ECONOMIC ANALYSES

2. ECONOMIC ASSUMPTIONS

This chapter presents the economic assumptions that underlie the Administration's 2025 Budget.[1] It provides an overview of the recent performance of the American economy, presents the Administration's projections for key macroeconomic variables, compares them with other prominent forecasts, and discusses the inherent uncertainty of multiyear forecasts.

The chapter proceeds as follows. The first section provides an overview of the recent performance of the U.S. economy based on a broad array of key economic indicators. The second section presents a detailed exposition of the Administration's economic assumptions underlying the 2025 Budget and how key macroeconomic variables are expected to evolve over the 11-year window from 2024 through 2034. The third section compares the forecast of the Administration with those of the Congressional Budget Office (CBO), the Federal Open Market Committee of the Federal Reserve (FOMC), and the consensus from the Blue Chip Economic Indicators panel of professional forecasters available at the time the Administration's forecast was being finalized. The fourth section discusses the sensitivity of the Administration's projections of Federal receipts and outlays to alternative paths of macroeconomic variables. The fifth section considers the errors in past Administration forecasts, comparing them with the errors in forecasts produced by the CBO and the Blue Chip Economic Indicators panel of professional forecasters. The sixth section uses information on past accuracy of Administration forecasts to provide context for the uncertainty associated with the Administration's current forecast of the budget balance.

Recent Economic Performance

The Administration has made significant progress on the President's top economic priority—achieving stable, steady economic growth and a robust labor market while lowering inflation. Inflation has fallen substantially, the economy is growing and adding jobs, and the unemployment rate has remained low for the longest stretch in half a century. A robust labor market alongside lower inflation has led to real wages increases and real average hourly earnings above pre-pandemic levels. The state of the economy in 2023 shows that the President's plan to build an economy from the bottom up and middle out is working.

The Labor Market

Employment—The labor market was strong in 2023. The unemployment rate averaged 3.6 percent over the year, and has remained at or below 4.0 percent in every month since the start of 2022. That reflects significant progress from the COVID-19 recession; the unemployment rate averaged 8.1 percent during 2020 and 5.4 percent in 2021. Other indicators of labor market health also showed signs of strength in 2023, with several measures remaining near multidecade lows, including the long-term unemployment rate, the number of marginally attached and discouraged workers as shares of the labor force, and the share of the labor force working part-time for economic reasons (e.g., those unable to find full-time employment). Notably, sustained labor market strength in 2023 occurred simultaneously with a sharp reduction in inflation.

Following robust growth over 2022, job gains continued at a steady clip through 2023. The economy added an average of 255,000 jobs per month in 2023, roughly twice the number needed to accommodate population growth. Total employment at the end of the year was roughly 5.0 million above its pre-pandemic peak. Additionally, by the end of 2023 the prime-age labor force participation rate exceeded its pre-pandemic level by 0.2 percentage point.

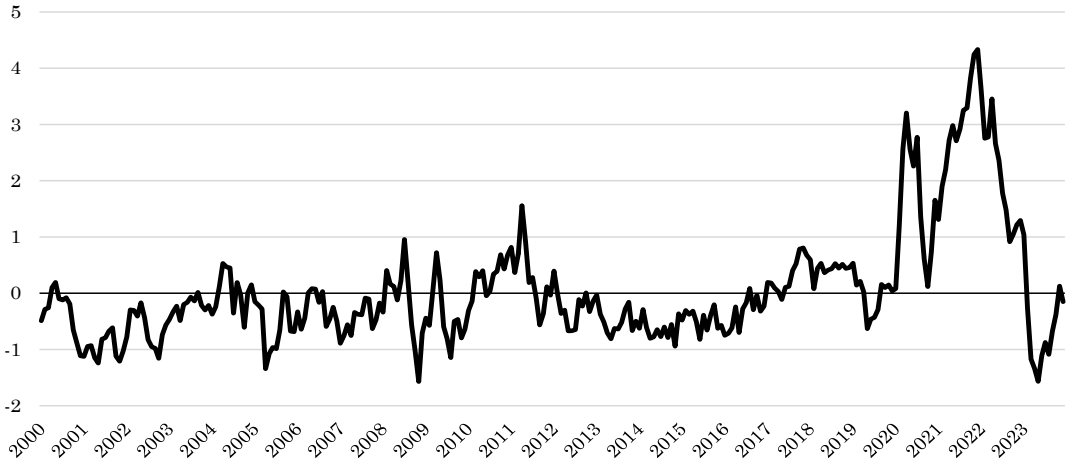
Inflation—Price growth slowed considerably over 2023. For example, inflation measured by the Consumer Price Index for all Urban Consumers (CPI-U) was 3.4 percent over the year ending in December 2023 (on a non-seasonally adjusted basis), compared with a 6.5 percent increase over the preceding 12 months. Core CPI-U inflation, which excludes food and energy prices, was 3.9 percent over the year ending in December 2023, down from a 5.5 percent increase over the preceding 12 months. While overall and core CPI-U 12-month inflation remain elevated relative to the Federal Reserve's target,[2] the marked slowdown in inflation over 2023 was broad based. 12-month price growth slowed across each major component of the CPI-U from December 2022 to December 2023. One of the factors supporting slower inflation in 2023 was improvements in the supply side of the economy, including global supply chains (see Chart 2-1), which facilitated domestic and international trade and eased price pressures. Labor supply gains helped bring the labor market into better balance as well.

Wages—Wage growth over 2023 was robust across a variety of measures. Over the year ending in December 2023, average hourly earnings (AHE) rose 4.3 percent across all private-sector workers, and 4.6 percent across private-sector workers in production and nonsupervisory positions. Similarly, over the year ending in 2023:Q4, wages and salaries increased 4.3 percent across both all private-sector workers as well as the subset of private-sector workers who are not in an incentive-paid

[1] Economic performance, unless otherwise specified, is discussed in terms of calendar years (January-December). Budget figures are discussed in terms of fiscal years (October-September).

[2] The Federal Reserve's inflation target is 2 percent annual growth as measured by the Personal Consumption Expenditures price index. The rate of CPI-U annual inflation consistent with this target is approximately 2.3 percent.

Chart 2-1. Supply Chains Pressure Index



Source: Federal Reserve Bank of New York Global Supply Chain Pressure Index

position, according to the Employment Compensation Index (ECI)—ECI is a measure of worker compensation that accounts for changes in the composition of the workforce. Wage growth in 2023 outpaced consumer price inflation. For example, over the year ending in December 2023, real AHE rose 1.0 percent across all private-sector workers and 1.4 percent for private-sector workers in production and nonsupervisory positions. Wages and salaries as measured by the ECI also increased in real terms over the year, rising 0.9 percent across all private-sector workers and 1.0 percent for private-sector workers who are not in an incentive-paid position. Looking ahead, sustaining the labor market's solid performance while continuing to bring inflation down for American workers remains an important economic priority for the Administration.

Gross Domestic Product[3]

Overview—Real GDP, which adjusts for inflation, rose 3.1 percent over 2023 (fourth-quarter-over-fourth-quarter), the highest among America's peer nations. The COVID-19 recession and its recovery have significantly shaped GDP dynamics in recent years: real GDP fell 1.1 percent over 2020, reflecting the COVID-19 recession and initial recovery, grew 5.4 percent over 2021, and increased 0.7 percent over 2022. GDP growth in 2023 was broad-based, with positive contributions from all major components of GDP, including consumption, non-residential business investment, net exports, and government expenditures.

Consumption—Household consumption of goods and services accounts for roughly two-thirds of U.S. GDP. Real personal consumption expenditures (PCE) increased by 2.7 percent during the four quarters of 2023. The consumption of durable goods increased 5.7 percent over 2023, while the consumption of nondurable goods rose 2.1 percent and the consumption of services increased 2.3 percent.

Nonresidential Fixed Investment—Real nonresidential fixed investment rose 4.2 percent in 2023 (fourth-quarter-over-fourth-quarter). Over the past three years, real nonresidential fixed investment fell 3.7 percent in 2020, rose 4.9 percent in 2021, and rose 5.6 percent in 2022. Investment in structures was the primary contributor to 2023 business investment growth, rising 16.0 percent over the year, driven by growth in manufacturing structures investment. That reflects a rebound for structures investment, which fell an average of 7.9 percent annually over 2020 and 2021 and rose a modest 0.8 percent in 2022. Equipment investment fell 0.8 percent during 2023, while intellectual property investment increased 2.9 percent.

The Government Sector—Real government expenditures on consumption and investment increased 4.5 percent in the four quarters ending 2023:Q4, which reflects a 3.9 percent increase in Federal spending and a 4.9 percent increase in State and local government spending. Within the Federal spending category, nondefense spending increased 4.7 percent and defense spending increased 3.2 percent.

Trade—Real exports of goods and services increased 2.1 percent in the four quarters ending 2023:Q4, reflecting increases of 1.5 percent in goods and 3.2 percent in services. Real imports were unchanged over the same period, reflecting an increase of 0.5 percent in goods and a 2.1 percent decline in services.

Economic Projections

The Administration's economic assumptions for the 2024-2034 budget window informs the 2025 Budget and assumes implementation of the Administration's policy proposals. The Administration's projections are reported in Table 2-1 and summarized below. The Administration finalized the economic assumptions in early November 2023, and this forecast is broadly in line with the prevail-

[3] The data reported here on GDP and its underlying components reflect "second" estimates from the Bureau of Economic Analysis. These estimates are subject to revision.

Table 2–1. ECONOMIC ASSUMPTIONS[1]
(Calendar Years, Dollar Amounts in Billions)

	Actual 2022	Projections 2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Gross Domestic Product (GDP)													
Levels, Dollar Amounts in Billions:													
Current Dollars	25,744	27,347	28,507	29,640	30,863	32,139	33,466	34,870	36,368	37,947	39,594	41,313	43,110
Real, Chained (2017) Dollars	21,822	22,347	22,728	23,136	23,600	24,072	24,553	25,059	25,601	26,164	26,739	27,328	27,929
Chained Price Index (2017=100), Annual Average	118	122	125	128	131	134	136	139	142	145	148	151	154
Percent Change, Fourth-Quarter-over-Fourth-Quarter:													
Current Dollars	7.1	5.6	3.6	4.1	4.1	4.1	4.1	4.2	4.3	4.3	4.3	4.3	4.4
Real, Chained (2017) Dollars	0.7	2.6	1.3	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.2	2.2
Chained Price Index (2017=100)	6.4	3.0	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Incomes, Billions of Current Dollars													
Domestic Corporate Profits	2,736	2,795	2,659	2,438	2,472	2,693	2,944	3,151	3,353	3,582	3,835	4,083	4,343
Employee Compensation	13,439	14,267	14,978	15,644	16,360	17,100	17,859	18,637	19,453	20,307	21,203	22,137	23,115
Wages and Salaries	11,116	11,823	12,402	12,967	13,557	14,168	14,792	15,435	16,109	16,818	17,555	18,325	19,148
Nonwage Personal Income	6,101	6,452	6,813	7,196	7,533	7,877	8,300	8,638	9,007	9,384	9,780	10,246	10,679
Consumer Price Index (All Urban)[2]:													
Level (1982–1984=100), Annual Average	293.0	305.0	314.0	321.0	328.0	336.0	344.0	352.0	360.0	368.0	376.0	385.0	394.0
Percent Change, Fourth-Quarter-over-Fourth-Quarter	7.1	3.4	2.5	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Unemployment Rate, Civilian, Percent													
Annual Average	3.6	3.6	4.0	4.0	3.9	3.9	3.8	3.8	3.8	3.8	3.8	3.8	3.8
Q4 Level	3.6	3.8	4.1	4.0	3.9	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
Interest Rates, Percent													
91-Day Treasury Bills	2.0	5.1	5.1	4.0	3.3	3.1	2.9	2.8	2.8	2.7	2.7	2.7	2.7
10-Year Treasury Notes	3.0	4.1	4.4	4.0	3.9	3.8	3.8	3.7	3.7	3.7	3.7	3.7	3.7

[1] Based on information available as of November 2023.
[2] Seasonally Adjusted

ing consensus at that time. Since early November, data for 2023 have come in better than expected for a range of indicators. The labor market remained strong, with the unemployment rate edging down from 3.8 percent in October to 3.7 percent in December. Economic growth was also strong, with real GDP increasing 3.2 percent annualized during the fourth quarter of 2023. Furthermore, broad price pressures continued to ease, with three-month annualized CPI-U inflation slowing from 3.9 percent in October to 1.9 percent in December. Had these data been available when the Administration's forecast was finalized, the forecast would likely feature a lower unemployment rate path and higher GDP growth, just as many other more frequently produced external forecasts have shown in updates since early November.

Real GDP—The Administration's economic assumptions project real GDP growth of 2.6 percent over the four quarters of 2023; subsequently released data show that actual real GDP growth over that period was 3.1 percent. Real GDP growth is expected to be 1.3 percent in 2024, and to average 2.0 percent between 2025-2029, and 2.2 percent during 2030-2034.

Unemployment—The Administration's economic assumptions project a 3.6 percent unemployment rate on average over 2023, in line with published data. The unemployment rate is projected to rise modestly in 2024, before declining over the forecast horizon to a long-run rate of 3.8 percent by 2028.

Interest Rates—After rising over the past couple years, interest rates are expected to broadly hold steady through 2024. The 91-day Treasury bill rate is expected to average 5.1 percent over 2023 and 2024, before falling to a terminal rate of 2.7 percent in 2031. The 10-year rate is projected to average 4.1 percent over 2023, edge up to 4.4 percent over 2024, and then fall to a terminal rate of 3.7 percent in 2029. For 2023, the economic assumption's forecast for the 91-day rate is consistent with subsequently released data, while the 10-year rate forecast is slightly higher than in the data (4.0 percent).

Inflation—The Administration's forecast anticipates further declines in inflation rates over the next two years, following the elevated pace during 2021 and 2022. Specifically, the assumptions anticipate that, after growing 7.1 percent on a fourth-quarter-over-fourth-quarter basis in 2022, inflation as measured by the CPI-U would be 3.4 percent in 2023, compared with the 3.2 percent reported. The assumptions forecast CPI-U inflation of 2.5 percent in 2024, and 2.3 percent in 2025 and in subsequent years.

Changes in Economic Assumptions from Last Year's Budget—Table 2-2 compares the Administration's forecast for the 2025 Budget with that from the 2024 Budget and Mid-Session Review. Compared with the

Table 2–2. COMPARISON OF ECONOMIC ASSUMPTIONS IN THE 2024 AND 2025 BUDGETS

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
(fourth-quarter-over-fourth-quarter percent change)											
Real GDP:											
2024 Budget Assumptions	0.4	2.1	2.4	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.2
2024 MSR Assumptions	0.4	1.8	2.4	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.2
2025 Budget Assumptions	2.6	1.3	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.2
GDP Price Index:											
2024 Budget Assumptions	2.8	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
2024 MSR Assumptions	3.2	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
2025 Budget Assumptions	3.0	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Consumer Price Index (All-Urban):											
2024 Budget Assumptions	3.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
2024 MSR Assumptions	3.3	2.5	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
2025 Budget Assumptions	3.4	2.5	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
(calendar year average)											
Civilian Unemployment Rate:											
2024 Budget Assumptions	4.3	4.6	4.4	4.3	4.2	4.1	4.0	3.9	3.8	3.8	3.8
2024 MSR Assumptions	3.8	4.4	4.2	4.1	4.1	4.1	4.0	3.9	3.8	3.8	3.8
2025 Budget Assumptions	3.6	4.0	4.0	3.9	3.9	3.8	3.8	3.8	3.8	3.8	3.8
91-Day Treasury Bill Rate:											
2024 Budget Assumptions	4.9	3.8	3.0	2.5	2.3	2.2	2.3	2.4	2.4	2.5	2.5
2024 MSR Assumptions	5.0	4.1	3.2	2.7	2.4	2.3	2.3	2.3	2.4	2.5	2.5
2025 Budget Assumptions	5.1	5.1	4.0	3.3	3.1	2.9	2.8	2.8	2.7	2.7	2.7
10-Year Treasury Note Rate:											
2024 Budget Assumptions	3.8	3.6	3.5	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
2024 MSR Assumptions	3.7	3.7	3.5	3.4	3.3	3.3	3.4	3.4	3.4	3.4	3.4
2025 Budget Assumptions	4.1	4.4	4.0	3.9	3.8	3.8	3.7	3.7	3.7	3.7	3.7

2024 Budget forecast, the Administration's interest rate forecasts towards the end of the Budget window are now higher. The upward revisions are consistent with changes across market-based measures and external forecasts. Interest rates aside, the Administration's expectations over the outyears of the forecast are little changed from the 2024 Budget forecast. Revisions to the near-term largely reflect the more current economic data available at the time the current assumptions were finalized.

Comparison with Other Forecasts

This section compares the Administration's forecast with the then-available forecasts from CBO, the FOMC, and the Blue Chip panel of professional forecasters.

There are important methodological differences across these forecasts. Aside from the inherent uncertainty of forecasting economic variables, different projections make different assumptions about which policies of the Administration are enacted. The Administration's forecast assumes implementation of the Administration's proposed policies—such as expanding access to affordable, high-quality early childcare and learning, improving college affordability, and modernizing our immigration system. In contrast, the CBO forecast assumes no changes to current law. It is unclear to what extent Blue Chip panelists incorporate policy implementation expectations into their respective outlooks. The Blue Chip panel comprises a large number of private-sector forecasters, who have different expectations about the enactment of the Administration's proposed policies and different views about how those policies might affect economic growth.

A second key difference is that the various forecasts were published on different dates. For example, while the forecast published by the Administration is based on data available as of early November 2023, the Blue Chip forecasts are drawn from a survey administered in early October. In addition, the Federal Reserve's FOMC projections were released in mid-September and the CBO forecast was published in July 2023.

Real GDP—The Administration forecasts an average real GDP growth rate of 2.0 percent (fourth-quarter-over-fourth-quarter) during the 11 years from 2024 to 2034, modestly higher than the 1.8 percent average of both Blue Chip and the median FOMC participant over the same window and the 1.9 percent average of CBO over 2024-2033. Over the near term, the Administration forecasts an average growth rate of 1.7 percent during 2024-2025, which is above the 1.3 percent average for Blue Chip, below the 2.0 percent average from CBO, and in line with the median FOMC participant's forecast.

Unemployment—The Administration, Blue Chip consensus, CBO, and the median FOMC participant all

Table 2–3. COMPARISON OF ECONOMIC ASSUMPTIONS [1]

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
(fourth-quarter-over-fourth-quarter percent change)												
Real GDP:												
2025 Budget (November 2023)	2.6	1.3	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.2	2.2
Blue Chip [2] (October 2023)	2.1	0.9	1.7	2.1	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8
CBO [3] (July 2023)	0.9	1.5	2.4	2.4	2.1	1.9	1.9	1.8	1.8	1.8	1.7	.....
Federal Reserve [4] (September 2023)	2.1	1.5	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Consumer Price Index (CPI-U):												
2025 Budget (November 2023)	3.4	2.5	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Blue Chip [2] (October 2023)	3.3	2.4	2.3	2.2	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2
CBO [3] (July 2023)	3.3	2.7	2.2	2.0	2.1	2.2	2.3	2.3	2.3	2.3	2.3	.....
Federal Reserve [4,5] (September 2023)	3.3	2.5	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
(calendar year average)												
Unemployment Rate:												
2025 Budget (November 2023)	3.6	4.0	4.0	3.9	3.9	3.8	3.8	3.8	3.8	3.8	3.8	3.8
Blue Chip [2] (October 2023)	3.7	4.2	4.2	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
CBO [3] (July 2023)	3.7	4.5	4.6	4.6	4.5	4.5	4.5	4.5	4.5	4.5	4.5	.....
Federal Reserve [4,6] (September 2023)	3.8	4.1	4.1	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
91-Day Treasury Bills (discount basis):												
2025 Budget (November 2023)	5.1	5.1	4.0	3.3	3.1	2.9	2.8	2.8	2.7	2.7	2.7	2.7
Blue Chip [2] (October 2023)	5.3	4.8	3.4	2.8	2.7	2.7	2.6	2.7	2.7	2.7	2.7	2.7
CBO [3] (July 2023)	5.1	4.7	3.6	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	.....
10-Year Treasury Notes:												
2025 Budget (November 2023)	4.1	4.4	4.0	3.9	3.8	3.8	3.7	3.7	3.7	3.7	3.7	3.7
Blue Chip [2] (October 2023)	4.0	4.0	3.6	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
CBO [3] (July 2023)	3.8	4.0	3.7	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	.....

Sources: Administration; CBO, The Budget and Economic Outlook: 2023 to 2033, February 2023; CBO, An Update to the Economic Outlook: 2023 to 2025, July 2023; October 2023 Blue Chip Economic Indicators, Aspen Publishers, Inc.; Federal Reserve Open Market Committee, September 22, 2023

[1] Calendar Year

[2] GDP & CPI growth rates are year-over-year after 2024. Values for 2030-2034 are 5 year averages.

[3] Values for 2023–2025 are from July 2023 report; values for 2026-2033 are from February 2023 report.

[3] Median of FOMC Participants' Projections

[4] PCE Inflation

[5] Average rate during 4th quarter.

forecast that the average unemployment rate during 2024 will be slightly elevated compared with 2023. Across 2024 and 2025, the Administration forecasts that the unemployment rate will average 4.0 percent, compared with CBO, Blue Chip, and median FOMC participant averages of 4.6, 4.2, and 4.1 percent during that window, respectively. Over the long run, the Administration projects a terminal unemployment rate of 3.8 percent, compared with 4.0 percent for both Blue Chip and the median FOMC participant, and 4.5 percent for CBO.

Interest Rates—The Administration's 91-day interest rate forecast is qualitatively consistent with the Blue Chip consensus forecast over the forecast horizon, though modestly higher in magnitude during most years. The Administration expects the annual average short-term interest rate will start to fall in 2025, whereas CBO and Blue Chip forecast declines will begin during 2024. The Administration and Blue Chip forecast the 91-day Treasury rate will stabilize at 2.7 percent by the end of the Budget window, while CBO forecasts a 2.3 percent rate. A similar overall pattern holds for the 10-year Treasury rate, and the Administration projects a 3.7 percent terminal rate, compared with 3.5 percent by Blue Chip and 3.8 percent by CBO.

Inflation—The Administration's forecast for CPI-U inflation (on a fourth-quarter-over-fourth-quarter basis) is broadly consistent with outside forecasts throughout the budget window. The Administration, Blue Chip consensus, CBO, and the median FOMC participant all project that inflation will continue to moderate through 2025. The Administration's projection for the long-term CPI-U inflation rate of 2.3 percent equals CBO's long-term projection, is 0.1 percentage point higher than Blue Chip's long-term projection, and is approximately consistent with the FOMC's 2.0 percent target for PCE inflation

Sensitivity of the Budget to Economic Assumptions

Federal spending and tax collections are heavily influenced by developments in the economy. Income tax receipts are a function of growth in incomes for households and firms. Spending on social assistance programs may rise when the economy enters a downturn, while in-

Table 2–4. SENSITIVITY OF THE BUDGET TO ECONOMIC ASSUMPTIONS

(Fiscal Years; In Billions of Dollars)

Budget Effect	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Total of Budget Effects: 2024–2034
Real Growth and Employment:												
Budgetary effects of 1 percentage point lower real GDP growth:												
(1) For calendar year 2024 only, with real GDP recovery in 2025–2034:[1]												
Receipts	-20.4	-32.1	-16.4	-2.6	*	*	*	*	*	*	*	-71.1
Outlays	14.2	30.0	15.8	4.3	3.9	3.7	3.6	3.5	3.5	3.6	3.6	89.7
Increase in deficit (+)	34.6	62.1	32.2	7.0	3.8	3.6	3.5	3.4	3.4	3.5	3.6	160.7
(2) For calendar year 2024 only, with no subsequent recovery:												
Receipts	-20.4	-42.6	-49.8	-52.1	-54.0	-56.1	-58.3	-60.6	-63.0	-65.5	-68.2	-590.7
Outlays	14.2	36.3	41.2	45.4	50.1	54.9	59.7	64.5	69.9	75.6	81.5	593.2
Increase in deficit (+)	34.6	78.9	90.9	97.4	104.2	111.0	118.0	125.2	132.8	141.1	149.7	1,183.9
(3) Sustained during 2024–2034, with no change in unemployment:												
Receipts	-20.5	-63.5	-115.6	-171.8	-230.9	-294.0	-361.5	-433.5	-509.9	-592.0	-679.6	-3,472.7
Outlays	0.4	1.7	3.9	7.2	11.2	15.8	20.8	26.4	32.9	39.6	46.6	206.5
Increase in deficit (+)	20.8	65.2	119.5	179.0	242.1	309.9	382.3	459.9	542.7	631.6	726.2	3,679.3
Inflation and Interest Rates:												
Budgetary effects of 1 percentage point higher rate of:												
(4) Inflation and interest rates during calendar year 2024 only:												
Receipts	21.6	42.2	44.4	44.6	46.2	47.9	49.8	51.8	53.8	55.9	58.2	516.3
Outlays	69.4	100.1	74.4	74.5	74.7	73.5	72.1	73.4	73.3	78.3	78.4	841.9
Increase in deficit (+)	47.8	57.9	30.0	30.0	28.5	25.5	22.3	21.6	19.5	22.4	20.2	325.6
(5) Inflation and interest rates, sustained during 2024–2034:												
Receipts	21.6	65.0	113.7	165.2	219.8	278.9	342.9	412.4	486.8	568.0	655.7	3,329.8
Outlays	69.7	178.5	265.3	355.7	452.4	541.8	646.4	753.4	868.1	1,008.8	1,121.3	6,261.5
Increase in deficit (+)	48.1	113.6	151.6	190.5	232.7	263.0	303.4	341.1	381.3	440.8	465.6	2,931.7
(6) Interest rates only, sustained during 2024–2034:												
Receipts	1.6	3.9	5.0	5.4	5.8	6.1	6.4	6.6	6.9	7.2	7.5	62.4
Outlays	51.8	128.8	179.0	225.3	269.7	313.7	352.8	392.7	432.6	473.5	514.1	3,333.9
Increase in deficit (+)	50.1	125.0	174.0	219.8	263.9	307.6	346.4	386.1	425.7	466.3	506.6	3,271.5
(7) Inflation only, sustained during 2024–2034:												
Receipts	19.9	61.0	108.6	159.5	213.7	272.4	336.1	405.2	479.4	560.1	647.5	3,263.5
Outlays	18.0	50.0	87.0	131.4	184.2	230.0	296.0	363.6	439.0	539.2	611.7	2,949.8
Decrease in deficit (–)	-1.9	-11.1	-21.6	-28.1	-29.5	-42.5	-40.2	-41.6	-40.4	-20.9	-35.8	-313.7
Interest Cost of Higher Federal Borrowing:												
(8) Outlay effect of $100 billion increase in borrowing in 2024	2.8	4.8	4.0	3.8	3.7	3.7	3.7	3.8	3.9	4.0	4.1	42.2

* $500 million or less.

[1] The unemployment rate is assumed to be 0.5 percentage point higher per one percent shortfall in the level of real GDP.

creases in nominal spending on Social Security and other programs are dependent on consumer price inflation. A robust set of projections for macroeconomic variables assists in budget planning, but unexpected developments in the economy have ripple effects for Federal spending and receipts. This section seeks to provide an understanding of the magnitude of the effects that unforeseen changes in the economy can have on the budget.

To make these assessments, the Administration relies on a set of heuristics that can predict how certain spending and receipt categories will react to a change in a given subset of macroeconomic variables, holding nearly everything else constant. These sensitivity analyses provide a sense of the broad changes one would expect after a given development, but do not attempt to anticipate how policy makers would react and potentially change course in such an event. For example, if the economy were to suffer an unexpected recession, tax receipts would decline and spending on programs such as unemployment insurance would rise. However, policy makers might enact policies to stimulate the economy, leading to secondary and tertiary changes that are difficult to predict. Another

Table 2–5. FORECAST ERRORS, 2002-PRESENT

REAL GDP ERRORS			
2-Year Average Annual Real GDP Growth	Administration	CBO	Blue Chip
Mean Error	1.2	0.5	0.7
Mean Absolute Error	1.3	0.8	0.8
Root Mean Square Error	1.6	1.2	1.2
6-Year Average Annual Real GDP Growth			
Mean Error	1.4	1.2	1.0
Mean Absolute Error	1.4	1.2	1.0
Root Mean Square Error	1.5	1.3	1.2
INFLATION ERRORS			
2-Year Average Annual Change in the Consumer Price Index	Administration	CBO	Blue Chip
Mean Error	-0.3	-0.3	-0.0
Mean Absolute Error	0.7	0.8	0.7
Root Mean Square Error	1.0	1.0	0.9
6-Year Average Annual Change in the Consumer Price Index			
Mean Error	0.2	0.1	0.3
Mean Absolute Error	0.3	0.3	0.4
Root Mean Square Error	0.4	0.4	0.5
INTEREST RATE ERRORS			
2-Year Average 91-Day Treasury Bill Rate	Administration	CBO	Blue Chip
Mean Error	0.6	0.5	0.7
Mean Absolute Error	0.8	0.7	0.8
Root Mean Square Error	1.1	1.1	1.2
6-Year Average 91-Day Treasury Bill Rate			
Mean Error	2.0	2.1	2.2
Mean Absolute Error	2.0	2.1	2.2
Root Mean Square Error	2.2	2.3	2.4

caveat is that it is often unrealistic to suppose that one macroeconomic variable might change while others would remain constant. Most macroeconomic variables interact with each other in complex and subtle ways. Be mindful of these considerations when examining Table 2-4.

For real GDP growth and employment:

- The first panel in the table illustrates the effect on the deficit resulting from a one percentage point reduction in real GDP growth, relative to the Administration's forecast, in 2024 that is followed by a subsequent recovery in 2025 and 2026. The unemployment rate is assumed to be half a percentage point higher in 2024 before returning to the baseline level in 2025 and 2026.
- The next panel in the table reports the effect of a reduction of one percentage point in real GDP growth in 2024 that is not subsequently made up by faster growth in 2025 and 2026. Consistent with this output path, the rate of unemployment is assumed to rise by half a percentage point relative to that assumed in the Administration's forecasts.
- The third panel in the table shows the impact of a GDP growth rate that is permanently reduced by one percentage point, while the unemployment rate is not affected. This is the sort of situation that would arise if, for example, the economy was to experience a permanent decline in productivity growth.

For inflation and interest rates:

- The fourth panel in Table 2-4 shows the effect on the budget in the case of a one percentage point higher rate of inflation and a one percentage point higher nominal interest rate in 2024. Both inflation and interest rates return to their assumed levels in 2025. This would result in a permanently higher price level and nominal GDP level over the course of the forecast horizon.
- The fifth panel in the table illustrates the effects on the budget deficit of a one percentage point higher inflation rate and interest rate than projected in every year of the forecast.
- The sixth panel reports the effect on the deficit resulting from an increase in interest rates in every year of the forecast, with no accompanying increase in inflation.
- The seventh panel in the table reports the effect on the budget deficit of a one percentage point higher

Table 2–6. DIFFERENCES BETWEEN ESTIMATED AND ACTUAL SURPLUSES OR DEFICITS FOR FIVE-YEAR BUDGET ESTIMATES SINCE 1985

	Current Year Estimate	Budget Year Estimate	Estimate for Budget Year Plus:			
			One Year (BY + 1)	Two Years (BY + 2)	Three Years (BY + 3)	Four Years (BY + 4)
Mean Error	-0.4	0.8	1.6	-2.2	-2.6	-2.9
Mean Absolute Error	1.4	1.9	2.5	3.1	3.6	3.9
Root Mean Squared Error	2.3	2.9	3.6	4.2	4.6	4.7

inflation rate than projected in every year of the forecast window, while the interest rate remains as forecast.

- The table also shows the effect on the budget deficit if the Federal Government were to borrow an additional $100 billion in 2024, while all of the other projections remain constant.
- These simple approximations that inform the sensitivity analysis are symmetric. This means that the effect of, for example, a one percentage point higher rate of growth over the forecast horizon would be of the same magnitude as a one percentage point reduction in growth, though with the opposite sign.

Forecast Errors for Growth, Inflation, and Interest Rates

This section evaluates the historical accuracy of past Administration forecasts for real GDP growth, inflation, and short-term interest rates from 2002 to the present day, and compares this accuracy with that of forecasts produced by the CBO and Blue Chip panel. For this exercise, forecasts produced by all three entities are compared with realized values of these variables. As with any forecast, the Administration's projections are inherently uncertain because they are based on underlying assumptions about future social, political, and global conditions. It is impossible to foresee every eventuality over a one-year horizon, much less over ten or more years.

The results of this exercise are reported in Table 2-5 and contain three different measures of accuracy. The first is the average forecast error. A forecast with an average error of zero is unbiased, in the sense that realized values of the variables have not been systematically above or below the forecasted value. The second is the average absolute value of the forecast error, which offers a sense of the magnitude of errors. Thus, even if a forecast's errors are unbiased, the forecast can still be very inaccurate with very large positive and negative errors cancelling one another out. The table also reports the square root of the mean of squared forecast error (RMSE). This metric applies a harsher penalty to forecasts with larger errors. The table reports these measures of accuracy at both the 2-year and the 6-year horizons, thus evaluating the relative success of different forecasts in the short and medium run.

Past Administration forecasts have 2-year real GDP growth and average annual interest rates that were higher than realized, on average, by 1.2 percentage points and 0.6 percentage points, respectively. This is partly due to the assumption that Administration policy proposals contained in the Budget will be enacted, which may not come to pass. The 2-year average forecast error for inflation is smaller, -0.3 percentage points, and similar to other forecasts' errors.

Uncertainty and the Deficit Projections

This section assesses the accuracy of past budget forecasts for the deficit or surplus, measured at different time horizons. The results of this exercise are reported in Table 2-6, where the average error, the average absolute error, and the RMSE are reported.

In Table 2-6, a negative number signifies that the Federal Government budget ran a larger surplus or a smaller deficit than was expected, while a positive number in the table indicates a smaller surplus or a larger deficit. In the current year in which the budget is published, the Administration has tended to understate the surplus (or, equivalently, overstate the deficit by an average of 0.4 percent of GDP. For the budget year, however, the historical pattern has been for the budget to understate the deficit by an average of 0.8 percent of GDP.[4] One possible reason for this is that past Administrations' policy proposals have not all been implemented. The forecast errors tend to grow with the time horizon, which is not surprising given that there is much greater uncertainty in the medium run about both the macroeconomic situation and the specific details of policy enactments.

Chart 2-2 uses the historical forecast errors summarized in Table 2-6 to construct a probabilistic range of outcomes for the deficit over the budget window. These probabilistic ranges are derived from the RMSE of previous forecast errors and assume these errors are normally distributed. This exercise is repeated at every forecast horizon from the current year through fours year after the budget year. The middle line represents the Administration's expected deficit as a percent of GDP and the 50th percentile outcome. The highest line reports the 95th percentile of the distribution of outcomes over 2024 to 2029, meaning that there is a 95 percent probability that the actual deficit in those years will be below that line. Similarly, there is a 95 percent probability that the deficit will be above the lowest line in the chart.

[4] Additionally, the CBO's deficit forecasts have on average been smaller than what materialized.

Chart 2-2. Range of Uncertainty for the Budget Deficit