



# SURVEY OF PROFESSIONAL FORECASTERS

Release Date: February 12, 2016

## FIRST QUARTER 2016

### *Forecasters Predict Lower Growth over the Next Three Years*

The economy looks weaker now than it did three months ago, according to 40 forecasters surveyed by the Federal Reserve Bank of Philadelphia. The forecasters predict real GDP will grow at an annual rate of 2.0 percent this quarter and 2.5 percent next quarter. On an annual-average over annual-average basis, real GDP will grow 2.1 percent in 2016, down 0.5 percentage point from the previous estimate. The forecasters predict real GDP will grow 2.4 percent in 2017 and 2.7 percent in 2018, both down 0.1 percentage point from the estimates of three months ago. For 2019, real GDP is estimated to grow at 2.3 percent.

A slightly positive outlook for the labor market accompanies the outlook for weaker output growth. The forecasters predict that the unemployment rate will average 4.8 percent in 2016, before falling to 4.6 percent in 2017, 4.6 percent in 2018, and 4.7 percent in 2019. The projections for 2017 and 2018 are slightly below those of the last survey.

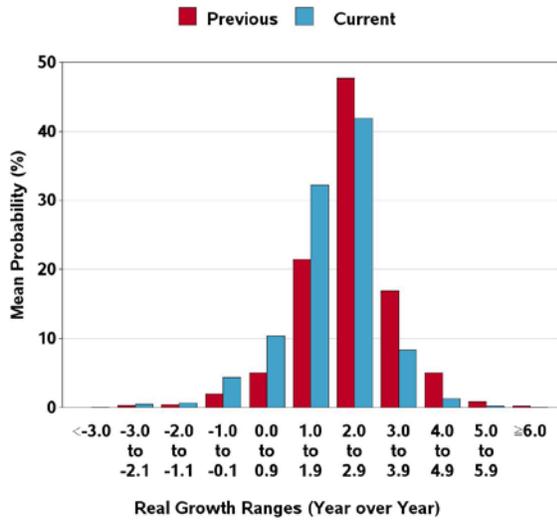
The panelists also predict a small improvement on the employment front. They have revised upward their estimates for job gains in 2016. The forecasters see nonfarm payroll employment growing at a rate of 195,000 jobs per month this quarter, 183,200 jobs per month next quarter, 195,900 jobs per month in the third quarter of 2016, and 152,600 jobs per month in the fourth quarter of 2016. The forecasters' projections for the annual-average level of nonfarm payroll employment suggest job gains at a monthly rate of 204,300 in 2016 and 165,000 in 2017, as the table below shows. (These annual-average estimates are computed as the year-to-year change in the annual-average level of nonfarm payroll employment, converted to a monthly rate.)

### *Median Forecasts for Selected Variables in the Current and Previous Surveys*

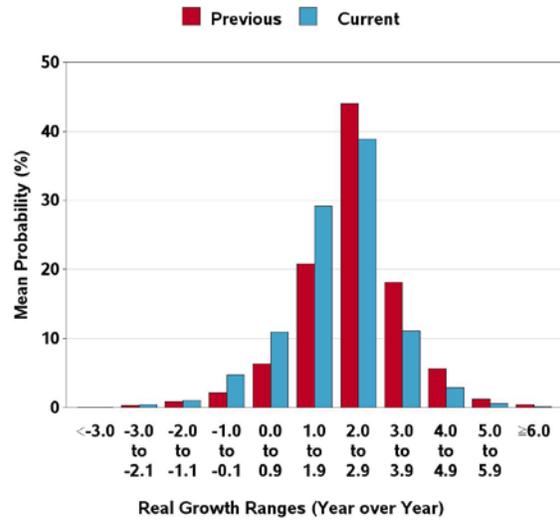
	Real GDP (%)		Unemployment Rate (%)		Payrolls (000s/month)	
	Previous	New	Previous	New	Previous	New
Quarterly data:						
2016:Q1	2.5	2.0	4.9	4.9	188.2	195.0
2016:Q2	2.6	2.5	4.8	4.8	193.5	183.2
2016:Q3	2.9	2.3	4.8	4.7	192.0	195.9
2016:Q4	2.4	2.5	4.7	4.6	181.2	152.6
2017:Q1	N.A.	2.4	N.A.	4.6	N.A.	177.1
Annual data (projections are based on annual-average levels):						
2016	2.6	2.1	4.8	4.8	197.0	204.3
2017	2.5	2.4	4.7	4.6	N.A.	165.0
2018	2.8	2.7	4.7	4.6	N.A.	N.A.
2019	N.A.	2.3	N.A.	4.7	N.A.	N.A.

The charts below provide some insight into the degree of uncertainty the forecasters have about their projections for the rate of growth in the annual-average level of real GDP. Each chart (except the one for 2019) presents the forecasters' previous and current estimates of the probability that growth will fall into each of 11 ranges. The charts show the forecasters have revised upward their estimates of the probability that real GDP growth will fall below 2.0 percent in 2016, 2017, and 2018.

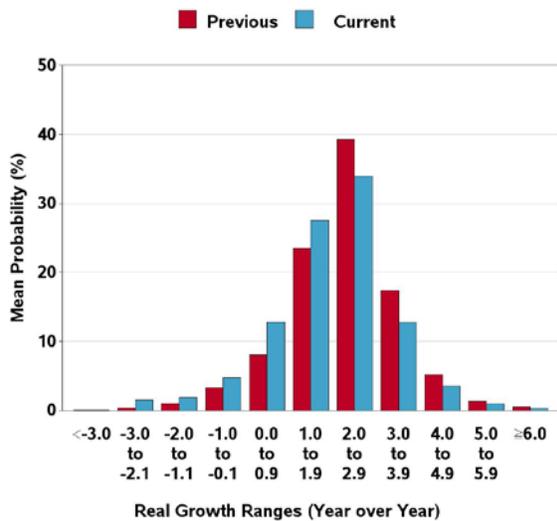
Mean Probabilities for Real GDP Growth in 2016



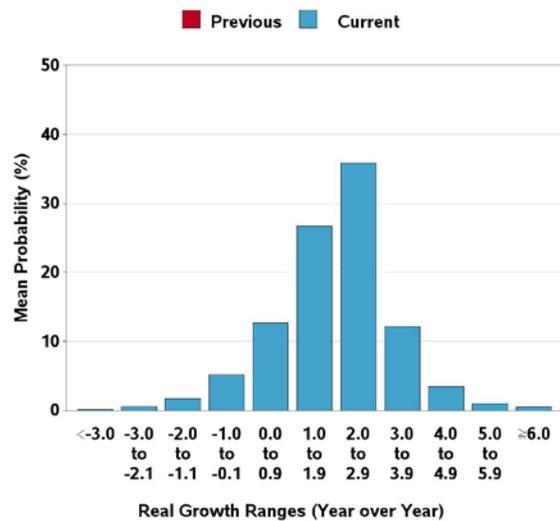
Mean Probabilities for Real GDP Growth in 2017



Mean Probabilities for Real GDP Growth in 2018

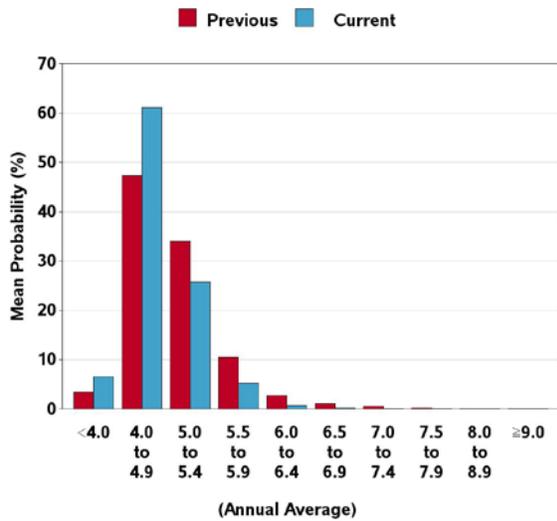


Mean Probabilities for Real GDP Growth in 2019

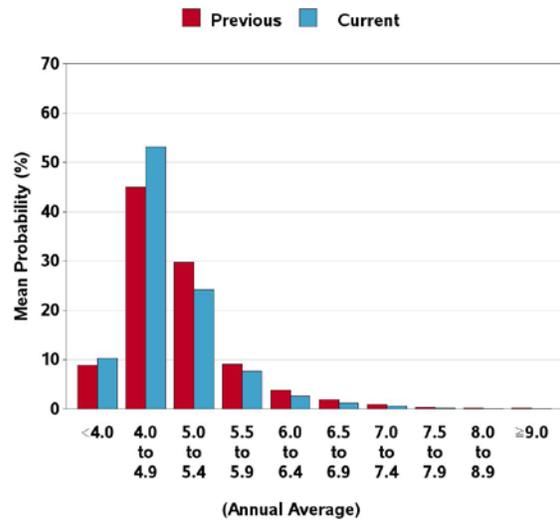


The forecasters' density projections for unemployment, shown below, shed light on uncertainty about the labor market over the next four years. Each chart presents the forecasters' current estimates of the probability that unemployment will fall into each of 10 ranges. The charts show the panelists are raising their density estimates over the next three years at the lower levels of unemployment outcomes.

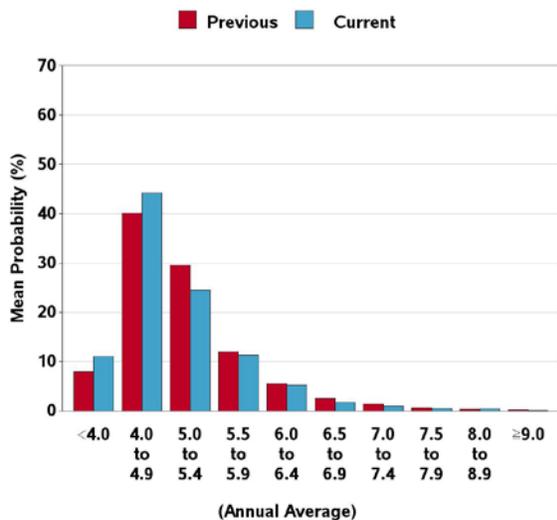
Mean Probabilities for Unemployment Rate in 2016



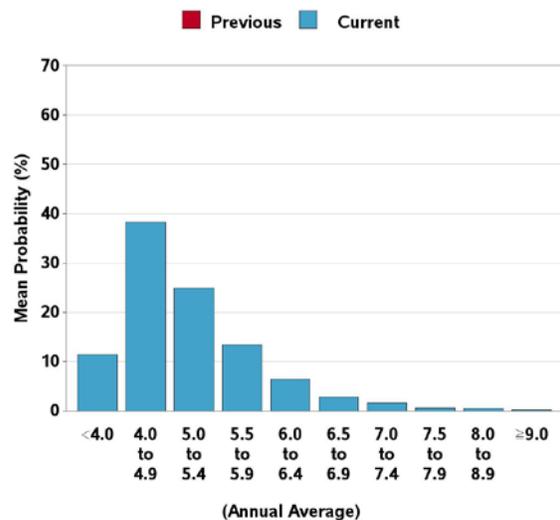
Mean Probabilities for Unemployment Rate in 2017



Mean Probabilities for Unemployment Rate in 2018



Mean Probabilities for Unemployment Rate in 2019



### ***Forecasters Predict Lower Headline Inflation over the Next Two Years***

The forecasters expect lower headline CPI inflation in 2016 and 2017 than they predicted three months ago. Measured on a fourth-quarter over fourth-quarter basis, headline CPI inflation is expected to average 1.5 percent in 2016 and 2.2 percent in 2017, down from 2.0 percent and 2.3 percent, respectively, in the last survey. The forecasters have also revised downward their projections for headline PCE inflation in 2016 to 1.3 percent, down from 1.8 percent in the survey of three months ago.

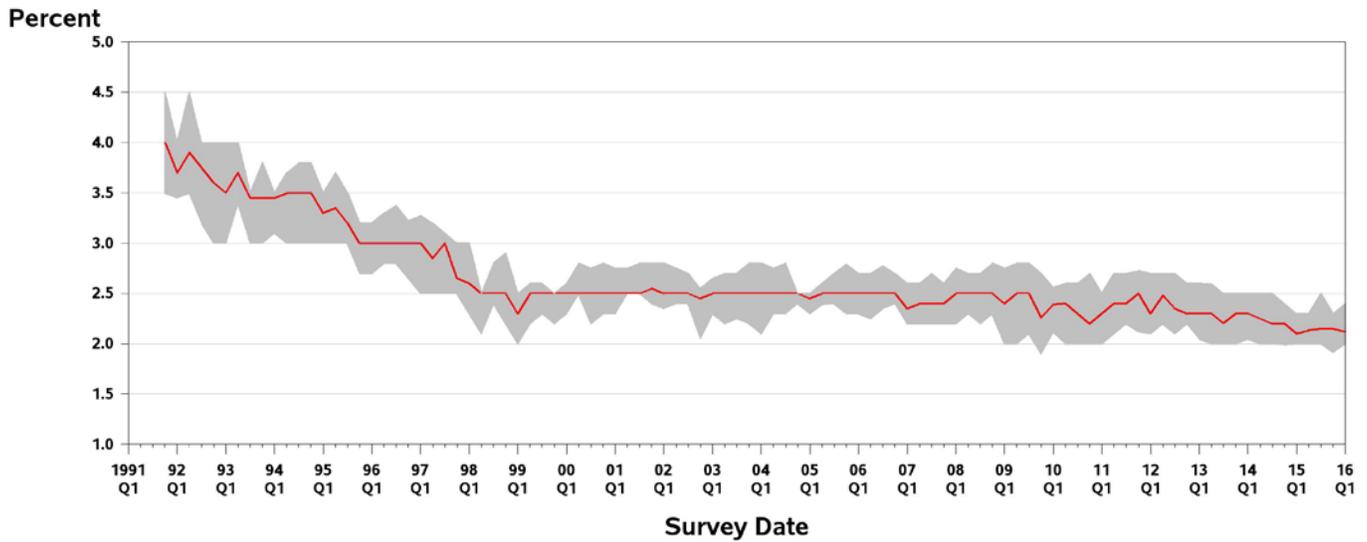
Over the next 10 years, 2016 to 2025, the forecasters expect headline CPI inflation to average 2.12 percent at an annual rate. The corresponding estimate for 10-year annual-average PCE inflation is 1.97 percent.

#### *Median Short-Run and Long-Run Projections for Inflation (Annualized Percentage Points)*

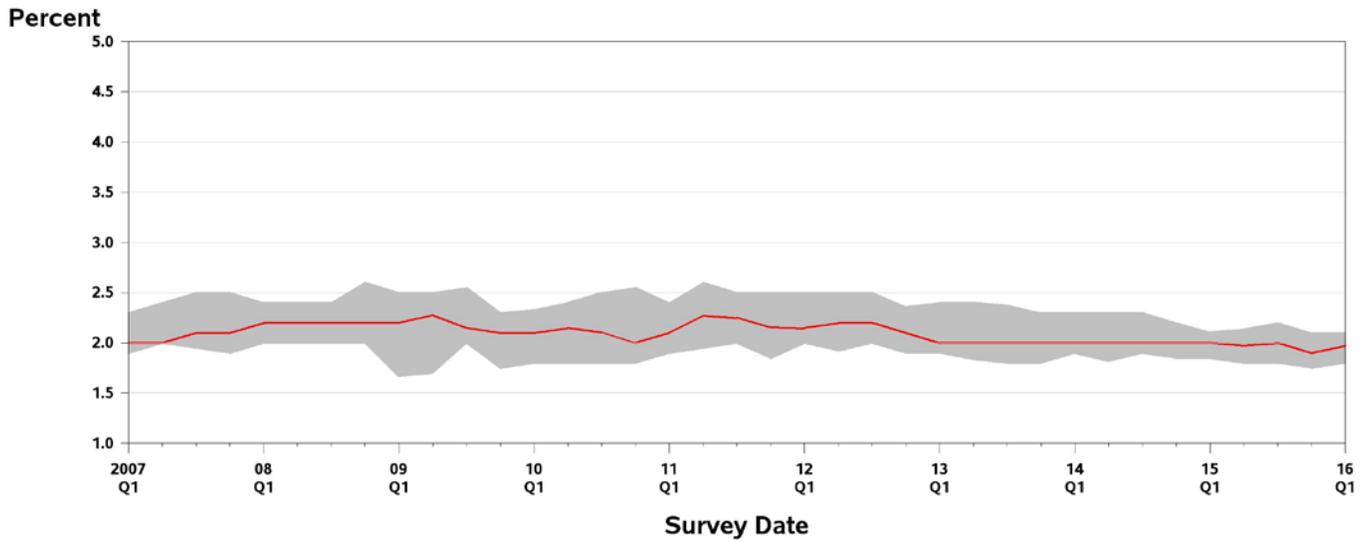
	Headline CPI		Core CPI		Headline PCE		Core PCE	
	Previous	Current	Previous	Current	Previous	Current	Previous	Current
Quarterly								
2016:Q1	1.8	0.4	1.9	1.8	1.6	0.4	1.5	1.4
2016:Q2	2.1	1.6	2.0	2.0	1.8	1.6	1.6	1.5
2016:Q3	2.1	2.1	2.0	2.0	1.8	1.8	1.7	1.7
2016:Q4	2.2	2.1	2.0	2.0	1.9	1.8	1.7	1.7
2017:Q1	N.A.	2.1	N.A.	2.0	N.A.	1.8	N.A.	1.7
Q4/Q4 Annual Averages								
2016	2.0	1.5	2.0	2.0	1.8	1.3	1.6	1.6
2017	2.3	2.2	2.1	2.1	1.9	1.9	1.8	1.8
2018	N.A.	2.3	N.A.	2.1	N.A.	2.0	N.A.	1.9
Long-Term Annual Averages								
2015-2019	1.90	N.A.	N.A.	N.A.	1.65	N.A.	N.A.	N.A.
2016-2020	N.A.	2.08	N.A.	N.A.	N.A.	1.88	N.A.	N.A.
2015-2024	2.15	N.A.	N.A.	N.A.	1.90	N.A.	N.A.	N.A.
2016-2025	N.A.	2.12	N.A.	N.A.	N.A.	1.97	N.A.	N.A.

The charts below show the median projections (the red line) and the associated interquartile ranges (the gray areas around the red line) for the projections for 10-year annual-average CPI and PCE inflation. The top panel shows a slightly lower level of the long-term projection for CPI inflation, at 2.12 percent. The bottom panel shows the slightly higher 10-year forecast for PCE inflation, at 1.97 percent.

**Projections for the 10-Year Annual-Average Rate of CPI Inflation  
(Median and Interquartile Range)**

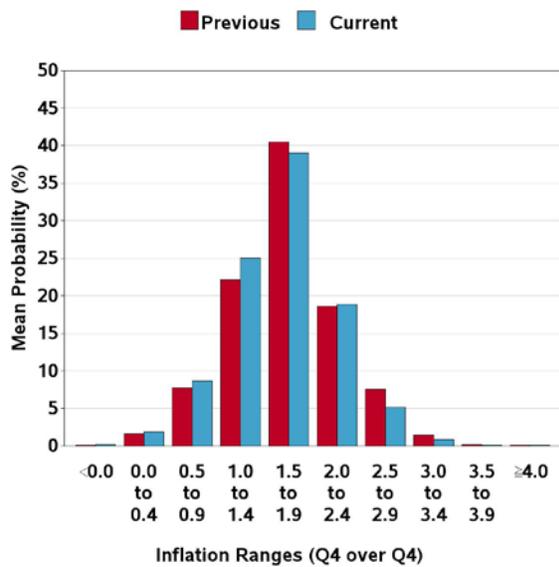


**Projections for the 10-Year Annual-Average Rate of PCE Inflation  
(Median and Interquartile Range)**

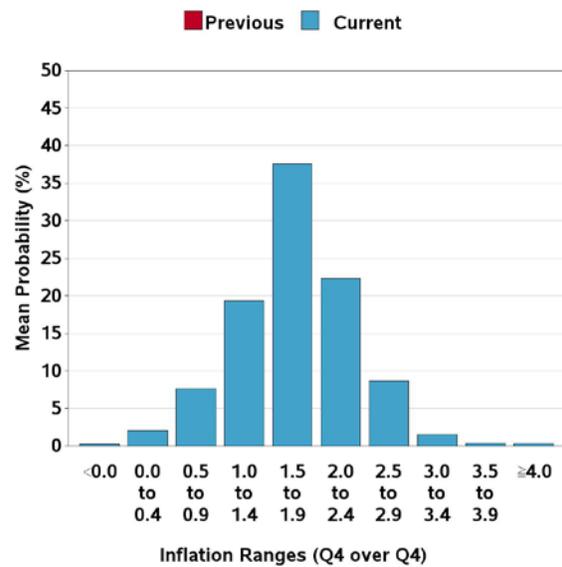


The figures below show the probabilities that the forecasters are assigning to the possibility that fourth-quarter over fourth-quarter core PCE inflation in 2016 and 2017 will fall into each of 10 ranges. For 2016, the forecasters have increased the probability that core PCE inflation will be below 1.5 percent, compared with their estimates in the survey of three months ago.

Mean Probabilities for Core PCE Inflation in 2016



Mean Probabilities for Core PCE Inflation in 2017



**Higher Risk of a Negative Quarter**

For the current quarter, the forecasters predict a 14.4 percent chance of negative growth in real GDP. As the table below shows, the forecasters have also increased their risk estimates for a downturn in the following quarters, compared with their previous estimates.

*Risk of a Negative Quarter (%)*  
*Survey Means*

Quarterly data:	Previous	New
2016:Q1	13.0	14.4
2016:Q2	12.6	14.7
2016:Q3	13.7	15.8
2016:Q4	14.7	17.0
2017:Q1	N.A.	18.8

### ***Forecasters State Their Views on Home Price Growth over the Next Two Years***

In this survey, a special question asked panelists to provide their forecasts for fourth-quarter over fourth-quarter growth in house prices, as measured by a number of alternative indices. The panelists were allowed to choose their measure from a list of indices or to write in their own index. For each index of their choosing, the panelists provided forecasts for growth in 2016 and 2017.

Eighteen panelists answered the special question. Some panelists provided projections for more than one index. The table below provides a summary of the forecasters' responses. The number of responses (N) is low for each index. The median estimates for the seven house-price indices listed in the table below range from 2.9 percent to 5.0 percent in 2016 and from 2.5 percent to 4.4 percent in 2017.

#### *Projections for Growth in Various Indices of House Prices Q4/Q4, Percentage Points*

Index	2016 (Q4/Q4 Percent Change)			2017 (Q4/Q4 Percent Change)		
	N	Mean	Median	N	Mean	Median
S&P/Case-Shiller: U.S. National	2	4.6	4.6	2	4.0	4.0
S&P/Case-Shiller: Composite 10	1	4.5	4.5	1	4.4	4.4
S&P/Case-Shiller: Composite 20	4	2.7	2.9	4	2.4	2.5
FHFA: U.S. Total	3	4.9	5.0	3	3.9	4.0
FHFA: Purchase Only	6	4.3	4.7	6	3.5	3.8
CoreLogic: National HPI, incl. Distressed Sales (Single Family Combined)	3	4.9	4.9	2	3.7	3.7
NAR Median: Total Existing	2	3.4	3.4	2	3.2	3.2

### ***Forecasters Predict Lower Long-Run Growth in Output and Productivity and in Returns to Financial Assets***

In our first-quarter surveys, the forecasters provide their long-run projections for an expanded set of variables, including growth in output and productivity, as well as returns on financial assets.

As the table below shows, the forecasters have reduced their estimates for the annual-average rate of growth in real GDP over the next 10 years. Currently, the forecasters expect real GDP to grow at an annual-average rate of 2.28 percent over the next 10 years, down from their projection of 2.50 percent in the first-quarter survey of 2015. Productivity growth is now expected to average 1.40 percent, down from 1.70 percent.

Downward revisions to the return on the financial assets accompany the current outlook. The forecasters see the S&P 500 returning an annual-average 5.37 percent per year over the next 10 years, down slightly from 5.45 percent in last year's first-quarter survey. The forecasters expect the rate on 10-year Treasuries to average 3.39 percent over the next 10 years, down from 3.98 percent in last year's first-quarter survey. Three-month Treasury bills will return an annual-average 2.50 percent per year over the next 10 years, down from 2.67 percent.

#### *Median Long-Term (10-Year) Forecasts (%)*

	<i>First Quarter 2015</i>	<i>Current Survey</i>
<i>Real GDP Growth</i>	2.50	2.28
<i>Productivity Growth</i>	1.70	1.40
<i>Stock Returns (S&amp;P 500)</i>	5.45	5.37
<i>Rate on 10-Year Treasury Bonds</i>	3.98	3.39
<i>Bill Returns (3-Month)</i>	2.67	2.50

The Federal Reserve Bank of Philadelphia thanks the following forecasters for their participation in recent surveys:

**Lewis Alexander**, Nomura Securities; **Scott Anderson**, Bank of the West (BNP Paribas Group); **Robert J. Barbera**, Johns Hopkins University Center for Financial Economics; **Peter Bernstein**, RCF Economic and Financial Consulting, Inc.; **Christine Chmura, Ph.D.**, and **Xiaobing Shuai, Ph.D.**, Chmura Economics & Analytics; **Gary Ciminero, CFA**, GLC Financial Economics; **Nathaniel Curtis**, Navigant Consulting; **Gregory Daco**, Oxford Economics USA, Inc.; **Rajeev Dhawan**, Georgia State University; **Michael R. Englund**, Action Economics, LLC; **Michael Gapen**, Barclays Capital; **James Glassman**, JPMorgan Chase & Co.; **Matthew Hall**, **Daniil Manaenkov**, and **Ben Meiselman**, RSQE, University of Michigan; **Jan Hatzius**, Goldman Sachs; **Keith Hembre**, Nuveen Asset Management; **Peter Hooper**, Deutsche Bank Securities, Inc.; **IHS Global Insight**; **Fred Joutz**, Benchmark Forecasts and Research Program on Forecasting, George Washington University; **Sam Kahan**, Kahan Consulting Ltd. (ACT Research LLC); **N. Karp**, BBVA Research USA; **Walter Kemmsies**, Moffatt & Nichol; **Jack Kleinhenz**, Kleinhenz & Associates, Inc.; **Thomas Lam**, RHB Securities Singapore Pte. Ltd.; **L. Douglas Lee**, Economics from Washington; **John Lonski**, Moody's Capital Markets Group; **Macroeconomic Advisers, LLC**; **R. Anthony Metz**, Pareto Optimal Economics; **Michael Moran**, Daiwa Capital Markets America; **Joel L. Naroff**, Naroff Economic Advisors; **Mark Nielson, Ph.D.**, MacroEcon Global Advisors; **Luca Noto**, Anima Sgr; **Brendon Ogmundson**, BC Real Estate Association; **Tom Porcelli**, RBC Capital Markets; **Arun Raha** and **Maira Trimble**, Eaton Corporation; **Martin A. Regalia**, U.S. Chamber of Commerce; **Philip Rothman**, East Carolina University; **Chris Rupkey**, Bank of Tokyo-Mitsubishi UFJ; **John Silvia**, Wells Fargo; **Allen Sinai**, Decision Economics, Inc.; **Sean M. Snaith, Ph.D.**, University of Central Florida; **Constantine G. Soras, Ph.D.**, CGS Economic Consulting; **Stephen Stanley**, Amherst Pierpont Securities; **Charles Steindel**, Ramapo College of New Jersey; **Susan M. Sterne**, Economic Analysis Associates, Inc.; **James Sweeney**, Credit Suisse; **Thomas Kevin Swift**, American Chemistry Council; **Richard Yamarone**, Bloomberg, LP; **Mark Zandi**, Moody's Analytics; **Ellen Zentner**, Morgan Stanley.

This is a partial list of participants. We also thank those who wish to remain anonymous.

SUMMARY TABLE  
SURVEY OF PROFESSIONAL FORECASTERS  
MAJOR MACROECONOMIC INDICATORS

	2016 Q1	2016 Q2	2016 Q3	2016 Q4	2017 Q1	2016	2017 (YEAR-OVER-YEAR)	2018	2019
PERCENT GROWTH AT ANNUAL RATES									
1. REAL GDP (BILLIONS, CHAIN WEIGHTED)	2.0	2.5	2.3	2.5	2.4	2.1	2.4	2.7	2.3
2. GDP PRICE INDEX (PERCENT CHANGE)	1.1	1.6	1.8	1.9	1.9	1.4	1.9	N.A.	N.A.
3. NOMINAL GDP (\$ BILLIONS)	3.2	4.0	4.1	4.5	4.2	3.4	4.4	N.A.	N.A.
4. NONFARM PAYROLL EMPLOYMENT (PERCENT CHANGE) (AVG MONTHLY CHANGE)	1.6 195.0	1.5 183.2	1.6 195.9	1.3 152.6	1.5 177.1	1.7 204.3	1.4 165.0	N.A. N.A.	N.A. N.A.
VARIABLES IN LEVELS									
5. UNEMPLOYMENT RATE (PERCENT)	4.9	4.8	4.7	4.6	4.6	4.8	4.6	4.6	4.7
6. 3-MONTH TREASURY BILL (PERCENT)	0.3	0.4	0.7	0.8	1.0	0.6	1.4	2.2	2.7
7. 10-YEAR TREASURY BOND (PERCENT)	2.1	2.3	2.4	2.5	2.7	2.4	2.8	3.2	3.5
	2016 Q1	2016 Q2	2016 Q3	2016 Q4	2017 Q1	2016	2017 (Q4-OVER-Q4)	2018	
INFLATION INDICATORS									
8. CPI (ANNUAL RATE)	0.4	1.6	2.1	2.1	2.1	1.5	2.2	2.3	
9. CORE CPI (ANNUAL RATE)	1.8	2.0	2.0	2.0	2.0	2.0	2.1	2.1	
10. PCE (ANNUAL RATE)	0.4	1.6	1.8	1.8	1.8	1.3	1.9	2.0	
11. CORE PCE (ANNUAL RATE)	1.4	1.5	1.7	1.7	1.7	1.6	1.8	1.9	

THE FIGURES ON EACH LINE ARE MEDIANS OF 40 INDIVIDUAL FORECASTERS.

SOURCE: RESEARCH DEPARTMENT, FEDERAL RESERVE BANK OF PHILADELPHIA.  
SURVEY OF PROFESSIONAL FORECASTERS, FIRST QUARTER 2016.

## **SURVEY OF PROFESSIONAL FORECASTERS**

**First Quarter 2016**

**Tables**

Note: Data in these tables listed as "actual" are the data that were available to the forecasters when they were sent the survey questionnaire on January 29, 2016; the tables do not reflect subsequent revisions to the data. All forecasts were received on or before February 9, 2016.

TABLE ONE  
MAJOR MACROECONOMIC INDICATORS  
MEDIAN OF FORECASTER PREDICTIONS

	NUMBER OF FORECASTERS	ACTUAL	FORECAST					ACTUAL	FORECAST				
		2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4	2017 Q1	2015 ANNUAL	2016 ANNUAL	2017 ANNUAL	2018 ANNUAL	2019 ANNUAL	
1. GROSS DOMESTIC PRODUCT (GDP) (\$ BILLIONS)	38	18128	18271	18449	18637	18846	19039	17938	18550	19373	N.A.	N.A.	
2. GDP PRICE INDEX (2009=100)	38	110.26	110.56	111.00	111.51	112.02	112.56	109.78	111.26	113.40	N.A.	N.A.	
3. CORPORATE PROFITS AFTER TAXES (\$ BILLIONS)	16	N.A.	1513.0	1535.0	1545.7	1577.0	1598.6	N.A.	1539.4	1622.0	N.A.	N.A.	
4. UNEMPLOYMENT RATE (PERCENT)	38	5.0	4.9	4.8	4.7	4.6	4.6	5.3	4.8	4.6	4.6	4.7	
5. NONFARM PAYROLL EMPLOYMENT (THOUSANDS)	33	142963	143548	144098	144685	145143	145674	141959	144411	146391	N.A.	N.A.	
6. INDUSTRIAL PRODUCTION (2012=100)	34	106.6	106.8	107.3	107.9	108.6	109.3	107.1	107.7	110.0	N.A.	N.A.	
7. NEW PRIVATE HOUSING STARTS (ANNUAL RATE, MILLIONS)	36	1.13	1.18	1.21	1.24	1.28	1.30	1.11	1.23	1.33	N.A.	N.A.	
8. 3-MONTH TREASURY BILL RATE (PERCENT)	37	0.12	0.29	0.44	0.65	0.79	1.00	0.05	0.58	1.35	2.15	2.69	
9. AAA CORPORATE BOND YIELD (PERCENT)	28	3.99	4.05	4.16	4.25	4.31	4.50	3.89	4.19	4.55	N.A.	N.A.	
10. BAA CORPORATE BOND YIELD (PERCENT)	27	5.42	5.47	5.58	5.65	5.70	5.75	5.00	5.60	5.87	N.A.	N.A.	
11. 10-YEAR TREASURY BOND YIELD (PERCENT)	39	2.19	2.11	2.29	2.40	2.50	2.70	2.14	2.36	2.82	3.25	3.50	
12. REAL GDP (BILLIONS, CHAIN WEIGHTED)	39	16442	16525	16626	16719	16824	16923	16342	16682	17083	17537	17936	
13. TOTAL CONSUMPTION EXPENDITURE (BILLIONS, CHAIN WEIGHTED)	36	11322.5	11396.4	11473.4	11544.2	11617.6	11693.1	11211.3	11505.6	11795.6	N.A.	N.A.	
14. NONRESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED)	36	2214.7	2229.2	2249.3	2272.6	2298.9	2321.5	2209.7	2262.7	2359.0	N.A.	N.A.	
15. RESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED)	35	545.0	554.3	565.6	576.7	585.2	595.6	529.0	570.7	608.1	N.A.	N.A.	
16. FEDERAL GOVERNMENT C & I (BILLIONS, CHAIN WEIGHTED)	35	1119.4	1122.2	1125.0	1128.3	1132.8	1133.9	1113.5	1126.9	1137.5	N.A.	N.A.	
17. STATE AND LOCAL GOVT C & I (BILLIONS, CHAIN WEIGHTED)	34	1753.6	1759.5	1764.8	1769.0	1775.1	1780.8	1745.0	1767.0	1788.5	N.A.	N.A.	
18. CHANGE IN PRIVATE INVENTORIES (BILLIONS, CHAIN WEIGHTED)	34	68.6	55.2	56.5	57.8	59.2	56.0	95.1	57.7	57.7	N.A.	N.A.	
19. NET EXPORTS (BILLIONS, CHAIN WEIGHTED)	36	-566.5	-579.9	-597.3	-610.3	-629.3	-642.6	-547.1	-604.0	-657.3	N.A.	N.A.	

SOURCE: RESEARCH DEPARTMENT, FEDERAL RESERVE BANK OF PHILADELPHIA. SURVEY OF PROFESSIONAL FORECASTERS, FIRST QUARTER 2016.

TABLE TWO  
MAJOR MACROECONOMIC INDICATORS  
PERCENTAGE CHANGES AT ANNUAL RATES

	NUMBER OF FORECASTERS	Q4 2015 TO Q1 2016	Q1 2016 TO Q2 2016	Q2 2016 TO Q3 2016	Q3 2016 TO Q4 2016	Q4 2016 TO Q1 2017	2015 TO 2016	2016 TO 2017	2017 TO 2018	2018 TO 2019
1. GROSS DOMESTIC PRODUCT (GDP) (\$ BILLIONS)	38	3.2	4.0	4.1	4.5	4.2	3.4	4.4	N.A.	N.A.
2. GDP PRICE INDEX (2009=100)	38	1.1	1.6	1.8	1.9	1.9	1.4	1.9	N.A.	N.A.
3. CORPORATE PROFITS AFTER TAXES (\$ BILLIONS)	16	1.0	5.9	2.8	8.3	5.6	2.0	5.4	N.A.	N.A.
4. UNEMPLOYMENT RATE (PERCENT)	38	-0.1	-0.1	-0.1	-0.1	-0.0	-0.5	-0.2	0.1	0.1
5. NONFARM PAYROLL EMPLOYMENT (PERCENT CHANGE) (AVG MONTHLY CHANGE)	33 33	1.6 195.0	1.5 183.2	1.6 195.9	1.3 152.6	1.5 177.1	1.7 204.3	1.4 165.0	N.A. N.A.	N.A. N.A.
6. INDUSTRIAL PRODUCTION (2012=100)	34	0.8	2.0	2.3	2.5	2.4	0.6	2.2	N.A.	N.A.
7. NEW PRIVATE HOUSING STARTS (ANNUAL RATE, MILLIONS)	36	16.0	11.7	10.7	13.5	6.4	10.7	8.3	N.A.	N.A.
8. 3-MONTH TREASURY BILL RATE (PERCENT)	37	0.17	0.15	0.21	0.13	0.22	0.53	0.78	0.80	0.53
9. AAA CORPORATE BOND YIELD (PERCENT)	28	0.06	0.11	0.09	0.06	0.20	0.30	0.36	N.A.	N.A.
10. BAA CORPORATE BOND YIELD (PERCENT)	27	0.05	0.11	0.07	0.05	0.05	0.60	0.27	N.A.	N.A.
11. 10-YEAR TREASURY BOND YIELD (PERCENT)	39	-0.08	0.18	0.11	0.10	0.20	0.22	0.46	0.43	0.25
12. REAL GDP (BILLIONS, CHAIN WEIGHTED)	39	2.0	2.5	2.3	2.5	2.4	2.1	2.4	2.7	2.3
13. TOTAL CONSUMPTION EXPENDITURE (BILLIONS, CHAIN WEIGHTED)	36	2.6	2.7	2.5	2.6	2.6	2.6	2.5	N.A.	N.A.
14. NONRESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED)	36	2.7	3.7	4.2	4.7	4.0	2.4	4.3	N.A.	N.A.
15. RESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED)	35	7.0	8.4	8.1	6.0	7.3	7.9	6.6	N.A.	N.A.
16. FEDERAL GOVERNMENT C & I (BILLIONS, CHAIN WEIGHTED)	35	1.0	1.0	1.2	1.6	0.4	1.2	0.9	N.A.	N.A.
17. STATE AND LOCAL GOVT C & I (BILLIONS, CHAIN WEIGHTED)	34	1.4	1.2	1.0	1.4	1.3	1.3	1.2	N.A.	N.A.
18. CHANGE IN PRIVATE INVENTORIES (BILLIONS, CHAIN WEIGHTED)	34	-13.4	1.3	1.3	1.4	-3.2	-37.4	0.0	N.A.	N.A.
19. NET EXPORTS (BILLIONS, CHAIN WEIGHTED)	36	-13.4	-17.4	-13.0	-19.0	-13.4	-56.9	-53.3	N.A.	N.A.

NOTE: FIGURES FOR UNEMPLOYMENT RATE, TREASURY BILL RATE, AAA CORPORATE BOND YIELD, BAA CORPORATE BOND YIELD, AND 10-YEAR TREASURY BOND YIELD ARE CHANGES IN THESE RATES, IN PERCENTAGE POINTS. FIGURES FOR CHANGE IN PRIVATE INVENTORIES AND NET EXPORTS ARE CHANGES IN BILLIONS OF CHAIN-WEIGHTED DOLLARS. ALL OTHERS ARE PERCENTAGE CHANGES AT ANNUAL RATES.

SOURCE: RESEARCH DEPARTMENT, FEDERAL RESERVE BANK OF PHILADELPHIA. SURVEY OF PROFESSIONAL FORECASTERS, FIRST QUARTER 2016.

TABLE THREE  
 MAJOR PRICE INDICATORS  
 MEDIANS OF FORECASTER PREDICTIONS

	NUMBER OF FORECASTERS	ACTUAL	FORECAST(Q/Q)					ACTUAL	FORECAST(Q4/Q4)			
		2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4	2017 Q1	2015 ANNUAL	2016 ANNUAL	2017 ANNUAL	2018 ANNUAL	
1. CONSUMER PRICE INDEX (ANNUAL RATE)	39	0.2	0.4	1.6	2.1	2.1	2.1	0.4	1.5	2.2	2.3	
2. CORE CONSUMER PRICE INDEX (ANNUAL RATE)	37	2.1	1.8	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	
3. PCE PRICE INDEX (ANNUAL RATE)	36	0.1	0.4	1.6	1.8	1.8	1.8	0.4	1.3	1.9	2.0	
4. CORE PCE PRICE INDEX (ANNUAL RATE)	35	1.2	1.4	1.5	1.7	1.7	1.7	1.4	1.6	1.8	1.9	

SOURCE: RESEARCH DEPARTMENT, FEDERAL RESERVE BANK OF PHILADELPHIA. SURVEY OF PROFESSIONAL FORECASTERS, FIRST QUARTER 2016.

TABLE FOUR  
ESTIMATED PROBABILITY OF DECLINE IN REAL GDP

ESTIMATED PROBABILITY (CHANCES IN 100)	Q4 2015	Q1 2016	Q2 2016	Q3 2016	Q4 2016
	TO Q1 2016	TO Q2 2016	TO Q3 2016	TO Q4 2016	TO Q1 2017
NUMBER OF FORECASTERS					
10 OR LESS	17	17	13	12	9
11 TO 20	14	14	17	16	14
21 TO 30	5	5	6	7	11
31 TO 40	1	1	1	2	2
41 TO 50	0	0	0	0	1
51 TO 60	0	0	0	0	0
61 TO 70	0	0	0	0	0
71 TO 80	0	0	0	0	0
81 TO 90	0	0	0	0	0
91 AND OVER	0	0	0	0	0
NOT REPORTING	3	3	3	3	3
MEAN AND MEDIAN					
MEDIAN PROBABILITY	12.00	12.00	15.00	15.00	16.00
MEAN PROBABILITY	14.38	14.69	15.79	17.04	18.76

NOTE: TOTAL NUMBER OF FORECASTERS REPORTING IS 37.  
SOURCE: RESEARCH DEPARTMENT, FEDERAL RESERVE BANK OF PHILADELPHIA.  
SURVEY OF PROFESSIONAL FORECASTERS, FIRST QUARTER 2016.

TABLE FIVE  
MEAN PROBABILITIES

MEAN PROBABILITY ATTACHED TO POSSIBLE  
CIVILIAN UNEMPLOYMENT RATES:  
(ANNUAL AVERAGE)

	2016	2017	2018	2019
9.0 PERCENT OR MORE	0.06	0.06	0.11	0.17
8.0 TO 8.9 PERCENT	0.09	0.14	0.39	0.52
7.5 TO 7.9 PERCENT	0.11	0.17	0.48	0.63
7.0 TO 7.4 PERCENT	0.12	0.55	1.00	1.61
6.5 TO 6.9 PERCENT	0.21	1.17	1.71	2.80
6.0 TO 6.4 PERCENT	0.68	2.57	5.27	6.44
5.5 TO 5.9 PERCENT	5.22	7.66	11.27	13.37
5.0 TO 5.4 PERCENT	25.74	24.17	24.56	24.88
4.0 TO 4.9 PERCENT	61.17	53.16	44.19	38.22
LESS THAN 4.0 PERCENT	6.60	10.34	11.02	11.37

MEAN PROBABILITY ATTACHED TO POSSIBLE  
PERCENT CHANGES IN REAL GDP:  
(ANNUAL-AVERAGE OVER ANNUAL-AVERAGE)

	2015-2016	2016-2017	2017-2018	2018-2019
6.0 OR MORE	0.06	0.16	0.31	0.47
5.0 TO 5.9	0.23	0.55	0.94	0.99
4.0 TO 4.9	1.30	2.85	3.53	3.45
3.0 TO 3.9	8.36	11.09	12.76	12.19
2.0 TO 2.9	41.88	38.95	33.94	35.86
1.0 TO 1.9	32.21	29.19	27.50	26.71
0.0 TO 0.9	10.35	10.95	12.82	12.69
-1.0 TO -0.1	4.38	4.78	4.74	5.20
-2.0 TO -1.1	0.66	1.03	1.85	1.73
-3.0 TO -2.1	0.51	0.40	1.53	0.60
LESS THAN -3.0	0.05	0.06	0.08	0.13

MEAN PROBABILITY ATTACHED TO POSSIBLE  
PERCENT CHANGES IN GDP PRICE INDEX:  
(ANNUAL-AVERAGE OVER ANNUAL-AVERAGE)

	2015-2016	2016-2017
4.0 OR MORE	0.07	0.13
3.5 TO 3.9	0.30	0.81
3.0 TO 3.4	0.92	2.34
2.5 TO 2.9	3.62	8.98
2.0 TO 2.4	16.82	23.92
1.5 TO 1.9	32.75	34.65
1.0 TO 1.4	31.42	19.07
0.5 TO 0.9	10.85	6.95
0.0 TO 0.4	2.84	2.44
WILL DECLINE	0.42	0.71

SOURCE: RESEARCH DEPARTMENT, FEDERAL RESERVE BANK OF PHILADELPHIA.  
SURVEY OF PROFESSIONAL FORECASTERS, FIRST QUARTER 2016.

TABLE SIX  
 MEAN PROBABILITY OF CORE CPI AND CORE PCE INFLATION (Q4/Q4)

MEAN PROBABILITY ATTACHED TO CORE CPI INFLATION:

	15Q4 TO 16Q4	16Q4 TO 17Q4
4 PERCENT OR MORE	0.14	0.50
3.5 TO 3.9 PERCENT	0.38	0.59
3.0 TO 3.4 PERCENT	1.40	3.40
2.5 TO 2.9 PERCENT	11.27	13.67
2.0 TO 2.4 PERCENT	31.45	32.92
1.5 TO 1.9 PERCENT	36.13	32.46
1.0 TO 1.4 PERCENT	13.77	11.67
0.5 TO 0.9 PERCENT	4.10	3.40
0.0 TO 0.4 PERCENT	1.14	1.09
WILL DECLINE	0.22	0.31

MEAN PROBABILITY ATTACHED TO CORE PCE INFLATION:

	15Q4 TO 16Q4	16Q4 TO 17Q4
4 PERCENT OR MORE	0.14	0.30
3.5 TO 3.9 PERCENT	0.13	0.36
3.0 TO 3.4 PERCENT	0.85	1.49
2.5 TO 2.9 PERCENT	5.17	8.70
2.0 TO 2.4 PERCENT	18.89	22.32
1.5 TO 1.9 PERCENT	39.02	37.58
1.0 TO 1.4 PERCENT	25.03	19.34
0.5 TO 0.9 PERCENT	8.69	7.58
0.0 TO 0.4 PERCENT	1.88	2.05
WILL DECLINE	0.20	0.27

SOURCE: RESEARCH DEPARTMENT, FEDERAL RESERVE BANK OF PHILADELPHIA.  
 SURVEY OF PROFESSIONAL FORECASTERS, FIRST QUARTER 2016.

TABLE SEVEN  
LONG-TERM (5-YEAR AND 10-YEAR) FORECASTS

ANNUAL AVERAGE OVER THE NEXT 5 YEARS: 2016-2020

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CPI INFLATION RATE		PCE INFLATION RATE	
-----		-----	
MINIMUM	1.49	MINIMUM	1.40
LOWER QUARTILE	1.92	LOWER QUARTILE	1.70
MEDIAN	2.08	MEDIAN	1.88
UPPER QUARTILE	2.30	UPPER QUARTILE	2.00
MAXIMUM	2.90	MAXIMUM	2.60
MEAN	2.09	MEAN	1.87
STD. DEVIATION	0.32	STD. DEVIATION	0.27
N	36	N	35
MISSING	4	MISSING	5

ANNUAL AVERAGE OVER THE NEXT 10 YEARS: 2016-2025

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CPI INFLATION RATE		PCE INFLATION RATE	
-----		-----	
MINIMUM	1.59	MINIMUM	1.60
LOWER QUARTILE	2.00	LOWER QUARTILE	1.80
MEDIAN	2.12	MEDIAN	1.97
UPPER QUARTILE	2.40	UPPER QUARTILE	2.10
MAXIMUM	3.10	MAXIMUM	2.50
MEAN	2.21	MEAN	2.00
STD. DEVIATION	0.31	STD. DEVIATION	0.25
N	35	N	34
MISSING	5	MISSING	6

REAL GDP GROWTH RATE		PRODUCTIVITY GROWTH RATE	
-----		-----	
MINIMUM	1.53	MINIMUM	0.50
LOWER QUARTILE	2.00	LOWER QUARTILE	1.00
MEDIAN	2.28	MEDIAN	1.40
UPPER QUARTILE	2.40	UPPER QUARTILE	1.70
MAXIMUM	3.00	MAXIMUM	2.33
MEAN	2.23	MEAN	1.37
STD. DEVIATION	0.31	STD. DEVIATION	0.49
N	28	N	25
MISSING	12	MISSING	15

STOCK RETURNS (S&P 500)		BOND RATE (10-YEAR)		BILL RETURNS (3-MONTH)	
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MINIMUM	3.00	MINIMUM	2.00	MINIMUM	1.00
LOWER QUARTILE	4.50	LOWER QUARTILE	3.00	LOWER QUARTILE	1.80
MEDIAN	5.37	MEDIAN	3.39	MEDIAN	2.50
UPPER QUARTILE	6.00	UPPER QUARTILE	4.00	UPPER QUARTILE	2.75
MAXIMUM	7.50	MAXIMUM	4.80	MAXIMUM	3.80
MEAN	5.34	MEAN	3.44	MEAN	2.44
STD. DEVIATION	1.34	STD. DEVIATION	0.76	STD. DEVIATION	0.81
N	18	N	26	N	24
MISSING	22	MISSING	14	MISSING	16

SOURCE: RESEARCH DEPARTMENT, FEDERAL RESERVE BANK OF PHILADELPHIA.  
SURVEY OF PROFESSIONAL FORECASTERS, FIRST QUARTER 2016.