ECONOMIC ASSUMPTIONS AND OVERVIEW

2. ECONOMIC ASSUMPTIONS AND OVERVIEW

This chapter presents the economic assumptions that underlie the Administration's Fiscal Year 2020 Budget.[1] It describes the recent performance of the American economy, explains the Administration's projections for key macroeconomic variables, contrasts them with forecasts prepared by other prominent institutions and discusses the uncertainty inherent in producing an eleven-year forecast.

The economy of the United States is thriving. Unemployment has reached its lowest level in half a century. Inflation remains on target. Real wages have seen sustained growth. Investment has increased.

Yet there are head winds facing this economy, which must be navigated with care. The fiscal deficit has swollen. Labor force participation has stabilized only after a protracted period of decline. Productivity growth, despite recent improvement, remains below the post-war average. The integration of Artificial Intelligence into the economy provides both opportunities and dangers.

The United States approaches the next decade with the ability to solve the major challenges confronting it. Whether we do will define the next American century.

This chapter proceeds as follows:

- The first section provides an overview of the recent performance of the U.S. economy, examining a broad array of key economic indicators.
- The second section provides a detailed exposition of the Administration's economic assumptions for the FY 2020 Budget, discussing how key macroeconomic variables are expected to evolve over the years 2019 to 2029.
- The third section compares the forecast of the Administration with those prepared by the Congressional Budget Office, the Federal Open Market Committee of the Federal Reserve, and the Blue Chip panel of private sector forecasters.
- The fourth section discusses the sensitivity of the Administration's projections of Federal receipts and outlays to fluctuations in macroeconomic variables.
- The fifth section considers the errors and possible biases[2] in past Administration forecasts, comparing them with the errors in forecasts produced by the Congressional Budget Office and the Blue Chip panel of private professional forecasters.
- The sixth section uses information on past accuracy of Administration forecasts to provide understanding and insight into the uncertainty associated with the Administration's current forecast of the budget balance.

[1] Economic performance, unless otherwise specified, is generally discussed in terms of calendar years (Jan-Dec). Budget figures are discussed in terms of fiscal years (Oct-Sep).

[2] As discussed later in this chapter, "bias" here is defined in the statistical sense and refers to whether previous Administrations' forecasts have tended to make positive or negative forecast errors on average.

Recent Economic Performance[3]

The U.S. economy continues to exhibit vibrant growth. Real Gross Domestic Product (GDP) experienced 3.1 percent growth during the four quarters of 2018. This compares to an average of 2.1 percent between 2010 and 2016. Among the demand components of increase in real GDP, private consumption contributed 1.8 percent, private investment contributed 1.2 percent, government purchases contributed 0.3 percent, and net exports made a negative contribution of -0.3 percent. On the supply side, nonfarm business sector output per hour increased at an average pace of 1.8 percent over the first three quarters of 2018. This is elevated from an annual average of 0.7 percent growth between 2010 and 2016.

While encouraging, the U.S worker's productivity growth remains lower than it has been historically. The 1947 to 2016 long-run average was 2.3 percent. The Administration aims to raise productivity growth through cutting red tape, lowering barriers to market entry, increased business and labor dynamism, investment in deteriorating public infrastructure and a new tax structure that encourages business investment. Higher productivity growth is a top priority for Administration economic policy.

Labor Markets—Labor markets continued to improve in 2018 across a broad array of metrics. The civilian unemployment rate declined, falling from 4.7 percent at the end of 2016 to a nadir of 3.7 percent in 2018, the lowest rate since November 1969 (at that time over three million individuals were serving in the military), and well below the post-war average of 5.8 percent. There were 7.3 million job openings in December 2018, exceeding the number of unemployed. During the 12 months of 2018, the labor force participation rate averaged 62.9 percent, edging up slightly from 62.7 percent in 2015.

The participation rate has stabilized somewhat following a steep decline since 2000, but demographic forces are expected to exert continued downward pressure as the baby boom generation continues retiring in large numbers. This must be mitigated by greater opportunities for marginalized individuals to leave the sidelines of the economy. Increasing health improvements and less physically-demanding jobs may increase participation among traditional retirement-age individuals, which could be decisive in allowing the United States to cope with a greying population.

[3] The statistics in this section are based on information available in February 2019.

Table 2–1. ECONOMIC ASSUMPTIONS [1]

(Calendar Years, Dollar Amounts in Billions)

	Actual 2017	Projections											
		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Gross Domestic Product (GDP)													
Levels, Dollar Amounts in Billions:													
Current Dollars	19,485	20,497	21,565	22,694	23,851	25,061	26,330	27,665	29,050	30,475	31,957	33,512	35,141
Real, Chained (2012) Dollars	18,051	18,575	19,167	19,767	20,368	20,979	21,608	22,256	22,910	23,560	24,219	24,897	25,594
Chained Price Index (2012=100), Annual Average	107.9	110.3	112.5	114.8	117.1	119.5	121.9	124.3	126.8	129.4	132.0	134.6	137.3
Percent Change, Fourth Quarter over Fourth Quarter:													
Current Dollars	4.5	5.3	5.3	5.2	5.1	5.1	5.1	5.1	5.0	4.9	4.9	4.9	4.9
Real, Chained (2012) Dollars	2.5	3.1	3.2	3.1	3.0	3.0	3.0	3.0	2.9	2.8	2.8	2.8	2.8
Chained Price Index (2012=100)	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Incomes, Billions of Current Dollars													
Domestic Corporate Profits	1650	1760	1864	1862	1846	1814	1793	1780	1783	1764	1739	1708	1670
Employee Compensation	10,407	10,878	11,364	11,945	12,588	13,296	14,041	14,830	15,657	16,516	17,416	18,366	19,349
Wages and Salaries	8,454	8,850	9,242	9,717	10,248	10,832	11,446	12,068	12,732	13,424	14,160	14,929	15,753
Nonwage Personal Income	4,863	5,104	5,426	5,902	6,248	6,548	6,833	7,073	7,327	7,594	7,895	8,149	8,427
Consumer Price Index (All Urban) [3]:													
Level (1982-1984 = 100), Annual Average	245.1	251.2	256.6	262.4	268.3	274.4	280.6	287.0	293.5	300.1	306.9	313.9	321.0
Percent Change, Fourth Quarter over Fourth Quarter	2.1	2.3	2.2	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	4.4	3.9	3.6	3.6	3.7	3.9	4.0	4.1	4.2	4.2	4.2	4.2	4.2
Interest Rates, Percent													
91-Day Treasury Bills [2]	0.9	1.9	2.7	3.1	3.2	3.2	3.1	3.0	3.0	3.0	3.0	3.0	3.0
10-Year Treasury Notes	2.3	2.9	3.4	3.6	3.8	3.8	3.7	3.7	3.7	3.7	3.7	3.7	3.7

[1] Based on information available as of mid-November 2018

[2] Average rate, secondary market (bank discount basis)

[3] Seasonally Adjusted

The portion of the labor force employed part-time for economic reasons has fallen to 2.9 percent in December 2018, well below a peak of over 6.0 percent during the Great Recession. Furthermore, the share of unemployed that have been job hunting for longer than 27 weeks has fallen to 18.4 percent, from a peak of nearly 50 percent during the Great Recession. This is the most taut labor market in more than a generation.

In spite of these encouraging indicators, several metrics suggest that the labor market has further room to improve. Compared with the last business cycle peak in 2007, the portion of the labor force working part-time for economic reasons and the portion unemployed for more than 27 weeks are both still elevated, as are the shares of the working-age population only marginally attached to the labor force or too discouraged to look for work. Labor force participation has fallen from 67.3 percent in January 2000 to 63.1 percent in December 2018. The aging of the baby boom cohorts into retirement does not explain the drop in the labor force participation rates for prime-age men and women (age 25-54) which fell 2.2 percentage points from 2000 to 2018. This suggests a need for policy alteration, removing impediments and disincentives for individuals to participate. Of special concern are NEET young adults (Not in Education, Employment or Training, age 20-24), which made up 14 percent of their cohort in 2017. Transition into the labor market is crucial to assuring their future as healthy, productive adults. Administration policies encouraging more individuals to join the labor force may cause short term increases in the unemployment rate, but these actions are beneficial to the economy.

Consumption—Consumer spending increased by an average of 2.7 percent over the four quarters ending 2018:Q4. This was driven by increased purchases of a variety of goods and services, including, recreational goods and vehicles (0.2 p.p.), food and beverages (0.1 p.p.), health care (0.3 p.p.), clothing and footwear (0.1 p.p.) and financial services and insurance (0.1 p.p.). Spending on gasoline and other energy goods was slightly negative, due to low prices generated by increased supply and the falling costs of renewable energy. The personal savings rate averaged 6.7 percent over the first 10 months of 2018, above its 20-year average of 5.9 percent, and household debt service payments have fallen to 9.8 percent of disposable income in 2018:Q3, from a peak of 13.2 in 2007:Q4. This above-average saving rate suggests that the pace of consumption is sustainable and is a positive development.

Investment—Nonresidential fixed investment increased by an average of 7.2 percent the four quarters ending 2018:Q4, 5.4 percentage points higher than in 2016. Private Investment contributed an average of 1.2

Table 2–2. COMPARISON OF ECONOMIC ASSUMPTIONS IN THE 2019 AND 2020 BUDGETS

(Calendar Years, Dollar Amounts in Billions)

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Real GDP (Percent Change)[1]:												
2019 Budget Assumptions	2.5	3.1	3.2	3.1	3.0	3.0	3.0	3.0	2.9	2.8	2.8	2.8
2020 Budget Assumptions	2.5	3.1	3.2	3.1	3.0	3.0	3.0	3.0	2.9	2.8	2.8	2.8
GDP Price Index (Percent Change)[1]:												
2019 Budget Assumptions	1.6	1.6	1.8	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
2020 Budget Assumptions	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Consumer Price Index (All-Urban; Percent Change)[1]:												
2019 Budget Assumptions	2.1	1.9	2.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
2020 Budget Assumptions	2.1	2.3	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Civilian Unemployment Rate (Percent)[2]:												
2019 Budget Assumptions	4.4	3.9	3.7	3.8	3.9	4.0	4.2	4.3	4.5	4.7	4.8	4.8
2020 Budget Assumptions	4.4	3.9	3.6	3.6	3.7	3.9	4.0	4.1	4.2	4.2	4.2	4.2
91-Day Treasury Bill Rate (Percent)[2]:												
2019 Budget Assumptions	0.9	1.5	2.3	2.9	3.0	3.0	2.9	2.9	2.9	2.9	2.9	2.9
2020 Budget Assumptions	0.9	1.9	2.7	3.1	3.2	3.2	3.1	3.0	3.0	3.0	3.0	3.0
10-Year Treasury Note Rate (Percent)[2]:												
2019 Budget Assumptions	2.3	2.6	3.1	3.4	3.6	3.7	3.7	3.7	3.7	3.6	3.6	3.6
2020 Budget Assumptions	2.3	2.9	3.4	3.6	3.8	3.8	3.7	3.7	3.7	3.7	3.7	3.7

[1] % Change 4Q

[2] Calendar Year Average

p.p. to GDP during the four quarters of 2018. Equipment spending contributed 0.3 p.p., spending on structures 0.3 p.p., and spending on intellectual property products 0.5 p.p. Growth in overall private fixed investment (residential and nonresidential) was 7.6 percent in 2018, compared with 6.4 percent last year and 1.9 percent in 2016. The rapid growth of investment during the past year was encouraged by reductions in the cost of capital from the Tax Cut and Jobs Act, enacted in December 2017 but partially retroactive to 2017:Q4. Continued vigorous investment growth will lower the cost of capital and increase the return to labor, allowing for the American worker to make sustained gains in productivity and real wages.

Government—Real government purchases (consumption and gross investment) increased at an average rate of 1.8 percent over the four quarters ending in Q4:2018. State and local governments' purchases contributed 0.1 percent, while Federal purchases contributed 0.2 p.p., of which all was defense related, nondefense increases being negligible. The Federal deficit as a percentage of GDP increased to 3.9 percent in fiscal year 2018 from 3.5 percent in fiscal year 2017. Increasing deficits are anticipated to lead to higher interest rates and subsequent crowding out of private investment. Higher interest rates would raise the share of the budget devoted to debt servicing, creating a vicious cycle that must be avoided.

Trade—Exports of goods and services increased an average rate of 2.4 percent in the four quarters ending 2018:Q4. Imports increased 3.6 percent over the same period. While cheap imports benefit the American consumer, this level of trade imbalance is not sustainable, and the reasons for this state of affairs (foreign protectionism, savings imbalance, high government debt, etc.) are being addressed by Administration policy.

Monetary Policy—After holding the nominal federal funds rate near zero percent for seven years, the Federal Open Market Committee of the Federal Reserve began raising the federal funds rate at the end of 2015. The federal funds rate has steadily increased to 2.4 percent by January of 2019. This increase in the interest rate is meant to keep inflation low and avoid bubbles in financial markets. However, it also decreases investment and must be handled carefully to avoid adversely affecting growth. The Federal Reserve will need caution in order to walk the tightrope of its dual mandate to keep prices stable and maximize employment.

Energy Supply—Higher energy prices act as a tax on consumers and producers, since nearly all consumption and production processes require energy input. An "all of the above" energy policy that both lowers energy prices and addresses negative externalities, has greased the wheels of economic growth. Smooth economic advancement requires independence from energy commodities produced by hostile actors. After a post-financial crisis agitation, energy prices have relaxed significantly, assisting in economic recovery. Between a 2008 peak and 2018:Q3, the price of natural gas decreased 48 percent, petroleum decreased 16 percent, coal increased by 42 percent, solar decreased by 80 percent and wind decreased by 30 percent.[4] Average nuclear generation costs fell 18 percent

[4] Renewable price estimates made by the International Renewable Energy Agency.

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

(Calendar Years, Dollar Amounts in Billions)

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Real GDP (Year-over-Year):												
2020 Budget	2.9	3.2	3.1	3.0	3.0	3.0	3.0	2.9	2.8	2.8	2.8	2.8
CBO	2.9	2.7	1.9	1.6	1.6	1.7	1.8	1.8	1.7	1.8	1.8	1.8
Blue Chip [2]	2.9	2.6	1.8	1.8	1.9	2.1	2.1	2.0	2.0	2.0	2.0	2.0
Real GDP (Fourth-Quarter-over-Fourth-Quarter):												
2020 Budget	3.1	3.2	3.1	3.0	3.0	3.0	3.0	2.9	2.8	2.8	2.8	2.8
Federal Reserve [3]	3.0	2.3	2.0	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Consumer Price Index (CPI-U):												
2020 Budget	2.5	2.1	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
CBO	2.5	2.1	2.6	2.6	2.5	2.5	2.4	2.3	2.3	2.3	2.3	2.4
Blue Chip [2]	2.5	2.3	2.3	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.2
Federal Reserve [3, 4]	1.9	1.9	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Unemployment Rate:												
2020 Budget	3.9	3.6	3.6	3.7	3.9	4.0	4.1	4.2	4.2	4.2	4.2	4.2
CBO	3.9	3.5	3.7	4.2	4.6	4.8	4.8	4.8	4.8	4.8	4.7	4.7
Blue Chip [2]	3.9	3.6	3.8	4.1	4.2	4.3	4.3	4.4	4.4	4.4	4.4	4.4
Federal Reserve [3]	3.7	3.5	3.6	3.8	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
Interest Rates:												
91-Day Treasury Bills (discount basis):												
2020 Budget	1.9	2.7	3.1	3.2	3.2	3.1	3.0	3.0	3.0	3.0	3.0	3.0
CBO	1.9	2.8	3.2	3.2	3.2	3.0	2.8	2.7	2.7	2.8	2.8	2.8
Blue Chip [2]	2.0	2.7	3.0	2.9	2.8	2.9	3.0	3.0	3.0	3.0	3.0	3.0
10-Year Treasury Notes												
2020 Budget	2.9	3.4	3.6	3.8	3.8	3.7	3.7	3.7	3.7	3.7	3.7	3.7
CBO	2.9	3.4	3.6	3.7	3.7	3.8	3.7	3.7	3.7	3.7	3.7	3.8
Blue Chip [2]	2.9	3.3	3.6	3.5	3.6	3.7	3.7	3.7	3.7	3.7	3.7	3.7

Sources: Administration; CBO, The Budget and Economic Outlook: 2019 to 2029, January 2019; October 2018 Blue Chip Economic Indicators, Aspen Publishers, Inc.; Federal Reserve Open Market Committee, December 19, 2018

[1] Calendar Year

[2] 2025–2028 are 5 year averages

[3] Median Projection

[4] PCE Inflation

between 2012 and 2017. This plunge in energy prices was prompted by an 87 percent increase in crude oil domestic production, 39 percent increase in natural gas domestic production and a 55 percent increase in renewable energy domestic production.

Housing—2018 has been a kaleidoscopic year for the housing market. House prices, as measured by the Federal Housing Finance Agency's (FHFA) purchase-only index, were 5.8 percent higher in November 2018 than in November 2017, continuing the trend from the previous year. This rate of increase may slow as interest rates rise. The year to date number of housing starts increased from 1.08 million in November 2017 to 1.12 million in November 2018. Building permits decreased 6.0 percent over the same period, and residential investment was zero over the four quarters ending in 2018:Q3. As the largest asset class, a stable and affordable housing market is of paramount importance to economic performance.

External Sector—Internationally, economic prospects are less favorable than in the United States. According to the International Monetary Fund's World Economic Outlook, January 2019, global growth for 2017 is estimated at 3.8 percent, forecast to decrease to 3.5 percent by 2019. The Euro area is projected to grow by 1.6 percent in 2019, down from 2.4 percent in 2017. This is partially propelled by expectations of a poorly organized departure of the United Kingdom from the European Union. In Asia, annual growth is projected to decrease in Japan from 1.7 percent in 2017 to 1.1 percent in 2019 and China from 6.9 to 6.2 percent However, not all of the Indo-Pacific has a stormy outlook. India is forecast to increase annual growth from 6.7 to 7.5 percent between 2017 and 2019. In addition, despite Venezuela's economic hemorrhaging, there are bright spots throughout the American hemisphere. Latin America and the Caribbean is forecast to increase growth from 1.3 percent to 2.0 percent. Overall, any growth reversal among trading partners will depress U.S. growth and create difficulties for U.S exporters, while foreign growth will have the opposite effect.

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

(Fiscal Years; In Billions Of Dollars)

Budget Effect	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total of Budget Effects: 2019–2029
Real Growth and Employment:												
Budgetary effects of 1 percent lower real GDP growth:												
(1) For calendar year 2019 only, with real GDP recovery in 2019–2029:[1]												
Receipts	–14.9	–23.3	–11.9	–1.8	0.2	0.2	0.2	0.2	0.2	0.2	0.2	–50.7
Outlays	9.4	19.9	9.4	3.1	2.9	2.8	2.8	2.8	2.9	3.0	3.1	62.0
Increase in deficit (+)	24.3	43.2	21.3	4.9	2.7	2.6	2.6	2.7	2.7	2.8	2.9	112.8
(2) For calendar year 2019 only, with no subsequent recovery:[1]												
Receipts	–14.9	–31.0	–36.4	–38.4	–40.4	–42.6	–44.6	–47.1	–49.5	–51.7	–54.2	–450.9
Outlays	9.4	24.1	24.2	25.3	27.3	28.7	30.9	33.8	36.6	39.5	42.3	322.1
Increase in deficit (+)	24.3	55.0	60.6	63.7	67.7	71.3	75.5	80.9	86.1	91.2	96.6	773.0
(3) Sustained during 2019–2029, with no change in unemployment:												
Receipts	–14.9	–46.3	–85.0	–127.7	–174.0	–225.3	–279.3	–340.6	–405.3	–472.6	–547.1	–2,718.2
Outlays	0.1	0.9	2.7	5.6	9.1	13.2	18.3	24.9	32.9	42.2	52.6	202.4
Increase in deficit (+)	15.0	47.1	87.7	133.3	183.0	238.5	297.7	365.5	438.3	514.7	599.7	2,920.6
Inflation and Interest Rates:												
Budgetary effects of 1 percentage point higher rate of:												
(4) Inflation and interest rates during calendar year 2019 only:												
Receipts	16.0	31.2	32.9	33.3	35.1	36.8	38.7	40.9	42.9	44.9	47.0	399.6
Outlays	26.0	50.9	47.2	48.0	47.0	46.9	46.5	47.6	47.4	50.3	49.6	507.3
Increase in deficit (+)	10.0	19.7	14.3	14.7	11.9	10.1	7.8	6.7	4.5	5.4	2.6	107.7
(5) Inflation and interest rates, sustained during 2019–2029:												
Receipts	16.0	48.0	84.5	123.7	166.9	214.4	266.4	325.5	388.5	456.0	529.5	2,619.5
Outlays	24.4	75.1	125.4	180.2	233.9	288.5	350.9	414.4	480.2	558.8	613.4	3,345.1
Increase in deficit (+)	8.4	27.1	40.9	56.5	67.0	74.0	84.5	88.8	91.6	102.8	83.9	725.6
(6) Interest rates only, sustained during 2019–2029:												
Receipts	1.3	3.0	3.8	4.1	4.4	4.7	4.9	5.2	5.5	5.7	6.0	48.6
Outlays	11.3	37.7	62.9	86.0	107.6	128.5	146.6	163.6	178.2	193.0	206.7	1,322.1
Increase in deficit (+)	10.0	34.6	59.1	81.9	103.2	123.8	141.7	158.4	172.7	187.2	200.8	1,273.4
(7) Inflation only, sustained during 2019–2029:												
Receipts	14.8	45.0	80.6	119.4	162.3	209.5	261.2	319.9	382.6	449.7	522.9	2,567.8
Outlays	13.1	37.5	62.5	94.3	126.5	160.1	204.5	251.0	302.3	366.2	407.2	2,025.0
Decrease in deficit (–)	–1.6	–7.5	–18.1	–25.2	–35.9	–49.4	–56.7	–69.0	–80.3	–83.5	–115.7	–542.8
Interest Cost of Higher Federal Borrowing:												
(8) Outlay effect of 100 billion increase in borrowing in 2019 ...	1.4	3.3	3.5	3.6	3.7	3.7	3.8	3.9	4.0	4.2	4.3	39.4

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

Risks—There are several risks for the economy that are being watched very closely. Student loan debt has reached almost 1.6 trillion, doubling from 800 billion in 2010. The price of tuition, school fees and childcare has risen 34 percent since 2010, compared with just 16 percent for all items, making the cost of raising children unaffordable for many and potentially contributing to a falling birthrate[5]. Lending has increased, which is a positive development, but care must be taken that excessive leverage and risk do not reprise the mistakes of the 2000s. The leveraged loan market recently passed $1 trillion, more than double 2010's nominal level. The cryptocurrency bubble has partially deflated without significant impact, but similar manias always pose a volatile threat to the economy. The fiscal deficit has grown to $779 billion, 3.9 percent of GDP. Bringing the deficit under control while continuing to deliver high quality services is as difficult as it is crucial to the future prosperity of the American people.

[5] Dettling and Kearney (2014) find that an increase in costs associated with child rearing (such as housing) reduces fertility.

Table 2–5. FORECAST ERRORS, 1985-PRESENT

REAL GDP ERRORS			
2-Year Average Annual Real GDP Growth	Administration	CBO	Blue Chip
Mean Error	0.1	-0.2	-0.2
Mean Absolute Error	1.1	1.0	1.0
Root Mean Square Error	1.5	1.3	1.3
6-Year Average Annual Real GDP Growth			
Mean Error	0.4	0.1	0.0
Mean Absolute Error	1.0	0.9	0.9
Root Mean Square Error	1.2	1.1	1.1
INFLATION ERRORS			
2-Year Average Annual Change in the Consumer Price Index	Administration	CBO	Blue Chip [1]
Mean Error	0.1	0.2	-0.0
Mean Absolute Error	0.7	0.7	0.6
Root Mean Square Error	0.8	0.8	0.7
6-Year Average Annual Change in the Consumer Price Index			
Mean Error	0.1	0.3	0.1
Mean Absolute Error	0.5	0.5	0.3
Root Mean Square Error	0.6	0.7	0.4
INTEREST RATE ERRORS			
2-Year Average 91-Day Treasury Bill Rate	Administration	CBO	Blue Chip
Mean Error	0.3	0.6	0.6
Mean Absolute Error	1.0	0.9	1.0
Root Mean Square Error	1.2	1.3	1.3
6-Year Average 91-Day Treasury Bill Rate			
Mean Error	0.9	1.4	1.5
Mean Absolute Error	1.4	1.5	1.6
Root Mean Square Error	1.7	1.8	1.9

[1] Since 2003

Economic Projections

The Administration's economic forecast is based on information available as of mid-November 2018. The forecast informs the Fiscal Year 2020 Budget and rests on the central assumption that all of the President's policy proposals will be enacted. The Administration's projections are reported in Table 2-1 and summarized below. The Administration forecast was finalized on November 16, with data available at that date.

Real GDP—In mid-November, when the forecast was finalized, the Administration projected that real GDP growth would achieve a four-quarter percent change of 3.1 in 2018. The pace of growth is projected to increase to 3.2 percent in 2019 before declining slightly to 2.8 at the end of the forecast window. The enactment of tax reform and the Administration's additional policies for reducing the burden of unnecessarily complex regulation, building useful and efficient infrastructure, improving health care provision, enacting criminal justice reform and increasing labor force participation are expected to improve the supply side of the U.S. economy and achieve these growth rates.

Unemployment—As of December 2018, the unemployment rate stood at 3.9 percent. The Administration expects the unemployment rate to decrease as a result of increasing business investment and higher real GDP growth, reaching a low of 3.6 percent in 2019. As technology increases and the population becomes more mobile, the rate of non-cyclical unemployment will decrease.

Interest Rates—As growth continues, the Administration expects that interest rates will begin to

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

(As a Percent of GDP)

			Estimate for Budget Year Plus:			
	Current Year Estimate	Budget Year Estimate	One Year (BY + 1)	Two Years (BY + 2)	Three Years (BY + 3)	Four Years (BY + 4)
Mean Error	-0.5	0.6	1.4	2.0	2.4	2.7
Mean Absolute Error	1.0	1.2	2.0	2.6	3.1	3.5
Root Mean Squared Error	1.4	1.8	2.8	3.5	3.8	4.0

rise to values more consistent with historical experience. The rate on the 91-day Treasury bill is expected to rise from 1.9 percent in 2018 to 3.2 percent in 2021. As the economy grows, there is higher demand for money with which to make valuable investments. This means that the higher growth created by administration policy will lead to higher interest rates.

Inflation—After years of the inflation rate being lower than targeted, it has finally begun to rise. The Administration expects CPI-U to rise to 2.3 percent in 2018 (on a fourth quarter-over-fourth quarter basis). A small and stable amount of inflation can facilitate economic growth and avoid a deflationary spiral, in which nobody wants to spend money today because their dollar will be worth more tomorrow.

Changes in Economic Assumptions from Last Year's Budget—Table 2-2 compares the Administration's forecast for the FY 2020 Budget with that from the FY 2019 Budget. Compared with the previous forecast, the Administration expects real output growth to be unchanged. Both forecasts are predicated on the implementation of the Administration's policies designed to boost productivity and labor force participation. The Administration's expectations for inflation differ little from the previous forecast, except for slightly higher CPI inflation in the near term. The forecast for the unemployment rate is the first major deviation. The Administration now expects a lower long run rate of unemployment, reflecting technological advances that result in increased mobility and faster matching of job seekers and employers, Administration policy encouraging dynamism through opportunity zones, reduced licensing and worker training, and the rising value of labor caused by increased investment. The FY 2020 Budget predicts higher interest rates in the near term, which drop to broadly similar rates in the medium and long term.

Comparison with Other Forecasts

For some additional perspective on the Administration's forecast, this section compares it with forecasts prepared around the same time by the Congressional Budget Office (CBO), the Federal Open Market Committee of the Federal Reserve (FOMC), and the Blue Chip panel of private-sector forecasters. There are some important differences to bear in mind when making such a comparison.

The most important difference between these forecasts is that they make different assumptions about the implementation of the Administration's policies. As already noted, the Administration's forecast assumes full implementation of these proposals. At the opposite end of the spectrum, CBO produces a forecast that assumes no changes to current law. It is not clear to what extent FOMC participants and Blue Chip panelists incorporate policy implementation in their respective outlooks. The Blue Chip panel, in particular, compiles a large number of private-sector forecasts, which are marked by considerable heterogeneity across individual forecasters and their policy expectations.

A second difference is the publication dates of the various forecasts. While the forecast published by the Administration is based on data available in mid-November, the Blue Chip long-term forecast is based on their October Survey, the FOMC projections were released in June, and the CBO forecast was published in August.

In spite of these differences, the forecasts share several attributes. All of them project a further short-run decline in unemployment, followed by a rise back toward a rate consistent with stable inflation. They all forecast a rise in inflation, followed by a stable path at its long-run rate. Finally, they all foresee a gradual rise in interest rates over the course of the forecast horizon. What separates the Administration's forecast from those of the other bodies is their respective views on real output growth. See Table 2-3 for a comparison.

Real GDP—The Administration forecasts a higher path for real GDP growth compared with the CBO, FOMC, and Blue Chip forecasts throughout the forecast period, with a growth rate 0.3 percentage point faster than the next fastest forecast in 2019 and 0.8 percentage point faster than the next fastest forecast at the end of the forecast window. This reflects the Administration's expectation of full implementation of its policy proposals, while other forecasters are unlikely to be operating under the same assumption. The CBO in particular is constrained to assume a continuation of current law in its forecast.

Unemployment—On the unemployment rate, the Administration's expectations are largely aligned with those of the other forecasters. Along with the Administration, all forecasters expect further declines in unemployment in 2019. After 2019, all forecasters project a gradual uptick in the unemployment rate to their respective estimates of the long-term rate (4.2 percent for the Administration, 4.7 percent for the CBO, and 4.5 percent for the FOMC and 4.4 percent for the Blue Chip panel[6]).

Interest Rates—There are not many significant differences in the outlooks for interest rates. For both short- and long-term rates, all forecasters agree that they will tend to gradually rise, the Treasury bill rate is expected to rise to a steady-state level of around 2.9 percent and the 10-year Treasury note yield is expected to lie around 3.7 percent

Inflation—Expectations for inflation are similar across the Administration, the CBO, and the Blue Chip. The CBO expects a CPI inflation rate of 2.4 percent in the long run, while the Administration and the Blue Chip expect a 2.2 to 2.3 percent long-run rate, and the Federal Reserve predicts it will hit its target of 2.0 percent

Sensitivity of the Budget to Economic Assumptions

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

[6] As of February 2019 the CBO revised down their long run unemployment rate to 4.7 from 4.8, the F.O.M.C. to 4.4 from 4.5 and Blue Chip to 4.3 from 4.4.

the economy enters a downturn, while increases 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 revenues. 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 revenue categories will react to a change in a given subset of macroeconomic variables, holding almost everything else constant. These provide a sense of the broad changes one would expect after a given development, but they cannot 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 revenues would decline and spending on programs such as unemployment insurance would go up. In such a situation, however, policy makers might cut tax rates to stimulate the economy, leading to secondary and tertiary changes that are difficult to predict.

Another 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. These are important considerations to bear in mind when examining Table 2-4.

For real 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 2019 that is followed by a subsequent recovery in 2020 and 2021. The unemployment rate is assumed to be half a percentage point higher in 2019 before returning to the baseline level in 2020 and 2021.
- The next panel in the table reports the effect of a reduction of one percentage point in real GDP growth in 2019 that is not subsequently made up by faster growth in 2020 and 2021. 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 were hit by 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 1 percentage point higher nominal interest rate in 2018. Both inflation and interest rates return to their assumed levels in 2020. This would result in a permanently higher price level and level of nominal GDP over the course of the forecast horizon.
- The fifth panel in the table illustrates the effects on the Budget deficit of an inflation rate and an interest rate one percentage point higher than projected in every year of the forecast.
- The next 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 an inflation rate one percentage point higher than projected in every year of the forecast window, while the interest rate remains as forecast.
- Finally, the table shows the effect on the Budget deficit if the Federal government were to borrow an additional $100 billion in 2019, 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

As with any forecast, the Administration's projections will not be fully accurate. It is impossible to foresee every eventuality over a one–year horizon, much less ten or more years. This section evaluates the historical accuracy of the past administration forecasts for real GDP, inflation, and short-term interest rates from 1985 to present day, especially as compared with the accuracy of forecasts produced by the CBO or Blue Chip panel. For this exercise, forecasts produced by all three entities are compared with realized values of these important variables.

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. When a forecaster has an average forecast error of zero, it may be said that the forecast has historically been 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. Even if the past forecast errors average to zero, the errors may have been of a very large magnitude, with both positive and negative values. Finally, the table reports the square root of the mean of squared forecast error (RMSE). This metric applies a harsher penalty to forecasts showing large 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 run and in the medium term.

For real GDP growth rates, at both the 2-year and 6-year horizons, the mean forecast error suggests that all of the forecasts (the administration, the CBO, and the Blue Chip panel) have been broadly unbiased, with small average errors close to zero. The mean absolute error and the RMSE both suggest that past administration forecasts have tended to make slightly larger errors than the others. This could be due to incomplete adoption of the various administrations' proposed policies.

When it comes to inflation, the mean errors at the 2- and 6-year horizons are close to unbiased. The mean absolute error and the RMSE metrics imply that the errors in the administration's inflation forecast have tended to be of equal or smaller magnitude.

Finally, all of the forecasts have historically projected interest rates that were slightly higher than what later occurred. Across the three forecasters, the administration has generally made errors of lesser magnitude than the other two.

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 the table, a negative number means that the Federal Government ran a greater surplus 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). For every year beyond the current year, however, the historical pattern has been for the Budget deficit to be larger than the Administration expected.[7] 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.

It is possible to construct a probabilistic range of outcomes for the deficit. This is accomplished by taking the RMSE of previous forecast errors and assuming that these errors are drawn from a normal distribution. This exercise is undertaken at every forecast horizon from the current Budget year to five years into the future. Chart 2-1 displays the projected range of possible deficits. In the chart, the middle line represents the Administration's expected Budget balance and can be interpreted as the 50th percentile outcome. The rest of the lines in the chart may be read in the following fashion. The top line reports the 95th percentile of the distribution of outcomes over 2019 to 2024, meaning that there is a 95 percent probability that the actual balance in those years will be more negative than expressed by the line. Similarly, there is a 95 percent probability that the balance will be more positive than suggested by the bottom line in the chart.

[7] Additionally, CBO has on average underestimated the deficit in their forecasts.

Chart 2-1. Range of Uncertainty for the Budget Deficit