

CONGRESSIONAL BUDGET OFFICE

The Macroeconomic and Budgetary Effects of an Illustrative Policy for Reducing the Federal Budget Deficit

July 14, 2011

The federal government's debt has increased dramatically in the past few years, and large annual budget deficits will probably continue indefinitely under current laws or policies. If current laws remain unchanged, deficits will total roughly \$7 trillion over the next 10 years, the Congressional Budget Office (CBO) projects; if certain policies that are scheduled to expire under current law were extended instead, deficits would be much larger. Beyond the coming decade, the aging of the U.S. population and rising health care costs will put increasing pressure on the federal budget. If debt held by the public continues to expand faster than the economy—as it has since 2007—the growth of people's incomes will slow, the share of federal spending devoted to paying interest on the debt will rise more quickly, and the risk of a fiscal crisis will increase.¹ At the same time, the recovery from the recent recession has been anemic, and the economy remains in a severe slump. CBO and many private forecasters expect that the unemployment rate will remain high, and that output will remain well below the economy's potential, for a number of years.

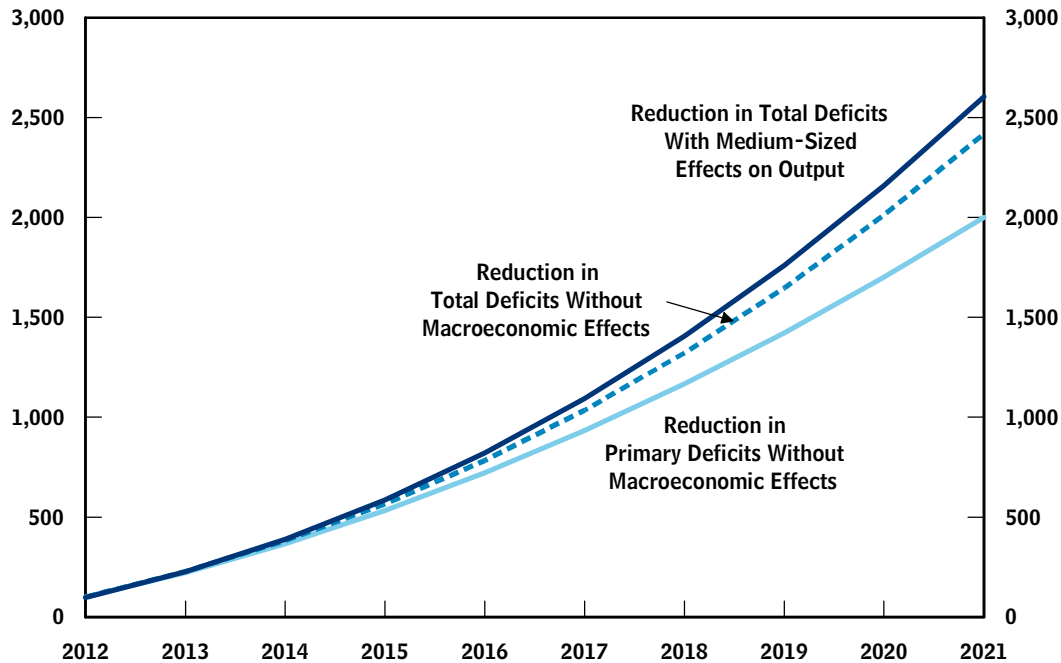
This analysis describes the economic and budgetary effects of an illustrative policy that would reduce primary deficits—that is, total budget deficits excluding net interest payments—by a cumulative \$2.0 trillion between 2012 and 2021 relative to CBO's baseline projections, before taking into account any economic effects of the policy.² The reduction in primary deficits under that policy, excluding economic effects, was assumed to equal \$100 billion in 2012 and to increase gradually until it

-
1. See Congressional Budget Office, *CBO's 2011 Long-Term Budget Outlook* (June 2011); and *Federal Debt and the Risk of a Fiscal Crisis*, Issue Brief (July 27, 2010).
 2. CBO last issued baseline projections in March 2011 and is scheduled to publish an updated baseline in August 2011. CBO's baseline is a neutral reference point for measuring the budgetary effects of proposed changes to federal revenues or spending. It consists of projections of budget authority, outlays, revenues, and the deficit or surplus over 10 years. Those projections, which are calculated according to rules originally set forth in the Balanced Budget and Emergency Deficit Control Act of 1985, are not intended to be predictions of future budgetary outcomes; rather, they represent CBO's best judgment of how economic and other factors would affect federal revenues and spending if current laws did not change.

Figure 1.

Cumulative Reduction in Deficits Under an Illustrative Policy, With and Without Its Macroeconomic Effects

(Billions of dollars)



Source: Congressional Budget Office.

Notes: The primary deficit is the total budget deficit excluding net interest.

All of the years in this figure are federal fiscal years, which run from October 1 to September 30.

CBO provides a range of estimates of the possible effects of the illustrative policy on output (see Table 1). The assumptions that generate medium-sized effects on output are discussed in the text.

reaches \$300 billion in 2021. That illustrative policy does not incorporate any assumptions about the particular mix of spending or revenue changes and is not meant to correspond to any specific legislative proposal. Such a reduction in future deficits would result in lower federal debt than is currently projected, thus reducing the government's interest costs. Taking into account those savings in interest, CBO estimates that the illustrative policy would lower deficits by a total of \$2.4 trillion over the 2012–2021 period, under an assumption that those budgetary changes would have no effect on the economy (see Figure 1).

But, in fact, budgetary changes would affect the economy—in differing ways in the short term and over the medium term and long term:³

3. For a discussion of the effects of budget deficits on the economy over different time horizons, see Congressional Budget Office, *An Analysis of the President's Budgetary Proposals for Fiscal Year 2012* (April 2011), pp. 21–22.

- In the short term, while the economy is relatively weak and economic growth is restrained primarily by a shortfall in demand for goods and services, the reduction in federal spending or increases in taxes that would produce smaller deficits would decrease the demand for goods and services even further and thus *reduce* economic output and income. In addition, long-term interest rates would be lower than if the deficit reduction did not occur.
- Over the medium term and long term, when economic output is determined by the supply of labor and capital and the productivity of those inputs, the reduction in federal borrowing that would result from smaller deficits would induce greater national saving and investment and thereby *increase* output and income. Long-term interest rates would continue to be lower than if the deficit reduction did not occur.

CBO used two approaches to estimate the effects of the illustrative policy on the economy. Those approaches focus on somewhat different aspects of the economy: One approach is used to estimate short-term effects only; the other addresses medium-term and long-term effects. Because considerable uncertainty surrounds many of the economic relationships that are fundamental to this analysis, CBO used a range of assumptions about the short-term effects on output of changes in federal spending and taxes and about the effects on national saving and investment of changes in deficits—and reports results corresponding to smaller, medium-sized, and larger effects on output. Even so, the macroeconomic impact of a reduction in primary budget deficits of \$2.0 trillion could lie outside the range of estimates reported here, depending on the specific policies chosen, the future state of the economy, and numerous other factors. The magnitude of the impact of future deficit reduction on interest rates is especially uncertain.

CBO estimated the effects of the illustrative policy relative to the current-law assumptions underlying CBO's baseline projections. According to those estimates, lower demand resulting from the illustrative policy would decrease real (inflation-adjusted) gross national product (GNP) in 2012, 2013, and 2014 by amounts ranging from roughly 0.1 percent to 0.6 percent depending on the year and the assumptions used.⁴ In addition, long-term interest rates would be reduced by about 0.1 to 0.4 percentage points during those years. Beyond 2014, the estimates show that the illustrative policy would lead to gains in GNP that increased over time. Near the end of the decade, in the years from 2019 through 2021, GNP would increase by roughly 0.5 percent

4. For this analysis, all references to gross national product are expressed in real terms (that is, the estimates have been adjusted to exclude the effects of inflation). CBO used GNP—the total market value of goods and services produced in a given period by the labor and capital supplied by the country's residents, regardless of where the labor and capital are located—as its measure of output instead of the more commonly cited gross domestic product. Changes in GNP exclude foreigners' earnings on investments in the domestic economy but include U.S. residents' earnings overseas and are therefore a better measure of the effects on U.S. residents' income than are changes in gross domestic product. CBO's budget calculations for this analysis reflect the fact that features of U.S. tax laws result in some foreign income of U.S. residents effectively being untaxed.

to 1.4 percent, again depending on the year and the assumptions used. Long-term interest rates would be reduced by about 0.1 to 0.2 percentage points.

The changes in the economy would in turn affect the federal budget—through changes in such factors as taxable income (which affects the amount of revenues collected) and interest rates (which affect the government’s borrowing costs). Specifically, CBO’s analysis indicates the following:

- The macroeconomic effects of the illustrative policy would increase primary deficits by small amounts in the first part of the coming decade and reduce them by small amounts in the latter part of the decade. Because the gains in GNP generated by the policy would increase further beyond the decade, the reduction in primary deficits would continue to grow as well.
- The macroeconomic effects would reduce federal interest payments—over and above the reduction attributable to the lower levels of debt that would result from the policy—because the policy would lead to lower interest rates (relative to those underlying CBO’s baseline projections) in every year. Those savings would be much larger than the net savings arising from the changes in primary deficits induced by the macroeconomic effects of the policy and would also continue to grow beyond the end of the decade.
- Under the set of assumptions that imply medium-sized effects of the illustrative policy on output, the macroeconomic effects of the policy would reduce deficits by about \$185 billion over and above the \$2.4 trillion reduction in primary deficits and interest costs estimated before accounting for the macroeconomic effects. Therefore, the illustrative \$2.0 trillion reduction in primary deficits (relative to CBO’s baseline projections) would yield a total reduction in deficits of about \$2.6 trillion from 2012 through 2021 (see Figure 1 on page 2).

Alternative scenarios for deficit reduction would generate different macroeconomic effects and resulting budgetary effects. For example, a policy that had a different amount of cumulative reduction in primary deficits but that reduced deficits on the same gradual time path as the policy analyzed here would have macroeconomic and budgetary effects that differed by roughly the same percentage as did the cumulative amount of deficit reduction. Thus, for example, a reduction in primary deficits that followed the same gradual time path but was twice as large would produce macroeconomic effects that were roughly twice as large as those shown here.

A different policy that had the same amount of cumulative reduction in primary deficits but that reduced deficits more slowly than the policy analyzed here would have more favorable macroeconomic effects in the next few years but less favorable ones later in the decade. The total budgetary impact of slower deficit reduction would be smaller, for two reasons. First, the policy’s impact on interest rates would be smaller.

Second, because the reduction in debt would occur more slowly, the resulting savings in interest costs would have less time to compound.

A related question concerns the effects of the same illustrative \$2.0 trillion reduction in primary deficits on the same timetable analyzed here, but assuming that those reductions were relative to a scenario other than the circumstances under current law. In that case, the macroeconomic and resulting budgetary effects of the policy would probably be similar, but not identical, to the effects described here. For example, compared with an alternative fiscal scenario that led to significantly greater amounts of debt than in CBO's baseline, the illustrative policy would reduce interest rates slightly more than presented here, and the larger amount of debt under the alternative fiscal scenario would imply that a given reduction in interest rates would lead to a larger reduction in interest payments.⁵ As a result, relative to such a scenario, the budgetary implications of the macroeconomic effects of this illustrative policy would be modestly larger.

An Illustrative Policy of Deficit Reduction

For its analysis, CBO constructed an illustrative policy of deficit reduction with the following characteristics:

- Current-law policies would be changed to reduce primary deficits by a cumulative \$2.0 trillion between 2012 and 2021, with no specification about the mix of spending and revenue changes that would make up that total;
- Deficit reduction would total \$100 billion in 2012 and grow by about \$22 billion per year until it reached \$300 billion in 2021;
- No net changes would be made to benefit programs or tax policies that would directly affect households' incentives to work and save or businesses' incentives to hire and invest. For example, CBO assumed that no changes to marginal tax rates, unemployment insurance, or tax rules for depreciation would occur.⁶

To put that amount of deficit reduction in context, CBO projects that, under current law, federal budget deficits will total \$6.7 trillion over the 2012–2021 period. Under an alternative fiscal scenario that incorporated several changes to current law that are widely expected to occur or that modified some provisions of law that might be difficult to sustain for a long period, budget deficits would total \$12.8 trillion during

5. Other economic responses would be somewhat different as well. For an example of such an alternative scenario and its economic consequences, see Congressional Budget Office, *CBO's 2011 Long-Term Budget Outlook*, Chapter 2.

6. When analyzing specific policies, CBO incorporates the effects of changes in such incentives. See, for example, Congressional Budget Office, *An Analysis of the President's Budgetary Proposals for Fiscal Year 2012* and *CBO's 2011 Long-Term Budget Outlook*, Chapter 2.

those years, CBO projects.⁷ In order to keep the ratio of debt held by the public to gross domestic product (GDP) in 2021 from rising above the 69 percent figure projected for the end of fiscal year 2011, cumulative deficits over the next decade would need to be roughly \$1.6 trillion less than is indicated in CBO's current-law projections and roughly \$7.6 trillion less than would be the case in the alternative fiscal scenario.

Types of Macroeconomic Effects

CBO used two approaches to estimate the effects of the illustrative policy on the economy relative to the agency's baseline projections. Those approaches focus on somewhat different aspects of the economy and reflect distinct ways of thinking about it. One approach addresses short-term effects that stem largely from variations in aggregate demand; the other addresses medium-term and long-term effects on the economy's potential output.⁸ Each approach represents people's economic decisions in a simplified way while capturing some important aspects of actual behavior.

In CBO's judgment, the macroeconomic effects of the illustrative policy would be determined primarily by effects on the demand for goods and services in 2012 and 2013, by effects on the nation's capital stock (such as factories and computers) in the years 2017 through 2021, and by a combination of those factors from 2014 through 2016.⁹

Short-Term Effects. The path of deficit reduction in the illustrative policy could be achieved through many possible combinations of decreases in government spending and increases in revenues. Such combinations would affect economic output in the short term both directly and indirectly. Direct effects consist of immediate effects on economic activity from a decrease in demand for goods and services. For example, in the case of lower government spending on goods and services, output would fall directly on a dollar-for-dollar basis. In the cases of tax increases, reductions in transfer payments, and decreases in aid to state and local governments, the direct effects on output would occur as the parties affected by the changes reduced their spending.¹⁰

7. See Congressional Budget Office, *CBO's 2011 Long-Term Budget Outlook*.

8. For examples of recent CBO analyses using the same approaches, see Congressional Budget Office, *An Analysis of the President's Budgetary Proposals for Fiscal Year 2012*, Chapter 2; and Statement of Douglas W. Elmendorf, Director, Congressional Budget Office, before the Senate Committee on the Budget, *The Economic Outlook and Fiscal Policy Choices* (September 28, 2010).

9. Specifically, CBO combines results from the modeling approaches as follows: estimates for 2012 and 2013 are based on effects on demand; estimates for 2014, 2015, and 2016 place weights of 0.75, 0.50, and 0.25, respectively, on the effects on demand and the remaining weights on the effects on the capital stock; and estimates for 2017 through 2021 are based on effects on the capital stock.

10. For the purpose of this analysis, CBO assumed that 75 percent of the overall direct effect would occur in the quarter when the deficit reduction occurs and 25 percent would occur in the following quarter.

Reductions in spending or increases in taxes would also have indirect effects on economic output. For example, the immediate reductions in demand for goods and services from private firms would prompt those firms to cut back on hiring and reduce capital investment because of scaled-back production plans. Those reductions, in turn, would lead to additional reductions in demand and output. At the same time, the lower path of expected future budget deficits would reduce interest rates, which would spur spending and output. The enactment of a significant deficit reduction policy would probably also reduce uncertainty about future policy actions and enhance business and consumer confidence. However, CBO did not incorporate such effects into its analysis because they are quite difficult to quantify.

CBO's analysis allows the illustrative policy to have a range of possible short-term effects on output. The medium-sized response reflects the assumption that each one-dollar reduction in the deficit would cause economic output to decline by a dollar in the short term excluding the effects from changes in interest rates. At one end of the range, each one-dollar cut in the deficit was assumed to cause cumulative economic output to decline by \$0.60 over several quarters. At the opposite end of the range, each one-dollar cut in the deficit was assumed to cause economic output to decline by a cumulative \$1.40.¹¹

In the near term, weaker demand for goods and services would increase unemployment and slow the rate of inflation, which would typically lead monetary policymakers to lower short-term interest rates. However, with short-term interest rates already near zero and expected to stay low for some time, the Federal Reserve might be constrained from reducing those rates as much as it would under other circumstances. Still, short-term interest rates would be somewhat lower during the next few years than they would be in the absence of the illustrative policy.¹²

The illustrative policy would also lead to lower long-term interest rates than would occur in the absence of the policy, even during the period when short-term rates are constrained from falling as much as they would otherwise. Long-term interest rates reflect, to at least some extent, the expectations that participants in financial markets

11. The dollar-for-dollar response lies within the ranges of estimated effects on GDP for many policies examined in CBO's analysis of the macroeconomic effects of the American Recovery and Reinvestment Act of 2009 (ARRA); the percentage range of possible effects on GDP used in this analysis is about the same as that assumed for the effects on GDP of particular policies in the analysis of ARRA. See Congressional Budget Office, *Estimated Impact of the American Recovery and Reinvestment Act on Employment and Economic Output from January 2011 Through March 2011* (May 2011).

12. In this analysis, CBO assumed that, apart from the lower bound of zero on interest rates, monetary policy would follow a so-called Taylor rule with: (a) some forward-looking behavior based on projected inflation and unemployment; and (b) a slowly adjusting view of the interest rate that will prevail when the economy is operating at its potential and a desired level of inflation is reached. In addition, CBO assumed that the proximity of interest rates to the lower bound of zero would affect the Federal Reserve's interest-rate decisions.

have about future short-term rates. Further, long-term interest rates tend to move contemporaneously and in the same direction as short-term rates. Thus, long-term interest rates would be expected to decline once the policy was enacted. However, the magnitude of that decline is especially uncertain, in part because it would depend on the credibility of the deficit reduction plan.¹³

In this analysis, CBO estimated the effect on interest rates of an illustrative deficit reduction plan relative to the interest rates that would prevail if no such plan was adopted and participants in the financial markets concluded that no such plan would be adopted. Thus, this analysis also shows that interest rates would *increase* if a deficit reduction plan that participants in financial markets had been expecting failed to be enacted and those participants no longer expected one to be enacted.

The Federal Reserve's inability in the near term to respond to the illustrative policy by lowering interest rates as much as it would under better economic conditions would tend to increase the negative short-term effects of that policy on economic output. In light of the recent evidence of continued weakness in output and employment, the Federal Reserve might keep interest rates near zero for a longer period of time—under current-law fiscal policy—than CBO projected in January 2011.¹⁴ Under those circumstances, the illustrative policy considered here would reduce short-term interest rates by less and reduce output by more in the next few years than shown in this analysis.

Medium-Term and Long-Term Effects. Over the medium term and long term, a reduction in primary budget deficits would boost economic output and lower both short-term and long-term interest rates relative to what would occur without such deficit reduction. In estimating the effects of deficit reduction beyond the next few years, CBO used an enhanced version of a widely used model developed by Robert Solow. In that model, output depends on the size and composition of the capital stock, the quantity and quality of the labor force, and the nation's technological progress.¹⁵ This analysis focused on how the illustrative policy would affect output and income by changing the nation's capital stock.

13. Even if the plan itself was fully credible, if its enactment caused financial market participants to expect future policy changes that offset some of the changes in the illustrative policy, then the effect on interest rates would be smaller than what is shown here.

14. See Congressional Budget Office, *The Budget and Economic Outlook: Fiscal Years 2011 to 2021* (January 2011).

15. For details of that model and a discussion of alternative assumptions about the effects of budget deficits on saving and investment, see Congressional Budget Office, *An Analysis of the President's Budgetary Proposals for Fiscal Year 2012*, Appendix A. Unlike in that earlier analysis, the results reported here are not sensitive to the response of labor supply because CBO assumed that this illustrative policy would have no net effect on incentives to work.

The capital stock owned by residents of the United States depends on national saving, which is the sum of personal saving, business saving (that is, after-tax corporate profits not paid as dividends), and saving or dissaving (as reflected in budget surpluses or deficits) by the federal government and state and local governments. Federal budget deficits reduce national saving, so all other things being equal, a decrease in those deficits would increase that saving—resulting in a larger capital stock owned by U.S. residents over time from an increase in domestic investment, a decrease in net borrowing from abroad, or both. To illustrate a range of possible effects, CBO assumed that each dollar of deficit reduction would increase domestic investment by 20, 36, or 50 cents (reflecting different assumptions about the effects of deficits on both national saving and net borrowing from abroad). Those alternative responses would cause the reduction in budget deficits to have small, medium-sized, and large effects on output, respectively.

The larger capital stock from greater investment would increase economic output (because the labor force would use the additional capital to be more productive) and decrease interest rates (because the greater availability of capital would drive down the cost of using it). In this analysis, the resulting change in interest rates was projected to be the same for both short-term and long-term rates.

Estimates of Macroeconomic Effects

On the basis of CBO's assumptions that would lead to medium-sized effects on output—specifically, that each one-dollar cut in the deficit causes economic output to decline by a dollar in the short term and increases domestic investment by 36 cents—CBO projects that the illustrative policy would decrease GNP by amounts ranging from 0.4 percent in 2012 to 0.2 percent in 2014, but gradually increase GNP in later years relative to the level projected under current law (see Table 1). In 2012, with short-term interest rates still close to zero and monetary policy therefore constrained, the decrease in GNP of 0.4 percent would be the largest in any year over the 10-year period. As monetary policy became less constrained over the following few years, the negative effects on GNP would diminish. By 2015, GNP would be about what it would have been without the policy. Between 2016 and 2021, GNP would be increasingly above CBO's baseline projections because the policy would boost savings and the capital stock by increasing amounts each year. By 2021, GNP would be 1.0 percent higher than CBO projects under current law (and the positive impact of the policy would continue beyond that). During the next 10 years, long-term interest rates would decrease by between 0.08 and 0.29 percentage points relative to the rates projected under current law.

Under the set of assumptions that imply the budgetary changes would have smaller effects on output—that is, each one-dollar cut in the deficit causes economic output to decline by 60 cents in the short term and increases domestic investment by 20 cents—the illustrative policy would decrease GNP by amounts ranging from 0.3 percent in 2012 to 0.1 percent in 2014, relative to CBO's baseline projections; it

Table 1.**The Macroeconomic Effects of an Illustrative Policy Under Three Sets of Assumptions**

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Smaller Effects on Output										
Real GNP (Percent)	-0.3	-0.2	-0.1	0.0	0.2	0.3	0.4	0.4	0.5	0.6
Interest Rates (Percentage points)										
Three-month Treasury bill	-0.27	-0.25	-0.18	-0.16	-0.10	-0.05	-0.05	-0.06	-0.07	-0.08
Ten-year Treasury note	-0.19	-0.17	-0.12	-0.10	-0.07	-0.05	-0.05	-0.06	-0.07	-0.08
Medium-Sized Effects on Output										
Real GNP (Percent)	-0.4	-0.3	-0.2	0.0	0.3	0.5	0.6	0.8	0.9	1.0
Interest Rates (Percentage points)										
Three-month Treasury bill	-0.41	-0.39	-0.30	-0.27	-0.18	-0.08	-0.10	-0.12	-0.14	-0.16
Ten-year Treasury note	-0.29	-0.28	-0.20	-0.18	-0.13	-0.08	-0.10	-0.12	-0.14	-0.16
Larger Effects on Output										
Real GNP (Percent)	-0.6	-0.5	-0.3	0.0	0.3	0.7	0.9	1.0	1.2	1.4
Interest Rates (Percentage points)										
Three-month Treasury bill	-0.55	-0.54	-0.41	-0.38	-0.25	-0.12	-0.14	-0.17	-0.20	-0.22
Ten-year Treasury note	-0.40	-0.38	-0.28	-0.25	-0.18	-0.12	-0.14	-0.17	-0.20	-0.22

Source: Congressional Budget Office.

Notes: Gross national product (GNP) is expressed in real terms; that is, it has been adjusted to exclude the effects of inflation.

Changes are measured relative to the economic projections that underlie CBO's March 2011 baseline. Those projections are summarized in Chapter 2 of *The Budget and Economic Outlook: Fiscal Years 2011 to 2021* (January 2011). All of the years in this table are federal fiscal years, which run from October 1 to September 30.

CBO provides a range of estimates of the illustrative policy's possible effects on output. The assumptions that generate smaller, medium-sized, and larger effects on output are discussed in the text.

would increase GNP thereafter, for example, by 0.6 percent in 2021. Long-term interest rates would be 0.05 to 0.19 percentage points lower throughout those 10 years.

Under the set of assumptions that imply larger effects on output, in which each one-dollar cut in the deficit causes economic output to decline by \$1.40 in the short term and increases domestic investment by 50 cents, the illustrative policy would decrease GNP by amounts ranging from 0.6 percent in 2012 to 0.3 percent in 2014, relative to CBO's baseline projections. It would increase GNP in subsequent years; by 2021, GNP would be 1.4 percent higher than CBO projects under current law. The

reductions in interest rates would be larger throughout that period than under the other sets of assumptions: Specifically, long-term interest rates would be 0.12 to 0.40 percentage points lower over those 10 years.

The Implications for Deficits of the Policy's Macroeconomic Effects

CBO estimated the budgetary implications of the illustrative policy's macroeconomic effects using an approach that takes into account changes in GNP, interest rates, and other factors.¹⁶ Over the period from 2012 through 2021, CBO estimates, those effects would reduce deficits by an additional \$185 billion under the set of assumptions that imply medium-sized effects on output (see Table 2). The additional reduction in deficits would be about \$100 billion or \$280 billion, respectively, under the sets of assumptions that imply smaller or larger effects on output.¹⁷

Under all of the assumptions analyzed here, most of those additional amounts of deficit reduction would stem from lower interest rates than those projected in CBO's current-law baseline and correspondingly lower interest costs. The results based on assumptions that lead to larger effects of the illustrative policy on output show a greater reduction in deficits over 10 years through their bigger reductions in interest rates, even though they also show larger negative effects on GNP in the first few years, which would boost primary deficits in those years. Similarly, under the assumptions

16. CBO has previously used this same approach to estimate the budgetary implications of macroeconomic effects of fiscal policies. See, for example, Congressional Budget Office, *An Analysis of the President's Budgetary Proposals for Fiscal Year 2012*. Chapter 2 of that report describes the budgetary implications of the proposals' macroeconomic effects; Chapter 1 presents a more detailed program-by-program analysis of the proposals that does not incorporate such macroeconomic feedback.

17. A previous analysis by CBO (*The Economic and Budget Outlook: Fiscal Years 1998-2007*, January 1997, Chapter 4) of the macroeconomic effects and resulting budgetary effects of deficit reduction showed larger effects per dollar of deficit reduction than those presented here. The principal reason for the difference in estimated effects is that the previous analysis assumed that long-term interest rates would fall to a greater extent than the current analysis projects. The magnitude of the interest rate responses in this analysis derives from the macroeconomic models that CBO uses in all of its current analyses of the economic effects of fiscal policy. Those models are grounded in both theory and data, and the response of long-term interest rates to fiscal policy in the models is within the range of the statistical relationships examined in recent research. (For a review of the empirical literature, see Eric M. Engen and R. Glenn Hubbard, "Federal Government Debt and Interest Rates," *NBER Macroeconomics Annual*, 2004.) The relationship between long-term and short-term interest rates in this analysis reflects the expectations hypothesis, a theory that links long-term rates to the expected path of short-term rates, as well as the historical statistical relationship between long-term and short-term rates. (The current analysis also differs from the previous one by incorporating short-term effects on output from the reduction in demand for goods and services that would result from increases in taxes or decreases in government spending. The previous analysis assumed that the reduction in demand would be fully offset by monetary policy, which, as explained earlier in the text, would be much more difficult under current economic circumstances.)

Table 2.

Reductions in Deficits Under an Illustrative Policy, With and Without Its Macroeconomic Effects

(Billions of dollars)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total		
											2012-2016	2017-2021	2012-2021
Deficit Reductions Without Macroeconomic Effects													
Primary deficit	100	122	144	167	189	211	233	256	278	300	722	1,278	2,000
Interest costs	<u>1</u>	<u>5</u>	<u>10</u>	<u>18</u>	<u>28</u>	<u>40</u>	<u>54</u>	<u>70</u>	<u>87</u>	<u>106</u>	<u>62</u>	<u>357</u>	<u>419</u>
Subtotal	101	127	154	185	217	252	288	325	365	406	784	1,635	2,419
Additional Deficit Reductions With Medium-Sized Effects on Output													
Primary deficit	-10	-15	-12	-7	0	6	9	12	16	21	-45	65	20
Interest costs	<u>7</u>	<u>19</u>	<u>20</u>	<u>20</u>	<u>18</u>	<u>15</u>	<u>16</u>	<u>16</u>	<u>17</u>	<u>19</u>	<u>82</u>	<u>83</u>	<u>165</u>
Subtotal	-4	3	7	12	18	21	25	28	33	40	37	148	185
Total Reductions in Deficits	97	130	162	197	235	272	312	354	398	446	821	1,783	2,604

Memorandum:

Total Deficit as Projected in

CBO's March 2011 Baseline	-1,081	-692	-513	-538	-635	-590	-585	-665	-710	-729	-3,459	-3,278	-6,737
---------------------------	--------	------	------	------	------	------	------	------	------	------	--------	--------	--------

Source: Congressional Budget Office.

Notes: The primary deficit is the total budget deficit excluding net interest.

Positive numbers indicate a *decrease* in the primary deficit, interest costs, or total deficit; negative numbers indicate an *increase* in those items.

Changes are measured relative to CBO's March 2011 baseline projections, which are summarized in Table 1-5 of *An Analysis of the President's Budgetary Proposals for Fiscal Year 2012* (April 2011). All of the years in this table are federal fiscal years, which run from October 1 to September 30.

CBO provides a range of estimates of the possible effects of the illustrative policy on output. The assumptions that generate medium-sized effects on output are discussed in the text.

that generate smaller effects on output, the effects on interest rates and the total amount of deficit reduction would be smaller.

The economic effects on primary deficits—which result from changes in both spending and revenues—would be much smaller on net than those on interest costs, raising those deficits slightly in the early years and reducing them slightly later on. Initially, when the illustrative policy reduced GNP, government revenues would be

reduced and government spending (excluding interest costs) would increase as more households qualified for government assistance, such as unemployment insurance.

However, by 2014, that effect on spending would be outweighed by a decline in price-sensitive spending, such as Social Security benefits, reflecting lower inflation in those early years. In the latter part of the 10-year period, primary deficits would decrease as a result of lower spending and higher revenues generated by higher GNP.¹⁸

Caveats About This Analysis

CBO's findings depend critically on the assumptions made to construct the illustrative policy and estimate its effects on the economy. A legislative plan with the same effects on primary budget deficits (apart from the economic impact) as that illustrative policy but that differed from that policy in any of three ways would have different effects on the economy. Those possible differences relate to the plan's timing (that is, how quickly or gradually the deficit reduction occurred); its composition of tax and spending changes, including the effects of those changes on people's incentives to work and invest and their impact on productive government investments; and its credibility. In addition, for this analysis CBO assumed the continuation of current laws, aside from any changes included in the illustrative policy; if the same policy was evaluated relative to some other scenario, the macroeconomic and budgetary effects could also be different.

Timing. Relative to the illustrative policy, reducing deficits more quickly—while monetary policy is constrained by the low level of short-term interest rates—would lead to a greater loss in economic output in the short run. However, a faster reduction in deficits would also lead to greater increases in output in the second half of the decade, for several reasons. The total cumulative impact on deficits would be greater, because interest savings would have more time to compound and because reductions in both short- and long-term rates would be larger. Also, when earlier additions to the capital stock increase output, some of that additional output goes toward investment, which further increases the capital stock. Conversely, reducing deficits more slowly than was assumed in this analysis would result in smaller negative effects on output in the short term and smaller positive effects on output in the second half of the decade.

Composition of Tax and Spending Changes, Including Their Effect on Incentives and on Productive Government Investments. The illustrative policy was assumed to have no direct effects on households' incentives to work and save or on businesses' incentives to hire and invest. For example, CBO assumed that the policy would include no changes to marginal tax rates, the unemployment insurance program, or tax rules for depreciation. In addition, the illustrative policy was assumed to have no impact on productive government investments. For example, CBO assumed that the policy

18. The increase in revenues is slowed a little by the lower level of prices—reflecting lower inflation in the early years—as well as by other technical factors.

would include no changes in infrastructure investment or funding for educational programs that might affect the economy's productivity in the long run. Moreover, the estimates of medium-sized effects on output are based on the assumption that the illustrative policy would change taxes and government spending in such a way that each dollar of deficit reduction would reduce real GDP in the short term by a cumulative total of one dollar.

A legislated deficit reduction plan might not have those characteristics. For example, such a plan might include higher marginal income tax rates that would decrease households' incentives to supply labor. Also, a deficit reduction plan might reduce productive government investments; a plan that cut such spending but was otherwise similar to the illustrative policy would have less positive long-run effects on the economy. Further, changes in policies that have a greater short-term impact per dollar on GDP would increase the negative effects of deficit reduction on GDP in the next few years, while changing policies that have a smaller short-term impact would decrease the negative effects.¹⁹

Credibility. A policy's credibility—the extent to which people are confident that it will be carried out and be effective—can have a significant impact on its economic effects. In this analysis, the credibility of the deficit reduction policy matters most for the estimated impact of future short-term interest rates (which depend on the ultimate amount of deficit reduction achieved) on current long-term rates. For example, an analysis that assumed a deficit reduction policy had less credibility would imply a smaller reduction in long-term interest rates in the early years of the policy—and, hence, a slightly larger decline in output in the first few years, smaller savings in interest costs, and less deficit reduction.

Comparisons with Other Scenarios. Applying the illustrative deficit reduction policy to a scenario in which deficits were assumed to be larger or smaller than those in CBO's current-law baseline would yield different estimates of the policy's macroeconomic and budgetary effects. For example, if the starting point involved greater amounts of debt than are projected in CBO's baseline, as is the case in the alternative fiscal scenario described in *CBO's 2011 Long-Term Budget Outlook*, a given reduction in interest rates under the illustrative policy would result in a modestly larger reduction in interest costs.²⁰

Moreover, relative to the alternative fiscal scenario, the illustrative policy's effects on interest rates would differ slightly from those estimated in this analysis. Under the assumptions of the alternative fiscal scenario, deficits would be larger than those in the baseline and the Federal Reserve would probably raise interest rates more rapidly than

19. For a discussion of how CBO estimated the effects on the economy of an assortment of different policies, see Congressional Budget Office, *Estimated Impact of the American Recovery and Reinvestment Act on Employment and Economic Output from January 2011 Through March 2011* (May 2011).

it would under current law. Therefore, in analyzing a deficit reduction plan that took the alternative fiscal scenario as its starting point instead of current law, CBO would assume that the Federal Reserve would be able to respond by reducing short-term interest rates by a larger amount. That greater responsiveness of monetary policy would cause long-term interest rates to fall by more when the policy was enacted, and it would also attenuate the policy's negative short-run effects on output. Overall, the budgetary implications of the macroeconomic effects would be modestly larger in total.

-
20. The alternative fiscal scenario incorporates several changes to current law that are widely expected to occur or that would modify some provisions of law that might be difficult to sustain for a long period. Most important are the assumptions about revenues: that the tax cuts enacted since 2001 and extended most recently in 2010 will be permanently extended and that the reach of the alternative minimum tax will be restrained to stay close to its historical extent. This scenario also incorporates the assumption that Medicare's payment rates for physicians will remain at current levels (rather than declining by about a third, as under current law).

