FOMC BACKGROUND MATERIAL

RESEARCH AND STATISTICS GROUP

FRBNY Blackbook

January 2017

CLASS II FOMC - RESTRICTED (FR)

FRBNY BLACKBOOK

January 2017

CONTENTS

APPENDIX

1. Policy Recommendation and Rationale

The data releases over the intermeeting period were generally somewhat better than expected; however, they did not materially alter our outlook for the near- and medium-term. Real GDP growth was above potential in 2016H2. It is anticipated to remain slightly above potential in 2017, and then be near potential in 2018. Inflation is projected to return gradually to mandate-consistent levels over the medium term. Uncertainty around the outlook remains elevated reflecting lack of detailed information about possible government policy changes and their potential impact, but risks continue to be roughly balanced for both inflation and output growth. With little change in our outlook and risk profile, we see no change in the FFR target range at the upcoming FOMC meeting as appropriate. Over the medium term, our modal projections remain conditioned on a gradual increase of the policy rate towards its longer-term natural rate of around 2.50-2.75%. The specific timing of adjustments to the monetary stance is less crucial than the overall shape and steepness of the medium-term policy path. Yet, if fundamentals generally evolve according to our modal scenario, we believe two or three hikes in 2017 as well as an end to current reinvestment policy in the second half of the year would be appropriate.

Overall, the data released over the intermeeting period surprised on the upside, with the Citi U.S. Economic Surprise Index moving up from +22.9 on December 16 to +35.8 as of January 26. Even so, real GDP growth in Q4 was 1.9% (annual rate), little different from the 1.8% projection in the December *Blackbook* and modestly below our projection just prior to the release. The FRBNY staff nowcast for 2017Q1 moved up from 2.4% on December 9 to 2.7% on January 27. The staff growth outlook for 2017H1 and beyond was little changed relative to the previous *Blackbook*.

The December labor market report generally indicated a continued gradual strengthening in labor market conditions as wage growth picked up. For 2016Q4, payroll gains averaged 165,000, a slower pace than the average gains for 2016 as a whole (+179,750) but above what we would associate with GDP growth at potential. The unemployment rate ticked up slightly to 4.7% in December, while the labor force participation rate went up a notch to 62.7%. Average hourly earnings suggested a pickup in wage growth, as the 12-month change rose to 2.9% in December from 2.5% in November, the highest reading over this expansion.

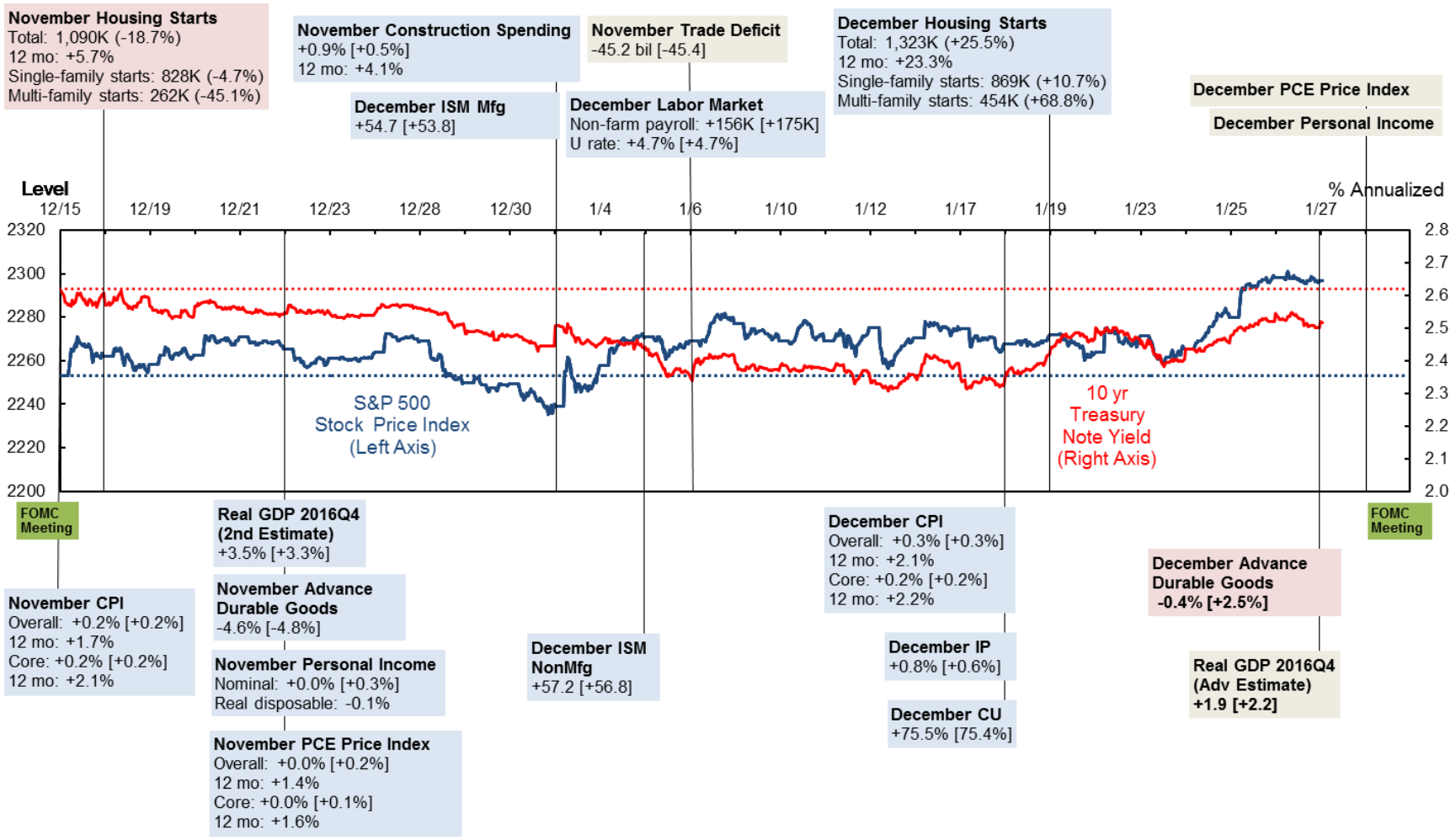
The data provided mixed signals about the underlying pace of inflation. Recent readings of core PCE inflation have been weaker than expected, resulting in Q4 core PCE inflation of only 1.3% (annual rate). Nevertheless, 12-month changes in core inflation measures were little changed over the course of 2016. Measures of longer-term inflation compensation rose slightly on net over the intermeeting period and remain near the highest level since July 2015. The median of three-year household inflation expectations in our December SCE increased modestly, but the December Michigan measure of longer-term household expectations ticked down to a new low before rebounding in January. Overall, we do not yet see a significant buildup of inflationary pressures, although we continue to expect a gradual convergence of inflation towards the Committee's objective.

Compared to the previous intermeeting period, movements in financial market prices over this period were much more muted, with little change in the broad trade-weighted dollar index and the 10-year Treasury yield, a modest rise in equity prices, and a small decline in the VIX index. Also, the market-implied expected path of the federal funds rate has not changed materially over the period: as of January 26 the FFR at the end of 2018 is around 1.5%, which is somewhat below the end-2018 value assumed in our modal forecast. On net, it appears that financial conditions have become only modestly tighter in the intermeeting period, which we think is consistent with our assessment of continued sizable uncertainty around the economic outlook (the low level of the VIX stands in contrast to that assessment).

With little change in our outlook or our risk assessment, we continue to recommend a gradual pace of increases in the FFR. A shallow upward sloping path for the policy rate is consistent with the gradually rising path of the real natural rate of interest projected by the FRBNY DSGE model. In terms of timing, we currently see a 25 basis point rate hike sometime in the first half of the year, followed by at least one but no more than two 25 basis point increases in the second half as likely to be appropriate. Furthermore, the time may soon be ripe to begin reconsidering the statement language regarding the Federal Reserve's balance sheet policy. Consistently with the Policy Normalization Principles and Plans, we believe that it will be appropriate to start phasing out the reinvestment of maturing Treasury securities and MBS principal payments when

the FFR has moved away sufficiently from its effective lower bound, a condition that could materialize in the second half of 2017. In preparation, the FOMC should soon begin to discuss the possibility of a change in reinvestment policy, possibly as early as March, which would allow the FOMC to provide signals of any change well in advance of its implementation.

While our modal projection is for a relatively shallow policy path in the medium term, the continued high uncertainty surrounding the outlook suggests that the FOMC should retain flexibility to adjust the policy rate path in response to the evolution of economic and financial conditions in the U.S. and abroad. Even so, such flexibility could engender concerns about policy becoming overly discretionary. To address such concerns, we continue to recommend that the FOMC provide additional communication on the potential near- and medium-term response of monetary policy to the manifestation of certain conditions.



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.
Numbers in parentheses represent changes from the prior month.

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

Economic indicators released over the intermeeting period have tended to surprise to the upside, with the Citi US Economic Surprise Index moving up from around 30 in mid-December to 44 as of January 24. The Goldman Sachs Financial Conditions Index has moved modestly in the direction of easing over the intermeeting period, reflecting some net decline of the exchange value of the dollar, a modest decline of the risk free interest rate and corporate bond spreads, and a slight increase of equity values.

Real GDP in 2016Q4 has moved up slightly to 1.9% (annual rate) from 1 3/4% in the December Blackbook. With the upward revision of the Q3 growth rate to 3.5% from the second estimate of 3.2%, the 2016Q4/Q4 growth is 1.9% rather than the 1.8% of December.

Consumer spending over the second half of 2016 turned out to be stronger than we were anticipating, with the Q4 growth rate of real PCE now at 2.5% while the Q3 rate was revised up from 2.8% to 3.0%. Reflecting the somewhat stronger growth of consumption spending and a modest downward revision of disposable income, the personal saving rate for Q3 was revised down to 5.8% from 5.9%. The personal saving rate declined to 5.6% in the fourth quarter. Growth of nominal disposable income slowed to between 3 ½% and 4.0% (annual rate) in the fourth quarter while growth of nominal PCE increased to around 4.7%. It appears that consumers adapted to the large increase in energy prices by reducing saving in addition to reducing real consumption of gasoline.

It should be mentioned that some measures of consumer confidence soared in November and December, and that some forecasters have boosted their projections for consumer spending in 2017 by a fair amount due to these developments. We have concluded that, while not entirely, for the most part we should look through this burst in consumer confidence. First, internal analysis suggests that after accounting for the main drivers of consumer spending, including consumer confidence adds only a modestly to the fit of the equation and the economic significance of that variable is quite modest. Second, our internal Survey of Consumer Expectations shows a more muted increase in the percent of respondents who believe they will be somewhat or much better off twelve months in the future, which is reasonably close

conceptually to the Conference Board's Expectations Index, a subcomponent of the overall Consumer Confidence Index.

Housing sector data for the fourth quarter was reasonably strong, likely due at least in part to the steep rise of mortgage rates that occurred over the period. The December average for the contract rate on new 30 year fixed rate mortgages was 4.2%, up from 3.5% in September. Single-family housing starts averaged 830,000 (annual rate) in the fourth quarter, 10% above the year-ago level and the highest since the fourth quarter of 2007. Multi-family starts continued to be quite volatile over the fourth quarter, averaging 386,000 units, essentially unchanged from a year ago. Sales of existing homes fell 2.8% in December, but for the fourth quarter as a whole averaged 5.57 million units (SAAR), up 7% from a year ago and the highest quarterly average since 2007Q1. Also of note, the month's supply of existing single-family homes listed for sale fell to 3.9 months in the fourth quarter, tying the previous low in the first quarter of 2005. For the quarter, growth of real residential investment was 10.2% following two consecutive quarterly declines.

High frequency data pertaining to business fixed investment have continued to be mixed. A three-month moving average of new orders for nondefense capital goods excluding aircraft increased in October and November following an increase for the third quarter as a whole. However, shipments of nondefense capital goods were basically flat for all of 2016. The level of new orders is now above that of shipments, consistent with our expectation of some firming of business investment in new equipment in 2017. Overall, for 2016Q4 the growth of this category of final expenditures was 3.1%.

Despite positive readings on nominal construction spending as well as industrial production data on oil and gas drilling activity, real business investment in nonresidential structures declined by about 5% annual rate in Q4, down from the +12% growth rate of the third quarter. While growth of investment in new office and education buildings was quite strong over the quarter, investment in manufacturing and power generation related structures declined sharply over the final quarter of 2016.

After declining in the second and third quarters, construction spending by state and local governments rebounded in the fourth quarter. Growth of employment at the state and local level

slowed in the fourth quarter but was up 0.7% over 2015Q4, the fastest four-quarter change since 2008Q4. State and local government spending rose at 2.6% for 2016Q4. In contrast, growth spending at the federal level contracted by 1.2% annual rate in 2016Q4.

Overall, final sales to domestic purchasers increased at a 2.5% annual rate in 2016Q4, up slightly from an average of around 2 ¼% over the previous two quarters.

Recent data indicate a substantial pickup in the rate of growth of real imports while real exports declined in Q4. The decline in exports is only partially due to the surge in exports of food, feeds, and beverages in the third quarter. Exports of capital goods and automobiles also appear to have declined in the fourth quarter, based on data for October and November. Overall, the net export growth contribution was -1.7 percentage points, a further deterioration from our projection of a -0.6 percentage point in the December Blackbook.

In contrast, Q4 growth contribution from inventory investment went from zero in the December Blackbook to a full percentage point in this cycle, reflecting stronger than expected inventory investment in October and November. As a result, a NIPA-based real inventory-sales ratio increased in Q4, in contrast to the two consecutive declines in the past quarters.

Total nonfarm payroll employment rose 156,000 in December, moderately below the consensus expectation of a gain of 175,000. Payroll gains in the previous two months were revised modestly upward on balance. Hours worked by all private sector employees rose 0.2% in December, reversing a similar-sized decline in November. For the fourth quarter we project a 1.4% annual rate increase in hours worked in the nonfarm business sector, up from 0.5% in the third quarter. Average hourly earnings increased 0.4% in December and rose 2.9% over the year, the highest in this expansion. The unemployment rate was 4.7% in December, up 0.1 percentage point from November. The labor force participation rate rose slightly to 62.7% from 62.6% in November. For the year as a whole the participation rate was essentially flat. The employment-population ratio was unchanged at 59.7% in December and was also fairly flat over 2016.

Activity in the US manufacturing sector improved further in December. The ISM manufacturing index rose to 54.5 from 53.5 in November. Of note, the new orders subcomponent of the ISM

manufacturing index rose to 60.3, its highest level since late 2014. For January, all available regional manufacturing indices have increased.

The total CPI rose 0.3% in December, up from a 0.2% gain in November, with energy prices up 1.5% while there was another small decline in food prices. The core CPI rose 0.23% in December following increases of 0.15% in both October and November. For 2016Q4 the core CPI rose at a 2% annual rate, up from 1.9% in the third quarter. The 12-month change of the core CPI was 2.2% in December, about where it has been all year. Core service prices were up 3.1% over the 12-months ending in December while core goods prices were down 0.6%. Core goods price were up very slightly in December, but as yet we do not observe the clear firming in core goods prices that we have been anticipating. This is despite the fact that the rate of decline of nonpetroleum import prices has slowed to around zero on a 12-month change basis.

For Q4 the core PCE deflator increased at a 1.3% annual rate versus 1.5% in the December Blackbook. Its Q4/Q4 has nudged down to 1.7% from 1.8% in the December Blackbook.

The Outlook

In this Blackbook, as in the past few cycles, we expect growth of real GDP of around 1.9% in 2017 then slowing to around 1.7% in 2018, with this slowing driven by a combination of an aging business cycle and a tightening of financial conditions as monetary policy continues to move in the direction of normalization. The unemployment rate has been projected to decline to around 4.6% by the end of 2017 and then edge up to 4.7% by the end of 2018 as productivity growth gradually moves up toward what we regard to be its long-run trend. With the economy operating near full employment and inflation expectations well anchored at the FOMC's objective, we expect total PCE deflator inflation to move up to 2% by the end of 2017 and then to modestly overshoot the objective in 2018, reaching 2.2% by the end of that year. This overshooting of inflation is the mirror image of the undershooting of the unemployment rate in 2017.

Since the election there have been some significant moves in financial asset prices resulting in a very modest easing of financial conditions as measured by the Goldman Sachs Financial

Conditions Index. In our view, the change in underlying financial conditions is at this point too modest to warrant a meaningful change in our forecast.

We have boosted slightly our near-term growth path for real PCE given the improvement in consumer confidence. However, we still anticipate some slowing in the rate of growth of real PCE in both 2017 and 2018 due to tightening financial conditions and some modest slowing in the rate of growth of real disposable income. As in past cycles, we expect the personal saving rate to be essentially flat over the forecast horizon. We do anticipate some firming of business fixed investment, and that housing starts will remain on a gradual uptrend despite rising mortgage interest rates. Overall, growth of final sales to domestic purchasers is slightly stronger in 2017 than was the case in 2016. However, we expect the net export trade drag to increase to -0.5 percentage points in 2017 from zero in 2016. In 2018 growth of final sales to domestic purchasers slows a bit, mainly due to slowing of growth of consumer spending and residential investment. This slowing of domestic demand lessens the net export trade drag to -0.3 percentage points. The current account deficit, currently around 2 ½% of GDP, is projected to approach 3% of GDP by the end of 2018.

With the new Administration now in power, we are waiting to get a clearer idea of what changes in fiscal policy are likely to be enacted. There has been some preliminary discussion of individual and corporate tax reform as well as increased spending on infrastructure. But at this point we believe that there is insufficient information regarding the nature, magnitude, and timing of future changes in fiscal policy to attempt to incorporate them into our forecast. In addition, it is not at all clear how much stimulus such actions will be able to deliver with the economy at or near full employment while asset prices, particularly the exchange value of the dollar, are completely flexible. That being said, some alternative forecasts will likely incorporate changes in fiscal policy, and so we should keep that in mind when comparing our forecast with others.

2-1: Projections of Key Variables

	Core PCE Inflation		Real GDP Growth		Unemployment Rate*		Fed Funds Rate**	
	Dec	Jan	Dec	Jan	Dec	Jan	Dec	Jan
2016								
Q1	*2.0*	*2.0*	*0.8*	*0.8*	*4.9*	*4.9*	*0.38*	*0.38*
Q2	*1.8*	*1.8*	*1.4*	*1.4*	*4.9*	*4.9*	*0.38*	*0.38*
Q3	*1.7*	*1.7*	*3.2*	*3.5*	*4.9*	*4.9*	*0.38*	*0.38*
Q4	1.5	*1.2*	1.8	*1.9*	4.7	*4.7*	0.63	*0.63*
2017								
Q1	1.7	1.6	1.9	1.6	4.7	4.7	0.63	0.63
Q2	1.8	1.8	1.7	1.7	4.7	4.6	0.63	0.63
Q3	1.9	1.9	2.1	2.0	4.6	4.6	0.88	0.88
Q4	2.0	2.0	2.1	2.2	4.6	4.6	0.88	1.13
2018								
Q1	2.2	2.2	1.4	1.2	4.6	4.6	1.13	1.13
Q2	2.3	2.3	1.9	2.0	4.6	4.6	1.38	1.38
Q3	2.2	2.2	1.6	1.6	4.7	4.7	1.38	1.38
Q4	2.1	2.1	1.9	1.9	4.7	4.7	1.63	1.63
Q4/Q4								
2015	*1.4*	*1.4*	*1.9*	*1.9*	*-0.7*	*-0.7*	*0.17*	*0.17*
2016	1.8	1.7	1.8	1.9	-0.2	-0.2	0.63	0.63
2017	1.9	1.9	1.9	1.9	-0.1	-0.1	0.88	1.13
2018	2.2	2.2	1.7	1.7	0.1	0.1	1.63	1.63

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

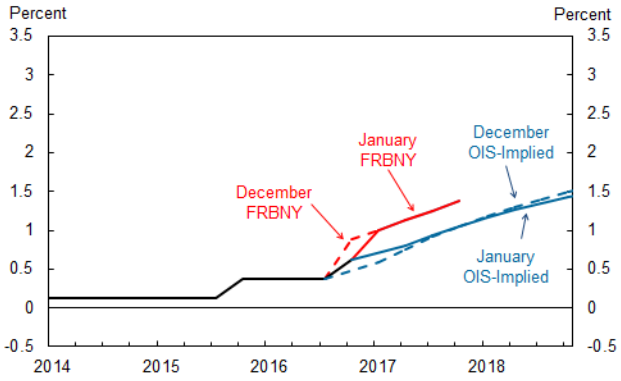
*Quarterly values are the average rate for the quarter. Yearly values are the difference between Q4 of the listed year and Q4 of the previous year.

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

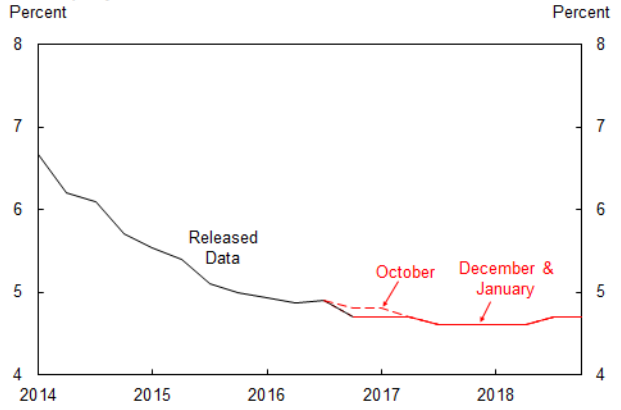
2-2: Evolution of Projected Quarterly Paths

Key Indicators

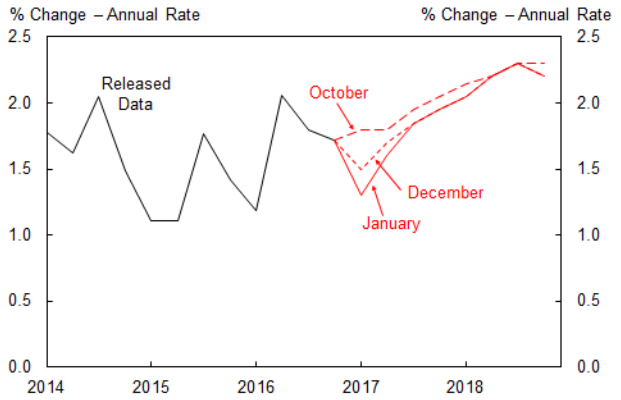
Federal Funds Rate



Unemployment Rate

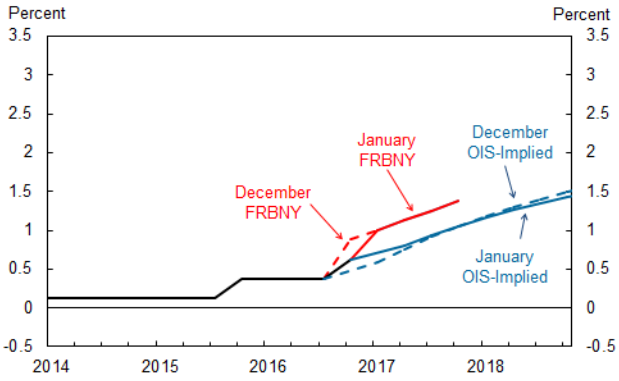


Core PCE Inflation

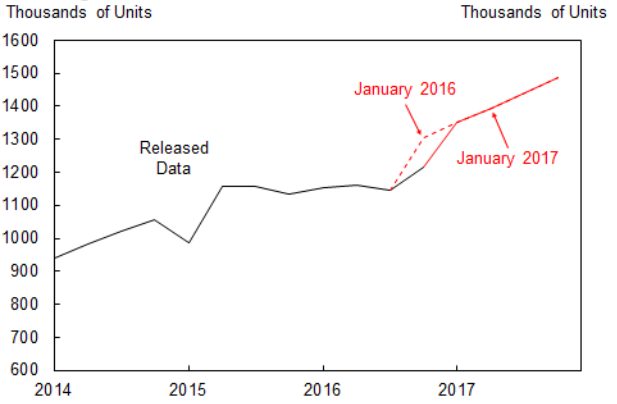


Forecast Assumptions

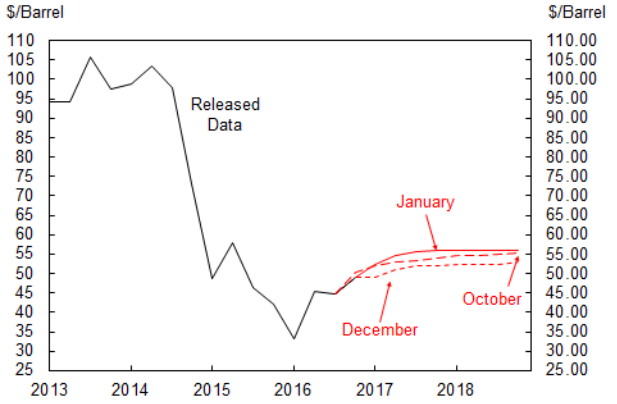
Federal Funds Rate



Housing Starts



Crude Oil



Source: FRBNY (MMS and IR Functions)

2-3: Near-Term Projections

	Growth Rates (AR)			Growth Contributions (AR)		
	2016Q4	2017Q1	2017Q2	2016Q4	2017Q1	2017Q2
OUTPUT						
Real GDP	*1.9*	1.6	1.7	*1.9*	1.6	1.7
	(1.8)	(1.9)	(1.7)	(1.8)	(1.9)	(1.7)
Final Sales to Domestic Purchasers	*2.5*	2.5	2.3	*2.6*	2.5	2.3
	(2.3)	(2.3)	(2.2)	(2.3)	(2.3)	(2.3)
Consumption	*2.5*	2.6	2.5	*1.7*	1.8	1.7
	(2.5)	(2.3)	(2.3)	(1.7)	(1.6)	(1.6)
BFI: Equipment	*3.1*	4.0	4.0	*0.2*	0.2	0.2
	(2.0)	(4.0)	(4.0)	(0.1)	(0.2)	(0.2)
BFI: Nonresidential Structures	*-4.9*	4.0	4.0	*-0.1*	0.1	0.1
	(2.5)	(4.0)	(4.0)	(0.1)	(0.1)	(0.1)
BFI: Intellectual Property Products	*6.4*	3.0	3.0	*0.3*	0.1	0.1
	(3.0)	(3.0)	(3.0)	(0.1)	(0.1)	(0.1)
Residential Investment	*10.2*	4.3	0.9	*0.4*	0.2	0.0
	(5.2)	(5.1)	(3.3)	(0.2)	(0.2)	(0.1)
Government: Federal	*-1.2*	-0.3	-0.3	*-0.1*	0.0	0.0
	(-0.8)	(-0.3)	(-0.3)	(-0.1)	(-0.0)	(-0.0)
Government: State and Local	*2.6*	1.3	1.3	*0.3*	0.1	0.1
	(1.8)	(1.3)	(1.3)	(0.2)	(0.1)	(0.1)
Inventory Investment	--	--	--	*1.0*	-0.4	0.1
	--	--	--	(0.0)	(0.2)	(0.0)
Net Exports	--	--	--	*-1.7*	-0.5	-0.7
	--	--	--	(-0.6)	(-0.7)	(-0.6)
INFLATION						
Total PCE Deflator	*2.2*	1.9	2.0			
	(2.3)	(1.9)	(2.0)			
Core PCE Deflator	*1.2*	1.6	1.8			
	(1.5)	(1.7)	(1.8)			
PRODUCTIVITY AND LABOR COSTS*						
Output per Hour	0.7	1.0	0.8			
	(0.0)	(0.9)	(0.7)			
Compensation per Hour	3.1	3.0	3.1			
	(3.1)	(3.0)	(3.1)			
Unit Labor Costs	2.4	2.0	2.3			
	(3.1)	(2.1)	(2.4)			

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		
	2016	2017	2018	2016	2017	2018
OUTPUT						
Real GDP	1.9	1.9	1.7	1.9	1.9	1.7
	(1.8)	(1.9)	(1.7)	(1.8)	(1.9)	(1.7)
Final Sales to Domestic Purchasers	2.1	2.4	2.0	2.1	2.4	2.1
	(1.9)	(2.3)	(2.0)	(1.9)	(2.4)	(2.1)
Consumption	2.8	2.4	2.1	1.9	1.7	1.5
	(2.8)	(2.3)	(2.1)	(1.9)	(1.6)	(1.5)
BFI: Equipment	-3.6	3.5	2.0	-0.2	0.2	0.1
	(-3.9)	(3.5)	(2.0)	(-0.2)	(0.2)	(0.1)
BFI: Nonresidential Structures	1.1	3.7	2.5	0.0	0.1	0.1
	(2.5)	(3.7)	(2.5)	(0.1)	(0.1)	(0.1)
BFI: Intellectual Property Products	5.6	3.0	3.0	0.2	0.1	0.1
	(4.1)	(3.0)	(3.0)	(0.2)	(0.1)	(0.1)
Residential Investment	1.2	5.6	5.5	0.0	0.2	0.2
	(-0.0)	(7.3)	(6.3)	(-0.0)	(0.3)	(0.3)
Government: Federal	-0.2	-0.4	-0.7	0.0	0.0	0.0
	(-0.1)	(-0.4)	(-0.7)	(-0.0)	(-0.0)	(-0.0)
Government: State and Local	0.8	1.3	1.2	0.1	0.1	0.1
	(0.4)	(1.3)	(1.2)	(0.0)	(0.1)	(0.1)
Inventory Investment	--	--	--	-0.1	-0.1	-0.1
	--	--	--	(-0.3)	(0.1)	(-0.0)
Net Exports	--	--	--	-0.2	-0.5	-0.3
	--	--	--	(0.1)	(-0.5)	(-0.3)
INFLATION						
Total PCE Deflator	1.5	2.0	2.2			
	(1.5)	(2.0)	(2.2)			
Core PCE Deflator	1.7	1.9	2.2			
	(1.8)	(1.9)	(2.2)			
PRODUCTIVITY AND LABOR COSTS*						
Output per Hour	0.7	0.9	1.0			
	(0.6)	(1.0)	(1.0)			
Compensation per Hour	3.0	3.0	3.3			
	(3.0)	(3.0)	(3.2)			
Unit Labor Costs	2.2	2.1	2.3			
	(2.4)	(2.0)	(2.3)			

Note: Numbers in parentheses are from the previous Blackbook.

*Nonfarm business sector.

2-5: Comparison with Other Forecasts

Real GDP Growth

	Release Date	2016Q4	2017Q1	2016 Q4/Q4	2017 Q4/Q4
FRBNY	1/20/2017	1.9	1.6	1.9	1.9
		(1.8)	(1.9)	(1.8)	(1.9)
Blue Chip	1/10/2017	2.2	2.2	1.6	2.3
		(2.1)	(2.2)	(1.8)	(2.2)
Median SPF	11/14/2016	2.2	2.2	1.5	2.2
		(2.2)	(2.2)	(1.5)	(2.2)
Macro Advisers	12/23/2016	1.7	2.6	1.9	2.3
		(1.5)	(2.1)	(1.7)	(2.1)
FRBNY-DSGE	1/25/2017	2.3	2.1	2.0	2.1
		(2.0)	(1.7)	(1.8)	(1.9)
Median SPD	12/5/2016	--	--	1.9	2.2
		--	--	(1.7)	(2.1)

Core PCE Inflation

	Release Date	2016Q4	2017Q1	2016 Q4/Q4	2017 Q4/Q4
FRBNY	1/20/2017	1.2	1.6	1.7	1.9
		(1.5)	(1.7)	(1.8)	(1.9)
Median SPF	11/14/2016	1.7	1.8	1.8	1.9
		(1.7)	(1.8)	(1.8)	(1.9)
Macro Advisers	12/23/2016	1.3	1.6	1.7	1.7
		(1.8)	(1.9)	(1.8)	(1.9)
FRBNY-DSGE	1/25/2017	1.3	1.3	1.7	1.3
		(1.6)	(1.4)	(1.8)	(1.4)
Median SPD	12/5/2016	--	--	1.8	2.0
		--	--	(1.8)	(1.9)

Unemployment*

	Release Date	2016Q4	2017Q1	2016 Q4/Q4	2017 Q4/Q4
FRBNY	1/20/2017	4.7	4.7	-0.2	-0.1
		(4.7)	(4.7)	(-0.2)	(-0.1)
Blue Chip	1/10/2017	4.7	4.7	-0.3	-0.2
		(4.8)	(4.7)	(-0.2)	(-0.2)
Median SPF	11/14/2016	4.8	4.8	-0.2	-0.1
		(4.7)	(4.7)	(-0.3)	--
Macro Advisers	12/23/2016	4.8	4.7	-0.3	-0.4
		(4.8)	(4.7)	(-0.3)	(-0.4)
Median SPD	12/5/2016	4.8	--	-0.2	-0.3
		(4.9)	--	(-0.1)	(-0.3)

*Note: Numbers in gray are from the previous Blackbook

*Yearly values are the difference between Q4 of the listed year and Q4 of the previous year.

2-6: Tealbook Comparison

	FRBNY (Q4/Q4)			Tealbook (Q4/Q4)		
	2016	2017	2018	2016	2017	2018
OUTPUT						
Real GDP Growth	1.9	1.9	1.7	1.9	2.1	2.0
	(1.8)	(1.9)	(1.7)	(1.8)	(2.2)	(2.0)
GDP Growth Contributions						
Final Sales to Domestic Purchasers	2.1	2.4	2.1	2.0	2.5	2.3
	(1.9)	(2.4)	(2.1)	(1.9)	(2.5)	(2.4)
Consumption	1.9	1.7	1.5	2.0	2.0	1.9
	(1.9)	(1.6)	(1.5)	(1.8)	(2.0)	(1.9)
BFI	0.0	0.4	0.3	0.0	0.5	0.3
	(0.0)	(0.4)	(0.3)	(0.0)	(0.4)	(0.3)
Residential Investment	0.0	0.2	0.2	0.1	0.0	0.1
	(-0.0)	(0.3)	(0.3)	(0.1)	(0.1)	(0.2)
Government	0.1	0.1	0.1	0.1	0.3	0.1
	(0.0)	(0.1)	(0.1)	(0.1)	(0.3)	(0.1)
Inventory Investment	-0.1	-0.1	-0.1	-0.2	-0.1	0.0
	(-0.3)	(0.1)	(-0.0)	(-0.3)	(0.1)	(0.0)
Net Exports	-0.2	-0.5	-0.3	0.0	-0.5	-0.5
	(0.1)	(-0.5)	(-0.3)	(0.1)	(-0.6)	(-0.5)
INFLATION						
Total PCE Deflator	1.5	2.0	2.2	1.5	1.7	1.8
	(1.5)	(2.0)	(2.2)	(1.5)	(1.7)	(1.8)
Core PCE Deflator	1.7	1.9	2.2	1.7	1.7	1.9
	(1.8)	(1.9)	(2.2)	(1.7)	(1.7)	(1.8)
LABOR MARKET						
Unemployment Rate (Avg. Q4 Level)	4.7	4.6	4.7	4.7	4.5	4.2
	(4.7)	(4.6)	(4.7)	(4.8)	(4.5)	(4.3)
Participation Rate (Avg. Q4 Level)	62.7	62.8	62.8	62.7	62.6	62.3
	(62.8)	(62.8)	(62.9)	(62.7)	(62.6)	(62.3)
Avg. Monthly Nonfarm Payroll Growth (Thous.)	188	142	101	180	184	162
	(192)	(136)	(102)	(180)	(181)	(157)
SAVING						
Personal Saving Rate (Avg. Q4 Level)	5.6	5.4	5.2	5.4	6.2	5.8
	(6.0)	(6.0)	(6.0)	(5.8)	(6.6)	(6.3)
HOUSING						
Housing Starts (Avg. Q4 Level, Thous.)	1305	1485	--	1200	1200	1300
	(1305)	(1485)	--	(1200)	(1200)	(1300)
INTREST RATE ASSUMPTION						
Fed Funds Rate*	0.63	1.13	1.63	0.45	1.46	2.51
	(0.63)	(1.13)	(1.63)	(0.47)	(1.49)	(2.47)

Note: Numbers in parentheses are from the previous Blackbook and Tealbook.

* FRBNY numbers indicate end of year Federal Funds Rate, Tealbook numbers indicate average of Q4 Federal Funds Rate.

3. Uncertainty & Risks

Developments during the intermeeting period indicate little change in uncertainty and risks around the outlook from the assessment in the December *Blackbook*. Based on the difference between the modal forecast and the expected value from our forecast distributions [Exhibit 3-1], as well as the changes in the distributions [Exhibit 3-3], the risks to real GDP growth are roughly balanced through much of the forecast horizon. For core PCE inflation, the risks are balanced throughout the forecast horizon. The widths of the probability intervals are essentially the same as those in the December *Blackbook*. The uncertainties around the real GDP growth projection and around the inflation projection are above their respective historical norms.

The data on U.S. real economic activity over the intermeeting period generally were moderately positive and consistent with our outlook, as the staff nowcast for 2017Q1 real GDP growth increased from 2.40 percent on December 9 to 2.66 percent on January 27. Even so, real GDP growth in Q4 was 1.9% (annual rate), modestly below most projections prior to the release. The December labor market report indicated continued healthy growth in nonfarm payrolls and somewhat stronger wage growth. The unemployment rate ticked up after a sharp fall in November while the employment-population ratio was flat. Manufacturing production was little changed on net in November and December, consistent with its behavior over the past two years. Based on 12-month changes, core PCE inflation and core CPI inflation have been fairly stable since the beginning of 2016. Alternative underlying inflation measures paint a broadly similar picture. Longer-term inflation compensation rose modestly on net, but it remains near its mid-2015 levels; on a longer historical basis, it is still at a low level. Survey measures of inflation expectations continued to be at low levels. Outside of the U.S., the data generally were solid, including in the euro area, Japan, and China.

Prices in financial markets generally fluctuated within narrow ranges. The nominal Treasury yield curve was little changed on net. The market-implied expected path of the federal funds rate also did not move much: the expected FFR at end-2019 was a little above 1.7 percent. Longer-term nominal sovereign yields in Germany moved up 15-20 basis points. Major U.S. equity indexes rose moderately at the end of the period to record highs. Implied volatility remained low. Corporate credit spreads to Treasuries narrowed slightly. Major equity indices in the euro

area increased somewhat, but those in Japan declined slightly. Oil prices fluctuated within a narrow range that was modestly above the prevailing range of the second half of 2016. Broad non-energy commodity indices increased, particularly toward the end of the period. The nominal broad dollar index was little changed on net.

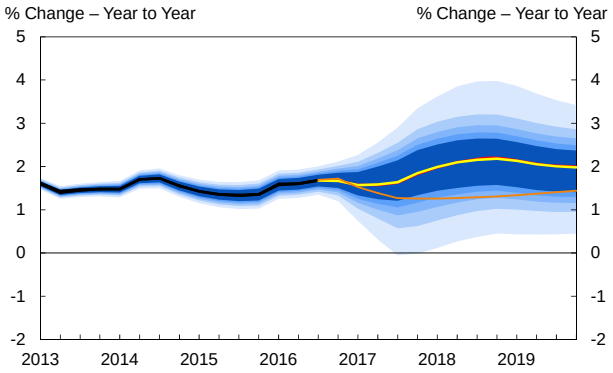
Typically, a period with data roughly consistent with the outlook and relatively muted movements in financial markets would prompt some reduction in uncertainty around the outlook. However, because there remains considerable uncertainty about possible changes in government policies as well as their economic impact over the medium term, our assessment is that the intermeeting developments do not warrant a change in the scenario probabilities [Exhibit 3-2]. We also have maintained our assumption of fatter tails in some of the scenario distributions.

With no changes in scenario probabilities, there has been essentially no change in the 90 percent probability intervals for real GDP growth and core PCE inflation [Exhibit 3-3]. The intervals for real GDP growth and for core PCE inflation are wider than their respective historical norms. Based on the difference between the mode and the mean of the forecast distribution, the real GDP growth forecast distribution signals that the risks to real activity are roughly balanced into 2018 and slightly skewed to the downside thereafter, while the risks to inflation are balanced throughout the forecast horizon [Exhibit 3-1].

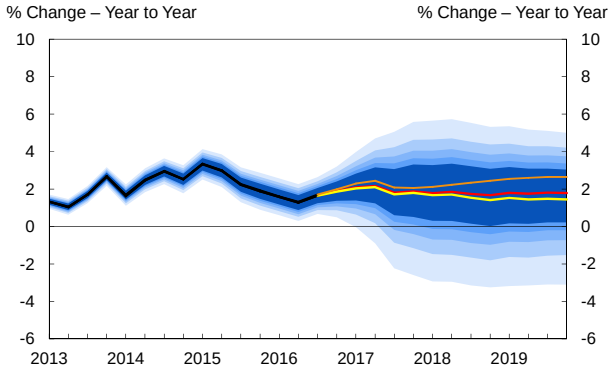
In a comparison to the forecast distribution from a year earlier, the current projections for inflation and real GDP growth run somewhat above the respective year-ago expectations, reflecting our pessimistic assessment of a year ago when there was considerable financial market volatility [Exhibit 3-3]. Nonetheless, both the realizations of inflation and real GDP growth and the current projections of these variables are within last year's respective fifty percent forecast probability intervals, which is partly a reflection of the high uncertainty at that time.

3-1: Forecast Distributions

Core PCE Inflation Forecast Distribution



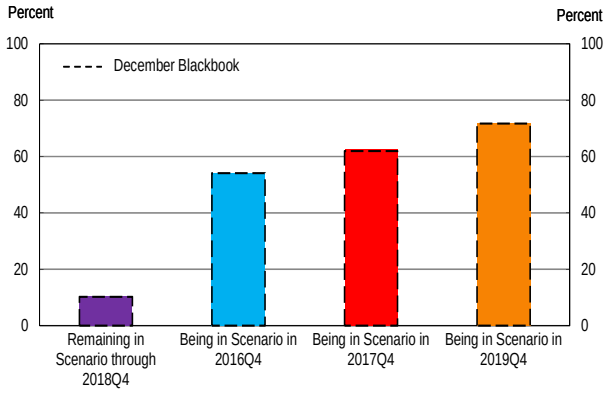
Real GDP Growth Forecast Distribution



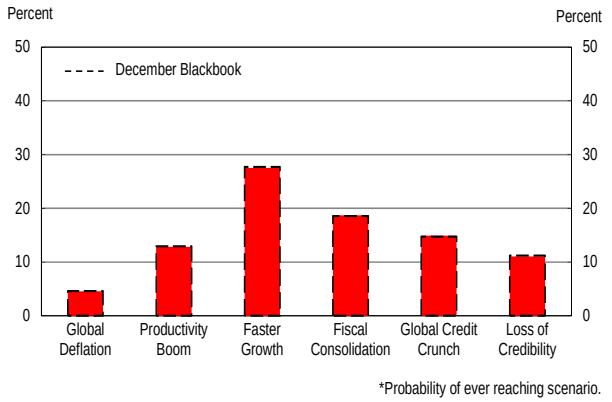
The yellow line is the expected value of the forecast distribution, the red line is the FRBNY central projection, the orange line is the DSGE forecast, and the black line is released data. The shading represents the 50, 60, 70, 80 and 90 percent probability that the four-quarter change will be within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

3-2: Scenario Probabilities

Central Scenario Probabilities



Alternative Scenario Probabilities*



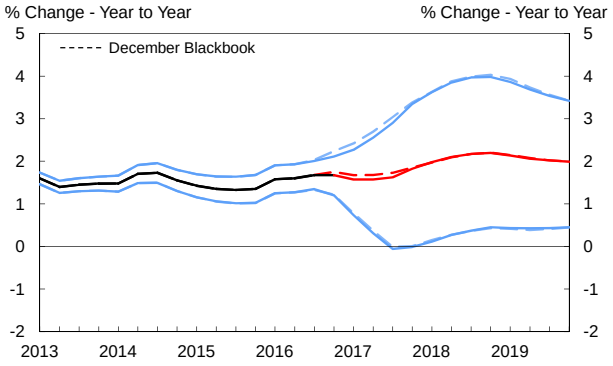
*Probability of ever reaching scenario.

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.

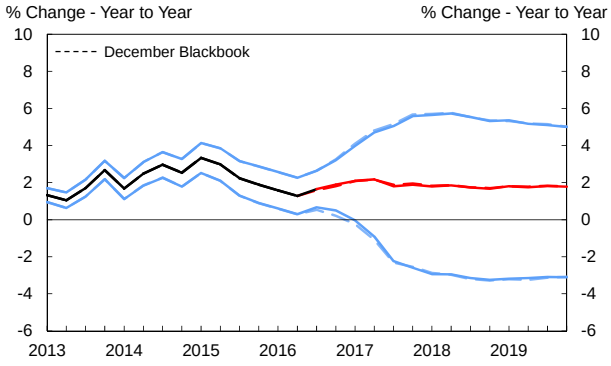
Source: MMS Function (FRBNY)

3-3: Evolution and Performance of Forecast Distributions

Change in Core PCE Inflation Forecast Distribution

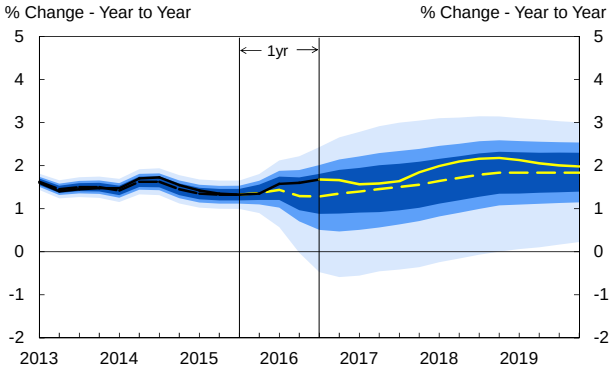


Change in Real GDP Growth Forecast Distribution

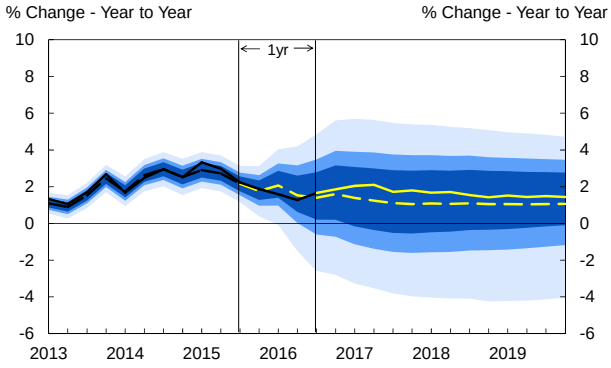


The red lines are the central scenario projections, black lines are released data, and blue lines represent upper and lower 90 percent forecast probability intervals. Dashed lines represent forecasts from the previous Blackbook.

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

RESEARCH AND STATISTICS GROUP

FRBNY Blackbook

March 2017

CLASS II FOMC - RESTRICTED (FR)

FRBNY BLACKBOOK

March 2017

CONTENTS

APPENDIX

1. Policy Recommendation and Rationale

Economic developments over the intermeeting period were generally in line with our projections, if not somewhat better than expected; in light of this, we did not materially alter our judgmental forecast for the near- and medium-term. In our central scenario real GDP growth is slightly above its potential rate in 2017, and then moderates to near potential in 2018. We continue to project core inflation to rise to the FOMC's longer-run objective by the end of this year, and to overshoot slightly in 2018. While uncertainty around our outlook remains higher than in normal times, partly reflecting the lack of detailed information on possible changes in government policies, risks are roughly balanced for both output and inflation. Overall, our outlook is consistent with maintaining our policy recommendation of two to three 25 basis point increases in the FFR target range during 2017. While the precise timing of removing policy accommodation is arguably less crucial than the broad shape of the policy path, we recommend an increase in the short-term policy rate at the March FOMC meeting against a backdrop of favorable financial conditions driven by strong market sentiment. This move would also be in line with recent communication by FOMC participants and current expectations of market participants. Over the medium term, our modal projections remain conditioned on a gradual increase of the policy rate towards, and eventually even possibly above, its longer-term natural rate, which we see around 2.50 – 2.75%. As we anticipate that the policy rate will be sufficiently away from the effective lower bound by year-end, it will be appropriate to phase out the current reinvestment policy, starting sometime in the second half of the year.

The expenditure data releases over the intermeeting period were generally consistent with our forecast. Our near-term real GDP projections are slightly higher than those in the January *Blackbook*. For 2017H1, we expect real GDP growth of 1.8% (annual rate) compared to 1.7% in the previous Blackbook. The real GDP growth projections for 2017 and 2018 are unchanged from January at 1.9% and 1.7% (Q4/Q4), respectively. Nevertheless, there has been some tension between the expenditure indicators and other economic activity data releases. Whereas the expenditure indicators generally have pointed to continued moderate growth, recent survey indicators such as the ISM survey and the System regional surveys have posted solid gains. The positive surprise from these measures has boosted the FRBNY nowcast of real GDP growth in 2017Q1 to above 3 percent (annual rate), more than a full percentage point above our judgmental

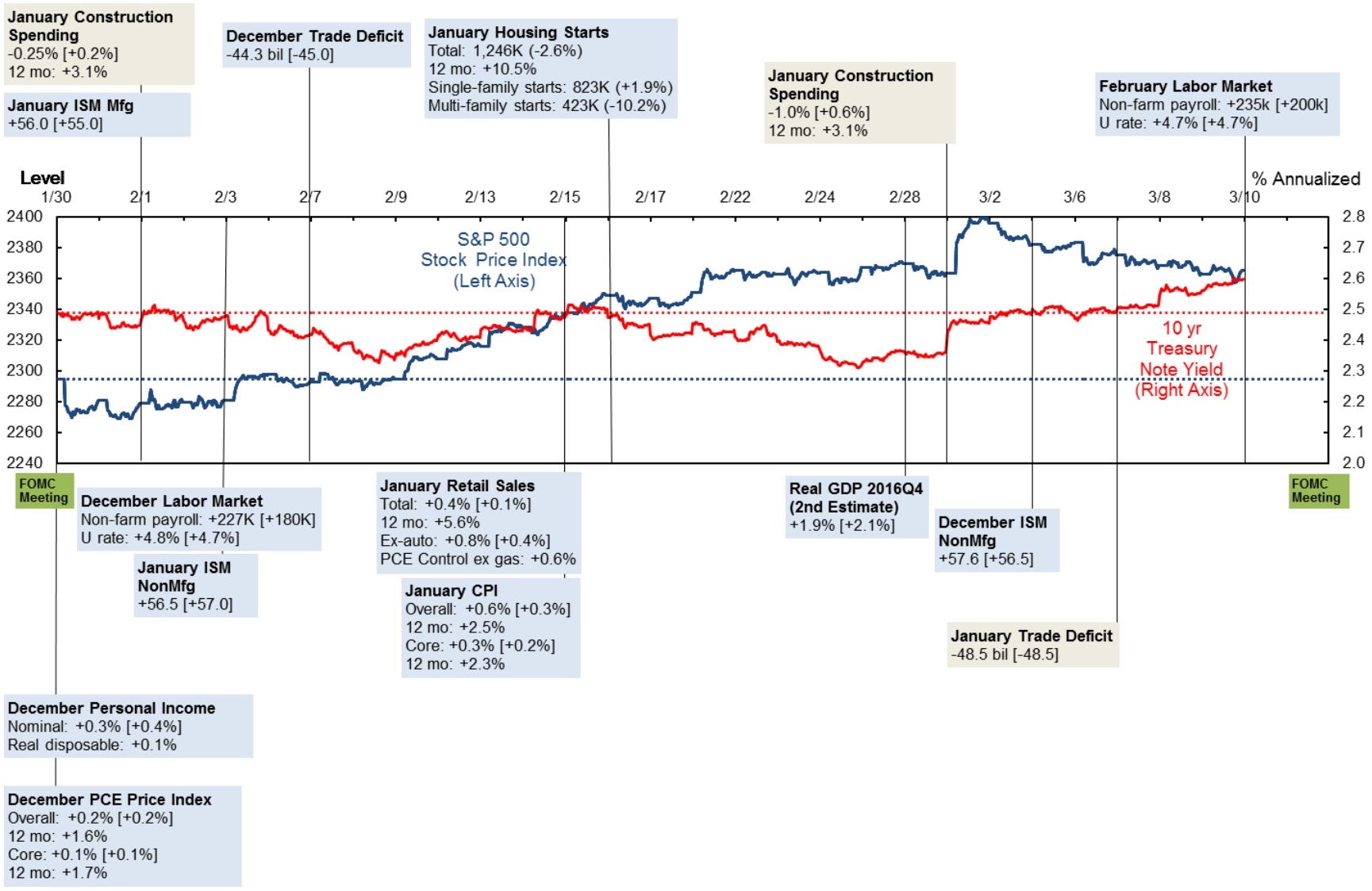
projection. Moreover, measures of consumer and firms' sentiment, which rose sharply in the fourth quarter, remained elevated over the first two months of 2017; historical correlations suggest that such robust improvements might foreshadow somewhat stronger real GDP growth. On a sobering note, however, some interest-rate-sensitive sectors of the economy have shown tentative signs of softening. There has been a step down in the sales of light-weight motor vehicles in January and February compared to 2016Q4. In addition, new home sales in 2016Q4 and early this year were somewhat below the pace recorded in mid-2016. More generally, the positive signals from the business surveys have not yet fully materialized in more solid growth in manufacturing production and demand for capital goods. Consistent with the less upbeat hard data, compensation growth has remained fairly flat while real income growth has slowed in recent months. Lastly, net exports continue to be a drag to our forecast through the forecasting horizon.

With respect to inflation, January data showed significant increases in both core PCE and core CPI indexes, which were concentrated in relatively volatile categories of goods prices. As a result we have not materially changed the broad contour of our inflation forecast and we continue to project a return of inflation to the FOMC's longer-run objective. Core PCE inflation is expected to be at 1.9% in 2017 (Q4/Q4) and to reach 2.2% in 2018 (Q4/Q4). Measures of longer-term inflation compensation fell slightly over the intermeeting period, but remained near the highest level since July 2015. The median of three-year household inflation expectations in our February SCE (to be released publicly on March 13) increased to its highest level since mid-2015; by contrast, the Michigan measure of longer-term household expectations was ticked down in February and is just above its historical low. Overall, we continue to expect inflation to fluctuate near the Committee's longer-run objective.

Financial market conditions improved some over the intermeeting period: the broad trade-weighted dollar index fell slightly, the 10-year Treasury yield increased modestly, and equity prices increased notably. The market-implied expected path of the federal funds rate rose over the latter part of the intermediate period. At the short end the probability of a 25 basis point hike at the March FOMC meeting is near 90%, reflecting the impact of recent FOMC communications. This change in market participants' assessment of the policy path reduces the

risk that raising the policy rate at the upcoming meeting would lead to sudden and sharp re-pricing: on the contrary, failing to act in March could now be read by markets as a signal of unforeseen deterioration of the economic outlook with potential negative effects on financial market conditions.

In summary, despite the recommendation for a hike at the March FOMC, our view of the appropriate policy strategy over the short term has not materially changed, and we still see risks to the outlook as roughly balanced. We continue to recommend a gradual path of increases of the policy rate toward, and possibly even slightly above, the longer-term natural rate, which we judge to be in the 2.50 – 2.75% range. For the rest of the year, we still see no more than two hikes (in addition to March) as most consistent with our outlook. At any rate, the path for the federal funds rate will need to account for how the outlook evolves and how financial conditions respond to policy. As noted above, recent indicators suggest some softening in housing and motor vehicles, two key sectors vulnerable to a sudden tightening in the policy stance and financial conditions, and it will be important to monitor these sectors' responses to the removal of policy accommodation. More generally, if the positive signals that we have recently received do not translate into stronger growth, or an unanticipated firming of the exchange value of the dollar or of broader financial conditions takes place, it would be appropriate to pause in removing accommodation at the June meeting. In addition, the timing and size of future changes of the short-term policy rate will need to account for the tightening in financial conditions resulting from the prospective end of reinvestment policy and other changes in the size and composition of the balance sheet. This consideration becomes more pertinent as increases in the policy rate bring us closer to the point where "normalization of the level of the federal funds rate is well under way."



Note
Blue shading: Data release encouraging/positive.
Red shading: Data release discouraging/negative.
Grey shading: Data release was neutral.
Numbers in square brackets are the median of the Bloomberg survey.
Numbers in parentheses represent changes from the prior month.

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

On balance, economic indicators released over the intermeeting period have continued to surprise to the upside, with the Citi US Economic Surprise Index moving up from around 32 at the time of the last FOMC meeting to around 45 recently. In addition, the Goldman Sachs Financial Conditions Index has moved modestly further in the direction of easing over the intermeeting period, due primarily to additional increases in equity prices. Our projection for growth of real GDP in 2017Q1 is now at 1.8% (annual rate), essentially unchanged from the projection of 1.6% in the January Blackbook. The composition of growth has changed, however, with somewhat weaker growth of final sales offset by a reduced drag from inventory investment. Moreover, it should be noted that the FRBNY Nowcast is predicting growth of real GDP somewhat above 3% in the first quarter of 2017, suggesting there may be some upside risk to the judgmental projection as more data become available.

Based on the second estimate, growth of real GDP was unchanged from the advance estimate of 1.9% for 2016Q4. The consensus expectation had been for an upward revision to 2.1%. There were some noteworthy changes in the composition of demand. Growth of real personal consumption expenditures (PCE) was revised up from 2.5% to 3%, the same rate of increase as in the third quarter. The largest sources of this upward revision were spending on health care and on energy goods and services. Despite the upward revision to growth of real PCE, the personal saving rate was unchanged at 5.6% as nominal disposable income estimates in both Q3 and Q4 were revised upward after incorporating more accurate information on wage and salary income. The personal saving rate peaked at 6.1% in 2016Q1, and the decline since then likely owes in part to consumers' responses to the increase of energy prices over the course of 2016.

Offsetting the upward revision of growth of real PCE were downward revisions of growth of business fixed investment and of consumption and gross investment by state and local governments. The downward revision in the latter category was substantial, reducing the growth contribution from +0.3 percentage point to +0.1 percentage point. Finally, the growth contribution from inventory investment was revised down from +1.0 percentage point to +0.9, contributing to our modestly stronger projection for 2017Q1.

Available data suggest that growth of real PCE is likely to slow in 2017Q1, possibly quite sharply. Sales of light-weight motor vehicles averaged 17.6 million units (seasonally-adjusted annual rate) in January and February, down from 18.1 million in the fourth quarter. Excluding sales of motor vehicles, real PCE was quite weak in January. In part this reflected unseasonably mild weather, which resulted in a decline in spending for home heating. But in addition there were steep declines in spending for furnishings and durable household equipment and for gasoline. Barring substantial upward revisions to the January data and/or strong rebounds in spending for February and March, it will be difficult to get a real PCE growth rate in Q1 over 2% (annual rate). One potential behavioral explanation for this slowing in real PCE growth is that growth of real disposable income has slowed in response to the significant increase of energy prices over the past several months. Initially, households adapted to the increase of energy prices by bringing the personal saving rate down, from an average of 6% over the first half of 2016 to 5.4% in December. However, this may be as far as households are willing to go. The personal saving rate rose to 5.5% in January.

Total housing starts came in at 1.25 million (seasonally-adjusted annual rate) in January, comparable to the 2016Q4 average level. Single-family starts rose relative to December, but at 823,000 units were somewhat below the Q4 average. In contrast, multi-family starts fell in January relative to December, but were somewhat above the Q4 average. It appears that, at least through January, single-family starts remained on a very gradual uptrend, as did single-family permits. However, it should be noted that sales of new single-family homes appear to have peaked in September and have been gradually trending lower since then. The new home sales series is quite volatile and subject to large revisions, so it is likely premature to take a strong signal from this development. However, it is also the case that mortgage interest rates have increased by 60 to 70 basis points since September, and we have been on the lookout for evidence that this increase might cause a slowing in housing market activity. (A relatively new housing indicator, the Redfin Housing Demand Index, which is in essence a measure of online search activity by prospective home buyers in 15 major metro areas, has moved upward since mid-2016 and has continued to climb in January. While interesting, it does not rule out the possibility that people are trying to beat further rate increases and that the housing market is in fact being adversely affected by the increase in rates.)

The January data on construction put in place were mixed. Private residential construction spending increased 0.5% in January, well below the 1.7% average monthly increase of the fourth quarter. (Real residential investment increased at a 9.6% annual rate in Q4, but we now expect some slowing to around 5.6% in the first quarter.) Private nonresidential construction spending was essentially unchanged in January, which also represents a slowing from the fourth quarter pace of increases. Finally, public construction fell a steep 5% (monthly rate) in January after having increased in Q4 as a whole. Weather may have played a role in this weakness in construction spending. While the weather was warmer than usual, the amount of precipitation was 65% above the average of the past five years. Based on various reports, much of the entire West Coast of the US saw unusually heavy precipitation which may have brought a great deal of construction activity to a halt. On the plus side, based on the January data on industrial production, oil and gas drilling has continued to expand rapidly. On balance, we expect a 5% annual rate increase in real business investment in nonresidential structures in the first quarter, an improvement from the 4.4% decline of the fourth quarter.

Shipments of nondefense capital goods declined slightly in January, but were above the average of the fourth quarter. In addition, the trade data for January indicated that imports of capital goods were solid while exports of capital goods declined. As a result, we have nudged up our 2017Q1 estimate of growth of real business investment in new equipment to 5% versus 1.9% in Q4. New orders for nondefense capital goods have been very choppy but appear to be on a downward trend due mainly to declining new orders for civilian aircraft. Excluding aircraft, new orders for nondefense capital goods appear to be on a modest upward trend.

Real state and local consumption and gross investment is expected to increase at about a 3/4% annual rate in the first quarter, down from 1 ¼% in the fourth quarter. As mentioned above, public construction spending declined in January and we do not expect much of a rebound in February based on our hypothesis of the impact of unusually high volumes of precipitation. In addition, state and local government employment declined in January. Federal spending is expected to increase in the first quarter following a steep decline in defense outlays in the fourth quarter. But it should be noted that this continues to be the sector where we make the largest errors in our projections. Overall, we expect that final sales to domestic purchasers will increase at a 2.1% annual rate in 2017Q1 following a 2.6% gain in 2016Q4.

In contrast, we have boosted our projected Q1 growth contribution from inventory investment from -0.4 percentage point in the January Blackbook to +0.1 percentage point. The increase reflects a combination of the marking down of final sales to domestic purchasers in Q1 and preliminary indicators of January inventory investment being higher than expected. For Q2, we have lowered the growth contribution from inventory investment to -0.2 percentage point from +0.1 percentage point.

The trade data for January was weaker than our expectations. In real terms, exports of goods grew by 0.4% over the month, while imports grew a greater-than-expected 1.4%. Nevertheless, we have maintained our projection of a net export contribution of -0.5 percentage point to 2017Q1 GDP growth. This judgment is partly based on January being the first month of the quarter as well as the real exchange rate having stabilized at a somewhat lower level since the beginning of the current quarter. In addition, we view the decline in the capital goods excluding autos category as partially retracing the large December gain, while the decline in the other goods category is likely temporary due to the very volatile nature of this category.

Total nonfarm payroll employment rose 227,000 in January, moderately above the consensus expectation of a gain of 180,000. The establishment survey in the January labor market report also incorporated the annual benchmark revision. Based on the revised data, nonfarm employment increased by 2.242 million in 2016, compared to the pre-benchmark revision estimate of 2.157 million, a difference of around +7000 per month. Hours worked by all private sector employees rose 0.2% in January, matching the increase in December. For the first quarter, we project a 1.2% annual rate increase in hours worked in the nonfarm business sector, up slightly from 1.1% in the fourth quarter. Average hourly earnings increased 0.1% in January and rose 2.5% over the past 12 months. The unemployment rate was 4.8% in January, up 0.1 percentage point from December. The labor force participation rate rose to 62.9% from 62.7% in December. For the year as a whole the participation rate was essentially flat. The employment-population ratio increased 0.2 percentage point in January to 59.9%, but was also fairly flat over 2016.

A relatively bright spot of the recent data flow has been information pertaining to manufacturing. The ISM manufacturing index rose to 57.7 from 56.0 in February, the sixth consecutive month

indicating expansion in activity and the highest reading since August 2014. Of note, the new orders subcomponent of the ISM manufacturing index displayed the largest increase and rose to 65.1. In addition, the inventories subcomponent rose 3 percentage points to 51.5, its first reading above 50 in nineteen months. The regional Fed survey data were also strong in February. While these indicators suggest manufacturing may be close to escaping its recent stagnation, data on manufacturing activity has yet to provide clear evidence that the sector is gaining momentum. Manufacturing production increased 0.2% in January, following an increase of 0.1% in December and no change in November. The 12-month change in manufacturing production was +0.3%.

The total PCE deflator rose at a very strong 0.4% in January, up from a 0.2% gain in December, with energy prices up 4.2% and food prices unchanged. The core PCE deflator also showed a sharp rise in January and increased 0.3%. Total and core PCE inflation were higher than we were expecting. The upside surprise in core PCE inflation was concentrated in some categories of goods prices such as apparel and durables excluding motor vehicles that tend to be volatile, so we have not built in faster prices increases in coming months. However, because the large price increases occurred in the first month of the quarter, they will impact the path of quarterly projections. Consequently, our forecast of core inflation in Q1 has moved up from 1.6% (annual rate) to 2%, with core inflation then expected to move back down to 1.7% in Q2. Similarly, the total PCE deflator in Q1 is now expected to increase 2.2% (annual rate) versus 1.9% in January, and then increase at an annual rate of 2.0% in Q2. The 12-month change in the total PCE deflator was +1.9% in January, a notable rise from the 1.6% increase in December. Excluding food and energy, the 12-month change in the core PCE deflator was +1.7%, the same as in December.

The Outlook

In this forecast round we have raised projected growth of real GDP for 2017Q1 and 2017Q2 by 0.2 percentage point to 1.8%. While we expect a lower growth contribution from real PCE over the first half of this year than was anticipated at the end of January, we now see this decline being more than offset by higher growth of business fixed investment, residential investment and

inventory investment. As we will discuss shortly, however, developments over the intermeeting period have left our projections for output, inflation and unemployment in 2017 and 2018 largely unchanged. While the forecasts may not have changed, it is worth noting that there is a growing consensus that downside risks to the economy have diminished over the intermeeting period.

We expect growth of real GDP for all of 2017 at 1.9% (Q4/Q4), unchanged from the January Blackbook. As in the past few cycles, we expect growth of real GDP to slow to around 1.7% in 2018, with this slowing driven by a combination of an aging business cycle and a tightening of financial conditions as monetary policy continues to move in the direction of normalization. The unemployment rate has been projected to decline to around 4.6% by the end of 2017 and then edge up to 4.7% by the end of 2018 as productivity growth gradually moves up toward what we regard to be its long-run trend. With the economy operating near full employment and inflation expectations well anchored at the FOMC's objective, we now expect total PCE deflator inflation to move up to 2.1% (versus 2.0% in January) by the end of 2017 and then to modestly overshoot the objective in 2018, reaching 2.2% by the end of that year. This overshooting of inflation is the mirror image of the undershooting of the unemployment rate in 2017. The Q4/Q4 increase of the core PCE deflator is projected at 1.9% in 2017 and 2.2% in 2018, unchanged from January.

Since the election there have been some significant moves in financial asset prices resulting in a very modest easing of financial conditions as measured by the Goldman Sachs Financial Conditions Index. In our view, the change in underlying financial conditions still remains too modest to warrant a meaningful change in our forecast.

Even before the reporting of weaker consumer spending data for January, we had anticipated some slowing in the rate of growth of real PCE in both 2017 and 2018 due to tightening financial conditions and some modest slowing in the rate of growth of real disposable income. As in past cycles, we expect the personal saving rate to be essentially flat over the forecast horizon. We do anticipate some firming of business fixed investment, and that housing starts will remain on a gradual uptrend despite rising mortgage interest rates. Overall, growth of final sales to domestic purchasers is slightly stronger in 2017 than was the case in 2016. However, we expect the net export trade drag to increase to -0.5 percentage point in 2017 from -0.2 percentage point in 2016. In 2018 growth of final sales to domestic purchasers slows a bit, mainly due to slowing of growth of consumer spending, business equipment spending and residential investment. This

slowing of domestic demand lessens the net export trade drag to -0.4 percentage point. The current account deficit, currently around 2 ½% of GDP, is projected to approach 3% of GDP by the end of 2018.

As was the case in January, we continue to wait to get a clearer idea of what changes in fiscal policy are likely to be enacted by the New Administration. There has been ongoing discussion of individual and corporate tax reform as well as increased spending on infrastructure. But at this point we believe that there is insufficient information regarding the nature, magnitude, and timing of future changes in fiscal policy to attempt to incorporate them into our forecast. In addition, it is not at all clear how much stimulus such actions will be able to deliver with the economy at or near full employment while asset prices, particularly the exchange value of the dollar, are completely flexible. That being said, some alternative forecasts will likely incorporate changes in fiscal policy, and so we should keep that in mind when comparing our forecast with others.

2-1: Projections of Key Variables

	Core PCE Inflation		Real GDP Growth		Unemployment Rate*		Fed Funds Rate**	
	Jan	Mar	Jan	Mar	Jan	Mar	Jan	Mar
2016								
Q1	*2.0*	*2.0*	*0.8*	*0.8*	*4.9*	*4.9*	*0.38*	*0.38*
Q2	*1.8*	*1.8*	*1.4*	*1.4*	*4.9*	*4.9*	*0.38*	*0.38*
Q3	*1.7*	*1.7*	*3.5*	*3.5*	*4.9*	*4.9*	*0.38*	*0.38*
Q4	1.2	*1.2*	1.9	*1.9*	4.7	*4.7*	0.63	*0.63*
2017								
Q1	1.6	2.0	1.6	1.8	4.7	4.8	0.63	0.88
Q2	1.8	1.7	1.7	1.8	4.6	4.7	0.63	1.13
Q3	1.9	1.9	2.0	2.1	4.6	4.7	0.88	1.38
Q4	2.0	2.0	2.2	2.2	4.6	4.6	1.13	1.38
2018								
Q1	2.2	2.2	1.2	1.5	4.6	4.6	1.13	1.38
Q2	2.3	2.2	2.0	1.7	4.6	4.6	1.38	1.63
Q3	2.2	2.2	1.6	1.7	4.7	4.7	1.38	1.88
Q4	2.1	2.2	1.9	1.8	4.7	4.7	1.63	2.13
Q4/Q4								
2015	*1.4*	*1.4*	*1.9*	*1.9*	*-0.7*	*-0.7*	*0.17*	*0.38*
2016	1.7	*1.7*	1.9	*1.9*	-0.2	*-0.3*	0.63	*0.63*
2017	1.9	1.9	1.9	1.9	-0.1	-0.1	1.13	1.38
2018	2.2	2.2	1.7	1.7	0.1	0.1	1.63	2.13

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

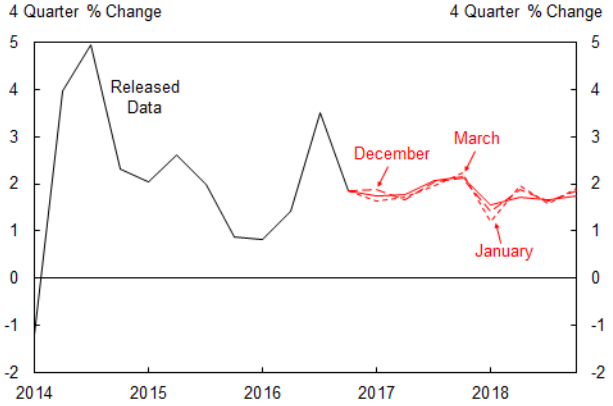
*Quarterly values are the average rate for the quarter. Yearly values are the difference between Q4 of the listed year and Q4 of the previous year.

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

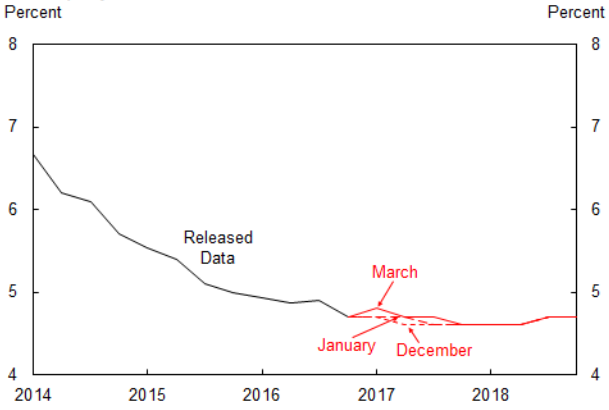
2-2: Evolution of Projected Quarterly Paths

Key Indicators

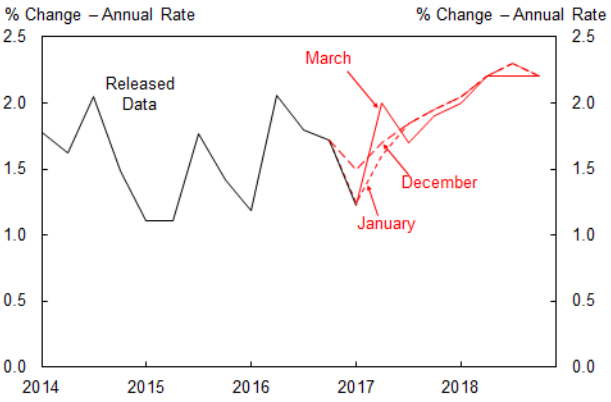
Real GDP Growth



Unemployment Rate

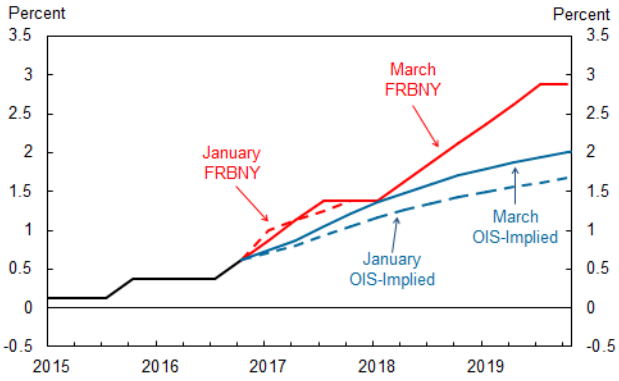


Core PCE Inflation

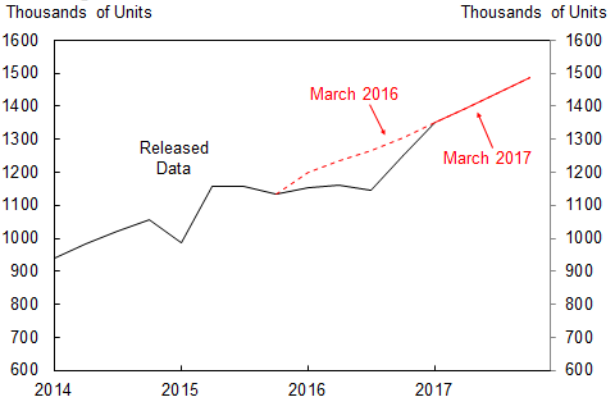


Forecast Assumptions

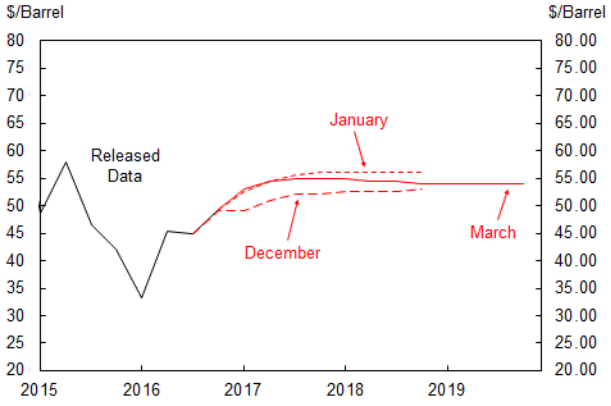
Federal Funds Rate



Housing Starts



Crude Oil



Source: FRBNY (MMS and IR Functions)

2-3: Near-Term Projections

	Growth Rates (AR)			Growth Contributions (AR)		
	2017Q1	2017Q2	2017Q3	2017Q1	2017Q2	2017Q3
OUTPUT						
Real GDP	1.8	1.8	2.1	1.8	1.8	2.1
	(1.6)	(1.7)	(2.0)	(1.6)	(1.7)	(2.0)
Final Sales to Domestic Purchasers	2.1	2.5	2.5	2.2	2.6	2.6
	(2.5)	(2.3)	(2.4)	(2.5)	(2.3)	(2.5)
Consumption	1.8	2.5	2.4	1.2	1.7	1.6
	(2.6)	(2.5)	(2.4)	(1.8)	(1.7)	(1.6)
BFI: Equipment	5.0	4.0	3.0	0.3	0.2	0.2
	(4.0)	(4.0)	(3.0)	(0.2)	(0.2)	(0.2)
BFI: Nonresidential Structures	5.0	4.0	4.0	0.1	0.1	0.1
	(4.0)	(4.0)	(4.0)	(0.1)	(0.1)	(0.1)
BFI: Intellectual Property Products	5.0	5.0	5.0	0.2	0.2	0.2
	(3.0)	(3.0)	(3.0)	(0.1)	(0.1)	(0.1)
Residential Investment	5.6	6.1	8.6	0.2	0.2	0.3
	(4.3)	(0.9)	(7.7)	(0.2)	(0.0)	(0.3)
Government: Federal	0.7	-0.3	-0.3	0.0	0.0	0.0
	(-0.3)	(-0.3)	(-0.3)	(-0.0)	(-0.0)	(0.0)
Government: State and Local	0.8	1.3	1.3	0.1	0.1	0.1
	(1.3)	(1.3)	(1.3)	(0.1)	(0.1)	(0.1)
Inventory Investment	--	--	--	0.1	-0.2	0.0
	--	--	--	(-0.4)	(0.1)	(0.0)
Net Exports	--	--	--	-0.5	-0.6	-0.5
	--	--	--	(-0.5)	(-0.7)	(-0.5)
INFLATION						
Total PCE Deflator	2.2	2.0	2.2			
	(1.9)	(2.0)	(2.2)			
Core PCE Deflator	2.0	1.7	1.9			
	(1.6)	(1.8)	(1.9)			
PRODUCTIVITY AND LABOR COSTS*						
Output per Hour	0.8	0.8	1.0			
	(1.0)	(0.8)	(0.8)			
Compensation per Hour	3.0	3.1	3.1			
	(3.0)	(3.1)	(3.1)			
Unit Labor Costs	2.3	2.3	2.1			
	(2.0)	(2.3)	(2.3)			

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		
	2016	2017	2018	2016	2017	2018
OUTPUT						
Real GDP	1.9	1.9	1.7	1.9	1.9	1.7
	(1.9)	(1.9)	(1.7)	(1.9)	(1.9)	(1.7)
Final Sales to Domestic Purchasers	2.1	2.4	2.1	2.1	2.5	2.1
	(2.1)	(2.4)	(2.0)	(2.1)	(2.4)	(2.1)
Consumption	3.0	2.2	2.1	2.0	1.5	1.5
	(2.8)	(2.4)	(2.1)	(1.9)	(1.7)	(1.5)
BFI: Equipment	-3.9	3.7	2.0	-0.2	0.2	0.1
	(-3.6)	(3.5)	(2.0)	(-0.2)	(0.2)	(0.1)
BFI: Nonresidential Structures	1.2	4.0	2.5	0.0	0.1	0.1
	(1.1)	(3.7)	(2.5)	(0.0)	(0.1)	(0.1)
BFI: Intellectual Property Products	5.1	5.0	5.0	0.2	0.2	0.2
	(5.6)	(3.0)	(3.0)	(0.2)	(0.1)	(0.1)
Residential Investment	1.1	7.6	5.0	0.0	0.3	0.2
	(1.2)	(5.6)	(5.5)	(0.0)	(0.2)	(0.2)
Government: Federal	-0.2	-0.1	-0.7	0.0	0.0	0.0
	(-0.2)	(-0.4)	(-0.7)	(-0.0)	(-0.0)	(-0.0)
Government: State and Local	0.5	1.2	1.2	0.1	0.1	0.1
	(0.8)	(1.3)	(1.2)	(0.1)	(0.1)	(0.1)
Inventory Investment	--	--	--	-0.1	-0.1	-0.1
	--	--	--	(-0.1)	(-0.1)	(-0.1)
Net Exports	--	--	--	-0.2	-0.5	-0.4
	--	--	--	(-0.2)	(-0.5)	(-0.3)
INFLATION						
Total PCE Deflator	1.4	2.1	2.2			
	(1.5)	(2.0)	(2.2)			
Core PCE Deflator	1.7	1.9	2.2			
	(1.7)	(1.9)	(2.2)			
PRODUCTIVITY AND LABOR COSTS*						
Output per Hour	1.0	1.0	1.1			
	(0.7)	(0.9)	(1.0)			
Compensation per Hour	2.9	3.0	3.4			
	(3.0)	(3.0)	(3.3)			
Unit Labor Costs	1.9	2.0	2.3			
	(2.2)	(2.1)	(2.3)			

Note: Numbers in parentheses are from the previous Blackbook.

*Nonfarm business sector.

2-5: Comparison with Other Forecasts

Real GDP Growth

	Release Date	2017Q1	2017Q2	2017 Q4/Q4	2018 Q4/Q4
FRBNY	3/3/2017	1.8	1.8	1.9	1.7
		(1.6)	(1.7)	(1.9)	(1.7)
Blue Chip	2/10/2017	2.2	2.3	2.3	2.3
		(2.2)	(2.3)	(2.3)	(2.4)
Median SPF	2/10/2017	2.2	2.3	2.3	2.4
		(2.2)	(2.2)	(2.2)	(2.1)
Macro Advisers	2/27/2017	2.0	2.5	2.3	2.1
		(2.7)	(2.0)	(2.1)	(2.1)
FRBNY-DSGE	3/8/2017	2.1	1.8	1.9	2.2
		(1.7)	--	(1.9)	--
Median SPD	1/23/2017	--	--	2.3	2.5
		--	--	(2.2)	(2.4)

Core PCE Inflation

	Release Date	2017Q1	2017Q2	2017 Q4/Q4	2018 Q4/Q4
FRBNY	3/3/2017	2.0	1.7	1.9	2.2
		(1.6)	(1.8)	(1.9)	(2.2)
Median SPF	2/10/2017	1.8	1.9	1.9	2.0
		(1.8)	(1.8)	(1.9)	(1.9)
Macro Advisers	2/27/2017	1.5	1.8	1.7	1.9
		(1.8)	(1.8)	(1.8)	(2.0)
FRBNY-DSGE	3/8/2017	1.8	1.6	1.6	1.5
		(1.4)	--	(1.4)	--
Median SPD	1/23/2017	--	--	1.9	2.0
		--	--	(2.0)	(2.1)

Unemployment*

	Release Date	2017Q1	2017Q2	2017 Q4/Q4	2018 Q4/Q4
FRBNY	3/3/2017	4.8	4.7	-0.1	0.1
		(4.7)	(4.6)	(-0.1)	(0.1)
Blue Chip	2/10/2017	4.7	4.6	-0.3	-0.2
		(4.7)	(4.6)	(-0.3)	(-0.1)
Median SPF	2/10/2017	4.7	4.6	-0.2	-0.1
		(4.8)	(4.7)	(-0.1)	(-0.1)
Macro Advisers	2/27/2017	4.7	4.6	-0.4	-0.3
		(4.7)	(4.6)	(-0.3)	(-0.2)
Median SPD	1/23/2017	--	--	-0.2	-0.2
		--	--	(-0.3)	(-0.1)

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

*Yearly values are the difference between Q4 of the listed year and Q4 of the previous year.

2-6: Tealbook Comparison

	FRBNY (Q4/Q4)			Tealbook (Q4/Q4)		
	2016	2017	2018	2016	2017	2018
OUTPUT						
Real GDP Growth	1.9	1.9	1.7	1.9	2.0	2.2
	(1.9)	(1.9)	(1.7)	(1.9)	(2.1)	(2.0)
GDP Growth Contributions						
Final Sales to Domestic Purchasers	2.1	2.5	2.1	2.1	2.3	2.6
	(2.1)	(2.4)	(2.1)	(2.0)	(2.5)	(2.3)
Consumption	2.0	1.5	1.5	2.0	1.7	2.0
	(1.9)	(1.7)	(1.5)	(2.0)	(2.0)	(1.9)
BFI	0.0	0.5	0.4	0.0	0.5	0.4
	(0.0)	(0.4)	(0.3)	(0.0)	(0.5)	(0.3)
Residential Investment	0.0	0.3	0.2	0.0	0.1	0.2
	(0.0)	(0.2)	(0.2)	(0.1)	(0.0)	(0.1)
Government	0.0	0.1	0.1	0.0	0.2	0.1
	(0.1)	(0.1)	(0.1)	(0.1)	(0.3)	(0.1)
Inventory Investment	-0.1	-0.1	-0.1	0.0	-0.1	0.0
	(-0.1)	(-0.1)	(-0.1)	(-0.2)	(-0.1)	(0.0)
Net Exports	-0.2	-0.5	-0.4	-0.2	-0.5	-0.5
	(-0.2)	(-0.5)	(-0.3)	(0.0)	(-0.5)	(-0.5)
INFLATION						
Total PCE Deflator	1.4	2.1	2.2	1.4	1.7	1.8
	(1.5)	(2.0)	(2.2)	(1.5)	(1.7)	(1.8)
Core PCE Deflator	1.7	1.9	2.2	1.7	1.8	1.9
	(1.7)	(1.9)	(2.2)	(1.7)	(1.7)	(1.9)
LABOR MARKET						
Unemployment Rate (Avg. Q4 Level)	4.7	4.6	4.7	4.7	4.6	4.2
	(4.7)	(4.6)	(4.7)	(4.7)	(4.5)	(4.2)
Participation Rate (Avg. Q4 Level)	62.7	62.8	62.8	62.7	62.6	62.3
	(62.7)	(62.8)	(62.8)	(62.7)	(62.6)	(62.3)
Avg. Monthly Nonfarm Payroll Growth (Thous.)	194	137	99	187	172	157
	(188)	(142)	(101)	(180)	(184)	(162)
SAVING						
Personal Saving Rate (Avg. Q4 Level)	5.6	5.4	5.3	5.6	5.0	6.0
	(5.6)	(5.4)	(5.2)	(5.4)	(6.2)	(5.8)
HOUSING						
Housing Starts (Avg. Q4 Level, Thous.)	1305	1485	--	1200	1200	1300
	(1305)	(1485)	--	(1200)	(1200)	(1300)
INTREST RATE ASSUMPTION						
Fed Funds Rate*	0.63	1.38	2.13	0.45	1.45	2.46
	(0.63)	(1.13)	(1.63)	(0.45)	(1.46)	(2.51)

Note: Numbers in parentheses are from the previous Blackbook and Tealbook.

* FRBNY numbers indicate end of year Federal Funds Rate, Tealbook numbers indicate average of Q4 Federal Funds Rate.

3. Uncertainty & Risks

Developments during the intermeeting period indicate small changes in uncertainty and risks around the outlook from the assessment in the January *Blackbook*. Based on the difference between the modal forecast and the expected value from our forecast distributions [Exhibit 3-1], as well as the changes in the distributions [Exhibit 3-3], the risks to real GDP growth are roughly balanced through much of the forecast horizon. For core PCE inflation, the risks are balanced throughout the forecast horizon. The widths of the GDP growth probability intervals are slightly narrower than those in the January *Blackbook*, but the 90 percent probability interval for inflation has widened some because of greater upside tail risks. The uncertainties around the real GDP growth projection and around the inflation projection are still moderately above their respective historical norms.

The data on U.S. real economic activity over the intermeeting period displayed a dichotomy between the near-term implications of the expenditure data and the survey data. The expenditure data were roughly in line with the staff near-term projection; consequently, the judgmental forecast for 2017Q1 is 1.8 percent, only slightly above that from the January *Blackbook*. In contrast, the FRBNY nowcast for 2017Q1 real GDP growth increased from 2.66 percent on January 27 to 3.18 percent on March 9. The difference between the two near-term projections largely reflects the impact on the staff nowcast of continued strong survey data. The January labor market report indicated continued healthy growth in nonfarm payrolls. Even so, wage growth remained somewhat subdued. The unemployment rate, the labor force participation rate, and the employment-population ratio all ticked up. Manufacturing production rose modestly in January, but still has been fairly flat over the past two years. Based on 12-month changes, core PCE inflation and core CPI inflation have moved to the upper end of their recent prevailing ranges. Alternative underlying inflation measures have moved up some. Longer-term inflation compensation from TIPS fell modestly and remains at a low level. Our SCE 3-year inflation expectations measure rose further in February, but the Michigan measure of longer-run expectations fell slightly and remained low. Outside of the U.S., the data generally were solid.

Financial conditions improved overall. This improvement occurred as the market-implied expected path of the federal funds rate shifted upward by 15 – 30 basis points, with the larger

increases occurring at longer horizons. Longer-term Treasury yields increased about 10 basis points. In contrast, longer-term nominal sovereign yields in Germany fell and European sovereign spreads rose slightly. Corporate credit spreads to Treasuries narrowed further. Major U.S. equity indexes rose appreciably and implied volatility remained low. Most major foreign equity indices also increased. Oil prices fluctuated within its recent narrow prevailing range, but fell sharply at the end of the period. After reaching a local peak during the intermeeting period, broad non-energy commodity indices fell noticeably toward the end of the period. The nominal broad dollar index declined modestly on net.

Typically, a period with data generally consistent with or somewhat better than that assumed in the outlook would prompt some reduction in uncertainty, and in fact we have lowered modestly our assessment of uncertainty around the real activity outlook and reduced the extent of fatter tails in some of the scenario distributions. Nevertheless, because there remains considerable uncertainty about possible changes in government policies and the geopolitical risks are appreciable (particularly regarding upcoming European elections) we have made only rather small changes in the scenario probabilities [Exhibit 3-2].

In particular, we have made a small increase in the probability of the positive *Faster Growth* scenario and a small decrease in the probability of the negative *Fiscal Consolidation* scenario to account for the possibility that the strong survey data is providing a more accurate signal than the expenditure data about the strength of the U.S. economy. This combination also incorporates the risk if a fiscal stimulus package is enacted. Indications of a stronger global outlook led to a modest decline in the probability of the Global Deflation scenario. The high January inflation data, some increase in alternative underlying measures, and the rise in our measure of household inflation expectations contributed to our assessment of a somewhat higher probability of the *Loss of Credibility* scenario.

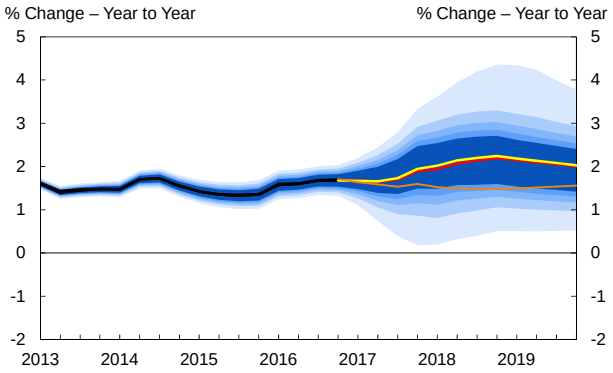
These changes in scenario probabilities led to mostly small changes in the 90 percent probability intervals for real GDP growth and core PCE inflation [Exhibit 3-3]. The one exception is a more notable rise in the upper band around the inflation projection, reflecting greater upside tail risks associated with the *Loss of Credibility* scenario. The intervals for real GDP growth and for core

PCE inflation remain moderately wider than their respective historical norms. Based on the difference between the mode and the mean of the forecast distribution, the real GDP growth distribution signals that the risks to real activity are roughly balanced into 2018 and slightly skewed to the downside thereafter, while the risks to inflation are still balanced overall—despite the greater upside tail risks—throughout the forecast horizon [Exhibit 3-1].

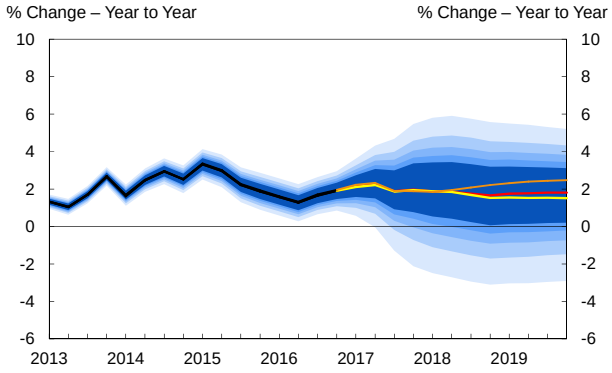
In a comparison to the forecast distribution from a year earlier, the current projections for inflation and real GDP growth run somewhat above the respective year-ago expectations, reflecting our pessimistic assessment of a year ago when there was considerable financial market volatility [Exhibit 3-3]. Nonetheless, both the realizations of inflation and real GDP growth and the current projections of these variables are within last year's respective fifty percent forecast probability intervals, which is partly a reflection of the high uncertainty at that time.

3-1: Forecast Distributions

Core PCE Inflation Forecast Distribution



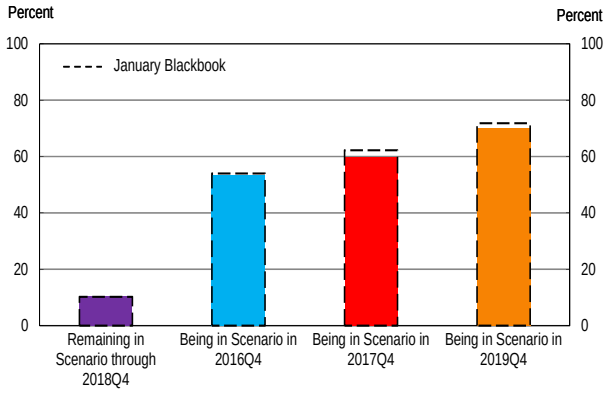
Real GDP Growth Forecast Distribution



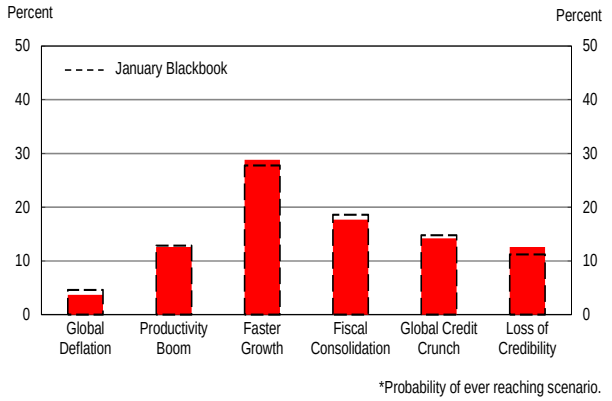
The yellow line is the expected value of the forecast distribution, the red line is the FRBNY central projection, the orange line is the DSGE forecast, and the black line is released data. The shading represents the 50, 60, 70, 80 and 90 percent probability that the four-quarter change will be within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

3-2: Scenario Probabilities

Central Scenario Probabilities



Alternative Scenario Probabilities*



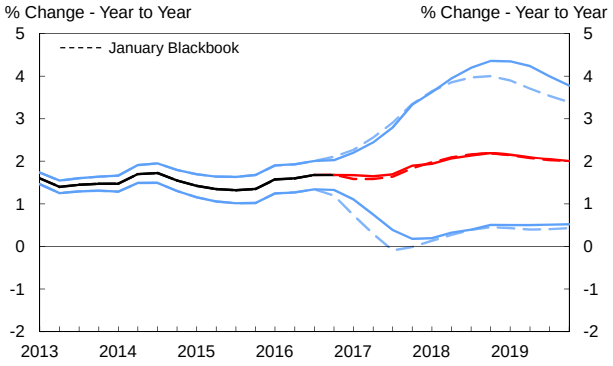
*Probability of ever reaching scenario.

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.

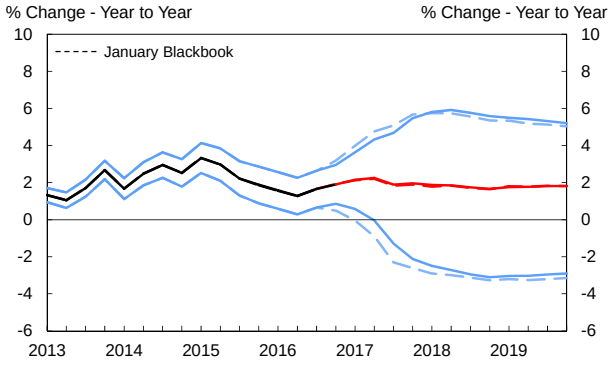
Source: MMS Function (FRBNY)

3-3: Evolution and Performance of Forecast Distributions

Change in Core PCE Inflation Forecast Distribution

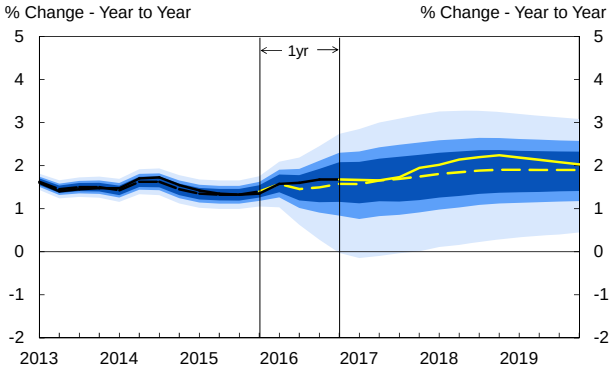


Change in Real GDP Growth Forecast Distribution

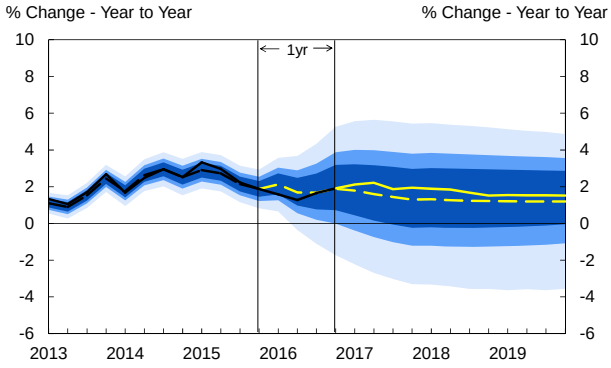


The red lines are the central scenario projections, black lines are released data, and blue lines represent upper and lower 90 percent forecast probability intervals. Dashed lines represent forecasts from the previous Blackbook.

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)

SEPIA Projections and Charts

Brandyn Bok, Daniele Caratelli, Argia Sbordone, and Giorgio Topa

In this box we present an alternative set of Research staff's views of the outlook as well as of the uncertainty and risks around it (**S**ummary of **E**conomic **P**rojections with **I**ndividual **A**ssessment of uncertainty). We obtain them by eliciting individual density forecasts from a number of Research Group economists in a manner similar to that of the Survey of Professional Forecasters and the Survey of Primary Dealers, and then aggregating them. This methodology allows us to construct fan charts around the forecasts that represent the economists' subjective assessment of uncertainty and risks.

Why these alternative projections?

We engaged the Research Group economists in this exercise to mimic the collection of projections in the FOMC Summary of Economic Projections (SEP), aiming at the same time to provide a more comprehensive, quantitative representation of the economists' views about possible outcomes for each variable. The SEP currently provides only a qualitative assessment of FOMC participants' uncertainty and risk around their projections: specifically, participants rate their uncertainty for each projection relative to a measure of historical uncertainty of those projections. Board staff have computed this historical benchmark by averaging the root mean squared errors (RMSEs) of forecasts over the past 20 years from six sets of forecasters: FOMC participants, the Board staff, the CBO, the Administration, the Blue Chip survey, and the Survey of Professional Forecasters (see Reifschneider and Tulip, FEDS 2017-020). In the SEP, participants also assess whether risks around their forecasts are broadly balanced or skewed to the upside or downside. Both qualitative assessments are discussed in the narrative portion of the SEP as reported in an addendum to the minutes of the FOMC meetings, while a table in the SEP reports the historical RMSEs. Starting with the March FOMC meeting, the SEP will translate the information in that table into confidence bands (fan charts) around the median of the FOMC participants' projections.

By collecting density forecasts from respondents, we provide instead an integrated framework to construct confidence bands that are consistent with their current views of the outlook, uncertainty and risks. Moreover, tracking this information over time, we can evaluate how the survey

participants' views evolve.

Density forecasts and construction of fan charts

We elicited subjective forecast distributions in an easy-to-implement manner: we asked the participants to assign probabilities to pre-determined ranges of outcomes ("buckets") for each variable/year of interest. As we are trying to mimic the process of the actual SEP submission of the FOMC participants, we centered the buckets on the median of the most recent SEP so that the buckets capture the most pertinent range of outcomes for each variable. To facilitate the visualization and submission of the projections, we created a user-friendly, spreadsheet-based tool, where we also provided a reference default distribution for each variable/year. This distribution is set to be a normal distribution with mean equal to the latest median SEP projection and standard deviation based on the historical RMSEs of the forecasts discussed above.

To aggregate the projections, we first computed *aggregate* bucket probabilities for each variable/year, by taking the simple arithmetic mean of individual bucket probabilities across the participants. This generated discrete aggregate forecast distributions. To these we then fitted a flexible probability density function (PDF): this generated continuous aggregate PDFs that we used to compute various statistics of interest.

Results and main takeaways

For this survey, conducted during the March FOMC cycle, we collected projections for real GDP growth (Q4/Q4), the unemployment rate (Q4 average), core PCE inflation (Q4/Q4), and the federal funds rate (midpoint of end-of-year target range) for the years 2017-19 from 13 Research economists. The projections reflect the same "appropriate policy assumption" as in the SEP.

The table provides a summary of the results; the fan charts show median projections with confidence bands; and the histogram charts show aggregate distributions of each variable by projection year against the previous submission.

The summary table reports the median of the aggregate distribution and, for comparison, the median from the December SEP. Real GDP growth is expected to remain moderate around 2% through the forecast horizon, expected unemployment is a tad higher than was expected by

FOMC participants in December, and core inflation is expected to reach 2% by next year, in line with the December SEP projections. The projected federal funds rate path moves upward, as in the December SEP, but on a somewhat shallower path. Overall economists' projections are not materially different from those we collected for the January FOMC cycle.

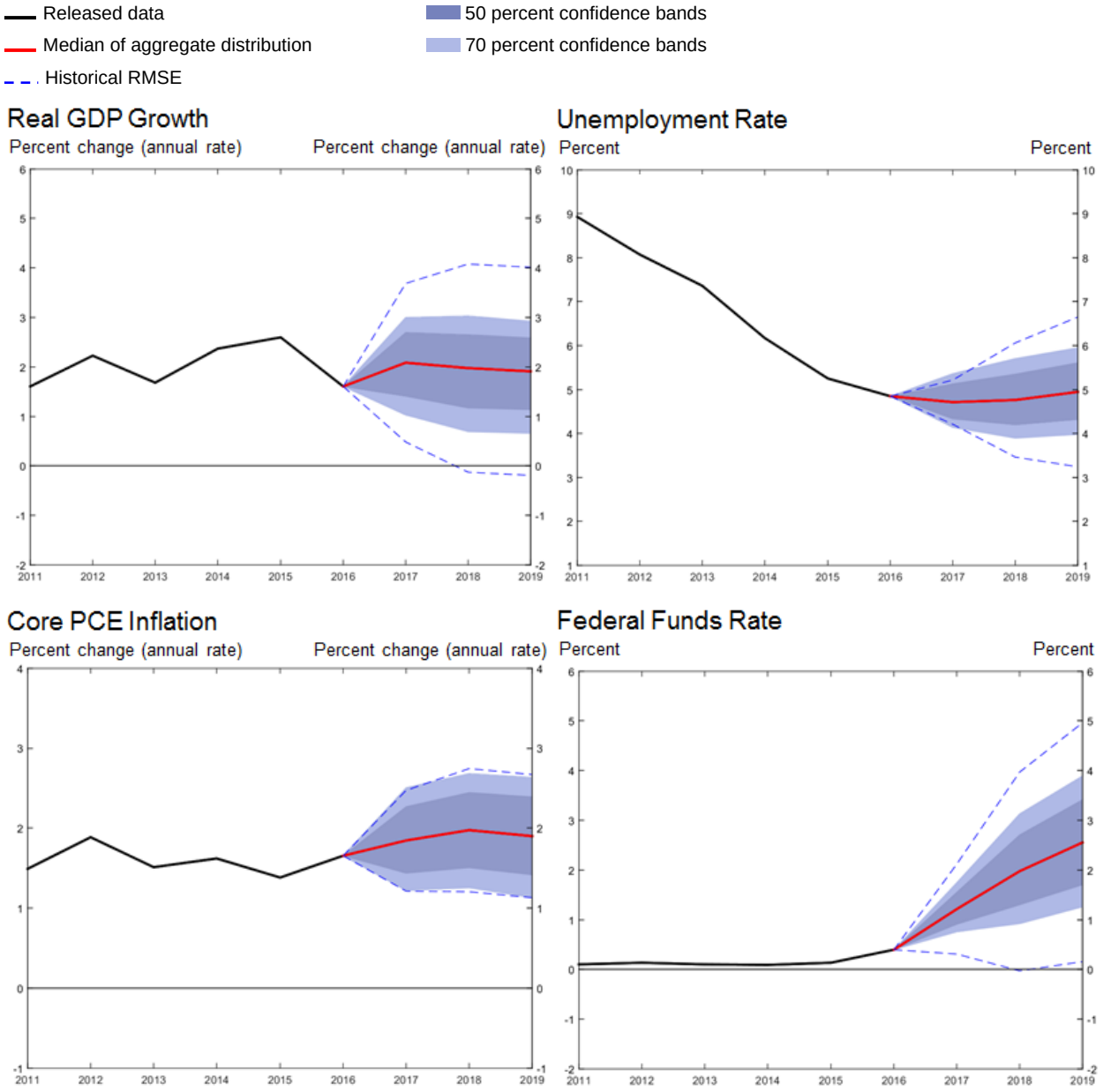
Turning to the uncertainty about the forecasts, we note that, except for core PCE, the aggregate uncertainty of our forecasts is generally lower than the historical uncertainty as measured by the historical RMSEs reported in the table. The next-to-last column of the table reports the IQR (interquartile range) of each aggregate distribution, as a comprehensive measure of uncertainty and dispersion. Not surprisingly, this measure tends to rise over the forecast horizon. Finally, the last column reports the skewness of each aggregate distribution, which represents the degree of upside/downside risk associated with each projection. From this measure, it appears that risks to economic growth are slightly tilted to the downside, while there is some upside risk in the federal funds rate projections in the near term.

Variable	Year	Median	SEP Median	Standard deviation	Historical RMSEs	IQR	Skewness
Real GDP Growth							
	2017	2.1	2.1	1.0	1.6	1.3	0.9
	2018	2.0	2.0	1.1	2.1	1.5	0.8
	2019	1.9	1.9	1.1	2.1	1.4	0.9
Unemployment Rate							
	2017	4.7	4.5	0.6	0.5	0.8	1.1
	2018	4.8	4.5	0.9	1.3	1.2	1.0
	2019	4.9	4.5	1.0	1.7	1.3	1.0
Core PCE Inflation							
	2017	1.8	1.8	0.6	0.6	0.8	1.0
	2018	2.0	2.0	0.7	0.8	0.9	1.0
	2019	1.9	2.0	0.7	0.8	1.0	1.0
Federal Funds Rate							
	2017	1.2	1.4	0.5	0.9	0.6	1.1
	2018	2.0	2.1	1.1	2.0	1.4	1.1
	2019	2.6	2.9	1.3	2.4	1.7	1.0

Summary table: Median, standard deviation, interquartile range (IQR), and skewness (measured as the ratio of P75-P50 and P50-P25) are summary statistics for the aggregate distributions of participants' projections for the SEPIA conducted during the current (March 2017) FOMC cycle. The SEP median is from the December 2016 SEP, and historical RMSEs are those reported in Reifschneider and Tulip (FEDS 2017-020).

The information in the table is reflected in the projections in the fan charts. Here the solid red line is the median of the aggregate distribution, and the shaded fan charts represent the 50 (darker blue) and the 70 (lighter blue) percent confidence bands. Finally, to emphasize the difference with the historical uncertainty, we report with dashed lines symmetric confidence bands based on historical RMSEs, centered around the median of the aggregate distribution.

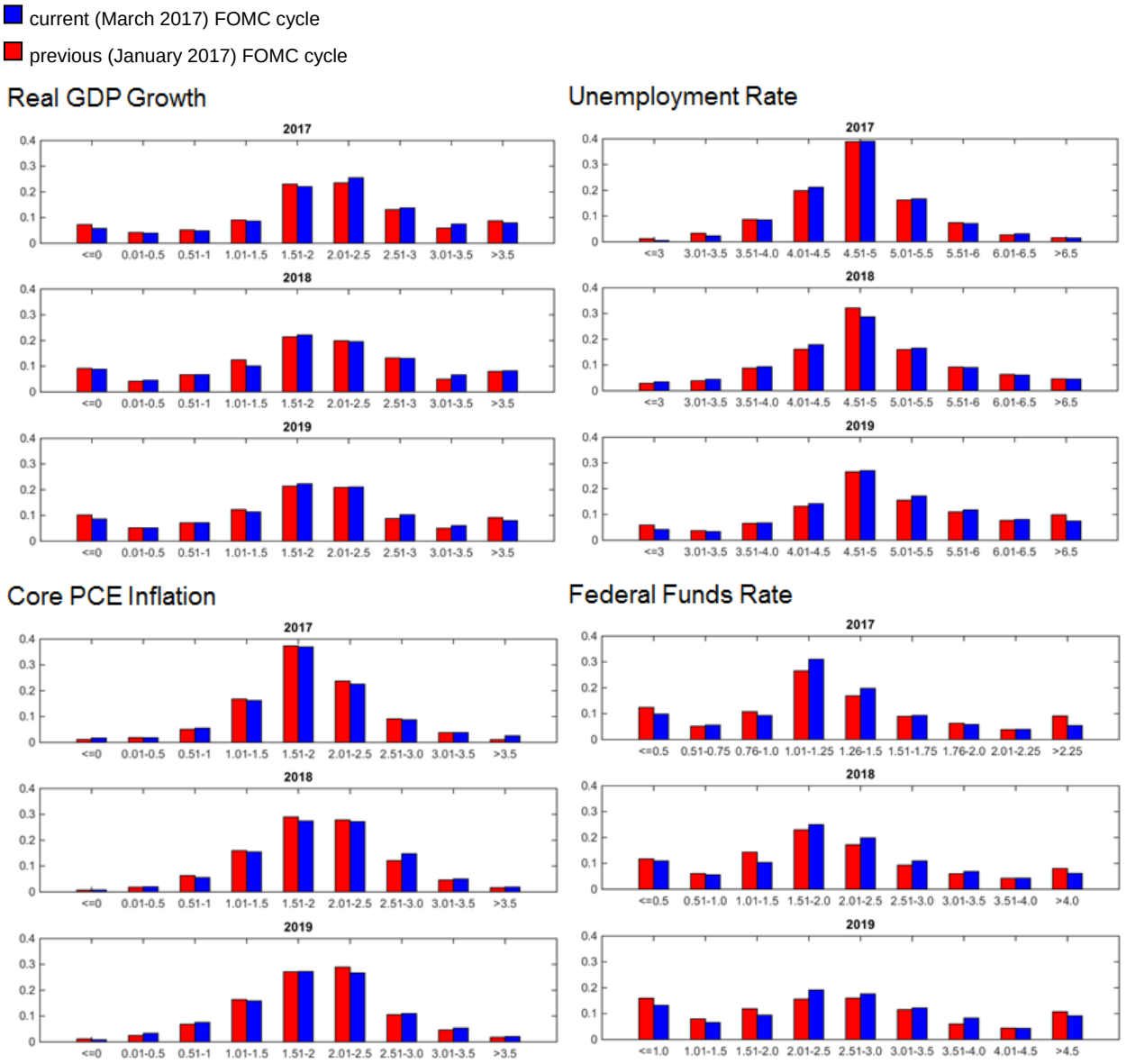
Fan Charts: Aggregate Distributions of Participants' Projections



Fan charts: In each chart, the red line is the median of the aggregate distribution, and the black line is released data. The blue shaded areas represent 50 (darker shade) and 70 (lighter shade) percent confidence bands. The blue dashed lines are symmetric confidence bands based on historical RMSEs, centered around the median of the aggregate distribution.

The histogram charts present for each variable the aggregate distributions for the three projection years (blue histograms). For comparison, we also report the distributions from the analogous survey that we conducted in the January FOMC cycle (red histograms). Looking at the change between the previous and the current submissions, the aggregate density forecast for GDP growth and especially the target fed funds rate appear to have shifted to the right, with some increased upside risk for core PCE (in 2018) and the unemployment rate (in 2019).

Histograms: Aggregate Distributions of Participants' Projections



Histograms: The histograms are the aggregate distributions of SEPIA participants' projections for the current (blue) and previous (red) FOMC cycles.

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

RESEARCH AND STATISTICS GROUP

FRBNY Blackbook

April 2017

CLASS II FOMC - RESTRICTED (FR)

FRBNY BLACKBOOK

April 2017

CONTENTS

APPENDIX

1. Policy Recommendation and Rationale

Developments over the intermeeting period did not lead to significant changes in our medium-term outlook. Real GDP growth was weak in 2017Q1, but it was close to our projections just prior to the release and much of the weakness can be traced to temporary factors, such as unusually mild weather in January and February. Consequently, we expect a solid rebound in the second quarter. Beyond the near term, our judgmental forecast is largely unchanged: Real GDP growth is projected to be slightly above its potential rate in 2017, and then to moderate to near potential in 2018. We project inflation to rise to the FOMC's longer-run objective by the end of this year, and to slightly overshoot it in 2018. Risks are roughly balanced for both output and inflation. On the upside, our modal outlook does not incorporate a fiscal stimulus, which could boost expenditures. On the downside, the improvement in "soft-data" readings since the November election largely has yet to materialize in hard data, leaving the door open for some disappointment that could adversely affect financial markets and economic outcomes.

Assuming developments continue to evolve roughly as we anticipate, we maintain our policy recommendation of two additional 25 basis point increases in the FFR target range during 2017. Over the medium term, our modal projections remain conditioned on a gradual increase of the policy rate towards, and eventually even possibly above, our estimate of its longer-term natural rate (2.50 – 2.75 percent). Because we anticipate that the policy rate will be sufficiently away from the effective lower bound by year-end, we believe it will be appropriate to announce late in the year a phase-out of reinvestment that commences soon thereafter. A possible sequence consistent with our recommendation would be hikes in June and September followed by a December announcement of the reinvestment phase-out. In this case decisions would be taken only at press-conference meetings and would be staggered to minimize risks of unwarranted financial market overreaction to multiple policy-tightening actions at a single meeting. Of course, departures from this "modal" sequence would be appropriate in response to unforeseen circumstances.

Expenditure data releases, particularly those related to consumer spending, over the intermeeting period were generally weaker than expected. This weakness owes to a number of factors including lower utility consumption due to unseasonably mild weather in January and February,

weaker-than-expected auto sales, delays in federal tax refunds, and some payback from strong 2016Q4 consumption. The weakness in consumption was a major factor behind the soft real GDP growth of 0.7 percent (annual rate) in 2017Q1, which was below our 1.8 percent projection in the March *Blackbook*, but close to our projection just prior to the GDP release. Because we see much of the Q1 softness as reflecting transitory factors, we raised the 2017Q2 real GDP forecast from 1.8 percent in March to about 3 percent. As a result, the real GDP forecast for 2017H1 is around 2 percent, little changed from the March *Blackbook*.

The recent tension between expenditure indicators feeding into GDP and other economic activity data releases persisted in this intermeeting period. Whereas expenditure indicators generally have been soft, survey indicators such as the ISM survey and the System regional surveys continue to point to solid gains in economic activity. The gap between "soft data" and "hard data" continued to be reflected in the divergence between the judgmental forecast (as well as the advance GDP estimate) and the FRBNY nowcast for 2017Q1; the latter stands at 2.7 percent. Moreover, measures of consumer and business sentiment remained buoyant in 2017Q1; historical correlations suggest that such robust improvements might foreshadow somewhat stronger real GDP growth. On a sobering note, sales of light-weight motor vehicles fell further in March. In addition, the positive signals from business surveys have not yet fully translated into more solid growth in manufacturing production and capital goods demand. Furthermore, net exports continue to be a drag to our real GDP forecast through the forecasting horizon.

Finally, while the labor market continued to strengthen, employment in retail trade has weakened significantly in recent months, likely owing to pressure on brick-and-mortar stores from online retailers as well as tighter commercial real estate lending standards. We nonetheless continue to project growth at or slightly above its potential rate over the medium term because of the overall strength of the labor market, the good condition of the household sector balance sheet, and a general upward trend in the housing market despite somewhat higher mortgage rates.

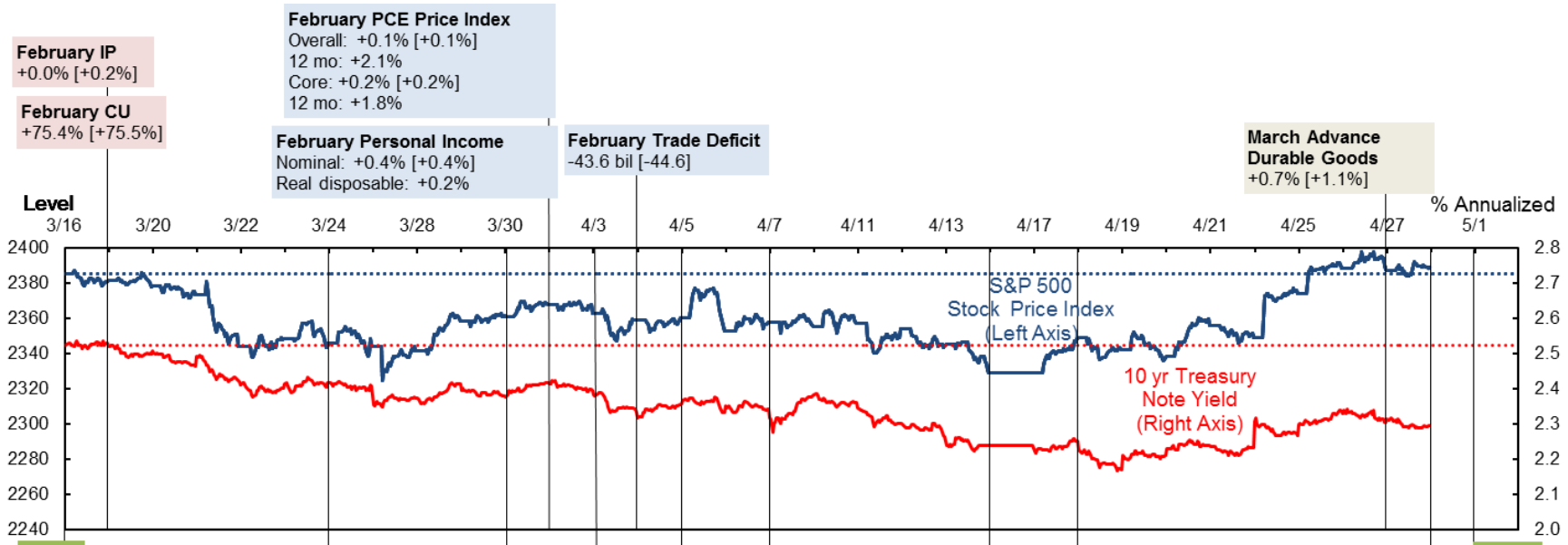
Regarding inflation, after increasing 0.2 percent in February, core CPI fell 0.1 percent in March, its first decrease since January 2010. The decline partly resulted from a quality adjustment in telecommunication charges, but other components, such as shelter and medical care, also

displayed softness. While surprising, the March CPI release (much like the January release in the other direction) did not materially change the broad contour of our inflation forecast, and 2017Q1 core PCE inflation was near our projection. Measures of market-implied longer-term inflation compensation fell slightly over the intermeeting period and remain low on a historical basis. Measures of household longer-term inflation expectations in our SCE and the Michigan survey declined slightly. Overall, we continue to expect inflation to fluctuate near the Committee's longer-run objective: Core PCE inflation is projected to be 1.9 percent in 2017 (Q4/Q4) and 2.1 percent in 2018 (Q4/Q4).

Overall financial conditions became more accommodative over the intermeeting period. Long-term Treasury yields, which rose ahead of the March FOMC meeting, declined over the intermeeting period. The decline reflected a reassessment of the policy path following the March FOMC meeting, a number of soft data releases, an apparent reduction in expectations of fiscal stimulus, and geopolitical risks. Credit spreads narrowed modestly, mortgage rates declined and equity prices rose slightly**.** The broad trade-weighted dollar index fell about 2 percent, with much of the decline following the first round of the French Presidential election. Overall, financial conditions appear to have eased since the December FOMC rate hike. Consistent with the Treasury yield declines, the market-implied expected path of the federal funds rate flattened over the period, as the expected FFR in 2019Q4 has fallen about 25 basis points. The market-implied probability of a 25 basis point hike at the June FOMC meeting is around 65 percent.

In summary, the intermeeting developments have not materially changed our view of the appropriate policy strategy, and we still see risks to the outlook as roughly balanced. We thus continue to recommend a gradual path of increases of the policy rate toward, and possibly even slightly above, our estimate of the longer-term natural rate (2.50 – 2.75 percent). For the rest of the year, we see no more than two additional hikes if conditions evolve in line with our outlook, with the June and September meetings being the most likely appropriate opportunities to raise rates. Still, the timing of these hikes will ultimately depend on the evolution of the outlook and the response of financial conditions to policy. However, if the positive signals that we have received in recent months do not begin to translate into stronger growth, or an unanticipated firming of financial conditions occurs, it would be appropriate to pause in removing

accommodation until the second half of the year. We continue to recommend that the policy stance should be adjusted through changes in the FFR target rather than through balance sheet policy. With respect to the latter, we recommend further communication about plans for changes in reinvestment policy in advance of the initial change to prepare the public. Under our modal scenario, an announcement late in the year of a gradual phase-out of reinvestments of principal payments from the SOMA portfolio would be appropriate as we anticipate that the "normalization of the level of the federal funds rate will be well under way" by that time.



February IP
+0.0% [+0.2%]

February CU
+75.4% [+75.5%]

February PCE Price Index
Overall: +0.1% [+0.1%]
12 mo: +2.1%
Core: +0.2% [+0.2%]
12 mo: +1.8%

February Personal Income
Nominal: +0.4% [+0.4%]
Real disposable: +0.2%

February Trade Deficit
-43.6 bil [-44.6]

March Advance Durable Goods
+0.7% [+1.1%]

FOMC Meeting

February Advance Durable Goods
+1.7% [+1.4%]

Real GDP 2016Q4 (3rd Estimate)
+2.1% [+2.0%]

February Construction Spending
+0.8% [+1.0%]
12 mo: +3.0%

March ISM Mfg
+57.2 [+57.2]

March ISM NonMfg
+55.2 [+57.0]

March Retail Sales
Total: -0.2% [-0.2%]
12 mo: +5.2%
Ex-auto: +0.0% [+0.1%]
PCE Control ex gas: +0.4%

March CU
+76.1% [+76.1%]

March IP
+0.5% [+0.5%]

March CPI
Overall: -0.3% [+0.0%]
12 mo: +2.4%
Core: -0.1% [+0.2%]
12 mo: +2.3%

Real GDP 2017Q1 (Adv. Estimate)
+0.7% [+1.0%]

March Construction Spending

March PCE Price Index

March Personal Income

April ISM Mfg

FOMC Meeting

February Housing Starts
Total: 1,288K (+3.0%)
12 mo: +6.2%
Single-family starts: 872K (+6.5%)
Multi-family starts: 416K (-3.7%)

March Labor Market
Non-farm payroll: +98k [+180k]
U rate: +4.5% [+4.7%]

March Housing Starts
Total: 1,215K (-6.8%)
12 mo: +9.2%
Single-family starts: 821K (-6.2%)
Multi-family starts: 394K (-7.9%)

Note
Blue shading: Data release encouraging/positive.
Red shading: Data release discouraging/negative.
Grey shading: Data release was neutral.
Numbers in square brackets are the median of the Bloomberg survey.
Numbers in parentheses represent changes from the prior month.

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

Several widely followed measures of consumer and business sentiment moved notably higher over the first quarter of 2017. Nonetheless, the first estimate of growth of real GDP for 2017Q1 came in at 0.7% (annual rate), close to our projection just prior to the release. The Q1increase of the personal consumption expenditures (PCE) deflator and the core PCE deflator came in at 2.4% and 2.0%, respectively, also quite close to our expectations.

While we came quite close to the top line number for GDP growth, were we off on the individual components, in some cases by quite a bit. That being said, we got the narrative correct. Consumer and government spending were quite weak and inventory investment exerted substantial drag. In contrast, both residential investment and business fixed investment improved while the net export growth contribution was essentially zero, reflecting surprising strength in growth of real exports. The following discussion of intermeeting developments is based on our information prior to the release of the advance estimate.

The largest source of the downward revision to our Q1 growth projection from that in the March Blackbook is surprising weakness in the growth rate of real PCE, which we now expect to increase at just 0.8% (annual rate). This is down from an already moderate 1.8% projection in the March Blackbook and well below the robust 3 ¼% annual growth rate over the second half of 2016. There is a litany of factors that likely contributed to this dramatic slowing. In broad terms, growth of real disposable income slowed to 2% (annual rate) in 2016Q4 and likely to 1% in 2017Q1 after having increased at nearly 3% in the second and third quarters of 2016. This was due mainly to the faster pace of price increases since growth of nominal disposable income slowed much less. Second, due to unusually warm weather in January and February, household spending on electricity and natural gas declined at a 66% annual rate over that two month period. Excluding electricity and gas, real PCE would have increased at a 0.3% annual rate over January and February rather than declining at a 1.7% annual rate. (Weather conditions returned to normal in March, which is expected to result in a rather large increase of real PCE for that month.) Third, after surging in the second half of 2016, consumer spending on automobiles and parts fell sharply in the first quarter, with total light-weight vehicle sales down at a 34% annual rate from

December to March. This occurred despite the fact that, according to Ward's Automotive Reports, incentives averaged $3,900 per vehicle, near the all-time high of $4,000 at the end of 2016. Ward's attributes the decline in sales to tightening of lending standards on both loans and leases, which is confirmed by our Senior Loan Officer Survey. Loan terms have already been extended, with 72-month loans now making up 34% of new-vehicle sales contracts. Leases represented 30.7% of sales in 2017Q1, down somewhat from the same period in 2016. Based on the Consumer Price Index price series for used vehicles, those prices peaked in December of 2013 and have been declining since then, with the rate of decline intensifying over the past year. Also according to Ward's, if the residual values of currently outstanding leases turn out to be on average $100 below expectations when the leases were written, the auto industry would lose about $500 million. Finally, in mid-February there was a substantial backlog of tax refund disbursements relative to last year. That backlog may have temporarily depressed sales of big-ticket items such as new and used vehicles, though the backlog was reportedly over by early March.

We expect another quarter of relatively strong growth of real residential investment—around 11% annualized growth versus 9.6% in 2016Q4. Total housing starts averaged 1.25 million (annual rate) in the first quarter, essentially the same as in 2016Q4. The split between single-family and multi-family was also essentially unchanged. But the level of total starts over the past two quarters was about 100,000 units above that of the first three quarters of 2016, such that the number of units under construction is up roughly 11% (annual rate) over the six months ending in March. In addition, the pace of decline in value of new single-family units that occurred during 2016 appears to have eased thus far in 2017. Finally, available data suggest that real investment in improvements to the existing housing stock grew at a low double-digit pace in Q1 following a gain of 8.7% (annual rate) in the fourth quarter. It should also be noted that sales of existing single-family homes were just shy of 5 million units (annual rate) in 2017Q1, the highest since the fourth quarter of 2006. The month's supply of existing single-family homes listed for sale has been under 4 for four straight months, an unprecedented tightness of supply in the history of this series going back to 1982. Finally, mortgage applications to purchase homes continue to edge higher, with the April average 12 ½% above the recent low in October of last year.

Data pertaining to business investment in new equipment also suggest that some firming in growth took place in Q1. With the advance data for March now available, shipments of nondefense capital goods excluding aircraft were up 7 ½% (annual rate) in the first quarter, the most since the third quarter of 2014. In addition, the trade data indicated that nominal imports of capital goods increased at an 8.6% annual rate in Q1, while nominal exports of capital goods declined at a 3.6% annual rate. We currently expect real growth of business investment in new equipment to have increased around 6% (annual rate) in the first quarter, following a 3.8% (Q4/Q4) decline in 2016. New orders for nondefense capital goods excluding aircraft increased 6% in Q1 (annual rate), the third consecutive quarterly increase.

The same cannot be said for nonresidential construction put in place, which declined 0.2% in January and 0.3% in February. Several sectors within this aggregate saw declines in recent months, including lodging, commercial, health care, and communication. The one bright spot for business investment in nonresidential structures is the fact that, based on the Industrial Production data, oil and gas drilling activity increased at a 159% annual rate in 2017Q1. On net, we expect positive growth of real business investment in nonresidential structures, with some upside risk in that projection due to the strong gains in activity in the energy sector.

Available data on inventories suggests that inventory investment slowed in the first quarter, exerting a drag of about ½ percentage points on the Q1 growth rate. It appears that manufacturers' inventories declined over the quarter. The only notable increase was of retail inventories of motor vehicles and parts, as mentioned above.

After growth of just 0.4% (Q4/Q4) in 2016, real state and local consumption and gross investment appears to have gotten off to a slow start in 2017. Employment in the sector increased a modest 0.2% annual rate in the first quarter, while state and local nominal construction was down sharply over the January-February period relative to the fourth quarter. We expect essentially zero growth for the entire first quarter for the state and local sector. At the federal level, defense spending was down nearly 30% (annual rate) in Q1 relative to Q4. Growth of federal employment was positive in Q1, but much slower than in the second half of 2016. Combined, this information leads us to conclude that federal consumption and gross investment declined slightly for the entire first quarter.

Recent trade data indicate that the rate of growth of real imports slowed in the first quarter after having increased at an 8.9% annual rate in 2016Q4. The slowing was largely confined to imports of motor vehicles and consumer goods other than motor vehicles. Due to the decline in vehicle sales over the quarter, motor vehicle inventories as of the end of Q1 were described by Ward's as well above desired. Domestic production of motor vehicles and parts fell nearly 4% (annual rate) due primarily to a sharp decline in March. Growth of real exports is expected to have been modestly positive in the first quarter following a sizeable decline in the fourth quarter. This growth is coming from industrial supplies, motor vehicles, and consumer goods. At this time we anticipate a net export growth contribution of -0.5 percentage point in the first quarter, the same as in the last Blackbook and equal to the average of the second half of 2016.

Total nonfarm payroll employment rose by just 98,000 in March, though the Q1 average monthly gain was 178,000, above the Q4 average monthly increase of 148,000. In March there was a notable slowing of employment gains in private service-providing industries, with employment in the retail sector down by 30,000.

Hours worked by all private sector employees rose 0.1% in March following a 0.1% decline in February. For the entire first quarter they increased 0.4%, the same as the average quarterly increase of the third and fourth quarters of 2016. Our projection for Q1 growth of hours worked for the entire nonfarm business sector in Q1 is 0.8% (annual rate), reflecting a decline of hours worked by the non-agricultural self-employed. Average hourly earnings increased at a 2.4% annual rate in 2017Q1, the slowest in over a year. Overall, we anticipate that growth of nominal disposable personal income slowed somewhat further in the first quarter after reaching a recent peak of 5% (annual rate) in 2016Q2.

The unemployment rate declined to 4.5% in March from 4.7% in February, reflecting a quite large increase in the number of people employed, as measured by the household survey. The labor force participation rate was unchanged at 63.0%. The participation rate has been trending higher since reaching a low of 62.4% in September of 2015. There have been increases for all major age cohorts and for both men and women, though the largest contribution has come from prime age women. The employment-population ratio rose another 0.1 percentage point to 60.1% in March; its highest since February of 2009.

The total CPI declined 0.3% in March, led by a 3.2% decline of energy prices. But for the entire first quarter, the total CPI rose 3.2%, up from 3.0% in the fourth quarter. That was the largest quarterly increase since 2011Q2, another period when energy prices were rising. The big surprise in the March CPI data was a 0.1% decline of the core CPI, the first monthly decline since January of 2010. Several individual components of the CPI contributed to the decline of the core index in March. Prices of household furnishings and supplies, apparel, new vehicles, and used vehicles declined over the month, as did the prices of lodging away from home, leased vehicles, wireless telephone services, and internet services. Nonetheless, the core CPI increased at a 2.5% annual rate for all of 2017Q1, comparable to the increase in the first quarter of last year. It is quite likely that the core PCE deflator also declined in March, but for Q1 as a whole we expect that it increased at a 2% annual rate.

In addition to the widespread price declines listed above, another recent development is potentially even more important in influencing the likely path of inflation over the forecast horizon. Monthly changes in rent of primary residence, or the rent that tenants pay to landlords, and of owners' equivalent rent (OER) slowed in the first quarter. The 12-month change of rent of primary residence has leveled off at around 3.9% after several years of gradual acceleration. Similarly, the 12-month change of OER has leveled off around 3.5%. This development coincides with the National Multi Housing Council's index of apartment market tightness moving below 50 in 2016Q4 and then moving down to around 40 as of early in the second quarter of 2017. This indicates that managers of large apartment projects regard rental market conditions as now easing. Census Bureau data indicate that the aggregate rental vacancy rate for the US bottomed out at 6.7% as of 2016Q2 and has been edging up since then, reaching 7.0% as of 2017Q1. This in turn coincides with the leveling off of multi-family starts and permits. Given the large weights that rents have in both the CPI and the PCE deflator, this development bears careful watching.

The Outlook

We regard the unusual weakness of real GDP growth in 2017Q1 as temporary, with growth likely to rebound to around 3% in the second quarter. Thus, in this Blackbook, as in the past few cycles, we expect growth of real GDP of around 2% (Q4/Q4) in 2017, then slowing to around

1.7% in 2018, with this slowing driven by a combination of an aging business cycle and a tightening of financial conditions as monetary policy continues to move in the direction of normalization. Relative to 2016, the growth contributions from the major expenditure components are expected to be somewhat different. Growth of real PCE is anticipated to slow to around 2 ¼%, down from 3% in 2016, with the personal saving rate relatively stable. In contrast, growth of residential investment and business fixed investment are projected to be somewhat stronger than last year. The combined government consumption and gross investment will likely add 0.1 percentage point to growth at best, modestly better than in 2016. On balance, growth of final sales to domestic purchases is projected at 2.4% in 2017 versus 2.1% in 2016. Working in the other direction, however, the net export growth contribution is expected to be -0.4 percentage points versus -0.2 in 2016.

The quarterly average unemployment rate is projected to decline to around 4.6% by the end of 2017 and then edge down to 4.5% by the end of 2018. This very gradual decline is due to our assumptions of modestly higher growth of labor productivity as well as modest uptrends of the participation rate and average weekly hours.

With the unemployment rate below our estimate of NAIRU, and with the effect of past dollar appreciation fading, we expect total PCE deflator inflation to move up to 1.8% by the end of 2017 and then to modestly overshoot the FOMC objective in 2018, reaching 2.1% by the end of that year. This overshooting of inflation is the mirror image of the undershooting of the unemployment rate in 2017 and 2018.

As has been the case for the past few cycles, we continue to hold off on incorporating any fiscal stimulus into our forecast. A very general tax reform proposal has been introduced by the new Administration, which is quite similar to the House Republican framework released last summer. But the key issue of whether this will be revenue-neutral tax reform or a tax cut has yet to be decided. Moreover, we suspect getting a bill through Congress will take much longer than has been suggested. For reference, it took at least two years of intense work to finally agree on the Tax Reform Act of 1986.

2-1: Projections of Key Variables

	Core PCE Inflation		Real GDP Growth		Unemployment Rate*		Fed Funds Rate**	
	Mar	Apr	Mar	Apr	Mar	Apr	Mar	Apr
2016								
Q1	*2.0*	*2.0*	*0.8*	*0.8*	*4.9*	*4.9*	*0.38*	*0.38*
Q2	*1.8*	*1.8*	*1.4*	*1.4*	*4.9*	*4.9*	*0.38*	*0.38*
Q3	*1.7*	*1.7*	*3.5*	*3.5*	*4.9*	*4.9*	*0.38*	*0.38*
Q4	1.2	*1.3*	1.9	*2.1*	4.7	*4.7*	0.63	0.63
2017								
Q1	2.0	2.0	1.8	0.7	4.8	4.7	0.88	0.88
Q2	1.7	1.7	1.8	3.2	4.7	4.6	1.13	1.13
Q3	1.9	1.9	2.1	1.8	4.7	4.6	1.38	1.38
Q4	2.0	2.0	2.2	2.4	4.6	4.6	1.38	1.38
2018								
Q1	2.2	2.1	1.5	1.9	4.6	4.6	1.38	1.38
Q2	2.2	2.1	1.7	1.6	4.6	4.6	1.63	1.63
Q3	2.2	2.2	1.7	1.6	4.7	4.5	1.88	1.88
Q4	2.2	2.2	1.8	1.6	4.7	4.5	2.13	2.13
Q4/Q4								
2015	*1.4*	*1.4*	*1.9*	*1.9*	*-0.7*	*-0.7*	*0.38*	*0.38*
2016	1.7	1.7	1.9	2.0	-0.3	*-0.3*	0.63	0.63
2017	1.9	1.9	1.9	2.0	-0.1	-0.1	1.38	1.38
2018	2.2	2.1	1.7	1.7	0.1	-0.1	2.13	2.13

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

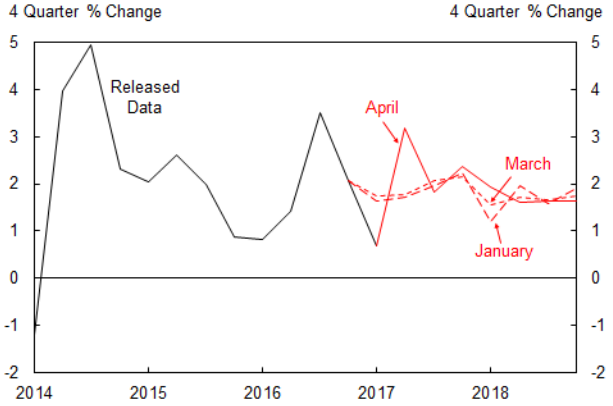
*Quarterly values are the average rate for the quarter. Yearly values are the difference between Q4 of the listed year and Q4 of the previous year.

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

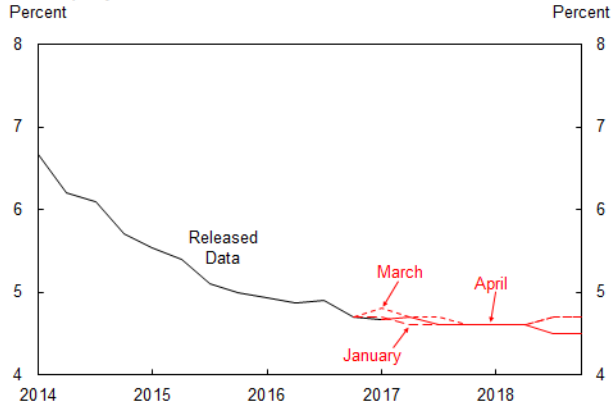
2-2: Evolution of Projected Quarterly Paths

Key Indicators

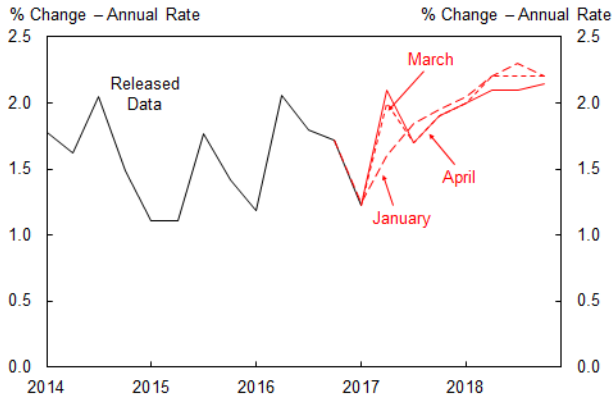
Real GDP Growth



Unemployment Rate

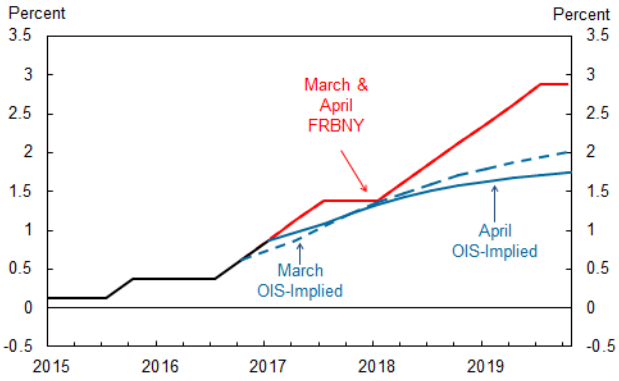


Core PCE Inflation

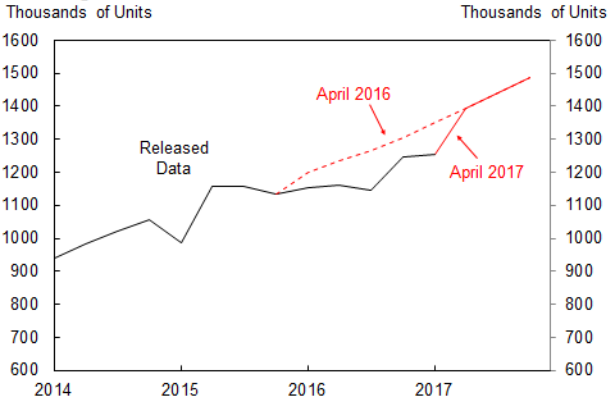


Forecast Assumptions

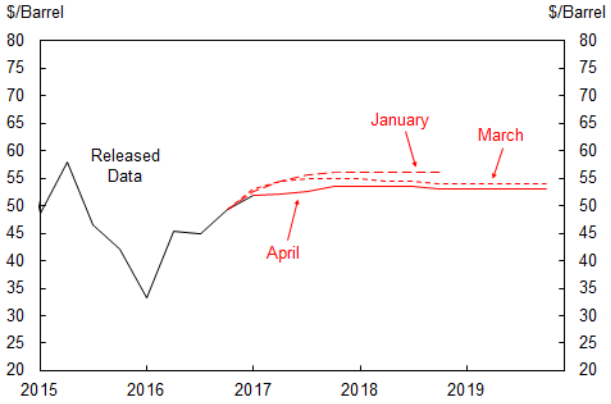
Federal Funds Rate



Housing Starts



Crude Oil



Source: FRBNY (MMS and IR Functions)

2-3: Near-Term Projections

	Growth Rates (AR)			Growth Contributions (AR)		
	2017Q1	2017Q2	2017Q3	2017Q1	2017Q2	2017Q3
OUTPUT						
Real GDP	0.7	3.2	1.8	0.7	3.2	1.8
	(1.8)	(1.8)	(2.1)	(1.8)	(1.8)	(2.1)
Final Sales to Domestic Purchasers	1.5	2.8	2.4	1.6	2.8	2.5
	(2.1)	(2.5)	(2.5)	(2.2)	(2.6)	(2.6)
Consumption	0.3	3.0	2.5	0.2	2.1	1.7
	(1.8)	(2.5)	(2.4)	(1.2)	(1.7)	(1.6)
BFI: Equipment	9.1	4.0	3.0	0.5	0.2	0.2
	(5.0)	(4.0)	(3.0)	(0.3)	(0.2)	(0.2)
BFI: Nonresidential Structures	22.1	4.0	4.0	0.6	0.1	0.1
	(5.0)	(4.0)	(4.0)	(0.1)	(0.1)	(0.1)
BFI: Intellectual Property Products	2.0	4.0	4.0	0.1	0.2	0.2
	(5.0)	(5.0)	(5.0)	(0.2)	(0.2)	(0.2)
Residential Investment	13.7	5.0	7.0	0.5	0.2	0.3
	(5.6)	(6.1)	(8.6)	(0.2)	(0.2)	(0.3)
Government: Federal	-1.9	-0.3	-0.3	-0.1	0.0	0.0
	(0.7)	(-0.3)	(-0.3)	(0.0)	(-0.0)	(-0.0)
Government: State and Local	-1.5	0.9	0.9	-0.2	0.1	0.1
	(0.8)	(1.3)	(1.3)	(0.1)	(0.1)	(0.1)
Inventory Investment	--	--	--	-0.9	0.6	0.0
	--	--	--	(0.1)	(-0.2)	(0.0)
Net Exports	--	--	--	0.1	-0.3	-0.7
	--	--	--	(-0.5)	(-0.6)	(-0.5)
INFLATION						
Total PCE Deflator	2.4	1.2	1.7			
	(2.2)	(2.0)	(2.2)			
Core PCE Deflator	2.0	1.7	1.9			
	(2.0)	(1.7)	(1.9)			
PRODUCTIVITY AND LABOR COSTS*						
Output per Hour	-0.4	2.3	0.9			
	(0.8)	(0.8)	(1.0)			
Compensation per Hour	3.0	3.1	3.1			
	(3.0)	(3.1)	(3.1)			
Unit Labor Costs	3.4	0.8	2.3			
	(2.3)	(2.3)	(2.1)			

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		
	2016	2017	2018	2016	2017	2018
OUTPUT						
Real GDP	2.0	2.0	1.7	2.0	2.0	1.7
	(1.9)	(1.9)	(1.7)	(1.9)	(1.9)	(1.7)
Final Sales to Domestic Purchasers	2.1	2.3	2.1	2.2	2.3	2.1
	(2.1)	(2.4)	(2.1)	(2.1)	(2.5)	(2.1)
Consumption	3.1	2.0	2.2	2.1	1.4	1.5
	(3.0)	(2.2)	(2.1)	(2.0)	(1.5)	(1.5)
BFI: Equipment	-3.8	4.7	2.0	-0.2	0.3	0.1
	(-3.9)	(3.7)	(2.0)	(-0.2)	(0.2)	(0.1)
BFI: Nonresidential Structures	1.9	8.0	2.5	0.0	0.2	0.1
	(1.2)	(4.0)	(2.5)	(0.0)	(0.1)	(0.1)
BFI: Intellectual Property Products	4.3	3.5	4.0	0.2	0.1	0.2
	(5.1)	(5.0)	(5.0)	(0.2)	(0.2)	(0.2)
Residential Investment	1.1	8.9	5.0	0.0	0.3	0.2
	(1.1)	(7.6)	(5.0)	(0.0)	(0.3)	(0.2)
Government: Federal	-0.2	-0.8	-0.7	0.0	-0.1	0.0
	(-0.2)	(-0.1)	(-0.7)	(-0.0)	(-0.0)	(-0.0)
Government: State and Local	0.4	0.3	1.2	0.0	0.0	0.1
	(0.5)	(1.2)	(1.2)	(0.1)	(0.1)	(0.1)
Inventory Investment	--	--	--	-0.1	-0.1	-0.1
	--	--	--	(-0.1)	(-0.1)	(-0.1)
Net Exports	--	--	--	-0.2	-0.2	-0.3
	--	--	--	(-0.2)	(-0.5)	(-0.4)
INFLATION						
Total PCE Deflator	1.4	1.8	2.1			
	(1.4)	(2.1)	(2.2)			
Core PCE Deflator	1.7	1.9	2.1			
	(1.7)	(1.9)	(2.2)			
PRODUCTIVITY AND LABOR COSTS*						
Output per Hour	1.0	1.1	1.0			
	(1.0)	(1.0)	(1.1)			
Compensation per Hour	3.0	3.0	3.5			
	(2.9)	(3.0)	(3.4)			
Unit Labor Costs	2.0	1.9	2.5			
	(1.9)	(2.0)	(2.3)			

Note: Numbers in parentheses are from the previous Blackbook.

*Nonfarm business sector.

2-5: Comparison with Other Forecasts

Real GDP Growth

	Release Date	2017Q1	2017Q2	2016 Q4/Q4	2017 Q4/Q4
FRBNY	4/28/2017	0.7	3.2	2.0	2.0
		(1.8)	(1.8)	(1.9)	(1.9)
Blue Chip	4/10/2017	1.4	2.7	2.0	2.2
		(1.9)	(2.5)	(1.9)	(2.3)
Median SPF	2/10/2017	2.2	2.3	2.0	2.3
		(2.2)	(2.3)	(1.9)	(2.3)
Macro Advisers	4/11/2017	1.0	3.6	2.0	2.3
		(2.0)	(2.5)	(1.9)	(2.3)
FRBNY-DSGE	12/6/2016	0.7	1.5	2.0	1.3
		(2.1)	(1.8)	(1.9)	(2.2)
Median SPD	3/6/2017	--	--	2.0	2.2
		--	--	(1.9)	(2.2)

Core PCE Inflation

	Release Date	2017Q1	2017Q2	2016 Q4/Q4	2017 Q4/Q4
FRBNY	4/28/2017	2.0	1.7	1.7	1.9
		(2.0)	(1.7)	(1.7)	(1.9)
Median SPF	2/10/2017	1.8	1.9	1.7	1.9
		(1.8)	(1.9)	(1.7)	(1.9)
Macro Advisers	4/11/2017	2.3	1.9	1.7	2.0
		(1.5)	(1.4)	(1.7)	(1.7)
FRBNY-DSGE	12/6/2016	2.2	1.8	1.7	1.8
		(1.8)	(1.6)	(1.7)	(1.6)
Median SPD	3/6/2017	--	--	1.7	1.9
		--	--	(1.7)	(1.9)

Unemployment*

	Release Date	2017Q1	2017Q2	2016 Q4/Q4	2017 Q4/Q4
FRBNY	4/28/2017	4.7	4.6	-0.3	-0.1
		(4.8)	(4.7)	(-0.3)	(-0.1)
Blue Chip	4/10/2017	4.7	4.6	-0.3	-0.2
		(4.7)	(4.6)	(-0.3)	(-0.2)
Median SPF	2/10/2017	4.7	4.6	-0.3	-0.2
		(4.7)	(4.6)	(-0.3)	(-0.2)
Macro Advisers	4/11/2017	4.7	4.6	-0.3	-0.4
		(4.7)	(4.6)	(-0.3)	(-0.3)
Median SPD	3/6/2017	--	--	-0.3	-0.2
		--	--	(-0.3)	(-0.2)

Note: Numbers in gray are from the previous Blackbook.

*Yearly values are the difference between Q4 of the listed year and Q4 of the previous year.

2-6: Tealbook Comparison

	FRBNY (Q4/Q4)			Tealbook (Q4/Q4)		
	2016	2017	2018	2016	2017	2018
OUTPUT						
Real GDP Growth	2.0	2.0	1.7	2.0	2.1	2.2
	(1.9)	(1.9)	(1.7)	(1.9)	(2.0)	(2.2)
GDP Growth Contributions						
Final Sales to Domestic Purchasers	2.2	2.3	2.1	2.1	2.3	2.5
	(2.1)	(2.5)	(2.1)	(2.1)	(2.3)	(2.6)
Consumption	2.1	1.4	1.5	2.1	1.6	2.0
	(2.0)	(1.5)	(1.5)	(2.0)	(1.7)	(2.0)
BFI	0.0	0.6	0.3	0.0	0.2	0.1
	(0.0)	(0.5)	(0.4)	(0.0)	(0.1)	(0.2)
Residential Investment	0.0	0.3	0.2	0.0	0.2	0.1
	(0.0)	(0.3)	(0.2)	(0.0)	(0.1)	(0.2)
Government	0.0	0.0	0.1	0.0	0.2	0.1
	(0.0)	(0.1)	(0.1)	(0.0)	(0.2)	(0.1)
Inventory Investment	-0.1	-0.1	-0.1	0.0	-0.1	0.0
	(-0.1)	(-0.1)	(-0.1)	(0.0)	(-0.1)	(0.0)
Net Exports	-0.2	-0.2	-0.3	-0.2	-0.3	-0.4
	(-0.2)	(-0.5)	(-0.4)	(-0.2)	(-0.5)	(-0.5)
INFLATION						
Total PCE Deflator	1.4	1.8	2.1	1.4	1.7	1.8
	(1.4)	(2.1)	(2.2)	(1.4)	(1.7)	(1.8)
Core PCE Deflator	1.7	1.9	2.1	1.7	1.8	1.9
	(1.7)	(1.9)	(2.2)	(1.7)	(1.7)	(1.9)
LABOR MARKET						
Unemployment Rate (Avg. Q4 Level)	4.7	4.6	4.5	4.7	4.4	4.1
	(4.7)	(4.6)	(4.7)	(4.7)	(4.6)	(4.2)
Participation Rate (Avg. Q4 Level)	62.7	63.1	63.2	62.7	62.7	62.5
	(62.7)	(62.8)	(62.8)	(62.7)	(62.6)	(62.3)
Avg. Monthly Nonfarm Payroll Growth (Thous.)	194	131	108	187	176	169
	(194)	(137)	(99)	(187)	(172)	(157)
SAVING						
Personal Saving Rate (Avg. Q4 Level)	5.5	5.6	5.2	5.5	5.2	6.1
	(5.6)	(5.4)	(5.3)	(5.6)	(5.0)	(6.0)
HOUSING						
Housing Starts (Avg. Q4 Level, Thous.)	1305	1485	--	1200	1300	1300
	(1305)	(1485)	--	(1200)	(1200)	(1300)
INTREST RATE ASSUMPTION						
Fed Funds Rate*	0.63	1.38	2.13	0.63	1.47	2.55
	(0.63)	(1.38)	(2.13)	(0.63)	(1.45)	(2.46)

Note: Numbers in parentheses are from the previous Blackbook and Tealbook.

* FRBNY numbers indicate end of year Federal Funds Rate, Tealbook numbers indicate average of Q4 Federal Funds Rate.

3. Uncertainty & Risks

Developments during the intermeeting period indicate small changes in uncertainty and risks around the outlook from the assessment in the March *Blackbook*. Based on the difference between the modal forecast and the expected value from our forecast distributions [Exhibit 3-1], as well as the changes in the distributions [Exhibit 3-3], the risks to real GDP growth are roughly balanced through much of the forecast horizon. For core PCE inflation, the risks are balanced throughout the forecast horizon. The widths of the GDP growth probability intervals are slightly narrower than those in the March *Blackbook*, while the 90 percent probability interval for inflation has narrowed because of reduction in upside tail risks. The uncertainties around the real GDP growth projection and around the inflation projection are still moderately above their respective historical norms.

The data on U.S. real economic activity continued to display a dichotomy between the near-term implications of the expenditure data and the survey data. The expenditure data generally were softer than anticipated in the staff's near-term projection in March; consequently, real GDP growth for 2017Q1 was 0.7 percent, below the 1.8 percent projection in the March *Blackbook*. In contrast, the FRBNY nowcast for 2017Q1 real GDP growth decreased only from 3.19 percent on March 10 to 2.70 percent on April 27. The more modest decline in the staff nowcast largely reflected the impact of continued strong survey data. The February and March labor market reports combined indicated solid growth in nonfarm payrolls. Even so, wage growth remained somewhat subdued. The unemployment rate fell to a new cyclical low, while the labor force participation rate and the employment-population ratio rose. Manufacturing production has been fairly flat over the two years through March. The March CPI was a surprise to the downside, with 12-month changes of the overall and core CPI declining from recent highs. Alternative underlying CPI inflation measures declined slightly. Longer-term inflation compensation from TIPS remains at a low level. Our SCE 3-year inflation expectations measure fell in March, and the Michigan measure of longer-run expectations remained low in mid-April. Outside of the U.S., the economic data generally were robust.

Financial conditions improved overall. The market-implied expected path of the federal funds rate shifted downward by 10 – 30 basis points, with the larger declines occurring at longer

horizons. Longer-term nominal Treasury yields decreased about 30 basis points and real yields fell about 20 basis points. Longer-term nominal sovereign yields fell in other advanced economies. European sovereign spreads rose and then fell around the French presidential election. Corporate credit spreads to Treasuries narrowed slightly further. Major U.S. equity indexes rose moderately and implied volatility remained low. Oil prices increased moderately on net, leaving them toward the lower end of their recent narrow prevailing range. Broad non-energy commodity indices fell during the period. The nominal broad dollar index rose about 1½ percent over the period.

As has been the case in recent cycles, the considerable uncertainty around possible changes in government policies and the still-appreciable geopolitical risks—even after the first round of the French presidential election—have led us to make only rather small changes in the scenario probabilities [Exhibit 3-2]. In particular, the soft March CPI data, modest declines in inflation compensation, and the fall in our measure of household inflation expectations contributed to our assessment of a somewhat lower probability of the *Loss of Credibility* scenario. With the apparently market-friendly result of the first round of the French presidential election, we also see a moderately lower probability of the *Global Credit Crunch* scenario. Although we made no changes in their weights, the scenarios with highest probabilities remain *Faster Growth* and *Fiscal Consolidation.* This combination helps to account for the possibility that the strong survey data is providing a more accurate signal than the expenditure data about the strength of the U.S. economy and the risk of an enactment of a fiscal stimulus package.

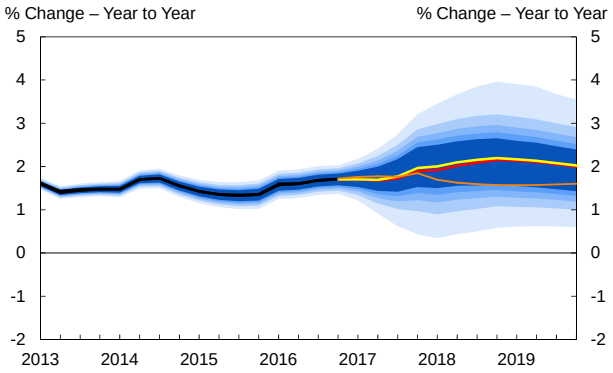
These changes in scenario probabilities led to mostly small changes in the 90 percent probability intervals for real GDP growth and core PCE inflation [Exhibit 3-3]. The one exception is a more notable decline in the upper band around the inflation projection, reflecting lesser upside tail risks associated with the *Loss of Credibility* scenario. This shift largely reverses the shift in the March *Blackbook.* The upward shift in the lower bands for both variables reflects the reduction in the probability of the *Global Credit Crunch* scenario. The intervals for real GDP growth and for core PCE inflation remain moderately wider than their respective historical norms. Based on the difference between the mode and the mean of the forecast distribution, the real GDP growth distribution signals that the risks to real activity are roughly balanced through most of 2018 and

slightly skewed to the downside thereafter, while the risks to inflation are balanced overall throughout the forecast horizon [Exhibit 3-1].

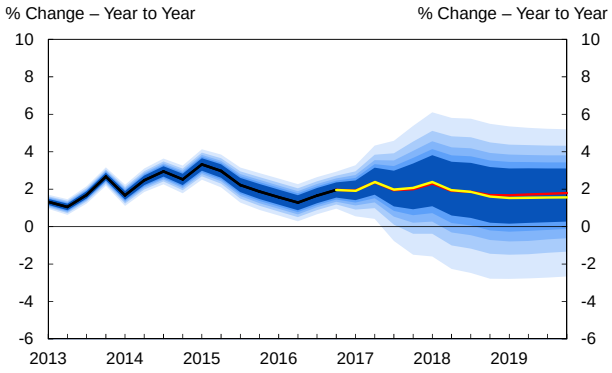
In a comparison to the forecast distribution from a year earlier, the current projections for inflation and real GDP growth run fairly close to the respective year-ago expectations, reflecting some improvement in our assessment of a year ago as the financial market volatility of early 2016 started to subside [Exhibit 3-3]. Another factor behind the fact that the realizations of inflation and real GDP growth and the current projections of these variables are within last year's respective fifty percent forecast probability intervals is the high uncertainty that still lingered at that time.

3-1: Forecast Distributions

Core PCE Inflation Forecast Distribution



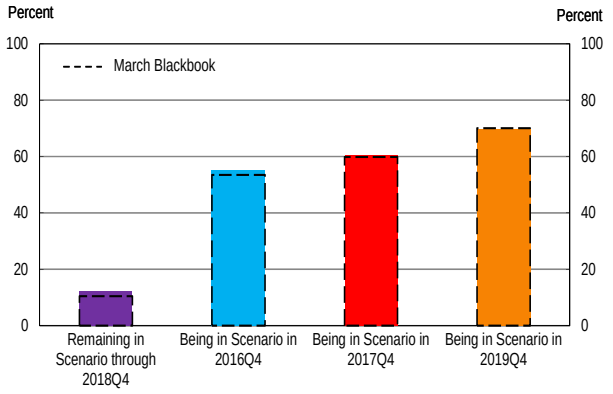
Real GDP Growth Forecast Distribution



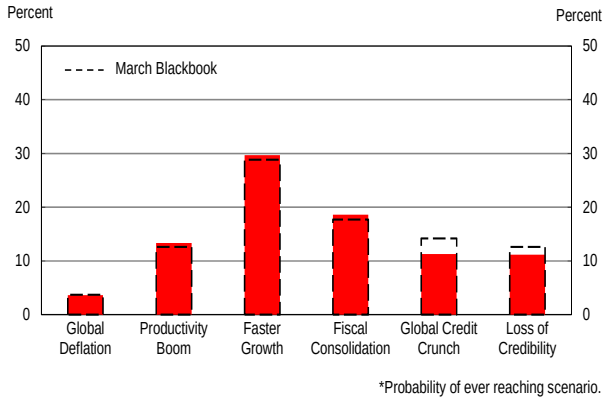
The yellow line is the expected value of the forecast distribution, the red line is the FRBNY central projection, the orange line is the DSGE forecast, and the black line is released data. The shading represents the 50, 60, 70, 80 and 90 percent probability that the four-quarter change will be within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

3-2: Scenario Probabilities

Central Scenario Probabilities



Alternative Scenario Probabilities*



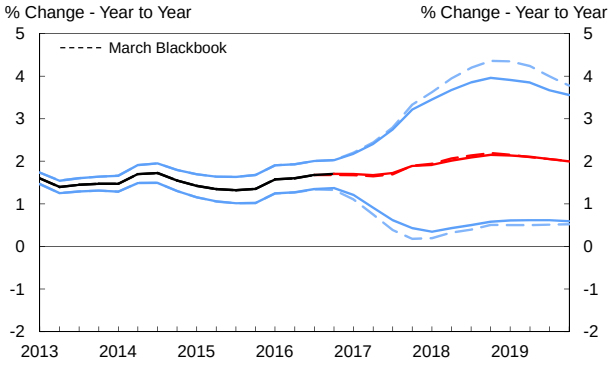
*Probability of ever reaching scenario.

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.

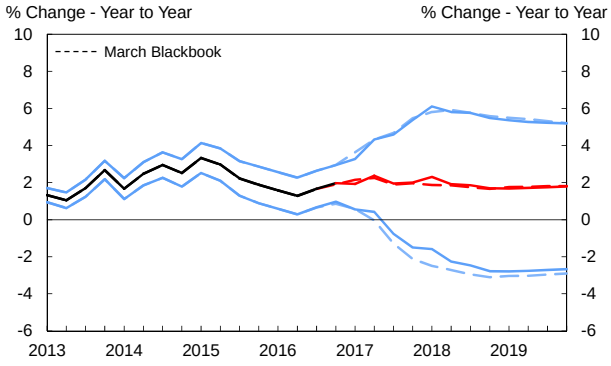
Source: MMS Function (FRBNY)

3-3: Evolution and Performance of Forecast Distributions

Change in Core PCE Inflation Forecast Distribution

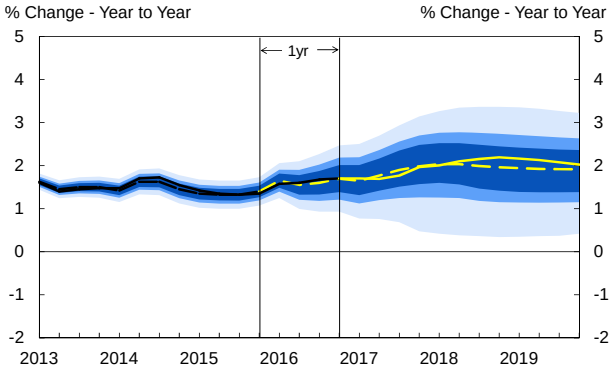


Change in Real GDP Growth Forecast Distribution

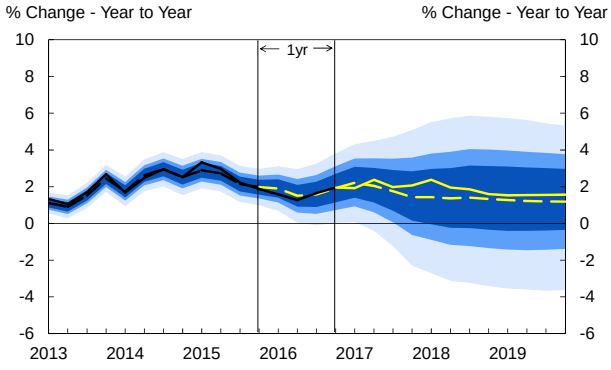


The red lines are the central scenario projections, black lines are released data, and blue lines represent upper and lower 90 percent forecast probability intervals. Dashed lines represent forecasts from the previous Blackbook.

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

RESEARCH AND STATISTICS GROUP

FRBNY Blackbook

June 2017

CLASS II FOMC - RESTRICTED (FR)

FRBNY BLACKBOOK

June 2017

CONTENTS

APPENDIX

1. Policy Recommendation and Rationale

Developments over the intermeeting period did not lead to significant changes in our medium-term outlook. Real GDP growth was weak in 2017Q1, but much of the weakness appears to be transitory, consistent with our previous assessment. We expect GDP growth to be 2.9 percent in the second quarter, mainly reflecting a rebound in consumer spending. We thus expect growth to average about 2.0 percent in 2017H1, similar to the April *Blackbook*. Beyond the near term, our judgmental forecast is little changed. GDP growth is projected to be modestly above its potential rate in 2017, and then to be near potential in 2018. We project inflation to be somewhat below the FOMC's longer-run objective for this year and to slightly overshoot it in 2018. Risks are roughly balanced for both output and inflation. On the upside, our modal outlook does not incorporate a fiscal stimulus that could boost expenditures. On the downside, some readings for inflation and inflation expectations have been soft recently. We expect the weakness to be largely transitory, but we will need to see evidence of that soon in the inflation data.

As economic conditions are evolving roughly as expected, we maintain our policy recommendation of two additional 25 basis point increases in the FFR target range during 2017. Based on our modal scenario we recommend one hike in June and one in the second half – most likely in December. Over the medium term, our outlook remains conditioned on a gradual increase of the policy rate toward our estimate of the longer-term natural rate, which we assess to be around 2.75 percent. As under these projections the policy rate will be sufficiently away from the effective lower bound by year-end, we believe it will be appropriate to start a phase-out of reinvestment sometime in the second half of this year. A possible schedule would be to announce the general plan for balance sheet normalization after the June meeting and announce the start date of normalization in September. Implementation would soon start thereafter, most likely in October but possibly a little later depending upon market conditions. Aligning major announcements with press-conference meetings would allow more extensive communication, and staggering balance sheet and federal funds rate policy actions would minimize risks of unwarranted financial market overreaction to multiple policy-tightening actions at a single meeting. Of course, departures from this "modal" sequence would be appropriate in response to unforeseen circumstances.

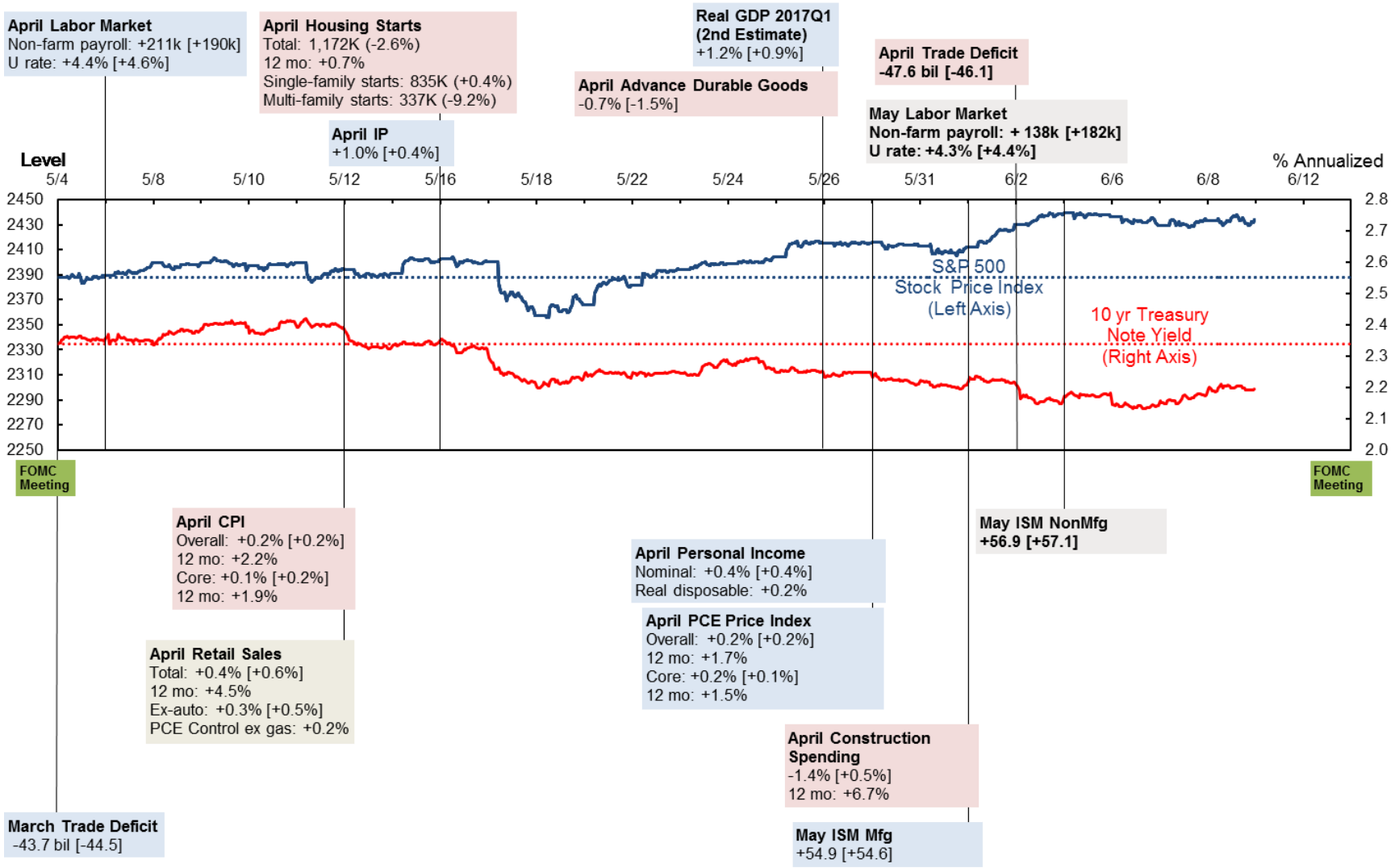
Overall, the data releases related to economic activity were roughly consistent with our economic outlook in the April *Blackbook*. Consumer spending growth appears to be bouncing back in Q2 after a weak first quarter. Business investment shows further growth, although more so for structures than for equipment. Production and business survey data have been mixed, but consumer sentiment remains relatively high. Although payroll growth and wage growth were soft in the May labor market report, overall labor market conditions remain solid.

Consequently, our growth forecast for 2017H1 is around 2 percent. Consistently, the staff nowcast for 2017Q2 is little changed over the intermeeting period, ending at about 2.3 percent on June 9. Also, as in the April *Blackbook*, we project growth over the medium term at or slightly above its potential rate (1¾ percent) because of the strength of the labor market, the good condition of the household sector balance sheet, and an upward trend in the housing market.

Regarding inflation, the recent readings on overall and core PCE inflation have been soft, as the 12-month changes declined in the past couple of months (we have seen similar behavior for the CPI). Measures of market-implied longer-term inflation compensation fell moderately over the intermeeting period and remain low on a historical basis. Measures of longer-term household inflation expectations fell to near its historical low in the SCE and remained flat at a low level in the Michigan survey. We see the recent softness in inflation as largely transitory, but it will be important to see if the upcoming data confirm that assessment. Overall, we expect inflation to remain modestly below the Committee's longer-run objective for the remainder of the year, but to rebound and to overshoot it slightly in 2018.

Financial conditions remained accommodative and appeared to have eased further over the intermeeting period. Long-term Treasury yields declined moderately and credit spreads narrowed slightly. Mortgage rates declined somewhat while equity prices rose further**.** The broad trade-weighted dollar index fell. The market-implied expected path of the federal funds rate was little changed on net over the intermeeting period. The market-implied probability of a 25 basis point hike at the June FOMC meeting is around 90 percent.

In summary, the intermeeting developments have not materially changed our view of the outlook, the risks around the outlook, and the appropriate policy strategy. We thus continue to recommend a gradual path of hikes of the policy rate, eventually stabilizing around our estimate of the longer-term natural rate. Over the rest of the year, we consider two additional hikes appropriate as long as fundamentals evolve in line with our outlook. Ongoing favorable financial conditions support a hike in June, while the second hike could occur as late as December. A longer pause between policy rate increases is consistent with an earlier start of the balance sheet normalization relative to our expectations in April, would avoid multiple policy-tightening actions at a single meeting, and allow time to assess the reaction of financial markets to these various actions. Uncertainty about the market reaction to upcoming events, including the impending debt ceiling, suggests retaining valuable optionality regarding the precise sequencing and timing of policy actions. Conversely, if financial conditions become inappropriately loose, some quickening in the pace of rate increases may be necessary.



Note
Blue shading: Data release encouraging/positive.
Red shading: Data release discouraging/negative.
Grey shading: Data release was neutral.
Numbers in square brackets are the median of the Bloomberg survey.
Numbers in parentheses represent changes from the prior month.

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

The second estimate for real GDP growth in 2017Q1 was 1.2% (annual rate), up from the advance estimate of 0.7%. PCE accounted for 0.2 percentage point of the growth revision, largely from a higher estimate of services consumption. In addition, there were upward revisions to nonresidential structures and intellectual property products which combined resulted in a 0.3 percentage point increase in the growth rate. There were also downward revisions of business investment in new equipment and inventory investment. The revisions to the overall and core PCE deflator inflation rates were minor. The 2017Q1 inflation measured by the PCE deflator remained at 2.4%, while that measured by the core PCE deflator was revised upward slightly from 2.0% to 2.1%.

The second GDP estimate revealed some interesting developments on the income side of the accounts. There was a substantial downward revision to wage and salary income for 2016Q4, which then fed into the estimate of wages and salaries for 2017Q1. It is possible that some bonus income was shifted into 2017 in anticipation of a cut in tax rates. With the revision to wage and salary income, real disposable income growth in 2016Q4 was revised down from 2.0% to -0.3% (annual rate), while that for 2017Q1 was revised up from 1.0% to 1.7%. (The Q1 level remains well below the advance estimate.) Consequently, the personal saving rate for 2017Q1 was revised down from 5.7% to 5.2% while the saving rate for 2016Q4 was revised down from 5.5% to 4.9%. Corporate profits declined 1.9% (quarterly rate) in 2017Q1 to $2.11 trillion. The estimate was affected by legal settlements reached by Deutsche Bank, Credit Suisse, and Volkswagen. The profit share was 12.8% of national income, down from 13.2% over the previous two quarters.

For the current quarter we have modestly reduced our projected growth rate of GDP from 3.2% in the April *Blackbook* to 2.9%. With data on real PCE through April and light-weight vehicle sales through May, we continue to expect growth of real personal consumption expenditures to rebound to around 3.0% from 0.6% in Q1. After a modest rebound in April to 16.9 million units (annual rate), light-weight vehicle sales slipped to 16.7 million units in May. The May level of total sales was 10% below the recent peak of 18.4 million in December 2016, with autos down

15% and light-weight trucks down 6%. However, real sales of non-auto durables plus nondurables were quite robust in April and underlying fundamentals for the consumer look quite favorable: Real disposable income is expected to increase solidly, consumer confidence remains high, and financial conditions have improved.

Data for the housing sector remain generally positive. A three-month moving average of single-family housing starts continues to trend higher, reaching 848,000 in April, the highest since late 2007. Contract interest rates on 30-year fixed rate mortgages have declined by roughly 20 basis points since March, while purchase mortgage applications continued to edge higher through May. Home prices are up 6% to 7% over the year ending in April. The supply of existing homes for sales is quite lean at around 4 months' supply at the current sales pace. In real terms, improvements to the existing stock of housing have rebounded after a lull in mid-2016. In contrast, multi-family starts have been choppy but essentially flat for the past two years. The pace of housing completions has slowed, largely due to the leveling-off of multi-family starts, leading us to anticipate essentially no growth contribution from residential investment in the second quarter following a 0.5 percentage point contribution in the first quarter. A positive contribution is expected over the second half of the year.

Real business fixed investment increased 11% (annual rate) in 2017Q1, the strongest since the first quarter of 2012. We expect strong growth of business investment in nonresidential structures to continue in the second quarter, with oil and gas exploration activity increasing strongly again in Q2. However, the April data on private nonresidential construction put in place, which does not include oil and gas exploration activity, was tepid, leading us to conclude that the second quarter growth of real business investment in nonresidential structures will be around 15%, down from 28% in the first quarter. Similarly, the monthly gains of shipments of nondefense capital goods have slowed after a series of fairly strong increases beginning in mid-2016, while aircraft shipments are on track to decline again in the second quarter. Thus, at this point our projection for growth of real business investment in new equipment in Q2 is just 2%, down from 7% in the first quarter.

The pace of inventory accumulation slowed sharply in 2017Q1, taking 1.1 percentage points off of the Q1 growth rate. Nominal business inventories declined in April, but given the strong gains in both manufacturing output and nominal imports of goods in April, we expect that

inventories will increase over the quarter at a rate modestly above that of Q1. As usual, this is a source of considerable uncertainty.

Regarding the trade data, nominal imports increased substantially in April and nominal exports declined modestly, resulting in a widening of the trade deficit. For the second quarter we anticipate that, in real terms, export growth will be positive but roughly half the pace of the first quarter, while growth of imports will be roughly comparable to that of the first quarter. The net export growth contribution is expected to swing from +0.1 percentage point in Q1 to -0.2 percentage point in Q2.

Data on the government sector have been weak. Employment at the federal level rose significantly in May, perhaps associated with the mid-April expiration of the executive order freezing federal employment. But the April-May average level of federal employment is below that of the first quarter, so even if we see another increase in June the gain, if any, relative to the first quarter should be modest. Defense outlays fell sharply in April, setting the stage for another quarterly decline. On balance, we anticipate another decline in real federal government consumption and gross investment in the second quarter. At the state and local level, the April-May average level of employment is roughly equal to that of the first quarter, while the April data on state and local construction put in place suggest another quarterly decline. We expect essentially no change in state and local consumption and gross investment in the second quarter.

The May increase in private nonfarm payrolls, at 138,000, was below expectations while gains over the previous two months were revised down by a combined 66,000. The three-month moving average of payroll gains has slowed to 121,000, the lowest since mid-2012. Aggregate hours increased just 0.1% in May, but this follows a 0.5% increase in April. The April-May average of paid hours is up 2% (annual rate) over the first quarter level. Average hourly earnings rose just 0.2% per month in April and May, representing additional slowing from the first quarter. The 12-month change in average hourly earnings has slowed to 2.5% from 2.9% in December 2016. This slowing of year-over-year wage gains is most pronounced in the manufacturing sector, where the 12-month change was 1.9% in May 2017 versus 3.5% in May 2016. Based on the April and May data, the increase in the rate of growth of hours largely offsets the slowing in the rate of growth of wages, leaving our proxy for growth of aggregate wage and salary income at 3.8% (annual rate) for Q2, essentially unchanged from Q1.

The unemployment rate fell another 0.1 percentage point in May to 4.3% and is now down 0.4 percentage point since December. The decline of the unemployment rate over the past five months has been most pronounced for adult men and for people with less than a high school education. The participation rate fell in May by 0.2 percentage point to 62.7%--it had reached 63.0% in February and March. Most of the recent volatility in the participation rate has been among people aged 16 to 24 whose participation rate is historically the most volatile. The unemployment rate and participation rate for those with less than a high school education rose quite a bit in 2016, but now those increases are reversing. Also of note, the difference between the U6 and U3 unemployment rates declined to 4.1 percentage points in May. That difference reached a cyclical low of 3.6 percentage points in 2006.

The PCE deflator rose 0.2% in April following a 0.2% decline in March. The 12-month change was 1.7% in April, down from a recent high of 2.1% in February. Energy prices rose 1.0% in April and were up 10.2% over the year. The year-over-year increases of energy prices have slowed from a recent peak of 18.5% in February. Energy price data suggest that the energy price index will decline in May, likely leading to a further slowing of the year-over-year change of the total PCE deflator to 1.6%.

The core PCE deflator rose by 0.15% in April following a 0.13% decline in March. From a recent peak of 1.8% in January and February, the 12-month change of the core PCE deflator slowed to 1.5% in April. The 12-month change of cellular telephone services went from -4.7% in February to -12.9% in April. With a weight of 1% in the core PCE deflator, this small category contributed 0.1 percentage point of the total 0.3 percentage point slowing of the core PCE deflator. The 12-month change of the price of prescription drugs slowed from 7.0% in January to 3.6% in April. With a weight of 4% in the index, this slowing contributed 0.1 percentage point to the overall slowing. Another contributor is the fact that the rate of increase of both tenant rent and owners' equivalent rent eased by 0.2 percentage point over the past few months. These two components have a combined weight of 18%, so this slowing contributed about 0.035 percentage point to the slowing of core PCE inflation. Finally, the 12-month change of prices of non-food, non-energy goods slowed from around -0.5% to -0.6%, which likely contributed around 0.03 percentage point. Thus, these four categories are responsible for essentially all of the slowing of core PCE deflator inflation.

The Outlook

The weakness of GDP growth in 2017Q1 appears to have been a temporary phenomenon, with growth now expected to rebound to around 3% in the second quarter. Growth over the entire first half of 2017 should come in at around 2%, the same as for 2016 (Q4/Q4). We expect growth to firm to around 2¼% over the second half of the year, reflecting modestly stronger growth of final sales to domestic purchasers and somewhat less drag from both inventories and net exports. As we have expected for some time, growth is projected to slow to around 1¾% in 2018 due largely to the tightening of financial conditions associated with the normalization of monetary policy.

The fundamentals for consumer spending look to be solid, with the labor market near full employment and consumer confidence at high levels. Growth of real disposable income should remain around 2% (annual rate) over the second half of 2017 and we have introduced a slight decline of the personal saving rate over the second half of the year to reflect the improvement in household net worth. Growth of real PCE over the second half of 2017 is projected at 2.4% (annual rate), up from 1.8% over the first half of the year. We do believe that light-weight vehicle sales have likely peaked for this cycle due to tightening of credit conditions in that sector, but there are lots of other things for consumers to spend their money on. Growth of real PCE is then expected to slow to around 2% by the end of 2018 as part of the general slowing of growth.

While multi-family housing starts appear to have peaked, we believe that the fundamentals for the single-family sector should result in gradual increases in starts and sales. This is particularly true given with the meaningful decline of mortgage interest rates over the past few months. The inventory of single-family homes is very lean, with bidding wars cropping up in some markets. Another sector that should support growth is spending on improvements to the existing stock. Some needed repairs were postponed over the past several years and contractors report much stronger activity of late. In addition, press reports indicate that the demand and supply of cash-out refinancings and home equity loans are increasing.

Growth of business fixed investment firmed over the first half of 2017, growing at an 8.4% annual rate versus 1.1% over the second half of 2016. This strengthening is largely due to

developments in the energy sector, which should fade over time given our expectation that oil prices should be flat to down slightly over the next year and a half. Going forward we expect relatively modest growth of BFI, as has been a feature of this cycle to date.

As has been the case for the past few cycles, we continue to hold off on incorporating any fiscal stimulus into our forecast. In that case, the growth contribution from the government should be essentially zero.

We expect the economy to grow at somewhat above potential for the next six to twelve months, further reducing slack and the unemployment rate. The decline of the unemployment rate should be muted, however, due to firming of productivity growth and the gradual rise of the labor force participation rate. We expect the unemployment rate to average 4.3% in 2017Q4 and then approach 4.5% by the end of 2018. Average monthly gains in nonfarm payroll employment should slow to the 125,000 to 150,000 range in 2018.

While core inflation has slowed in recent months, we suspect that many of the factors responsible for that slowing are temporary. Our models continue to project a gradual firming of underlying inflation over the forecast horizon. In fact, with the path of the unemployment rate lower than in the April Blackbook, the firming in core service prices in this forecast is modestly stronger. In addition, with nonpetroleum import prices now rising, we expect that core goods price inflation will move back into positive territory in the not too distant future. Overall PCE deflator inflation is projected at 2.1% (Q4/Q4) in 2018, with some risk of further overshooting of the FOMC's inflation objective in 2019.

2-1: Projections of Key Variables

	Core PCE Inflation		Real GDP Growth		Unemployment Rate*		Fed Funds Rate**	
	Apr	Jun	Apr	Jun	Apr	Jun	Apr	Jun
2016								
Q1	*2.0*	*2.0*	*0.8*	*0.8*	*4.9*	*4.9*	*0.38*	*0.38*
Q2	*1.8*	*1.8*	*1.4*	*1.4*	*4.9*	*4.9*	*0.38*	*0.38*
Q3	*1.7*	*1.7*	*3.5*	*3.5*	*4.9*	*4.9*	*0.38*	*0.38*
Q4	1.3	*1.3*	2.1	*2.1*	4.7	*4.7*	0.63	0.63
2017								
Q1	2.0	2.1	0.7	1.2	4.7	4.7	0.88	0.88
Q2	1.7	1.1	3.2	2.9	4.6	4.4	1.13	1.13
Q3	1.9	1.8	1.8	2.3	4.6	4.3	1.38	1.38
Q4	2.0	2.0	2.4	2.2	4.6	4.3	1.38	1.38
2018								
Q1	2.1	2.1	1.9	1.9	4.6	4.3	1.38	1.38
Q2	2.1	2.1	1.6	1.6	4.6	4.4	1.63	1.63
Q3	2.2	2.2	1.6	1.7	4.5	4.4	1.88	1.88
Q4	2.2	2.2	1.6	1.7	4.5	4.4	2.13	2.13
Q4/Q4								
2015	*1.4*	*1.4*	*1.9*	*1.9*	*-0.7*	*-0.7*	*0.38*	*0.38*
2016	1.7	1.7	2.0	2.0	-0.3	*-0.3*	0.63	0.63
2017	1.9	1.7	2.0	2.1	-0.1	-0.4	1.38	1.38
2018	2.1	2.1	1.7	1.7	-0.1	0.1	2.13	2.13

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

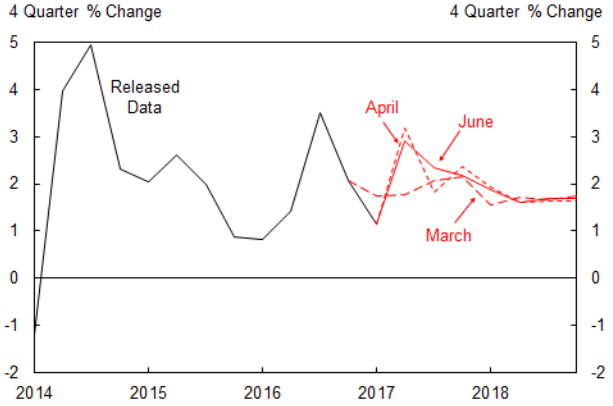
*Quarterly values are the average rate for the quarter. Yearly values are the difference between Q4 of the listed year and Q4 of the previous year.

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

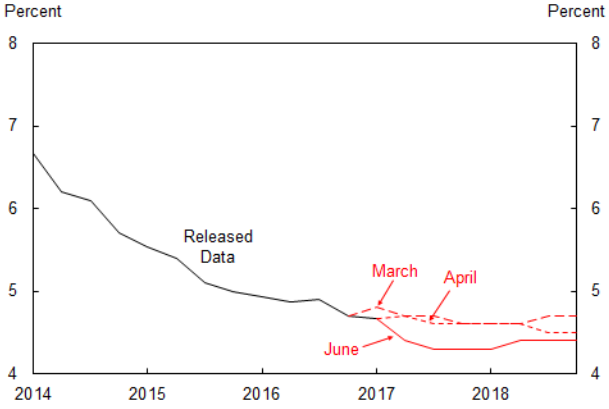
2-2: Evolution of Projected Quarterly Paths

Key Indicators

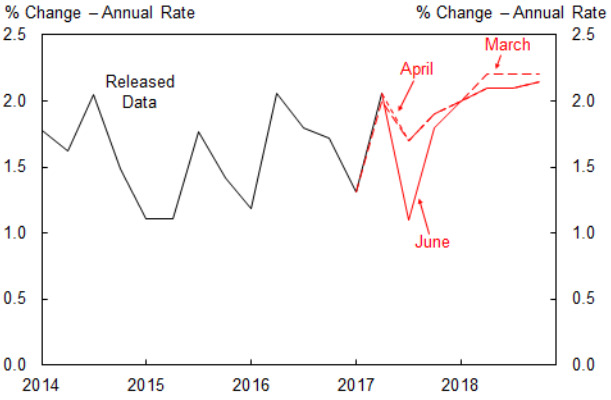
Real GDP Growth



Unemployment Rate

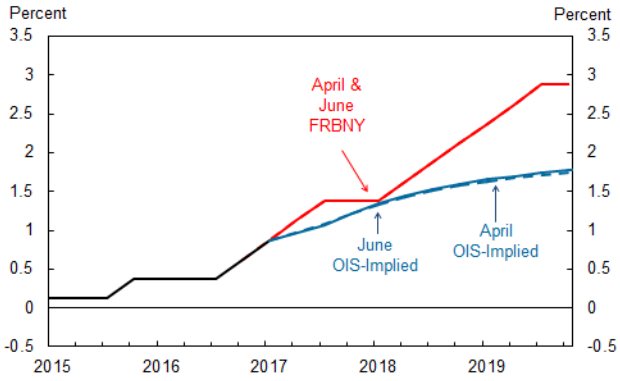


Core PCE Inflation

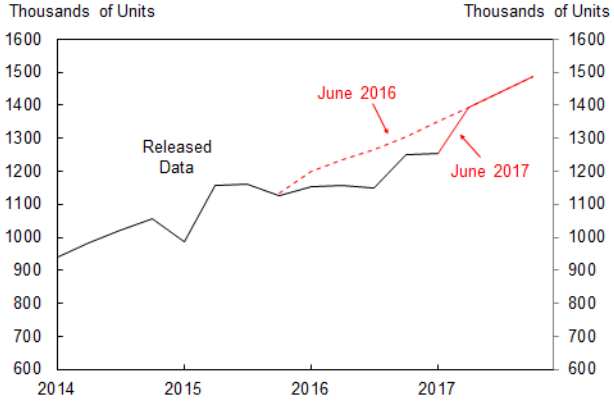


Forecast Assumptions

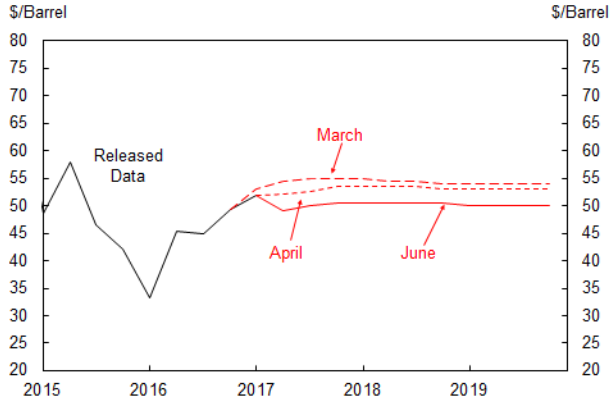
Federal Funds Rate



Housing Starts



Crude Oil



Source: FRBNY (MMS and IR Functions)

2-3: Near-Term Projections

	Growth Rates (AR)			Growth Contributions (AR)		
	2017Q2	2017Q3	2017Q4	2017Q2	2017Q3	2017Q4
OUTPUT						
Real GDP	2.9	2.3	2.2	2.9	2.3	2.2
	(3.2)	(1.8)	(2.4)	(3.2)	(1.8)	(2.4)
Final Sales to Domestic Purchasers	2.7	2.6	2.3	2.8	2.7	2.4
	(2.8)	(2.4)	(2.4)	(2.8)	(2.5)	(2.4)
Consumption	3.0	2.5	2.3	2.1	1.7	1.6
	(3.0)	(2.5)	(2.3)	(2.1)	(1.7)	(1.6)
BFI: Equipment	2.0	3.0	3.0	0.1	0.2	0.2
	(4.0)	(3.0)	(3.0)	(0.2)	(0.2)	(0.2)
BFI: Nonresidential Structures	15.0	4.0	3.0	0.4	0.1	0.1
	(4.0)	(4.0)	(3.0)	(0.1)	(0.1)	(0.1)
BFI: Intellectual Property Products	4.0	4.0	4.0	0.2	0.2	0.2
	(4.0)	(4.0)	(4.0)	(0.2)	(0.2)	(0.2)
Residential Investment	0.0	12.0	8.0	0.0	0.5	0.3
	(5.0)	(7.0)	(10.0)	(0.2)	(0.3)	(0.4)
Government: Federal	-0.3	-0.3	-0.6	0.0	0.0	0.0
	(-0.3)	(-0.3)	(-0.6)	(-0.0)	(-0.0)	(-0.0)
Government: State and Local	0.3	0.9	0.9	0.0	0.1	0.1
	(0.9)	(0.9)	(0.9)	(0.1)	(0.1)	(0.1)
Inventory Investment	--	--	--	0.3	0.2	-0.1
	--	--	--	(0.6)	(0.0)	(0.0)
Net Exports	--	--	--	-0.2	-0.6	-0.1
	--	--	--	(-0.3)	(-0.7)	(-0.1)
INFLATION						
Total PCE Deflator	0.6	2.0	2.1			
	(1.2)	(1.7)	(2.0)			
Core PCE Deflator	1.1	1.8	2.0			
	(1.7)	(1.9)	(2.0)			
PRODUCTIVITY AND LABOR COSTS*						
Output per Hour	2.1	1.2	1.5			
	(2.3)	(0.9)	(1.7)			
Compensation per Hour	3.4	3.4	3.1			
	(3.1)	(3.1)	(2.8)			
Unit Labor Costs	1.3	2.2	1.6			
	(0.8)	(2.3)	(1.1)			

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		
	2016	2017	2018	2016	2017	2018
OUTPUT						
Real GDP	2.0	2.1	1.7	2.0	2.1	1.7
	(2.0)	(2.0)	(1.7)	(2.0)	(2.0)	(1.7)
Final Sales to Domestic Purchasers	2.1	2.4	1.9	2.2	2.5	2.0
	(2.1)	(2.3)	(2.1)	(2.2)	(2.3)	(2.1)
Consumption	3.1	2.1	2.2	2.1	1.5	1.5
	(3.1)	(2.0)	(2.2)	(2.1)	(1.4)	(1.5)
BFI: Equipment	-3.8	3.8	2.0	-0.2	0.2	0.1
	(-3.8)	(4.7)	(2.0)	(-0.2)	(0.3)	(0.1)
BFI: Nonresidential Structures	1.9	12.1	2.5	0.0	0.3	0.1
	(1.9)	(8.0)	(2.5)	(0.0)	(0.2)	(0.1)
BFI: Intellectual Property Products	4.3	4.7	3.0	0.2	0.2	0.1
	(4.3)	(3.5)	(4.0)	(0.2)	(0.1)	(0.2)
Residential Investment	1.1	8.3	2.3	0.0	0.3	0.1
	(1.1)	(8.9)	(5.0)	(0.0)	(0.3)	(0.2)
Government: Federal	-0.2	-0.8	-0.7	0.0	-0.1	0.0
	(-0.2)	(-0.8)	(-0.7)	(-0.0)	(-0.1)	(-0.0)
Government: State and Local	0.4	0.4	1.0	0.0	0.0	0.1
	(0.4)	(0.3)	(1.2)	(0.0)	(0.0)	(0.1)
Inventory Investment	--	--	--	-0.1	-0.2	0.0
	--	--	--	(-0.1)	(-0.1)	(-0.1)
Net Exports	--	--	--	-0.2	-0.2	-0.3
	--	--	--	(-0.2)	(-0.2)	(-0.3)
INFLATION						
Total PCE Deflator	1.4	1.8	2.1			
	(1.4)	(1.8)	(2.1)			
Core PCE Deflator	1.7	1.7	2.1			
	(1.7)	(1.9)	(2.1)			
PRODUCTIVITY AND LABOR COSTS*						
Output per Hour	1.1	1.2	1.0			
	(1.0)	(1.1)	(1.0)			
Compensation per Hour	1.5	3.0	3.7			
	(3.0)	(3.0)	(3.5)			
Unit Labor Costs	0.4	1.8	2.7			
	(2.0)	(1.9)	(2.5)			

Note: Numbers in parentheses are from the previous Blackbook.

*Nonfarm business sector.

2-5: Comparison with Other Forecasts

Real GDP Growth

	Release Date	2017Q2	2017Q3	2016 Q4/Q4	2017 Q4/Q4
FRBNY	6/7/2017	2.9	2.3	2.0	2.1
		(3.2)	(1.8)	(2.0)	(2.0)
Blue Chip	5/10/2017	3.1	2.4	2.0	2.1
		(2.7)	(2.4)	(2.0)	(2.2)
Median SPF	5/12/2017	3.1	2.5	2.0	2.1
		(2.3)	(2.4)	(2.0)	(2.3)
Macro Advisers	6/2/2017	2.9	2.9	2.0	2.2
		(3.6)	(2.4)	(2.0)	(2.3)
FRBNY-DSGE	6/7/2017	2.9	2.2	2.0	2.1
		(1.5)	--	(2.0)	(1.3)
Median SPD	4/24/2017	--	--	2.0	2.2
		--	--	(2.0)	(2.2)

Core PCE Inflation

	Release Date	2017Q2	2017Q3	2016 Q4/Q4	2017 Q4/Q4
FRBNY	6/7/2017	1.1	1.8	1.7	1.7
		(1.7)	(1.9)	(1.7)	(1.9)
Median SPF	5/12/2017	1.7	1.9	1.7	1.9
		(1.9)	(1.9)	(1.7)	(1.9)
Macro Advisers	6/2/2017	1.0	1.5	1.7	1.8
		(1.9)	(1.9)	(1.7)	(2.0)
FRBNY-DSGE	6/7/2017	1.1	1.2	1.7	1.4
		(1.8)	--	(1.7)	(1.8)
Median SPD	4/24/2017	--	--	1.7	1.9
		--	--	(1.7)	(1.9)

Unemployment*

	Release Date	2017Q2	2017Q3	2016 Q4/Q4	2017 Q4/Q4
FRBNY	6/7/2017	4.4	4.3	-0.3	-0.4
		(4.6)	(4.6)	(-0.3)	(-0.1)
Blue Chip	5/10/2017	4.6	4.5	-0.3	-0.3
		(4.6)	(4.6)	(-0.3)	(-0.2)
Median SPF	5/12/2017	4.5	4.4	-0.3	-0.3
		(4.6)	(4.6)	(-0.3)	(-0.2)
Macro Advisers	6/2/2017	4.3	4.2	-0.3	-0.5
		(4.6)	(4.4)	(-0.3)	(-0.4)
Median SPD	4/24/2017	--	--	-0.3	-0.2
		--	--	(-0.3)	(-0.2)

Note: Numbers in gray are from the previous Blackbook.

*Yearly values are the difference between Q4 of the listed year and Q4 of the previous year.

2-6: Tealbook Comparison

	FRBNY (Q4/Q4)			Tealbook (Q4/Q4)		
	2016	2017	2018	2016	2017	2018
OUTPUT						
Real GDP Growth	2.0	2.1	1.7	2.0	2.4	2.2
	(2.0)	(2.0)	(1.7)	(2.0)	(2.1)	(2.2)
GDP Growth Contributions						
Final Sales to Domestic Purchasers	2.2	2.5	2.0	2.1	2.5	2.5
	(2.2)	(2.3)	(2.1)	(2.1)	(2.3)	(2.5)
Consumption	2.1	1.5	1.5	2.1	1.6	2.0
	(2.1)	(1.4)	(1.5)	(2.1)	(1.6)	(2.0)
BFI	0.0	0.7	0.3	0.0	0.7	0.4
	(-0.0)	(0.6)	(0.3)	(0.0)	(0.5)	(0.4)
Residential Investment	0.0	0.3	0.1	0.0	0.2	0.1
	(0.0)	(0.3)	(0.2)	(0.0)	(0.2)	(0.1)
Government	0.0	0.0	0.1	0.0	0.1	0.1
	(0.0)	(-0.0)	(0.1)	(0.0)	(0.2)	(0.1)
Inventory Investment	-0.1	-0.2	0.0	0.0	-0.1	-0.1
	(-0.1)	(-0.1)	(-0.1)	(0.0)	(-0.1)	(0.0)
Net Exports	-0.2	-0.2	-0.3	-0.2	-0.2	-0.3
	(-0.2)	(-0.2)	(-0.3)	(-0.2)	(-0.3)	(-0.4)
INFLATION						
Total PCE Deflator	1.4	1.8	2.1	1.4	1.6	1.9
	(1.4)	(1.8)	(2.1)	(1.4)	(1.7)	(1.8)
Core PCE Deflator	1.7	1.7	2.1	1.7	1.6	1.9
	(1.7)	(1.9)	(2.1)	(1.7)	(1.7)	(1.9)
LABOR MARKET						
Unemployment Rate (Avg. Q4 Level)	4.7	4.3	4.4	4.7	4.2	3.9
	(4.7)	(4.6)	(4.5)	(4.7)	(4.4)	(4.1)
Participation Rate (Avg. Q4 Level)	62.7	62.9	63.1	62.7	62.7	62.5
	(62.7)	(63.1)	(63.2)	(62.7)	(62.7)	(62.5)
Avg. Monthly Nonfarm Payroll Growth (Thous.)	194	156	136	187	166	167
	(194)	(131)	(108)	(187)	(176)	(169)
SAVING						
Personal Saving Rate (Avg. Q4 Level)	4.9	5.0	4.6	4.9	5.0	5.8
	(5.5)	(5.6)	(5.2)	(5.5)	(5.2)	(6.1)
HOUSING						
Housing Starts (Avg. Q4 Level, Thous.)	1305	1485	--	1200	1200	1300
	(1305)	(1485)	--	(1200)	(1300)	(1300)
INTREST RATE ASSUMPTION						
Fed Funds Rate*	0.63	1.38	2.13	0.63	1.51	2.73
	(0.63)	(1.38)	(2.13)	(0.63)	(1.47)	(2.55)

Note: Numbers in parentheses are from the previous Blackbook and Tealbook.

* FRBNY numbers indicate end of year Federal Funds Rate, Tealbook numbers indicate average of Q4 Federal Funds Rate.

3. Uncertainty & Risks

Developments during the intermeeting period indicate a modest reduction in uncertainty around the outlook from the assessment in the April *Blackbook*. Based on the difference between the modal forecast and the expected value from our forecast distributions [Exhibit 3-1], as well as the changes in the distributions [Exhibit 3-3], the risks to growth are roughly balanced through much of the forecast horizon. For core PCE inflation, the risks are balanced throughout the forecast horizon. The widths of the growth probability intervals are slightly narrower than those in the April *Blackbook*, while the 90 percent probability interval for inflation has narrowed further because of a reduction in upside tail risks. The uncertainties around the GDP growth and inflation projections are relatively close to their respective historical norms.

As discussed earlier in this *Blackbook*, recent data have been consistent with our prior outlook of growth rebounding after a weak Q1. As such, growth over 2017H1 is anticipated to be around 2 percent (annual rate), close to the April *Blackbook* projection. The FRBNY nowcast for 2017Q2 GDP growth has fluctuated within a narrow range recently, and was at 2.3 percent on June 9. The April and May labor market reports generally indicated further strengthening in labor market conditions as the unemployment rate fell to its lowest level since 2001. However, payroll growth moderated and wage growth was again subdued. Inflation indicators were again on the soft side in April. Longer-term inflation compensation from TIPS fell moderately and remained low. Our SCE 3-year inflation expectations measure fell considerably in May, and the Michigan measure of longer-run expectations remained low. The economic data for the major foreign economies were solid outside of soft Q1 growth in the United Kingdom.

Financial conditions improved overall. Longer-term nominal Treasury yields decreased about 10 – 15 basis points and real yields fell about 5 basis points. Corporate credit spreads to Treasuries remained narrow, while sovereign yields in other advanced economies continued to be low. Major U.S. equity indexes rose moderately and implied volatility remained low. Oil prices declined on net, leaving them near the low end of their recent narrow prevailing range. The nominal broad dollar index fell about 1½ percent over the period. The market-implied expected path of the federal funds rate was little changed.

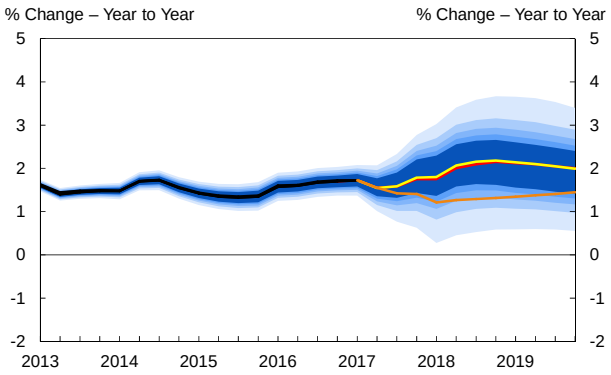
In response to the developments, we made rather small changes in the scenario probabilities [Exhibit 3-2]. In particular, the soft inflation data, modest declines in inflation compensation, the fall in SCE inflation expectations, and subdued wage growth contributed to our assessment of a lower probability of the *Loss of Credibility* scenario. With the perceived probability of tax reform and other expansionary fiscal actions apparently receding, as well as some moderation in payroll growth and in the survey data, we reduced slightly the weight on the *Faster Growth* scenario and raised the probability of the *Fiscal Consolidation* scenario.

These changes in scenario probabilities led to some further narrowing in the 90 percent probability intervals for GDP growth and core PCE inflation [Exhibit 3-3]. There was a further notable decline in the upper band around the inflation projection, reflecting lesser upside tail risks associated with the *Loss of Credibility* scenario. With the further narrowing, the intervals for GDP growth and for core PCE inflation are now relatively close to their respective historical norms. Based on the difference between the mode and the mean of the forecast distribution, the GDP growth distribution signals that the risks to activity are roughly balanced through most of 2018 and slightly skewed to the downside thereafter, while the risks to inflation are balanced overall throughout the forecast horizon [Exhibit 3-1].

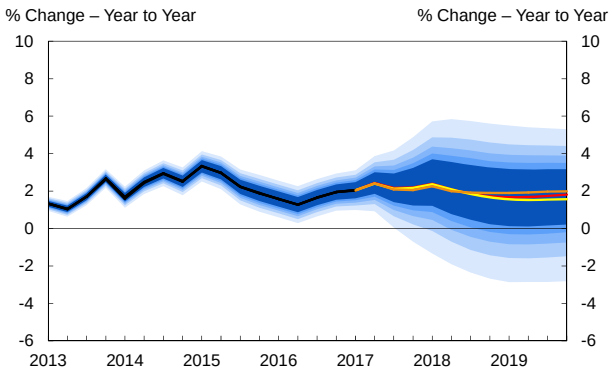
In a comparison to the forecast distribution from a year earlier, the current projections for inflation and GDP growth are fairly close to the respective year-ago expectations [Exhibit 3-3]. One factor behind the fact that the realizations of inflation and growth and the current projections of these variables are within last year's respective fifty percent forecast probability intervals is the high uncertainty that prevailed at that time prior to the "Brexit" referendum and the U.S. presidential election.

3-1: Forecast Distributions

Core PCE Inflation Forecast Distribution



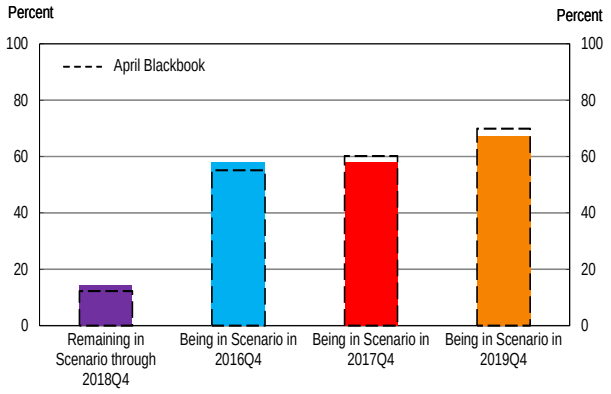
Real GDP Growth Forecast Distribution



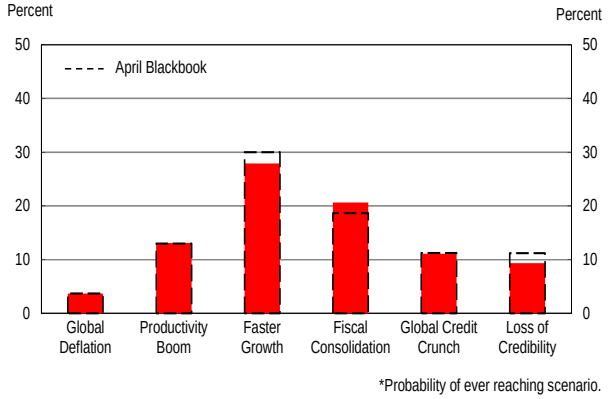
The yellow line is the expected value of the forecast distribution, the red line is the FRBNY central projection, the orange line is the DSGE forecast, and the black line is released data. The shading represents the 50, 60, 70, 80 and 90 percent probability that the four-quarter change will be within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

3-2: Scenario Probabilities

Central Scenario Probabilities



Alternative Scenario Probabilities*

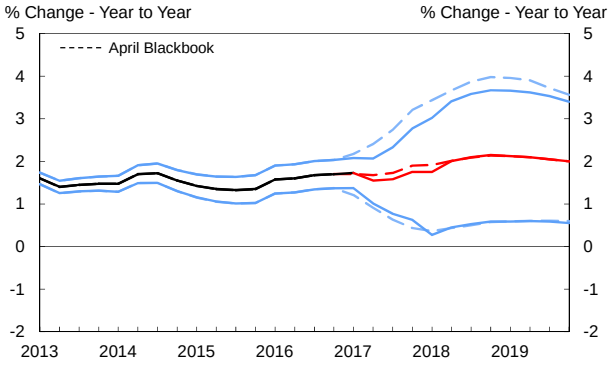


The left chart shows the probability of remaining in the central scenario through the end of the forecast horizon and the probabilities of being in the central scenario at the end of the next three years. The right chart shows the probabilities of ever reaching an alternative scenario over the forecast 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.

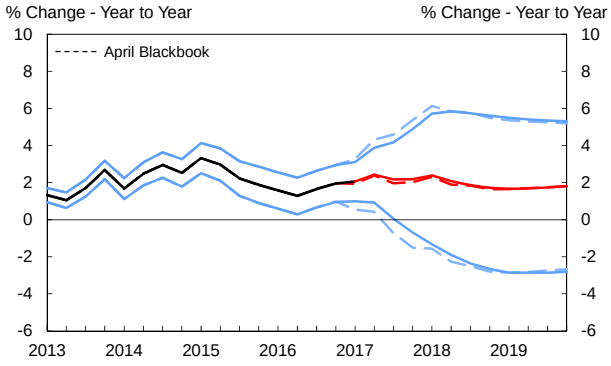
Source: MMS Function (FRBNY)

3-3: Evolution and Performance of Forecast Distributions

Change in Core PCE Inflation Forecast Distribution

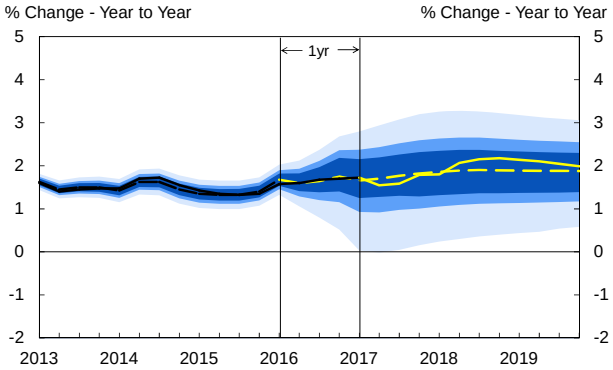


Change in Real GDP Growth Forecast Distribution

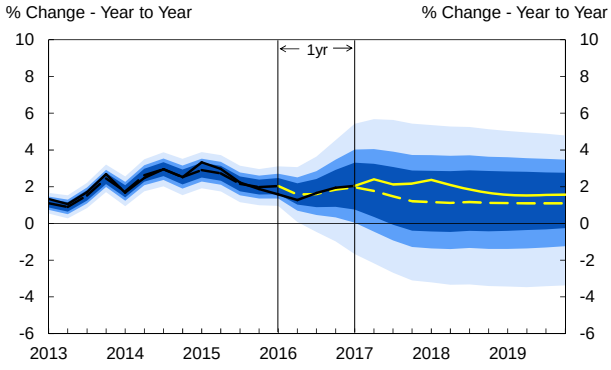


The red lines are the central scenario projections, black lines are released data, and blue lines represent upper and lower 90 percent forecast probability intervals. Dashed lines represent forecasts from the previous Blackbook.

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

RESEARCH AND STATISTICS GROUP

FRBNY Blackbook

July 2017

CLASS II FOMC - RESTRICTED (FR)

FRBNY BLACKBOOK

July 2017

CONTENTS

APPENDIX

1. Policy Recommendation and Rationale

Data over the intermeeting period have not appreciably changed the outlook, with growth projected to be above its potential rate in 2017H2 and then to ease to near potential in 2018. Core PCE inflation is expected to rebound from the low Q2 reading and reach 2.1 percent next year, slightly above the FOMC's longer-run objective. The diminished chance of a fiscal stimulus package has reduced the near-term upside risk to growth while the continuing soft inflation releases have lowered the upside risk to the inflation outlook. Financial conditions remain accommodative, with a modest increase in long-term Treasury yields offset by higher equity prices and a weaker dollar. The market-implied expected path of the federal funds rate for the near term shifted over the intermeeting period, with a lower implied probability for a rate hike in September and a higher one for December. The probability for rate hike by December was little changed at somewhat below 50 percent. The medium-term market-implied expected path was little changed. These market expectations are broadly consistent with our assessment. As the intermeeting developments have not materially changed our outlook and risks, the policy strategy outlined in the June *Blackbook* remains appropriate.

We anticipate that real GDP growth in Q2 was 2.8 percent (annual rate), mainly reflecting a rebound in consumer spending, leaving growth in 2017H1 at around 2 percent. Business investment is showing some strength, although more so for structures than for equipment. Payroll data were solid in June, while wage growth was soft. Our projection is that real GDP growth will be 2.4 percent in 2017H2. This favorable growth outlook is tied to strength in the labor market, the good condition of the household sector balance sheet, and accommodative financial conditions. The 2018 outlook of 1.7 percent growth is near our estimate of the economy's potential growth rate (1¾ percent), as the ongoing normalization of monetary policy and tighter financial conditions slow growth.

The staff nowcast for Q2 dipped over the intermeeting period, from 2.3 percent on June 9 to 2.0 percent on July 19. The nowcast for Q3 rose moderately over the period to 2.0 percent.

Regarding inflation, the recent readings on overall and core PCE inflation have been soft, leading to declines in the 12-month changes. Measures of market-implied longer-term inflation

compensation were little changed over the intermeeting period and remain low on a historical basis. Measures of longer-term household inflation expectations in the SCE and in the Michigan survey moved up in the most recent readings, but their levels are still relatively low. We continue to see the recent softness in inflation as largely transitory, but we will need to see confirmation soon to maintain that assessment. For now, we expect inflation to remain modestly below the Committee's longer-run objective for the remainder of 2017, but to rebound and to overshoot it slightly in 2018.

Financial conditions remained accommodative. Longer-term Treasury yields increased modestly on net over the intermeeting period, declining late in the period after rising more substantially following foreign central bank communications that suggested somewhat less accommodation. Equity prices moved moderately higher, the broad dollar index declined, and credit spreads remained narrow.

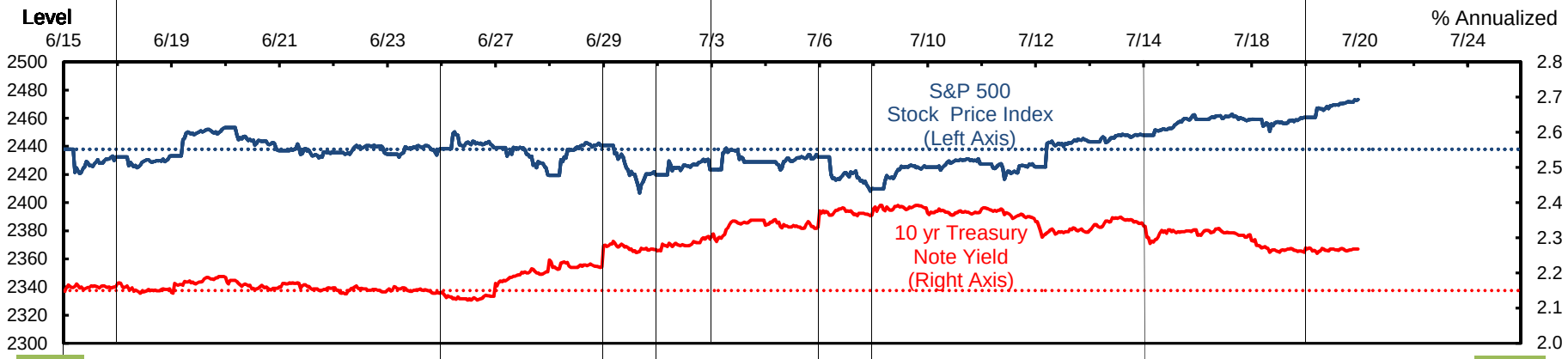
In light of our assessment, we continue to recommend an additional policy rate hike at the end of the year as long as fundamentals evolve in line with our outlook. A relatively long pause between policy rate hikes would allow time to evaluate the flow of inflation data to confirm that the recent softness is transitory. We also believe it is appropriate to start a phase-out of reinvestment soon as the policy rate is now sufficiently away from the zero lower bound. Our recommendation is to announce in September that balance sheet normalization will start in October. Aligning major policy announcements with press-conference meetings would allow more extensive communication around these actions, and staggering balance sheet and federal funds rate policy actions would minimize risks of unwarranted financial market overreaction to multiple policy-tightening actions. As a caveat, uncertainty associated with upcoming events, including the approach of a binding debt ceiling, suggests retaining optionality regarding the precise sequencing and timing of policy actions. Conversely, if financial conditions become inappropriately loose, a quickening in the pace of rate increases may be necessary.

May Housing Starts
Total: 1,092K (-5.5%)
12 mo: -2.4%
Single-family starts: 794K (-3.9%)
Multi-family starts: 298K (-9.7%)

May Construction Spending
-0.0% [+0.3%]
12 mo: +4.5%

June ISM Mfg
+57.8 [+55.3]

June Housing Starts
Total: 1,215K (+8.3%)
12 mo: +2.1%
Single-family starts: 849K (+6.3%)
Multi-family starts: 366K (+13.3%)



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May IP
+0.0% [+0.2%]

May CU
+76.6% [+76.8%]

May Advance Durable Goods
-1.1% [-0.6%]

Real GDP 2017Q1 (3rd Estimate)
+1.4% [+1.2%]

May Personal Income
Nominal: +0.4% [+0.3%]
Real disposable: +0.6%

May PCE Price Index
Overall: -0.1% [-0.1%]
12 mo: +1.4%
Core: +0.1% [+0.1%]
12 mo: +1.4%

May Trade Deficit
-46.5 bil [-46.3]

June ISM NonMfg
+57.4 [+56.5]

June Labor Market
Non-farm payroll: +222k [+178k]
U rate: +4.4% [+4.3%]

April Retail Sales
Total: -0.2% [+0.1%]
12 mo: +2.9%
Ex-auto: -0.2% [+0.2%]
PCE Control ex gas: -0.2%

June IP
+0.4% [+0.3%]

June CU
+76.6% [+76.8%]

June CPI
Overall: -0.0% [+0.1%]
12 mo: +1.6%
Core: +0.1% [+0.2%]
12 mo: +1.7%

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Note
Blue shading: Data release encouraging/positive.
Red shading: Data release discouraging/negative.
Grey shading: Data release was neutral.
Numbers in square brackets are the median of the Bloomberg survey.
Numbers in parentheses represent changes from the prior month.

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

Over the intermeeting period, data pertaining to real expenditures have been mixed but still consistent with a significant rebound of growth of real GDP in the second quarter. At this time our projection is for growth of 2.8% (annual rate), up from 1.4% in the first quarter. If that turns out to be correct, growth over the first half of 2017 would have been 2.1% (annual rate), essentially unchanged from 2016. The labor market data for June rebounded from disappointing results for May, resulting in a pretty strong performance for Q2 as a whole. We believe that hours worked increased about 2¾% (annual rate) while the average monthly gain in nonfarm payroll employment moved up to 194,000. These labor market results are consistent with a somewhat above potential growth rate. In contrast, the price data continued to surprise to the downside, with the core CPI rising just 0.06% in May and 0.12% in June. On a positive note, the 12-month change of the core CPI held steady at 1.7% in June, but this is down from 2.3% this past January. The Citi US Economic Surprise Index bottomed out in mid-June, deep in negative territory. It then began to move up through July 13, but then fell again following the downside surprises of the June data on retail sales and the CPI.

Based on the third estimate, real GDP increased 1.4% (annual rate) in 2017Q1, up from the second estimate (+1.2%). Growth of real personal consumption expenditures (PCE) was revised up to 1.1% (annual rate) from 0.6% in the second estimate (and 0.3% in the advance estimate). The upward revision to consumption was primarily in services and reflected the incorporation of information from the Quarterly Services Report. In addition, there was an upward revision to the growth contribution from net exports that came from an upward revision to goods exports. As a partial offset, there was a downward revision to nonresidential structures investment that reflected the revised construction data from Census. Corporate profits declined by roughly $50 billion (annual rate) in the first quarter after rising strongly over the second half of 2016. Labor compensation rose to 62.6% of National Income in Q1 from 62.3% in 2016Q4, but it has been relatively stable for roughly the past year and one half.

Growth of real PCE averaged a moderate 0.17% (monthly rate) in April and May, an improvement over the 0.11% average monthly gain of the first quarter but well below the 0.3% average monthly gain of the fourth quarter. Nonetheless, due to the fact that real PCE declined in January and February and then increased 0.6% in March, we expect the second quarter growth rate of real PCE to come in at an annual rate of around 3%. Light-weight motor vehicle sales for June were again below the consensus expectation and averaged just 16.7 million (annual rate) for the second quarter, the lowest quarterly average sales pace since the second quarter of 2014. The June retail sales data were a major downside surprise, with the BEA retail control declining by 0.1% versus a consensus expectation of a gain of 0.3%. However, prices for food consumed at home, household furnishings, and apparel declined, such that in real terms the retail control increased. We project that real PCE increased 0.24% in June, resulting in a Q2 average monthly gain of 0.2%. If sustained at that rate over the next three months, growth of real PCE would slow to 2.5% (annual rate) for the third quarter.

Total housing starts fell 2.8% in May, the third consecutive monthly decline, but then rose 8.3% in June. For the entire second quarter, starts averaged 1.164 million (seasonally adjusted annual rate), down from an average of 1.24 million over the previous two quarters. The bulk of the Q2 decline was in the volatile multi-family sector, where the second quarter level was down nearly 15% (quarterly rate) from that of the first quarter. While multi-family starts rebounded in June, the June level, at 366,000, was roughly 100,000 units below that of December of 2016. We suspect that multi-family starts have essentially peaked, at least for the near-term. There is a high volume of multi-family units under construction. In addition, the overall rental vacancy rate has increased modestly in the three quarters through 2017Q1, and the rate of increase of rents has flattened out in recent months. Single-family starts rose 6.3% in June following three consecutive monthly declines. We continue to believe that single-family starts remain on a gradual uptrend. Home prices are rising at a brisk pace, homebuilder confidence remains high, and mortgage applications to purchase homes continue to edge upward. Given the recent decline in housing starts, we expect real residential investment to contract at around a 3% annual rate in the second quarter following a strong 12.9% increase in the first quarter. Growth of residential investment is expected to resume in the second half of this year given our expectation that single-family starts are on an upward trend.

After rebounding strongly coming out of the Great Recession, growth of real business investment in new equipment progressively slowed since 2010 and was negative in 2016. Over the four-quarters ending in 2017Q1, growth was an anemic 0.5%. Investment in mining and oil field machinery declined sharply over the two years ending in 2016Q4 and stabilized in 2017Q1. However, at its recent peak level in 2014 it represented just 2¾% of total investment in new equipment and thus is too small to have a meaningful impact on the aggregate performance. While there are likely to be many contributing factors, a key reason why business investment in new equipment remains so weak is that manufacturing capacity utilization remains at a relatively low 75.5%. Historically, we have not seen double-digit growth of business investment in new equipment until the capacity utilization rate surpassed 80%.

Both new orders and shipments of nondefense capital goods excluding aircraft trended lower through mid-2016 after peaking in September of 2014. They have since begun to increase again but at only low to mid-single digit growth rates over the year ending in May. Recent readings have suggested some loss of forward momentum, with three-month growth rates slowing in recent months. This recent slowing of growth has been broad based across many major categories, including computers and electronic products and machinery. At this time we expect growth of real business investment in nonresidential equipment of around 5% (annual rate) in the second quarter, down from 7.8% in Q1. Based on the recent trend of new orders, we expect growth of this category of investment of just 3% over the second half of this year.

Real business investment in nonresidential structures grew by 22.5% (annual rate) in 2017Q1 after rising just 1.9% in 2016 (Q4/Q4). Excluding investment in the petroleum and natural gas sector, real investment in nonresidential structures declined in the first quarter but was up 4.9% from 2016Q1. For the second quarter of 2017 we expect growth of around 10% in this expenditure component, again due entirely to strength in the oil and gas sector. Nominal private nonresidential construction put in place has decline by nearly 9% (annual rate) over the three months ending in May, reflecting broad-based weakness. A three-month moving average of the Architectural Billings Index stood at 52.7 as of May, the highest level since mid-2015. That

index does provide some leading information for future nonresidential construction spending but the relationship is not particularly strong from a statistical perspective.

Over the four quarters ending in 2017Q1, real spending by the federal government was down 0.3% and real state and local government spending was down 0.5%. The decline in spending at the federal level was concentrated in real defense outlays. Defense outlays peaked in 2010Q3 and are down 20.6% as of 2017Q1. Nondefense outlays are down just 0.2% over the same period, but have increased at a steady 2.5% to 3% rate for the past two and one half years. The decline at the state and local government level is due primarily to a steep and broad-based decline in investment in new structures and infrastructure such as roads and water treatment facilities. For 2017Q2 the high frequency data lead us to project growth of real federal spending of 1.5% and growth of state and local spending of 1%. Growth of employment in both sectors has slowed over the past year but remains positive.

Overall, we expect growth of final sales to domestic purchasers to increase at a 2.8% annual rate in 2017Q2, up from 2.3% in Q1. The first half pace of 2.5% (annual rate) would be the same as the second half of 2016. The recent trade data came in about as expected in the June Blackbook, with real exports expected to increase at a 2.8% annual rate while real imports increase at a 3.6% annual rate, resulting in a net export growth contribution of -0.2 percentage point. Data for April and May suggest that the pace of inventory accumulation will remain quite sluggish in the second quarter but somewhat stronger than in the first quarter. We anticipate an inventory growth contribution of 0.1 percentage point in Q2 versus -1.1 percentage points in Q1.

The June employment report was solid. Nonfarm payroll employment rose by 222,000 in June, above the consensus expectation, while payroll gains for April and May were revised up by a combined 47,000. The average monthly increase for 2017Q2 was 194,000, a notable step up from the 157,000 average over the preceding two quarter. The stronger employment gains of the second quarter came primarily from the private service-providing sector of the economy, particularly in the leisure, hospitality, health, and education industries. Payroll gains in the private goods-producing sector slowed.

While the June gain in payrolls was above expectations, there was also an increase in the average workweek. Putting the two together, paid hours increased a healthy 0.5% (monthly rate) and were up at a 3% annual rate for Q2, the strongest since 2014Q4. The June increase of average hourly earnings (0.15%) continued to disappoint, but the implied increase of nominal wage and salary income was impressive at 0.65% or 7.4% at an annual rate.

The unemployment rate edged up 0.1 percentage point to 4.4% in June and averaged 4.4% for the entire second quarter. The labor force participation rate also increased 0.1 percentage point in June to 62.8%. The participation rate has been relatively stable since late 2015 when the unemployment rate averaged 5%. The participation rate for prime age workers increased around 1 percentage point over that period.

The May JOLTS data also depicted a relatively strong labor market, with the quits rate rising to 2.5%, essentially the same as the peak of the previous business cycle. One difference, however, is that the previous peak quits rate occurred when the unemployment rate was about half a percentage point higher than it is currently.

Manufacturing output rose 0.2% in June following a 0.4% decline in May. For the entire second quarter, manufacturing output rose at a 1.4% annual rate, down from 2.1% in the first quarter. Production within high-tech industries ramped up during the second quarter, rising at a 12.9% annual rate after declining at a 2.7% annual rate in the first quarter. Production of motor vehicles and parts has been quite choppy of late, but rose at a 2.9% annual rate in Q2 following a 4.5% annual rate decline in the first quarter. Finally, manufacturing excluding high-tech industries and motor vehicles and parts rose at a 0.9% annual rate in Q2, down from 2.7% in Q1. On a year-over-year basis, manufacturing production was up 1.2%, the same as in May. The quarterly average of the manufacturing output index, at 103.3 for Q2, now surpasses the previous cyclical peak of 102.8 in 2014Q4. The ISM manufacturing index rebounded in June, reaching 57.8, its highest level since August of 2014. This provides some support for the idea that manufacturing output will continue to expand over the second half of 2017.

Perhaps the most significant development over the intermeeting period has been the continued downside surprises for the rate of increase of the core CPI in May and June. The core CPI rose at just a 0.6% annual rate in 2017Q2, down from 2.5% in the first quarter. The 12-month change slowed to 1.7% in June from 2.3% in January. Based on the June CPI data, we expect the core PCE deflator to increase at a 0.7% annual rate in the second quarter, down from 2.0% in the first quarter. The 12-month change is likely to come in at 1.4% for June, down from 1.8% in January. We have done an accounting exercise to determine those components of the CPI that are most responsible for slowing in the rate of increase of the core CPI. Virtually all of the slowing is due to seven components; 31.4% is due to wireless telephone services (relative importance of 0.019), 17.5% is due to owners' equivalent rent (relative importance of 0.31), 14.3% is due to physicians' services (relative importance of 0.021), 11.8% is due to apparel (relative importance of 0.039), 7.8% is due to new vehicles (relative importance of 0.046), 7.1% is due to health insurance (relative importance of 0.013), and 6.2% is due to medical care commodities (relative importance of 0.023).

In trying to assess whether the recent slowing is temporary or we are on a lower inflation trajectory than previously thought, a few comments are in order. First, the plunge in wireless telephone services started this past February and is fundamentally driven by increased competition in that market. While prices for such services may continue to fall due to that increased competition, it seems unlikely that the recent pace of year-over-year declines—13.2% in June—will continue indefinitely. Second, due to the Bureau of Labor Statistics methodology, there is a tendency for the rate of increase of OER to slow during periods when prices of electricity and natural gas increase at a faster pace and vice versa.[1] The rate of energy services price inflation was -4.6% (year-over-year) in February of 2016 but was up to +4.7% in June of 2017. Going forward, the rate of increase of energy services prices in likely to slow, resulting in some firming in OER inflation. Third, the sharp slowing of physicians' services prices is unique to the CPI and is not occurring in the PCE deflator. A BLS analyst indicated that a decline in prices for plastic surgery procedures, frequently paid for out of pocket, is an important factor

[1] "Since owners pay for utilities directly, the goal for OER is to measure changes in the rental price with utilities excluded, and so in computing OER, BLS subtracts from the Economic Rent an estimate of the embedded utility cost to yield Pure Rent." Robert Poole, Frank Ptacek, and Randal Verbrugge 2005, "Treatment of Owner-Occupied Housing in the CPI," Office of Prices and Living Conditions, Bureau of Labor Statistics.

behind the slowing in the CPI measure. Fourth, the faster rate of decline of new vehicle prices is reportedly the result of bloated inventories, particularly for cars, following the recent slowing in the pace of sales. The lead story of the July 10 issue of Ward's Automotive Reports indicates that dealers entered July with near record inventories, and that we should expect a combination of scaled back production schedules and aggressive pricing in the third quarter. Finally, the significant slowing in the pace of medical care commodities prices is reportedly due to prescription drugs with very large sales volumes coming off patent and now being replaced by lower cost generic drugs.

The Outlook

We expect growth to firm to around 2.4% over the second half of the year, reflecting a sustained pace of growth of final sales to domestic purchasers at around 2½%, a modest boost from inventory investment following substantial drag over the first half, and somewhat more drag from net exports. That would bring growth of real GDP to 2.2% (Q4/Q4) for 2017, modestly stronger than the last Blackbook. As we have expected for some time, growth is projected to slow to around 1¾% in 2018 due largely to the ongoing tightening of financial conditions associated with the gradual normalization of monetary policy.

The fundamentals for consumer spending look to be solid, with the labor market near full employment and consumer confidence at high levels. Real disposable income is expected to increase around 2½% (annual rate) over the second half of 2017, which should produce growth of real PCE around that rate with a relatively stable personal saving rate. We do believe that light-weight vehicle sales have likely peaked for this cycle due to tightening of credit conditions in that sector, but there are lots of other things for consumers to spend their money on. Growth of both real PCE are expected to slow to around 2% in 2018 as part of the general slowing of growth, though we have allowed the saving rate to drift down somewhat.

Even though multi-family housing starts appear to have peaked, we believe that the fundamentals for the single-family sector should result in continued gradual increases in starts and sales. The inventory of single-family homes is very lean, with bidding wars cropping up in some markets. Another part of the housing market that should support growth for the sector overall is

improvements to the existing stock. Some needed repairs were postponed over the past several years, and contractors report much stronger activity of late. In addition, press reports indicate that the demand and supply of cash-out refinancings and home equity loans have begun to increase.

While growth of business fixed investment firmed to around an 8% annual rate over the first half of 2017, we believe that much of that strengthening is due to developments in the energy sector, which should fade over time given our expectation that oil prices will be essentially flat over the next year and a half. Going forward we expect relatively modest growth of BFI, as has been a feature of this cycle to date. The manufacturing capacity utilization rate remains relatively low, and there does not appear to be much momentum in the nonresidential structures sector outside of the oil and gas industry.

As has been the case for the past few cycles, we continue to hold off on incorporating any fiscal stimulus into our forecast. In that case, the growth contribution from the government sector should be essentially zero.

For roughly the next six to twelve months, we expect the economy to growth at a somewhat above potential rate, further reducing slack in the labor market. The decline of the unemployment rate should be muted, however, due to firming of productivity growth and the gradual rise of the labor force participation rate. We expect the unemployment rate to average 4.3% in 2017Q4 and then approach 4½% by the end of 2018. Average monthly gains in nonfarm payroll employment should slow from around 150,000 in 2017 to the 100,000 to 125,000 range in 2018.

While core inflation has slowed in recent months, we suspect that the bulk of this slowing is due to temporary factors that will dissipate over the second half of this year. Therefore, we have not changed our modal forecast for inflation, though the recent downside surprises certainly increase the downside risk to that forecast. Our workhorse core CPI inflation model, which combines separate forecasts of core service and core goods, continues to project a gradual firming of core

CPI inflation, reaching 2½% (Q4/Q4) for 2018. That rate of increase of the core CPI is consistent with 2% inflation as measured by the core PCE deflator.

2-1: Projections of Key Variables

	Core PCE Inflation		Real GDP Growth		Unemployment Rate*		Fed Funds Rate**	
	Jun	Jul	Jun	Jul	Jun	Jul	Jun	Jul
2016								
Q1	*2.0*	*2.0*	*0.8*	*0.8*	*4.9*	*4.9*	*0.38*	*0.38*
Q2	*1.8*	*1.8*	*1.4*	*1.4*	*4.9*	*4.9*	*0.38*	*0.38*
Q3	*1.7*	*1.7*	*3.5*	*3.5*	*4.9*	*4.9*	*0.38*	*0.38*
Q4	1.3	*1.3*	2.1	*2.1*	4.7	*4.7*	0.63	0.63
2017								
Q1	2.0	2.0	1.2	1.4	4.7	4.7	0.88	0.88
Q2	1.1	0.7	2.9	2.8	4.4	4.4	1.13	1.13
Q3	1.8	1.5	2.4	2.4	4.3	4.3	1.38	1.38
Q4	2.0	1.9	2.2	2.3	4.3	4.3	1.38	1.38
2018								
Q1	2.1	2.1	2.0	1.9	4.3	4.3	1.38	1.38
Q2	2.1	2.1	1.7	1.7	4.4	4.4	1.63	1.63
Q3	2.2	2.2	1.6	1.4	4.4	4.4	1.88	1.88
Q4	2.2	2.2	1.6	1.7	4.4	4.4	2.13	2.13
Q4/Q4								
2015	*1.4*	*1.4*	*1.9*	*1.9*	*-0.7*	*-0.7*	*0.38*	*0.38*
2016	1.7	1.7	2.0	2.0	-0.3	*-0.3*	0.63	0.63
2017	1.7	1.5	2.2	2.2	-0.4	-0.4	1.38	1.38
2018	2.1	2.1	1.7	1.7	0.1	0.1	2.13	2.13

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

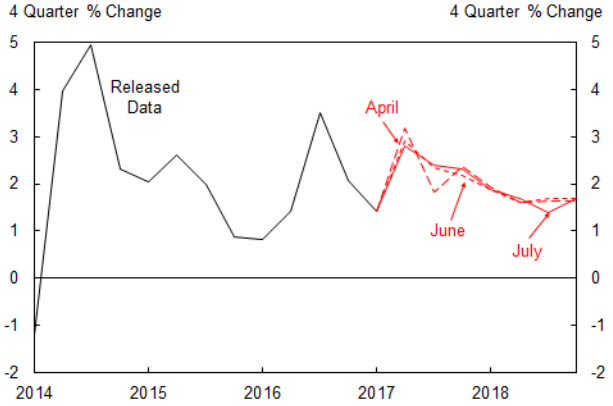
*Quarterly values are the average rate for the quarter. Yearly values are the difference between Q4 of the listed year and Q4 of the previous year.

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

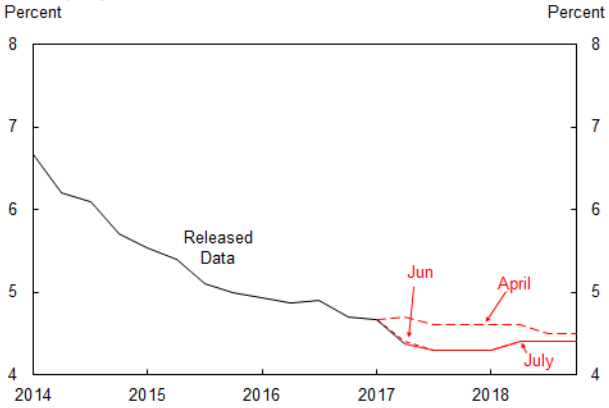
2-2: Evolution of Projected Quarterly Paths

Key Indicators

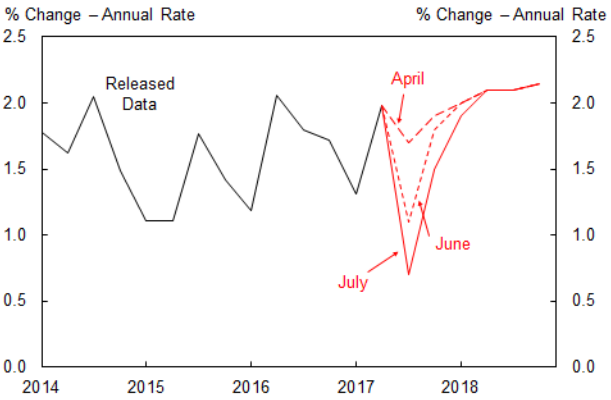
Real GDP Growth



Unemployment Rate

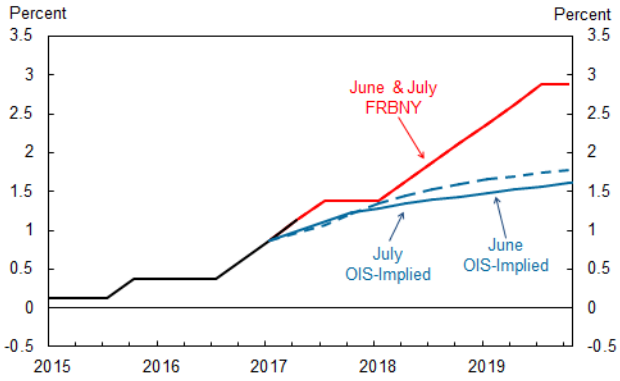


Core PCE Inflation

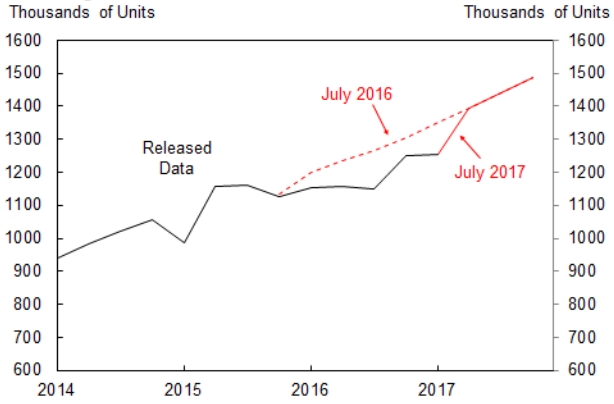


Forecast Assumptions

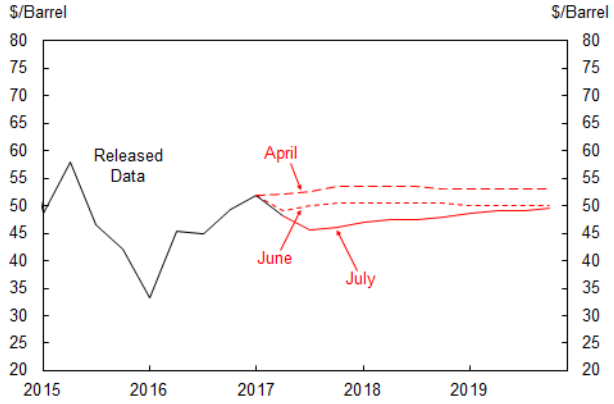
Federal Funds Rate



Housing Starts



Crude Oil



Source: FRBNY (MMS and IR Functions)

2-3: Near-Term Projections

	Growth Rates (AR)			Growth Contributions (AR)		
	2017Q2	2017Q3	2017Q4	2017Q2	2017Q3	2017Q4
OUTPUT						
Real GDP	2.8	2.4	2.3	2.8	2.4	2.3
	(2.9)	(2.4)	(2.2)	(2.9)	(2.4)	(2.2)
Final Sales to Domestic Purchasers	2.8	2.6	2.4	2.9	2.6	2.5
	(2.7)	(2.6)	(2.3)	(2.7)	(2.7)	(2.4)
Consumption	3.0	2.5	2.3	2.1	1.7	1.6
	(3.0)	(2.5)	(2.3)	(2.1)	(1.7)	(1.6)
BFI: Equipment	5.0	3.0	3.0	0.3	0.2	0.2
	(2.0)	(3.0)	(3.0)	(0.1)	(0.2)	(0.2)
BFI: Nonresidential Structures	10.0	6.0	4.0	0.3	0.2	0.1
	(15.0)	(4.0)	(3.0)	(0.4)	(0.1)	(0.1)
BFI: Intellectual Property Products	4.0	4.0	4.0	0.2	0.2	0.2
	(4.0)	(4.0)	(4.0)	(0.2)	(0.2)	(0.2)
Residential Investment	-3.1	8.6	10.2	-0.1	0.3	0.4
	(0.0)	(12.0)	(8.0)	(0.0)	(0.5)	(0.3)
Government: Federal	1.5	-0.3	-0.6	0.1	0.0	0.0
	(-0.3)	(-0.3)	(-0.6)	(-0.0)	(-0.0)	(-0.0)
Government: State and Local	1.0	0.9	0.9	0.1	0.1	0.1
	(0.2)	(0.9)	(0.9)	(0.0)	(0.1)	(0.1)
Inventory Investment	--	--	--	0.1	0.3	-0.1
	--	--	--	(0.3)	(0.2)	(-0.1)
Net Exports	--	--	--	-0.2	-0.5	-0.1
	--	--	--	(-0.2)	(-0.5)	(-0.0)
INFLATION						
Total PCE Deflator	0.1	1.3	2.0			
	(0.6)	(2.0)	(2.1)			
Core PCE Deflator	0.7	1.5	1.9			
	(1.1)	(1.8)	(2.0)			
PRODUCTIVITY AND LABOR COSTS*						
Output per Hour	0.9	1.3	1.8			
	(2.1)	(1.2)	(1.5)			
Compensation per Hour	3.4	3.4	3.1			
	(3.4)	(3.4)	(3.1)			
Unit Labor Costs	2.5	2.1	1.4			
	(1.3)	(2.2)	(1.6)			

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		
	2016	2017	2018	2016	2017	2018
OUTPUT						
Real GDP	2.0	2.2	1.7	2.0	2.2	1.7
	(2.0)	(2.2)	(1.7)	(2.0)	(2.2)	(1.7)
Final Sales to Domestic Purchasers	2.1	2.5	1.9	2.2	2.6	1.9
	(2.1)	(2.4)	(1.9)	(2.2)	(2.5)	(2.0)
Consumption	3.1	2.2	2.1	2.1	1.5	1.5
	(3.1)	(2.1)	(2.1)	(2.1)	(1.5)	(1.5)
BFI: Equipment	-3.8	4.7	2.0	-0.2	0.3	0.1
	(-3.8)	(3.8)	(2.0)	(-0.2)	(0.2)	(0.1)
BFI: Nonresidential Structures	1.9	10.4	2.5	0.0	0.3	0.1
	(1.9)	(12.1)	(2.5)	(0.0)	(0.3)	(0.1)
BFI: Intellectual Property Products	4.3	4.6	3.0	0.2	0.2	0.1
	(4.3)	(4.7)	(3.0)	(0.2)	(0.2)	(0.1)
Residential Investment	1.1	7.0	2.1	0.0	0.3	0.1
	(1.1)	(8.3)	(2.3)	(0.0)	(0.3)	(0.1)
Government: Federal	-0.2	-0.4	-0.7	0.0	0.0	0.0
	(-0.2)	(-0.8)	(-0.7)	(-0.0)	(-0.1)	(-0.0)
Government: State and Local	0.4	0.7	1.0	0.0	0.1	0.1
	(0.4)	(0.4)	(1.0)	(0.0)	(0.0)	(0.1)
Inventory Investment	--	--	--	-0.1	-0.2	0.0
	--	--	--	(-0.1)	(-0.2)	(-0.0)
Net Exports	--	--	--	-0.2	-0.1	-0.3
	--	--	--	(-0.2)	(-0.1)	(-0.2)
INFLATION						
Total PCE Deflator	1.4	1.4	2.1			
	(1.4)	(1.8)	(2.1)			
Core PCE Deflator	1.7	1.5	2.1			
	(1.7)	(1.7)	(2.1)			
PRODUCTIVITY AND LABOR COSTS*						
Output per Hour	1.1	1.0	1.2			
	(1.1)	(1.2)	(1.0)			
Compensation per Hour	1.5	3.0	3.7			
	(1.5)	(3.0)	(3.7)			
Unit Labor Costs	0.4	2.0	2.5			
	(0.4)	(1.8)	(2.7)			

Note: Numbers in parentheses are from the previous Blackbook.

*Nonfarm business sector.

2-5: Comparison with Other Forecasts

Real GDP Growth

	Release Date	2017Q2	2017Q3	2016 Q4/Q4	2017 Q4/Q4
FRBNY	7/17/2017	2.8	2.4	2.0	2.2
		(2.9)	(2.4)	(2.0)	(2.2)
Blue Chip	7/10/2017	2.8	2.5	2.0	2.2
		(3.1)	(2.4)	(2.0)	(2.1)
Median SPF	5/12/2017	3.1	2.5	2.0	2.1
		(3.1)	(2.5)	(2.0)	(2.1)
Macro Advisers	7/7/2017	2.6	3.0	2.0	2.3
		(2.9)	(2.9)	(2.0)	(2.2)
FRBNY-DSGE	7/17/2017	2.8	2.5	2.0	2.2
		(2.9)	(2.2)	(2.0)	(2.1)
Median SPD	6/5/2017	--	--	2.0	2.2
		--	--	(2.0)	(2.2)

Core PCE Inflation

	Release Date	2017Q2	2017Q3	2016 Q4/Q4	2017 Q4/Q4
FRBNY	7/17/2017	0.7	1.5	1.7	1.5
		(1.1)	(1.8)	(1.7)	(1.7)
Median SPF	5/12/2017	1.7	1.9	1.7	1.9
		(1.7)	(1.9)	(1.7)	(1.9)
Macro Advisers	7/7/2017	0.7	1.4	1.7	1.4
		(1.0)	(1.5)	(1.7)	(1.8)
FRBNY-DSGE	7/17/2017	0.7	1.0	1.7	1.2
		(1.1)	(1.2)	(1.7)	(1.4)
Median SPD	6/5/2017	--	--	1.7	1.9
		--	--	(1.7)	(1.9)

Unemployment*

	Release Date	2017Q2	2017Q3	2016 Q4/Q4	2017 Q4/Q4
FRBNY	7/17/2017	4.4	4.3	-0.3	-0.4
		(4.4)	(4.3)	(-0.3)	(-0.4)
Blue Chip	7/10/2017	4.4	4.3	-0.3	-0.5
		(4.6)	(4.5)	(-0.3)	(-0.3)
Median SPF	5/12/2017	4.5	4.4	-0.3	-0.3
		(4.5)	(4.4)	(-0.3)	(-0.3)
Macro Advisers	7/7/2017	4.3	4.2	-0.3	-0.6
		(4.3)	(4.2)	(-0.3)	(-0.5)
Median SPD	6/5/2017	--	--	-0.3	-0.2
		--	--	(-0.3)	(-0.2)

Note: Numbers in gray are from the previous Blackbook.

*Yearly values are the difference between Q4 of the listed year and Q4 of the previous year.

2-6: Tealbook Comparison

	FRBNY (Q4/Q4)			Tealbook (Q4/Q4)		
	2016	2017	2018	2016	2017	2018
OUTPUT						
Real GDP Growth	2.0	2.2	1.7	2.0	2.3	2.2
	(2.0)	(2.2)	(1.7)	(2.0)	(2.4)	(2.2)
GDP Growth Contributions						
Final Sales to Domestic Purchasers	2.2	2.6	1.9	2.1	2.5	2.3
	(2.2)	(2.5)	(2.0)	(2.1)	(2.5)	(2.5)
Consumption	2.1	1.5	1.5	2.1	1.7	1.8
	(2.1)	(1.5)	(1.5)	(2.1)	(1.6)	(2.0)
BFI	0.0	0.7	0.3	0.0	0.7	0.4
	(-0.0)	(0.7)	(0.3)	(0.0)	(0.7)	(0.4)
Residential Investment	0.0	0.3	0.1	0.0	0.0	0.1
	(0.0)	(0.3)	(0.1)	(0.0)	(0.2)	(0.1)
Government	0.0	0.0	0.1	0.0	0.1	0.1
	(0.0)	(-0.0)	(0.1)	(0.0)	(0.1)	(0.1)
Inventory Investment	-0.1	-0.2	0.0	0.0	-0.2	0.0
	(-0.1)	(-0.2)	(-0.0)	(0.0)	(-0.1)	(-0.1)
Net Exports	-0.2	-0.1	-0.3	-0.2	0.0	-0.2
	(-0.2)	(-0.1)	(-0.2)	(-0.2)	(-0.2)	(-0.3)
INFLATION						
Total PCE Deflator	1.4	1.4	2.1	1.4	1.4	1.9
	(1.4)	(1.8)	(2.1)	(1.4)	(1.6)	(1.9)
Core PCE Deflator	1.7	1.5	2.1	1.7	1.5	1.9
	(1.7)	(1.7)	(2.1)	(1.7)	(1.6)	(1.9)
LABOR MARKET						
Unemployment Rate (Avg. Q4 Level)	4.7	4.3	4.4	4.7	4.2	4.0
	(4.7)	(4.3)	(4.4)	(4.7)	(4.2)	(3.9)
Participation Rate (Avg. Q4 Level)	62.7	62.8	62.9	62.7	62.7	62.5
	(62.7)	(62.9)	(63.1)	(62.7)	(62.7)	(62.5)
Avg. Monthly Nonfarm Payroll Growth (Thous.)	194	156	110	187	177	167
	(194)	(156)	(136)	(187)	(166)	(167)
SAVING						
Personal Saving Rate (Avg. Q4 Level)	4.9	5.3	4.9	4.9	4.7	5.0
	(4.9)	(5.1)	(4.7)	(4.9)	(5.0)	(5.8)
HOUSING						
Housing Starts (Avg. Q4 Level, Thous.)	1305	1485	--	1200	1200	1300
	(1305)	(1485)	--	(1200)	(1200)	(1300)
INTREST RATE ASSUMPTION						
Fed Funds Rate*	0.63	1.38	2.13	0.63	1.41	2.51
	(0.63)	(1.38)	(2.13)	(0.63)	(1.48)	(2.70)

Note: Numbers in parentheses are from the previous Blackbook and Tealbook.

* FRBNY numbers indicate end of year Federal Funds Rate, Tealbook numbers indicate average of Q4 Federal Funds Rate.

3. Uncertainty & Risks

Developments during the intermeeting period indicate a further modest reduction in uncertainty around the outlook from the assessment in the June *Blackbook*. Based on the difference between the modal forecast and the expected value from our forecast distributions [Exhibit 3-1], as well as the changes in the distributions [Exhibit 3-3], the risks to growth are roughly balanced through much of the forecast horizon. For core PCE inflation, the risks are balanced throughout the forecast horizon. The widths of the growth probability intervals are slightly narrower than those in the June *Blackbook*, while the 90 percent probability interval for inflation has narrowed further because of another reduction in upside tail risks. The uncertainties around the GDP growth and inflation projections are relatively close to their respective historical norms.

As discussed earlier in this *Blackbook*, recent data generally have been consistent with our prior outlook. Growth over 2017H1 is anticipated to have been around 2 percent (annual rate), close to the June *Blackbook* projection. The FRBNY nowcasts for 2017Q2 and 2017Q3 real GDP growth both fluctuated within narrow ranges over the intermeeting period, and both were at 2.0 percent on July 19. The June labor market report generally indicated further strengthening in labor market conditions as payroll growth was solid again and the unemployment rate remained low; however, wage growth was again subdued. Inflation indicators were again on the soft side in May and June. Longer-term inflation compensation from TIPS remained low. Our SCE 3-year inflation expectations measure rebounded in June, and the Michigan measure of longer-run expectations rose slightly in mid-July. Both of these survey measures remained relatively low. The economic data for the major foreign economies were generally solid, and generally consistent with our outlook.

Financial conditions were little changed. Longer-term nominal and real Treasury yields increased modestly. Sovereign yields in many advanced economies rose more notably following central bank communications that were interpreted as implying a less accommodative path in those economies. Corporate credit spreads to Treasuries remained narrow. Major U.S. equity indexes rose moderately and implied volatility remained low. Oil prices fluctuated within narrow ranges and were little changed on net at relatively low levels. The nominal broad dollar index

fell about 1¾ percent over the period. The market-implied expected path of the federal funds rate over the medium term was little changed.

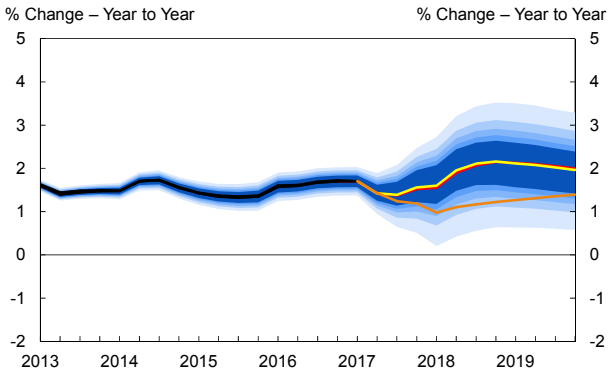
In response to the developments, we made small changes in the scenario probabilities [Exhibit 3-2]. The soft inflation data and subdued wage growth contributed to a further reduction in the probability of the *Loss of Credibility* scenario. With improvement in the global outlook and financial conditions, as well as the apparent successful resolution of some troubled European banks, we reduced slightly the weight on the adverse *Global Credit Crunch* scenario.

These changes in scenario probabilities led to a further narrowing in the 90 percent probability intervals for GDP growth and core PCE inflation [Exhibit 3-3]. There was a further decline in the upper band around the inflation projection, reflecting lesser upside tail risks associated with the *Loss of Credibility* scenario. The intervals for GDP growth and for core PCE inflation are relatively close to their respective historical norms. Based on the difference between the mode and the mean of the forecast distribution, the GDP growth distribution signals that the risks to activity are roughly balanced through most of 2018 and slightly skewed to the downside thereafter, while the risks to inflation are balanced overall throughout the forecast horizon [Exhibit 3-1].

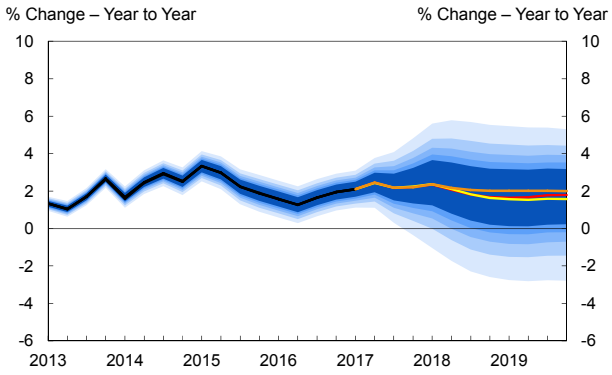
In a comparison to the forecast distribution from a year earlier, the current projections for inflation and GDP growth are within the 50 percent probability intervals, which is partly a reflection of the wide bands at that time following the "Brexit" vote [Exhibit 3-3]. The current inflation projection runs in the lower half of the distribution through the first half of 2018, reflecting the recent low inflation data. Thereafter, the inflation projection is in the upper half of the distribution as we continue to anticipate inflation to overshoot the longer-run objective in 2018 and 2019. The current real GDP growth projection is in the upper half of the distribution, as we project growth to be moderately stronger than we had in mid-2016.

3-1: Forecast Distributions

Core PCE Inflation Forecast Distribution



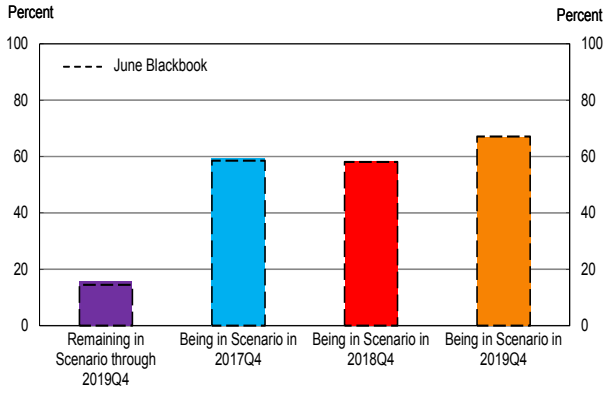
Real GDP Growth Forecast Distribution



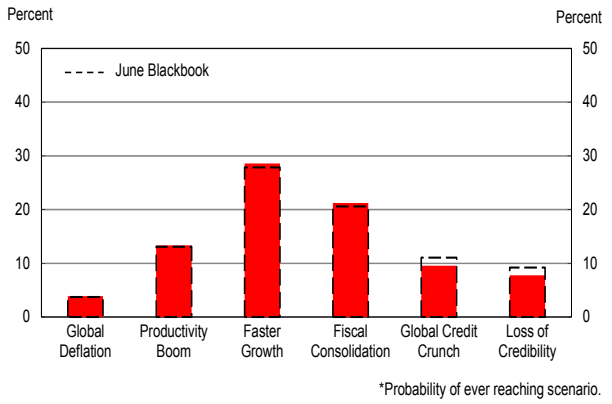
The yellow line is the expected value of the forecast distribution, the red line is the FRBNY central projection, the orange line is the DSGE forecast, and the black line is released data. The shading represents the 50, 60, 70, 80 and 90 percent probability that the four-quarter change will be within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

3-2: Scenario Probabilities

Central Scenario Probabilities



Alternative Scenario Probabilities*

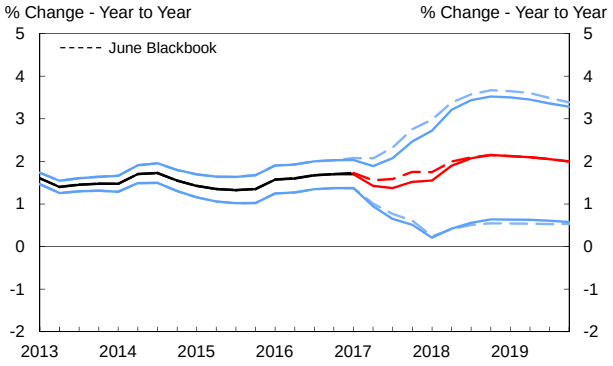


The left chart shows the probability of remaining in the central scenario through the end of the forecast horizon and the probabilities of being in the central scenario at the end of the next three years. The right chart shows the probabilities of ever reaching an alternative scenario over the forecast 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.

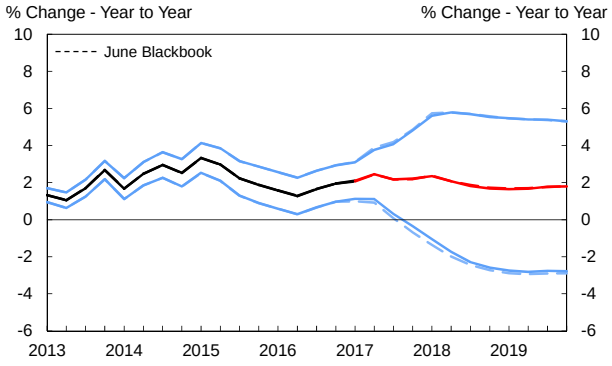
Source: MMS Function (FRBNY)

3-3: Evolution and Performance of Forecast Distributions

Change in Core PCE Inflation Forecast Distribution

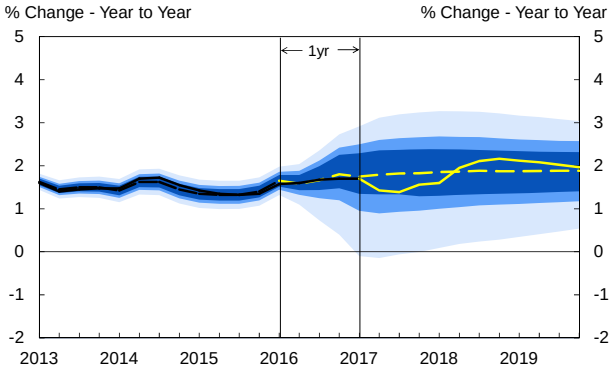


Change in Real GDP Growth Forecast Distribution

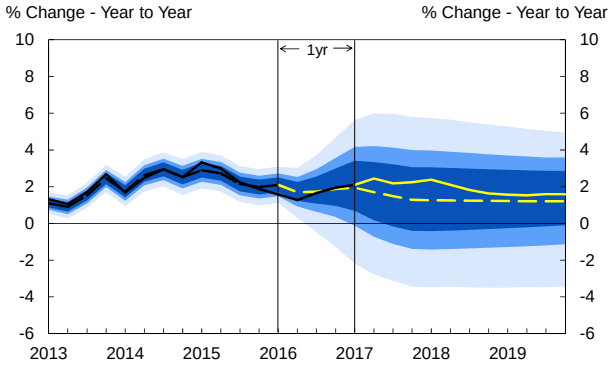


The red lines are the central scenario projections, black lines are released data, and blue lines represent upper and lower 90 percent forecast probability intervals. Dashed lines represent forecasts from the previous Blackbook.

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

RESEARCH AND STATISTICS GROUP

FRBNY Blackbook

September 2017

CLASS II FOMC - RESTRICTED (FR)

FRBNY BLACKBOOK

September 2017

CONTENTS

APPENDIX

1. Policy Recommendation and Rationale

Despite the disruptions stemming from the recent major hurricanes, intermeeting developments point to stronger growth over the course of 2017H2 than we previously projected. However we continue to forecast that growth will be near potential in 2018 – 19. The medium-term inflation outlook is also substantially unchanged, with core PCE inflation expected to rebound from low recent readings, reaching 2 percent next year and slightly above that in 2019. Risks around the growth and inflation outlooks remain roughly balanced. Financial conditions have eased further, with long-term Treasury yields edging lower and the dollar continuing to depreciate. The market-implied expected path of the federal funds rate shifted lower over the intermeeting period and flattened: Pricing implies that the expected federal funds rate does not reach 1½ percent until sometime in 2020. The market-implied probability of a rate hike before the end of the year is roughly one-third. In comparison, respondents in the September Desk surveys assign a 57 percent unconditional probability to this event.

Consequently, the tension between market expectations and our policy recommendation, which remains as outlined in the July *Blackbook*, has become somewhat more pronounced. We believe that a 25 bps increase in the FFR target range at the December meeting remains appropriate, given our assessment of developments since July. Three additional 25 bps increases in each of the following two years will be needed if conditions evolve as expected.

Real GDP growth in Q2 was 3.0 percent (annual rate), reflecting stronger growth in consumer and business equipment spending, leaving growth in 2017H1 at just above 2 percent. Our projection is that real GDP growth will average 2.9 percent in H2. We currently anticipate that hurricane effects will be modest and transitory, with little net effect on average growth over the two quarters. The favorable H2 growth outlook is tied to continued strengthening in the labor market, the good condition of the aggregate household balance sheet, and overall accommodative financial conditions.

In 2018 growth is anticipated to slow to near our estimate of the economy's potential growth rate, which remains at 1¾ percent, and then to stay near that rate in 2019, as the ongoing normalization of monetary policy is expected to tighten financial conditions somewhat. Notably,

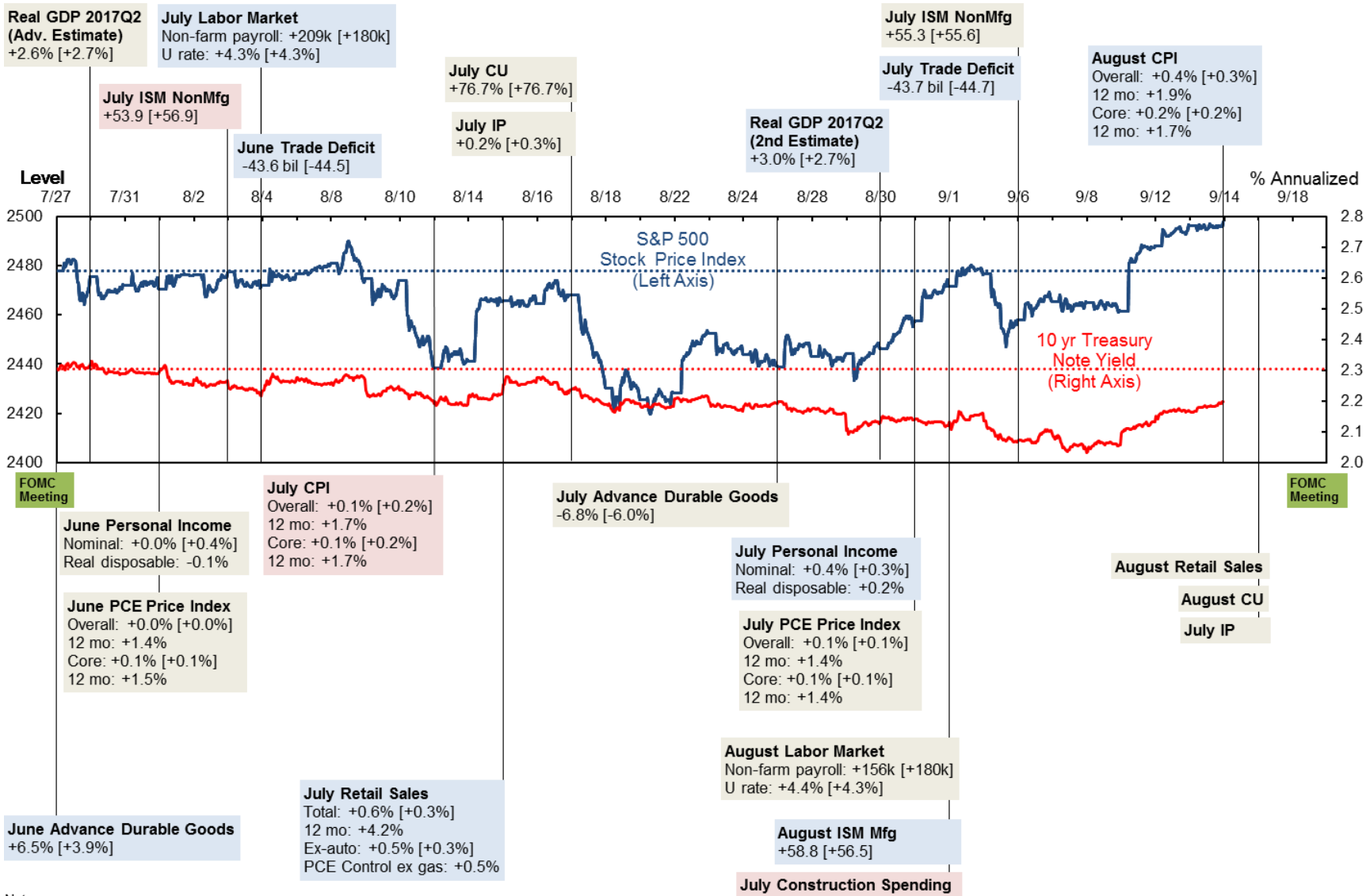
we expect productivity growth in the nonfarm business sector to be 1.0 percent in 2018 and 1.3 percent in 2019. Such a path for productivity growth would be a step-up from what we have observed in recent years. Much of the productivity data since mid-2016 and the early indicators for Q3 signal such a shift.

Readings on overall and core PCE inflation have remained soft, leading to further modest declines in the 12-month changes. Measures of market-implied longer-term inflation compensation were little changed over the intermeeting period and remain low on a historical basis. The median of 3-year inflation expectations declined 0.1 percentage point in the August SCE survey. Longer-term inflation expectations in the Michigan survey fell by a similar amount in August. Both survey measures remain low. We maintain our assessment that the recent softness in inflation is largely transitory; however, continued moderate readings in the months ahead would prompt a reassessment of the inflation outlook. For now, we expect inflation to remain somewhat below the Committee's longer-run objective for the remainder of 2017, but to rebound to match it in 2018 and then rise slightly above it in 2019.

Financial conditions eased further over the intermeeting period. Longer-term Treasury yields edged lower, credit spreads remained quite narrow, realized and implied volatility generally continued to be low, and equity prices moved modestly higher. The broad dollar index fell appreciably, building on declines in June and July.

As the outlook has not materially changed and financial conditions remain generally buoyant, we do not see reason to change our previous recommendation: One 25 bps policy rate hike would be appropriate before the end of the year if fundamentals evolve generally in line with our projections. As far as the timing is concerned, remaining on hold at the September and October/November meetings will allow time to evaluate the data flow to confirm our view that the recent softness of inflation is transitory. We also believe that it is now appropriate to start a phase-out of reinvestment as the policy rate is sufficiently away from the effective lower bound. We thus recommend a September announcement that balance sheet normalization will start in October. Aligning such major policy announcements with press-conference meetings would allow more extensive communication around these actions. In addition, staggering balance sheet

and federal funds rate policy actions should help minimize risks of financial market overreaction to multiple policy-tightening actions. The appropriateness of a December rate hike can be reassessed if upcoming inflation readings remain soft, or should the start of balance sheet normalization prompt an unexpectedly sharp tightening in financial conditions.



Note
Blue shading: Data release encouraging/positive.
Red shading: Data release discouraging/negative.
Grey shading: Data release was neutral.
Numbers in square brackets are the median of the Bloomberg survey.
Numbers in parentheses represent changes from the prior month.

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, growth of real GDP in the second quarter was 3.0% at an annual rate, up from the advance estimate of 2.6%. The main contributor to the upward revision was real personal consumption expenditures, which are now estimated to have increased at a 3.3% annual rate versus 2.8% in the advance report. The personal saving rate for 2017Q2 was revised downward from 3.8% to 3.7%. The growth rate of nonresidential fixed investment was also revised upward, to 6.9% from 5.2%, primarily reflecting an upward revision in intellectual property products. The 2017Q2 inflation rate as measured by the overall PCE deflator remained at +0.3% (annual rate) and that measured by the core PCE deflator was unchanged at +0.9%.

With the upward revision of growth of real output, growth of labor productivity in the nonfarm business sector was revised up to 1.5% (annual rate) from the advance estimate of 0.9%. The four-quarter change of productivity was 1.4% as of 2017Q2, the highest since the second quarter of 2015. Compensation per hour rose at a 1.8% annual rate in Q2 and is up just 1.1% over the past four quarters. Unit labor costs fell modestly over the four quarters ending in 2017Q2, a marked slowing from the 1.8% increase over the four quarters of 2016. This development is receiving a great deal of attention in the discussion of the likely future path for inflation in the U.S.

The expenditure side data for July and August have suggested that growth of real GDP in the third quarter would be around 3%, possibly higher. However, Hurricanes Harvey and Irma will likely depress the Q3 growth rate somewhat. We have introduced a ¼ percentage point hit to the Q3 growth rate, mainly through somewhat slower growth of consumer spending—electricity in particular—and a slower pace of inventory investment due to production disruptions, especially in the energy and related chemicals sectors. The Board is assuming a ½ percentage point reduction of GDP due to the hurricanes, while Goldman Sachs has concluded that the impact could be as high as a full percentage point. We are guided by how quickly economic activity rebounds following even very severe storms such as Hurricane Sandy. Indeed, on page 6 of the Tealbook a chart is presented indicating that daily electronic retail spending in Texas returned to

its baseline within six days of Hurricane Harvey making landfall. This experience was quite similar to what happened in New York and New Jersey following Hurricane Sandy. Another offsetting effect is that truckloads of needed supplies flow into the areas affected by the storms from areas of the country not affected, likely resulting in a boost to production in those areas that would not have occurred otherwise.

Consumer spending grew at a 3% annual rate in July, somewhat better than expected. Even before the hurricanes, we anticipated some slowing from that pace in August and September, with the Q3 growth rate of real PCE in the 2 ½% to 3% range. Growth of real disposable income slowed to 2¼% (annual rate) in July, and the personal saving rate, at 3.5% in July, has been declining since this past February. Total sales of light-weight motor vehicles declined to 16.1 million units (seasonally-adjusted annual rate) in August from 16.8 million in July. These sales have been on a downward trend since peaking at 18.2 million in December of 2016. Also noteworthy, the month of August was unusually cool in the 48 contiguous states, with cooling degree days nearly 12 percent below the average of the preceding five years. This will dampen growth of consumer spending for the month.

Total housing starts have been little changed over the three months ending in July, with the three month moving average—1.165 million units (SAAR)—running below the 1.24 million unit average of 2017Q1. Multi-family starts have fallen sharply in recent months, with the three-month moving average at 329,000 in July versus 431,000 this past February. We believe that the starts data do not provide an accurate picture of what is happening in this sector. The three-month moving average of multi-family permits was 424,000 in July, down from around 470,000 over the second half of 2016 but quite a bit higher than the recent level of starts. We do believe that multi-family starts have essentially peaked, at least for the near-term. There is a high volume of multi-family units under construction. In addition, the overall rental vacancy rate has increased modestly in the three quarters through 2017Q2, and the rate of increase of rents has flattened out in recent months. Single-family starts remain on a gradual uptrend which we expect to continue. Home prices are rising at a brisk pace, homebuilder confidence remains high, and mortgage interest rates remain quite attractive. The Mortgage Bankers Association's index of applications for mortgages to purchase homes, which had drifted lower during July and August,

has popped back to the average level of June during the second week of September. Spending on improvements to the existing housing stock also appears to be rebounding in the third quarter following a second quarter decline. At this point we expect modest growth of real residential investment in Q3 following a 6.5% annual rate decline in the second quarter. In the fourth quarter we anticipate double digit growth of residential investment, spurred in part by rebuilding activity in Texas and Florida.

Growth of real business investment in new equipment appears to have gotten off to a strong start in July, with shipments of nondefense capital goods excluding aircraft up 1.2% over the month while imports of capital goods increased 2.4%. (Shipments are up 6% over the 12 months ending in July whereas they were down 8% over the year ending in July 2016.) New orders for nondefense capital goods rose 1% in July and were up nearly 4% over the year. The levels of shipments and new orders are essentially equal but both are rising. At this time we expect growth of real business investment in new equipment of 12% (annual rate) in Q3, up from the 8.8% increase of Q2.

While investment in new equipment finally appears to be strengthening, the same cannot be said for investment in new nonresidential structures. Private nonresidential construction put in place fell by 1.9% in July on the heels of a 1.6% decline in June. The July level was 3.6% below that of a year ago. The weakness in this sector is broad based. We now project that real business investment in nonresidential structures will decline at a 5% annual rate in 2017Q3 after rising briskly over the first half of the year due to a revival of oil and gas drilling activity. (Such activity was essentially unchanged from June to July following a major ramping up over the preceding 12 months.)

Another factor in our expectation of continued firm growth in Q3 is that after virtually no inventory accumulation over the first half of this year, based on data for July the pace of inventory investment appears to be increasing somewhat in Q3, resulting in a positive growth contribution—around ¼ percentage point. However, the aggregate inventory sales ratio is expected to continue to decline in the third quarter, particularly with the hurricane associated loss of output.

The recent trade data came in a notch better than expected in the July Blackbook, with real exports for the current quarter expected to increase at a 3.2% annual rate while real imports increase at a 1.8% annual rate, resulting in a net export growth contribution of +0.1 percentage point for Q3.

For the third quarter we expect the government sector to continue to act as a modest drag on growth, as was the case over the first half of this year. While federal outlays are quite volatile from month to month, they declined sharply in July. Total federal employment is on a very gradual downward trend over the past year. At the state and local level, the July-August level of employment is below that of Q2. In addition, state and local government construction put in place continued to decline sharply in July.

Recent supply side data have been mixed. Nonfarm payroll employment increased by 156,000 in August, below the consensus expectation of an 180,000 increase. In addition, payroll gains for June and July were revised down by a cumulative 41,000. Hours worked declined by 0.2% in August, while average hourly earnings rose just 0.1%. Both employment gains and hours worked for September are likely to be adversely affected by the hurricanes. The unemployment rate rose to 4.4% from 4.3% in July, with the labor force participation rate unchanged at 62.9%. The participation rate has been rising very gradually since 2015 at which point the unemployment rate had declined to 5%.

Manufacturing output was unchanged in July, due primarily to a continuing decline in motor vehicle production which hit a local peak this past April. That sector has experienced an increase in inventories as sales have been trending lower this year. Excluding motor vehicles, manufacturing output rose 0.2% in July and is up 1.6% over the past year. This is the largest 12 month increase since January of 2015.

The ISM (Institute for Supply Management) manufacturing composite index rose to 58.8 in August from 56.3 in July. This is the highest level for this manufacturing sector barometer since April of 2011. In addition, the new orders subcomponent remained slightly above 60. The ISM

non-manufacturing composite index increased to 55.3 in August from 53.9 in July, although it averaged 57 over the first half of this year.

Both the total and the core PCE deflator rose 0.1% in July, with the 12-month changes both at 1.4%. The 12-month change of the core PCE deflator was 1.5% in June and 1.9% this past January. After several months of softness, the CPI for August (released September 14) was above recent trends: Overall CPI rose 0.4% and core CPI increased 0.25% in the month. We expect the core PCE deflator to increase by 1.6% (annual rate) in the third quarter, up from 0.9% in the second quarter. The 12-month change will likely remain around 1.5% over the remainder of the year. We have noticed that at the three-month horizon, the decline of the price of cellular telephone services has moderated significantly. At the same horizon, the price of prescription drugs has shot up while the rate of increase of owners' equivalent rent has begun to move back up.

Despite the slowing of core inflation thus far this year, the median response of household inflation expectations at the one-year-ahead horizon from the Michigan survey was unchanged in August at 2.6%, which is what they averaged over the first half of 2017. Longer-dated household inflation expectations declined slightly, to 2.5% from 2.6% in July, but remained near the average of the past two years.

The Outlook

We now expect growth of real GDP to average 2.9% over the second half of the year, up from 2.4% in the July Blackbook. Growth of final sales to domestic purchasers is projected at around 2½%, about the same as over the first half of this year, while inventory investment contributes about 0.3 percentage points to growth after having exerted a substantial drag over the first half of the year. On balance, net exports are expected to be a modest drag on growth over the second half of the year, due largely to an anticipated faster pace of growth of real imports in Q4. With the upward revision to the second half, we now project real GDP growth of 2.5% (Q4/Q4) for 2017, up from 2.2% in July. As we have expected for some time, growth is projected to slow to around 1¾% in 2018 due largely to the ongoing tightening of financial conditions associated

with the gradual normalization of monetary policy. In this cycle we have added 2019 to our forecast horizon and assume that growth will be around its potential rate in that year as well.

The fundamentals for consumer spending look solid, with the labor market near full employment, the job opening rate considerably higher than in the mid-2000s, and consumer confidence at high levels. Real disposable income is expected to slow over the second half of 2017 to around 1½%--from 3% over the first half—reflecting rising energy prices and some slowing in growth of hours worked. The personal saving rate is expected to average 3.2% over 2017H2 versus 3.8% over H1, but this does not appear to be at odds with underlying fundamentals as the ratio of household net worth to disposable income is at a record high. We do believe that light-weight vehicle sales have likely peaked for this cycle due to tightening of credit conditions in that sector, but there are lots of other things for consumers to spend their money on. Growth of real PCE is expected to slow to around 2% in 2018 and 2019 as part of the general slowing of growth, with the personal saving rate drifting down somewhat.

Even though multi-family housing starts appear to have peaked, we believe that the fundamentals for the single-family sector should result in continued gradual increases in starts and sales. The inventory of single-family homes is very lean, with bidding wars cropping up in some markets. Another part of the housing market that should support growth for the sector overall is improvements to the existing stock. Some needed repairs were postponed over the past several years, and contractors report much stronger activity of late. In addition, press reports indicate that the demand and supply of cash-out refinancings and home equity loans have begun to increase.

Business fixed investment grew at a 7% annual rate over the first half of 2017, a significant improvement over the preceding two years. However, much of that strengthening is due to developments in the energy sector, which should fade over time given our expectation that oil prices will be essentially flat over the forecast horizon. As mentioned above, the recent data on new orders for nondefense capital goods have been encouraging, so we have boosted real investment in new equipment somewhat. However, investment in nonresidential structures is

shaping up to be weaker than previously expected. On balance, we expect relatively modest growth of BFI, as has been a feature of this cycle to date.

Since the last Blackbook the dollar continued to weaken on a trade-weighted basis, and we now expect the dollar to decline in 2017 by 6.1% (Q4/Q4) relative to a decline of 2.8% in the previous Blackbook. Combined with the robust growth rates for the global economy in the first half of 2017, we therefore upgraded our projection for 2017 exports growth to 4.4% (Q4/Q4) and downgraded the corresponding imports growth forecast to 3.0%. As a consequence, the net export contribution to real GDP growth in 2017 is now expected to be around +0.1 percentage point (Q4/Q4), an increase from a projected net export growth contribution of -0.1 percentage point in the July Blackbook. Beyond 2017, however, our outlook does not contain the necessary ingredients to keep export growth elevated. From the second half of 2017 onwards we expect export-weighted foreign real GDP growth to slow, with foreign real GDP growth moving from 2.7% (Q4/Q4) in 2017 to 2.4% in 2018 and 2.5% 2019. Similar to the Tealbook, we project the trade-weighted dollar to appreciate by 2.2% (Q4/Q4) in both 2018 and 2019. In real terms, the dollar is expected to appreciate more, as U.S. CPI inflation is forecast to accelerate to 2.6% (Q4/Q4) in 2018 and 2019 whereas trade-weighted foreign CPI inflation is expected to stay flat around 2.1% (Q4/Q4) over the forecast horizon. Consequently, export growth is projected to decelerate to around 3.0% (Q4/Q4) annually beyond 2017. Import growth, on the other hand, remains robust based on our domestic demand outlook for 2018 and 2019, helped by the projected real dollar appreciation that makes imports cheaper. This implies, given the respective GDP shares of exports and imports, that trade will become a drag on real GDP growth, with net export growth contributions of around -0.2 and -0.4 percentage point (Q4/Q4) in 2018 and 2019, respectively.

As has been the case for the past few cycles, we continue to hold off on incorporating any fiscal stimulus into our forecast. There is some talk of tax reform/tax cut legislation, but we suspect that it will take longer to emerge than is now being expressed by the Administration and some members of Congress. In that case, the growth contribution from the government sector should be essentially zero.

For roughly the next six to twelve months, we expect the economy to grow at a somewhat above its potential rate, further reducing slack in the labor market. Indeed, as mentioned above, our projection for growth of real GDP over 2017H2 is now up to 2.9%. Relative to some forecasts, our projected decline of the unemployment rate in response to the above potential growth is relatively muted, however, due to firming of productivity growth and the gradual rise of the labor force participation rate. However, we have lowered our projected path of the unemployment rate somewhat, averaging 4.2% over the first half of 2018, and then rising to 4.3% by 2018Q4 and to 4.4% by 2019Q4. Average monthly gains in nonfarm payroll employment should slow from around 170,000 in 2017 to the 120,000 in 2018 and 100,000 in 2019.

While core inflation has slowed in recent months, we suspect that the bulk of this slowing is due to temporary factors that will gradually dissipate over time: The CPI data for August were consistent with this hypothesis. Nonetheless, the 2017Q4/Q4 increase of the core PCE deflator is now projected at 1.5%. In light of this lower near term path, we have lowered very slightly our projection for the 2018Q4/Q4 increase of the core PCE deflator to 2.0% from 2.1% in the July Blackbook. Core inflation then rises to 2.2% in 2019, a slight overshoot of the FOMC's target to correspond with the undershoot of the unemployment rate.

2-1: Projections of Key Variables

	Core PCE Inflation		Real GDP Growth		Unemployment Rate*		Fed Funds Rate**	
	Jul	Sep	Jul	Sep	Jul	Sep	Jul	Sep
2017								
Q1	*2.0*	*1.8*	*1.4*	*1.2*	*4.7*	*4.7*	*0.88*	*0.88*
Q2	0.7	*0.9*	2.8	*3.0*	*4.4*	*4.4*	*1.13*	*1.13*
Q3	1.5	1.6	2.4	2.9	4.3	4.4	1.38	1.13
Q4	1.9	1.7	2.3	2.9	4.3	4.3	1.38	1.38
2018								
Q1	2.1	1.8	1.9	1.6	4.3	4.2	1.38	1.38
Q2	2.1	1.9	1.7	2.0	4.4	4.2	1.63	1.63
Q3	2.2	2.0	1.4	1.5	4.4	4.3	1.88	1.88
Q4	2.2	2.1	1.7	1.9	4.4	4.3	2.13	2.13
2019								
Q1	--	2.1	--	2.1	--	4.3	2.38	2.38
Q2	--	2.2	--	1.4	--	4.3	2.63	2.63
Q3	--	2.2	--	1.5	--	4.4	2.88	2.88
Q4	--	2.2	--	1.7	--	4.4	2.88	2.88
Q4/Q4								
2016	*1.7*	*1.9*	*2.0*	*1.8*	*-0.3*	*-0.3*	*0.63*	*0.63*
2017	1.5	1.5	2.2	2.5	-0.4	*-0.4*	1.38	1.38
2018	2.1	2.0	1.7	1.7	0.1	0.0	2.13	2.13
2019	--	2.2	--	1.7	--	0.1	2.88	2.88

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

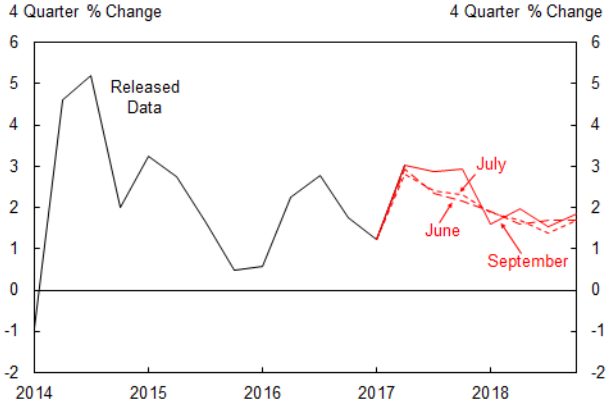
*Quarterly values are the average rate for the quarter. Yearly values are the difference between Q4 of the listed year and Q4 of the previous year.

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

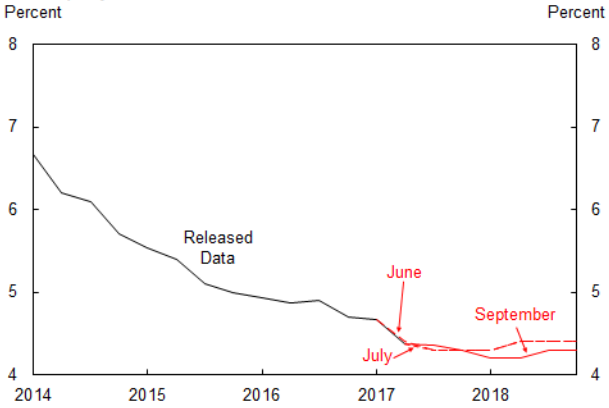
2-2: Evolution of Projected Quarterly Paths

Key Indicators

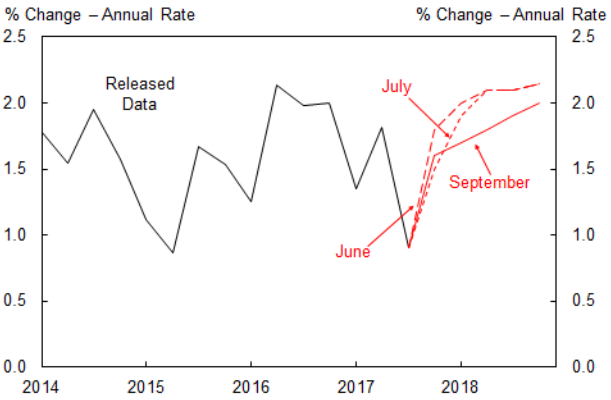
Real GDP Growth



Unemployment Rate

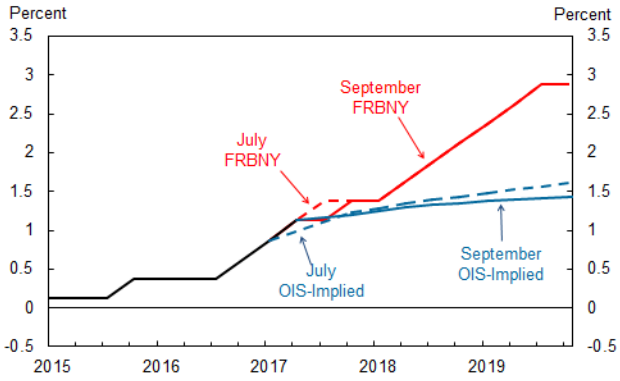


Core PCE Inflation

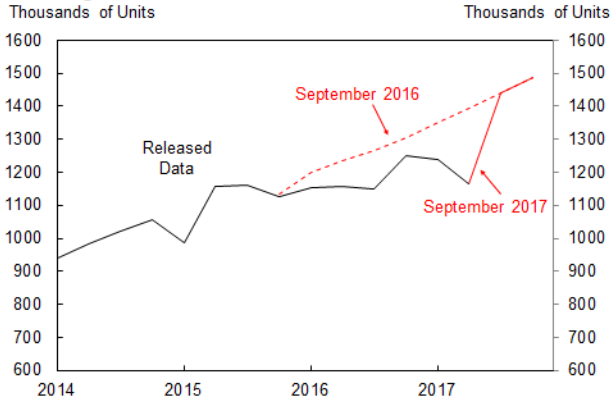


Forecast Assumptions

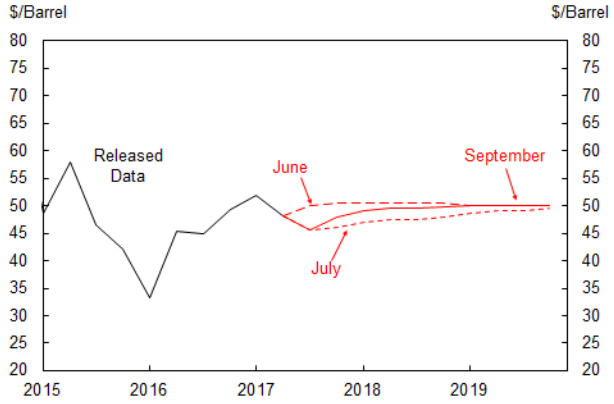
Federal Funds Rate



Housing Starts



Crude Oil



Source: FRBNY (MMS and IR Functions)

2-3: Near-Term Projections

	Growth Rates (AR)			Growth Contributions (AR)		
	2017Q3	2017Q4	2018Q1	2017Q3	2017Q4	2018Q1
OUTPUT						
Real GDP	2.9	2.9	1.6	2.9	2.9	1.6
	(2.4)	(2.3)	(1.9)	(2.4)	(2.3)	(1.9)
Final Sales to Domestic Purchasers	2.3	2.8	1.9	2.4	2.8	1.9
	(2.6)	(2.4)	(1.8)	(2.6)	(2.5)	(1.8)
Consumption	2.5	2.3	2.2	1.7	1.6	1.5
	(2.5)	(2.3)	(2.2)	(1.7)	(1.6)	(1.5)
BFI: Equipment	12.0	8.0	4.0	0.6	0.4	0.2
	(3.0)	(3.0)	(2.0)	(0.2)	(0.2)	(0.1)
BFI: Nonresidential Structures	-5.0	4.0	3.0	-0.1	0.1	0.1
	(6.0)	(4.0)	(3.0)	(0.2)	(0.1)	(0.1)
BFI: Intellectual Property Products	4.0	4.0	3.0	0.2	0.2	0.1
	(4.0)	(4.0)	(3.0)	(0.2)	(0.2)	(0.1)
Residential Investment	2.2	12.6	-2.1	0.1	0.5	-0.1
	(8.6)	(10.2)	(-1.5)	(0.3)	(0.4)	(-0.1)
Government: Federal	-0.9	-0.6	-0.8	-0.1	0.0	0.0
	(-0.3)	(-0.6)	(-0.7)	(-0.0)	(-0.0)	(-0.0)
Government: State and Local	-0.5	0.9	1.0	-0.1	0.1	0.1
	(0.9)	(0.9)	(1.0)	(0.1)	(0.1)	(0.1)
Inventory Investment	--	--	--	0.3	0.3	-0.2
	--	--	--	(0.3)	(-0.1)	(0.2)
Net Exports	--	--	--	0.1	-0.3	-0.1
	--	--	--	(-0.5)	(-0.1)	(-0.2)
INFLATION						
Total PCE Deflator	1.8	2.5	1.8			
	(1.3)	(2.0)	(2.1)			
Core PCE Deflator	1.6	1.7	1.8			
	(1.5)	(1.9)	(2.1)			
PRODUCTIVITY AND LABOR COSTS*						
Output per Hour	2.4	1.8	0.8			
	(1.3)	(1.8)	(1.0)			
Compensation per Hour	2.3	2.1	2.3			
	(3.4)	(3.1)	(3.5)			
Unit Labor Costs	-0.1	0.3	1.5			
	(2.1)	(1.4)	(2.5)			

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		
	2017	2018	2019	2017	2018	2019
OUTPUT						
Real GDP	2.5	1.7	1.7	2.5	1.7	1.7
	(2.2)	(1.7)	--	(2.2)	(1.7)	--
Final Sales to Domestic Purchasers	2.6	1.9	1.9	2.6	2.0	1.9
	(2.5)	(1.9)	--	(2.6)	(1.9)	--
Consumption	2.5	2.1	2.0	1.7	1.5	1.4
	(2.2)	(2.1)	--	(1.5)	(1.5)	--
BFI: Equipment	8.3	2.7	2.0	0.5	0.2	0.1
	(4.7)	(2.0)	--	--	(0.1)	--
BFI: Nonresidential Structures	4.8	2.5	2.0	0.1	0.1	0.1
	(10.4)	(2.5)	--	(0.3)	(0.1)	--
BFI: Intellectual Property Products	4.7	3.0	3.0	0.2	0.1	0.1
	(4.6)	(3.0)	--	(0.2)	(0.1)	--
Residential Investment	4.6	2.8	4.1	0.2	0.1	0.2
	(7.0)	(2.1)	--	(0.3)	(0.1)	--
Government: Federal	-0.5	-0.7	-0.7	0.0	0.0	0.0
	(-0.4)	(-0.7)	--	(-0.0)	(-0.0)	--
Government: State and Local	-0.2	1.0	1.0	0.0	0.1	0.1
	(0.7)	(1.0)	--	(0.1)	(0.1)	--
Inventory Investment	--	--	--	-0.2	-0.1	0.1
	--	--	--	(-0.2)	(-0.0)	--
Net Exports	--	--	--	0.1	-0.2	-0.4
	--	--	--	(-0.1)	(-0.3)	--
INFLATION						
Total PCE Deflator	1.7	2.0	2.2			
	(1.4)	(2.1)	--			
Core PCE Deflator	1.5	2.0	2.2			
	(1.5)	(2.1)	--			
PRODUCTIVITY AND LABOR COSTS*						
Output per Hour	1.5	1.0	1.3			
	(1.0)	(1.2)	--			
Compensation per Hour	2.8	2.4	2.6			
	(3.0)	(3.7)	--			
Unit Labor Costs	1.3	1.4	1.3			
	(2.0)	(2.5)	--			

Note: Numbers in parentheses are from the previous Blackbook.

*Nonfarm business sector.

2-5: Comparison with Other Forecasts

Real GDP Growth

	Release Date	2017Q3	2017Q4	2017 Q4/Q4	2018 Q4/Q4
FRBNY	9/8/2017	2.9	2.9	2.5	1.7
		(2.4)	(2.3)	(2.2)	(1.7)
Blue Chip	9/10/2017	2.7	2.5	2.3	2.3
		(2.5)	(2.3)	(2.2)	(2.3)
Median SPF	8/11/2017	2.6	2.3	2.1	2.4
		(2.5)	(2.4)	(2.1)	(2.5)
Macro Advisers	9/7/2017	2.8	2.3	2.3	2.2
		(3.0)	(2.3)	(2.3)	(2.1)
FRBNY-DSGE	9/11/2017	2.7	2.1	2.3	2.0
		(2.2)	--	(2.1)	(1.9)
Median SPD	7/17/2017	--	--	2.2	2.2
		--	--	(2.2)	(2.3)

Core PCE Inflation

	Release Date	2017Q3	2017Q4	2017 Q4/Q4	2018 Q4/Q4
FRBNY	9/8/2017	1.6	1.7	1.5	2.0
		(1.5)	(1.9)	(1.5)	(2.1)
Median SPF	8/11/2017	1.6	1.8	1.5	1.8
		(1.9)	(1.9)	(1.9)	(2.0)
Macro Advisers	9/7/2017	1.3	1.6	1.4	1.7
		(1.4)	(1.5)	(1.4)	(1.8)
FRBNY-DSGE	7/17/2017	1.4	1.3	1.4	1.4
		(1.2)	--	(1.4)	(1.3)
Median SPD	7/17/2017	--	--	1.6	1.9
		--	--	(1.8)	(2.0)

Unemployment*

	Release Date	2017Q3	2017Q4	2017 Q4/Q4	2018 Q4/Q4
FRBNY	9/8/2017	4.4	4.3	-0.4	0.0
		(4.3)	(4.3)	(-0.4)	(0.1)
Blue Chip	9/10/2017	4.4	4.3	-0.4	-0.2
		(4.3)	(4.2)	(-0.5)	(-0.1)
Median SPF	8/11/2017	4.3	4.2	-0.5	--
		(4.4)	(4.4)	(-0.3)	--
Macro Advisers	9/7/2017	4.4	4.3	-0.4	-0.2
		(4.2)	(4.1)	(-0.6)	(-0.1)
Median SPD	7/17/2017	--	--	-0.5	-0.1
		--	--	(-0.4)	(-0.1)

Note: Numbers in gray are from the previous Blackbook.

*Yearly values are the difference between Q4 of the listed year and Q4 of the previous year.

2-6: Tealbook Comparison

	FRBNY (Q4/Q4)			Tealbook (Q4/Q4)		
	2017	2018	2019	2017	2018	2019
OUTPUT						
Real GDP Growth	2.5	1.7	1.7	2.6	2.3	1.9
	(2.2)	(1.7)	--	(2.3)	(2.2)	(1.9)
GDP Growth Contributions						
Final Sales to Domestic Purchasers	2.6	2.0	1.9	2.6	2.3	1.8
	(2.6)	(1.9)	--	(2.5)	(2.3)	(2.0)
Consumption	1.7	1.5	1.4	1.8	1.8	1.6
	(1.5)	(1.5)	--	(1.7)	(1.8)	(1.6)
BFI	0.8	0.4	0.3	0.8	0.4	0.2
	(0.7)	(0.3)	--	(0.7)	(0.4)	(0.2)
Residential Investment	0.2	0.1	0.2	0.0	0.1	0.1
	(0.3)	(0.1)	--	(0.0)	(0.1)	(0.2)
Government	-0.1	0.1	0.1	0.0	0.1	0.1
	(0.0)	(0.1)	--	(0.1)	(0.1)	(0.1)
Inventory Investment	-0.2	-0.1	0.1	-0.2	-0.1	0.0
	(-0.2)	(-0.0)	--	(-0.2)	(0.0)	(0.0)
Net Exports	0.1	-0.2	-0.4	0.2	0.0	-0.1
	(-0.1)	(-0.3)	--	(0.0)	(-0.2)	(-0.2)
INFLATION						
Total PCE Deflator	1.7	2.0	2.2	1.5	1.9	2.0
	(1.4)	(2.1)	--	(1.4)	(1.9)	(2.0)
Core PCE Deflator	1.5	2.0	2.2	1.5	1.9	2.0
	(1.5)	(2.1)	--	(1.5)	(1.9)	(2.0)
LABOR MARKET						
Unemployment Rate (Avg. Q4 Level)	4.3	4.3	4.4	4.2	3.8	3.7
	(4.3)	(4.4)	--	(4.2)	(4.0)	(3.8)
Participation Rate (Avg. Q4 Level)	62.9	63.0	63.0	62.8	62.6	62.5
	(62.8)	(62.9)	--	(62.7)	(62.5)	(62.3)
Avg. Monthly Nonfarm Payroll Growth (Thous.)	171	117	103	181	179	122
	(156)	(110)	--	(177)	(167)	(122)
SAVING						
Personal Saving Rate (Avg. Q4 Level)	3.2	2.9	2.6	3.3	3.5	3.4
	(5.3)	(4.9)	(6.0)	(4.7)	(5.0)	(5.0)
HOUSING						
Housing Starts (Avg. Q4 Level, Thous.)	1485	--	--	1200	1300	1300
	(1485)	--	--	(1200)	(1300)	(1400)
INTREST RATE ASSUMPTION						
Fed Funds Rate*	1.38	2.13	2.88	1.42	2.62	3.47
	(1.38)	(2.13)	(2.88)	(1.41)	(2.51)	(3.31)

Note: Numbers in parentheses are from the previous Blackbook and Tealbook.

* FRBNY numbers indicate end of year Federal Funds Rate, Tealbook numbers indicate average of Q4 Federal Funds Rate.

3. Uncertainty & Risks

The September *Blackbook* introduces a number of important changes to the New York Fed forecast distribution. The new forecast distribution currently combines elements of the previous approach, which is based on the scenarios described in prior *Blackbooks*, and a new approach that introduces new scenarios based on the BVAR and DSGE methodologies. These changes are described in more detail in the *Blackbook* appendix.

Importantly, changes in the forecast distribution since the July *Blackbook* reflect mostly changes in the staff's risk assessment during the intermeeting period and *not* changes in the methodology. This is because the forecast distribution under the new approach was designed to be as close as possible to that obtained under the previous approach. The new scenarios are different from the old ones, however, in terms of both the risks they represent and the way they are constructed. Going forward, changes in the balance of risks will mainly reflect changes in the probability associated with the new scenarios, as the old scenarios will gradually fade away in terms of their impact on the overall forecast distribution.

Developments during the intermeeting period indicate a further modest reduction in uncertainty around the outlook from the assessment in the July *Blackbook*. Based on the difference between the modal forecast and the expected value from our forecast distributions [Exhibit 3-1], as well as the changes in the distributions [Exhibit 3-3], the risks to growth are roughly balanced through much of the forecast horizon. For core PCE inflation, the risks are also balanced throughout the forecast horizon. The widths of the growth probability intervals are modestly narrower than those in the July *Blackbook*, while the 90 percent probability interval for inflation has narrowed further because of another reduction in tail risks. The uncertainties around the GDP growth and inflation projections are relatively close to their respective historical norms.

The reduction in uncertainty reflects the fact that, as discussed earlier in this *Blackbook*, recent data generally have been consistent with our prior outlook, perhaps with the exception of inflation. Inflation indicators were again on the soft side in July, and wage growth continued to be subdued. Longer-term inflation compensation from TIPS and survey measures of longer-run inflation expectations remained low. Overall financial conditions eased some over the

intermeeting period. In response to the developments, we made small changes in the old scenario probabilities [Exhibit 3-2, right panel]. The soft inflation data and subdued wage growth contributed to a further reduction in the probability of the *Loss of Credibility* scenario. With improvement in the global outlook and financial conditions, we reduced slightly the weight on the adverse *Global Credit Crunch* scenario and increased the weight on the *Faster Growth* scenario. The weights on the new scenarios, which we describe below, are by construction all the same in the current *Blackbook* [Exhibit 3-2, left panel]. They will change over time as our assessment of the balance of risks evolves. Exhibit 3-2 also highlights that we currently place a weight of 80 percent on the old scenarios, and 20 percent on the new ones.

In a comparison to the forecast distribution from a year earlier, the current projections for inflation and GDP growth are within the 50 percent probability intervals, which is partly a reflection of the wide bands at that time following the "Brexit" vote and political uncertainties associated with then upcoming U.S. presidential election [Exhibit 3-3]. The current inflation projection runs in the lower half of the distribution through the first half of 2018, reflecting the recent low inflation data. Thereafter, the inflation projection is in the upper half of the distribution as we continue to anticipate inflation to overshoot the longer-run objective in 2019. The current real GDP growth projection is in the upper half of the distribution, as we project growth to be moderately stronger than we had in mid-2016, which reflects the recent stronger activity data.

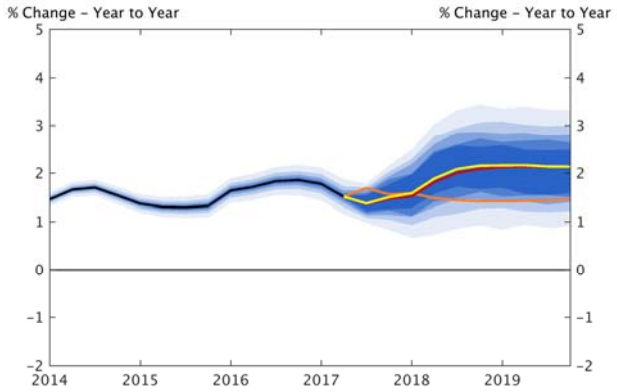
With the new methodology, we introduce eight new scenarios: Seven are produced using the BVAR and one using the DSGE. Our first scenario considers a tightening of financial conditions in the U.S., measured by an increase in corporate bond yields in the next quarter (*High Spreads*). The next two scenarios consider the effects of a substantial increase in consumer expectations after November 2016, with the rise more persistent in the second scenario (*Surge in Consumer Expectations*; *Persistent Consumer Optimism*). The fourth scenario has a sudden increase in the 10-year Treasury yield, possibly driven by shifting expectations about the evolution of the Fed balance sheet (*Taper Tantrum*). The fifth scenario describes the effects of a downward shift in public sentiment coupled with a significant tightening of financial conditions (*Broad Policy Disappointment*). The last two BVAR scenarios focus on global factors. The first assumes a

tightening in global financial conditions driven by a worsening outlook for emerging economies. These developments raise corporate spreads, compress treasury yields, reduce equity prices substantially, and lead to a dollar appreciation (*EME Turbulence*). The *Strong Global Growth* scenario depicts a nearly opposite situation where improved prospects for the global economy fuel easier financial conditions, higher oil and commodities prices, and a temporary dollar depreciation (*Strong Global Growth*). The last scenario, produced using the DSGE, considers the implications of a positive output gap over the next two years—similar to that projected in the Tealbook—coupled with a Phillips curve steeper than baseline estimates (*Positive Output Gap*).

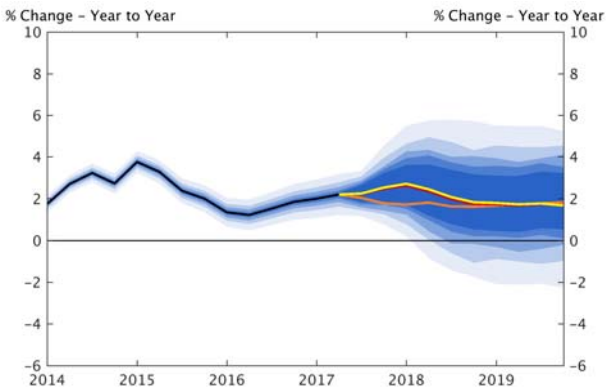
The four panels in Exhibit 3-4 describe the mean paths of core PCE inflation, real GDP growth, the real natural rate of interest and the nominal federal funds rate under the new alternative scenarios. The grey-shaded area in each panel denotes the 90 percent bands of the variable's forecast distribution. Relative to the past *Blackbooks*, in addition to inflation and output growth we have produced the forecast distributions for the federal funds rate and the natural rate of interest. These forecasts are computed by interpreting both new and old scenarios through the NY Fed DSGE model. The *EME Turbulence*, the *Positive Output Gap* and *Strong Global Growth* imply the strongest deviations from our central projections. In the *EME Turbulence* scenario, inflation dips towards 1 percent while the economy enters a recession. As the natural rate of interest remains in negative territory until mid-2018 the policy rate falls back to the zero lower bound constraint. Conversely, output growth and inflation surge under both *Strong Global Growth* and *Positive Output Gap* scenarios, as output overshoots its potential level and inflation responds to a steeper-than expected Phillips curve and/or a weaker dollar. In response, the path of the federal funds rate steepens considerably, reaching 2 percent at the end of this year.

3-1: Forecast Distributions

Core PCE Inflation Forecast Distribution



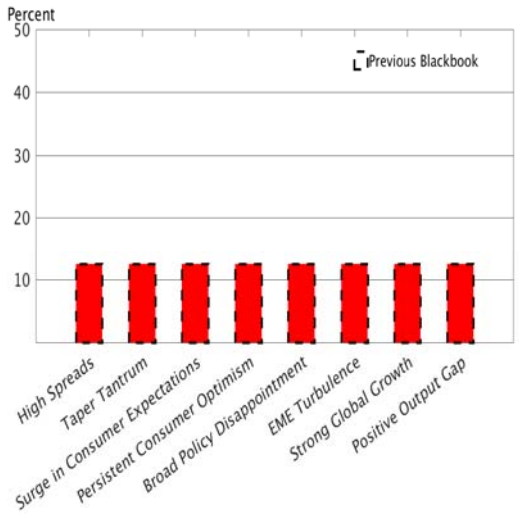
Real GDP Growth Forecast Distribution



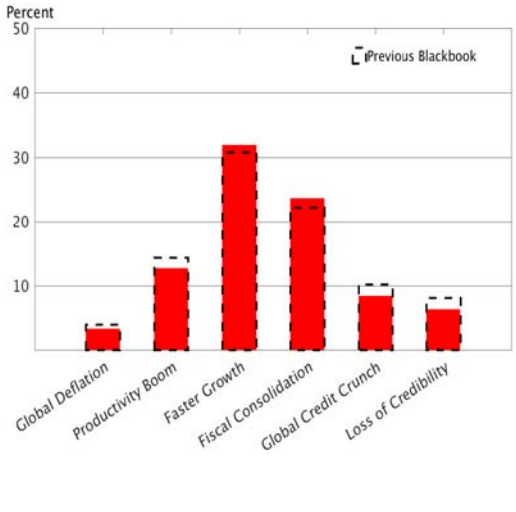
The yellow line is the expected value of the forecast distribution, the red line is the New York Fed central projection, the orange line is the DSGE forecast, and the black line is released data. The shading represents the 50, 60, 70, 80 and 90 percent probability that the four-quarter change will be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

3-2: Scenario Probabilities

New Scenario Probabilities (20%)



Old Scenario Probabilities (80%)

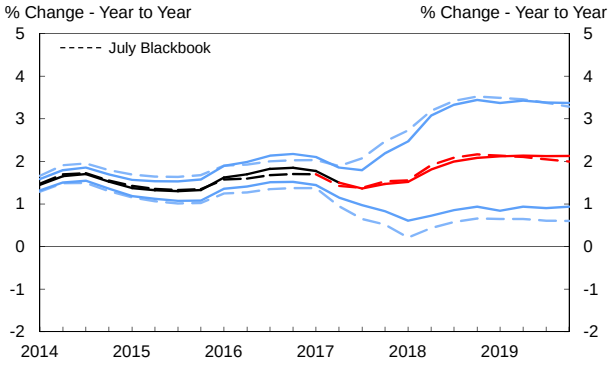


Both charts show the probabilities of ever reaching an alternative scenario over the forecast horizon, an assessment of the overall likelihood of each alternative scenario. The left chart shows the new scenarios, which constitute 20% of the final mixture of scenarios. The right chart shows the old New York Fed scenarios, which constitute 80% of the final mixture. A short description of the scenarios and the methodology to perform risk assessment is in the Appendix.

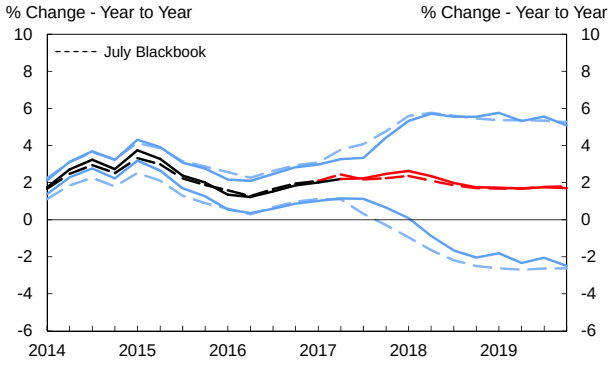
Source: MMS Function (New York Fed)

3-3: Evolution and Performance of Forecast Distributions

Change in Core PCE Inflation Forecast Distribution

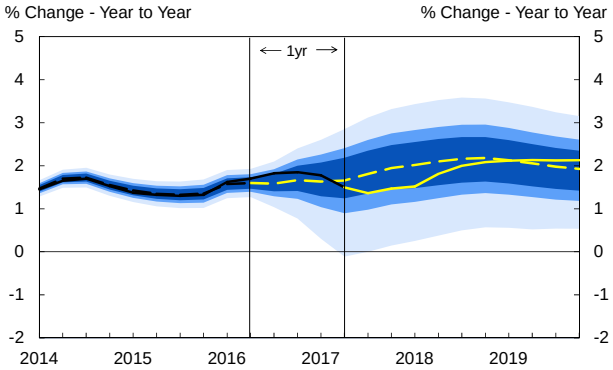


Change in Real GDP Growth Forecast Distribution

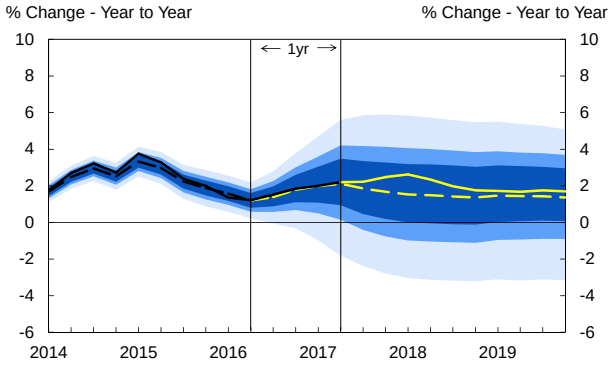


The red lines are the central scenario projections, black lines are released data, and blue lines represent upper and lower 90 percent forecast probability intervals. Dashed lines represent forecasts from the previous Blackbook.

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



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

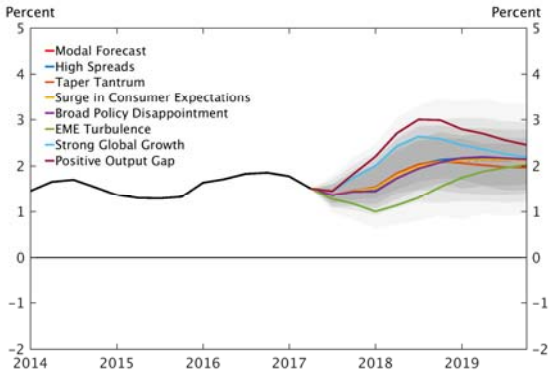


The solid yellow lines are the current expected values from the forecast distributions and the dashed yellow lines are the year-ago Blackbook expected values. Black lines are released data and the blue shaded areas represent 50 (darkest shade), 70, and 90 (lightest shade) percent forecast probability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

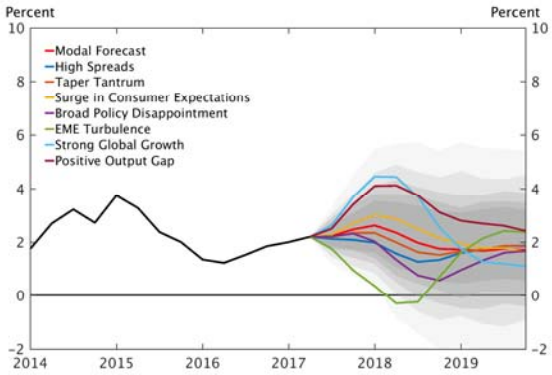
Source: MMS Function (FRBNY)

3-4: Projections under Alternative Scenarios

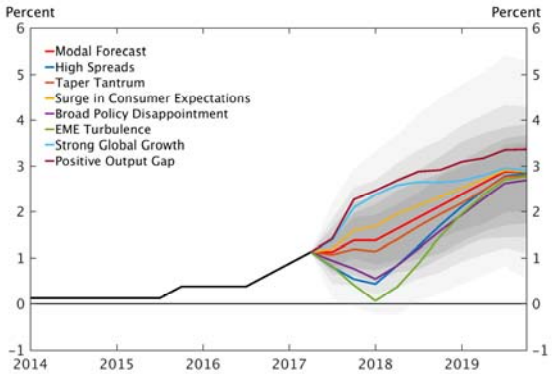
Core PCE Inflation under Alternative Scenarios



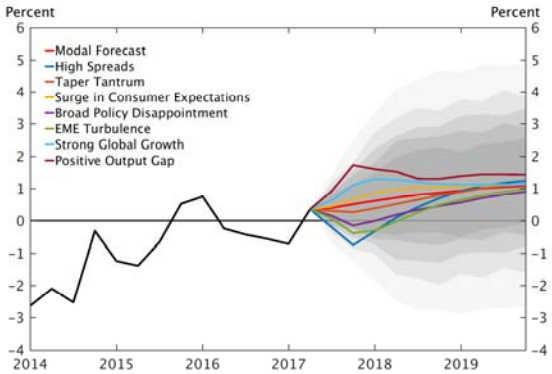
Real GDP Growth under Alternative Scenarios



Nominal FFR under Alternative Scenarios



Natural Rate of Interest under Alternative Scenarios



The black lines are released data and the red lines are the modal forecast. The shading represents the 50, 60, 70, 80 and 90 percent probability that the four-quarter change will be within the respective range.

Source: MMS Function (New York Fed)

Appendix

A-1. Constructing and Interpreting Scenarios

In the appendix we will use the labels "old" and "new" scenarios to refer to the alternative scenarios existing before the September 2017 *Blackbook* (old) and those introduced in that Blackbook or after (new). The old scenarios are constructed to provide plausible distributions for output growth and inflation under a variety of economic conditions. The new scenarios are constructed through a Bayesian VAR (BVAR) or the NY Fed DSGE model.

To construct the BVAR scenarios, we postulate a change in economic conditions (e.g., an increase in consumer confidence) and trace out the effect on other economic and financial variables using the BVAR. More specifically, BVAR scenarios are based on the difference between a forecast distribution *conditional* on current data and possible *future events* (e.g., a rise in consumer confidence) and the BVAR *unconditional* forecast distribution (the forecast without conditioning on any future event). Scenarios are then defined by their particular conditioning assumptions (see below).

DSGE scenarios differ from the BVAR scenarios in that they trace out the effects of posited changes in structural equations (e.g., a steeper Phillips curve) possibly combined with some conditioning assumptions (e.g., a given projected size of the output gap).

Since the September 2017 *Blackbook*, both old scenarios and the BVAR scenarios are replicated and interpreted using the NY Fed DSGE model. The DSGE interprets the BVAR scenarios as described by four variables (inflation, output and consumption growth, and spreads) in terms of a subset of its structural shocks. The choice of shocks is guided by the narrative behind each scenario. Based on the recovered shocks, the DSGE can be used to calculate a path for variables of policy interest such as the *natural interest rate* and *the output gap*. Moreover, the DSGE model is used to compute the path of the federal funds rate through the model's historical policy rule. The interpretation of the old scenarios is done in similarly, except that only inflation and output growth are used as the observable variables.

A-2. Alternative Scenario Descriptions

"Old" scenarios. There are six "old" alternative scenarios. The first considers the impact of productivity growth persistently above our assumed trend of about 1.5 percent on a nonfarm business sector basis (*Productivity Boom)*. The second scenario (*Fiscal Consolidation)* assesses the consequences of persistently below-trend productivity growth, in part prompted by sustained fiscal restraint. In the third (*Faster Growth*), subsiding "headwinds" lead to stronger response of aggregate demand to accommodative policy. The fourth scenario (*Loss of Credibility*) assumes that the public and investors become more concerned about the path of policy. In the last 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.

Note that these scenarios are interpreted through the DSGE model. Given that these scenarios are defined on the basis of the paths for output growth and inflation only, they are interpreted in terms of two DSGE structural shocks in order to obtain other policy-relevant variables. The *Central Scenario* (defined below) is instead interpreted using all the shocks in the model.

"New" scenarios. In this *Blackbook* we consider 8 scenarios: Seven are produced using the BVAR and one using the DSGE. Our first scenario considers a tightening of financial conditions in the U.S., measured by an increase in corporate bond yields in the next quarter (*High Spreads*). The next two scenarios consider the effects of a substantial increase in consumer expectations after November 2016, with the rise more persistent in the second scenario (*Surge in Consumer Expectations*; *Persistent Consumer Optimism*). The fourth scenario has a sudden increase in the 10-year Treasury yield, possibly driven by shifting expectations about the evolution of the Fed balance sheet (*Taper Tantrum*). The fifth scenario describes the effects of a downward shift in public sentiment coupled with a significant tightening of financial conditions (*Broad Policy Disappointment*). The last two BVAR scenarios focus on global factors. The first assumes a tightening in global financial conditions driven by a worsening outlook for emerging economies. These developments raise corporate spreads, compress treasury yields, reduce equity prices substantially, and lead to a dollar appreciation (*EME Turbulence*). The *Strong Global Growth* scenario depicts a nearly opposite situation where improved prospects for the global economy

fuel easier financial conditions, higher oil and commodities prices, and a temporary dollar depreciation (*Strong Global Growth*). The last scenario, produced using the DSGE, considers the implications of a positive output gap over the next two years—similar to that projected in the Tealbook—coupled with a Phillips curve steeper than baseline estimates (*Positive Output Gap*).

A-3. Methodology to Construct the Forecast Distribution

The Forecast Distribution from the Old Scenarios

To calculate the forecast distribution from the old scenarios we first create 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 has entered 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 indicated scenario 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.

The Forecast Distribution from the New Scenarios

The way alternative paths in the new forecast distribution are generated is fairly similar to the old method described above. This distribution is described by three components: (1) the *Central Scenario* which comprises the NY Fed modal forecast and a distribution based on historical

forecast errors; (2) the alternative scenarios described above; (3) probabilities of entering and leaving the scenarios.

Alternative forecast paths based on specific scenarios are generated as follows. In the first quarter the economy starts at the Central Scenario, but in each subsequent quarter over the forecast horizon it can switch to a specific alternative scenario with some exogenously chosen probability (currently, these probabilities are 20 percent for the first quarter, 50 percent for each of the 11 subsequent quarters, and 0 thereafter). Conditional on being in the alternative scenario, the economy faces a constant probability in each quarter of switching back to the central scenario (currently 15 percent, so that the average alternative scenario duration is six quarters). The central scenario is an absorbing state: once the economy switches back from the alternative scenario to the central scenario it remains there over the rest of the forecast horizon. Also, there is no switching among alternative scenarios; that is, each individual alternative path is built using only one alternative scenario. The forecast distribution is then obtained by combining draws from each scenario-specific alternative path. The proportion of draws built from specific scenarios depends on the subjective probability associated with each scenario. Note that when we display mean paths (or distributions) under a given scenario, we include in these computations all paths that ever entered such scenario.

Combining the Forecast Distributions from the Old and New Scenarios

Currently the NY Fed forecast distribution is obtained as a mixture of the forecast distributions from the old and new scenarios with mixture probabilities of 80 and 20 percent, respectively.

FOMC BACKGROUND MATERIAL

RESEARCH AND STATISTICS GROUP

FRBNY Blackbook

October 2017

CLASS II FOMC - RESTRICTED (FR)

FRBNY BLACKBOOK

October 2017

CONTENTS

APPENDIX

1. Policy Recommendation and Rationale

Intermeeting developments supported our expectation of solid growth over 2017H2 and 2018, and a return to near-potential growth in 2019. The medium-term inflation outlook is substantially unchanged, with core PCE inflation expected to rebound from low recent readings to about 2 percent in 2018 and slightly above that in 2019. Risks around the growth and inflation outlooks remain roughly balanced. Financial conditions continue to be quite accommodative, as equity prices increased and corporate credit spreads narrowed modestly, but long-term Treasury yields rose and the dollar generally appreciated. The market-implied expected path of the federal funds rate moved up moderately over the intermeeting period: Pricing implies that the expected federal funds rate to be about 1¾ percent in early 2019. The market-implied probability of a rate hike before the end of the year is roughly 80 percent. Respondents in the October/November Desk surveys assign a 60 percent unconditional probability to this event.

Our policy recommendation remains as outlined in the previous *Blackbook*: Given our assessment of economic conditions, we believe that a 25 bps increase in the FFR target range at the December meeting is appropriate. We also anticipate that up to three additional 25 bps increases in each of the following two years would be apt if conditions evolve according to our forecasts. Particularly important in determining the appropriate path of the policy rate over this period is core inflation firming along the lines of our projection.

Real GDP growth in Q3 is projected to be about 3 percent (annual rate), reflecting somewhat more strength than we anticipated in September in inventory investment. We project that real GDP growth will average around 2¾ percent in H2, supported by continued strengthening in the labor market, the good condition of the aggregate household balance sheet, a stronger global environment and overall accommodative financial conditions.

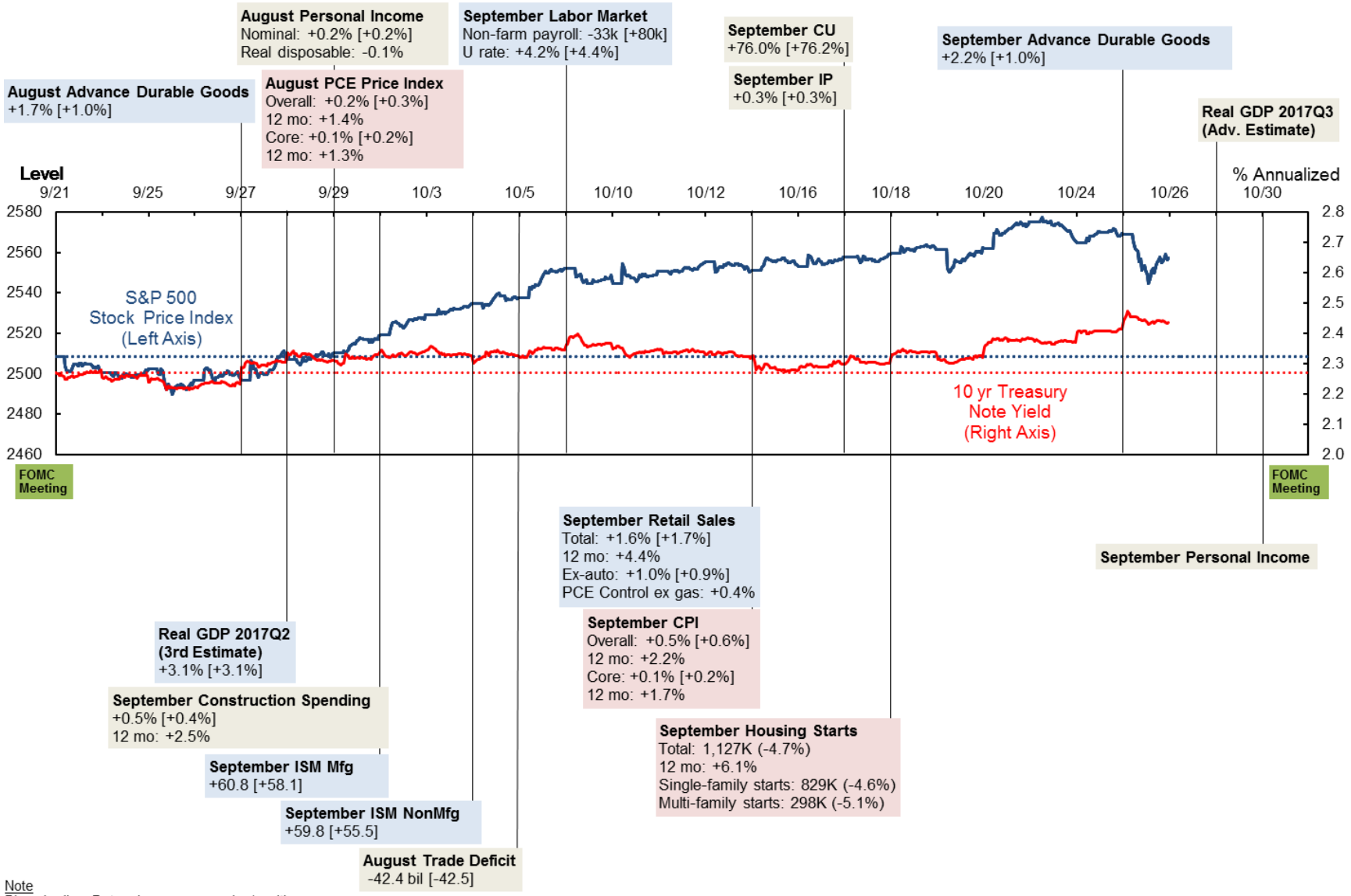
In 2018 growth is anticipated to be appreciably above our estimate of the economy's potential growth rate, which remains at 1¾ percent. It is then projected to slow to near that rate in 2019, as the anticipated path of policy normalization leads to a gradual tightening of financial conditions. Productivity growth in the nonfarm business sector for 2018 – 19 is expected to be at or slightly above the 4-quarter change through 2017Q2 (1.3 percent); the projection for 2018 is a

little above that in the previous *Blackbook*. Such a path for productivity growth is a step-up from what we observed through most of 2014 – 16.

Readings on overall and core PCE inflation have remained soft, leading to further modest declines in the 12-month changes. Measures of market-implied longer-term inflation compensation were little changed over the intermeeting period and remain low on a historical basis. The median of 3-year-ahead inflation expectations increased 0.2 percentage point to 2.8 percent in the September SCE survey. Longer-term inflation expectations in the Michigan survey ticked down in the preliminary October release (the final release will be on October 27) and remained near the bottom of their historical range. We maintain our assessment that the recent softness in inflation is largely transitory, but continue to monitor incoming data. At this time our modal scenario is for inflation to remain somewhat below the Committee's longer-run objective for the remainder of 2017, and rebound to near the FOMC's longer-run objective by the end of 2018 and slightly above it in 2019.

Financial conditions remained broadly accommodative over the intermeeting period with an apparently muted reaction to the beginning of the balance sheet normalization. Longer-term Treasury yields increased, but credit spreads narrowed somewhat; realized and implied volatility generally remained low, and equity prices continued to move higher. The broad dollar index strengthened over the period; dollar appreciated against most currencies, with an especially strong appreciation against the Mexican peso.

With a somewhat brighter medium-term growth outlook and financial conditions remaining generally buoyant, we maintain our previous policy recommendation of increasing the target range for the policy rate by 25 bps at the December FOMC meeting. The appropriateness of a December rate hike can be reassessed if upcoming inflation readings deteriorate notably, or financial conditions tighten unexpectedly as balance sheet normalization progresses.



Note
Blue shading: Data release encouraging/positive.
Red shading: Data release discouraging/negative.
Grey shading: Data release was neutral.
Numbers in square brackets are the median of the Bloomberg survey.
Numbers in parentheses represent changes from the prior month.

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, growth of real GDP in the second quarter was 3.1 percent at an annual rate, up from the second estimate of 3.0 percent. For the first half of 2017, growth was 2.1 percent (annual rate), essentially unchanged from 2016. The upward revision to growth in Q2 reflected stronger government spending at the state and local level, which is now estimated to have declined at a 1.5 percent annual rate versus -1.7 percent in the advance report, as well as greater inventory investment. Real personal consumption expenditures increased at a 3.3 percent annual rate, unchanged from the second estimate. The personal saving rate for 2017Q2 was revised downward from 3.7 percent to 3.6 percent. The growth rate of residential fixed investment was revised downward to -7.3 percent from -6.5 percent and there was also a downward revision to real business fixed investment from 6.9 percent to 6.7 percent due solely to weaker growth of investment in intellectual property products. The 2017Q2 inflation rate as measured by the overall PCE deflator remained at +0.3 percent (annual rate) and that measured by the core PCE deflator was unchanged at +0.9 percent.

The expenditure side data for August and September have suggested that growth of real GDP in the third quarter was 3 percent. This is slightly higher than the estimate of 2.9 percent in the previous *Blackbook* that incorporated a ¼ percentage point drag to growth from the effects of Hurricanes Harvey and Irma slowing the growth of consumer spending—electricity in particular—and slowing the pace of inventory investment due to production disruptions, especially in the energy and related chemicals sectors. While data pertaining to real consumer expenditures suggest its growth may come in a bit below our September projection, the inventory data have surprised notably to the upside and now suggest that inventory investment will act as a significant boost to growth in 2017Q3.

Consumer spending and real personal income both fell in August reflecting the effects of the hurricanes. Consumer spending fell at a 0.9 annual rate in August after growing at a 2¾ percent pace in July, with growth of real personal income declining at a 1.2 percent annual rate in August following a 1¼ percent gain in the previous month. The personal saving rate remained

unchanged at 3.6 percent. There were, however, two subsequent data releases that helped bolster our outlook for consumer spending. After steadily declining since December 2017, auto sales surged from 16.1 million units at a seasonally adjusted annual rate (SAAR) in August to 18.6 million units in September. Hurricane related replacement was an important consideration as reports suggest that 600,000 – 700,000 vehicles will need to be replaced in Texas and Florida, with this process expected to continue through the end of the year. However, Labor Day discounts and higher fleet sales appear to have been a bigger factor as dealers were facing higher inventory levels and carrying a higher mix of 2017 model-year vehicles than is typical for September. In addition to the jump in sales of light-weight motor vehicles, the September retail sales release showed a 1 percent increase in the PCE control, with upward revisions for August and July. Taken together, we anticipate the Q3 growth rate of real PCE to be a little over 2 percent.

Total housing starts have been little changed over the three months ending in September, with the three month moving average—1.165 million units (SAAR)—essentially unchanged from the 1.167 million unit average of 2017Q2 but below the 1.24 million unit average in Q1. The September release did not cite any particular impact on housing starts from the major hurricanes that hit in late August and September. Multi-family starts have fallen sharply since the end of 2016, with the Q3 reading of 319,000 down from 342,000 in Q2 and notably below the recent peak of 414,000 in 2016Q4. The data continue to be consistent with our view that multi-family starts have essentially peaked, at least for the near-term. There is a high volume of multi-family units under construction. In addition, the overall rental vacancy rate has increased modestly in the three quarters through 2017Q2, and the rate of increase of rents has flattened out in recent months. While single-family starts fell 4.6 percent to a level of 829,000 units in September, the average of 846,000 for Q3 was very close to our forecast and is consistent with our view that single-family starts remain on a gradual uptrend that we expect to continue. Home prices are rising at a brisk pace, homebuilder confidence remains high, and mortgage interest rates remain quite attractive. The National Association of Home Builders Housing Market Index for October was 68, up 4 index points from September, and remains at a level consistent with a continued solid pace of improvement in conditions for home builders. Spending on improvements to the existing housing stock also appears to be rebounding in the third quarter following a second

quarter decline. At this point we expect a 1 percent decline in real residential investment in Q3 following a 6.5 percent annual rate decline in the second quarter. In the fourth quarter, however, we anticipate growth of residential investment of almost 20 percent, spurred in part by rebuilding activity in Texas and Florida.

After a healthy gain of nearly 6 percent in the first half, capital spending indicators suggest that growth of real business equipment investment in Q3 will be even stronger. Shipments of nondefense capital goods excluding aircraft rose 1.1 percent in August after rising 1.0 percent in July. The July-August average level of these shipments was 1.9 percent above the Q2 monthly average. (Shipments are up nearly 7 percent over the 12 months ending in August whereas they were down 7 percent over the year ending in August 2016.) New orders for nondefense capital goods rose 1.1 percent in August and were up nearly 4 percent from a year ago. The levels of shipments and new orders are both rising, with orders a bit above shipments. Moreover, several measures of business optimism and expected profitability have shown an upswing. At this time we expect growth of real business investment in new equipment of 10 percent (annual rate) in Q3, up from the 8.8 percent increase of Q2.

While investment in new equipment finally appears to be strengthening, the same cannot be said for investment in new nonresidential structures. Private nonresidential construction put in place rose by 0.5 percent in August, but this comes on the heels of declines of 1.4 percent and 1.2 percent in July and June, respectively. The August level was 2½ percent below that of a year ago. The weakness in this sector is broad based. In particular, oil and gas drilling activity is anticipated to decelerate sharply after rising briskly over the first half of the year. We now project that real business investment in nonresidential structures will decline at a 1.1 percent annual rate in 2017Q3 after rising briskly over the first half of the year.

Another factor in our expectation of continued firm growth in Q3 is that after virtually no inventory accumulation over the first half of this year, data through August indicate that the pace of inventory investment has picked up significantly in Q3, resulting in a positive growth contribution of around 0.8 percentage point. The increase in inventory investment has been broad based, and particularly notable in the wholesale trade sector. Even with the surge in inventory

accumulation, the aggregate inventory sales ratio is expected to continue to decline in the third quarter. It should be emphasized that these projections come with greater uncertainty than normal due to the effects of the hurricanes.

The recent trade data came in slightly worse than expected in the September *Blackbook*, with real exports for the current quarter expected to increase at a 3.4 percent annual rate and real imports expected to increase at a 2.5 percent annual rate, resulting in the net export growth contribution for Q3 being lowered by 0.1 percentage point to zero.

For the third quarter we expect the government sector to be a neutral influence on growth, which is a slight improvement from the first half of the year when it acted as a modest drag on growth. At the federal level, there has been some recent strength in defense spending, but growth in non-defense spending remains sluggish. At the state and local level, consumption growth has been moderate as employment has expanded. However, investment spending has been declining rapidly as the data on construction spending have been exceptionally weak.

Recent supply side data have been encouraging. As expected, employment gains and hours worked were adversely affected by the hurricanes that made landfall before or during the reference period of the establishment survey. Nonfarm payroll employment decreased by 33,000 in September, below the consensus expectation of an 80,000 increase. However, an examination across sectors shows that businesses reporting declines and low gains in employment during the survey week of September 12 were concentrated in weather-sensitive sectors. For example, employment in the leisure and hospitality sector fell by 111,000 and employment in the construction and mining sectors only increased by 10,000. There were also downward revisions to payroll gains for July and upward revisions for August that resulted in a cumulative decline of 38,000. Hours worked declined by 0.1 percent in September, while average hourly earnings rose a strong 0.45 percent. The hurricanes likely played a role in the increase in the reported average hourly earnings figure as many workers with relatively low wages were not included in the establishment survey which helped to raise the overall average. In contrast to the establishment survey, the household survey pointed to a much stronger labor market. The unemployment rate fell to 4.2 percent from 4.4 percent in August, with the labor force participation rate rising 0.2

percentage point to 63.1 percent. The participation rate has been rising very gradually since 2015 at which point the unemployment rate was 5 percent.

Manufacturing output edged up 0.1 percent in September, marking the first increase in factory output since June. While the September reading of manufacturing production was slightly below the median of forecasts from the Bloomberg survey (+0.2 percent), the increase is being viewed as the first sign that the manufacturing sector is regaining its footing after the impacts of Hurricanes Harvey and Irma. Revisions to prior months' data resulted in manufacturing for August being lower than the previously reported level. Manufacturing production in September was associated with uneven increases across the major sectors. Motor vehicle and parts production rose 0.1 percent in September, after increasing 3.6 percent in the previous month. The 12-month change in motor vehicle production was -3.2 percent. Excluding motor vehicles, manufacturing output rose 0.1 percent in September and is up 1.3 percent over the past year.

The ISM (Institute for Supply Management) manufacturing composite index rose to 60.8 in September from 58.8 in August. This is the highest level for this manufacturing sector barometer in more than a decade. In addition, the new orders subcomponent increased to 64.6. There have also been strong readings from September data from various regional Fed manufacturing surveys. The ISM non-manufacturing composite index increased to 59.8 in September from 55.3 in August, also reaching its highest level in more than a decade.

The total PCE and the core PCE deflator rose 0.2 percent and 0.1 percent, respectively, in August. The 12-month change of the total PCE was 1.4 percent, while the core PCE deflator showed a rise of 1.3 percent. The 12-month change of the core PCE deflator was 1.5 percent in June and 1.9 percent this past January. After several months of softness, the CPI has been above recent trends for two consecutive months: the overall CPI rose 0.5 percent in September following a 0.4 percent increase in August. In the case of core CPI inflation, however, the rise of 0.25 percent in August was followed by the more modest increase of 0.1 percent in September. We expect the core PCE deflator to increase by 1.3 percent (annual rate) in the third quarter, up from 0.9 percent in the second quarter. The 12-month change will likely remain around 1.5 percent over the remainder of the year. We have noticed, however, that at the three-month

horizon, the decline of the price of cellular telephone services has moderated significantly. At the same horizon, the price of prescription drugs has shot up while the rate of increase of owners' equivalent rent has begun to move back up.

Possibly in response to the slowing of core inflation thus far this year, the median response of household inflation expectations at the one-year-ahead horizon from the Michigan survey moved down markedly from 2.7 percent in September to 2.3 percent in October. Longer-dated household inflation expectations showed a more modest decline to 2.4 percent from 2.5 percent in September, somewhat below the average of the past two years.

The Outlook

We now expect growth of real GDP to average 2¾ percent over the second half of the year, down slightly from 2.9 percent in the September *Blackbook*. Growth of final sales to domestic purchasers is projected at around 2.7 percent, the same as over the first half of this year, while inventory investment contributes about 0.45 percentage point to growth after having exerted a substantial drag over the first half of the year. On balance, net exports are expected to be a notable drag on growth over the second half of the year, due largely to an anticipated faster pace of growth of real imports relative to real exports in Q4. Even with the small downward revision to growth for the second half, our projection for real GDP growth of 2.5 percent (Q4/Q4) for 2017 is the same as that in September. For 2018, we now project growth to slow to 2.1 percent, up from 1¾ percent in July, with a positive swing in the contribution of net exports and higher investment in new equipment partially offsetting the ongoing tightening of financial conditions associated with the gradual normalization of monetary policy. For 2019, we assume growth will slow further and be around its potential growth rate of 1¾ percent.

The underlying fundamentals for consumer spending appear solid, with the labor market near full employment, the job opening rate considerably higher than in the mid-2000s, and consumer confidence at high levels. Real disposable income is expected to slow from 3 percent over the first half of 2017 to around 1½ percent over the second half. The personal saving rate is expected to average 3.3 percent over 2017H2 versus 3.8 percent in H1. While we attribute much of the spike in September auto sales to transitory factors, we have interpreted part of the sales gain as

reflecting stronger underlying demand. Consequently, we have slightly raised our profile for auto sales through the remainder of 2017. Growth of real PCE is expected to slow to around 2 percent in 2018 and 2019 as part of the general slowing of growth.

Even though multi-family housing starts appear to have peaked, we believe that the fundamentals for the single-family sector should result in continued gradual increases in starts and sales. The inventory of single-family homes is very lean, with bidding wars cropping up in some markets. Another part of the housing market that should support growth for the sector overall is improvements to the existing stock. Some needed repairs were postponed over the past several years, and contractors report much stronger activity of late. In addition, press reports indicate that the demand and supply of cash-out refinancings and home equity loans have begun to increase.

Business fixed investment grew at a 7 percent annual rate over the first half of 2017, a significant improvement over the preceding two years. However, much of that strengthening is due to developments in the energy sector, which should fade over time given our expectation that oil prices will be essentially be flat over the forecast horizon. As mentioned above, however, the recent data on new orders for nondefense capital goods have been encouraging, so we have boosted real investment in new equipment and carried some of this increase into 2018.

Since the last Blackbook the dollar has strengthened on a trade-weighted basis, and we now expect the dollar to decline in 2017 by 5.7 percent (Q4/Q4) relative to a decline of 6.2 percent in the previous Blackbook. However, when combined with very robust growth rates of global economic activity in 2017, we have upgraded our projection for 2017 export growth to 5.1 percent (Q4/Q4). Healthy growth rates of domestic demand this year also lead us to upgrade the corresponding import growth forecast to 4.2 percent. As a consequence, the net export contribution to real GDP growth (Q4/Q4) in 2017 is now expected to be around zero, a slight decrease from a projected net export growth contribution of +0.1 percentage point in the September *Blackbook*. We expect export-weighted foreign real GDP growth to slow by mid-2018 and, similar to the Tealbook, we continue to project the trade-weighted dollar to appreciate by 2.2 percent (Q4/Q4) in both 2018 and 2019. In real terms, the dollar is expected to appreciate

more, as U.S. CPI inflation is forecast to accelerate to 2.3 percent (Q4/Q4) and 2.6 percent (Q4/Q4) in 2018 and 2019, respectively, whereas trade-weighted foreign CPI inflation is expected to slow to around 2.1 percent (Q4/Q4) over the forecast horizon. Consequently, export growth is projected to decelerate to around 2.7 percent (Q4/Q4) in 2018, and although we anticipate some rebound in 2019, the expected continued real dollar appreciation will hamper any full recovery in export growth rates. Import growth, on the other hand, will step back in 2018H1 as payback for the strong acceleration projected at the end of 2017, but from 2018H2 onwards it will resume on a robust growth rate path based on our domestic demand outlook for 2018 and 2019, helped by the projected real dollar appreciation that makes imports cheaper. This implies, given the respective GDP shares of exports and imports, that we expect a slight positive net export growth contribution of around +0.1 percentage point (Q4/Q4) in 2018 and a negative export growth contribution in 2019 of around -0.3 percentage point (Q4/Q4).

As has been the case for the past few cycles, we continue to hold off on incorporating any fiscal stimulus into our forecast. Although the Senate has passed a budget resolution that eases the path for tax legislation, the fate and extent of any tax package remains unclear at the time of this writing. The political developments over the next few weeks should begin to provide more clarity on this issue, and we will revise our fiscal assumption accordingly as events transpire. Based on our current assumption, the growth contribution from the federal government sector should be essentially zero over the forecast horizon.

For roughly the next twelve to eighteen months, we expect the economy to grow above its potential rate, further reducing slack in the labor market. Indeed, as mentioned above, our current projection for growth of real GDP is 2¾ percent over 2017H2 and 2.1 percent for 2018. While we continue to maintain the view of a firming of productivity growth and the gradual rise of the labor force participation rate, we have lowered our projected path of the unemployment rate. In particular, unemployment moves down to 4.1 percent in 2018 and 4.0 percent in 2019H1 before rising back to 4.1 percent in 2019H2. Average monthly gains in nonfarm payroll employment should slow from around 164,000 in 2017 to 149,000 in 2018 and 138,000 in 2019.

While core inflation has slowed in recent months, we still associate the bulk of this slowing to temporary factors that will gradually dissipate over time: The CPI data for August and September were consistent with this hypothesis. Nonetheless, we have retained the inflation projection from the September *Blackbook* in which the 2017Q4/Q4 increase of the core PCE deflator is projected at 1.5 percent and the 2018Q4/Q4 increase of the core PCE deflator is projected at 2.0 percent. Core inflation then rises to 2.2 percent in 2019, a slight overshoot of the FOMC's target that corresponds with the undershooting of the unemployment rate. While we could have used the change in the profiles for output growth and the unemployment rate as a basis to alter our inflation projections, we instead have elected to view these developments as affording us a greater conviction for the inflation outlook.

2-1: Projections of Key Variables

	Core PCE Inflation		Real GDP Growth		Unemployment Rate*		Fed Funds Rate**	
	Sep	Oct	Sep	Oct	Sep	Oct	Sep	Oct
2017								
Q1	*1.8*	*1.8*	*1.2*	*1.2*	*4.7*	*4.7*	*0.88*	*0.88*
Q2	0.9	*0.9*	3.0	*3.1*	*4.4*	*4.4*	*1.13*	*1.13*
Q3	1.6	1.3	2.9	3.0	4.4	*4.3*	1.13	*1.13*
Q4	1.7	1.7	2.9	2.5	4.3	4.2	1.38	1.38
2018								
Q1	1.8	1.8	1.6	2.6	4.2	4.1	1.38	1.38
Q2	1.9	1.9	2.0	2.5	4.2	4.1	1.63	1.63
Q3	2.0	2.0	1.5	1.3	4.3	4.1	1.88	1.88
Q4	2.1	2.1	1.9	2.0	4.3	4.1	2.13	2.13
2019								
Q1	2.1	2.1	2.1	2.2	4.3	4.0	2.38	2.13
Q2	2.2	2.2	1.4	1.8	4.3	4.0	2.63	2.38
Q3	2.2	2.2	1.5	1.5	4.4	4.1	2.88	2.63
Q4	2.2	2.2	1.7	2.0	4.4	4.1	2.88	2.88
Q4/Q4								
2016	*1.9*	*1.9*	*1.8*	*1.8*	*-0.3*	*-0.3*	*0.63*	*0.63*
2017	1.5	1.5	2.5	2.5	-0.4	-0.5	1.38	1.38
2018	2.0	2.0	1.7	2.1	0.0	-0.1	2.13	2.13
2019	2.2	2.2	1.7	1.8	0.1	0.0	2.88	2.88

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

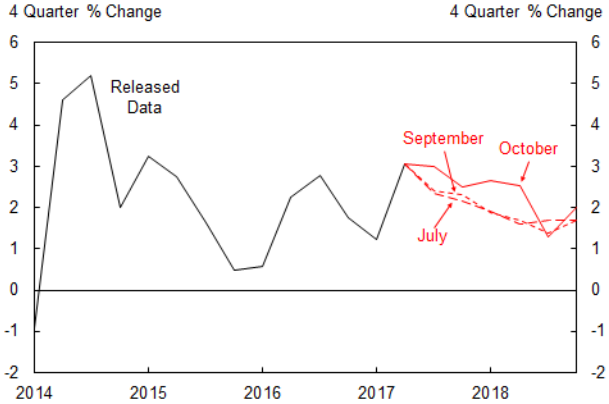
*Quarterly values are the average rate for the quarter. Yearly values are the difference between Q4 of the listed year and Q4 of the previous year.

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

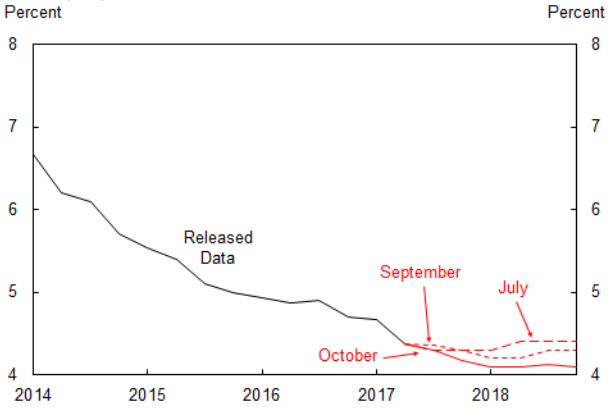
2-2: Evolution of Projected Quarterly Paths

Key Indicators

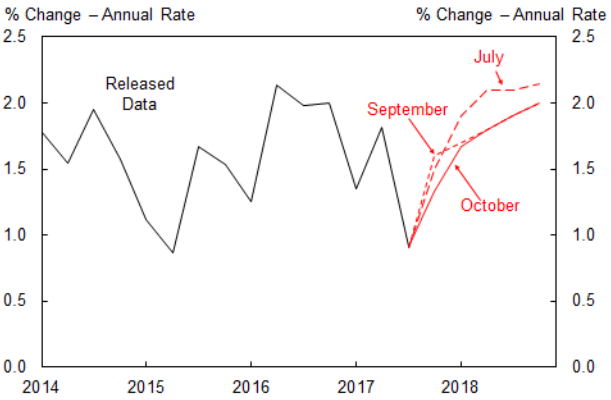
Real GDP Growth



Unemployment Rate

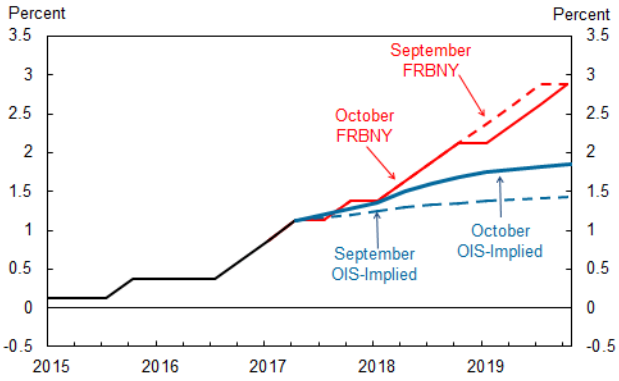


Core PCE Inflation

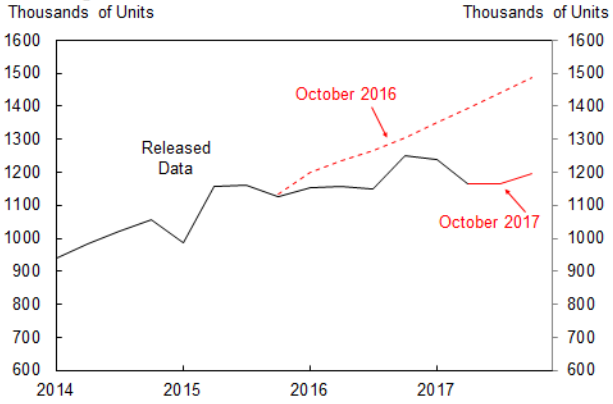


Forecast Assumptions

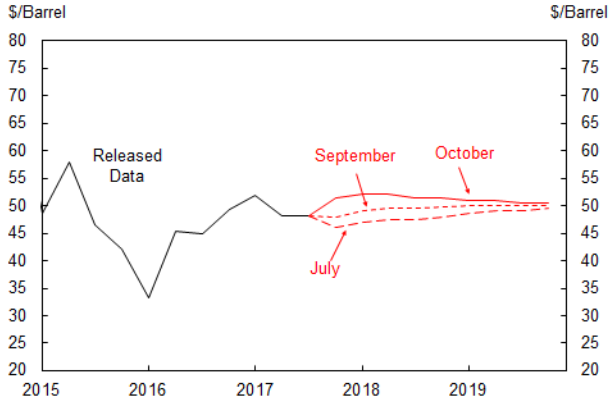
Federal Funds Rate



Housing Starts



Crude Oil



Source: FRBNY (MMS and IR Functions)

2-3: Near-Term Projections

	Growth Rates (AR)			Growth Contributions (AR)		
	2017Q3	2017Q4	2018Q1	2017Q3	2017Q4	2018Q1
OUTPUT						
Real GDP	3.0	2.5	2.6	3.0	2.5	2.6
	(2.9)	(2.9)	(1.6)	(2.9)	(2.9)	(1.6)
Final Sales to Domestic Purchasers	2.2	3.2	2.3	2.2	3.2	2.3
	(2.3)	(2.8)	(1.9)	(2.4)	(2.8)	(1.9)
Consumption	2.1	2.5	2.2	1.4	1.7	1.5
	(2.5)	(2.3)	(2.2)	(1.7)	(1.6)	(1.5)
BFI: Equipment	10.0	8.0	6.0	0.6	0.5	0.3
	(12.0)	(8.0)	(4.0)	(0.6)	(0.4)	(0.2)
BFI: Nonresidential Structures	-1.1	-0.8	4.0	0.0	0.0	0.1
	(-5.0)	(4.0)	(3.0)	(-0.1)	(0.1)	(0.1)
BFI: Intellectual Property Products	4.0	4.0	4.0	0.2	0.2	0.2
	(4.0)	(4.0)	(3.0)	(0.2)	(0.2)	(0.1)
Residential Investment	-1.0	18.7	5.0	0.0	0.8	0.2
	(2.2)	(12.6)	(-2.1)	(0.1)	(0.5)	(-0.1)
Government: Federal	1.4	-0.6	-0.6	0.1	0.0	0.0
	(-0.9)	(-0.6)	(-0.8)	(-0.1)	(-0.0)	(-0.0)
Government: State and Local	-0.8	0.9	0.5	-0.1	0.1	0.1
	(-0.5)	(0.9)	(1.0)	(-0.1)	(0.1)	(0.1)
Inventory Investment	--	--	--	0.8	0.1	-0.4
	--	--	--	(0.3)	(0.3)	(-0.2)
Net Exports	--	--	--	0.0	-0.7	0.7
	--	--	--	(0.1)	(-0.3)	(-0.1)
INFLATION						
Total PCE Deflator	1.5	2.2	1.8			
	(1.8)	(2.5)	(1.8)			
Core PCE Deflator	1.3	1.7	1.8			
	(1.6)	(1.7)	(1.8)			
PRODUCTIVITY AND LABOR COSTS*						
Output per Hour	2.2	1.5	1.3			
	(2.4)	(1.8)	(0.8)			
Compensation per Hour	3.1	2.7	3.2			
	(2.3)	(2.1)	(2.3)			
Unit Labor Costs	0.9	1.2	1.9			
	(-0.1)	(0.3)	(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		
	2017	2018	2019	2017	2018	2019
OUTPUT						
Real GDP	2.5	2.1	1.8	2.5	2.1	1.8
	(2.5)	(1.7)	(1.7)	(2.5)	(1.7)	(1.7)
Final Sales to Domestic Purchasers	2.6	2.2	1.9	2.6	2.2	1.9
	(2.6)	(1.9)	(1.9)	(2.6)	(2.0)	(1.9)
Consumption	2.4	2.1	2.0	1.7	1.5	1.4
	(2.5)	(2.1)	(2.0)	(1.7)	(1.5)	(1.4)
BFI: Equipment	7.8	4.2	2.0	0.4	0.2	0.1
	(8.3)	(2.7)	(2.0)	(0.5)	(0.2)	(0.1)
BFI: Nonresidential Structures	4.8	3.4	2.0	0.1	0.1	0.1
	(4.8)	(2.5)	(2.0)	(0.1)	(0.1)	(0.1)
BFI: Intellectual Property Products	4.4	4.0	3.0	0.2	0.2	0.1
	(4.7)	(3.0)	(3.0)	(0.2)	(0.1)	(0.1)
Residential Investment	4.9	3.6	4.1	0.2	0.1	0.2
	(4.6)	(2.8)	(4.1)	(0.2)	(0.1)	(0.2)
Government: Federal	0.1	-0.6	-0.7	0.0	0.0	0.0
	(-0.5)	(-0.7)	(-0.7)	(-0.0)	(-0.0)	(-0.0)
Government: State and Local	-0.2	0.5	0.7	0.0	0.1	0.0
	(-0.2)	(1.0)	(1.0)	(-0.0)	(0.1)	(0.1)
Inventory Investment	--	--	--	-0.1	-0.2	0.1
	--	--	--	(-0.2)	(-0.1)	(0.1)
Net Exports	--	--	--	0.0	0.1	-0.3
	--	--	--	(0.1)	(-0.2)	(-0.4)
INFLATION						
Total PCE Deflator	1.5	2.0	2.2			
	(1.7)	(2.0)	(2.2)			
Core PCE Deflator	1.5	2.0	2.2			
	(1.5)	(2.0)	(2.2)			
PRODUCTIVITY AND LABOR COSTS*						
Output per Hour	1.3	1.4	1.3			
	(1.5)	(1.0)	(1.3)			
Compensation per Hour	3.1	3.2	3.5			
	(2.8)	(2.4)	(2.6)			
Unit Labor Costs	1.8	1.8	2.2			
	(1.3)	(1.4)	(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	2017Q3	2017Q4	2017 Q4/Q4	2018 Q4/Q4
FRBNY	10/24/2017	3.0	2.5	2.5	2.1
		(2.9)	(2.9)	(2.5)	(1.7)
Blue Chip	10/10/2017	2.4	2.6	2.3	2.3
		(2.7)	(2.5)	(2.3)	(2.3)
Median SPF	8/11/2017	2.6	2.3	2.1	2.4
		(2.6)	(2.3)	(2.1)	(2.4)
Macro Advisers	10/10/2017	2.4	2.9	2.4	2.3
		(2.8)	(2.3)	(2.3)	(2.2)
FRBNY-DSGE	10/24/2017	2.7	2.1	2.3	2.0
		(2.7)	(2.1)	(2.3)	(2.0)
Median SPD	9/12/2017	--	--	2.3	2.2
		--	--	(2.2)	(2.2)

Core PCE Inflation

	Release Date	2017Q3	2017Q4	2017 Q4/Q4	2018 Q4/Q4
FRBNY	10/24/2017	1.3	1.7	1.5	2.0
		(1.6)	(1.7)	(1.5)	(2.0)
Median SPF	8/11/2017	1.6	1.8	1.5	1.8
		(1.6)	(1.8)	(1.5)	(1.8)
Macro Advisers	10/10/2017	1.3	1.5	1.4	1.6
		(1.3)	(1.6)	(1.4)	(1.7)
FRBNY-DSGE	10/24/2017	1.3	1.3	1.3	1.4
		(1.4)	(1.3)	(1.4)	(1.4)
Median SPD	9/12/2017	--	--	1.5	1.9
		--	--	(1.6)	(1.9)

Unemployment*

	Release Date	2017Q3	2017Q4	2017 Q4/Q4	2018 Q4/Q4
FRBNY	10/24/2017	4.3	4.2	-0.5	-0.1
		(4.4)	(4.3)	(-0.4)	(0.0)
Blue Chip	10/10/2017	4.3	4.3	-0.4	-0.2
		(4.4)	(4.3)	(-0.4)	(-0.2)
Median SPF	8/11/2017	4.3	4.2	-0.5	--
		(4.3)	(4.2)	(-0.5)	--
Macro Advisers	10/10/2017	4.4	4.3	-0.5	-0.3
		(4.4)	(4.3)	(-0.4)	(-0.2)
Median SPD	9/12/2017	--	--	-0.4	-0.3
		--	--	(-0.5)	(-0.1)

Note: Numbers in gray are from the previous Blackbook.

*Yearly values are the difference between Q4 of the listed year and Q4 of the previous year.

2-6: Tealbook Comparison

	FRBNY (Q4/Q4)			Tealbook (Q4/Q4)		
	2017	2018	2019	2017	2018	2019
OUTPUT						
Real GDP Growth	2.5	2.1	1.8	2.6	2.4	1.9
	(2.5)	(1.7)	(1.7)	(2.6)	(2.3)	(1.9)
GDP Growth Contributions						
Final Sales to Domestic Purchasers	2.6	2.2	1.9	2.6	2.3	1.9
	(2.6)	(2.0)	(1.9)	(2.6)	(2.3)	(1.8)
Consumption	1.7	1.5	1.4	1.9	1.8	1.6
	(1.7)	(1.5)	(1.4)	(1.8)	(1.8)	(1.6)
BFI	0.7	0.5	0.3	0.8	0.4	0.2
	(0.8)	(0.4)	(0.3)	(0.8)	(0.4)	(0.2)
Residential Investment	0.2	0.1	0.2	0.0	0.1	0.1
	(0.2)	(0.1)	(0.2)	(0.0)	(0.1)	(0.1)
Government	0.0	0.0	0.0	0.0	0.1	0.1
	(-0.1)	(0.1)	(0.1)	(0.0)	(0.1)	(0.1)
Inventory Investment	-0.1	-0.2	0.1	-0.2	0.0	0.0
	(-0.2)	(-0.1)	(0.1)	(-0.2)	(-0.1)	(0.0)
Net Exports	0.0	0.1	-0.3	0.3	0.0	-0.1
	(0.1)	(-0.2)	(-0.4)	(0.2)	(0.0)	(-0.1)
INFLATION						
Total PCE Deflator	1.5	2.0	2.2	1.5	1.7	2.0
	(1.7)	(2.0)	(2.2)	(1.5)	(1.9)	(2.0)
Core PCE Deflator	1.5	2.0	2.2	1.4	1.8	2.0
	(1.5)	(2.0)	(2.2)	(1.5)	(1.9)	(2.0)
LABOR MARKET						
Unemployment Rate (Avg. Q4 Level)	4.2	4.1	4.1	4.2	3.7	3.6
	(4.3)	(4.3)	(4.4)	(4.2)	(3.8)	(3.7)
Participation Rate (Avg. Q4 Level)	62.9	62.9	63.0	62.8	62.6	62.5
	(62.9)	(63.0)	(63.0)	(62.8)	(62.6)	(62.5)
Avg. Monthly Nonfarm Payroll Growth (Thous.)	164	149	138	172	179	138
	(171)	(117)	(103)	(181)	(179)	(122)
SAVING						
Personal Saving Rate (Avg. Q4 Level)	3.3	3.8	4.1	3.1	3.6	3.5
	(2.9)	(2.7)	(5.9)	(3.3)	(3.5)	(3.4)
HOUSING						
Housing Starts (Avg. Q4 Level, Thous.)	1195	1295	1355	1200	1300	1300
	(1190)	(1280)	--	(1200)	(1300)	(1300)
INTREST RATE ASSUMPTION						
Fed Funds Rate*	1.38	2.13	2.88	1.35	2.52	3.46
	(1.38)	(2.13)	(2.88)	(1.42)	(2.62)	(3.47)

Note: Numbers in parentheses are from the previous Blackbook and Tealbook.

* FRBNY numbers indicate end of year Federal Funds Rate, Tealbook numbers indicate average of Q4 Federal Funds Rate.

3. Uncertainty & Risks

Developments during the intermeeting period indicate little change in the uncertainty and risks assessment around the outlook from that in the September *Blackbook*. Based on the difference between the modal forecast and the expected value from our forecast distributions [Exhibit 3-1], as well as the changes in the distributions [Exhibit 3-3], the risks to growth are roughly balanced through much of the forecast horizon. For core PCE inflation, the risks are also balanced throughout the forecast horizon. The widths of the probability intervals for both real growth and inflation are slightly narrower than those in the September *Blackbook*, particularly at longer horizons. The uncertainties around the GDP growth and inflation projections are relatively close to their respective historical norms.

The small changes in uncertainty and risks occurred even as we raised our modal forecast for real GDP growth in 2018. Despite a continued solid tone to the activity data, the major sources of uncertainty over recent months have not been resolved. Although the Senate passed a budget resolution, the fate and extent of any tax package remains unclear. Geopolitical uncertainties, including North Korea and European political developments, have not diminished significantly. Inflation indicators were again on the soft side in September, but wage growth appeared to pick up moderately. Longer-term inflation compensation from TIPS and survey measures of longer-run inflation expectations remained low. Overall financial conditions were mixed over the intermeeting period, with a rise in equity prices, an increase in longer-term Treasury yields, a dollar appreciation, and a narrowing of corporate spreads. In response to the developments, we made essentially no changes to the old scenario probabilities [Exhibit 3-2, right panel]. The weights on the scenarios developed under the methodology introduced in the September *Blackbook*, which we describe below, are unchanged from the last *Blackbook* and are all equal to each other [Exhibit 3-2, left panel]. They will change over time as our assessment of the balance of risks evolves. Exhibit 3-2 also displays that we currently place a weight of 80 percent on the old scenarios, and 20 percent on the new ones.

In a comparison to the forecast distribution from a year earlier, the current projection for inflation runs along the lower end of the 50 percent probability interval into 2018, reflecting the impact of low inflation data of recent months [Exhibit 3-3, lower left panel]. Thereafter, the

inflation projection is in the middle of the year-ago distribution as we continue to anticipate inflation to overshoot the longer-run objective in 2019. The current real GDP growth projection is near the upper end of the 50 percent probability interval into 2018, as we project near-term growth to be moderately stronger than we did in mid-2016, which reflects the recent stronger activity data. The current projection then moves gradually toward the middle of the year-ago distribution by the end of 2019.

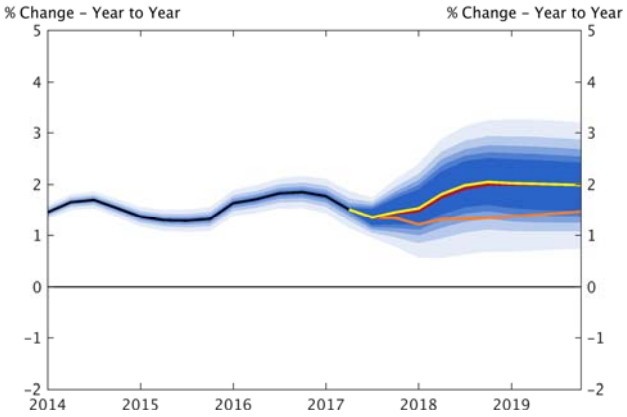
Under the methodology introduced in the September *Blackbook*, there are eight scenarios: Seven financial conditions, measured by an increase in corporate bond yields in the next quarter (*High Spreads*). The next two scenarios consider the effects of a substantial increase in consumer expectations after November 2016, with the rise more persistent in the second scenario (*Surge in Consumer Expectations*; *Persistent Consumer Optimism*). The fourth has a sudden increase in the 10-year Treasury yield, possibly driven by shifting expectations about the evolution of the Fed balance sheet (*Taper Tantrum*). The fifth scenario describes the effects of a downward shift in public sentiment coupled with a significant tightening of financial conditions (*Broad Policy Disappointment*). The last two BVAR scenarios focus on global factors. The first assumes a tightening in global financial conditions driven by a worsening outlook for emerging economies that raise corporate spreads, compress treasury yields, reduce equity prices, and appreciates the dollar (*EME Turbulence*). The *Strong Global Growth* scenario depicts a nearly opposite situation where improved prospects for the global economy fuel easier financial conditions, higher oil and commodities prices, and a temporary dollar depreciation (*Strong Global Growth*). The last scenario, produced using the DSGE, considers the implications of a positive output gap over the next two years—similar to that projected in the Tealbook—coupled with a Phillips curve steeper than baseline estimates (*Positive Output Gap*).

The four panels in Exhibit 3-4 describe the mean paths of core PCE inflation, real GDP growth, the real natural rate of interest and the nominal federal funds rate under the new alternative scenarios. The grey-shaded area in each panel denotes the 90 percent bands of the variable's forecast distribution. These forecasts are computed by interpreting both new and old scenarios through the NY Fed DSGE model. The *EME Turbulence*, the *Positive Output Gap* and *Strong Global Growth* imply the strongest deviations from our central projections. In the *EME*

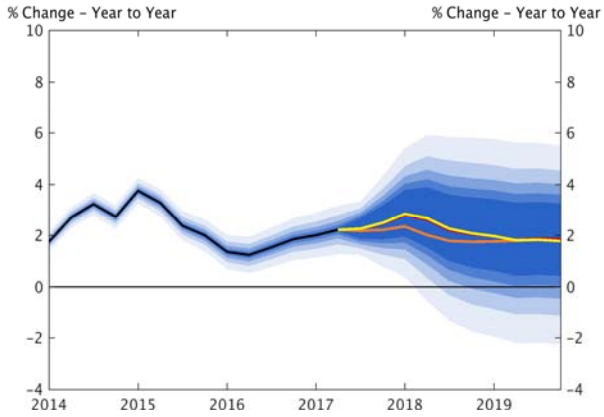
Turbulence scenario, inflation dips towards 1 percent while the economy enters a recession. As the natural rate of interest remains in negative territory until mid-2018 the policy rate falls back to the zero lower bound constraint. Conversely, output growth and inflation surge under both *Strong Global Growth* and *Positive Output Gap* scenarios, as output overshoots its potential level and inflation responds to a steeper-than expected Phillips curve and/or a weaker dollar. In response, the path of the federal funds rate steepens considerably, moving above 2 percent by the end of this year.

3-1: Forecast Distributions

Core PCE Inflation Forecast Distribution



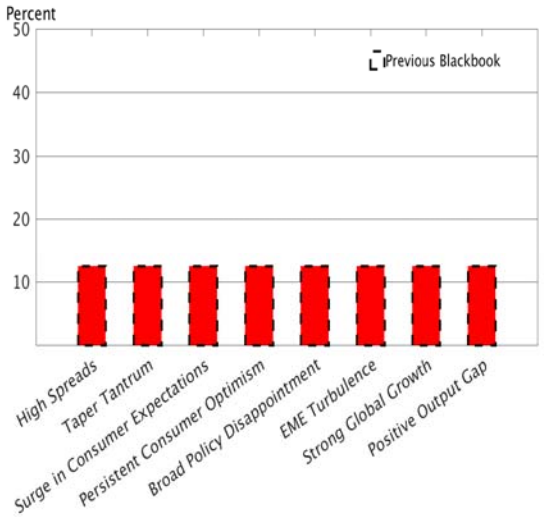
Real GDP Growth Forecast Distribution



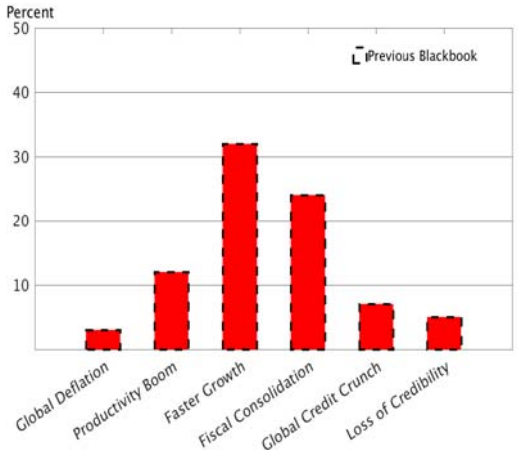
The yellow line is the expected value of the forecast distribution, the red line is the New York Fed central projection, the orange line is the DSGE forecast, and the black line is released data. The shading represents the 50, 60, 70, 80 and 90 percent probability that the four-quarter change will be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

3-2: Scenario Probabilities

New Scenario Probabilities (20%)



Old Scenario Probabilities (80%)

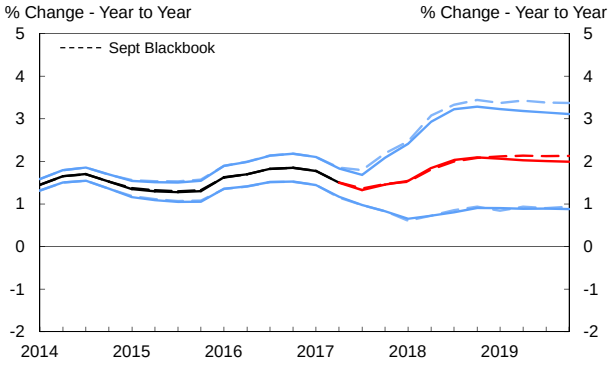


Both charts show the probabilities of ever reaching an alternative scenario over the forecast horizon, an assessment of the overall likelihood of each alternative scenario. The left chart shows the new scenarios, which constitute 20% of the final mixture of scenarios. The right chart shows the old New York Fed scenarios, which constitute 80% of the final mixture. A short description of the scenarios and the methodology to perform risk assessment is in the Appendix.

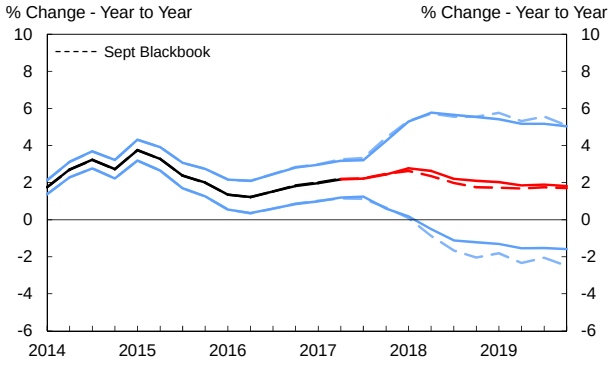
Source: MMS Function (New York Fed)

3-3: Evolution and Performance of Forecast Distributions

Change in Core PCE Inflation Forecast Distribution

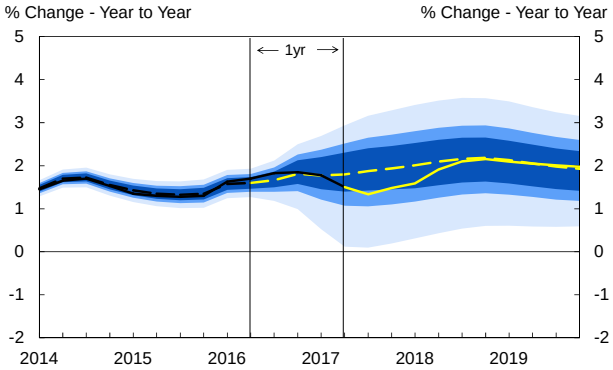


Change in Real GDP Growth Forecast Distribution

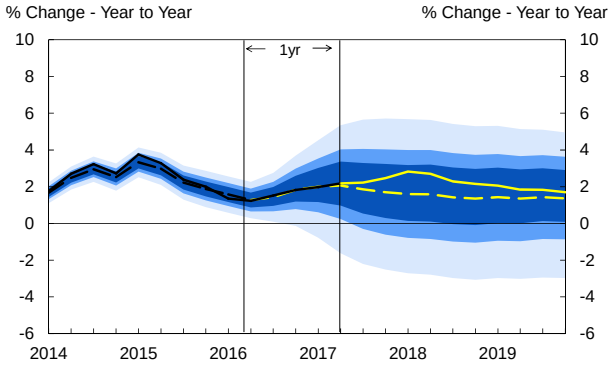


The red lines are the central scenario projections, black lines are released data, and blue lines represent upper and lower 90 percent forecast probability intervals. Dashed lines represent forecasts from the previous Blackbook.

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



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

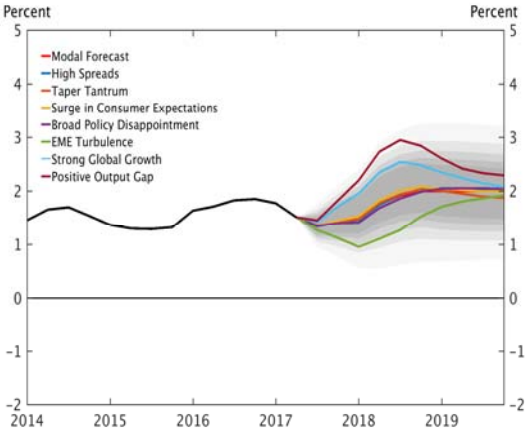


The solid yellow lines are the current expected values from the forecast distributions and the dashed yellow lines are the year-ago Blackbook expected values. Black lines are released data and the blue shaded areas represent 50 (darkest shade), 70, and 90 (lightest shade) percent forecast probability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

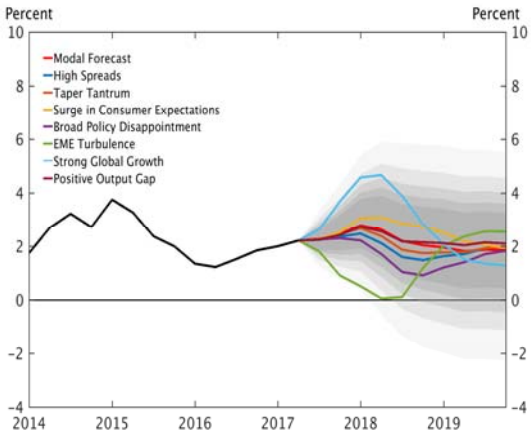
Source: MMS Function (FRBNY)

3-4: Projections under Alternative Scenarios

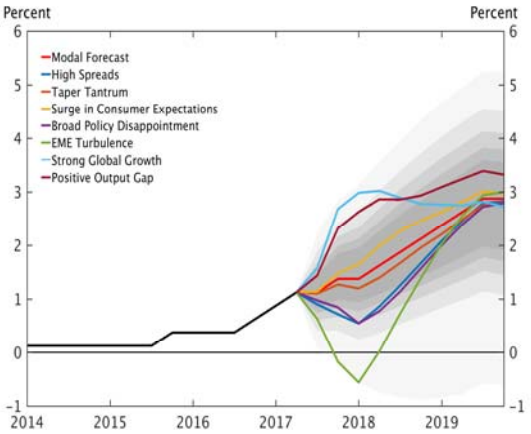
Core PCE Inflation under Alternative Scenarios



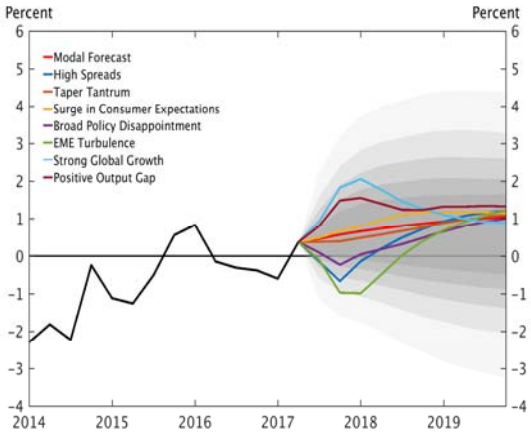
Real GDP Growth under Alternative Scenarios



Nominal FFR under Alternative Scenarios



Natural Rate of Interest under Alternative Scenarios



The black lines are released data and the red lines are the modal forecast. The shading represents the 50, 60, 70, 80 and 90 percent probability that the four-quarter change will be within the respective range.

Source: MMS Function (New York Fed)

Appendix

A-1. Constructing and Interpreting Scenarios

In the appendix we will use the labels "old" and "new" scenarios to refer to the alternative scenarios existing before the September 2017 *Blackbook* (old) and those introduced in that Blackbook or after (new). The old scenarios are constructed to provide plausible distributions for output growth and inflation under a variety of economic conditions. The new scenarios are constructed through a Bayesian VAR (BVAR) or the NY Fed DSGE model.

To construct the BVAR scenarios, we postulate a change in economic conditions (e.g., an increase in consumer confidence) and trace out the effect on other economic and financial variables using the BVAR. More specifically, BVAR scenarios are based on the difference between a forecast distribution *conditional* on current data and possible *future events* (e.g., a rise in consumer confidence) and the BVAR *unconditional* forecast distribution (the forecast without conditioning on any future event). Scenarios are then defined by their particular conditioning assumptions (see below).

DSGE scenarios differ from the BVAR scenarios in that they trace out the effects of posited changes in structural equations (e.g., a steeper Phillips curve) possibly combined with some conditioning assumptions (e.g., a given projected size of the output gap).

Since the September 2017 *Blackbook*, both old scenarios and the BVAR scenarios are replicated and interpreted using the NY Fed DSGE model. The DSGE interprets the BVAR scenarios as described by four variables (inflation, output and consumption growth, and spreads) in terms of a subset of its structural shocks. The choice of shocks is guided by the narrative behind each scenario. Based on the recovered shocks, the DSGE can be used to calculate a path for variables of policy interest such as the *natural interest rate* and *the output gap*. Moreover, the DSGE model is used to compute the path of the federal funds rate through the model's historical policy rule. The interpretation of the old scenarios is done in similarly, except that only inflation and output growth are used as the observable variables.

A-2. Alternative Scenario Descriptions

"Old" scenarios. There are six "old" alternative scenarios. The first considers the impact of productivity growth persistently above our assumed trend of about 1.5 percent on a nonfarm business sector basis (*Productivity Boom)*. The second scenario (*Fiscal Consolidation)* assesses the consequences of persistently below-trend productivity growth, in part prompted by sustained fiscal restraint. In the third (*Faster Growth*), subsiding "headwinds" lead to stronger response of aggregate demand to accommodative policy. The fourth scenario (*Loss of Credibility*) assumes that the public and investors become more concerned about the path of policy. In the last 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.

Note that these scenarios are interpreted through the DSGE model. Given that these scenarios are defined on the basis of the paths for output growth and inflation only, they are interpreted in terms of two DSGE structural shocks in order to obtain other policy-relevant variables. The *Central Scenario* (defined below) is instead interpreted using all the shocks in the model.

"New" scenarios. In this *Blackbook* we consider 8 scenarios: Seven are produced using the BVAR and one using the DSGE. Our first scenario considers a tightening of financial conditions in the U.S., measured by an increase in corporate bond yields in the next quarter (*High Spreads*). The next two scenarios consider the effects of a substantial increase in consumer expectations after November 2016, with the rise more persistent in the second scenario (*Surge in Consumer Expectations*; *Persistent Consumer Optimism*). The fourth scenario has a sudden increase in the 10-year Treasury yield, possibly driven by shifting expectations about the evolution of the Fed balance sheet (*Taper Tantrum*). The fifth scenario describes the effects of a downward shift in public sentiment coupled with a significant tightening of financial conditions (*Broad Policy Disappointment*). The last two BVAR scenarios focus on global factors. The first assumes a tightening in global financial conditions driven by a worsening outlook for emerging economies. These developments raise corporate spreads, compress treasury yields, reduce equity prices substantially, and lead to a dollar appreciation (*EME Turbulence*). The *Strong Global Growth* scenario depicts a nearly opposite situation where improved prospects for the global economy

fuel easier financial conditions, higher oil and commodities prices, and a temporary dollar depreciation (*Strong Global Growth*). The last scenario, produced using the DSGE, considers the implications of a positive output gap over the next two years—similar to that projected in the Tealbook—coupled with a Phillips curve steeper than baseline estimates (*Positive Output Gap*).

A-3. Methodology to Construct the Forecast Distribution

The Forecast Distribution from the Old Scenarios

To calculate the forecast distribution from the old scenarios we first create 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 has entered 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 indicated scenario 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.

The Forecast Distribution from the New Scenarios

The way alternative paths in the new forecast distribution are generated is fairly similar to the old method described above. This distribution is described by three components: (1) the *Central Scenario* which comprises the NY Fed modal forecast and a distribution based on historical

forecast errors; (2) the alternative scenarios described above; (3) probabilities of entering and leaving the scenarios.

Alternative forecast paths based on specific scenarios are generated as follows. In the first quarter the economy starts at the Central Scenario, but in each subsequent quarter over the forecast horizon it can switch to a specific alternative scenario with some exogenously chosen probability (currently, these probabilities are 20 percent for the first quarter, 50 percent for each of the 11 subsequent quarters, and 0 thereafter). Conditional on being in the alternative scenario, the economy faces a constant probability in each quarter of switching back to the central scenario (currently 15 percent, so that the average alternative scenario duration is six quarters). The central scenario is an absorbing state: once the economy switches back from the alternative scenario to the central scenario it remains there over the rest of the forecast horizon. Also, there is no switching among alternative scenarios; that is, each individual alternative path is built using only one alternative scenario. The forecast distribution is then obtained by combining draws from each scenario-specific alternative path. The proportion of draws built from specific scenarios depends on the subjective probability associated with each scenario. Note that when we display mean paths (or distributions) under a given scenario, we include in these computations all paths that ever entered such scenario.

Combining the Forecast Distributions from the Old and New Scenarios

Currently the NY Fed forecast distribution is obtained as a mixture of the forecast distributions from the old and new scenarios with mixture probabilities of 80 and 20 percent, respectively.

FOMC BACKGROUND MATERIAL

RESEARCH AND STATISTICS GROUP

FRBNY Blackbook

December 2017

CLASS II FOMC - RESTRICTED (FR)

FRBNY BLACKBOOK

December 2017

CONTENTS

APPENDIX

1. Policy Recommendation and Rationale

The recent passage of far-reaching tax reform bills by the House and the Senate has rekindled the debate on the upside risk to real activity associated with an overhaul of the U.S. tax system. Our modal projection has incorporated a small increase—about ¼ percentage point—to real GDP growth in 2018. Combined with our assessment of somewhat stronger upward momentum in real activity, we have raised our projection for real GDP growth in 2018 by almost ½ percentage point and lowered the forecast for the unemployment rate at the end of that year. Nevertheless, the new tax package has not altered significantly our views about potential output growth nor our assessment of the inflation outlook, and we still see the economy as evolving broadly in line with our previous outlook.

In light of these considerations, our policy recommendation remains as outlined in the previous *Blackbook*: generally solid economic conditions warrant a 25 bps increase in the FFR target range at the December meeting, and we continue to anticipate that three additional 25 bps increases in both 2018 and 2019 would be apt if conditions evolve according to our forecasts. Particularly important in determining the appropriate path of the policy rate over this period is whether core inflation firms broadly in line with our forecast. Notably, our modal projection includes some mild overshooting of inflation around the end of the decade, consistent with the symmetric nature of the price stability objective.

Data on economic activity released over the intermeeting period generally were somewhat better than our expectations. Consistently, the New York Fed nowcast for 2017Q4 increased from 3.05 percent on October 27 to 3.91 percent on December 6. Labor market conditions strengthened further, as payroll employment gains remained solid and unemployment fell; however, compensation growth continued to be subdued. The recent inflation data were generally consistent with our outlook, as the 12-month change in core PCE inflation has begun to move up modestly. Much of the upward movement has been in core services, including owners' equivalent rent, while core goods prices continue to fall. Market-implied inflation compensation and survey measures of inflation expectations were little changed over the intermeeting period and remain low on a historical basis. In the November SCE (to be published on December 11), median expectations were unchanged at the three-year (2.8%) and one-year (2.6%) horizons.

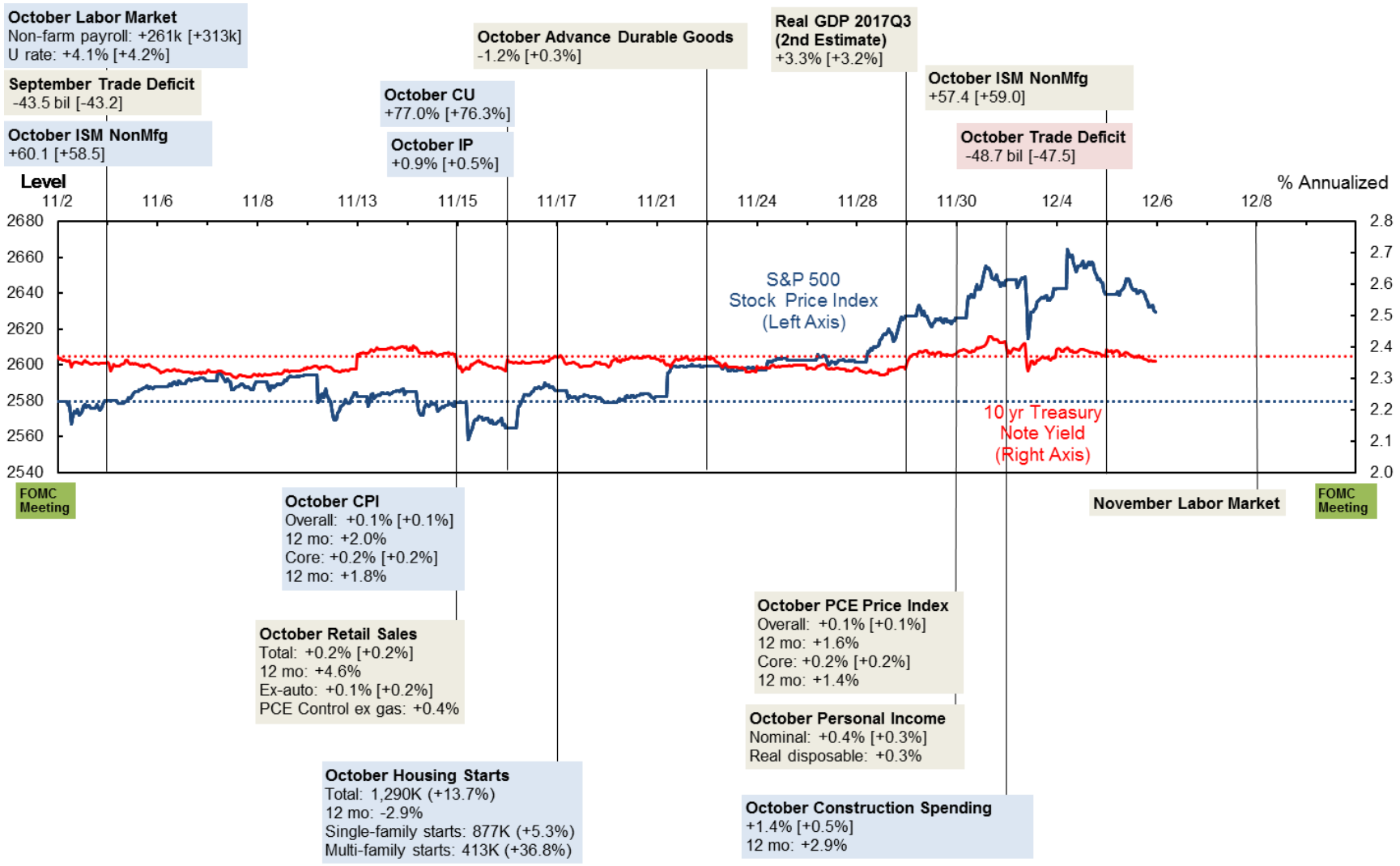
Over the intermeeting period, financial conditions continue to be generally accommodative, as equity prices continued to rise, realized and implied volatility generally remained low, corporate credit spreads and long-term Treasury yields were essentially unchanged, and the dollar depreciated. The market-implied expected path of the federal funds rate moved up modestly, steepening some at shorter horizons but flattening slightly at longer horizons. Pricing implies the expected federal funds rate to be a little under 2 percent in early 2019 and to be only modestly above that level over the following couple of years. The market-implied probability of a 25 bps rate hike at the December FOMC meeting is roughly 95 percent, and respondents in the December Desk surveys assign an 85 percent unconditional probability to this event.

Real GDP growth in Q4 is projected to be 2.4 percent (annual rate), just below the 2.5 percent projection in the previous *Blackbook*. Even though real growth in Q4 is projected to be a little lower, the underlying pace appears somewhat stronger, as the reduction in the projection came from lower inventory investment and higher import growth. With stronger momentum and the incorporation of a tax cut into our central forecast, we anticipate real GDP growth in 2018 to be about 2.5 percent (Q4/Q4), appreciably above our estimate of the economy's potential growth rate, which remains at 1¾ percent. Growth is then projected to slow to about 2 percent (Q4/Q4) in 2019, as the anticipated path of policy normalization leads to a gradual tightening of financial conditions. With a stronger growth outlook, we project that the unemployment rate will fall below 4 percent in 2018 and then begin to rise modestly in 2019. Even with the changes in the real activity outlook, the medium-term inflation outlook is substantially unchanged, with core PCE inflation expected to rebound from 1.5 percent in 2017 to about 2 percent in 2018 and modestly above that in 2019.

The risks around the growth and inflation outlooks remain roughly balanced. While the passage of the tax bills provides some resolution of uncertainty regarding fiscal policy, the details of an eventual tax package and their macroeconomic implications remain ambiguous. The effects likely will be uneven across individuals and geographic regions, so any assessment of general-equilibrium net gains and distortions will be highly imprecise. In addition, other aspects of the current policy landscape, such as the threat of the U.S. withdrawing from NAFTA, continue to

represent downside risks to the outlook for economic activity. Inflation risks remain similar to those of the past several FOMC cycles. On the downside, global disinflationary forces could contribute to keep inflation persistently subdued and lead to lower inflation expectations. On the upside, stronger growth and nonlinearities in the Phillips Curve could result in higher inflation and possibly begin to raise inflation expectations above levels consistent with the FOMC's inflation objective.

In sum, with a somewhat brighter medium-term growth outlook and financial conditions remaining generally buoyant, we maintain our previous policy recommendation of increasing the target range for the policy rate by 25 bps at the December FOMC meeting. We also continue to recommend a pace of increase in the policy rate over the next two years similar to that of this year. Inflation data and financial conditions will be important in assessing the appropriateness of this recommendation in the coming months. For example, if upcoming inflation readings indicate a notable deterioration in the inflation outlook or financial conditions tighten unexpectedly, then a pause in the removal of accommodation would be suitable.



Note
Blue shading: Data release encouraging/positive.
Red shading: Data release discouraging/negative.
Grey shading: Data release was neutral.
Numbers in square brackets are the median of the Bloomberg survey.
Numbers in parentheses represent changes from the prior month.

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, growth of real GDP in the third quarter was revised up to 3.3 percent (annual rate) from the advance estimate of 3.0 percent. There were modest upward revisions in a number of expenditure categories that contributed to the upward revision. The growth rate of business equipment spending was revised upward from 8.6 percent to 10.4 percent (annual rate) and the growth in intellectual property products was revised up 1.5 percentage points to 5.8 percent. In addition, there was stronger government spending at the state and local level, which is now estimated to have declined at a 0.1 percent annual rate versus a decline of 0.9 percent in the advance report, as well as greater inventory investment. In contrast, the growth rate of real personal consumption expenditures was revised downward very slightly from 2.4 percent to 2.3 percent (annual rate). There was also a downward revision to the level of wage and salary income for 2017Q2 resulting from the incorporation of the second quarter data from the BLS Quarterly Census of Employment and Wages, which partially fed into the estimate of wages and salaries for 2017Q3. As a consequence, real disposable income growth for 2017Q3 was revised downward slightly from 0.6 percent to 0.5 percent (annual rate). With modest downward revisions to both real PCE and disposable income, the saving rate for 2017Q3 was revised downward from 3.4 percent to 3.3 percent. The 2017Q3 inflation rate as measured by the overall PCE deflator remained at +1.5 percent (annual rate), while that measured by the core PCE deflator was revised upward slightly from +1.3 percent to +1.4 percent.

The intermeeting period also provided the first estimate of productivity growth for the third quarter. Labor productivity in the nonfarm business sector rose at a 3.0 percent annual rate in 2017Q3, above the consensus forecast of +2.6 percent. The pace of labor productivity growth picked up compared to the first half of the year and it registered its highest reading since 2014Q3. The four-quarter change in productivity was 1.5 percent, the strongest since the second quarter of 2015.

Until a little over a week ago, the incoming US data were generally upbeat, leading us to expect growth of real GDP in the fourth quarter to be above 3 percent for a third consecutive quarter.

Growth of nonfarm payroll employment rebounded in October following a hurricane-depressed September reading. Growth in manufacturing output showed a notable pickup in October after a gain in September. The housing market data for October surprised to the upside, with starts, new home sales, and existing home sales all increasing. However, data on inventory accumulation and exports and imports of goods in October came in weaker than we were expecting. In addition, auto sales in November were a bit disappointing, and real consumer spending showed a marked slowdown in October from the robust pace in September. Taken together, the expenditure side data for October and November have suggested that growth of real GDP in the fourth quarter will likely be around 2 ½ percent.

After rising at a robust 6.1 percent annual rate in September, consumer spending rose just 1.3 percent in October. Goods expenditures rose 3.3 percent (annual rate) in October, a sharp slowing from the pace of 14.4 percent in September, with the slowdown in goods expenditures due to a decline in the durable goods category. Growth of expenditures on services was weak, increasing only 0.4 percent (annual rate), following a 2.3 percent rise in September. Real disposable income grew at a 3.8 percent (annual rate) in October, and the personal saving rate rose to 3.2 percent after declining to 3.0 percent in September, its lowest level since December 2007. As recently reported, total sales of light-weight motor vehicles declined to 17.5 million units (seasonally-adjusted annual rate) in November. These sales have returned to a downward trend after a spike to 18.6 million units in September that reflected a combination of hurricane-related replacement and sizable discounts intended to reduce somewhat bloated inventories. We anticipate some rebound in consumer spending in November and December, with the Q4 growth rate of real PCE comparable to that of the third quarter (2.3 percent annual rate).

Total housing starts in October were an upside surprise, rising 13.7 percent to 1.290 million units (seasonally-adjusted annual rate). Single-family starts rose 5.3 percent in October to 877,000 units, while multi-family starts surged 36.8 percent to 413,000 units. Taking a three-month moving average to smooth out volatility, single-family starts remain on a gradual uptrend while multi-family starts have rebounded somewhat but remain below recent peak levels. Going forward, we expect single-family starts to remain on a gradual uptrend as conditions in the single-family market are generally rather tight. Inventories of existing homes for sale are

relatively low, and home prices at the national level are now rising around 7 percent on a year-over-year basis. Continued improvement in the labor market has the potential to strengthen the rate of recovery in this sector. The increase of multi-family starts comes after a roughly nine month period of declines. The three-month moving average of multi-family permits has been in the 420,000 to 450,000 range for the past few months, suggesting that multi-family starts may move up to that range in the months ahead. However, that would still be consistent with our view that multi-family starts have peaked for now, reflecting rising vacancy rates. At this point we expect residential investment to increase at around a 6 percent annual rate in the fourth quarter. This is less than would be suggested by the increase in starts alone due to the fact that it appears that the value per unit of both single-family and multi-family units is declining again after having stabilized over the past year.

Real business investment in new equipment increased at a 10.4 percent annual rate in the third quarter following an 8.8 percent increase in the second quarter. Over the past four quarters, this category of expenditure is up 6.3 percent, the strongest since 2014Q3. The recent gains have been broad-based, although increases in oil and gas related equipment spending peaked in the first quarter and have since been slowing. Recent high frequency data suggest that the fourth quarter gain in this category may be even stronger than the Q3 pace. Shipments of nondefense capital goods excluding aircraft continue to rise at a brisk pace, rising 9.3 percent over the twelve months ending in October. Moreover, it appears that the rate of increase is accelerating, with the three-month annualized change at 16.3 percent. New orders for nondefense capital goods ex aircraft have increased somewhat faster over the past three months, with the level remaining above that of shipments. In addition, exports of capital goods have weakened in the past few months while imports have strengthened.

In contrast to investment in new equipment, real business investment in nonresidential structures declined at a 6.8 percent annual rate in the third quarter, with the weakness broad based. Private nonresidential construction put in place rose 0.9 percent in October following four consecutive monthly declines. The October level is only modestly above the Q3 average level, while the rate of increase of prices in the sector is accelerating, reaching 4.5 percent (annual rate) in Q3. For the fourth quarter we are anticipating essentially no change in this expenditure category.

Real consumption and gross investment of the total government sector rose at a 0.4 percent annual rate in the third quarter after declining modestly over the first half of the year. Spending at the federal level increased 1.3 percent (annual rate) led by a 2.4 percent increase in defense spending. Spending at the state and local level was essentially unchanged in the third quarter, held back by continuing declines in spending on structures. The early fourth-quarter data for the government sector, however, suggest some firming in spending is underway, particularly at the state and local level. Defense spending increased briskly again in October. Growth of employment at the state and local level, which has been slowing for the past year, perked up in October. And most importantly, after being on a downward trend for the past two years, construction spending at the state and local level has begun to rebound, rising for three consecutive months through October. We currently project that real government spending will increase at around a 2 percent annual rate in the fourth quarter, the strongest quarterly increase since 2015Q2.

The trade data continued to be an upside surprise in the third quarter, with net exports making a positive 0.4 percentage point growth contribution. However, the trade deficit for October was larger than expected, with real exports of goods falling 0.2 percent and real imports of goods rising 1.5 percent. Some of the real export weakness was due to weaker foods, feeds and beverages exports, which is historically volatile, but a major driver of U.S. goods exports, capital goods (excluding autos), also experienced a significant real decline in October. Similarly, strong real imports could partially be traced to volatile components but also to components more directly linked to strong domestic spending, such as import volumes of consumer goods (excluding autos). A sizeable negative net export contribution to Q4 GDP growth should therefore be expected, although there might be some uncertainty regarding the magnitude, and at this time we expect net exports to exert a 0.3 percentage point drag on the Q4 growth rate.

After barely increasing at all over the first half of 2017, inventory accumulation picked up in the third quarter, contributing 0.8 percentage point to the overall growth rate. Data for October suggest that the pace of inventory accumulation is likely to slow again in the fourth quarter. At this point we have penciled in a 0.4 percentage point drag from inventory accumulation in Q4,

although this estimate of course is subject to change. As mentioned above, real imports of goods increased sharply in October. In addition, manufacturing output increased 1.3 percent in October after a 0.4 percent rise in September, with upward revisions to the data for the previous months. The increase in October production was consistent with the October labor market report which noted a sizable rise in aggregate manufacturing hours for the month. The rise in manufacturing activity for October was broad based across the major sectors. Motor vehicle and parts production rose 1.0 percent in October, its third consecutive increase. Production in high-tech industries increased 1.1 percent, which marked its third consecutive increase of around 1 percent. Production rose briskly for computers and semiconductors, although it declined for communications equipment. The strong increases in manufacturing production in October importantly reflected rebounds in activity following the effects of the hurricanes and point to continued improvement in manufacturing conditions. While the recent data are encouraging, manufacturing production still is far from fully recovered from the recent recession – the October level of manufacturing production was about 4.7 percent below the December 2007 peak.

The ISM (Institute for Supply Management) manufacturing composite index fell to 58.2 in November from 58.7 in October, although it remained at a level consistent with solid growth in the sector. There have also been readings from November for various regional Fed manufacturing surveys. While the Empire State and Philadelphia Fed indexes showed modest declines in November, they also remained at fairly high levels and signaled robust manufacturing conditions in those Districts. The ISM non-manufacturing composite index decreased to 57.4 in November from 60.1 in October, but the latter reading reflected the highest level in more than a decade.

Employment gains and hours worked rebounded in October from their hurricane-depressed readings in September. Nonfarm payroll employment rose by 261,000 in October, although this was below the consensus expectation of a gain of 313,000, while payroll gains for August and September were revised up by a combined 90,000. As expected, the stronger payroll employment gains in October came primarily from the private service-providing sector of the economy, particularly the leisure and hospitality sector which showed an increase of 106,000 and reversed the adverse employment impact of Hurricanes Harvey and Irma in the previous month. Payroll

gains in the private goods producing sector also rose. Average weekly hours remained unchanged at 34.4 hours. With the notable rise in payrolls, aggregate hours worked increased 0.2 percent in October after declining 0.1 percent in September. Average hourly earnings were essentially flat in October after rising a strong 0.45 percent in September. The slowdown in the reported average hourly earnings likely reflected the reversal of the hurricane effects from the previous month, as many workers with relatively low wages were again included in the establishment survey which helped to lower the average.

The unemployment rate fell 0.1 percentage point in October to 4.1 percent, its lowest reading since December 2000. The drop in the unemployment rate was due primarily to declines in unemployment among female workers 25 years old and older. An alternative measure of unemployment, U6, which includes marginally attached workers and workers who hold part-time jobs but prefer full time jobs declined notably from 8.3 percent to 7.9 percent. The participation rate declined from 63.1 percent to 62.7 percent after increasing 0.2 percentage point in September. The decline can be attributed to a decrease in flows from non-participation to employment coupled with an increase in flows from employment to non-participation.

The total PCE and the core PCE deflator rose 0.1 percent and 0.2 percent, respectively, in October. The 12-month change of the total PCE was 1.6 percent, while the core PCE deflator showed a rise of 1.4 percent. While the October price data indicate that total PCE inflation and core PCE inflation continue to be well below the FOMC's objective, core inflation appears to be on a firmer trajectory over the near-term. The 12-month change of the core PCE deflator has moved up from its recent low of 1.3 percent in August. In addition, the 3-month annualized change in the core PCE deflator is now 1.9 percent, with the rate of increase of owners' equivalent rent having begun to move back up and the decline of the price of cellular telephone services having moderated significantly. We expect the core PCE deflator to increase by 2.0 percent (annual rate) in the fourth quarter, up from 1.4 percent in the third quarter.

While core inflation has shown some recent firming, the response of household inflation expectations was mixed. The median response of household inflation expectations at the one-year-ahead horizon from the Michigan survey ticked up slightly from 2.4 percent in October to

2.5 percent in November. Longer-dated household inflation expectations, however, declined slightly to 2.4 percent from 2.5 percent in October, somewhat below the average of the past two years.

The Outlook

As of now, our projection for growth of real GDP in 2017Q4 is around 2 ½ percent, resulting in a Q4/Q4 growth rate of 2.5 percent for 2017, broadly in line with the October Blackbook. Nonetheless, the US and global economies appear to have more forward momentum going into 2018 than we expected to be the case earlier this year. In particular, manufacturing activity has rebounded smartly in the US and the Euro Area, and to a lesser extent in China. In the case of the US, it now appears that by 2018Q1, the NIPA based inventory-sales ratio will be the lowest since mid-2014, just when the dollar and commodity price shocks began to unfold. In addition, in the US there is now clear evidence of a sustained strengthening in the pace of business investment, a development we have been expecting for some time. As evidence of this stronger momentum has become clearer, we upgraded our forecast for 2018 in the October Blackbook and have done so again in this cycle.

In addition, given the high likely-hood that a tax reform/cut will be enacted in the near future, we have incorporated this legislation into our modal forecast. The House and Senate versions of this legislation are conceptually similar, providing lower marginal income tax rates for individuals and businesses in return for a broadening of the tax base. The reduction of individual tax liabilities is likely to be on the order of 0.2 percent of GDP in 2018, rising to 0.6 percent to 0.8 percent of GDP in 2019. The bulk of this reduction in individual tax liabilities will accrue to upper-income households with relatively low marginal propensities to consume. Thus, while we expect some boost to growth of real consumer spending, we also expect the personal saving rate to rise by ½ to ¾ percentage points, as occurred following the tax cuts of the early 2000s. The magnitude of the cuts in corporate taxes is less certain, as the House version has the 20 percent corporate tax rate effective in 2018 while the Senate version delays it to 2019. More importantly, we are just not certain what the impact of a lower corporate tax rate and full expensing of investment will be on business investment spending. So, as with consumption, we have boosted business fixed investment somewhat in both 2018 and 2019. The combined impact

of these increases in real PCE and real BFI are to increase growth of final sales to domestic purchases by roughly ¼ percentage point in both years. Of course some of this increase in domestic demand is satisfied by increased imports. In addition, it is likely that financial conditions will tighten somewhat more over the forecast horizon than would otherwise be the case. The net impact of introducing the tax bill is to boost our projected growth rates for 2018 and 2019 by about 0.2 percentage points, to 2.5 percent (Q4/Q4) and 2.0 percent, respectively.

With this somewhat stronger growth outlook, we have lowered the path of the unemployment rate over the forecast horizon. It is now expected to reach 3.8 percent by the fourth quarter of 2018, rather than 4.1 percent in the previous Blackbook, and then gradually rise to 4.0 percent by 2019Q4 rather than 4.2 percent. The path of the unemployment rate would have been even lower had we not boosted productivity growth somewhat. Finally, with even less slack in the economy, we boosted projected inflation slightly, such that it reaches 2.3 percent (Q4/Q4) in 2019 rather than 2.2 percent.

We want to emphasis that these projected impacts of the tax bill are just rough guesses at this point. As the legislation is finalized and our thinking on likely impacts progresses, we will no doubt fine tune these projections.

2-1: Projections of Key Variables

	Core PCE Inflation		Real GDP Growth		Unemployment Rate*		Fed Funds Rate**	
	Oct	Dec	Oct	Dec	Oct	Dec	Oct	Dec
2017								
Q1	*1.8*	*1.8*	*1.2*	*1.2*	*4.7*	*4.7*	*0.88*	*0.88*
Q2	0.9	*0.9*	*3.1*	*3.1*	*4.4*	*4.4*	*1.13*	*1.13*
Q3	1.3	*1.4*	3.0	*3.3*	*4.3*	*4.3*	*1.13*	*1.13*
Q4	1.7	2.0	2.5	2.4	4.2	4.0	1.38	1.38
2018								
Q1	1.8	1.8	2.6	3.5	4.1	3.9	1.38	1.38
Q2	1.9	2.0	2.5	2.4	4.1	3.8	1.63	1.63
Q3	2.0	2.1	1.3	2.1	4.1	3.8	1.88	1.88
Q4	2.1	2.2	2.0	2.1	4.1	3.8	2.13	2.13
2019								
Q1	2.1	2.3	2.2	2.1	4.0	3.9	2.13	2.13
Q2	2.2	2.3	1.8	1.9	4.0	3.9	2.38	2.38
Q3	2.2	2.3	1.5	1.9	4.1	4.0	2.63	2.63
Q4	2.2	2.4	2.0	2.0	4.1	4.0	2.88	2.88
Q4/Q4								
2016	*1.9*	*1.9*	*1.8*	*1.8*	*-0.3*	*-0.3*	*0.63*	*0.63*
2017	1.5	1.5	2.5	2.5	-0.5	-0.7	1.38	1.38
2018	2.0	2.0	2.1	2.5	-0.1	-0.2	2.13	2.13
2019	2.2	2.3	1.8	2.0	0.0	0.2	2.88	2.88

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

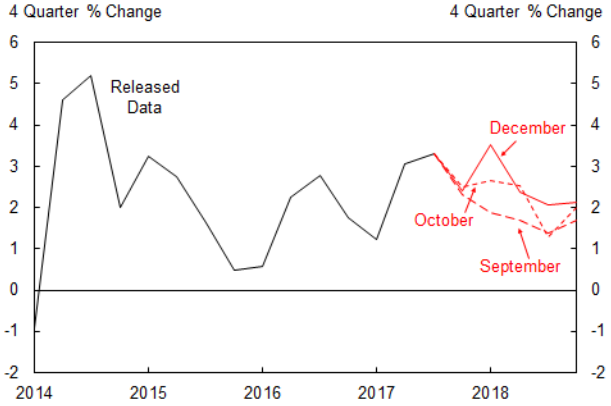
*Quarterly values are the average rate for the quarter. Yearly values are the difference between Q4 of the listed year and Q4 of the previous year.

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

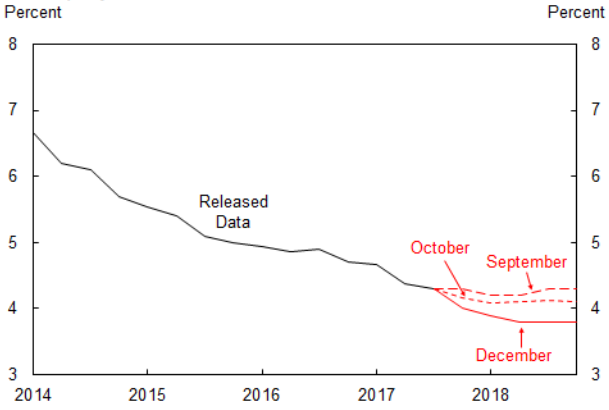
2-2: Evolution of Projected Quarterly Paths

Key Indicators

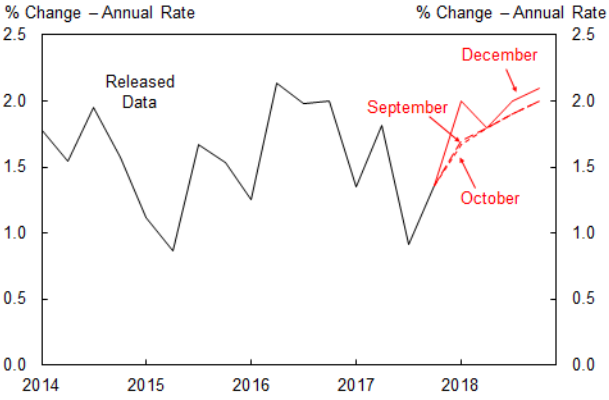
Real GDP Growth



Unemployment Rate

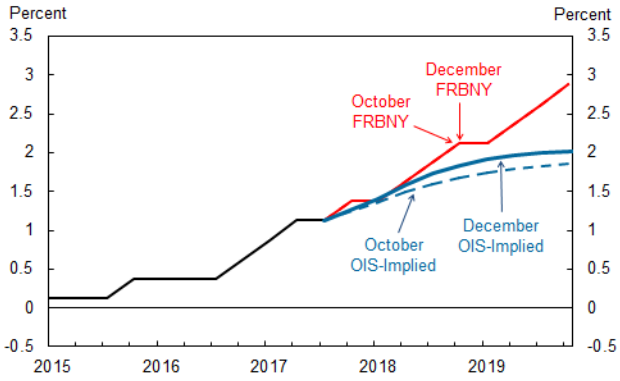


Core PCE Inflation

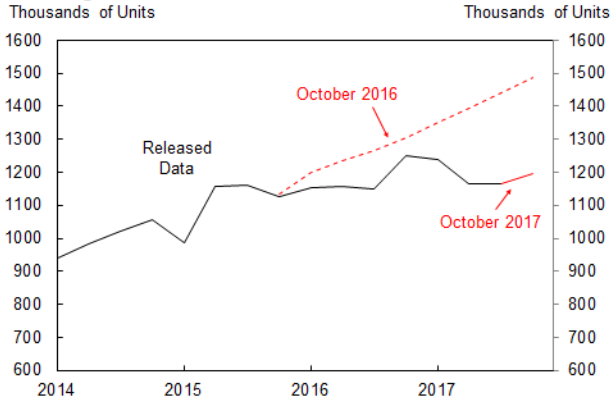


Forecast Assumptions

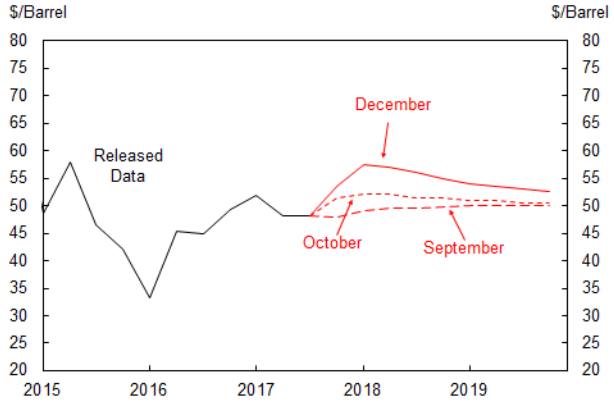
Federal Funds Rate



Housing Starts



Crude Oil



Source: FRBNY (MMS and IR Functions)

2-3: Near-Term Projections

	Growth Rates (AR)			Growth Contributions (AR)		
	2017Q4	2018Q1	2018Q2	2017Q4	2018Q1	2018Q2
OUTPUT						
Real GDP	2.4	3.5	2.4	2.4	3.5	2.4
	(2.5)	(2.6)	(2.5)	(2.5)	(2.6)	(2.5)
Final Sales to Domestic Purchasers	3.1	2.6	2.6	3.1	2.7	2.6
	(3.2)	(2.3)	(2.1)	(3.2)	(2.3)	(2.2)
Consumption	2.5	2.5	2.5	1.7	1.7	1.7
	(2.5)	(2.2)	(2.1)	(1.7)	(1.5)	(1.4)
BFI: Equipment	13.0	10.0	8.0	0.7	0.6	0.5
	(8.0)	(6.0)	(4.5)	(0.5)	(0.3)	(0.3)
BFI: Nonresidential Structures	0.0	2.0	3.5	0.0	0.1	0.1
	(-0.8)	(4.0)	(3.5)	(0.0)	(0.1)	(0.1)
BFI: Intellectual Property Products	4.0	4.0	4.0	0.2	0.2	0.2
	(4.0)	(4.0)	(4.0)	(0.2)	(0.2)	(0.2)
Residential Investment	6.0	4.5	4.5	0.2	0.2	0.2
	(18.7)	(5.0)	(5.0)	(0.8)	(0.2)	(0.2)
Government: Federal	2.0	-0.6	-0.6	0.1	0.0	0.0
	(-0.6)	(-0.6)	(-0.6)	(0.0)	(0.0)	(0.0)
Government: State and Local	2.0	0.5	0.5	0.2	0.1	0.1
	(0.9)	(0.5)	(0.5)	(0.1)	(0.1)	(0.1)
Inventory Investment	--	--	--	-0.4	-0.1	0.5
	--	--	--	(0.1)	(-0.4)	(0.0)
Net Exports	--	--	--	-0.3	0.9	-0.7
	--	--	--	(-0.7)	(0.7)	(0.4)
INFLATION						
Total PCE Deflator	2.8	1.9	2.0			
	(2.2)	(1.8)	(1.9)			
Core PCE Deflator	2.0	1.8	2.0			
	(1.7)	(1.8)	(2.0)			
PRODUCTIVITY AND LABOR COSTS*						
Output per Hour	1.5	1.9	1.5			
	(1.5)	(1.3)	(1.2)			
Compensation per Hour	2.4	2.6	2.8			
	(2.7)	(3.2)	(2.3)			
Unit Labor Costs	0.9	0.7	1.3			
	(1.2)	(1.9)	(1.1)			

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		
	2017	2018	2019	2017	2018	2019
OUTPUT						
Real GDP	2.5	2.5	2.0	2.5	2.5	2.0
	(2.5)	(2.1)	(1.8)	(2.5)	(2.1)	(1.8)
Final Sales to Domestic Purchasers	2.5	2.5	2.1	2.6	2.6	1.9
	(2.6)	(2.2)	(1.9)	(2.6)	(2.2)	(1.9)
Consumption	2.5	2.4	2.1	1.7	1.7	1.4
	(2.4)	(2.1)	(2.0)	(1.7)	(1.5)	(1.4)
BFI: Equipment	9.1	8.5	4.0	0.5	0.5	0.2
	(7.8)	(4.2)	(2.0)	(0.4)	(0.2)	(0.1)
BFI: Nonresidential Structures	3.5	2.9	3.0	0.1	0.1	0.1
	(4.8)	(3.4)	(2.0)	(0.1)	(0.1)	(0.1)
BFI: Intellectual Property Products	4.8	4.0	4.0	0.2	0.2	0.2
	(4.4)	(4.0)	(3.0)	(0.2)	(0.2)	(0.1)
Residential Investment	0.9	4.5	4.1	0.0	0.2	0.2
	(4.9)	(3.6)	(4.1)	(0.2)	(0.1)	(0.2)
Government: Federal	0.7	-0.6	-0.6	0.0	0.0	0.0
	(0.1)	(-0.6)	(-0.7)	(0.0)	(0.0)	(0.0)
Government: State and Local	0.2	0.5	1.0	0.0	0.1	0.1
	(-0.2)	(0.5)	(0.7)	(0.0)	(0.1)	(0.0)
Inventory Investment	--	--	--	-0.2	0.1	0.0
	--	--	--	(-0.1)	(-0.2)	(0.1)
Net Exports	--	--	--	0.1	-0.2	-0.2
	--	--	--	(0.0)	(0.1)	(-0.3)
INFLATION						
Total PCE Deflator	1.7	2.1	2.3			
	(1.5)	(2.0)	(2.2)			
Core PCE Deflator	1.5	2.0	2.3			
	(1.5)	(2.0)	(2.2)			
PRODUCTIVITY AND LABOR COSTS*						
Output per Hour	1.5	1.5	1.4			
	(1.3)	(1.4)	(1.3)			
Compensation per Hour	2.6	2.9	3.5			
	(3.1)	(3.2)	(3.5)			
Unit Labor Costs	1.1	1.3	2.0			
	(1.8)	(1.8)	(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	2017Q4	2018Q1	2017 Q4/Q4	2018 Q4/Q4
FRBNY	12/5/2017	2.4	3.5	2.5	2.5
		(2.5)	(2.6)	(2.5)	(2.1)
Blue Chip	11/10/2017	2.7	2.3	2.5	2.3
		(2.6)	(2.3)	(2.3)	(2.3)
Median SPF	11/13/2017	2.6	2.4	2.2	2.5
		(2.3)	(2.2)	(2.1)	(2.4)
Macro Advisers	11/13/2017	2.6	2.4	2.5	2.2
		(2.9)	(2.2)	(2.4)	(2.3)
FRBNY-DSGE	11/22/2017	3.3	2.0	2.6	2.0
		(2.1)	(2.0)	(2.3)	(2.0)
Median SPD	10/23/2017	--	--	2.3	2.2
		--	--	(2.3)	(2.2)

Core PCE Inflation

	Release Date	2017Q4	2018Q1	2017 Q4/Q4	2018 Q4/Q4
FRBNY	12/5/2017	2.0	1.8	1.5	2.0
		(1.7)	(1.8)	(1.5)	(2.0)
Median SPF	11/13/2017	1.6	1.7	1.4	1.8
		(1.8)	(1.8)	(1.5)	(1.8)
Macro Advisers	11/13/2017	1.5	1.6	1.4	1.8
		(1.5)	(1.4)	(1.4)	(1.6)
FRBNY-DSGE	11/22/2017	1.8	1.5	1.5	1.5
		(1.3)	(1.3)	(1.3)	(1.4)
Median SPD	10/23/2017	--	--	1.4	1.8
		--	--	(1.5)	(1.9)

Unemployment*

	Release Date	2017Q4	2018Q1	2017 Q4/Q4	2018 Q4/Q4
FRBNY	12/5/2017	4.0	3.9	-0.7	-0.2
		(4.2)	(4.1)	(-0.5)	(-0.1)
Blue Chip	11/10/2017	4.2	4.1	-0.5	-0.2
		(4.3)	(4.2)	(-0.4)	(-0.2)
Median SPF	11/13/2017	4.2	4.1	-0.5	-0.2
		(4.2)	(4.2)	(-0.5)	--
Macro Advisers	11/13/2017	4.2	4.1	-0.5	-0.2
		(4.3)	(4.2)	(-0.4)	(-0.3)
Median SPD	10/23/2017	--	--	-0.5	-0.2
		--	--	(-0.4)	(-0.3)

Note: Numbers in gray are from the previous Blackbook.

*Yearly values are the difference between Q4 of the listed year and Q4 of the previous year.

2-6: Tealbook Comparison

	FRBNY (Q4/Q4)			Tealbook (Q4/Q4)		
	2017	2018	2019	2017	2018	2019
OUTPUT						
Real GDP Growth	2.5	2.5	2.0	2.6	2.4	1.9
	(2.5)	(2.1)	(1.8)	(2.6)	(2.4)	(1.9)
GDP Growth Contributions						
Final Sales to Domestic Purchasers	2.6	2.6	2.2	2.5	2.4	1.9
	(2.6)	(2.2)	(1.9)	(2.6)	(2.3)	(1.9)
Consumption	1.7	1.7	1.4	1.7	1.8	1.6
	(1.7)	(1.5)	(1.4)	(1.9)	(1.8)	(1.6)
BFI	0.8	0.7	0.5	0.7	0.5	0.3
	(0.7)	(0.5)	(0.3)	(0.8)	(0.4)	(0.2)
Residential Investment	0.0	0.2	0.2	0.0	0.1	0.1
	(0.2)	(0.1)	(0.2)	(0.0)	(0.1)	(0.1)
Government	0.1	0.0	0.1	0.0	0.1	0.1
	(0.0)	(0.0)	(0.0)	(0.0)	(0.1)	(0.1)
Inventory Investment	-0.2	0.1	0.0	-0.3	-0.1	0.0
	(-0.1)	(-0.2)	(0.1)	(-0.2)	(0.0)	(0.0)
Net Exports	0.1	-0.2	-0.2	0.2	0.0	-0.1
	(0.0)	(0.1)	(-0.3)	(0.3)	(0.0)	(-0.1)
INFLATION						
Total PCE Deflator	1.7	2.1	2.3	1.7	1.7	1.9
	(1.5)	(2.0)	(2.2)	(1.5)	(1.7)	(2.0)
Core PCE Deflator	1.5	2.0	2.3	1.5	1.8	2.0
	(1.5)	(2.0)	(2.2)	(1.4)	(1.8)	(2.0)
LABOR MARKET						
Unemployment Rate (Avg. Q4 Level)	4.0	3.8	4.0	4.1	3.6	3.5
	(4.2)	(4.1)	(4.1)	(4.2)	(3.7)	(3.6)
Participation Rate (Avg. Q4 Level)	62.9	63.0	63.1	62.7	62.6	62.5
	(62.9)	(62.9)	(63.0)	(62.8)	(62.6)	(62.5)
Avg. Monthly Nonfarm Payroll Growth (Thous.)	172	160	110	174	179	147
	(164)	(149)	(138)	(172)	(179)	(138)
SAVING						
Personal Saving Rate (Avg. Q4 Level)	3.5	3.9	4.2	3.0	2.9	3.0
	(3.3)	(3.8)	(4.1)	(3.1)	(3.6)	(3.5)
HOUSING						
Housing Starts (Avg. Q4 Level, Thous.)	1195	1295	1355	1200	1300	1300
	(1195)	(1295)	(1355)	(1200)	(1300)	(1300)
INTREST RATE ASSUMPTION						
Fed Funds Rate*	1.38	2.13	2.88	1.25	2.50	3.46
	(1.38)	(2.13)	(2.88)	(1.35)	(2.52)	(3.46)

Note: Numbers in parentheses are from the previous Blackbook and Tealbook.

* FRBNY numbers indicate end of year Federal Funds Rate, Tealbook numbers indicate average of Q4 Federal Funds Rate.

3. Uncertainty & Risks

Even though the probability of passage of a tax package has risen considerably, developments during the intermeeting period overall indicate only modest changes in the uncertainty and risks assessment around the outlook from that in the October *Blackbook*. Based on the difference between the modal forecast and the expected value from our forecast distributions [Exhibit 3-1], as well as the changes in the distributions [Exhibit 3-3], the risks to growth and to core PCE inflation are roughly balanced through much of the forecast horizon. The widths of the probability intervals for both real growth and inflation are modestly wider than those in the October *Blackbook*. Nevertheless, the uncertainties around the GDP growth and inflation projections are relatively close to their respective historical norms.

The most prominent development influencing the outlook was the passage of tax bills in both the House and the Senate, raising the probability of passage of a tax package to a high level. As discussed in the Central Forecast section, with the enactment of a tax package now likely, we have incorporated our preliminary views of the likely macroeconomic impact of legislation into the staff's modal projection. At this time, with that change, we see the effect on uncertainty and risks as fairly small. Although the likely resolution of a risk event like this would ordinarily reduce uncertainty, the economic effects of the legislation likely to come out of Congress are sufficiently unclear to warrant maintaining significant uncertainty associated with fiscal policy. For instance, the legislation could have stronger positive supply-side effects than those we currently have in the central forecast. At the same time, the bills could have sizable implications for the regional and sectoral allocation of capital. To the extent that frictions slow the process of reallocating capital in response to the tax changes, the legislation then could have adverse supply-side effects that are not in the central forecast.

Developments outside of the fiscal ones appeared to have only modest influences on the uncertainties and risks, even though the tone of the activity data generally was solid. Geopolitical uncertainties, including North Korea and European political developments, have not diminished significantly. Inflation indicators firmed modestly in October, consistent with our projection, but compensation growth remained subdued. Longer-term inflation compensation from TIPS and survey measures of longer-run inflation expectations remained low. Overall

financial conditions were mixed over the intermeeting period, with a rise in equity prices, little change in longer-term Treasury yields, a flatter yield curve, a dollar depreciation, and minimal changes in corporate spreads.

As we continue to transition to the methodology introduced in the September *Blackbook*, we made no changes to the old scenario probabilities [Exhibit 3-2, right panel]. As we noted in the previous *Blackbook*, we will make changes to the scenarios introduced under the new methodology to incorporate the evolution of our assessment of the balance of risks. We maintained the eight "new" scenarios introduced in the September *Blackbook*, but we have added two new judgmental scenarios—*Global Deflation* and *Loss of Credibility*. These scenarios have been part of the "old" set of scenarios, and are "judgmental" in the sense that they were not constructed using either the BVAR or DSGE models. They have been included in the "new" balance of risk portfolio to add downside (*Global Deflation*) and upside (*Loss of Credibility*) inflation tail risk in the medium and long run. We describe these scenarios in more detail below. The probabilities of the eight previous new scenarios and the *Global Deflation* scenario are all equal to each other, while there is less probability on the *Loss of Credibility* scenario [Exhibit 3-2, left panel]. Exhibit 3-2 also displays that we currently place a weight of 60 percent on the old scenarios (which still include, with some modest weight, the *Global Deflation* and *Loss of Credibility* scenarios), and 40 percent on the new ones. (A description of the eight scenarios that were introduced in the September *Blackbook* can be found in Appendix A-2.)

The introduction of the two new scenarios were factors in the modest widening of the 90 percent probability intervals for both core PCE inflation and real GDP growth [Exhibit 3-3, upper panels]. The *Loss of Credibility* scenario introduces more upside tail risks to the inflation distribution under the new methodology [Exhibit 3-4, upper left panel] and depicts a situation where inflation expectations become unmoored to the upside as households and businesses lose confidence in the FOMC's ability to maintain its longer-run inflation objective in the face of upside demand pressures. The *Global Deflation* scenario, meanwhile, introduces more downside tail risks to both the inflation and real growth distributions [Exhibit 3-4, upper left and right panels]. This scenario captures a prolonged global decline in economic activity and inflation---similar qualitatively to what happened in the aftermath of the Great Recession but quantitatively

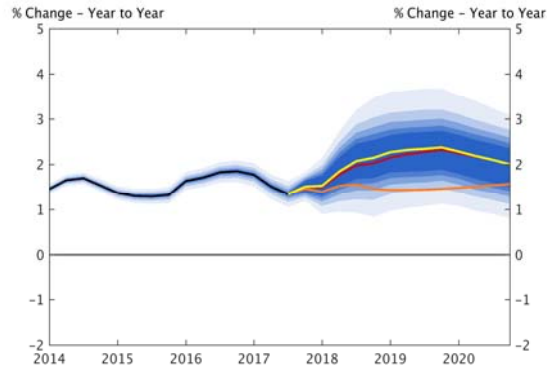
more severe. It depicts a situation where deflationary and "secular stagnation" forces in the global economy become more apparent as the extraordinary monetary accommodation in the advanced economies begins to be reduced. Even so, the widths of the probability intervals remain near historical standards and the risks remain roughly balanced.

In a comparison to the forecast distribution from a year earlier, the current projection for inflation runs along the lower quartile of the distribution into 2018, reflecting the impact of low inflation data of recent months [Exhibit 3-3, lower left panel]. Thereafter, the inflation projection is in the middle of the year-ago distribution as we continue to anticipate inflation to overshoot the longer-run objective in 2019. The current real GDP growth projection is in the upper half of the distribution through 2019, as we project growth to be moderately stronger than we did in late-2016, which reflects the impact of recent stronger activity data on our projection as well as the modest impacts from the incorporation of tax package in the central forecast.

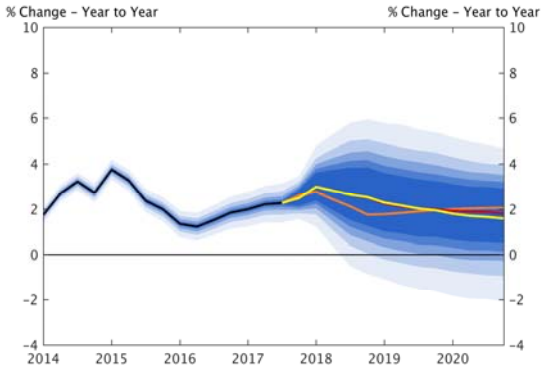
The four panels in Exhibit 3-4 describe the mean paths of core PCE inflation, real GDP growth, the real natural rate of interest and the nominal federal funds rate under the new alternative scenarios. The grey-shaded area in each panel denotes the 90 percent bands of the variable's forecast distribution. These forecasts are computed by interpreting both new and old scenarios through the NY Fed DSGE model. The scenarios of *Global Deflation* and *Loss of Credibility* imply the strongest deviations from our central projections. In the *Global Deflation* scenario, inflation falls to well below 1 percent by the end of 2020 while the real economy enters a prolonged and deep recession. The policy rate falls back quickly to the zero lower bound constraint and remains there over the rest of the forecast horizon. In the *Loss of Credibility* scenario, inflation rises persistently as inflation expectations become unmoored to around 4 percent at the end of 2019. In response, the FOMC engages in a persistent series of policy rate increases, which begins to contribute to a modest slowing of inflation in 2020.

3-1: Forecast Distributions

Core PCE Inflation Forecast Distribution

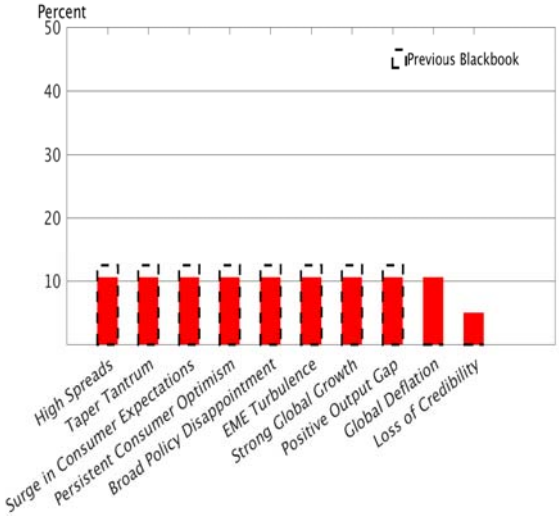


Real GDP Growth Forecast Distribution

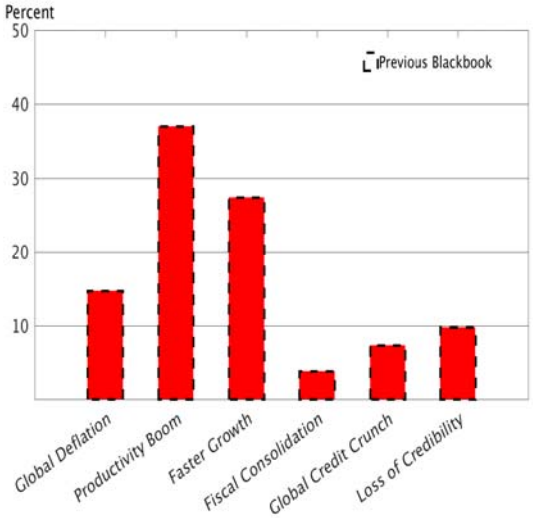


The yellow line is the expected value of the forecast distribution, the red line is the New York Fed central projection, the orange line is the DSGE forecast, and the black line is released data. The shading represents the 50, 60, 70, 80 and 90 percent probability that the four-quarter change will be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

3-2: Scenario Probabilities



New Scenario Probabilities (40%)



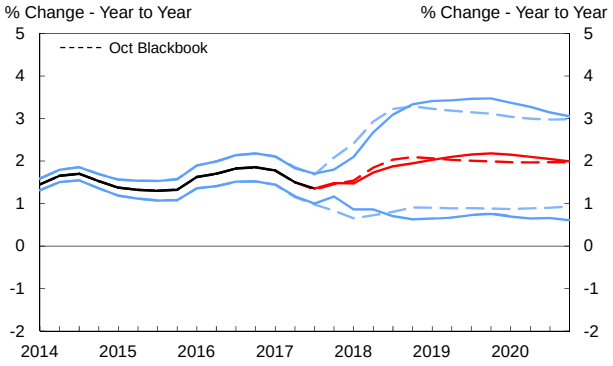
Old Scenario Probabilities (60%)

Both charts show the probabilities of ever reaching an alternative scenario over the forecast horizon, an assessment of the overall likelihood of each alternative scenario. The left chart shows the new scenarios, which constitute 40% of the final mixture of scenarios. The right chart shows the old New York Fed scenarios, which constitute 60% of the final mixture. A short description of the scenarios and the methodology to perform risk assessment is in the Appendix.

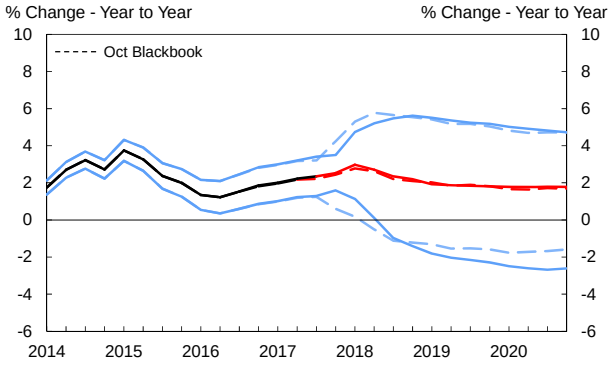
Source: MMS Function (New York Fed)

3-3: Evolution and Performance of Forecast Distributions

Change in Core PCE Inflation Forecast Distribution

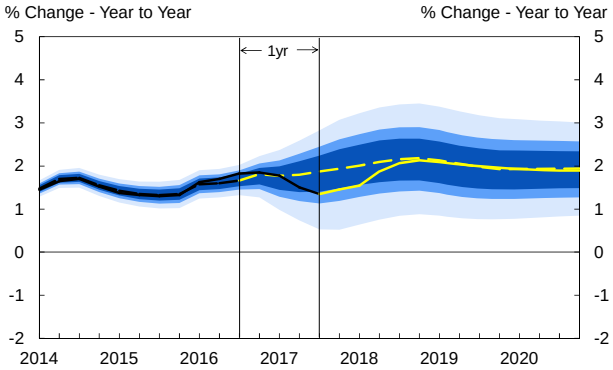


Change in Real GDP Growth Forecast Distribution

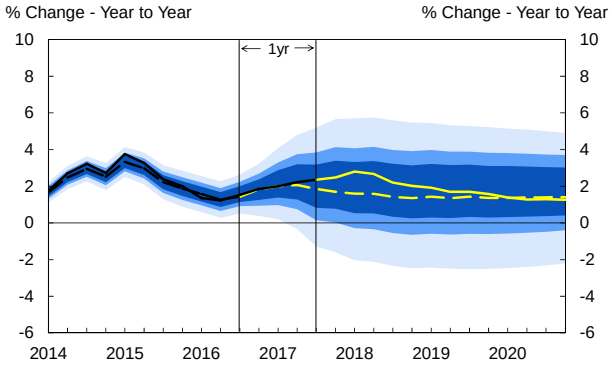


The red lines are the central scenario projections, black lines are released data, and blue lines represent upper and lower 90 percent forecast probability intervals. Dashed lines represent forecasts from the previous Blackbook.

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



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

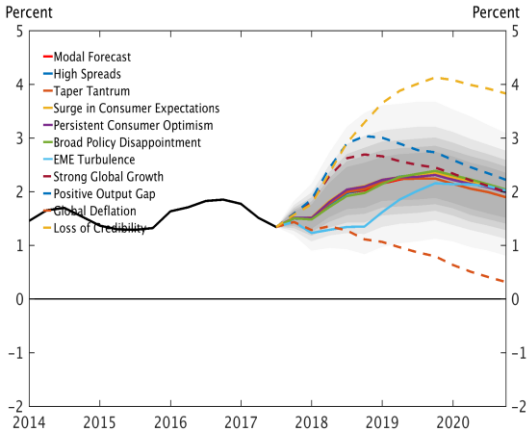


The solid yellow lines are the current expected values from the forecast distributions and the dashed yellow lines are the year-ago Blackbook expected values. Black lines are released data and the blue shaded areas represent 50 (darkest shade), 70, and 90 (lightest shade) percent forecast probability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

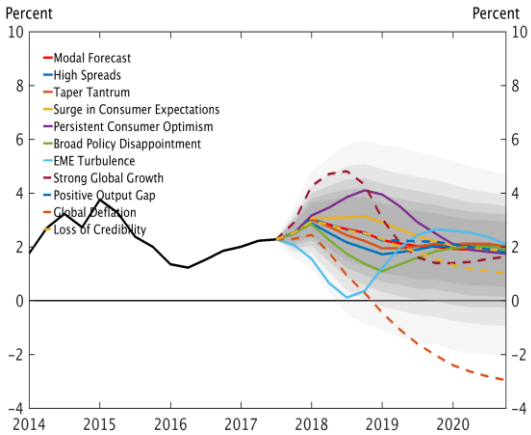
Source: MMS Function (FRBNY)

3-4: Projections under Alternative Scenarios

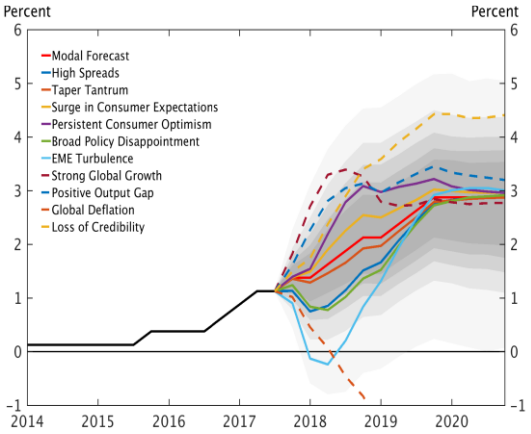
Core PCE Inflation under Alternative Scenarios



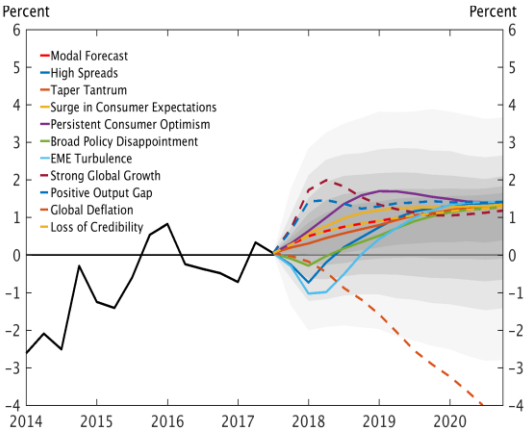
Real GDP Growth under Alternative Scenarios



Nominal FFR under Alternative Scenarios



Natural Rate of Interest under Alternative Scenarios



The black lines are released data and the red lines are the modal forecast. The shading represents the 50, 60, 70, 80 and 90 percent probability that the four-quarter change will be within the respective range.

Source: MMS Function (New York Fed)

Appendix

A-1. Constructing and Interpreting Scenarios

In the appendix we will use the labels "old" and "new" scenarios to refer to the alternative scenarios existing before the September 2017 *Blackbook* (old) and those introduced in that Blackbook or after (new). The old scenarios are constructed to provide plausible distributions for output growth and inflation under a variety of economic conditions. The new scenarios are constructed through a Bayesian VAR (BVAR) or the NY Fed DSGE model.

To construct the BVAR scenarios, we postulate a change in economic conditions (e.g., an increase in consumer confidence) and trace out the effect on other economic and financial variables using the BVAR. More specifically, BVAR scenarios are based on the difference between a forecast distribution *conditional* on current data and possible *future events* (e.g., a rise in consumer confidence) and the BVAR *unconditional* forecast distribution (the forecast without conditioning on any future event). Scenarios are then defined by their particular conditioning assumptions (see below).

DSGE scenarios differ from the BVAR scenarios in that they trace out the effects of posited changes in structural equations (e.g., a steeper Phillips curve) possibly combined with some conditioning assumptions (e.g., a given projected size of the output gap).

Since the September 2017 *Blackbook*, both old scenarios and the BVAR scenarios are replicated and interpreted using the NY Fed DSGE model. The DSGE interprets the BVAR scenarios as described by four variables (inflation, output and consumption growth, and spreads) in terms of a subset of its structural shocks. The choice of shocks is guided by the narrative behind each scenario. Based on the recovered shocks, the DSGE can be used to calculate a path for variables of policy interest such as the *natural interest rate* and *the output gap*. Moreover, the DSGE model is used to compute the path of the federal funds rate through the model's historical policy rule. The interpretation of the old scenarios is done in a similarly fashion, except that now only inflation and output growth are used as the observable variables.

A-2. Alternative Scenario Descriptions

"Old" scenarios. There are six "old" alternative scenarios. The first considers the impact of productivity growth persistently above our assumed trend of about 1.5 percent on a nonfarm business sector basis (*Productivity Boom)*. The second scenario (*Fiscal Consolidation)* assesses the consequences of persistently below-trend productivity growth, in part prompted by sustained fiscal restraint. In the third (*Faster Growth*), subsiding "headwinds" lead to stronger response of aggregate demand to accommodative policy. The fourth scenario (*Loss of Credibility*) assumes that the public and investors become more concerned about the path of policy. In the last 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.

Note that these scenarios are interpreted through the DSGE model. Given that these scenarios are defined on the basis of the paths for output growth and inflation only, they are interpreted in terms of two DSGE structural shocks in order to obtain other policy-relevant variables. The *Central Scenario* (defined below) is instead interpreted using all the shocks in the model.

"New" scenarios. In this *Blackbook* we consider 10 scenarios: Seven are produced using the BVAR, one is constructed using the DSGE, and two are purely judgmental. Our first scenario considers a tightening of financial conditions in the U.S., measured by an increase in corporate bond yield spreads in the next quarter (*High Spreads*). The next two scenarios consider the effects of a substantial increase in consumer expectations after November 2016, with the rise more persistent in the second scenario (*Surge in Consumer Expectations*; *Persistent Consumer Optimism*). The fourth scenario has a sudden increase in the 10-year Treasury yield, possibly driven by shifting expectations about the evolution of the Fed balance sheet (*Taper Tantrum*). The fifth scenario describes the effects of a downward shift in public sentiment coupled with a significant tightening of financial conditions (*Broad Policy Disappointment*). The last two BVAR scenarios focus on global factors. The first assumes a tightening in global financial conditions driven by a worsening outlook for emerging economies. These developments raise corporate spreads, compress treasury yields, reduce equity prices substantially, and lead to a dollar appreciation (*EME Turbulence*). The *Strong Global Growth* scenario depicts a nearly

opposite situation where improved prospects for the global economy fuel easier financial conditions, higher oil and commodities prices, and a temporary dollar depreciation (*Strong Global Growth*). The last scenario, produced using the DSGE, considers the implications of a positive output gap over the next two years—similar to that projected in the Tealbook—coupled with a Phillips curve steeper than baseline estimates (*Positive Output Gap*).

In this *Blackbook*, we have added two purely judgmental scenarios—*Global Deflation* and *Loss of Credibility*—that are also part of the "old" scenarios. They have been included in the "new" balance of risk portfolio to add both downside (*Global Deflation*) and upside (*Loss of Credibility*) medium- and long-run inflation tail risk to the "new" balance of risk methodology. The *Loss of Credibility* scenario depicts a situation where inflation expectations become unmoored to the upside as households and businesses lose confidence in the FOMC's ability to maintain its longer-run inflation objective in the face of upside demand pressures. The *Global Deflation* scenario captures a prolonged global decline in economic activity and inflation—similar qualitatively to what happened in the aftermath of the Great Recession but quantitatively more severe. It describes a situation where deflationary and "secular stagnation" forces in the global economy become more apparent as the extraordinary monetary accommodation in the advanced economies begins to be reduced.

A-3. Methodology to Construct the Forecast Distribution

The Forecast Distribution from the Old Scenarios

To calculate the forecast distribution from the old scenarios we first create 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 has entered 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 indicated scenario 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.

The Forecast Distribution from the New Scenarios

The way alternative paths in the new forecast distribution are generated is fairly similar to the old method described above. This distribution is described by three components: (1) the *Central Scenario* which comprises the NY Fed modal forecast and a distribution based on historical forecast errors; (2) the alternative scenarios described above; (3) probabilities of entering and leaving the scenarios.

Alternative forecast paths based on specific scenarios are generated as follows. In the first quarter the economy starts at the Central Scenario, but in each subsequent quarter over the forecast horizon it can switch to a specific alternative scenario with some exogenously chosen probability (currently, these probabilities are 20 percent for the first quarter, 50 percent for each of the 11 subsequent quarters, and 0 thereafter). Conditional on being in the alternative scenario, the economy faces a constant probability in each quarter of switching back to the central scenario (currently 15 percent, so that the average alternative scenario duration is six quarters). The central scenario is an absorbing state: once the economy switches back from the alternative scenario to the central scenario it remains there over the rest of the forecast horizon. Also, there is no switching among alternative scenarios; that is, each individual alternative path is built using only one alternative scenario. The forecast distribution is then obtained by combining draws from each scenario-specific alternative path. The proportion of draws built from specific scenarios depends on the subjective probability associated with each scenario. Note that when we

display mean paths (or distributions) under a given scenario, we include in these computations all paths that ever entered such scenario.

Combining the Forecast Distributions from the Old and New Scenarios

Currently the NY Fed forecast distribution is obtained as a mixture of the forecast distributions from the old and new scenarios with mixture probabilities of 60 and 40 percent, respectively.