



tax break

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Fiscal Policy and Economic Growth: A Simple Framework

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The effect of fiscal policy on economic growth is a controversial and long-standing topic in economic theory, empirical research, and economic policy-making. It is at the heart of the policy debate surrounding the sharp increases in official federal budget surpluses in the 1990s, the equally sharp decline in the fiscal outlook since January 2001, and the increasingly imminent retirement of the baby boom generation. The issue will receive further attention in the wake of recent calls for new tax cuts and increased spending on defense, homeland security, Medicare, and other programs.

In this article, we provide a brief overview of the macroeconomic relations between budget surpluses and deficits, the tax and spending policies that influence those budget outcomes, and economic growth. The article is intended to provide a framework for thinking about the role of deficits, tax, and spending policies in affecting medium- and longer-term economic growth.¹

In the first section, we use national income accounting identities to explore the relation between budget outcomes, national saving, and future national income. We show that, holding other factors constant, an increase in budget deficits (or a reduction in surpluses) will reduce future national income under conventional views of how the economy operates. This occurs because the deficit reduces national saving, which in turn

reduces national investment. The reduction in national investment can take the form of lower domestic investment and/or lower net foreign investment by Americans. In either case, the expected future income received by Americans falls.

The first section provides only a partial analysis: It focuses on the effects of budget surpluses or deficits per se, ignoring the effects of the policies that generate those budget outcomes. By focusing on the effect of the deficit in isolation of other changes, the section establishes two key results. One is that a bigger deficit or smaller surplus creates a drag on future national income and does so by reducing national saving and national investment. The other key result is that this chain of events occurs *regardless of whether deficits affect interest rates*. Although the popular debate (on which we will comment more extensively in a future column) focuses on the relation between deficits and interest rates, the much more important economic relation is the one emphasized in this section: Holding other factors constant, bigger deficits imply lower future national income regardless of whether deficits influence interest rates. The potential effect of deficits on interest rates is one channel through which deficits can reduce future growth, but the negative effect on growth will occur regardless of whether interest rates are affected or not.

In the second section, we distinguish between the effects of surpluses or deficits per se and the full effects of the policies that create those budget outcomes. For example, a cut in marginal tax rates will generally have two sets of effects on future national income. First, the tax cut will affect labor supply, human capital accumulation, saving, investment, entrepreneurship and so on. Second, the reduction in revenues will raise the deficit and reduce national saving. The net effect of the tax cut on economic growth is the sum of the two effects, and will depend on the difference between the (generally positive) effects created by more favorable economic incentives and the (negative) effects created by the increase in the deficit. That is, for the tax cut to have a net positive effect on economic growth, the effects on labor supply, saving, etc., not only must be positive, they must be larger than the drag created by the increased deficit. Similar findings apply to deficits created by spending increases.

The article does not address the short-term effects of policies that change the deficit when the economy is operating either above or below its potential output level. For example, a current short-term macroeconomic problem is inadequate aggregate demand for the goods and services that could be produced by firms, and is reflected in low rates of capacity usage

¹This article is based on parts of Gale and Orszag (2002) and Elmendorf and Mankiw (1998, 1999).

by firms. Under these circumstances, policies that generate temporary increases in the budget deficit can spur aggregate demand and improve short-term economic performance (which can then have feed-back effects on the deficit itself).

The positive, short-term effects of deficits on aggregate demand in a slack economy, however, do not change the longer-term impact of deficits. Over the longer term, the key to improved living standards is an expansion in the capacity of domestic firms to produce goods and services and an increase in the net flow of income from abroad. The impact of deficits on national saving and thus national investment is a crucial component of that process.

The article closes with a short, admittedly speculative discussion of some broader ramifications of the possible effects of long-term deficits on the economy.

I. Budget Surpluses and National Income

A. Building Blocks

National income accounting identities go a long way toward framing the relevant issues. (For accounting details, see the Appendix.) National saving is the sum of private saving (which occurs when the private sector spends less than its after-tax income) and public saving (which occurs when the public sector runs budget surpluses). National saving is identically equal to — and is used to finance — the sum of domestic investment and net foreign investment. Domestic investment is the accumulation by Americans of assets at home. Net foreign investment is the nation's investment overseas minus borrowing from abroad (foreign investment in the United States). An increase in net foreign investment may take the form of increased U.S. investment overseas, increased U.S. lending to foreigners, reduced foreign investment in the United States, or reduced U.S. borrowing from abroad. The composition of the change in net foreign investment is of secondary importance, and we will typically refer to an increase in net foreign investment as “reduced borrowing from abroad.” We refer to the sum of domestic and net foreign investment as “national investment.”

In simplest terms, national saving must by identity equal national investment, and an increase in national saving must show up as an increase in domestic investment and/or net foreign investment. Either way, the accumulation of assets due to increased saving and investment means that the capital stock owned by Americans is increased. The returns to that additional capital — whether domestic or foreign — raise the income of Americans in the future.

These macroeconomic building blocks highlight two key points (see also Figure 1):

- *An increase in the budget deficit (a decline in public saving) reduces national saving unless it is fully offset by an increase in private saving, and*
- *A reduction in national saving must correspond to a reduction in national investment and in future national income, holding other things equal.*

B. Budget Deficits and National Saving

Barro (1974) demonstrates that if households are fully rational and take the well-being of their descendants into account in formulating their consumption and savings patterns, reductions in taxes today would be balanced by offsetting increases in private saving today. In particular, households would recognize that the reduction in taxes today would increase future tax liabilities and thus save the entire tax cut. Numerous tests of household saving behavior, however, conclude that households do not follow the dictates of this model (Bernheim 1987). The implication is that increased budget deficits are not fully offset by increases in private saving, and therefore result in a reduction in national saving.

C. National Saving and Future National Income

A decline in national saving must reduce private domestic investment, net foreign investment, or some combination thereof. The reduction in investment reduces the capital stock owned by Americans, and therefore reduces the flow of future capital income. Either the domestic capital stock is reduced (if the reduction in national saving crowds out private domestic investment) or the nation is forced to mortgage its future capital income by borrowing from abroad (if the reduction in national saving generates a decline in net foreign investment). In either case, future national income is lower than it otherwise would have been.

The only issue is how the elements of the identity between national saving and national investment come back into alignment following a decline in national saving. There are two possibilities:

- First, the decline in national saving may cause interest rates to rise. At a given interest rate, a reduction in national saving relative to current domestic and net foreign investment implies a shortage of funds to finance such investments. That imbalance puts upward pressure on interest rates as firms compete for the limited pool of funds to finance their investment projects. An increase in interest rates may serve to raise private saving and to reduce domestic and net foreign investment and thus bring national saving and investment back into equality.
- Second, the decline in national saving may cause capital inflows to rise. Capital inflows would dampen (and under certain conditions eliminate) any increase in domestic interest rates. The potential absence of an effect on interest rates in this case does not imply, however, that the reduction in national saving entails no economic cost: The capital inflows represent a reduction in net foreign investment and therefore a reduction in the capital owned by Americans and a reduction in future national income.

Figure 1 illustrates this logic: The junction marked A highlights the relation between deficits and national saving. It shows that as long as private saving rises by less than 100 percent of the decline in public saving, national saving falls in response to a budget deficit, which in turn reduces future national income, other

things being equal. The extent to which the decline in national saving generates a response from capital inflows (junction B) or interest rates (junction C) or both may also be of interest in its own right, but it does not alter the basic conclusion that larger deficits reduce future national income, other things equal.

D. An Example

These findings can be used to illustrate the potential longer-term consequences of the recent deterioration in fiscal prospects:

- From January 2001 to August 2002, the CBO's cumulative projected surplus for fiscal years 2002 to 2011 fell by about \$5.3 trillion.² That reduction reflects the cumulative deterioration in government saving between 2002 and 2011 under the official forecasts.
- We assume that private saving would rise by about 25 percent of the decline in public saving.³ This implies that the net capital stock owned by Americans will be \$4 trillion $(=(1-.25)*5.3 \text{ trillion})$ lower in 2011 than if the fiscal deterioration had not occurred.
- To translate this change in the capital stock into a change in income, it is necessary to assume a rate of return to the capital. We use an estimate of 6 percent.⁴ This implies a decline of real national income in 2012 of about \$240 billion $(=.06*\$4 \text{ trillion})$.
- The implied decline in national income equals about 1.4 percent of projected gross national product in 2012 or almost \$800 for each person in the United States.⁵

It is also possible to estimate the impact on gross domestic product, as opposed to gross national product. Gross national product depends on the capital stock owned by Americans, which is financed by national saving. Gross domestic product depends on the capital stock employed in the United States, which is financed by national saving plus net capital inflows. The implied \$4 trillion reduction in national saving

above would generate some change in interest rates and some change in capital inflows. We assume that 33 percent of the decline in national saving is offset by capital inflows.⁶ This implies that the domestic capital stock would fall by \$2.67 trillion $(=(1-.33)*\$4 \text{ trillion})$ and that GDP would therefore fall by about \$160 billion (again assuming a 6 percent rate of return on capital). This decline is smaller in dollar terms than the GNP decline because the capital inflows mitigate the adverse impact on GDP (even though the repayment of those inflows in the future creates a mortgage against future national income).

II. Effects of Policies That Raise Deficits

The analysis above considers only the effects of reduced budget surpluses or increased budget deficits per se. It establishes the crucial observation that, other things equal, larger budget deficits reduce future national income relative to what it would otherwise be, and do so regardless of how they affect interest rates.

In this section, we point out that a full analysis of policies that raise deficits or reduce surpluses needs to take into account (1) the direct effects of the policy in question, ignoring any change in the deficit, and (2) the change in the deficit. The most recent prominent example of this issue is the 2001 tax cut. The net effect of the 2001 tax cut on growth is the sum of its direct effect on changes in incentives and after-tax income and its indirect effect through changes in the budget deficits. The improved economic incentives from provisions of the 2001 tax cut, analyzed in isolation, tend to raise labor supply, human capital accumulation, and private saving. But these changes in incentives are financed by reductions in public saving. Thus, to gauge the full effect on growth, one needs to factor in the effect of lower public saving on economic growth.

Given the structure of the 2001 tax cut, researchers have generally found that the positive effects on future output from the impact of reduced marginal tax rates on labor supply, human capital accumulation, private saving and investment are either substantially offset or even outweighed by the negative effects of the tax cuts via reduced public and national saving (see Auerbach 2002, CBO 2001, Elmendorf and Reifschneider 2002, Gale and Potter 2002).⁷ The main point here is not the effect of this particular tax cut, but rather that analysis of tax cuts needs to account for both the direct, positive effects on growth-inducing behavior and the indirect

²CBO (2001) projected a surplus of \$5.6 trillion. By August 2002, the figure had fallen to \$336 billion (CBO 2002).

³The empirical evidence suggests only limited offsets from private savings in response to budget shifts. Although the precise amount of offset will depend on the specific policy that leads to the deficit, very few articles suggest that the offset will be complete or even close to complete. CBO (1998) concludes that private saving may offset 20 percent to 50 percent of a shift in the deficit. Elmendorf and Liebman (2000) suggest that private saving would offset about 25 percent of an increase in the deficit. Gale and Potter (2002) estimate that private saving will offset 31 percent of the decline in public saving caused by the 2001 tax cut, but the tax cut is only one of several reasons why the fiscal outlook deteriorated.

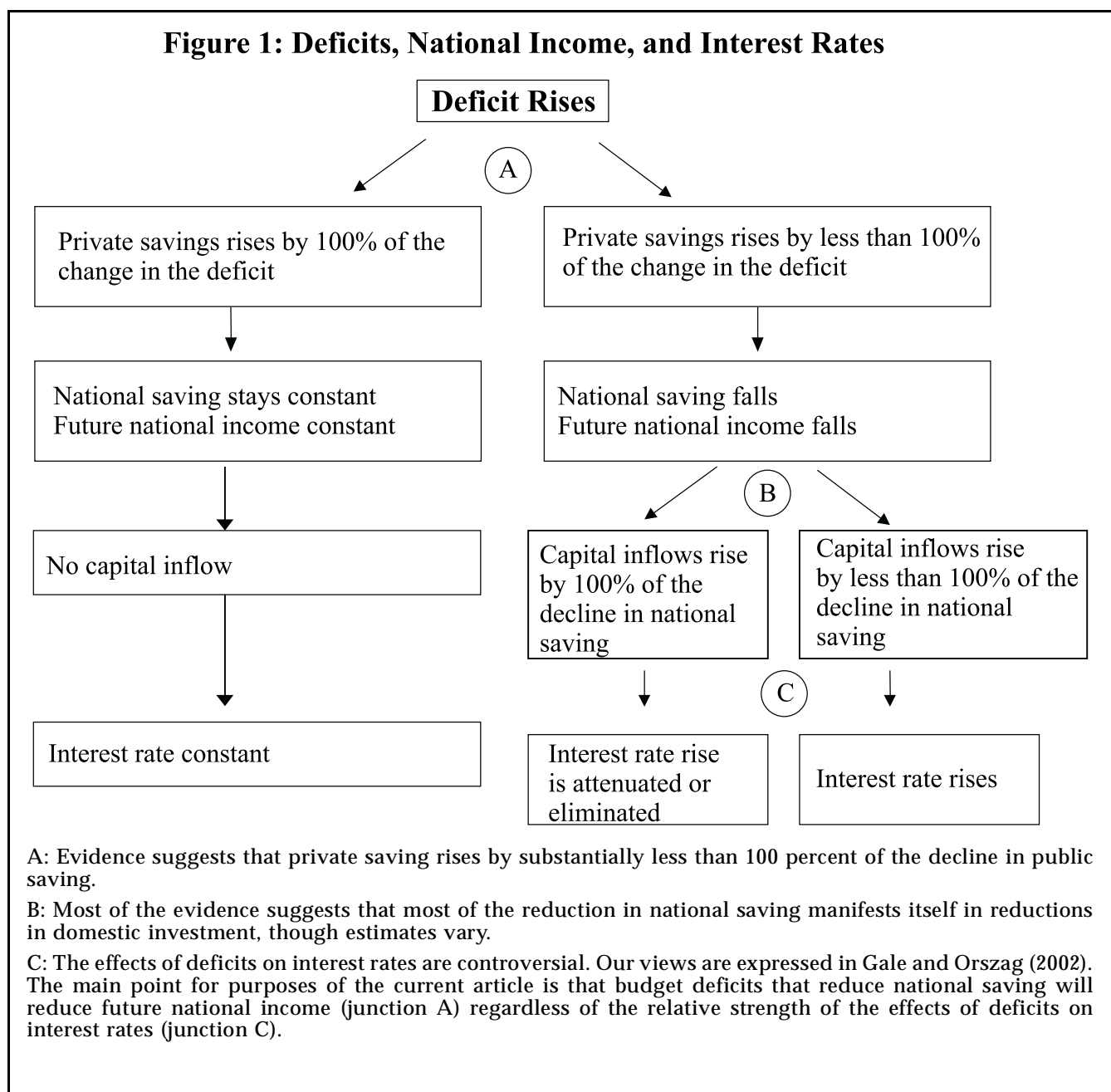
⁴Poterba (1998) estimates the pre-tax marginal product of capital to be 8.5 percent for nonfinancial corporate capital. Elmendorf and Mankiw (1999) suggest a more conservative estimate, 6 percent, for the return on aggregate capital.

⁵The projected U.S. population in 2012 is 304.8 million. (See www.census.gov/population/www/projections/natsum-T1.html).

⁶Over the long-term, changes in net foreign investment flows are estimated to account for between 25 percent and 40 percent of changes in national saving, though that percent may be rising over time and may be higher for economically integrated European countries than for the United States. For specific studies, see, among others, Feldstein and Bacchetta (1991), Feldstein and Horioka (1980), Obstfeld and Rogoff (2000), and Blanchard and Giavazzi (2002). For an overview of such studies, see CBO (1997).

⁷One reason for the tepid estimated response to the 2001 tax cut is that 64 percent of filers, accounting for 38 percent of taxable income, will receive no reduction in marginal tax rates, according to Treasury estimates (Kiefer *et al.* 2002).

Figure 1: Deficits, National Income, and Interest Rates



negative effects on growth that occur through expansions of the deficit.

III. Broader Ramifications

All of the analysis above holds constant factors like investor confidence in the United States. It is worth noting, however, that high and persistent budget deficits, and the resulting effects on interest rates or capital inflows or both, may create broader problems. Truman (2001) notes that a substantial fiscal deterioration over the longer term may cause “a loss of confidence in the orientation of US economic policies and a further widening of the current account deficit . . . [and] . . . will undermine the strength of the US econ-

omy and confidence in US economic and financial policies.” Such a loss in confidence could then put upward pressure on domestic interest rates, as investors demand a higher “risk premium” on U.S. assets. Likewise, Friedman (1988) notes that “World power and influence have historically accrued to creditor countries. It is not coincidental that America emerged as a world power simultaneously with our transition from a debtor nation . . . to a creditor supplying investment capital to the rest of the world.” These insights reinforce the notion that fiscal policy matters in a variety of ways, and that long-term deterioration in a country’s fiscal position can create difficult and lasting economic problems.

Appendix: National Income Accounting Identities

We follow Mankiw and Elmendorf (1998) in the derivations below. The private sector's budget constraint is given by

$$(1) \quad Y = C + S + T,$$

where Y is national income, C is private consumption, S is private saving, and T is taxes paid less transfer payments received. National income is also equal to national output, which is given by:

$$(2) \quad Y = C + I + G + NX,$$

where G is government purchases of goods and services, I is domestic investment, and NX is net exports of goods and services (exports minus imports). Substituting (2) into (1) yields:

$$(3) \quad S + (T-G) = I + NX.$$

Another identity implies that

$$(4) \quad NX = NFI$$

where NFI is net foreign investment, the difference between what Americans invest overseas and what foreigners invest here. Equation (4) simply says that the international flow of goods and services has to be matched by an international flow of funds. Substituting (4) into (3) yields:

$$(5) \quad S + (T-G) = I + NFI.$$

The left-hand side of (5) is national saving, the sum of private saving and public saving. The right-hand side is the sum of domestic investment and net foreign investment, which we will call national investment. Thus, equation (5) is the key relation equating national saving and national investment.

Equation (5) can also be used to demonstrate the basic points of section I in the paper. If government saving falls, three things can happen. Private saving may rise to re-establish the equality in (5) at the original level of national saving and national investment. If it does not, however, then domestic investment falls, and/or net foreign investment falls. As long as less than 100 percent of the adjustment occurs via changes in private saving, both national saving and national investment will fall as the deficit rises.

A decline in either domestic investment or net foreign investment will reduce future national income. As Elmendorf and Mankiw (1998, page 17) note: "Reduced domestic investment over a period of time will result in a smaller domestic capital stock, which in turn implies lower output and income. . . . Reduced net foreign investment over a period of time means that domestic residents will own less capital abroad (or that foreign residents will own more domestic capital). In either case, the capital income of domestic residents will fall."

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