# SURVEY OF PROFESSIONAL FORECASTERS

**Release Date: February 14, 2020**

***FIRST QUARTER 2020***

***Stronger Output Growth and Higher Job Gains in 2020***

The U.S. economy in 2020 looks stronger now than it did three months ago, according to 37 forecasters surveyed by the Federal Reserve Bank of Philadelphia. The panel predicts real GDP will grow at an annual rate of 1.7 percent this quarter, down from 1.9 percent in the last survey. However, for each of the next three quarters, the panel sees higher output growth than they predicted previously. On an annual-average over annual-average basis, the forecasters expect real GDP to grow 2.0 percent in each of the next four years. The current projection for 2020 growth is up from 1.8 percent in the last survey.

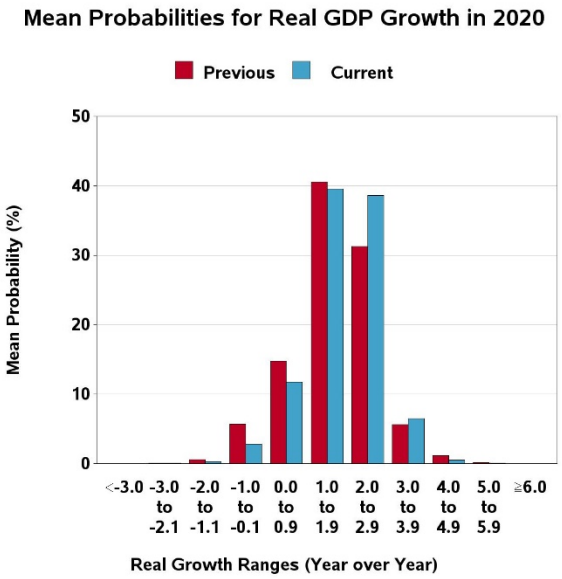
A brighter outlook for the labor market accompanies the outlook for growth. The forecasters predict the unemployment rate will average between 3.6 percent and 3.9 percent from 2020 to 2023. Notably, the projections for 2020, 2021, and 2022 are below those of the last survey.

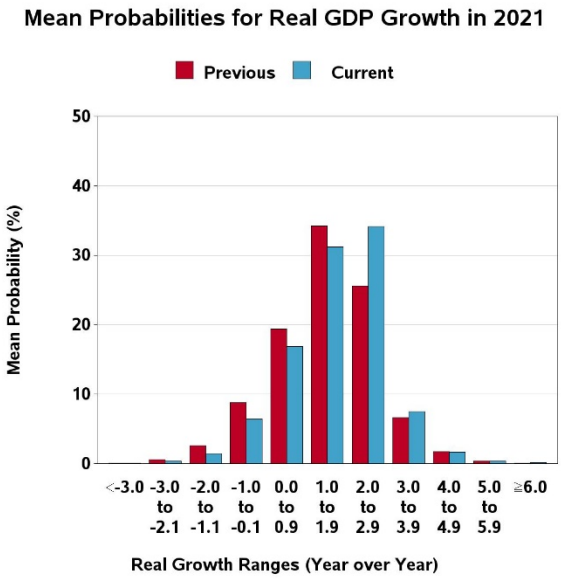
On the employment front, the forecasters have revised upward their estimates for job gains in 2020. The projections for the annual-average level of nonfarm payroll employment suggest job gains at a monthly rate of 168,500 in 2020, up from 143,800 projected three months ago. (These annual-average estimates are computed as the year-to-year change in the annual-average level of nonfarm payroll employment, converted to a monthly rate.)

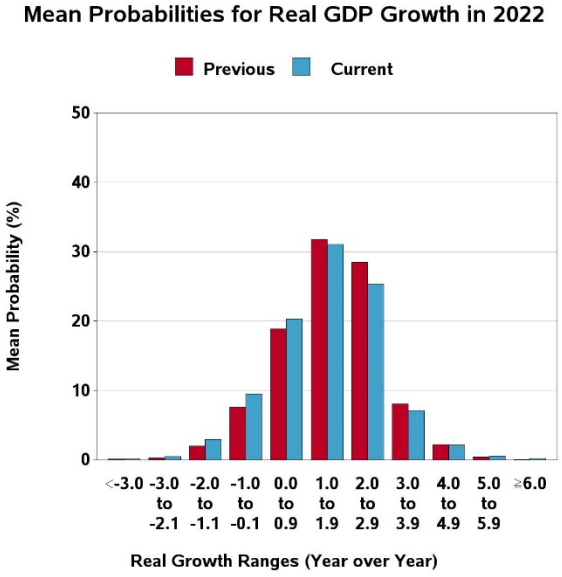
*Median Forecasts for Selected Variables in the Current and Previous Surveys*

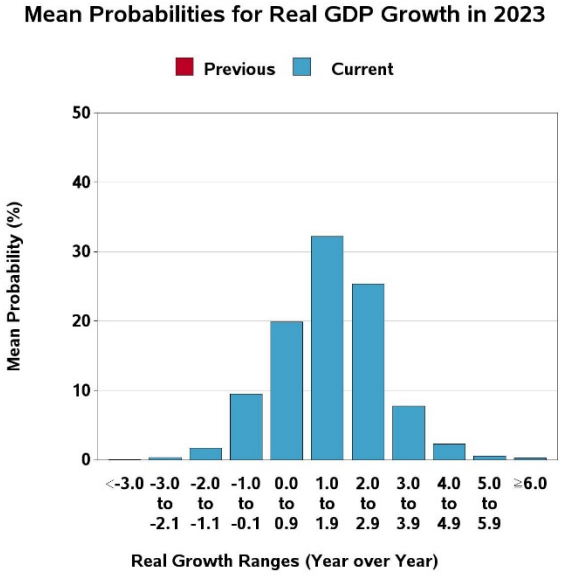
| | Real GDP (%) | | Unemployment Rate (%) | | Payrolls (000s/month) | |
|---|---|---|---|---|---|---|
| | Previous | New | Previous | New | Previous | New |
| Quarterly data: | | | | | | |
| 2020:Q1 | 1.9 | 1.7 | 3.6 | 3.6 | 133.1 | 178.2 |
| 2020:Q2 | 1.7 | 2.1 | 3.6 | 3.5 | 159.4 | 168.6 |
| 2020:Q3 | 1.7 | 2.0 | 3.7 | 3.5 | 122.5 | 132.8 |
| 2020:Q4 | 1.9 | 2.1 | 3.7 | 3.6 | 127.3 | 116.7 |
| 2021:Q1 | N.A. | 2.2 | N.A. | 3.6 | N.A. | 114.5 |
| Annual data (projections are based on annual-average levels): | | | | | | |
| 2020 | 1.8 | 2.0 | 3.7 | 3.6 | 143.8 | 168.5 |
| 2021 | 2.0 | 2.0 | 3.7 | 3.6 | N.A. | 125.2 |
| 2022 | 2.0 | 2.0 | 3.9 | 3.7 | N.A. | N.A. |
| 2023 | N.A. | 2.0 | N.A. | 3.9 | 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 the forecasters have revised upward their estimates of the probability that real GDP will grow 2.0 percent or more in 2020 and 2021.

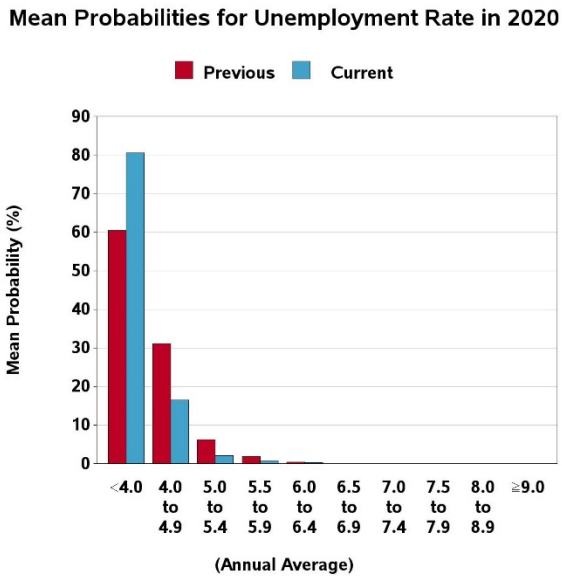


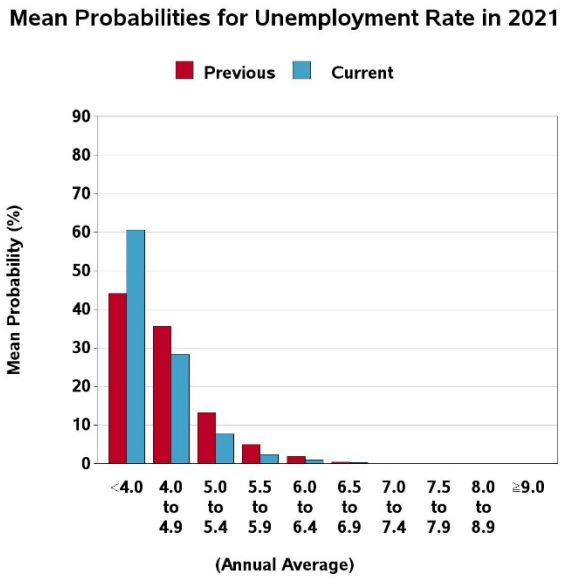



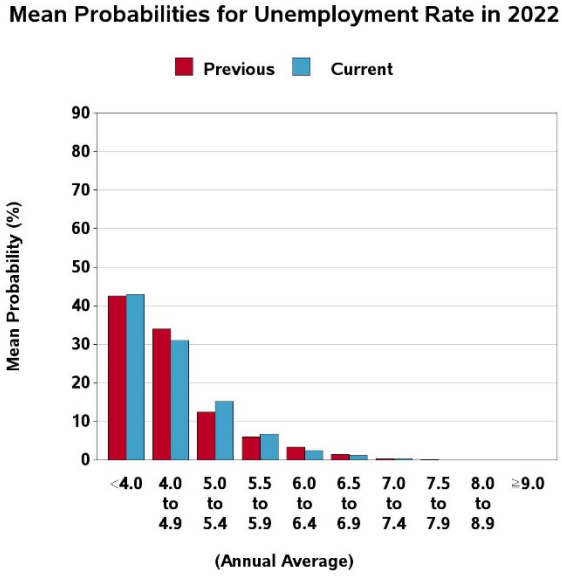



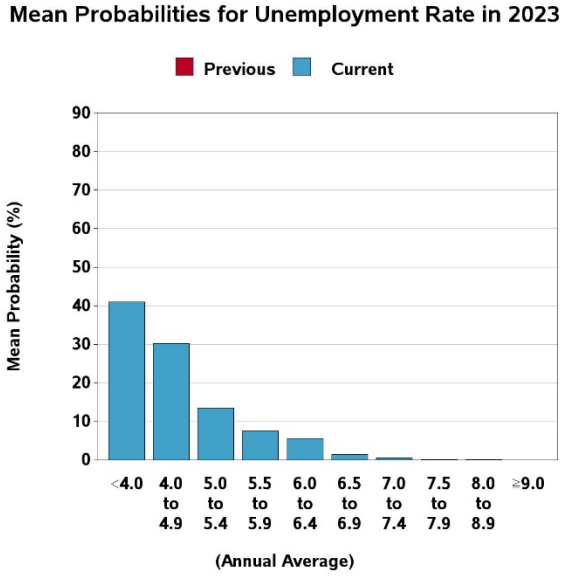



The forecasters' density projections for unemployment, shown below, shed light on uncertainty about the labor market over the next four years. Each chart presents the forecasters' current estimates of the probability that unemployment will fall into each of 10 ranges. The charts show the panelists are raising their density estimates for an unemployment rate below 4.0 percent for the next three years, especially in 2020 and 2021.



***Lower Inflation in the Current Quarter***
The forecasters expect current-quarter headline CPI inflation to average 2.0 percent, down from 2.2 percent in the last survey. Headline PCE inflation for the current quarter will be 1.7 percent, down 0.3 percentage point from the previous estimate.

The forecasters' projections for inflation beyond the current quarter are little changed compared with the previous survey.

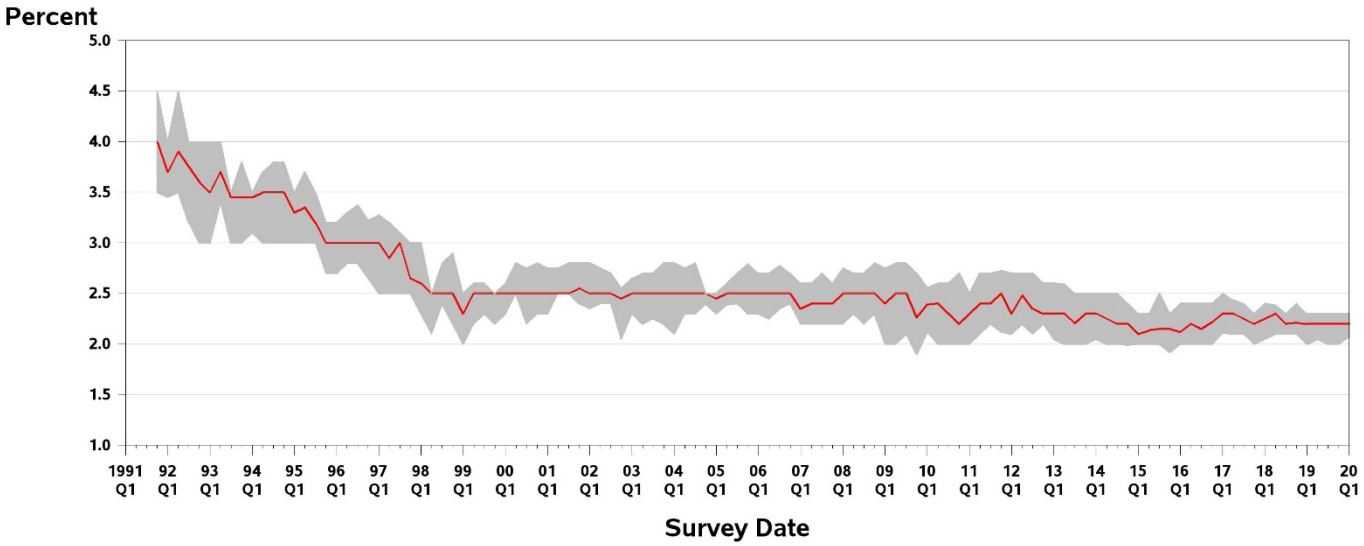
Over the next 10 years, 2020 to 2029, the forecasters expect headline CPI inflation to average 2.20 percent at an annual rate. The corresponding estimate for 10-year annual-average PCE inflation is 2.00 percent.

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

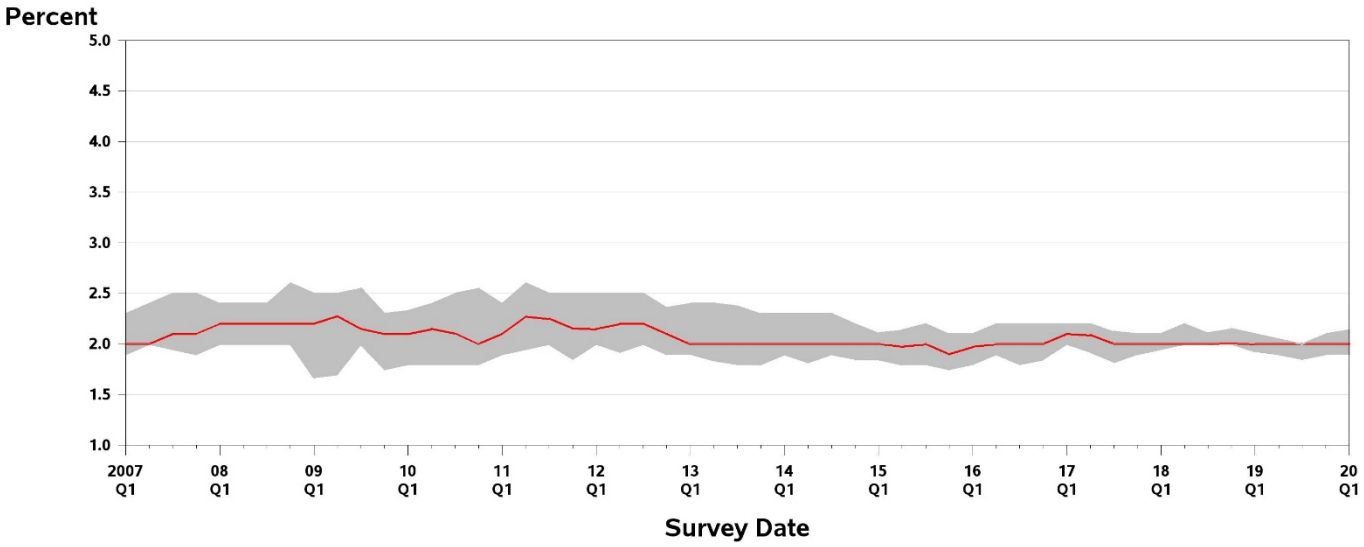
| | Headline CPI | | Core CPI | | Headline PCE | | Core PCE | |
|---|---|---|---|---|---|---|---|---|
| | Previous | Current | Previous | Current | Previous | Current | Previous | Current |
| Quarterly | | | | | | | | |
| 2020:Q1 | 2.2 | 2.0 | 2.3 | 2.1 | 2.0 | 1.7 | 2.0 | 1.9 |
| 2020:Q2 | 2.1 | 2.0 | 2.2 | 2.1 | 2.0 | 1.8 | 2.0 | 1.9 |
| 2020:Q3 | 2.2 | 2.2 | 2.2 | 2.1 | 1.9 | 1.9 | 2.0 | 1.9 |
| 2020:Q4 | 2.1 | 2.2 | 2.2 | 2.2 | 1.9 | 2.0 | 2.0 | 1.9 |
| 2021:Q1 | N.A. | 2.2 | N.A. | 2.2 | N.A. | 2.0 | N.A. | 1.9 |
| Q4/Q4 Annual Averages | | | | | | | | |
| 2020 | 2.1 | 2.0 | 2.3 | 2.2 | 1.9 | 1.9 | 2.0 | 1.9 |
| 2021 | 2.2 | 2.2 | 2.2 | 2.1 | 2.0 | 2.0 | 1.9 | 1.9 |
| 2022 | N.A. | 2.3 | N.A. | 2.2 | N.A. | 2.0 | N.A. | 1.9 |
| Long-Term Annual Averages | | | | | | | | |
| 2019-2023 | 2.20 | N.A. | N.A. | N.A. | 1.90 | N.A. | N.A. | N.A. |
| 2020-2024 | N.A. | 2.20 | N.A. | N.A. | N.A. | 2.00 | N.A. | N.A. |
| 2019-2028 | 2.20 | N.A. | N.A. | N.A. | 2.00 | N.A. | N.A. | N.A. |
| 2020-2029 | N.A. | 2.20 | N.A. | N.A. | N.A. | 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 unchanged projections for the long-term inflation rate, compared with those of the last survey.

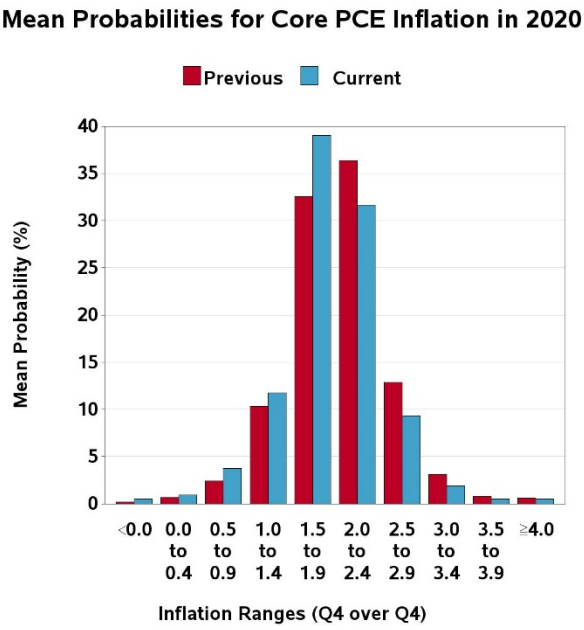
**Projections for the 10-Year Annual-Average Rate of CPI Inflation**
**(Median and Interquartile Range)**

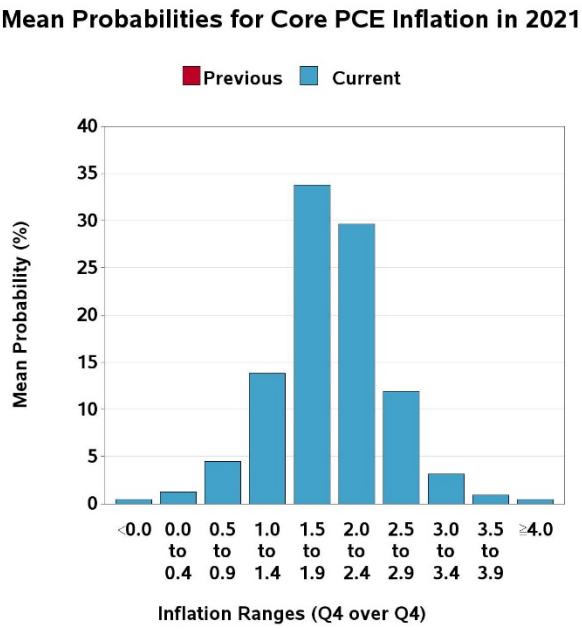



**Projections for the 10-Year Annual-Average Rate of PCE Inflation**
**(Median and Interquartile Range)**



The figures below show the probabilities that the forecasters are assigning to each of 10 possible ranges for fourth-quarter over fourth-quarter core PCE inflation in 2020 and 2021. For 2020, the forecasters have increased the probability that core PCE inflation will be below 2.0 percent.




***Lower Risk of a Negative Quarter***

The forecasters have revised downward the chance of a contraction in real GDP in any of the next four quarters. For the current quarter, the forecasters predict a 12.5 percent chance of negative growth, down from 18.1 percent in the survey of three months ago.

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

| Quarterly data: | Previous | New |
|---|---|---|
| 2020:Q1 | 18.1 | 12.5 |
| 2020:Q2 | 20.8 | 14.9 |
| 2020:Q3 | 22.6 | 18.4 |
| 2020:Q4 | 25.1 | 21.3 |
| 2021:Q1 | N.A. | 25.7 |

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

In a special question in this survey, panelists were asked 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 2020 and 2021.

Sixteen 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 six house-price indices listed in the table below range from 3.5 percent to 4.3 percent in 2020 and from 2.8 percent to 4.0 percent in 2021.

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

| Index | 2020 (Q4/Q4 Percent Change) | | | 2021 (Q4/Q4 Percent Change) | | |
|---|---|---|---|---|---|---|
| | N | Mean | Median | N | Mean | Median |
| S&P CoreLogic Case-Shiller: U.S. National | 5 | 4.2 | 4.2 | 5 | 3.7 | 3.4 |
| S&P CoreLogic Case-Shiller: Composite 10 | 2 | 4.2 | 4.2 | 2 | 4.0 | 4.0 |
| S&P CoreLogic Case-Shiller: Composite 20 | 5 | 3.5 | 3.5 | 5 | 3.3 | 2.8 |
| FHFA: Purchase Only (U.S. Total) | 10 | 4.1 | 4.1 | 10 | 3.9 | 3.9 |
| CoreLogic: National HPI, incl. Distressed Sales (Single Family Combined) | 4 | 4.2 | 4.3 | 4 | 3.8 | 3.8 |
| NAR Median: Total Existing | 2 | 3.8 | 3.8 | 2 | 3.7 | 3.7 |

***Stable 10-Year Growth in Output and Productivity and Lower Returns to Financial Assets***

In our first-quarter surveys, the forecasters provide their 10-year annual-average 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 projection for the annual-average rate of growth in real GDP over the next 10 years is nearly unchanged. Currently, the forecasters expect real GDP to grow at an annual-average rate of 2.00 percent over the next 10 years, almost identical to their projection of 1.99 percent in the first-quarter survey of 2019. Ten-year annual-average productivity growth is now expected to be 1.40 percent, up slightly from 1.35 percent previously.

Downward revisions to the return on financial assets accompany the current outlook. The forecasters predict the S&P 500 returning an annual-average 5.00 percent over the next 10 years, down from 5.35 percent. The forecasters see the rate on 10-year Treasuries averaging 2.70 percent over the next 10 years, down from 3.50 percent in last year's first-quarter survey. Three-month Treasury bills will return an annual-average 2.02 percent over the next 10 years, down from 2.75 percent.

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

| | *First Quarter 2019* | *Current Survey* |
|---|---|---|
| *Real GDP Growth* | 1.99 | 2.00 |
| *Productivity Growth* | 1.35 | 1.40 |
| *Stock Returns (S&P 500)* | 5.35 | 5.00 |
| *Rate on 10-Year Treasury Bonds* | 3.50 | 2.70 |
| *Bill Returns (3-Month)* | 2.75 | 2.02 |

*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.; **Wayne Best** and **Michael Brown**, Visa, Inc.; **Jay Bryson**, Wells Fargo; **J. Burton**, **G. Ehrlich**, **D. Manaenkov**, **W. Song**, and **A. Thapar**, RSQE, University of Michigan; **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; **Michael R. Englund**, Action Economics, LLC; **Michael Gapen**, Barclays Capital; **Sacha Gelfer**, Bentley University; **James Glassman**, JPMorgan Chase & Co.; **Jan Hatzius**, Goldman Sachs; **Brian Higginbotham**, U.S. Chamber of Commerce; **Peter Hooper**, Deutsche Bank Securities, Inc.; **Fred Joutz**, Benchmark Forecasts; **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**, Sim Kee Boon Institute, Singapore Management University; **John Lonski**, Moody's Capital Markets Group; **IHS Markit**; **Robert McNab**, Old Dominion University; **R. Anthony Metz**, Pareto Optimal Economics; **R. M. Monaco**, TitanRM; **Michael Moran**, Daiwa Capital Markets America; **Joel L. Naroff**, Naroff Economic Advisors; **Mark Nielson, Ph.D.**, MacroEcon Global Advisors; **Brendon Ogmundson**, BC Real Estate Association; **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/Montclair State University; **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; **Maira Trimble**, Eaton Corporation; **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

| | 2020 Q1 | 2020 Q2 | 2020 Q3 | 2020 Q4 | 2021 Q1 | 2020 | 2021 (YEAR-OVER-YEAR) | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|
| PERCENT GROWTH AT ANNUAL RATES | | | | | | | | | |
| 1. REAL GDP (BILLIONS, CHAIN WEIGHTED) | 1.7 | 2.1 | 2.0 | 2.1 | 2.2 | 2.0 | 2.0 | 2.0 | 2.0 |
| 2. GDP PRICE INDEX (PERCENT CHANGE) | 1.8 | 1.8 | 1.9 | 2.0 | 2.0 | 1.8 | 1.9 | N.A. | N.A. |
| 3. NOMINAL GDP ($ BILLIONS) | 3.4 | 4.2 | 4.2 | 4.1 | 3.7 | 3.9 | 4.0 | N.A. | N.A. |
| 4. NONFARM PAYROLL EMPLOYMENT | | | | | | | | | |
| (PERCENT CHANGE) | 1.4 | 1.3 | 1.0 | 0.9 | 0.9 | 1.3 | 1.0 | N.A. | N.A. |
| (AVG MONTHLY CHANGE) | 178.2 | 168.6 | 132.8 | 116.7 | 114.5 | 168.5 | 125.2 | N.A. | N.A. |
| VARIABLES IN LEVELS | | | | | | | | | |
| 5. UNEMPLOYMENT RATE (PERCENT) | 3.6 | 3.5 | 3.5 | 3.6 | 3.6 | 3.6 | 3.6 | 3.7 | 3.9 |
| 6. 3-MONTH TREASURY BILL (PERCENT) | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.7 | 2.0 | 2.2 |
| 7. 10-YEAR TREASURY BOND (PERCENT) | 1.7 | 1.8 | 1.9 | 2.0 | 2.0 | 1.9 | 2.1 | 2.5 | 2.7 |

| | 2020 Q1 | 2020 Q2 | 2020 Q3 | 2020 Q4 | 2021 Q1 | 2020 | 2021 (Q4-OVER-Q4) | 2022 |
|---|---|---|---|---|---|---|---|---|
| INFLATION INDICATORS | | | | | | | | |
| 8. CPI (ANNUAL RATE) | 2.0 | 2.0 | 2.2 | 2.2 | 2.2 | 2.0 | 2.2 | 2.3 |
| 9. CORE CPI (ANNUAL RATE) | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.1 | 2.2 |
| 10. PCE (ANNUAL RATE) | 1.7 | 1.8 | 1.9 | 2.0 | 2.0 | 1.9 | 2.0 | 2.0 |
| 11. CORE PCE (ANNUAL RATE) | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 |

Note: The figures on each line are medians of 37 forecasters.

Source: Research Department, Federal Reserve Bank of Philadelphia.
Survey of Professional Forecasters, First Quarter 2020.

# SURVEY OF PROFESSIONAL FORECASTERS

## First Quarter 2020

## 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 30, 2020; the tables do not reflect subsequent revisions to the data. All forecasts were received on or before February 11, 2020.

TABLE ONE
MAJOR MACROECONOMIC INDICATORS
MEDIANS OF FORECASTER PREDICTIONS

| | NUMBER OF FORECASTERS | ACTUAL 2019 Q4 | ACTUAL 2020 Q1 | FORECAST 2020 Q2 | FORECAST 2020 Q3 | FORECAST 2020 Q4 | FORECAST 2021 Q1 | ACTUAL 2019 ANNUAL | ACTUAL 2020 ANNUAL | FORECAST 2021 ANNUAL | FORECAST 2022 ANNUAL | FORECAST 2023 ANNUAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. GROSS DOMESTIC PRODUCT ($ BILLIONS) | 37 | 21734 | 21919 | 22144 | 22372 | 22599 | 22804 | 21429 | 22259 | 23149 | N.A. | N.A. |
| 2. GDP PRICE INDEX (2012=100) | 36 | 113.08 | 113.58 | 114.10 | 114.64 | 115.20 | 115.77 | 112.36 | 114.38 | 116.57 | N.A. | N.A. |
| 3. CORPORATE PROFITS AFTER TAXES ($ BILLIONS) | 20 | N.A. | 1885.6 | 1910.2 | 1921.5 | 1923.0 | 1927.6 | N.A. | 1901.1 | 1972.1 | N.A. | N.A. |
| 4. UNEMPLOYMENT RATE (PERCENT) | 36 | 3.5 | 3.6 | 3.5 | 3.5 | 3.6 | 3.6 | 3.7 | 3.6 | 3.6 | 3.7 | 3.9 |
| 5. NONFARM PAYROLL EMPLOYMENT (THOUSANDS) | 34 | 152201 | 152736 | 153242 | 153640 | 153990 | 154333 | 151404 | 153426 | 154928 | N.A. | N.A. |
| 6. INDUSTRIAL PRODUCTION (2012=100) | 31 | 109.4 | 109.4 | 109.8 | 110.2 | 110.5 | 110.7 | 109.5 | 110.0 | 111.4 | N.A. | N.A. |
| 7. NEW PRIVATE HOUSING STARTS (ANNUAL RATE, MILLIONS) | 33 | 1.44 | 1.37 | 1.38 | 1.38 | 1.37 | 1.39 | 1.30 | 1.38 | 1.38 | N.A. | N.A. |
| 8. 3-MONTH TREASURY BILL RATE (PERCENT) | 35 | 1.58 | 1.56 | 1.57 | 1.59 | 1.60 | 1.60 | 2.06 | 1.58 | 1.66 | 1.96 | 2.18 |
| 9. MOODY'S AAA CORP BOND YIELD * (PERCENT) | 26 | N.A. | 2.97 | 3.05 | 3.10 | 3.12 | 3.19 | N.A. | 3.07 | 3.38 | N.A. | N.A. |
| 10. MOODY'S BAA CORP BOND YIELD * (PERCENT) | 27 | N.A. | 3.86 | 3.92 | 3.98 | 4.08 | 4.15 | N.A. | 3.95 | 4.30 | N.A. | N.A. |
| 11. 10-YEAR TREASURY BOND YIELD (PERCENT) | 36 | 1.79 | 1.74 | 1.81 | 1.92 | 1.97 | 2.02 | 2.14 | 1.87 | 2.10 | 2.50 | 2.65 |
| 12. REAL GDP (BILLIONS, CHAIN WEIGHTED) | 36 | 19220 | 19299 | 19400 | 19497 | 19600 | 19707 | 19073 | 19451 | 19834 | 20235 | 20648 |
| 13. TOTAL CONSUMPTION EXPENDITURE (BILLIONS, CHAIN WEIGHTED) | 34 | 13411.9 | 13485.2 | 13554.9 | 13626.8 | 13692.1 | 13764.3 | 13279.6 | 13591.8 | 13875.4 | N.A. | N.A. |
| 14. NONRESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED) | 32 | 2732.4 | 2737.0 | 2750.9 | 2769.5 | 2783.7 | 2802.4 | 2749.8 | 2763.9 | 2841.3 | N.A. | N.A. |
| 15. RESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED) | 33 | 602.1 | 608.0 | 611.1 | 614.3 | 617.5 | 621.9 | 593.6 | 612.6 | 625.4 | N.A. | N.A. |
| 16. FEDERAL GOVERNMENT C & I (BILLIONS, CHAIN WEIGHTED) | 33 | 1295.7 | 1302.3 | 1309.9 | 1315.4 | 1321.8 | 1324.9 | 1275.7 | 1311.8 | 1333.4 | N.A. | N.A. |
| 17. STATE AND LOCAL GOVT C & I (BILLIONS, CHAIN WEIGHTED) | 34 | 2035.8 | 2042.3 | 2049.1 | 2055.5 | 2061.9 | 2068.1 | 2022.5 | 2053.1 | 2077.6 | N.A. | N.A. |
| 18. CHANGE IN PRIVATE INVENTORIES (BILLIONS, CHAIN WEIGHTED) | 32 | 6.5 | 20.3 | 27.5 | 32.0 | 38.6 | 39.6 | 65.3 | 29.0 | 45.6 | N.A. | N.A. |
| 19. NET EXPORTS (BILLIONS, CHAIN WEIGHTED) | 33 | -902.0 | -918.7 | -927.6 | -942.5 | -955.7 | -960.0 | -954.2 | -934.4 | -975.9 | 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, First Quarter 2020.

TABLE TWO
MAJOR MACROECONOMIC INDICATORS
PERCENTAGE CHANGES AT ANNUAL RATES

| | NUMBER OF FORECASTERS | Q4 2019 TO Q1 2020 | Q1 2020 TO Q2 2020 | Q2 2020 TO Q3 2020 | Q3 2020 TO Q4 2020 | Q4 2020 TO Q1 2021 | 2019 TO 2020 | 2020 TO 2021 | 2021 TO 2022 | 2022 TO 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. GROSS DOMESTIC PRODUCT (GDP) ($ BILLIONS) | 37 | 3.4 | 4.2 | 4.2 | 4.1 | 3.7 | 3.9 | 4.0 | N.A. | N.A. |
| 2. GDP PRICE INDEX (2012=100) | 36 | 1.8 | 1.8 | 1.9 | 2.0 | 2.0 | 1.8 | 1.9 | N.A. | N.A. |
| 3. CORPORATE PROFITS AFTER TAXES ($ BILLIONS) | 20 | 1.6 | 5.3 | 2.4 | 0.3 | 1.0 | 2.9 | 3.7 | N.A. | N.A. |
| 4. UNEMPLOYMENT RATE (PERCENT) | 36 | 0.1 | -0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 0.1 | 0.2 |
| 5. NONFARM PAYROLL EMPLOYMENT | | | | | | | | | | |
| (PERCENT CHANGE) | 34 | 1.4 | 1.3 | 1.0 | 0.9 | 0.9 | 1.3 | 1.0 | N.A. | N.A. |
| (AVG MONTHLY CHANGE) | 34 | 178.2 | 168.6 | 132.8 | 116.7 | 114.5 | 168.5 | 125.2 | N.A. | N.A. |
| 6. INDUSTRIAL PRODUCTION (2012=100) | 31 | -0.1 | 1.4 | 1.6 | 1.0 | 0.9 | 0.5 | 1.2 | N.A. | N.A. |
| 7. NEW PRIVATE HOUSING STARTS (ANNUAL RATE, MILLIONS) | 33 | -18.6 | 2.1 | 0.2 | -0.9 | 5.6 | 5.9 | 0.3 | N.A. | N.A. |
| 8. 3-MONTH TREASURY BILL RATE (PERCENT) | 35 | -0.02 | 0.01 | 0.02 | 0.01 | 0.00 | -0.48 | 0.08 | 0.30 | 0.22 |
| 9. MOODY'S AAA CORP BOND YIELD * (PERCENT) | 26 | N.A. | 0.09 | 0.04 | 0.03 | 0.06 | N.A. | 0.32 | N.A. | N.A. |
| 10. MOODY'S BAA CORP BOND YIELD * (PERCENT) | 27 | N.A. | 0.06 | 0.06 | 0.10 | 0.07 | N.A. | 0.35 | N.A. | N.A. |
| 11. 10-YEAR TREASURY BOND YIELD (PERCENT) | 36 | -0.05 | 0.07 | 0.11 | 0.05 | 0.06 | -0.27 | 0.23 | 0.40 | 0.15 |
| 12. REAL GDP (BILLIONS, CHAIN WEIGHTED) | 36 | 1.7 | 2.1 | 2.0 | 2.1 | 2.2 | 2.0 | 2.0 | 2.0 | 2.0 |
| 13. TOTAL CONSUMPTION EXPENDITURE (BILLIONS, CHAIN WEIGHTED) | 34 | 2.2 | 2.1 | 2.1 | 1.9 | 2.1 | 2.4 | 2.1 | N.A. | N.A. |
| 14. NONRESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED) | 32 | 0.7 | 2.0 | 2.7 | 2.1 | 2.7 | 0.5 | 2.8 | N.A. | N.A. |
| 15. RESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED) | 33 | 4.0 | 2.0 | 2.2 | 2.1 | 2.8 | 3.2 | 2.1 | N.A. | N.A. |
| 16. FEDERAL GOVERNMENT C & I (BILLIONS, CHAIN WEIGHTED) | 33 | 2.1 | 2.3 | 1.7 | 2.0 | 0.9 | 2.8 | 1.6 | N.A. | N.A. |
| 17. STATE AND LOCAL GOVT C & I (BILLIONS, CHAIN WEIGHTED) | 34 | 1.3 | 1.3 | 1.3 | 1.2 | 1.2 | 1.5 | 1.2 | N.A. | N.A. |
| 18. CHANGE IN PRIVATE INVENTORIES (BILLIONS, CHAIN WEIGHTED) | 32 | 13.8 | 7.2 | 4.5 | 6.6 | 1.0 | -36.3 | 16.6 | N.A. | N.A. |
| 19. NET EXPORTS (BILLIONS, CHAIN WEIGHTED) | 33 | -16.7 | -8.9 | -14.9 | -13.2 | -4.3 | 19.8 | -41.5 | 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, First Quarter 2020.

TABLE THREE
MAJOR PRICE INDICATORS
MEDIANS OF FORECASTER PREDICTIONS

| | NUMBER OF FORECASTERS | ACTUAL 2019 Q4 | FORECAST(Q/Q) 2020 Q1 | 2020 Q2 | 2020 Q3 | 2020 Q4 | 2021 Q1 | ACTUAL 2019 ANNUAL | FORECAST(Q4/Q4) 2020 ANNUAL | 2021 ANNUAL | 2022 ANNUAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. CONSUMER PRICE INDEX (ANNUAL RATE) | 35 | 2.6 | 2.0 | 2.0 | 2.2 | 2.2 | 2.2 | 2.0 | 2.0 | 2.2 | 2.3 |
| 2. CORE CONSUMER PRICE INDEX (ANNUAL RATE) | 35 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.3 | 2.2 | 2.1 | 2.2 |
| 3. PCE PRICE INDEX (ANNUAL RATE) | 35 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.0 | 1.5 | 1.9 | 2.0 | 2.0 |
| 4. CORE PCE PRICE INDEX (ANNUAL RATE) | 35 | 1.3 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.6 | 1.9 | 1.9 | 1.9 |

Source: Research Department, Federal Reserve Bank of Philadelphia. Survey of Professional Forecasters, First Quarter 2020.

TABLE FOUR
YIELD SPREADS
MEDIANS OF FORECASTER PREDICTIONS

| | NUMBER OF FORECASTERS | ACTUAL 2019 Q4 | ACTUAL 2020 Q1 | FORECAST 2020 Q2 | FORECAST 2020 Q3 | FORECAST 2020 Q4 | FORECAST 2021 Q1 | ACTUAL 2019 ANNUAL | ACTUAL 2020 ANNUAL | FORECAST 2021 ANNUAL | FORECAST 2022 ANNUAL | FORECAST 2023 ANNUAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. TBOND MINUS TBILL (PERCENTAGE POINTS) | 34 | 0.22 | 0.15 | 0.26 | 0.35 | 0.38 | 0.44 | 0.08 | 0.30 | 0.50 | 0.52 | 0.44 |
| 2. AAA MINUS TBOND (PERCENTAGE POINTS) | 26 | N.A. | 1.22 | 1.21 | 1.23 | 1.20 | 1.20 | N.A. | 1.23 | 1.22 | N.A. | N.A. |
| 3. BAA MINUS TBOND (PERCENTAGE POINTS) | 27 | N.A. | 2.08 | 2.08 | 2.07 | 2.10 | 2.10 | N.A. | 2.09 | 2.15 | N.A. | N.A. |
| 4. BAA MINUS AAA (PERCENTAGE POINTS) | 26 | N.A. | 0.89 | 0.90 | 0.92 | 0.95 | 0.96 | N.A. | 0.91 | 0.98 | 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, First Quarter 2020.

TABLE FIVE
ESTIMATED PROBABILITY OF DECLINE IN REAL GDP

| ESTIMATED PROBABILITY (CHANCES IN 100) | Q4 2019 TO Q1 2020 | Q1 2020 TO Q2 2020 | Q2 2020 TO Q3 2020 | Q3 2020 TO Q4 2020 | Q4 2020 TO Q1 2021 |
|---|---|---|---|---|---|
| | | | NUMBER OF FORECASTERS | | |
| 10 OR LESS | 16 | 13 | 6 | 3 | 0 |
| 11 TO 20 | 7 | 11 | 10 | 11 | 10 |
| 21 TO 30 | 5 | 4 | 12 | 11 | 12 |
| 31 TO 40 | 1 | 0 | 1 | 4 | 6 |
| 41 TO 50 | 0 | 1 | 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 | 8 | 8 | 8 | 8 | 8 |
| MEAN AND MEDIAN | | | | | |
| MEDIAN PROBABILITY | 10.00 | 14.60 | 19.00 | 21.00 | 25.00 |
| MEAN PROBABILITY | 12.54 | 14.88 | 18.36 | 21.28 | 25.68 |

Note: Total number of forecasters reporting is 29.

Source: Research Department, Federal Reserve Bank of Philadelphia.
Survey of Professional Forecasters, First Quarter 2020.

TABLE SIX
MEAN PROBABILITIES

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

| | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|
| 9.0 PERCENT OR MORE | 0.00 | 0.00 | 0.00 | 0.02 |
| 8.0 TO 8.9 PERCENT | 0.00 | 0.01 | 0.02 | 0.09 |
| 7.5 TO 7.9 PERCENT | 0.00 | 0.01 | 0.04 | 0.16 |
| 7.0 TO 7.4 PERCENT | 0.00 | 0.03 | 0.41 | 0.45 |
| 6.5 TO 6.9 PERCENT | 0.00 | 0.30 | 1.19 | 1.44 |
| 6.0 TO 6.4 PERCENT | 0.25 | 0.95 | 2.51 | 5.57 |
| 5.5 TO 5.9 PERCENT | 0.65 | 2.31 | 6.73 | 7.47 |
| 5.0 TO 5.4 PERCENT | 2.02 | 7.63 | 15.11 | 13.53 |
| 4.0 TO 4.9 PERCENT | 16.48 | 28.23 | 30.99 | 30.26 |
| LESS THAN 4.0 PERCENT | 80.59 | 60.52 | 42.99 | 41.03 |

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

| | 2019-2020 | 2020-2021 | 2021-2022 | 2022-2023 |
|---|---|---|---|---|
| 6.0 PERCENT OR MORE | 0.00 | 0.12 | 0.18 | 0.27 |
| 5.0 TO 5.9 PERCENT | 0.06 | 0.36 | 0.57 | 0.56 |
| 4.0 TO 4.9 PERCENT | 0.52 | 1.64 | 2.17 | 2.27 |
| 3.0 TO 3.9 PERCENT | 6.50 | 7.46 | 7.14 | 7.80 |
| 2.0 TO 2.9 PERCENT | 38.60 | 34.13 | 25.39 | 25.38 |
| 1.0 TO 1.9 PERCENT | 39.53 | 31.23 | 31.09 | 32.22 |
| 0.0 TO 0.9 PERCENT | 11.73 | 16.83 | 20.34 | 19.87 |
| -1.0 TO -0.1 PERCENT | 2.78 | 6.39 | 9.50 | 9.53 |
| -2.0 TO -1.1 PERCENT | 0.25 | 1.44 | 2.95 | 1.69 |
| -3.0 TO -2.1 PERCENT | 0.03 | 0.34 | 0.52 | 0.36 |
| LESS THAN -3.0 PERCENT | 0.00 | 0.07 | 0.14 | 0.06 |

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

| | 2019-2020 | 2020-2021 |
|---|---|---|
| 4.0 PERCENT OR MORE | 0.02 | 0.60 |
| 3.5 TO 3.9 PERCENT | 0.18 | 1.32 |
| 3.0 TO 3.4 PERCENT | 2.45 | 4.19 |
| 2.5 TO 2.9 PERCENT | 11.38 | 11.52 |
| 2.0 TO 2.4 PERCENT | 28.23 | 29.59 |
| 1.5 TO 1.9 PERCENT | 38.72 | 32.24 |
| 1.0 TO 1.4 PERCENT | 14.72 | 13.49 |
| 0.5 TO 0.9 PERCENT | 3.16 | 4.47 |
| 0.0 TO 0.4 PERCENT | 0.89 | 1.52 |
| LESS THAN 0.0 PERCENT | 0.25 | 1.05 |

Source: Research Department, Federal Reserve Bank of Philadelphia.
Survey of Professional Forecasters, First Quarter 2020.

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

MEAN PROBABILITY ATTACHED TO CORE CPI INFLATION:

| | 19Q4 TO 20Q4 | 20Q4 TO 21Q4 |
|---|---|---|
| 4.0 PERCENT OR MORE | 0.08 | 0.93 |
| 3.5 TO 3.9 PERCENT | 0.59 | 2.16 |
| 3.0 TO 3.4 PERCENT | 4.83 | 5.89 |
| 2.5 TO 2.9 PERCENT | 20.38 | 18.39 |
| 2.0 TO 2.4 PERCENT | 41.04 | 32.88 |
| 1.5 TO 1.9 PERCENT | 25.42 | 27.61 |
| 1.0 TO 1.4 PERCENT | 5.85 | 8.95 |
| 0.5 TO 0.9 PERCENT | 1.60 | 2.54 |
| 0.0 TO 0.4 PERCENT | 0.19 | 0.44 |
| LESS THAN 0.0 PERCENT | 0.02 | 0.23 |

MEAN PROBABILITY ATTACHED TO CORE PCE INFLATION:

| | 19Q4 TO 20Q4 | 20Q4 TO 21Q4 |
|---|---|---|
| 4.0 PERCENT OR MORE | 0.53 | 0.46 |
| 3.5 TO 3.9 PERCENT | 0.54 | 0.94 |
| 3.0 TO 3.4 PERCENT | 1.90 | 3.18 |
| 2.5 TO 2.9 PERCENT | 9.34 | 11.94 |
| 2.0 TO 2.4 PERCENT | 31.65 | 29.66 |
| 1.5 TO 1.9 PERCENT | 39.01 | 33.78 |
| 1.0 TO 1.4 PERCENT | 11.77 | 13.85 |
| 0.5 TO 0.9 PERCENT | 3.77 | 4.48 |
| 0.0 TO 0.4 PERCENT | 0.95 | 1.24 |
| LESS THAN 0.0 PERCENT | 0.54 | 0.48 |

Source: Research Department, Federal Reserve Bank of Philadelphia.
Survey of Professional Forecasters, First Quarter 2020.

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

ANNUAL AVERAGE OVER THE NEXT 5 YEARS: 2020-2024

| CPI INFLATION RATE | | PCE INFLATION RATE | |
|---|---|---|---|
| MINIMUM | 1.90 | MINIMUM | 1.69 |
| LOWER QUARTILE | 2.10 | LOWER QUARTILE | 1.87 |
| MEDIAN | 2.20 | MEDIAN | 2.00 |
| UPPER QUARTILE | 2.29 | UPPER QUARTILE | 2.04 |
| MAXIMUM | 2.90 | MAXIMUM | 2.40 |
| MEAN | 2.22 | MEAN | 1.99 |
| STD. DEVIATION | 0.23 | STD. DEVIATION | 0.17 |
| N | 28 | N | 28 |
| MISSING | 9 | MISSING | 9 |

ANNUAL AVERAGE OVER THE FOLLOWING 5 YEARS: 2025-2029

| CPI INFLATION RATE | | PCE INFLATION RATE | |
|---|---|---|---|
| MINIMUM | 1.90 | MINIMUM | 1.60 |
| LOWER QUARTILE | 2.01 | LOWER QUARTILE | 2.00 |
| MEDIAN | 2.23 | MEDIAN | 2.00 |
| UPPER QUARTILE | 2.38 | UPPER QUARTILE | 2.20 |
| MAXIMUM | 3.50 | MAXIMUM | 2.90 |
| MEAN | 2.25 | MEAN | 2.05 |
| STD. DEVIATION | 0.31 | STD. DEVIATION | 0.26 |
| N | 28 | N | 28 |
| MISSING | 9 | MISSING | 9 |

ANNUAL AVERAGE OVER THE NEXT 10 YEARS: 2020-2029

| CPI INFLATION RATE | | PCE INFLATION RATE | |
|---|---|---|---|
| MINIMUM | 1.90 | MINIMUM | 1.76 |
| LOWER QUARTILE | 2.07 | LOWER QUARTILE | 1.90 |
| MEDIAN | 2.20 | MEDIAN | 2.00 |
| UPPER QUARTILE | 2.30 | UPPER QUARTILE | 2.14 |
| MAXIMUM | 3.20 | MAXIMUM | 2.60 |
| MEAN | 2.23 | MEAN | 2.02 |
| STD. DEVIATION | 0.26 | STD. DEVIATION | 0.19 |
| N | 28 | N | 28 |
| MISSING | 9 | 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, First Quarter 2020.

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TABLE NINE
ADDITIONAL LONG-TERM (10-YEAR) FORECASTS

ANNUAL AVERAGE OVER THE NEXT 10 YEARS: 2020-2029

| REAL GDP GROWTH RATE | |
|---|---|
| MINIMUM | 1.50 |
| LOWER QUARTILE | 1.80 |
| MEDIAN | 2.00 |
| UPPER QUARTILE | 2.20 |
| MAXIMUM | 2.65 |
| MEAN | 2.03 |
| STD. DEVIATION | 0.27 |
| N | 27 |
| MISSING | 10 |

| PRODUCTIVITY GROWTH RATE | |
|---|---|
| MINIMUM | 1.00 |
| LOWER QUARTILE | 1.38 |
| MEDIAN | 1.40 |
| UPPER QUARTILE | 1.70 |
| MAXIMUM | 2.50 |
| MEAN | 1.54 |
| STD. DEVIATION | 0.34 |
| N | 22 |
| MISSING | 15 |

| STOCK RETURNS (S&P 500) | |
|---|---|
| MINIMUM | 3.22 |
| LOWER QUARTILE | 4.70 |
| MEDIAN | 5.00 |
| UPPER QUARTILE | 6.70 |
| MAXIMUM | 15.00 |
| MEAN | 6.17 |
| STD. DEVIATION | 2.88 |
| N | 17 |
| MISSING | 20 |

| BOND RATE (10-YEAR) | |
|---|---|
| MINIMUM | 1.80 |
| LOWER QUARTILE | 2.13 |
| MEDIAN | 2.70 |
| UPPER QUARTILE | 3.41 |
| MAXIMUM | 4.00 |
| MEAN | 2.81 |
| STD. DEVIATION | 0.66 |
| N | 23 |
| MISSING | 14 |

| BILL RETURNS (3-MONTH) | |
|---|---|
| MINIMUM | 1.55 |
| LOWER QUARTILE | 1.90 |
| MEDIAN | 2.02 |
| UPPER QUARTILE | 2.61 |
| MAXIMUM | 3.20 |
| MEAN | 2.26 |
| STD. DEVIATION | 0.51 |
| N | 21 |
| MISSING | 16 |

Source: Research Department, Federal Reserve Bank of Philadelphia.
Survey of Professional Forecasters, First Quarter 2020.