, more policy accommodation is needed. At the same time, policy continues to be constrained by the zero lower bound. In the August statement the FOMC changed its forward guidance by substituting the "extended period" language with a more specific time frame ("at least through mid-2013") for the policy rate to remain at exceptionally low levels. Market participants responded by lowering their policy expectations at medium-term horizons. Both market- and survey-based measures of federal funds rate expectations are now in the 0-0.25% range until mid-2013. This shift in expectations could reflect two different interpretations of the statement. On the one hand, the statement might have been interpreted as a conditional commitment in terms of calendar time. As we argued in the August Blackbook, a time commitment policy has some undesirable features: for example, if the policy is successful, the FOMC would probably wish to tighten before the end of the commitment period, as it occurred with the Bank of Canada's conditional commitment of 2009-10. On the other hand, markets might have interpreted the anticipated prolonged period at or near the zero lower bound as confirming that the FOMC expects the recovery to remain weak. This could exacerbate the risk of a liquidity trap scenario, and it is particularly worrisome given that market-implied measures of long-term real rates are at historical lows.

We therefore recommend that the FOMC provide more explicit forward guidance about the extent to which monetary policy accommodation will be maintained through a state-contingent commitment. Under such a commitment the FOMC would explicitly state the conditions that would warrant maintaining the federal funds rate target range at 0-0.25% along with those that would justify changes in the size or composition of the Federal

Reserve's balance sheet to support policy accommodation. The FOMC may also explicitly state the conditions that would warrant an early exit strategy.

A key feature of a state contingent policy is to provide clarity on the triggers for actions. One possible way to implement a state contingent policy is by formulating the policy in terms of a target path for either the price level or the level of nominal GDP. These two options were discussed in detail in the September 2010 and August 2011 Blackbooks. Were the FOMC to adopt such a form of state-contingent policy, a clear communications strategy and appropriate operational measures should be taken to enhance the credibility of the new policy framework. We recommend that the announcement of a new intermediate target regime be accompanied by policy actions to meet the proposed target. In particular, we recommend increasing the size of the Federal Reserve's balance sheet. As in the previous two LSAPs, the Fed should increase its holdings of longer-term Treasuries to reduce term premia and longer-term interest rates. Furthermore, given the recent stress observed in financial markets—which has led to wider spreads in private debt instruments, including mortgages—we also believe that purchasing MBS would help lower mortgage spreads.

2. Evolution of Outlook and Risks

2.1 Central Forecast

After rising at a 3.1% (Q4/Q4) rate in 2010, growth of real GDP slowed to just 0.7% (annual rate) over the first half of 2011. The main contributor to the slowing of growth was real personal consumption expenditures, which rose at just a 1¼% annual rate over the first half of 2011 following a 3.1% growth over the second half of 2010. But while real PCE made the largest contribution to the slowdown, every major category of final expenditures other than residential investment and inventory investment saw slower growth in the first half of the year. This is particularly true of government consumption and gross investment, which contracted at a 3.4% annual rate. Thus, while temporary factors such as higher commodity prices and supply disruptions clearly played a role in the first half slowdown, it has become increasingly clear that structural problems facing the economy are acting as a significant restraint on growth.

Indeed, while some firming of growth in the second half of 2011 appears to be in the works, growth over the second half is now expected to be just 2¼% (annual rate) versus the 3% we expected a few months ago. Production of motor vehicles and parts were up at a 23% annual rate as of August, but this is far below the gains anticipated in the second quarter. Apparently, manufacturers have scaled back production plans in light of the fact that the rebound of consumer purchases of new vehicles has not yet occurred. For July and August light-weight vehicle sales averaged just 12.18 million units (annual rate), up only modestly from the 12.15 million pace of the second quarter. In addition, the three-month moving average change of total nonfarm payroll employment has slowed from over 200,000 in April to just 35,000 in August. After reaching a recent low of 8.8% in March, the unemployment rate is back at 9.1% with the participation rate down 0.2 percentage points. Consumer confidence has plunged, with the August reading of the University of Michigan consumer sentiment index returning to levels that prevailed in the depths of the Great Recession. (The mid September reading of this index saw an improvement in the assessments of current conditions but further erosion of expectations for the future.)

Despite this disappointing slowdown, it should be noted that there continue to be some important pockets of strength. Business investment in new equipment and software grew at a respectable pace over the first half of 2011, business investment in nonresidential structures appears to be recovering and, while somewhat slower recently, growth of real exports remains relatively healthy. Along with the fact that inventories do not appear to be terribly out of line with sales, these sources of strength should keep the economy from slipping into recession. But that is certainly a significant risk at this point.

Inflation continues to surprise to the upside. As of August, the 12-month change of the total CPI was up to 3.8% versus 3.6% over the preceding three months. Energy prices have declined over the past three months, but by less than expected given the decline of the WTI price of oil. The Brent price has fallen by considerably less and now appears to be the basis for gasoline pricing. On a seasonally-adjusted basis, gasoline prices actually rose significantly in July and August. In addition, the rate of increase of prices of food for off-premise consumption continues to move higher, reaching 4.6% on a year-over-year basis. This time last year that rate of increase was under 1%. Finally, core inflation has also moved higher, with the year-over-year change of the core CPI reaching 2% in August, the highest since late 2008. Over that 12-month period the increase of core goods prices was 2.1% while the increase of core services prices was 1.9%. Apparel prices have spiked, rising 4.2% over the past year, apparently reflecting the steep increases in cotton and other fiber prices over the past year. The year-over-year increase of shelter prices has reached 1.6%, with the annualized three month increase reaching 2.4% in August. The rate of increase of new and used vehicle prices has begun to slow but remains relatively high.

Conditioning assumptions. Our estimate of potential GDP growth is around 2¼%, down from around 2½% based on the revised NIPA data that was released at the end of July. The Board staff estimate of potential for 2011 and 2012 is 2.1%, unchanged from the August Tealbook. For 2013 the Board staff anticipates a modest increase of potential to 2.2% reflecting an increased contribution of capital deepening to labor productivity.

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

The FRBNY outlook for foreign real GDP growth in 2011 has been lowered to 3.0% (Q4/Q4 on a GDP-weighted basis) from 3.3% in August. This reflects a generalized downgrading of growth prospect but is particularly notable for the Euro area. Projected foreign real GDP growth for 2012 has also been revised downward to 3.2% from 3.3%, with this revision concentrated among the major industrial economies. The Board staff projection for 2011 is 2.8%, down from 3.1% in August, and for 2012 is 3.0%, down from 3.3%. For 2013 both the Blackbook and the Tealbook forecasts anticipate foreign growth of 3.2%.

The projected path of oil prices has been lowered by around $10 per barrel relative to the August forecast. Based on futures quotes, we expect an average price of WTI of $88 per barrel for 2011Q4, $11 per barrel less than in August. The Board assumes $90 per barrel for 2011Q4, $4.50 per barrel less than in August. Further out, the oil futures curve continues to have a slight upward slope but over a lower level. For 2012Q4 both we and the Board assume a price of $90, rising to $92.50 in 2013Q4.

Our assumptions regarding federal fiscal policy, which are the same as that of the Tealbook, are unchanged from August. For calendar year 2011, federal fiscal policy is expected to be a roughly neutral influence on aggregate demand. However, in both 2012 and 2013, fiscal policy is anticipated to exert a drag on growth of about 1 percentage point as the payroll tax reduction and investment expensing provisions expire, the emergency unemployment benefits are phased out, the grants to state and local governments included in the 2009 stimulus bill are exhausted, and the deficit reduction called for in the Budget Control Act of 2011 begins to kick in. Note that the Board staff has two measures of the stance of fiscal policy, the change in the high employment budget balance (HEB) and a fiscal impulse (FI) measure. The HEB measure is an accounting of discretionary changes in policy, while the FI measure takes into account marginal propensities to consume and multipliers attached to those changes. For 2012 the change in the HEB is -1.6 percentage points, declining to 0.8 percentage points in 2013. However, the FI for both years is around -1 percentage point.

We also adopt the Tealbook assumptions regarding equity prices. Currently, equity values are about 6½% below the level assumed in August. From that lower level, equity prices are expected to rise at an 11½% annual rate through 2013. Reflecting the lower starting point, this rate of increase is faster than the 9% assumed in the last Blackbook. The main driver of this increase in equity prices is the return of the equity premium to more normal levels.

Also reflecting intermeeting developments, the Board's assumed path of the nominal exchange value of the dollar has been changed to -2.2% in 2011 versus -5.4% in August. The assumed decline in 2012 is 2.2% versus 2.0%. For 2013 a decline of 1.3% is anticipated. Our assumed path of the nominal exchange rate is a decline of 4.7% in 2011, versus 5.9% in the last Blackbook, and of 1.5% in 2012, unchanged from August. For 2013 we assume a decline of 1.5%.

Finally, we also adopt the Tealbook forecast with respect to the future path of the CoreLogic national home price index. As of July that index has been relatively stable for four months at a level that was somewhat higher than a few months ago due to revisions. That index is assumed to decline very slightly over the remainder of 2011 and then remain essentially flat in 2012 and 2013.

The Outlook. As mentioned above, our modal forecast continues to be a modest firming of growth over the second half of 2011, but we have scaled back the projected second half growth rate to around 2¼% from around 3% in the last Blackbook. Adding in the downward revision of the Q2 growth rate from 1.3% to 1%, growth for all of 2011 is likely to be just 1.5% (Q4/Q4). This is below our estimate of the economy's potential growth rate, such that the unemployment rate is projected to end the year around 9% after falling to 8.8% in March. For 2012 we expect growth of real GDP of 2.6%, down from 3.1% in August, with the unemployment rate in 2012Q4 at around 8¾% rather than 8½%. In this Blackbook we have added 2013 onto the forecast horizon, as has the Tealbook. For 2013 we have penciled in growth of 3½% with a more significant decline of the unemployment rate to around 7½%.

The lower projected growth of 2011H2 and 2012 reflects two key considerations. First, the temporary factors restraining growth in the first half of the year have not dissipated as rapidly or as much as hoped. Energy prices rose in July and August after falling in May and June. The August level is only modestly lower than the April peak. The rate of increase of food prices remains relatively high, and core inflation continued to move higher in August. As a result, we have not yet seen the boost to disposable income that was supposed to result from a significant slowing of headline inflation. Similarly, motor vehicle production is not rebounding as strongly as hoped, likely reflecting the continued sluggishness of demand. Industry sources continue to say that sales are low due to low inventories, but it likely also reflects consumers' uncertainty over their future employment and financial prospects.

The second consideration is that we have concluded that the structural imbalances facing the economy are acting as a more serious impediment to growth than we previously appreciated. The retrenchment in government spending has been more significant than expected and has occurred at both the federal and the state and local levels. State and local government employment is now down about 650,000 or 3.4% from its peak in 2008Q3. While the worst may be over for that sector, we have dampened the projected growth rate of state and local spending over the forecast horizon. The weakness of spending at the federal level in the first half of the year may be due in part to the lumpiness of defense expenditures, but the recent Budget Control Act prescribes significant fiscal restraint over the forecast horizon. Moreover, we assume that the payroll tax cut, investment expensing provision, and extended unemployment benefits all roll off at the end of 2011.

The other major structural issue weighing on growth is the housing market and its linkages to the household balance sheet. Household wealth took another hit in the third quarter, led by the decline in equity prices. Home prices as measured by the CoreLogic home price index stabilized over the past few months, so that, at least as measured in the Flow of Funds Accounts, the value of household real estate was likely stable. But we suspect that there may be a recognition lag among households regarding the longer term decline of home prices. Anecdotally, mortgage banking industry sources report that the main reason that mortgage refinancing activity has not been brisker given the decline of mortgage rates is that appraised values of properties are coming in very low. Reportedly, many homeowners are in a state a shock when they see the results of the appraisal and are told they lack sufficient equity to get a new mortgage. Along those lines, it is interesting to note that in the face of a very significant commodity price shock, the personal saving rate, as currently measured, has remained relatively stable. One way to interpret that development is that a desired upward trend of the saving rate was interrupted by the commodity price surge. With these thoughts in mind, we have dampened somewhat the pace of growth of real consumer spending.

Elsewhere, the modal forecast of September is quite similar to that of August. We envision a gradual recovery of business fixed and residential investment with continued strong growth of exports. By 2013, with the economy on a more solid footing, production should begin to pick up more substantially as a more normal pace of inventory building takes hold.

The modal forecast for core inflation continues to be a slowing from the recent pace. In fact, given the downgrading of the growth outlook and the somewhat higher path of the unemployment rate, we have judgmentally lowered our projection of core PCE inflation in 2012 to 1.3% from 1.4% in August. For 2013 we envision a modest firming of core PCE inflation to 1.5%.

While inflation has surprised to the upside of late, fundamentals remain consistent with the slowing in the rate of inflation that is envisioned in our modal forecast. Even if we assume that the natural rate of unemployment has increased somewhat, the economy is operating with substantial slack. Profit margins are quite wide, prompting greater price competition going forward. Historically, pass through of rising import prices has been relatively modest. Moreover, despite the recent run up of inflation, inflation expectations remain well anchored within the ranges of the past few years. That being said, our models have been under predicting inflation for the past few quarters, and we are increasingly concerned that the models may be missing something important. This is an issue we will explore over the next intermeeting period.

2.2 Alternative Scenarios and Risks

Downside risks to both real activity and inflation have increased notably over the intermeeting period, resulting in a balance of risks skewed to the downside for both real GDP growth and inflation. These changes, driven by the worsening of financial conditions in Europe and the lackluster labor market and consumer spending reports, are captured by an increase in the likelihood of our most pessimistic scenarios, the *Global Credit Crunch* and *Global Deflation* scenarios.

The *Fiscal Consolidation* scenario, which reflects the risks from fiscal consolidation, is still the most likely scenario, with an associated probability of about 40% [Exhibit C-1]. The likelihoods of the *Global Credit Crunch* and *Global Deflation* (not shown) scenarios have increased from 17% to almost 20% and from 3% to 5%, respectively. While these changes do not seem dramatic, the paths associated with these scenarios are so much more pessimistic than the *Central Scenario* forecasts that they imply a significant shift in the forecast distribution. The probabilities of scenarios associated with upside risks in either real activity or inflation, notably the *Productivity Boom, Faster Growth*, and *Loss of Credibility* scenarios, have decreased. The likelihood of the *Productivity Boom* scenario is now roughly comparable to that of the *Global Credit Crunch* scenario.

The *Central Scenario* forecasts for real GDP growth and inflation also became more pessimistic than in August. Since the risks are defined relative to the *Central Scenario*, the paths for core PCE inflation and real GDP growth associated with the various scenarios have also shifted down [Exhibit C-2]. Because of the downward move in the *Central Scenario* forecasts, as well as the changes in our risk assessment, the forecast distributions for core PCE inflation and real GDP growth have both shifted downward considerably [Exhibit C-3]. In particular, the probability of a recession through the end of 2012 increased from 60% to 68% relative to August. The "Depth of Recession" chart shows that should a recession occur, it would most likely be relatively mild, similar to that in 2001.

Exhibit C-3 also shows the mean forecasts from the FRBNY DSGE model. The forecasts for output and inflation are close to the expected value of the FRBNY forecast distribution through the end of 2012. Afterwards, the DSGE model predicts lower real

GDP growth, as it does not foresee growth significantly above trend at any time over the forecast horizon.

3. Forecast Comparison

3.1 Comparison with Private Forecasters[1]

Relative to those reported in the August Blackbook, private forecasts for GDP growth in both 2011 and 2012 have decreased substantially and are now generally in line with FRBNY projections. This sizable change reflects the fact that private forecasts now incorporate information from the recent weak data. The FRBNY core inflation projections for 2011 are roughly in line with private forecasts, while our forecast for 2012 continues to be at the low end of private forecasts.

Real GDP Growth. The FRBNY forecast for 2011Q3 and 2011Q4 are 2.1% and 2.4% (annual rate), down from 2.6% and 2.5%, respectively, in the August Blackbook. These forecasts are roughly in line with Blue Chip (1.9% and 2.1%) but above Macro Advisers (1.6% and 2.0%). The median SPF projections are higher because they do not incorporate the latest negative data. The FRBNY forecast for 2011 (Q4/Q4), at 1.5%, is 0.2 percentage point above Blue Chip and Macro Advisers, while our projection for 2012 (Q4/Q4), revised down to 2.6% from 3.1% in the August Blackbook, is in line with both Blue Chip (2.5%) and Macro Advisers (2.6%).

Inflation. The FRBNY projection for core PCE inflation in 2011Q3 was revised up to 2.4% from 1.9% in the August Blackbook. Our forecast is slightly above Macro Advisers (2.2%) and SPF (1.7%). The latter is, however, based on one-month-old information. Our forecasts for core PCE inflation in 2011Q4 and 2011(Q4/Q4), at 1.4% (annual rate) and 1.9% respectively, are roughly in line with Macro Advisers (1.4% and 1.8%) and median SPF (1.5% and 1.7%). For 2012 (Q4/Q4), the FRBNY projection for core PCE inflation is 1.2%, 0.2 percentage point lower than Macro Advisers. The FRBNY projection for core CPI inflation in 2011H2 is 2.1% (annual rate), below Macro Advisers (2.4%) and slightly above median SPF (1.9%). For 2012 (Q4/Q4) our forecast,

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

at 1.5%, is below both Macro Advisers (1.7%) and median SPF (1.8%). Headline CPI inflation for 2011 (Q4/Q4) is 3.3%, roughly in line with private forecasts, while for 2012 (Q4/Q4), our forecast of 1.9% is 0.3 percentage point below Macro Advisers.

4. Robustness of Policy Recommendation

4.1 Sensitivity to Alternative Scenarios and Policy Rules

Given our current forecast for output and inflation, our policy recommendation is to maintain the target range for the federal funds rate at 0–0.25%. Our recommendation is consistent with the *Baseline* policy rule under most scenarios, including the *Central* scenario. The exceptions are the *Loss of Credibility* and *Faster Recovery* scenarios, which envision higher inflation and real GDP growth than the *Central* scenario [Exhibit D-1]. Under the *Loss of Credibility* and *Faster Recovery* scenarios the *Baseline* policy rule implies a lift-off in the current quarter and in 2012Q4, respectively.

Exhibit D-2 shows the prescription of various policy rules using the expected value of the forecast distribution as an input. The path implied by the *Baseline* policy rule under the expected paths for output and inflation implies a federal funds rate at 0–0.25% through the end of 2013. The *Nutter* rule, which puts weight purely on inflation, is the only rule prescribing a liftoff earlier than 2013Q3. Exhibit D-2 also shows the implied nominal FFR for the *Outcome-based* rule, ignoring the zero bound. Under the expected value of the forecast distribution, the unconstrained nominal FFR is almost -9% by the end of 2013.

Exhibit D-3 shows the prescriptions from alternative policy rules under the various scenarios. The *Nutter* rule prescribes a lift-off before 2012 under all scenarios. FFR paths under the *Asymmetric Price Targeting* rule are at the lower bound (.25%) throughout the forecast horizon. For the *Outcome-based* rule, the paths are at or below zero through the end of 2013.

Exhibit D-1 shows the real FFR rates implied by the *Baseline* rule under the various scenarios, ignoring the zero bound constraint. Under the *Central* scenario, this rule implies a very gradual renormalization of the real rate, increasing from about -5% in the current quarter to -2.5% by the end of 2013. Exhibit D-3 shows the real rate (under alternative scenarios) for the *Asymmetric Price Targeting*, the *Nutter*, and the *Outcome-based* rules. We also use the DSGE model to assess the current stance of monetary policy by performing a counterfactual exercise that eliminates current and past policy shocks. We find that the DSGE model predicts a counterfactual FFR for the current quarter roughly in line with the policy rate.

4.2 Comparison to Market Expectations

The renormalization process implied by FFR futures starts in the second half of 2013, consistent with the FOMC contingent commitment. Primary dealers' expectations for the path of the fed funds target rate also conformed with the FOMC contingent commitment: the median dealer's expectation for the timing of the first tightening shifted from 2012Q4 to 2013Q4. Further, the entire distribution of the first policy rate hike shifted towards later dates. On average, respondents attach a 45% probability to the first policy rate hike occurring in 2014Q1 or later.

5. Significant Developments

5.1 Economic Developments

Data releases during the intermeeting period generally indicated that the real activity outlook remains soft at best and that the balance of risks to the outlook is to the downside. The labor market continued to display notable weakness. Consumer spending still appeared to be sluggish, and consumer confidence indicators fell to levels typically associated with recessions. Investment spending indicators were fairly well maintained in July, although some business survey indicators fell to weak levels. Inflation indicators pointed to little change in the inflation outlook, and household inflation expectations measures were little changed.

Real Activity. *Labor market. Nonfarm payroll employment* was unchanged in August while *private payroll employment* rose 17,000. The net revision to the June and July payroll employment estimates was -58,000. Employment in the goods-producing sector declined slightly while employment in the private service-providing sector increased modestly. The *diffusion index* for all industries declined from 57.7 to 52.2 while that for the manufacturing sector fell from 56.8 to 42.0. *Aggregate hours worked* declined 0.2% in August. *Average hourly earnings* fell 0.1% and the 12-month change was 1.9%.

The *unemployment rate* remained at 9.1% in August. The *labor force participation rate* increased slightly from 63.9% to 64.0%. The *employment-to-population ratio* rose from 58.1% to 58.2%. This ratio is well below its peak of 64.7% in April 2000. The *median duration of unemployment* increased from 21.2 to 21.8 weeks.

Labor market—unemployment insurance claims. Initial claims for unemployment insurance remained elevated over the intermeeting period and were at 428,000 in the week ending September 10. The four-week moving average was 419,500. Continuing claims were little changed at somewhat above 3.7 million.

Labor market—JOLTS. The *job openings rate* was 2.4% in July, unchanged from June and a relatively low level. The *total hires rate* fell 0.1 percentage point to 3.0%. The *total separations rate* was unchanged in July at 3.0%, which is modestly above its historical low. The *quits rate* was unchanged at a low rate of 1.5%. The *rate of discharges and layoffs* fell from 1.4% to 1.3%.

Consumer spending—retail sales. Total retail sales were virtually unchanged in August and *retail sales excluding sales at automobile dealers* rose 0.1%. Retail sales were revised downward for June and July. As far as the implications of this release for consumer spending in the current quarter, the *PCE control*, which excludes motor vehicles and building materials, rose 0.1% in August, while the *PCE control excluding gasoline* was unchanged. These data suggest that real PCE growth in 2011Q3 will be lower than we thought prior to the release.

Consumer spending—motor vehicle sales. According to Autodata Corporation, *light motor vehicle sales* in August were 12.12 million units (seasonally adjusted annual rate), slightly below the July pace of 12.23 million units. The average pace in July and August was little different from the sluggish average pace of sales in 2011Q2.

Consumer spending—PCE and personal income. Nominal personal income rose 0.3% in July. *Nominal disposable income* rose 0.3% in July and *real disposable personal income* fell 0.1%. *Personal consumption expenditures (PCE)* increased by 0.8%. In real terms, personal consumption expenditures increased by 0.5%, compared to small contractions in the previous three months. In July there was a contraction of 0.3% in nondurable goods consumption. Real durable goods consumption increased 2.0%. Real consumption of services increased 0.5%. The *personal saving rate* was 5.0%, down from 5.5% in June.

Housing and construction—housing starts. Total housing starts decreased 1.5% in July to a level of 604,000 (annual rate). *Single-family starts* fell 4.9% to 425,000, compared to the 20-year average of over 1.1 million. *Multi-family starts* rose 7.8% to 179,000, as they have shown a gradual uptrend since late 2009. *Total building permits* decreased 3.2% in July to 597,000 (annual rate). Single-family permits increased 0.5% and multi-family permits declined 10.2%.

Housing and construction—home sales. Overall existing home sales (single-family and condos/coops) decreased 3.5% in July to 4.67 million units (annual rate). *Single-family existing home sales* fell 4.0% in July to 4.12 million units. The overall *months' supply of existing homes* was 9.4, and that for *single-family homes* was 8.9. Both inventories-sales ratios continue to be elevated.

Sales of new single-family homes were essentially unchanged in July at the very low level of 298,000 units (annual rate). *Inventories of new homes for sale* expressed as months' supply at the current sales pace were unchanged at 6.6 months. This measure remains well above its average over the period from the mid 1990s through the mid 2000s.

Housing and construction—home prices. The *CoreLogic national home price index* for July provides some evidence that home prices may be stabilizing. With distressed sales excluded, the seasonally-adjusted CoreLogic national home price index rose 1.1% in July, the seventh consecutive monthly increase. Over the twelve months ending in July, this index is down a modest 0.7%. With distressed sales included, the seasonally-adjusted CoreLogic national home price rose 0.1%. At 5.3%, the year-over-year decline was less steep than earlier in the year.

Housing and construction—construction put-in-place. The *value of construction put in place* fell 1.3% in July. The 12-month change in total construction spending was +0.1% in July, the first time this change has been positive since October 2007. *Private residential construction* decreased 1.4% in July. *Private nonresidential construction* decreased 0.4%. *Public construction* decreased 2.1%.

Production. Total industrial production rose 0.2% in August after rising 0.9% in July. *Manufacturing production* increased 0.5% in August after rising 0.6% in July. The 12-month change in manufacturing production was +3.8%, similar to that of the previous three months but below the corresponding changes in the first quarter. Motor vehicle and parts production rose 1.7%, the second consecutive robust monthly increase. Production in high-tech industries rose 1.5% in August, rebounding from a decline in July. Excluding autos and the high tech sector, manufacturing production increased 0.3% in August. The *overall capacity utilization rate* increased 0.1 percentage point to 77.4%. The *manufacturing capacity utilization rate* rose 0.3 percentage points to 75.0%. Both capacity utilization rates remain below their 20- and 30-year averages. Overall, manufacturing production appears to have rebounded fairly solidly in July and August after a weak second quarter that reflected in part the supply chain disruptions associated with the Japanese earthquake.

Manufacturing shipments and orders. New orders for manufactured goods increased 2.4% in July. Excluding transportation, orders increased 0.9%. *Orders for manufactured durable goods* increased 4.1%. *Orders for manufactured nondurable goods* increased 1.0%. *Shipments by manufacturers* increased 1.6%: shipments from durable goods manufacturers increased 2.4% and nondurable goods shipments rose 1.0%. The book value of *manufacturers' inventories* increased 0.5%, while the *inventories-shipments ratio* fell from 1.33 to 1.32. The capital spending indicators were a little soft in July, but not exceedingly so. *Shipments of nondefense capital goods excluding aircraft* decreased 0.2% in July. *Orders for nondefense capital goods excluding aircraft* fell 0.9%. Orders for these goods remain above the level of shipments.

Business inventories. Total business inventories rose 0.4% in July, below the average monthly growth rate of the second quarter. Manufacturers' inventories rose 0.5%, retail inventories declined slightly, while wholesale inventories rose by 0.8%. *Total business sales* rose 0.7%. With growth of sales above the growth of inventories, the *total business inventory-sales ratio* edged lower to 1.27, which is a relatively low level.

GDP. Based on the second estimate, *real GDP* grew 1.0% (annual rate) in 2011Q2, a downward revision from the first estimate of 1.3%. The growth of business fixed investment was revised up. The net exports contribution to growth was revised downward from +0.6 percentage points to +0.1. The inventory contribution to GDP growth was revised downward from +0.2 percentage points to -0.2. *Output of the nonfarm business sector* increased at a 1.3% annual rate, a downward revision. On the income side, *corporate profits* were $1,933.7 billion, $57.3 billion higher than in the first quarter. As a percentage of National Income, corporate profits were 14.4% in 2011Q2, the highest percentage since the 1950s. The *personal savings rate* was revised up to 5.2% from 5.1%.

Productivity and costs. According to the second estimate, *labor productivity growth in the nonfarm business sector* was revised downward to -0.7% in 2011Q2 from the initial estimate of -0.3%. The four-quarter change was +0.7%, which is a sharp decline from the corresponding change at the beginning of 2010. *Growth of compensation per hour* was revised upward to a 2.7% annual rate from the initial estimate of 1.9%. The four-quarter change in compensation per hour was 2.7%. The *growth of unit labor costs* was revised upward to 3.3% (annual rate) from the advance estimate of 2.2%. The four-quarter change in unit labor costs was +1.9%; this change had been negative throughout

2010. Partly based on the recent productivity data, we have tentatively lowered our estimate of potential GDP growth to around 2¼% from our previous estimate of 2½%.

Inflation. *CPI.* The *overall CPI* increased 0.4% in August. On a 12-month basis, the change in the total non-seasonally adjusted CPI was +3.8%, up from 3.6% in July. The *core CPI* rose 0.2% in August. The 12-month inflation rate in the core index was +2.0%, continuing the steady upward trajectory from this series' record low of +0.6% registered in October 2010. *Core goods* prices rose 0.4% in August and are up 2.1% over the past 12 months. *Core services* prices rose 0.2% in August, stable relative to July and up 1.9% over the past 12 months. The gains in core prices continue to be fairly broad-based, contributing to move core inflation close to mandate-consistent levels.

PCE deflator. The *PCE price index* rose 0.4% in July after falling 0.1% in June. A major factor in the swing of the overall price index was energy prices. The 12-month change in the overall PCE deflator was +2.8% in July, above the +2.6% of the previous two months. *Core PCE* increased 0.2% in July. The 12-month change in the core PCE was +1.6%, continuing its rise from the exceptionally low levels of late 2010 (the trough was +0.9% in December); however, this change remains below the levels of the first quarter of 2010. The *"market-based" core measure* rose 0.2% in July; the 12-month change was +1.5%, above that of recent months but still below the levels of late 2009. The *12-month trimmed-mean PCE inflation rate* was +1.6%: it shows similar patterns as the 12-month changes of the core and market-based core PCE deflators.

PPI. The *PPI for finished goods* was unchanged in August, following a 0.2% rise in July and a 0.4% decline in June. *Core PPI* increased 0.1% in August, after rising 0.4% in July and 0.3% in June. The 12-month change in the PPI for finished goods was +6.5%, significantly below the 7.2% registered in July. Ex food and energy, the 12-month inflation rate was unchanged at 2.5% in August. The *intermediate goods PPI* declined 0.5% in August—the first decrease since July 2010. The *crude goods PPI* rose 0.2% in August following three consecutive monthly declines.

Inflation expectations. According to the preliminary September figures from the University of Michigan survey of households, *the median of near-term (one-year ahead) inflation expectations* increased to 3.7% from 3.5% in August, but is significantly lower than its reading of 4.6% in March. The inter-quartile range rose to 4.3 percentage points from 3.9 percentage points in August, which is wider than in recent months but comparable to the levels registered in 2010.

The median of longer-term (five to ten years ahead) inflation expectations rose 0.1 percentage point from August to 3.0%, which is in the upper part of its narrow prevailing range. The inter-quartile range widened slightly.

Surveys. *Consumer confidence.* According to the preliminary data, the *Reuters/Michigan consumer sentiment index* was 57.8 in September—up 2 points from August, but only modestly above the recent trough of 55.3 registered in November 2008. The Expectations component was 47.0 in mid-September, which is the lowest level since May 1980. The Current Conditions component was 74.5, which is in the lower part of its range over the past two years. The *Conference Board's Consumer Confidence Index* fell nearly 15 points to 44.5 in August—its lowest level since April 2009. The drop in the Conference Board index was driven largely by the Expectations component, which tumbled 23 points to 51.9, its lowest level since April 2009. The Present Situation component declined 2.4 points to 33.3, largely reflecting more negative perceptions of job availability. The percentage-point differential between respondents saying jobs are hard to get and those saying they are plentiful stood at 44 in August, up from 40 in July.

Business surveys. The *ISM manufacturing composite index* slipped 0.3 points to 50.6 in August, a level that suggests modest growth in the manufacturing sector. After peaking at 61.4 in February, this measure has now fallen by a cumulative 10.8 points. The prices paid index fell another 3.5 points to 55.5 in August. The decline in the prices paid index suggests an easing of cost pressures. The *ISM non-manufacturing composite index* increased 0.6 points to 53.3, which is a level that suggests relatively tepid growth in the service sector. The prices paid index, which had been trending down steadily since February, rose 7.6 points in August to 64.2.

The most recent Federal Reserve Bank regional surveys on business conditions were somewhat weaker than the ISM surveys. In the *Empire State Manufacturing Survey,* the headline general business conditions index inched down a point in September to -8.8, continuing its streak of negative readings that began in June. Many of the specific activity indexes were also negative. In contrast, both the prices paid and prices received indexes climbed several points. Indexes for the six-month outlook rose modestly but remained below their levels of earlier this year. In the *Philadelphia Fed Business Outlook Survey*, the headline general business conditions index was -17.5 in September, up from -30.7 in August. This index has now been negative for three of the last four months. The prices paid index rose, indicating increasing input price pressures. Indexes for the six-month outlook generally remained positive, though they are lower than earlier in the year.

Economic forecasts. In the *September Blue Chip Economic Indicators survey,* the consensus forecast for real GDP growth in 2011 (Q4/Q4) was 1.3%, 0.3 percentage point lower than in the August survey. The consensus forecast for 2012 (Q4/Q4) declined from 2.7% to 2.5%. The consensus forecast for the average unemployment rate in 2011Q4 was 9.1%, up from 9.0% in August. For 2012Q4, the consensus forecast was 8.7%, up 0.2 percentage point from August. The September consensus forecast for CPI inflation in 2011 (Q4/Q4) was 3.3%, up from 3.2% in August. The consensus forecast for 2012 (Q4/Q4) CPI inflation was lowered slightly to 2.1% from 2.2% in August.

The *2011Q3 Survey of Professional Forecasters (SPF)* indicated that the respondents expect slower real GDP growth than they did last quarter, with the median forecast of 1.7% in 2011. They expect growth to pick up slowly to around 3% in 2013. Reflecting the recent weakness in labor market conditions and the slower growth path, they raised their projected unemployment rate path. Near- and medium-term forecasts for inflation were little changed from those in the last survey. Forecast distributions for real GDP growth shifted toward lower growth, with the mode of the distribution for 2011 shifting from the 2-2.9% range to the 1-1.9% range. Forecast distributions for subsequent years shifted down more modestly. There was also a notable increase in reported probabilities of negative growth over the next four quarters. The forecast distributions for core PCE inflation changed relatively little from those in the last survey. The medians of long-term (5- and 10-year) forecasts for CPI and PCE inflation were little changed, indicating that long-term inflation expectations of professional forecasters are fairly stable.

Trade. The trade deficit narrowed from a revised $51.6 billion in June to $44.8 billion in July. Export volumes surged, and import volumes were flat. Export volumes jumped 4.9% in July over the previous month, offsetting the declines in the previous two months. Over the 12 months ending in July, real exports moved up only 6.6%. Nonoil import volumes were up 1.1% in July relative to June, following neutral movements in the previous three months, resulting in a 7.0% increase over the year. Oil volumes continued to exhibit high volatility, with a 5% slump in July over the previous month. These data suggest that the forecast for net exports will add 0.5 percentage point to GDP growth in Q3.

Foreign Data Releases. *Euro area*: Growth slowed sharply in Q2 after a strong Q1 reading. July production was near where it has been for most of the year. The PMI survey weakened further in August, with the manufacturing reading falling below the threshold that signals an expansion. The European Commission's economic sentiment index continues to soften and was 2% below its long-run average in August.

U.K.: The economy grew only slightly in Q2, leaving output 4% below its pre-crisis peak. Production increased modestly in July, but export volumes were down. The services PMI fell sharply in August and the manufacturing PMI moved below the threshold that signals an expansion.

Japan: The Japanese economy shrank in Q2, the third consecutive dip in output. The contraction was mainly accounted for by a steep drop in exports. Production rose in July and was only modestly below its year-ago level. Auto production, though, was still down 10% over the year. A survey of producers suggests production in Q3 will be up substantially relative to Q2. The PMI for manufacturing was stable in August at a relatively high level. Core prices were down 0.5% over the year in July.

EM Asia: China data for retail sales, production, and investment spending have moderated slightly while export growth has accelerated. However, August manufacturing PMI readings were around the nominal break-even mark of 50 and the export orders component dipped below 50 for the first time in over two years. Property investment remains strong, though some data suggest that tighter lending standards are starting to bring down prices in China's leading cities. CPI inflation slowed in August, but remains at an elevated 6.2%. Hong Kong, Singapore, and Thailand recorded outright output contractions in Q2.

Latin America: Brazil's growth slowed in Q2. The industrial sector is showing some weakness while low unemployment and ample credit are supporting consumption. Mexico enjoyed faster growth in Q2. A slowdown in manufacturing through the summer appears to have bottomed out.

5.2 Financial Markets

Domestic Financial Markets. Since the last FOMC meeting, nominal and real Treasury yields have continued to decline while credit spreads have increased, and equity markets have moved sideways under considerable volatility. At the same time, expected future policy rates have shifted down markedly after the change of forward guidance language in the August FOMC statement. These developments likely reflect the persistent weakness in the economy and a reassessment of future monetary policy actions. The political uncertainty arising from the ongoing fiscal crisis in the euro area has also contributed to the high volatility in financial markets in recent weeks.

Nominal Interest Rates: Since the last FOMC meeting, Treasury yields have continued their secular decline and longer-dated tenors have fallen to their lowest levels in the post-

WWII period. The 10-year yield declined roughly 24 basis points over the intermeeting period to 2.08% on September 15, after having dipped to 1.92% on September 9. The 2-year yield declined about 7 basis points to 0.19% and the 3-month yield remained just above zero over the intermeeting period. These movements reflect market participants' reassessment of future short-term rates following the August FOMC statement as well as the continuing deterioration in the economic outlook. (Exhibit A-3: Treasury Yields)

Expected Policy Rate Path: The expected path of the fed funds rate, as inferred from futures markets, has shifted down sharply since the last FOMC meeting. Consistent with the forward guidance language in the August FOMC statement, market prices currently imply a target fed funds rate of 0.0-0.25% well through the second quarter of 2013. The uncertainty around the implied path as inferred from options has fallen to the lowest levels on record, indicating that market participants interpret the forward guidance language as an unconditional rather than a conditional statement. Professional forecasters also revised down markedly their expected policy rate paths in the September Blue Chip Financial Forecasts Survey. The median survey expectation for the fourth quarter of 2012 is now 0.13%, down from 1% in August. The disagreement among professional forecasters as measured by the inter-quartile range of their fed funds projections for the fourth quarter of 2012 has also evaporated and is now only 10 basis points, down from 90 basis points in August. Short term dollar funding rates have been volatile over the intermeeting period and Libor-OIS spreads have ticked up recently, mainly reflecting dollar funding strains of European banks. (Exhibit A-5: Policy Expectations)

Inflation Compensation: The sharp decline in nominal Treasury yields since the last FOMC meeting was accompanied by on balance somewhat smaller declines in real yields. While both the 0-5 year and the 5-10 year forward real yields reached new historical lows shortly after the August FOMC meeting, they retraced some of their declines towards the end of the intermeeting period. In contrast, nominal Treasury yields continued to decline. As a consequence, market-based measures of expected inflation have decreased somewhat since the last FOMC meeting. The 0-5 year measure, which gauges expected inflation over the next five years, decreased about 30 basis points over the intermeeting period to 1.66% on September 15. The 5-10 year measure, which gauges expected inflation 5-10 years out, decreased about 50 basis points over the intermeeting period to 2.56% on September 16. This decline in market-based measures of inflation compensation is consistent with a moderate decline of commodity prices observed in recent weeks and is generally consistent with the weaker economic outlook. (Exhibit A-4: Real Yields and Implied Inflation)

Equity Markets: Equity markets were very volatile but flat on balance over the intermeeting period, with the S&P 500 index up 3% since the August FOMC meeting. Staggered news about the fiscal situation in Europe, the potential of near-term fiscal stimulus in the U.S., as well as the uncertain economic outlook in the U.S. and in other countries, appeared to be the main drivers of the sharp price swings. Financials underperformed the overall market somewhat over the intermeeting period. Market participants expect equity volatility to remain high in the near term. Indeed, implied equity volatility, as measured by the VIX is currently measured at 32% which, while well below its recent peak of 48% on August 8, is still elevated with respect to the low levels seen over most of the first half of the year. (Exhibit A-6: Equity)

Credit Spreads: Corporate credit spreads continued to increase over the intermeeting period, especially in the lower tiers of the credit spectrum. Compared to their levels at the August FOMC meeting, spreads on investment grade corporate bonds widened 43 basis points to 233 basis points. Spreads on high-yield corporate bonds widened 65 basis points to 749 basis points on September 15. At the same time, CDS spreads on high yield corporate bonds remained at elevated levels over the intermeeting period, increasing 82 basis points to 663 basis points from the Friday before the August meeting to September 15. In line with the declines of Treasury yields, mortgage rates declined sharply over the intermeeting period with both primary and secondary market rates falling below the levels reached in the fall of 2010. (Exhibit A-7: Credit)

Foreign Financial Markets. *Euro Area*: Since the last FOMC meeting, peripheral euro area spreads have continued to widen on concerns about the implementation of changes to the EFSF, the need for and willingness to adopt additional austerity measures in Italy and Greece, and large upcoming sovereign debt redemptions in Italy. Greek spreads in particular have widened sharply as expectations of default continue to grow amid larger-than-expected austerity measures and concerns about participation rates in the country's bond auction. These default concerns were further exacerbated when IMF and European officials temporarily suspended their 5th review of the Greek aid program due to a dispute with Greek officials over the need for additional austerity. Spanish sovereign debt has outperformed Italian equivalents as the Spanish government pro-actively passed a constitutional balanced budget amendment. In contrast, the Italian government has been more tepid in undertaking fiscal reform, seemingly responding only to market and ECB pressure.

Japan: There was some initial volatility in the U.S. dollar-yen currency pair following Japan's decision to intervene in early August. Beyond that, Japanese financial asset prices have been relatively flat since the last FOMC meeting. The Japanese yen has been broadly unchanged against the dollar since August 9. The Nikkei 225 index was down 4% and benchmark 10-year Japanese government bond yields were 4 basis points lower over the same time period.

Emerging Asia: EM Asian currencies weakened on average by 2% against the U.S. dollar, led by a 5% slide in the Indian rupee. The lone currency to appreciate was the Chinese yuan, which gained 0.5%. The forward market points to an appreciation of only 1% over the next year. EM Asian equities shed 3% on average, underpinned by continued heavy foreign outflows.

Latin America: Latin American currencies depreciated on average by 5% relative to the U.S. dollar, led by a 7% decline in the Brazilian real. There were steep declines at the short end of Latin American yield curves, as the 2-year sectors fell on average 65 basis points. This reflected a re-calibration of monetary policy expectations, especially in Brazil, where the central bank delivered a surprising rate cut. Equity markets in the region rose 8%, with gains broad-based.

5.3 Global Economic Policy

Euro Area: The ECB left its policy rate unchanged at 1.5% at its September meeting and signaled a more neutral policy stance. At the press conference, President Trichet described inflation risks as "broadly balanced" rather than "on the upside" as in the previous month, while monetary policy remained "accommodative." This suggests that further rate hikes are off the table for now and leaves the door open for a rate cut if the growth outlook worsens. The ECB continued its purchases of peripheral debt under the securities markets program. Since reactivating the program in August, the ECB has bought securities worth about €70 billion, bringing the overall size of the program to €142 billion. The resignation of ECB board member Stark highlighted the disagreement within the ECB about the merits of purchasing peripheral sovereign debt. On September 15, the ECB announced that it will lend dollars in three-month loans to ensure that euro area banks have enough U.S. currency through the end of the year. The loans will be conducted as fix-rate tenders with full allotment.

Japan: The Bank of Japan is keeping its policy rate in a range of 0.0-0.10% and will continue to do so until its official projections suggest price stabilization in the near-to-medium term. At its September policy meeting, the Bank of Japan kept the size of its asset purchase program at ¥15 trillion. Continued upward pressure on the yen relative to the currencies of Japan's main trading partners increases the likelihood of renewed currency interventions in the near term.

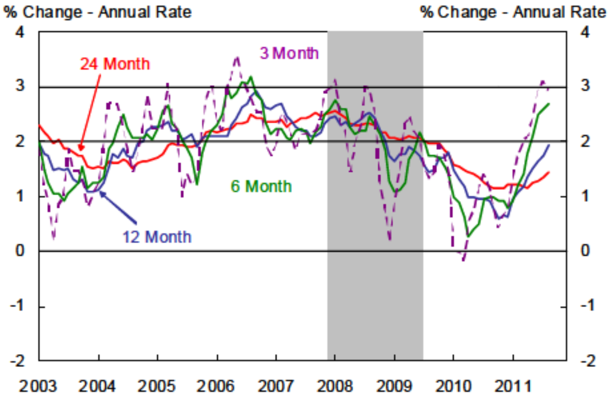
EM Asia: Monetary authorities in most EM Asian countries have interrupted their tightening campaigns amidst uncertainties about the global growth outlook. Looking forward, only China and India—where the growth momentum remains exceptionally strong and inflation concerns persist—are expected to hike rates before year-end. Reserve accumulation outside China has fallen off considerably in recent weeks with most countries experiencing capital outflows in response to increased risk aversion amongst investors globally.

Latin America: In Mexico, monetary policy expectations have turned decidedly more dovish, with market participants now divided on whether the central bank's next move will be to tighten or ease. Roughly a quarter of surveyed analysts expect a rate cut by year end, while analysts looking for a rate hike do not anticipate one until 2013. The Brazilian central bank unexpectedly cut the policy rate by 50 basis points to 12% at its August meeting, citing the deteriorating global backdrop and expectations for greater fiscal restraint. Analysts sharply lowered their rate forecasts in the wake of the cut and now expect an additional 100 basis points of easing through the rest of the year despite high inflation.

A. Significant Developments

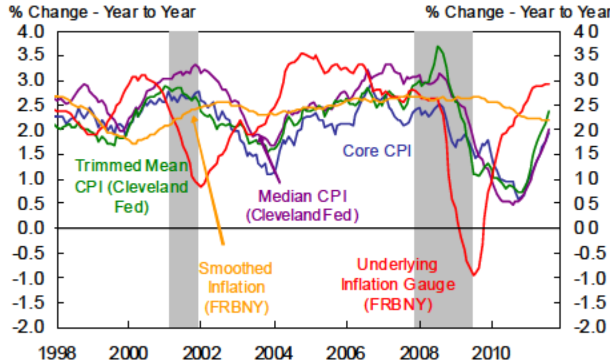
Exhibit A-1:
Measures of Trend Inflation

Core CPI Inflation over Various Horizons



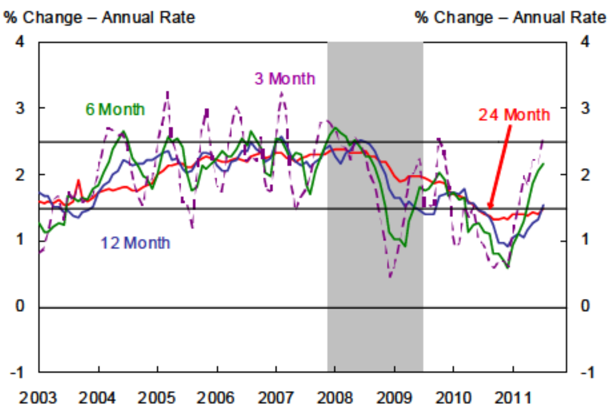
Source: Bureau of Labor Statistics

Alternative Measures of CPI Inflation



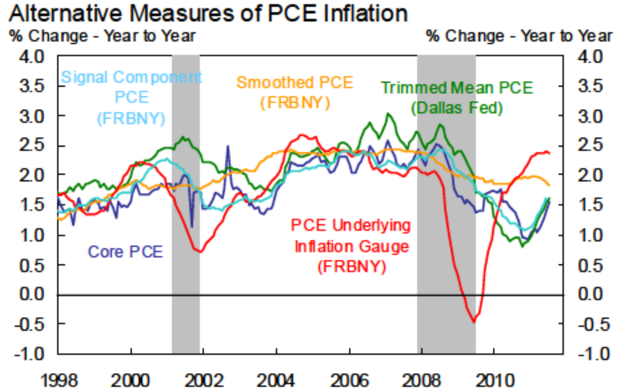
Source: Bureau of Labor Statistics, Cleveland Fed, MMS Function (FRBNY), and Swiss National Bank

Core PCE over Various Horizons



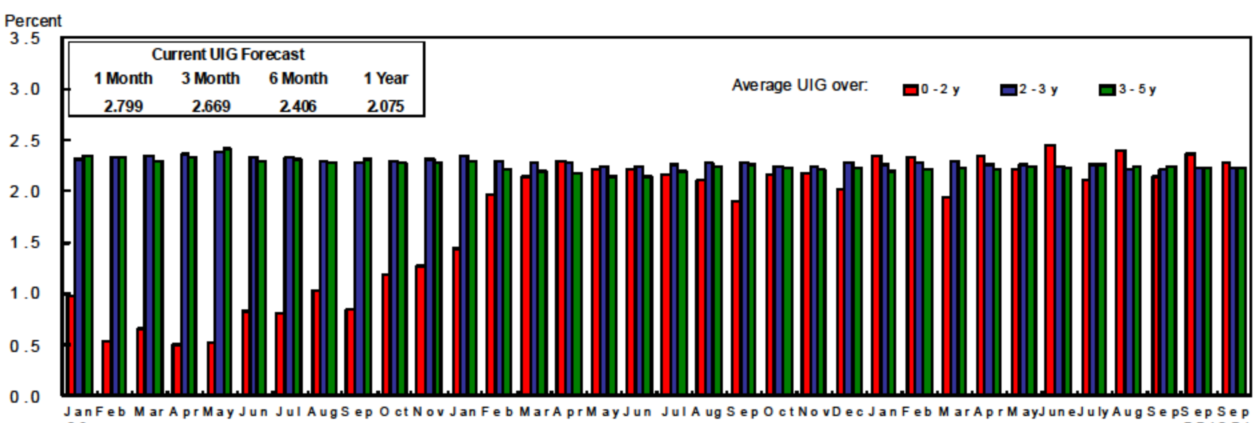
Source: Bureau of Economic Analysis

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)

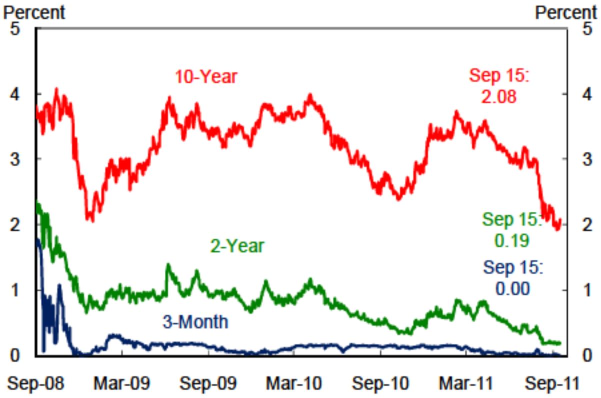


Source: MMS Function (FRBNY) and Swiss National Bank

A. Significant Developments

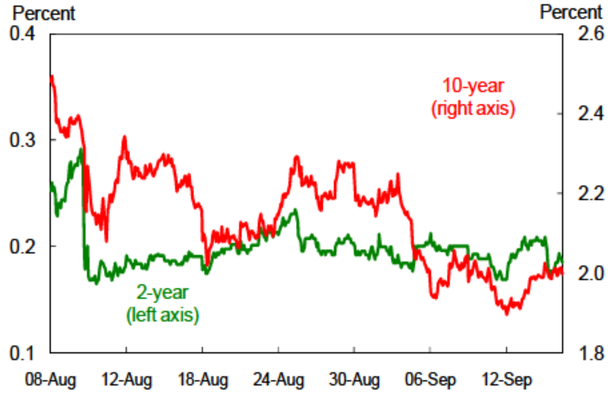
Exhibit A-3:
Treasury Yields

Short- and Long-Term Rates



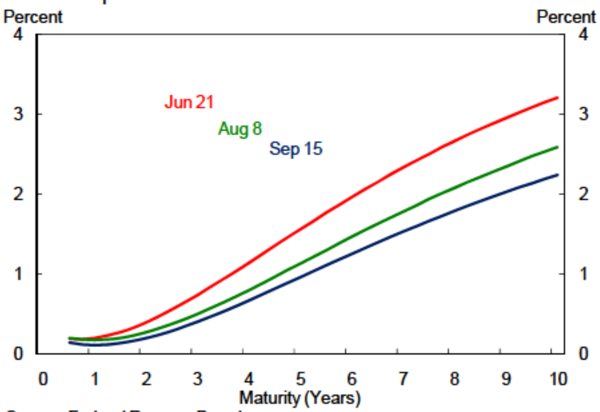
Source: Bloomberg Note: Yields of on-the-run securities.

Short- and Long-Term Rates (Intraday)



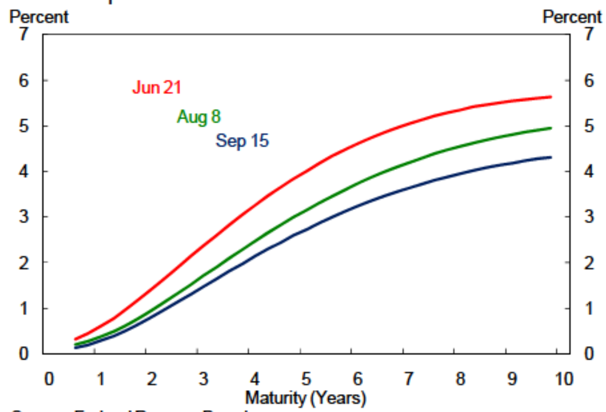
Source: Bloomberg Note: On-the-run securities, 8:00 am to 4:00 pm.

Zero Coupon Yield Curves



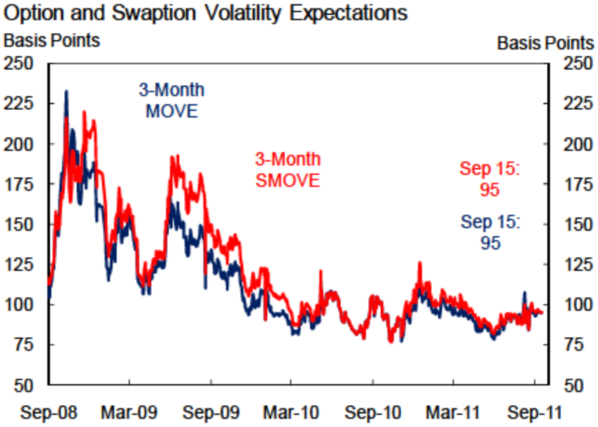
Source: Federal Reserve Board

Zero Coupon Yield Curves: One-Year Forward Rates



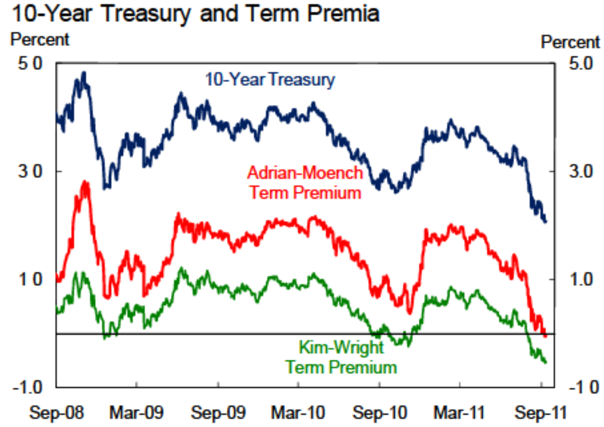
Source: Federal Reserve Board

Option and Swaption Volatility Expectations



Source: Federal Reserve Board, Barclays, and FRBNY

10-Year Treasury and Term Premia

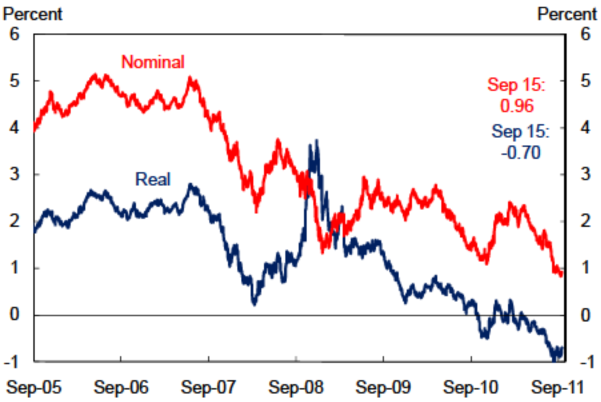


Source: FRBNY calculations, Federal Reserve Board

A. Significant Developments

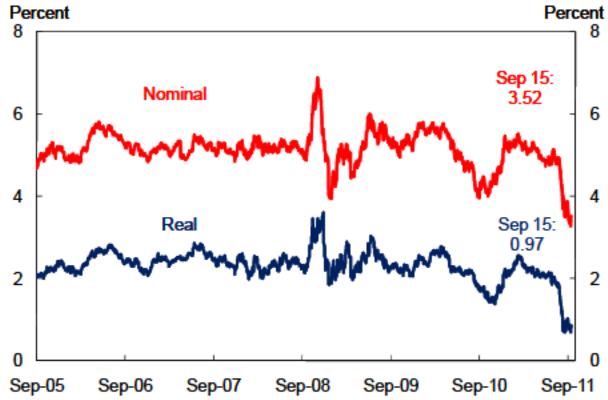
Exhibit A-4:
Real Yields and Implied Inflation

5 Year Spot Rate



Source: Federal Reserve Board

5-10 Year Forward Rates



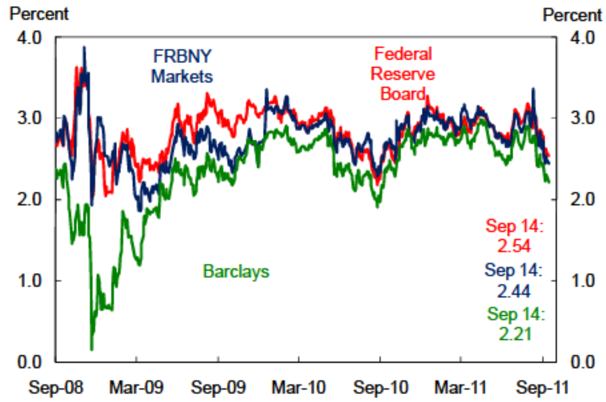
Source: Federal Reserve Board

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

Source: Federal Reserve Board

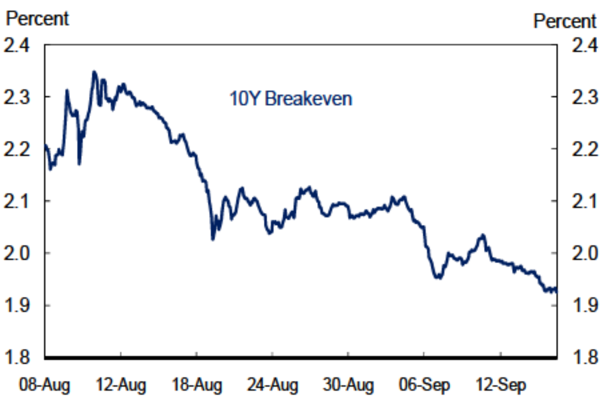
Note: Carry-adjusted.

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

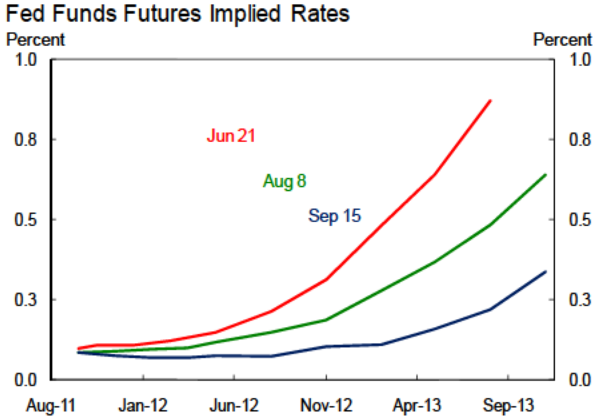
Implied Inflation from Inflation Swaps: 0-5, 5-10 Year Horizon

Source: Barclays

A. Significant Developments

Exhibit A-5:
Policy Expectations

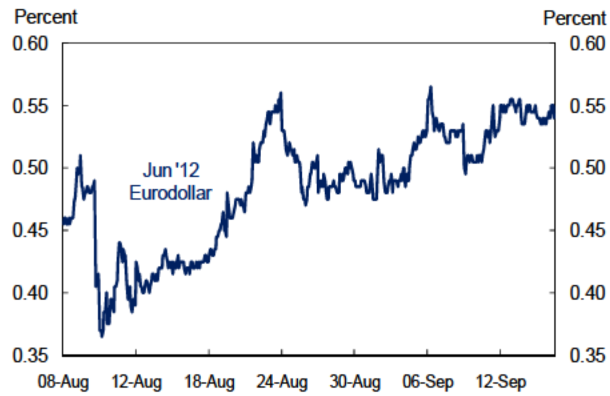
Fed Funds Futures Implied Rates



Source: Federal Reserve Board

Note: Estimated using fed funds and Eurodollar futures.

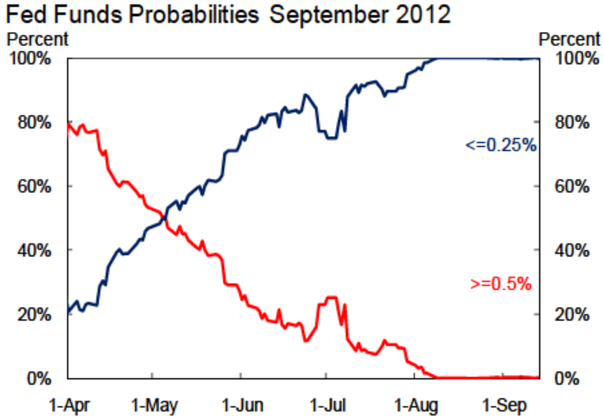
Implied Eurodollar Rates (Intraday)



Source: Bloomberg

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

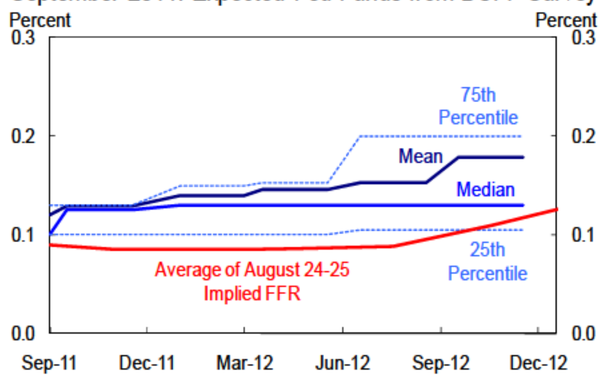
Fed Funds Probabilities September 2012



Source: Bloomberg

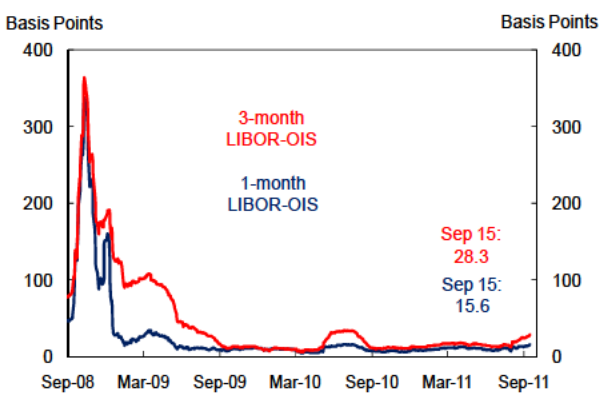
Note: Estimated from Fed Funds Futures

September 2011: Expected Fed Funds from BCFF Survey



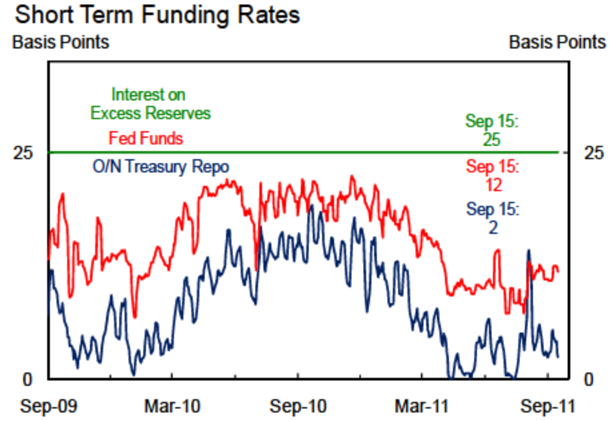
Note: Implied FFR are from Fed Funds and Eurodollar futures. The BCFF survey was conducted on August 24-25 .

Libor to OIS



Source: Federal Reserve Board, Bloomberg

Short Term Funding Rates



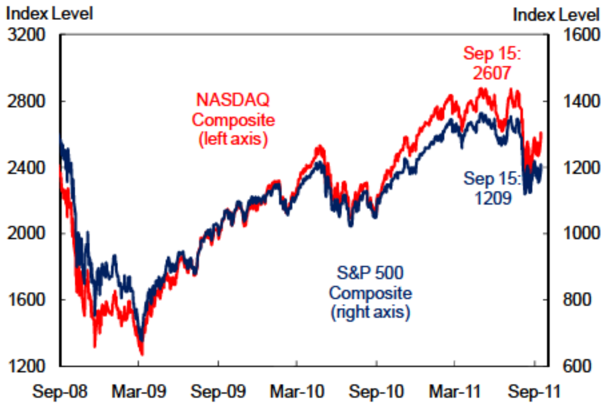
Source: Bloomberg, FRBNY calculations

Note: 1-week moving averages.

A. Significant Developments

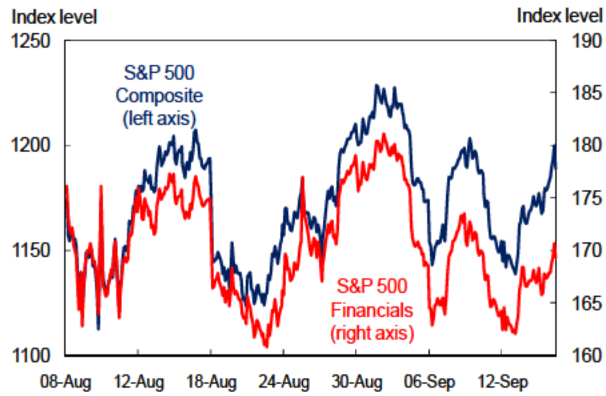
Exhibit A-6:
Equity

Equity Index Levels



Source: Datastream

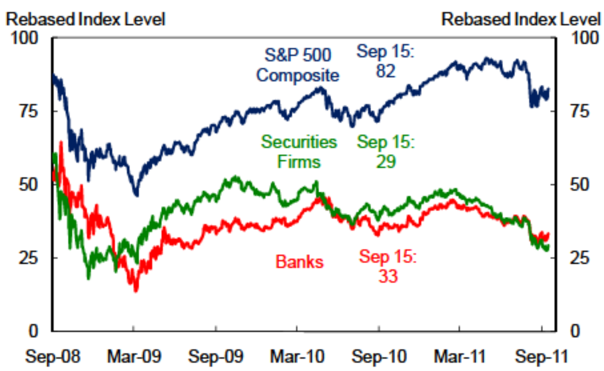
S&P 500 Indices (Intraday)



Source: Bloomberg

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

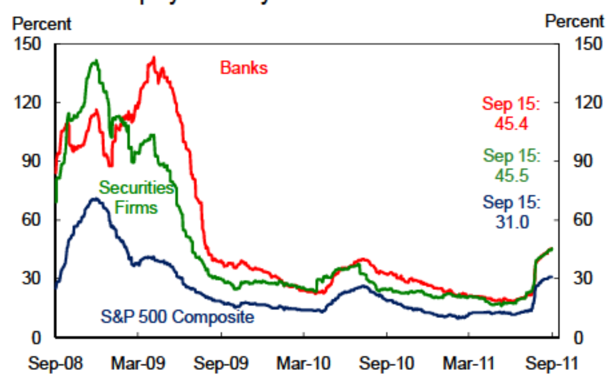
Equity Performance



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

Source: Datastream

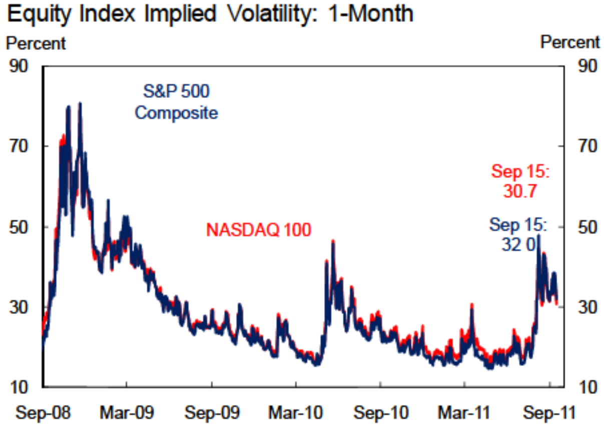
Historical Equity Volatility



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

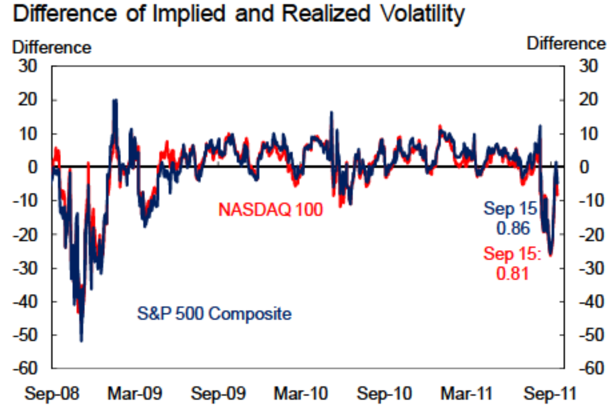
Source: Datastream

Equity Index Implied Volatility: 1-Month



Source: Datastream

Difference of Implied and Realized Volatility



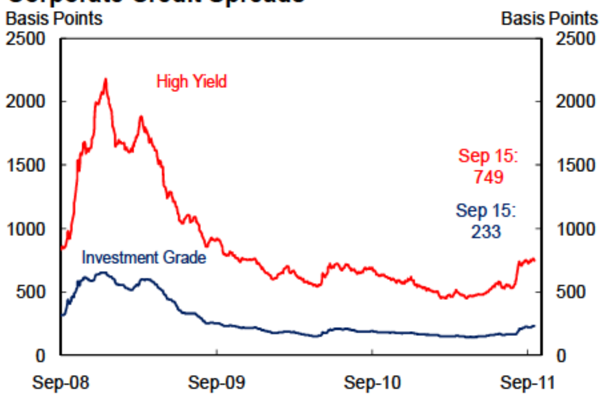
Source: Datastream

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

A. Significant Developments

Exhibit A-7:
Credit

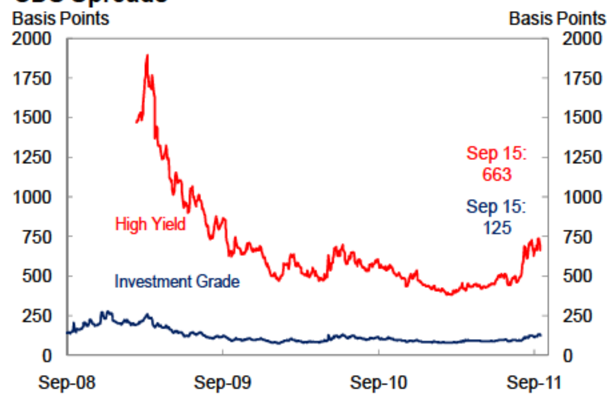
Corporate Credit Spreads



Source: Bloomberg

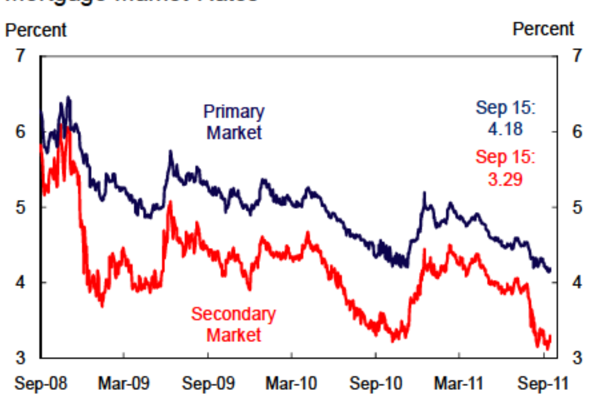
Note: Option-adjusted spreads.

CDS Spreads



Source: Bloomberg

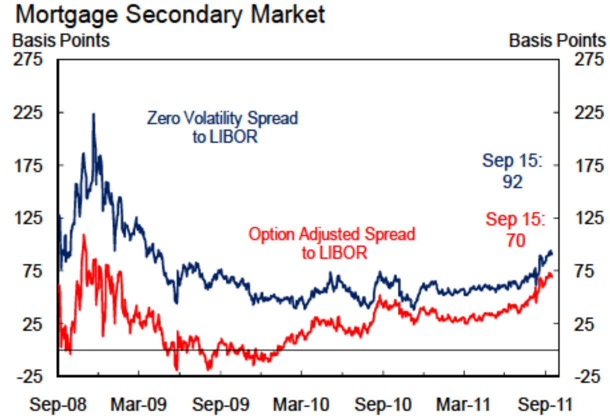
Mortgage Market Rates



Source: Bloomberg

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

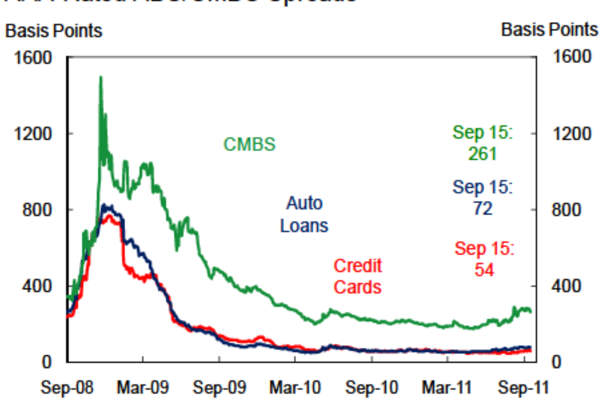
Mortgage Secondary Market



Source: J.P. Morgan

Note: 30 year current coupon Fannie Mae MBS.

AAA-Rated ABS/CMBS Spreads



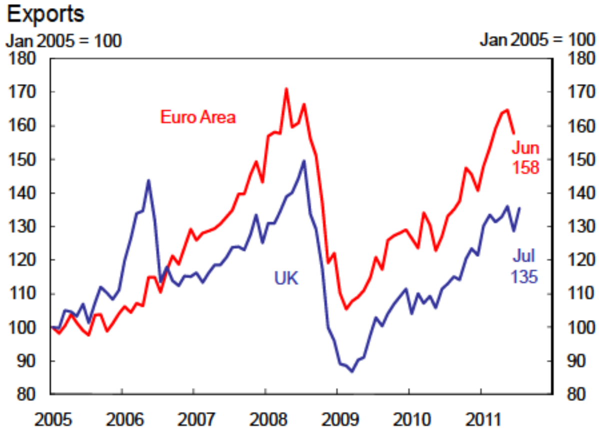
Source: Merrill Lynch

Note: Option-adjusted spreads.

A. Significant Developments

Exhibit A-8: Exports and Industrial Production

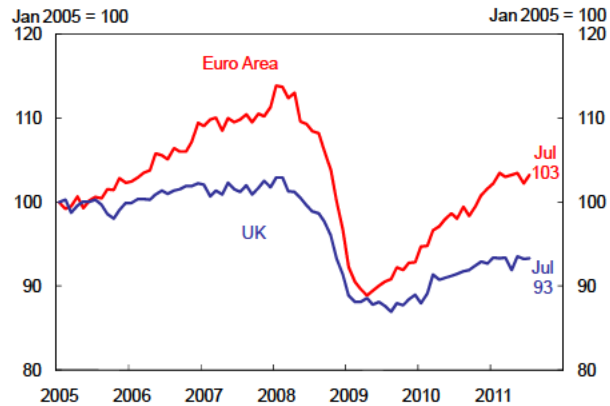
Exports



Source: Haver

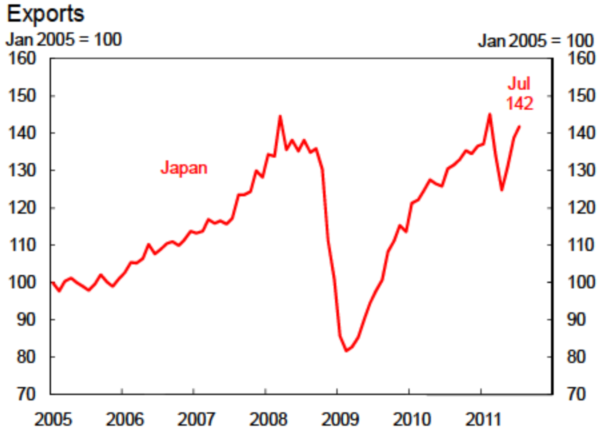
Note: In Dollar Terms

Industrial Production



Source: Haver

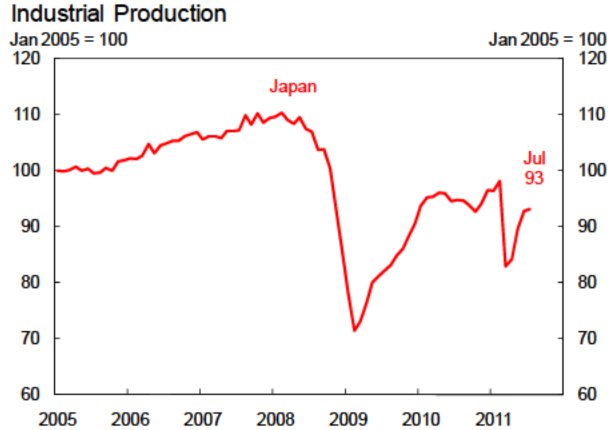
Exports



Source: Haver

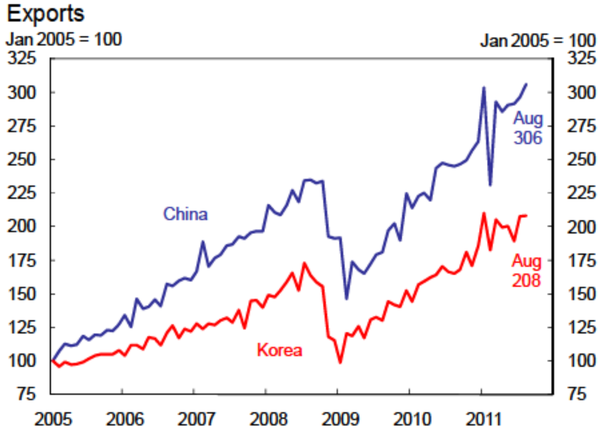
Note: In Dollar Terms

Industrial Production



Source: Haver

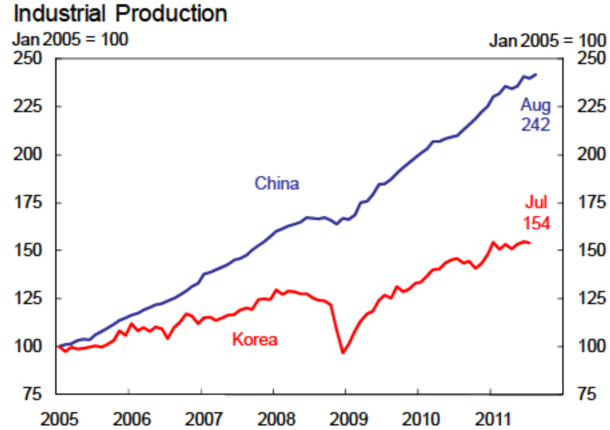
Exports



Source: Haver

Note: In Dollar Terms

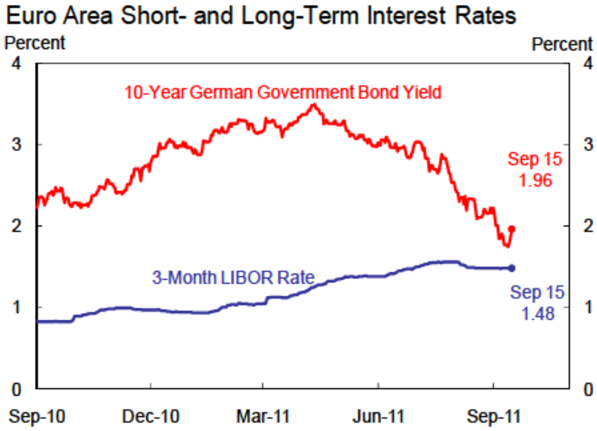
Industrial Production



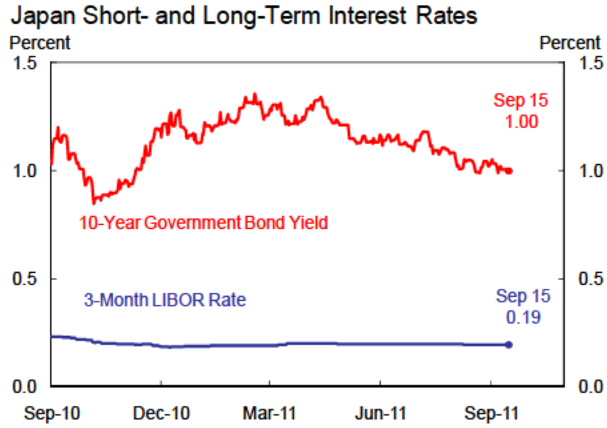
Source: Haver

A. Significant Developments

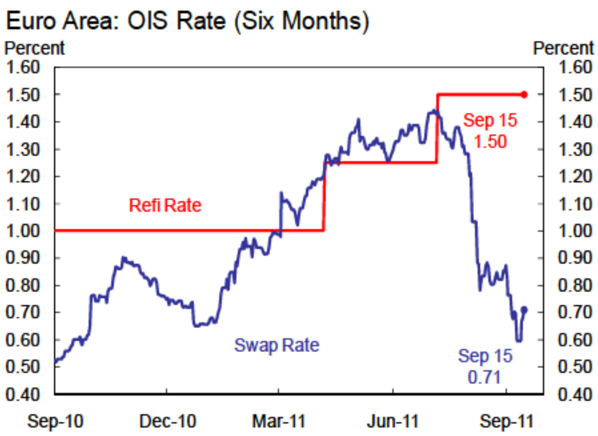
Exhibit A-9:
Global Interest Rates and Equity Markets



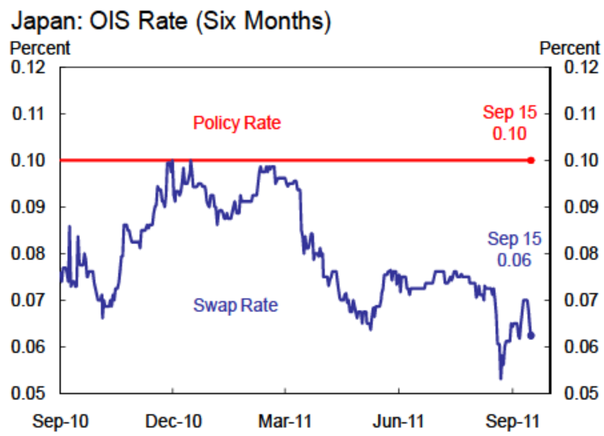
Source: Bloomberg



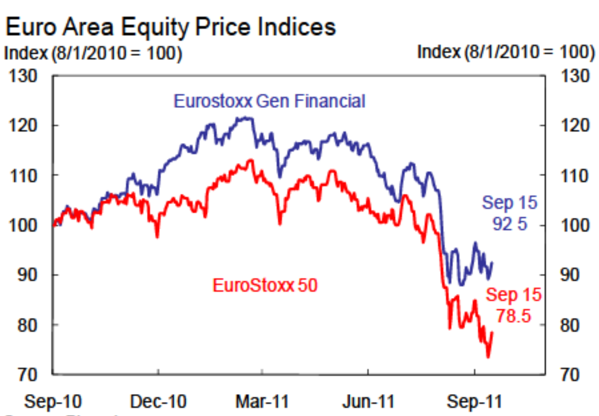
Source: Bloomberg



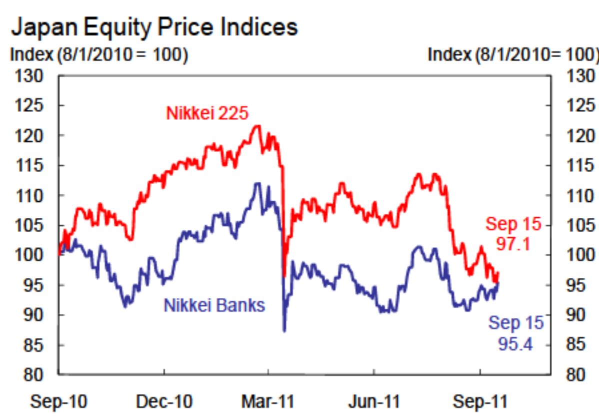
Source: Bloomberg



Source: Bloomberg



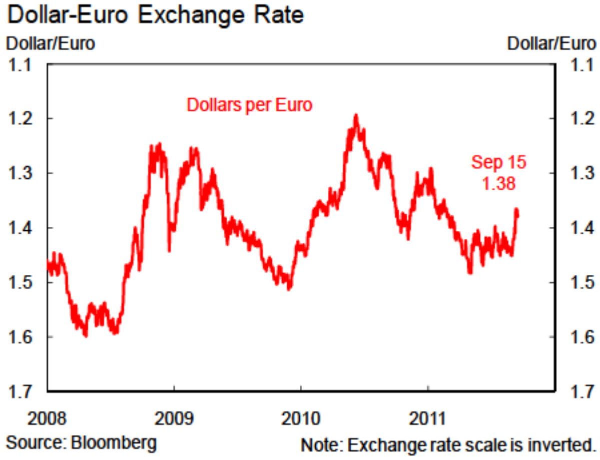
Source: Bloomberg

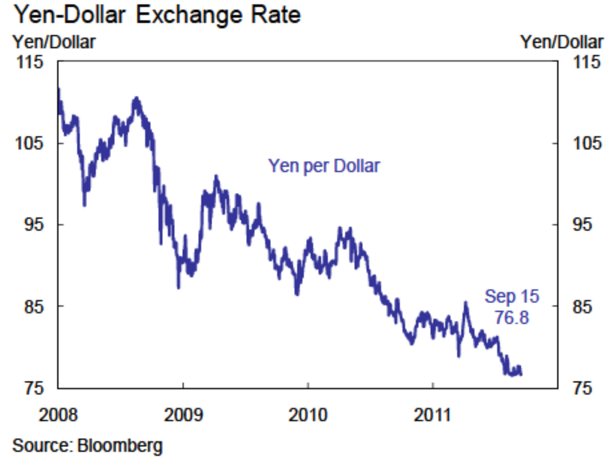


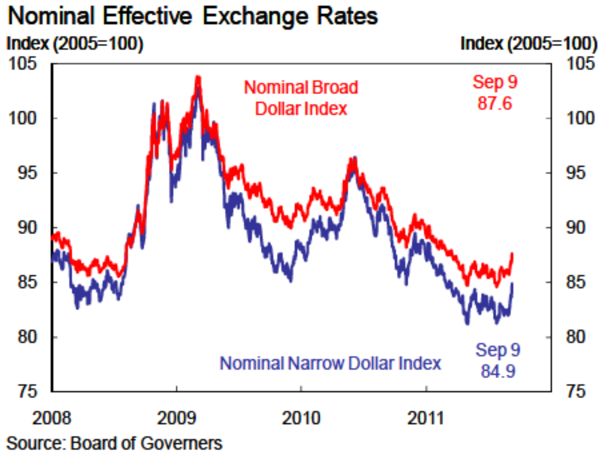
Source: Bloomberg

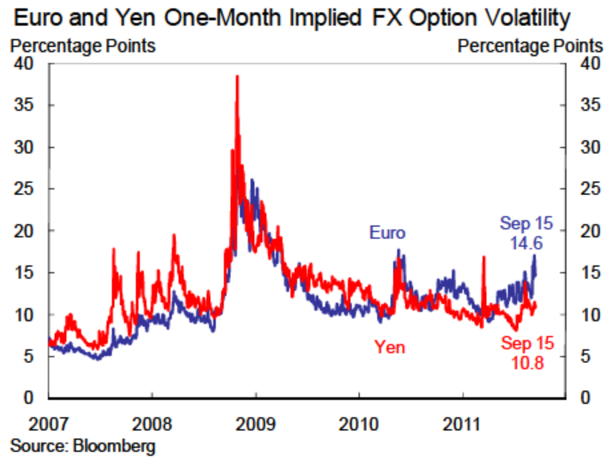
A. Significant Developments

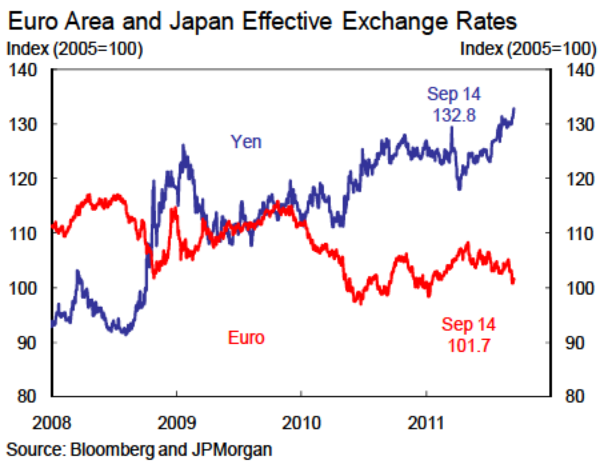
Exhibit A-10:
Exchange Rates

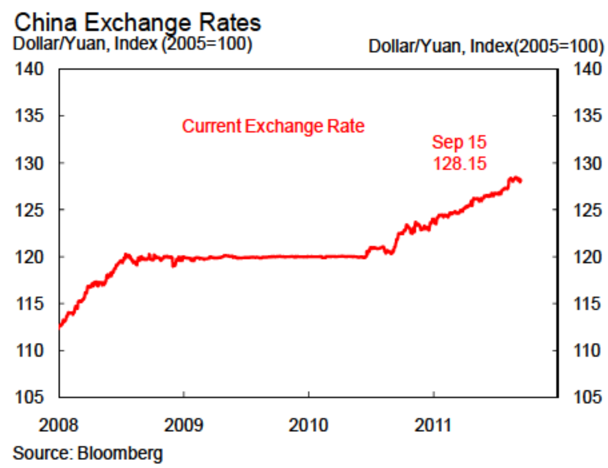












B. FRBNY Forecast Details

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

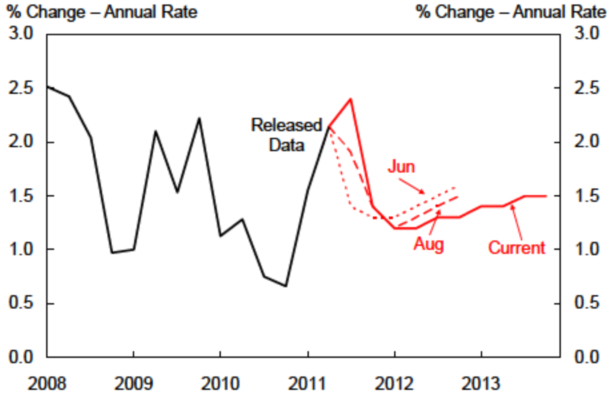
	Core PCE Inflation			Real GDP Growth			Unemployment Rate*			Fed Funds Rate**		
	Jun	Aug	Sep	Jun	Aug	Sep	Jun	Aug	Sep	Jun	Aug	Sep
2011												
Q1	1.4	1.5	*1.5*	1.8	0.4	*0.4*	8.9	8.9	*8.9*	*0-0.25*	*0-0.25*	*0-0.25*
Q2	2.2	2.1	*2.1*	2.2	1.3	*1.0*	9.1	9.1	*9.1*	*0-0.25*	*0-0.25*	*0-0.25*
Q3	1.4	1.9	2.4	3.6	2.6	2.1	8.8	9.1	9.0	0-0.25	0-0.25	0-0.25
Q4	1.3	1.4	1.4	4.6	2.5	2.4	8.4	9.0	9.0	0-0.25	0-0.25	0-0.25
2012												
Q1	1.3	1.2	*1.2*	3.0	2.8	2.3	8.2	8.9	8.9	0-0.25	0-0.25	0-0.25
Q2	1.4	1.3	1.2	4.0	2.9	2.5	7.9	8.8	8.8	0-0.25	0-0.25	0-0.25
Q3	1.5	1.4	1.3	4.1	3.4	2.8	7.7	8.7	8.8	0-0.25	0-0.25	0-0.25
Q4	1.6	1.5	1.3	3.7	3.4	2.7	7.5	8.5	8.7	0.25	0.25	0-0.25
2013												
Q1	--	--	1.4	--	--	3.6	--	--	8.4	--	--	0-0.25
Q2	--	--	1.4	--	--	3.3	--	--	8.1	--	--	0-0.25
Q3	--	--	1.5	--	--	3.5	--	--	7.9	--	--	0-0.25
Q4	--	--	1.5	--	--	3.5	--	--	7.6	--	--	0-0.25
Q4/Q4												
2010	0.8	*1.0*	*1.0*	2.8	*3.1*	*3.1*	-0.3	*-0.3*	*-0.3*	*0.0*	*0.0*	*0.0*
2011	1.6	1.7	*1.9*	3.0	1.7	*1.5*	-1.4	-0.7	*-0.7*	0.0	0.0	*0.0*
2012	1.5	1.3	1.2	3.7	3.1	2.6	-1.0	-0.1	-0.1	0.25	0.25	0.0
2013	--	--	1.4	--	--	3.5	--	--	-0.8	--	--	0.0

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

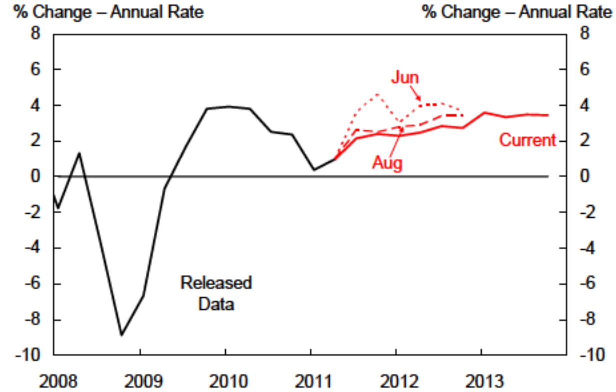
B. FRBNY Forecast Details

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

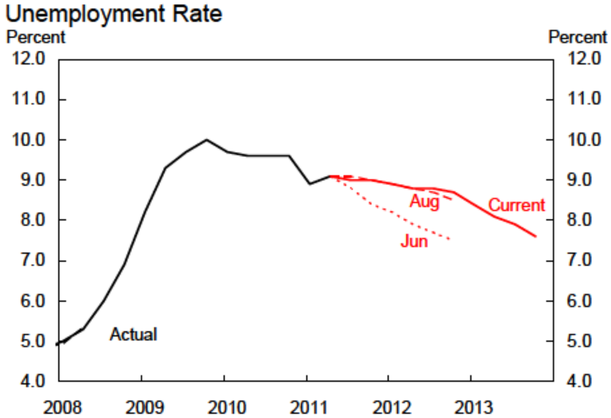
Core PCE Inflation



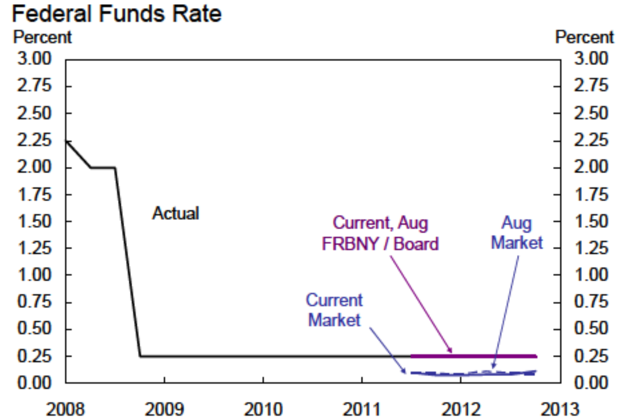
Real GDP Growth



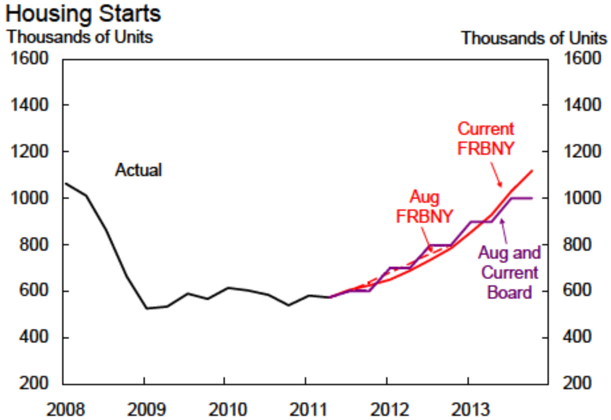
Unemployment Rate



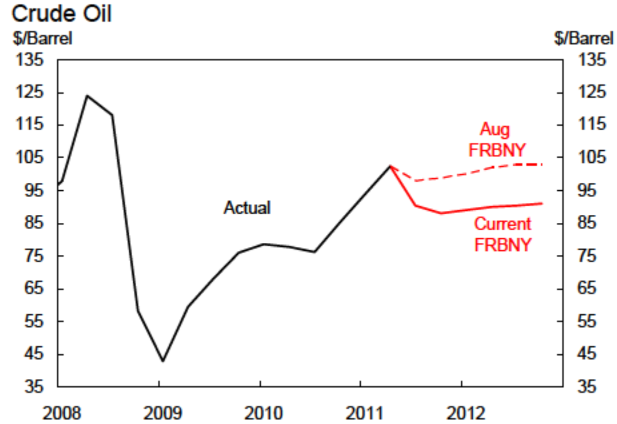
Federal Funds Rate



Housing Starts



Crude Oil



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

B. FRBNY Forecast Details

Exhibit B-3: Near-Term Projections

	Quarterly Growth Rates (AR)		Quarterly Growth Contributions (AR)	
	2011Q3	2011Q4	2011Q3	2011Q4
OUTPUT				
Real GDP	2.1	2.4	2.1	2.4
	(2.6)	(2.5)	(2.6)	(2.5)
Final Sales to Domestic Purchasers	1.6	1.7	1.6	1.7
	(1.7)	(2.0)	(1.8)	(2.0)
Consumption	1.7	1.8	1.2	1.3
	(1.9)	(1.8)	(1.3)	(1.2)
BFI: Equipment and Software	6.0	6.0	0.4	0.4
	(4.0)	(8.0)	(0.3)	(0.6)
BFI: Nonresidential Structures	8.0	4.0	0.2	0.1
	(6.0)	(5.0)	(0.2)	(0.1)
Residential Investment	3.0	0.0	0.1	0.0
	(5.3)	(3.9)	(0.1)	(0.1)
Government: Federal	0.0	1.7	0.0	0.1
	(1.2)	(1.2)	(0.1)	(0.1)
Government: State and Local	-2.0	-1.8	-0.2	-0.2
	(-2.0)	(-1.0)	(-0.2)	(-0.1)
Inventory Investment	--	--	-0.1	-0.1
	--	--	(0.8)	(-0.5)
Net Exports	--	--	0.5	0.7
	--	--	(0.2)	(1.0)
INFLATION				
Total PCE Deflator	2.5	1.7		
	(1.1)	(1.5)		
Core PCE Deflator	2.4	1.4		
	(1.9)	(1.4)		
PRODUCTIVITY AND LABOR COSTS*				
Output per Hour	3.2	1.5		
	(3.3)	(1.5)		
Compensation per Hour	3.0	2.0		
	(1.4)	(1.8)		
Unit Labor Costs	-0.2	0.5		
	(-1.9)	(0.3)		

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

B. FRBNY Forecast Details

Exhibit B-4: Real GDP and Inflation Projections

	Q4/Q4 Growth Rates			Q4/Q4 Growth Contributions		
	2011	2012	2013	2011	2012	2013
OUTPUT						
Real GDP	1.5	2.6	3.5	1.5	2.6	3.5
	(1.7)	(3.1)	--	(1.7)	(3.1)	--
Final Sales to Domestic Purchasers	1.2	1.8	2.7	1.2	1.9	2.7
	(1.1)	(2.2)	--	(1.2)	(2.3)	--
Consumption	1.5	2.0	2.4	1.1	1.4	1.7
	(1.5)	(2.1)	--	(1.0)	(1.5)	--
BFI: Equipment and Software	7.1	7.5	8.5	0.5	0.5	0.6
	(6.6)	(7.0)	--	(0.5)	(0.5)	--
BFI: Nonresidential Structures	2.7	5.0	7.7	0.1	0.1	0.2
	(0.8)	(6.5)	--	(0.0)	(0.2)	--
Residential Investment	1.0	7.0	12.0	0.0	0.2	0.3
	(2.6)	(9.0)	--	(0.1)	(0.2)	--
Government: Federal	-1.5	-3.3	-2.0	-0.1	-0.3	-0.2
	(-1.3)	(-0.8)	--	(-0.1)	(-0.1)	--
Government: State and Local	-2.5	-0.7	0.4	-0.3	-0.1	0.0
	(-2.4)	(-0.1)	--	(-0.3)	(-0.0)	--
Inventory Investment	--	--	--	0.0	0.0	0.2
	--	--	--	(0.2)	(0.0)	--
Net Exports	--	--	--	0.2	0.7	0.5
	--	--	--	(0.3)	(0.8)	--
INFLATION						
Total PCE Deflator	2.8	1.4	1.5			
	(2.4)	(1.6)	--			
Core PCE Deflator	1.9	1.2	1.4			
	(1.7)	(1.3)	--			
Total CPI Inflation	3.3	1.9	2.0			
	(3.1)	(2.1)	--			
Core CPI Inflation	2.1	1.5	1.8			
	(2.1)	(1.7)	--			
GDP Deflator	2.6	1.2	1.4			
	(2.0)	(1.4)	--			

Note: Numbers in parentheses are from the previous Blackbook.

B. FRBNY Forecast Details

Exhibit B-5: Projections of Other Key Economic Variables

	Q4/Q4 Growth Rates		
	2011	**2012**	**2013**
INTEREST RATE ASSUMPTIONS			
Federal Funds Rate (End-of-Year)	0-0.25	0-0.25	0-0.25
	0-0.25	0-0.25	--
10-Year Treasury Yield (Avg. Q4 Level)	1.9	1.6	1.5
	(1.5)	(1.5)	--
PRODUCTIVITY AND LABOR COSTS*			
Output	2.0	3.2	4.3
	(2.9)	(3.8)	--
Hours	1.2	1.7	2.8
	(1.6)	(2.2)	--
Output per Hour	0.8	1.5	1.5
	(1.4)	(1.6)	--
Compensation per Hour	3.3	2.2	2.5
	(1.7)	(2.2)	--
Unit Labor Costs	2.4	0.7	1.0
	(0.3)	(0.7)	--
LABOR MARKET			
Unemployment Rate (Avg. Q4 Level)	9.0	8.7	7.6
	(9.0)	(8.5)	--
Participation Rate (Avg. Q4 Level)	64.0	64.0	64.1
	(64.0)	(64.0)	--
Avg. Monthly Nonfarm Payroll Growth (Thous.)	127	121	271
	(116)	(176)	--
INCOME			
Personal Income	5.8	2.3	4.6
	(5.0)	(3.2)	--
Real Disposable Personal Income	1.8	0.7	2.5
	(1.5)	(1.3)	--
Personal Saving Rate	5.7	4.6	4.6
	(5.5)	(4.9)	--
Corporate Profits Before Taxes	6.1	2.7	3.3
	(2.8)	(2.8)	--

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

B. FRBNY Forecast Details

Exhibit B-6: FRBNY and Tealbook Forecast Comparison

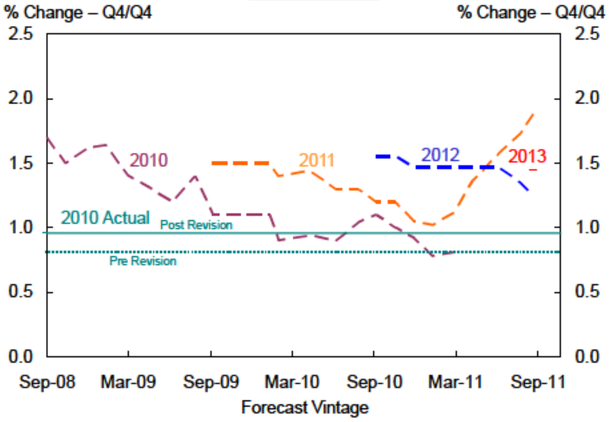
	FRBNY (Q4/Q4)			Board (Q4/Q4)		
	2011	2012	2013	2011	2012	2013
OUTPUT						
Real GDP	1.5	2.6	3.5	1.5	2.6	3.4
	(1.7)	(3.1)	--	(1.8)	(3.0)	--
GDP Growth Contributions						
Final Sales to Domestic Purchasers	1.2	1.9	2.7	1.0	2.0	2.7
	(1.2)	(2.3)	--	(1.1)	(2.2)	--
Consumption	1.1	1.4	1.7	0.9	1.6	2.2
	(1.0)	(1.5)	--	(1.0)	(1.8)	--
BFI	0.6	0.7	0.9	0.5	0.3	0.5
	(0.5)	(0.7)	--	(0.5)	(0.4)	--
Residential Investment	0.0	0.2	0.3	0.0	0.2	0.2
	(0.1)	(0.2)	--	(0.0)	(0.1)	--
Government	-0.4	-0.4	-0.1	-0.4	-0.1	-0.2
	(-0.4)	(-0.1)	--	(-0.4)	(-0.1)	--
Inventory Investment	0.0	0.0	0.2	0.3	0.2	0.5
	(0.2)	(0.0)	--	(0.3)	(0.0)	--
Net Exports	0.2	0.7	0.5	0.2	0.5	0.2
	(0.3)	(0.8)	--	(0.4)	(0.7)	--
INFLATION						
Total PCE Deflator	2.8	1.4	1.5	2.6	1.2	1.3
	(2.4)	(1.6)	--	(2.4)	(1.5)	--
Core PCE Deflator	1.9	1.2	1.4	1.9	1.5	1.3
	(1.7)	(1.3)	--	(1.8)	(1.5)	--
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	--
PRODUCTIVITY AND LABOR COSTS*						
Output per Hour	0.8	1.5	1.5	0.8	1.3	1.8
	(1.4)	(1.6)	--	(0.5)	(1.7)	--
Compensation per Hour	3.3	2.2	2.5	2.8	2.3	2.2
	(1.7)	(2.2)	--	(2.2)	(2.3)	--
Unit Labor Costs	2.4	0.7	1.0	2.1	1.0	0.5
	(0.3)	(0.7)	--	(1.7)	(0.6)	--
LABOR MARKET						
Unemployment Rate (Avg. Q4 Level)	9.0	8.7	7.6	9.1	8.7	8.1
	(9.0)	(8.5)	--	(9.2)	(8.5)	--
Participation Rate (Avg. Q4 Level)	64.0	64.0	64.1	64.0	63.9	64.0
	(64.0)	(64.0)	--	(64.2)	(64.3)	--
Avg. Monthly Nonfarm Payroll Growth (Thous.)	127	121	271	100	142	225
	(116)	(176)	--	(117)	(175)	--
SAVING						
Personal Saving Rate (Avg. Q4 Level)	5.7	4.6	4.6	5.4	5.7	5.5
	(5.5)	(4.9)	--	(5.4)	(5.3)	--
HOUSING						
Housing Starts (Avg. Q4 Level, Thous.)	625	785	1120	600	700	900
	(640)	(800)	--	(600)	(700)	--

B. FRBNY Forecast Details

Exhibit B-7: Evolution of FRBNY and Board Forecasts since Mid-2007

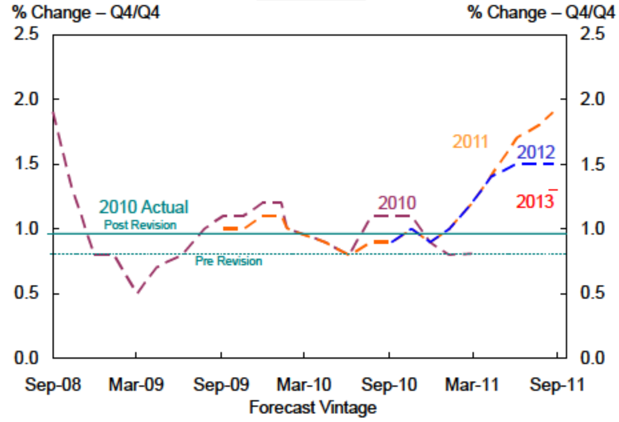
FRBNY

Core PCE Inflation

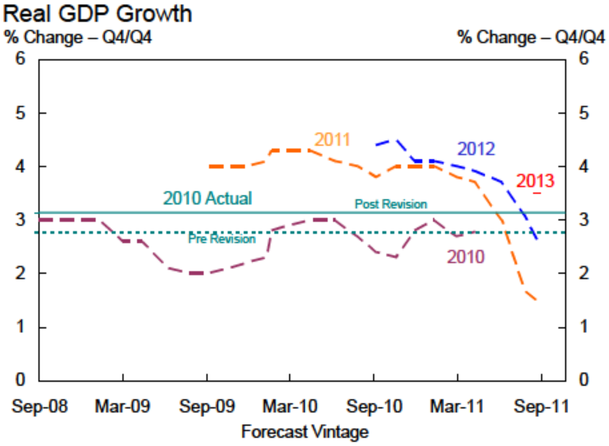


Board

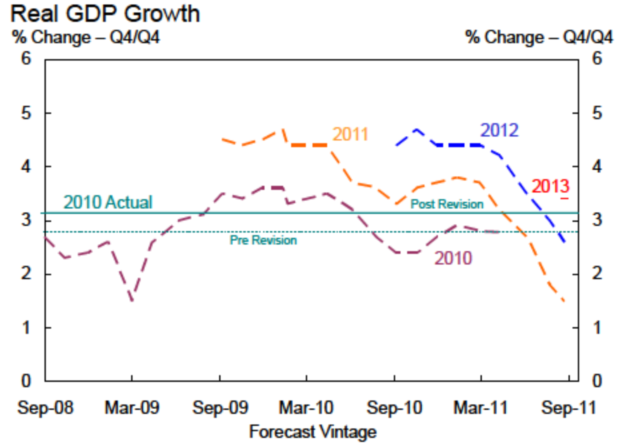
Core PCE Inflation



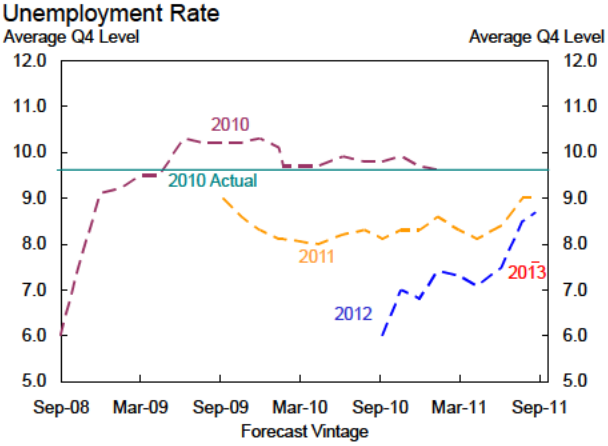
Real GDP Growth



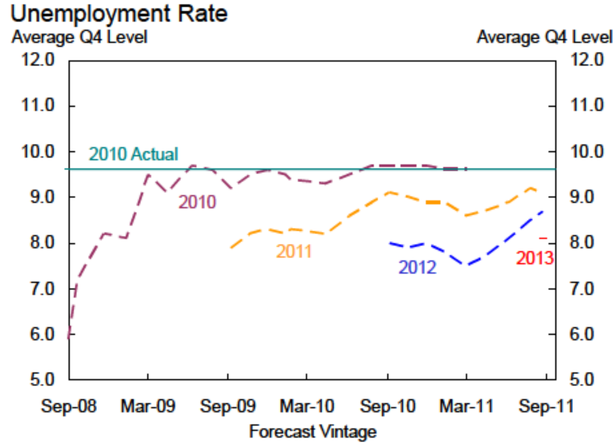
Real GDP Growth



Unemployment Rate



Unemployment Rate



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	2011Q3	2011Q4	2011 Q4/Q4	2012 Q4/Q4
FRBNY	9/15/2011	2.1	2.4	1.5	2.6
		(2.6)	(2.5)	(1.7)	(3.1)
Blue Chip	9/10/2011	1.9	2.1	1.3	2.5
		(3.2)	(3.2)	(2.6)	(3 0)
Median SPF	8/12/2011	2.2	2.6	1.6	--
		(3.4)	(3.5)	(3.0)	--
Macro Advisers	9/14/2011	1.6	2.0	1.3	2.6
		(3.9)	(3.0)	(2.7)	(3.5)

Core PCE Inflation

	Release Date	2011Q3	2011Q4	2011 Q4/Q4	2012 Q4/Q4
FRBNY	9/15/2011	2.4	1.4	1.9	1 2
		(1.9)	(1.4)	(1.7)	(1.3)
Median SPF	8/12/2011	1.7	1.5	1.7	1.6
		(1.4)	(1.5)	(1.5)	(1.6)
Macro Advisers	9/14/2011	2.2	1.4	1.8	1.4
		(1.6)	(1.5)	(1.7)	(1.6)

CPI Inflation

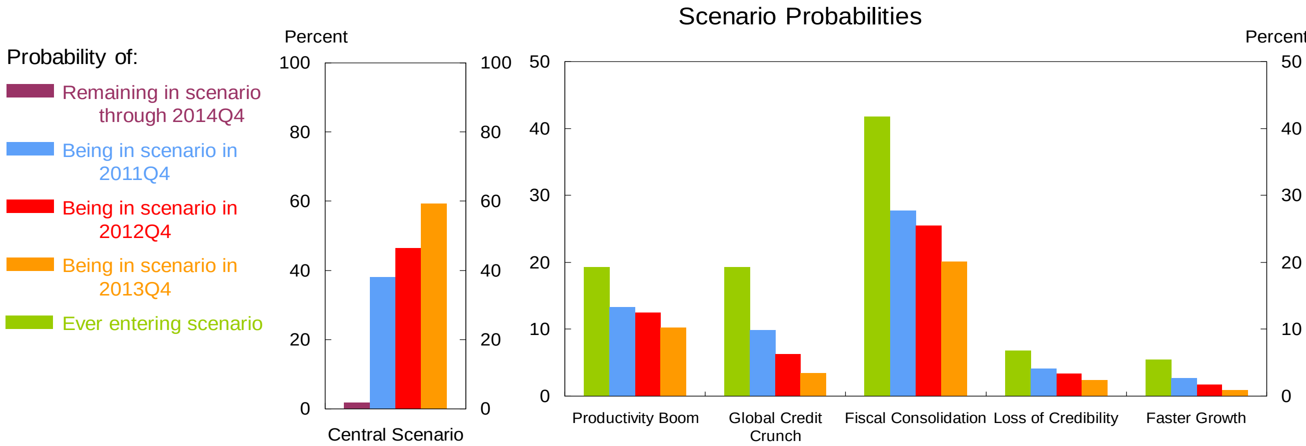
	Release Date	2011Q3	2011Q4	2011 Q4/Q4	2012 Q4/Q4
FRBNY	9/15/2011	2.7	1.4	3.3	1 9
		(1.4)	(1.6)	(3.1)	(2.1)
Blue Chip	9/10/2011	2.2	1.8	3.3	2.1
		(2.0)	(2.0)	(3.5)	(2 2)
Median SPF	8/12/2011	1.5	2.0	3.2	2 0
		(2.2)	(2.0)	(3.1)	(2 2)
Macro Advisers	9/14/2011	2.7	2.2	3.5	1.6
		(1.7)	(1.9)	(3.3)	(1.8)

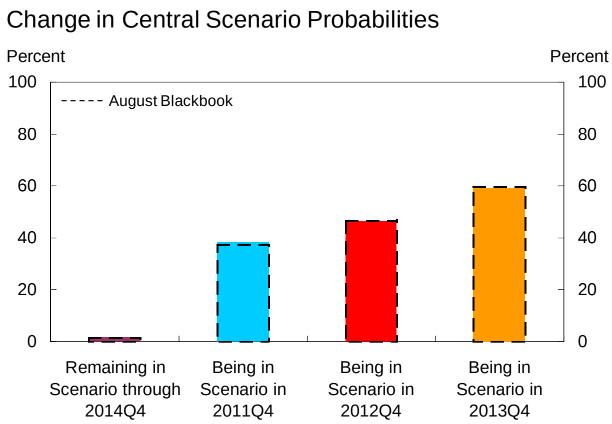
Core CPI Inflation

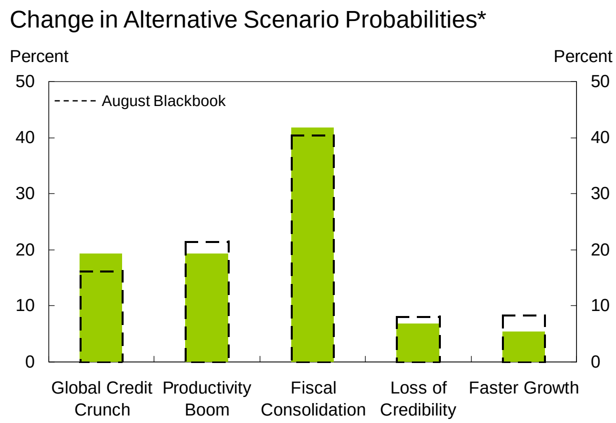
	Release Date	2011Q3	2011Q4	2011 Q4/Q4	2012 Q4/Q4
FRBNY	9/15/2011	2.7	1.4	2.1	1.5
		(2.5)	(1.6)	(2.1)	(1.7)
Median SPF	8/12/2011	2.1	1.7	2.0	1.8
		(1.6)	(1.6)	(1.6)	(1 9)
Macro Advisers	9/14/2011	2.8	2.1	2.3	1.7
		(2.2)	(1.9)	(2.1)	(1 9)

C. FRBNY Forecast Distributions

Exhibit C-1:
Risks

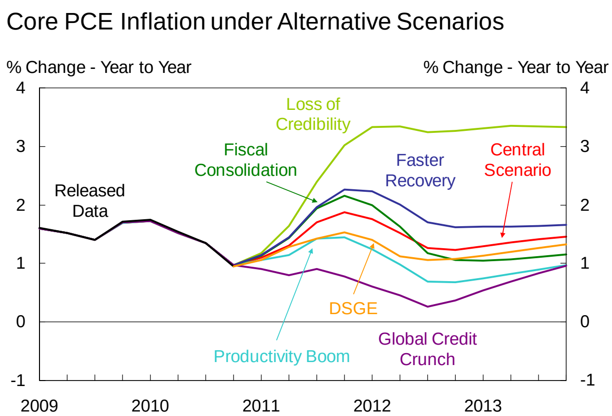


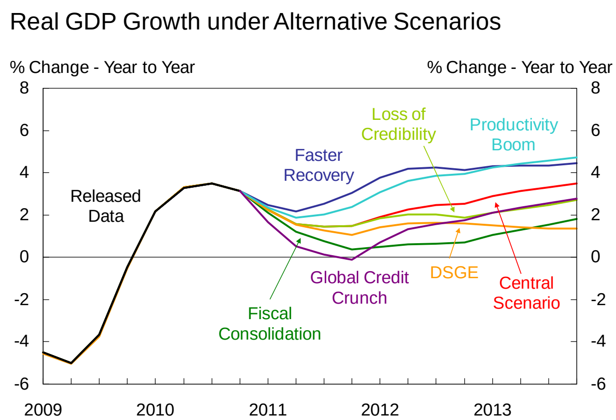




*Probability of ever reaching scenario

Exhibit C-2: Projections under Alternative Scenarios



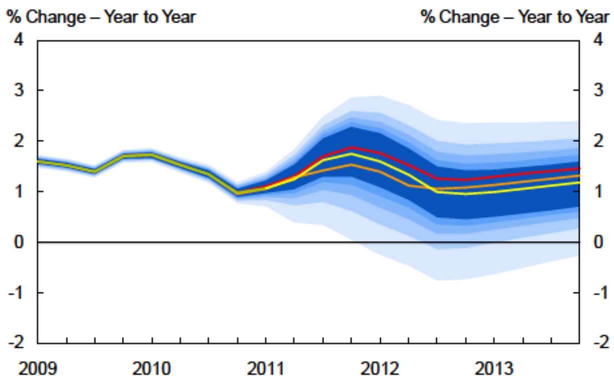


Source: MMS Function (FRBNY)

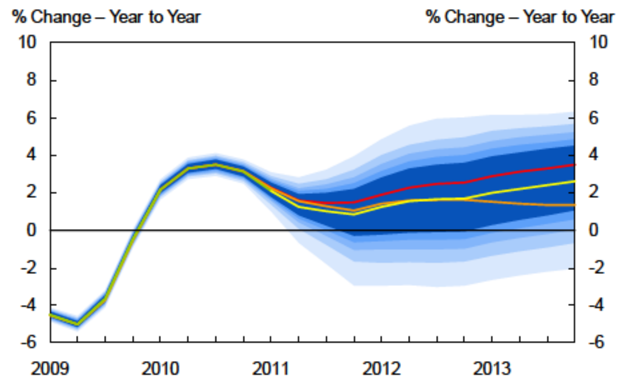
C. FRBNY Forecast Distributions

Exhibit C-3: Inflation and Output Forecast Distributions

Core PCE Inflation Forecast Distribution

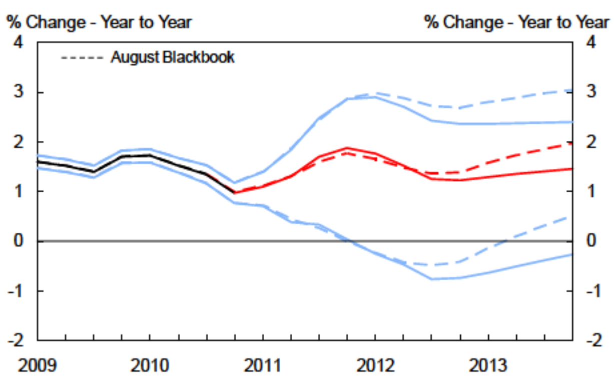


Real GDP Growth Forecast Distribution

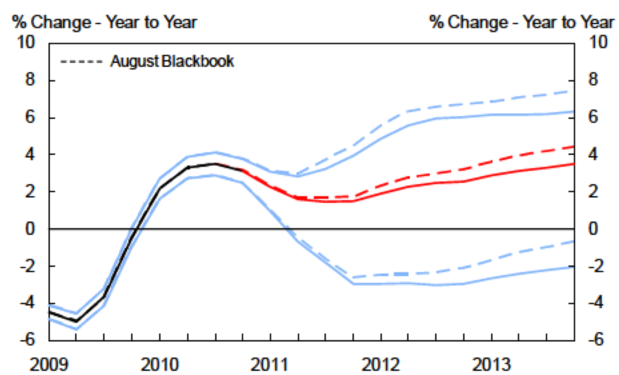


The yellow line represents the expected value of the forecast distribution, the red line represents the FRBNY central projection, the orange line represents the DSGE forecast, and the green line represents released data. The shading represents the 50, 60, 70, 80 and 90 percent probability that the four-quarter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

Change in Core PCE Inflation Forecast Distribution

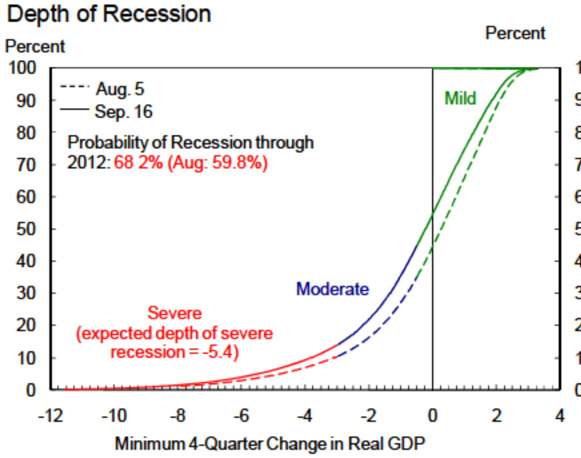


Change in Real GDP Growth Forecast Distribution

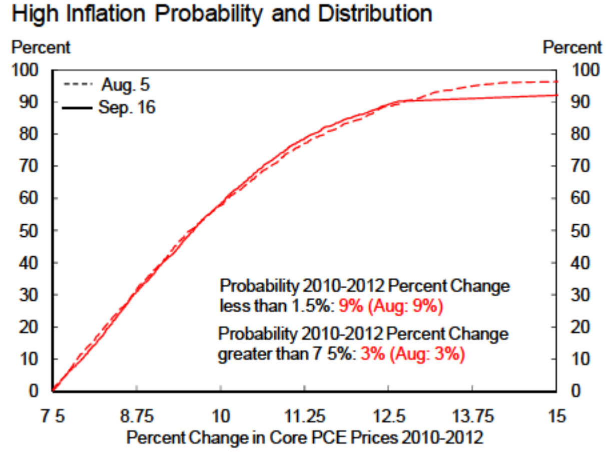


The blue lines are the 90% chance the four-quarter change will be within the lines, the red line is the central scenario projection, and the black line is released data. Dashed lines represent forecasts from the previous Blackbook.

Depth of Recession



High Inflation Probability and Distribution

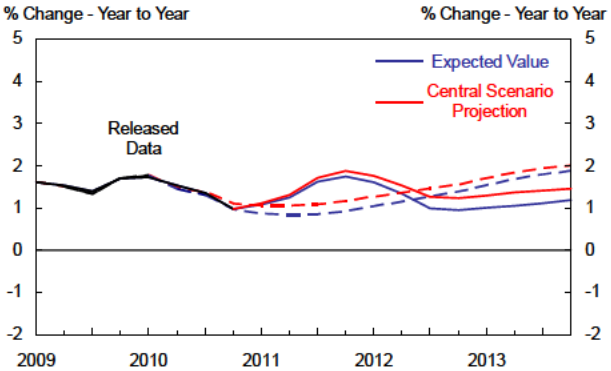


Source: MMS Function (FRBNY)

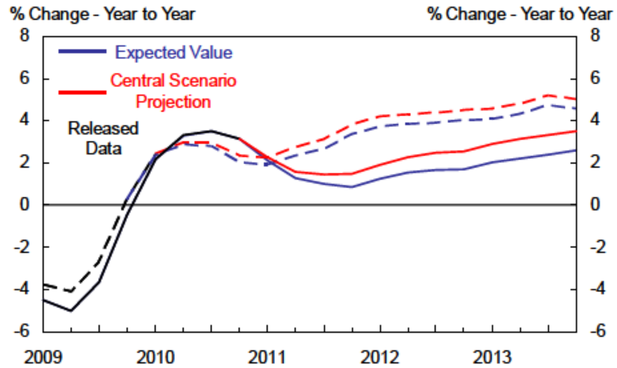
C. FRBNY Forecast Distributions

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

One-Year Comparison of Core PCE Inflation Forecast

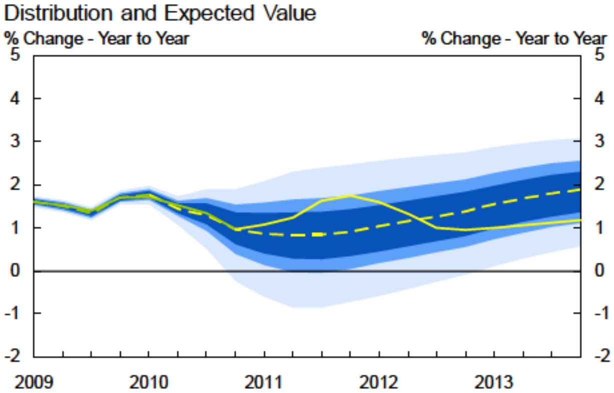


One-Year Comparison of Real GDP Growth Forecast

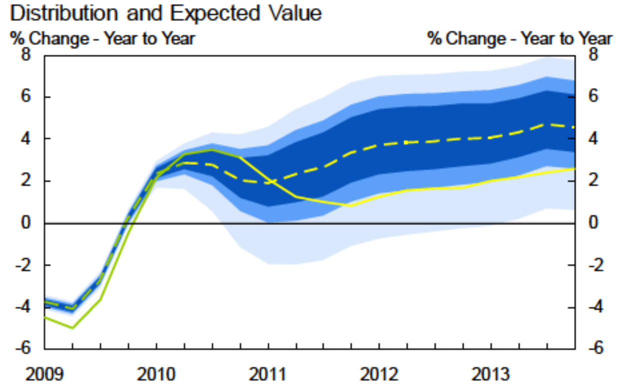


The solid lines represent the current central scenario projection and expected value, while the dashed lines represent those from the year-ago Blackbook.

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



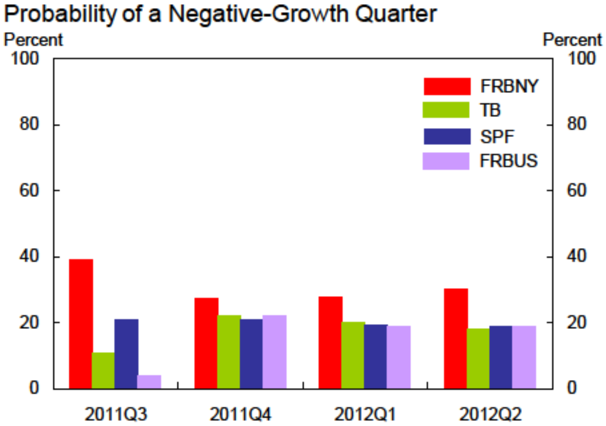
One-Year Comparison of Real GDP Growth Forecast Distribution and Expected Value



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

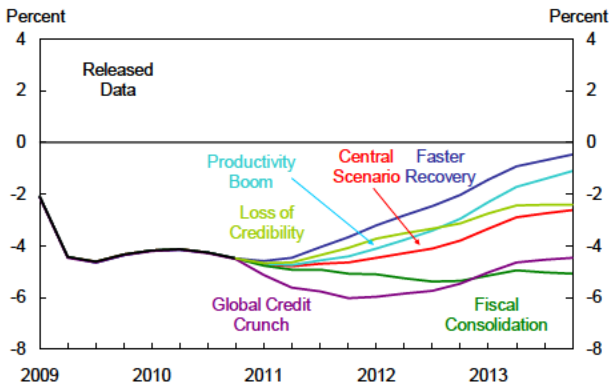


Source: MMS Function (FRBNY)

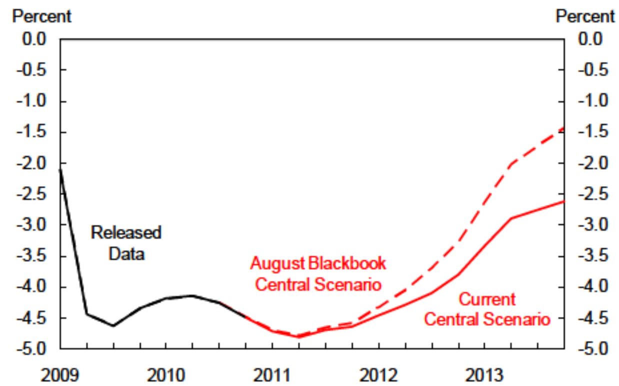
D. FRBNY Fed Funds Rate Projections

Exhibit D-1: *Baseline*
Policy Rule Analysis

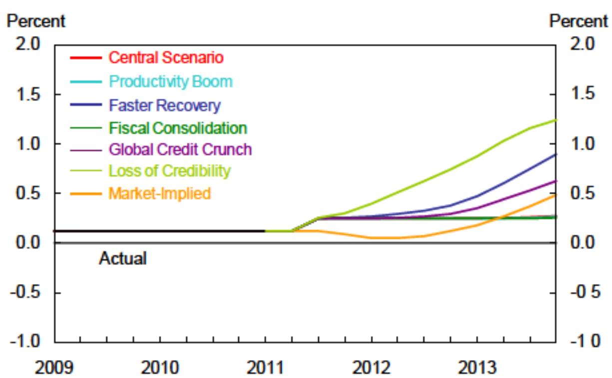
Real FFR under Alternative Scenarios



Change in Central Scenario Real FFR



Nominal FFR under Alternative Scenarios



Change in Central Scenario and Market-Implied Nominal FFR

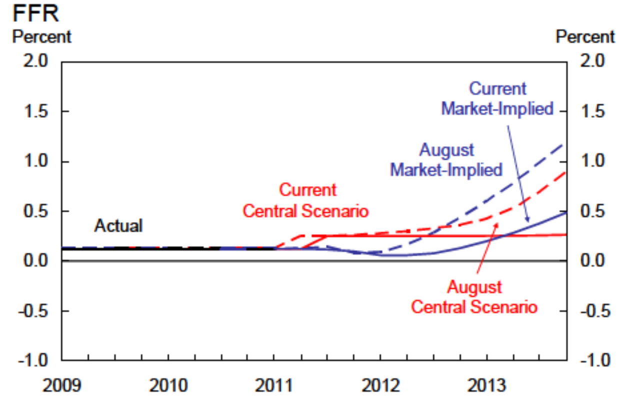
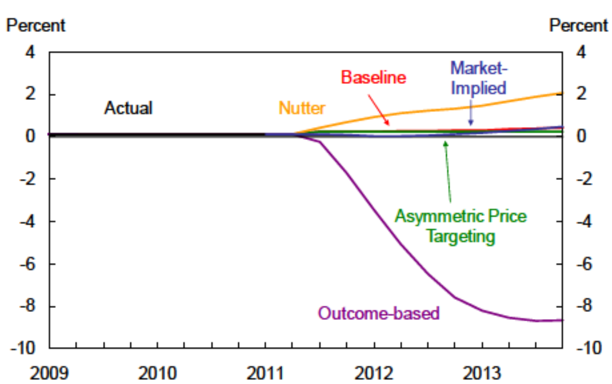


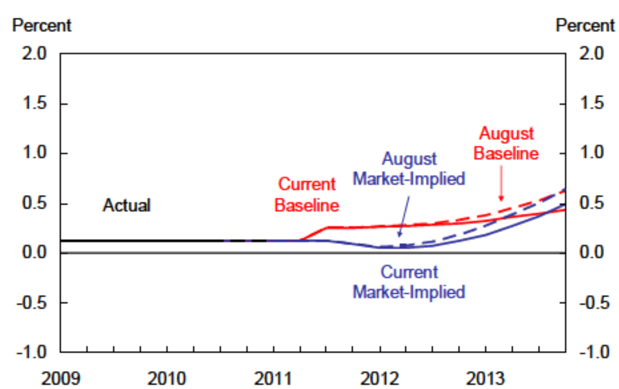
Exhibit D-2: Alternative Policy Rules under Expected Value of Forecast Distribution

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

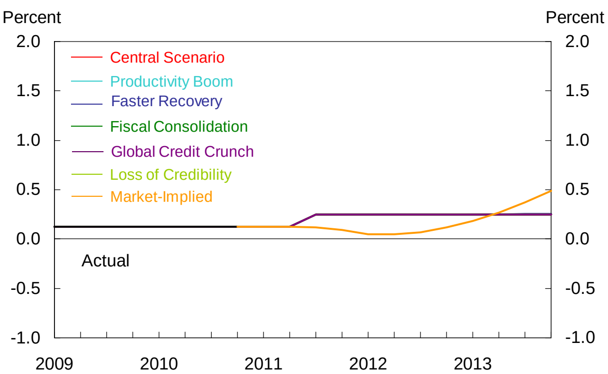
Source: MMS Function (FRBNY)

D. FRBNY Fed Funds Rate Projections

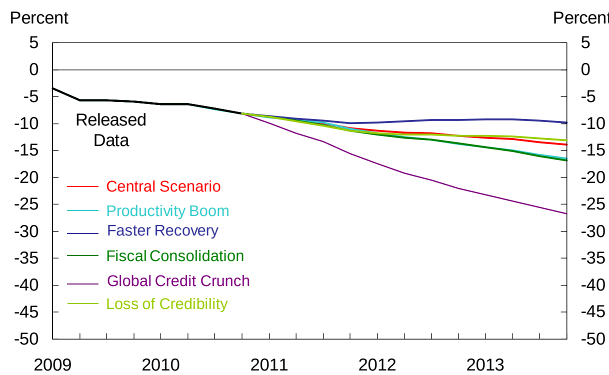
Exhibit D-3: Alternative Policy Rule Analysis

Policy Rule: *Asymmetric Price Targeting*

Nominal FFR under Alternative Scenarios

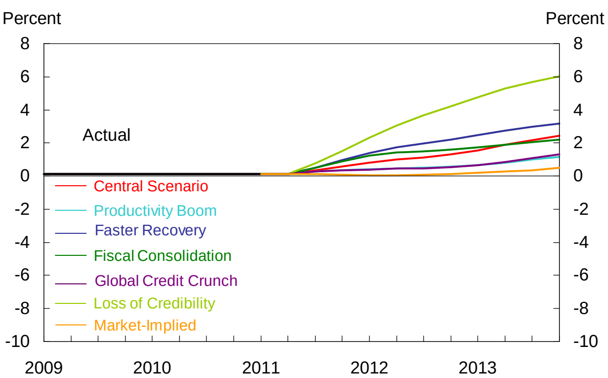


Real FFR under Alternative Scenarios

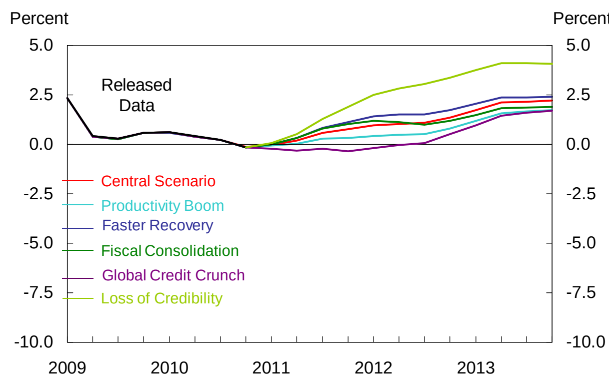


Policy Rule: *Nutter*

Nominal FFR under Alternative Scenarios

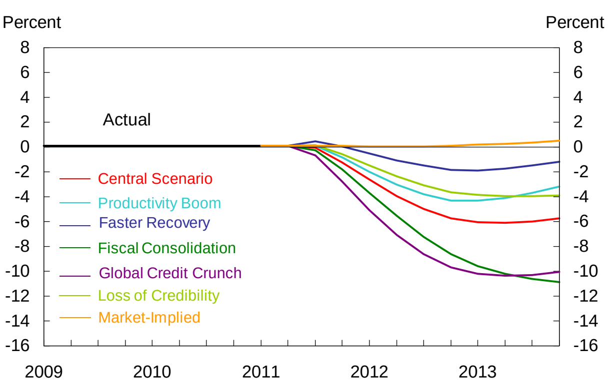


Real FFR under Alternative Scenarios

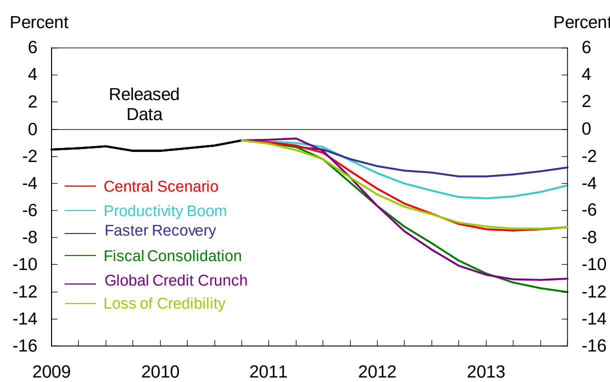


Policy Rule: *Outcome-based*

Nominal FFR under Alternative Scenarios



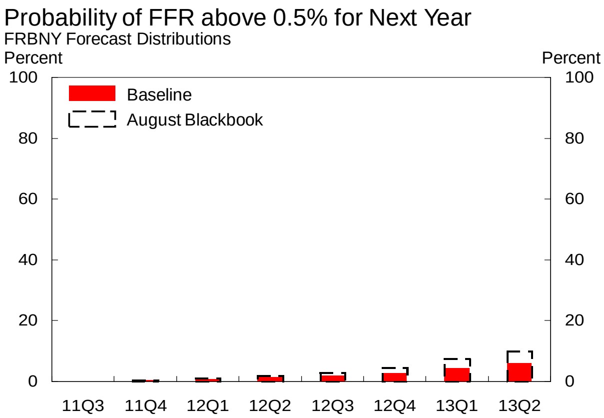
Real FFR under Alternative Scenarios

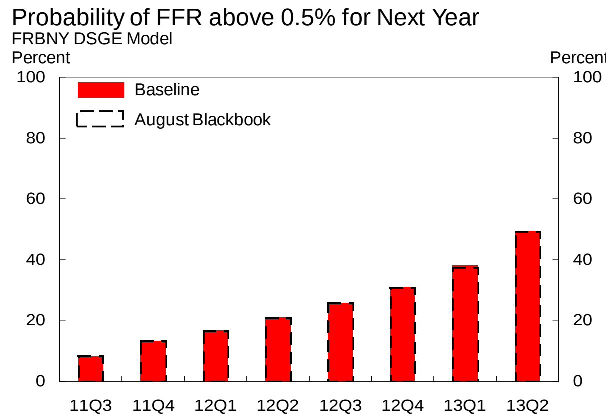


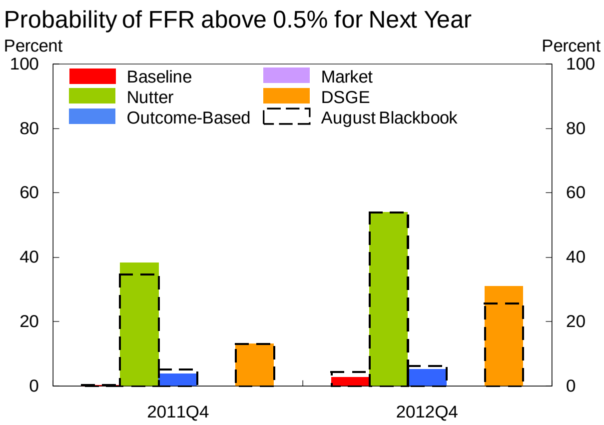
Source: MMS Function (FRBNY)

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)

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

[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.

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

Alternative 4: *Loss of Credibility*

In the wake of the monetary and fiscal stimulus used to combat the 2007-2009 recession, some commentary has focused on the possibility that these policies could lead to higher inflation expectations and eventually to higher inflation. The continued elevated levels of some commodity prices are consistent with such commentary. Even though the FOMC has made its commitment to low rates contingent on “subdued inflation trends” and “stable inflation expectations,” it is possible that market participants may begin to believe that the FOMC is not credibly committed to keeping inflation around the presumed implicit target level, especially if the unemployment rate remains high. In addition, concerns about the possible influence of continued high fiscal deficits on monetary policy could lead investors and the public to question FOMC credibility on inflation: FRBNY survey evidence suggests that, for at least some market participants, increases in government debt lead to higher inflation expectations, regardless of the reason for the increased debt. If the concerns about credibility were to become widespread, they would likely cause a rise in inflation and inflation expectations above forecast.

Alternative 5: *Global Credit Crunch*

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

Alternative 6: *Global Deflation*

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

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

1. *Productivity Boom*: inflation below central forecast, output above central forecast.

2. *Fiscal Consolidation*: inflation initially above and then below central forecast, output below central forecast.
3. *Faster Growth/Recovery*: inflation above central forecast, output above central forecast.
4. *Loss of Credibility*: inflation far above central forecast, output slightly below central forecast.
5. *Global Credit Crunch*: inflation below central forecast, output significantly below central forecast.
6. *Global Deflation*: inflation far below central forecast, output far below central forecast.

Policy Rule Descriptions

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

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

Baseline Policy Rule Specification:

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

$\rho = 0.8$ (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 (φ_π = 2 instead of 1.5). The *Nutter* rule does not react to changes in the output gap.

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

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

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

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

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