Example 12.2
On Large Federal Budget Deficits
(Revised for 2011)

The administration of George W. Bush brought a return to the large federal budget deficits experienced during President Reagan's administration, and for essentially the same reasons. The deficits each time resulted from a combination of very large tax cuts and large increases in defense spending. The Reagan deficits averaged 4.5% of GDP from FY1982 to FY1988, and the Bush deficits averaged 2.4% of GDP from FY2002 to FY2008.

Mainstream economists are generally opposed to running large budget deficits year after year, for two very practical reasons. One is that large budget deficits cannot last. Eventually taxes have to be raised or expenditures cut to close the deficit. The other is that even temporary deficits lasting five to ten years or so are harmful to saving and investment. As a result, they bequeath to future generations a lower capital stock and a less productive economy. Consider each of these points in turn.

THE DEFICITS CANNOT LAST

The government issues new debt each year to cover the excess of expenditures over tax revenues (Tx). The expenditures are on government purchases of goods and services (G), transfer payments (Tr) and the debt service, both the interest (at rate r) and the repayment of outstanding debt (D). Assume for simplicity that the government issues one-year bonds. Then the issuance of new debt each year is given by

(1) $\quad D_1 = rD_0 + D_0 + (G + Tr - Tx)$

The first two terms on the RHS are the debt service on the existing debt D_0, and the three terms in parentheses comprise the so-called programmatic deficit, the deficit resulting from government expenditure and tax programs.

The change in the debt (the deficit) is

(2) $\quad D_1 - D_0 = \quad D = Deficit = rD_0 + (G + Tr - Tx)$

Dividing by the existing debt D_0 yields

(3) $D/D_0 = r + (G + Tr - Tx)/D_0$

The LHS of (3) is the rate of growth of the debt, which cannot grow faster in the long run than the rate of growth of GDP because if it did then the debt service—interest and repayment of principal-- would eventually exceed the national product.

The debt during the first four years of the Bush administration did grow faster than the rate of growth of GDP, and that is not sustainable. The annual rate of growth in nominal GDP averaged 5.4% from 2002 to 2006. During the same period, the interest rate on 10-year Treasury bonds averaged 4.4% and the programmatic deficit as a percentage of the debt averaged 2.0%. According to equation (3), this implies an average rate of growth in the deficit of 6.4%, greater than the rate of growth in GDP. As a result, the ratio of Treasury debt held by the public[1] to GDP grew steadily from 33.6% in FY2002 to 36.9% in FY2005.

Notice that the debt would continue to grow at the rate of interest even if the programmatic deficit were zero. Interest rates could rise with the need to issue new debt, which would increase the rate of growth of the debt even more, which would increase interest rates even more, and so on, in a potentially explosive cycle. Once the cycle begins, the only way to stop it is to raise taxes or cut expenditures, or both, to run a programmatic surplus.

There was some hope in 2006 and 2007 that the growth of the budget deficits had been brought under control. The economy grew rapidly enough in those years to turn the programmatic budget into slight surpluses, primarily due to large increases in personal and corporation income taxes. The ratio of debt held by the public[2] to GDP fell slightly to 36.5% in 2006 and 36.2% in 2007. But that hope was dashed by the financial crises of 2008 and the ensuing "Great Recession" that followed. The recession itself added about $500 billion to the programmatic deficit in 2009 and 2010 as tax collections fell sharply and income sensitive transfer payments increased. The $787 billion stimulus package passed in February 2009 increased the deficit even further, leading to deficits of $1.4 trillion in 2009 and $1.3 trillion in 2010, each about 9% of GDP. The ratio of debt held by the public to GDP jumped sharply to 53.0% in 2009 and 61.6% in 2010.

The sharp spike in the deficits will not continue now that the economy has begun to grow again and the stimulus package has played itself out. The nonpartisan Congressional Budget Office (CBO) estimates that the federal deficit will fall to 7% of GDP in 2011and

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[1] The debt held by the public is the difference between the total Treasury debt outstanding less the amount of the total debt held by federally agencies, such as the Social Security Trust Fund.

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4.4% of GDP in 2012. Nonetheless, it is not clear as this is written in December 2010 whether the growth in the budget deficit will be brought under control.

The CBO periodically publishes estimates of the federal budget over the next ten years. In August 2010, it projected the federal budget from 2011 to 2020 under a number of different assumptions or scenarios. Its so-called baseline scenario assumes that there will be no major policy changes affecting federal revenues and expenditures beyond those that had already been legislated at the time of its projections. Its baseline assumptions for the economy are that nominal GDP grows by 3.1% in 2011, then by an average of 5.6% per year from 2012 to 2014 as the economic recovery picks up steam and the economy reaches its production possibilities frontier. Thereafter, from 2015 to 2020, GDP remains on the frontier and grows by 4.5% per year. Corresponding to its projections in the growth in GDP, the unemployment rate is projected to average 9.0% in 2011, 6.1% from 2012 to 2014, and 5% thereafter. Finally, the interest rate on 10-year Treasury bonds is projected to be 3.5% in 2011, 4.7% from 2012 to 2014, and 5.9% thereafter. Under these projections, the programmatic budget is about $100 billion in deficit, on average, throughout the period, which, added to the assumed interest rates, causes the debt to grow slightly more rapidly than GDP. The ratio of the debt held by the public to GDP is projected to increase slightly from 66.1% in 2011 to 69.4% in 2020. The growth in the debt remains unsustainable, although only barely so.

The CBO's baseline assumptions about the growth in federal expenditures and revenues may be far too optimistic, however. On the expenditure side, the assumption is that Congress will be able to reign in expenditures, holding them to an average rate of growth of 4.5% per year from 2012 to 2020. (Expenditures are projected to grow by 6.6% in 2011.) On the revenue side, the assumption is that the Bush tax cuts will expire after 2010 and there will be no further adjustments in the alternative minimum tax. The result is that revenues are projected to grow by 23.5% in 2011 and then by an average of 7.0% from 2012 to 2020.

Both assumptions are highly suspect. As this is written, Congress has just passed, and President Obama will sign, a bill to extend the Bush tax cuts for the next two years, make adjustments in the alternative minimum tax such that it affects far fewer taxpayers, and add a number of items to stimulate the economy, most notably a one-year cut in the payroll tax and a thirteen-month extension of unemployment insurance benefits. The CBO did not anticipate this proposal in its August 2010 projections, but it did offer an alternative set of projections under which the Bush tax cuts are retained and the alternative minimum tax would be indexed for inflation throughout the next ten years. Those two changes alone would add a projected $3.8 trillion to the programmatic budget deficits and $4.8 trillion to the overall deficits from 2011 to 2020, increasing the ratio of debt held by the public to GDP from 67.3% in 2011 to 72.7% in 2020. Once again, the growth of the deficit is not sustainable. Under either scenario, the budget is in a highly fragile state as very large increases in Medicare and Medicaid expenditures begin to kick

in after 2020 (see Example 12.3 on the huge long-run Medicare deficits projected by the Social Security Trust Fund). A final word of caution is that the assumed 5.9% interest rate on 10-year Treasury bonds from 2015 to 2020 may be much too low given the amount of new debt the Treasury has to induce the public to hold over the next decade. The projection is especially problematic if the Chinese stop buying our Treasury debt to the same degree that they have been over the past ten years.

EVEN TEMPORARY DEFICITS ARE HARMFUL TO SAVING AND INVESTMENT

Sustainability of the deficits is not the only issue. Continued budget deficits have important economic effects even if the growth rate of the accumulating debt is sustainable.

Economists use variations of the overlapping generations (OLG) model presented in Chapter 12 of the textbook to think about the long-run effects of budget deficits. The economy is assumed to operate at full employment on its production possibilities frontier. The only possible final goods and services are consumption goods and investment (capital) goods, so the primary issue is the effect of the deficits on the consumption/investment mix.

Suppose there are two groups (generations) of people, the retired elderly and the young workers. Both groups are assumed to consume according to the life-cycle hypothesis (LCH) over the long run, smoothing their consumption over their lifetimes. They borrow when young, save in their middle ages to pay back earlier debts and accumulate assets, and then draw down their accumulated assets in their old age to finance consumption during retirement. One implication of the LCH is that consumers smooth any unexpected, temporary changes in income over their remaining lifetimes. Since the retired elderly have a shorter life expectancy, they have a higher MPC out of unexpected, temporary changes in income than do the young workers.

A deficit transfers resources from the government to both groups, but they know that the deficits can only be temporary. The deficit must eventually turn into a surplus, as explained above. Many of the elderly will not be alive to repay their portion of the deficit, however, so that the young workers will eventually pay for most of the deficit. Consequently, economists view a temporary budget deficit as an intertemporal transfer of lifetime resources from the young to the old. Since the elderly have the higher MPC (it is substantially higher on average), the transfer of resources from the young to the old increases consumption at the expense of saving and investment. (A budget surplus is the reverse, an intertemporal transfer of lifetime resources from the old to the young, which reduces consumption and increases saving and investment.)

Simple OLG models of the economy find very large effects of temporary deficits that last ten to fifteen years on saving, investment, consumption, and the long-run growth

of GDP. When the economy returns to a long-run equilibrium with a balanced budget, the decrease in output per person is between 10% and 20% per year, which for the U.S translates into an annual loss between $4,900 and $9,800 per person (in 2010). Losses of this magnitude are much larger than the long-run increases in output per person that these same models predict would result from any feasible tax reform that is saving and investment friendly. This includes replacing the federal personal income tax with some form of consumption tax such as a personal expenditures tax or a national sales tax. The lesson is clear: The sooner the federal budget deficits are reversed the better for the long-run health of the economy. Yet even the rather optimistic CBO baseline projections suggest that the deficits will continue, leading to an almost uninterrupted run of programmatic deficits of at least 18 years, and likely much longer than that. The budget deficit is a very serious problem for the United States that simply must be addressed, and the sooner the better.

Sources

Budget of the United States Government, Fiscal Year 2008 (Washington, D.C.: U.S. Government Printing Office, 2007), Part Five: Historical Tables, Table 1.3 (the Reagan and Bush deficits as a percentage of GDP)

Economic Report of the President, 2007 (Washington, D.C.: U.S. Government Printing Office, 2007), Tables B-73 (10-year Treasury bond rate) and B-89 (Treasury debt outstanding)

Flow of Funds Accounts of the United States, September 2004, 2005, 2006 and 2007 (Washington, D.C.: Board of Governors of the Federal Reserve System), Table F106 (the most comprehensive estimate of the programmatic federal deficit, equal to the increase in financial liabilities less interest payments)