

**FOMC BACKGROUND MATERIAL**

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**RESEARCH AND STATISTICS GROUP**

**FRBNY Blackbook**

**January 2015**

**CONFIDENTIAL (FR) Class II FOMC**

# FRBNY BLACKBOOK

## January 2015

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## 1. Policy Recommendation and Rationale

Economic developments since the last FOMC meeting indicated continued solid economic activity in the last quarter of 2014, which was somewhat stronger than we projected in the last Blackbook, as labor market conditions continued to improve and consumer spending appeared to rise at a brisk pace in the quarter. Significant uncertainty remains, however, about the sustainability of this forward momentum, particularly in light of ongoing developments in the global economy and financial markets. At this time, it remains difficult to calibrate the ultimate effects on the U.S. economy of the recent dollar appreciation, broader volatility in currency markets, and the continuing decline in oil prices. Based on our current outlook as well as our evaluation of risks, we maintain our December recommendation for keeping the FFR at its current level until mid-2015 and strongly reemphasize the state contingency of policy decisions.

Economic data releases in the intermeeting period were positive on balance. The December labor market report indicated a continued, well-sustained pace of improvement in labor market conditions. Real GDP growth in 2014Q3 was revised upward to 5 percent (annual rate), the strongest quarterly growth in 11 years, largely because of a more robust reading of consumer spending. The November data on real PCE indicated that consumption growth in 2014Q4 would be solid again, although December retail sales mitigated some of that momentum. The strength in consumer spending reflects in part the impact of lower energy prices on real incomes and improved consumer sentiment. In contrast, the manufacturing and nonmanufacturing ISM indices fell in December, although both remain at solid levels, and business investment indicators continued to be rather soft.

Although we have marked up the 2014Q4 projection in response, we see the intermeeting data as largely consistent with our central outlook, and have made only fairly minor changes to our projections for real GDP growth in 2015-16. We thus continue to project that the economy will approach the FOMC's maximum employment objective in 2016. However, we see notable uncertainty around our outlook. While we assess the risks as balanced, we see that the downside risks increasingly stem from global developments. The recent oil price decline may boost household disposable income and spending, but that decline and the dollar appreciation could be

detrimental to investment and external demand. In addition, expectations of a global investment dearth and persistent stagnation may be driving much of the decline of long-term yields.

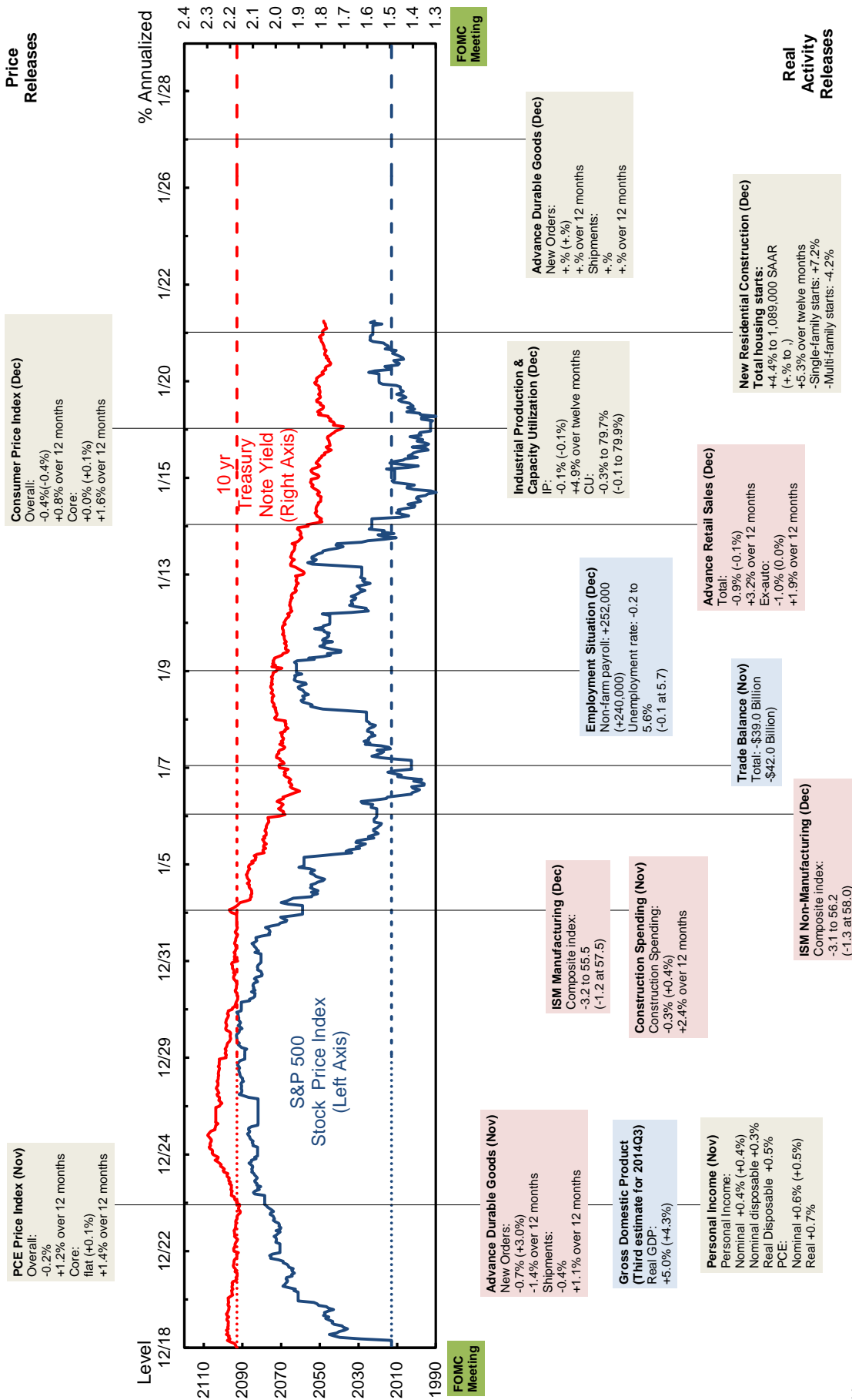
Significant uncertainty also continues to surround the projected return of inflation to the FOMC's objective over the medium term. The latest PCE deflator (November) and CPI (December) data indicate some reduction in inflation from already below-objective levels. Other measures of underlying inflation, including our SiCo measure, also display some decline. Moreover, aggregate measures of compensation growth generally remained subdued, despite the improvement in the labor market. With low inflation in many major economies, a soft global outlook, an appreciation of the dollar, and further falls in commodity prices, the declines in financial market measures of long-term inflation compensation raise the possibility of longer-run inflation expectations becoming less anchored to the downside. At this time, this risk should not be unduly emphasized in communication, but we continue to recommend that movements in indicators of inflation compensation and expectations be monitored closely. On this note, we read as an encouraging signal the latest readings from the Michigan survey and the SCE, which indicate that the central tendencies of household longer-term inflation expectations have remained stable.

Based on our outlook and risk assessment, we again recommend that the target federal funds rate remains at the current range until mid-2015. In state-contingent terms, at the time of lift-off we should be confident that the economy has attained sufficient momentum that the probability of a policy reversal is very low. We continue to judge June 2015 as the most appropriate time for lift-off, but weaker inflation readings amid ongoing global risks lead us to assign a somewhat higher probability to a delayed lift-off and somewhat lower probability to an earlier one than we did in December. At this time we see the risks of a premature lift-off outweighing the risks of prolonged patience. With the strength of the economy not yet translated into a firming of wages and prices, and in an environment with significant external vulnerabilities and greater financial market volatility, the U.S. economy may be still susceptible to sudden reversals if tightening is premature, and being patient in removing accommodation will enable policymakers to better sort out signals from noise. By contrast, we do not see signs of incipient overheating in asset pricing

(as risk premia compression remains moderate) and inflation, suggesting that the costs of waiting a bit longer before lift-off are likely contained.

In December, we recommended shifting forward guidance towards language that would indicate “patience” in removing accommodation but also reflect the extent of the Committee’s confidence about the economic outlook. At this time, while our confidence in the outlook for real activity has not weakened appreciably, and we continue to view the downward pressure on inflation from energy prices and other global forces as largely transitory, the signals emanating from long-term, market-based, inflation expectations raise some concern. We recommend therefore that the Committee retains the current language and communicates that it is carefully monitoring inflation developments and the economic outlook to gauge whether the current pace of recovery provides sufficient momentum for employment and inflation to return to objectives over an appropriate time horizon. We will revisit our language options in March, suggesting that any revision in the policy stance and communication should carefully balance the benefits of being patient in lifting off against the possible risks, including financial stability risks, associated with an overly accommodative policy.

# 1-1: Key Data Releases



**Note**

Blue shading: Data release encouraging/positive.  
 Red shading: Data release discouraging/negative.  
 Beige shading: Data release was neutral.  
 Gray shading: No attempt to sign the impact.  
 Numbers in parentheses are the median of the Bloomberg survey.

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

## 2. Central Forecast

### Intermeeting Developments

While it has been a relatively short period of time since the December Blackbook, our understanding of the strength of economic growth over the second half of 2014 has changed a great deal. First, in the final estimate, growth of real GDP in 2014Q3 was revised up to 5.0%, the strongest quarterly growth rate since 2003Q3. In addition, we now estimate that real GDP increased at around a 2 3/4% annual rate in the fourth quarter, three-fourths of a percentage point stronger than anticipated in December. This brings the compound annual growth rate of real GDP over the entire second half of 2014 to around 4%. The unemployment rate fell by ½ percentage point over this six month period—6.1% in June to 5.6% in December—somewhat less than suggested by Okun’s Law if the economy’s potential growth rate is actually 2%, as we now assume. Productivity in the nonfarm business sector likely increased at a 2.2% annual rate over the second half, above our assumed trend of 1.5%. Finally, the total PCE deflator likely rose at just a 0.4% annual rate in the second half of 2014, while the core PCE deflator likely rose at a 1.3% annual rate. In both cases, these inflation rates are somewhat lower than we expected in December.

The primary source of the stronger growth over the second half of 2014 was consumer spending, which is now estimated to have increased at a 3.2% annual rate in the third quarter and is expected to increase at around a 4% annual rate in the fourth quarter. Recall that in the advance estimate of growth of GDP for the third quarter, real PCE was estimated to have increased just 1.8%. While spending in nearly all categories of PCE was revised upward, the largest single contribution came from spending on health care services, which was surprisingly weak in the first quarter of 2014. Overall, however, the considerably stronger tone of consumer spending appears to be the culmination of several supporting trends. Hours worked in the nonfarm business sector likely increased at about a 3% annual rate over the second half of the year while compensation per hour likely increased at nearly a 2% annual rate. The sharp decline of energy prices helped to boost the real purchasing power of the respectable gain in nominal income. Finally, access to credit has increased to the point where, as of 2014Q3, even households with

the lowest credit scores were experiencing year-over-year gains in total liabilities. Indeed, it is unlikely that the pace of sales of light-weight motor vehicles would have been restored to pre-recession levels without the re-emergence of sub-prime auto financing.

Housing construction ended 2014 on a high note, with total housing starts averaging 1.075 million units (seasonally-adjusted annual rate) in the fourth quarter, the highest since 2007Q4. In the first quarter of 2014, total starts averaged just 925,000. Beneath this headline number a shift is taking place toward production of single-family units while multi-family starts have leveled off. Single-family starts averaged 708,000 in the fourth quarter, the highest since 2008Q2. In contrast, multi-family starts averaged 367,000 in the fourth quarter, essentially the same as the average of the second and third quarters. The data on building permits issued also reflect this transition, with single-family permits trending gradually upward in 2014 while multi-family permits in 2014Q4 were essentially unchanged from their level in 2013Q4. Some housing analysts believe that while multi-family starts may continue to rise, the upward trend is unlikely to be as steep as it has been since 2010. The increased supply of multi-family housing appears to be putting downward pressure on rents. On a six-month change basis, the rate of increase of rent of primary residence has slowed from 3.8% in September to 3.2% in December.

The ongoing decline of mortgage interest rates over the past year, along with the improvement in the labor market, has clearly helped to give the single-family sector renewed upward momentum. According to the Mortgage Bankers Association of America, the contract interest rate on 30-year fixed rate mortgages averaged 3.8% last week, down almost 100 basis points from their recent high in August of 2013. Mortgage rates hit a recent low of 3.5% in December of 2012. Applications for mortgages to purchase homes have risen fairly sharply in the past two weeks after an extended period in the doldrums.

Despite the rise of total housing starts, growth of real residential investment looks to have been rather tepid over the second half of 2014. This is the lagged effect of the leveling off of starts in the first half of the year as well as some weakness in additions and alterations. But the stage is set for a stronger growth contribution from residential investment in the first half of 2015.



The stronger pace of consumer spending, continued inventory building, and respectable growth of exports contributed to an increase in the rate of growth of industrial production in the second half of 2014—to a 4.8% annual rate from 4.1% over the first half of the year. Production of durable goods slowed somewhat over the second half, whereas growth of production of nondurable goods was considerably stronger. This was particularly the case in categories such as apparel, textiles, and chemicals. It is quite possible that, in addition to increased demand, falling energy prices are providing a boost to these sectors. The capacity utilization rate reached 78.4 in November and December of 2014, the highest since December of 2007.

Not all recent data has been as upbeat as that associated with consumer spending, housing, and manufacturing output. Through November, new orders for nondefense capital goods excluding aircraft have declined for three consecutive months. After rising at double-digit rates in 2014Q2 and Q3, it now looks like growth of business investment in nonresidential equipment will be in the low single-digits in the fourth quarter. Even though growth of real business investment in nonresidential structures looks to have been somewhat firmer in the fourth quarter than in the third, growth of overall business fixed investment appears to have slowed substantially. In addition, while growth of exports was reasonably well maintained in the fourth quarter, growth of imports picked up substantially, such that the next export growth contribution for 2014Q4 is anticipated to have been -0.6 percentage points in the fourth quarter versus +0.8 percentage points in the third quarter.

Despite the slower growth of real GDP in the fourth quarter, demand for labor increased. The average monthly change of total nonfarm payroll employment moved up to 289,000 in 2014Q4 versus 239,000 per month in the third quarter. Hours worked by private sector employees rose at a 3 ½% annual rate versus 2.4% in the third quarter. Nonetheless, the 12-month change of average hourly earnings slowed over the fourth quarter. (This was true even before the decline of average hourly earnings in December.) Despite this slowing in the rate of growth of average hourly earnings, available data suggest that labor's share of national income has stabilized in recent quarters but at a quite low level.

As expected, energy prices fell sharply in December, and an even larger decline is likely for the month of January. At this point we project that the total PCE deflator fell 0.4% (annual rate) in the fourth quarter, and is likely to fall at a 2% annual rate in the first quarter. Year-over-year changes of the PCE deflator will likely be close to zero by February and March and are expected to stay quite low for some time. Of more significance, however, is the fact that, based on our interpretation of the December CPI data, we have lowered the rate of increase of the core PCE deflator to 1.2% (annual rate) for the fourth quarter, with a further slowing to 1% for the first quarter of 2015. The 12-month change of the core PCE deflator has declined to 1.4% from the 1.5% that prevailed from May through October of 2014. As expected, the rate of decline of core goods has intensified. But in addition, the rate of increase of core services has also slowed somewhat, led by declining rates of increase of the rent measures, as mentioned above.

## **The Outlook**

Qualitatively, the economy is beginning to perform in a manner consistent with our narrative. But of course, we have gotten some unexpected support in the form of much lower energy prices and much lower long-term interest rates. Nonetheless, the labor market has made steady gains, the unemployment rate is down to around 5 ½%, household liabilities are growing, and fiscal drag is a thing of the past. Quantitatively, we have once again edged our projection for growth in 2015 slightly lower, to 2.6% (Q4/Q4) from 2.7% in December and 2.9% in October. While growth of final sales to domestic purchasers has been raised modestly, increased drag from net exports stemming from an upward revision to the path of the exchange value of the dollar more than offsets that gain. The stronger growth of final sales to domestic purchasers flows through into 2016 as well, primarily due to a somewhat stronger growth contribution from residential investment, boosting growth of real GDP back up to 2.5%--where it was in October--from 2.3% in December.

The path of the unemployment rate in this forecast is unchanged. It is projected to decline to 5.2% by 2015Q4 and then to 5.0% by 2016Q4. We continue to assume a gradual increase of the labor force participation rate from the current 62.8% to 63% by 2016Q4. With low and stable

long-term inflation expectations, nominal labor compensation growth is expected to move upward on a very gradual trend.

The biggest change in the modal forecast is the path of inflation. Oil prices have fallen much more than expected. And while we assume that the WTI benchmark price will gradually rise back up toward \$60 per barrel, total PCE inflation for all of 2015 is now likely to be just 0.6% (Q4/Q4), rising to around 1  $\frac{3}{4}$ % by 2016. Given recent developments, plus the assumption of more dollar appreciation than previously expected, the path of core inflation is also projected to be lower. The core PCE deflator is now expected to rise 1.2% (Q4/Q4) in 2015, down from 1.5% in the December forecast, then move up toward 1.7% over the course of 2016. These projections assume that longer-dated inflation expectations, which have been relatively low of late, soon move back up to levels consistent with the FOMC's inflation objective.

## 2-1: Projections of Key Variables

	<u>Core PCE Inflation</u>		<u>Real GDP Growth</u>		<u>Unemployment Rate*</u>		<u>Fed Funds Rate**</u>	
	Dec	Jan	Dec	Jan	Dec	Jan	Dec	Jan
<b>2014</b>								
Q1	<i>1.2</i>	<i>1.2</i>	<i>-2.1</i>	<i>-2.1</i>	<i>6.7</i>	<i>6.7</i>	<i>0-0.25</i>	<i>0-0.25</i>
Q2	<i>2.0</i>	<i>2.0</i>	<i>4.6</i>	<i>4.6</i>	<i>6.2</i>	<i>6.2</i>	<i>0-0.25</i>	<i>0-0.25</i>
Q3	<i>1.4</i>	<i>1.4</i>	<i>3.9</i>	<i>5.0</i>	<i>6.1</i>	<i>6.1</i>	<i>0-0.25</i>	<i>0-0.25</i>
Q4	<i>1.7</i>	<i>1.2</i>	<i>2.5</i>	<i>2.8</i>	<i>5.8</i>	<i>5.7</i>	<i>0-0.25</i>	<i>0-0.25</i>
<b>2015</b>								
Q1	1.5	1.0	3.1	2.8	5.6	5.5	0-0.25	0-0.25
Q2	1.5	1.2	2.9	2.8	5.4	5.4	0-0.25	0-0.25
Q3	1.6	1.3	3.0	2.6	5.2	5.3	0.50	0.50
Q4	1.7	1.4	2.7	2.4	5.1	5.2	0.88	0.88
<b>2016</b>								
Q1	1.8	1.5	2.3	2.3	5.1	5.2	1.19	1.19
Q2	1.9	1.6	2.4	2.5	5.0	5.2	1.51	1.51
Q3	2.0	1.7	2.4	2.5	5.0	5.1	1.82	1.82
Q4	2.0	1.8	2.5	2.6	5.0	5.0	2.13	2.13
<b>Q4/Q4</b>								
2013	1.3	1.3	3.1	3.1	-0.9	-0.9	0-0.25	0-0.25
2014	1.6	1.4	2.2	2.5	-1.2	-1.2	0-0.25	0-0.25
2015	1.6	1.2	2.9	2.6	-0.7	-0.5	0.88	0.88
2016	1.9	1.6	2.4	2.5	-0.1	-0.2	2.13	2.13

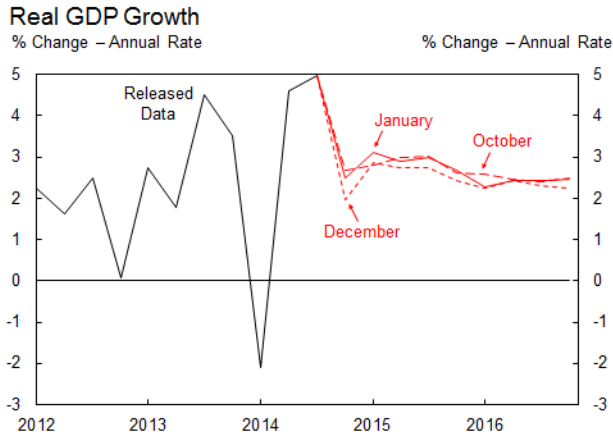
Columns reflect the forecast dates. Numbers in gray are from the previous Blackbook, and numbers in italics are released data.

\*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.

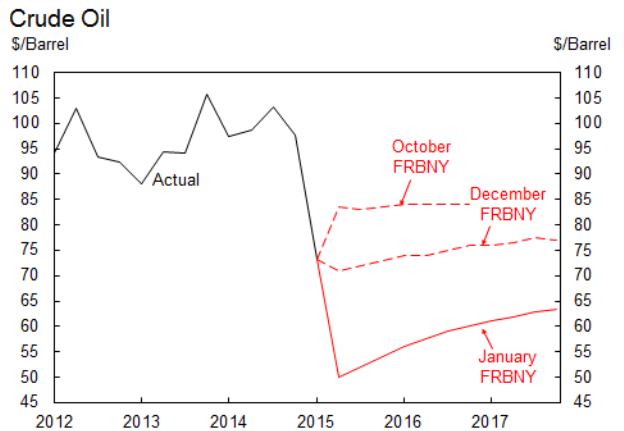
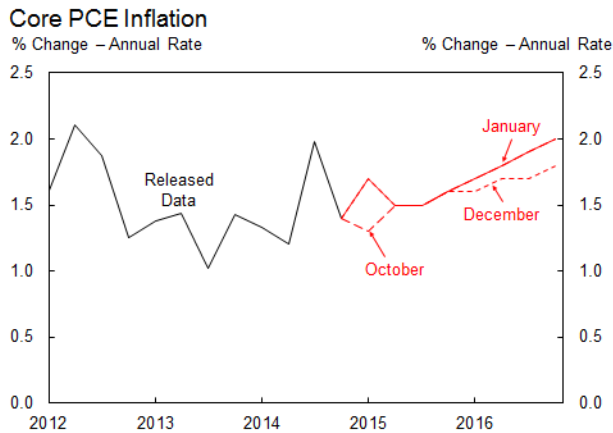
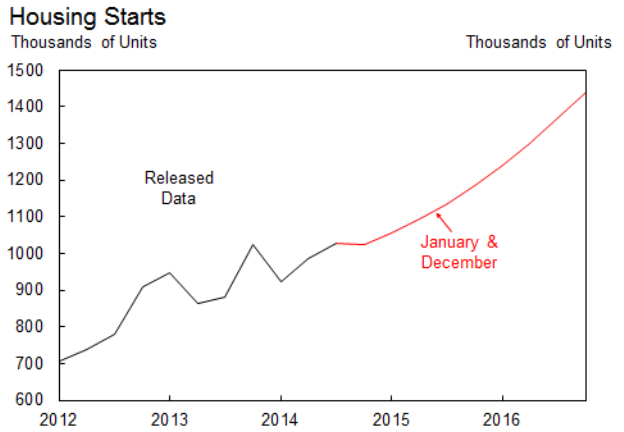
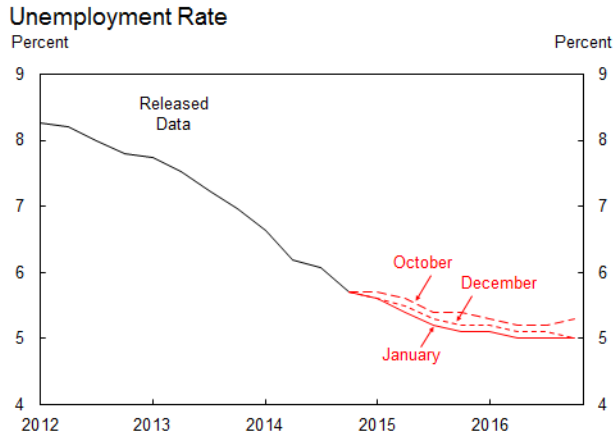
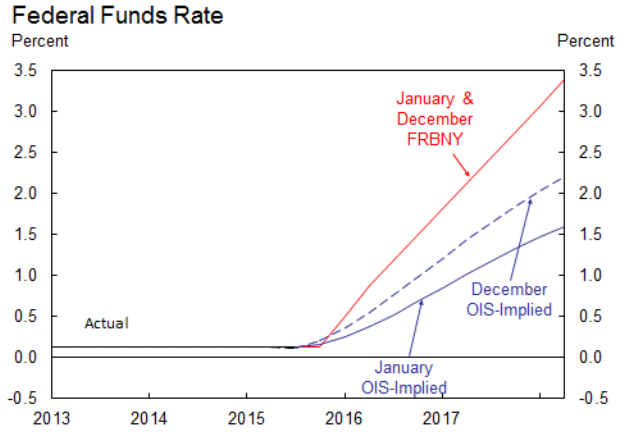
\*\*Quarterly values are the end-of-quarter value. Yearly values are the difference between the end-of-year value in the previous year and the end-of-year value in the listed year.

## 2-2: Evolution of Projected Quarterly Paths

### Key Indicators



### Forecast Assumptions



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

## 2-3: Near-Term Projections

	Growth Rates (AR)			Growth Contributions (AR)		
	2014Q4	2015Q1	2015Q2	2014Q4	2015Q1	2015Q2
<b>OUTPUT</b>						
<b>Real GDP</b>	2.8 (2.5)	2.8 (3.1)	2.8 (2.9)	2.8 (2.5)	2.8 (3.1)	2.8 (2.9)
<b>Final Sales to Domestic Purchasers</b>	3.3 (2.7)	3.4 (3.4)	3.4 (2.9)	3.4 (2.8)	3.5 (3.4)	3.4 (3.0)
<b>Consumption</b>	3.9 (3.0)	3.7 (3.3)	3.4 (2.7)	2.6 (2.0)	2.5 (2.2)	2.3 (1.8)
<b>BFI: Equipment</b>	2.0 (4.0)	5.0 (8.0)	8.0 (8.0)	0.1 (0.2)	0.3 (0.5)	0.5 (0.5)
<b>BFI: Nonresidential Structures</b>	9.0 (5.0)	5.0 (5.0)	5.0 (5.0)	0.3 (0.1)	0.1 (0.1)	0.1 (0.1)
<b>BFI: Intellectual Property Products</b>	6.0 (6.0)	6.0 (6.0)	6.0 (6.0)	0.2 (0.2)	0.2 (0.2)	0.2 (0.2)
<b>Residential Investment</b>	3.0 (4.0)	9.6 (10.0)	7.9 (9.0)	0.1 (0.1)	0.3 (0.3)	0.3 (0.3)
<b>Government: Federal</b>	-2.0 (-2.0)	-2.0 (-2.0)	-2.0 (-2.0)	-0.1 (-0.1)	-0.1 (-0.1)	-0.1 (-0.1)
<b>Government: State and Local</b>	1.5 (1.5)	1.5 (1.5)	1.5 (1.5)	0.2 (0.2)	0.2 (0.2)	0.2 (0.2)
<b>Inventory Investment</b>	-- --	-- --	-- --	0.0 (-0.2)	-0.2 (-0.3)	0.0 (0.0)
<b>Net Exports</b>	-- --	-- --	-- --	-0.5 (0.0)	-0.5 (0.0)	-0.6 (-0.1)
<b>INFLATION</b>						
<b>Total PCE Deflator</b>	-0.4 (0.1)	-2.0 (1.4)	1.2 (1.5)			
<b>Core PCE Deflator</b>	1.2 (1.7)	1.0 (1.5)	1.2 (1.5)			
<b>PRODUCTIVITY AND LABOR COSTS*</b>						
<b>Output per Hour</b>	0.5 (0.4)	1.4 (1.6)	1.4 (1.6)			
<b>Compensation per Hour</b>	2.2 (1.9)	2.2 (2.1)	2.2 (2.1)			
<b>Unit Labor Costs</b>	1.7 (1.6)	0.8 (0.5)	0.8 (0.5)			

Note: Numbers in parentheses are from the previous Blackbook.

\*Nonfarm business sector.

## 2-4: Medium-Term Projections

	Q4/Q4 Growth Rates			Q4/Q4 Growth Contributions		
	2014	2015	2016	2014	2015	2016
<b>OUTPUT</b>						
<b>Real GDP</b>	2.5 (2.2)	2.6 (2.9)	2.5 (2.4)	2.5 (2.2)	2.6 (2.9)	2.5 (2.4)
<b>Final Sales to Domestic Purchasers</b>	2.9 (2.5)	3.2 (3.1)	2.8 (2.6)	2.9 (2.5)	3.3 (3.1)	2.9 (2.6)
<b>Consumption</b>	2.7 (2.2)	3.2 (2.9)	2.5 (2.5)	1.9 (1.5)	2.2 (2.0)	1.7 (1.7)
<b>BFI: Equipment</b>	5.7 (6.1)	7.0 (7.7)	6.0 (6.0)	0.3 (0.4)	0.4 (0.5)	0.4 (0.4)
<b>BFI: Nonresidential Structures</b>	7.3 (5.3)	4.7 (4.7)	3.2 (3.2)	0.2 (0.1)	0.1 (0.1)	0.1 (0.1)
<b>BFI: Intellectual Property Products</b>	6.2 (5.6)	5.7 (5.7)	5.0 (5.0)	0.2 (0.2)	0.2 (0.2)	0.2 (0.2)
<b>Residential Investment</b>	2.3 (2.4)	8.7 (9.0)	13.7 (6.0)	0.1 (0.1)	0.3 (0.3)	0.5 (0.2)
<b>Government: Federal</b>	1.6 (1.6)	-2.0 (-2.0)	-2.0 (-2.0)	0.1 (0.1)	-0.1 (-0.1)	-0.1 (-0.1)
<b>Government: State and Local</b>	1.2 (1.1)	1.5 (1.5)	1.5 (1.5)	0.1 (0.1)	0.2 (0.2)	0.2 (0.2)
<b>Inventory Investment</b>	-- --	-- --	-- --	0.0 (-0.1)	-0.1 (-0.1)	-0.1 (0.0)
<b>Net Exports</b>	-- --	-- --	-- --	-0.4 (-0.3)	-0.6 (-0.1)	-0.3 (-0.2)
<b>INFLATION</b>						
<b>Total PCE Deflator</b>	1.1 (1.3)	0.6 (1.6)	1.8 (1.9)			
<b>Core PCE Deflator</b>	1.4 (1.6)	1.2 (1.6)	1.6 (1.9)			
<b>PRODUCTIVITY AND LABOR COSTS*</b>						
<b>Output per Hour</b>	0.6 (0.2)	1.4 (1.6)	1.5 (1.5)			
<b>Compensation per Hour</b>	2.3 (2.2)	2.2 (2.2)	2.5 (2.5)			
<b>Unit Labor Costs</b>	2.0 (1.9)	0.8 (0.6)	1.0 (1.0)			

Note: Numbers in parentheses are from the previous Blackbook.

\*Nonfarm business sector.

## 2-5: Comparison with Other Forecasts

		Real GDP Growth			
	Release Date	2014Q4	2015Q1	2014 Q4/Q4	2015 Q4/Q4
FRBNY	1/20/2015	2.8 (2.5)	2.8 (3.1)	2.5 (2.2)	2.6 (2.9)
Blue Chip	1/10/2015	2.8 (2.5)	2.9 (2.9)	2.9 (2.2)	2.8 (2.9)
Median SPF	11/17/2014	2.7 (2.7)	2.8 (2.8)	2.2 (2.2)	3.0 (3.0)
Macro Advisers	1/12/2015	3.4 (2.2)	2.6 (2.5)	2.7 (2.0)	3.0 (2.8)
FRBNY-DSGE	1/21/2015	2.8 (2.5)	2.7 (2.2)	2.5 (2.2)	2.5 (2.1)
		Core PCE Inflation			
	Release Date	2014Q4	2015Q1	2014 Q4/Q4	2015 Q4/Q4
FRBNY	1/20/2015	1.2 (1.7)	1.0 (1.5)	1.4 (1.6)	1.2 (1.6)
Median SPF	11/17/2014	1.6 (1.6)	1.7 (1.7)	1.5 (1.5)	1.8 (1.8)
Macro Advisers	1/12/2015	1.3 (1.4)	1.3 (1.5)	1.5 (1.5)	1.5 (1.7)
FRBNY-DSGE	1/21/2015	1.2 (1.7)	0.9 (1.3)	1.4 (1.6)	1.0 (1.2)
		CPI Inflation			
	Release Date	2014Q4	2015Q1	2014 Q4/Q4	2015 Q4/Q4
FRBNY	1/20/2015	-1.1 (0.2)	-2.9 (1.8)	1.2 (1.6)	0.7 (2.0)
Blue Chip	1/10/2015	-0.9 (0.2)	-0.6 (1.0)	1.4 (1.6)	2.3 (1.8)
Median SPF	11/17/2014	1.0 (1.0)	1.8 (1.8)	1.8 (1.8)	1.9 (1.9)
Macro Advisers	1/12/2015	-1.0 (0.1)	-1.5 (0.8)	1.2 (1.5)	1.1 (1.7)
		Core CPI Inflation			
	Release Date	2014Q4	2015Q1	2014 Q4/Q4	2015 Q4/Q4
FRBNY	1/20/2015	1.6 (1.9)	1.5 (2.0)	1.8 (1.8)	1.7 (2.0)
Median SPF	11/17/2014	1.7 (1.7)	1.9 (1.9)	1.8 (1.8)	2.0 (2.0)
Macro Advisers	1/12/2015	1.6 (1.6)	1.7 (1.7)	1.8 (1.8)	1.8 (1.9)

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



### 3. Uncertainty & Risks

The developments over the intermeeting period have led us to reduce modestly our assessment of uncertainty around the outlook and to make little change to the balance of risks. Based on the difference between the modal central forecast and the expected value from our forecast distributions [Exhibit 3-1], as well as the changes in the forecast distributions [Exhibit 3-3], the risks are roughly balanced both for core PCE inflation and for real GDP growth. We see the uncertainty around the real GDP growth projection as still above historical norms, while that around the inflation projection as near those norms.

The changes in our forecast distributions reflect the impact of a number of crosscurrents. In the U.S., data releases on real activity during the intermeeting period were positive on balance, particularly the solid December labor market report and the robust November real PCE release. In contrast, the U.S. inflation data were somewhat lower than they had been recently, suggesting some greater downward inflation pressures. Data on global economic activity and inflation also continued to be on the weaker side. Longer-term inflation compensation measures in the U.S. and the euro area fell further and are now near or below their financial crisis troughs, but U.S. survey measures were fairly stable. In financial markets, oil prices continued to fall, while equity prices increased moderately amid somewhat higher implied and realized volatility. There were also some signs of additional stresses in financial markets following the SNB abandonment of the franc/euro floor, but other financial stress measures were little changed on net.

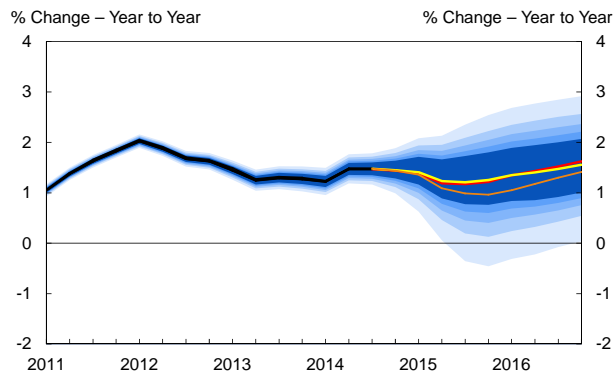
We incorporated these developments in this Blackbook through a number of changes in scenario probabilities [Exhibit 3-2]. Because of the generally solid data, we reduced the probability of the negative *Fiscal Consolidation* scenario, and raised that for the positive *Faster Growth* scenario. The indications of a continued solid expansion in the U.S. led to a small reduction in the probability of the *Global Credit Crunch* scenario; this probability would have been reduced further except for the stresses associated with the SNB action. Although we did not reduce it further, the probability of the *Loss of Credibility* scenario remains unusually low, consistent with the low levels of longer-run inflation compensation. The low inflation compensation measures and declining commodity prices also led to a small increase in the probability of the *Global*

*Deflation* scenario. With these changes, the widths of the 90 percent probability intervals for both real GDP growth and core PCE inflation have narrowed modestly and the distributions exhibit roughly balanced risks through most of the forecast horizon [Exhibit 3-1].

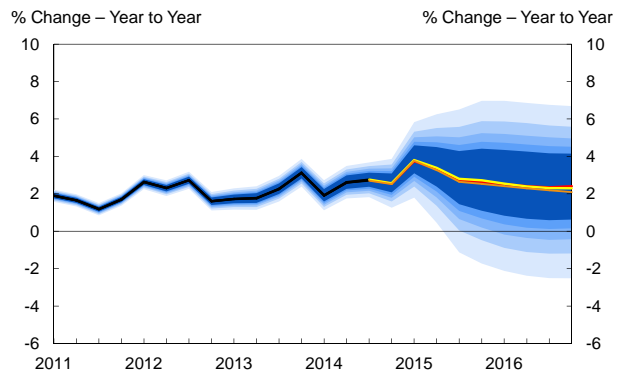
Comparing the recent data and our current central forecast to the forecast distribution from a year earlier, the current projection for inflation now generally runs in the lower half of the year-ago inflation distribution and below the year-ago central scenario, reflecting the lower inflation data in the intermeeting period and a reduction in the inflation forecast [Exhibit 3-3]. Although it shows some greater near-term volatility, the current real GDP growth forecast is near the middle of the year-ago forecast distribution and is fairly close to the year-ago central scenario. These patterns indicate that the basic contours of our central forecast for real activity have not changed a great deal on net over the past year, but the inflation forecast has moved down more noticeably over the year.

### 3-1: Forecast Distributions

Core PCE Inflation Forecast Distribution



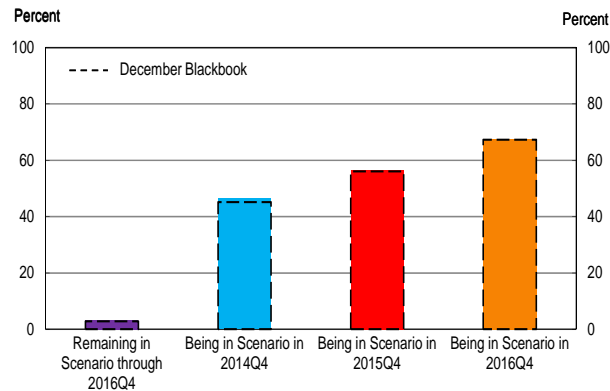
Real GDP Growth Forecast Distribution



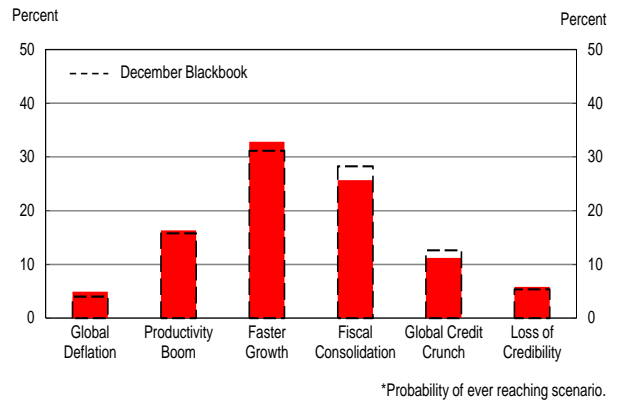
The yellow line is the expected value of the forecast distribution, the red line is the FRBNY central projection, the orange line is the DSGE forecast, and the black line is released data. The shading represents the 50, 60, 70, 80 and 90 percent probability that the four-quarter change will be within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

### 3-2: Scenario Probabilities

Central Scenario Probabilities



Alternative Scenario Probabilities\*

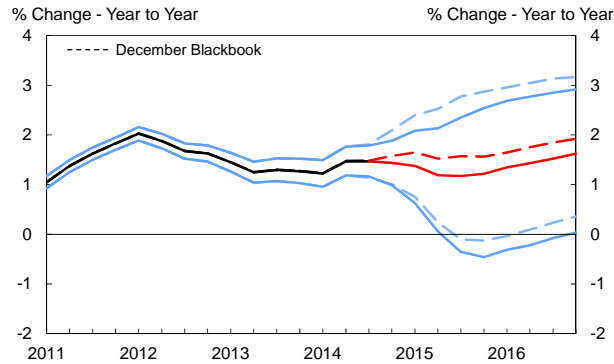


The left chart shows the probability of remaining in the central scenario through the end of the forecast horizon and the probabilities of being in the central scenario at the end of the next three years. The right chart shows the probabilities of ever reaching an alternative scenario over the forecast horizon, an assessment of the overall likelihood of each alternative scenario. A short description of the scenarios and the methodology to perform risk assessment is in the Appendix.

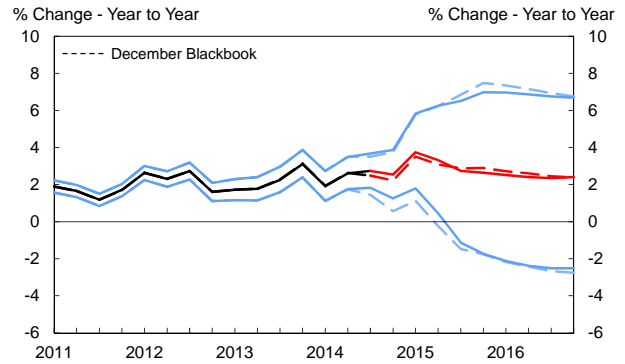
Source: MMS Function (FRBNY)

### 3-3: Evolution and Performance of Forecast Distributions

Change in Core PCE Inflation Forecast Distribution

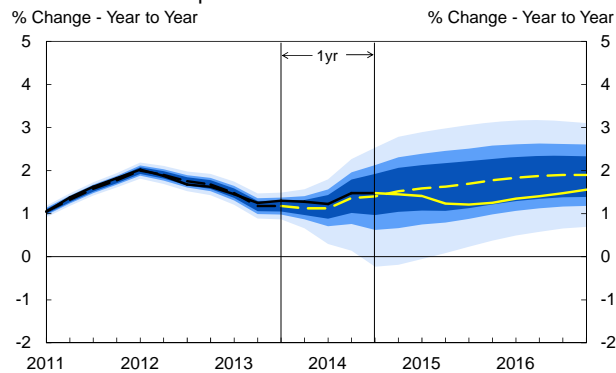


Change in Real GDP Growth Forecast Distribution

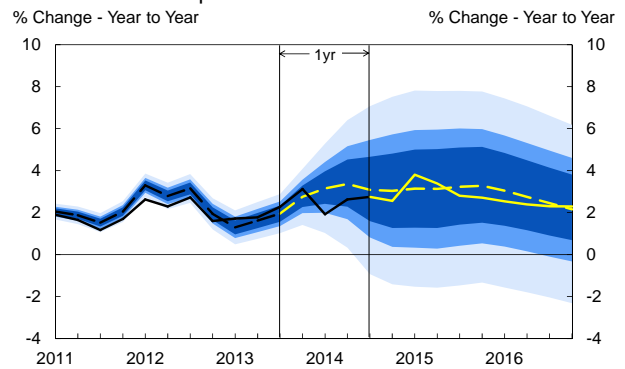


The red lines are the central scenario projections, black lines are released data, and blue lines represent upper and lower 90 percent forecast probability intervals. Dashed lines represent forecasts from the previous Blackbook.

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 lines are the current expected values from the forecast distributions and the dashed yellow lines are the year-ago Blackbook expected values. Black lines are released data and the blue shaded areas represent 50 (darkest shade), 70, and 90 (lightest shade) percent forecast probability intervals from the year-ago Blackbook.

Source: MMS Function (FRBNY)

## Appendix

In this Appendix, we provide brief descriptions of the alternative scenarios used in this Blackbook [A-1], and of the methodology underlying our risk assessment and forecast distributions [A-2].

### A-1. Alternative Scenario Descriptions

Our first alternative scenario considers the impact of productivity growth above our assumed trend of about 1.5% on a nonfarm business sector basis (*Productivity Boom*). The second scenario (*Fiscal Consolidation*) assesses the consequences of below-trend productivity growth. We consider four additional scenarios. In one (*Faster Growth*), “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*), renewed stresses in global financial and economic conditions have an adverse impact on U.S. real economic growth and inflation; the differences between the two mainly reflect differing assessments of the persistence of the negative effects.

### A-2. Methodology to construct the forecast distribution

Our approach to producing the FRBNY forecast distributions is a generalization of techniques used at the Bank of England and other central banks to depict the uncertainty and balance of risks around a forecast. It allows for a dynamic balance of risks that is jointly assessed over inflation and output growth.

Three primary components underlie these forecast distributions: (1) a central scenario with modal inflation and output growth characterized by the central forecast described in Section 2, (2) alternative scenarios with specific inflation and output implications that differ from those of the central scenario, and (3) probabilities that the economy will enter those alternative scenarios. This approach to quantifying uncertainty and risks allows us to interpret the forecast distribution

for output growth and inflation, as well as analyze the impact on that distribution of changing the probabilities of the alternative scenarios.

We set the long-run behavior of our central forecast at the FOMC's longer-run inflation goal and our estimate of the potential growth rate. We also assume that, if the economy enters an alternative scenario, it eventually returns to the central scenario and remains in that scenario thereafter.

We conduct a simulation exercise to generate paths for inflation and output growth; we then perform calculations about our forecast distribution that reflect our risk assessment.

This exercise consists in generating a large number of indicator series, with each entry in a given series corresponding to a quarter in the forecast horizon; for each of these series, each quarter's value indicates only the prevailing scenario in that quarter. To generate these scenario-indicator series, we set two parameters for each alternative scenario: (1) the probability that the economy will leave the central scenario and enter the alternative scenario—the “initial probability”—and (2) the probability that the economy will remain in the alternative scenario once it enters the scenario—the “persistence.”

After creating the indicator series, we generate, for each series, a path for inflation and a path for output growth, with each entry in a given path corresponding to a quarter in the forecast horizon. For a given indicator series and a given quarter, the values of the associated inflation and output growth paths are determined by a draw from the indicated joint distribution of inflation and output growth, based on the scenario the indicator series points to for that quarter. If, for example, the series indicates that the economy is in the central scenario, we draw inflation and output values from a distribution centered at the central forecast. If instead the series indicates the economy is in an alternative scenario, we draw values from a modified version of the central scenario distribution that is consistent with the alternative scenario.

**FOMC BACKGROUND MATERIAL**

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**RESEARCH AND STATISTICS GROUP**

**FRBNY Blackbook**

**March 2015**

**CONFIDENTIAL (FR) Class II FOMC**

**FRBNY BLACKBOOK****March 2015****CONTENTS**

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## 1. Policy Recommendation and Rationale

Economic developments since the last FOMC meeting indicated some moderation in real GDP growth in the first quarter of 2015 compared to the projection in the January Blackbook. The labor market continued to improve markedly. However, equipment spending, housing construction, and measures of manufacturing output have been growing somewhat more slowly than expected. In addition, inflation indicators continued to run below the FOMC's longer-run objective, and market-based measures of inflation compensation remained low. The assessment of current conditions has been complicated by the unusually harsh winter weather in parts of the country. Moreover, the net effect of the strong appreciation of the U.S. dollar and the sharp reduction in oil prices over the past several months remains uncertain. Based on our current outlook as well as our evaluation of risks, we recommend that the target federal funds rate be maintained at its current level at least until mid-2015, and propose to explicitly link the lift-off date to clear indications that inflation measures are moving back up toward the 2 percent goal, and that labor market conditions continue to improve.

Economic data releases in the intermeeting period were mixed. On the one hand, the January and February labor market reports as well as other labor market indicators signaled robust improvement in labor market conditions. Real consumer spending grew relatively strongly in January, even though the personal saving rate rose to 5.5 percent. On the other hand, expenditures and manufacturing output data for 2015Q1 generally came in weaker than anticipated. New orders and shipments of durable goods indicate that conditions for the manufacturing sector and equipment spending remained sluggish, suggesting that growth in manufacturing activity over the near term will be slower than it was in 2014Q4. Data on construction for January also was notably weaker than expected.

While we have marked down our 2015Q1 projection in response to these developments, we expect growth moderation to be temporary, and thus made only small changes to projections for subsequent quarters. In all, we lowered our growth forecast by 0.2 percentage points to 2.5 percent in 2015 (Q4/Q4) and to 2.3 percent in 2016.

Because of the strong February employment report, we marked down our unemployment rate forecast for 2015Q4 to 5.1 percent, while keeping it at 5.0 percent for 2016Q4. Despite the strength in headline numbers in this report, we still assess that there is significant slack in the labor market. Indeed, the below pre-recession level of the employment-to-population ratio for prime age workers, the still-elevated number of part-time workers for economic reasons, the slowly-rising number of quits, and continued sluggish wage growth all indicate that significant slack remains.

We assess risks about economic activity as roughly balanced. While the recent moderation in growth may be less transitory than currently anticipated, risk factors from the global economy, which we considered significant in January, have diminished somewhat, in part because of the higher degree of policy accommodation put in place abroad.

The inflation data continues to be a source of concern. While the headline PCE deflator is clearly affected by the drop in oil prices and the strength of the dollar, the latest core PCE inflation (+0.1 percent from December to January) was also weaker than projected in the last Blackbook. In addition, other measures of underlying inflation (SiCo, UIG, trimmed mean) declined in January. We thus revised down our 2015Q1 core PCE inflation projection from 1.0 percent to 0.8 percent. Our annual projections are 1.2 percent in 2015 (Q4/Q4) and 1.5 percent in 2016, both well below the FOMC's longer-run inflation objective. While part of the recent decline is likely transitory, a concern is that the longer inflation remains below the FOMC's goal, the more likely inflation expectations are to drift down. Surveys show notable decreases in near-term inflation expectations, but longer-term expectations still appear stable. For instance, in the February FRBNY *Survey of Consumer Expectations* (SCE), median inflation expectations at the one-year horizon declined for the third consecutive month, but three-year-ahead inflation expectations were unchanged at 3 percent. In contrast, according to the Survey of Professional Forecasters, the median five-year five-year-forward forecast of total PCE deflator inflation has been trending down over the past year, and stands now at 2 percent.

There continues to be significant uncertainty about the projected return of inflation to the FOMC's objective over the medium term. We see it as reasonable to assume that the continuous

improvement in labor market conditions will eventually result in higher wage pressure, which would ultimately lead to higher price inflation, likely amplified by a possible reversal in oil prices. However, it is certainly plausible that low energy prices, an appreciating dollar, weak wage growth and declining inflation expectations would result in an inflation rate persistently below the FOMC's objective.

In January, we recommended that the target federal funds rate remain at the current range at least until mid-2015. We also emphasized the state-contingent nature of this policy, according to which we should be confident at lift-off that the economy has attained sufficient momentum so that the probability of a policy reversal was judged to be very low. The further reduction in our inflation projections since the last Blackbook in response to the recent readings on inflation and inflation expectations are now leading us to view a later lift-off as marginally more desirable.

We continue to view the risks of a premature lift-off as outweighing the risks of a delayed lift-off, as the latter can be addressed by moving the federal funds rate on a somewhat steeper trajectory, without endangering the achievement of the maximum employment and price stability goals in the medium run. In current circumstances we view an appropriate policy strategy as consistent with a significant probability of a temporary and controlled overheating in labor and product markets to provide more insurance against the risk of getting stuck in a "lowflation" trap.

Much discussion has been around the forward guidance in the FOMC statement, especially the implications of changing the "patient" language. Market participants judge that a federal funds rate lift-off at the March or April meetings is highly unlikely, so that a change in language at the March meeting likely will signal that lift-off as early as June is possible. Even though the introduction of the "patient" language was an improvement relative to previous communication, at this stage we find that maintaining a time-contingent language unduly constrains policy. We thus recommend that the current guidance be replaced by a more informative state-contingent guidance which links explicitly the lift-off timing and the FFR path after lift-off to substantial evidence that a turnaround in inflation—such that it will return to the 2 percent objective in 2-3 years—is in the cards, and to sustainable improvement in labor market conditions. We expect that such a policy stance would appropriately ensure a relatively rapid exit from the zero lower bound

while mitigating deviations from mandate-consistent objectives. Such guidance de-emphasizes the importance of the exact timing of lift-off, and focuses instead on the evolution of the stance of monetary policy over the near- and medium-term. We caution, however, that the removal of the “patience” language without an explicit reference to the conditions anticipated to prevail during the early stages of normalization may result in an unwarranted tightening of financial conditions, as occurred in mid-2013.



## 2. Central Forecast

### Intermeeting Developments

Based on the second estimate, real GDP growth in 2014Q4 was revised down to 2.2% (AR) from the advance estimate of 2.6%. The downward revision was more than accounted for by a slower pace of inventory accumulation, with the growth contribution from inventory investment declining from +0.8 percentage points to +0.1. The net export growth contribution also was revised downward to -1.2 percentage points from -1.0, although the subsequent revisions to the trade balance data suggest that this contribution could be revised back to -1.0 pp. In contrast, the growth contribution of final sales to domestic purchasers was revised upward to 3.2 percentage points from 2.9, due mainly to upward revisions of investment in equipment and intellectual property products. The total PCE deflator declined 0.4% (AR) in 2014Q4 while the core PCE deflator rose just 1.1%, the slowest since the second quarter of 2013.

The bright spot in the fourth quarter data was the 4.2% (AR) growth of real personal consumption expenditures, in part supported by strong 3.8% (AR) growth of real disposable income. Hours worked in the nonfarm business sector increased at a very strong 4.9% annual rate, while compensation per hour rose 1.9%. Available data suggest that the corporate profit share declined to 13.9% of national income in 2014Q4 from 14.2% in 2014Q3. Productivity fell 2.2% (AR) in 2014Q4, with the four quarter change at -0.1%. Unit labor costs rose a steep 4.1% (AR); the four-quarter change was +2.6%.

Although downward revisions to the inventory investment growth contribution typically push up our GDP projection for the following quarter, our current projection of real GDP growth in 2015Q1—2¼ %—is somewhat lower than in the January Blackbook. In part, this markdown reflects weakness in a wide range of recent indicators: as a result, the Citigroup US Economic Surprise Index has fallen into deep negative territory. As one indication of this pattern, the sales pace of light weight motor vehicles declined in the past three months, reaching just 16.2 million units in February, about one million less than in November. Even though real personal consumption expenditures (PCE) rose a respectable 0.3% and real disposable income grew a

very strong 0.9% in January, we have marked down real PCE growth for Q1 to about 3¼% (AR) from around 3½% in the last Blackbook due largely to this decline in auto sales. Unless real PCE rebounds sharply in February and March, we are likely to see a significant increase of the personal saving rate in Q1.

The manufacturing sector has been another source of downside surprises. The ISM manufacturing index tumbled from 57.9 in October 2014 to 52.9 in February, led by steep declines of the new orders and production subcomponents. The January data on manufacturers' shipments, inventories and new orders provided additional evidence of an ongoing decline of new orders, particularly for nondurable goods. Private nonresidential and public construction both fell in January and the number of drilling rigs in operation continued to plunge. Finally, sales of existing homes fell 4.9% in January. These developments have led us to shave down projected Q1 growth of nonresidential structures investment, residential investment, state and local government spending, and business inventory investment.

Some of the softness may be due to yet another winter of unusually large snowfall in the Northeast and the Midwest. Our analysis of the Northeast Snow Impact Scale (NESIS) published by the National Oceanic and Atmospheric Administration (NOAA), a measure of both the amount of snow and the population of the area affected by that snow, indicates that in January and February this scale was about 25 percent above the average of the preceding five years.<sup>1</sup> We find that such deviations have statistically significant negative impacts on high frequency economic indicators, particularly the construction data. MacroAdvisors has developed an alternative snowfall impact measure that tracks deviations from normal readings for every weather station in the US, weighted by population. According to their analysis, the snowfall in January and February would reduce the Q1 real GDP growth rate by an estimated 0.7 percentage points even if snowfall in March is normal.

Another possible temporary dampening factor is the recent work slowdown by West Coast dockworkers. Anecdotal reports suggest that decreased deliveries of crucial, imported parts have

<sup>1</sup> There have been large positive deviations in the January and February readings of this scale relative to a five-year rolling average since 2009, indicating that the amount of snowfall in the Northeast is increasing at an increasing rate.

resulted in some slowing of US manufacturing output and exports. While there probably is some truth to such reports, there appears to have been greater usage of alternative ports and transportation modes that partially offset these effects. Overall, we believe the net impact of this slowdown on the net exports growth contribution is modest.

However, not all recent data have been downbeat. The ISM non-manufacturing index inched up in February, rising 0.2 points to 56.9, slightly beating expectations. Its level remains consistent with moderate growth in the service sector. In addition, there is a renewed, gradual upward trend in home prices and in starts and sales of new single-family homes, likely reflecting the improved labor market, low mortgage rates, and low housing inventories. After declining in October and November, shipments of nondefense capital goods ex-aircraft increased in December and January; however, orders for these goods were only slightly above shipments, a pattern that suggests some caution about the outlook. Finally, over the year ending in 2014Q4 we saw gathering strength in investment in intellectual property products, particularly R&D spending.

Most notably, the January and February employment data were solid, with the average increase of nonfarm payroll employment at 267,000, although this is down from an average of 324,000 over 2014Q4. It appears that growth of hours worked is slowing to around 2% (AR) in 2015Q1 from nearly 5% in 2014Q4, although weather does not seem to have had much effect on hours worked. Average hourly earnings, which rose a robust 0.5% in January, rose a more modest 0.1% in February. The 12-month change remains stuck near 2%.

Turning to inflation, the overall PCE deflator fell 0.5% in January, its third consecutive monthly decline, reflecting the continued impact of the steep slide of energy prices. The twelve-month change in headline PCE inflation slowed to 0.2% in January from 0.8% in December. Energy prices retraced a small part of their recent decline in February and look to be rising again in March, but the 12-month change of the PCE deflator is likely to remain very low for several more months. More notably, the core PCE deflator rose just 0.06% in January, much less than was suggested by the January CPI. The twelve-month change of the core PCE deflator has slowed to 1.3% as of January from 1.5% in mid-2014. Non-food, non-energy goods prices are falling more rapidly of late as are prices of nonpetroleum imports. In addition, while the rate of



increase of some non-energy services prices, such as rents, has increased, the rate of increase of several other categories, such as health care and recreation services, has slowed.

The slowing of health care services inflation deserves special mention. Health care in the PCE deflator reflects all health care consumed, whereas in the CPI it reflects just out of pocket expenditures. As such, health care services have a weight of nearly 20 percent in the core PCE deflator. The twelve-month change in health care service prices has slowed from nearly 4% in 2007 to just 0.5% as of January, with most of the slowing occurring in hospitals. Initially, this slowing was confined to Medicare and Medicaid patients as the federal government scaled back reimbursement rates—an administrative action, not the result of market forces. Over the past two years, however, there has been a marked slowing of price increases for hospital services for patients covered by private insurance. While we are not certain about the reason for this development, one possibility is that the protracted flatness of Medicare and Medicaid reimbursements has given private insurers greater leverage when negotiating with hospitals.

## **The Outlook**

After growing at just a 2% annual rate over the period from 2010 through 2012, real GDP expanded at a 2.7% annual rate from 2013 through 2014. Qualitatively, this firming in growth unfolded much as expected. The household deleveraging process appears to have run its course. The imbalances in the housing market also appear to have been worked off, with housing starts and home prices on a gradual uptrend. Federal fiscal consolidation has largely ended, with the federal deficit expected to be around 2½% of GDP for the next few years. Employment and spending by state and local governments are increasing. Growth over the past two years appeared to have been above the potential growth rate, with the unemployment rate declining by over two percentage points since the end of 2012. Other labor market indicators, such as job vacancies and the job finding rate, also suggest that slack in labor markets has been reduced, though certainly not eliminated.

Nevertheless, the pace of growth over recent years has been slower than hoped for, and we consistently have marked down our growth projections during this period. Even though the

household wealth-income ratio is now near its pre-financial crisis level and conditions in labor markets are substantially improved, consumer spending growth has been slower and the personal saving rate higher than our models suggested. Similarly, while mortgage rates have been quite low by historical standards, the recovery of single-family housing construction has been surprisingly sluggish. And despite very accommodative financial conditions and high corporate profits, growth of business fixed investment lags behind the typical experience of previous economic recoveries.

Looking forward, the consensus of private forecasts for 2015 has anticipated that real GDP growth would be slightly higher than the average of the past two years. This would lead to further reduction of labor market slack and the unemployment rate near 5¼% by the end of the year. Given the improved underlying fundamentals discussed above, and continued accommodative financial conditions, such a forecast is reasonable. However, the US economy has experienced several important shocks over the past year. While there is substantial uncertainty about the net impact of those shocks, our assessment is that they will have a modest negative effect on US economic performance.

The most visible of those shocks is the recent steep decline of energy prices. In recent weeks the benchmark WTI oil price has been around \$50 per barrel, less than half what it was in June 2014. Because the US is still a net importer of petroleum, this development provides substantial benefits, with our oil import bill down by about ½ percentage point of GDP. That represents a significant boost to real disposable income, and has helped to support real consumer spending in recent months.

However, US oil production has been rising rapidly over recent years, due largely to new technology that greatly expanded the amount of oil that could be extracted from a given well. In fact, recent production increases were somewhat surprising and contributed to the decline of oil prices while at the same time the ramping up of oil production provided an important boost to economic growth. Now, with prices sharply lower, oil exploration and drilling activity has fallen off very sharply, and has begun to exert a meaningful drag on economic activity. So the decline

of oil prices has become a double-edged sword for the US: the net impact on GDP is likely still positive, but the magnitude probably has declined compared to that of a few years ago.

Another significant shock is the nearly 15% appreciation of the exchange value of the dollar since mid-2014. This appreciation stems from the fact that US interest rates are well above those of our major trading partners, also reflecting the prospects of a significant divergence in monetary policy stances over the next couple of years. This appreciation makes US exports more expensive for potential foreign customers while reducing the dollar price of imported goods and services. Our analysis indicates that a 10% appreciation of the dollar over two quarters would, all else equal, reduce real GDP growth by about  $\frac{1}{2}$  percentage point two quarters after the phase in is complete.

Putting these divergent strands together, our forecast for real GDP growth in 2015 is 2½%, somewhat below the consensus and slightly below the January Blackbook. Comparing our forecast to the consensus, the main differences are that we see somewhat slower real PCE growth, a higher personal saving rate, and a larger net export drag from dollar appreciation. For 2016 we foresee growth slowing to around 2¼%, reflecting our assumption that the FOMC begins to raise the federal funds rate gradually in the second half of 2015 and continues to do so in 2016. There are significant risks around this projection. On the upside, there is the potential for stronger real PCE growth given that the saving rate is high relative to its historical relationship with household net worth. In addition, it is possible that there will be a faster-than-expected recovery of housing construction given the substantial improvement in labor market conditions. On the downside, the effects of the dollar appreciation and declining oil and gas drilling may exert more drag on economic activity than we now expect. In addition, the dollar may continue to appreciate rather than level off as we have assumed.

In this forecast cycle we have again lowered the near term path of the unemployment rate, in part reflecting the decline in the unemployment rate to 5.5% in February. In addition, after rising to 62.9% in January, the labor force participation rate fell back down to 62.8% in February, leaving the two-month average about equal to that of 2014H2. As a result, we have lowered the path of the unemployment rate by 0.1 percentage point over 2015, reaching an average of 5.1% in

2015Q4. We still see the unemployment rate bottoming out at 5% in 2016H2, as we expect improved labor market conditions to lead to a small increase in the participation rate that year.

Based on oil futures markets, we anticipate that oil prices have bottomed out and will gradually rise over the forecast horizon. Thus, while the total PCE deflator is likely to decline about 2% (AR) in 2015Q1, by the second half of 2015 we expect it to rise at a 1½% to 1¾% rate. Over the course of 2016 we expect overall inflation to continue to move gradually toward the FOMC's objective of 2%, due to declining slack and the gravitational pull of well-anchored inflation expectations. The core PCE deflator is expected to rise at just a 1% annual rate over 2015H1 as declining prices for nonpetroleum imports depress goods prices. However, as the effect of the dollar appreciation begins to wane, core PCE deflator inflation will move gradually toward 2% over the remainder of the forecast horizon.

## 2-1: Projections of Key Variables

	<u>Core PCE Inflation</u>		<u>Real GDP Growth</u>		<u>Unemployment Rate*</u>		<u>Fed Funds Rate**</u>	
	Jan	Mar	Jan	Mar	Jan	Mar	Jan	Mar
<b>2014</b>								
Q1	<i>1.2</i>	<i>1.2</i>	<i>-2.1</i>	<i>-2.1</i>	<i>6.7</i>	<i>6.6</i>	<i>0-0.25</i>	<i>0-0.25</i>
Q2	<i>2.0</i>	<i>2.0</i>	<i>4.6</i>	<i>4.6</i>	<i>6.2</i>	<i>6.2</i>	<i>0-0.25</i>	<i>0-0.25</i>
Q3	<i>1.4</i>	<i>1.4</i>	<i>5.0</i>	<i>5.0</i>	<i>6.1</i>	<i>6.1</i>	<i>0-0.25</i>	<i>0-0.25</i>
Q4	<i>1.2</i>	<i>1.1</i>	<i>2.8</i>	<i>2.2</i>	<i>5.7</i>	<i>5.7</i>	<i>0-0.25</i>	<i>0-0.25</i>
<b>2015</b>								
Q1	1.0	0.8	2.8	2.3	5.5	5.6	0-0.25	0-0.25
Q2	1.2	1.2	2.8	2.7	5.4	5.4	0-0.25	0-0.25
Q3	1.3	1.3	2.6	2.6	5.3	5.2	0.50	0.38
Q4	1.4	1.4	2.4	2.5	5.2	5.1	0.88	0.63
<b>2016</b>								
Q1	1.5	1.4	2.3	2.2	5.2	5.1	1.16	0.94
Q2	1.6	1.5	2.5	2.5	5.2	5.1	1.44	1.25
Q3	1.7	1.6	2.5	2.3	5.1	5.0	1.72	1.54
Q4	1.8	1.7	2.6	2.4	5.0	5.0	2.00	1.88
<b>Q4/Q4</b>								
2013	1.3	1.3	3.1	3.1	-0.9	-0.8	0-0.25	0-0.25
2014	1.4	1.4	2.5	2.4	-1.2	-1.3	0-0.25	0-0.25
2015	1.2	1.2	2.6	2.5	-0.5	-0.6	0.88	0.63
2016	1.6	1.5	2.5	2.3	-0.2	-0.1	2.00	1.88

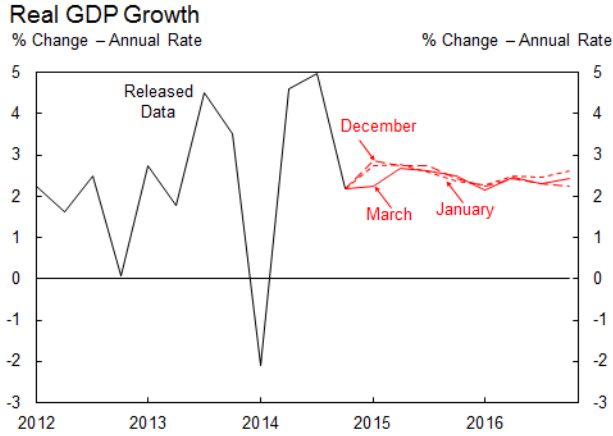
Columns reflect the forecast dates. Numbers in gray are from the previous Blackbook, and numbers in italics are released data.

\*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.

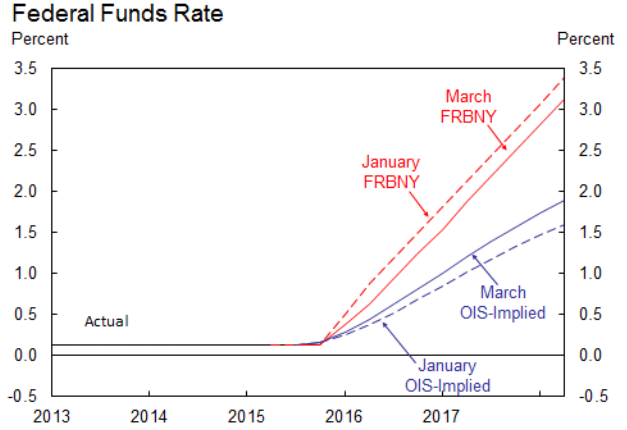
\*\*Quarterly values are the end-of-quarter value. Yearly values are the difference between the end-of-year value in the previous year and the end-of-year value in the listed year.

## 2-2: Evolution of Projected Quarterly Paths

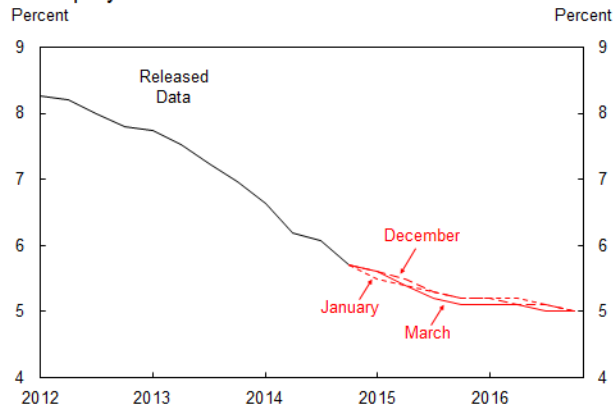
### Key Indicators



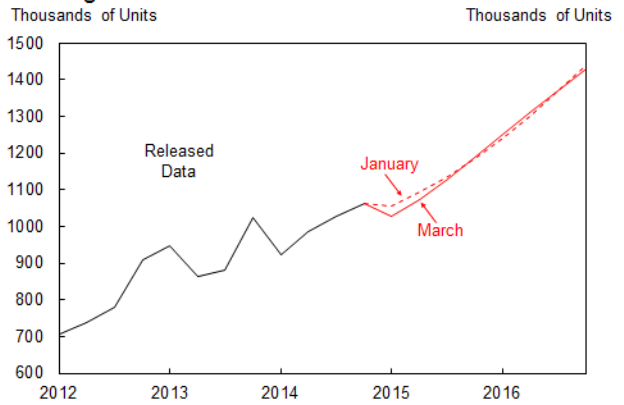
### Forecast Assumptions



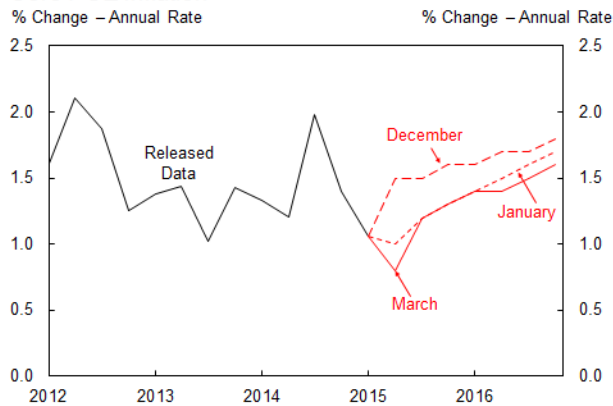
### Unemployment Rate



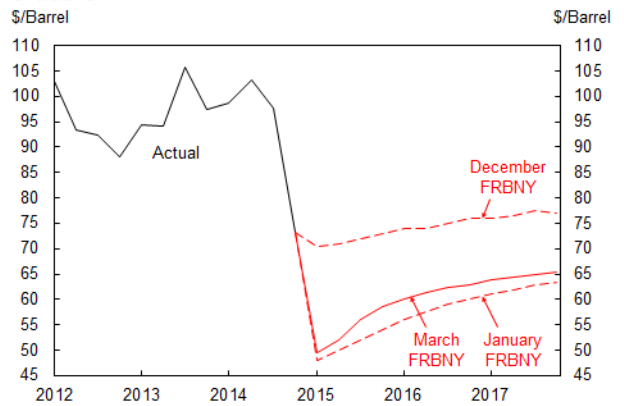
### Housing Starts



### Core PCE Inflation



### Crude Oil



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

## 2-3: Near-Term Projections

	Growth Rates (AR)			Growth Contributions (AR)		
	2015Q1	2015Q2	2015Q3	2015Q1	2015Q2	2015Q3
<b>OUTPUT</b>						
<b>Real GDP</b>	2.3 (2.8)	2.7 (2.8)	2.6 (2.6)	2.3 (2.8)	2.7 (2.8)	2.6 (2.6)
<b>Final Sales to Domestic Purchasers</b>	2.8 (3.4)	3.7 (3.4)	3.5 (3.2)	2.8 (3.5)	3.7 (3.4)	3.5 (3.2)
<b>Consumption</b>	3.3 (3.7)	3.3 (3.4)	3.1 (3.0)	2.2 (2.5)	2.2 (2.3)	2.1 (2.0)
<b>BFI: Equipment</b>	5.0 (5.0)	8.0 (8.0)	8.0 (8.0)	0.3 (0.3)	0.5 (0.5)	0.5 (0.5)
<b>BFI: Nonresidential Structures</b>	-3.0 (5.0)	7.0 (5.0)	5.0 (5.0)	-0.1 (0.1)	0.2 (0.1)	0.1 (0.1)
<b>BFI: Intellectual Property Products</b>	8.0 (6.0)	7.0 (6.0)	7.0 (6.0)	0.3 (0.2)	0.3 (0.2)	0.3 (0.2)
<b>Residential Investment</b>	2.0 (9.6)	12.0 (7.9)	12.0 (10.5)	0.1 (0.3)	0.4 (0.3)	0.4 (0.3)
<b>Government: Federal</b>	-1.0 (-2.0)	-0.4 (-2.0)	-0.4 (-2.0)	-0.1 (-0.1)	0.0 (-0.1)	0.0 (-0.1)
<b>Government: State and Local</b>	0.5 (1.5)	1.6 (1.5)	1.6 (1.5)	0.1 (0.2)	0.2 (0.2)	0.2 (0.2)
<b>Inventory Investment</b>	-- --	-- --	-- --	-0.1 (-0.2)	-0.4 (-0.0)	-0.1 (0.0)
<b>Net Exports</b>	-- --	-- --	-- --	-0.5 (-0.5)	-0.6 (-0.6)	-0.8 (-0.7)
<b>INFLATION</b>						
<b>Total PCE Deflator</b>	-1.9 (-2.0)	1.2 (1.2)	1.5 (1.5)			
<b>Core PCE Deflator</b>	0.8 (1.0)	1.2 (1.2)	1.3 (1.3)			
<b>PRODUCTIVITY AND LABOR COSTS*</b>						
<b>Output per Hour</b>	0.8 (1.4)	1.6 (1.4)	1.5 (1.4)			
<b>Compensation per Hour</b>	2.7 (2.2)	2.6 (2.2)	2.5 (2.1)			
<b>Unit Labor Costs</b>	2.0 (0.8)	1.0 (0.8)	1.0 (0.7)			

Note: Numbers in parentheses are from the previous Blackbook.

\*Nonfarm business sector.

## 2-4: Medium-Term Projections

	Q4/Q4 Growth Rates			Q4/Q4 Growth Contributions		
	2014	2015	2016	2014	2015	2016
<b>OUTPUT</b>						
<b>Real GDP</b>	2.4	2.5	2.3	2.4	2.5	2.3
	(2.5)	(2.6)	(2.5)	(2.5)	(2.6)	(2.5)
<b>Final Sales to Domestic Purchasers</b>	2.8	3.3	2.6	2.9	3.4	2.7
	(2.9)	(3.2)	(2.8)	(2.9)	(3.3)	(2.9)
<b>Consumption</b>	2.8	3.2	2.4	1.9	2.1	1.6
	(2.7)	(3.2)	(2.5)	(1.9)	(2.2)	(1.7)
<b>BFI: Equipment</b>	5.4	7.0	5.7	0.3	0.4	0.4
	(5.7)	(7.0)	(6.0)	(0.3)	(0.4)	(0.4)
<b>BFI: Nonresidential Structures</b>	6.2	3.2	3.0	0.2	0.1	0.1
	(7.3)	(4.7)	(3.2)	(0.2)	(0.1)	(0.1)
<b>BFI: Intellectual Property Products</b>	7.4	7.2	5.0	0.3	0.3	0.2
	(6.2)	(5.7)	(5.0)	(0.2)	(0.2)	(0.2)
<b>Residential Investment</b>	2.4	9.4	10.0	0.1	0.3	0.4
	(2.3)	(8.7)	(13.7)	(0.1)	(0.3)	(0.5)
<b>Government: Federal</b>	0.2	-0.5	-1.4	0.0	0.0	-0.1
	(1.6)	(-2.0)	(-2.0)	(0.1)	(-0.1)	(-0.1)
<b>Government: State and Local</b>	1.3	1.3	1.5	0.1	0.1	0.2
	(1.2)	(1.5)	(1.5)	(0.1)	(0.2)	(0.2)
<b>Inventory Investment</b>	--	--	--	0.0	-0.2	0.0
	--	--	--	(0.0)	(-0.1)	(-0.1)
<b>Net Exports</b>	--	--	--	-0.6	-0.7	-0.3
	--	--	--	(-0.4)	(-0.6)	(-0.3)
<b>INFLATION</b>						
<b>Total PCE Deflator</b>	1.1	0.7	1.6			
	(1.1)	(0.6)	(1.8)			
<b>Core PCE Deflator</b>	1.4	1.2	1.5			
	(1.4)	(1.2)	(1.6)			
<b>PRODUCTIVITY AND LABOR COSTS*</b>						
<b>Output per Hour</b>	-0.1	1.3	1.5			
	(0.6)	(1.4)	(1.5)			
<b>Compensation per Hour</b>	2.5	2.6	2.8			
	(2.3)	(2.2)	(2.5)			
<b>Unit Labor Costs</b>	2.6	1.3	1.3			
	(2.0)	(0.8)	(1.0)			

Note: Numbers in parentheses are from the previous Blackbook.

\*Nonfarm business sector.



## 2-5: Comparison with Other Forecasts

		<b>Real GDP Growth</b>			
	<b>Release Date</b>	<b>2015Q1</b>	<b>2015Q2</b>	<b>2015 Q4/Q4</b>	<b>2016 Q4/Q4</b>
<b>FRBNY</b>	3/9/2015	2.3 (2.8)	2.7 (2.8)	2.5 (2.6)	2.3 (2.5)
<b>Blue Chip</b>	3/10/2015	2.4 (2.9)	3.1 (2.9)	2.8 (2.9)	2.8 (2.8)
<b>Median SPF</b>	2/13/2015	2.7 (2.8)	3.0 (3.1)	3.2 (3.0)	2.9 (2.9)
<b>Macro Advisers</b>	2/12/2015	2.4 (2.6)	2.7 (3.0)	3.0 (3.0)	2.7 (2.6)
<b>FRBNY-DSGE</b>	3/9/2015	2.3 (2.8)	2.4 (2.6)	2.3 (2.5)	2.2 (2.1)
		<b>Core PCE Inflation</b>			
	<b>Release Date</b>	<b>2015Q1</b>	<b>2015Q2</b>	<b>2015 Q4/Q4</b>	<b>2016 Q4/Q4</b>
<b>FRBNY</b>	3/9/2015	0.8 (1.0)	1.2 (1.2)	1.2 (1.2)	1.2 (1.2)
<b>Median SPF</b>	2/13/2015	1.2 (1.7)	1.4 (1.7)	1.4 (1.8)	1.7 (1.8)
<b>Macro Advisers</b>	2/12/2015	1.1 (1.3)	1.2 (1.3)	1.3 (1.5)	1.7 (2.0)
<b>FRBNY-DSGE</b>	3/9/2015	0.8 (0.9)	0.8 (0.9)	0.9 (1.0)	1.1 (1.4)
		<b>CPI Inflation</b>			
	<b>Release Date</b>	<b>2015Q1</b>	<b>2015Q2</b>	<b>2015 Q4/Q4</b>	<b>2016 Q4/Q4</b>
<b>FRBNY</b>	3/9/2015	-2.8 (-2.9)	1.8 (1.8)	0.7 (0.7)	2.1 (2.1)
<b>Blue Chip</b>	3/10/2015	-2.5 (-0.6)	2.1 (2.0)	0.9 (1.4)	2.3 (2.3)
<b>Median SPF</b>	2/13/2015	-1.4 (1.8)	1.6 (1.9)	1.1 (1.9)	2.1 (2.1)
<b>Macro Advisers</b>	2/12/2015	-2.0 (-1.5)	2.5 (1.6)	1.1 (1.1)	2.1 (2.4)
		<b>Core CPI Inflation</b>			
	<b>Release Date</b>	<b>2015Q1</b>	<b>2015Q2</b>	<b>2015 Q4/Q4</b>	<b>2016 Q4/Q4</b>
<b>FRBNY</b>	3/9/2015	1.5 (1.5)	1.7 (1.7)	1.7 (1.7)	2.0 (2.0)
<b>Median SPF</b>	2/13/2015	1.3 (1.9)	1.7 (1.9)	1.7 (2.0)	1.9 (2.0)
<b>Macro Advisers</b>	2/12/2015	1.3 (1.7)	1.5 (1.5)	1.5 (1.8)	1.9 (2.2)

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

### 3. Uncertainty & Risks

The developments over the intermeeting period have led us to reduce further our assessment of uncertainty around the outlook and to make little change to the balance of risks. Based on the difference between the modal central forecast and the expected value from our forecast distributions [Exhibit 3-1], as well as the changes in the forecast distributions [Exhibit 3-3], the risks are roughly balanced both for core PCE inflation and for real GDP growth. Even though it has declined, we see the uncertainty around the real GDP growth projection as still above historical norms; uncertainty around the inflation projection is fairly close to those norms.

The changes in our forecast distributions reflect the impact of a number of divergent developments. In the U.S., data on real activity during the intermeeting period were mixed, with a number of expenditure and production releases on the soft side, but other data, particularly the January and February labor market reports, signaling solid conditions. The U.S. inflation data also provided divergent signals: the CPI was somewhat above expectations, but the PCE deflator indicated weaker inflation trends than the CPI. Data on economic activity and inflation in the euro area were a bit stronger than they had been recently, but Chinese data were somewhat soft. Longer-term inflation compensation measures in the U.S. and the euro area reversed part of their recent declines, but remained relatively low; U.S. survey measures continued to be fairly stable. In financial markets, oil prices over the intermeeting period retraced a small part of the sizable decline over the previous several cycles, while equity prices increased moderately amid somewhat lower implied and realized volatility. Long-term yields in the U.S. rose from their recent lows, but yields in the euro area dropped further with the start of the ECB sovereign bond purchase program.

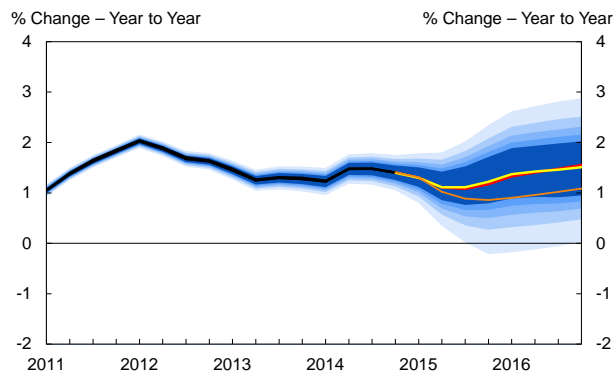
We incorporated these developments in this Blackbook through a number of changes in scenario probabilities [Exhibit 3-2]. Because the expenditure data seemed largely consistent with continued moderate growth, we lowered the probabilities of both the negative *Fiscal Consolidation* scenario and the positive *Faster Growth* scenario. The indications of a continued solid expansion in the U.S., some resolution of the Greek debt situation, and mild improvement in the euro area financial conditions led to a reduction in the probability of the *Global Credit*

*Crunch* scenario. Although it did not change in this cycle, the probability of the *Loss of Credibility* scenario remains unusually low, consistent with the still-low levels of longer-run inflation compensation. The low inflation compensation measures and commodity prices led to maintaining a relatively high probability of the *Global Deflation* scenario. With these changes, the widths of the 90 percent probability intervals for both real GDP growth and core PCE inflation have narrowed some from the previous Blackbook [Exhibit 3.3] and the distributions reflect roughly balanced risks through most of the forecast horizon [Exhibit 3-1].

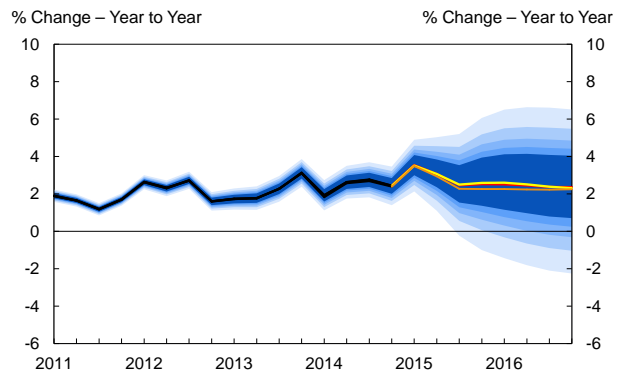
Comparing the recent data and our current central forecast to the forecast distribution from a year earlier, the current projection for inflation now generally runs in the lower half of the year-ago inflation distribution and below the year-ago central scenario, reflecting the lower inflation data in the intermeeting period and a reduction in the inflation forecast [Exhibit 3-3]. Although it shows some greater near-term volatility, the current real GDP growth forecast is near the middle of the year-ago forecast distribution and fluctuates around the year-ago central scenario. These patterns indicate that the basic contours of our central forecast for real activity have not changed a great deal on net over the past year, but the inflation forecast has moved down more noticeably.

### 3-1: Forecast Distributions

Core PCE Inflation Forecast Distribution



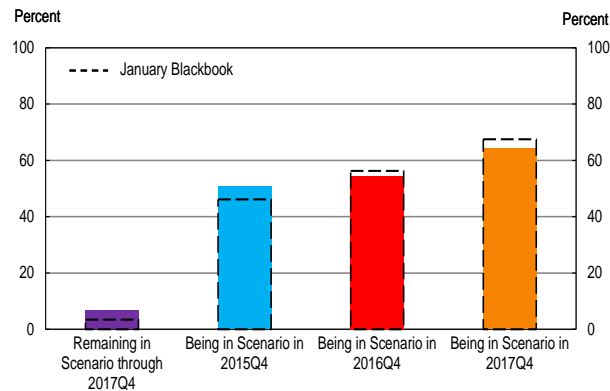
Real GDP Growth Forecast Distribution



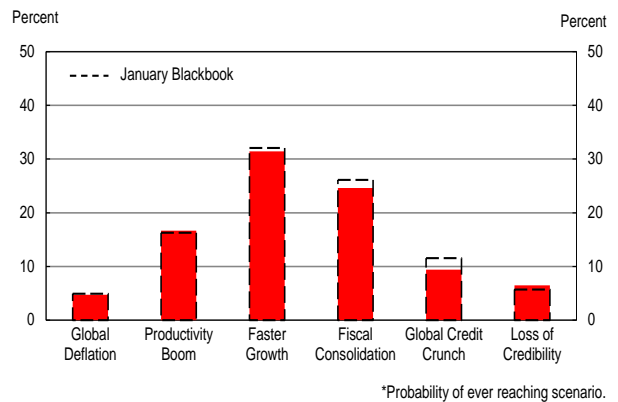
The yellow line is the expected value of the forecast distribution, the red line is the FRBNY central projection, the orange line is the DSGE forecast, and the black line is released data. The shading represents the 50, 60, 70, 80 and 90 percent probability that the four-quarter change will be within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

### 3-2: Scenario Probabilities

Central Scenario Probabilities



Alternative Scenario Probabilities\*

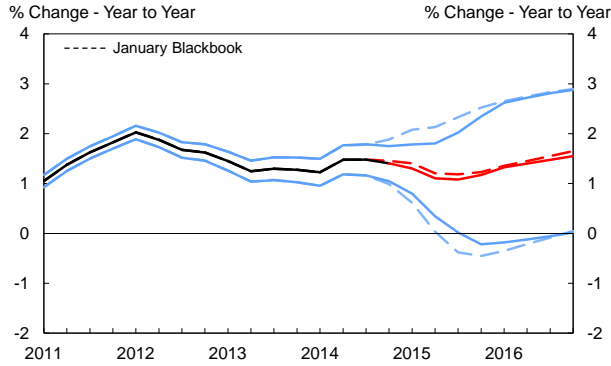


The left chart shows the probability of remaining in the central scenario through the end of the forecast horizon and the probabilities of being in the central scenario at the end of the next three years. The right chart shows the probabilities of ever reaching an alternative scenario over the forecast horizon, an assessment of the overall likelihood of each alternative scenario. A short description of the scenarios and the methodology to perform risk assessment is in the Appendix.

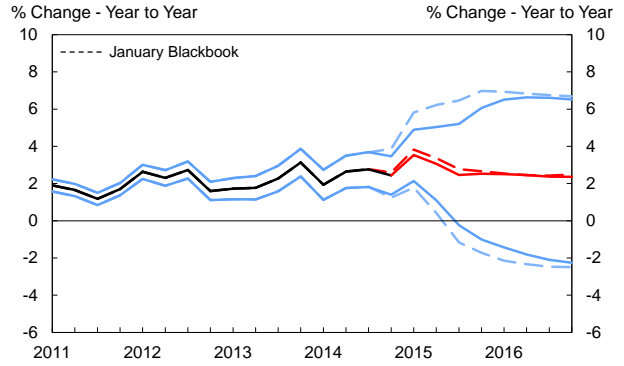
Source: MMS Function (FRBNY)

### 3-3: Evolution and Performance of Forecast Distributions

Change in Core PCE Inflation Forecast Distribution

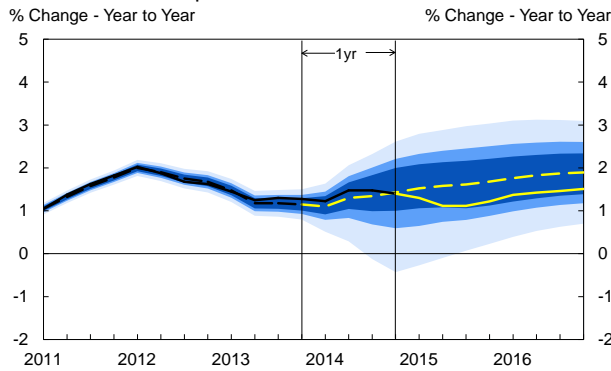


Change in Real GDP Growth Forecast Distribution

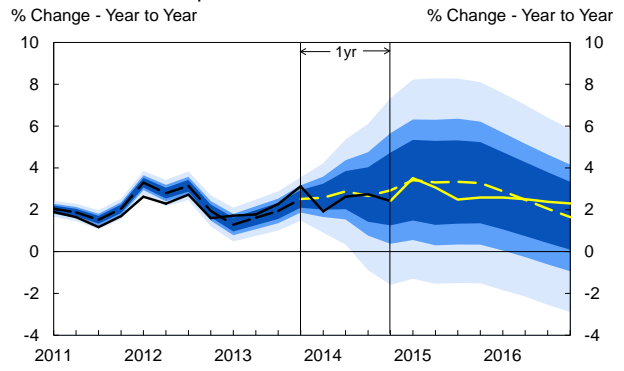


The red lines are the central scenario projections, black lines are released data, and blue lines represent upper and lower 90 percent forecast probability intervals. Dashed lines represent forecasts from the previous Blackbook.

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 lines are the current expected values from the forecast distributions and the dashed yellow lines are the year-ago Blackbook expected values. Black lines are released data and the blue shaded areas represent 50 (darkest shade), 70, and 90 (lightest shade) percent forecast probability intervals from the year-ago Blackbook.

Source: MMS Function (FRBNY)

## Appendix

In this Appendix, we provide brief descriptions of the alternative scenarios used in this Blackbook [A-1], and of the methodology underlying our risk assessment and forecast distributions [A-2].

### A-1. Alternative Scenario Descriptions

Our first alternative scenario considers the impact of productivity growth above our assumed trend of about 1.5% on a nonfarm business sector basis (*Productivity Boom*). The second scenario (*Fiscal Consolidation*) assesses the consequences of below-trend productivity growth. We consider four additional scenarios. In one (*Faster Growth*), “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*), renewed stresses in global financial and economic conditions have an adverse impact on U.S. real economic growth and inflation; the differences between the two mainly reflect differing assessments of the persistence of the negative effects.

### A-2. Methodology to construct the forecast distribution

Our approach to producing the FRBNY forecast distributions is a generalization of techniques used at the Bank of England and other central banks to depict the uncertainty and balance of risks around a forecast. It allows for a dynamic balance of risks that is jointly assessed over inflation and output growth.

Three primary components underlie these forecast distributions: (1) a central scenario with modal inflation and output growth characterized by the central forecast described in Section 2, (2) alternative scenarios with specific inflation and output implications that differ from those of the central scenario, and (3) probabilities that the economy will enter those alternative scenarios. This approach to quantifying uncertainty and risks allows us to interpret the forecast distribution

for output growth and inflation, as well as analyze the impact on that distribution of changing the probabilities of the alternative scenarios.

We set the long-run behavior of our central forecast at the FOMC's longer-run inflation goal and our estimate of the potential growth rate. We also assume that, if the economy enters an alternative scenario, it eventually returns to the central scenario and remains in that scenario thereafter.

We conduct a simulation exercise to generate paths for inflation and output growth; we then perform calculations about our forecast distribution that reflect our risk assessment.

This exercise consists in generating a large number of indicator series, with each entry in a given series corresponding to a quarter in the forecast horizon; for each of these series, each quarter's value indicates only the prevailing scenario in that quarter. To generate these scenario-indicator series, we set two parameters for each alternative scenario: (1) the probability that the economy will leave the central scenario and enter the alternative scenario—the “initial probability”—and (2) the probability that the economy will remain in the alternative scenario once it enters the scenario—the “persistence.”

After creating the indicator series, we generate, for each series, a path for inflation and a path for output growth, with each entry in a given path corresponding to a quarter in the forecast horizon. For a given indicator series and a given quarter, the values of the associated inflation and output growth paths are determined by a draw from the indicated joint distribution of inflation and output growth, based on the scenario the indicator series points to for that quarter. If, for example, the series indicates that the economy is in the central scenario, we draw inflation and output values from a distribution centered at the central forecast. If instead the series indicates the economy is in an alternative scenario, we draw values from a modified version of the central scenario distribution that is consistent with the alternative scenario.

**FOMC BACKGROUND MATERIAL**

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**RESEARCH AND STATISTICS GROUP**

**FRBNY Blackbook**

**April 2015**

**CONFIDENTIAL (FR) Class II FOMC**



# FRBNY BLACKBOOK

## April 2015

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## 1. Policy Recommendation and Rationale

The data flow since the last FOMC meeting generally has been disappointing; with the March labor market report being the prominent example. As a result, our estimate for real GDP growth in the first quarter of 2015 has been downgraded to 1.4% (annual rate), almost a full percentage point below that in the March *Blackbook*. However, a *prima facie* assessment of the evidence suggests that this slowdown largely reflects the impact of transitory factors. The harsh winter weather in many parts of the country was notable among these factors, and we assess that it probably had a significant adverse effect on growth. As the drag from these factors dissipates, we anticipate the positive fundamentals for consumption to emerge more decisively and lead to a rebound in spending, likely accompanied by the long-awaited pick-up in business investment. Therefore, we continue to project real GDP growth to be somewhat above its potential rate over the rest of 2015 and 2016.

On the inflation front, the news in the inter-meeting period has been a bit more positive, with core PCE inflation in February moving slightly higher on a 12-month basis, following three months of declines. The March core CPI also suggests a continuation of this slight uptrend, which is consistent with our central outlook. In the meantime, longer-term surveys of inflation expectations and TIPS-based measures of inflation compensation were fairly stable over the inter-meeting period. In fact, the latter have fluctuated within a fairly narrow range since the beginning of the year, although at historically low levels, after falling steadily in the second half of 2014.

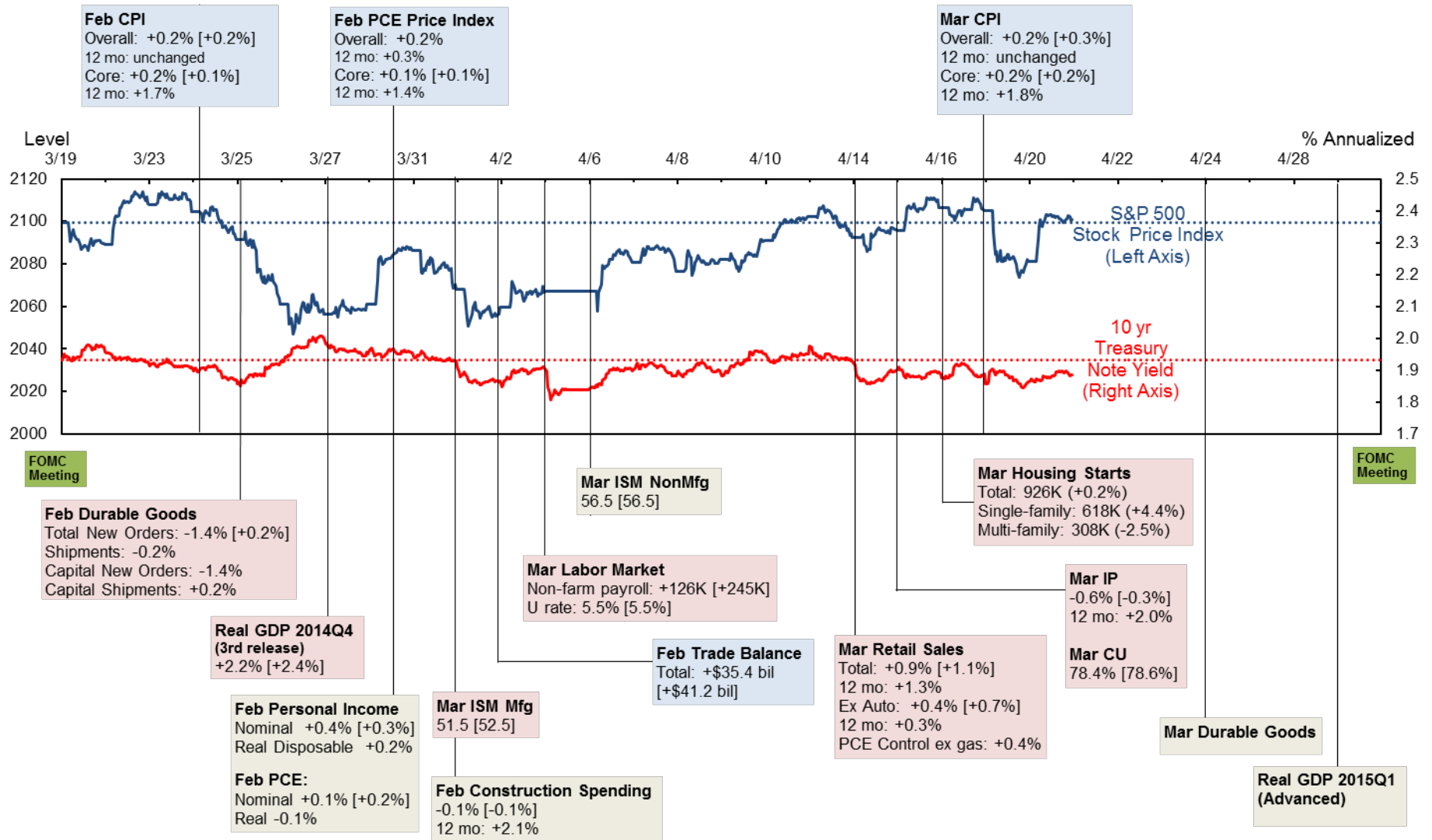
On balance, these developments did not boost our confidence in a sufficiently quick rebound of inflation toward its 2% objective, relative to our assessment in March. We have therefore moved back our modal forecast for the lift-off date and recommend that the target federal funds rate be maintained at its current level at least until September 2015.

In particular, the marked slowdown in the pace of improvement of labor market conditions in the first quarter of this year relative to that of the second half of 2014 makes us marginally more concerned about the pace of absorption of the remaining slack going forward. The recent

tentative stabilization of inflation, although welcome, was in line with our central projection of a slow return to mandate-consistent levels; therefore, we assess a similar likelihood of achieving this objective in two to three years as we did in March.

While our recommendation does not rule out the possibility of an earlier tightening, given the data dependence of policy expressed in the March FOMC statement (which we continue to endorse), it makes it very slim. A June lift-off would probably be appropriate if there were very strong labor market reports for April and May along with a decline in unemployment to 5%, as long as inflation continued to evolve in accordance with our forecast. In contrast, the current target range for the federal funds rate would remain appropriate past the September meeting if either oil prices resumed falling and dragged down core inflation, if the effect of the dollar appreciation on domestic inflation was larger or more persistent than we currently expect, or if the recent weakness in the economy proved to be more protracted. Any of these scenarios would reduce our confidence on inflation rising to 2% in the medium term. In that case, we would recommend conditioning the lift-off date more explicitly on the outlook for inflation, or possibly on the perspective evolution of nominal spending, as a tool to extend – in a state-dependent fashion – the period over which market participants would anticipate the target rate to remain at zero, as well as to anchor expectations for a gradual evolution of the policy rate after lift-off.

# 1-1: Key Data Releases



Note  
Blue shading: Data release encouraging/positive.  
Red shading: Data release discouraging/negative.  
Beige shading: Data release was neutral.  
Numbers in brackets are the median of the Bloomberg survey.

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

## 2. Central Forecast

### Intermeeting Developments

Based on the third estimate, real GDP growth in 2014Q4 was 2.2% (AR), which was unchanged from the second estimate. There were upward revisions to consumer spending and exports that were largely offset by a downward revision to inventory investment. The growth contribution from personal consumption expenditures was revised up to +3 percentage points from +2.8 percentage points and the net exports growth contribution was revised up to -1.03 percentage points from -1.15 percentage points, while the growth contribution from inventory investment was revised downward from +0.1 percentage point to -0.1 percentage point. The rates of change of both the total PCE deflator and the core PCE deflator were unchanged at -0.4% (AR) and 1.1%, respectively.

The third estimate of real GDP for 2014Q4 also provided information on the income side of the national accounts by providing estimates of net factor income, corporate profits, and the statistical discrepancy. The corporate profit share declined in the fourth quarter to 12.0% of Gross National Product (GNP) from 12.2% in the third quarter. The decline in corporate profits was concentrated in the domestic financial sector and in net receipts from abroad, while corporate profits of the domestic nonfinancial sector increased. Real gross domestic income increased at a 3.1% annual rate in the fourth quarter.

While the March Blackbook projected real GDP to grow at a 2¼% annual rate in 2015Q1, our current projection has been lowered to just below 1½% [Exhibit 2-1]. Some of the first quarter weakness is likely due to transitory dampening factors. One such factor was the California port dispute that may have decreased deliveries of crucial, imported parts and resulted in some slowing of US manufacturing output and exports. However, the effects of the slowdown appear to have been mitigated by greater usage of alternative ports and transportation, and thus we believe the net impact of this slowdown was modest.

Another factor was the harsh winter weather in the Northeast and Midwest. While most research has suggested only a modest drag on growth, our recent work using more sophisticated modeling techniques and data on snowfall and heating degree days suggests a larger impact. According to this analysis, the snowfall and temperature from January through March could have reduced the 2015Q1 real GDP growth rate by an estimated 1.6 percentage points, only slightly less than the estimated reduction of 1.9 percentage points for 2014Q1 real GDP growth.

The intermeeting economic data releases generally have reinforced the view that the economy slowed in the first quarter. There appeared to have been a downshift in consumer spending in Q1 despite fundamentals apparently being in good shape. Retail sales rose 0.9% in March, marking the first increase in four months, but the rebound was less than what was expected and has come against a background of low energy prices, strong real disposable income growth, upbeat consumer sentiment, high net worth, and improved household balance sheets. The personal saving rate in February was 5.8% and has risen more than a full percentage point from 2014Q4, suggesting that households have been saving much of the “dividend” from lower energy prices. On the bright side, March auto sales were solid, which would be consistent with the slowdown in consumer spending being transitory. Taken together, we have marked down real PCE growth for Q1 to slightly below 2% (AR) from 3¼% in the last Blackbook.

The manufacturing sector remains sluggish, with production posting a slight increase in March after declines in February and January. While the March ISM manufacturing index, at 51.5, remains above 50 indicating continued expansion, the index has been falling steadily since October 2014. The recent regional Fed manufacturing indices suggest continued sluggishness in manufacturing, which could reflect a continued impact from the recent sharp appreciation of the dollar. Private residential construction and public construction both fell in February, and the number of drilling rigs in operation continued to plunge. As of last week, there were 760 oil rigs operating – half the number working across the U.S. as recently as last October. Shipments of nondefense capital goods excluding aircraft rose 0.2% in February, while orders for these goods decreased 1.4%. Orders for these goods were below shipments in February, which suggests ongoing sluggish equipment spending over the near term. In addition, incoming data on housing activity has generally been another source of downside surprises. Sales of new single-family

homes in February rose 7.8% to 539,000 units (SAAR), the highest level since February 2008. However, the March data on housing starts, which was expected to show a substantial rebound from weather effects in February, rose only modestly. These developments have led us to lower projected Q1 growth of nonresidential structures investment, residential investment and state and local government spending.

A partial offset to the developments discussed in the previous two paragraphs is an upward revision to the growth contribution of inventory investment. Data on business inventories and sales for January and February have shown that inventories/sales ratios remain elevated and indicate a much faster pace of inventory accumulation during the quarter. While the March Blackbook projected an inventory growth contribution of -0.1 percentage point, our current projection has been raised to +0.6 percentage point.

Following a string of relatively robust readings, the March labor market report showed nonfarm payroll employment increased by 126,000 in March, the weakest net hiring in 15 months. Payroll employment increased on average by 197,000 in the first quarter compared to an average increase of 324,000 in the final quarter of 2014. It appears that the growth of hours worked slowed to around 1.7% (AR) in 2015Q1 from nearly 5% in 2014Q4, although this slowing does not appear to be weather related. Average hourly earnings rose by 0.3% in March and 2.1% over the past twelve months, consistent with the ongoing sluggish growth displayed by this and other measures of labor compensation.

Turning to inflation, the overall PCE deflator rose 0.2% in February after declining 0.4% in January. The twelve-month change in headline PCE inflation was 0.3%, up slightly from the 0.2% increase in January. Services prices increased 0.1% in in January. More notably, both energy prices and goods prices rose for the first time in seven months by 1.0% and 0.3%, respectively. The core PCE deflator was up 0.1% in February, the same increase as in January. The twelve-month change in the core index was 1.4%. With the increases in energy prices and goods prices, PCE inflation appears to have stabilized albeit at a level well below the FOMC objective. The March CPI data provide some tentative signs that of a small uptick in inflation that would be consistent with our central outlook.

## The Outlook

The slower pace of growth in the first quarter has increased debate about whether the data is reflecting temporary restraining factors or indicating the onset of a more sustained period of weakness. Our assessment is that the first quarter growth slowdown is transitory and that the economy will regain momentum starting in the second quarter. We have again lowered our forecast for real GDP growth in 2015 to 2.1% (Q4/Q4) from 2.5% in March [Exhibit 2-1] and 2.6% in January. A key element of the forecast is a rebound in the growth of real consumption expenditures that reflects supportive conditions going forward. In addition to the strong underlying fundamentals previously discussed in the *Intermeeting Developments* section, the saving rate is high relative to its historical relationship with household net worth and there is also evidence of higher planned borrowings on the part of consumers. We also anticipate a rebound in non-residential and residential investment from accommodative financial conditions, although inventory investment is expected to exert a significant drag in the second quarter following its positive growth contribution in the first quarter. We also maintain a significant drag from net exports during 2015 from the effects of dollar appreciation. For 2016, we see the economy strengthening due to somewhat stronger growth contributions from residential investment and net exports, boosting growth of real GDP back up to 2.4% from the forecast of 2.3% in March [Exhibit 2-1]. The path of the unemployment rate in this forecast is largely unchanged. It is projected to decline to 5.2% by 2015Q4 and then to 4.8% by 2016Q4. With low and stable long-term inflation expectations, nominal labor compensation growth is expected to move upward on a very gradual trend.

There has been a notable change in the modal forecast for the near-term path of inflation. Goods prices and energy prices have recently firmed. Based on oil futures markets, we anticipate that oil prices have bottomed out and will gradually rise over the forecast horizon. Given these considerations, the near-term paths of the total PCE deflator and core PCE deflator are now projected to be higher. The total PCE deflator is now expected to decline about 1.6% (AR) in 2015Q1 and then to rise at a 1.6% rate during the second half of 2015. For 2016, we expect overall inflation to continue to move gradually toward the FOMC's objective of 2%, due to declining slack and the gravitational pull of well-anchored inflation expectations. The core PCE



deflator is now expected to rise 1.3% (Q4/Q4) in 2015, up slightly from 1.2% in the March forecast, and then move up to 1.6% over the course of 2016 [Exhibit 2-1].

## 2-1: Projections of Key Variables

	<u>Core PCE Inflation</u>		<u>Real GDP Growth</u>		<u>Unemployment Rate*</u>		<u>Fed Funds Rate**</u>	
	Mar	Apr	Mar	Apr	Mar	Apr	Mar	Apr
<b>2014</b>								
Q1	1.2	1.2	-2.1	-2.1	6.6	6.6	0-0.25	0-0.25
Q2	2.0	2.0	4.6	4.6	6.2	6.2	0-0.25	0-0.25
Q3	1.4	1.4	5.0	5.0	6.1	6.1	0-0.25	0-0.25
Q4	1.1	1.1	2.2	2.2	5.7	5.7	0-0.25	0-0.25
<b>2015</b>								
Q1	0.8	1.1	2.3	1.4	5.6	5.6	0-0.25	0-0.25
Q2	1.2	1.5	2.7	2.1	5.4	5.4	0-0.25	0-0.25
Q3	1.3	1.4	2.6	2.7	5.2	5.3	0.38	0.38
Q4	1.4	1.4	2.5	2.4	5.1	5.2	0.63	0.63
<b>2016</b>								
Q1	1.4	1.5	2.2	2.4	5.1	5.1	0.94	0.88
Q2	1.5	1.6	2.5	2.5	5.1	5.0	1.25	1.13
Q3	1.6	1.7	2.3	2.6	5.0	4.9	1.54	1.38
Q4	1.7	1.8	2.4	2.3	5.0	4.8	1.88	1.63
<b>Q4/Q4</b>								
2013	1.3	1.3	3.1	3.1	-0.8	-0.8	0-0.25	0-0.25
2014	1.4	1.4	2.4	2.4	-1.3	-1.3	0-0.25	0-0.25
2015	1.2	1.3	2.5	2.1	-0.6	-0.5	0.63	0.63
2016	1.5	1.6	2.3	2.4	-0.1	-0.4	1.88	1.63

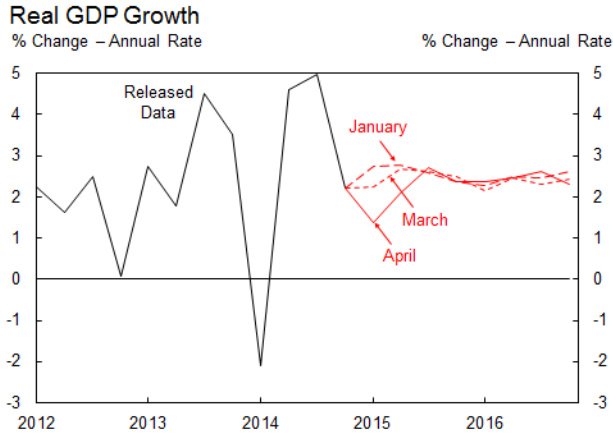
Columns reflect the forecast dates. Numbers in gray are from the previous Blackbook, and numbers in italics are released data.

\*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.

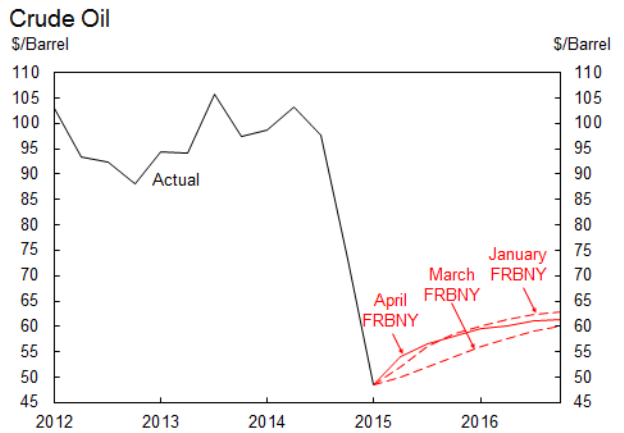
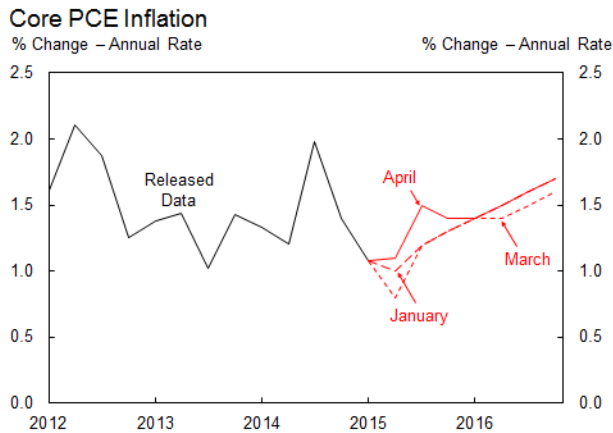
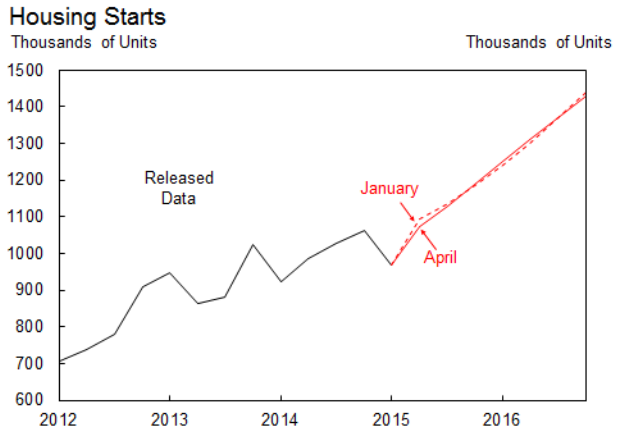
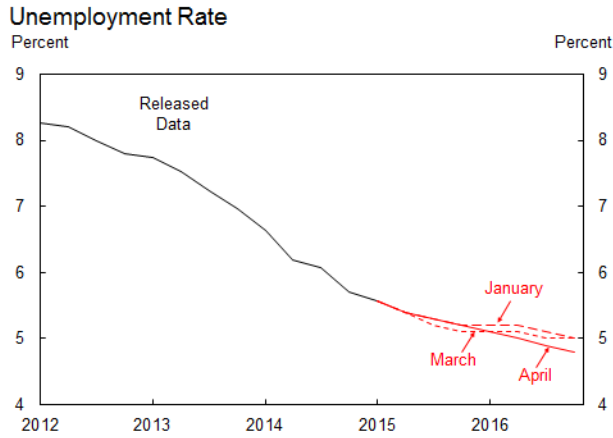
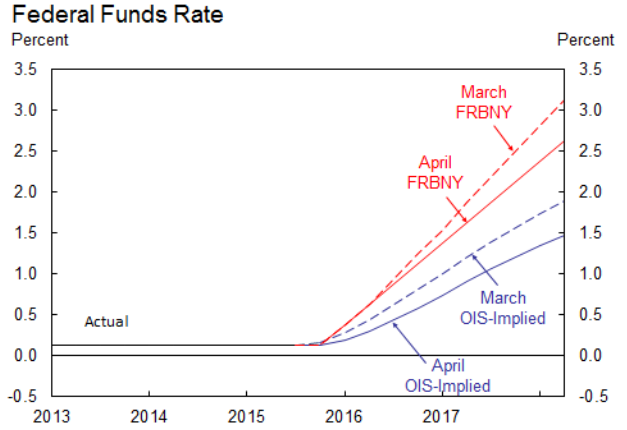
\*\*Quarterly values are the end-of-quarter value. Yearly values are the difference between the end-of-year value in the previous year and the end-of-year value in the listed year.

## 2-2: Evolution of Projected Quarterly Paths

### Key Indicators



### Forecast Assumptions



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

## 2-3: Near-Term Projections

	Growth Rates (AR)			Growth Contributions (AR)		
	2015Q1	2015Q2	2015Q3	2015Q1	2015Q2	2015Q3
<b>OUTPUT</b>						
<b>Real GDP</b>	1.4 (2.3)	2.1 (2.7)	2.7 (2.6)	1.4 (2.3)	2.1 (2.7)	2.7 (2.6)
<b>Final Sales to Domestic Purchasers</b>	1.0 (2.8)	3.8 (3.7)	3.7 (3.5)	1.1 (2.8)	3.8 (3.7)	3.8 (3.5)
<b>Consumption</b>	1.9 (3.3)	3.5 (3.3)	3.3 (3.1)	1.3 (2.2)	2.4 (2.2)	2.2 (2.1)
<b>BFI: Equipment</b>	0.5 (5.0)	4.0 (8.0)	8.0 (8.0)	0.0 (0.3)	0.2 (0.5)	0.5 (0.5)
<b>BFI: Nonresidential Structures</b>	-5.0 (-3.0)	10.0 (7.0)	5.0 (5.0)	-0.2 (-0.1)	0.3 (0.2)	0.1 (0.1)
<b>BFI: Intellectual Property Products</b>	8.0 (8.0)	8.0 (7.0)	8.0 (7.0)	0.3 (0.3)	0.3 (0.3)	0.3 (0.3)
<b>Residential Investment</b>	-5.5 (2.0)	14.5 (12.0)	14.5 (12.0)	-0.2 (0.1)	0.4 (0.4)	0.5 (0.4)
<b>Government: Federal</b>	-3.0 (-1.0)	-0.4 (-0.4)	-0.4 (-0.4)	-0.2 (-0.1)	0.0 (0.0)	0.0 (0.0)
<b>Government: State and Local</b>	-0.3 (0.5)	1.6 (1.6)	1.6 (1.6)	0.0 (0.1)	0.2 (0.2)	0.2 (0.2)
<b>Inventory Investment</b>	-- --	-- --	-- --	0.6 (-0.1)	-0.9 (-0.4)	-0.1 (-0.1)
<b>Net Exports</b>	-- --	-- --	-- --	-0.3 (-0.5)	-0.8 (-0.6)	-1.0 (-0.8)
<b>INFLATION</b>						
<b>Total PCE Deflator</b>	-1.6 (-1.9)	1.8 (1.2)	1.5 (1.5)			
<b>Core PCE Deflator</b>	1.1 (0.8)	1.5 (1.2)	1.4 (1.3)			
<b>PRODUCTIVITY AND LABOR COSTS*</b>						
<b>Output per Hour</b>	-0.2 (0.8)	1.5 (1.6)	1.5 (1.5)			
<b>Compensation per Hour</b>	2.7 (2.7)	2.5 (2.6)	2.5 (2.5)			
<b>Unit Labor Costs</b>	2.8 (2.0)	1.0 (1.0)	1.0 (1.0)			

Note: Numbers in parentheses are from the previous Blackbook.

\*Nonfarm business sector.

## 2-4: Medium-Term Projections

	Q4/Q4 Growth Rates			Q4/Q4 Growth Contributions		
	2014	2015	2016	2014	2015	2016
<b>OUTPUT</b>						
<b>Real GDP</b>	2.4 (2.4)	2.1 (2.5)	2.4 (2.3)	2.4 (2.4)	2.1 (2.5)	2.4 (2.3)
<b>Final Sales to Domestic Purchasers</b>	2.9 (2.8)	2.9 (3.3)	2.9 (2.6)	2.9 (2.9)	3.0 (3.4)	3.0 (2.7)
<b>Consumption</b>	2.9 (2.8)	2.9 (3.2)	2.5 (2.4)	1.9 (1.9)	2.0 (2.1)	1.7 (1.6)
<b>BFI: Equipment</b>	5.3 (5.4)	4.8 (7.0)	6.0 (5.7)	0.3 (0.3)	0.3 (0.4)	0.4 (0.4)
<b>BFI: Nonresidential Structures</b>	6.5 (6.2)	3.4 (3.2)	3.2 (3.0)	0.2 (0.2)	0.1 (0.1)	0.1 (0.1)
<b>BFI: Intellectual Property Products</b>	7.3 (7.4)	8.0 (7.2)	6.0 (5.0)	0.3 (0.3)	0.3 (0.3)	0.3 (0.2)
<b>Residential Investment</b>	2.5 (2.4)	7.4 (9.4)	13.7 (10.0)	0.1 (0.1)	0.2 (0.3)	0.5 (0.4)
<b>Government: Federal</b>	0.2 (0.2)	-1.0 (-0.5)	-1.4 (-1.4)	0.0 (0.0)	-0.1 (0.0)	-0.1 (-0.1)
<b>Government: State and Local</b>	1.2 (1.3)	1.1 (1.3)	1.5 (1.5)	0.1 (0.1)	0.1 (0.1)	0.2 (0.2)
<b>Inventory Investment</b>	-- --	-- --	-- --	0.0 (0.0)	-0.1 (-0.2)	-0.1 (0.0)
<b>Net Exports</b>	-- --	-- --	-- --	-0.6 (-0.6)	-0.8 (-0.7)	-0.5 (-0.3)
<b>INFLATION</b>						
<b>Total PCE Deflator</b>	1.1 (1.1)	0.8 (0.7)	1.8 (1.6)			
<b>Core PCE Deflator</b>	1.4 (1.4)	1.3 (1.2)	1.6 (1.5)			
<b>PRODUCTIVITY AND LABOR COSTS*</b>						
<b>Output per Hour</b>	-0.1 (-0.1)	1.1 (1.3)	1.5 (1.5)			
<b>Compensation per Hour</b>	2.5 (2.5)	2.6 (2.6)	2.8 (2.8)			
<b>Unit Labor Costs</b>	2.6 (2.6)	1.5 (1.3)	1.3 (1.3)			

Note: Numbers in parentheses are from the previous Blackbook.

\*Nonfarm business sector.

## 2-5: Comparison with Other Forecasts

		Real GDP Growth			
	Release Date	2015Q1	2015Q2	2015 Q4/Q4	2016 Q4/Q4
FRBNY	4/22/2015	1.4 (2.3)	2.1 (2.7)	2.1 (2.5)	2.4 (2.3)
Blue Chip	4/10/2015	1.4 (2.4)	3.3 (3.1)	2.7 (2.8)	2.7 (2.8)
Median SPF	2/13/2015	2.7 (2.7)	3.0 (3.0)	3.2 (3.2)	2.9 (2.9)
Macro Advisers	4/7/2015	1.2 (2.4)	2.8 (2.7)	2.8 (3.0)	2.5 (2.7)
FRBNY-DSGE	4/22/2015	1.4 (2.3)	2.2 (2.4)	2.0 (2.3)	2.2 (2.2)
		Core PCE Inflation			
	Release Date	2015Q1	2015Q2	2015 Q4/Q4	2016 Q4/Q4
FRBNY	4/22/2015	1.1 (0.8)	1.5 (1.2)	1.3 (1.2)	1.3 (1.2)
Median SPF	2/13/2015	1.2 (1.2)	1.4 (1.4)	1.4 (1.4)	1.7 (1.7)
Macro Advisers	4/7/2015	1.1 (1.1)	0.9 (1.2)	1.3 (1.3)	1.8 (1.7)
FRBNY-DSGE	4/22/2015	1.1 (0.8)	1.0 (0.8)	1.0 (0.9)	1.0 (1.1)
		CPI Inflation			
	Release Date	2015Q1	2015Q2	2015 Q4/Q4	2016 Q4/Q4
FRBNY	4/22/2015	-3.1 (-2.8)	1.8 (1.8)	0.6 (0.7)	2.1 (2.1)
Blue Chip	4/10/2015	-2.6 (-2.5)	1.8 (2.1)	0.8 (0.9)	2.2 (2.3)
Median SPF	2/13/2015	-1.4 (-1.4)	1.6 (1.6)	1.1 (1.1)	2.1 (2.1)
Macro Advisers	4/7/2015	-0.9 (-2.0)	-2.9 (2.5)	1.0 (1.1)	2.3 (2.1)
		Core CPI Inflation			
	Release Date	2015Q1	2015Q2	2015 Q4/Q4	2016 Q4/Q4
FRBNY	4/22/2015	1.7 (1.5)	1.7 (1.7)	1.8 (1.7)	2.0 (2.0)
Median SPF	2/13/2015	1.3 (1.3)	1.7 (1.7)	1.7 (1.7)	1.9 (1.9)
Macro Advisers	4/7/2015	1.5 (1.3)	1.6 (1.5)	1.7 (1.5)	2.0 (1.9)

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

### 3. Uncertainty & Risks

The developments over the intermeeting period indicate continued sizable uncertainty around the outlook. Based on the difference between the modal central forecast and the expected value from our forecast distributions [Exhibit 3-1], as well as the changes in the forecast distributions [Exhibit 3-3], the risks still are roughly balanced both for core PCE inflation and for real GDP growth. The uncertainty around the real GDP growth projection is above historical norms; uncertainty around the inflation projection is fairly close to those norms.

The changes in our forecast distributions reflect the impact of a number of divergent developments. In the U.S., data on real activity and the labor market during the intermeeting period were generally weak. The U.S. inflation data provided some tentative indications of a gradual upward move, although inflation remained well below the FOMC objective. Data on economic activity and inflation in the euro area were somewhat stronger than they had been recently, but Chinese data were rather weak. Longer-term inflation compensation measures in the U.S. and the euro area fluctuated within fairly narrow ranges that were still relatively low; U.S. survey measures continued to be fairly stable. In financial markets, oil prices over the intermeeting period retraced a bit more of the sizable decline from the second half of 2014, while equity prices increased moderately amid fairly low implied volatility. Long-term nominal and real yields in the U.S. fell moderately, with real yields declining more. As ECB sovereign bond purchases continued, nominal yields in the euro area dropped further with negative yields occurring further out on the yield curve in a number of countries.

We incorporated these developments in this Blackbook through a number of changes in scenario probabilities [Exhibit 3-2]. We see the recent expenditure data as raising the chances of either a larger than expected rebound—reflecting the possibility that strong underlying fundamentals have obscured because of transitory adverse factors—or a more persistent period of weak growth—reflecting the possibility that underlying fundamentals are weaker than we assess. Consequently, we raised the probabilities of both the positive *Faster Growth* scenario and the negative *Fiscal Consolidation* scenario. Because the Greek debt situation is far from resolved and the Chinese economy still displays some weaknesses, we have maintained a notable

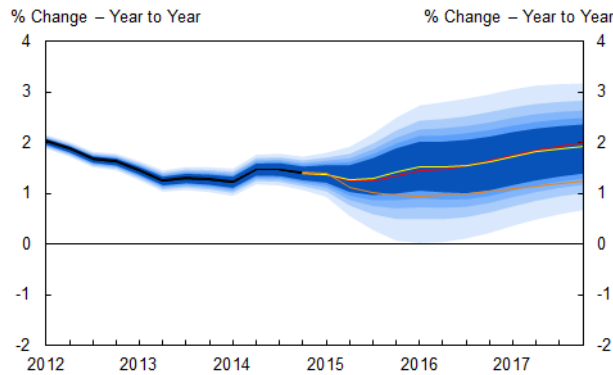
probability of the *Global Credit Crunch* scenario. The probability of the *Loss of Credibility* scenario remains unusually low, consistent with the still-low levels of longer-run inflation compensation; however, some stabilization of commodity prices led to a small reduction in the probability of the *Global Deflation* scenario. With these changes, the widths of the 90 percent probability intervals for both real GDP growth and core PCE inflation remain fairly wide and similar to those of the previous *Blackbook* [Exhibit 3.3] and the distributions reflect roughly balanced risks through most of the forecast horizon [Exhibit 3-1].

Comparing the recent data and our current central forecast to the forecast distribution from a year earlier, the current projection for inflation generally runs in the lower half of the year-ago inflation distribution and below the year-ago central scenario, reflecting the lower inflation data in the intermeeting period and a continued low inflation forecast [Exhibit 3-3]. The current real GDP growth forecast now is in the lower half of the year-ago forecast distribution over the next year, reflecting the reduction in the Q1 projection with little change in the forecast for subsequent quarters. Over 2016-17, the current projection path is near the year-ago central scenario. These patterns indicate that the basic contours of our medium-term central forecast for real activity have not changed much on net over the past year, but the inflation forecast has moved down more noticeably.

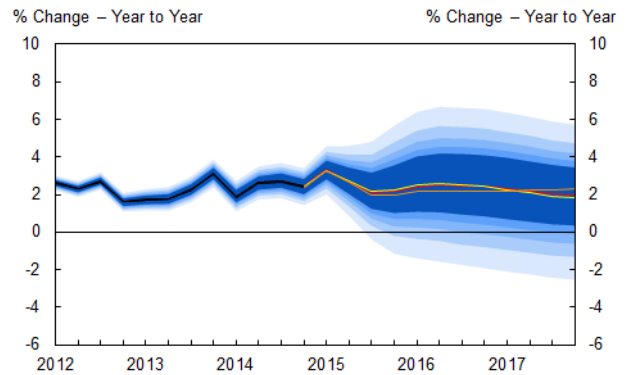


### 3-1: Forecast Distributions

Core PCE Inflation Forecast Distribution



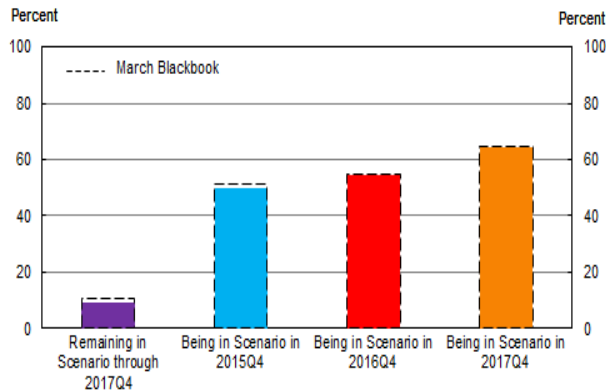
Real GDP Growth Forecast Distribution



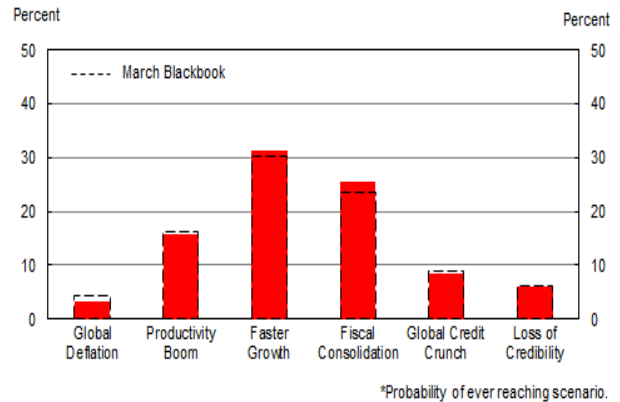
The yellow line is the expected value of the forecast distribution, the red line is the FRBNY central projection, the orange line is the DSGE forecast, and the black line is released data. The shading represents the 50, 60, 70, 80 and 90 percent probability that the four-quarter change will be within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

### 3-2: Scenario Probabilities

Central Scenario Probabilities



Alternative Scenario Probabilities\*

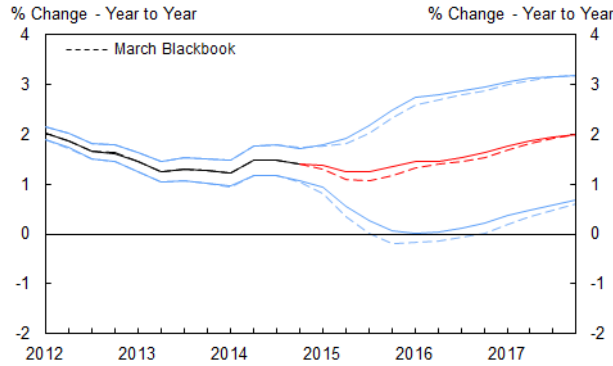


The left chart shows the probability of remaining in the central scenario through the end of the forecast horizon and the probabilities of being in the central scenario at the end of the next three years. The right chart shows the probabilities of ever reaching an alternative scenario over the forecast horizon, an assessment of the overall likelihood of each alternative scenario. A short description of the scenarios and the methodology to perform risk assessment is in the Appendix.

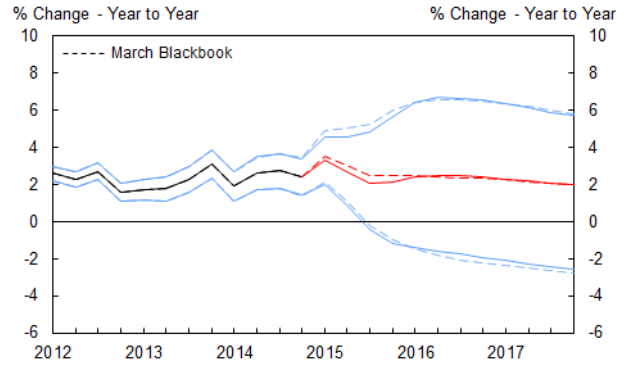
Source: MMS Function (FRBNY)

### 3-3: Evolution and Performance of Forecast Distributions

**Change in Core PCE Inflation Forecast Distribution**

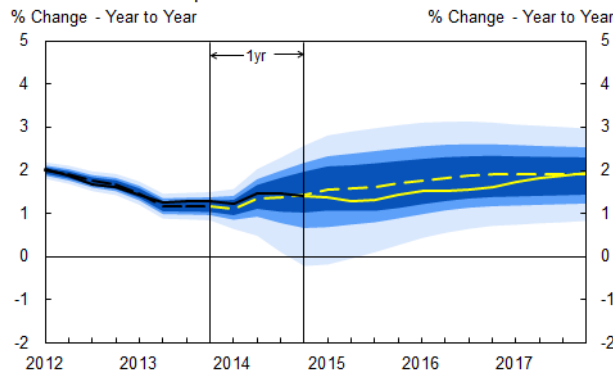


**Change in Real GDP Growth Forecast Distribution**

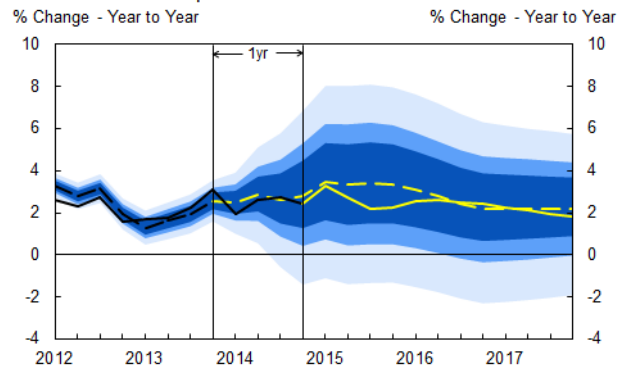


The red lines are the central scenario projections, black lines are released data, and blue lines represent upper and lower 90 percent forecast probability intervals. Dashed lines represent forecasts from the previous Blackbook.

**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 lines are the current expected values from the forecast distributions and the dashed yellow lines are the year-ago Blackbook expected values. Black lines are released data and the blue shaded areas represent 50 (darkest shade), 70, and 90 (lightest shade) percent forecast probability intervals from the year-ago Blackbook.

Source: MMS Function (FRBNY)

## Appendix

In this Appendix, we provide brief descriptions of the alternative scenarios used in this Blackbook [A-1], and of the methodology underlying our risk assessment and forecast distributions [A-2].

### A-1. Alternative Scenario Descriptions

Our first alternative scenario considers the impact of productivity growth above our assumed trend of about 1.5% on a nonfarm business sector basis (*Productivity Boom*). The second scenario (*Fiscal Consolidation*) assesses the consequences of below-trend productivity growth. We consider four additional scenarios. In one (*Faster Growth*), “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*), renewed stresses in global financial and economic conditions have an adverse impact on U.S. real economic growth and inflation; the differences between the two mainly reflect differing assessments of the persistence of the negative effects.

### A-2. Methodology to construct the forecast distribution

Our approach to producing the FRBNY forecast distributions is a generalization of techniques used at the Bank of England and other central banks to depict the uncertainty and balance of risks around a forecast. It allows for a dynamic balance of risks that is jointly assessed over inflation and output growth.

Three primary components underlie these forecast distributions: (1) a central scenario with modal inflation and output growth characterized by the central forecast described in Section 2, (2) alternative scenarios with specific inflation and output implications that differ from those of the central scenario, and (3) probabilities that the economy will enter those alternative scenarios. This approach to quantifying uncertainty and risks allows us to interpret the forecast distribution

for output growth and inflation, as well as analyze the impact on that distribution of changing the probabilities of the alternative scenarios.

We set the long-run behavior of our central forecast at the FOMC's longer-run inflation goal and our estimate of the potential growth rate. We also assume that, if the economy enters an alternative scenario, it eventually returns to the central scenario and remains in that scenario thereafter.

We conduct a simulation exercise to generate paths for inflation and output growth; we then perform calculations about our forecast distribution that reflect our risk assessment.

This exercise consists in generating a large number of indicator series, with each entry in a given series corresponding to a quarter in the forecast horizon; for each of these series, each quarter's value indicates only the prevailing scenario in that quarter. To generate these scenario-indicator series, we set two parameters for each alternative scenario: (1) the probability that the economy will leave the central scenario and enter the alternative scenario—the “initial probability”—and (2) the probability that the economy will remain in the alternative scenario once it enters the scenario—the “persistence.”

After creating the indicator series, we generate, for each series, a path for inflation and a path for output growth, with each entry in a given path corresponding to a quarter in the forecast horizon. For a given indicator series and a given quarter, the values of the associated inflation and output growth paths are determined by a draw from the indicated joint distribution of inflation and output growth, based on the scenario the indicator series points to for that quarter. If, for example, the series indicates that the economy is in the central scenario, we draw inflation and output values from a distribution centered at the central forecast. If instead the series indicates the economy is in an alternative scenario, we draw values from a modified version of the central scenario distribution that is consistent with the alternative scenario.

**FOMC BACKGROUND MATERIAL**

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**RESEARCH AND STATISTICS GROUP**

**FRBNY Blackbook**

**June 2015**

**RESTRICTED (FR)**

# FRBNY BLACKBOOK

## June 2015

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## 1. Policy Recommendation and Rationale

On balance, data releases over the inter-meeting period were consistent with the outlook underlying our policy assessment in the April *Blackbook*. We therefore retain our modal projection for the near-term policy path and recommend that the target federal funds rate be maintained at its current range *at least* until the September 2015 FOMC meeting.

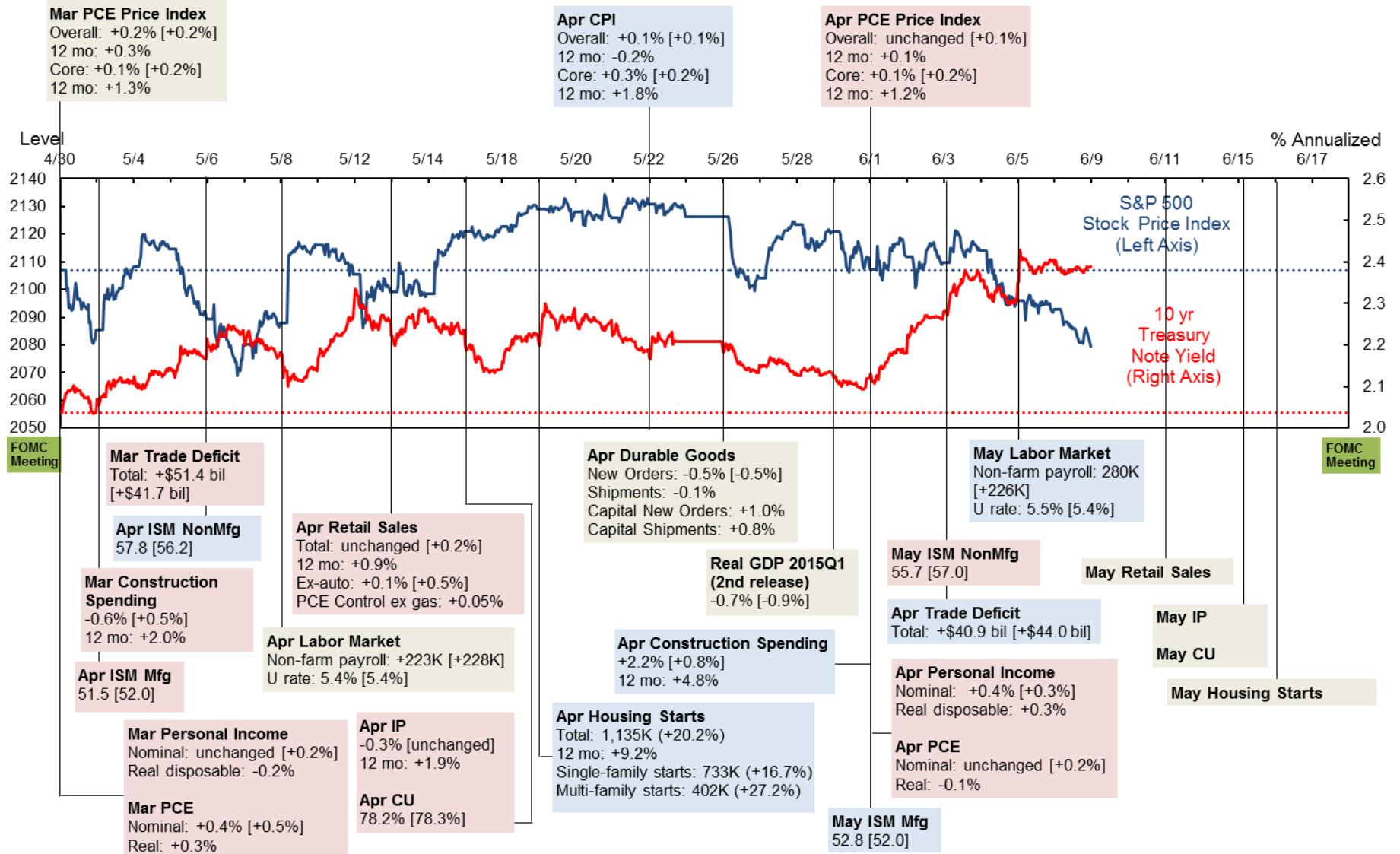
In this *Blackbook* we marked down our estimate for 2015 real GDP growth (Q4/Q4) to 1.7%, from 2.1% in the April *Blackbook*. This downward revision largely reflected the decline in real GDP in the first quarter, of which net exports were a major contributor. We believe that transitory factors drove much of the weakness in GDP and net exports. More recent data show a partial reversal of net exports and upside surprises from construction and housing; however, consumer spending largely continued to be disappointing. Labor market conditions showed further improvement, with average monthly gains in employment in April and May around 250,000 and small increases in compensation measures. Household assessments on labor market conditions from our Survey of Consumer Expectations (SCE) generally pointed to further improvement with the exception of earnings expectations which remained subdued. On the international front, weaker growth projections for China and Brazil were counterbalanced by a somewhat more solid outlook for Europe and Japan, so that our forecast for global growth was essentially unchanged. Overall, the data flow since the last FOMC meeting has been broadly in line with our forecast. We thus continue to project real GDP growth to be somewhat above its potential rate over the second half of 2015 and over 2016.

The news on inflation in the inter-meeting period was mildly positive. Even though the 12-month core PCE inflation rate fell slightly in April, the April PCE inflation data generally were consistent with a continued gradual upward trend. In particular, viewed through the lenses of our Signal Component model (SiCo) for core PCE, inflation appears to be moving slowly toward the FOMC's longer run objective, although it remains still well below it. The April core CPI also appeared to continue to be on an upward trend, consistent with our central outlook. Three-year inflation expectations from the SCE, longer-term expectations from other surveys and TIPS-based inflation compensation were fairly stable over the inter-meeting period.

With unemployment unchanged at 5.5% and little indication that substantially stronger real activity growth or higher inflation is on the horizon, we see a liftoff at the June or July meetings as inappropriate. However, we would recommend maintaining the current target range for the federal funds rate *past* the September meeting if either the recent weakness in consumer spending proved to be more protracted, or if the effects of the dollar appreciation on real activity and/or domestic inflation were larger or more persistent than we currently expect. The realization of any of these events would undermine our confidence in the return of inflation to the 2% objective in the medium term. We continue to endorse the data-dependence of policy expressed in recent FOMC statements. If the downside risks were to materialize over the next few months, we would recommend a more explicit conditioning of the lift-off date on the outlook for inflation, or possibly on the outlook for nominal spending. Such conditioning would extend – in a state-dependent fashion – the period over which market participants would anticipate the target rate to remain at zero, as well as anchor expectations for a gradual evolution of the policy rate after lift-off.



# 1-1: Key Data Releases



**Note**  
Blue shading: Data release encouraging/positive.  
Red shading: Data release discouraging/negative.  
Beige shading: Data release was neutral.  
Numbers in brackets are the median of the Bloomberg survey.

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

## 2. Central Forecast

### Intermeeting Developments

In the second estimate, growth of real GDP in 2015Q1 was revised down from +0.2% (annual rate) to -0.7%, a slightly smaller decline than the consensus expectation of -0.9%. The primary sources of this downward revision were net exports and inventories. There was a marked widening in the trade deficit, with a sizable upward revision to import growth and a modest downward revision to export growth. The net exports growth contribution was reduced to -1.9 percentage points from the advance estimate of -1.3 percentage points. The growth contribution of inventory investment was revised down to +0.3 percentage point from the advance estimate of +0.8 percentage point.

There was a slight downward revision to growth in real personal consumption expenditures (to +1.8% from +1.9%). Disposable personal income was also revised downward, leaving the personal saving rate unchanged at 5.5% (up from 4.6% in 2014Q4). The growth contribution of fixed investment was revised up from -0.4 percentage point to -0.2 percentage point, led by an upward revision of residential investment.

The rate of growth of output of the nonfarm business sector for 2015Q1 was revised down to -1.6% (annual rate) from -0.2%. With only a modest revision of hours worked, growth of output per hour was revised down to -3.1% from the first estimate of -1.9%. Compensation per hour increased at a 3.3% annual rate, resulting in a 6.7% increase in unit labor costs. Over the past two quarters, unit labor costs in the nonfarm business sector have increased at a 6.2% annual rate, the fastest since 2007Q1. Looking longer-term, the 16 quarter annualized change of output per hour in the nonfarm business sector has slowed to 0.6%, the lowest since 1983Q1.

Corporate profits fell sharply in the first quarter, to 13.1% of national income from 13.9% in 2014Q4. The recent peak was 14.6% in 2013Q3. The employee compensation share of national income rose from 60.6% to 61.9% over that period.

It should be noted that the statistical discrepancy fell substantially again in the first quarter, bringing the decline over the past two quarters to roughly \$160 billion. At -\$330 billion or -1.9% of GDP, the statistical discrepancy is relatively large, such that the upcoming annual revision of the NIPAs could be quite interesting. As of 2015Q1, the four-quarter growth rate of real Gross Domestic Income was 3.6% versus 2.7% for GDP.

Recent data support the view that the US economy is emerging from the first quarter soft patch, but as yet the rebound appears to be somewhat tepid. Our projection for growth of real GDP in the second quarter has moved somewhat higher in recent weeks, to around 2 <sup>3</sup>/<sub>4</sub>% (annual rate). But this is a far cry from the 4.6% annual rate growth of 2014Q2.

The April data on consumer spending was disappointing, with real PCE actually declining slightly following a decent increase in March. As of April, the annualized three-month growth rate of real PCE was just 1.2%, down from a recent peak of 4.9% last October. This slowing has been broad based across most categories of goods and services and is at odds with the widely held view that growth of real PCE would strengthen given the steep decline of energy prices. As mentioned above, the personal saving rate increased by nearly a full percentage point from the fourth quarter to the first quarter, resulting in a great deal of head scratching among forecasters.

Upon further analysis, this slowing in growth of real PCE may be less of a mystery than generally thought. First, the rate of growth of aggregate hours worked has followed a similar pattern as that of real PCE. An annualized three-month change of hours worked in the nonfarm business sector peaked at 4.8% in December and has been under 1% for the three month period ending in May. Coincident with this slowing of income growth, consumer confidence has weakened somewhat in recent months after reaching quite high levels early this year—despite the recent decline, consumer confidence remains well above levels of this time last year. Regarding the decline of energy prices, our internal surveys indicate that most people expect energy prices to return to previous levels by this time next year. In addition, comparable past episodes of major oil price declines—1986 and 1998—saw initial increases of the personal saving rate. Presumably, the behavioral response of what to do with the boost to disposable income from persistently lower energy price takes some time to materialize.

The available data for May related to consumer spending look better, with sales of light-weight motor vehicles soaring to 17.8 million units, the highest level in roughly a decade. Hours worked rose strongly in May, particularly in the service sector, as did average hourly earnings. For the second quarter as a whole, growth of real PCE is likely to be only modestly stronger than in the first quarter due to the weakness in April. But the available May data does provide support for the view that consumer spending will strengthen over the second half of 2015.

Recent data coming out of the housing market suggest that both construction and sales are bouncing back after the harsh winter. Total housing starts rose 20% in April to 1.135 million units, the highest since November of 2007. While this level may not be sustained in May, it appears that a gradual uptrend has reemerged. Sales of new single-family homes rose 7% in April following a 10% decline in March. A three-month moving average of new home sales has been above 500,000 for three months, the highest since mid-2008. The underlying fundamentals of the housing market look pretty favorable. In addition to low mortgage rates, household formations moved notably higher in 2014Q4 and 2015Q1, with the rental vacancy rate falling below our estimate of equilibrium. The rate of increase of rent of primary residence (what tenants pay to landlords) continues to edge higher, and home prices are rising at a more rapid pace. Mortgage credit availability remains an issue, but lending standards look to be easing somewhat.

The trade balance narrowed more than expected April, with imports declining and exports rising. We now expect the net exports growth contribution to be modestly positive in the second quarter following the very large drag on growth in the first quarter. However, the average growth contribution for the first half of the year is expected to be -0.9 percentage point, consistent with our model estimates of the effect of the appreciation of the dollar since mid-2014. We expect a trade drag of -0.7 percentage point over the second half of 2015, only a modest improvement from the first half experience.

Both private nonresidential and state and local construction spending rebounded sharply in April, consistent with the finding that this type of activity is most adversely affected by the severe

winter weather that affected much of the country. Overall, however, indicators of private business investment spending point to continued sluggishness in the second quarter. New orders for nondefense capital goods excluding aircraft declined in April and are down at a 14.4% annual rate over the past three months. Shipments of nondefense capital goods excluding aircraft did increase in April, but are down at a 3.6% annual rate over the past three months. New orders have been below shipments for the past three months. Moreover, it is likely the case that much of the April increase in shipments was for exports, as exports of capital goods are on track for a 24% annual rate increase in the second quarter. Oil and gas drilling activity continues to plunge. In fact, based on the April data on industrial production, oil and gas drilling is likely to decline at a nearly 90 percent annual rate in the second quarter following a 70 percent annual rate decline over the first quarter.

The employment report for May was pretty strong across the board, with nonfarm payrolls rising by 280,000, hours worked increasing at a 3.6% annual rate, and average hourly earnings rising at a 3.9% annual rate. The unemployment rate ticked up by 0.1 percentage point to 5.5%, with an increase in the participation rate of 16 to 24 year olds boosting the overall participation rate from 62.8 from 62.9. Again, this supports the forecast of stronger growth in the second half of 2015. It should be noted, however, that the strength is concentrated in the service sector and the construction industry. In contrast, in the manufacturing sector employment growth remains weak while aggregate hours worked were flat. The best one can say is that hours worked in manufacturing at least stopped declining. The ISM manufacturing composite index rose to 52.8 in May following two months at 51.5. The largest contributors to the May increase were new orders—which rose to a respectable 55.8—and employment—which crossed back above 50 after one month below.

With both imports and domestic production expected to grow at relatively low rates, we have built into the projection for Q2 a slowing in the pace of inventory accumulation. At this point we expect a drag from inventories of about ¼ percentage point. But that estimate is based on very little hard data and is subject to substantial change.

Regarding inflation, the PCE deflator was essentially unchanged in April following gains of 0.2% in each of the previous two months. The 12-month change in the overall PCE deflator was +0.1%, below the 0.3% increase of March. Energy prices declined 1.4%, after increasing 1.45% in March and 1.15% in February. Food prices declined 0.2%, slightly less in magnitude than the March decline of 0.3%.

The core PCE deflator increased 0.11% in April, less than was suggested by the April CPI data. The 12-month change in the core index declined to 1.2% (1.24% to two decimal points), relative to 1.3% in March. The “market-based” core measure increased 0.2%, above the March and February readings of +0.1%; its 12-month change was 1.1% (1.14% to two decimal points), in line with the previous two months.

We expect the core PCE deflator to increase at a 1.5% annual rate in 2015Q2, up from 0.8% in the first quarter. In addition, energy price data for May suggest a 5% increase of energy prices for that month. Thus, we expect a 1.8% annual rate increase of the overall PCE deflator. The 12-month changes of both the overall and the core price indices appear to have hit bottom. However, we continue to believe that there is some risk that core inflation could start slowing again due to past dollar appreciation and its effect on core goods prices.

## **The Outlook**

Real GDP expanded at a 2.7% compound annual rate in over 2013 and 2014. Qualitatively, this firming in growth unfolded much as expected. The household deleveraging process ran its course, and household liabilities began increasing again. The imbalances in the housing market were worked off, with housing starts moving toward a gradual upward trend. Fiscal consolidation at both the federal and state and local levels ended, with employment at the state and local government level beginning to increase. The stronger growth rate of the 2013 to 2014 period appears to have been above the economy’s potential growth rate, with the unemployment rate declining by over two percentage points. Other labor market indicators, such as job vacancies and the job finding rate, also improved, suggesting that slack in labor market had declined, though certainly not eliminated. Inflation as measured by the core PCE deflator was

relatively stable over this period, running between 1 ¼% and 1 ½%. A stable inflation rate might lead one to conclude that the economy was operating near potential. But research suggests that the price Phillips curve is quite flat, at least in a range of +/- 2 percentage points of NAIRU.

Then in the first quarter of 2015 the US economy was buffeted by several adverse shocks, some of which were clearly temporary, such as severe winter weather and the West Coast port work slowdown, while others are more long lasting, such as the appreciation of dollar and steep contraction in oil and gas exploration in the wake of the steep decline of oil prices. As mentioned above, there is increasing evidence that the economy is shaking off these shocks, but at this point the growth rate of real GDP for the entire first half of 2015 is expected to be just 1% (annual rate).

Looking forward, we expect real GDP to expand at a 2 ¼% to 2 ½% annual rate over the second half of 2015, which would bring the Q4/Q4 growth rate to 1 ¾%. We envision growth of real PCE moving up to around 3% (annual rate) over the second half from 2% over the first half. In addition to improved labor market conditions and consumer confidence, we expect to see the savings from lower energy prices provide an important boost. We also expect housing construction to continue to move higher, aided by an improved labor market, gradual easing of mortgage underwriting standards, and emerging tightness in housing supply. The steep contraction in investment in the oil and gas sector should be largely over by the second half of the year. In addition, the drag from trade, while still substantial, should be less than it was over the first half.

For 2016 we continue to expect growth of around 2 ½% (Q4/Q4). Growth of real PCE will likely slow somewhat from the 3% pace of 2015H2 as the boost from lower energy prices gradually fades. Nonetheless, the personal saving rate is expected to continue to gradually decline as credit becomes more readily available and the scars from the financial crisis fade. Growth of residential investment is expected to be stronger in 2016 than in 2015 but is expected to slow in the second half of 2016 as higher mortgage interest rates begin to have an effect. Given our assumption of a relatively stable exchange value of the dollar and somewhat stronger foreign growth, the drag from trade will diminish and the US manufacturing output will resume a

health growth rate. In this environment, business fixed investment is also expected to strengthen though the absolute growth rate—6% (Q4/Q4)—is not particularly robust.

Growth above potential from mid-2015 through the end of 2016 is expected to lead to further reductions of labor market slack, with the unemployment rate falling below 5% by the second half of 2016. Admittedly, this is a pretty flat trajectory relative to the experience of the past few years. The unemployment rate forecast presumes a return of productivity growth to its longer term trend and modest increases of both the average work week and the labor force participation rate may exert more drag on economic activity than we now expect. In addition, the dollar may continue to appreciate rather than level off as we have assumed.

Based on oil futures markets, we believe that oil prices have bottomed out and will gradually move higher over the forecast horizon. Thus, while the total PCE deflator is likely to be essentially unchanged over the first half of 2015, over the second half of 2015 we expect it to rise at 1 ¾% annual rate. Over the course of 2016 we expect headline inflation to continue to move gradually toward the FOMC's target of 2%, due to declining slack and the gravitational pull of well anchored inflation expectations. The core PCE deflator is expected to rise at a 1 ¼% annual rate over the first half of 2015, the same as over the second half of 2014, as declining prices for nonpetroleum imports depress goods prices. However, over the remainder of the forecast horizon the effect of the dollar appreciation begins to wane and the slowing of health care prices is expected to end. Under those assumptions, core PCE deflator inflation will move gradually toward 2%.



## 2-1: Projections of Key Variables

	<u>Core PCE Inflation</u>		<u>Real GDP Growth</u>		<u>Unemployment Rate*</u>		<u>Fed Funds Rate**</u>	
	Apr	Jun	Apr	Jun	Apr	Jun	Apr	Jun
<b>2014</b>								
Q1	1.2	1.2	-2.1	-2.1	6.6	6.6	0-0.25	0-0.25
Q2	2.0	2.0	4.6	4.6	6.2	6.2	0-0.25	0-0.25
Q3	1.4	1.4	5.0	5.0	6.1	6.1	0-0.25	0-0.25
Q4	1.1	1.1	2.2	2.2	5.7	5.7	0-0.25	0-0.25
<b>2015</b>								
Q1	1.1	0.8	1.4	-0.7	5.6	5.6	0-0.25	0-0.25
Q2	1.5	1.5	2.1	2.6	5.4	5.5	0-0.25	0-0.25
Q3	1.4	1.6	2.7	2.1	5.3	5.4	0.38	0.38
Q4	1.4	1.6	2.4	2.5	5.2	5.3	0.63	0.63
<b>2016</b>								
Q1	1.5	1.7	2.4	2.5	5.1	5.2	0.88	0.88
Q2	1.6	1.7	2.5	2.6	5.0	5.1	1.13	1.13
Q3	1.7	1.8	2.6	2.5	4.9	5.0	1.38	1.38
Q4	1.8	1.9	2.3	2.3	4.8	4.9	1.63	1.63
<b>Q4/Q4</b>								
2013	1.3	1.3	3.1	3.1	-0.8	-0.8	0-0.25	0-0.25
2014	1.4	1.4	2.4	2.4	-1.3	-1.3	0-0.25	0-0.25
2015	1.3	1.4	2.1	1.6	-0.5	-0.4	0.63	0.63
2016	1.6	1.8	2.4	2.5	-0.4	-0.4	1.63	1.63

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

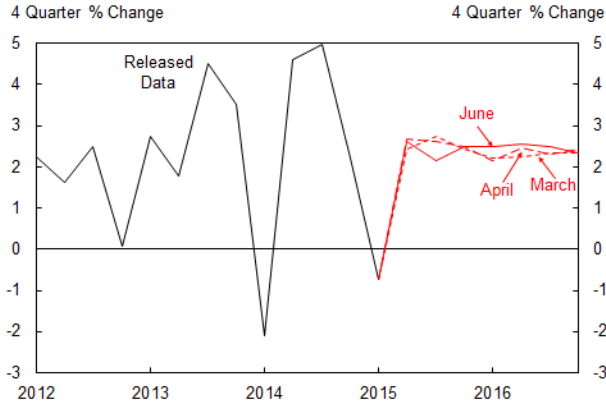
\*Quarterly values are the average rate for the quarter. Yearly values are the difference between Q4 of the previous year and Q4 of the listed year.

\*\*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.

## 2-2: Evolution of Projected Quarterly Paths

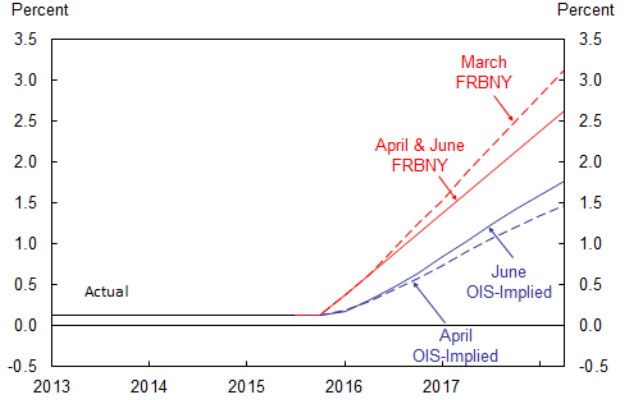
### Key Indicators

#### Real GDP Growth

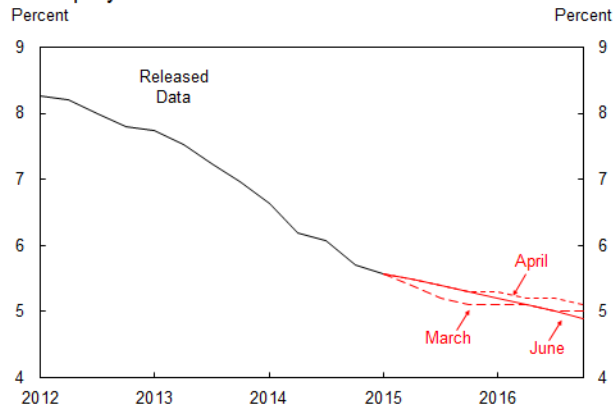


### Forecast Assumptions

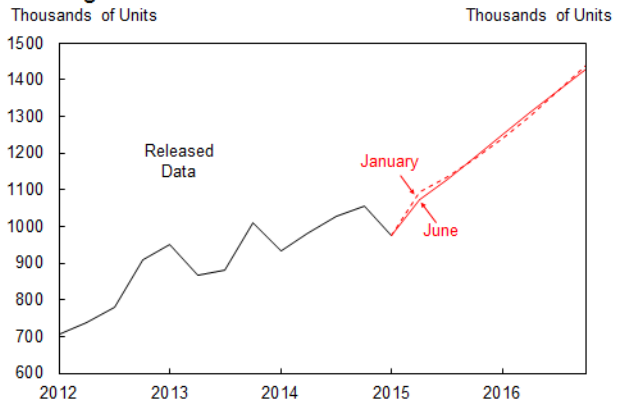
#### Federal Funds Rate



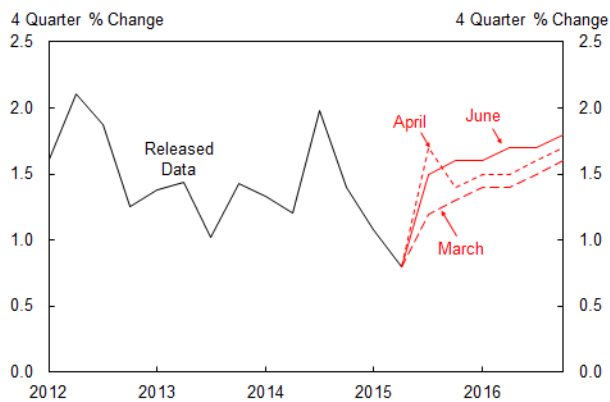
#### Unemployment Rate



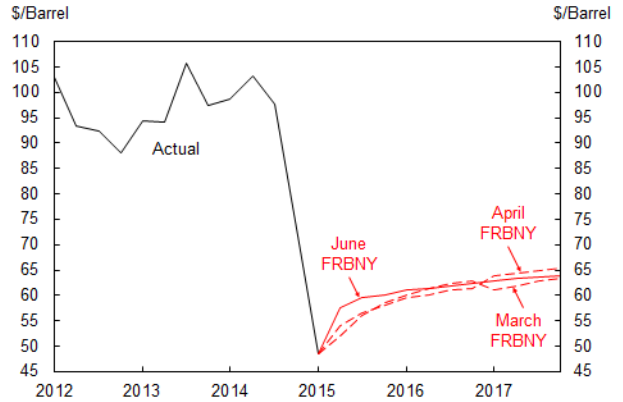
#### Housing Starts



#### Core PCE Inflation



#### Crude Oil



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

## 2-3: Near-Term Projections

	Growth Rates (AR)			Growth Contributions (AR)		
	2015Q2	2015Q3	2015Q4	2015Q2	2015Q3	2015Q4
<b>OUTPUT</b>						
<b>Real GDP</b>	2.6 (2.1)	2.1 (2.7)	2.5 -	2.6 (2.1)	2.1 (2.7)	2.5 -
<b>Final Sales to Domestic Purchasers</b>	2.9 (3.8)	3.4 (3.7)	3.2 -	3.0 (3.8)	3.5 (3.8)	3.3 -
<b>Consumption</b>	2.3 (3.5)	3.0 (3.3)	3.0 -	1.6 (2.4)	2.0 (2.2)	2.0 -
<b>BFI: Equipment</b>	4.0 (4.0)	6.0 (8.0)	8.0 -	0.2 (0.2)	0.4 (0.5)	0.5 -
<b>BFI: Nonresidential Structures</b>	0.0 (10.0)	5.0 (5.0)	5.0 -	0.0 (0.3)	0.1 (0.1)	0.1 -
<b>BFI: Intellectual Property Products</b>	8.0 (8.0)	8.0 (8.0)	8.0 -	0.3 (0.3)	0.3 (0.3)	0.3 -
<b>Residential Investment</b>	10.0 (14.5)	8.0 (14.5)	12.0 -	0.3 (0.4)	0.3 (0.5)	0.4 -
<b>Government: Federal</b>	3.5 (-0.4)	2.2 (-0.4)	-3.4 -	0.2 (0.0)	0.2 (0.0)	-0.2 -
<b>Government: State and Local</b>	3.0 (1.6)	1.8 (1.6)	1.8 -	0.3 (0.2)	0.2 (0.2)	0.2 -
<b>Inventory Investment</b>	-- --	-- --	-- --	-0.3 (-0.9)	-0.5 (-0.1)	-0.2 -
<b>Net Exports</b>	-- --	-- --	-- --	0.0 (-0.8)	-0.8 (-1.0)	-0.7 -
<b>INFLATION</b>						
<b>Total PCE Deflator</b>	1.8 (1.8)	1.9 (1.5)	1.7 -			
<b>Core PCE Deflator</b>	1.5 (1.5)	1.6 (1.4)	1.6 -			
<b>PRODUCTIVITY AND LABOR COSTS*</b>						
<b>Output per Hour</b>	1.8 (1.5)	1.5 (1.5)	1.5 -			
<b>Compensation per Hour</b>	-0.6 (2.5)	2.4 (2.5)	4.2 -			
<b>Unit Labor Costs</b>	-2.4 (1.0)	0.9 (1.0)	2.7 -			

Note: Numbers in parentheses are from the previous Blackbook.

\*Nonfarm business sector.

## 2-4: Medium-Term Projections

	Q4/Q4 Growth Rates			Q4/Q4 Growth Contributions		
	2014	2015	2016	2014	2015	2016
<b>OUTPUT</b>						
<b>Real GDP</b>	2.4	1.6	2.5	2.4	1.6	2.5
	(2.4)	(2.1)	(2.4)	(2.4)	(2.1)	(2.3)
<b>Final Sales to Domestic Purchasers</b>	2.9	2.6	3.1	2.9	2.6	3.2
	(2.9)	(2.9)	(2.9)	(2.9)	(3.0)	(2.9)
<b>Consumption</b>	2.9	2.5	2.5	1.9	1.7	1.8
	(2.9)	(2.9)	(2.5)	(1.9)	(2.0)	(1.7)
<b>BFI: Equipment</b>	5.3	5.2	6.5	0.3	0.3	0.4
	(5.3)	(4.8)	(6.0)	(0.3)	(0.2)	(0.4)
<b>BFI: Nonresidential Structures</b>	6.5	-3.3	5.0	0.2	-0.1	0.1
	(6.5)	(3.4)	(3.2)	(0.2)	(0.1)	(0.1)
<b>BFI: Intellectual Property Products</b>	7.3	6.9	6.0	0.3	0.3	0.3
	(7.3)	(8.0)	(6.0)	(0.3)	(0.3)	(0.3)
<b>Residential Investment</b>	2.5	8.7	14.5	0.1	0.3	0.5
	(2.5)	(7.4)	(13.7)	(0.1)	(0.3)	(0.4)
<b>Government: Federal</b>	0.2	0.6	0.2	0.0	0.0	0.0
	(0.2)	(-1.0)	(-1.4)	(0.0)	(-0.1)	(-0.1)
<b>Government: State and Local</b>	1.2	1.2	1.5	0.1	0.1	0.2
	(1.2)	(1.1)	(1.5)	(0.1)	(0.1)	(0.2)
<b>Inventory Investment</b>	--	--	--	0.0	-0.2	0.0
	--	--	--	(0.0)	(-0.1)	(-0.1)
<b>Net Exports</b>	--	--	--	-0.6	-0.9	-0.7
	--	--	--	(-0.6)	(-0.8)	(-0.6)
<b>INFLATION</b>						
<b>Total PCE Deflator</b>	1.1	0.8	1.9			
	(1.1)	(0.8)	(1.8)			
<b>Core PCE Deflator</b>	1.4	1.4	1.8			
	(1.4)	(1.3)	(1.6)			
<b>PRODUCTIVITY AND LABOR COSTS*</b>						
<b>Output per Hour</b>	-0.1	0.4	1.5			
	(-0.1)	(1.1)	(1.5)			
<b>Compensation per Hour</b>	2.9	2.3	2.4			
	(2.5)	(2.6)	(2.8)			
<b>Unit Labor Costs</b>	3.0	1.9	0.9			
	(2.6)	(1.5)	(1.3)			

Note: Numbers in parentheses are from the previous Blackbook.

\*Nonfarm business sector.

## 2-5: Comparison with Other Forecasts

		<b>Real GDP Growth</b>			
	<b>Release Date</b>	<b>2015Q2</b>	<b>2015Q3</b>	<b>2015 Q4/Q4</b>	<b>2016 Q4/Q4</b>
<b>FRBNY</b>	6/10/2015	2.6 (2.4)	2.1 (2.8)	1.6 (2.1)	2.5 (2.3)
<b>Blue Chip</b>	6/10/2015	2.7 (3.3)	3.2 (3.0)	2.0 (2.7)	2.7 (2.7)
<b>Median SPF</b>	5/15/2015	2.5 (3.0)	3.1 (2.8)	2.4 (3.2)	2.8 (2.9)
<b>Macro Advisers</b>	6/9/2015	1.9 (2.8)	3.0 (3.6)	1.7 (2.8)	2.9 (2.5)
<b>FRBNY-DSGE</b>	6/10/2015	2.6 (2.2)	1.9 (2.2)	1.4 (2.0)	2.1 (2.2)

		<b>Core PCE Inflation</b>			
	<b>Release Date</b>	<b>2015Q2</b>	<b>2015Q3</b>	<b>2015 Q4/Q4</b>	<b>2016 Q4/Q4</b>
<b>FRBNY</b>	6/10/2015	1.5 (1.7)	1.6 (1.4)	1.4 (1.4)	1.4 (1.4)
<b>Median SPF</b>	5/15/2015	1.5 (1.4)	1.5 (1.5)	1.4 (1.4)	1.7 (1.7)
<b>Macro Advisers</b>	6/9/2015	1.5 (1.3)	1.5 (1.5)	1.3 (1.3)	1.8 (1.8)
<b>FRBNY-DSGE</b>	6/10/2015	1.5 (1.0)	1.2 (0.9)	1.2 (1.0)	1.2 (1.0)

		<b>CPI Inflation</b>			
	<b>Release Date</b>	<b>2015Q2</b>	<b>2015Q3</b>	<b>2015 Q4/Q4</b>	<b>2016 Q4/Q4</b>
<b>FRBNY</b>	6/10/2015	3.0 (2.5)	2.8 (2.4)	1.2 (0.9)	2.1 (2.2)
<b>Blue Chip</b>	6/10/2015	2.3 (1.8)	2.2 (2.0)	0.8 (0.8)	2.3 (2.2)
<b>Median SPF</b>	5/15/2015	1.9 (1.6)	2.0 (1.9)	0.7 (1.1)	2.1 (2.1)
<b>Macro Advisers</b>	6/9/2015	2.2 (2.1)	2.6 (2.7)	0.7 (1.0)	2.2 (2.3)

		<b>Core CPI Inflation</b>			
	<b>Release Date</b>	<b>2015Q2</b>	<b>2015Q3</b>	<b>2015 Q4/Q4</b>	<b>2016 Q4/Q4</b>
<b>FRBNY</b>	6/10/2015	2.4 (2.5)	2.3 (2.4)	2.1 (2.2)	2.1 (2.1)
<b>Median SPF</b>	5/15/2015	1.8 (1.7)	1.8 (1.8)	1.8 (1.7)	2.0 (1.9)
<b>Macro Advisers</b>	6/9/2015	2.4 (1.5)	1.6 (1.7)	1.9 (1.7)	2.0 (2.0)

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

### 3. Uncertainty & Risks

The developments over the intermeeting period indicate somewhat less uncertainty around the outlook, particularly for real activity. Based on the difference between the modal central forecast and the expected value from our forecast distributions [Exhibit 3-1], as well as the changes in the forecast distributions [Exhibit 3-3], the risks still are roughly balanced both for core PCE inflation and for real GDP growth. The uncertainty around the real GDP growth projection is fairly close to historical norms at near-term horizons and somewhat above those norms at medium-term horizons; uncertainty around the inflation projection is fairly close to those norms.

The changes in our forecast distributions reflect that a number of indicators, though certainly not all, were roughly consistent with our central outlook. In the U.S., even though real GDP fell in the first quarter and real consumer spending was still soft in April, the April and May labor market reports as well as some production and housing indicators pointed to further improvement in labor market conditions and moderate real growth over the forecast horizon. The U.S. inflation data provided some further indications of a gradual upward move, although inflation remained well below the FOMC objective. Data on economic activity and inflation in the euro area and Japan again were somewhat stronger than they had been recently, but Chinese data were rather weak. Longer-term inflation compensation measures in the U.S. and the euro area fluctuated within fairly narrow ranges that were still relatively low; U.S. survey measures continued to be fairly stable. In financial markets, oil prices and equity prices fluctuated within relatively narrow ranges amid fairly low implied volatility. However, long-term nominal and real yields in the U.S. and the euro area rose considerably, and displayed greater actual and implied volatility. Currency markets also were more volatile in the period.

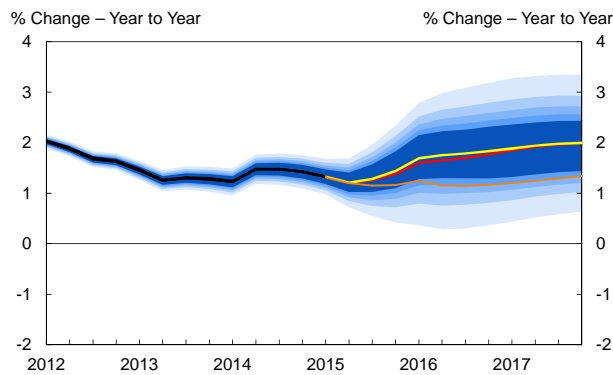
We incorporated these developments in this Blackbook through a number of changes in scenario probabilities [Exhibit 3-2]. We see the recent labor market reports combined with some of the recent expenditure data as lowering somewhat the chances of either a larger than expected rebound—reflecting the possibility that strong underlying fundamentals have obscured because of transitory adverse factors—or a more persistent period of weak growth—reflecting the possibility that underlying fundamentals are weaker than we assess. Consequently, we reduced

the probabilities of both the positive *Faster Growth* scenario and the negative *Fiscal Consolidation* scenario. In addition, the continued weakness in productivity growth has led us to reduce the probability on the *Productivity Boom* scenario. With the sizable moves in sovereign yields, the ongoing Greek debt saga, and additional signs of weakness in the Chinese economy, we have maintained a notable probability of the *Global Credit Crunch* scenario. Although a bit higher than in April, the probability of the *Loss of Credibility* scenario remains fairly small, consistent with the still-low levels of longer-run inflation compensation. Overall, these changes have led to some narrowing of the 90 percent probability intervals for both real GDP growth and core PCE inflation at near-term horizons, putting them closer to historical norms; however, at medium-term horizons they remain somewhat wider than historical and similar to those of the previous *Blackbook* [Exhibit 3.3]. The forecast distributions also still reflect roughly balanced risks through most of the forecast horizon [Exhibit 3-1].

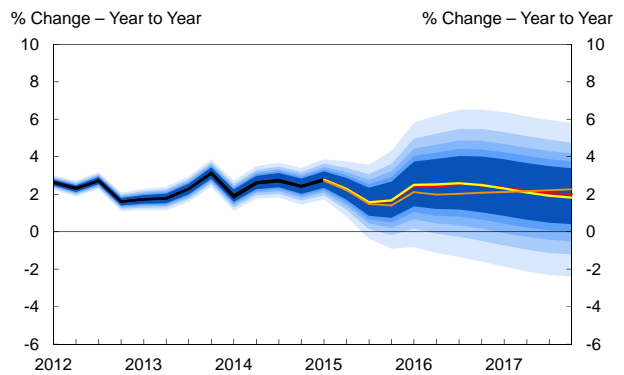
Comparing the recent data and our current central forecast to the forecast distribution from a year earlier, the current projection for inflation generally runs in the lower half of the year-ago inflation distribution and below the year-ago central scenario into 2016, reflecting the fairly low inflation data of the intermeeting period and an inflation forecast that gradually approaches the 2 percent objective [Exhibit 3-3]. The current real GDP growth forecast is in the lower half of the year-ago forecast distribution into the first quarter of 2016, reflecting the decline in real GDP in 2015Q1 and a little-changed projection for subsequent quarters. Over 2016-17, the current projection path is near the year-ago central scenario. These patterns indicate that the basic contours of our medium-term central forecasts for inflation and real activity have not changed much on net over the past year.

### 3-1: Forecast Distributions

Core PCE Inflation Forecast Distribution



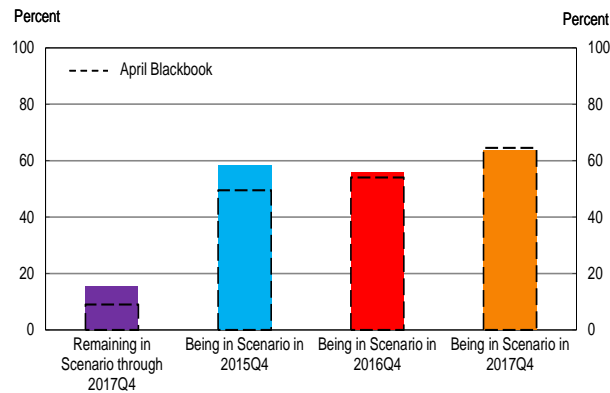
Real GDP Growth Forecast Distribution



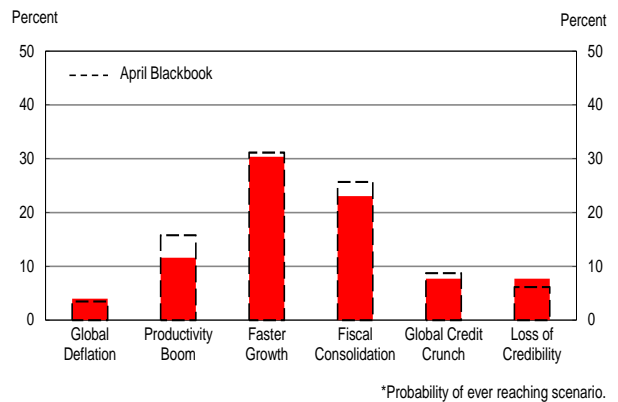
The yellow line is the expected value of the forecast distribution, the red line is the FRBNY central projection, the orange line is the DSGE forecast, and the black line is released data. The shading represents the 50, 60, 70, 80 and 90 percent probability that the four-quarter change will be within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

### 3-2: Scenario Probabilities

Central Scenario Probabilities



Alternative Scenario Probabilities\*



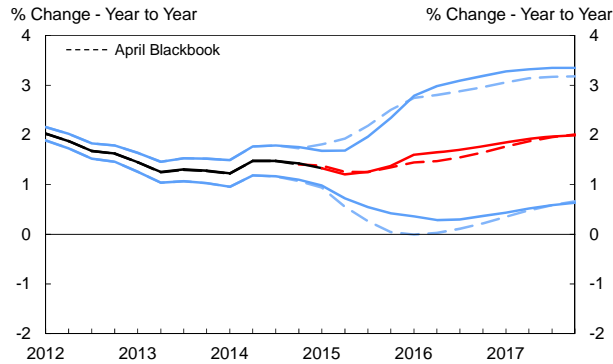
The left chart shows the probability of remaining in the central scenario through the end of the forecast horizon and the probabilities of being in the central scenario at the end of the next three years. The right chart shows the probabilities of ever reaching an alternative scenario over the forecast horizon, an assessment of the overall likelihood of each alternative scenario. A short description of the scenarios and the methodology to perform risk assessment is in the Appendix.

Source: MMS Function (FRBNY)

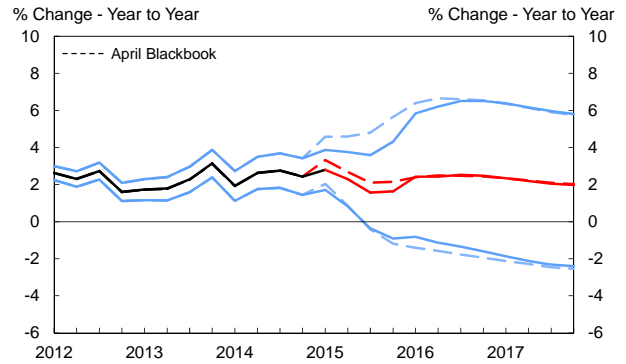


### 3-3: Evolution and Performance of Forecast Distributions

Change in Core PCE Inflation Forecast Distribution

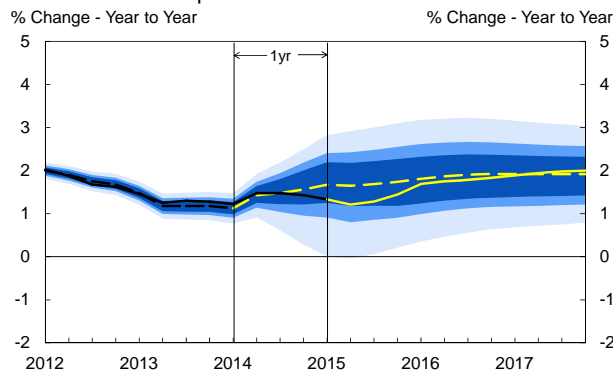


Change in Real GDP Growth Forecast Distribution

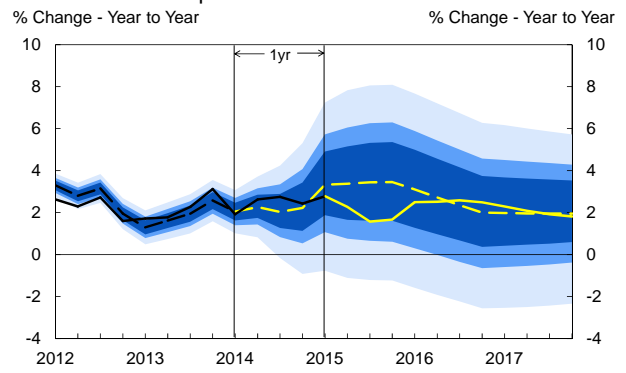


The red lines are the central scenario projections, black lines are released data, and blue lines represent upper and lower 90 percent forecast probability intervals. Dashed lines represent forecasts from the previous Blackbook.

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 lines are the current expected values from the forecast distributions and the dashed yellow lines are the year-ago Blackbook expected values. Black lines are released data and the blue shaded areas represent 50 (darkest shade), 70, and 90 (lightest shade) percent forecast probability intervals from the year-ago Blackbook.

Source: MMS Function (FRBNY)

## Appendix

In this Appendix, we provide brief descriptions of the alternative scenarios used in this Blackbook [A-1], and of the methodology underlying our risk assessment and forecast distributions [A-2].

### A-1. Alternative Scenario Descriptions

Our first alternative scenario considers the impact of productivity growth above our assumed trend of about 1.5% on a nonfarm business sector basis (*Productivity Boom*). The second scenario (*Fiscal Consolidation*) assesses the consequences of below-trend productivity growth. We consider four additional scenarios. In one (*Faster Growth*), “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*), renewed stresses in global financial and economic conditions have an adverse impact on U.S. real economic growth and inflation; the differences between the two mainly reflect differing assessments of the persistence of the negative effects.

### A-2. Methodology to construct the forecast distribution

Our approach to producing the FRBNY forecast distributions is a generalization of techniques used at the Bank of England and other central banks to depict the uncertainty and balance of risks around a forecast. It allows for a dynamic balance of risks that is jointly assessed over inflation and output growth.

Three primary components underlie these forecast distributions: (1) a central scenario with modal inflation and output growth characterized by the central forecast described in Section 2, (2) alternative scenarios with specific inflation and output implications that differ from those of the central scenario, and (3) probabilities that the economy will enter those alternative scenarios. This approach to quantifying uncertainty and risks allows us to interpret the forecast distribution

for output growth and inflation, as well as analyze the impact on that distribution of changing the probabilities of the alternative scenarios.

We set the long-run behavior of our central forecast at the FOMC's longer-run inflation goal and our estimate of the potential growth rate. We also assume that, if the economy enters an alternative scenario, it eventually returns to the central scenario and remains in that scenario thereafter.

We conduct a simulation exercise to generate paths for inflation and output growth; we then perform calculations about our forecast distribution that reflect our risk assessment.

This exercise consists in generating a large number of indicator series, with each entry in a given series corresponding to a quarter in the forecast horizon; for each of these series, each quarter's value indicates only the prevailing scenario in that quarter. To generate these scenario-indicator series, we set two parameters for each alternative scenario: (1) the probability that the economy will leave the central scenario and enter the alternative scenario—the “initial probability”—and (2) the probability that the economy will remain in the alternative scenario once it enters the scenario—the “persistence.”

After creating the indicator series, we generate, for each series, a path for inflation and a path for output growth, with each entry in a given path corresponding to a quarter in the forecast horizon. For a given indicator series and a given quarter, the values of the associated inflation and output growth paths are determined by a draw from the indicated joint distribution of inflation and output growth, based on the scenario the indicator series points to for that quarter. If, for example, the series indicates that the economy is in the central scenario, we draw inflation and output values from a distribution centered at the central forecast. If instead the series indicates the economy is in an alternative scenario, we draw values from a modified version of the central scenario distribution that is consistent with the alternative scenario.

**FOMC BACKGROUND MATERIAL**

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**RESEARCH AND STATISTICS GROUP**

**FRBNY Blackbook**

**July 2015**

**RESTRICTED (FR)**

# FRBNY BLACKBOOK

## July 2015

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## 1. Policy Recommendation and Rationale

While the data releases over the intermeeting period suggest that the second quarter rebound of real GDP growth was somewhat stronger than we previously anticipated, on balance they were broadly consistent with the outlook underlying our policy assessment in the June *Blackbook*. We therefore retain our modal projection for the near-term policy path and recommend that the current target range of the federal funds rate be maintained at least until the September 2015 FOMC meeting.

In this *Blackbook*, we project real GDP growth in the second quarter to have been 3.1% (annual rate) versus 2.6% in the June *Blackbook*. The main source of the upward revision is higher projected real PCE growth, now at 2.9% (annual rate). The growth contribution of inventory investment was also revised upward, but it was essentially offset by a downward revision to the contribution of net exports. Growth of business fixed investment was revised upward modestly, principally because some stronger data on nonresidential structures. Labor market conditions continued to show some improvement, although the pace of growth of nonfarm payroll employment in the first half of 2015 (208,000 per month) was below that of 2014 (260,000 per month). Regarding inflation, core PCE inflation in the second quarter appeared to be modestly higher than we anticipated in June, as rental inflation continued to firm, the slowing of medical care price inflation looked to be over for now, and some goods prices (new vehicles and furniture) stopped falling.

Looking forward, we project real GDP to expand about 2% (annual rate) over the second half of 2015, which would bring the Q4/Q4 growth rate to about 1¾%, and then to rise just over 2½% in 2016. We envision solid real PCE growth over this period, supported by continued improvement in labor market conditions and consumer confidence as well as lower energy prices; this stronger growth should also support stronger business investment, particularly as we anticipate that the steep contraction in investment in the oil and gas sector will be largely over by the second half of the year. The anticipated drag from net exports and inventory investment help to hold down growth in 2015H2, and net exports are projected to be a drag into 2016. Labor market conditions continue to improve gradually, with the unemployment rate projected to change little over the rest of this year and to decline to just below 5% in 2016Q4. In this environment, both overall

and core PCE inflation are forecast to rise to FOMC's 2% objective by the end of next year, a bit more quickly than we projected in the June *Blackbook*.

In sum, we see the prospects for economic activity and inflation as generally favorable, as long as the rebound in consumer spending proceeds as expected, and forthcoming data confirm the other positive evidence registered on balance in the intermeeting period. We see these developments as supporting a rise in the target range for the federal funds rate sometime in the latter part of 2015—possibly as early as September based on some further progress in labor market conditions and additional signals that inflation is firming.

In parallel with the choice of the appropriate timing of liftoff, a key priority of policy design at the onset of normalization should be to define the general characteristics of the monetary policy stance over the medium term. Specifically, the policy stance should be responsive both to an unwelcome and excessive tightening of financial conditions and to the risk of a premature return to the zero lower bound. Consequently, policy should avoid steep increases in the target funds rate or abrupt changes in balance sheet policies. At the same time, communication should be carefully structured to avoid creating a public impression of a deterministic path of the policy rate. Consistently, we do not believe that a preference for avoiding abrupt transitions during normalization should affect the Committee's decision regarding the timing of liftoff, in the sense of supporting a bias toward a premature exit followed by a relatively flat path. The timing of liftoff and the steepness of the policy path afterward should be integrated elements of a well-communicated data-driven strategy, allowing sufficient room both pre- and post-liftoff to adjust policy in response to unwarranted developments in financial conditions or increased uncertainty that could impair the achievement of the longer-run goals.

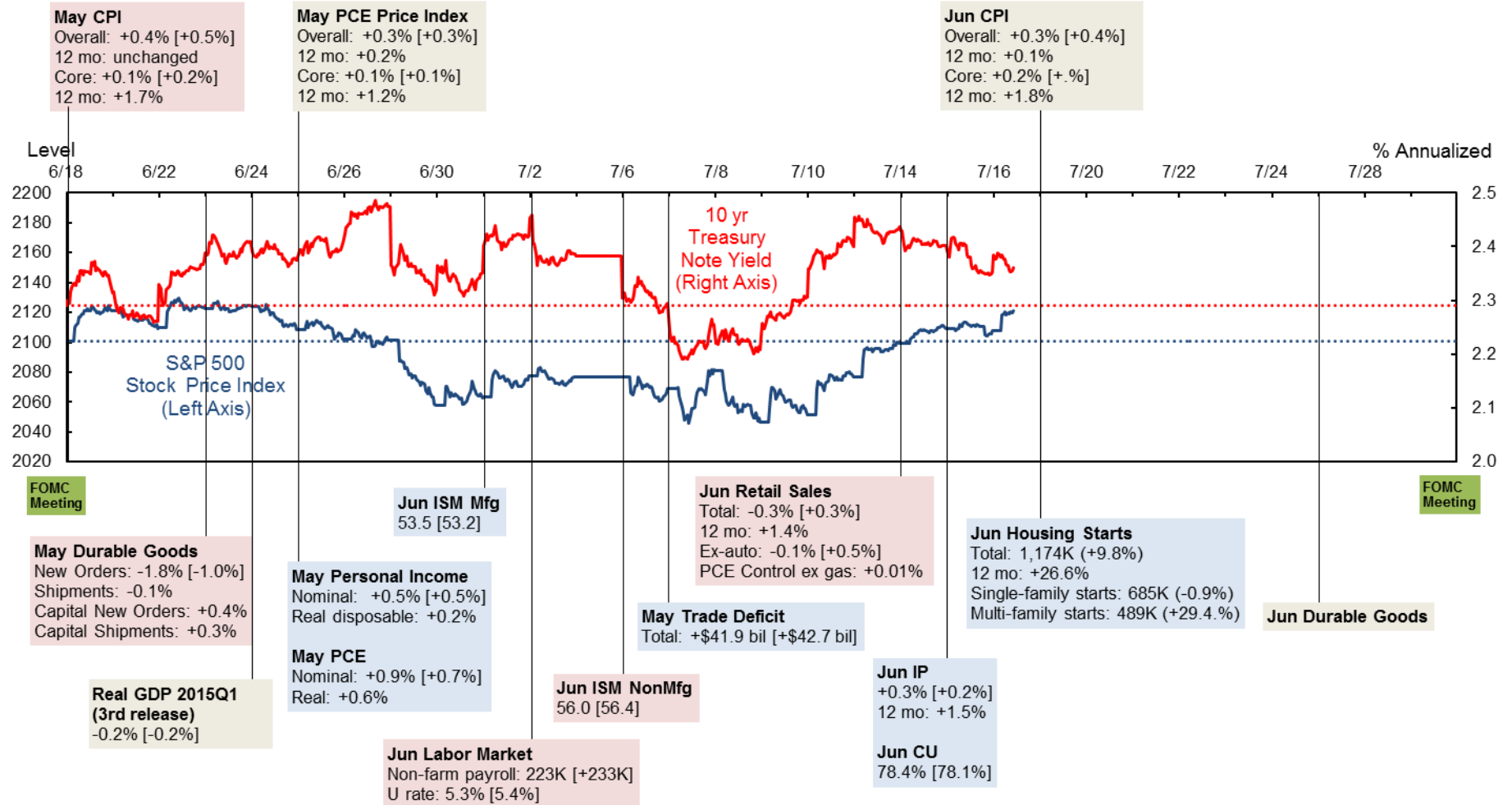
Similarly, plans for eventually ceasing reinvestment and more generally for balance sheet policy should be consistent with the overall strategy of normalization; that is, to help generate financial conditions that best support the dual mandate objectives. Policy decisions regarding reinvestments thus should be largely about providing insurance, particularly against the risk of falling back again to the zero lower bound. We therefore recommend delaying the end of the reinvestments according to a qualitative state-contingent rather than calendar time-dependent

approach; that is, until the policy rate has moved sufficiently away from the zero lower bound, and that financial conditions – including rising term and risk premia - are supportive of growth in a context of price stability. Consistently, tapering of reinvestment could be used at an appropriate contingency as a tactical tool to address possible disorderly developments in financial markets. This strategy seems consistent with dealers' projections and previous communication. To summarize, while we do not advocate using reinvestment as an active policy tool to fine tune the policy stance, we believe that the pace of reinvestment should be set to minimize the risk that financial conditions unduly disrupt policy normalization. If the Committee agrees on such a strategy, it would be important to communicate that policy to the public.

Finally, an important aspect of implementing the state-contingent policies we advocate is to provide more thorough communications regarding the Committee's economic outlook. While a full-fledged FOMC consensus forecast would be ideal, we realize that for now much of the communications regarding the outlook would be through the SEP. Consequently, it would be useful to provide more information in the SEP about the "center" of the projections. One option within the current SEP framework would be to provide the median projection for each variable and horizon separately. Our previous analysis indicated that for many "normal" situations, such medians provide useful information regarding the central Committee outlook, and so we do not have an objection in providing that information. However, we would note a couple of qualifications. First, it is possible that the median projection of the participants could differ from collective view of the Committee. One recommendation to address that possibility is to provide the median projections across voting members of the Committee in addition to the median across participants. Second, because the median is formed separately for each variable at each forecast horizon, the median forecasts may not be internally consistent. Because the median forecasts could become the focal point for the public, the potential internal inconsistency could result in significant communications challenges for the FOMC at a future meeting. The Committee should be aware of this possibility and continue to work on alternative methods to provide its collective view on the economic outlook.



# 1-1: Key Data Releases



**Note**  
Blue shading: Data release encouraging/positive.  
Red shading: Data release discouraging/negative.  
Beige shading: Data release was neutral.  
Numbers in parentheses are the median of the Bloomberg survey.

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

## 2. Central Forecast

### Intermeeting Developments

Data released over the inter-meeting period suggest that the rebound of growth of real GDP in the second quarter was somewhat stronger than previously expected. At this writing, real GDP is estimated to have increased at a 3.1% annual rate in 2015Q2 versus the 2.6% projected in the June Blackbook. Moreover, the final estimate of the 2015Q1 growth rate of real GDP was revised up to -0.2% from the second estimate of -0.7%. For the entire first half of 2015, real GDP is now estimated to have increased at a 1.5% annual rate versus the 1.0% expected last month. Relative to the CBO estimate of real potential GDP, the output gap as of 2015Q2 is now estimated to be 2.1 percentage points versus 2.4 percentage points in the June Blackbook.

Despite the disappointing performance of retail sales in June, the main source of the upward revision of the overall Q2 growth rate is real personal consumption expenditures (PCE), which are now estimated to have increased at a 2.9% annual rate versus the 2 ¼% expected in June. (The growth contribution from real PCE is boosted by 0.4 percentage points to 2 percentage points.) The primary source of this upward revision is the fact that the May increase in real non-auto durable goods and nondurable goods was about five times larger than predicted by our model based on the BEA control total and related price changes. Also contributing, but to a lesser extent, is that sales of light-weight motor vehicles declined much less in June than expected. The 2015Q2 average pace of such sales was 17.15 million units, the highest since 2005Q3. The stronger pace of real consumer spending completely accounts for the increase of the contribution to real GDP growth from final sales to domestic purchaser (FSDP) to 3.4 percentage points from 3.0 percentage points in the June Blackbook. Changes in projected growth in the other categories of FSDP are relatively modest and offsetting.

The June data on housing starts surprised to the upside. However, since it was the final quarter of the month, and since the upside surprise was entirely in the multi-family sector where completion rates are much slower than in the single-family sector, our projection for growth of real residential investment in 2015Q2 is essentially unchanged at 10% (annual rate), which

would be the first double-digit increase since the third quarter of 2013. Single-family housing starts averaged 704,000 in the second quarter, about the same as in 2014Q4. But the high point for the quarter was April, with single-family starts declining in both May and June. Single-family permits averaged 678,000 in the second quarter, and suggest that the single-family sector has at best a very gradual uptrend. In contrast, multi-family starts and permits surged in the second quarter, rising 32% and 34%, respectively. (Virtually all of this increase was in the Northeast.)

In contrast, recent data suggest that growth of business fixed investment continued to be relatively sluggish in the second quarter. Shipments of nondefense capital goods have been essentially unchanged for the past six months, as have imports of capital goods. Growth of real business investment in new equipment was a sluggish 2.6% in 2015Q1, and at this time we expect a comparable growth rate in the second quarter. Nonresidential construction put-in-place rebounded sharply in April and May from weather-depressed Q1 levels. This, in and of itself, would suggest a sharp rebound of growth of real business investment in nonresidential structures. However, based on the industrial production data, oil and gas well drilling declined at an 82% annual rate in the second quarter following a 70% decline in the first quarter. The June level of this activity was about 45% of the December 2014 level. Using this IP data as a proxy for investment in the oil and gas exploration sector suggests that growth of business investment in nonresidential structures will also be sluggish in Q2, though it is not likely to plunge sharply as was the case in the first quarter.

Rounding out the expenditure components of FSDP, we expect to see relatively strong growth of real government consumption and fixed investment in the second quarter following negative growth in the previous two quarters. Both shipments of defense capital goods and defense spending as reported in the Monthly Treasury Statement increased substantially in the second quarter following a first quarter slump. At the state and local government level, employment was unchanged in the second quarter relative to the first quarter. But, based on data for April and May, construction spending at the state and local level rose at a 13% annual rate in the second quarter following a nearly 10% decline in the first quarter.

Another factor helping to boost the Q2 growth rate is that real exports are expected to grow at a roughly 3 ¼% annual rate following a nearly 6% decline in the first quarter. At the same time, the growth rate of real imports in the second quarter, at about 4.7%, is well below the growth rates of the previous two quarters. The net export growth contribution is expected to be -0.3 percentage point in the second quarter, a vast improvement from the nearly 2 percentage point drag of the first quarter. We do not regard this improvement in the net export growth contribution in Q2 relative to Q1 to be a fundamental development that will persist over the remainder of 2015. Rather, the slump in exports in Q1 was likely related to the weather and the West Coast ports work slowdown. For the entire first half, the net export growth contribution was -1 percentage point, the same as in 2014Q4.

Finally, inventory data through May have led us to again move upward the expected growth contribution from inventory investment in the second quarter. Barring a substantial break from recent trends in the month of June, we are on track for a second consecutive quarter of inventory accumulation at an annual rate of around \$100 billion. The ratio of real inventories over real final sales has risen sharply over the first two quarters of 2015. A big issue for the performance of the economy over the second half of 2015 is the timing and magnitude of the slowing of the pace of inventory accumulation.

Turning to the supply side data, the monthly pattern of increases in hours paid, based on the establishment survey data, was generally consistent with a decent rebound of economic activity in the second quarter. Following a 0.2% decline in March, hours paid rose 0.1% in April and then 0.2% in both May and June. Thus, a three-month annualized change was up to 2% by June from 0.8% in March. Growth of hours paid strengthened in the service sector and the construction sector, while the rate of decline in the mining and logging sector lessened. In contrast, hours paid in the manufacturing sector declined at a substantial rate.

But while growth of hours paid was strengthening over the course of 2015Q2, the labor market data for the quarter as a whole did not show the rate of improvement that was experienced over the second half of 2014. For example, nonfarm payroll employment increased an average of 221,000 per month in 2015Q2, up from 195,000 in the first quarter but well below the 280,000

average monthly increases over the second half of 2014. We expect hours worked in the nonfarm business sector to have increased around 1 ¾% (annual rate) in the second quarter, a bit stronger than the first quarter but only about half the rate of increase of the second half of 2014. The main driver of this overall slowing in the rate of labor market gains is the fact that productivity in the nonfarm business sector is expected to increase at about a 2 ¼% annual rate in 2015Q2 after having declined at a 2.6% annual rate over the preceding two quarters.

The recent price data have been in line with our expectations. After declining at a 4.4% annual rate in the first quarter, energy prices rose at a nearly 16% annual rate in the second quarter. These sharp swings in energy prices were a primary contributor to the fact that the total PCE deflator rose around 2% (annual rate) in Q2 after falling at a 2% annual rate in the first quarter. Core inflation also firmed in 2015Q2. With the June CPI data in hand, we estimate that the core PCE deflator rose at a 1.7% annual rate in the second quarter after increasing just 1% (annual rate) over the preceding two quarters. Referring to the CPI data, core goods prices rose at a 0.8% annual rate in the second quarter, the first quarterly increase since 2013Q1. New and used vehicles were the main contributors to this firming, followed by furniture. Core services inflation rose from 2.5% (annual rate) in Q1 to 3.1% in Q2, led by a major increase in medical care price inflation, followed by rents and transportation services.

## **The Outlook**

After growing at a 3 ½% annual rate over the second half of 2014, in the first quarter of 2015 the US economy was buffeted by several adverse shocks, some of which were clearly temporary, such as severe winter weather and the West Coast port work slowdown, while others were more long lasting, such as the appreciation of dollar and steep contraction in oil and gas exploration in the wake of the plunge of oil prices. As mentioned above, it appears that the economy rebounded nicely in the second quarter, with a growth rate of FSDP of nearly 3 ½% (annual rate).

Looking forward, we believe that a reasonable case can be made for FSDP to continue to grow in the 3% to 3 ½% range over the forecast horizon. As noted, growth of hours worked was firming going into the second half of 2015 and consumer confidence remained relatively high. Plus, the

personal saving rate is high relative to household net worth, as households have yet to adjust their spending patterns in light of the windfall from lower energy prices. Thus, we expect real PCE to continue to grow around 3% (annual rate) over the second half of 2015 before slowing gradually in 2016. In addition, we expect housing construction to continue to move higher, aided by ongoing improvement in labor market conditions, gradual easing of mortgage underwriting standards, and emerging tightness in housing supply. Indeed, household formations moved notably higher in the fourth and first quarters. The rental vacancy rate appears to be below its equilibrium level, with the rate of increase of rents moving higher. After slowing over the year ending in February of this year, the 12-month change of the CoreLogic national home price index has begun moving higher again over the past three months.

We also expect that business fixed investment will gradually strengthen over the forecast horizon. First and foremost, the steep contraction in investment in the oil and gas sector should be largely over by the second half of 2015. In addition, as time passes the manufacturing sector is likely to complete its adjustment to the higher exchange value of the dollar and begin expanding again. As the capacity utilization rate begins to move upward, we expect to see a firming in business investment in new equipment. In contrast, while relatively strong in the second quarter, growth of government consumption and gross investment is expected to revert to a relatively sluggish pace.

Overall growth will then depend largely on the behavior of inventory investment and net exports. Over the second half of 2015, our trade model expects net exports to exert a 0.7 percentage point drag on growth, somewhat less than the 1.1 percentage point drag of the first half, but still substantial. In addition, we expect about a  $\frac{1}{2}$  percentage point drag from a slower pace of inventory investment. This nets out to a growth rate of real GDP of 2% for the second half of 2015, bringing the entire 2015 growth rate (Q4/Q4) to 1  $\frac{3}{4}$ %.

For 2016 we expect growth of around 2  $\frac{1}{2}$ % (Q4/Q4). Growth of real PCE will likely slow somewhat from the 3% pace of 2015H2 as the boost from lower energy prices gradually fades. Nonetheless, the personal saving rate is expected to continue to edge lower as credit becomes more readily available and the scars from the financial crisis fade. Growth of residential

investment is expected to be stronger in 2016 than in 2015 but should be slowing by the second half of 2016 as higher mortgage interest rates begin to take a toll. Given our assumption of a relatively stable exchange value of the dollar and somewhat stronger foreign growth, the drag from trade will diminish and US manufacturing output will resume a healthy growth rate. In this environment, business fixed investment is also expected to strengthen to around 7% (Q4/Q4), a respectable pace by historical standards.

Over the second half of 2015 our projection for growth of real GDP is essentially equal to our assumption for potential growth. With productivity growth moving back into potential territory, gains in employment should slow to an average of about 150,000 per month with little, if any, further decline of the unemployment rate. For 2016 we expect a slightly above potential growth rate, in which case employment growth moves up to an average of 175,000 per month, with the unemployment rate average just below 5% by the end of the year. Of course, this unemployment rate forecast depends on a range of assumptions. We are assuming trend productivity growth (1 ¼% GDP basis), a flat participation rate at the 2015Q2 average value of 62.8, and a modest increase of the average work week as the manufacturing sector begins to recover.

Relative to the June Blackbook, the assumed path of oil prices (WTI), which is based on futures markets, is \$7 per barrel lower for 2015H2 at an average of \$52.75. By the end of 2016, oil prices average around \$60 per barrel, which is roughly \$4 lower than in June. Despite this decline in assumed oil prices, in this cycle we have boosted somewhat our projections of core inflation and, to a lesser extent, total inflation. After rising at just a 1% annual rate over the first half of 2015, recent data suggest that the core PCE deflator is likely to increase at around a 1 ¾% annual rate over the second half of 2015. The rate of increase of rent inflation continues to move higher, and the roughly year-long slowing of PCE medical care price inflation appears to be over. In addition, some core goods prices, such as new motor vehicles and furniture, have stopped falling. Moving into 2016, the amount of slack in the economy continues to decline while the effects of dollar appreciation begin to wane, pushing core PCE deflator inflation to 2% (Q4/Q4).

## 2-1: Projections of Key Variables

	<u>Core PCE Inflation</u>		<u>Real GDP Growth</u>		<u>Unemployment Rate*</u>		<u>Fed Funds Rate**</u>	
	Jun	Jul	Jun	Jul	Jun	Jul	Jun	Jul
<b>2014</b>								
Q1	<i>1.2</i>	<i>1.2</i>	<i>-2.1</i>	<i>-2.1</i>	<i>6.6</i>	<i>6.6</i>	<i>0-0.25</i>	<i>0-0.25</i>
Q2	<i>2.0</i>	<i>2.0</i>	<i>4.6</i>	<i>4.6</i>	<i>6.2</i>	<i>6.2</i>	<i>0-0.25</i>	<i>0-0.25</i>
Q3	<i>1.4</i>	<i>1.4</i>	<i>5.0</i>	<i>5.0</i>	<i>6.1</i>	<i>6.1</i>	<i>0-0.25</i>	<i>0-0.25</i>
Q4	<i>1.1</i>	<i>1.1</i>	<i>2.2</i>	<i>2.2</i>	<i>5.7</i>	<i>5.7</i>	<i>0-0.25</i>	<i>0-0.25</i>
<b>2015</b>								
Q1	<i>0.8</i>	<i>0.8</i>	<i>-0.7</i>	<i>-0.2</i>	<i>5.6</i>	<i>5.6</i>	<i>0-0.25</i>	<i>0-0.25</i>
Q2	<i>1.5</i>	<i>1.7</i>	<i>2.6</i>	<i>3.1</i>	<i>5.5</i>	<i>5.4</i>	<i>0-0.25</i>	<i>0-0.25</i>
Q3	<i>1.6</i>	<i>1.8</i>	<i>2.1</i>	<i>2.0</i>	<i>5.4</i>	<i>5.3</i>	<i>0.38</i>	<i>0.38</i>
Q4	<i>1.6</i>	<i>1.8</i>	<i>2.5</i>	<i>2.0</i>	<i>5.3</i>	<i>5.3</i>	<i>0.63</i>	<i>0.63</i>
<b>2016</b>								
Q1	<i>1.7</i>	<i>1.9</i>	<i>2.5</i>	<i>2.5</i>	<i>5.2</i>	<i>5.2</i>	<i>0.88</i>	<i>0.88</i>
Q2	<i>1.7</i>	<i>1.9</i>	<i>2.6</i>	<i>2.7</i>	<i>5.1</i>	<i>5.1</i>	<i>1.13</i>	<i>1.13</i>
Q3	<i>1.8</i>	<i>2.0</i>	<i>2.5</i>	<i>2.7</i>	<i>5.0</i>	<i>5.0</i>	<i>1.38</i>	<i>1.38</i>
Q4	<i>1.9</i>	<i>2.1</i>	<i>2.3</i>	<i>2.4</i>	<i>4.9</i>	<i>4.9</i>	<i>1.63</i>	<i>1.63</i>
<b>Q4/Q4</b>								
2013	<i>1.3</i>	<i>1.3</i>	<i>3.1</i>	<i>3.1</i>	<i>-0.8</i>	<i>-0.8</i>	<i>0-0.25</i>	<i>0-0.25</i>
2014	<i>1.4</i>	<i>1.4</i>	<i>2.4</i>	<i>2.4</i>	<i>-1.3</i>	<i>-1.3</i>	<i>0-0.25</i>	<i>0-0.25</i>
2015	<i>1.4</i>	<i>1.5</i>	<i>1.6</i>	<i>1.7</i>	<i>-0.4</i>	<i>-0.4</i>	<i>0.63</i>	<i>0.63</i>
2016	<i>1.8</i>	<i>2.0</i>	<i>2.5</i>	<i>2.6</i>	<i>-0.4</i>	<i>-0.4</i>	<i>1.63</i>	<i>1.63</i>

Columns reflect the forecast dates. Numbers in gray are from the previous Blackbook, 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.

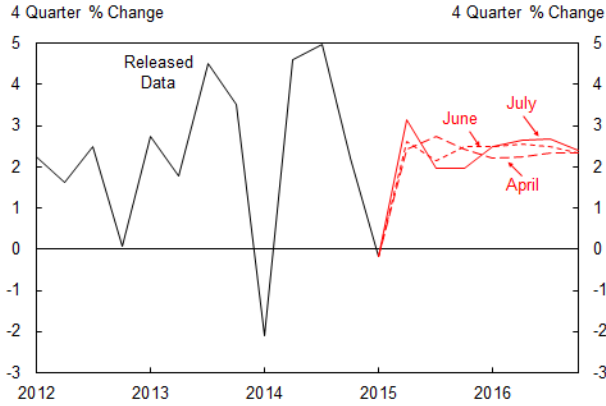
\*\*Quarterly values are the end-of-quarter value. Yearly values are the difference between the end-of-year value in the previous year and the end-of-year value in the listed year.



## 2-2: Evolution of Projected Quarterly Paths

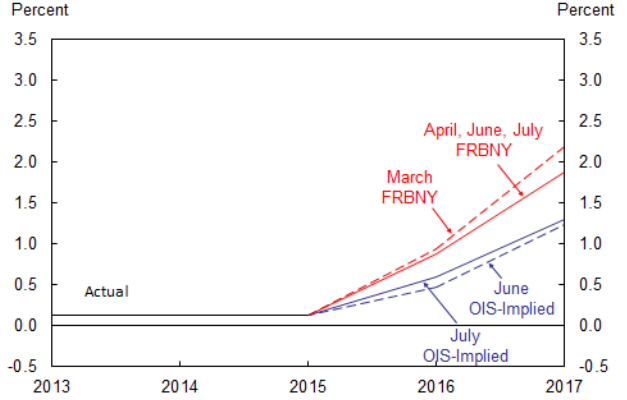
### Key Indicators

#### Real GDP Growth

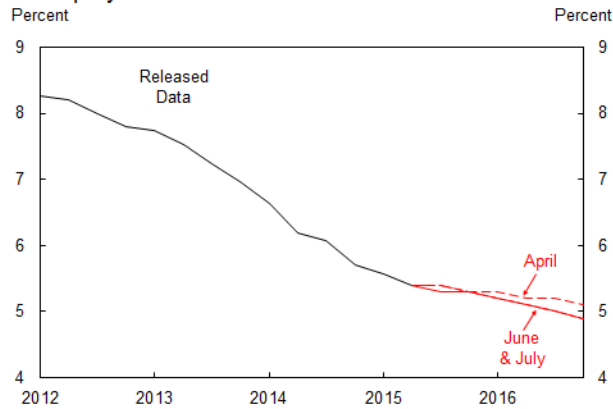


### Forecast Assumptions

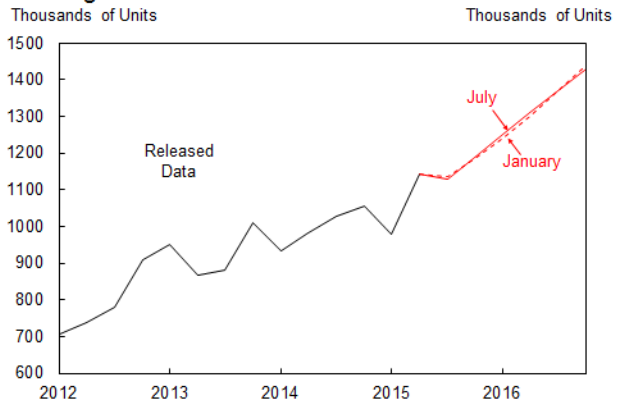
#### Federal Funds Rate



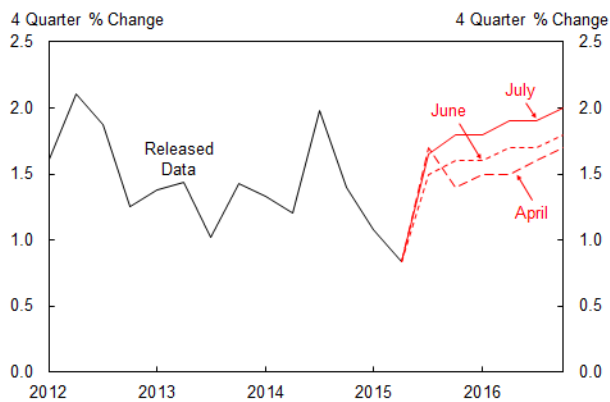
#### Unemployment Rate



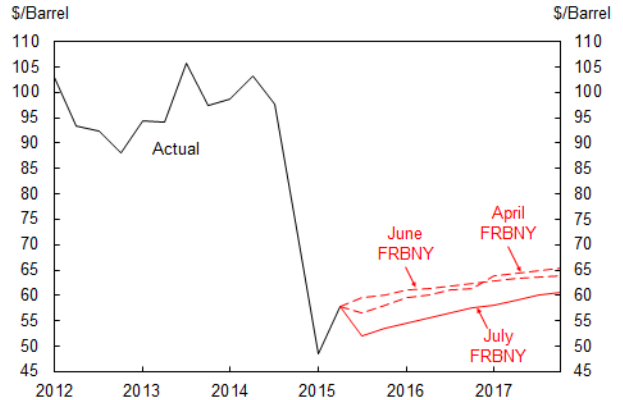
#### Housing Starts



#### Core PCE Inflation



#### Crude Oil



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

## 2-3: Near-Term Projections

	Growth Rates (AR)			Growth Contributions (AR)		
	2015Q2	2015Q3	2015Q4	2015Q2	2015Q3	2015Q4
<b>OUTPUT</b>						
<b>Real GDP</b>	3.1 (2.6)	2.0 (2.1)	2.0 (2.5)	3.1 (2.6)	2.0 (2.1)	2.0 (2.5)
<b>Final Sales to Domestic Purchasers</b>	3.4 (2.9)	3.3 (3.4)	3.0 (3.2)	3.4 (3.0)	3.3 (3.5)	3.1 (3.3)
<b>Consumption</b>	2.9 (2.3)	3.0 (3.0)	3.0 (3.0)	2.0 (1.6)	2.0 (2.0)	2.0 (2.0)
<b>BFI: Equipment</b>	3.0 (4.0)	4.0 (6.0)	6.0 (8.0)	0.2 (0.2)	0.2 (0.4)	0.3 (0.5)
<b>BFI: Nonresidential Structures</b>	4.0 (0.0)	6.0 (5.0)	7.0 (5.0)	0.1 (0.0)	0.2 (0.1)	0.2 (0.1)
<b>BFI: Intellectual Property Products</b>	8.0 (8.0)	8.0 (8.0)	8.0 (8.0)	0.3 (0.3)	0.3 (0.3)	0.3 (0.3)
<b>Residential Investment</b>	10.0 (10.0)	6.0 (8.0)	6.0 (12.0)	0.3 (0.3)	0.2 (0.3)	0.2 (0.4)
<b>Government: Federal</b>	3.5 (3.5)	2.2 (2.2)	-3.4 (-3.4)	0.2 (0.2)	0.2 (0.2)	-0.2 (-0.2)
<b>Government: State and Local</b>	2.6 (3.0)	2.0 (1.8)	1.8 (1.8)	0.3 (0.3)	0.2 (0.2)	0.2 (0.2)
<b>Inventory Investment</b>	-- --	-- --	-- --	0.0 (-0.3)	-0.5 (-0.5)	-0.6 (-0.2)
<b>Net Exports</b>	-- --	-- --	-- --	-0.3 (-0.0)	-0.8 (-0.8)	-0.5 (-0.7)
<b>INFLATION</b>						
<b>Total PCE Deflator</b>	2.1 (1.8)	2.2 (1.9)	2.0 (1.7)			
<b>Core PCE Deflator</b>	1.7 (1.5)	1.8 (1.6)	1.8 (1.6)			
<b>PRODUCTIVITY AND LABOR COSTS*</b>						
<b>Output per Hour</b>	2.3 (1.8)	1.0 (1.5)	1.3 (1.5)			
<b>Compensation per Hour</b>	0.2 (-0.6)	2.2 (2.4)	4.1 (4.2)			
<b>Unit Labor Costs</b>	-2.0 (-2.4)	1.2 (0.9)	2.8 (2.7)			

Note: Numbers in parentheses are from the previous Blackbook.

\*Nonfarm business sector.

## 2-4: Medium-Term Projections

	Q4/Q4 Growth Rates			Q4/Q4 Growth Contributions		
	2014	2015	2016	2014	2015	2016
<b>OUTPUT</b>						
<b>Real GDP</b>	2.4 (2.4)	1.7 (1.6)	2.6 (2.5)	2.4 (2.4)	1.7 (1.6)	2.6 (2.5)
<b>Final Sales to Domestic Purchasers</b>	2.9 (2.9)	2.7 (2.6)	3.2 (3.1)	2.9 (2.9)	2.8 (2.6)	3.3 (3.2)
<b>Consumption</b>	2.9 (2.9)	2.7 (2.5)	2.5 (2.5)	1.9 (1.9)	1.9 (1.7)	1.8 (1.8)
<b>BFI: Equipment</b>	5.3 (5.3)	3.9 (5.2)	8.0 (6.5)	0.3 (0.3)	0.2 (0.3)	0.5 (0.4)
<b>BFI: Nonresidential Structures</b>	6.5 (6.5)	-1.1 (-3.3)	6.5 (5.0)	0.2 (0.2)	0.0 (-0.1)	0.2 (0.1)
<b>BFI: Intellectual Property Products</b>	7.3 (7.3)	7.2 (6.9)	6.0 (6.0)	0.3 (0.3)	0.3 (0.3)	0.3 (0.3)
<b>Residential Investment</b>	2.5 (2.5)	7.1 (8.7)	14.5 (14.5)	0.1 (0.1)	0.2 (0.3)	0.5 (0.5)
<b>Government: Federal</b>	0.2 (0.2)	0.5 (0.6)	0.2 (0.2)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
<b>Government: State and Local</b>	1.2 (1.2)	1.3 (1.2)	1.5 (1.5)	0.1 (0.1)	0.1 (0.1)	0.2 (0.2)
<b>Inventory Investment</b>	-- --	-- --	-- --	0.0 (-0.0)	-0.2 (-0.2)	0.0 (-0.0)
<b>Net Exports</b>	-- --	-- --	-- --	-0.6 (-0.6)	-0.9 (-0.9)	-0.7 (-0.7)
<b>INFLATION</b>						
<b>Total PCE Deflator</b>	1.1 (1.1)	1.1 (0.8)	2.0 (1.9)			
<b>Core PCE Deflator</b>	1.4 (1.4)	1.5 (1.4)	2.0 (1.8)			
<b>PRODUCTIVITY AND LABOR COSTS*</b>						
<b>Output per Hour</b>	-0.1 (-0.1)	0.3 (0.4)	1.6 (1.5)			
<b>Compensation per Hour</b>	2.9 (2.9)	2.4 (2.3)	2.5 (2.4)			
<b>Unit Labor Costs</b>	3.0 (3.0)	2.1 (1.9)	0.9 (0.9)			

Note: Numbers in parentheses are from the previous Blackbook.

\*Nonfarm business sector.

## 2-5: Comparison with Other Forecasts

<b>Real GDP Growth</b>					
	<b>Release Date</b>	<b>2015Q2</b>	<b>2015Q3</b>	<b>2015 Q4/Q4</b>	<b>2016 Q4/Q4</b>
<b>FRBNY</b>	7/21/2015	3.1 (2.6)	2.0 (2.1)	1.7 (1.6)	2.6 (2.5)
<b>Blue Chip</b>	7/10/2015	2.9 (2.7)	3.2 (3.2)	2.2 (2.0)	2.7 (2.7)
<b>Median SPF</b>	5/15/2015	2.5 (2.5)	3.1 (3.1)	2.4 (2.4)	2.8 (2.8)
<b>Macro Advisers</b>	7/8/2015	2.7 (1.9)	2.8 (3.0)	2.0 (1.7)	2.9 (2.9)
<b>FRBNY-DSGE</b>	7/21/2015	3.1 (2.6)	2.2 (1.9)	1.8 (1.4)	2.3 (2.1)
<b>Core PCE Inflation</b>					
	<b>Release Date</b>	<b>2015Q2</b>	<b>2015Q3</b>	<b>2015 Q4/Q4</b>	<b>2016 Q4/Q4</b>
<b>FRBNY</b>	7/21/2015	1.7 (1.5)	1.8 (1.6)	1.5 (1.4)	2.0 (1.4)
<b>Median SPF</b>	5/15/2015	1.5 (1.5)	1.5 (1.5)	1.4 (1.4)	1.7 (1.7)
<b>Macro Advisers</b>	7/8/2015	1.6 (1.5)	1.6 (1.5)	1.4 (1.3)	1.8 (1.8)
<b>FRBNY-DSGE</b>	7/21/2015	1.7 (1.5)	1.3 (1.2)	1.3 (1.2)	1.2 (1.2)
<b>CPI Inflation</b>					
	<b>Release Date</b>	<b>2015Q2</b>	<b>2015Q3</b>	<b>2015 Q4/Q4</b>	<b>2016 Q4/Q4</b>
<b>FRBNY</b>	7/21/2015	3.0 (3.0)	2.7 (2.8)	1.2 (1.2)	2.4 (2.1)
<b>Blue Chip</b>	7/10/2015	2.7 (2.3)	2.2 (2.2)	0.9 (0.8)	2.3 (2.3)
<b>Median SPF</b>	5/15/2015	1.9 (1.9)	2.0 (2.0)	0.7 (0.7)	2.1 (2.1)
<b>Macro Advisers</b>	7/8/2015	2.8 (2.2)	2.3 (2.6)	0.8 (0.7)	2.2 (2.2)
<b>Core CPI Inflation</b>					
	<b>Release Date</b>	<b>2015Q2</b>	<b>2015Q3</b>	<b>2015 Q4/Q4</b>	<b>2016 Q4/Q4</b>
<b>FRBNY</b>	7/21/2015	2.5 (2.4)	2.4 (2.3)	2.3 (2.1)	2.6 (2.1)
<b>Median SPF</b>	5/15/2015	1.8 (1.8)	1.8 (1.8)	1.8 (1.8)	2.0 (2.0)
<b>Macro Advisers</b>	7/8/2015	2.4 (2.4)	1.7 (1.6)	1.9 (1.9)	2.0 (2.0)

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

### 3. Uncertainty & Risks

Even though there were significant international developments during the intermeeting period, the net changes to our forecast distribution were minor. Based on the difference between the modal central forecast and the expected value from our forecast distributions [Exhibit 3-1], as well as the changes in the forecast distributions [Exhibit 3-3], the risks still are roughly balanced both for core PCE inflation and for real GDP growth. With little change in the widths of the probability intervals, the uncertainty around the real GDP growth projection remains fairly close to historical norms at near-term horizons and somewhat above those norms at medium-term horizons; uncertainty around the inflation projection is fairly close to those norms.

As reflected in our forecast distributions current data continue to signal that the small first quarter decline in real GDP largely was the result of transitory factors, consistent with our central outlook. In particular, despite the weak June retail sales release, real consumer spending still appears to be on a fairly solid path. The June labor market report was on the softer side, but not enough to substantially change the outlook. The U.S. inflation data provided further indications of a gradual increase, although inflation remained well below the FOMC objective. Longer-term inflation compensation measures in the U.S. and the euro area fluctuated within fairly narrow ranges that were still relatively low; U.S. survey measures continued to be fairly stable. International economic developments were dominated by the events surrounding the Greek debt situation, and its near-term resolution suggests a small reduction in risk from that source. In financial markets, oil and commodity prices declined over the intermeeting period. U.S. equity prices rose moderately, reversing declines earlier in the period that were associated with the Greek crisis and the sharp fall in Chinese equity prices; implied volatility ended the period at a low level. Long-term nominal yields in the U.S. and the euro area fell during the more concerning periods of the Greek crisis, but rose later to end little changed over the period. The dollar appreciated against most major currencies, probably partly reflecting expectations of monetary policy divergence between the U.S. and most other advanced economies.

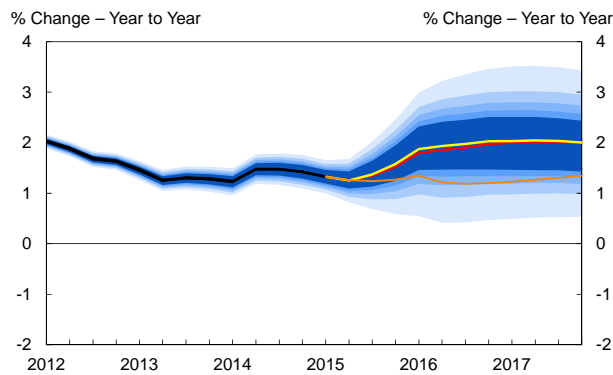
We incorporated these developments in this Blackbook through a number of changes in scenario probabilities [Exhibit 3-2]. We see the recent data on real activity as largely confirming our

central outlook of continued moderate growth, which implies reductions in the probabilities of some of our upside and downside alternative scenarios. Consequently, we reduced the probabilities of the positive *Faster Growth* scenario and the negative *Fiscal Consolidation* scenario. With the still-ongoing Greek debt saga and the large swings in the Chinese equity market, we have maintained a notable probability of the *Global Credit Crunch* scenario. At the same time, the inflation developments suggest increases in some of our other alternative scenarios. With some indicators of underlying inflation pointing to a bit more momentum in inflation, we raised slightly the probability of the *Loss of Credibility* scenario; however, it remains relatively small, as longer-run inflation compensation is still low. At the same time, the fall in commodity prices suggests there are still notable deflation pressures globally, and we have raised slightly the probability of the *Global Deflation* scenario. Overall, these changes have led to only small changes in the widths of the 90 percent probability intervals for real GDP growth and core PCE inflation [Exhibit 3.3]. At medium-term horizons, the width of this interval for real GDP growth is moderately wider than historical norms based on realized forecast errors, but it is near that norm for core PCE inflation. The forecast distributions also still reflect roughly balanced risks through most of the forecast horizon [Exhibit 3-1].

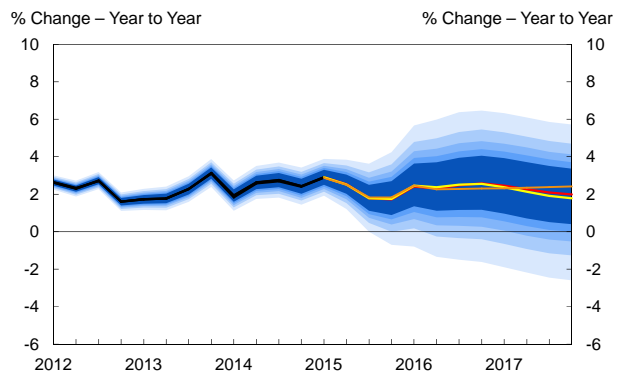
Comparing the recent data and our current central forecast to the forecast distribution from a year earlier, the current projection for inflation generally runs in the lower half of the year-ago inflation distribution and below the year-ago central scenario into 2016, reflecting the continued low inflation data as measured by 4-quarter changes and an inflation forecast that runs fairly close to the 2 percent objective [Exhibit 3-3]. Real GDP growth for most of the past year was in the upper part of the year-ago distribution, as it was quite strong in the middle of 2014. Going forward, the current real GDP growth forecast is in the lower half of the year-ago forecast distribution into the first quarter of 2016, reflecting the decline in real GDP in 2015Q1 and a rather subdued path for the rest of this year. Over 2016-17, the current projection path is near the year-ago central scenario. These patterns indicate that the basic contours of our medium-term central forecasts for inflation and real activity have not changed much on net over the past year.

### 3-1: Forecast Distributions

Core PCE Inflation Forecast Distribution



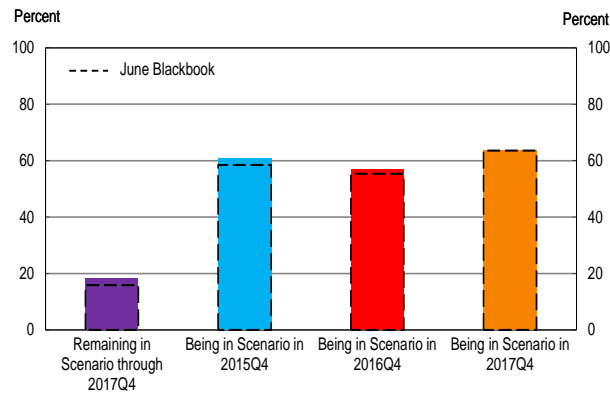
Real GDP Growth Forecast Distribution



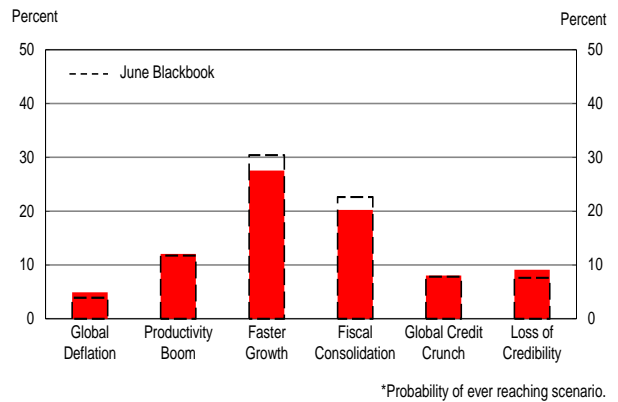
The yellow line is the expected value of the forecast distribution, the red line is the FRBNY central projection, the orange line is the DSGE forecast, and the black line is released data. The shading represents the 50, 60, 70, 80 and 90 percent probability that the four-quarter change will be within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

### 3-2: Scenario Probabilities

Central Scenario Probabilities



Alternative Scenario Probabilities\*

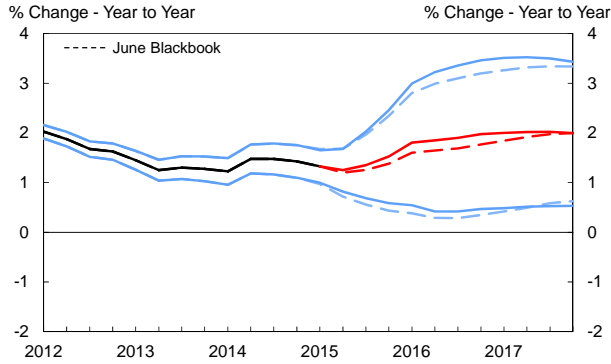


The left chart shows the probability of remaining in the central scenario through the end of the forecast horizon and the probabilities of being in the central scenario at the end of the next three years. The right chart shows the probabilities of ever reaching an alternative scenario over the forecast horizon, an assessment of the overall likelihood of each alternative scenario. A short description of the scenarios and the methodology to perform risk assessment is in the Appendix.

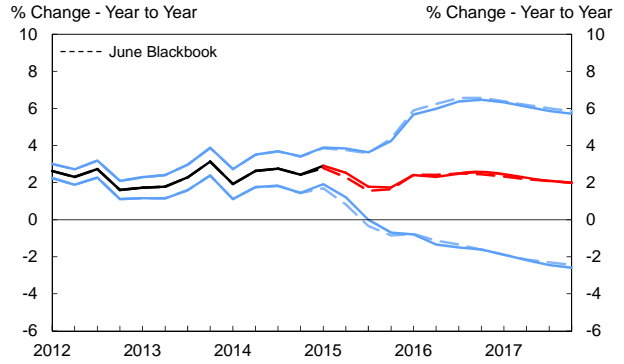
Source: MMS Function (FRBNY)

### 3-3: Evolution and Performance of Forecast Distributions

Change in Core PCE Inflation Forecast Distribution

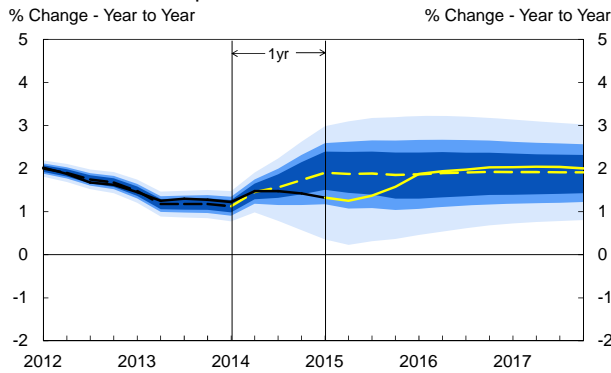


Change in Real GDP Growth Forecast Distribution

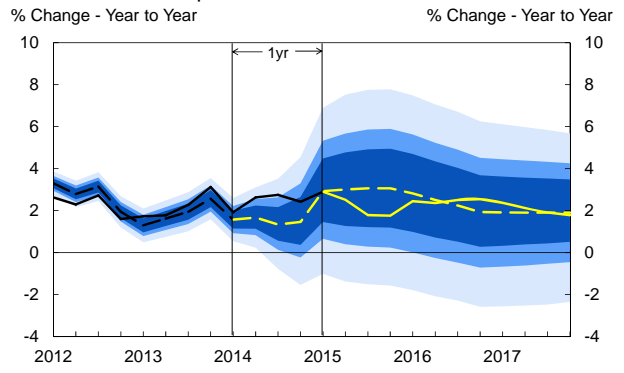


The red lines are the central scenario projections, black lines are released data, and blue lines represent upper and lower 90 percent forecast probability intervals. Dashed lines represent forecasts from the previous Blackbook.

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 lines are the current expected values from the forecast distributions and the dashed yellow lines are the year-ago Blackbook expected values. Black lines are released data and the blue shaded areas represent 50 (darkest shade), 70, and 90 (lightest shade) percent forecast probability intervals from the year-ago Blackbook.

Source: MMS Function (FRBNY)



## Appendix

In this Appendix, we provide brief descriptions of the alternative scenarios used in this Blackbook [A-1], and of the methodology underlying our risk assessment and forecast distributions [A-2].

### A-1. Alternative Scenario Descriptions

Our first alternative scenario considers the impact of productivity growth above our assumed trend of about 1.5% on a nonfarm business sector basis (*Productivity Boom*). The second scenario (*Fiscal Consolidation*) assesses the consequences of below-trend productivity growth. We consider four additional scenarios. In one (*Faster Growth*), “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*), renewed stresses in global financial and economic conditions have an adverse impact on U.S. real economic growth and inflation; the differences between the two mainly reflect differing assessments of the persistence of the negative effects.

### A-2. Methodology to construct the forecast distribution

Our approach to producing the FRBNY forecast distributions is a generalization of techniques used at the Bank of England and other central banks to depict the uncertainty and balance of risks around a forecast. It allows for a dynamic balance of risks that is jointly assessed over inflation and output growth.

Three primary components underlie these forecast distributions: (1) a central scenario with modal inflation and output growth characterized by the central forecast described in Section 2, (2) alternative scenarios with specific inflation and output implications that differ from those of the central scenario, and (3) probabilities that the economy will enter those alternative scenarios. This approach to quantifying uncertainty and risks allows us to interpret the forecast distribution

for output growth and inflation, as well as analyze the impact on that distribution of changing the probabilities of the alternative scenarios.

We set the long-run behavior of our central forecast at the FOMC's longer-run inflation goal and our estimate of the potential growth rate. We also assume that, if the economy enters an alternative scenario, it eventually returns to the central scenario and remains in that scenario thereafter.

We conduct a simulation exercise to generate paths for inflation and output growth; we then perform calculations about our forecast distribution that reflect our risk assessment.

This exercise consists in generating a large number of indicator series, with each entry in a given series corresponding to a quarter in the forecast horizon; for each of these series, each quarter's value indicates only the prevailing scenario in that quarter. To generate these scenario-indicator series, we set two parameters for each alternative scenario: (1) the probability that the economy will leave the central scenario and enter the alternative scenario—the “initial probability”—and (2) the probability that the economy will remain in the alternative scenario once it enters the scenario—the “persistence.”

After creating the indicator series, we generate, for each series, a path for inflation and a path for output growth, with each entry in a given path corresponding to a quarter in the forecast horizon. For a given indicator series and a given quarter, the values of the associated inflation and output growth paths are determined by a draw from the indicated joint distribution of inflation and output growth, based on the scenario the indicator series points to for that quarter. If, for example, the series indicates that the economy is in the central scenario, we draw inflation and output values from a distribution centered at the central forecast. If instead the series indicates the economy is in an alternative scenario, we draw values from a modified version of the central scenario distribution that is consistent with the alternative scenario.

**FOMC BACKGROUND MATERIAL**

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**RESEARCH AND STATISTICS GROUP**

**FRBNY Blackbook**

**September 2015**

**RESTRICTED (FR)**

# FRBNY BLACKBOOK

## September 2015

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## 1. Policy Recommendation and Rationale

While our modal forecast has changed only modestly over the intermeeting period, recent developments in currency and commodity markets, coupled with some tightening in financial conditions, have led us to change our balance of risks. We now view the risks to our forecast somewhat skewed to the downside for both output and inflation. To properly gauge the effects of recent external developments on the domestic outlook, and avoid exposing the economy to further elements of strain in a situation of high market volatility, we therefore recommend to delay the lift-off to at least the December 2015 FOMC meeting.

Data releases in the intermeeting period indicate that economic activity in the first half of 2015 has been stronger than our projections in the July *Blackbook*. Real GDP growth for 2015H1 is now estimated to be 2.2%, driven partly by a healthy pace of growth in real PCE, at 2.4%, solid growth in residential investment, and strong inventory accumulation. More recently, PCE growth appears to have been maintained and business fixed investment has picked up somewhat in recent months. Labor market conditions continued to improve, with a pace of growth of nonfarm payroll employment of about 220,000 per month over the three months through August, a pace only moderately below that of 2014 (260,000 per month), and further declines in the unemployment rate. Regarding inflation, core PCE inflation remains weak at 1.2% over the past 12 months (1.4% over the past 3 months) in response to softer medical price inflation, a stronger dollar, and lower commodity prices.

Looking forward, we project real GDP to expand about 1¾% (annual rate) over the second half of 2015, which would bring the Q4/Q4 growth rate to just under 2%, and then to rise to about 2¼% in 2016. We continue to project solid real PCE growth over this period, supported by continued improvement in labor market conditions and consumer confidence as well as lower energy prices. Business investment growth we also envision to be stronger, particularly as we anticipate that the steep contraction in investment in the oil and gas sector will be largely over by the second half of the year. These positive forces are counterbalanced by two negative factors. First, the anticipated drag from net exports and inventory investment will hold down growth in 2015H2, and net exports are projected to continue to be a drag into 2016. Second, after re-

assessing the statistical evidence in light of the latest NIPA revisions, we have revised downward slightly our estimate of potential real GDP growth to 1¾%. Combined, these changes have relatively small net implications for the prospective path of real GDP growth, leaving our projection only slightly below that of the July *Blackbook*. Labor market conditions continue to improve gradually, with the unemployment rate projected to change little over the rest of this year and to decline to about 4¾% (our revised estimate of the longer-run natural rate of unemployment) in 2016Q4. In this environment, both overall and core PCE inflation are forecast to rise towards the FOMC's longer term objective, but a slightly slower pace than we projected in the July *Blackbook*.

On net, despite the better than anticipated reading on economic activity in the first half of the year we judge that economic conditions since July have not improved to a degree warranting an increase in the target range at the September FOMC meeting, especially in light of the recent financial market volatility. Indeed, while information in the intermeeting period has not led to a significant revision of our modal scenario, the degree of uncertainty surrounding our forecast has increased from July. In particular, primarily because of recent international developments, we view our balance of risks to be tilted to the downside for both economic activity and inflation. Below we list four key factors behind our risk assessment.

First, recent developments in currency and commodity markets raise the issue of whether they may reflect structural changes whose impact we may not yet be able to assess properly. For example, our staff statistical models indicate that the recent declines in oil prices may have been predominantly driven by a global demand factors, suggesting more significant global deflationary pressures (see the special topic "Drivers of Recent Oil Price Changes").

Second, the US dollar may undergo further appreciation if China's financial tensions significantly affect its rate of economic expansion, particularly if those tensions escalate. If these risks do materialize, U.S. real growth as well as inflation may be significantly lower over the next year, delaying the closing of gaps from the FOMC's objectives.

Third, despite the stability of long-term inflation expectations as measured by surveys and models of asset prices, there are some concerns worth pointing out. According to the August SCE, median inflation expectations declined at both the one-year ahead (from 3.0 to 2.8 percent) and the three-year ahead (from 3.0 to 2.9 percent) horizons. The probability of deflation increased from 14.5% to 16.3% at the one-year horizon, and remained essentially flat at the 3-year horizon. Also, risk premia on inflation compensation are currently negative. Such unusual valuations may reflect market participants' expectations of a protracted period at the zero lower bound, where lower expected inflation is associated with anemic growth. In addition, negative inflation risk premia may contribute to nominal interest rates remaining above the still-negative natural nominal interest rate. Recent inflation data also have surprised on the downside, increasing the tail risk of downward un-anchoring of long-term expectations.

Fourth, the current episode of high financial market volatility has contributed to a mild tightening of financial conditions. For example, the Baa corporate-Treasury spread has widened 25 basis points since the July *Blackbook* to near 3.2%, the highest level in about 3 years. If these conditions were to persist beyond the end of this quarter, we expect them to have a significant negative impact on both inflation and economic activity. Staff models show that a protracted period of tight financial conditions would reduce substantially the path of the natural rate of interest through the forecast horizon. The evolution of the natural rate under this scenario would imply a path for the nominal rate roughly in line with current market expectations for the path of the federal funds rate.

In our view, this recent increase in the downside risk to our forecast provides a strong case for delaying the lift-off. The data-dependence of our policy strategy implies that we should be confident at lift-off that the economy has attained sufficient momentum so that the probability of a policy reversal could be deemed to be very low. Currently, we view the risks of a premature lift-off as outweighing the risks of postponing somewhat the lift-off. With the strength of the economy not yet translated into a firming of wages and prices, and in an environment with significant external vulnerabilities and greater financial market volatility, the U.S. economy remains susceptible to sudden reversals if tightening is premature. In these circumstances, being cautious in removing accommodation will enable policymakers to better sort out signals from

noise. In addition, we see less-stretched asset valuations, as financial conditions have tightened somewhat and equity prices have declined since July, and weakening inflation, suggesting that the costs of waiting a bit longer before lift-off are likely contained. By contrast, a premature lift-off probably would significantly exacerbate the downside risks described above and possibly trigger adverse outcomes that so far have not materialized yet, especially with respect to a number of vulnerable emerging market economies with strong links to the US economy. Moreover, should an unwarranted rushed onset of monetary normalization require a reversal to the zero lower bound, the credibility and reputation of the FOMC would be greatly damaged.

In terms of communication, it is our view that the rationale underlying a delayed lift-off can be convincingly explained without need for drastic changes to the FOMC statement outside of an adjustment to the Committee's risk assessment. The case for maintaining the current target range for the FFR should be articulated by the Chair in her preamble to the press conference and restated in detail in the Q&A. Yet, to enhance the effectiveness of our communication strategy we suggest modifying the second paragraph of the July statement to acknowledge explicitly a change in the balance of risks: "In light of the recent international developments and volatility in financial markets the Committee now sees the risks to the outlook for economic activity and the labor market as tilted somewhat to the downside." With a clarification of this sort, we believe the third paragraph (... "the Committee today reaffirmed its view that the current 0 to ¼ percent target range for the federal funds rate remains appropriate") does not require substantial modification.

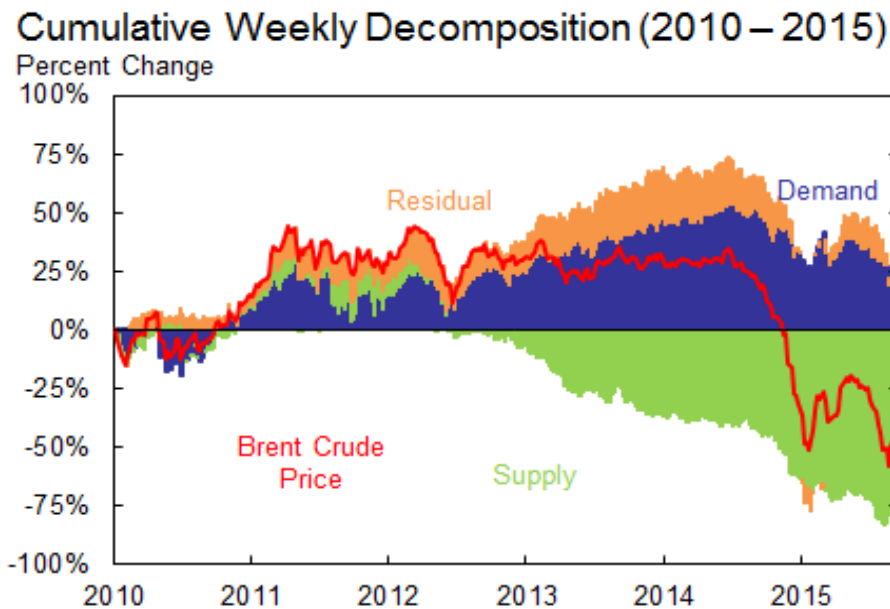


## Special Topic: Drivers of Recent Oil Price Changes

Jan Groen

After a slight rebound earlier in the year, oil prices resumed their declining path on which they have been since mid-2014. To understand the drivers of these developments, I use the methodology outlined in my LSE posts “A New Approach for Identifying Demand and Supply Shocks in the Oil Market” and “Is Cheaper Oil Good News or Bad News for the U.S. Economy?” In this approach I utilize correlations of oil price changes with a large number of financial variables to identify demand and supply shocks affecting oil prices. Below I interpret recent oil price developments through the lens of this approach using weekly data from late January 1986 up to early September 2015.

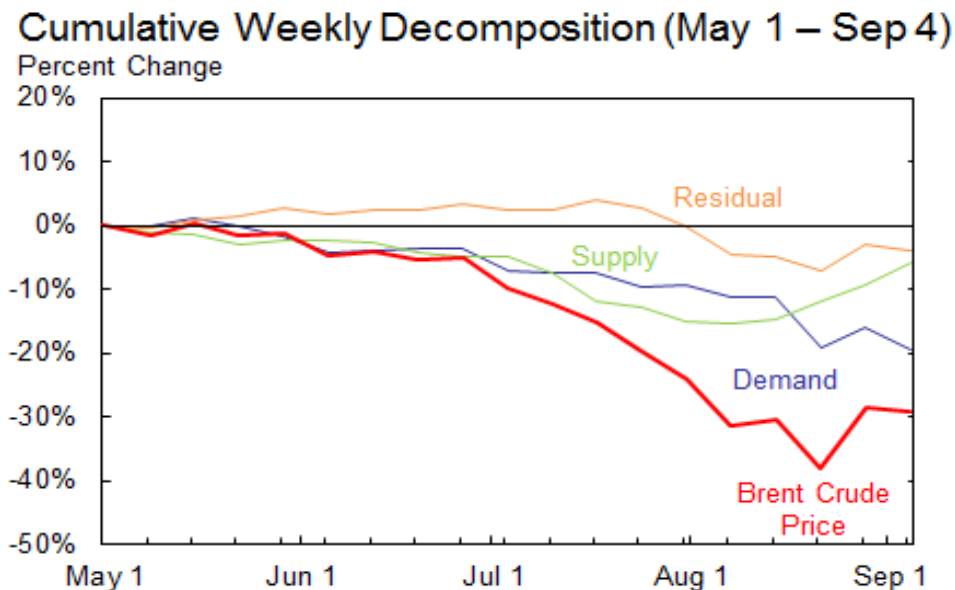
Starting off with a slightly longer perspective, the chart below shows oil price changes along with the identified supply and demand drivers cumulated from 2010 to the week ending September 4<sup>th</sup>, 2015. Excess supply became a significant driver of oil prices since mid-2012 and generally dominated price dynamics from mid-2014 onwards.



Sources: Author's calculations; Haver Analytics; Thomson Reuters; Bloomberg.

Note: Residual reflects price movements unexplained by supply and demand factors

But does this pattern still hold for the recent oil price declines? In the following chart I have cumulated the Brent crude price changes along with its components from the week ending on May 1<sup>st</sup> to the week ending on September 4<sup>th</sup>. Up to early August the decline in oil prices was driven more or less equally by demand and supply factors, with the impact of expected excess supply being slightly more dominant than that of decreasing global demand. Since then, however, demand has become the dominant factor underlying the oil price weakness with supply considerations becoming increasingly less important. As a result, the gloomier global demand outlook now explains about 2/3 of the cumulative oil price decline since May 1<sup>st</sup>.



Sources: Author's calculations; Haver Analytics; Thomson Reuters; Bloomberg.

Note: Residual reflects price movements unexplained by supply and demand factors.

Supply, Demand, and Residual sum to Brent Crude Price.

## 2. Central Forecast

### Intermeeting Developments

Growth of real GDP over the first half of 2015 is now estimated to have been at a 2.2% annual rate, up from the 1 ½% expected in the July Blackbook, but a full percentage point below the pace of growth over the second half of 2014. With the release of the annual revision of the NIPAs, growth in 2015Q1 was revised up to +0.6% (annual rate) from -0.2%. In addition, growth in the second quarter is now estimated at 3.7% (annual rate) versus 2.3% in the advance estimate. Growth of final sales to domestic purchasers (FSDP) contributed 2 ½ percentage points to the overall growth rate, down from 3 ½ percentage points over the second half of 2014. The slowing of growth of real final sales to domestic purchasers over the first half of the year was concentrated in real personal consumption expenditures (PCE) and business fixed investment (BFI). The growth contribution from net exports was -0.85 percentage points in 2015H1 versus -0.25 percentage points over 2014H2. Growth of real exports was slightly negative over the first half of this year, down from 3.6% over the second half of 2014. In contrast, real imports increased at a 5% annual rate over the first half, modestly stronger than over the second half of last year. The change in the pace of inventory accumulation added 0.5 percentage points to growth over the first half of 2015 versus 0 over 2014H2.

Growth of real PCE rebounded to 3.1% in 2015Q2 from a relatively weak 1.7% in the first quarter. The sluggish pace in Q1 was likely due in part to severe winter weather. The personal saving rate rose from an average of 4.7% over the second half of 2014 to 5.2% in 2015Q1. But the second quarter rebound in consumer spending saw the saving rate decline to 4.8%, suggesting that consumers were beginning to spend some of the windfall from sharply lower energy prices. The data on real PCE for July, combined with the August data on sales of light-weight motor vehicles, suggest that growth of real PCE is likely to be around 3% again in the third quarter. Growth of real PCE in July was modestly lower than the average monthly gain of the second quarter, but this reflected lower household energy consumption due to cooler than normal temperatures. August was also somewhat cooler than the average of the preceding five Augusts, but less so than in July. So we should see a rebound in utility usage in the August PCE

data. Motor vehicle sales rose more than expected in August, reaching 17.8 million (annual rate). A three-month moving average of motor vehicle sales is now up to 17.5 million, the highest since mid-2005.

In contrast, growth of real residential investment slowed in 2015Q2 to 7.8% (annual rate) after increasing at a 10% annual rate over the preceding two quarters. This reflected a very sharp slowing in investment in new single-family structures stemming from a steep decline of single-family starts during the first quarter, which was likely weather-related. As of July, single-family starts have rebounded by 30% relative to their February low, reaching the highest level since December of 2007. We expect some decline in single-family starts in August as the July starts level was 15% above the level of single-family permits. But even with some decline in August, the Q3 level of single-family starts will be above that of the second quarter, providing a boost to residential investment over the second half of 2015. The level of multi-family starts over the second half of 2015 is also expected to be well above that of the first half, providing an additional source of growth.

Business fixed investment also appears to be perking up as we enter the second half of the year. Shipments of nondefense capital goods excluding aircraft increased in June and July while exports of capital goods plunged in July. Moreover, new orders for nondefense capital goods excluding aircraft increased considerably faster than shipments over the past two months, and now the two values are essentially equal. Thus, the high frequency data are signaling continued gains in real equipment investment in the fourth quarter as well.

Growth of business investment in nonresidential structures also looks to be on a stronger footing. Total private nonresidential construction spending is slowing somewhat going into the third quarter following a weather-related surge in the second quarter. But the pace of growth remains robust. The annualized three month growth rate was 18.1% in July, down from a recent peak of 57.2% in May. However, the construction put in place data does not include oil and gas drilling activity which is a component of investment in nonresidential structures in the National Income and Product Accounts. The number of active drilling rigs bottomed out at the end of June and increased somewhat in both July and August. Thus, for Q3 as a whole the quarterly decline in oil

and gas drilling may be sufficiently reduced that the quarterly change of NIPA-based business investment in nonresidential structures could turn out to be stronger than the modest 3.2% annualized growth rate of the second quarter.

Finally, we expect the growth contribution from the government sector over the second half of 2015 to be somewhat lower than it was over the first half but still positive. At the state and local government level, there was a surge of construction spending in the second quarter that more than offset the weather-related decline of the first quarter. But, based on data through July, growth of construction spending by state and local governments is slowing significantly. This slowing of growth of construction is being offset somewhat in the third quarter due to stronger employment growth. Real spending at the federal level was essentially unchanged over the first half of 2015, and we expect very little movement up or down over the remainder of this year.

Overall, we expect final sales to domestic purchasers to increase at around a 3 ½% annual rate over the second half of 2015, comparable to the pace of the second half of 2014. However, we expect real GDP to grow at a 2.2% annual rate (versus 3.2% over 2014H2) due to substantial drags from both net exports and inventories.

The July trade data was surprisingly favorable, with nominal exports of goods and services up 0.4% while nominal imports fell by 1.1%. Nonetheless, our trade model anticipates that net exports will exert a 0.7 percentage point drag on growth of real GDP over the second half of 2015. This is less than the 0.9 percentage point drag over the first half, but for some reason there is a recurring pattern in the data that trade performance is better in the second half of the year than over the first half.

Finally, it appears to us that the pace of inventory investment over the first half of the year is not sustainable as it led to a sharp increase in the ratio of real inventories over real final sales. This inventory accumulation was primarily in durable goods, with about \$25 billion of the Q2 inventory accumulation in the form of motor vehicles and parts at the manufacturing, wholesale, and retail sectors. Based on available data, accumulation of oil inventories appears to have totaled somewhat less than \$6 billion in the second quarter. While limited, the available inventory data for July, along with indicators coming out of the manufacturing sector, are

consistent with our expectation that the pace of inventory accumulation will slow over the second half. We have penciled in a full 1 percentage point drag from inventories over 2015H2, which would keep the inventory-final sales ratio roughly constant.

Turning to the supply side data, the monthly average gain in private payroll employment slowed to 182,000 over July and August from an average of 220,000 per month over the second quarter. Nonetheless, the rate of growth of hours worked in July and August suggest that hours growth will be somewhat stronger in Q3 than was the case in Q2, due to the fact that hours worked in the goods-producing sector is now a modest positive versus a steep decline in the second quarter. Given our projection of Q3 growth of real GDP of 1  $\frac{3}{4}$ % (annual rate), this implies that productivity growth will be quite sluggish in the third quarter after rising at a 3.3% annual rate in the second quarter. The 20-quarter annualized growth rate of output per hour in the nonfarm business sector has slowed to around  $\frac{1}{2}$ % from 2% at the end of 2010.

The recent price data have been softer than we expected back in July, leading to a much lower projection of total PCE deflator inflation for 2015 and a modestly lower projection for core PCE deflator inflation. Our assumed oil price path over the second half of 2015 is \$7.50 per barrel lower than in the July Blackbook. Our projection of the increase of the total PCE deflator for all of 2015 (Q4/Q4) has been marked down to 0.5% from 1.1% in July. Core inflation is also expected to be somewhat lower, increasing 1.4% in 2015 versus a forecast of 1.5% in July. Some key underlying developments of the past few months include more intense downward pressure on core goods prices than occurred during the second quarter as a whole. In addition, there has been renewed softness in the rate of increase of health care prices in the PCE deflator after some firming in the second quarter. This is a repeat of what happened with this price index in 2011, 2012, and 2013.

## **The Outlook**

As mentioned above, it appears that over the second half of 2015 growth of real final sales to domestic purchasers will be a relatively healthy 3  $\frac{1}{4}$ % but that substantial drag from both

contracting net exports and a slower pace of inventory accumulation will keep the overall growth rate at around 1  $\frac{3}{4}$ %. The pace of employment gains is expected to slow from the 213,000 average monthly increase of nonfarm payroll employment that occurred over the first half of the year. Twelve month changes of the total PCE deflator are expected to remain quite low over the entire period due to the additional decline of oil prices that occurred over July and August. Core PCE deflator inflation is expected to be in the 1  $\frac{1}{4}$ % to 1  $\frac{1}{2}$ % range, the same as the past year. For 2015 as a whole that would result in growth of real GDP of around 2%, below the 2  $\frac{1}{2}$ % pace of 2013 and 2014.

For 2016 and 2017 our modal forecast is conceptually unchanged, though we have adjusted some of the key parameters of the forecast. First, taking on board the information contained in the annual NIPA revision, we have lowered our estimate of the economy's potential growth rate to 1  $\frac{3}{4}$ % from our previous estimate of 2%. (1  $\frac{1}{4}$ % to 1  $\frac{1}{2}$ % growth of productivity in the nonfarm business sector,  $\frac{1}{2}$ % to  $\frac{3}{4}$ % growth of hours worked) In addition, we have lowered our estimate of NAIRU to 4.8% from 5% as an acknowledgement of the ageing of the population.

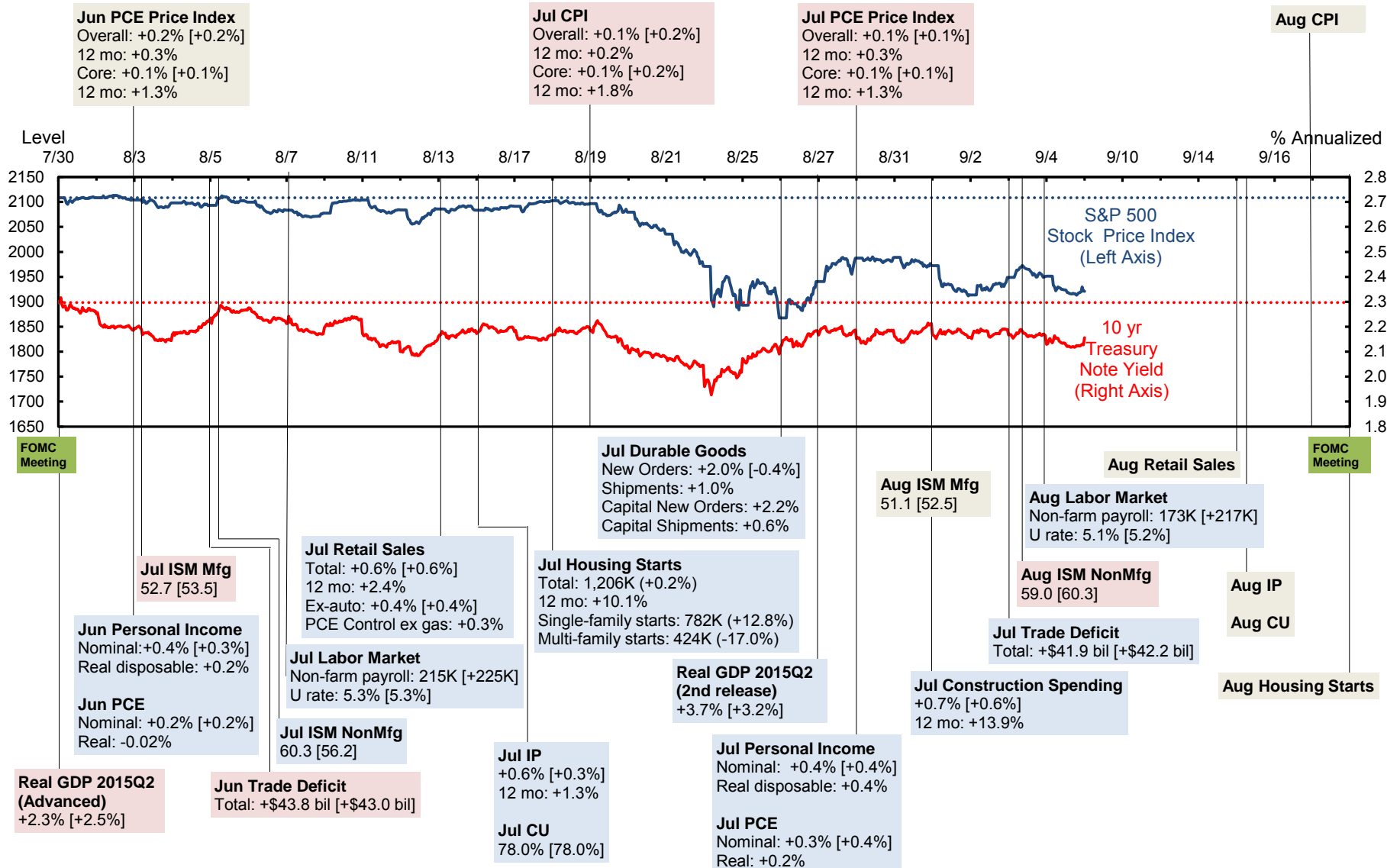
Given these changes, we continue to expect growth to pick up in 2016, but to around 2  $\frac{1}{4}$ % rather than the 2  $\frac{1}{2}$ % at the time of the July Blackbook. Real personal consumption expenditures are expected to continue to grow at a solid pace, reflecting the fact that the labor market has nearly returned to full employment with decent income growth, consumer confidence at relatively high levels, and improving access to consumer credit. Also, the personal saving rate is high relative to household net worth, giving room for a gradual decline of the personal saving rate over the forecast horizon. That being said, we do expect growth of consumer spending in 2016 to slow somewhat from its recent 3% pace. The consumer durable goods cycle is getting a bit old at this point. For example, while light vehicle sales have continued to move higher in recent months, the 12 month growth rate of that series is clearly slowing. In addition, we expect housing construction to continue to move higher, aided by ongoing improvement in labor market conditions, gradually easier mortgage underwriting standards, and emerging tightness in housing supply. Indeed, household formations moved notably higher over the past three quarters. The rental vacancy rate appears to be below its equilibrium level, with the rate of increase of rents

moving higher. After slowing over the year ending in February of this year, the 12-month change of the CoreLogic national home price index has moved up to 6.9% as of July.

We also expect that business fixed investment will gradually strengthen over the course of 2016. On the plus side, given our assumption of a gradual firming of oil prices, the steep contraction in investment in the oil and gas sector should be largely over by the second half of 2015. On the negative side, the economy will continue to adjust to the steep dollar appreciation of the past year, with the drag from net exports is likely be around a full percentage point. Thus, while a bit stronger in 2016 than over the past three years, growth of BFI will likely be only around 7% (Q4/Q4). Growth of government consumption and gross investment is expected to revert to a relatively sluggish pace. This reflects our assumption that the sequester will remain in effect.

In 2017 we anticipate that growth of real GDP will slow to just under 2%, due to a combination of further aging of the business cycle and the gradual tightening of financial conditions generated by our assumed path for the federal funds rate. The unemployment rate is expected to stabilize at 4.8% with the labor force participation rate relatively stable in the 62.6 to 62.7 range. Inflation moves gradually up to 2% by the end of 2017 as slack continues to decline and the effects of dollar appreciation fade.





**Note**  
Blue shading: Data release encouraging/positive.  
Red shading: Data release discouraging/negative.  
Beige shading: Data release was neutral.  
Numbers in square brackets are the median of the Bloomberg survey.

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

## 2-1: Projections of Key Variables

	<u>Core PCE Inflation</u>		<u>Real GDP Growth</u>		<u>Unemployment Rate*</u>		<u>Fed Funds Rate**</u>	
	Jul	Sep	Jul	Sep	Jul	Sep	Jul	Sep
<b>2015</b>								
Q1	<i>0.8</i>	<i>1.3</i>	<i>-0.2</i>	<i>0.6</i>	<i>5.6</i>	<i>5.6</i>	<i>0-0.25</i>	<i>0-0.25</i>
Q2	<i>1.7</i>	<i>1.3</i>	<i>3.1</i>	<i>3.7</i>	<i>5.4</i>	<i>5.4</i>	<i>0-0.25</i>	<i>0-0.25</i>
Q3	1.8	1.3	2.0	1.7	5.3	5.2	0.38	0-0.25
Q4	1.8	1.4	2.0	1.7	5.3	5.1	0.63	0.38
<b>2016</b>								
Q1	1.9	1.5	2.5	2.3	5.2	5.0	0.88	0.56
Q2	1.9	1.4	2.7	2.3	5.1	4.9	1.13	0.75
Q3	2.0	1.5	2.7	2.3	5.0	4.8	1.38	0.94
Q4	2.1	1.6	2.4	2.2	4.9	4.8	1.63	1.13
<b>2017</b>								
Q1	--	1.7	--	1.8	--	4.8	--	1.50
Q2	--	1.8	--	2.0	--	4.8	--	1.88
Q3	--	1.8	--	1.8	--	4.8	--	2.25
Q4	--	1.9	--	1.8	--	4.8	--	2.63
<b>Q4/Q4</b>								
2014	1.4	1.2	2.4	2.5	-1.3	-1.3	0-0.25	0-0.25
2015	1.5	1.3	1.7	1.9	-0.4	-0.6	0.63	0.38
2016	2.0	1.7	2.6	2.3	-0.4	-0.3	1.63	1.13
2017	--	1.9	--	1.9	--	0.0	--	2.63

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

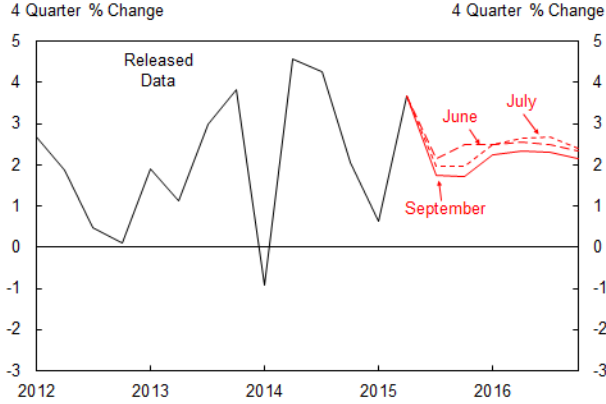
\*Quarterly values are the average rate for the quarter. Yearly values are the difference between Q4 of the previous year and Q4 of the listed year.

\*\*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.

## 2-2: Evolution of Projected Quarterly Paths

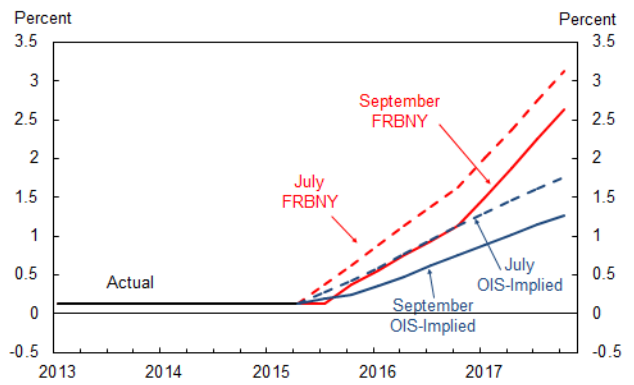
### Key Indicators

#### Real GDP Growth

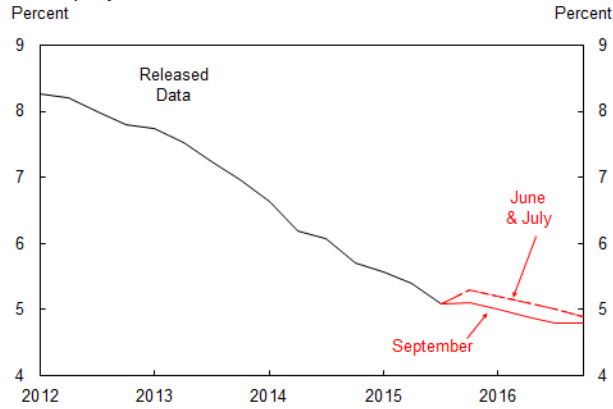


### Forecast Assumptions

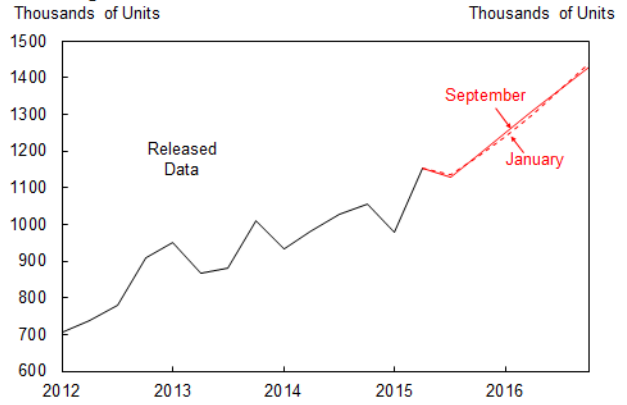
#### Federal Funds Rate



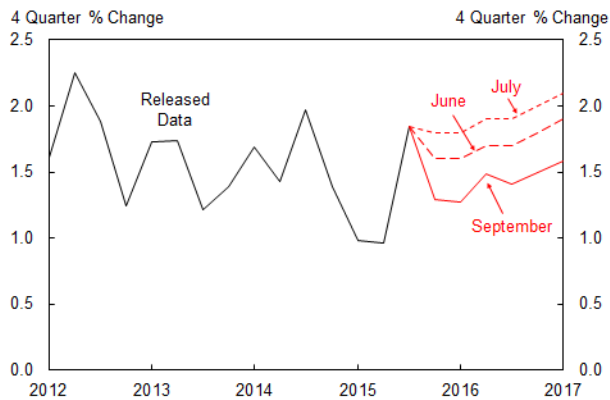
#### Unemployment Rate



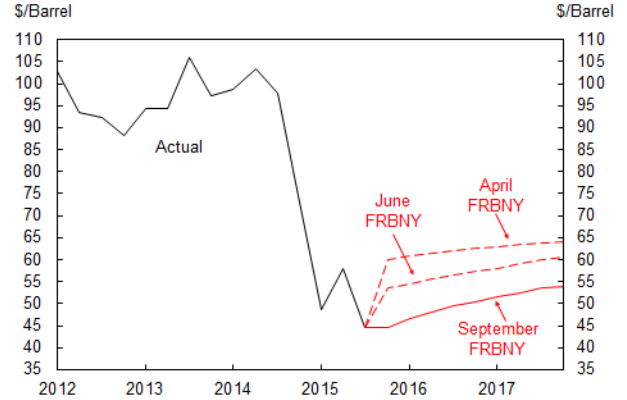
#### Housing Starts



#### Core PCE Inflation



#### Crude Oil



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

## 2-3: Near-Term Projections

	Growth Rates (AR)			Growth Contributions (AR)		
	2015Q3	2015Q4	2016Q1	2015Q3	2015Q4	2016Q1
<b>OUTPUT</b>						
<b>Real GDP</b>	1.7	1.7	2.3	1.7	1.7	2.3
	(2.0)	(2.0)	--	(2.0)	(2.0)	--
<b>Final Sales to Domestic Purchasers</b>	2.8	2.6	2.3	3.3	3.4	3.4
	(3.3)	(3.0)	--	(3.3)	(3.1)	--
<b>Consumption</b>	3.0	3.0	2.8	2.0	2.0	1.9
	(3.0)	(3.0)	--	(2.0)	(2.0)	--
<b>BFI: Equipment</b>	8.0	8.0	8.0	0.5	0.5	0.5
	(4.0)	(6.0)	--	(0.2)	(0.3)	--
<b>BFI: Nonresidential Structures</b>	5.0	8.0	8.0	0.1	0.2	0.2
	(6.0)	(7.0)	--	(0.2)	(0.2)	--
<b>BFI: Intellectual Property Products</b>	7.0	7.0	7.0	0.3	0.3	0.3
	(8.0)	(8.0)	--	(0.3)	(0.3)	--
<b>Residential Investment</b>	8.0	10.0	12.0	0.3	0.3	0.4
	(6.0)	(6.0)	--	(0.2)	(0.2)	--
<b>Government: Federal</b>	-0.5	-0.5	-0.5	0.0	0.0	0.0
	(2.2)	(-3.4)	--	(0.2)	(-0.2)	--
<b>Government: State and Local</b>	2.0	1.4	1.4	0.2	0.2	0.2
	(2.0)	(1.8)	--	(0.2)	(0.2)	--
<b>Inventory Investment</b>	--	--	--	-1.1	-0.9	0.0
	--	--	--	(-0.5)	(-0.2)	--
<b>Net Exports</b>	--	--	--	-0.5	-0.8	-1.1
	--	--	--	(-0.8)	(-0.5)	--
<b>INFLATION</b>						
<b>Total PCE Deflator</b>	1.2	0.6	1.6			
	(2.2)	(2.0)	--			
<b>Core PCE Deflator</b>	1.3	1.4	1.5			
	(1.8)	(1.6)	--			
<b>PRODUCTIVITY AND LABOR COSTS*</b>						
<b>Output per Hour</b>	0.5	0.5	1.0			
	(1.0)	(1.3)	--			
<b>Compensation per Hour</b>	3.2	2.9	3.0			
	(2.2)	(4.1)	--			
<b>Unit Labor Costs</b>	2.7	2.4	2.0			
	(1.2)	(2.8)	--			

Note: Numbers in parentheses are from the previous Blackbook.

\*Nonfarm business sector.

## 2-4: Medium-Term Projections

	Q4/Q4 Growth Rates			Q4/Q4 Growth Contributions		
	2015	2016	2017	2015	2016	2017
<b>OUTPUT</b>						
<b>Real GDP</b>	1.9 (1.7)	2.3 (2.6)	1.9 --	1.9 (1.7)	2.3 (2.6)	1.9 --
<b>Final Sales to Domestic Purchasers</b>	2.9 (2.7)	3.2 (3.2)	2.2 --	2.9 (2.8)	3.3 (3.3)	2.3 --
<b>Consumption</b>	2.7 (2.7)	2.6 (2.5)	2.2 --	1.8 (1.9)	1.8 (1.8)	1.5 --
<b>BFI: Equipment</b>	4.8 (3.9)	6.9 (8.0)	3.5 --	0.3 (0.2)	0.5 (0.5)	0.2 --
<b>BFI: Nonresidential Structures</b>	2.0 (-1.1)	6.5 (6.5)	3.5 --	0.1 (0.0)	0.2 (0.2)	0.1 --
<b>BFI: Intellectual Property Products</b>	7.5 (7.2)	6.2 (6.0)	3.5 --	0.3 (0.3)	0.3 (0.3)	0.2 --
<b>Residential Investment</b>	9.0 (7.1)	13.5 (14.5)	7.0 --	0.3 (0.2)	0.4 (0.5)	0.2 --
<b>Government: Federal</b>	0.0 (0.5)	-0.5 (0.2)	-0.5 --	0.0 (0.0)	0.0 (0.0)	0.0 --
<b>Government: State and Local</b>	1.7 (1.3)	1.4 (1.5)	0.7 --	0.2 (0.1)	0.2 (0.2)	0.1 --
<b>Inventory Investment</b>	-- --	-- --	-- --	-0.2 (-0.2)	0.0 (0.0)	0.0 --
<b>Net Exports</b>	-- --	-- --	-- --	-0.8 (-0.9)	-1.0 (-0.7)	-0.4 --
<b>INFLATION</b>						
<b>Total PCE Deflator</b>	0.5 (1.1)	1.7 (2.0)	1.9 --			
<b>Core PCE Deflator</b>	1.3 (1.5)	1.7 (2.0)	1.9 --			
<b>PRODUCTIVITY AND LABOR COSTS*</b>						
<b>Output per Hour</b>	0.5 (0.3)	1.3 (1.6)	1.3 --			
<b>Compensation per Hour</b>	2.9 (2.4)	3.7 (2.5)	3.4 --			
<b>Unit Labor Costs</b>	2.4 (2.1)	2.4 (0.9)	2.2 --			

Note: Numbers in parentheses are from the previous Blackbook.

\*Nonfarm business sector.

## 2-5: Comparison with Other Forecasts

<b>Real GDP Growth</b>					
	<b>Release Date</b>	<b>2015Q3</b>	<b>2015Q4</b>	<b>2015 Q4/Q4</b>	<b>2016 Q4/Q4</b>
<b>FRBNY</b>	9/9/2015	1.7 (2.0)	1.7 (2.0)	1.9 (1.7)	2.3 (2.6)
<b>Blue Chip</b>	9/10/2015	2.5 (3.2)	2.7 (3.2)	2.4 (2.2)	2.7 (2.7)
<b>Median SPF</b>	8/14/2015	2.7 (3.1)	2.8 (2.9)	2.3 (2.4)	2.8 (2.8)
<b>Macro Advisers</b>	8/14/2015	2.2 (2.8)	2.7 (2.8)	2.0 (2.0)	2.6 (2.9)
<b>FRBNY-DSGE</b>	8/28/2015	1.8 (2.2)	1.8 (2.3)	2.0 (1.8)	2.1 (2.3)
<b>Core PCE Inflation</b>					
	<b>Release Date</b>	<b>2015Q3</b>	<b>2015Q4</b>	<b>2015 Q4/Q4</b>	<b>2016 Q4/Q4</b>
<b>FRBNY</b>	9/9/2015	1.3 (1.8)	1.4 (1.5)	1.3 (1.5)	1.7 (2.0)
<b>Median SPF</b>	8/14/2015	1.6 (1.5)	1.6 (1.6)	1.5 (1.4)	1.8 (1.7)
<b>Macro Advisers</b>	8/14/2015	1.6 (1.6)	1.7 (1.6)	1.5 (1.4)	1.8 (1.8)
<b>FRBNY-DSGE</b>	8/28/2015	1.5 (1.3)	1.2 (1.2)	1.4 (1.3)	1.1 (1.2)
<b>CPI Inflation</b>					
	<b>Release Date</b>	<b>2015Q3</b>	<b>2015Q4</b>	<b>2015 Q4/Q4</b>	<b>2016 Q4/Q4</b>
<b>FRBNY</b>	9/9/2015	1.6 (2.7)	0.7 (2.4)	0.5 (1.2)	2.1 (2.4)
<b>Blue Chip</b>	9/10/2015	1.9 (2.2)	1.3 (2.2)	0.7 (0.9)	2.2 (2.3)
<b>Median SPF</b>	8/14/2015	2.0 (2.0)	1.8 (1.9)	0.8 (0.7)	2.1 (2.1)
<b>Macro Advisers</b>	8/14/2015	2.4 (2.3)	0.7 (2.3)	0.7 (0.8)	2.1 (2.2)
<b>Core CPI Inflation</b>					
	<b>Release Date</b>	<b>2015Q3</b>	<b>2015Q4</b>	<b>2015 Q4/Q4</b>	<b>2016 Q4/Q4</b>
<b>FRBNY</b>	9/9/2015	1.8 (2.4)	2.1 (2.3)	2.0 (2.3)	2.0 (2.6)
<b>Median SPF</b>	8/14/2015	1.9 (1.8)	1.9 (1.9)	2.0 (1.8)	2.0 (2.0)
<b>Macro Advisers</b>	8/14/2015	1.8 (1.7)	1.8 (1.7)	1.9 (1.9)	2.1 (2.0)

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

### 3. Uncertainty & Risks

Although domestic economic developments were roughly consistent with our central outlook, the international and financial market developments during the intermeeting period led to some deterioration in our risk assessment. Based on the difference between the modal central forecast and the expected value from our forecast distributions [Exhibit 3-1], as well as the changes in the forecast distributions [Exhibit 3-3], the risks have shifted to the downside for real GDP growth. For core PCE inflation, the risks are still roughly balanced over near-term horizons, but have shifted to the downside at longer horizons. The widths of the probability intervals increased modestly over the period. The uncertainty around the real GDP growth projection remains greater than historical norms while the uncertainty around the inflation projection is still near its historical norms.

U.S. economic data suggested that the U.S. economy remained on a fairly solid footing in the early part of the second half of this year. The first half of this year saw a real GDP growth rate that was somewhat stronger than we anticipated in July. Manufacturing indicators continued to be a bit soft, but other data indicated that private domestic final demand remained fairly solid. The July and August labor market reports indicated further improvement in labor market conditions. Although U.S. inflation data releases were a bit softer in this period with inflation remaining well below the FOMC objective, the data were still roughly consistent with our outlook. Nevertheless, longer-term inflation compensation measures in the U.S. and the euro area fell to near historical lows, while U.S. survey measures continued to be fairly stable. International economic developments focused concerns of a more substantial slowdown in the Chinese economy and its impact on other economies, particularly emerging markets. These concerns also affected financial markets, particularly after the devaluation of the Chinese renminbi. U.S. and global equity prices declined appreciably as Chinese equity prices resumed their sharp fall; implied volatility spiked and ended the period at a substantially elevated level. Oil and commodity prices declined further over the period. Long-term nominal yields in the U.S. and the euro area fell modestly over the period. Although the exchange value of the dollar fluctuated within a narrow range against the major currencies (including the euro and yen), partly

reflecting shifts in expectations of the U.S. monetary policy path, the dollar appreciated considerably against most emerging market currencies.

We incorporated these developments in this Blackbook through changes that raised probabilities of some of our downside scenarios [Exhibit 3-2]. We raised moderately the probability of the negative *Fiscal Consolidation* scenario while maintaining the relatively high probability of the *Faster Growth* scenario. With the further decline in the Chinese equity market and falls in other equity markets as well as the broad-based depreciation of emerging market currencies, we have raised the probability of the *Global Credit Crunch* scenario. The inflation developments suggest changes in some of our other scenarios. With longer-term inflation compensation declining to very low levels, we reduced the already-low probability of the *Loss of Credibility* scenario. The decline in inflation compensation along with the fall in commodity prices suggests there are notable disinflationary pressures globally, and we have raised the probability of the *Global Deflation* scenario. Overall, these changes led to a moderate widening of the 90 percent probability intervals for real GDP growth and core PCE inflation [Exhibit 3.3]. The interval for real GDP growth is somewhat wider than historical norms based on realized forecast errors, while that for core PCE inflation is still fairly close to its norms. The real GDP growth forecast distributions reflect that the risks to real activity are skewed to the downside through most of the forecast horizon, while the risks to inflation are to the downside for longer horizons only [Exhibit 3-1].

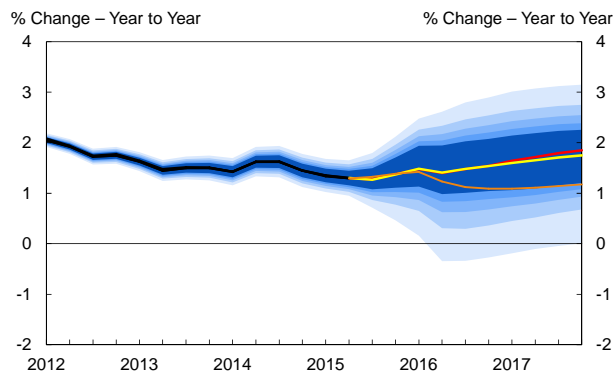
Comparing the recent data and our current expected forecast to the forecast distribution from a year earlier, the current projection for inflation generally runs in the lower half of the year-ago inflation distribution and below the year-ago expectation through 2017. This reflects the continued low inflation data as measured by 4-quarter changes and an inflation forecast that now runs somewhat below the 2 percent objective through 2017 [Exhibit 3-3]. Real GDP growth in the second half of 2014 was in the upper part of the year-ago distribution, reflecting the strong quarters in the middle of 2014. Going forward, the current real GDP growth expectation is in the lower half of the year-ago forecast distribution through most of 2016, reflecting the rather subdued path for real GDP growth and the downside risks over the second half of this year.



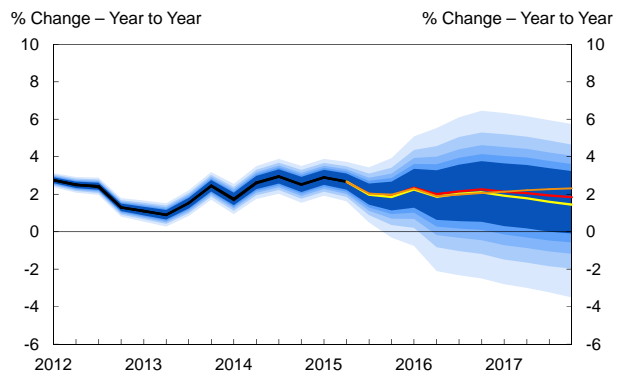
Over 2017, the current path is near the year-ago path. These patterns indicate a modest deterioration in our outlook for both inflation and real activity over the past year.

### 3-1: Forecast Distributions

Core PCE Inflation Forecast Distribution



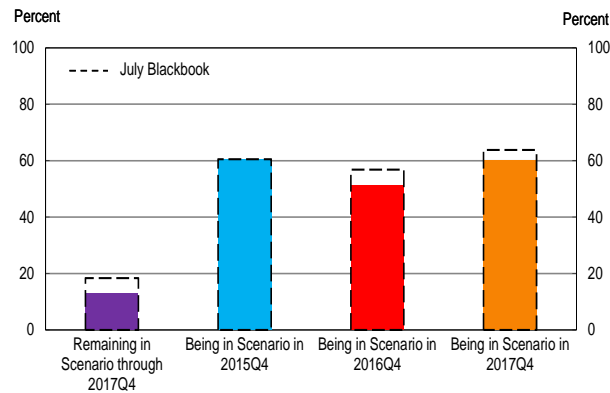
Real GDP Growth Forecast Distribution



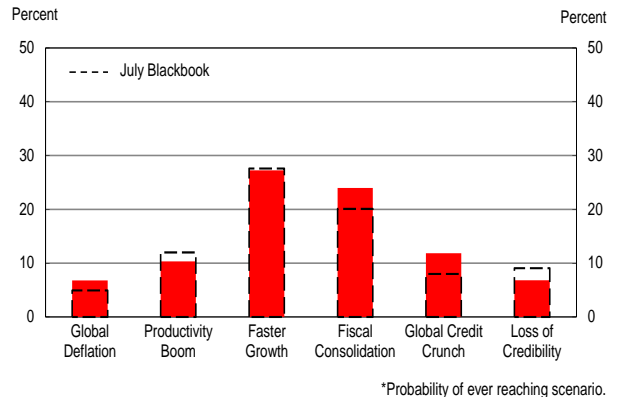
The yellow line is the expected value of the forecast distribution, the red line is the FRBNY central projection, the orange line is the DSGE forecast, and the black line is released data. The shading represents the 50, 60, 70, 80 and 90 percent probability that the four-quarter change will be within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

### 3-2: Scenario Probabilities

Central Scenario Probabilities



Alternative Scenario Probabilities\*



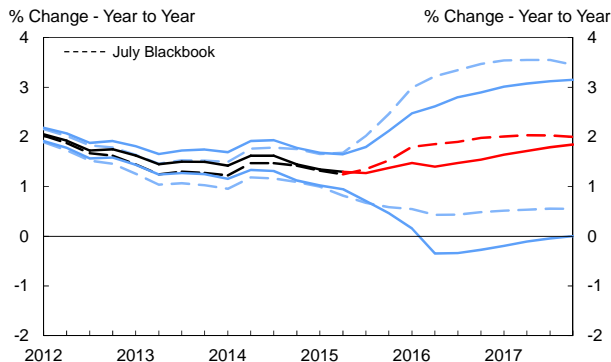
\*Probability of ever reaching scenario.

The left chart shows the probability of remaining in the central scenario through the end of the forecast horizon and the probabilities of being in the central scenario at the end of the next three years. The right chart shows the probabilities of ever reaching an alternative scenario over the forecast horizon, an assessment of the overall likelihood of each alternative scenario. A short description of the scenarios and the methodology to perform risk assessment is in the Appendix.

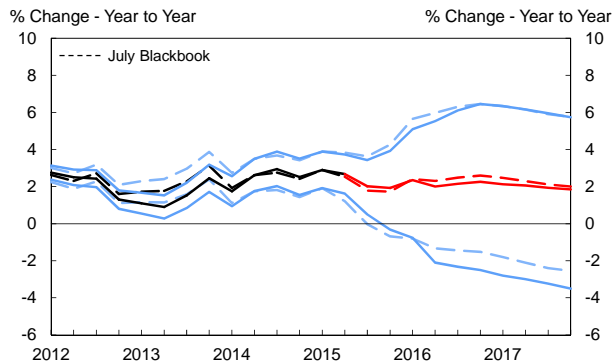
Source: MMS Function (FRBNY)

### 3-3: Evolution and Performance of Forecast Distributions

Change in Core PCE Inflation Forecast Distribution

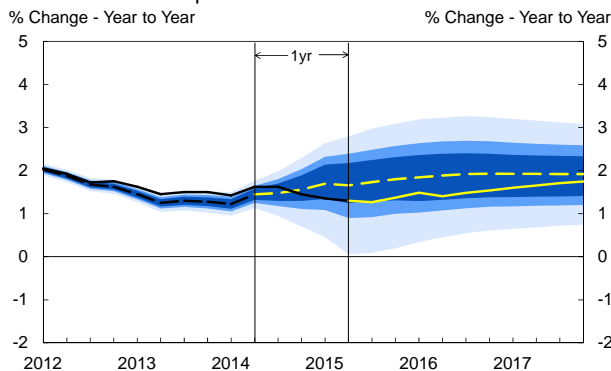


Change in Real GDP Growth Forecast Distribution

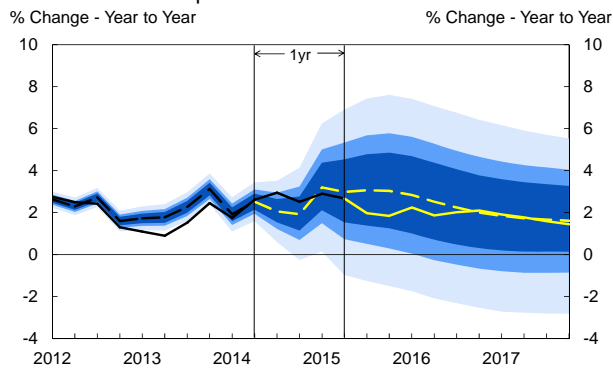


The red lines are the central scenario projections, black lines are released data, and blue lines represent upper and lower 90 percent forecast probability intervals. Dashed lines represent forecasts from the previous Blackbook.

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 lines are the current expected values from the forecast distributions and the dashed yellow lines are the year-ago Blackbook expected values. Black lines are released data and the blue shaded areas represent 50 (darkest shade), 70, and 90 (lightest shade) percent forecast probability intervals from the year-ago Blackbook.

Source: MMS Function (FRBNY)

## Appendix

In this Appendix, we provide brief descriptions of the alternative scenarios used in this Blackbook [A-1], and of the methodology underlying our risk assessment and forecast distributions [A-2].

### A-1. Alternative Scenario Descriptions

Our first alternative scenario considers the impact of productivity growth above our assumed trend of about 1.5% on a nonfarm business sector basis (*Productivity Boom*). The second scenario (*Fiscal Consolidation*) assesses the consequences of below-trend productivity growth. We consider four additional scenarios. In one (*Faster Growth*), “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*), renewed stresses in global financial and economic conditions have an adverse impact on U.S. real economic growth and inflation; the differences between the two mainly reflect differing assessments of the persistence of the negative effects.

### A-2. Methodology to construct the forecast distribution

Our approach to producing the FRBNY forecast distributions is a generalization of techniques used at the Bank of England and other central banks to depict the uncertainty and balance of risks around a forecast. It allows for a dynamic balance of risks that is jointly assessed over inflation and output growth.

Three primary components underlie these forecast distributions: (1) a central scenario with modal inflation and output growth characterized by the central forecast described in Section 2, (2) alternative scenarios with specific inflation and output implications that differ from those of the central scenario, and (3) probabilities that the economy will enter those alternative scenarios. This approach to quantifying uncertainty and risks allows us to interpret the forecast distribution

for output growth and inflation, as well as analyze the impact on that distribution of changing the probabilities of the alternative scenarios.

We set the long-run behavior of our central forecast at the FOMC's longer-run inflation goal and our estimate of the potential growth rate. We also assume that, if the economy enters an alternative scenario, it eventually returns to the central scenario and remains in that scenario thereafter.

We conduct a simulation exercise to generate paths for inflation and output growth; we then perform calculations about our forecast distribution that reflect our risk assessment.

This exercise consists in generating a large number of indicator series, with each entry in a given series corresponding to a quarter in the forecast horizon; for each of these series, each quarter's value indicates only the prevailing scenario in that quarter. To generate these scenario-indicator series, we set two parameters for each alternative scenario: (1) the probability that the economy will leave the central scenario and enter the alternative scenario—the “initial probability”—and (2) the probability that the economy will remain in the alternative scenario once it enters the scenario—the “persistence.”

After creating the indicator series, we generate, for each series, a path for inflation and a path for output growth, with each entry in a given path corresponding to a quarter in the forecast horizon. For a given indicator series and a given quarter, the values of the associated inflation and output growth paths are determined by a draw from the indicated joint distribution of inflation and output growth, based on the scenario the indicator series points to for that quarter. If, for example, the series indicates that the economy is in the central scenario, we draw inflation and output values from a distribution centered at the central forecast. If instead the series indicates the economy is in an alternative scenario, we draw values from a modified version of the central scenario distribution that is consistent with the alternative scenario.

**FOMC BACKGROUND MATERIAL**

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**RESEARCH AND STATISTICS GROUP**

**FRBNY Blackbook**

**October 2015**

**RESTRICTED (FR)**

# FRBNY BLACKBOOK

## October 2015

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## 1. Policy Recommendation and Rationale

Our modal forecast and balance of risks have not changed significantly over the intermeeting period, with the risks to our forecast remaining somewhat skewed to the downside.

Consequently, we recommend maintaining the course that we outlined in the September *Blackbook*. A number of the factors that persuaded us to recommend delaying lift-off in September have shown some signs of stabilization, and we anticipate a more definitive stabilization over the remainder of the year. If future developments generally conform to our forecast and its underlying assumptions, and thus provide evidence of ongoing improvement in labor market conditions and increasing confidence in the return of inflation to its mandate-consistent level over the medium term, then a lift-off by the end of 2015 would be appropriate. Of course, this state-contingency may work in the opposite direction: if our assessment of external factors, financial conditions and economic fundamentals does not improve materially relative to that of September, then a postponement of liftoff until 2016 would be appropriate. We realize that maintaining data-dependent optionality requires a finely balanced communication strategy to avoid making the FOMC vulnerable to accusations of Hamlet-like indecisiveness. Yet, without a self-evident improvement in economic and financial conditions the risks of lifting off prematurely remain larger than the risks of falling temporarily behind the curve.

While real GDP growth in Q2 was revised upward further, more recent data releases seem to convey mixed signals on the health of the economy in the second half of 2015. Real PCE growth in July and August was relatively strong and fairly evenly spread out across its components. The September retail sales release, however, suggested that the pace of consumer spending growth for Q3 may turn out to be somewhat slower. Similarly, the September labor market report indicated a slower pace of growth of nonfarm payroll employment, with the three-month average growth through September of about 167,000 per month, which was well below the average monthly pace in 2014 (260,000 per month). By contrast, housing market indicators, especially housing construction and house price data, continue to show signs of gradual improvement. On the inflation front, core PCE inflation over the past 12 months remained weak at 1.3%; however, the most recent CPI release indicated some pickup in the core measure, which is some encouraging news regarding inflation moving toward the FOMC's longer-run goal.



Nevertheless, the continued low levels of longer-term inflation compensation and recent modest declines in longer-term inflation expectations in the FRBNY SCE suggest that there are still significant risks of inflation remaining below objective.

In terms of our outlook, we project real GDP to expand at a rate around 2% (annual rate) over 2015H2, which would bring the Q4/Q4 growth rate a little over 2%, which is modestly above the projection in September. Thereafter, the projection is similar to that in the September *Blackbook*. The details of this projection also are similar to those in September: solid real PCE growth (supported by improving labor market conditions and lower energy prices) and more upbeat business investment growth that are counterbalanced by an anticipated drag from net exports and inventory investment. Furthermore, net exports are projected to continue to be a drag into 2016. We expect labor market conditions to continue to improve gradually, with the unemployment rate projected to change little over the rest of this year and to decline to about 4¾% (our estimate of the longer-run natural rate of unemployment) by 2016Q4. In this environment, both overall and core PCE inflation are forecast to rise gradually toward the FOMC's longer-run objective by 2017, in line with our projection in the September *Blackbook*.

As in the September *Blackbook*, we view the balance of risks to be tilted to the downside for both economic activity and inflation, especially in light of the continuing uncertainty about the global environment. Indeed, the softness of some recent data releases could very well be a consequence of this uncertainty, confirming that the decision at the September FOMC meeting to maintain the federal funds rate target range at 0-25 basis points was prudent. At the same time, the recent behavior of commodity prices and exchange rates showed some signs of stabilization, and the Chinese economic data indicate a moderate growth slowdown rather than the dawn of a very sharp downturn with negative implications for the US economy. Therefore, it is certainly possible that the economic outlook will evolve to warrant an increase of the policy rate before the end of the year. We next discuss the conditions that would need to occur between the October and December FOMC meetings for this to be the case.

One such condition is that foreign developments, both in global asset prices as well as global economic activity, do not significantly deteriorate further and continue to stabilize, a condition

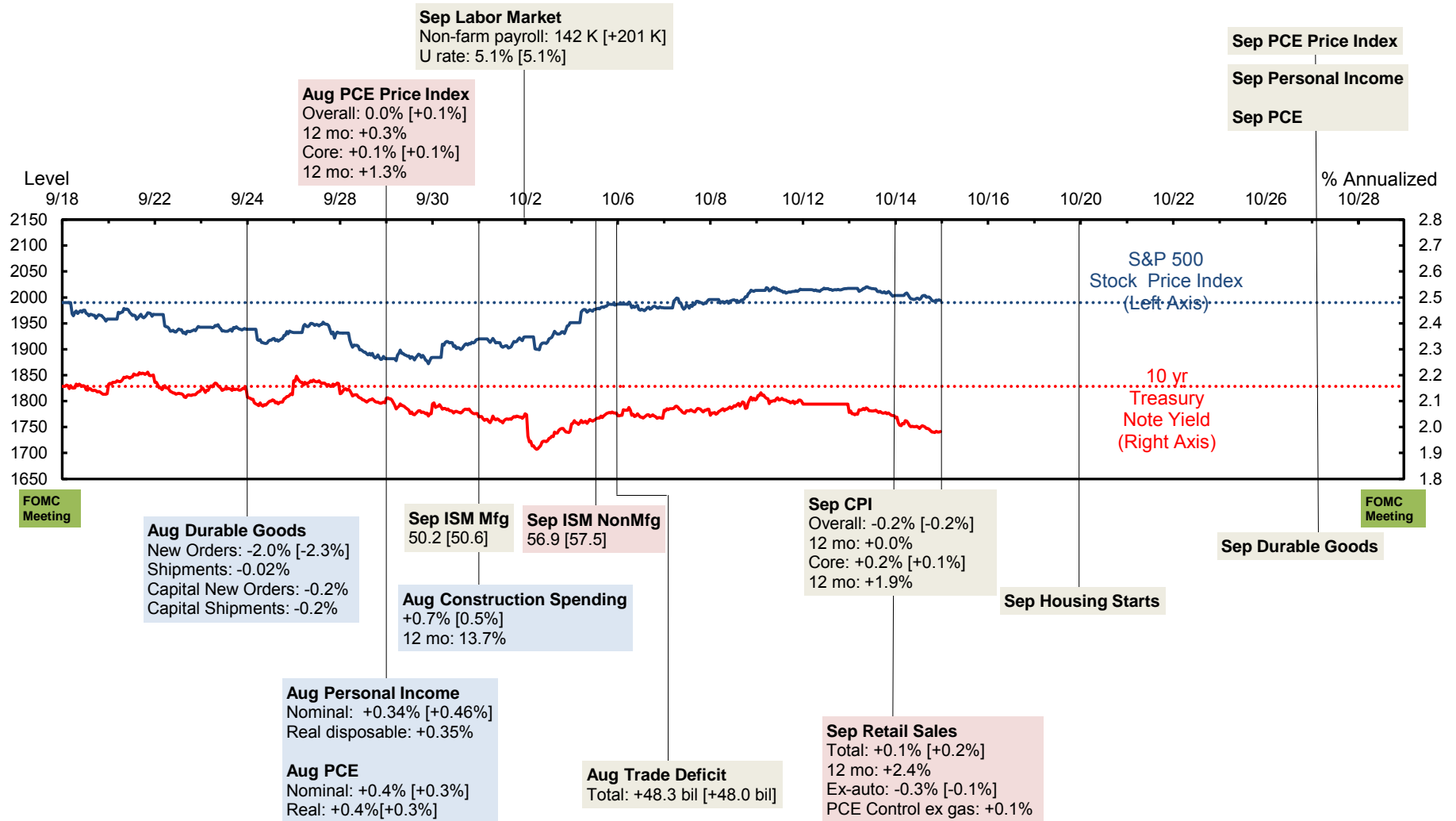
that we acknowledge seems quite mild. Given the complexity of the situation in emerging economies, we do not expect a quick resolution of the uncertainty regarding the challenges faced by China and other emerging markets, and the recent stability in the external environment may very well hide the build-up of additional pressures that lead to further volatility in those economies. However, domestic monetary policymaking cannot acquiesce indefinitely to foreign vulnerabilities, and we judge that continued stability over the upcoming intermeeting period would signal that these risks have receded sufficiently to base a lift-off decision primarily on the domestic outlook.

There are certainly risks around this assessment of recent external developments. The stabilization of commodity and currency markets could be a mere pause; indeed, EM Asian equity prices are still well below their levels from earlier in the year. Furthermore, the anecdotal evidence suggests that the dollar depreciation in the first half of October was mainly driven by market participants lowering their expected path for the federal funds rate. Lastly, official statistics can lag relative to underlying developments and therefore it might be too early to tell whether the Chinese economic activity is gradually slowing down as part of a rebalancing or whether it is on a threshold of a sharp downturn. Therefore, over the forthcoming intermeeting period global asset prices and international economic data releases need to be monitored closely and Federal Reserve communications have to make clear the appropriateness of preserving policymaking optionality in such an environment.

Another condition for lift-off by the end of 2015 is a continuing improvement of labor market conditions. With inflation likely to remain below objective for some time, a balanced approach to monetary policy normalization requires that after having experienced a prolonged period of unemployment well above reasonable estimates of NAIRU, we should now welcome unemployment reaching and possibly *falling below* NAIRU estimates. Also, a protracted period of low unemployment is desirable to promote stronger wage growth, which has been subdued up to this point, as this could be key to pushing inflation back to the FOMC's longer-run objective. The slowdown in employment growth in the third quarter clearly poses a risk. At this stage it is unclear whether the slowdown is temporary or more persistent. If it is the latter, the labor market may be catching up with trends emerging elsewhere: for example, the extremely low inflation

risk premia priced into inflation compensation may reflect market participants' expectations of a protracted period of lower inflation associated with anemic growth. Also consistent with such concerns, the September FRBNY SCE reported notable declines in earnings growth and household spending growth expectations.

In our view, the recent international data suggest that the likelihood of a further deterioration has decreased somewhat; to the extent that this was identified as the main reason to hold off on initiating normalization in September, a fed funds rate lift-off thus may be appropriate at the December FOMC meeting. In doing so, however, the Committee should make clear that it will monitor closely external and labor market developments, as the lack of further deterioration in the former and continuing improvement in the latter should provide greater confidence in inflation returning to 2% over the medium term, and thus they constitute appropriate conditions to warrant starting to remove policy accommodation at the December FOMC meeting. Also, communications should stress that the likely path of the fed funds target range will be shallow, as a cautious removal of accommodation will enable policymakers to better sort out signals from noise in what is still an unusually uncertain environment.



**Note**  
 Blue shading: Data release encouraging/positive.  
 Red shading: Data release discouraging/negative.  
 Beige shading: Data release was neutral.  
 Numbers in square brackets are the median of the Bloomberg survey.

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

## 2. Central Forecast

### Intermeeting Developments

Real GDP grew at a 2.3% annual rate (AR) over the first half of 2015, somewhat slower than the 2.5% growth rate (Q4/Q4) of 2013 and 2014. Final sales to domestic purchasers (FSDP) contributed 2.7 percentage points to the first half growth rate, down from 3.1 percentage points in 2014 due mainly to somewhat lower growth contributions from real personal consumption expenditures (PCE) and business fixed investment (BFI). The growth contribution from net exports was -0.9 percentage points in 2015H1 versus -0.5 percentage points over 2014. Rapid inventory accumulation added 0.4 percentage points to the first half growth rate.

Data released over the intermeeting period have led us to boost our growth projection for the second half of 2015 to 2.0% (AR) from 1.7% in the September Blackbook—1 1/2% in Q3 and 2 1/2% in Q4. The growth contribution of final sales to domestic purchasers for the second half has been boosted to 3.5 percentage points from 3.3 percentage points in September. The primary source of this upgrading is the strength of consumer spending, which we now project to have increased at a 3 1/2% to 3 3/4% annual rate in the third quarter. Sales of light-weight motor vehicles surprised to the upside again in September, reaching 18.2 million units (seasonally-adjusted annual rate). For the third quarter as a whole, vehicle sales averaged 17.8 million units, the highest since 2005Q3. The retail sales report for September was a downside surprise, and sales levels of August and July were revised downward. But in real terms, September non-auto retail sales were relatively strong. In addition to the 9% decline of gasoline prices, sales at clothing and accessory stores rose 0.9% while apparel prices fell 0.3%. This suggests that consumer spending entered the fourth quarter with some forward momentum, with 3% (AR) our current estimate of fourth quarter growth of real PCE.

Elsewhere the changes to the forecast for the second half of 2015 were modest. Business fixed investment is expected to increase at around a 7% annual rate, up from only 3% over the first half of the year. Investment in both new equipment and nonresidential structures are on a firmer footing as the bulk of the retrenchment in oil and gas drilling activity appears to be over.

Residential investment is expected to increase at a 9% annual rate, modestly lower than over the first half, reflecting the fact that housing starts declined in July and then again in August. But looking through the monthly volatility, both single-family and multi-family housing starts remain on a gradual uptrend. (Mortgage interest rates are back down to around 4% for a 30 year, fixed rate loan, potentially creating some upside risk to our outlook for housing starts in coming months.) The growth contribution from the government sector is expected to be essentially zero as spending gains at the state and local level are offset by declining spending at the federal level.

Also contributing to the slightly improved growth prospects for the second half of 2015 is the fact that we have modestly lowered the expected drag from net exports, to -0.6 percentage points from -0.7 in the September Blackbook. The foreign growth outlook for the second half of 2015 has been downgraded a bit, reducing projected growth of exports. But this has been more than offset by a reduction in projected growth of imports, particularly of petroleum. Lastly, the drag from a much reduced pace of inventory investment has also been reduced modestly, to -0.9 percentage points from -1.0 in September. However, this reflects a downward revision to the pace of inventory investment in the second quarter. Indeed, complete inventory data through August point to an even slower pace of accumulation over the second half of 2015 than we had assumed in September.

The employment report for the month of September was a disappointment but, like the retail sale report, not as gloomy as the general impression. The unemployment rate was unchanged at 5.1% but the labor force participation rate fell to 62.4, its lowest level since September of 1977. The ongoing decline of the participation rate is concentrated among people in the prime working age years of 25 to 54. The employment to population ratio fell in September and has been essentially unchanged for all of 2015 thus far.

Nonfarm payroll employment increased by 142,000 in September, well below expectations, and employment gains for August and July were revised downward. Average payroll growth over 2015Q3 was 167,000, down from an average of 213,000 per month over the first half of 2015. Reflecting the ongoing adjustment to the sharp appreciation of the dollar and slower growth among our trading partners, employment in the goods-producing sector declined over the third

quarter. Gains in employment in the service sector, including government, slowed to around 175,000 per month in the third quarter from around 200,000 per month over the first half of the year. Hours worked by private sector employees fell 0.2% in September, but for the third quarter as a whole were up a strong 2.7% (annual rate), well above the 1.6% (AR) growth of the first half of 2015. (Productivity growth is expected to slow to just 0.5% (AR) in the third quarter from 3.3% in the second quarter.) Even with only 2% growth of average hourly earnings, this implies relatively strong growth of nominal labor compensation in the third quarter. Indeed, despite the upward revision of growth of real PCE, the personal saving rate is expected to be essentially unchanged in the third quarter at 4.7%. The monthly personal income data suggest that labor's share of national income will reach 62% for the third quarter, the highest since the second quarter of 2011.

The consumer price index (CPI) for September showed somewhat stronger core inflation than was generally expected. The total CPI declined by 0.2%, bringing the 12-month change to -0.03%. But the core CPI rose 0.2%, bringing the 12-month change up to 1.9%, the highest since mid-2014. Core goods prices rose modestly in September, due primarily to unusually large increases in prices of furniture and appliances following steep declines in July and August. The 12-month change of core goods prices was -0.5%, the same as over the preceding two months. Core services prices rose 0.3% in September, above the 0.17 average of the preceding two months. The 12-month change of core services prices moved up to 2.7% from 2.6% in August. Rent of primary residence rose by 0.4% while owners' equivalent rent rose by 0.3%. The 12-month changes of these components rose to 3.7% and 3.1%, respectively, the highest of the recovery to date. Aside from rents, the price of lodging away from home rose an unusually large 0.8% in September, but on a year-over-year basis the rate of increase of this series is slowing. And medical care services prices rose 0.3% in September but the 12-month change of this series is relatively stable around 2.4%.

Our attempt to translate the September CPI data to the PCE deflator suggests that the core PCE deflator will increase around 0.1% in September and just 1.3% (AR) for the entire third quarter. Shelter has roughly half the weight in the core PCE deflator that it has in the core CPI. In contrast, health care services have a weight of around 24% in the core PCE deflator versus about

8% in the core CPI. Health care services prices within the PCE deflator reflect all health care services consumed, and the rate of increase of that series has been quite low of late. The September PPI data suggest that health care services prices in the PCE deflator may have declined in September. In the CPI, medical care services are those that consumers pay for out of pocket. The rate of increase of that price series has been moving gradually higher since mid-2014 with the 12-month change up to 2.4% as of September.

## **The Outlook**

We continue to expect growth to pick up modestly in 2016 to around 2 ¼%. Then, in 2017 we anticipate that growth of real GDP will slow to around 2%, due to a combination of further aging of the business cycle and the gradual tightening of financial conditions generated by our assumed path for the federal funds rate. The unemployment rate is projected to decline to 4.8%--our estimate of NAIRU-- by the end of 2016 and remain near that level through 2017 with the labor force participation rate moving gradually higher and productivity growth reverting to its longer run trend. Inflation will move gradually up to 2% by the end of 2017 as slack continues to decline and the effects of dollar appreciation fade.

There are several critical assumptions underlying this projection, however. Domestically, we expect lending standards to gradually ease, allowing for more growth in the credit sensitive sectors. In addition, we expect the dollar to remain relatively stable near its current value while foreign GDP growth begins to improve. Under those assumptions, the net export drag gradually subsides over the forecast horizon and employment and output in the US manufacturing sector begin to grow again. In addition, based on futures markets, we anticipate a gradual uptrend of energy prices over the course of 2016 and 2017. This is likely to result in stability in the oil and gas exploration sector and will help push headline inflation higher over the forecast horizon. Finally, fiscal policy, broadly defined, is expected to move to a modestly stimulative stance after several years of restraint.

Under the assumptions outlined above, it is quite reasonable to expect real personal consumption expenditures to continue to grow at a solid pace. Growth of labor compensation is expected to



firm such that, even if productivity growth returns to its longer term trend, labor's share of national income is likely to continue to improve. Plus, the personal saving rate is high relative to household net worth, giving room for a gradual decline of the personal saving rate over the forecast horizon. That being said, we do expect growth of consumer spending in 2016 to slow somewhat from the 3 1/4% pace anticipated for the second half of 2015. The boost to consumer spending coming from the steep fall of energy prices is likely to fade over time. In addition, the consumer durable goods cycle is in its latter stages.

In addition, we expect housing construction to continue to move higher, aided by ongoing improvement in labor market conditions, gradual easing of mortgage underwriting standards, and emerging tightness in housing supply. Current levels of housing construction on a per capita basis remain well below longer term trends. In addition, household formations moved notably higher over the past three quarters and are likely to move higher still as the labor market continues to improve. The rental vacancy rate appears to be below its equilibrium level, with the rate of increase of rents moving higher.

Finally, the fundamentals underlying business fixed investment are also likely to improve. As the drag resulting from the appreciation of the dollar moderates, activity in the manufacturing sector is likely to begin to expand, pushing up the capacity utilization rate and creating stronger incentives to expand capacity. Continued growth of employment and overall economic activity should similarly strengthen incentives to invest in nonresidential structures.

## 2-1: Projections of Key Variables

	<u>Core PCE Inflation</u>		<u>Real GDP Growth</u>		<u>Unemployment Rate*</u>		<u>Fed Funds Rate**</u>	
	Sep	Oct	Sep	Oct	Sep	Oct	Sep	Oct
<b>2015</b>								
Q1	1.3	1.3	<i>0.6</i>	<i>0.6</i>	5.6	5.6	0-0.25	0-0.25
Q2	1.3	1.3	3.7	3.9	5.4	5.4	0-0.25	0-0.25
Q3	1.3	1.3	1.7	1.5	5.2	5.2	0-0.25	0-0.25
Q4	1.4	1.4	1.7	2.5	5.1	5.1	0.38	0.38
<b>2016</b>								
Q1	1.5	1.5	2.3	2.1	5.0	5.0	0.56	0.56
Q2	1.4	1.4	2.3	2.5	4.9	4.9	0.75	0.75
Q3	1.5	1.5	2.3	2.5	4.8	4.9	0.94	0.94
Q4	1.6	1.6	2.2	2.4	4.8	4.8	1.13	1.13
<b>2017</b>								
Q1	1.7	1.7	1.8	2.0	4.8	4.8	1.5	1.50
Q2	1.8	1.8	2.0	2.2	4.8	4.8	1.9	1.88
Q3	1.8	1.8	1.8	2.0	4.8	4.8	2.3	2.25
Q4	1.9	1.9	1.8	2.1	4.8	4.8	2.6	2.63
<b>Q4/Q4</b>								
2014	1.2	1.2	2.5	2.5	-1.3	-1.3	0-0.25	0-0.25
2015	1.3	1.3	1.9	2.1	-0.6	-0.6	0.38	0.38
2016	1.7	1.7	2.3	2.3	-0.3	-0.3	1.13	1.13
2017	1.9	1.9	1.9	2.1	0.0	0.0	2.6	2.63

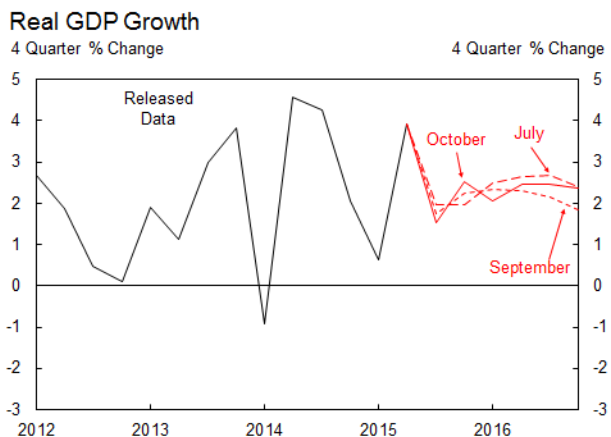
Columns reflect the forecast dates. Numbers in gray are from the previous Blackbook, and numbers in italics are released data.

\*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.

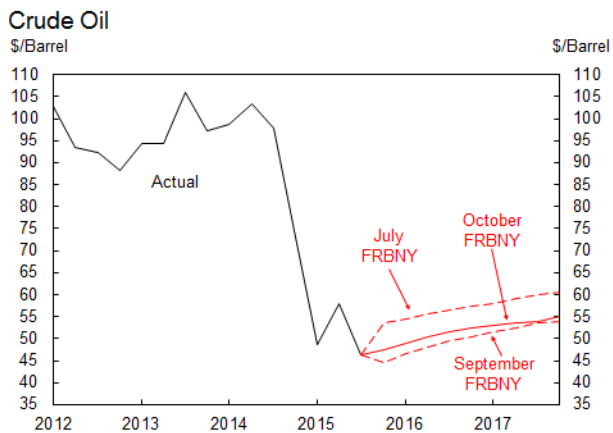
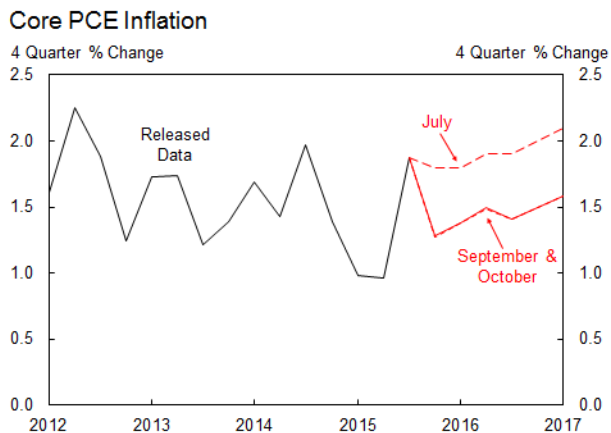
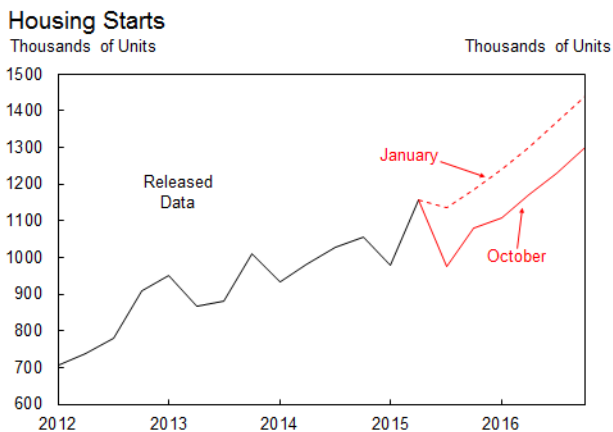
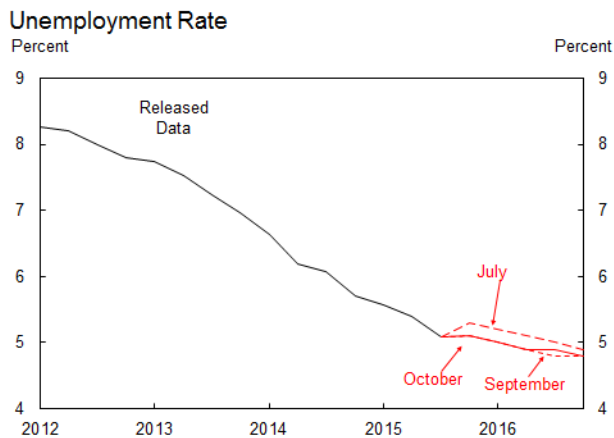
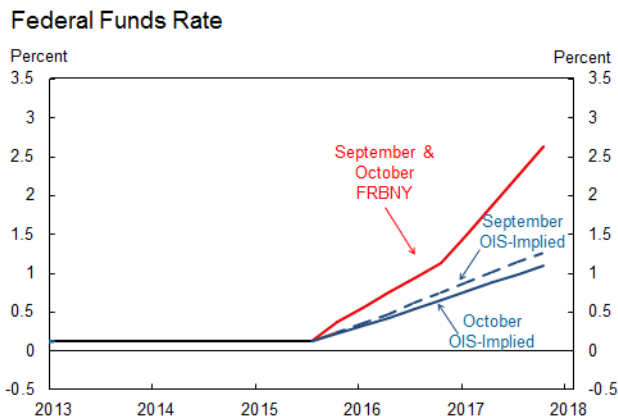
\*\*Quarterly values are the end-of-quarter value. Yearly values are the difference between the end-of-year value in the previous year and the end-of-year value in the listed year.

## 2-2: Evolution of Projected Quarterly Paths

### Key Indicators



### Forecast Assumptions



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

## 2-3: Near-Term Projections

	Growth Rates (AR)			Growth Contributions (AR)		
	2015Q3	2015Q4	2016Q1	2015Q3	2015Q4	2016Q1
<b>OUTPUT</b>						
<b>Real GDP</b>	1.5 (1.7)	2.5 (1.7)	2.1 (2.3)	1.5 (1.7)	2.5 (1.7)	2.1 (2.3)
<b>Final Sales to Domestic Purchasers</b>	3.5 (2.8)	3.4 (2.6)	3.3 (2.3)	3.5 (3.3)	3.4 (3.4)	3.3 (3.4)
<b>Consumption</b>	3.6 (3.0)	3.0 (3.0)	2.8 (2.8)	2.4 (2.0)	2.0 (2.0)	1.9 (1.9)
<b>BFI: Equipment</b>	8.0 (8.0)	8.0 (8.0)	8.0 (8.0)	0.5 (0.5)	0.5 (0.5)	0.5 (0.5)
<b>BFI: Nonresidential Structures</b>	5.0 (5.0)	8.0 (8.0)	8.0 (8.0)	0.1 (0.1)	0.2 (0.2)	0.2 (0.2)
<b>BFI: Intellectual Property Products</b>	7.0 (7.0)	7.0 (7.0)	7.0 (7.0)	0.3 (0.3)	0.3 (0.3)	0.3 (0.3)
<b>Residential Investment</b>	8.0 (8.0)	10.0 (10.0)	10.2 (12.0)	0.3 (0.3)	0.3 (0.3)	0.3 (0.4)
<b>Government: Federal</b>	-4.0 (-0.5)	-0.5 (-0.5)	-0.5 (-0.5)	-0.3 (0.0)	0.0 (0.0)	0.0 (0.0)
<b>Government: State and Local</b>	2.0 (2.0)	1.4 (1.4)	1.4 (1.4)	0.2 (0.2)	0.2 (0.2)	0.2 (0.2)
<b>Inventory Investment</b>	-- --	-- --	-- --	-1.6 (-1.1)	-0.1 (-0.9)	-0.1 (0.0)
<b>Net Exports</b>	-- --	-- --	-- --	-0.4 (-0.5)	-0.8 (-0.8)	-1.2 (-1.1)
<b>INFLATION</b>						
<b>Total PCE Deflator</b>	1.2 (1.2)	0.9 (0.6)	1.6 (1.6)			
<b>Core PCE Deflator</b>	1.3 (1.3)	1.4 (1.4)	1.5 (1.5)			
<b>PRODUCTIVITY AND LABOR COSTS*</b>						
<b>Output per Hour</b>	0.5 (0.5)	1.5 (0.5)	0.8 (1.0)			
<b>Compensation per Hour</b>	3.2 (3.2)	2.9 (2.9)	3.0 (3.0)			
<b>Unit Labor Costs</b>	2.7 (2.7)	1.4 (2.4)	2.2 (2.0)			

Note: Numbers in parentheses are from the previous Blackbook.

\*Nonfarm business sector.

## 2-4: Medium-Term Projections

	Q4/Q4 Growth Rates			Q4/Q4 Growth Contributions		
	2015	2016	2017	2015	2016	2017
<b>OUTPUT</b>						
<b>Real GDP</b>	2.1 (1.9)	2.3 (2.3)	2.1 (1.9)	2.1 (1.9)	2.3 (2.3)	2.1 (1.9)
<b>Final Sales to Domestic Purchasers</b>	3.0 (2.9)	3.2 (3.2)	2.4 (2.2)	3.1 (2.9)	3.3 (3.3)	2.5 (2.3)
<b>Consumption</b>	3.0 (2.7)	2.6 (2.6)	2.2 (2.2)	2.0 (1.8)	1.8 (1.8)	1.5 (1.5)
<b>BFI: Equipment</b>	4.6 (4.8)	7.5 (6.9)	3.5 (3.5)	0.3 (0.3)	0.5 (0.5)	0.2 (0.2)
<b>BFI: Nonresidential Structures</b>	2.8 (2.0)	6.5 (6.5)	3.5 (3.5)	0.1 (0.1)	0.2 (0.2)	0.1 (0.1)
<b>BFI: Intellectual Property Products</b>	7.4 (7.5)	6.2 (6.2)	3.5 (3.5)	0.3 (0.3)	0.3 (0.3)	0.2 (0.2)
<b>Residential Investment</b>	9.4 (9.0)	13.9 (13.5)	12.5 (7.0)	0.3 (0.3)	0.4 (0.4)	0.5 (0.2)
<b>Government: Federal</b>	-0.9 (0.0)	-0.5 (-0.5)	-0.5 (-0.5)	-0.1 (0.0)	0.0 (0.0)	0.0 (0.0)
<b>Government: State and Local</b>	1.7 (1.7)	1.4 (1.4)	0.7 (0.7)	0.2 (0.2)	0.2 (0.2)	0.1 (0.1)
<b>Inventory Investment</b>	-- --	-- --	-- --	-0.2 (-0.2)	0.0 (0.0)	-0.1 (0.0)
<b>Net Exports</b>	-- --	-- --	-- --	-0.7 (-0.8)	-0.9 (-1.0)	-0.4 (-0.4)
<b>INFLATION</b>						
<b>Total PCE Deflator</b>	0.6 (0.5)	1.7 (1.7)	1.9 (1.9)			
<b>Core PCE Deflator</b>	1.3 (1.3)	1.7 (1.7)	1.9 (1.9)			
<b>PRODUCTIVITY AND LABOR COSTS*</b>						
<b>Output per Hour</b>	1.5 (0.5)	1.3 (1.3)	1.5 (1.3)			
<b>Compensation per Hour</b>	2.9 (2.9)	3.7 (3.7)	3.4 (3.4)			
<b>Unit Labor Costs</b>	1.4 (2.4)	2.5 (2.4)	1.9 (2.2)			

Note: Numbers in parentheses are from the previous Blackbook.

\*Nonfarm business sector.

## 2-5: Comparison with Other Forecasts

### Real GDP Growth

	Release Date	2015Q3	2015Q4	2015 Q4/Q4	2016 Q4/Q4
<b>FRBNY</b>	10/15/2015	1.5 (1.7)	2.5 (1.7)	2.1 (1.9)	2.3 (2.3)
<b>Blue Chip</b>	10/10/2015	2.1 (2.5)	2.7 (2.7)	2.3 (2.4)	2.6 (2.7)
<b>Median SPF</b>	8/14/2015	2.7 (2.7)	2.8 (2.8)	2.3 (2.3)	2.8 (2.8)
<b>Macro Advisers</b>	9/21/2015	2.3 (2.2)	2.7 (2.7)	2.3 (2.0)	2.5 (2.6)
<b>FRBNY-DSGE</b>	10/14/2015	1.7 (1.8)	2.1 (1.8)	2.1 (2.0)	2.1 (2.1)

### Core PCE Inflation

	Release Date	2015Q3	2015Q4	2015 Q4/Q4	2016 Q4/Q4
<b>FRBNY</b>	10/15/2015	1.3 (1.3)	1.4 (1.4)	1.3 (1.3)	1.7 (1.7)
<b>Median SPF</b>	8/14/2015	1.6 (1.6)	1.6 (1.6)	1.5 (1.5)	1.8 (1.8)
<b>Macro Advisers</b>	9/21/2015	1.4 (1.6)	1.6 (1.7)	1.4 (1.5)	1.7 (1.8)
<b>FRBNY-DSGE</b>	10/14/2015	1.3 (1.5)	1.1 (1.2)	1.3 (1.4)	1.1 (1.1)

### CPI Inflation

	Release Date	2015Q3	2015Q4	2015 Q4/Q4	2016 Q4/Q4
<b>FRBNY</b>	10/15/2015	1.3 (1.6)	0.6 (0.7)	0.4 (0.5)	2.1 (2.1)
<b>Blue Chip</b>	10/10/2015	1.6 (1.9)	0.9 (1.3)	0.6 (0.7)	2.2 (2.2)
<b>Median SPF</b>	8/14/2015	2.0 (2.0)	1.8 (1.8)	0.8 (0.8)	2.1 (2.1)
<b>Macro Advisers</b>	9/21/2015	2.1 (2.4)	-0.1 (0.7)	0.5 (0.7)	2.1 (2.1)

### Core CPI Inflation

	Release Date	2015Q3	2015Q4	2015 Q4/Q4	2016 Q4/Q4
<b>FRBNY</b>	10/15/2015	1.6 (1.8)	2.0 (2.1)	2.0 (2.0)	2.0 (2.0)
<b>Median SPF</b>	8/14/2015	1.9 (1.9)	1.9 (1.9)	2.0 (2.0)	2.0 (2.0)
<b>Macro Advisers</b>	9/21/2015	1.8 (1.8)	1.8 (1.8)	1.9 (1.9)	1.9 (2.1)

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

### 3. Uncertainty & Risks

Developments during the intermeeting period did not lead to much resolution around the U.S. economic outlook, and thus our assessments of uncertainty and of the balance of risks have not changed much since the September *Blackbook*. Based on the difference between the modal central forecast and the expected value from our forecast distributions [Exhibit 3-1], as well as the changes in the forecast distributions [Exhibit 3-3], the balance of risks for real GDP growth remain to the downside. For core PCE inflation, the risks are still roughly balanced over near-term horizons, but are skewed to the downside at longer horizons. The widths of the probability intervals are little changed over the period. The uncertainty around the real GDP growth projection remains greater than historical norms while the uncertainty around the inflation projection is still near its historical norms.

Overall, the data on U.S. real economic activity were soft. Manufacturing indicators signaled some further slowdown in the sector, probably reflecting the impact of previous dollar appreciation and slower growth in emerging markets. The September labor market report indicated a notable slowing in labor market improvement. Retail sales, while not signaling a substantial deterioration in consumer spending, were still disappointing and do not suggest a pickup in real growth. Core CPI inflation rose modestly in September, which is roughly consistent with our outlook, but it still indicates that inflation is well below the FOMC objective. Longer-term inflation compensation measures in the U.S. and the euro area remain near historical lows. Many U.S. survey measures continued to be fairly stable, but the FRBNY SCE median of 3-year ahead inflation expectations fell modestly in August and September. Outside of the U.S., there continued to be indications of a slowdown in emerging market economies, including China, although there were fewer signals of a more abrupt deterioration. Consequently, financial markets stabilized to some degree. U.S. and global equity prices have rebounded from their lows of August and September, but remain appreciably below pre-August levels; implied volatility has declined. Oil and commodity prices were relatively range-bound at levels well below those of mid-year. Long-term nominal and real yields in the U.S. and the euro area declined over the period. The trade-weighted dollar index depreciated modestly, in part reflecting market participants' shifts in expectations of the U.S. monetary policy path.

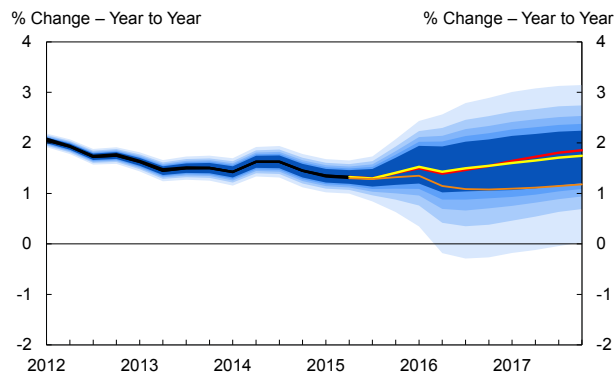
We interpreted these developments as indicating little change in the uncertainty and risks around the U.S. outlook, and thus made only small changes in the probabilities of our scenarios [Exhibit 3-2]. We raised moderately the probability of the negative *Fiscal Consolidation* scenario and lowered moderately the probability of the *Faster Growth* scenario, as we see the softer data on the labor market and retail sales reducing somewhat the probability of higher growth. With some stabilization in financial markets and in currency markets, we reduced modestly the probability of the *Global Credit Crunch* scenario. Overall, these changes led to little substantive change in the 90 percent probability intervals for real GDP growth and core PCE inflation [Exhibit 3.3]. The interval for real GDP growth remains somewhat wider than historical norms based on realized forecast errors, while that for core PCE inflation is fairly close to its norms. The real GDP growth forecast distributions reflect that the risks to real activity are skewed to the downside through most of the forecast horizon, while the risks to inflation are to the downside for longer horizons only [Exhibit 3-1].

Comparing the recent data and our current expected forecast to the forecast distribution from a year earlier, the current projection for inflation generally runs in the lower half of the year-ago inflation distribution and below the year-ago expectation through 2017. This reflects the continued low inflation data as measured by the 4-quarter change and an inflation forecast that is somewhat below the 2 percent objective through 2017 [Exhibit 3-3]. Real GDP growth in the second half of 2014 was in the upper part of the year-ago distribution, reflecting the strong quarters in the middle of 2014. Going forward, the current real GDP growth expectation is moderately below the year-ago expectation through mid-2016, reflecting the rather subdued path for real GDP growth and the downside risks over the second half of this year. Over 2017, the current path is near the year-ago path. These patterns indicate a modest deterioration in our outlook for both inflation and real activity over the past year.

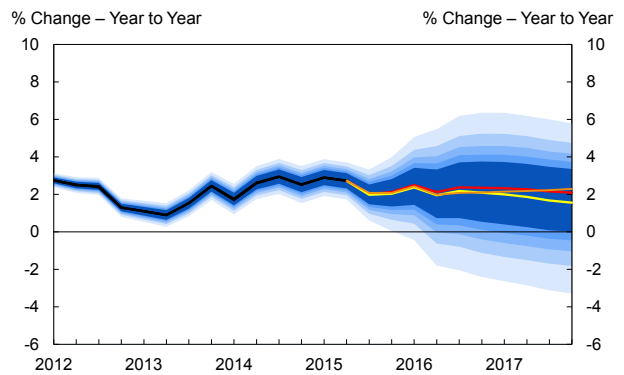


### 3-1: Forecast Distributions

Core PCE Inflation Forecast Distribution



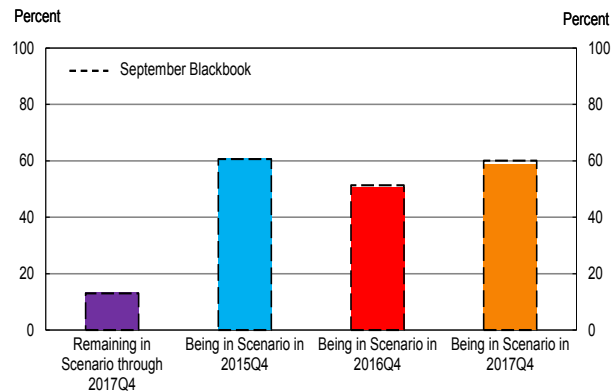
Real GDP Growth Forecast Distribution



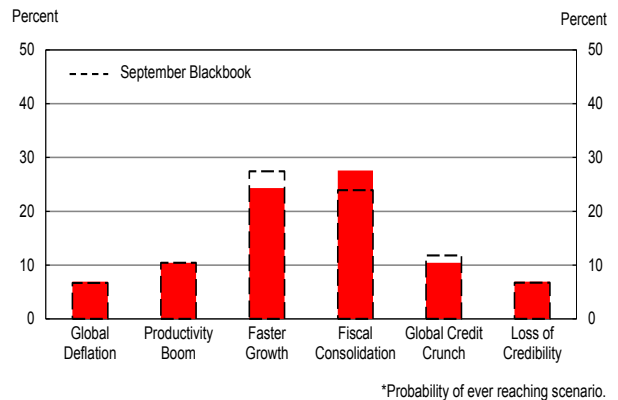
The yellow line is the expected value of the forecast distribution, the red line is the FRBNY central projection, the orange line is the DSGE forecast, and the black line is released data. The shading represents the 50, 60, 70, 80 and 90 percent probability that the four-quarter change will be within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

### 3-2: Scenario Probabilities

Central Scenario Probabilities



Alternative Scenario Probabilities\*

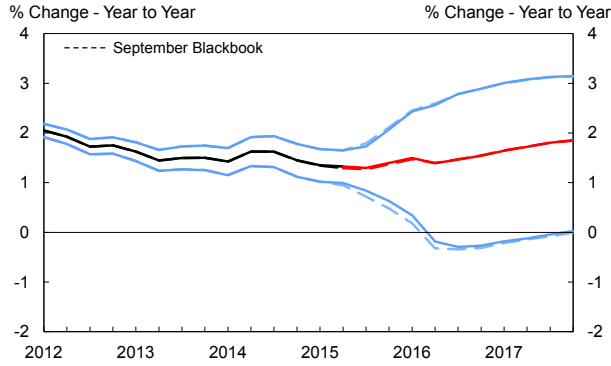


The left chart shows the probability of remaining in the central scenario through the end of the forecast horizon and the probabilities of being in the central scenario at the end of the next three years. The right chart shows the probabilities of ever reaching an alternative scenario over the forecast horizon, an assessment of the overall likelihood of each alternative scenario. A short description of the scenarios and the methodology to perform risk assessment is in the Appendix.

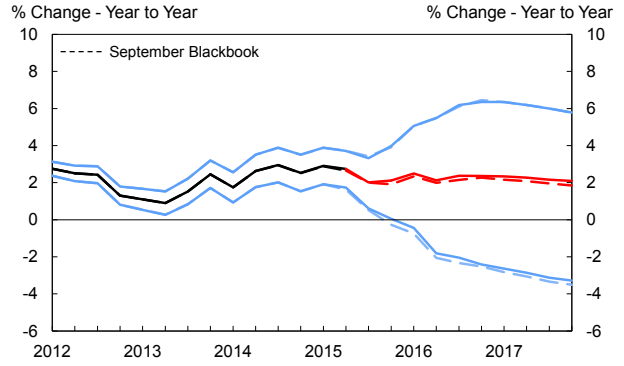
Source: MMS Function (FRBNY)

### 3-3: Evolution and Performance of Forecast Distributions

Change in Core PCE Inflation Forecast Distribution

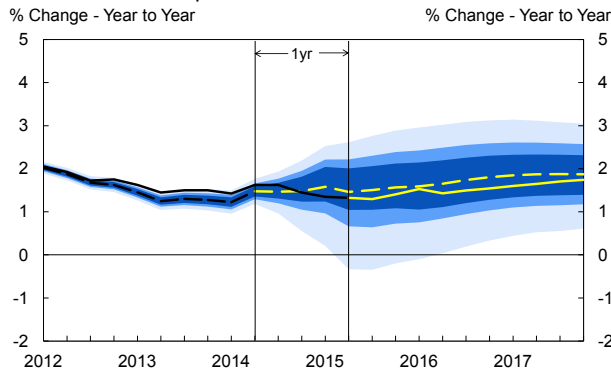


Change in Real GDP Growth Forecast Distribution

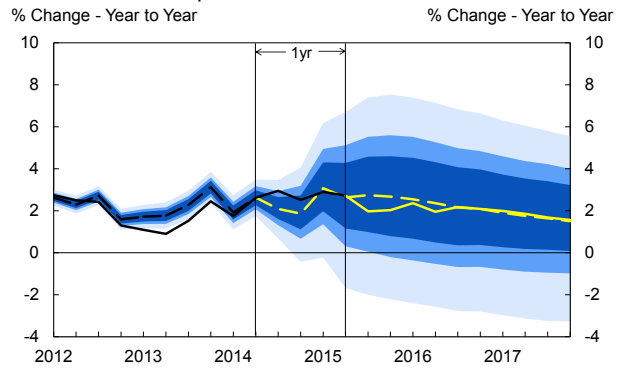


The red lines are the central scenario projections, black lines are released data, and blue lines represent upper and lower 90 percent forecast probability intervals. Dashed lines represent forecasts from the previous Blackbook.

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 lines are the current expected values from the forecast distributions and the dashed yellow lines are the year-ago Blackbook expected values. Black lines are released data and the blue shaded areas represent 50 (darkest shade), 70, and 90 (lightest shade) percent forecast probability intervals from the year-ago Blackbook.

Source: MMS Function (FRBNY)

## Appendix

In this Appendix, we provide brief descriptions of the alternative scenarios used in this Blackbook [A-1], and of the methodology underlying our risk assessment and forecast distributions [A-2].

### A-1. Alternative Scenario Descriptions

Our first alternative scenario considers the impact of productivity growth above our assumed trend of about 1.5% on a nonfarm business sector basis (*Productivity Boom*). The second scenario (*Fiscal Consolidation*) assesses the consequences of below-trend productivity growth. We consider four additional scenarios. In one (*Faster Growth*), “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*), renewed stresses in global financial and economic conditions have an adverse impact on U.S. real economic growth and inflation; the differences between the two mainly reflect differing assessments of the persistence of the negative effects.

### A-2. Methodology to construct the forecast distribution

Our approach to producing the FRBNY forecast distributions is a generalization of techniques used at the Bank of England and other central banks to depict the uncertainty and balance of risks around a forecast. It allows for a dynamic balance of risks that is jointly assessed over inflation and output growth.

Three primary components underlie these forecast distributions: (1) a central scenario with modal inflation and output growth characterized by the central forecast described in Section 2, (2) alternative scenarios with specific inflation and output implications that differ from those of the central scenario, and (3) probabilities that the economy will enter those alternative scenarios. This approach to quantifying uncertainty and risks allows us to interpret the forecast distribution

for output growth and inflation, as well as analyze the impact on that distribution of changing the probabilities of the alternative scenarios.

We set the long-run behavior of our central forecast at the FOMC's longer-run inflation goal and our estimate of the potential growth rate. We also assume that, if the economy enters an alternative scenario, it eventually returns to the central scenario and remains in that scenario thereafter.

We conduct a simulation exercise to generate paths for inflation and output growth; we then perform calculations about our forecast distribution that reflect our risk assessment.

This exercise consists in generating a large number of indicator series, with each entry in a given series corresponding to a quarter in the forecast horizon; for each of these series, each quarter's value indicates only the prevailing scenario in that quarter. To generate these scenario-indicator series, we set two parameters for each alternative scenario: (1) the probability that the economy will leave the central scenario and enter the alternative scenario—the “initial probability”—and (2) the probability that the economy will remain in the alternative scenario once it enters the scenario—the “persistence.”

After creating the indicator series, we generate, for each series, a path for inflation and a path for output growth, with each entry in a given path corresponding to a quarter in the forecast horizon. For a given indicator series and a given quarter, the values of the associated inflation and output growth paths are determined by a draw from the indicated joint distribution of inflation and output growth, based on the scenario the indicator series points to for that quarter. If, for example, the series indicates that the economy is in the central scenario, we draw inflation and output values from a distribution centered at the central forecast. If instead the series indicates the economy is in an alternative scenario, we draw values from a modified version of the central scenario distribution that is consistent with the alternative scenario.

**FOMC BACKGROUND MATERIAL**

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**RESEARCH AND STATISTICS GROUP**

**FRBNY Blackbook**

**December 2015**

**RESTRICTED (FR)**

# FRBNY BLACKBOOK

## December 2015

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## 1. Policy Recommendation and Rationale

In the October *Blackbook* we identified external factors and domestic labor market developments as key elements underlying a decision to initiate policy normalization, and saw the balance of risks as tilted to the downside for both real activity and inflation. While we still see the balance of risks to the downside, during the intermeeting period foreign conditions displayed signs of further stabilization and labor market conditions continued to improve, with payroll employment rising briskly in the past two months and compensation growth picking up modestly. At the same time, inflation data have been mixed, with core CPI inflation slightly higher, largely because of strong services prices, but with core PCE inflation little changed at 1.3%, about where it has been throughout this year. Nevertheless, the U.S. economy has evolved consistently with our forecast and the signs of further firming in the labor market and of higher compensation growth provide greater confidence about the attainment of the inflation objective in the medium term. Consequently, a partial recalibration of the monetary stance involving fed funds rate lift-off at the December FOMC meeting seems appropriate. Even so, we recommend that the monetary policy stance going forward should remain accommodative, with the nominal fed funds rate rising only gradually under our central outlook and continued reinvestment of principal payments to maintain SOMA holdings of longer-term securities at current levels for some time. Federal Reserve communications should continue to emphasize that realizations of the policy path will depend on the evolution of financial conditions and the effect of incoming data on the outlook.

The data released over the intermeeting period provided some mixed signals on the U.S. economy, with weakness in manufacturing and exports but relative strength in other sectors. Real GDP growth in 2015Q3 was 2.1% (annual rate), close to its average rate over this expansion. However, real PCE growth was subdued in September and October despite solid income growth. After a bit of a lull in late summer, payroll employment rose robustly in October and November: the average growth over the past three months (218,000) was slightly above the average over the first half of 2015 (213,000). Some measures indicated that labor compensation growth has risen above the levels that prevailed over most of this expansion. Labor productivity surprised on the upside, raising 2.2% (annual rate) in the third quarter, and housing market indicators generally signaled a continued gradual improvement in conditions. On the downside, the ISM

manufacturing purchasing index fell below the breakeven level of 50 for the first time in three years, and exports were little changed on net over September and October.

Inflation continued to run significantly below the FOMC's longer-run objective, with core PCE inflation over the past 12 months remaining at 1.3%. A concerning development is that household survey measures of consumer inflation expectations continued to decline: three-year expectations in the SCE dropped for the fifth consecutive month to the lowest level in the series and the 5-10 year ahead measure in the Michigan survey remains very low by historical standards. Although longer-term inflation compensation rose slightly during the period, it remains low.

In terms of the outlook, we project real GDP to expand 1.8% (annual rate) over 2015Q4, which would bring the 2015 Q4/Q4 growth rate to just above 2%, in line with the October projection. Thereafter, the projection is similar to that in the October *Blackbook*. The details of this projection also are similar to those in October: real PCE growth is expected to remain solid, supported by improving labor market conditions and lower energy prices, and business investment should pick up modestly. These components are counterbalanced by a continued drag from net exports. We expect labor market conditions to continue to improve gradually, with the unemployment rate projected to be just below 5% by year-end, then to decline to about 4¾% (our estimate of the longer-run natural rate of unemployment) by mid-2016 and to remain around that level thereafter. In this environment, both overall and core PCE inflation are forecast to rise gradually from the currently depressed levels toward the FOMC's longer-run objective by 2017, in line with our projection in the October *Blackbook*.

Even though recent developments have been largely consistent with our central outlook, we see the balance of risks as still tilted to the downside for both real activity and inflation. This judgment reflects our continuing concerns about the global environment and the potential restraining effect of further dollar appreciation. The strains in the Chinese and EME economies evident during the summer have dissipated, but the issues underlying those strains—particularly the necessary rebalancing of the Chinese economy—are still beneath the surface and still could

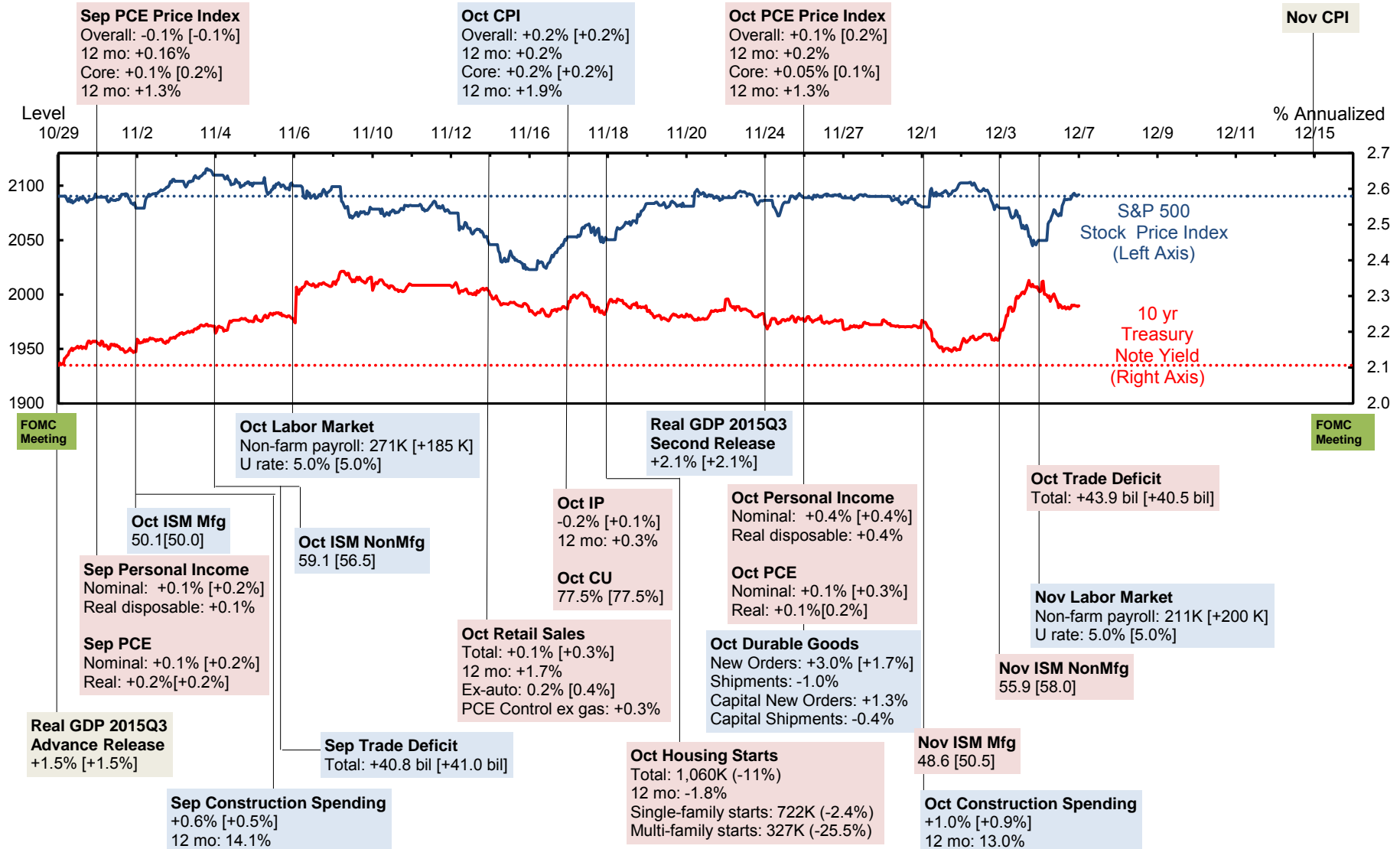


lead to a significant flare-up of the stresses that adversely affect the global and U.S. economies. The recent declines in commodity prices indicate that those risks remain significant.

Despite the downside risks, the concerns we expressed in the October *Blackbook* have attenuated sufficiently to recommend a policy rate lift-off at the December FOMC meeting. Foreign conditions, both in terms of global asset prices as well as global economic activity, appear to have stabilized somewhat. The October and November labor market reports indicate sufficient improvement in labor market conditions over the course of the year as well as prospects for further improvement. Even though inflation remains well below the longer-run goal, the strengthening of the labor market and indications of faster compensation growth are just sufficient to meet the “reasonable confidence” criterion. Given these developments and the signals that FOMC participants have given, a decision to not lift-off likely would be very costly, both in terms of the financial market reaction as well as the impact on FOMC credibility.

However, as we have emphasized previously, the policy path after lift-off is more important for the outlook than the timing of lift-off. We recommend cautious action as well as careful and clear communication about both the policy rate path and the FOMC’s reaction function after lift-off. Given the still unusual environment, a relatively slow pace of removing accommodation will enable policymakers to monitor the response of financial conditions to policy actions, as well as to assess the impact of financial conditions and incoming data on the outlook. But for such a policy to be effective, the public must understand the rationale for the policy and form expectations consistent with it. Consequently, communication that the likely path of the FFR target will be shallow is important. One avenue for such communication is to underline that a shallow path is consistent with the likely behavior of the ‘neutral’ (or ‘natural’) real short-term interest rate ( $r^*$ ). Recent Federal Reserve staff estimates show that  $r^*$ , after a prolonged period of negative values, is still only slightly above zero. Furthermore, its projected path rises very slowly toward its longer-run level, which appears to be below pre-crisis levels. Therefore, the path for the actual policy rate should be shallow enough to provide the needed degree of policy accommodation so that the economy achieves sufficient strength to forestall a relatively quick return to the effective lower bound. We recommend that FOMC communications (including the Chair’s press conference and participants’ speeches) explicitly acknowledge this assessment of

the neutral rate, with the SEP providing quantitative information about participants' assessments of the appropriate policy path. As we recognize the key role that the SEP "dots" are likely to play during the early stages of normalization, we would favor some possible enhancements to the SEP, including participants' estimates of  $r^*$  and their assessments of surrounding uncertainties.



**Note**  
Blue shading: Data release encouraging/positive.  
Red shading: Data release discouraging/negative.  
Beige shading: Data release was neutral.  
Numbers in square brackets are the median of the Bloomberg survey.

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

## 2. Central Forecast

### Intermeeting Developments

Based on the second estimate, real GDP increased 2.1% (annual rate) in 2015Q3, up from the advance estimate of +1.5%. This upward revision was more than accounted for by a faster pace of inventory accumulation. The growth contribution of real final sales was revised down from 2.9 percentage points to 2.7 percentage points, with a larger drag from net exports responsible for the bulk of that downward revision. The first estimate of corporate profits for the third quarter saw a 1.1% (quarterly rate) decline to 13.2% of national income. The corporate profit share has been trending downward gradually from the recent peak of 14.5% in 2011Q4.

With the upward revision of growth of real GDP, growth of output per hour in the nonfarm business sector was revised up to 2.2% (annual rate) in 2015Q3 from the advance estimate of +1.6%. Nonetheless, the four-quarter change in output per hour remained lackluster at +0.6%. Contrary to information from the monthly Employment Situation, hours worked in the nonfarm business sector declined at a 0.3% annual rate, an unusual event except for periods just before, during, and just after a recession. There was a large decline in hours worked by the nonfarm self-employed, but that sector is not large enough to explain all of this weakness. Compensation per hour increased at a 4.0% (annual rate), bringing its four-quarter change to +3.6%. While even a four-quarter change of this series is quite volatile, looking at an annualized 12 quarter change reveals an upward trend since mid-2014, just as the unemployment rate was falling below 6 percent. An annualized twelve-quarter change of unit labor costs rose to 2.1% in 2015Q3, the highest since 2008.

Our current projection for growth of real GDP in the fourth quarter is 1 3/4% (annual rate), which would put growth for 2015H2 at 1.9% and for all of 2015 at 2.1% (Q4/Q4), essentially unchanged from the October Blackbook. The pattern of growth over the second half of the year is different than envisioned in October, with less inventory drag in the third quarter and more in the fourth quarter.

We have marked down our projection for growth of real personal consumption expenditures (PCE) in the fourth quarter, to 2.4% (annual rate) from 3.0% in October. Real PCE grew a modest 0.6% in October, due largely to a steep (-8.3%) decline in household spending on electricity and natural gas. Temperatures in October were well above normal, and temperatures in November were even further above normal. Nonetheless, the underlying trend of consumer spending still looks reasonably strong, though it does appear to be slowing as the boost to real disposable income from lower energy prices is beginning to fade. The 12-month growth of real PCE excluding food and energy was 3.0% in October, down from a recent peak of 4.4% in January of this year.

Recent housing data have been mixed, but we continue to believe that the sector remains on a gradual uptrend. Total housing starts fell 11% in October, with declines in both the single-family and multi-family categories. But total building permits rose 5.1% with increases in both single-family and multi-family permits. In fact, looking at a 3-month moving average of single-family permits, it appears that the pace of improvement has increased somewhat of late. The pace of private residential construction remained strong in October, and employment gains in residential construction picked up in October and November. We currently project growth of real residential investment of around 8% (annual rate) in the fourth quarter, comparable to the third quarter, but then expect it to move up to around 15% over the first half of 2016.

Recent indicators pertaining to business investment in new equipment have also been mixed, but on net suggest continued moderate real growth in the fourth quarter. New orders for nondefense capital goods rose 13.2% in October following two months of substantial declines. Data on shipments was quite a bit less impressive; they declined by 1.5% in October. But offsetting this weakness in shipments is the fact that capital goods prices fell in October. In addition, exports of capital goods declined in October while imports increased.

Unlike equipment, recent data on investment in nonresidential structures suggest another quarter of quite weak, if not negative, growth. Nominal spending on private nonresidential structures reported in the construction-put-place report rose at a decent 0.6% in October, the best in five months. However, oil and gas drilling activity as reported in the industrial production data

declined 5% (monthly rate) in October following a 4% decline in September. The quarterly decline is likely to be quite steep, largely or completely offsetting gains in other components of this sector.

The October trade data were somewhat better than we were anticipating. Real exports declined, as expected, but the rate of growth of real imports was lower than expected. Real imports of industrial supplies and materials, which include petroleum and products, fell 3% in October. For the entire fourth quarter, the drag from net exports is now projected to be 0.4 percentage points rather than the 0.8 percentage points expected in the October forecast.

At the state and local government level, the rate of growth of real consumption and gross investment is projected to slow to around 1% (annual rate) in the fourth quarter from 2.6% in the third quarter. Employment growth in the sector has slowed to an average of 1,000 per month over October and November from 10,000 per month in the third quarter. In addition, growth of construction spending by the state and local sector declined in October on the heels of a decline in September. In contrast, the Monthly Treasury Statement for October suggests that spending at the federal level will increase at a relatively strong pace in the fourth quarter, more than offsetting the slowing in the state and local sector.

The pace of inventory accumulation slowed only modestly in the third quarter, to \$90 billion from around \$113 billion over the first half. This remains well above the roughly \$40 to \$50 billion pace of accumulation we believe to be consistent with stable inventory sales ratio. Indeed, the total manufacturing and trade inventory sales ratio has risen notably since mid-2014 and as of October was at its highest level since July of 2009. With very little hard data to go on, we anticipate a slowing in the pace of inventory accumulation in the fourth quarter to the \$50 to \$60 billion range. Supply side indicators have been consistent with this view. The ISM Manufacturing Composite Index (PMI) fell by 1.5 percentage points to 48.6 in November from 50.1 in October, its lowest level since 2009. The subcomponents for production and new orders also fell below 50 for the first time since the second half of 2012. Hours worked in the manufacturing sector over the three months ending in November declined at a 1.3% annual rate.

Monthly gains in nonfarm payroll employment averaged 255,000 in October and November, a big step up from the 174,000 monthly average of the third quarter. In contrast, growth of hours worked (based on the Employment Situation data) looks to have slowed to around 1 ¾% in the fourth quarter versus 2 ¾% in the third quarter. The bulk of the increase in job gains has been in the service-providing sector, with particularly large increases in retail trade and professional and business services. (The ISM non-manufacturing composite index fell 3.2 percentage points to 55.9, its weakest reading in six months, but remains at a level consistent with continued moderate growth in the service sector of the economy.) Employment gains also increased in the goods-producing sector of the economy, where gains in employment in construction offset weakness in mining and manufacturing. The monthly gain in average hourly earnings slipped to 0.16% in November from 0.36% in October. But the 12-month change in this series has moved up a few tenths since the beginning of the year.

Recent inflation data have come in somewhat below expectations. Oil prices have fallen further, leading us to revise down our assumed path for WTI by around \$5 per barrel over 2015Q4 and 2016Q1, and then by around \$4 per barrel over the remainder of the forecast horizon. While energy prices rose by 0.2% in October, we expect them to decline by 0.5% in November and 0.2% in December. The total PCE deflator is now expected to increase at a 0.4% annual rate in 2015Q4 versus 0.9% in the October Blackbook. This reduction in the path of energy prices feeds through into early 2016, with the total PCE deflator in 2016Q1 expected to rise at a 1.4% annual rate versus 1.6% in October. Our projection for the rate of increase of the core PCE deflator in 2015Q4 has also been revised lower, to 1.2% (annual rate) from 1.4%. The core PCE deflator for October rose just 0.05%. The rate of decline of core goods prices intensified, the rate of increase of rents slowed somewhat, and the PCE health care price index fell modestly. The 12-month change of the core PCE deflator was unchanged at 1.3%. Despite the monthly decline in the health care index, the 12-month change of that index rose to 0.9% from 0.7% over the preceding three months. Moreover, although it is rare to observe declines in this sub-index, it did fall by 0.3% in October of 2014 and by 0.4% in January of 2015 and April of 2013. However, there does not appear to be any seasonal regularity to these declines.

## The Outlook

From 2.1% (Q4/Q4) in 2015, we expect growth to pick up modestly to around 2 ¼% in 2016. The firming in growth reflects an end of the current inventory correction by early 2016, continued solid growth of consumer spending, some firming in residential and business fixed investment, and somewhat stronger growth of federal spending in 2016 due to the recently signed budget agreement. These positive developments are offset to a large extent by continued drag from net exports. By 2017 we expect growth to slow to just under 2% due to a combination of aging of the business cycle and the gradual tightening of financial conditions generated by our assumed upward path for the federal funds rate. The unemployment rate is projected to decline to 4.7% by the end of 2016 and then level out at 4.8%--our current estimate of NAIRU--through 2017. This path of the unemployment rate assumes that the labor force participation rate will move gradually higher, from the recent 62.5 to just shy of 62.7, while productivity growth reverts to its longer run trend. Inflation moves gradually up to 2% by the end of 2017 as slack continues to decline and the effects of dollar appreciation fade. The broad parameters of this forecast are unchanged from the October Blackbook.

There are several critical assumptions underlying this projection. Domestically, we expect lending standards to gradually ease, allowing for more growth in the credit sensitive sectors, particularly residential investment. The assumed level of the exchange value of the dollar is somewhat higher in this round, though we continue to expect it to be little changed from the end of 2015 to the end of 2017. In addition, foreign GDP growth is expected to gradually improve in 2016 and 2017. Based on futures markets, we anticipate a gradual uptrend of energy prices over the course of 2016 and 2017. Finally, fiscal policy, broadly defined, was already expected to move to a modestly stimulative stance in 2016 after several years of restraint. With the passage of the Bipartisan Budget Act of 2015, which raises the discretionary budget authority caps for FY2016 and FY2017, we expect fiscal policy to add as much as an additional 0.2 percentage points to growth in FY2016. (The Surface Transportation Reauthorization and Reform Act of 2015 would have minimal impact on federal outlays over the forecast horizon but would depress federal spending in the later part of CBO's ten year projections.)



In this forecast real consumer spending is expected to grow around 2 ½% (Q4/Q4) in 2016, down from around 2 ¾% in 2015. Under our assumptions for oil prices, the boost to real disposable income from lower energy prices will continue to wane going forward. In addition, given our assumption for productivity growth, growth of real disposable income will slow in 2016. Also, the consumer durable goods cycle is aging; we think it is very unlikely that light vehicle sales will continue to increase at the pace of the past four quarters. For 2017, we expect consumer spending to slow to around 2 ¼% as growth of real disposable income slows further. Maintaining these growth rates will require some movement downward of the personal saving rate, but by the end of 2017 we expect it will still be around 4 ¼%. We view the current restrained supply of credit to consumers to be an important factor behind the currently elevated saving rate.

While consumer spending slows, we expect the growth contribution from residential investment to move somewhat higher in 2016, reflecting gathering evidence of growing tightness in housing markets which is pushing rents and home prices higher. Also helping to increase the level of housing starts is the recent increase in the pace of household formations, which is likely to move higher given the ongoing improvement in the labor market, and the assumption of an easing in mortgage underwriting standards. By 2017, however, the growth contribution from residential investment will decline somewhat as the ongoing tightening of monetary policy begins to push long term interest rates higher.

Given our assumptions for the exchange value of the dollar and for foreign growth, we expect exports to begin growing again by the second quarter of 2016. Along with the end of the current inventory cycle, this development is expected to result in a gradual improvement in output of the manufacturing sector associated with a rising capacity utilization rate. The rising capacity utilization rate should in turn increase incentives for business investment in new capacity.

However, the net export growth contribution in 2016 is projected to be -1.0 percentage points versus the -0.6 percentage points of 2015. Growth of real imports is expected to increase from around 3 ½% for 2015 to around 7% in 2016. Import growth this year has been weaker than expected given the appreciation of the dollar, possibly reflecting the relatively elevated level of

domestic inventories. For 2017 we project the net export growth contribution to improve to -0.5 percentage points as export growth strengthens while import growth slows.

As mentioned above, the unemployment rate is expected to stabilize at 4.8% in 2017. Monthly gains in nonfarm payroll employment are likely to slow to around 175,000 in 2016 and then to 130,000 in 2017.

## 2-1: Projections of Key Variables

	<u>Core PCE Inflation</u>		<u>Real GDP Growth</u>		<u>Unemployment Rate*</u>		<u>Fed Funds Rate**</u>	
	Oct	Dec	Oct	Dec	Oct	Dec	Oct	Dec
<b>2015</b>								
Q1	1.3	1.3	0.6	0.6	5.6	5.6	0-0.25	0-0.25
Q2	1.3	1.3	3.9	3.9	5.4	5.4	0-0.25	0-0.25
Q3	1.3	1.3	1.5	2.1	5.2	5.2	0-0.25	0-0.25
Q4	1.4	1.2	2.5	1.8	5.1	5.0	0.38	0.38
<b>2016</b>								
Q1	1.4	1.4	2.1	2.3	5.0	4.9	0.56	0.50
Q2	1.5	1.5	2.5	2.5	4.9	4.8	0.75	0.63
Q3	1.6	1.6	2.5	2.2	4.9	4.7	0.94	0.75
Q4	1.7	1.7	2.4	2.1	4.8	4.7	1.13	0.88
<b>2017</b>								
Q1	1.8	1.8	2.0	1.9	4.8	4.8	1.5	1.19
Q2	1.8	1.8	2.2	2.1	4.8	4.8	1.9	1.50
Q3	1.9	1.9	2.0	1.9	4.8	4.8	2.3	1.81
Q4	1.9	1.9	2.1	1.9	4.8	4.8	2.6	2.13
<b>Q4/Q4</b>								
2014	1.2	1.3	2.5	2.5	-1.3	-1.3	0-0.25	0-0.25
2015	1.3	1.3	2.1	2.1	-0.6	-0.7	0.38	0.38
2016	1.7	1.6	2.3	2.3	-0.3	-0.3	1.13	0.88
2017	1.9	1.9	2.1	1.9	0.0	0.1	2.6	2.13

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

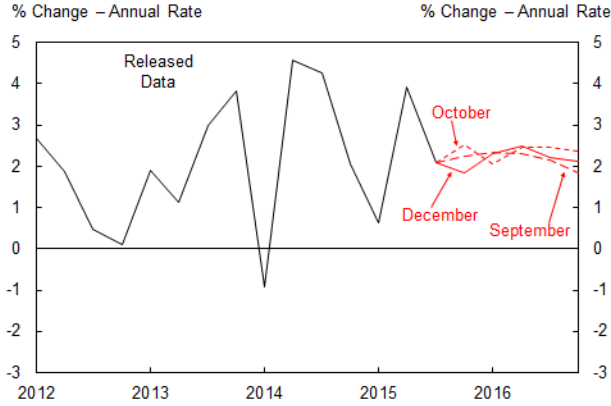
\*Quarterly values are the average rate for the quarter. Yearly values are the difference between Q4 of the previous year and Q4 of the listed year.

\*\*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.

## 2-2: Evolution of Projected Quarterly Paths

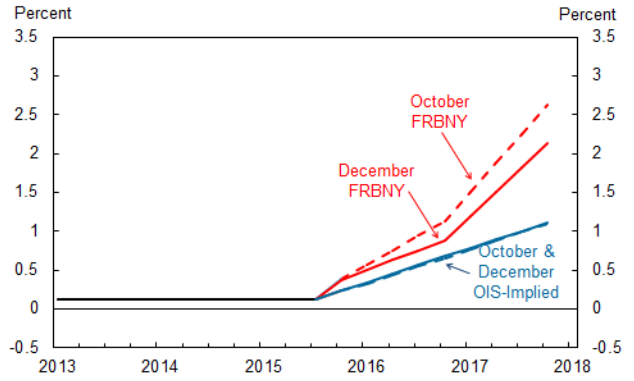
### Key Indicators

#### Real GDP Growth

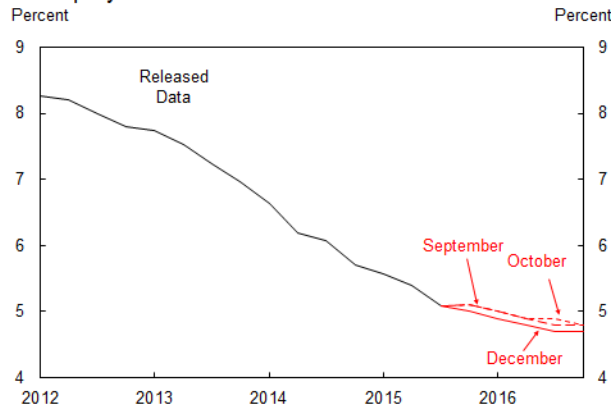


### Forecast Assumptions

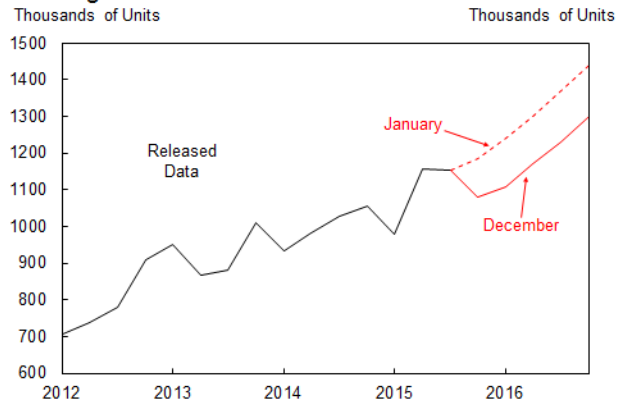
#### Federal Funds Rate



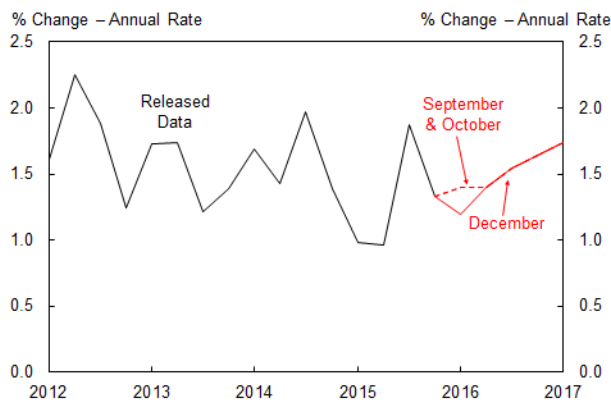
#### Unemployment Rate



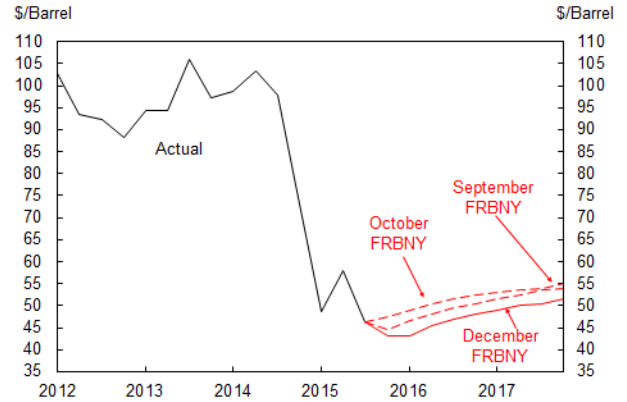
#### Housing Starts



#### Core PCE Inflation



#### Crude Oil



Source: FRBNY (MMS and IR Functions)

## 2-3: Near-Term Projections

	Growth Rates (AR)			Growth Contributions (AR)		
	2015Q4	2016Q1	2016Q2	2015Q4	2016Q1	2016Q2
<b>OUTPUT</b>						
<b>Real GDP</b>	1.8 (2.5)	2.3 (2.1)	2.5 (2.5)	1.8 (2.5)	2.3 (2.1)	2.5 (2.5)
<b>Final Sales to Domestic Purchasers</b>	3.0 (3.4)	3.6 (3.3)	3.4 (3.3)	3.0 (3.4)	3.6 (3.3)	3.5 (3.3)
<b>Consumption</b>	2.4 (3.0)	2.8 (2.8)	2.7 (2.7)	1.6 (2.0)	1.9 (1.9)	1.8 (1.8)
<b>BFI: Equipment</b>	8.0 (8.0)	10.0 (8.0)	10.0 (8.0)	0.5 (0.5)	0.6 (0.5)	0.6 (0.5)
<b>BFI: Nonresidential Structures</b>	0.0 (8.0)	8.0 (8.0)	7.0 (7.0)	0.0 (0.2)	0.2 (0.2)	0.2 (0.2)
<b>BFI: Intellectual Property Products</b>	6.0 (7.0)	7.0 (7.0)	7.0 (7.0)	0.2 (0.3)	0.3 (0.3)	0.3 (0.3)
<b>Residential Investment</b>	7.7 (10.0)	16.4 (10.2)	14.4 (12.4)	0.2 (0.3)	0.5 (0.3)	0.5 (0.4)
<b>Government: Federal</b>	5.0 (-0.5)	-0.5 (-0.5)	-0.5 (-0.5)	0.3 (-0.0)	0.0 (-0.0)	0.0 (0.0)
<b>Government: State and Local</b>	1.1 (1.4)	1.4 (1.4)	1.4 (1.4)	0.1 (0.2)	0.2 (0.2)	0.2 (0.2)
<b>Inventory Investment</b>	-- --	-- --	-- --	-0.8 (-0.1)	-0.3 (-0.1)	0.0 (0.0)
<b>Net Exports</b>	-- --	-- --	-- --	-0.4 (-0.8)	-1.0 (-1.2)	-1.0 (-0.8)
<b>INFLATION</b>						
<b>Total PCE Deflator</b>	0.4 (0.9)	1.5 (1.6)	1.6 (1.6)			
<b>Core PCE Deflator</b>	1.2 (1.4)	1.4 (1.4)	1.5 (1.5)			
<b>PRODUCTIVITY AND LABOR COSTS*</b>						
<b>Output per Hour</b>	0.5 (1.5)	1.1 (0.8)	1.6 (1.5)			
<b>Compensation per Hour</b>	3.1 (2.9)	3.2 (3.0)	3.4 (3.0)			
<b>Unit Labor Costs</b>	2.6 (1.4)	2.1 (2.2)	1.8 (1.5)			

Note: Numbers in parentheses are from the previous Blackbook.

\*Nonfarm business sector.

## 2-4: Medium-Term Projections

	Q4/Q4 Growth Rates			Q4/Q4 Growth Contributions		
	2015	2016	2017	2015	2016	2017
<b>OUTPUT</b>						
<b>Real GDP</b>	2.1 (2.1)	2.3 (2.3)	1.9 (2.1)	2.1 (2.1)	2.3 (2.3)	1.9 (2.1)
<b>Final Sales to Domestic Purchasers</b>	2.8 (3.0)	3.3 (3.2)	2.3 (2.4)	2.8 (3.1)	3.3 (3.3)	2.4 (2.5)
<b>Consumption</b>	2.7 (3.0)	2.6 (2.6)	2.2 (2.2)	1.8 (2.0)	1.8 (1.8)	1.5 (1.5)
<b>BFI: Equipment</b>	5.0 (4.6)	8.5 (7.5)	3.5 (3.5)	0.3 (0.3)	0.5 (0.5)	0.2 (0.2)
<b>BFI: Nonresidential Structures</b>	-2.2 (2.8)	6.5 (6.5)	3.5 (3.5)	-0.1 (0.1)	0.2 (0.2)	0.1 (0.1)
<b>BFI: Intellectual Property Products</b>	5.2 (7.4)	6.2 (6.2)	3.5 (3.5)	0.2 (0.3)	0.3 (0.3)	0.2 (0.2)
<b>Residential Investment</b>	8.6 (9.4)	13.7 (13.9)	9.4 (12.5)	0.3 (0.3)	0.4 (0.4)	0.3 (0.5)
<b>Government: Federal</b>	1.5 (-0.9)	-0.5 (-0.5)	-0.5 (-0.5)	0.1 (-0.1)	0.0 (-0.0)	0.0 (-0.0)
<b>Government: State and Local</b>	1.8 (1.7)	1.4 (1.4)	0.7 (0.7)	0.2 (0.2)	0.2 (0.2)	0.1 (0.1)
<b>Inventory Investment</b>	-- --	-- --	-- --	-0.1 (-0.2)	-0.1 (-0.0)	0.0 (-0.1)
<b>Net Exports</b>	-- --	-- --	-- --	-0.6 (-0.7)	-1.0 (-0.9)	-0.5 (-0.4)
<b>INFLATION</b>						
<b>Total PCE Deflator</b>	0.5 (0.6)	1.7 (1.7)	1.9 (1.9)			
<b>Core PCE Deflator</b>	1.3 (1.4)	1.6 (1.6)	1.9 (1.9)			
<b>PRODUCTIVITY AND LABOR COSTS*</b>						
<b>Output per Hour</b>	1.3 (1.0)	1.3 (1.2)	1.3 (1.4)			
<b>Compensation per Hour</b>	3.5 (2.3)	3.6 (3.3)	4.1 (3.6)			
<b>Unit Labor Costs</b>	2.3 (1.3)	2.3 (2.1)	2.8 (2.1)			

Note: Numbers in parentheses are from the previous Blackbook.

\*Nonfarm business sector.

## 2-5: Comparison with Other Forecasts

		Real GDP Growth			
	Release Date	2015Q4	2016Q1	2015 Q4/Q4	2016 Q4/Q4
<b>FRBNY</b>	12/7/2015	1.8 (2.5)	2.3 (2.1)	2.1 (2.1)	2.3 (2.3)
<b>Blue Chip</b>	12/10/2015	2.2 (2.7)	2.5 (2.7)	2.2 (2.3)	2.6 (2.6)
<b>Median SPF</b>	11/13/2015	2.6 (2.8)	2.5 (2.8)	2.4 (2.3)	2.6 (2.8)
<b>Macro Advisers</b>	9/21/2015	2.7 (2.7)	2.7 (2.7)	2.3 (2.3)	2.5 (2.5)
<b>FRBNY-DSGE</b>	12/4/2015	2.1 (2.1)	1.9 --	2.2 (2.1)	1.9 (2.1)
		Core PCE Inflation			
	Release Date	2015Q4	2016Q1	2015 Q4/Q4	2016 Q4/Q4
<b>FRBNY</b>	12/7/2015	1.2 (1.4)	1.4 (1.4)	1.3 (1.3)	1.6 (1.7)
<b>Median SPF</b>	11/13/2015	1.5 (1.6)	1.5 (1.7)	1.4 (1.5)	1.6 (1.8)
<b>Macro Advisers</b>	9/21/2015	1.6 (1.6)	1.6 (1.6)	1.4 (1.4)	1.7 (1.7)
<b>FRBNY-DSGE</b>	12/4/2015	1.2 (1.1)	1.0 --	1.3 (1.3)	1.0 (1.1)
		CPI Inflation			
	Release Date	2015Q4	2016Q1	2015 Q4/Q4	2016 Q4/Q4
<b>FRBNY</b>	12/7/2015	0.7 (0.6)	1.9 (2.0)	0.5 (0.4)	2.0 (2.1)
<b>Blue Chip</b>	12/10/2015	0.6 (0.9)	1.6 (0.9)	0.5 (0.6)	2.1 (2.2)
<b>Median SPF</b>	11/13/2015	0.9 (1.8)	1.8 (2.0)	0.6 (0.8)	2.0 (2.1)
<b>Macro Advisers</b>	9/21/2015	-0.1 (-0.1)	-0.1 (-0.1)	0.5 (0.5)	2.1 (2.1)
		Core CPI Inflation			
	Release Date	2015Q4	2016Q1	2015 Q4/Q4	2016 Q4/Q4
<b>FRBNY</b>	12/7/2015	2.2 (2.0)	1.8 (2.0)	2.0 (2.0)	1.9 (2.0)
<b>Median SPF</b>	11/13/2015	1.8 (1.9)	1.9 (2.0)	1.9 (2.0)	2.0 (2.0)
<b>Macro Advisers</b>	9/21/2015	1.8 (1.8)	1.8 (1.8)	1.9 (1.9)	1.9 (1.9)

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

### 3. Uncertainty & Risks

Developments during the intermeeting period generally were consistent with our central economic outlook, and thus we lowered modestly our assessment of uncertainty over the next year. Nevertheless, we still see significant downside risks over the medium term, and thus our assessment of uncertainty and the balance of risks at those horizons have not changed much since the October *Blackbook*. Based on the difference between the modal central forecast and the expected value from our forecast distributions [Exhibit 3-1], as well as the changes in the forecast distributions [Exhibit 3-3], the balance of risks for real GDP growth remain to the downside except for very near term horizons. For core PCE inflation, the risks are roughly balanced over near-term horizons, but are skewed to the downside at longer horizons. The widths of the probability intervals are somewhat narrower over the next year. The uncertainty around the real GDP growth projection remains greater than historical norms while the uncertainty around the inflation projection is near its historical norms.

Overall, the data on U.S. real economic activity were consistent with the central forecast. Manufacturing indicators continued to be rather weak, probably reflecting the impact of previous dollar appreciation and slower growth in emerging markets. The October and November labor market reports indicated that the pace of labor market improvement picked up to near that of the first half of the year. Real PCE growth was a bit subdued in September and October, but still suggested consumption growth could be maintained. Core PCE inflation was little changed in October and is well below the FOMC objective. Alternative underlying inflation measures behaved similarly. Longer-term inflation compensation measures in the U.S. and the euro area rose slightly but remain near historical lows. Some U.S. survey measures of inflation expectations, including the FRBNY SCE 3-year ahead median, have fallen modestly in recent months. Outside of the U.S., there are indications of continued softness in emerging market economies, although not of a more abrupt deterioration (despite a deep recession in Brazil).

Financial markets provided mixed signals. Developed economy equity prices rebounded further in the period (although they displayed some notable daily volatility), while emerging market equity prices rose less. Oil and commodity prices fell further to near multi-year lows. Long-



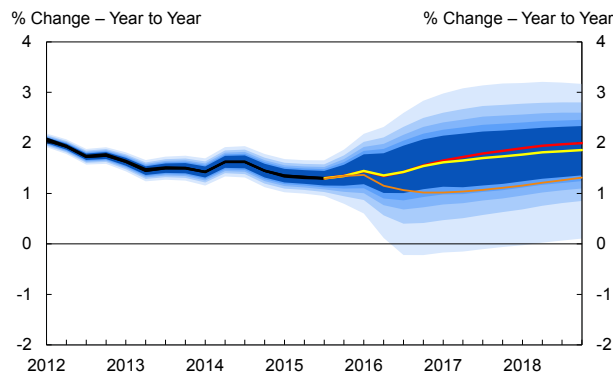
term nominal and real yields in the U.S. rose over the period as market participants placed a higher probability of a policy lift-off at the December meeting; yields in the euro area rose after the December ECB meeting. The trade-weighted dollar index appreciated moderately, reflecting assessments of policy divergence across the developed economies.

We interpreted these developments as indicating some reduction in near-term uncertainty, but little change in the medium-term risks around the U.S. outlook, and thus reduced the probabilities of a few of our scenarios [Exhibit 3-2]. We lowered moderately the probabilities of the negative *Fiscal Consolidation* scenario and the positive *Faster Growth* scenario, as we see the recent data as more consistent with our central outlook and thus signaling a higher probability that the economy will follow the central scenario over the near term. Otherwise, we made no significant changes in the probabilities. Overall, these changes led to some narrowing of the 90 percent probability intervals for real GDP growth and core PCE inflation over the next year [Exhibit 3.3]. The interval for real GDP growth remains moderately wider than historical norms based on realized forecast errors, while that for core PCE inflation is fairly close to its norms. The real GDP growth forecast distributions reflect that the risks to real activity are skewed to the downside through most of the forecast horizon, while the risks to inflation are to the downside in 2017-18 [Exhibit 3-1].

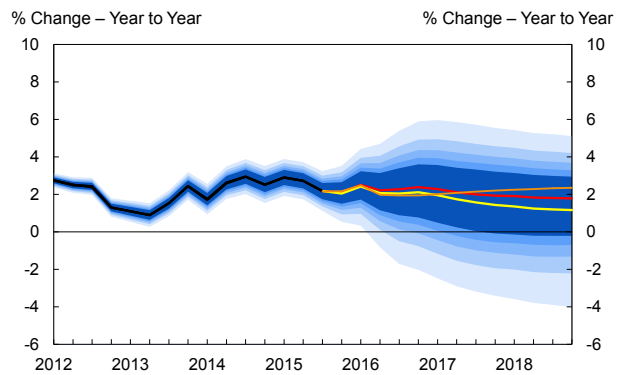
Comparing the recent data and our current expected forecast to the forecast distribution from a year earlier, the current projection for inflation generally runs somewhat below the year-ago expectation until the end of 2018. This reflects the continued low inflation data as measured by the 4-quarter change and an inflation forecast that is modestly below the 2 percent objective through 2017 [Exhibit 3-3]. Real GDP growth so far in 2015 has been in the lower part of the year-ago distribution, as the expected rebound in growth failed to materialize. Going forward, the current real GDP growth expectation is at or modestly below the year-ago expectation over the forecast horizon, reflecting the rather subdued path for real GDP growth and the medium-term downside risks in our outlook. These patterns indicate a modest deterioration in our outlook for both inflation and real activity over the past year.

### 3-1: Forecast Distributions

Core PCE Inflation Forecast Distribution



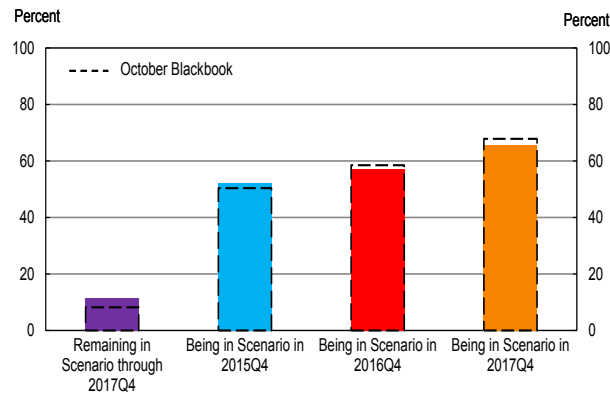
Real GDP Growth Forecast Distribution



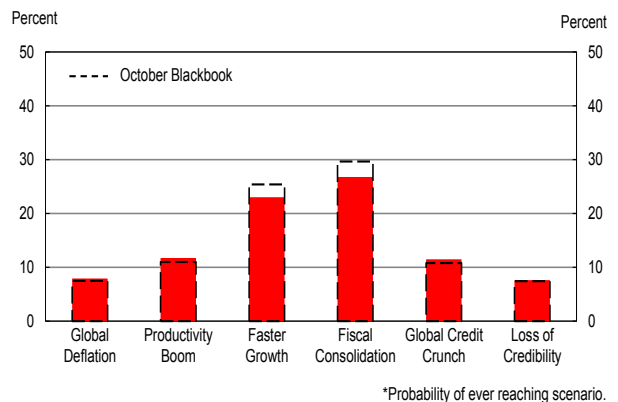
The yellow line is the expected value of the forecast distribution, the red line is the FRBNY central projection, the orange line is the DSGE forecast, and the black line is released data. The shading represents the 50, 60, 70, 80 and 90 percent probability that the four-quarter change will be within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

### 3-2: Scenario Probabilities

Central Scenario Probabilities



Alternative Scenario Probabilities\*

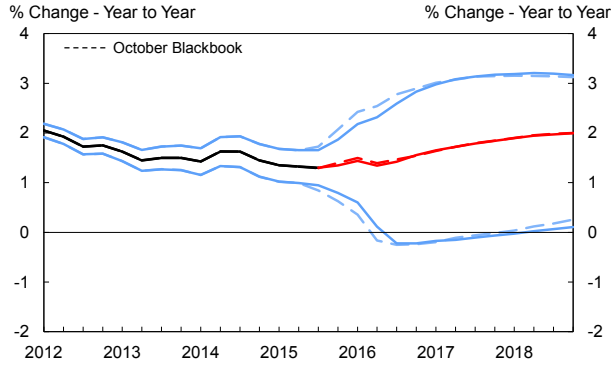


The left chart shows the probability of remaining in the central scenario through the end of the forecast horizon and the probabilities of being in the central scenario at the end of the next three years. The right chart shows the probabilities of ever reaching an alternative scenario over the forecast horizon, an assessment of the overall likelihood of each alternative scenario. A short description of the scenarios and the methodology to perform risk assessment is in the Appendix.

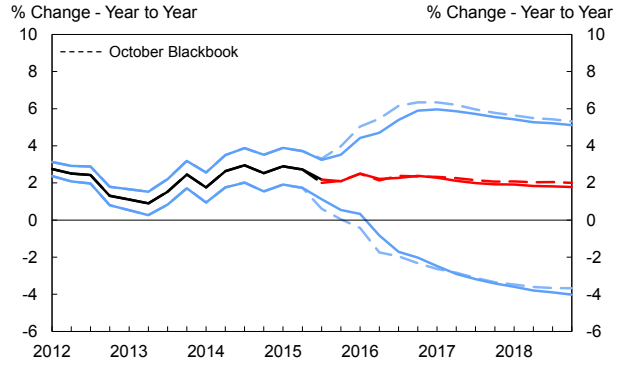
Source: MMS Function (FRBNY)

### 3-3: Evolution and Performance of Forecast Distributions

Change in Core PCE Inflation Forecast Distribution

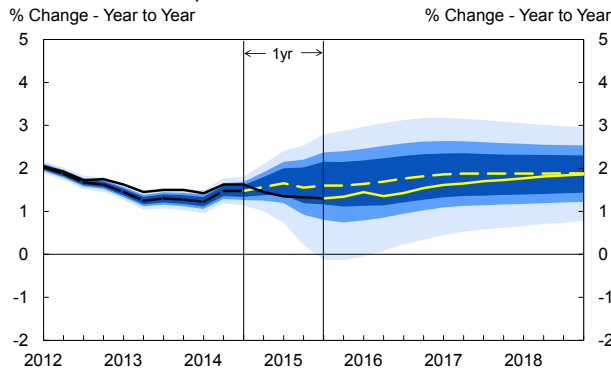


Change in Real GDP Growth Forecast Distribution

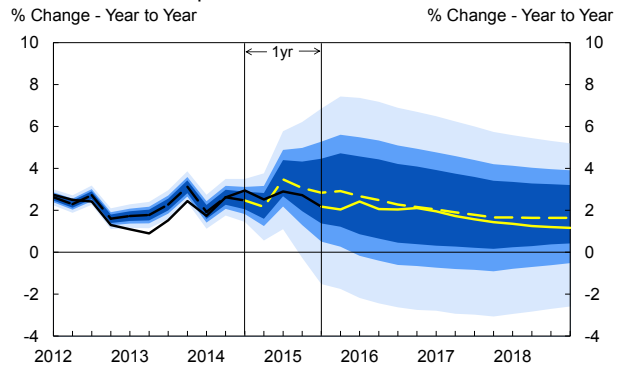


The red lines are the central scenario projections, black lines are released data, and blue lines represent upper and lower 90 percent forecast probability intervals. Dashed lines represent forecasts from the previous Blackbook.

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 lines are the current expected values from the forecast distributions and the dashed yellow lines are the year-ago Blackbook expected values. Black lines are released data and the blue shaded areas represent 50 (darkest shade), 70, and 90 (lightest shade) percent forecast probability intervals from the year-ago Blackbook.

Source: MMS Function (FRBNY)

## Appendix

In this Appendix, we provide brief descriptions of the alternative scenarios used in this Blackbook [A-1], and of the methodology underlying our risk assessment and forecast distributions [A-2].

### A-1. Alternative Scenario Descriptions

Our first alternative scenario considers the impact of productivity growth above our assumed trend of about 1.5% on a nonfarm business sector basis (*Productivity Boom*). The second scenario (*Fiscal Consolidation*) assesses the consequences of below-trend productivity growth. We consider four additional scenarios. In one (*Faster Growth*), “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*), renewed stresses in global financial and economic conditions have an adverse impact on U.S. real economic growth and inflation; the differences between the two mainly reflect differing assessments of the persistence of the negative effects.

### A-2. Methodology to construct the forecast distribution

Our approach to producing the FRBNY forecast distributions is a generalization of techniques used at the Bank of England and other central banks to depict the uncertainty and balance of risks around a forecast. It allows for a dynamic balance of risks that is jointly assessed over inflation and output growth.

Three primary components underlie these forecast distributions: (1) a central scenario with modal inflation and output growth characterized by the central forecast described in Section 2, (2) alternative scenarios with specific inflation and output implications that differ from those of the central scenario, and (3) probabilities that the economy will enter those alternative scenarios. This approach to quantifying uncertainty and risks allows us to interpret the forecast distribution

for output growth and inflation, as well as analyze the impact on that distribution of changing the probabilities of the alternative scenarios.

We set the long-run behavior of our central forecast at the FOMC's longer-run inflation goal and our estimate of the potential growth rate. We also assume that, if the economy enters an alternative scenario, it eventually returns to the central scenario and remains in that scenario thereafter.

We conduct a simulation exercise to generate paths for inflation and output growth; we then perform calculations about our forecast distribution that reflect our risk assessment.

This exercise consists in generating a large number of indicator series, with each entry in a given series corresponding to a quarter in the forecast horizon; for each of these series, each quarter's value indicates only the prevailing scenario in that quarter. To generate these scenario-indicator series, we set two parameters for each alternative scenario: (1) the probability that the economy will leave the central scenario and enter the alternative scenario—the “initial probability”—and (2) the probability that the economy will remain in the alternative scenario once it enters the scenario—the “persistence.”

After creating the indicator series, we generate, for each series, a path for inflation and a path for output growth, with each entry in a given path corresponding to a quarter in the forecast horizon. For a given indicator series and a given quarter, the values of the associated inflation and output growth paths are determined by a draw from the indicated joint distribution of inflation and output growth, based on the scenario the indicator series points to for that quarter. If, for example, the series indicates that the economy is in the central scenario, we draw inflation and output values from a distribution centered at the central forecast. If instead the series indicates the economy is in an alternative scenario, we draw values from a modified version of the central scenario distribution that is consistent with the alternative scenario.