

An hourglass-shaped graphic with a globe inside. The top bulb is dark blue, and the bottom bulb is light blue. The globe is centered in the narrow neck of the hourglass. The top bulb is filled with a dark blue color, and the bottom bulb is filled with a light blue color. The globe is centered in the narrow neck of the hourglass.

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The Economic Effects of Raising National Saving

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October 15, 2007

Abstract. Raising the share of income saved is a frequent aim of public policy. That may be particularly apparent in debates about the size of the federal budget deficit, but concerns about the low household saving rate have also prompted policymakers to consider ways to encourage individuals to save more. How much individuals save will directly affect their future economic well-being, but from a macroeconomic perspective, the source of saving - be it households, business, or government - makes no difference. This report presents standard economic analysis of the macroeconomic effects of raising saving.

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CRS Report for Congress

The Economic Effects of Raising National Saving

Updated October 15, 2007

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Prepared for Members and
Committees of Congress

The Economic Effects of Raising National Saving

Summary

Raising the share of income saved is a frequent aim of public policy. That may be particularly apparent in debates about the size of the federal budget deficit, but concerns about the low household saving rate have also prompted policymakers to consider ways to encourage individuals to save more. How much individuals save will directly affect their future economic well-being, but from a macroeconomic perspective, the source of saving — be it households, business, or government — makes no difference. This report presents standard economic analysis of the macroeconomic effects of raising saving.

An increase in saving means a reduction in spending. In the short run, that is likely to result in slower economic growth than would otherwise have been the case. When the saving rate rises, demand for financial assets rises as well. The increase in demand for assets puts upward pressure on their prices and that results in a decline in their yields and so interest rates fall. The decline in interest rates sets in motion a chain of events that tends to reduce the extent to which incomes might fall in response to an increase in the saving rate.

Domestically, lower interest rates reduce the cost of financing expenditures on durable goods as well as business fixed investment, and thus increase some private sector demand. Lower interest rates can also have an effect on the balance of trade. A decline in U.S. interest rates, relative to foreign rates, is likely to reduce foreign purchases of U.S. assets. While an increase in saving may initially cause income to fall relative to what it otherwise would have been, in time any decline in income is likely to be offset by rising investment demand and an increase in net exports.

If there is a one-time permanent increase in the rate of investment, each worker will have more capital with which to work, and there will be a one-time rise in the capital-labor ratio, and thus a one-time rise in labor productivity. The one-time increase in labor productivity will *temporarily* raise the growth rate of output.

If financial capital flows easily between countries, then even a small decline in U.S. interest rates would be likely to have a large influence on the demand for dollar-denominated assets. In that case, the net outflow of capital from the U.S. economy would minimize the decline in interest rates. The smaller the decline in interest rates is, the smaller any stimulus to domestic spending will be. In that case, more of the short-term contractionary effect of an increase in saving would be offset by rising net exports than by increased domestic investment.

This report will be updated as warranted.

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The Economic Effects of Raising National Saving

Introduction

Just as individuals must decide how much of their income to save and how much to spend, firms must decide how much of their profits to pay out as dividends and how much to reinvest, and government must decide how much to tax and how much to spend. Collectively, these choices determine our national rate of saving. From a macroeconomic perspective, however, the source of saving — be it households, business, or government — makes no difference.

Raising the share of income saved is a frequent aim of public policy. That may be particularly apparent in debates about the size of the federal budget deficit, but concerns about the low household saving rate have also prompted policymakers to consider ways to encourage individuals to save more.

One way to interpret the saving rate is as an expression of the collective importance of present versus future consumption. In other words, those who tend to live for the present and discount the future are likely to save at a lower rate than those for whom thrift is a virtue and who hope to maintain their standard of living into retirement.

Variations in the national saving rate can have substantial effects on the economy, and those effects are quite different depending on the time frame under consideration. While saving more may have its benefits, the immediate effect is a decline in consumption. This report examines what economics has to say about both the short- and long-run effects of an increase in the national saving rate on economic growth.

Components of National Saving

Put most simply, the saving rate refers to the share of total income that is not consumed. Saving, and consuming less than all of today's income, makes it possible to consume more tomorrow than would otherwise be possible.

There are multiple sources of saving. Households, or individuals, save in order to maintain living standards into retirement and to insulate themselves from temporary variations in income due to changing economic conditions. Businesses save when they do not pay out all of their profits in the form of dividends. As long as businesses are presented with profitable investment opportunities they will likely retain some earnings in order to take advantage of them. The public sector can also

be a source of domestic saving. When tax revenues exceed public outlays, government is a net contributor of saving to the economy. When revenues are insufficient to cover outlays the public sector dis-saves. In other words, saving that might have gone for other uses goes to pay for current government spending. Together, households, businesses, and government account for total national saving.¹

An Increase in Saving: Short-Run Effects

Suppose policymakers decide that, for whatever reason, the nation is not saving enough and enact legislation to raise the national saving rate. That might take the form of a reduction in the federal budget deficit, or a policy designed to encourage individuals to save more of their income.² What would be the immediate consequences for economic growth?

Personal saving equals income less consumption. An increase in saving thus requires a reduction in consumption spending. If the level of consumption spending is what determines living standards then current living standards will fall. If individuals consume less then the effect is direct. If government saves more (or dis-saves less) it will be due either to a cut in outlays or an increase in taxes. That means either individuals have less income out of which to consume or government itself is spending less.

In either case, an increase in saving means a reduction in spending. In the short run, that is likely to result in slower economic growth than would otherwise have been the case. To see that, remember that gross domestic product (GDP) is the sum of personal consumption spending, investment spending, government spending and net exports (exports minus imports). Other things being equal, in this elementary accounting framework, a reduction in either government or consumer spending will reduce GDP by an equal amount. Further, any reduction in spending would be reflected in incomes lower than they otherwise would be, at least in the short term.

Each dollar of spending represents income for those who supply the goods and services being bought. A dollar less in spending means a dollar less of income for those producers. Part of each dollar less in income would come out of spending, and part would come out of saving. Suppose that each initial dollar decline in spending resulted in an additional decline in spending of 75 cents. Total income would now have fallen by \$1.75. That additional 75 cent decline in spending would result in a 75 cent decline in income. That 75 cent decline in income would then result in a further decline in spending of 56 cents ($.75 \times .75$), and so it would continue in a kind of chain reaction. Total income would now have fallen by \$2.31. Each successive decline in income resulting from this chain of events would get smaller and smaller.

¹ For current estimates of saving rates, see CRS Report RS21480, *Saving Rates in the United States: Calculation and Comparison*, by Brian W. Cashell.

² For further discussion, see CRS Report RL32119, *Can Public Policy Raise the Saving Rate?*, by Brian W. Cashell.

If the sequence continued indefinitely, other things being equal, the total decline in income for each dollar increase in saving (decline in spending) would be:

$$1 + .75 + (.75 \times .75) + (.75 \times .75 \times .75) + \dots$$

Which reduces to:

$$\frac{1}{(1 - 0.75)}$$

Continuing with the simplified example and assuming that each dollar cut in income resulted in a 75 cent cut in spending, an increase of \$1 of saving would ultimately yield a reduction in income and output of \$4. In the jargon of economics, this is often referred to as the multiplier effect.³

If that were the end of the story, it would seem to make raising the saving rate a much less attractive policy goal given the large effects on income and production. But there are a number of other factors to consider. The full effect on incomes of an increase in the saving rate is not likely to be instantaneous. If there is a multiplier effect, it is likely to take time to develop rather than occur all at once. Other factors will come into play and tend ultimately to offset any decline in incomes associated with an increase in the saving rate.

When the saving rate rises, demand for financial assets can be expected to rise as well.⁴ The increase in demand for assets puts upward pressure on their prices and that results in a decline in their yields and so interest rates fall. The decline in interest rates sets in motion a chain of events that tends to reduce the extent to which incomes might fall in response to an increase in the saving rate.

Domestically, lower interest rates reduce the cost of financing expenditures on durable goods as well as business fixed investment, and thus increase some private sector demands. In the case of business investment, lower financing costs mean an increase in the number of investment opportunities that are profitable. In the case of consumer spending, lower interest rates may stimulate demand for those goods that are typically debt financed, housing and automobiles being the most important examples.

Lower interest rates can also have an effect on the balance of trade. A decline in U.S. interest rates, relative to foreign rates, is likely to reduce foreign purchases of U.S. assets. If yields on foreign assets rise relative to those on dollar-denominated assets both foreign and domestic investors are likely to increase the share of foreign assets they hold. In order to do that, Americans must first buy the currency in which those assets are denominated and sell dollars.

³ The discussion that follows will suggest that the actual multiplier is substantially less than four.

⁴ Or, where saving is in the form of debt reduction, the supply of financial assets falls.

If foreign demand for dollar-denominated assets falls, the demand for dollars in exchange markets will also fall. Both the increased supply of dollars and the increased demand for other currencies will tend to drive down the value of the dollar in foreign exchange markets. When the dollar falls in value, it makes imported goods more expensive for American consumers and makes American-made goods less expensive for foreign consumers. The result is thus likely to be a decline in imports and an increase in exports.

While an increase in saving may initially cause income to fall relative to what it otherwise would have been, in time any decline in income is likely to be offset by rising investment demand and an increase in net exports. Whether investment spending or net exports is more affected depends in part on how easy it is for financial capital to cross national borders.

If financial capital flows easily between countries, then even a small decline in U.S. interest rates would be likely to have a large influence on the demand for dollar-denominated assets. In that case, the net outflow of capital from the U.S. economy would minimize the decline in interest rates. The smaller the decline in interest rates is, the smaller any stimulus to domestic spending will be. In that case, more of the short-term contractionary effect of an increase in saving would be offset by rising net exports than by increased domestic investment.

Feldstein and Horioka published, in 1980, a widely cited paper suggesting that capital did not easily cross international borders, and their evidence was that for a large number of developed countries, variations in domestic saving and investment were highly correlated. That is, when saving rose domestic investment tended to rise as well.⁵

However, there is also evidence that since that paper was published capital mobility has increased substantially.⁶ In part because of floating exchange rates and the reduction in capital controls, the volume of international capital flows, at least among developed countries, has increased substantially. If capital is more free to cross borders, a rise in domestic saving is more likely to affect the balance of trade and raise net exports than it is the level of domestic investment.

A key short-run issue is how long it takes for any decline in income due to an increase in the saving rate to be offset by rising investment and net exports. It takes time for the full effects of the increase in saving to be felt on incomes, and it takes time for any consequent decline in interest rates to boost investment and net exports.

No two macroeconomic models agree completely on either the magnitude of the effect or its duration. A 1988 comparison of various models suggested that the ultimate size of the multiplier was somewhere between one and two, meaning that the peak decline in total income would be from \$1 to \$2 for each \$1 increase in

⁵ Martin Feldstein and Charles Horioka, "Domestic Saving and International Capital Flows," *The Economic Journal*, June 1980, pp. 314-329.

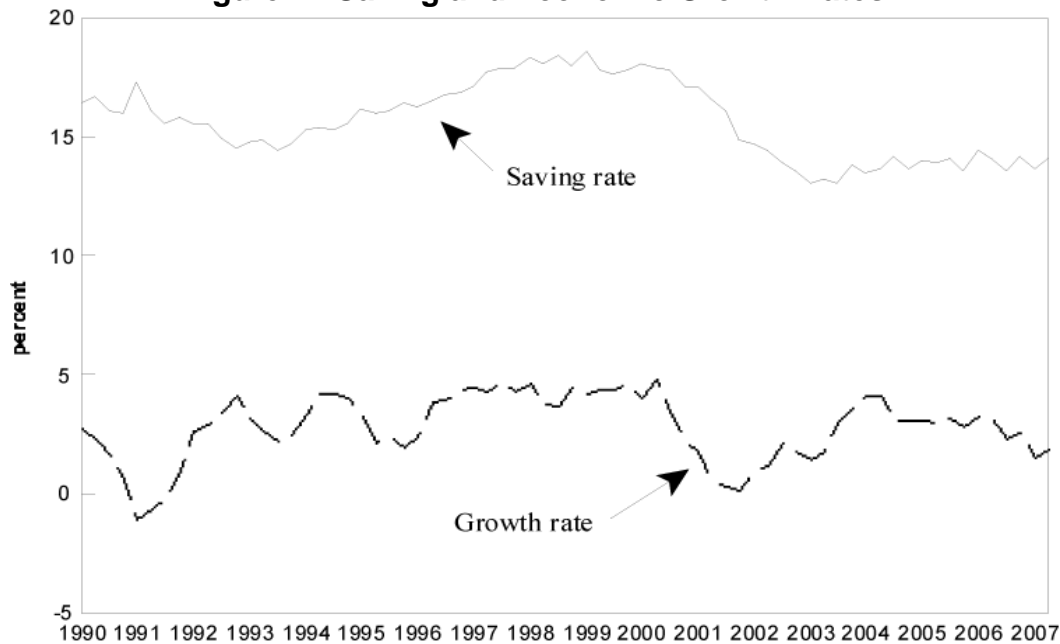
⁶ Maurice Obstfeld and Alan M. Taylor, *Globalization and Capital Markets*, NBER, Working Paper 8846, March 2002.

saving. Further, that peak effect was estimated to occur about a year or two after the increase in saving.⁷ More recently, it has been suggested that the multiplier may be closer to one, if not smaller.⁸

At some point, any effects of higher saving on the level of income are likely to dissipate. Once incomes make up any short-run losses, the only likely durable economic change will be in the composition of income. To the extent that the composition of income changes that may have important long-run consequences.

The past 15 years have seen some substantial swings in the rate of national saving, largely as a result of the federal government budget going from substantial deficits to large surpluses, and then back into deficit. In addition, beginning in the mid-1980s, there was a pronounced decline in the household saving rate. **Figure 1** compares the gross national saving rate with the rate of growth of real gross domestic product (GDP) between 1990 and 2007. While theory suggests that a rising saving rate might tend to slow economic growth, it would be hard to find evidence of that in these data.

Figure 1. Saving and Economic Growth Rates



Source: Department of Commerce, Bureau of Economic Analysis.

⁷ Ralph C. Bryant et al., eds, *Empirical Macroeconomics for Interdependent Economies* (Washington: The Brookings Institution, 1988), 342 pp.

⁸ Roberto Perotti, *Estimating the Effects of Fiscal Policy in OECD Countries*, paper presented at the “Federal Reserve Bank of San Francisco Conference on Fiscal and Monetary Policy,” March 4-5, 2005, 59 pp. Also, Olivier Blanchard and Roberto Perotti, *An Empirical Characterization of the Dynamic Effects of Changes in Government Spending and Taxes on Output*, NBER Working Paper 7269, July 1999.

It may simply be that the models overstate the potential effects of changes in saving on the economy. Another reason for the apparent absence of a connection in recent experience is that the theoretical connection assumes that “other things” stay the same — but in fact that is rarely the case. One thing in particular that might not stay the same is monetary policy.

Because of the ease with which capital flows across international boundaries, monetary policy has a greater potential to influence the short-term rate of economic growth than variations in saving. It is possible for the Federal Reserve (Fed) to take steps to prevent any short-run slowdown in economic growth that might result from an increase in the saving rate. That may be especially true in the case of an increase in federal government saving (either an increased surplus or reduced deficit) since there is such a long lead time between enacting a budget and any resulting change in saving.

An Increase in Saving: Long-Run Effects

As was discussed in the previous section, an increase in domestic saving is likely to result in either an increase in domestic investment or a reduction in borrowing from foreigners. This section discusses how an increase in saving might affect the composition of output, and what that might mean for economic growth.

Increased Investment

If an increase in domestic saving results in more domestic investment and a higher capital-labor ratio, will that raise the long-term rate of growth? The prevailing view of economic theory suggests that the answer to that question, perhaps surprisingly, is that it will not.

In the standard model, growth depends on three factors: growth in the labor force; advances in technology; and growth in the capital stock. The rate of growth of the labor force is assumed to be given and is considered to be independent. Growth in the capital stock depends on the saving rate and the rate at which capital depreciates.

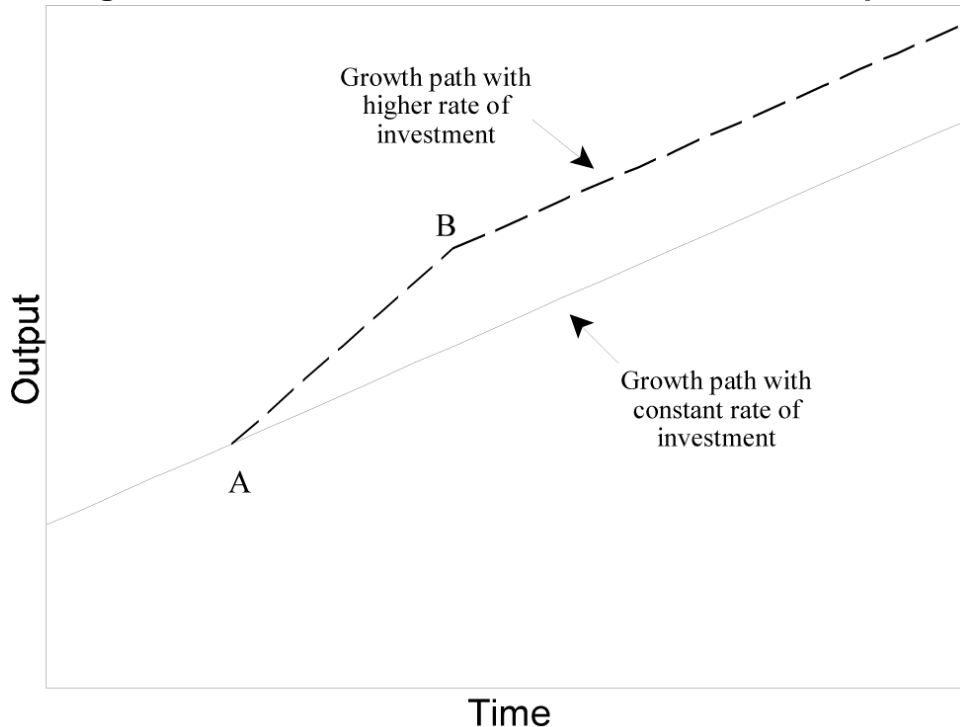
For the sake of clarity and simplicity, consider a hypothetical economy with no technological progress. In the absence of technological progress, the economy will grow at the rate of growth of the labor force. If investment remains a constant share of output, then the capital stock will grow at the same rate as output. Since all three variables grow at the same rate, the ratios of capital to labor and of output to labor are constant as both the numerators and denominators of those ratios are growing at the same rate. This might be referred to as the steady-state rate of growth.

In that steady state, the amount invested will be just enough to replace existing capital as it wears out and to provide for enough new capital through new net investment to ensure that each additional worker in the growing labor force has the same amount of capital to work with as those already employed. In other words, investment is sufficient to maintain a constant capital-to-labor ratio.

Suppose, given these initial conditions, there is a one-time permanent increase in the rate of investment. Each worker now has more capital with which to work, there is a one-time rise in the capital-labor ratio, and the result is a one-time rise in labor productivity. The increase in labor productivity temporarily raises the growth rate of output above that of the labor force.

Only during the transition to the higher rate of investment does the capital stock grow faster than output and the labor force. Furthermore, in this simple example with no technological advance, only during the transition is there an increase in average labor productivity. After the economy adjusts completely to the higher rate of investment, the growth rate of output and the growth rate of the capital stock continue to match the growth rate of the labor force, and the capital-labor ratio is once again constant. **Figure 2** illustrates the point.

Figure 2. The Effect of Increased Investment on Output



At point 'A' in **Figure 2**, there is an increase in the investment share of output. Between points 'A' and 'B,' the economy adjusts and the ratio of capital to labor rises, and average output per worker also rises. After point 'B,' the investment rate is again constant, and the capital stock, the labor force, and total output once again grow at the same rate as before. The only permanent difference is that output is higher than it would have been in the absence of the increase in investment. The long-term rate of growth is unaffected.

Adding technological progress to this simplified model only changes the picture slightly. With technological progress, output and the capital stock grow more rapidly than does the labor force. That means the capital labor ratio rises steadily even with a constant rate of investment. If the rate of investment rises, the rate of increase of the capital-labor ratio briefly accelerates as the economy adjusts. Ultimately, though,

the long-term growth rate is determined by the growth of the labor force and the rate of technological progress and is unaffected by the rate of investment.

As with most simple models, there are additional considerations. While the long-term rate of economic growth may be independent of the rate of investment, it may not be unaffected by the *composition* of investment. Some studies have suggested that the rate of technological progress may depend on the composition of investment spending. Among those types of investments that have been found to be correlated with faster rates of economic growth are education and business equipment.⁹

A number of recent studies has found a connection between investment in computers and other “information technology” equipment and the rate of productivity growth.¹⁰ If the long-run growth rate of output depends on the composition of investment, then it may be that the particular investments made possible by an increase in the rate of investment may be as important as the increase in the rate itself. Moreover, gains to output made possible by redirecting existing levels of investment may be comparable to those gains deriving from an increase in the overall level of investment.

Reduced Imports of Foreign Capital

As was already discussed, an increase in domestic saving might have two consequences. One is an increase in domestic investment. The other is an increase in net exports, and a reduction in U.S. dependence on foreign capital to finance domestic investment.

GDP, the most widely used measure of the size of the U.S. economy and its growth rate, measures the total value of goods and services produced within the nation’s borders. The workers producing those goods and services may or may not be U.S. citizens, and the capital stock may be foreign or American owned. To the extent that the domestic capital stock is foreign owned, income produced by that capital will be paid to foreign investors. If an increase in saving does not lead to increased domestic investment, then it will reduce the share of the capital stock that is owned by foreigners.¹¹

It isn’t only physical capital that is subject to foreign ownership, but any marketable security. That includes federal debt. An increase in domestic saving would also tend to reduce sales to foreigners of federal government debt. Either

⁹ For an overview of the arguments that the rate of economic growth may depend on a variety of factors see David M. Gould and Roy Ruffin, “What Determines Economic Growth?,” Federal Reserve Bank of Dallas *Economic Review*, second quarter 1993, pp. 25-40.

¹⁰ Stephen D. Oliner and Daniel E. Sichel, “The Resurgence of Growth in the Late 1990s: Is Information Technology the Story?,” *The Journal of Economic Perspectives*, fall 2000, vol. 14, no. 2, pp. 3-22.

¹¹ See CRS Report RS21409, *The Budget Deficit and the Trade Deficit: What is Their Relationship?*, by Marc Labonte and Gail Makinen.

domestic savers would buy a larger share of new debt issues, or if the increase in saving is attributable to a reduction in federal borrowing, there would simply be less debt for foreigners to buy.

In either case, an increase in domestic saving would reduce foreign investors' claims on income (dividends, interest, and rent) from domestic production. That would leave a larger share of income for Americans. The effect would be similar to that of an increase in investment on domestic output, except instead of an increase in production it would be an increase in income.

Policy Considerations

Although, from a macroeconomic perspective, it makes little difference who saves, how much is saved does have an effect. As with most policy choices, there are benefits and costs associated with raising the nation's saving rate. But the benefits and costs do not occur at the same time. The benefits of a higher saving rate are long-term in nature, while the cost of saving more is immediate. There may also be a conflict if policymakers decide to use spending and tax policy to stimulate economic growth. In that case, the immediate result would likely be a decline in saving, but any cost associated with a lower saving rate would be incurred in the long run. If policy succeeds in raising national saving, it is likely to be because of an increased appreciation of the long-run benefits