



# SURVEY OF PROFESSIONAL FORECASTERS

Release Date: February 10, 2023

## FIRST QUARTER 2023

### *Forecasters See Higher Growth and Stronger Labor Market in 2023*

The outlook for the U.S. economy in 2023 looks somewhat better now than it did three months ago, according to 37 forecasters surveyed by the Federal Reserve Bank of Philadelphia. The forecasters predict the economy will expand at an annual rate of 0.6 percent this quarter and 1.0 percent in the second quarter of 2023, up from the previous predictions of 0.2 percent in each quarter. On an annual-average over annual-average basis, the forecasters expect real GDP to increase 1.3 percent in 2023, up from the projection of 0.7 percent in the survey of three months ago.

A downward revision to the path for the unemployment rate accompanies the outlook for growth. The forecasters predict the unemployment rate will increase from 3.5 percent this quarter to 4.1 percent in the fourth quarter of 2023. In the previous survey, the unemployment rate was forecast to rise from 3.8 percent to 4.4 percent over the same period. On an annual-average basis, the forecasters expect the unemployment rate to average 3.8 percent this year, marking a downward revision from the previous estimate of 4.2 percent.

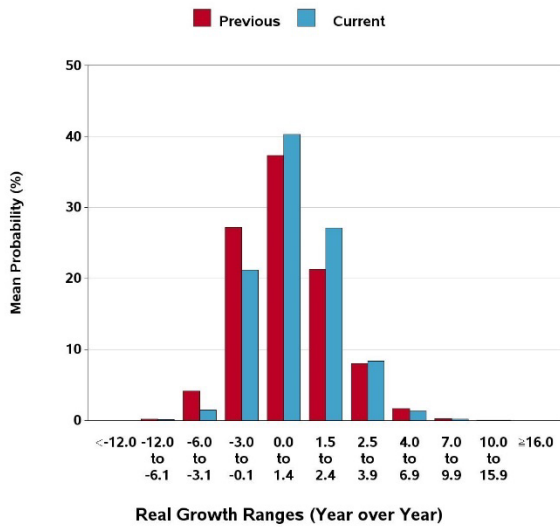
On the employment front, the panelists have revised upward their estimates for job gains in 2023. The projections for the annual-average level of nonfarm payroll employment suggest job gains at a monthly rate of 217,800 in 2023, up from 143,600 projected three months ago.

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

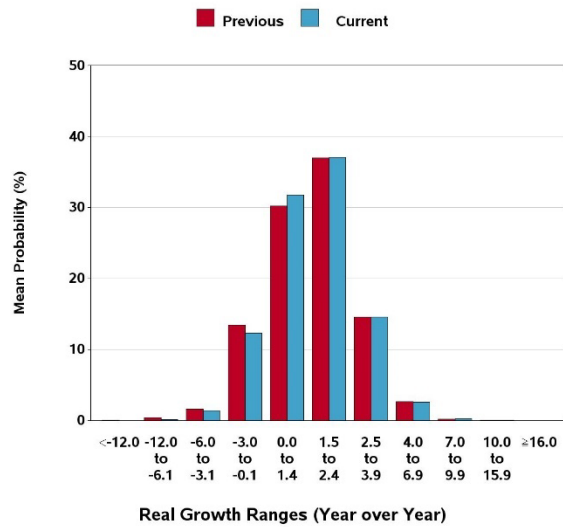
	Real GDP (%)		Unemployment Rate (%)		Payrolls (000s/month)	
	Previous	New	Previous	New	Previous	New
Quarterly data:						
2023:Q1	0.2	0.6	3.8	3.5	79.0	281.9
2023:Q2	0.2	1.0	4.0	3.7	35.8	0.5
2023:Q3	0.9	-0.1	4.3	3.9	41.8	47.5
2023:Q4	2.1	1.2	4.4	4.1	-14.5	62.7
2024:Q1	N.A.	1.3	N.A.	4.2	N.A.	60.8
Annual data (projections are based on annual-average levels):						
2023	0.7	1.3	4.2	3.8	143.6	217.8
2024	1.8	1.4	4.3	4.2	N.A.	43.3
2025	2.2	2.2	4.2	4.2	N.A.	N.A.
2026	N.A.	1.5	N.A.	4.1	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. For 2023, the forecasters see a higher probability that growth will fall into the positive ranges than they did in the previous survey. For 2024 and 2025, the forecasters see few changes to the probability estimates they projected in the survey of three months ago.

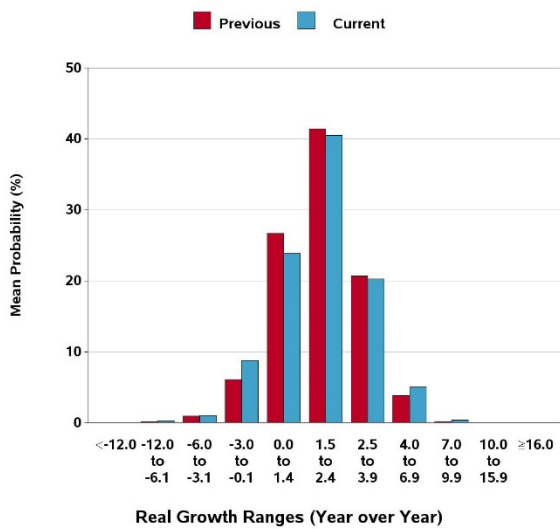
**Mean Probabilities for Real GDP Growth in 2023**



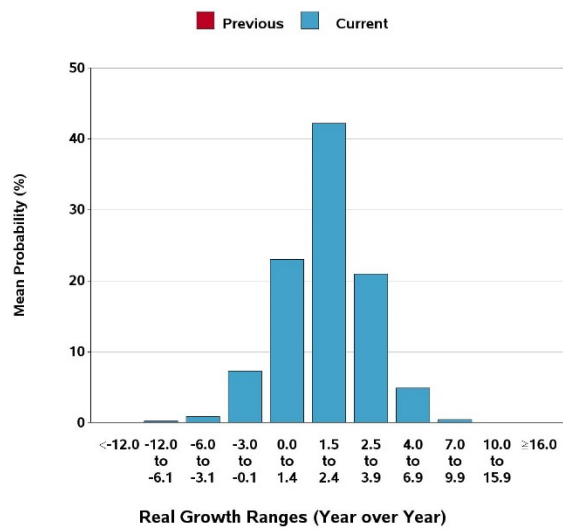
**Mean Probabilities for Real GDP Growth in 2024**



**Mean Probabilities for Real GDP Growth in 2025**

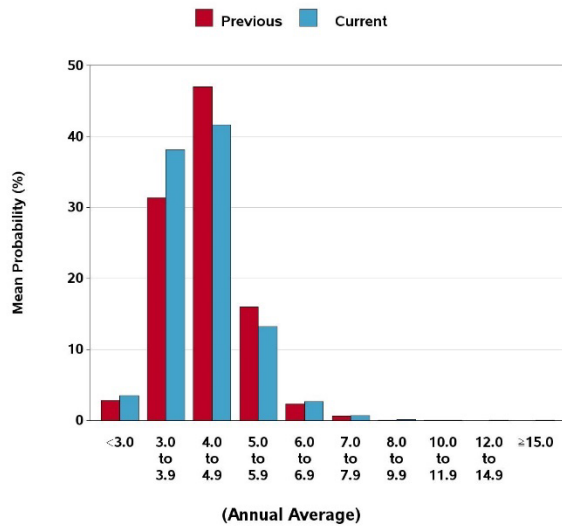


**Mean Probabilities for Real GDP Growth in 2026**

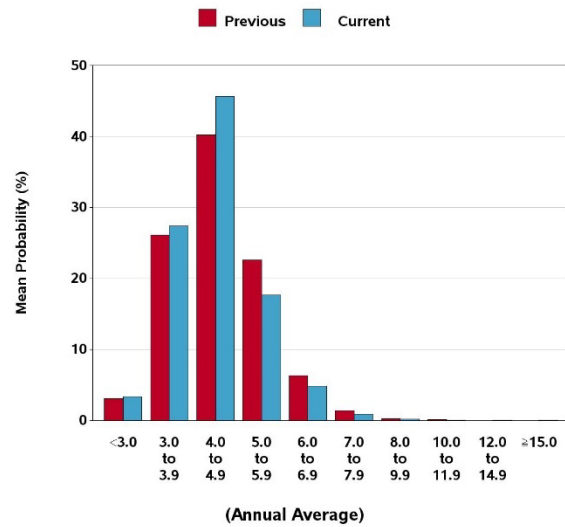


The forecasters' density projections for unemployment, shown below, shed light on uncertainty about the labor market over the next four years. Each chart presents the forecasters' current and previous estimates of the probability that unemployment will fall into each of 10 ranges. For 2023 and 2024, the forecasters are raising their probability estimates from the previous survey for an unemployment rate below 4.0 percent.

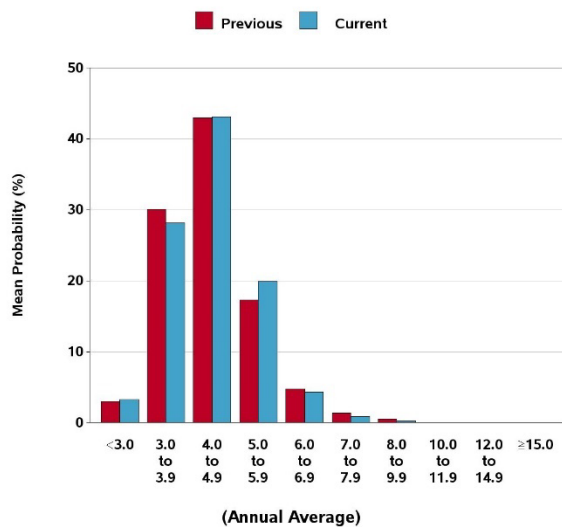
**Mean Probabilities for Unemployment Rate in 2023**



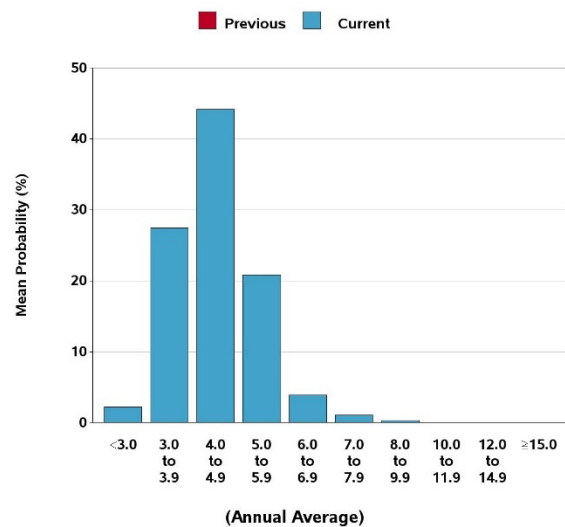
**Mean Probabilities for Unemployment Rate in 2024**



**Mean Probabilities for Unemployment Rate in 2025**



**Mean Probabilities for Unemployment Rate in 2026**



### ***Forecasters Predict Lower Inflation***

The forecasters expect current-quarter headline CPI inflation will average 3.3 percent at an annual rate, down from the prediction of 4.5 percent in the survey of three months ago. Headline PCE inflation over the current quarter will also be lower at an annual rate of 3.2 percent, down from the previous estimate of 3.8 percent.

Projections for headline and core CPI and PCE inflation at all other forecast horizons have also been revised downward or remain unchanged, compared with those of the previous survey.

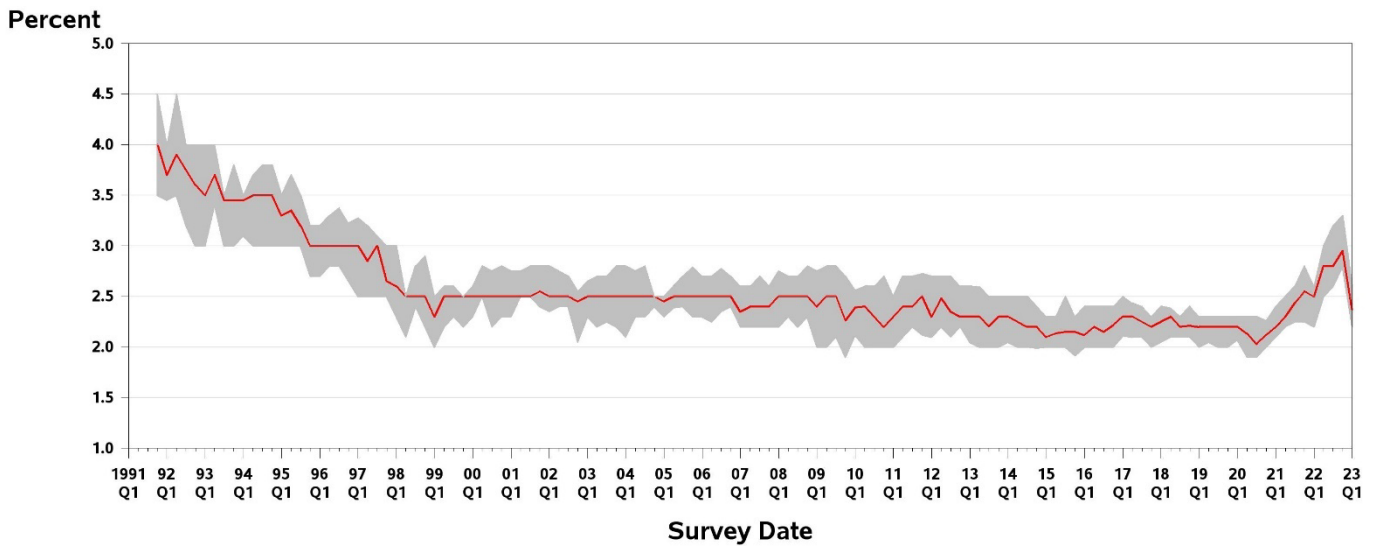
Over the next 10 years, 2023 to 2032, the forecasters predict headline CPI inflation will be at an annual-average rate of 2.37 percent. The corresponding estimate for 10-year annual-average PCE inflation is 2.15 percent. Notably, these 10-year projections are 0.58 percentage point and 0.43 percentage point lower than those of the previous survey, which covered the 10-year horizon from 2022 to 2031.

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

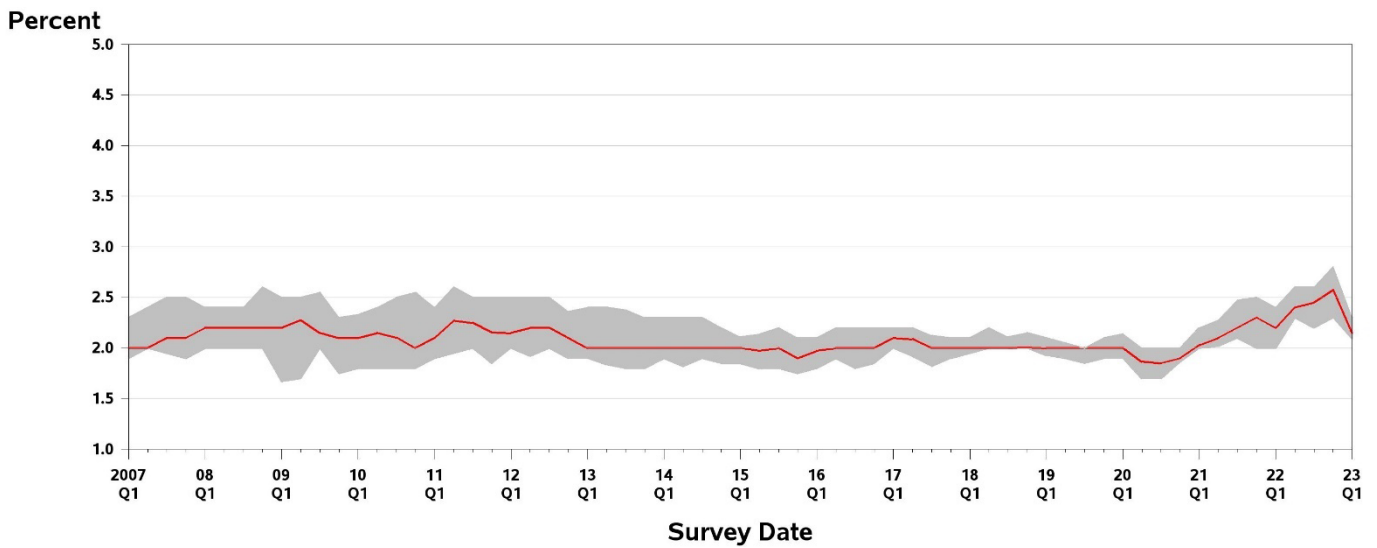
	Headline CPI		Core CPI		Headline PCE		Core PCE	
	Previous	Current	Previous	Current	Previous	Current	Previous	Current
<b>Quarterly</b>								
2023:Q1	4.5	3.3	4.5	3.8	3.8	3.2	3.8	3.6
2023:Q2	3.5	3.4	3.7	3.6	3.1	3.0	3.2	3.1
2023:Q3	3.1	3.1	3.2	3.1	2.7	2.6	2.8	2.7
2023:Q4	2.9	2.8	2.9	2.9	2.7	2.6	2.7	2.5
2024:Q1	N.A.	2.6	N.A.	2.8	N.A.	2.3	N.A.	2.5
<b>Q4/Q4 Annual Averages</b>								
2023	3.4	3.1	3.5	3.4	2.9	2.8	3.0	3.0
2024	2.5	2.5	2.6	2.6	2.3	2.2	2.4	2.3
2025	N.A.	2.4	N.A.	2.4	N.A.	2.2	N.A.	2.1
<b>Long-Term Annual Averages</b>								
2022-2026	3.75	N.A.	N.A.	N.A.	3.23	N.A.	N.A.	N.A.
2023-2027	N.A.	2.50	N.A.	N.A.	N.A.	2.30	N.A.	N.A.
2022-2031	2.95	N.A.	N.A.	N.A.	2.58	N.A.	N.A.	N.A.
2023-2032	N.A.	2.37	N.A.	N.A.	N.A.	2.15	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 10-year annual-average CPI and PCE inflation. The charts provide perspective on the lower 10-year inflation expectations in the current survey.

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

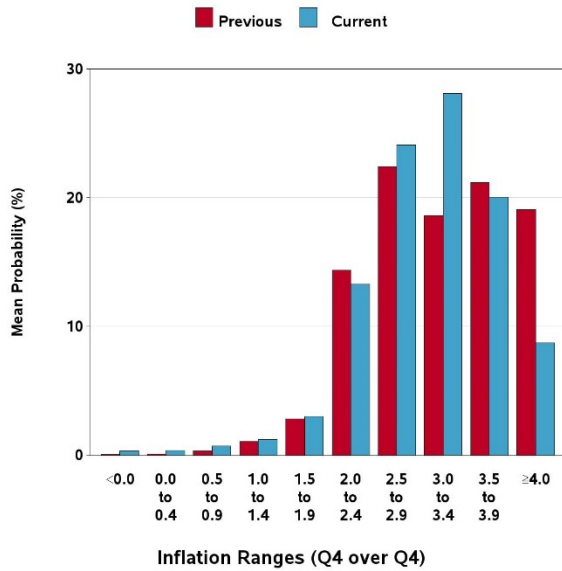


**Projections for the 10-Year Annual-Average Rate of PCE Inflation  
(Median and Interquartile Range)**

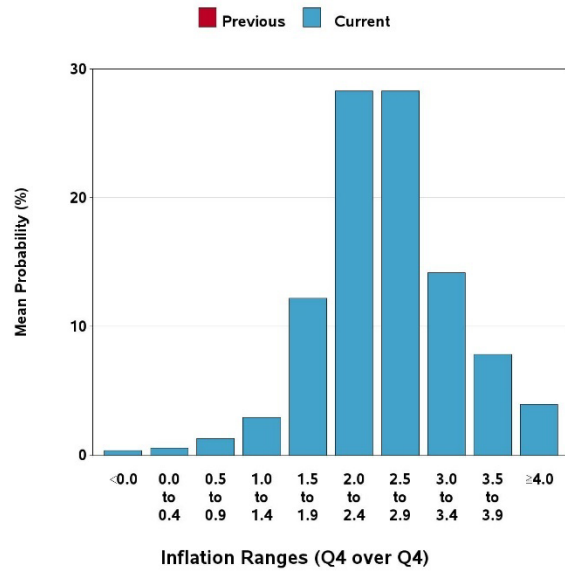


The figures below show the probabilities that the forecasters are assigning to each of 10 possible ranges for fourth-quarter over fourth-quarter core PCE inflation in 2023 and 2024. The forecasters have reduced their estimates for the probability that core PCE inflation in 2023 will be 3.5 percent or higher compared with their prediction in the last survey.

**Mean Probabilities for Core PCE Inflation in 2023**



**Mean Probabilities for Core PCE Inflation in 2024**



***Lower (but Significant) Risk of Negative Real GDP Growth in 2023***

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 40.4 percent chance of negative growth, down from 47.2 percent in the previous survey. The forecasters have also made downward revisions to their probability estimates for the following three quarters.

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

Quarterly data:	Previous	New
2023:Q1	47.2	40.4
2023:Q2	49.4	42.4
2023:Q3	46.1	44.9
2023:Q4	43.5	40.6
2024:Q1	N.A.	31.8

***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 2023 and 2024.

Fourteen 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 -4.4 percent to 0.0 percent in 2023 and from -3.0 percent to 4.0 percent in 2024.

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

Index	2023 (Q4/Q4 Percent Change)			2024 (Q4/Q4 Percent Change)		
	N	Mean	Median	N	Mean	Median
S&P CoreLogic Case-Shiller: U.S. National	5	-4.0	-4.2	5	-1.1	0.6
S&P CoreLogic Case-Shiller: Composite 10	1	0.0	0.0	1	4.0	4.0
S&P CoreLogic Case-Shiller: Composite 20	4	-3.6	-4.4	4	1.0	1.7
FHFA: Purchase Only (U.S. Total)	8	0.3	-1.5	8	2.0	2.2
CoreLogic: National HPI, incl. Distressed Sales (Single Family Combined)	2	-3.6	-3.6	1	-3.0	-3.0
NAR Median: Total Existing	2	-2.3	-2.3	2	1.4	1.4

***Lower Long-Term Output and Productivity Growth but Higher Returns on 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 forecasters expect real GDP to grow at an annual-average rate of 2.00 percent over the next 10 years, lower than their projection of 2.28 percent in the first-quarter survey of 2022. Ten-year annual-average productivity growth is now expected to be 1.30 percent, down from 1.60 percent previously.

Higher returns on financial assets over the next 10 years accompany the current long-term outlook for real GDP and productivity. The forecasters predict the S&P 500 returning an annual-average 7.50 percent over the next 10 years, up from the previous estimate of 6.73 percent in the first-quarter survey of 2022. The forecasters see the rate on 10-year Treasuries averaging 3.35 percent over the next 10 years, up from 3.07 percent in last year’s first-quarter survey. Three-month Treasury bills will return an annual-average 2.65 percent over the next 10 years, up from 2.25 percent previously.

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

	<i>First Quarter 2022</i>	<i>Current Survey</i>
<i>Real GDP Growth</i>	2.28	2.00
<i>Productivity Growth</i>	1.60	1.30
<i>Stock Returns (S&amp;P 500)</i>	6.73	7.50
<i>Rate on 10-Year Treasury Bonds</i>	3.07	3.35
<i>Bill Returns (3-Month)</i>	2.25	2.65

### *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:

**Scott Anderson**, Bank of the West (BNP Paribas Group); **Anwiti Bahuguna** and **Ed Al-Hussainy**, Columbia Threadneedle Investments; **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; **Christine Chmura, Ph.D.**, and **Xiaobing Shuai, Ph.D.**, Chmura Economics & Analytics; **Gary Ciminero, CFA**, GLC Financial Economics; **Grant Collins**, AIM Research, LLC; **Rajeev Dhawan**, Georgia State University; **Bill Diviney**, ABN AMRO Bank NV; **Gabriel Ehrlich**, **Daniil Manaenkov**, and **Tereza Ranosova**, RSQE, University of Michigan; **Michael R. Englund**, Action Economics, LLC; **Sacha Gelfer**, Bentley University; **James Glassman**, JPMorgan Chase & Co.; **Jan Hatzius**, Goldman Sachs; **Steve Kihm**, Citizens Utility Board of Wisconsin; **Oren Klachkin** and **Ryan Sweet**, Oxford Economics USA, Inc.; **Jack Kleinhenz**, Kleinhenz & Associates, Inc.; **Yaniv Konchitchki**, University of California, Berkeley; **Thomas Lam**, Sim Kee Boon Institute, Singapore Management University; **Brian Martin**, Australia New Zealand Bank (ANZ); **Robert McNab**, Old Dominion University; **R. Anthony Metz**, Pareto Optimal Economics; **R. M. Monaco**, TitanRM; **Joel L. Naroff**, Naroff Economic Advisors; **Nomura Securities International**; **Brendon Ogmundson**, BC Real Estate Association; **Perc Pineda, Ph.D.**, Plastics Industry Association; **Joel Prakken** and **Chris Varvares**, S&P Global Market Intelligence; **Jason Prole**, Capital Risk Management; **Michael Roberts**, Roberts Capital Advisors, LLC; **Alfredo A. Romero**, North Carolina A&T State University; **Philip Rothman**, East Carolina University; **Allen Sinai** and **Lu Yu**, Decision Economics, Inc.; **Sean Snaith**, University of Central Florida; **Stephen Stanley**, Santander Capital Markets; **Charles Steindel**, Editor, NABE *Business Economics*; **Susan M. Sterne**, Economic Analysis Associates, Inc.; **Edward Sullivan**, Portland Cement Association; **James Sweeney**, Credit Suisse; **Jordan Vickers** and **Marie Dempsey**, Eaton Corporation; **Lawrence Werther**, Daiwa Capital Markets America; **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

	2023 Q1	2023 Q2	2023 Q3	2023 Q4	2024 Q1	2023	2024 (YEAR-OVER-YEAR)	2025	2026
PERCENT GROWTH AT ANNUAL RATES									
1. REAL GDP (BILLIONS, CHAIN WEIGHTED)	0.6	1.0	-0.1	1.2	1.3	1.3	1.4	2.2	1.5
2. GDP PRICE INDEX (PERCENT CHANGE)	3.2	2.9	2.8	2.6	2.4	3.6	2.3	N.A.	N.A.
3. NOMINAL GDP (\$ BILLIONS)	4.0	3.4	3.5	3.9	4.2	5.0	3.8	N.A.	N.A.
4. NONFARM PAYROLL EMPLOYMENT (PERCENT CHANGE)	2.2	0.0	0.4	0.5	0.5	1.7	0.3	N.A.	N.A.
(AVG MONTHLY CHANGE)	281.9	0.5	47.5	62.7	60.8	217.8	43.3	N.A.	N.A.
VARIABLES IN LEVELS									
5. UNEMPLOYMENT RATE (PERCENT)	3.5	3.7	3.9	4.1	4.2	3.8	4.2	4.2	4.1
6. 3-MONTH TREASURY BILL (PERCENT)	4.7	5.0	4.9	4.9	4.5	4.9	4.1	3.1	2.8
7. 10-YEAR TREASURY BOND (PERCENT)	3.6	3.8	3.9	3.7	3.6	3.8	3.5	3.5	3.3
	2023 Q1	2023 Q2	2023 Q3	2023 Q4	2024 Q1	2023	2024 (Q4-OVER-Q4)	2025	
INFLATION INDICATORS									
8. CPI (ANNUAL RATE)	3.3	3.4	3.1	2.8	2.6	3.1	2.5	2.4	
9. CORE CPI (ANNUAL RATE)	3.8	3.6	3.1	2.9	2.8	3.4	2.6	2.4	
10. PCE (ANNUAL RATE)	3.2	3.0	2.6	2.6	2.3	2.8	2.2	2.2	
11. CORE PCE (ANNUAL RATE)	3.6	3.1	2.7	2.5	2.5	3.0	2.3	2.1	

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 2023.

## **SURVEY OF PROFESSIONAL FORECASTERS**

**First Quarter 2023**

**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 26, 2023; the tables do not reflect subsequent revisions to the data. All forecasts were received on or before February 7, 2023.

TABLE ONE  
MAJOR MACROECONOMIC INDICATORS  
MEDIAN OF FORECASTER PREDICTIONS

	NUMBER OF FORECASTERS	ACTUAL		FORECAST				ACTUAL		FORECAST		
		2022 Q4	2023 Q1	2023 Q2	2023 Q3	2023 Q4	2024 Q1	2022 ANNUAL	2023 ANNUAL	2024 ANNUAL	2025 ANNUAL	2026 ANNUAL
1. GROSS DOMESTIC PRODUCT (GDP) (\$ BILLIONS)	33	26133	26391	26612	26839	27094	27375	25461	26723	27752	N.A.	N.A.
2. GDP PRICE INDEX (2012=100)	33	129.37	130.40	131.34	132.25	133.10	133.90	127.19	131.81	134.79	N.A.	N.A.
3. CORPORATE PROFITS AFTER TAXES (\$ BILLIONS)	15	N.A.	2550.7	2519.9	2516.9	2520.9	2550.4	N.A.	2520.2	2612.6	N.A.	N.A.
4. UNEMPLOYMENT RATE (PERCENT)	36	3.6	3.5	3.7	3.9	4.1	4.2	3.6	3.8	4.2	4.2	4.1
5. NONFARM PAYROLL EMPLOYMENT (THOUSANDS)	30	153509	154355	154356	154499	154687	154869	152041	154655	155174	N.A.	N.A.
6. INDUSTRIAL PRODUCTION (2017=100)	27	104.1	104.0	103.7	103.8	104.1	104.1	103.9	103.9	104.2	N.A.	N.A.
7. NEW PRIVATE HOUSING STARTS (ANNUAL RATE, MILLIONS)	30	1.40	1.38	1.35	1.33	1.35	1.37	1.56	1.35	1.40	N.A.	N.A.
8. 3-MONTH TREASURY BILL RATE (PERCENT)	36	4.04	4.70	4.95	4.92	4.89	4.52	2.02	4.87	4.07	3.10	2.80
9. MOODY'S AAA CORP BOND YIELD * (PERCENT)	23	N.A.	4.55	4.90	4.89	5.05	4.94	N.A.	4.74	4.84	N.A.	N.A.
10. MOODY'S BAA CORP BOND YIELD * (PERCENT)	21	N.A.	5.69	6.06	6.25	6.25	6.12	N.A.	6.09	5.95	N.A.	N.A.
11. 10-YEAR TREASURY BOND YIELD (PERCENT)	34	3.83	3.64	3.78	3.86	3.69	3.55	2.95	3.76	3.52	3.45	3.32
12. REAL GDP (BILLIONS, CHAIN WEIGHTED)	37	20198	20227	20279	20273	20331	20395	20018	20277	20561	21004	21316
13. TOTAL CONSUMPTION EXPENDITURE (BILLIONS, CHAIN WEIGHTED)	31	14252.2	14295.4	14331.9	14390.9	14437.5	14473.4	14139.7	14371.3	14548.2	N.A.	N.A.
14. NONRESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED)	29	2964.7	2975.0	2985.8	2995.0	3004.6	3021.6	2938.7	2992.2	3047.6	N.A.	N.A.
15. RESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED)	30	573.6	558.7	551.2	544.5	544.5	551.3	642.3	549.5	563.6	N.A.	N.A.
16. FEDERAL GOVERNMENT C & I (BILLIONS, CHAIN WEIGHTED)	29	1374.1	1382.6	1391.2	1396.3	1396.8	1398.2	1355.5	1391.3	1404.3	N.A.	N.A.
17. STATE AND LOCAL GOVT C & I (BILLIONS, CHAIN WEIGHTED)	30	2068.3	2076.0	2084.5	2092.0	2098.8	2104.2	2050.8	2088.1	2110.6	N.A.	N.A.
18. CHANGE IN PRIVATE INVENTORIES (BILLIONS, CHAIN WEIGHTED)	30	129.9	76.0	49.1	37.7	42.1	43.1	123.3	46.6	42.9	N.A.	N.A.
19. NET EXPORTS (BILLIONS, CHAIN WEIGHTED)	30	-1232.4	-1233.4	-1234.7	-1229.6	-1224.5	-1224.8	-1355.1	-1228.2	-1216.0	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 2023.

TABLE TWO  
MAJOR MACROECONOMIC INDICATORS  
PERCENTAGE CHANGES AT ANNUAL RATES

	NUMBER OF FORECASTERS	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	2022	2023	2024	2025
		TO Q1 2023	TO Q2 2023	TO Q3 2023	TO Q4 2023	TO Q1 2024	TO 2023	TO 2024	TO 2025	TO 2026
1. GROSS DOMESTIC PRODUCT (GDP) (\$ BILLIONS)	33	4.0	3.4	3.5	3.9	4.2	5.0	3.8	N.A.	N.A.
2. GDP PRICE INDEX (2012=100)	33	3.2	2.9	2.8	2.6	2.4	3.6	2.3	N.A.	N.A.
3. CORPORATE PROFITS AFTER TAXES (\$ BILLIONS)	15	-0.4	-4.7	-0.5	0.6	4.8	0.9	3.7	N.A.	N.A.
4. UNEMPLOYMENT RATE (PERCENT)	36	-0.1	0.2	0.2	0.1	0.2	0.2	0.4	0.0	-0.1
5. NONFARM PAYROLL EMPLOYMENT (PERCENT CHANGE)	30	2.2	0.0	0.4	0.5	0.5	1.7	0.3	N.A.	N.A.
(AVG MONTHLY CHANGE)	30	281.9	0.5	47.5	62.7	60.8	217.8	43.3	N.A.	N.A.
6. INDUSTRIAL PRODUCTION (2017=100)	27	-0.2	-1.3	0.5	0.8	0.2	-0.0	0.3	N.A.	N.A.
7. NEW PRIVATE HOUSING STARTS (ANNUAL RATE, MILLIONS)	30	-7.3	-7.5	-4.9	4.1	6.5	-13.2	3.7	N.A.	N.A.
8. 3-MONTH TREASURY BILL RATE (PERCENT)	36	0.66	0.25	-0.03	-0.04	-0.37	2.85	-0.80	-0.97	-0.30
9. MOODY'S AAA CORP BOND YIELD * (PERCENT)	23	N.A.	0.35	-0.01	0.16	-0.11	N.A.	0.10	N.A.	N.A.
10. MOODY'S BAA CORP BOND YIELD * (PERCENT)	21	N.A.	0.37	0.19	0.00	-0.13	N.A.	-0.14	N.A.	N.A.
11. 10-YEAR TREASURY BOND YIELD (PERCENT)	34	-0.19	0.13	0.09	-0.18	-0.14	0.81	-0.24	-0.07	-0.13
12. REAL GDP (BILLIONS, CHAIN WEIGHTED)	37	0.6	1.0	-0.1	1.2	1.3	1.3	1.4	2.2	1.5
13. TOTAL CONSUMPTION EXPENDITURE (BILLIONS, CHAIN WEIGHTED)	31	1.2	1.0	1.7	1.3	1.0	1.6	1.2	N.A.	N.A.
14. NONRESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED)	29	1.4	1.5	1.2	1.3	2.3	1.8	1.8	N.A.	N.A.
15. RESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED)	30	-10.0	-5.3	-4.7	0.0	5.1	-14.4	2.6	N.A.	N.A.
16. FEDERAL GOVERNMENT C & I (BILLIONS, CHAIN WEIGHTED)	29	2.5	2.5	1.5	0.1	0.4	2.6	0.9	N.A.	N.A.
17. STATE AND LOCAL GOVT C & I (BILLIONS, CHAIN WEIGHTED)	30	1.5	1.6	1.4	1.3	1.0	1.8	1.1	N.A.	N.A.
18. CHANGE IN PRIVATE INVENTORIES (BILLIONS, CHAIN WEIGHTED)	30	-54.0	-26.8	-11.4	4.4	1.0	-76.7	-3.8	N.A.	N.A.
19. NET EXPORTS (BILLIONS, CHAIN WEIGHTED)	30	-1.0	-1.3	5.1	5.1	-0.3	126.9	12.2	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 2023.

TABLE THREE  
 MAJOR PRICE INDICATORS  
 MEDIANS OF FORECASTER PREDICTIONS

	NUMBER OF FORECASTERS	ACTUAL		FORECAST (Q/Q)				ACTUAL		FORECAST (Q4/Q4)	
		2022 Q4	2023 Q1	2023 Q2	2023 Q3	2023 Q4	2024 Q1	2022 ANNUAL	2023 ANNUAL	2024 ANNUAL	2025 ANNUAL
1. CONSUMER PRICE INDEX (ANNUAL RATE)	36	3.1	3.3	3.4	3.1	2.8	2.6	7.1	3.1	2.5	2.4
2. CORE CONSUMER PRICE INDEX (ANNUAL RATE)	34	4.4	3.8	3.6	3.1	2.9	2.8	6.0	3.4	2.6	2.4
3. PCE PRICE INDEX (ANNUAL RATE)	35	3.2	3.2	3.0	2.6	2.6	2.3	5.5	2.8	2.2	2.2
4. CORE PCE PRICE INDEX (ANNUAL RATE)	34	3.9	3.6	3.1	2.7	2.5	2.5	4.7	3.0	2.3	2.1

Source: Research Department, Federal Reserve Bank of Philadelphia. Survey of Professional Forecasters, First Quarter 2023.

TABLE FOUR  
YIELD SPREADS  
MEDIAN OF FORECASTER PREDICTIONS

	NUMBER OF FORECASTERS	ACTUAL		FORECAST				ACTUAL		FORECAST		
		2022 Q4	2023 Q1	2023 Q2	2023 Q3	2023 Q4	2024 Q1	2022 ANNUAL	2023 ANNUAL	2024 ANNUAL	2025 ANNUAL	2026 ANNUAL
1. TBOND MINUS TBILL (PERCENTAGE POINTS)	34	-0.21	-1.09	-0.98	-0.87	-0.82	-0.65	0.93	-0.95	-0.43	0.25	0.50
2. AAA MINUS TBOND (PERCENTAGE POINTS)	23	N.A.	0.92	1.00	1.04	1.09	1.09	N.A.	1.00	1.02	N.A.	N.A.
3. BAA MINUS TBOND (PERCENTAGE POINTS)	21	N.A.	2.00	2.20	2.28	2.28	2.25	N.A.	2.20	2.21	N.A.	N.A.
4. BAA MINUS AAA (PERCENTAGE POINTS)	21	N.A.	1.07	1.10	1.10	1.10	1.00	N.A.	1.09	1.07	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 2023.

TABLE FIVE  
ESTIMATED PROBABILITY OF DECLINE IN REAL GDP

ESTIMATED PROBABILITY (CHANCES IN 100)	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023
	TO Q1 2023	TO Q2 2023	TO Q3 2023	TO Q4 2023	TO Q1 2024
NUMBER OF FORECASTERS					
10 OR LESS	3	1	0	2	3
11 TO 20	5	4	5	3	7
21 TO 30	2	7	3	6	8
31 TO 40	7	6	9	5	3
41 TO 50	4	2	1	4	2
51 TO 60	2	2	3	2	4
61 TO 70	1	2	3	5	0
71 TO 80	3	2	3	1	1
81 TO 90	0	2	1	0	0
91 AND OVER	1	0	0	0	0
NOT REPORTING	9	9	9	9	9
MEAN AND MEDIAN					
MEDIAN PROBABILITY	40.00	36.25	39.00	35.00	30.00
MEAN PROBABILITY	40.39	42.41	44.85	40.61	31.78

Note: Total number of forecasters reporting is 28.

Source: Research Department, Federal Reserve Bank of Philadelphia.  
Survey of Professional Forecasters, First Quarter 2023.

TABLE SIX  
MEAN PROBABILITIES

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

	2023	2024	2025	2026
15.0 PERCENT OR MORE	0.03	0.04	0.00	0.00
12.0 TO 14.9 PERCENT	0.03	0.04	0.00	0.00
10.0 TO 11.9 PERCENT	0.03	0.04	0.00	0.00
8.0 TO 9.9 PERCENT	0.14	0.21	0.23	0.34
7.0 TO 7.9 PERCENT	0.69	0.89	0.88	1.10
6.0 TO 6.9 PERCENT	2.64	4.86	4.37	3.92
5.0 TO 5.9 PERCENT	13.19	17.63	19.91	20.83
4.0 TO 4.9 PERCENT	41.66	45.63	43.13	44.16
3.0 TO 3.9 PERCENT	38.09	27.36	28.17	27.45
LESS THAN 3.0 PERCENT	3.48	3.32	3.31	2.22

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

	2022-2023	2023-2024	2024-2025	2025-2026
16.0 PERCENT OR MORE	0.00	0.00	0.00	0.00
10.0 TO 15.9 PERCENT	0.03	0.04	0.00	0.00
7.0 TO 9.9 PERCENT	0.17	0.23	0.38	0.43
4.0 TO 6.9 PERCENT	1.33	2.55	5.01	4.93
2.5 TO 3.9 PERCENT	8.32	14.55	20.29	20.97
1.5 TO 2.4 PERCENT	27.14	37.06	40.48	42.20
0.0 TO 1.4 PERCENT	40.28	31.79	23.85	23.05
-3.0 TO -0.1 PERCENT	21.20	12.28	8.77	7.33
-6.0 TO -3.1 PERCENT	1.42	1.39	1.00	0.85
-12.0 TO -6.1 PERCENT	0.10	0.11	0.23	0.25
LESS THAN -12.0 PERCENT	0.00	0.00	0.00	0.00

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

	2022-2023	2023-2024
4.0 PERCENT OR MORE	19.94	4.09
3.5 TO 3.9 PERCENT	26.79	8.77
3.0 TO 3.4 PERCENT	22.96	16.64
2.5 TO 2.9 PERCENT	12.36	22.17
2.0 TO 2.4 PERCENT	7.33	26.54
1.5 TO 1.9 PERCENT	6.55	13.42
1.0 TO 1.4 PERCENT	2.45	5.92
0.5 TO 0.9 PERCENT	0.97	1.42
0.0 TO 0.4 PERCENT	0.43	0.66
LESS THAN 0.0 PERCENT	0.21	0.36

Source: Research Department, Federal Reserve Bank of Philadelphia.  
Survey of Professional Forecasters, First Quarter 2023.



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

MEAN PROBABILITY ATTACHED TO CORE CPI INFLATION:

	22Q4 TO 23Q4	23Q4 TO 24Q4
4.0 PERCENT OR MORE	18.22	6.07
3.5 TO 3.9 PERCENT	26.19	10.77
3.0 TO 3.4 PERCENT	22.64	16.82
2.5 TO 2.9 PERCENT	18.23	25.84
2.0 TO 2.4 PERCENT	7.27	25.54
1.5 TO 1.9 PERCENT	1.66	7.70
1.0 TO 1.4 PERCENT	0.90	1.94
0.5 TO 0.9 PERCENT	0.86	0.83
0.0 TO 0.4 PERCENT	0.74	1.16
LESS THAN 0.0 PERCENT	3.30	3.34

MEAN PROBABILITY ATTACHED TO CORE PCE INFLATION:

	22Q4 TO 23Q4	23Q4 TO 24Q4
4.0 PERCENT OR MORE	8.73	3.96
3.5 TO 3.9 PERCENT	20.08	7.85
3.0 TO 3.4 PERCENT	28.11	14.18
2.5 TO 2.9 PERCENT	24.12	28.30
2.0 TO 2.4 PERCENT	13.30	28.31
1.5 TO 1.9 PERCENT	3.02	12.20
1.0 TO 1.4 PERCENT	1.21	2.94
0.5 TO 0.9 PERCENT	0.70	1.31
0.0 TO 0.4 PERCENT	0.38	0.57
LESS THAN 0.0 PERCENT	0.35	0.38

Source: Research Department, Federal Reserve Bank of Philadelphia.  
Survey of Professional Forecasters, First Quarter 2023.

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

ANNUAL AVERAGE OVER THE NEXT 5 YEARS: 2023-2027

CPI INFLATION RATE		PCE INFLATION RATE	
MINIMUM	2.14	MINIMUM	1.59
LOWER QUARTILE	2.40	LOWER QUARTILE	2.20
MEDIAN	2.50	MEDIAN	2.30
UPPER QUARTILE	2.80	UPPER QUARTILE	2.50
MAXIMUM	3.75	MAXIMUM	3.25
MEAN	2.65	MEAN	2.37
STD. DEVIATION	0.43	STD. DEVIATION	0.36
N	29	N	28
MISSING	8	MISSING	9

ANNUAL AVERAGE OVER THE FOLLOWING 5 YEARS: 2028-2032

CPI INFLATION RATE		PCE INFLATION RATE	
MINIMUM	1.70	MINIMUM	1.26
LOWER QUARTILE	2.00	LOWER QUARTILE	1.90
MEDIAN	2.20	MEDIAN	2.00
UPPER QUARTILE	2.33	UPPER QUARTILE	2.25
MAXIMUM	3.70	MAXIMUM	3.29
MEAN	2.21	MEAN	2.07
STD. DEVIATION	0.38	STD. DEVIATION	0.39
N	28	N	27
MISSING	9	MISSING	10

ANNUAL AVERAGE OVER THE NEXT 10 YEARS: 2023-2032

CPI INFLATION RATE		PCE INFLATION RATE	
MINIMUM	1.96	MINIMUM	1.79
LOWER QUARTILE	2.20	LOWER QUARTILE	2.09
MEDIAN	2.37	MEDIAN	2.15
UPPER QUARTILE	2.60	UPPER QUARTILE	2.30
MAXIMUM	3.70	MAXIMUM	3.00
MEAN	2.44	MEAN	2.23
STD. DEVIATION	0.35	STD. DEVIATION	0.30
N	28	N	27
MISSING	9	MISSING	10

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 2023.

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

ANNUAL AVERAGE OVER THE NEXT 10 YEARS: 2023-2032  
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REAL GDP GROWTH RATE		PRODUCTIVITY GROWTH RATE			
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MINIMUM	1.50	MINIMUM	0.50		
LOWER QUARTILE	1.75	LOWER QUARTILE	1.00		
MEDIAN	2.00	MEDIAN	1.30		
UPPER QUARTILE	2.16	UPPER QUARTILE	1.40		
MAXIMUM	2.80	MAXIMUM	3.00		
MEAN	1.96	MEAN	1.33		
STD. DEVIATION	0.33	STD. DEVIATION	0.58		
N	25	N	17		
MISSING	12	MISSING	20		
STOCK RETURNS (S&P 500)		BOND RATE (10-YEAR)		BILL RETURNS (3-MONTH)	
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MINIMUM	1.80	MINIMUM	2.40	MINIMUM	1.10
LOWER QUARTILE	5.00	LOWER QUARTILE	2.80	LOWER QUARTILE	2.40
MEDIAN	7.50	MEDIAN	3.35	MEDIAN	2.65
UPPER QUARTILE	8.00	UPPER QUARTILE	3.51	UPPER QUARTILE	3.23
MAXIMUM	10.50	MAXIMUM	4.25	MAXIMUM	4.00
MEAN	6.82	MEAN	3.28	MEAN	2.75
STD. DEVIATION	2.31	STD. DEVIATION	0.51	STD. DEVIATION	0.66
N	13	N	22	N	22
MISSING	24	MISSING	15	MISSING	15

Source: Research Department, Federal Reserve Bank of Philadelphia.  
 Survey of Professional Forecasters, First Quarter 2023.