ECONOMIC AND BUDGET ANALYSES

2. ECONOMIC ASSUMPTIONS AND OVERVIEW

This chapter presents the economic assumptions that underlie the Administration's 2021 Budget.[1] It outlines an overview of the recent performance of the American economy, provides the Administration's projections for key macroeconomic variables, contrasts them with forecasts prepared by other prominent institutions, and discusses the unavoidable uncertainty inherent in providing an eleven-year forecast.

The American economy continues the longest expansion in its recorded history. The unemployment rate reached its deepest level in half a century. Prime-age labor force participation has hit decade highs. Real wages sustained their rise. Deregulation has removed over seven substantial regulations for each one added. The Tax Cut and Jobs Act (TCJA) expanded the capital base and encouraged multinational enterprises to repatriate nearly $1 trillion previously invested abroad.

Discordant elements perturbed this harmonious expansion. The Federal Government's deficit swelled as large spending increases were approved. Poor performance in the global economy, industrial turmoil at flagship U.S. companies, and international trade uncertainty subdued business confidence, investment growth, and manufacturing output. In order for 2020 to extend the economic expansion of the past three years, continued implementation of the Administration's pro-growth agenda is imperative.

This chapter proceeds as follows:

The first section provides an overview of the recent functioning of the U.S. economy, examining the performance of a broad array of key economic indicators.

The second section provides a detailed exposition of the Administration's economic assumptions behind the 2021 Budget, discussing how key macroeconomic variables are expected to evolve over the years 2020 to 2030.

The third section compares the forecast of the Administration with those of 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 (CBO) 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.

Recent Economic Performance[3]

The U.S. economy expanded steadily but unevenly. Real gross domestic product (GDP) grew at an average of 2.4 percent growth during the first three quarters of 2019. This compares to the 4-quarter growth of 2.5 percent in 2018 and 2.8 percent in 2017; which were well above both the current law expectations of the CBO and the observed yearly average of 2.2 percent between 2010 and 2016. Disaggregating the demand components of GDP during the first three quarters of 2019, private consumption contributed 2.0 percentage points (p.p.) of growth and Government purchases contributed 0.5 p.p., while stagnating private investment diminished growth by -0.1 p.p. and net exports failed to contribute anything. On the supply side, productivity growth measured by annualized nonfarm business sector real output per hour increased by an average of 1.9 percent in the first three quarters of 2019. This is elevated from an average of 0.8 percent growth between 2010 and 2016, 1.4 in 2017 and 1.0 in 2018, indicating a sustained acceleration in productivity and far outpacing other advanced nations: the non-U.S. G7+Australia averaged productivity growth of -0.2 percent for Q4:2017-Q3:2019.

A sundering occurred this year between the manufacturing and agricultural sectors and the rest of the economy. Manufacturing and agriculture are highly exposed to international markets, so global stagnation and trade frictions have outsized impacts in these sectors. Impactful economic events this year included a global growth slowdown, trade uncertainty, a Federal Government shutdown, a worker strike at General Motors, and ongoing issues at Boeing. These factors prompted lower output and damaged business confidence, with real output in the manufacturing sector falling in Q1 and Q2 of 2019, though there was some recovery in Q3. The resolution of these affairs will generate higher growth in future quarters. The U.S. Government has pledged to provide assistance of $28 billion, equivalent to a fifth of all U.S. agricultural exports in 2018, to farmers in order to compensate for the damage caused by trade actions.

The Labor Market

Overview—The U.S. labor market has exceeded expectations, fostering the best climate for job seekers in

[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] 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.

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

generations. The civilian unemployment rate continued to decline, descending from 4.7 percent at the end of 2016 to 3.5 percent in November 2019, the lowest rate since November 1969 (when over three million individuals were serving in the military—compared with 1.3 million today), and remaining well below the post-war average of 5.8 percent. There were 7.3 million job openings in October 2019, exceeding the number of unemployed by 1.4 million. A labor market with more openings than job seekers is an unprecedented situation and has been maintained for 20 consecutive months. The labor force participation rate reached 63.2 percent in November 2019, continuing its climb upwards from a crevasse of 62.4 percent in September 2015. Prime-age labor force participation, 82.8 percent in November 2019, is up from a low of 80.6 percent in September 2015, but is still below the 84.6 percent recorded in January 1999. This cannot be blamed on baby boomer retirements and is partially explained by the opioid epidemic, indicating the importance of the Administration's efforts to treat those suffering from addiction and interdict further illegal imports of opiates.[4]

The Workforce—The state of the labor market is especially impressive when it is framed by the rapid aging of the average American. The percent of the population above 65 has increased from 14.9 in 2015 to 16.0 in 2018. To illustrate, the first of the baby boomers turned 65 in 2011, and the corresponding drags on the labor force participation rate and fiscal path from their retirement has only accelerated. The last of the baby boomers will turn 65 in 2029. These demographic shifts will generate additional downward pressure on the labor force participation rate over the next decade.

This must be mitigated by greater opportunities for marginalized individuals to leave the sidelines of the economy. Health improvements and less physically demanding jobs should increase participation among traditional retirement-age individuals, which could be decisive in allowing the United States to thrive despite this demographic challenge. Continuing to recoup the losses from retirement with additional prime-age participation is critical for an adequate labor force supply that can meet employer demands.

There are other positive trends: the percent of the population receiving Social Security Disabled worker benefits has fallen with the improving economy, from 5.8 percent in 2015 to 5.5 percent in 2018. However, this is still elevated from 3.7 percent in 2000. The proportion of college graduates has continued to rise, from 34.1 percent of 25-34 year olds in 2015 to 36.2 in 2018. Furthermore, the percentage of total graduate degrees that are science and engineering has also increased from 15.0 percent to 16.9 percent over the same period.

Wages—In Q3:2019 average hourly earnings had improved 3.1 percent and median weekly real earnings had increased by 1.4 percent from one-year prior, benefiting workers by creating a higher standard of living. Wage growth for production workers is elevated above wage growth for supervisors. Wage growth for lower earning individuals is elevated above wage growth for higher earning individuals. Wage growth for those without a college degree is elevated above those with a college degree. Wage growth for African Americans is elevated above wage growth for Whites. These phenomenon reverse trends from earlier in this economic expansion, and have contributed to a fall in the poverty rate, from 13.5 percent in 2015 to 11.8 percent in 2018.

Unemployment and Underemployment—The number of individuals employed part-time for economic reasons has fallen to 4.3 million in November 2019, well below a peak of over 9 million during the Great Recession. Furthermore, the share of the unemployed that have been job-hunting for longer than 27 weeks has fallen to 20.8 percent in November 2019, from a pinnacle of nearly half the unemployed during the Great Recession.

The portion of the labor force working part-time for economic reasons and the portion unemployed for more than 27 weeks have finally recovered to pre-Great Recession ranges, as have the shares of the working-age population marginally attached to the labor force or too discouraged to look for work. However, these critical indicators are still elevated compared to the late 1990s. Even with this improved employment picture, there remains space for further ascent.

Gross Domestic Product

Consumption—Real consumer spending increased by 2.6 percent over the four quarters ending 2019:Q3. This was driven by increased purchases of a variety of goods and services, including recreational goods and vehicles (12 percent), transportation services (3 percent), food and beverages (3 percent), furnishings (3 percent), clothing and footwear (2 percent), and healthcare (2 percent). The personal savings rate reached 7.9 percent in November 2019, above its 20-year average of 6.1 percent, and household debt service payments have fallen to 9.7 percent of disposable income in 2019:Q2, from a peak of 13.2 percent in 2007:Q4. This heightened savings rate suggests that the pace of consumption growth is driven by the observed real wage gains rather than an unsustainable increase of personal debt.

Investment—Real nonresidential fixed investment increased by 1.4 percent over the four quarters ending 2019:Q3. Equipment investment increased 1.0 percent, investment in structures decreased 6.7 percent, and investment in intellectual property products increased 7.6 percent. Overall, real private fixed investment (residential and nonresidential) grew 0.9 percent over the four quarters ending 2019:Q3, compared with 3.5 percent in 2018, 5.1 percent in 2017 and 2.8 percent in 2016.

The rapid growth of investment during 2017 and 2018 was encouraged by substantial reductions in the cost of capital from the Tax Cut and Jobs Act (TCJA), enacted in December 2017 but retroactive to 2017:Q4. However, this momentum has faltered, due primarily to falling business confidence, generated by global growth and trade concerns. Despite these countervailing factors, the TCJA raised investment and real disposable personal income

[4] Dionissi Aliprantis, Kyle Fee, and Mark E. Schweitzer, 2019, "Opioids and the Labor Market," Federal Reserve Bank of Cleveland.

above pre-TCJA expectations. This resulted from both productivity gains and lower tax liability. Investment was 4.5 percent higher in 2018 and 3.3 percent higher in 2019 than the Blue Chip panel's pre-TCJA forecast[5].

Government—Real Government purchases (consumption and gross investment) increased 2.2 percent over the four quarters ending in Q3:2019. State and local government purchases increased 1.4 percent, while Federal purchases increased 3.7 percent. Federal defense spending rose 4.6 percent, and non-defense spending increased 2.4 percent. The Federal deficit as a percentage of GDP increased to 4.6 percent in fiscal year 2019 from 3.8 in fiscal year 2018 and 3.5 percent in fiscal year 2017. As the deficit rises, a greater percentage of the budget must be diverted to debt servicing, creating a vicious spiral that is difficult to break.

Trade—Exports of goods and services increased 0.2 percent in the four quarters ending 2019:Q3, generated by an increase of 0.8 percent in goods and a decrease of 0.9 percent in services. Imports increased 0.9 percent over the same period, generated by an increase of 0.1 percent in goods and an increase of 4.3 percent in services. While cheap imports benefit the American consumer, this worsening trade imbalance is not sustainable.

Key Factors

Monetary Policy—After holding the nominal Federal funds rate near zero for seven years, the Federal Open Market Committee of the Federal Reserve began raising the Federal funds rate target range at the end of 2015. This range steadily increased to 2.25-2.5 percent by January of 2019. This year the Fed reversed course, cutting interest rates three times to reach a rate range of 1.5-1.75 percent in December 2019. Inflation remains low and stable, defying predictions that labor market tightness would drive up prices. The increase in labor force participation indicates there was more slack in the labor market than was readily apparent.

Environment and Energy—Forty-six years after President Nixon announced Project Independence the United States has finally achieved its goal of ending net oil imports. Gross greenhouse gas emissions are falling in the United States, from 7,339.0 teragrams CO2 equivalent in 2005 to 6,456.7 in 2017, the latest year data is available. Between 2010 and 2019:Q3, the nominal price of natural gas decreased 60 percent, crude oil decreased 20 percent, coal increased by 6 percent, solar decreased by 77 percent, off-shore wind decreased by 20 percent and onshore wind decreased by 35 percent.[6] As energy costs are effectively a tax on production, lower energy costs have been a boon for this economic expansion. New technologies that continue to lower the complete costs of energy while maintaining high standards of environmental quality for all Americans will promote greater abundance.

Housing—2019 was a year of steady growth in the housing market. After the breathtaking crash of 2007-2012, housing prices have continued a return to normalcy, growing 4.6 percent in the year prior to Q3:2019. Increases in home building have followed, buoyed by lower interest rates, with new private starts up 13.6 percent in the 12 months ending November 2019. These trends reduce America's housing shortage, which is reaching epidemic proportions in restrictive high-density areas.

External Sector—Internationally, economic prospects are bleak. According to the International Monetary Fund's World Economic Outlook, October 2019, global growth for 2019 is estimated at 3.0 percent, its lowest level since the Great Recession. Additionally, growth in 2020 is forecast to increase just 3.4 percent, a downward revision of 0.2 p.p. from the previous report. The Euro area is projected to grow by 1.4 percent in 2020, up from 1.2 percent in 2019. In Asia, annual growth is projected to decrease in Japan from 0.9 percent in 2019 to 0.5 percent in 2020 and China from 6.1 to 5.8 percent. Overall, any growth reversal among trading partners will create difficulties for U.S. exporters, notably the agriculture sector, and depress U.S. growth, while additional foreign growth will have the opposite effect.

Risks—The largest risk to the current U.S. economic expansion is a crisis of confidence, especially in the manufacturing sector. The Organization for Economic Co-operation and Development manufacturing composite index has declined 2.2 percent in the past year and the Chicago Federal Reserve measurement of business conditions remains gloomy. When business owners are pessimistic about the future, they fail to invest in capital and labor, and their cloudy outlook becomes self-fulfilling. To reverse this, the atmosphere of uncertainty must be dispelled by the dawn of trade deals and reforms that attract more high-skilled workers to fill job openings across the Nation.

In the medium to long term, the rise of debt is concerning. The Federal Debt Held by the Public of the United States as a percentage of Gross Domestic Product has increased steadily since 2001, rising from 32 percent in 2001 to 80 percent in 2019. To comprehend the complete depiction of the financial situation of the United States it is necessary to understand the effects of today's budget on future generations (generational accounting[7]), including Federal debt and the fiscal gap, which is the difference between the forecasted net present value of future Government spending and tax receipts. As a measure of this fiscal gap, the "Long-Term Budget Outlook" chapter shows that, under current law, the 25-year fiscal gap above the average postwar ratio of debt held by the public to GDP of 45 percent is 1.3 percent of GDP per year, with the fiscal gap for Gross Federal Debt to GDP being even larger. This is untenable. The fact that Government debt has failed to fall in this period of historic growth indicates that a change in the current fiscal approach is required to keep the Nation solvent.

Educational expenses are rising rapidly. Student loan debt grew 5.1 percent in the 12 months ending October

[5] October 2016

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

[7] Alan J. Auerbach, Jagadeesh Gokhale, and Laurence J. Kotlikoff. 1994. "Generational Accounting: A Meaningful Way to Evaluate Fiscal Policy." Journal of Economic Perspectives, 8 (1): 73-94.

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

	Actual 2018	Projections											
		2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Gross Domestic Product (GDP):													
Levels, Dollar Amounts in Billions:													
Current Dollars	20,580	21,437	22,494	23,645	24,849	26,113	27,442	28,822	30,242	31,719	33,269	34,893	36,598
Real, Chained (2012) Dollars	18,638	19,077	19,619	20,219	20,829	21,458	22,106	22,760	23,410	24,070	24,749	25,447	26,165
Chained Price Index (2012=100), Annual Average	110	112	115	117	119	122	124	127	129	132	134	137	140
Percent Change, Fourth Quarter over Fourth Quarter:													
Current Dollars	4.9	4.2	5.2	5.1	5.1	5.1	5.1	5.0	4.9	4.9	4.9	4.9	4.9
Real, Chained (2012) Dollars	2.5	2.5	3.1	3.0	3.0	3.0	3.0	2.9	2.8	2.8	2.8	2.8	2.8
Chained Price Index (2012=100)	2.3	1.8	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	1,573	1,554	1,699	1,821	1,917	2,010	2,095	2,182	2,231	2,271	2,319	2,343	2,417
Employee Compensation	10,928	11,500	12,094	12,725	13,414	14,127	14,885	15,673	16,492	17,347	18,250	19,199	20,199
Wages and Salaries	8,889	9,370	9,844	10,348	10,915	11,493	12,110	12,752	13,416	14,115	14,838	15,611	16,415
Nonwage Personal Income	5,276	5,431	5,601	5,817	6,077	6,349	6,652	7,002	7,365	7,771	8,129	8,474	8,828
Consumer Price Index (All Urban)[3]:													
Level (1982-1984 = 100), Annual Average	251	256	261	267	273	280	286	292	299	306	313	320	327
Percent Change, Fourth Quarter over Fourth Quarter	2.2	1.9	2.3	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	3.9	3.7	3.5	3.6	3.8	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Interest Rates, Percent:													
91-Day Treasury Bills[2]	1.9	2.1	1.4	1.5	1.5	1.6	1.7	2.0	2.2	2.4	2.5	2.5	2.5
10-Year Treasury Notes	2.9	2.2	2.0	2.2	2.5	2.7	3.0	3.1	3.1	3.1	3.2	3.2	3.2

[1] Based on information available as of mid-November 2019
[2] Average rate, secondary market (bank discount basis)
[3] Seasonally Adjusted

2019, outpacing nominal GDP by over a percentage point. Curbing the soaring cost of a quality education is critical to producing a highly skilled workforce capable of investing in their future.

The continued rise of non-financial corporate debt, approaching $6.6 trillion, begs questions of viability.

Additional industrial turmoil arising from manufacturing or labor issues remain a threat to growth, The halting of production of the 737 MAX at Boeing is forecast to reduce annualized GDP growth by half a percentage point in Q1:2020.

Finally, 2020 is an election year, and there is the risk that this will distract from implementation of the necessary policies required for continued increases in prosperity.

Economic Projections for Current Law and Administration Policies

The Administration forecast was finalized on November 4, with data available as of that date. The forecast informs the 2021 Budget and rests on the central assumption of full implementation of all the Administration's policy proposals. The Administration's projections are reported in Table 2-1 and summarized below. The current law forecast incorporates the TCJA, passed in 2017, and previous Administration efforts to remove unhelpful regulations, which has supported a growth rate of GDP well above the rate forecasted by CBO. Moreover, as can be seen, the enactment of additional Administration policies would contribute to even higher growth rates of GDP, emphasizing the importance of these policies to the American economy.

Real GDP—In early November, when the forecast was finalized, the Administration projected that real GDP growth would achieve a four-quarter percent change of 2.5 in 2019. The pace of growth is projected to increase to 3.1 percent in 2020 before declining slightly to 2.8 percent at the end of the forecast window. The Administration is building on the pro-growth impact of criminal justice amnesty, tax reform, opportunity zones, historic deregulation, and a variety of trade deals. The enactment of additional Administration policies, such as reducing the burden of unnecessarily complex regulation, creating useful and cost-efficient infrastructure, streamlining the immigration process, lowering barriers to trade, and increasing labor force participation, are expected to improve the trajectory of the U.S. economy and hit these high growth rate targets.

Unemployment—As of November 2019, the unemployment rate stood at 3.5 percent. The Administration expects the unemployment rate to remain low as a re-

Table 2–2. COMPARISON OF ECONOMIC ASSUMPTIONS IN THE 2020 AND 2021 BUDGETS
(Calendar Years)

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Real GDP (Percent Change)[1]:												
2020 Budget Assumptions	3.1	3.2	3.1	3.0	3.0	3.0	3.0	2.9	2.8	2.8	2.8	2.8
2021 Budget Assumptions	2.5	2.5	3.1	3.0	3.0	3.0	3.0	2.9	2.8	2.8	2.8	2.8
GDP Price Index (Percent Change)[1]:												
2020 Budget Assumptions	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
2021 Budget Assumptions	2.3	1.8	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]:												
2020 Budget Assumptions	2.3	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
2021 Budget Assumptions	2.2	1.9	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Civilian Unemployment Rate (Percent)[1]:												
2020 Budget Assumptions	3.9	3.6	3.6	3.7	3.9	4.0	4.1	4.2	4.2	4.2	4.2	4.2
2021 Budget Assumptions	3.9	3.7	3.5	3.6	3.8	4.0	4.0	4.0	4.0	4.0	4.0	4.0
91-Day Treasury Bill Rate (Percent)[2]:												
2020 Budget Assumptions	1.9	2.7	3.1	3.2	3.2	3.1	3.0	3.0	3.0	3.0	3.0	3.0
2021 Budget Assumptions	1.9	2.1	1.4	1.5	1.5	1.6	1.7	2.0	2.2	2.4	2.5	2.5
10-Year Treasury Note Rate (Percent)[2]:												
2020 Budget Assumptions	2.9	3.4	3.6	3.8	3.8	3.7	3.7	3.7	3.7	3.7	3.7	3.7
2021 Budget Assumptions	2.9	2.2	2.0	2.2	2.5	2.7	3.0	3.1	3.1	3.1	3.2	3.2

[1] % Change 4Q
[2] Calendar Year Average

sult of increasing business investment and higher real GDP growth even as more people enter the labor force, maintaining an average of 3.5 percent through 2020. As technology becomes more pervasive and the population becomes more mobile, with a 35 percent increase in moving for a new job between 2010-2011 and 2018-2019, the rate of non-cyclical unemployment will decrease, with job seekers matching with employers at an accelerated rate.

Interest Rates—The 91-day and 10-year Treasuries are expected to continue to decline until 2020, at which point they will rise to their forecasted long-term values of 2.5 and 3.2 percent, respectively. Demand for a safe haven and low economic growth rates worldwide have generated increased purchases of U.S. Government debt that will continue for the near future. The negative yields in Europe and Japan make the relatively higher interest rates in the U.S. attractive.

General Inflation—The Administration expects the Consumer Price Index for all Urban Consumers (CPI-U) to rise to 2.3 percent in 2020 (on a fourth quarter-over-fourth quarter basis). Little to no inflation is preferable to facilitate certainty about future costs for employers and workers, which benefits overall economic activity and avoids a deflationary spiral, in which no one wants to spend money today because his or her dollar will be worth more tomorrow.

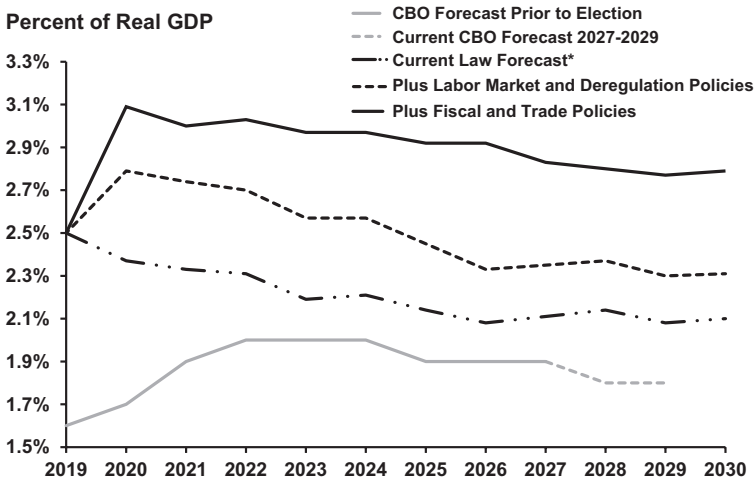
Changes in Economic Assumptions from Last Year's Budget—Table 2-2 compares the Administration's forecast for the 2021 Budget with that from the 2020 Budget. Compared with the previous forecast, the Administration expects future real output growth to be essentially unchanged. Both forecasts are predicated on the full 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. 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, greater dynamism resulting from opportunity zones, reduced occupational licensing and worker training, and the rising value of labor generated by increased investment. The 2021 Budget predicts lower interest rates in the near term and longer term, as U.S. debt continues to be in high demand because it is a safe haven for savings amidst global turmoil.

The Current Law Economic Forecast—Chart 2-1 shows the importance of Administration policy to the real GDP growth forecast. The current law forecast incorporates the TCJA, passed in 2017, and previous Administration efforts to remove unhelpful regulations. As can be seen, without the enactment of additional Administration policies into law, the growth rate of GDP will be substantially lower, emphasizing the importance of these policies to the American economy.

Labor Market Policies—A key Administration labor market policy is altering the current immigration process into a simpler, merit-based system. Immigrants will bring the most benefit to America when they possess highly demanded skills and manifest strong labor force participation.[8] Other labor market policies, such as work

[8] George J. Borjas, 2019. "Immigration and Economic Growth," NBER Working Papers 25836, National Bureau of Economic Research, Inc.

Chart 2-1. Forecast of Q4 over Q4 Growth Rate



*Includes TCJA, Deregulation prior to 2020, Global Trade Environment, etc.

Sources: Bureau of Economic Analysis, Bureau of Labor Statistics, Department of the Treasury, Office of Management and Budget, Council of Economic Advisors and Congressional Budget Office.

Note: Forecast is based on information available as of November 4, 2019.

requirements for receiving social assistance, are also expected to improve labor force participation and output. The estimates for the growth impact of labor market policies are derived from the Administration's internal modeling.

Deregulation Policies—The Administration is continuing to declutter unnecessary and counter-productive regulations. In addition, the Administration is setting a high criterion for adding additional regulations, removing an ongoing drag on economic growth. The Administration has estimated that these policies have substantially improved the economic growth rate.[9]

Trade Policies—The Administration is pursuing reciprocal fair trade deals with a variety of partners, with the eventual ambition of achieving free trade: a world of zero tariffs, zero non-tariff barriers, and zero subsidies. A reduction of trade barriers will allow for robust competition, greater productivity and improved consumer welfare. The USMCA, KORUS, and US-JPN trade agreements are but the first steps in a comprehensive overhaul of the existing trade architecture. The shortcomings of previous systems has limited the incredible gains achieved through reciprocal free trade.

Fiscal Policies—Enacting comprehensive infrastructure investment increases is a core fiscal policy of the Administration. Using input estimates from a variety of sources[10], the Administration evaluated the growth impacts of the Administration's proposed infrastructure investment increase. After 2025, the Administration also forecasts an extension of those TCJA provisions that will benefit economic growth, encourage physical investment and improve productivity and wages.

The President's Budget calls for a reduction in Government outlays compared with the baseline over the next decade. Recent research[11] has shown that a plan based around reducing outlays assists fiscal stabilization via a positive impact on output growth, as confidence in the Government's fiscal path increases and uncertainty about future tax increases is dispelled. In addition, there will be a reduction in the cost of debt financing brought about by a decline in the perceived risk of holding Government bonds. Currently there is a low risk premium, as the Federal Government is perceived as a reliable borrower. That can change if the United States continues to spend more than it taxes indefinitely. In addition, eliminating deficit spending could curtail the trade deficit, as if there is a reduction in U.S. debt available for purchase in the capital account (the transfer of asset ownership), the current account (the transfer of goods and services) may reach balance.

Comparison with Other Forecasts

For some additional perspective on the Administration's forecast, this section compares it with forecasts prepared at the same time by the CBO, the Federal Open Market Committee of the Federal Reserve (FOMC), and the Blue

[9] The Council of Economic Advisers, 2019. "The Economic Effects of Federal Deregulation since January 2017: An Interim Report."

[10] Pedro R.D. Bom and Jenny E. Ligthart. 2014. "What Have We Learned From Three Decades Of Research On The Productivity Of Public Capital?," Journal of Economic Surveys, Wiley Blackwell, vol. 28(5), pages 889-916, December. Congressional Budget Office, 2016. "The Macroeconomic and Budgetary Effects of Federal Investment." Jeffrey M. Stupak, 2018. "Economic Impact of Infrastructure Investment," Congressional Research Service.

[11] Alberto Alesina, Carlo Favero, and Francesco Giavazzi, 2019. "Austerity: When It Works and When It Doesn't," Princeton; Oxford: Princeton University Press.

Table 2–3. COMPARISON OF ECONOMIC ASSUMPTIONS
(Calendar Years)

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Real GDP (Year-over-Year, Percent Change):												
2021 Budget	2.4	2.8	3.1	3.0	3.0	3.0	3.0	2.9	2.8	2.8	2.8	2.8
CBO	2.6	2.1	1.8	1.7	1.7	1.7	1.8	1.7	1.8	1.8	1.8	N/A
Blue Chip [1]	2.3	1.7	1.8	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Federal Reserve [2]	2.2	2.0	1.9	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Consumer Price Index (All-Urban, Percent Change):												
2021 Budget	1.9	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
CBO	1.9	2.4	2.5	2.5	2.4	2.4	2.3	2.3	2.3	2.3	2.3	N/A
Blue Chip [1]	1.8	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
Federal Reserve [2, 3]	1.8	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Civilian Unemployment Rate (Percent):												
2021 Budget	3.7	3.5	3.6	3.8	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
CBO	3.7	3.7	3.9	4.2	4.5	4.7	4.7	4.8	4.7	4.7	4.6	N/A
Blue Chip [1]	3.7	3.7	4.0	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Federal Reserve [2]	3.7	3.7	3.8	3.9	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
Interest Rates:												
91-Day Treasury Bills (Discount Basis, Percent):												
2021 Budget	2.1	1.4	1.5	1.5	1.6	1.7	2.0	2.2	2.4	2.5	2.5	2.5
CBO	2.2	2.1	2.3	2.3	2.3	2.4	2.4	2.4	2.5	2.5	2.5	N/A
Blue Chip [1]	2.1	1.5	1.7	2.0	2.1	2.2	2.3	2.4	2.4	2.4	2.4	2.4
10-Year Treasury Notes (Percent):												
2021 Budget	2.2	2.0	2.2	2.5	2.7	3.0	3.1	3.1	3.1	3.2	3.2	3.2
CBO	2.3	2.2	2.5	2.9	3.0	3.1	3.1	3.1	3.2	3.2	3.2	N/A
Blue Chip [1]	2.1	1.8	2.2	2.6	2.8	2.9	3.0	3.1	3.1	3.1	3.1	3.1

Sources: Administration; CBO, The Budget and Economic Outlook: 2019 to 2029, August 2019; October 2019 Blue Chip Economic Indicators, Aspen Publishers, Inc.; Federal Reserve Open Market Committee, September 18, 2019

[1] 2026-2030 are 5 year averages

[2] Median Projection

[3] PCE Inflation

N/A = Not Available

Chip panel of private-sector forecasters. There are important differences that must inform 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 November, the Blue Chip long-term forecast is based on their October Survey, the FOMC projections were released in September, 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 plateau in the unemployment rate, followed by a rise back toward a rate consistent with long-term labor market fundamentals. 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 is its 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 year-over-year growth rate 0.7 p.p faster than the next fastest forecast in 2020 and 0.8 p.p. 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 vary in their outlooks regarding implementation of these policies. 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 unemployment to remain below 4.0 in 2020. After 2020, all forecasters project a gradual uptick in the unemployment rate to their respective estimates of the long-term rate (4.0 percent for the Administration, 4.6 percent for the CBO, 4.2 percent for the FOMC, and 4.1 percent for the Blue Chip panel).

Interest Rates—The Administration's 91-day interest rate forecast is lower than other forecasts for 2022-2025. Another deviation of note is the CBO's 2020-2022 forecast for 91-day Treasury Bills, which is higher than Blue Chip and the Administration's forecasts. 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 2.5 percent and the 10-year Treasury note yield is expected to lie around 3.2 percent.

General Inflation—Expectations for inflation are similar across the Administration, the CBO, and the Blue Chip. The Blue Chip Panel expects a CPI-U inflation rate of 2.2 percent in the long run, while the Administration and CBO expect a 2.3 percent long-run rate. The Federal Reserve predicts it will hit its target of 2.0 percent for Personal Consumption Expenditure (PCE) inflation, which tends to be lower than inflation measured by the CPI-U.

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 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 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 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 receipts 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 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 2020 that is followed by a subsequent recovery in 2021 and 2022. The unemployment rate is assumed to be half a percentage point higher in 2020 before returning to the baseline level in 2021 and 2022.
- The next panel in the table reports the effect of a reduction of one percentage point in real GDP growth in 2020 that is not subsequently made up by faster growth in 2021 and 2022. 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 one percentage point higher nominal interest rate in 2020. Both inflation and interest rates return to their assumed levels in 2021. 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 inflation rate 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 2020, 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

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

(Fiscal Years; In Billions of Dollars)

Budget Effect	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total of Budget Effects: 2020-2030
Real Growth and Employment:												
Budgetary effects of 1 percentage point lower real GDP growth:												
(1) For calendar year 2020 only, with real GDP recovery in 2021–2030:[1]												
Receipts	–15.6	–24.5	–12.4	–1.9	0.2	0.2	0.2	0.2	0.2	0.2	0.2	–53.1
Outlays	9.9	20.2	9.0	1.8	1.6	1.9	2.1	2.3	2.5	2.6	2.7	56.6
Increase in deficit (+)	25.5	44.7	21.5	3.6	1.4	1.7	2.0	2.1	2.3	2.4	2.5	109.8
(2) For calendar year 2020 only, with no subsequent recovery:[1]												
Receipts	–15.6	–32.6	–38.1	–40.1	–42.2	–44.3	–46.8	–49.1	–51.3	–53.7	–56.2	–470.2
Outlays	9.9	24.6	25.0	25.5	26.7	28.7	31.9	35.4	38.7	42.5	46.3	335.4
Increase in deficit (+)	25.5	57.1	63.1	65.7	69.0	73.1	78.7	84.5	90.1	96.3	102.5	805.5
(3) Sustained during 2020–2030, with no change in unemployment:												
Receipts	–15.6	–48.6	–89.0	–133.4	–181.9	–234.2	–292.8	–354.7	–420.1	–490.5	–565.9	–2,826.6
Outlays	0.0	0.2	0.9	2.4	4.0	6.9	11.0	16.9	23.6	31.3	40.0	137.2
Increase in deficit (+)	15.6	48.8	90.0	135.9	185.9	241.0	303.8	371.5	443.6	521.7	605.9	2,963.8
Inflation and Interest Rates:												
Budgetary effects of 1 percentage point higher rate of:												
(4) Inflation and interest rates during calendar year 2020 only:												
Receipts	16.8	32.8	34.7	35.1	36.9	38.7	40.8	42.8	44.7	46.8	48.9	418.9
Outlays	39.6	63.0	49.8	48.9	47.4	48.6	47.7	48.8	49.4	50.2	52.2	545.5
Increase in deficit (+)	22.8	30.2	15.1	13.8	10.5	9.9	6.8	6.0	4.6	3.4	3.4	126.6
(5) Inflation and interest rates, sustained during 2020–2030:												
Receipts	16.8	50.4	88.4	129.3	174.5	224.0	280.1	340.0	404.1	474.0	549.8	2,731.4
Outlays	38.5	108.5	170.8	231.6	288.7	352.3	416.5	484.6	564.1	627.6	714.5	3,997.9
Increase in deficit (+)	21.8	58.1	82.4	102.3	114.3	128.3	136.5	144.6	160.0	153.6	164.7	1,266.5
(6) Interest rates only, sustained during 2020–2030:												
Receipts	1.3	2.8	3.4	3.6	3.8	4.1	4.4	4.7	5.0	5.3	5.5	43.8
Outlays	24.8	70.5	104.5	133.7	158.3	182.0	203.3	223.8	242.2	260.3	276.2	1,879.7
Increase in deficit (+)	23.5	67.7	101.1	130.1	154.5	178.0	198.9	219.0	237.2	255.0	270.7	1,835.9
(7) Inflation only, sustained during 2020–2030:												
Receipts	15.4	47.6	84.9	125.6	170.5	219.7	275.4	334.9	398.7	468.3	543.7	2,684.8
Outlays	13.6	37.8	66.2	97.9	131.0	171.3	215.0	263.6	325.7	372.2	444.6	2,138.8
Decrease in deficit (–)	–1.8	–9.8	–18.8	–27.6	–39.5	–48.4	–60.4	–71.3	–73.0	–96.1	–99.2	–545.9
Interest Cost of Higher Federal Borrowing:												
(8) Outlay effect of 100 billion increase in borrowing in 2020	0.8	1.5	1.6	1.7	1.9	2.2	2.5	2.8	3.0	3.1	3.2	24.3

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

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 growth, inflation, and short-term interest rates from 2002 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 variables.

The results of this exercise are reported in Table 2-5 and contain three different measures of accuracy. The first is

Table 2–5. FORECAST ERRORS, 2002-PRESENT

REAL GDP ERRORS			
2-Year Average Annual Real GDP Growth	Administration	CBO	Blue Chip
Mean Error	0.9	0.5	0.1
Mean Absolute Error	1.0	0.8	0.3
Root Mean Square Error	1.5	1.3	0.4
6-Year Average Annual Real GDP Growth			
Mean Error	1.2	1.0	0.6
Mean Absolute Error	1.3	1.3	0.8
Root Mean Square Error	1.9	1.9	1.4
INFLATION ERRORS			
2-Year Average Annual Change in the Consumer Price Index	Administration	CBO	Blue Chip
Mean Error	-0.1	-0.1	0.0
Mean Absolute Error	0.7	0.5	0.1
Root Mean Square Error	1.0	0.8	0.1
6-Year Average Annual Change in the Consumer Price Index			
Mean Error	0.1	-0.0	0.2
Mean Absolute Error	0.8	0.7	0.6
Root Mean Square Error	1.1	1.0	0.9
INTEREST RATE ERRORS			
2-Year Average 91-Day Treasury Bill Rate	Administration	CBO	Blue Chip
Mean Error	0.7	0.6	0.0
Mean Absolute Error	0.9	0.7	0.1
Root Mean Square Error	1.4	1.3	0.1
6-Year Average 91-Day Treasury Bill Rate			
Mean Error	1.8	1.5	1.0
Mean Absolute Error	2.0	1.6	1.1
Root Mean Square Error	2.5	2.5	1.8

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.

Past administrations have forecast 2-year higher growth and interest rates then were actually realized by 0.9 p.p. and 0.7 p.p. respectively. This is related to the assumption detailed above - that all administration policies are enacted - which has not always been the case. The 2-year forecast error for inflation is smaller, -0.1 p.p., and has a slightly negative bias, and is in line with other forecasts.

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) by –0.7 percent of GDP. For the budget year, however, the historical pattern has been for the Budget deficit to be larger than the administration expected by 0.2 percent of GDP.[12] 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.

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

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

(As a Percent of GDP)

	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	–0.7	0.2	1.1	1.6	2.0	2.3
Mean Absolute Error	1.0	1.3	2.1	2.6	3.1	3.4
Root Mean Squared Error	1.2	1.9	2.9	3.5	3.8	4.0

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 2-2 displays the projected range of possible deficits. In the chart, the middle line represents the Administration's expected Budget balance and represents 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 2020 to 2025, 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.

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