



# SURVEY OF PROFESSIONAL FORECASTERS

Release Date: August 10, 2018

*THIRD QUARTER 2018*

## *Steady Outlook for Growth with Stronger Labor Markets*

The outlook for growth in the U.S. economy over the next three years is mostly unchanged from that of three months ago, according to 38 forecasters surveyed by the Federal Reserve Bank of Philadelphia. The panel predicts real GDP will grow at an annual rate of 3.0 percent this quarter and 2.8 percent next quarter, unchanged from the estimates of three months ago. On an annual-average over annual-average basis, the forecasters expect real GDP to grow 2.8 percent in 2018 and 2019, 1.8 percent in 2020, and 1.5 percent in 2021.

The forecasters see a small improvement in the outlook for the unemployment rate. The forecasters predict the unemployment rate will average 3.9 percent in 2018, 3.6 percent in 2019, 3.7 percent in 2020, and 4.0 percent in 2021. The projections for 2019 and 2020 are slightly below those of the last survey, indicating a better outlook for unemployment.

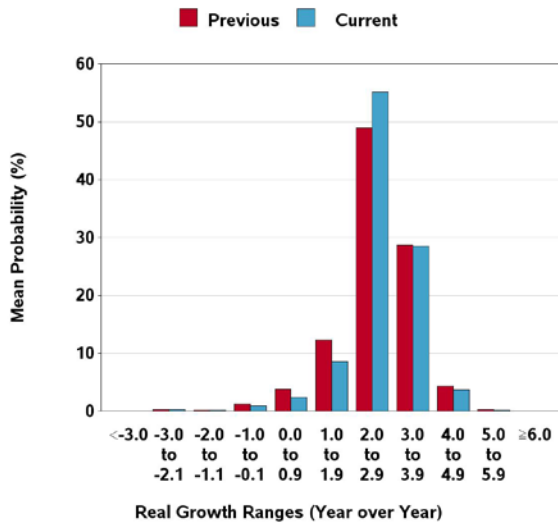
On the employment front, the forecasters have revised upward their estimates for job gains over the next two years. The projections for the annual-average level of nonfarm payroll employment suggest job gains at a monthly rate of 194,800 in 2018, up from the previous estimate of 185,900, and 167,800 in 2019, up from 160,800 estimated three months ago. (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*

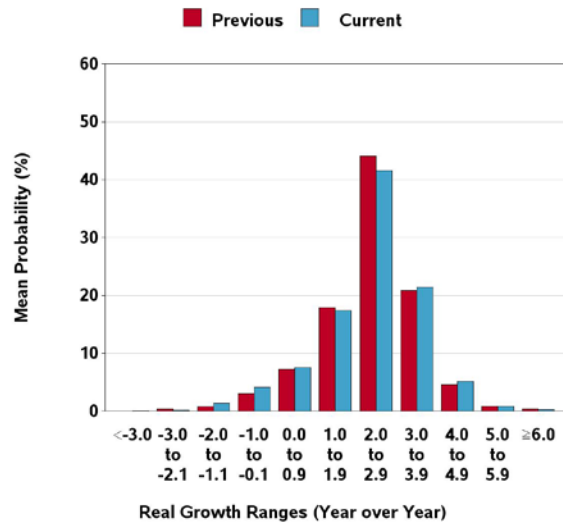
	Real GDP (%)		Unemployment Rate (%)		Payrolls (000s/month)	
	Previous	New	Previous	New	Previous	New
Quarterly data:						
2018:Q3	3.0	3.0	3.9	3.8	175.0	197.1
2018:Q4	2.8	2.8	3.8	3.7	160.4	173.3
2019:Q1	2.4	2.5	3.8	3.7	160.9	161.5
2019:Q2	2.6	2.7	3.7	3.6	151.7	162.0
2019:Q3	N.A.	2.6	N.A.	3.6	N.A.	150.1
Annual data (projections are based on annual-average levels):						
2018	2.8	2.8	3.9	3.9	185.9	194.8
2019	2.7	2.8	3.7	3.6	160.8	167.8
2020	1.9	1.8	3.9	3.7	N.A.	N.A.
2021	2.0	1.5	4.0	4.0	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 presents the forecasters' previous and current estimates of the probability that growth will fall into each of 11 ranges. The charts show that the estimates of uncertainty about growth over the next four years are nearly the same as those in the previous survey.

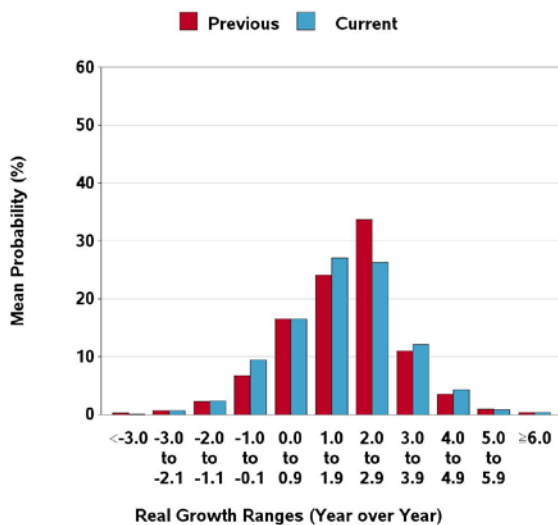
Mean Probabilities for Real GDP Growth in 2018



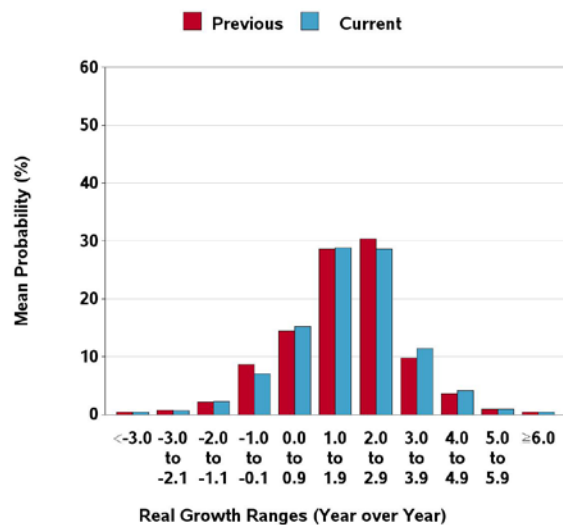
Mean Probabilities for Real GDP Growth in 2019



Mean Probabilities for Real GDP Growth in 2020

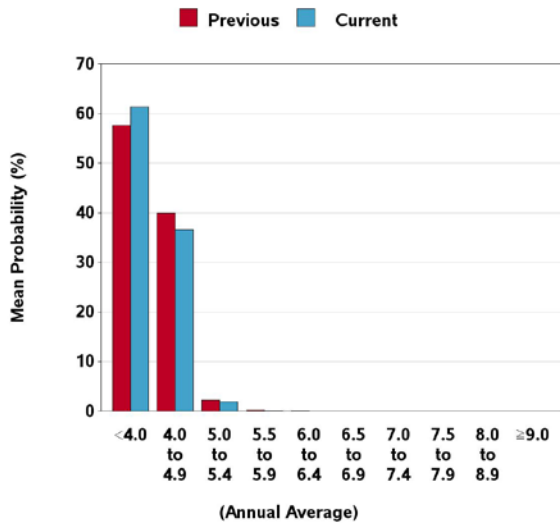


Mean Probabilities for Real GDP Growth in 2021

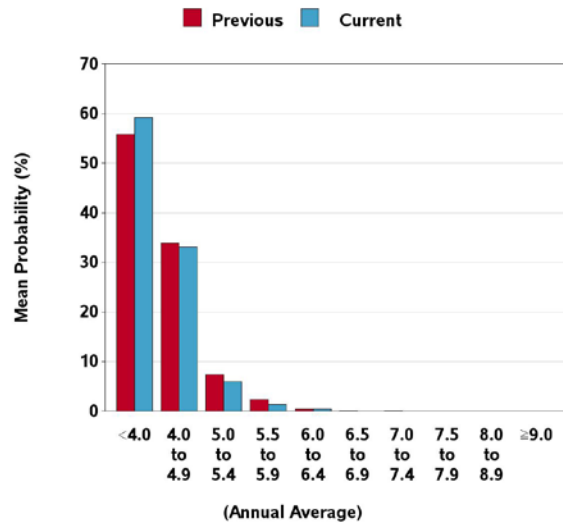


The forecasters' density projections for unemployment, shown below, shed light on uncertainty about the labor market over the next four years. Each chart presents the forecasters' current estimates of the probability that unemployment will fall into each of 10 ranges. The charts show the panelists are raising their density estimates for an unemployment rate below 4.0 percent for the next four years.

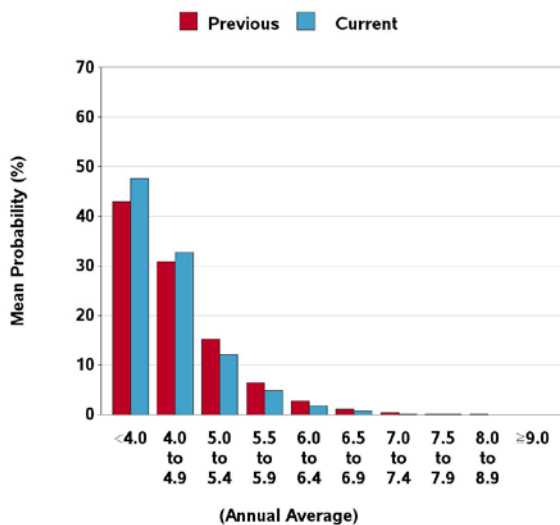
Mean Probabilities for Unemployment Rate in 2018



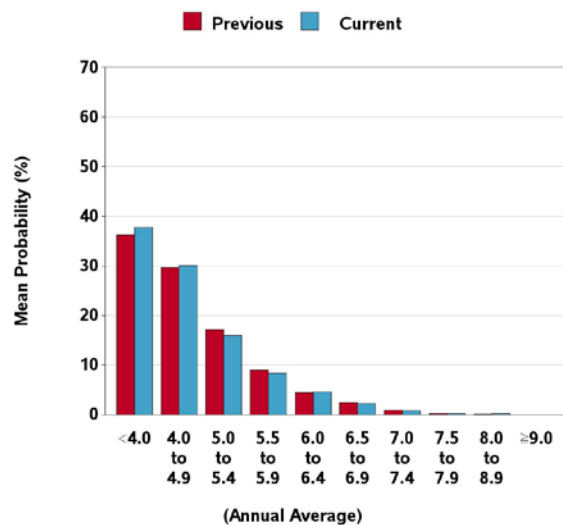
Mean Probabilities for Unemployment Rate in 2019



Mean Probabilities for Unemployment Rate in 2020



Mean Probabilities for Unemployment Rate in 2021



***Forecasters See Slightly Lower Inflation in 2018***

The forecasters expect current-year headline CPI inflation to average 2.4 percent, down slightly from 2.5 percent in the last survey. Core CPI inflation for 2018 will be 2.3 percent, down 0.2 percentage point from the previous estimate.

The forecasters predict current-year headline PCE inflation to average 2.1 percent, unchanged from the last survey. Core PCE inflation for 2018 will be 2.0 percent, down 0.2 percentage point from the previous estimate.

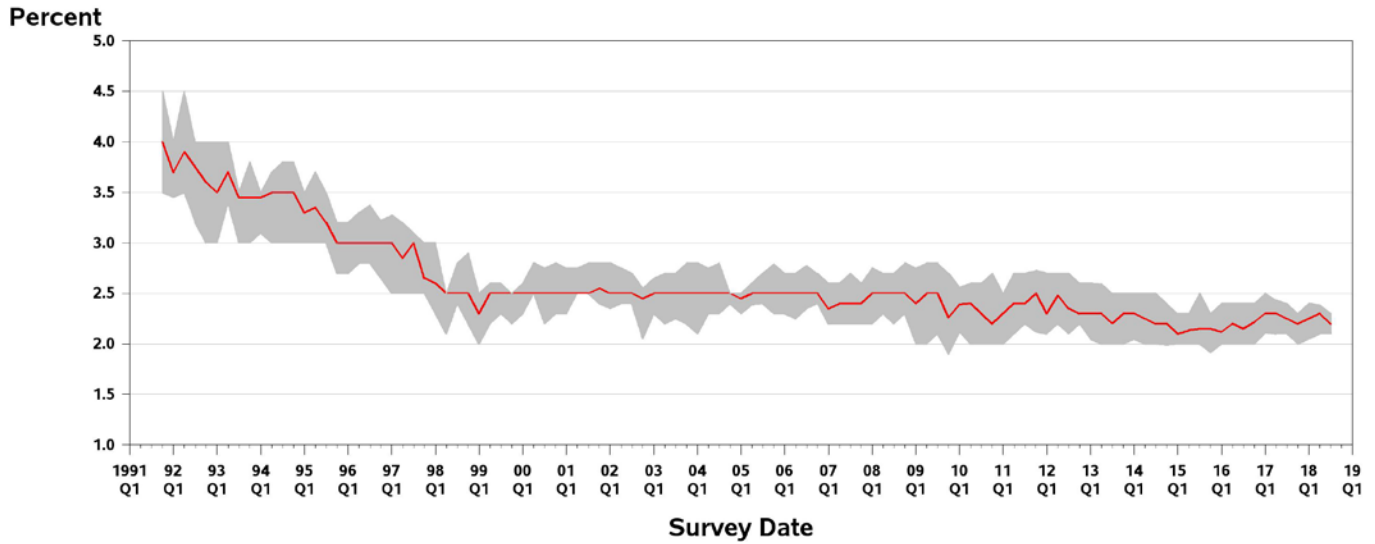
Over the next 10 years, 2018 to 2027, the forecasters expect headline CPI inflation to average 2.20 percent at an annual rate, down 0.1 percentage point from the previous estimate. The corresponding estimate for 10-year annual-average PCE inflation is 2.00 percent, unchanged from the estimate of three months ago.

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

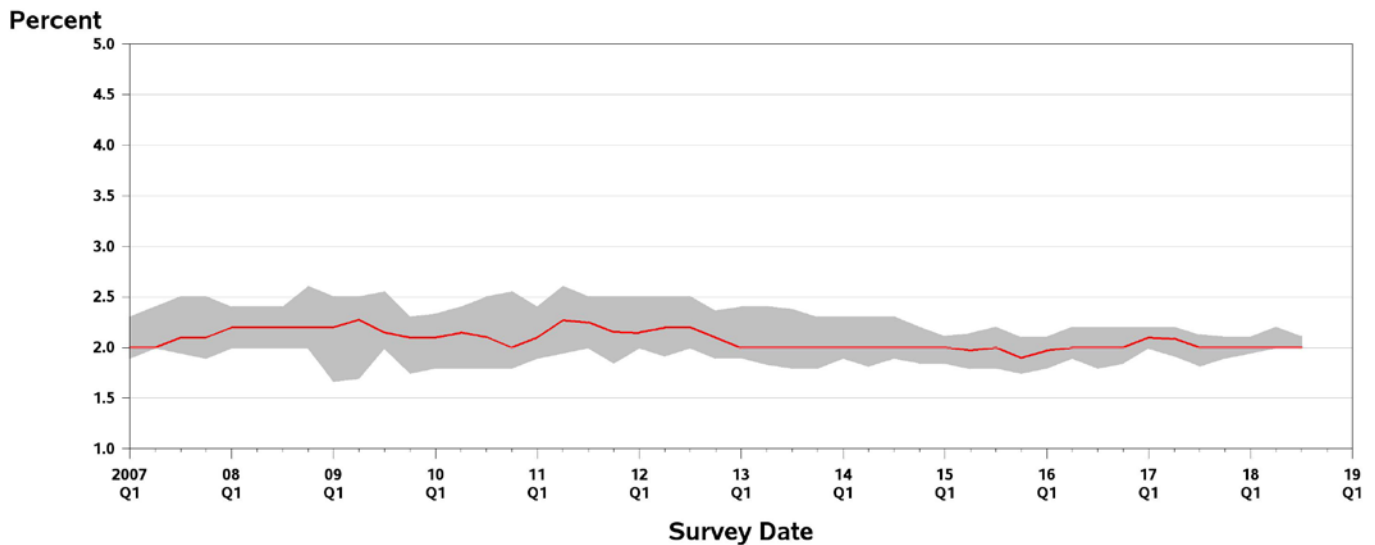
	Headline CPI		Core CPI		Headline PCE		Core PCE	
	Previous	Current	Previous	Current	Previous	Current	Previous	Current
Quarterly								
2018:Q3	2.2	2.3	2.3	2.3	2.0	2.0	2.1	2.0
2018:Q4	2.3	2.3	2.3	2.3	2.0	2.1	2.1	2.0
2019:Q1	2.3	2.4	2.4	2.4	2.1	2.1	2.1	2.1
2019:Q2	2.2	2.1	2.4	2.4	2.0	2.0	2.0	2.1
2019:Q3	N.A.	2.3	N.A.	2.4	N.A.	2.1	N.A.	2.1
Q4/Q4 Annual Averages								
2018	2.5	2.4	2.5	2.3	2.1	2.1	2.2	2.0
2019	2.2	2.3	2.4	2.4	2.1	2.1	2.1	2.1
2020	2.3	2.3	2.4	2.4	2.1	2.1	2.1	2.1
Long-Term Annual Averages								
2018-2022	2.20	2.22	N.A.	N.A.	2.00	2.04	N.A.	N.A.
2018-2027	2.30	2.20	N.A.	N.A.	2.00	2.00	N.A.	N.A.

The charts below show the median projections (the red line) and the associated interquartile ranges (gray areas around the red line) for the projections for 10-year annual-average CPI and PCE inflation. The charts highlight a slightly lower level of the long-term projection for CPI inflation and an unchanged long-term projection for PCE inflation.

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

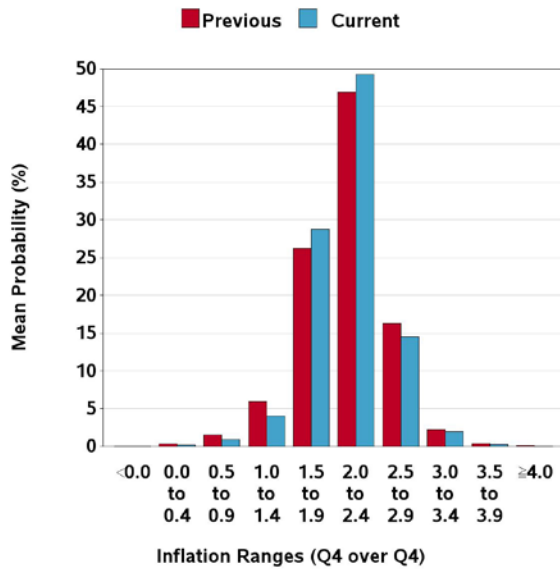


**Projections for the 10-Year Annual-Average Rate of PCE Inflation  
(Median and Interquartile Range)**

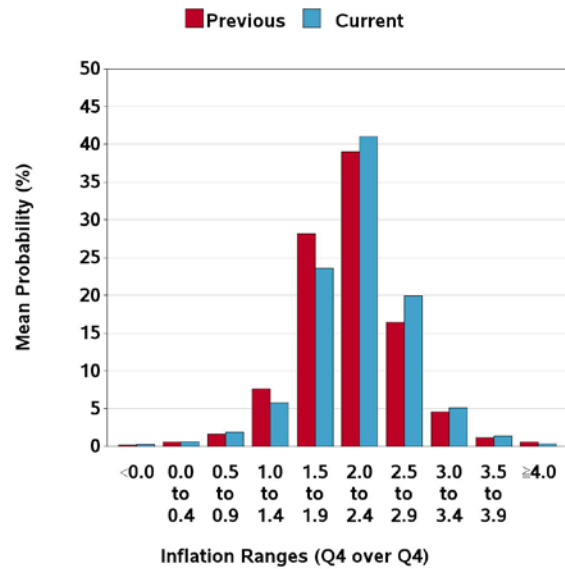


The figures below show the probabilities that the forecasters are assigning to the possibility that fourth-quarter over fourth-quarter core PCE inflation in 2018 and 2019 will fall into each of 10 ranges. For both years, the estimates are nearly the same as those of the previous survey, suggesting that the forecasters' assessment of the uncertainty about future inflation is holding steady.

Mean Probabilities for Core PCE Inflation in 2018



Mean Probabilities for Core PCE Inflation in 2019



**Forecasters See Little Change to the Risk of a Negative Quarter**

The forecasters have marginally revised downward the chance of a contraction in real GDP in any of the next three quarters. For the current quarter, the forecasters predict a 6.6 percent chance of negative growth, down from 8.6 percent in the survey of three months ago. The forecasters have also made downward revisions to their forecasts for the following two quarters. For the second quarter in 2019, the forecasters predict a 16.4 percent chance of negative growth, up from 15.6 percent in the previous survey.

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

Quarterly data:	Previous	New
2018:Q3	8.6	6.6
2018:Q4	11.1	10.5
2019:Q1	14.4	13.2
2019:Q2	15.6	16.4
2019:Q3	N.A.	19.6

### ***Natural Rate of Unemployment Estimated at 4.3 Percent***

In third-quarter surveys, we ask the forecasters to provide their estimates of the natural rate of unemployment — the rate of unemployment that occurs when the economy reaches equilibrium. The forecasters peg this rate at 4.30 percent. The table below shows, for each third-quarter survey since 1996, the percentage of respondents who use the natural rate in their forecasts and, for those who use it, the median estimate and the lowest and highest estimates. Thirty-four percent of the 32 forecasters who answered the question report that they use the natural rate in their forecasts. The lowest estimate is 3.80 percent, and the highest estimate is 4.60 percent.

#### *Median Estimates of the Natural Rate of Unemployment*

Survey Date	Percentage Who Use the Natural Rate	Median Estimate (%)	Low (%)	High (%)
1996:Q3	62	5.65	5.00	6.00
1997:Q3	59	5.25	4.50	5.88
1998:Q3	45	5.30	4.50	5.80
1999:Q3	43	5.00	4.13	5.60
2000:Q3	48	4.50	4.00	5.00
2001:Q3	34	4.88	3.50	5.50
2002:Q3	50	5.10	3.80	5.50
2003:Q3	41	5.00	4.31	5.40
2004:Q3	46	5.00	4.00	5.50
2005:Q3	50	5.00	4.25	5.50
2006:Q3	53	4.95	4.00	5.50
2007:Q3	52	4.65	4.20	5.50
2008:Q3	48	5.00	4.00	5.50
2009:Q3	45	5.00	4.00	6.00
2010:Q3	50	5.78	4.50	6.80
2011:Q3	42	6.00	4.75	7.00
2012:Q3	49	6.00	4.75	7.00
2013:Q3	63	6.00	4.75	7.00
2014:Q3	65	5.50	4.50	6.70
2015:Q3	62	5.00	4.25	5.80
2016:Q3	56	4.80	4.50	5.50
2017:Q3	44	4.50	3.50	5.00
2018:Q3	34	4.30	3.80	4.60

### *Technical Notes*

#### **Moody's Aaa and Baa Historical Rates**

The historical values of Moody's Aaa and Baa rates are proprietary and, therefore, not available in the data files on the Bank's website or on the tables that accompany the survey's complete write-up in the PDF.

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.; **Jay Bryson**, Wells Fargo; **Christine Chmura, Ph.D.**, and **Xiaobing Shuai, Ph.D.**, Chmura Economics & Analytics; **Gary Ciminero, CFA**, GLC Financial Economics; **Gregory Daco**, Oxford Economics USA, Inc.; **Rajeev Dhawan**, Georgia State University; **Bill Diviney**, ABN AMRO Bank NV; **Gabriel Ehrlich**, **Daniil Manaenkov**, **Owen Nie**, and **Aditi Thapar**, RSQE, University of Michigan; **Michael R. Englund**, Action Economics, LLC; **J.D. Foster**, U.S. Chamber of Commerce; **Michael Gapen**, Barclays Capital; **Sacha Gelfer**, Bentley University; **James Glassman**, JPMorgan Chase & Co.; **Jan Hatzius**, Goldman Sachs; **Keith Hembre**, Nuveen Asset Management; **Peter Hooper**, Deutsche Bank Securities, Inc.; **Sam Kahan**, Kahan Consulting Ltd. (ACT Research LLC); **N. Karp**, BBVA Research USA; **Walter Kemmsies**, Jones Lang LaSalle; **Jack Kleinhenz**, Kleinhenz & Associates, Inc.; **Thomas Lam**, Independent Economist; **L. Douglas Lee**, Economics from Washington; **John Lonski**, Moody's Capital Markets Group; **Macroeconomic Advisers**, **IHS Markit**; **Robert McNab**, Old Dominion University; **R. Anthony Metz**, Pareto Optimal Economics; **Michael Moran**, Daiwa Capital Markets America; **Joel L. Naroff**, Naroff Economic Advisors; **Michael Neal**, National Association of Home Builders; **Mark Nielson, Ph.D.**, MacroEcon Global Advisors; **Luca Noto**, Anima Sgr; **Brendon Ogmundson**, BC Real Estate Association; **Arun Raha** and **Maira Trimble**, Eaton Corporation; **Philip Rothman**, East Carolina University; **Chris Rupkey**, MUFG Union Bank; **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; **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

	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2018	2019 (YEAR-OVER-YEAR)	2020	2021
PERCENT GROWTH AT ANNUAL RATES									
1. REAL GDP (BILLIONS, CHAIN WEIGHTED)	3.0	2.8	2.5	2.7	2.6	2.8	2.8	1.8	1.5
2. GDP PRICE INDEX (PERCENT CHANGE)	2.3	2.3	2.2	2.2	2.2	2.3	2.3	N.A.	N.A.
3. NOMINAL GDP (\$ BILLIONS)	5.1	5.3	5.1	4.6	4.7	5.2	5.1	N.A.	N.A.
4. NONFARM PAYROLL EMPLOYMENT (PERCENT CHANGE) (AVG MONTHLY CHANGE)	1.6 197.1	1.4 173.3	1.3 161.5	1.3 162.0	1.2 150.1	1.6 194.8	1.4 167.8	N.A. N.A.	N.A. N.A.
VARIABLES IN LEVELS									
5. UNEMPLOYMENT RATE (PERCENT)	3.8	3.7	3.7	3.6	3.6	3.9	3.6	3.7	4.0
6. 3-MONTH TREASURY BILL (PERCENT)	2.1	2.3	2.5	2.7	2.8	1.9	2.7	3.1	3.1
7. 10-YEAR TREASURY BOND (PERCENT)	3.0	3.1	3.3	3.3	3.4	3.0	3.4	3.6	3.7
	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2018	2019 (Q4-OVER-Q4)	2020	
INFLATION INDICATORS									
8. CPI (ANNUAL RATE)	2.3	2.3	2.4	2.1	2.3	2.4	2.3	2.3	
9. CORE CPI (ANNUAL RATE)	2.3	2.3	2.4	2.4	2.4	2.3	2.4	2.4	
10. PCE (ANNUAL RATE)	2.0	2.1	2.1	2.0	2.1	2.1	2.1	2.1	
11. CORE PCE (ANNUAL RATE)	2.0	2.0	2.1	2.1	2.1	2.0	2.1	2.1	

Note: The figures on each line are medians of 38 forecasters.

Source: Research Department, Federal Reserve Bank of Philadelphia.  
Survey of Professional Forecasters, Third Quarter 2018.

# **SURVEY OF PROFESSIONAL FORECASTERS**

**Third Quarter 2018**

**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 July 27, 2018; the tables do not reflect subsequent revisions to the data. All forecasts were received on or before August 7, 2018.

TABLE ONE  
MAJOR MACROECONOMIC INDICATORS  
MEDIAN OF FORECASTER PREDICTIONS

	NUMBER OF FORECASTERS	ACTUAL	FORECAST					ACTUAL	FORECAST				
		2018 Q2	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2017 ANNUAL	2018 ANNUAL	2019 ANNUAL	2020 ANNUAL	2021 ANNUAL	
1. GROSS DOMESTIC PRODUCT (GDP) (\$ BILLIONS)	35	20403	20658	20925	21188	21427	21673	19485	20502	21546	N.A.	N.A.	
2. GDP PRICE INDEX (2012=100)	37	110.17	110.80	111.43	112.03	112.65	113.26	107.93	110.41	112.91	N.A.	N.A.	
3. CORPORATE PROFITS AFTER TAXES (\$ BILLIONS)	20	N.A.	2012.7	2036.8	2065.0	2085.0	2110.0	1748.6	1995.2	2090.0	N.A.	N.A.	
4. UNEMPLOYMENT RATE (PERCENT)	36	3.9	3.8	3.7	3.7	3.6	3.6	4.4	3.9	3.6	3.7	4.0	
5. NONFARM PAYROLL EMPLOYMENT (THOUSANDS)	31	148689	149280	149800	150284	150771	151221	146624	148961	150975	N.A.	N.A.	
6. INDUSTRIAL PRODUCTION (2012=100)	31	107.5	108.2	108.9	109.7	110.3	110.8	103.7	107.6	110.5	N.A.	N.A.	
7. NEW PRIVATE HOUSING STARTS (ANNUAL RATE, MILLIONS)	34	1.26	1.28	1.30	1.31	1.32	1.33	1.21	1.29	1.33	N.A.	N.A.	
8. 3-MONTH TREASURY BILL RATE (PERCENT)	36	1.84	2.06	2.25	2.49	2.67	2.80	0.93	1.93	2.71	3.12	3.11	
9. MOODY'S AAA CORP BOND YIELD * (PERCENT)	24	N.A.	4.06	4.19	4.34	4.49	4.64	N.A.	3.99	4.55	N.A.	N.A.	
10. MOODY'S BAA CORP BOND YIELD * (PERCENT)	23	N.A.	4.93	5.05	5.23	5.34	5.50	N.A.	4.80	5.40	N.A.	N.A.	
11. 10-YEAR TREASURY BOND YIELD (PERCENT)	37	2.92	3.00	3.12	3.28	3.33	3.43	2.33	2.95	3.40	3.60	3.67	
12. REAL GDP (BILLIONS, CHAIN WEIGHTED)	36	18507	18647	18775	18891	19018	19141	18051	18563	19076	19415	19708	
13. TOTAL CONSUMPTION EXPENDITURE (BILLIONS, CHAIN WEIGHTED)	35	12847.8	12930.5	13012.3	13087.9	13163.2	13234.8	12558.7	12878.4	13194.8	N.A.	N.A.	
14. NONRESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED)	33	2701.5	2739.1	2772.7	2806.8	2836.7	2873.1	2538.1	2717.7	2856.5	N.A.	N.A.	
15. RESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED)	33	613.7	615.2	619.6	622.8	626.0	631.2	611.1	616.0	629.7	N.A.	N.A.	
16. FEDERAL GOVERNMENT C & I (BILLIONS, CHAIN WEIGHTED)	32	1223.4	1232.7	1240.1	1248.8	1256.7	1262.3	1196.4	1228.1	1260.5	N.A.	N.A.	
17. STATE AND LOCAL GOVT C & I (BILLIONS, CHAIN WEIGHTED)	33	1944.3	1950.1	1956.4	1962.7	1970.1	1974.6	1932.3	1947.0	1972.1	N.A.	N.A.	
18. CHANGE IN PRIVATE INVENTORIES (BILLIONS, CHAIN WEIGHTED)	29	-27.9	19.9	29.0	30.0	32.0	34.0	22.5	12.4	31.1	N.A.	N.A.	
19. NET EXPORTS (BILLIONS, CHAIN WEIGHTED)	31	-849.9	-871.5	-887.8	-896.1	-905.0	-917.5	-858.7	-879.0	-911.6	N.A.	N.A.	

\* The historical values of Moody's Aaa and Baa rates are proprietary and therefore not available to the general public.

Source: Research Department, Federal Reserve Bank of Philadelphia. Survey of Professional Forecasters, Third Quarter 2018.

TABLE TWO  
MAJOR MACROECONOMIC INDICATORS  
PERCENTAGE CHANGES AT ANNUAL RATES

	NUMBER OF FORECASTERS	Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019	2017	2018	2019	2020
		TO Q3 2018	TO Q4 2018	TO Q1 2019	TO Q2 2019	TO Q3 2019	TO 2018	TO 2019	TO 2020	TO 2021
1. GROSS DOMESTIC PRODUCT (GDP) (\$ BILLIONS)	35	5.1	5.3	5.1	4.6	4.7	5.2	5.1	N.A.	N.A.
2. GDP PRICE INDEX (2012=100)	37	2.3	2.3	2.2	2.2	2.2	2.3	2.3	N.A.	N.A.
3. CORPORATE PROFITS AFTER TAXES (\$ BILLIONS)	20	5.9	4.9	5.7	3.9	4.9	14.1	4.8	N.A.	N.A.
4. UNEMPLOYMENT RATE (PERCENT)	36	-0.1	-0.1	-0.0	-0.1	-0.0	-0.5	-0.3	0.1	0.3
5. NONFARM PAYROLL EMPLOYMENT (PERCENT CHANGE) (AVG MONTHLY CHANGE)	31 31	1.6 197.1	1.4 173.3	1.3 161.5	1.3 162.0	1.2 150.1	1.6 194.8	1.4 167.8	N.A. N.A.	N.A. N.A.
6. INDUSTRIAL PRODUCTION (2012=100)	31	2.7	2.7	2.7	2.3	1.9	3.8	2.7	N.A.	N.A.
7. NEW PRIVATE HOUSING STARTS (ANNUAL RATE, MILLIONS)	34	7.3	4.4	2.2	5.9	3.0	6.8	3.0	N.A.	N.A.
8. 3-MONTH TREASURY BILL RATE (PERCENT)	36	0.22	0.19	0.24	0.18	0.13	1.00	0.79	0.41	-0.01
9. MOODY'S AAA CORP BOND YIELD * (PERCENT)	24	N.A.	0.13	0.15	0.15	0.14	N.A.	0.56	N.A.	N.A.
10. MOODY'S BAA CORP BOND YIELD * (PERCENT)	23	N.A.	0.12	0.18	0.12	0.16	N.A.	0.60	N.A.	N.A.
11. 10-YEAR TREASURY BOND YIELD (PERCENT)	37	0.08	0.12	0.16	0.05	0.10	0.62	0.45	0.20	0.07
12. REAL GDP (BILLIONS, CHAIN WEIGHTED)	36	3.0	2.8	2.5	2.7	2.6	2.8	2.8	1.8	1.5
13. TOTAL CONSUMPTION EXPENDITURE (BILLIONS, CHAIN WEIGHTED)	35	2.6	2.6	2.3	2.3	2.2	2.5	2.5	N.A.	N.A.
14. NONRESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED)	33	5.7	5.0	5.0	4.3	5.2	7.1	5.1	N.A.	N.A.
15. RESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED)	33	1.0	2.9	2.1	2.0	3.4	0.8	2.2	N.A.	N.A.
16. FEDERAL GOVERNMENT C & I (BILLIONS, CHAIN WEIGHTED)	32	3.1	2.4	2.9	2.6	1.8	2.7	2.6	N.A.	N.A.
17. STATE AND LOCAL GOVT C & I (BILLIONS, CHAIN WEIGHTED)	33	1.2	1.3	1.3	1.5	0.9	0.8	1.3	N.A.	N.A.
18. CHANGE IN PRIVATE INVENTORIES (BILLIONS, CHAIN WEIGHTED)	29	47.8	9.1	1.0	2.0	2.0	-10.1	18.7	N.A.	N.A.
19. NET EXPORTS (BILLIONS, CHAIN WEIGHTED)	31	-21.6	-16.3	-8.3	-8.9	-12.5	-20.3	-32.6	N.A.	N.A.

\* The historical values of Moody's Aaa and Baa rates are proprietary and therefore not available to the general public.

Note: Figures for unemployment rate, 3-month Treasury bill rate, Moody's Aaa corporate bond yield, Moody's 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, Third Quarter 2018.

TABLE THREE  
MAJOR PRICE INDICATORS  
MEDIANS OF FORECASTER PREDICTIONS

	NUMBER OF FORECASTERS	ACTUAL		FORECAST(Q/Q)			ACTUAL		FORECAST(Q4/Q4)		
		2018 Q2	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2017 ANNUAL	2018 ANNUAL	2019 ANNUAL	2020 ANNUAL
1. CONSUMER PRICE INDEX (ANNUAL RATE)	37	1.7	2.3	2.3	2.4	2.1	2.3	2.1	2.4	2.3	2.3
2. CORE CONSUMER PRICE INDEX (ANNUAL RATE)	34	1.8	2.3	2.3	2.4	2.4	2.4	1.7	2.3	2.4	2.4
3. PCE PRICE INDEX (ANNUAL RATE)	34	1.8	2.0	2.1	2.1	2.0	2.1	1.8	2.1	2.1	2.1
4. CORE PCE PRICE INDEX (ANNUAL RATE)	33	2.0	2.0	2.0	2.1	2.1	2.1	1.6	2.0	2.1	2.1

Source: Research Department, Federal Reserve Bank of Philadelphia. Survey of Professional Forecasters, Third Quarter 2018.

TABLE FOUR  
YIELD SPREADS  
MEDIAN OF FORECASTER PREDICTIONS

	NUMBER OF FORECASTERS	ACTUAL	FORECAST					ACTUAL	FORECAST				
		2018 Q2	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2017 ANNUAL	2018 ANNUAL	2019 ANNUAL	2020 ANNUAL	2021 ANNUAL	
1. TBOND MINUS TBILL (PERCENTAGE POINTS)	36	1.08	0.96	0.85	0.80	0.66	0.60	1.40	1.01	0.62	0.67	0.77	
2. AAA MINUS TBOND (PERCENTAGE POINTS)	24	N.A.	1.01	1.05	1.10	1.12	1.12	N.A.	1.01	1.12	N.A.	N.A.	
3. BAA MINUS TBOND (PERCENTAGE POINTS)	23	N.A.	1.90	1.90	1.90	1.95	2.00	N.A.	1.85	1.95	N.A.	N.A.	
4. BAA MINUS AAA (PERCENTAGE POINTS)	22	N.A.	0.89	0.90	0.90	0.90	0.90	N.A.	0.83	0.90	N.A.	N.A.	

Notes:

TBOND is the rate on 10-year Treasury bonds.  
TBILL is the rate on 3-month Treasury bills.  
AAA is the rate on Moody's Aaa corporate bonds.  
BAA is the rate on Moody's Baa corporate bonds.

The historical values for interest rate spreads for Moody's Aaa and Baa rates are proprietary and therefore not available to the general public.

Each interest rate spread is computed as the median value of the forecasters' spreads. These median values may differ from those computed as the difference between the median values of each interest rate in the spread.

Source: Research Department, Federal Reserve Bank of Philadelphia. Survey of Professional Forecasters, Third Quarter 2018.

TABLE FIVE  
ESTIMATED PROBABILITY OF DECLINE IN REAL GDP

ESTIMATED PROBABILITY (CHANCES IN 100)	Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019
	TO Q3 2018	TO Q4 2018	TO Q1 2019	TO Q2 2019	TO Q3 2019
NUMBER OF FORECASTERS					
10 OR LESS	24	19	13	8	5
11 TO 20	6	11	16	17	15
21 TO 30	0	1	3	7	10
31 TO 40	0	0	0	0	1
41 TO 50	0	0	0	0	0
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	8	7	6	6	7
MEAN AND MEDIAN					
MEDIAN PROBABILITY	5.00	10.00	14.32	15.00	20.00
MEAN PROBABILITY	6.55	10.53	13.23	16.41	19.63

Note: Total number of forecasters reporting is 30.

Source: Research Department, Federal Reserve Bank of Philadelphia.  
Survey of Professional Forecasters, Third Quarter 2018.

TABLE SIX  
MEAN PROBABILITIES

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

	2018	2019	2020	2021
9.0 PERCENT OR MORE	0.00	0.00	0.01	0.04
8.0 TO 8.9 PERCENT	0.00	0.00	0.02	0.18
7.5 TO 7.9 PERCENT	0.00	0.00	0.06	0.22
7.0 TO 7.4 PERCENT	0.00	0.00	0.12	0.78
6.5 TO 6.9 PERCENT	0.00	0.01	0.66	2.20
6.0 TO 6.4 PERCENT	0.03	0.39	1.79	4.54
5.5 TO 5.9 PERCENT	0.14	1.34	4.85	8.40
5.0 TO 5.4 PERCENT	1.90	5.99	12.13	15.89
4.0 TO 4.9 PERCENT	36.58	33.05	32.74	30.02
LESS THAN 4.0 PERCENT	61.36	59.22	47.64	37.72

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

	2017-2018	2018-2019	2019-2020	2020-2021
6.0 PERCENT OR MORE	0.01	0.29	0.35	0.43
5.0 TO 5.9 PERCENT	0.13	0.85	0.82	0.92
4.0 TO 4.9 PERCENT	3.72	5.16	4.34	4.12
3.0 TO 3.9 PERCENT	28.57	21.42	12.09	11.45
2.0 TO 2.9 PERCENT	55.20	41.58	26.26	28.66
1.0 TO 1.9 PERCENT	8.53	17.41	27.10	28.80
0.0 TO 0.9 PERCENT	2.44	7.50	16.48	15.18
-1.0 TO -0.1 PERCENT	0.97	4.18	9.43	7.08
-2.0 TO -1.1 PERCENT	0.19	1.36	2.37	2.29
-3.0 TO -2.1 PERCENT	0.24	0.20	0.65	0.70
LESS THAN -3.0 PERCENT	0.00	0.04	0.12	0.39

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

	2017-2018	2018-2019
4.0 PERCENT OR MORE	0.02	0.69
3.5 TO 3.9 PERCENT	0.45	1.80
3.0 TO 3.4 PERCENT	4.05	7.92
2.5 TO 2.9 PERCENT	21.70	23.02
2.0 TO 2.4 PERCENT	49.95	38.27
1.5 TO 1.9 PERCENT	18.43	19.57
1.0 TO 1.4 PERCENT	4.26	6.39
0.5 TO 0.9 PERCENT	0.95	1.89
0.0 TO 0.4 PERCENT	0.16	0.31
LESS THAN 0.0 PERCENT	0.03	0.16

Source: Research Department, Federal Reserve Bank of Philadelphia.  
Survey of Professional Forecasters, Third Quarter 2018.



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

MEAN PROBABILITY ATTACHED TO CORE CPI INFLATION:

	17Q4 TO 18Q4	18Q4 TO 19Q4
4.0 PERCENT OR MORE	0.05	0.89
3.5 TO 3.9 PERCENT	0.34	2.35
3.0 TO 3.4 PERCENT	3.73	7.83
2.5 TO 2.9 PERCENT	28.12	30.10
2.0 TO 2.4 PERCENT	50.88	38.34
1.5 TO 1.9 PERCENT	14.28	15.87
1.0 TO 1.4 PERCENT	2.24	3.44
0.5 TO 0.9 PERCENT	0.27	0.82
0.0 TO 0.4 PERCENT	0.06	0.24
LESS THAN 0.0 PERCENT	0.02	0.11

MEAN PROBABILITY ATTACHED TO CORE PCE INFLATION:

	17Q4 TO 18Q4	18Q4 TO 19Q4
4.0 PERCENT OR MORE	0.06	0.33
3.5 TO 3.9 PERCENT	0.23	1.40
3.0 TO 3.4 PERCENT	2.00	5.07
2.5 TO 2.9 PERCENT	14.52	19.95
2.0 TO 2.4 PERCENT	49.22	41.00
1.5 TO 1.9 PERCENT	28.77	23.61
1.0 TO 1.4 PERCENT	4.04	5.83
0.5 TO 0.9 PERCENT	0.90	1.92
0.0 TO 0.4 PERCENT	0.20	0.64
LESS THAN 0.0 PERCENT	0.05	0.24

Source: Research Department, Federal Reserve Bank of Philadelphia.  
 Survey of Professional Forecasters, Third Quarter 2018.

TABLE EIGHT  
LONG-TERM (5-YEAR AND 10-YEAR) INFLATION FORECASTS

ANNUAL AVERAGE OVER THE NEXT 5 YEARS: 2018-2022

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CPI INFLATION RATE		PCE INFLATION RATE	
-----		-----	
MINIMUM	1.93	MINIMUM	1.80
LOWER QUARTILE	2.10	LOWER QUARTILE	1.90
MEDIAN	2.22	MEDIAN	2.04
UPPER QUARTILE	2.46	UPPER QUARTILE	2.20
MAXIMUM	3.10	MAXIMUM	2.80
MEAN	2.31	MEAN	2.10
STD. DEVIATION	0.27	STD. DEVIATION	0.23
N	31	N	30
MISSING	7	MISSING	8

ANNUAL AVERAGE OVER THE FOLLOWING 5 YEARS: 2023-2027

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CPI INFLATION RATE		PCE INFLATION RATE	
-----		-----	
MINIMUM	1.70	MINIMUM	1.70
LOWER QUARTILE	2.05	LOWER QUARTILE	2.00
MEDIAN	2.20	MEDIAN	2.07
UPPER QUARTILE	2.40	UPPER QUARTILE	2.20
MAXIMUM	3.70	MAXIMUM	3.00
MEAN	2.24	MEAN	2.09
STD. DEVIATION	0.35	STD. DEVIATION	0.25
N	30	N	29
MISSING	8	MISSING	9

ANNUAL AVERAGE OVER THE NEXT 10 YEARS: 2018-2027

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CPI INFLATION RATE		PCE INFLATION RATE	
-----		-----	
MINIMUM	1.88	MINIMUM	1.80
LOWER QUARTILE	2.10	LOWER QUARTILE	2.00
MEDIAN	2.20	MEDIAN	2.00
UPPER QUARTILE	2.30	UPPER QUARTILE	2.11
MAXIMUM	3.40	MAXIMUM	2.80
MEAN	2.27	MEAN	2.09
STD. DEVIATION	0.28	STD. DEVIATION	0.21
N	30	N	29
MISSING	8	MISSING	9

Note: The summary statistics for each forecast horizon are computed on a sample of panelists that may differ from one horizon to the next. The usual identity linking the 10-year horizon to the two underlying five-year horizons may not hold in the results.

Source: Research Department, Federal Reserve Bank of Philadelphia.  
Survey of Professional Forecasters, Third Quarter 2018.