



## Testimony

**Statement of  
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### **The Economic Outlook and Fiscal Policy Choices**

**before the  
Committee on the Budget  
United States Senate**

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Chairman Conrad, Senator Gregg, and Members of the Committee, thank you for the invitation to testify on the outlook for the economy and the important fiscal policy choices facing the nation.

## Summary

This testimony reviews the Congressional Budget Office's (CBO's) recent analyses of the economic outlook and the potential impact on the economy of various fiscal policy options. It also adds to those analyses by quantifying the economic impact of extending some or all of the 2001 and 2003 tax cuts that are scheduled to expire in three months.

### The Economic Outlook

CBO expects—as do most private forecasters—that the economic recovery will proceed at a modest pace during the next few years. In its projections released in August, CBO forecast that, under current laws governing federal spending and revenues, real (inflation-adjusted) gross domestic product (GDP) would increase by 2.8 percent between the fourth quarter of 2009 and the fourth quarter of 2010 and by 2.0 percent between the fourth quarters of 2010 and 2011. With economic growth so slow, the unemployment rate would remain above 8 percent until 2012 and above 6 percent until 2014. Since CBO completed that forecast, the economic data released have been weaker than the agency had expected, so if CBO was redoing the forecast today, it would project slightly slower growth in the near term.

The pace of recovery since the recession ended in June 2009 and the growth that CBO projects for the next few years are anemic relative to the rate of recovery following previous deep recessions. However, the most recent recession, spurred by a financial crisis, was unlike any this country has seen for a very long time, and there is reason to expect that the country's recovery will also be different from past ones: International experience suggests that recoveries from recessions that begin with financial crises tend to be slower than average.<sup>1</sup> Following such a crisis, it takes time for equity and asset markets to recover, for households to replenish their resources and boost their spending, for financial institutions to restore their capital bases, and for businesses to regain the confidence required to invest in new plant and equipment. In addition, the scheduled increases in taxes and the waning of fiscal policy measures that supported the economy earlier in this recovery will hold down spending, especially in 2011. The weak demand for goods and services resulting from those various factors is the primary constraint on economic recovery.

A weak economy has serious social consequences. In addition to the millions of Americans who are officially unemployed, many others are underemployed or have left the labor force. Moreover, the unemployment rate has risen disproportionately for men,

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1. See, for example, Carmen Reinhart and Kenneth Rogoff, "The Aftermath of Financial Crises," *American Economic Review*, vol. 99, no. 2 (May 2009), pp. 466–472.

for less-educated workers, and for people living in certain states, and long-term unemployment has increased strikingly—to the point that the incidence of unemployment lasting longer than 26 weeks is now the highest by far in the past 60 years. Of course, losing a job often has a significant impact on workers and their families, both in the short term and in the long term.

### **Fiscal Policy Approaches and Long-Term Budgetary Constraints**

Policymakers cannot reverse all of the effects of the housing and credit boom, the subsequent bust and financial crisis, and the deep recession. However, in CBO's judgment, there are both monetary and fiscal policy options that, if applied at a sufficient scale, would increase output and employment during the next few years. Those same fiscal policy options would, though, have longer-term economic costs. In particular, the cuts in taxes or increases in spending that would provide a short-term economic boost would also increase federal debt.

Federal debt held by the public is already larger relative to the size of the economy than it has been in more than 50 years, and it is headed higher. According to CBO's baseline projections, under current law, debt held by the public would be close to 70 percent of GDP for most of the coming decade. But other policies could result in substantially more debt. For example, if the 2001 and 2003 tax cuts were extended, the individual alternative minimum tax (or AMT) was indexed for inflation, and future annual appropriations remained the share of GDP that they are this year, the deficit in 2020 would equal about 8 percent of GDP, and debt held by the public would reach nearly 100 percent of GDP.<sup>2</sup> Such a path for federal debt is clearly unsustainable. Persistent deficits and continually mounting debt would crowd out growing amounts of private investment, require rising interest payments, restrict the ability of policymakers to respond to unexpected challenges, and increase the probability of a sudden fiscal crisis.<sup>3</sup>

Despite that grim picture, there is no intrinsic contradiction between providing additional fiscal stimulus today, while the unemployment rate is high and many factories and offices are underused, and imposing fiscal restraint several years from now, when output and employment will probably be close to their potential. What does that mean in practice? If taxes were cut permanently, or government spending was increased permanently, and no other changes were made to fiscal policy, the federal budget would be on an unsustainable path, and the economy would suffer. Even if tax cuts or spending increases were temporary, the additional debt accumulated during that temporary period would weigh on the budget and the economy over time. Therefore, if policymakers wanted to achieve both short-term stimulus and long-term sustainability, a combination of policies would be required: changes in taxes and

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2. The baseline projections reflect an assumption that future annual appropriations will be held constant in real terms, yielding estimates of discretionary spending that would be low relative to GDP by historical standards.
  3. Congressional Budget Office, *Federal Debt and the Risk of a Fiscal Crisis*, Issue Brief (July 27, 2010).

spending that would widen the deficit now but reduce it relative to current baseline projections after a few years. Developing such a combination would be feasible but not easy.

If policies that widened the deficit in the near term were enacted, observers might question whether, when, and how the difficult actions to narrow the deficit later would be carried out. The most important uncertainty facing families and businesses today is uncertainty about the path of the economy, but uncertainty about government policies is probably also a drag on businesses' hiring and investing and perhaps on consumer spending as well. The enactment of policies that improved the budget outlook beyond the next few years would help to reduce that uncertainty.

### **CBO's Analysis of Fiscal Policy Options**

To assist policymakers in their decisions, CBO has quantified the effects that some alternative fiscal policy options would have on the economy. In a January 2010 report, CBO estimated the effects of a diverse set of temporary policy options.<sup>4</sup> The agency reported the results in terms of the two-year effect on the economy per dollar of total budgetary cost, what one might informally call the "bang for the buck." The overall effects of those policies on the economy would depend also on the scale at which they were implemented; making a significant difference in an economy with an annual output of nearly \$15 trillion would involve a considerable budgetary cost.

CBO's key conclusions from that analysis are as follows (see Figure 1):

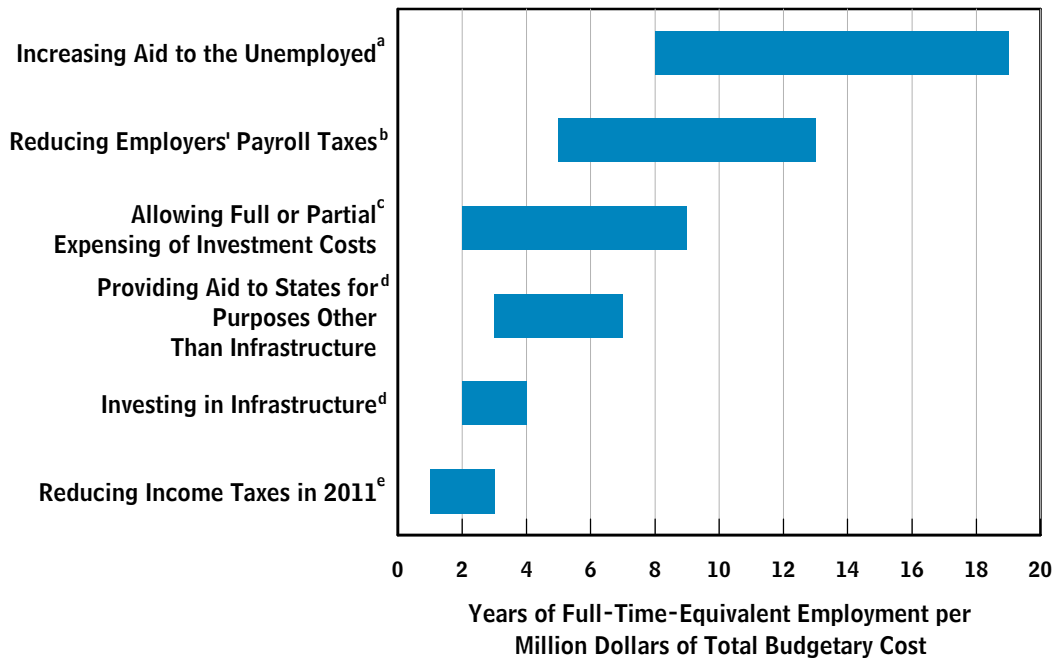
- A temporary increase in aid to the unemployed would have a significant positive short-term effect on the economy per dollar of budgetary cost. Such an increase would slightly raise unemployment among the affected individuals, but it would also raise people's spending and thereby increase output and employment in the economy overall.
- A temporary reduction in payroll taxes—especially in the share of taxes paid by employers—would also have a significant positive short-term effect on the economy. This approach would boost output and employment both by increasing demand for goods and services and by providing an incentive for additional hiring.
- A number of other temporary policy options, including the expensing of business investment and providing aid to states, would have smaller positive short-term effects on output and employment.

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4. Congressional Budget Office, *Policies for Increasing Economic Growth and Employment in 2010 and 2011* (January 2010).

**Figure 1.**

## Ranges of Cumulative Effects of Policy Options on Employment in 2010 and 2011, Assuming Enactment in Early 2010



Source: Congressional Budget Office, *Policies to Increase Economic Growth and Employment in 2010 and 2011* (January 2010).

Note: Estimated as years of full-time-equivalent employment (40 hours of employment per week for one year) with the policy option in effect minus years of full-time-equivalent employment without the policy option. The total budgetary cost is the amount of tax revenues or budget authority over the full duration of the policies' effects unless otherwise specified.

- a. Assumed spending began in March 2010, and no benefit payments would be made after July 2011.
- b. Assumed to be in effect for 2010 only.
- c. Assumed to be in effect for 2010 only. Initial reductions in revenues would be nearly fully offset by later increases. The policy's effects were therefore estimated per dollar of the present discounted value of the policy (discounted at businesses' cost of debt and equity) instead of per dollar of total budgetary cost.
- d. Assumed budget authority was provided as of April 2010, and timing of spending from new funding would follow historical experience.
- e. Assumed to extend, through 2011, the provisions of the Economic Growth and Tax Relief Reconciliation Act of 2001 and the Jobs and Growth Tax Relief Reconciliation Act of 2003 that are scheduled to expire at the end of 2010, and to provide relief from the individual alternative minimum tax by extending the higher exemption amounts that were in effect in 2009 (indexed for inflation) for 2010 and 2011.

- A temporary increase in infrastructure investment and a temporary across-the-board reduction in income taxes would have still smaller short-term effects on output and employment per dollar of budgetary cost.<sup>5</sup>

In its January study, CBO also explained that those policy actions would lead to the accumulation of additional government debt that would reduce income in the longer term unless other policies with offsetting effects on future debt were enacted. However, CBO did not quantify those future reductions in income.

At the request of the Chairman, CBO has now estimated the short-term and the longer-term effects of certain tax policy options being considered by the Congress. In particular, CBO studied the effects of extending the 2001 and 2003 tax cuts; extending the higher exemption amounts for the AMT that were in effect in 2009 (adjusted for inflation) for 2010 and subsequent years; and reinstating the estate tax, which expired completely in 2010, for 2011 and subsequent years at the rates in effect in 2009 and with the exemption amounts (adjusted for inflation) that applied in that year. CBO examined four alternative approaches to making those changes: a permanent change affecting all provisions (labeled a “full permanent extension”), a permanent change but without extending certain provisions that would apply only to high-income taxpayers (labeled a “partial permanent extension”), a change affecting all provisions but only through 2012 (“full extension through 2012”), and a change through 2012 but without extending certain provisions that would apply only to high-income taxpayers (“partial extension through 2012”).

The methodology for this analysis was quite similar to the methodology that CBO uses in analyzing the President’s budget each spring. CBO used several models that make different simplifying assumptions about people’s behavior. The models used to estimate the effects on the economy in 2011 and 2012 focus on the policies’ impact on the demand for goods and services, because CBO expects that economic growth in the near term will be restrained by a shortfall in demand. All else being equal, lower tax payments increase demand for goods and services and thereby boost economic activity. In contrast, the models used to estimate the effects on the economy in 2020 and later years focus on the policies’ impact on the supply of labor and capital, because CBO believes that economic growth over that longer horizon will be restrained by supply factors. All else being equal, lower tax revenues increase budget deficits and thereby government borrowing, which crowds out investment, while lower tax rates increase people’s saving and work effort; the net effect on economic activity depends on the balance of those forces. Because the responsiveness of people’s

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5. CBO focused on the effects of policy options during 2010 and 2011, and most of the across-the-board tax cut studied would not occur until halfway through that period. If CBO updated those estimates today and examined the impact during the 2011–2012 period, a temporary across-the-board reduction in income taxes would have a larger effect per dollar of budgetary cost but would still, by that measure, significantly trail most of the other options studied.

work effort to changes in their after-tax compensation is uncertain, CBO produced estimates based on alternative assumptions about such behavioral responses.<sup>6</sup>

Notwithstanding CBO's use of alternative models and assumptions, the actual effects of the policy options studied could fall above or below the estimates that CBO reports. With that caveat, the key findings are these:

- All four of the options for extending the expiring income tax cuts would raise output, income, and employment during the next two years, relative to what would occur under current law (see Figure 2). A full permanent extension or partial permanent extension would provide a larger boost to income and employment in the next two years than would a temporary extension, and a full extension would provide a larger boost than would the corresponding partial extension.
- But the effects of those policy options on the economy in the longer term would be very different from their effects during the next two years. For some of the options, the estimates based on different models and assumptions cover a broad range. Still, the estimates indicate that all four of the options would probably reduce income relative to what would otherwise occur in 2020 (see Figure 3, which shows the averages of the projected changes in GNP across the various models and assumptions). Beyond 2020, and again relative to what would occur under current law, the reductions in income from all four of the policy options would become larger. Either a full or a partial extension of the tax cuts through 2012 would reduce income by much less than would a full or partial permanent extension.

In sum, and as CBO has reported before, permanently or temporarily extending all or part of the expiring income tax cuts would boost income and employment in the next few years relative to what would occur under current law. However, even a temporary extension would add to federal debt and reduce future income if it was not accompanied by other changes in policy. A permanent extension of all of those tax cuts without future increases in taxes or reductions in federal spending would roughly double the projected budget deficit in 2020; a permanent extension of those cuts except for certain provisions that would apply only to high-income taxpayers would increase the budget deficit by roughly three-quarters to four-fifths as much. As a result, if policy-makers then wanted to balance the budget in 2020, the required increases in taxes or reductions in spending would amount to a substantial share of the budget—and without significant changes of that sort, federal debt would be on an unsustainable path that would ultimately reduce income. Similarly, even temporary increases in government spending would add to federal debt and reduce future income, and

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6. CBO's models incorporate different magnitudes of the responsiveness of saving to changes in the return on saving, but CBO did not produce explicit sensitivity analyses of the effect of variations in this parameter.

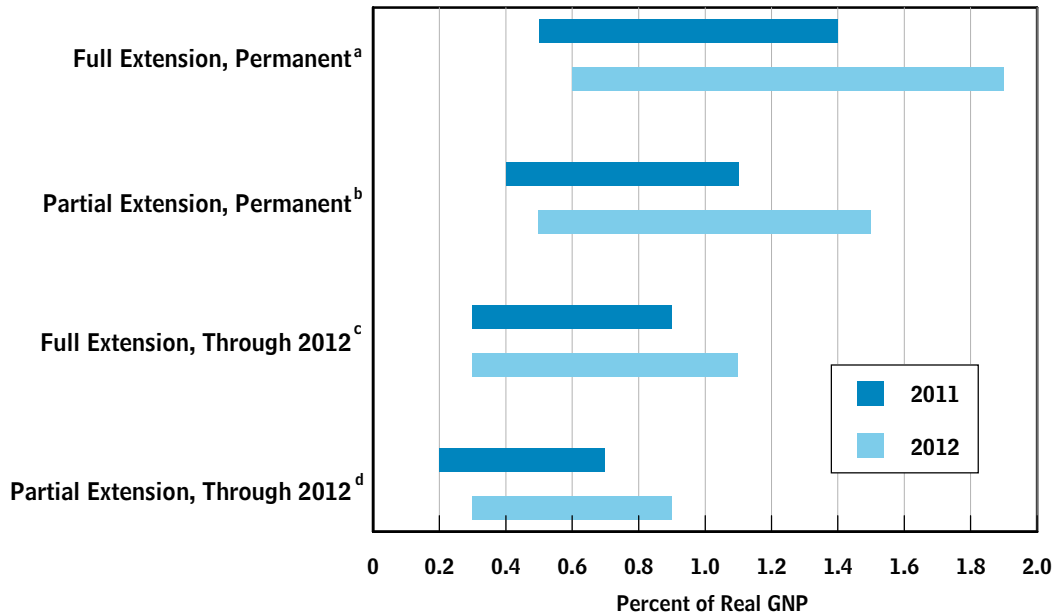


**Figure 2.**

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## Ranges of Effects of Four Tax Policy Options on Real GNP in 2011 and 2012

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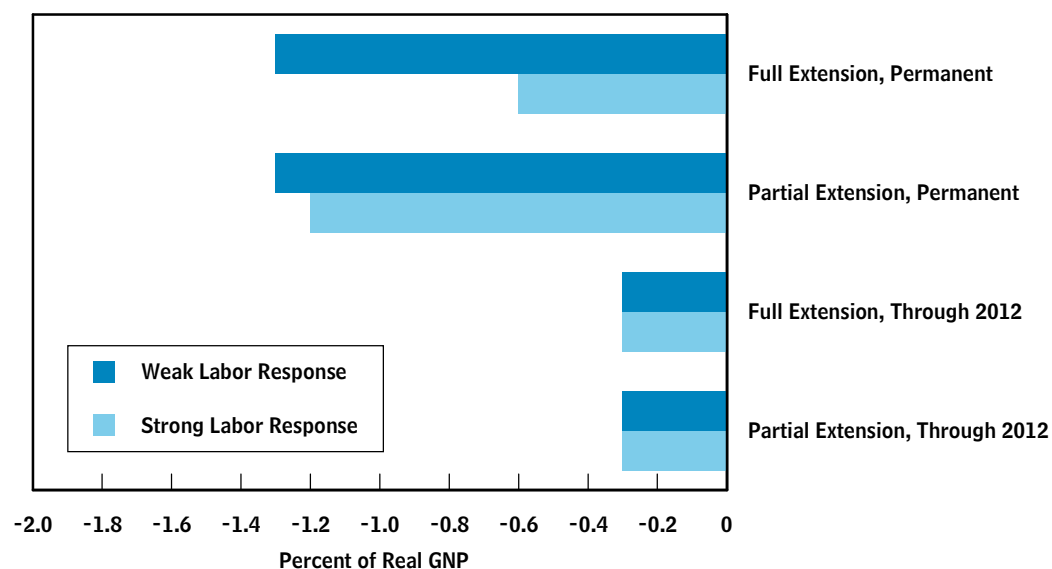
Source: Congressional Budget Office.

Note: Estimated as gross national product adjusted for inflation (real GNP) with the policy option in effect relative to real GNP without the policy option.

- a. This option would extend the provisions of the Economic Growth and Tax Relief Reconciliation Act of 2001 and the Jobs and Growth Tax Relief Reconciliation Act of 2003 that are scheduled to expire at the end of 2010; extend the higher exemption amounts from the individual alternative minimum tax that were in effect in 2009 (adjusted for inflation) for 2010 and subsequent years; and reinstate the estate tax—which expired completely in 2010—for 2011 and subsequent years at the rates in effect in 2009 and with the exemption amounts (adjusted for inflation) that applied in that year.
  - b. This option is the same as the full extension, except that certain provisions would expire that would otherwise have applied to married couples with income of \$250,000 or more and single taxpayers with income of \$200,000 or more. Those provisions include the lower tax rates in the top two income tax brackets, the lower 15 percent tax rates on capital gains and dividends, and the elimination of the phaseout of itemized deductions and personal exemptions.
  - c. This option would make the same changes as the full extension, but through 2012 rather than permanently.
  - d. This option would make the same changes as the partial extension, but through 2012 rather than permanently.
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**Figure 3.**

## Effects of Four Tax Policy Options on Real GNP in 2020



Source: Congressional Budget Office.

Note: Estimated as gross national product adjusted for inflation (real GNP) with the policy option in effect minus real GNP without the policy option. Based on the average of four estimates of effects from a life-cycle model, which accounts for additional policy changes needed to put fiscal policy on a sustainable path in the long run, and two estimates of effects from a “text-book” growth model, without additional policy changes. Averages are reported to the nearest tenth. Weak and strong labor responses correspond to the responsiveness of hours worked to changes in the effective marginal tax rate on labor income. For a description of the tax policy options, see the notes to Figure 2.

permanent large increases in spending that were not accompanied by other spending reductions or tax increases would put federal debt on an unsustainable path. Compared with the options examined here for extending the expiring tax cuts, various other options for temporarily reducing taxes or increasing government spending would provide a bigger boost to the economy per dollar of cost to the federal government.

## The Economic Outlook

Growth in the nation’s output since mid-2009 has been anemic in comparison with that of previous recoveries from deep recessions, and the unemployment rate has remained quite high, standing at 9.6 percent in August. That weak performance reflects several factors that are likely to remain in place over the next few years. The considerable number of vacant houses and underused factories and offices will be a continuing drag on residential construction and business investment. In addition, although conditions in financial markets have improved markedly from what they were in the depths of the recent crisis, households’ wealth remains below prerecession

levels, and some potential borrowers still are having trouble obtaining credit because lending standards have tightened; both factors are likely to restrain consumer spending in the near term, as will slow growth in employment and labor income. Moreover, under current law (which, in preparing its baseline projections, CBO assumes will remain in place), another factor will slow the recovery: Fiscal policy will provide much less support to economic activity in 2011 and 2012 than it has in the past few years. In particular, the scheduled expiration of the tax cuts enacted in 2001 and 2003, along with the waning of the effects of additional government spending and tax cuts enacted in last year's stimulus legislation, will produce slower economic growth next year than would otherwise occur.

As a result of those factors, CBO projects that the economic recovery will continue at a modest pace during the next few years.<sup>7</sup> Slow growth in output will generate slow growth in the demand for labor. The unemployment rate is likely to remain high for a prolonged period, which will have serious economic and social consequences.

### **CBO's Baseline Economic Forecast**

Given the assumptions about fiscal policy that underlie the baseline, CBO projects that real GDP will increase by 2.8 percent between the fourth quarters of 2009 and 2010 and by 2.0 percent between the fourth quarters of 2010 and 2011. After 2011, the projected growth of real GDP picks up, averaging 4.1 percent annually from 2012 through 2014; at that pace, GDP will reach its estimated potential level by the end of 2014.

The modest growth in output projected for the next two years points to sluggish growth in employment during the remainder of this year and next. Consequently, the unemployment rate in CBO's projections declines slowly, falling to 9.3 percent at the end of 2010 and 8.8 percent at the end of 2011. After 2011, growth in employment rises along with growth in output, and the unemployment rate declines more rapidly, reaching 5.1 percent at the end of 2014.

Inflation in the prices of consumer goods and services is projected to be about 1 percent in 2010 and 2011, when measured on a fourth-quarter-to-fourth-quarter basis using the price index for personal consumption expenditures. In CBO's projections, inflation picks up moderately thereafter but remains below 2 percent from 2012 through 2014. Interest rates also remain very low through the end of 2011 and then rise gradually as the recovery continues.

Economic forecasts are subject to a considerable degree of uncertainty, and many factors could lead to economic performance that is substantially different from CBO's projections. In fact, new information has already become available since the agency completed its forecast in early July. The latest data indicate that the growth in spending by households and businesses has been weaker than anticipated in CBO's forecast,

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7. See Congressional Budget Office, *The Budget and Economic Outlook: An Update* (August 2010).

suggesting that growth in the near term is likely to be a bit slower than the agency anticipated.

### **Conditions in Some Key Sectors**

The tepid nature of the recovery owes importantly to conditions in several key sectors of the economy—housing, international trade, and financial markets.

**Housing.** The housing sector, which was at the center of the problems that triggered the recession, remains weak. Home builders began construction on residential housing at an annual rate of 600,000 units during the first eight months of this year. That figure is more than the number of housing starts in 2009 (which was about 550,000 units, the lowest since at least 1958) but still well below the estimated 1.5 million units that would be necessary to keep up with the growth of the population and the replacement of obsolete units. Those low rates of housing starts primarily reflect the unusually high number of vacancies among existing housing units—by CBO’s estimate, about 2.6 million more than would normally be expected. Low levels of construction over the past two years have failed to diminish that number because the recession and a sharp rise in mortgage foreclosures have reduced the number of people able to maintain independent households.

CBO expects housing starts to pick up this year and to continue to grow next year. However, because so many vacant units exist and the construction of multifamily housing has been inhibited by the difficulty of obtaining credit for commercial real estate, housing starts will probably not return to levels consistent with population growth and the demand for replacement units until late 2012.

House prices are also unlikely to start rising significantly until the inventory of unsold homes shrinks considerably. Those prices have been falling since 2007, and although the recent data show some evidence that prices are stabilizing, CBO forecasts that the national average price of a house will drop by an additional 7 percent between the middle of 2010 and the fall of 2011.

**International Trade.** Net exports (that is, the difference between exports and imports) declined sharply in the first half of this year. Although exports rose faster than in the past few years, imports grew even more. CBO expects that net exports will continue to be a drag on the growth of real GDP in the coming year. The average pace of economic recovery among the United States’ trading partners is expected to be slow, dampening demand for U.S. exports. Net exports are also likely to decline in the near term because of the increase in foreign demand for U.S. financial assets stemming from the fiscal crisis in some European countries.

**Financial Markets.** Conditions in financial markets improved last year and early this year as the effects of the financial crisis diminished and the economy strengthened, although problems persist in some sectors. Financial conditions deteriorated a bit during the second quarter of 2010, apparently reflecting concerns about the strength and durability of the economic recovery in the United States and about the debt burden of

some European governments and its threat for the health of some financial institutions in Europe. Even though some degree of stability appears to have returned, those concerns have continued to weigh on global financial markets. Nevertheless, corporations' cost of raising funds remains quite favorable relative to long-term historical averages. Most small businesses report that, although they are concerned about the availability of credit, their larger concern is about whether they will have adequate sales. Although banks' willingness to lend to consumers has improved, the demand for loans is still weak.

Despite the general improvement in financial markets, some markets have yet to recover fully—especially the banking sector and the markets for asset-backed securities. Before the crisis, those securities, which are backed by loans on real estate or other assets, provided a significant amount of funding for loans to consumers and other borrowers. With markets for such securities still troubled, some potential borrowers are having difficulty obtaining loans for which they would qualify under normal conditions.

### **The Effect of Current-Law Fiscal Policies on CBO's Baseline Economic Forecast**

Through both higher federal spending and lower tax receipts, the federal budget has provided substantial support to economic activity during the downturn. Under current laws regarding taxes and spending, that support will diminish very rapidly over the next few years: In its baseline, CBO projects that between fiscal years 2010 and 2012, the federal budget deficit will decline by about \$675 billion (or from 9.1 percent to 4.2 percent of GDP). That reduction would be the sharpest two-year decline in the deficit relative to GDP since shortly after World War II.

Several factors contribute to the coming reduction in fiscal stimulus, including the expiration of numerous tax and spending provisions of current law and the diminishing effects of the automatic responses of federal tax revenues and spending to cyclical changes in the economy—the so-called automatic fiscal stabilizers. The temporary relief from the individual alternative minimum tax that was enacted most recently in the American Recovery and Reinvestment Act of 2009 (ARRA) expired at the end of last year. Without the relief from the AMT, tax rates and liabilities for 2010 are already higher for some people than they were last year. But CBO estimates that almost all of the economic effects of those increases will occur in 2011, when nearly all of the additional taxes will be paid. In addition, tax reductions enacted in the Economic Growth and Tax Relief Reconciliation Act of 2001 (EGTRRA) and the Jobs and Growth Tax Relief Reconciliation Act of 2003 (JGTRRA) are scheduled to expire at the end of this year. Altogether, the expiration of all of those tax provisions will deliver a significant dose of fiscal restraint in 2011: They will reduce disposable personal income by \$250 billion relative to what it would otherwise be (thereby reducing people's spending, albeit by a smaller proportion) and increase marginal tax rates for some workers (thereby reducing their after-tax wages and modestly dampening the supply of labor).

Moreover, by CBO's estimate, the increase in economic activity caused by the spending increases and other tax reductions enacted in ARRA peaked in the middle of 2010. That impact is diminishing now and will continue to do so next year. As the economy strengthens and output starts to move closer to its potential level, federal fiscal stimulus will also decline as the automatic stabilizers provide less support. That is, as output increases, tax payments to the government will begin to rise, and transfer payments to households (such as unemployment insurance) will decline.

### **Labor Markets**

The recession and the recovery that has followed have been marked by extremely weak demand for labor. Payroll employment fell by 7.3 million during the recession and by an additional 1.1 million during the second half of 2009, after the recession ended. The cumulative decline of 8.4 million jobs was the largest drop in employment in percentage terms—6.1 percent—since World War II. Although the labor market has turned up, employment gains totaled only 656,000 in the first eight months of the year (excluding temporary jobs associated with the decennial census, most of which have now ended). In contrast, if the recession had not occurred, employment would have increased during the past few years, so even with this year's increase, employment now stands roughly 10 million below the level it would have reached.

The dramatic loss of jobs pushed the unemployment rate to more than 10 percent. The unemployment rate has fallen slightly from its peak but remains high, at 9.6 percent (see Figure 4). Data from the Job Openings and Labor Turnover Survey (JOLTS) indicate that through July, there were about five unemployed workers per job opening, down from slightly over six in late 2009 but still much higher than the peak following the previous recession. The unemployment rate would be even higher had there not been a considerable falloff in the rate of participation in the labor force—the percentage of people age 16 or older who are working or seeking work—as the lack of available jobs caused some people to cease looking for a job. The labor force participation rate remains well below its prerecession level.

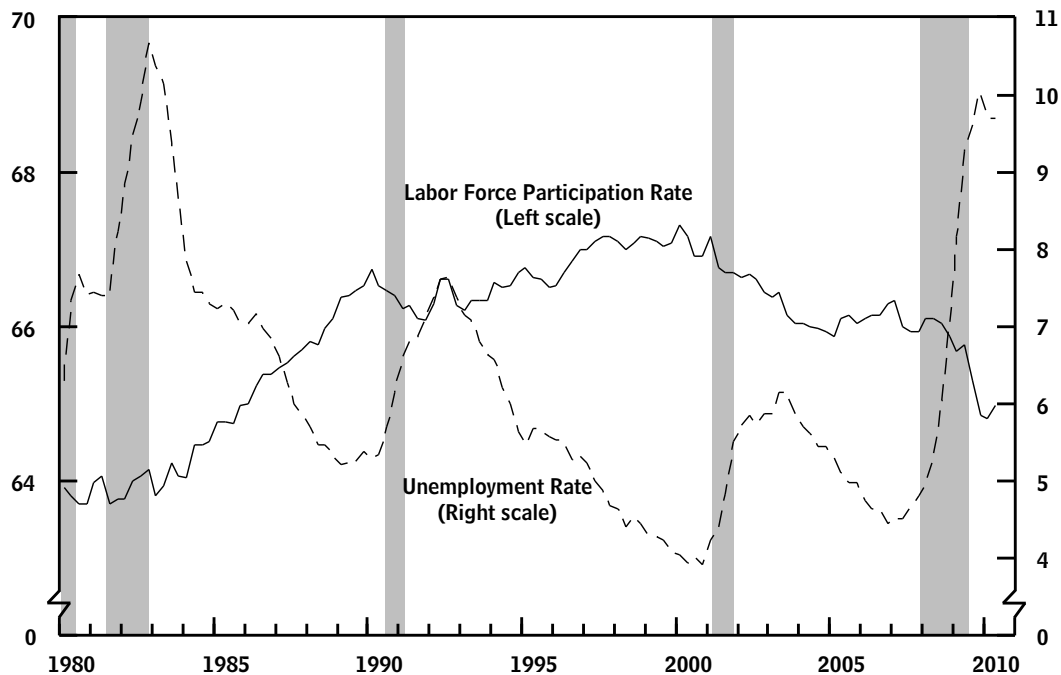
A few other measures suggest a modest improvement in labor market conditions thus far in 2010. According to data from JOLTS and from two measures of online job advertising, the number of job openings has increased significantly, though it remains a good deal below its prerecession level. Moreover, employment by temporary help services, a leading indicator for the labor market, has experienced large gains since late last year. However, new claims for unemployment insurance, which fell sharply in late 2009, have stayed stubbornly high throughout this year.

Several aspects of the rise in unemployment point to both a protracted recovery in employment and a greater degree of hardship for people who have lost their job than what people experienced following previous recessions. The share of unemployed workers whose jobs were permanently lost (or whose temporary job ended) rose much more sharply in the past few years than in previous downturns, and it has dipped only slightly since late 2009. Workers on temporary layoff have represented a smaller

**Figure 4.**

## Labor Force Participation and Unemployment Rate, 1980 to 2010

(Percent)



Source: Congressional Budget Office based on data from the Bureau of Labor Statistics.

Note: Data are quarterly and are plotted through the second quarter of 2010. The shaded bars indicate recessions.

percentage of the unemployed than they did in previous downturns. In addition, the incidence of long-term unemployment (lasting longer than 26 weeks) has been the highest by far in the past 60 years; it continued to rise during the first half of 2010 and has fallen only a little during the past two months.

**Effects of Job Losses.** Some workers who have lost a job during this downturn are facing, and will continue to face, serious difficulties.<sup>8</sup> Some of those people will rely on unemployment insurance benefits for an extended period, and others may stop looking for work altogether.<sup>9</sup> Loss of a job often means a loss of health insurance for the

8. See Congressional Budget Office, *Losing a Job During a Recession*, Issue Brief (April 22, 2010).

9. Among those who lost a job involuntarily between 1981 and 2003, three groups of workers—women, older people, and less-educated people—were more likely to leave the labor force than were others who lost a job. See Henry S. Farber, “What Do We Know About Job Loss in the United States? Evidence from the Displaced Workers Survey, 1984–2004,” *Economic Perspectives* (Spring 2005), pp. 13–28.

worker and perhaps for his or her family. People with health problems that make it difficult to work may decide to apply for disability benefits instead.<sup>10</sup>

Even among workers who find a new job, many will end up with lower earnings, not only in the short term but for many years to come. For example, among the men who lost their job in a mass layoff during the 1982 recession, earnings 15 to 20 years later were about 20 percent lower than those of similar men who did not lose their job.<sup>11</sup> Declines in earnings during the first few years after losing a job tend to be larger for people who become unemployed during or shortly after a recession. Those earnings losses can be particularly pronounced for older workers, who often have more tenure on the job and, as a consequence, more firm-specific knowledge or more skills that do not transfer readily to a new job. For example, among men who lost their job in a mass layoff during the 1982 recession, older workers—those ages 50 to 55—had their earnings decline in the following year by 40 percent more than did workers in their 20s and 30s.<sup>12</sup>

**Factors Hindering Reemployment.** In CBO's assessment, weak demand for labor owing to weak demand for goods and services accounts for much of the current high level of unemployment, and a smaller portion is attributable to structural changes in the economy that go beyond those that normally occur in a recession.

Regarding structural changes, the end of the housing boom and the recession have induced a reshuffling of jobs among businesses, occupations, industries, and geographical areas. Those developments suggest that gains in employment in the next several years will rely more than usual on the creation of new jobs—with different businesses, in different industries and locations, and requiring workers with different skills than those needed for the jobs that have disappeared. As a result, the movement of unemployed workers into new jobs will probably be more difficult in this recovery than in past ones.

For many workers who have lost their job, the process of acquiring new skills can take considerable time. One important example arises from the bubble in house prices and resulting surge in homebuilding, which generated a large increase in construction employment. The subsequent downsizing of the housing sector helps explain a much larger rise in the unemployment rate for men than for women (see Figure 5). Because the skills used in that sector are not readily transferable to most new jobs in expanding sectors, former construction workers can face a long search for work. Moreover, some

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10. Relying on unemployment insurance for an extended period or applying for disability benefits both create additional pressure on the federal budget.

11. Till M. von Wachter, Jae Song, and Joyce Manchester, *Long-Term Earnings Losses Due to Mass Layoffs During the 1982 Recession: An Analysis Using U.S. Administrative Data from 1974 to 2004* (working paper, Columbia University, April 2009), [www.columbia.edu/~vw2112/papers/mass\\_layoffs\\_1982.pdf](http://www.columbia.edu/~vw2112/papers/mass_layoffs_1982.pdf).

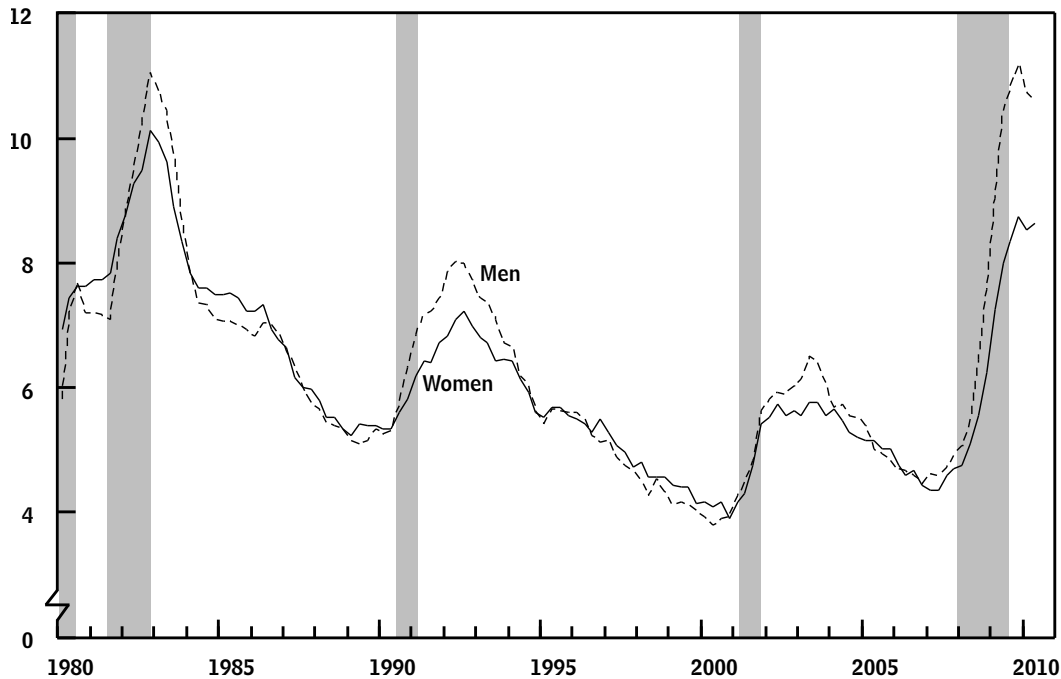
12. See von Wachter, Song, and Manchester, *Long-Term Earnings Losses Due to Mass Layoffs During the 1982 Recession*.



**Figure 5.**

## Unemployment Rate, for Men and for Women, 1980 to 2010

(Percent)



Source: Congressional Budget Office based on data from the Bureau of Labor Statistics.

Note: Data are quarterly and are plotted through the second quarter of 2010. The shaded bars indicate recessions.

employers have reorganized and upgraded their production systems during the recession to improve productivity. In such cases, unemployed workers may not be able to return to a job in the same industry because their skills have become obsolete.

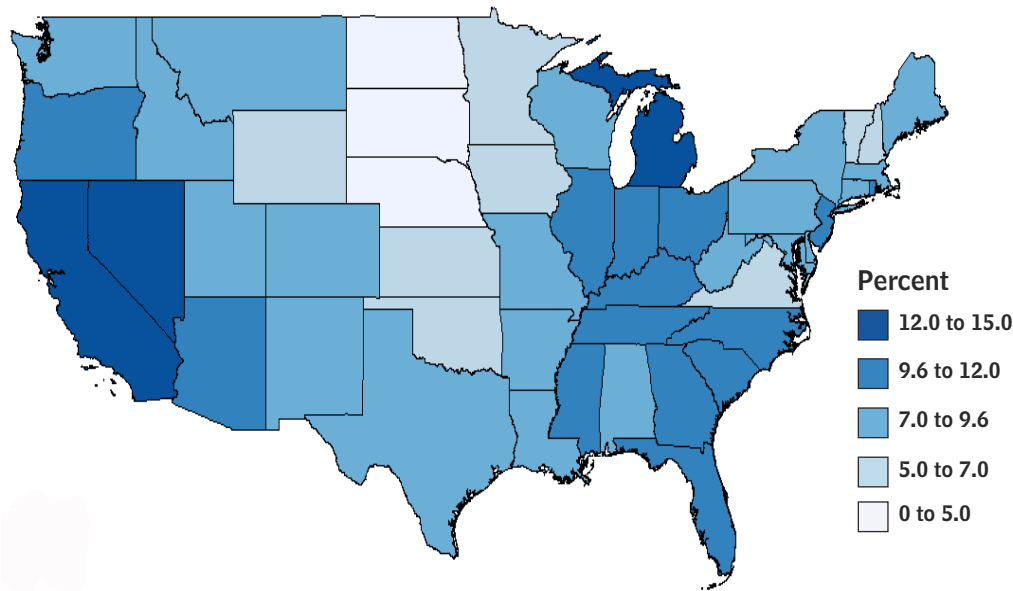
Workers who are unemployed for long periods of time can face even greater obstacles in finding a new job. Such workers are more likely not to have learned about the latest technologies and, because of a diminished social network, may have less knowledge of job opportunities. In addition, some employers may assume that long-term unemployment is a signal that a worker is not good at his or her job.

Furthermore, the sharp reduction in house prices, which left many homeowners owing more on their mortgage than their home is worth, is making relocating more difficult than usual.<sup>13</sup> Such immobility can prevent unemployed workers from finding

13. Homeowners who owe more on their mortgage than their house is worth are less likely to move. See Fernando Ferreira, Joseph Gyourko, and Joseph Tracy, "Housing Busts and Household Mobility," *Journal of Urban Economics*, vol. 68, no. 1 (July 2010), pp. 34–45.

**Figure 6.**

## Unemployment Rate, by State, August 2010



Source: Congressional Budget Office based on data from the Bureau of Labor Statistics.

potential employers. The unemployment rates in different states vary greatly, as some states that were hit hardest by the bursting of the housing bubble (such as California and Nevada) continue to have rates that are much higher than those of other states (see Figure 6).<sup>14</sup> The extent to which workers' immobility contributes to the current high unemployment rate nationally is unclear, because demand for labor is weak in so many parts of the country. However, immobility could play a larger role when the demand for labor strengthens in certain areas.

The labor market has also been affected by the extensions of unemployment insurance benefits enacted in the past few years. Those extensions have encouraged some people to stay in the labor force and collect benefits instead of leaving the labor force, and they have reduced the intensity of some workers' efforts to search for a new job because the benefits reduce the hardship of being unemployed.<sup>15</sup> Those effects of the

14. In previous bouts of high unemployment, unemployment rates in some states decreased significantly only when many of the unemployed workers moved to different states. See William H. Frey, *The Great American Migration Slowdown: Regional and Metropolitan Dimensions* (Washington, D.C.: Brookings Institution, December 2009).

15. Recent research suggests that the effect of extended unemployment insurance benefits on the duration of unemployment for the average worker who receives such benefits is rather small. See Daniel Aaronson, Bhashkar Mazumder, and Shani Schechter, "What Is Behind the Rise in Long-Term Unemployment?" *Economic Perspectives*, Federal Reserve Bank of Chicago (2010); and Rob Valetta and Katherine Kuang, "Extended Unemployment and UI benefits," *Economic Letter*, Federal Reserve Bank of San Francisco (April 19, 2010).

benefit extensions tend to increase the unemployment rate. However, other effects of the extensions work in the opposite direction, making it difficult to assess their net impact. For example, jobs that are not sought by workers receiving unemployment insurance may go instead to individuals who are not eligible for such benefits (such as new entrants to the labor force) and might otherwise be unemployed themselves. In addition, unemployment insurance facilitates mobility to new occupations by providing a safety net if such transitions do not work out. Moreover, the benefit extensions have led to greater spending by the recipients and thereby greater demand for goods and services in the economy as a whole; that effect tends to lower unemployment and boost employment. In CBO's assessment, the extensions of unemployment insurance benefits have increased employment, although because they have affected labor force participation as well, their effect on the unemployment rate is less clear.

## **Policy Options**

Although policy actions could not offset all of the effects of the boom in the housing and credit markets, the subsequent bust and financial crisis, and the severe recession, both monetary and fiscal policy could, if applied sufficiently vigorously, accelerate the recovery in output and employment during the next few years. However, fiscal policy options that would improve circumstances in the short term would have economic costs in the longer term. In particular, the cuts in taxes or increases in spending that would provide a short-term economic boost would also increase federal budget deficits and debt, thereby weakening economic growth in the long run. Policies that offer more bang for the buck in providing short-run stimulus could help minimize those long-term costs.

### **Monetary Policy Options**

Given current economic conditions and CBO's projection of continued high unemployment and low inflation next year, the agency assumes that the Federal Reserve will not begin to raise the federal funds rate until 2012.<sup>16</sup> Indeed, based on previous experience, most variants of a widely recognized rule (the Taylor Rule) for adjusting the funds rate imply that the Federal Reserve should lower that rate considerably in order to boost economic activity and inflation. That traditional approach is not feasible, however, because the funds rate has been barely above zero since December 2008.

Still, as Federal Reserve Board Chairman Bernanke explained in a speech in late August, the Federal Reserve has several monetary policy tools available, although use of those tools involves risks.<sup>17</sup> According to Chairman Bernanke, the most important tool appears to be the ability to buy additional longer-term securities in order to bring

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16. The federal funds rate is the interest rate that financial institutions charge each other for overnight loans of their monetary reserves, and it is the principal tool of monetary policy.

17. See Ben S. Bernanke, "The Economic Outlook and Monetary Policy," speech at the Federal Reserve Bank of Kansas City Economic Symposium, Jackson Hole, Wyoming (August 27, 2010).

down longer-term interest rates. To be sure, the effects of such purchases are quite uncertain. The Federal Reserve has not typically bought and sold such assets with the intention of moving longer-term interest rates, so it is not clear how much a given amount of purchases would reduce interest rates. Also, even if the Federal Reserve was successful in lowering longer-term interest rates, it is not clear how much a given reduction in interest rates would spur borrowing and spending in the current economic environment. However, there seems little reason to doubt that asset purchases in sufficient volume would encourage spending—although that volume might be quite large. In his talk, Chairman Bernanke acknowledged the risk that people would be uncertain about the Federal Reserve’s ability to withdraw such stimulus later, and other observers worry about greater government involvement in capital markets, especially if the Federal Reserve purchased securities other than ones issued by the government.

Chairman Bernanke also discussed other tools, including making clear in its policy statements its intention that interest rates will remain extraordinarily low for an extended period; reducing the interest paid on excess reserves; and raising the target for inflation in the medium term. Again, the effects of using those tools would be very uncertain, and, as Chairman Bernanke described, such actions would incur a number of risks.

### **Fiscal Policy Options**

Changes in taxes and government spending can affect the economy both by changing the potential supply of goods and services and by changing demand for them. Over the long run, the nation’s potential to produce goods and services depends on the size and quality of its labor force, on the stock of productive capital (such as factories, vehicles, and computers), and on the efficiency with which labor and capital are used to produce goods and services.<sup>18</sup> Changes in those determinants of potential output can have a lasting influence on the economy’s ability to supply goods and services. In particular, changes in tax rates affect people’s willingness to work and to save, influencing short-run demand but also affecting long-term supplies of labor and capital. Changes in tax rates can also affect businesses’ decisions about investment and hiring, and they can affect decisions about the allocation of capital investment among sectors and locations.

As the recent severe recession has shown, economic activity can deviate for substantial periods from its potential level in response to changes in aggregate demand (the total purchases of a country’s output of goods and services by consumers, businesses, governments, and foreigners). When demand for goods and services falls short of the economy’s ability to produce them, as is the case currently, tax cuts or government spending increases can increase demand and thereby hasten a return to the potential level of output. Nevertheless, demand-side effects are usually only temporary: They

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18. Efficiency in turn depends on such factors such as production technology, the way businesses are organized, and the regulatory environment.

raise or lower output relative to what it would be otherwise only for a while because, over time, stabilizing economic forces tend to move output back toward its potential.

Fiscal policies that aim to increase demand are likely to decrease output and income in the long run because such policies usually increase government borrowing and reduce the nation's saving and capital stock. Therefore, policies that increase demand often involve a trade-off between short-term benefits and longer-term costs. Indeed, to prevent unchecked growth in government debt, future policy changes are usually needed to offset the budgetary impact of stimulative policies.<sup>19</sup>

Depending on the policy enacted, the future policy changes that would be needed to maintain fiscal sustainability could be substantial. For example, CBO projects that, under current law, the gap between revenues and spending in 2020 would be about \$700 billion. Under an alternative policy assumption that the 2001 and 2003 tax cuts are extended and the AMT is indexed for inflation, the gap would grow to \$1.4 trillion, about 6 percent of GDP. If policymakers enacted those policy changes and wanted to balance the budget in 2020, they would need to increase tax revenues by one-third, reduce spending by one-quarter, or enact some combination of those approaches.

What would it mean to raise tax revenues by one-third in 2020? One possibility would be to increase revenues from the individual income tax by about two-thirds; another possibility would be to increase revenues from the corporate income tax by three-and-a-half times. On the other side of the government budget, what would it mean to cut spending by one-quarter in 2020? That amount would be a bit more than total projected spending on Social Security; almost as much as the combined spending on Medicare, Medicaid, and other health programs; much more than the spending on defense; and slightly more than all other federal spending apart from net interest.

## **Estimated Short-Term Effects of Alternative Tax and Spending Policies**

In its January 2010 report, CBO analyzed various policies for promoting economic growth and increasing employment.<sup>20</sup> That analysis focused on the effects of the policies in 2010 and 2011, assuming that they would be enacted in early 2010. If CBO repeated the analysis today, the precise estimates would be somewhat different because

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19. If a policy changes revenues and spending in a way that increases the deficit, the resulting shortfall will compound over time as the government's interest payments rise. Unless the government enacts an offsetting policy, the ratio of debt to output will be driven ever higher (under the assumption, which CBO's analysis incorporates, that the rate of interest on government debt will be higher than the rate of economic growth).

20. Congressional Budget Office, *Policies to Increase Economic Growth and Employment in 2010 and 2011*.

of small methodological changes and evolving economic conditions, but the qualitative pattern of the estimates would be quite similar.<sup>21</sup>

Different policy options would work somewhat differently depending on whether they sought to support spending by households, businesses, or governments. Policy options aimed at assisting households would spur demand for goods and services to varying degrees and thereby boost production to varying degrees. Because businesses' decisions on investing and hiring depend on the demand for their products, higher demand and production would lead to more investment and hiring. The size of those effects would depend largely on which households got the money. Policies that would temporarily increase the after-tax income of people who are relatively well off would probably have little effect on their spending, but policies that increased the resources of families with lower income, few assets, and poor credit would probably have a larger impact on their spending. Because of the extent of job losses and declines in asset prices in this recession, more families probably have those attributes now than was the case in the immediate aftermath of many previous recessions.

Policy options that supported businesses would operate somewhat differently. For example, if firms faced a temporary reduction in labor costs, they would probably respond through a combination of four channels. First, some firms would respond to lower employment costs by reducing the prices they charge in order to sell more goods or services. Those higher sales would in turn spur production, which would then increase hours worked and hiring. Second, some firms would pass the tax savings on to employees in the form of higher wages or other forms of compensation, which in turn would encourage more spending by those employees. Third, some firms would retain the tax savings as profits, and the resulting greater wealth would encourage more consumption by some households. Fourth, some firms would use slightly more labor during a period when it was temporarily less expensive. Or, if firms could realize the tax benefits of depreciation deductions more quickly, they would have a greater incentive for investment because a dollar of tax benefit this year is more valuable than a dollar of tax benefit in a future year.

Additional government spending would also boost output and employment. Effects would occur directly through the government-funded activity and indirectly through increases in demand for goods and services resulting from the higher income of the households and firms that directly benefited from the government activity.

In CBO's analysis, the effect of a policy on output was measured by the cumulative effects on GDP for each dollar of total budgetary cost (that cost equals the additional federal spending or reduction in federal tax revenues). The effect of a policy on employment was measured by the cumulative effects on years of full-time-equivalent

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21. The methodology used for those estimates was comparable to the methodology used in CBO's estimates of the economic effects of ARRA. See Congressional Budget Office, *Estimated Impact of the American Recovery and Reinvestment Act on Employment and Economic Output From April 2010 Through June 2010* (August 2010).

employment for each dollar of total budgetary cost (a year of full-time-equivalent employment is 40 hours of employment per week for one year). By focusing on full-time-equivalent employment, the calculations included increases in the hours worked by people in part-time employment and possibly some overtime work by full-time employees. To account for uncertainty, the analysis included both a “low” estimate and a “high” estimate for the effects of each policy.

For this analysis, policies were assumed to be temporary, although some of the policies could also be designed to be permanent. The total effect of a policy on economic growth and employment would depend critically on the magnitude of the reduction in taxes or increase in spending that occurred. The largest feasible magnitude of the budgetary change varies among policies, but all of the options considered are sufficiently scalable to allow tens of billions of dollars of tax cuts or spending increases per year.

The key results of the analysis of alternative policy options are as follows (see Table 1):

- The largest effect on the economy per dollar of budgetary cost would arise from a temporary increase in aid to the unemployed. Such an increase would slightly raise unemployment among the affected individuals. However, the households receiving the additional benefits would tend to spend a very large share of them (rather than saving them) and to do that spending quickly; the increase in spending would raise demand and thereby increase output and employment in the economy overall.
- The next-largest effect on the economy per dollar of budgetary cost would arise from a temporary reduction in employers’ payroll taxes. Firms would probably respond to such a tax cut through a combination of lower prices, higher wages, and higher profits. The changes in prices, wages, and profits would spur additional spending, which would boost employment. In addition, the reduced cost of labor would directly encourage the use of more labor in production. Reducing employers’ payroll taxes for firms that increased their payroll would have an even higher bang for the buck because the tax cut would be linked to payroll growth and therefore would use fewer dollars to cut employers’ taxes for workers who would have been employed anyway.
- Smaller but still significant effects on the economy per dollar of budgetary cost would result from a number of other policies. One such policy is a temporary reduction in employees’ payroll taxes. This option would not immediately affect employers’ costs, but instead would have effects similar to those of reducing other taxes for those workers—that is, it would raise spending and thus production and employment. Other policies with similar effects are providing additional one-time Social Security payments and additional temporary refundable tax credits for lower- and middle-income households. The people receiving those funds would be likely to spend a significant share of the amounts they received. Allowing for temporary expensing of business investment would have a similar bang for the buck, as would providing additional aid to states for purposes other than infrastructure, which would lead to fewer layoffs of state employees and fewer increases in state taxes.

**Table 1.**

## Effects of Policy Options on Output and Employment in 2010 to 2015, Assuming Enactment in Early 2010

	Cumulative Effects on GDP, 2010–2015 <sup>a</sup> (Dollars per dollar of total budgetary cost)		Cumulative Effects on Employment <sup>b</sup> (Years of full-time-equivalent employment per million dollars of total budgetary cost)					
			2010		2010–2011		2010–2015	
	Low	High	Low	High	Low	High	Low	High
<b>Policy Options with a Substantial Proportion of Impacts Beginning in 2010</b>								
Increasing Aid to the Unemployed <sup>c</sup>	0.7	1.9	4	7	8	19	6	15
Reducing Employers' Payroll Taxes	0.4	1.2	3	5	5	13	4	11
Reducing Employers' Payroll Taxes for Firms That Increase Their Payroll	0.4	1.3	5	9	8	18	7	16
Reducing Employees' Payroll Taxes	0.3	0.9	2	4	3	9	2	7
Providing an Additional One-Time Social Security Payment	0.3	0.9	2	6	3	9	2	8
Allowing Full or Partial Expensing of Investment Costs <sup>d</sup>	0.2	1.0	1	3	2	9	1	8
<b>Policy Options with a Substantial Proportion of Impacts Beginning in 2011</b>								
Investing in Infrastructure <sup>e</sup>	0.5	1.2	*	1	2	4	4	10
Providing Aid to States for Purposes Other Than Infrastructure <sup>e</sup>	0.4	1.1	1	1	3	7	3	9
Providing Additional Refundable Tax Credits for Lower- and Middle-Income Households in 2011	0.3	0.9	*	*	3	6	3	7
Extending Higher Exemption Amounts for the Alternative Minimum Tax	0.1	0.4	*	*	1	4	1	4
Reducing Income Taxes in 2011 <sup>f</sup>	0.1	0.4	*	*	1	3	1	4

Source: Congressional Budget Office, *Policies to Increase Economic Growth and Employment in 2010 and 2011* (January 2010).

Notes: Different elements of spending and tax policies would have different effects on economic output per dollar of budgetary cost. CBO grouped the elements into general categories. For each category, CBO judgmentally chose low and high estimates of the effects on economic output per dollar of budgetary cost. CBO combined those estimates with projections of how changes in output affect participation in the labor force and the unemployment rate to produce estimates of effects on employment, hours per worker, and full-time-equivalent employment (40 hours of employment per week for one year).

Unless otherwise specified, spending policy options were assumed to provide budget authority as of April 2010, tax policy options were assumed to be in effect for 2010 only, and the total budgetary cost is the amount of tax revenues or budget authority over the full duration of the policies' effects.

\* = between zero and 0.5.

- a. Estimated as gross domestic product (GDP) with the policy option in effect relative to GDP without the policy option.
- b. Estimated as years of full-time-equivalent employment with the policy option in effect minus years of full-time-equivalent employment without the policy option.
- c. Assumed spending began in March 2010, and no benefit payments would be made after July 2011.



- d. Initial reductions in revenues would be nearly fully offset by later increases. The policy's effects were therefore estimated per dollar of the present discounted value of the policy (discounted at the businesses' cost of debt and equity) instead of per dollar of total budgetary cost.
  - e. Timing of spending from new funding would follow historical experience.
  - f. Assumed to extend, through 2011, the provisions of the Economic Growth and Tax Relief Reconciliation Act of 2001 and the Jobs and Growth Tax Relief Reconciliation Act of 2003 that are scheduled to expire at the end of 2010, and to provide relief from the individual alternative minimum tax by extending the higher exemption amounts that were in effect in 2009 (indexed for inflation) for 2010 and 2011.
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- The other options that CBO analyzed would have still smaller effects on the economy per dollar of budgetary cost. One option in this category is a temporary increase in investment in infrastructure. Because many infrastructure projects involve substantial start-up lags and because considerable infrastructure financing was already provided through ARRA, most of the increases in output and employment from this policy would probably occur a few years in the future. Another option in this category is extending higher exemption amounts for the AMT in 2010. That policy would have a limited impact on spending because it would largely affect households whose spending is not constrained by their income in a given year.
- The final option that CBO studied for the January report was a one-year deferral of the increase in income taxes scheduled to occur in 2011, combined with an increase in the exemption amounts for the AMT for 2010 and 2011. CBO estimated that this option would have a small effect on the economy per dollar of budgetary cost because only a fraction of such a tax cut would probably be spent. CBO focused on the effects of policy options during 2010 and 2011, and most of this tax cut would not occur until halfway through that period. If CBO updated those estimates today and examined the impact during the 2011–2012 period, a temporary across-the-board reduction in income taxes would have a larger effect per dollar of budgetary cost but would still, by that measure, significantly trail most of the other options studied.
- A one-year deferral of all of the increases except certain provisions that apply to higher-income taxpayers would have a larger effect on the economy per dollar of budgetary cost than would a deferral of all of the increases because the higher-income households that would be excluded would probably save a larger fraction of their increase in after-tax income. However, the difference between the two options would be small, because much of the remaining tax reduction would still go to higher-income taxpayers.

## **Estimated Short-Term and Longer-Term Effects of Four Alternative Tax Policies**

Changes in tax law related to the 2001 and 2003 tax cuts that are scheduled to expire at the end of 2010, as well as changes to provisions of the AMT that expired at the

end of last year and to the estate tax, could have a significant impact on the federal budget and on the economy. In response to a request from the Chairman, CBO analyzed four possible approaches to changing those provisions of current law:

- **Full Permanent Extension.** This option would extend the provisions of EGTRRA and JGTRRA that are scheduled to expire at the end of 2010; extend the higher exemption amounts from the AMT that were in effect in 2009 and index them for inflation for 2010 and subsequent years; and reinstate the estate tax—which expired completely in 2010—for 2011 and subsequent years at the rates in effect in 2009 and with the exemption amounts (adjusted for inflation) that applied in that year, rather than at the higher rates and lower exemption amounts scheduled to take effect in 2011.
- **Partial Permanent Extension.** This option is the same as the full extension, except that it would not extend certain provisions of EGTRRA and JGTRRA that apply to married couples with income of \$250,000 or more and single taxpayers with income of \$200,000 or more. Those provisions include the lower tax rates in the top two income tax brackets, the lower 15 percent tax rates on capital gains and dividends, and the elimination of the phaseout of itemized deductions and personal exemptions.
- **Full Extension Through 2012.** This option would make the same changes as the full permanent extension, but through 2012 rather than permanently.
- **Partial Extension Through 2012.** This option would make the same changes as the partial permanent extension, but through 2012 rather than permanently.

To analyze how these four policy options would affect the economy, CBO used an approach very much like its method for analyzing the macroeconomic effects of the President's budgetary proposals. The agency used several models that make different simplifying assumptions about people's behavior, and, for some of the models, the agency produced estimates under alternative assumptions about the response of labor supply to changes in tax rates. Still, the effects of these policy options are quite uncertain, and the actual effects could be outside CBO's ranges of estimates. The estimates incorporate the assumption that no other tax or spending policies would be changed through 2020, although some of the estimates incorporate the effects of policy changes assumed to be made after 2020 to put fiscal policy on a sustainable path.

To estimate effects on the economy in 2011 and 2012, CBO used models that focus on the policies' effects on the demand for goods and services, because the agency thinks that weak demand will constrain economic growth in the short term. All else being equal, lower tax revenues increase demand for goods and services and thereby boost economic activity. By contrast, to estimate effects on the economy in 2020 and beyond, CBO used models that focus on the policies' effects on the supply of labor and capital, because the agency thinks that supply factors will restrain economic

growth over that longer horizon. All else being equal, lower tax revenues increase budget deficits, and, in turn, the federal government's increased borrowing displaces some productive investment in the private sector; at the same time, lower tax rates increase people's saving and work effort. The net effect on economic activity and income depends on the balance of those forces.

### **Estimated Effects on Federal Revenues and Marginal Tax Rates**

CBO estimates that a full extension of the tax provisions would reduce federal revenues as a share of gross national product (GNP) by 1.2 percent in 2011 and 1.7 percent in 2012 (see Table 2).<sup>22,23</sup> A partial extension would reduce revenues by about one-fifth to one-quarter less, CBO estimates—by 0.9 percent of GNP in 2011 and 1.4 percent in 2012. If the extension of the tax provisions continued through 2020, the full extension would reduce revenues by 2.1 percent of GNP in that year, and the partial extension would reduce them by 1.6 percent of GNP.<sup>24</sup>

Extending the expiring tax provisions would reduce the marginal federal tax rates (the rates that would apply to the last dollar of income subject to taxes) on both capital income and labor income, by keeping in place lower individual income tax rates on ordinary income, dividends, and capital gains. Under current law, the 25 percent, 28 percent, and 33 percent income tax rates would all rise by 3 percentage points in 2011, and the top tax rate would rise from 35 percent to 39.6 percent. The current maximum 15 percent tax rate on dividends and long-term capital gains would also rise. Under current law, the tax rate on long-term capital gains would increase to 20 percent in 2011, and dividends would be taxed at the same rates as other income.

The full extension would reduce the effective marginal tax rate on capital income by 2.0 percentage points in 2011 and by 2.3 percentage points in 2020, CBO

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22. GNP measures the total market value of goods and services produced during a given period by labor and capital supplied by residents of the United States, regardless of where the labor and capital are located. That value is conceptually equal to the total income accruing to residents of the country during that period (national income) and thus, compared with gross domestic product (GDP), is a better measure of the well-being of U.S. residents. GNP differs from GDP primarily by including the capital income that residents earn from investments abroad and excluding the capital income that nonresidents earn from domestic investment.

23. The revenue estimates are based on preliminary estimates provided by the staff of the Joint Committee on Taxation. The estimates include the effects of increased outlays for refundable credits and do not incorporate any impact that the policy options might have on GNP or other broad measures of economic activity.

24. Under CBO's baseline projections, which incorporate the assumption that current tax law continues in effect, federal revenues in 2020 would amount to about 21 percent of GNP.

**Table 2.**

## Effects of Four Tax Policy Options on Federal Revenues and Marginal Tax Rates, 2011, 2012, and 2020

	Impact on Revenues <sup>a</sup> (Percentage of Gross National Product)	Impact on Effective Federal Marginal Tax Rate on Capital Income <sup>b</sup> (Percentage points)	Impact on Effective Federal Marginal Tax Rate on Labor Income <sup>c</sup> (Percentage points)
<b>2011</b>			
Full Extension, Permanent <sup>d</sup>	-1.2	-2.0	-2.6
Partial Extension, Permanent <sup>e</sup>	-0.9	-0.4	-2.0
Full Extension, Through 2012 <sup>f</sup>	-1.2	-2.0	-2.6
Partial Extension, Through 2012 <sup>g</sup>	-0.9	-0.4	-2.0
<b>2012</b>			
Full Extension, Permanent <sup>d</sup>	-1.7	-2.1	-2.7
Partial Extension, Permanent <sup>e</sup>	-1.4	-0.4	-2.0
Full Extension, Through 2012 <sup>f</sup>	-1.7	-2.1	-2.7
Partial Extension, Through 2012 <sup>g</sup>	-1.4	-0.4	-2.0
<b>2020</b>			
Full Extension, Permanent <sup>d</sup>	-2.1	-2.3	-3.0
Partial Extension, Permanent <sup>e</sup>	-1.6	-0.4	-2.1
Full Extension, Through 2012 <sup>f</sup>	*	0	0
Partial Extension, Through 2012 <sup>g</sup>	*	0	0

Source: Congressional Budget Office.

Note: \* = less than 0.1 percentage point.

- a. Estimated as revenues with the policy in effect minus revenues without the policy. The impact on outlays for refundable tax credits is included.
- b. The difference relative to current law in the rate applicable to the last dollar of capital income subject to federal individual income and corporate income taxes.
- c. The difference relative to current law in the rate applicable to the last dollar of labor income subject to federal individual income and payroll taxes.
- d. This option would extend the provisions of the Economic Growth and Tax Relief Reconciliation Act of 2001 and the Jobs and Growth Tax Relief Reconciliation Act of 2003 that are scheduled to expire at the end of 2010; extend the higher exemption amounts from the individual alternative minimum tax that were in effect in 2009 (adjusted for inflation) for 2010 and subsequent years; and reinstate the estate tax—which expired completely in 2010—for 2011 and subsequent years at the rates in effect in 2009 and with the exemption amounts (adjusted for inflation) that applied in that year.
- e. This option is the same as the full extension, except that certain provisions would expire that would otherwise have applied to married couples with income of \$250,000 or more and single taxpayers with income of \$200,000 or more. Those provisions include the lower tax rates in the top two income tax brackets, the lower 15 percent tax rates on capital gains and dividends, and the elimination of the phaseout of itemized deductions and personal exemptions.
- f. This option would make the same changes as the full extension, but through 2012 rather than permanently.
- g. This option would make the same changes as the partial extension, but through 2012 rather than permanently.

estimates.<sup>25</sup> The partial extension would have a much smaller effect, reducing that tax rate by an estimated 0.4 percentage points in both 2011 and 2020. The effect is smaller because of the disproportionate share of capital income accruing to high-income households, who would not see a decline in marginal tax rates under the partial extension.

The full extension would reduce the effective marginal tax rate on labor income by 2.6 percentage points in 2011 and by 3.0 percentage points in 2020, CBO estimates; the partial extension would reduce those rates by an estimated 2.0 percentage points in 2011 and 2.1 percentage points in 2020. The projected effects on the effective marginal tax rate are greater for labor income than capital income because a substantial amount of capital income is not taxed under the individual income tax. For example, capital income in the form of implicit rent on owner-occupied homes and capital income earned from tax-preferred retirement accounts are not subject to income taxes.

### **Estimated Economic Effects in 2011 and 2012**

For 2011 and 2012, CBO's estimates of effects on GDP incorporate both supply-side effects (influences on the economy's potential output; that is, the amount of production that corresponds to a high level of resource use) and demand-side effects (temporary movements of actual output relative to potential output). However, the estimated economic effects depend predominantly on the demand-side effects because CBO projects that actual output will fall well short of potential output during the next two years. CBO analyzed the effects of the policies on total income (as measured by real GNP), the unemployment rate, employment, and full-time-equivalent employment.

According to CBO's estimates, all four policy options would add to income and employment in 2011 and 2012, largely because they would increase after-tax income and thereby encourage people to spend more. In 2011, for example, by CBO's estimates, the partial extension of the tax cuts through 2012 would increase real GNP by between 0.2 percent and 0.7 percent, reduce the unemployment rate by between 0.1 and 0.3 percentage points, and add between 0.3 million and 0.7 million full-time-equivalent jobs (see Table 3).

The full extension of the tax cuts through 2012 would increase GDP and employment more in 2011 and 2012 than would the partial extension through 2012 because it would have a greater overall impact on after-tax income. However, the economic impact per dollar of revenue reduction from the full extension would be smaller than that from partial extension because a greater proportion of the tax savings from the

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25. The effective marginal tax rate on capital income is the rate that would apply to the return on additional investment. That rate is averaged across all the businesses, people, and institutions that would receive that investment income (and that could face different tax rates). For a description of CBO's method for estimating effective tax rates, see Congressional Budget Office, *Computing Effective Tax Rates on Capital Income*, Background Paper (December 2006).

**Table 3.**


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## Effects of Four Tax Policy Options on Macroeconomic Outcomes in 2011 and 2012

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	Real GNP <sup>a</sup> (Percent)		Unemployment Rate <sup>b</sup> (Percentage points)		Employment <sup>c</sup> (Millions)		Full-Time-Equivalent Employment <sup>d</sup> (Millions)	
	Low	High	Low	High	Low	High	Low	High
	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
<b>2011</b>								
Full Extension, Permanent	0.5	1.4	-0.2	-0.5	0.4	1.0	0.6	1.4
Partial Extension, Permanent	0.4	1.1	-0.2	-0.4	0.3	0.8	0.5	1.2
Full Extension, Through 2012	0.3	0.9	-0.1	-0.3	0.2	0.6	0.3	0.9
Partial Extension, Through 2012	0.2	0.7	-0.1	-0.3	0.2	0.5	0.3	0.7
<b>2012</b>								
Full Extension, Permanent	0.6	1.9	-0.3	-1.0	0.7	1.9	0.9	2.7
Partial Extension, Permanent	0.5	1.5	-0.3	-0.8	0.5	1.6	0.8	2.3
Full Extension, Through 2012	0.3	1.1	-0.2	-0.6	0.3	1.1	0.5	1.7
Partial Extension, Through 2012	0.3	0.9	-0.2	-0.5	0.3	1.0	0.4	1.4

Source: Congressional Budget Office.

Notes: For a description of the tax policy options, see the notes to Table 2.

Different elements of tax policy options would have different effects on economic output per dollar of change in tax revenues. CBO grouped the provisions of the tax policies into general categories. For each category, CBO judgmentally chose low and high estimates of the effects on economic output per dollar of changes in tax revenues. Multiplying estimates of those per-dollar effects by the change in tax revenues from each element of a tax policy yields low and high estimates of the policy's total impact on output. CBO combined those estimates with projections of how changes in output affect participation in the labor force and the unemployment rate to produce estimates of effects on employment, hours per employed worker, and full-time-equivalent employment.

- a. Estimated as gross national product adjusted for inflation (real GNP) with the policy option in effect relative to real GNP without the policy option.
  - b. Estimated as the unemployment rate with the policy option in effect minus the unemployment rate without the policy option.
  - c. Estimated as the number of people who work for pay with the policy option in effect minus the number without the policy option.
  - d. Estimated as full-time-equivalent employment (40 hours of employment per week for one year) with the policy option in effect minus full-time-equivalent employment without the policy option.
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full extension would go to relatively high income households, which tend to spend less of an increase in income than lower-income households do.

The full permanent extension and partial permanent extension of the tax cuts would have larger economic effects in the next two years than would the corresponding extensions through 2012 because people tend to spend a larger portion of permanent changes in after-tax income than of temporary changes.<sup>26</sup> However, the economic effects in the next two years, per dollar of revenue reduction over the long run, would be smaller than those of the corresponding temporary extensions because the revenue loss would continue for many more years.

### **Estimated Economic Effects in 2020 and Later Years**

For 2020 and later years, CBO's estimates incorporate only supply-side effects, because the magnitude of demand-side effects depends on the state of the economy, which is especially difficult to predict over longer horizons. In addition, the Federal Reserve would probably offset much of the demand-side effects of policies that are foreseen well in advance in order to maintain economic stability. Because changes in unemployment caused by fiscal policy changes come largely from those policies' effects on demand, CBO did not estimate effects on unemployment in 2020 and beyond.

CBO used two different models (described more fully in the appendix) to project the economic effects of the alternative tax policies in 2020. One is a "textbook" growth model, an enhanced version of a model developed by economist Robert Solow. The other is a life-cycle growth model, which is designed to capture supply-side effects in a relatively complete and consistent way and to capture the fact that people make decisions based not only on their current circumstances but also on their expectations of future economic conditions. Among the crucial expectations are those for fiscal policy. The model imposes the common-sense rule that people believe that increases in debt arising from spending increases and tax cuts must eventually be paid for by spending cuts, tax increases, or some combination of the two. Therefore, an assumption is required about how increased deficits in the near term will be made up in later years. CBO applied two different assumptions about what people would expect—that government spending would be reduced after 2020, or that tax rates would be raised after

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26. In *The Budget and Economic Outlook: An Update* (August 2010), CBO described what its economic forecast would be if, instead of the current law that CBO must assume for its baseline, the Congress followed an alternative fiscal policy similar to what many private forecasters assume. A principal element of that alternative policy was a partial permanent extension of the tax cuts as proposed in the President's 2011 budget. The estimated effects of a partial permanent extension reported here differ somewhat from the estimated effects reported in the *Update* both because the policy considered here is a little different and because the effects are reported here on an annual-average basis rather than on a fourth-quarter-to-fourth-quarter basis as in the *Update*.

2020.<sup>27</sup> Because of the forward-looking nature of people's decisions in that model, those different assumptions lead to different projected outcomes in 2020 (and earlier).

A key assumption in both of the models is the responsiveness of labor supply to changes in after-tax compensation from employment. Because researchers are uncertain about the magnitude of this responsiveness, CBO estimated the effects of the tax policy options using two different assumptions, incorporating one of the lower estimates and one of the higher estimates in the research literature.<sup>28</sup>

By CBO's estimates, the partial extension of the tax cuts through 2012 would reduce real GNP in 2020 by between 0.2 percent and 0.3 percent relative to what would otherwise occur, depending on the model and assumptions used (see Table 4). The full extension of the tax cuts through 2012 would have a slightly larger negative effect of about 0.3 percent. Those projected reductions in GNP occur primarily because the negative effect on GNP of the crowding out of investment resulting from extra government borrowing outweighs the positive effect on GNP of extra labor supply and saving resulting from the lower tax rates during the next two years.<sup>29</sup>

The partial permanent extension of the tax cuts would have a larger negative effect on real GNP in 2020, reducing it by between 0.9 percent and 1.8 percent, depending on the model and assumptions. The reduction in GNP is larger for this policy than for the partial extension through 2012 because the additional government borrowing would diminish income by more than the persistence of lower tax rates would raise it. The reduction in GNP in 2020 is less pronounced when tax rates are assumed to increase after 2020 than when government spending is assumed to decrease after 2020, because the anticipation of an increase in tax rates would lead people to work more in the years up to and including 2020. Greater responsiveness of labor supply to changes in after-tax compensation from employment has an ambiguous impact on the effects of tax reductions on labor supply and GNP because the boost to labor supply from lower tax rates is offset at least in part by the reduction in labor supply from lower pretax compensation due to the crowding out of investment. In cases in which the fall in pretax compensation outweighs the cut in tax rates, greater responsiveness

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27. Other assumptions are possible. For example, if tax revenues were increased through broadening the calculation of taxable income for the individual income tax rather than raising the rates at which that income is taxed, then the estimated effects of the policy would more closely resemble the estimated effects of cutting government spending. Alternatively, if the reduction in government spending was concentrated only in purchases of goods and services or only in transfer payments, then the estimated effects of the policy would be different.

28. For a review of the estimates in the research literature and for an explanation of the labor supply response in the life-cycle model that CBO uses, see Juan Contreras and Sven Sinclair, "The Labor Supply Response in Macroeconomic Models," CBO Working Paper 2008-07 (September 2008).

29. In contrast with the analysis presented here, the analysis of different budgetary policies presented in CBO's *The Long-Term Budget Outlook* (June 2010, revised August 2010) did not incorporate the effects on labor supply of changes in marginal tax rates on labor income or the effects on saving of changes in marginal tax rates on capital income.



**Table 4.**

## Effects of Four Tax Policy Options on Real GNP in 2020 and the Long Term

(Percent)

	Effects Without Additional Policy Changes <sup>a</sup>		Effects with Additional Policy Changes Needed to Put Fiscal Policy on a Sustainable Path <sup>b</sup>			
			Government Spending Reduced After 2020		Tax Rates Increased After 2020	
	Weak Labor Response	Strong Labor Response	Weak Labor Response	Strong Labor Response	Weak Labor Response	Strong Labor Response
<b>2020</b>						
Full Extension, Permanent	-1.6	-1.1	-1.4	-0.9	-0.8	0.1
Partial Extension, Permanent	-1.3	-0.9	-1.6	-1.8	-1.1	-0.9
Full Extension, Through 2012	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
Partial Extension, Through 2012	-0.3	-0.3	-0.2	-0.3	-0.2	-0.3
<b>Long Term<sup>c</sup></b>						
Full Extension, Permanent	n.a.	n.a.	-2.9	-2.3	-8.4	-10.5
Partial Extension, Permanent	n.a.	n.a.	-2.9	-3.5	-7.8	-11.2
Full Extension, Through 2012	n.a.	n.a.	-0.6	-0.6	-0.7	-0.8
Partial Extension, Through 2012	n.a.	n.a.	-0.5	-0.6	-0.6	-0.7

Source: Congressional Budget Office.

Notes: Estimated as gross national product adjusted for inflation (real GNP) with the policy option in effect relative to real GNP without the policy option. Weak and strong labor responses correspond to the respective number of hours worked when the response to tax rate changes is weak and when it is strong. For a description of the tax policy options, see the notes to Table 2.

n.a. = not available; these estimates were not calculated for this analysis.

- a. Based on a "textbook" growth model, which is an enhanced version of a model developed by Robert Solow.
- b. Based on a life-cycle growth model, developed by CBO, which is an overlapping-generations general-equilibrium model in which people are forward-looking in their behavior. Because the U.S. economy is open to flows of foreign capital, but also large enough to influence world interest rates and wage rates, the results reported for this model are an average of results using assumptions of a closed economy and a small open economy. For this model, CBO had to make assumptions about how fiscal policy would be put on a sustainable path. CBO chose two alternatives: reducing government purchases of goods and services and transfer payments after 2020, and increasing marginal tax rates after 2020.
- c. Based on estimates for 2040.

implies a larger decrease in output rather than a smaller one; in this analysis, that occurs under the assumption that government spending is reduced after 2020.

The estimated effect of the full permanent extension of the tax cuts on GNP in 2020 varies substantially—ranging from a reduction of 1.6 percent to an increase of 0.1 percent—depending on the model and assumptions used. In results from the textbook growth model, the effect is more negative than that of the partial permanent extension because the greater government borrowing diminishes income by more than the existence of lower tax rates for more workers and savers raises it. In contrast, in results from the life-cycle growth model, the effect is less negative than for the partial permanent extension (or is positive) in large part because the greater reduction in tax rates has a larger effect on labor supply and saving than the additional crowding out from the larger deficits. In addition, as under the partial permanent extension, people would work more in the years up to and including 2020 in anticipation of the increase in future tax rates.

Estimates using the life-cycle growth model show that all four tax policy options would reduce GNP in the long term relative to what would otherwise occur (for all of the assumptions used in the analysis). Those negative effects would stem from the reduced capital stock and from the impact of the policy changes that are assumed to take place after 2020 to put fiscal policy on a sustainable path. The permanent extensions of the tax cuts would have much larger negative effects in the long term than the temporary extensions because the amount of additional government debt would be so much larger. CBO did not complete estimates beyond 2020 using the textbook growth model. However, such estimates would show larger negative effects on GNP beyond 2020 than in 2020—especially for the permanent extensions—because the additional government debt would compound over time, and the extent of crowding out would increase.

The estimated effects from the life-cycle model depend importantly on when further policy changes to put fiscal policy on a sustainable path are assumed to be made. For example, if subsequent cuts in government spending or increases in tax rates were made sooner than 2020, the permanent extensions would reduce GNP by more in 2020 but less in the long term.

# Appendix:

## Additional Information on the Estimated Effects of the Four Alternative Tax Policies

The four tax policy options that the Congressional Budget Office (CBO) examined would influence the economy through both demand and supply effects.<sup>1</sup> By reducing taxes relative to CBO's baseline projections, all four options would generate demand-side effects that would raise output relative to what would otherwise occur in 2011 and 2012. In particular, lower tax payments imply that disposable income would increase, encouraging consumers' demand for goods and services.

The options would also generate supply-side effects that would help determine the course of potential economic output. The supply-side effects of the options would arise primarily from two factors:

- The policies would result in a smaller stock of domestically owned capital, mainly as a consequence of increased budget deficits relative to those projected under current law. That effect is larger when the impact of the policy on the deficit is greater, and it becomes stronger over time as budget deficits accumulate. Therefore, full extensions of the tax cuts would have larger negative effects on the capital stock than partial extensions, and permanent extensions would have larger negative effects than extensions through 2012.
- While the policies are in effect, they would result in an increase in the supply of labor and saving by reducing the effective marginal tax rates on labor and saving. Those reductions, and therefore the positive impact on labor supply and saving, would be larger for full extensions than partial extensions and would last longer for permanent extensions than for extensions through 2012.

### How the Policies Would Affect the Economy

The alternative tax policies would influence the size of the nation's capital stock by affecting national saving, which consists of private saving (saving by households and businesses) plus public saving (the budget surpluses or deficits—which represent dis-saving—of state and local governments and the federal government). An increase in

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1. For a similar discussion of CBO's approach to estimating the macroeconomic effects of the President's budgetary proposals, see Congressional Budget Office, *An Analysis of the President's Budgetary Proposals for Fiscal Year 2011* (March 2010), Chapter 2 and Appendix B.

the federal deficit represents a reduction in public saving and, therefore, in national saving. Federal policies also can affect private saving; increases in private saving raise national saving, and decreases diminish national saving. A decline in national saving reduces the capital stock owned by U.S. citizens over time through a decrease in domestic investment, an increase in net borrowing from abroad, or both.

The policy options' largest consequences for national saving would come from their effects on the federal budget deficit. Each year between 2011 and 2020, the options would expand the federal deficit relative to that in CBO's baseline, which would reduce national saving, other things being equal.

Extending the tax cuts would also influence the size of the nation's capital stock by altering effective marginal tax rates on capital income (income derived from wealth, such as stock dividends, realized capital gains, or the owner's profits from a business) and thus the after-tax rate of return on saving and the amount of saving that people chose to do.<sup>2</sup> CBO's estimates of marginal tax rates reflect both corporate and individual income taxes.<sup>3</sup>

The reduction in the effective marginal tax rate on capital income would result primarily from the extension of lower income tax rates and the maximum 15 percent tax rate on dividends and capital gains. Under current law, for example, the top tax rate would rise from 35 percent to 39.6 percent, the top tax rate on capital gains would rise to 20 percent, and dividends would be taxed at the same rates as other income. The decrease in the tax rate on capital income relative to the rate prevailing under current law could have larger or smaller effects on private saving depending on how people responded.<sup>4</sup> However, even the upper end of reasonable estimates for the responsiveness of saving would imply relatively small consequences for the capital stock and output of the economy if the extension of the lower rates was limited to two years. Extending the tax cuts except for provisions applying to higher-income taxpayers would have a much smaller effect on the marginal effective tax rate on capital because a disproportionate share of capital income accrues to high-income households.

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2. The effective marginal tax rate on capital income is the rate that would apply to the return on additional investment. That rate is averaged across all the businesses, people, and institutions that would receive that investment income (and that could face different tax rates).

3. For a description of CBO's method for estimating effective tax rates, see Congressional Budget Office, *Computing Effective Tax Rates on Capital Income*, Background Paper (December 2006).

4. By increasing the after-tax return on saving, the tax policy options would influence private saving in two opposing ways: Higher after-tax returns would tend to increase saving and thus reduce consumer spending, but they also would boost the value of existing assets, making households wealthier and thus tending to encourage spending. On balance, the combined effect on spending of higher after-tax returns can be positive or negative, and researchers generally conclude that the effect is small. CBO's models incorporate different assumptions about how households might respond to changes in the after-tax return on saving.

Potential output is strongly tied to the amount and quality of labor supplied in the economy. A sustained long-term increase in total hours worked or in the capability of the labor force improves the economy's potential to generate output. CBO's analysis focused on channels through which the policy options could affect the number of hours of labor supplied because the evidence for those channels is stronger than is the evidence for channels through which government policies can affect the quality of labor.

Extending the tax provisions could affect the quantity of labor in two main ways. First, extending some of the provisions would change people's overall after-tax income but not their after-tax compensation for each additional hour of work. In the absence of a change in marginal rates, an increase in after-tax income tends to reduce the number of hours of labor supplied because people can maintain their standard of living with less work; conversely, a decline in income tends to increase the hours supplied.

Second, some provisions would change both after-tax income and after-tax compensation for each additional hour of work. For example, the extension of the lower marginal tax rates on income that were enacted in 2001 would increase both after-tax income and after-tax compensation per hour. Provisions that raised after-tax income and incremental after-tax compensation (and provisions that reduced both) would have opposing effects on people's incentives. In the case of extending lower tax rates, for example, the affected workers would be encouraged to work longer hours because they would earn more for each extra hour of labor they supplied. But a disincentive also exists: Those same workers would earn more after-tax income at their current working hours, which would encourage them to decrease their work hours.

For many people, the opposing incentives from reducing marginal tax rates largely offset each other, although most economists conclude that, on average, the positive effects of greater after-tax earnings for each additional hour worked slightly outweigh the negative effects of higher after-tax income from current working hours. Responses to changes in tax rates can also vary among family members, with secondary earners (for example, the spouse of a household's primary breadwinner) generally responding to a greater extent than primary earners.<sup>5</sup> All told, CBO assumes that reductions in marginal tax rates will tend to increase modestly the hours of labor that workers supply, and increases in marginal tax rates will modestly decrease hours worked.

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5. See Congressional Budget Office, *Labor Supply and Taxes*, CBO Memorandum (January 1996). Since that memorandum was published, CBO has revised downward its estimates of total wage elasticity and substitution elasticity for secondary earners because of evidence that their responsiveness has declined over time as their participation in the labor force has grown. (The highest-earning member of each household is the primary earner; other household members with earnings are secondary earners.) See also Congressional Budget Office, *The Effect of Tax Changes on Labor Supply in CBO's Microsimulation Tax Model*, Background Paper (April 2007); and Francine D. Blau and Lawrence M. Kahn, "Changes in the Labor Supply Behavior of Married Women: 1980–2000," *Journal of Labor Economics*, vol. 25, no. 3 (2007), pp. 393–438.

The policy options would affect labor supply not only by affecting tax rates on labor income, but also through their impact on the capital stock. Because higher deficits would crowd out capital, pretax wage rates would be lower than those under current law (all else being equal), weakening people's incentives to work.

## **Quantifying the Short-Term Effects of the Policies**

CBO used a set of models to estimate the effects of the policy options relative to current law. The estimated effects for 2011 and 2012 depend primarily on an analysis of demand-side impacts, although the estimates incorporate some supply-side influences as well. Specifically, CBO analyzed the effects of the policy options in 2011 and 2012 using macroeconomic forecasting models and historical relationships to determine estimated "multipliers" for each of the provisions. Each multiplier represents the effects on the nation's output of a dollar's worth of a given provision. A provision's multiplier can be applied to the budgetary cost of that provision to estimate its overall impact on output.

A policy's direct effects on the nation's output consist of immediate (or first-round) effects on economic activity. The size of the direct effects depends on the policy's impact on the behavior of recipients. If someone receives a tax reduction of a dollar and spends 80 cents (saving the other 20 cents), production increases over time to meet the additional demand generated by that spending, and the direct impact on output is 80 cents.

CBO reviewed evidence on the responses of households to various types of tax cuts to estimate the size of the provisions' direct effects on output.<sup>6</sup> For example, temporary tax cuts will generally have less impact on a household's purchases than permanent cuts because a temporary cut has a smaller effect on total lifetime disposable income. As another example, increases in disposable income are likely to boost purchases more for lower-income than for higher-income households. That difference arises, at least in part, because a larger share of people in lower-income households cannot borrow as much money as they would wish in order to spend more than they do currently.

Tax reductions also can have indirect effects that enhance or offset the direct effects. For example, direct effects are enhanced when greater demand for goods and services prompts companies to increase investment to bolster their future production. In the other direction, direct effects are muted if increases in interest rates in response to the

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6. On household spending, for example, see Jonathan A. Parker and others, *Consumer Spending and the Economic Stimulus Payments of 2008* (working paper, Northwestern University, February 2010), [www.kellogg.northwestern.edu/faculty/parker/html/research/PSJM2010.pdf](http://www.kellogg.northwestern.edu/faculty/parker/html/research/PSJM2010.pdf); Matthew D. Shapiro and Joel Slemrod, "Did the 2008 Tax Rebates Stimulate Spending?" *American Economic Review*, vol. 99, no. 2 (May 2009), pp. 374–379; Sumit Agarwal, Chunlin Liu, and Nicholas S. Souleles, "The Reaction of Consumer Spending and Debt to Tax Rebates: Evidence from Consumer Credit Data," *Journal of Political Economy*, vol. 115, no. 6 (December 2007), pp. 986–1019; and David S. Johnson, Jonathan A. Parker, and Nicholas S. Souleles, "Household Expenditure and the Income Tax Rebates of 2001," *American Economic Review*, vol. 96, no. 5 (December 2006), pp. 1589–1610.

tax cuts and associated government borrowing discourage spending by households and businesses. In estimating the magnitude of indirect effects, CBO relied heavily on estimates from macroeconomic forecasting models, informed by evidence from other types of models and from direct estimation using historical data.<sup>7</sup>

The estimates of policy effects on output were translated into estimates of the effects on the unemployment rate, total employment, and full-time-equivalent employment in a series of steps. First, the impact on the output gap—the percentage difference between actual and potential output—was calculated.<sup>8</sup> Next, the effect of the change in the output gap on the unemployment rate was estimated using the historical relationship between those two measures.<sup>9</sup> Then, the effect of changes in the unemployment rate on the labor force was taken into account: If unemployment declines and the economic environment improves, discouraged workers and people who have chosen to pursue activities such as education rather than work will tend to return to the labor force. Together, the estimated effect on the unemployment rate and the effect on the labor force were used to estimate the impact on the number of people employed. The change in full-time-equivalent employment was then estimated using the historical relationship between changes in hours per employed worker and changes in the gap between the unemployment rate and CBO’s estimate of the natural rate of unemployment.<sup>10</sup>

A key disadvantage of the model-based approach used in this analysis is the considerable degree of uncertainty about many of the economic relationships that are important in the modeling. Because economists differ on which analytical approaches provide the most convincing evidence about such relationships, they can reach different conclusions about them. In addition, each study involves uncertainty about the extent to which the results reflect the true effects of a given policy or the effects of other factors. For those reasons, CBO provides ranges of estimates of each policy’s effects.

## **Quantifying the Longer-Term Effects of the Policies**

CBO’s estimated effects for 2020 and later years incorporate supply-side effects only. The economic models used in the longer-term analysis represent people’s economic decisions in a simplified way that does not capture all aspects of actual behavior. Even

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7. For more details about those sources of information, see Congressional Budget Office, *Estimated Impact of the American Recovery and Reinvestment Act on Employment and Economic Output From April 2010 Through June 2010* (August 2010), Appendix.

8. Potential output is the level of production that corresponds to a high rate of use of labor and capital.

9. Changes in the output gap affect unemployment gradually over several quarters. Initially, part of a rise in output shows up as higher productivity and hours per worker rather than as reduced unemployment.

10. The natural rate of unemployment is the rate that arises from all sources except cyclical fluctuations in economywide demand for goods and services.

so, the results provide a reasonable range of estimated responses to changes in policy. CBO used two growth models to analyze the effects of the policy options in 2020.<sup>11</sup> The models—a textbook growth model and a life-cycle growth model—differ in their assumptions about whether people look to the future in making plans and in the ways the models capture people’s responses to changes in marginal tax rates.

### **Textbook Growth Model**

The textbook growth model assumes, in effect, that people do not consider expected future policies when they make economic decisions. CBO used the textbook growth model to estimate effects under two assumptions about how much people would adjust their work hours in response to changes in marginal tax rates: a “strong labor response” assumption, under which workers’ response is on the high side of the consensus range of empirical estimates from studies based on one-year changes in labor supply, and a “weak labor response” assumption, under which workers respond very little.<sup>12</sup>

### **Life-Cycle Growth Model**

In contrast to the textbook growth model, the life-cycle model is built on the assumption that people adjust their decisions about work and saving in response to current changes in marginal tax rates, government transfer payments, and after-tax rates of return—and in anticipation of future changes in those factors. In particular, the life-cycle model incorporates the assumption that people make lifelong plans for work and saving. Moreover, the life-cycle model assumes that people know with certainty how the government will resolve its long-term budget imbalance, whether by raising tax rates, cutting spending, or implementing some combination of the two. The life-cycle model also assumes that households face uncertainty about future wages and could become credit constrained (that is, unable to borrow to maintain their spending) if their wages declined significantly.<sup>13</sup>

The forward-looking characteristics of the life-cycle model necessitate assumptions about what people believe will happen in the future, not only during the 10-year projection period of CBO’s baseline but into the indefinite future as well. For its analysis, CBO assumed that people believe that the policies being assessed—those of the policy

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11. Growth models are often called supply-side models. They assume that the labor market is always in equilibrium and thus that overall fiscal policy has no effect on the unemployment rate.

12. CBO’s estimates used data from a large sample of taxpayers to account for the effects of changes in marginal tax rates and in after-tax income under the policy options. The models incorporated a larger response to changes in marginal tax rates among secondary earners than among primary earners.

13. The incorporation of uncertainty and credit constraints has an important effect on the results from this model: Unlike models that are similar in other respects but assume certainty and no constraints on borrowing, this model produces effects on people’s behavior of increases in disposable income from government policies, even if people expect the policies to be fully offset in the future.



options or of CBO's baseline—will be maintained through 2020. In reality, people may well believe that the policies might change at some point during that time.

For the years after 2020, however, the policies that are analyzed here are unsustainable.<sup>14</sup> Therefore, CBO made two assumptions about the manner in which the reduction in revenues under the alternative tax policies would eventually be reflected in taxes and spending. Under one assumption, people believe that the initial tax reductions will be financed by gradually adjusting government spending for goods and services and for transfer payments over the period from 2021 to 2030. Under the other assumption, people believe that the initial tax reductions will be financed by gradually adjusting marginal tax rates over the same period. In addition, as in the case of the textbook growth model, the life-cycle model's estimates incorporate assumptions about the "strong" or "weak" responsiveness of labor supply to changes in marginal tax rates. Thus, for each policy option, the life-cycle model produced four estimates of economic effects, combining different assumptions about future changes in policy and about the responsiveness of labor supply.<sup>15</sup>

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14. See Congressional Budget Office, *The Long-Term Budget Outlook* (June 2010, Revised August 2010).

15. In the past, CBO has also presented results from the life-cycle model based on the assumption that interest rates and wages in the United States are completely determined by the rest of the world (an "open economy" assumption) or that domestic interest rates and wages are unaffected by the rest of the world (a "closed economy" assumption). The estimates in this analysis average the results of those two assumptions to produce an intermediate result.

