Taxes, Saving, and Macroeconomics

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Abstract:

In response to increasing calls for policies to raise the U.S. saving rate, proposals are once again being offered in Congress to change the tax base from income to consumption. Beyond the important issues of income distribution (that is, outright unfairness) inherent in such a plan, it would simply not work. Indeed, it is based on a fundamental mismeasurement of what counts as saving in the U.S. economy.

The logical sequence underlying this proposal is wrong at two crucial points: lowering or eliminating taxes on saving in unlikely to increase saving; and higher saving would be unlikely to increase investment in any case (and would, more likely, decrease investment). The usual crowding-out logic is based on limited evidence and inadequate theory.

Finally, the interaction between monetary and fiscal policy is currently perverse. Contractionary fiscal policy (which is what is implied by these proposals) will *not* be counter-balanced by timely and adequate monetary stimulus. The Federal Reserve is likely to wait too long to respond, either due to excessive caution about the effectiveness of the fiscal policy change, or to take advantage of an opportunity to lower inflation still further before allowing the economy to recover.

"...[To institute tax incentives] on the assumption that they will
have commensurate effects in increasing investment must ...
rest essentially on faith. Faith is indeed sometimes rewarded.
But for our part, in this instance, we remain agnostic."

Chirinko and Eisner [1983]

I. Introduction

Proposals for tax reform have been part of the American political

landscape for as long as there have been taxes. However, with the

Republican Party gaining majority status in both houses of Congress in 1995,

a serious political movement arose to reform the tax system in a much more

radical way, by "tearing the current system out by its roots," in the words of

U.S. Rep. Bill Archer. The general idea is that we should replace the current

income-tax-based system with one of a variety of systems intended to improve

the U.S. economy's long-term growth rate through the encouragement of

saving, which is claimed to lead to higher investment, productivity,

international competitiveness, and long-run economic growth.

As radical as the political rhetoric is, the basic economic reasoning

behind these plans is anything but new. Neo-classical economists have been

calling for ways to increase saving for decades. Almost fifty years ago, Tobin

[1949] could reasonably describe such efforts as having "a long history."

Moreover, politicians have taken this advice to heart. While the United

States, along with every other industrialized country, continues to use an

income tax system, inducements to saving have always been a politically-popular part of the tax code (a fuller discussion of which is provided below). As is so often the case, therefore, everything old in politics is new again. There is another saving "crisis," and the tax code can save the day.

Most analyses of the various proposals to date (the Flat Tax, a national sales tax, the USATax, etc.) have concentrated on the distributional impact of the plans, along familiar lines of progressivity and regressivity. In Buchanan [1996a], I instead analyze the specific tax reform plans that have been proposed in the last year or so from the standpoint of their (un)workability and their likely damage to the functioning of national fiscal policy. On the other hand, in Buchanan [1996b], I defend the concept of tax progressivity and offer proposals for tax reform that preserve or enhance the current progressivity in the U.S. federal tax code.

Surprisingly little critical attention has been paid to the macroeconomic implications of these tax reform plans, particularly the claims associated with promoting saving. This essay will offer such an analysis. Section II describes some facts and definitions regarding saving in the U.S. economy, and it provides an analysis of why the tax code cannot succeed in coaxing Americans to save more. Section III critiques both the economic arguments for raising saving and the argument that the Federal Reserve can neutralize any damage that might ensue. Section IV concludes, summarizing the basic argument of the paper that tax code changes cannot be relied upon to raise saving, and that even if they could be, increasing saving is not an appropriate target of macroeconomic policy.

II. Saving in the United States

It would be difficult to find more agreement about the desired direction

of a non-policy variable than the rate of saving in the U.S. Virtually everyone with an opinion on the subject seems absolutely certain that saving is currently too low and needs to go up if the future is to be saved (no pun intended). The very repetition of this conclusion, moreover, creates its own legitimacy, causing those without a well-thought-out opinion on the issue to adopt it as a default and intimidating those who would dare to question this obvious "truth." (The companion to this concern, also broadly condemned, is the amount of the nation's private saving that is being borrowed by the public sector—i.e., The Deficit.)

Since the concept of "saving" is often defined in inconsistent and contradictory ways, however, it will be useful and important to look at alternative definitions of the term and the trends in various measures of saving in the U.S. economy. Among other things, this investigation will show that the most inclusive and macroeconomically-important saving rates are not moving downward, in spite of what some misleading statistics have been used to show.

A. Difficulties in Defining Consumption and Saving

In discussions of an economy's rate of saving, it is common to emphasize solely the rate of personal saving, which divides the average person's saving (i.e., the amount of their take-home pay that they do not spend on goods and services each year) by their total take-home pay. In a good example of the run of academic papers concerned with the decline of saving in the U.S., Summers and Carroll [1987] analyzed estimates from the National Income and Products Accounts (NIPA) and traced a decline in the personal saving rate (more formally described as the annual rate of personal saving as a percentage of disposable private income). In the early 1970s, this rate

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averaged over 8%, while it had fallen to near 5% by the mid-1980s, or a decline of more than one-third from its initial value. By 1994, according to government statistics, the rate had fallen further, to just under 4%, although it bounced back to nearly 5% in 1995 (with roughly $250 billion in saving and disposable income nearing $5 trillion).

However, it is important to clarify just what the term saving means in this context. Saving is simply computed as the amount remaining from disposable income after subtracting consumption, interest payments made by individuals, and money paid to recipients abroad (as when a worker in the U.S. sends part of their income to family members living in other countries). Typically, the latter category is minuscule (totaling 0.2% of disposable income in 1995), while the interest payments category is more significant (usually amounting to more than half of total computed personal saving).

Still, the vast majority of the calculation of personal saving amounts to subtracting personal consumption expenditures from disposable income. It turns out, however, that several of the items included in personal consumption expenditures are hardly examples of profligacy. Purchases of durable goods, such as automobiles, furniture, and appliances are counted as consumption, not saving. Expenditures for education are similarly counted as consumption, as are expenditures on medical care. In other words, much of what consumers do to invest in their long-term economic well-being is counted as consumption rather than saving.

Since saving will increase every time that any type of consumption decreases (assuming a constant level of disposable income—which is both a crucial assumption and an incorrect one), this means that a policy which decreases private expenditures on higher education, for example, would be saving-enhancing. It is worth noting here, therefore, that more saving should

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not automatically be associated with being thrifty or far-sighted in any meaningful sense.

On some levels, of course, it is perfectly reasonable to define saving in the way that the government's statistics do. The problem is not the statistics but the uses to which they are put. Nevertheless, the purest definition of saving would be the amount of resources produced in the economy in a given year that are not consumed today but are put to use in a way that will provide returns to the economy in years to come. (Not coincidentally, this is also the purest definition of investment.) The problem with the definitions used, as discussed above, is that the household sector is assumed never to make any purchases which have long-term pay-offs. Only private businesses are presumed to do so.

Moreover, the definition of consumption must also include those items that are consumed even though they are not paid for by direct out-of-pocket costs to the individual. Therefore, health care and most other employer-provided benefits, which are not currently taxed, would have to be taxed at the individual level if one viewed all consumption as bad and really wanted to discourage it. The value of owner-occupied housing would also have to be taxed, since homeowners are assumed to be receiving income (and making an identical consumption expenditure) in the form of the rent that they are effectively paying to themselves. Middle-class (and especially elderly) people could find themselves taxed on rather large consumption expenditures that they never knew they had been making.

Looked at from a broader perspective, however, even personal saving is not falling in the U.S. Block and Heilbroner [1992] analyzed official data and found several areas where saving is occurring but is being ignored by the government's statisticians. The largest of these is capital gains

distributions, which accrue to high-income individuals almost exclusively. Indeed, Block and Heilbroner point out that the trends in income distribution in the United States in the past fifteen years make it hard to believe that there *could* be a decline in personal saving. Since high-income individuals are responsible for the vast majority of personal saving [see Bunting, 1991, for a detailed distributional analysis of saving behavior], and since the distribution of income has become vastly more top-heavy, it would be strange indeed if there were a decline in private saving, properly measured.

It is noteworthy that Block and Heilbroner's suggested re-calculation of the NIPA measures of saving match up remarkably well with a measure of saving derived from the Federal Reserve's Flow of Funds accounts. Personal saving, appropriately measured, is simply not falling; and there is certainly no crisis that would require a complete re-write of the nation's tax code.

Even if saving is lower today than it used to be, however, it is also not at all clear why it ought to go back up. Why is more better? There is no systematic analysis available that tells us how much saving we should be doing, nor whether the current amount is too high or too low. Indeed, Gordon [1990] argued that the current level of saving in the U.S. economy was just about right, even at the time when the standard measures of savings looked their worst.

B. Business Saving

More important even than the arguments noted above, however, is the absence of business saving in most analyses of private saving. As argued in Levy and Levy [1983], it is business saving that drives business investment. Business saving dwarfs personal saving in the official statistics, usually coming in at a level three to four times greater than personal saving (e.g.,

$814 billion in 1994, compared to $192 billion in officially-measured personal saving).

Business saving is comprised of two items, undistributed business profits (also known as retained earnings) and capital consumption allowances (or depreciation). Since depreciation (which is usually at least five times greater than retained earnings, and in some recent quarters has been as much as ten times greater) is simply a recognition of the depletion of existing capital, it might be argued that this is really not saving at all. However, the depreciation allowances that show up in the national accounts are truly "allowances," i.e., they represent business revenues that were set aside and excluded from taxation. Businesses can then use those untaxed funds to purchase new capital. In many cases, moreover, the new capital is more productive than the old capital that it replaced, as when an old computer system is replaced with a newer one (which is sometimes cheaper even in the aggregate, much less per unit of computing power).

Finally, business saving has been relatively constant as a percentage of disposable income (or of GDP). Therefore, if one wanted to argue that there is a crisis in national saving, it would be a bad idea to mention business saving at all. Business saving represents the bulk of saving; and it finances the bulk of investment in productive capital (as argued in more detail below). Since it has not fallen, it is harder still to argue that there is a need for drastic action to make the tax system more friendly to saving.

C. Current Inducements to Save

The current tax system, indeed, already is very friendly to saving and investment. Among the more well-known attempts to induce saving that have been added to the tax code in the past decade or so are Individual

Retirement Accounts (which have been introduced, curtailed, and expanded, all without any apparent impact on aggregate personal saving) and 401(k) and 403(b) accounts. Anti-consumption initiatives have also been passed, such as the elimination of the deductibility of interest on consumer debt (which was followed by further increases in consumer debt, casting further doubt on the efficacy of these measures in altering individuals' behavior).

As Eisner [1992] notes, most of the types of saving that matter are already untaxed: unrealized and untaxed capital gains, and untaxed pension fund contributions. The President's Council of Economic Advisors [1996] provides a short list of the various pro-saving, pro-investment, or anti-consumption elements of the current tax code. The largest of these is pension fund contributions, followed by investment in machinery and equipment (which, while they are subject to some taxation, receive favorable treatment), and life insurance savings proceeds.

This again begs the question: How much saving is enough? If the tax code is already tilting people's behavior in favor of more saving, what independent basis is there to allow us to have confidence in the belief that saving is currently too low? Comparisons to our own history or to our trading partners do not address that question. We simply do not know whether or not we are currently saving enough. We ought to answer that question before embarking on massive social experiments of the sort being contemplated by Congressional tax planners today.

D. Tax Incentives, Saving, and Unintended Consequences

Even if one were certain that personal saving should rise, however, there is no guarantee that tax policy aimed at raising saving will not have perverse effects. Since the experiments with IRA's and other tax innovations

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have had such mixed results, it is wise to be cautious about what can be achieved through the introduction of a tax code that "encourages" saving. Quite the opposite is, in fact, likely to occur.

The basic policy idea behind an anti-consumption tax is that we can cause people to save more if we offer relatively favorable tax treatment to saving. This is true both of the plans that totally exempt saving from tax (e.g., the USATax, as written by Senators Nunn and Domenici) and those that merely exempt interest on saving from tax (e.g. a flat tax). In either case, the purpose is to decrease the cost of saving. In the cases of tax exemptions for saving, the idea is to reduce the "cost" of one dollar of saving from $1 (since, currently, consumption and saving have the same tax treatment, and hence can be substituted one-for-one) to one minus the relevant tax rate times a dollar (for example, eighty-five cents, if the tax rate is 15%). In the case of an interest exemption, on the other hand, the idea is to increase the cost of consumption, since a higher after-tax return on saving would imply a greater opportunity cost of consumption.

As a matter of theory, since both of these plans lower the cost of saving relative to consumption, these ideas are logically equivalent. No matter how it is done, the point is that you can supposedly increase saving if you give it a higher return. If people get to keep more money from their saving, this will encourage them to spend less and save more.

This assumption about how people will respond to price incentives is most easily tested by imagining that the inducement to saving comes from a higher rate of interest to be earned in a simple savings account. Since there have been many more studies on the interest-to-saving connection than on the taxes-to-saving connection, this logical equivalence is very useful. Those studies [e.g., Howrey and Hymans, 1978, Campbell and Mankiw, 1989] come

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to the near-unanimous conclusion that raising the rate of interest on savings accounts (broadly defined) does not raise saving; indeed, there is apparently no reliable connection between these two variables at all.

Not only does the best empirical work demonstrate that a better return on saving does not increase total personal saving, but even the most standard microeconomic theory argues that this should not be at all surprising. After all, when a person is faced with a better return (e.g., a higher interest rate) on saving, they can either save more than they had been saving (due to their desire not to miss out on a good deal, or the "substitution effect"), or they can save less because it is not necessary to set so much aside today in order to have the same amount in the future (the "income effect").

Consider the following numerical example: I put $100 in the bank, and the interest rate is 5%, meaning that I'll have $105 after a year; but if the interest rate goes to 10%, I can save $96 and still have $105.60 a year from now, even though I have reduced my saving by $4.

Note that the theory does not say that people will definitely save less than before, only that it is unclear what people will do. We can only watch and see which effect will dominate in the real economy; and the empirical tests make clear that the American people have not responded to changes in the rate of return by altering their rate of saving in a predictable direction. In general, at least in response to changes in the rate of return, they do not alter their saving at all.

This does not mean that people are unaware of interest rates or of the tax consequences of their decisions. It merely means that, while they try to earn the best return that they can on whatever amount of saving they plan to do, they do not alter their total level of saving in response to these incentives. The best example of this is Individual Retirement Accounts (IRA's), which

were invented for the precise purpose of increasing saving, but which instead led to the shifting of funds from taxable savings accounts into IRA's. Indeed, the aggregate (measured) U.S. personal saving rate continued to decline in the years following the introduction of IRA's.

The recent studies on saving by, for example, Campbell and Mankiw [1989], and Carroll and Samwick [1995] and others also indirectly confirm this behavioral regularity. They find that people are so-called "rule of thumb" savers, i.e., that people have a simple rule to determine how much they are going to save (for example, a person might decide to save $100 per month), rather than calculating and responding to changes in the cost of consumption and the returns to saving.

Suppose, however, that a tax break actually did increase private saving. This is still not sufficient to make the plan a success. Since national saving includes both private saving and government saving, it is necessary that the increase in saving more than make up for any tax revenue that is lost in the effort to give savers a tax break. In practice, this means ensuring that an increase in private saving is not merely a reflection of people taking their tax cut and putting only a fraction of it in the bank. Instead, they must actually increase the amount of their saving by *more than* the dollar amount of the tax cut.

This also makes it clear that any plan to increase saving, if it is to continue to collect the same amount of revenue as the current system (and thus not increase the fiscal deficit), must hurt someone for everyone that it helps. If everyone changed their behavior toward more saving, it would not be possible to make up the lost tax revenue. This implies that there must be a group of people whose consumption is non-responsive to tax changes, while there is another group which does respond to tax incentives. The tax burden

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is then shifted onto the former group. It should not be surprising that the latter group is also known as "high-income households."

This brings into sharp focus the fact that pro-saving taxes have the effect of rewarding high-income people for the saving that they would do even in the absence of tax incentives. This is discussed in more detail in Buchanan [1996b].

The distributional consequences of taxing consumption are likely to have a further perverse effect on saving. There is extremely strong evidence that people—when faced with difficult economic circumstances—will devote extraordinary amounts of creativity to maintaining their current level of consumption. On the theoretical level, the recent work on "loss aversion" [see, e.g., Thaler, 1992] indicates that people view absolute declines in real income as unambiguously worse than gains of equivalent magnitude in their real income. Employing experimental and survey techniques, Thaler has concluded that losses are twice as bad as gains of the same size are good. This theory is in rough accordance with the older "relative income hypothesis" [Duesenberry, 1949], which states that the marginal propensity to consume is substantially lower in response to declines in income than it is to increases in income. Under either theory, raising tax rates on consumption will not have a sizable impact on consumption because people will fight to continue to consume what they have grown accustomed to consuming.

Carrying this analysis to the empirical level, a recent study [Brown, 1995] has looked at the twenty years of declining real incomes for middle- and lower-middle-income workers in the United States between the early 1970s and the early 1990s. The evidence shows that the response to lower incomes has been to decrease saving and take on more consumer debt, a pattern that was not interrupted by the elimination of the tax deductibility of interest

payments on consumer loans. While this is precisely the decline in net saving that so many economists are decrying, this evidence indicates that the decrease in saving coincided exactly with economic changes that would normally be expected to decrease consumption, i.e., lower real incomes and adverse tax changes.

This evidence indicates forcefully that anti-consumption taxes are pointless: people have already spent twenty years ignoring declining real income, so why would they respond to a relatively small tax-induced change in the relative cost of saving and consumption? For better and for worse, this is a consumerist society. Trying to decrease people's consumption is difficult-to-impossible even with large, direct changes in the variables that matter most. Changes in variables that are only indirectly important are unlikely to meet with greater success.

For pro-saving policies to meet with any success, therefore, they must be designed to change people's behavior as their income rises, not to reallocate their saving and spending within a stagnant pie. That is, people could potentially be induced to save a larger fraction of their future increases in real income than they otherwise would. They might tenaciously spend $30,900 per year from a $31,000 net income, no matter what the tax code does to the relative price of saving and investment; but an increase in their net income to $34,000 might allow them to respond to tax incentives, allocating $500 of the increase to saving rather than, say, $50.

This, however, requires that people's real incomes actually rise, which makes it all the more important not to adopt policies that intensify the current stagnation of income. A stagnant economy will not respond to saving incentives, but a prosperous economy might.

To summarize, there are two ways that one might hope to raise the

overall rate of personal saving: 1) Shift income from the non-savers to the savers, which is the essence of a regressive, "trickle-down" approach, or 2) Induce every person to save more, on average, than they are currently saving. In order to achieve the second goal, however, one cannot simply rely on changing the relative prices of saving and consuming through adjustments in the tax code. Rather, it is necessary to create prosperity in both the short-run and the long-run.

For those who believe that the only path to prosperity is through a higher rate of saving, this appears to be a chicken-and-egg problem: saving can only rise if saving rises. However, for those who believe that it sometimes makes sense to pursue policies in the short-run that one would not pursue in the long-run, the question is how to change the policy mix in order to increase real incomes.

III.   The Macroeconomics of Saving

Based on the arguments in Section II, it is apparent that there is neither a shortage of saving nor a reasonable expectation that tax changes can induce people to save more than they currently do. For the purposes of this section, however, both of these arguments will be set aside. Instead, this section will attempt to answer the following question: *If* there really is an inadequate amount of saving in the U.S., and *if* the tax code could actually induce people to save more, what would be the consequences of that policy change?

The logic in favor of savings enhancement has been repeated so often that it has become seemingly unassailable. Savings creates investment, and investment causes growth. It turns out, however, that this straight-forward logic is not as reliable as it seems. This section will show that the reasoning

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behind the desire to increase saving—even if the measurement and policy-effectiveness issues are set aside—is questionable at best.

A. The Accounting Identity

The desire for higher national saving is not defensible because saving is an end in itself. Rather, more saving is believed to lead to more investment, which will presumably lead to higher rates of economic growth and, thus, to higher standards of living for all Americans. The analysis must, therefore, focus not on saving but on investment as the actual variable that policy is attempting to increase. The first step, therefore, is to show how saving and investment are related.

A basic macroeconomic accounting identity demonstrates that the sum of private saving, net taxes, and imports (known collectively as leakages or withdrawals) equals the sum of private investment, government purchases, and exports (together called injections). This identity can be re-arranged in any number of ways; but one commonly-used version exploits the definitions of the fiscal deficit (government purchases minus net taxes) and net foreign investment (exports minus imports, or the current account balance[1]) to demonstrate that private saving is equal to private domestic investment plus the fiscal deficit plus net foreign investment. Subtracting the fiscal deficit from private saving defines "national saving," which is obviously then equal to private domestic investment plus net foreign investment.

Once the accountants set up the definitions of what is measured by each

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[1]   Net foreign investment is a devilishly ambiguous term. It means "net purchase of foreign assets by Americans," or the net amount of money loaned to foreigners by Americans and American-owned companies.

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variable, this equation must hold. This equation is meaningless, however, unless one understands the definitions of each of its variables. Four clarifications are in order: First, while the only type of investment that might matter for economic growth is plant and equipment (P&E) spending, private domestic investment in the context of this identity includes two additional categories of spending: businesses' inventory accumulations (or, when negative, inventory draw-downs) and residential construction. Therefore, it is possible that "investment" could rise in the identity without implying an increase in the type of investment that macroeconomists believe increases long-run growth.

Second, national saving is the sum of private saving and government saving; and government saving goes down when tax revenues go down. As discussed above, it is not enough merely to increase private saving; the increase in private saving must be larger than any decrease in tax revenues associated with the saving-incentive programs.

Third, recall from above that private saving includes business saving as well as personal saving. It is not sufficient to look at the effect of a tax plan on personal saving without also looking at business saving. It turns out that business saving both is a more important determinant of P&E spending and is very likely to be lowered by the anti-consumption tax schemes.

Fourth, government purchases include purchases of both consumer goods (food for a government-run cafeteria, for example) and investment goods (a new runway for a government-owned airport). Therefore, this category combines both consumption (which is presumed to be bad) and investment (which is defined to be good).

By construction, therefore, any increase in private saving must be accompanied by more private domestic investment, more net foreign

investment, a higher fiscal deficit, or some combination thereof. A key question for policy is the proportions in which these variables change. For example, if any increase in saving were to be followed by an exactly-matching increase in the fiscal deficit, this would defeat any attempt to increase private investment. (Note, however, that it would not necessarily defeat the purpose of increasing *total* investment, since the higher fiscal deficit might have been used to finance investment in such things as public infrastructure and education.)

However, sorting out the likely proportions of the changes in these variables is beyond the scope of this simple accounting identity, since it is merely a mathematical fact and not a behavioral theory. In algebraic terms, the existence of this identity simply says that the six variables under consideration cannot have six separate behavioral equations, each independently determining the values of those variables. At most, there can only be five behavioral equations, with the identity closing the system of equations. While this is an important constraint, it says absolutely nothing further about the relationships among the six variables. One goal of macroeconomic analysis, therefore, is to determine the nature of the behavior behind these variables.

The prevailing orthodoxy assumes the following behavioral relationships: we can assume that net foreign investment and the fiscal deficit are exogenous, which leaves a direct relationship between private saving and private domestic investment. Furthermore, we can assume that the direction of causality is *from* private saving *to* private investment. Saving, therefore, *causes* investment. This means, quite naturally, that we can increase private investment by enacting policies designed to increase private saving.

While this conclusion is often stated as if it were the only possible conclusion derivable from the accounting identity, note that it in fact requires the assumptions that four variables are exogenous (i.e., non-responsive to changes in saving and investment) and, even more crucially, that the two remaining variables have a particular cause-and-effect relationship. This is now a contestable theory, not an undeniable fact deduced from accounting principles.

However, it is not even necessarily true that policies that succeed in increasing desired saving by individuals will increase saving in the aggregate. (This is a separate argument from above, where it was argued that no one might even *want* to increase their saving in response to tax incentives.) In a classic case of the fallacy of composition, it could turn out that the result of everyone trying to increase their saving is no increase in total saving at all.

The "paradox of thrift" argues precisely that. When people try to save more, businesses sell fewer goods (since people are saving instead of spending). This results in layoffs, which results in people having less income from which to save. In the end, investment will still be equal to national saving, but neither will have risen. After all, why would businesses invest in new machines when the machines they already have are producing goods that people have stopped buying? Thus, the paradox: people set out to save more, and end up saving the same amount of money as before.[2]
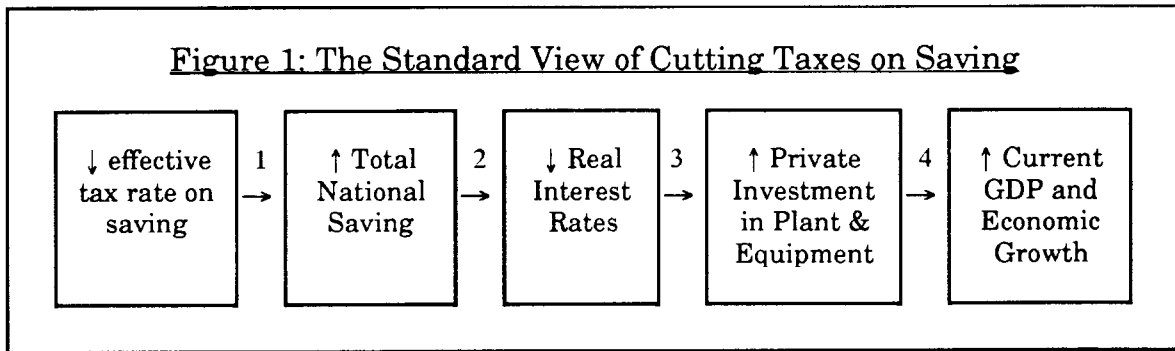
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2 Clearly, this could even result in both saving and investment falling, since businesses might reasonably choose to let their capital depreciate without replacing it (i.e., a firm might engage in net disinvestment). Thus, firms might decrease their gross amount of investment below even their earlier plans. This would make the level of saving fall still

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This means that saving has not gone up, so investment has not gone up either. Even accepting the assumptions summarized above (that four variables are exogenous and that saving causes investment), the model still does not demonstrate that *attempts* to increase saving will actually raise investment, since the attempts themselves are likely to fail. Given that the assumptions themselves are highly questionable (as discussed below), the usefulness of this model is seriously compromised.

B. The Financial Connection

What is conspicuously lacking in the preceding analysis is an explanation of the causal connection between saving and investment. That is, even if one were willing to concede that the four variables that comprise the fiscal deficit and net foreign investment are (at least in the aggregate) exogenous, why does more saving systematically result in more investment? A theory of investment behavior—preferably, of P&E investment behavior— is necessary.

<u>Figure 1: The Standard View of Cutting Taxes on Saving</u>

↓ effective tax rate on saving	1 →	↑ Total National Saving	2 →	↓ Real Interest Rates	3 →	↑ Private Investment in Plant & Equipment	4 →	↑ Current GDP and Economic Growth

The most prominent theory, enshrined in the textbooks, is summarized in Figure 1. Step 1, in which lowering the tax rate on saving results in more

further, to match the decrease in total investment.

saving both individually and in the aggregate, has been dealt with above. It is Steps 2 and 3 that constitute the orthodox view of saving and investment: more saving will cause interest rates to go down, and lower interest rates will cause investment to rise. This theory is logically superior to the investment-equals-national-saving identity in that it actually is based on a notion of cause-and-effect. In addition, the cause-and-effect story is intuitively believable: more money is being saved, so banks don't have to pay as much interest on their depositors' accounts, which allows them to charge lower interest rates on loans to firms, who are only too happy to accept the loans to spend on investment goods.

Simply having a theory does not, however, mean that the theory is true. This one, evidence indicates, is false both at Step 2 and Step 3. The failure of either step to work, of course, means that the policy will fail. Since these tax plans are based on such an elegant chain of causality, their effectiveness rides on each step in the causal process working exactly as advertised. Unfortunately, there is good reason to doubt that any of them will do so.

Step 2 is false because interest rate are determined, at least in their direction if not their level, by the Federal Reserve. The overall liquidity in the system is the primary determinant of interest rates, and the Fed can counter-act any changes in overall liquidity that a tax change might cause. Therefore, the usual notion that more saving can lower interest rates ignores the effect of liquidity injections and withdrawals by the central bank.

The second half of this theory of investment (Step 3) is the basis of one of the most fundamental debates in all of macroeconomics: are interest rates (or, more broadly, the cost of capital) inversely related to investment? A strong answer to this is provided by the following collection of quotations from various macroeconomic theorists:

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"One of the best-established facts in macroeconomics is that business fixed investment and output move strongly together over the business cycle. By contrast, investment and the cost of capital are either uncorrelated or only weakly correlated."

Shapiro [1986, p. 111]

"It is well-known from the work on investment theory...that an analysis of profit-maximizing behavior...can at most offer a relationship between the desired stock of capital and the rate of interest, but not a relationship between the desired rate of increase in the stock of capital and the rate of interest. ... Demand for a finite addition to the stock of capital can lead to any rate of investment."

Foley and Sidrauski [1970, p. 44]

"...[R]eal output emerges as the most important single determinant of investment expenditures. Considered as a competing model of investment, the profits ... model ... is definitely inferior. ... The introduction of financial considerations ... necessitates substantial modification of the ... model."

Jorgenson [1971, p. 1141]

"While standard economic theory predicts a link between capital costs and investment, the theory in its most general form does not make any quantitative predictions about how strong the link will be. Although some empirical work has addressed this issue, the results to date have been mixed. ... The most important determinant of investment is the strength of the economy."

Fazzari [1993, pp. 10-11]

"...[I]t appears that investment is most sensitive to quantity variables (output or sales) with price variables having only modest effects."

Chirinko [1993, p. 1883]

The available evidence, then, does not support the notion that lower interest rates will increase investment. Notice that the statements above are not saying merely that the state of the economy is more important than interest rates in influencing investment; rather, the state of the economy is the *only* thing that significantly effects investment, while the effect of interest rates (even holding the state of the economy constant) is small or non-existent.

This lack of success in finding a connection between interest rates (or the cost of capital) and real investment has only encouraged researchers to

look harder. One of the recent trends in this area of research has been deriving and testing so-called Euler Equations of investment [the earliest example being Abel, 1980]. This is done by hypothesizing how a typical firm would maximize the expected present value of real future profits, which allows one to derive mathematically how a firm would respond to changes in key variables when deciding how much to invest.

Not surprisingly, the Euler Equations derived from such a mental exercise indicate that investment decisions should depend crucially on the cost of capital in determining investment. The acid test is to see whether these derived equations actually match the data well. It turns out that they do not. A recent review by several researchers who have been active in the development of such models [Oliner, Rudebusch, and Sichel, 1995] of the empirical research to date on Euler Equations concluded, in fact, that Euler-equation models are worse at predicting investment than even the unsatisfactory cost-of-capital models that they were designed to replace.[3] Moreover, it is still the case that the state of the economy predicts investment behavior better than any models that rely on the interest rate as a determinant of investment.

It turns out, however, that interest rates do matter for non-P&E investment, especially residential construction. This leaves open the possibility that the interest rate could indirectly affect P&E investment, by improving the state of the economy and thus P&E. This effect has been tested by Fazzari [1993], who concludes that this effect is too small to offset the negative impact of lower internal cash flow in determining the level of

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[3]   This is true even of Euler Equation models derived with "time-to-build" structures included in the model.

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investment.

Even if saving caused investment, it is not true that plant and equipment investment (which, again, is the real focus of these policies) is financed by personal saving. As mentioned above, the vast majority of P&E is financed with a business's own internal funds [see, for example, Fazzari, 1993]. Personal saving is unimportant to this aspect of investment; so attempts to raise personal saving will not raise P&E spending. Another way to look at the Paradox of Thrift, in fact, is to observe that increases in personal saving will lead to decreases in business saving, since firms will not have any earnings to retain if everyone tries to save more. Repealing the entire tax code in order to make household saving rise, therefore, completely misses the point.

Finally, there is also the question of whether the magnitudes of the various changes will be large enough to have a meaningful impact on future economic growth. That is, even if changes in the tax code actually did cause all of the variables to change in the directions that proponents of these tax plans imagine they will, will the size of the changes make the political effort worthwhile? Almost certainly not. It turns out that it would take a huge increase in saving to have any appreciable effect on growth:

> "Studies of what makes the U.S. economy grow find repeatedly that technological innovation and improvements in the skills of the work force are six to seven times more important than business investment in plant and equipment in promoting higher productivity, growth, and incomes. As a result ... , [t]o achieve a permanent 1 percentage point increase in the economy's growth rate, we would have to nearly *triple* our current saving rate."

> Shapiro [1996, p. 14-15, emphasis in original]

To put this into perspective, the U.S. rate of personal saving as a percentage of disposable personal income was 5.1% in the first quarter of 1995. The highest that rate has ever been (in the fourth quarter of 1973) was

10.7%, or slightly more than double the recent level. The average over the last thirty years has been 6.5%, so that it would be necessary to increase the personal saving rate to 19.5% in order to increase the rate of growth of the economy from 2.5% to 3.5%. If one is looking at the total rate of private saving (as a percentage of GDP), the rate in early 1995 was 16.1%, whereas the highest it had ever been since 1970 was 20.7% in 1975:2. We would have to increase total private saving rates to nearly 50% to have an appreciable impact on GDP growth rates.

This means that Step 4 in the figure above might well be true (and it even gives the benefit of the doubt to Steps 2 and 3), but the size of the effect is not large enough to matter. Even if we were to get higher saving and investment from a change in the tax code, therefore, the impact on people's incomes is likely to be quite small. Looked at differently, political and economic resources would be better spent in finding ways to increase innovation and workers' skills, rather than radically altering the tax system (and the distribution of income) in pursuit of—at best—a numerically-insignificant increase in growth.

C. The Short Run, the Long Run, and Monetary Policy

Confronted with the notion of the Paradox of Thrift, the standard response from mainstream economists (at least those trained in the United States) is that the paradox is, at most, a short-run phenomenon. Since the economy will move in the long run to a technically-dictated level of "full-employment equilibrium," lower spending (i.e., more saving) cannot result in lower output in the long run. This implies that what happens along any particular adjustment path cannot affect the long-run levels of investment, output, growth, etc. The economy is assumed to be "path independent."

What would be required to make the economy impervious to contractionary fiscal policy, at least in the long run? Stated differently, how can you end up with exactly the same capital stock that you would have had, despite the occasional short-run downward blip in investment? Clearly, there must be periods when investment is greater than it would otherwise be, to balance out the average rate of investment over time.

If investment is responsive to swings in the economy rather than to changes in the cost of capital—as the empirical evidence shows so strongly—this further implies that output must occasionally operate above its long-run level, at levels high enough and for periods long enough to generate sufficient excess investment. One simple way to "prove" that this is how the U.S. economy actually works is simply to define the long-run potential of the economy to be equal to its trend value over any period of recent history, so that the time pattern of GDP is constructed with half of actual output levels above trend and half below. If, and this is a very big if, investment responds symmetrically on both sides of "full employment" (thus defined), the problem is solved. Average investment is unaffected by the existence of occasional downward swings in investment.

Any non-tautological method of defining full employment, however, has a much harder time proving that short-run drops in investment have no permanent effects. Simply relying on the notion that the economy's long-run tendency is *toward* full employment, as contentious as that claim is, does not prevent the economy from being moved onto a permanently lower growth path by the occasional loss of capital accumulation. In that case, the economy can be made cumulatively poorer over time by short-run deviations from full employment. (Whether this will affect the long run growth rate, rather than the long run level of GDP, depends on whether growth rates are path

dependent. At the very least, however, it is clear that living standards can be permanently lowered through contractionary fiscal policy.)

Any realistic discussion of the time path of investment and output must, however, look seriously at monetary policy's response to the proposed change in fiscal policy (which is what sets the process in motion). Will the Federal Reserve respond to the downward trend of output and investment by easing monetary policy? Current Fed Chair Alan Greenspan has promised as much on several occasions.

In theory, the Fed could certainly try to coordinate its actions with any change in fiscal policy, with any policy error being of unknown sign and duration. If it erred toward too much countervailing stimulus, the economy could experience a brief period of over-investment, with the likelihood of inflationary pressures causing the Fed to tighten later.

If, instead, the Fed erred in not providing enough stimulus, the economy would experience lower-than-full-employment growth levels. How would the Fed then respond to this? In order for no cumulative effects to remain from the short-run recession, the Fed would have to change policy in the future to allow a short-run boom to develop.

There is, however, another possible response. Since its current stated long-run goal is to create a zero-inflation environment, the Fed is in an interesting position. If it wants actively to induce a lower inflation rate, it must create a recession. (Yes, the Fed does believe in the Phillips Curve.) This can generate unwanted political heat, accompanied by Congressional attempts to restrict the independence of the Fed.

Therefore, the Fed could adopt what has been called an "opportunistic" monetary policy. The Fed could view this fiscally-induced recession as a fortunate brake on economic growth, not to be counteracted but in fact

exploited. The recession, since it was caused by tax policy, cannot be blamed on the Fed; the Fed can then delay its stimulative response in the hope that the inflation rate will drop from its current level of slightly less than 3%, down to 2%, 1%, or ideally 0%.

Indeed, there is some evidence that this is the policy rule currently used by the Fed. Orphanides and Wilcox [1996], while not claiming to know that the decision-makers at the Fed use the opportunistic approach, offer some revealing quotations from current and former voting members of the Fed's policy-making committee. Orphanides and Wilcox also demonstrate a model of opportunistic monetary policy, showing that it is logically coherent.

Another possibility is that the Fed targets the growth rate of output in determining its policy actions. Current consensus is that the Fed views a 2.5% annual real growth rate as the maximum possible for a sustained period of time. If that were a long-run average goal, once again the possibility of balance would exist, with periods of boom and bust both allowed to exist but not get out of hand. However, as seems more likely, if the 2.5% growth rate is seen as a maximum rate above which the economy cannot be allowed to accelerate, then the same result will hold as under the assumption that the Fed is targeting a decrease in the inflation rate. Once again, the cumulative effect will be lower output and investment.

Recall, however, that the whole point of the tax policy is to raise saving, raise investment, and thereby raise the rate of long-term potential growth of the economy. Even assuming that the Fed's policy works perfectly, that the economy does not move into recession, and that investment becomes a larger share of output, the Fed is nevertheless in the difficult position of having to determine when the long-run potential growth rate has risen above 2.5%, and to what level it has risen. Two problems, one common to all policy situations

and one unique to this question, will plague this reaction.

First, there is a recognition lag in determining that the economy's potential growth rate has increased. Even a Fed that allowed the economy to average its potential growth rate would end up holding the growth rate below its new potential until the new potential had been recognized, measured, and verified. Second, the restrictive bias of current Fed policy comes into play once again. This bias will argue strongly for waiting until there is virtually no doubt that the potential growth rate has risen, and it will also argue for adopting the lowest available estimate of the range of estimates of the new target rate. Throughout this process, therefore, the tendency toward contraction will make itself felt—not just in immediate-term interest rate policy, but in every decision involved in the transition to a higher growth path. That path, then, will be lower than it could be under different circumstances.

Finally, there is a problem with the methods used to measure the economy's potential growth rate. The discussion above implied that there is an independent process of measurement which would produce a range of estimates of the change in potential growth rates. In fact, however, the process is not independent of actual growth rates. The future growth potential of the economy is inferred, in part, from actual recent growth rates, with changes in other factors adding to or subtracting from that average. In that case, the problem of tautologically defining potential growth becomes quite serious. Slow growth could then beget slow growth.

While the foregoing is largely a critique of monetary policy, and not specifically a discussion about tax policy, in practice the two are inseparable. Tax policy has impacts on the macroeconomy, and the Fed then reacts or fails to react. It is the likelihood of non- and under-reactions that makes

contractionary fiscal policies so potentially damaging.

IV.   Conclusions

The desire to change the tax code is understandable. The system is currently complicated and, often, perverse. However, there is no need to re-write the entire tax code in order to encourage more saving. There is no reliable evidence to indicate that current levels of saving are inadequate, nor is there any guidance available as to what the optimum amount of saving should be.

The tax system already encourages saving and investment in a number of significant ways. More importantly, though, there is no evidence that changing the tax code in supposedly saving-enhancing ways will actually raise saving. People can be very ingenious when they want to maintain their levels of consumption, and the tax code cannot prevent this. Saving is simply not responsive to the tax system.

This is actually fortunate, because if a tax change did increase saving, the economy would be made worse off. The decline in consumption spending would at least slow the economy down, if it did not induce an outright recession. Moreover, the current conduct of monetary policy is such that this contractionary impact induced by tax policy would not be offset by monetary stimulus.

In short, saving-inducing tax plans are attacking a problem that does not exist, with a mechanism that will not work, in order to achieve a goal that would harm the economy. It would be much better to design tax policy to achieve other goals, such as raising revenue and redistributing income.

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