SPECIAL REPORT

TAX STIMULUS OPTIONS IN THE AFTERMATH OF THE TERRORIST ATTACK

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In the aftermath of the recent terrorist attacks, the Federal Reserve reduced interest rates, and Congress approved a $40 billion spending package and an airline bailout program. The key issues facing economic policymakers are whether additional stimulus proposals should be approved, and if so, what form they should take. Spending initiatives aimed at quickly stimulating the economy are worthy of consideration, and should likely form part of any stimulus package. Since tax cut proposals have now taken center stage in the stimulus debate, however, the focus of this paper is the stimulus potential of alternative types of tax cuts. The authors do not attempt to determine whether a stimulus should be provided. Rather, the central question they address is "if a stimulus is desirable, what is the best way to design the tax side of the package?"

The effectiveness of any potential tax stimulus needs to be evaluated relative to the current and expected economic and budget outlook. The attacks disrupted the workings of an already weakening economy, and may well have pushed the economy into a recession. But the economy's long-term prospects remain strong. The 10-year budget outlook, which was relatively auspicious at the beginning of the year, has deteriorated rapidly due to the tax cut enacted this spring, the weakening of the economy before the terrorist attack, and the further weakening economy after the attack. The economic outlook thus suggests the need for policies that stimulate the economy in the short run. The budget outlook suggests that the long-run revenue impact of stimulus policies should be limited, so as to avoid exacerbating the nation's long-term fiscal challenges, which would raise interest rates and undermine the effectiveness of the stimulus.

In short, say the authors, the most effective stimulus package would be temporary and maximize its "bang for the buck." It would direct the largest share of its tax cuts toward spurring new economic activity, and it would minimize long-term revenue losses. This reasoning suggests five principles for designing the most effective tax stimulus package: (1) Allow only temporary, not permanent, items. (2) Set an overall stimulus budget. (3) Structure any business tax incentives to encourage new investment, not to provide a windfall for previous investment. (4) Design any household tax reductions to maximize effect on demand. (5) Maintain long-term fiscal discipline.

These principles suggest that the most effective tax stimulus packages would stimulate consumer spending and/or business investment in the short run, without exacerbating long-term fiscal problems. Thus, temporary rebates to individuals and temporary subsidies for new investment for firms would likely be the most effective way to stimulate short-term economic activity via tax cuts. It is worth emphasizing, however, that a stimulus package with substantial long-term revenue costs could do as much harm as good. Expensive long-term packages would raise interest rates, which would restrain business and housing investment and interest-sensitive consumption. Many of the stimulus proposals currently being considered do little or nothing to address the need to stimulate the economy in the short run and would exacerbate long-term fiscal problems. Proposals to cut tax rates on capital gains or on corporate income are particularly problematic along these dimensions. These proposals may be worth discussing in other contexts, but they clearly represent the wrong policy response at the current time.

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I. Introduction

Congressional and administration leaders are now examining the appropriate economic and fiscal policy response to the recent terrorist attacks. Some policy responses have already occurred in the aftermath of the attacks. For example, the Federal Reserve immediately signaled its willingness to provide liquidity to the markets. The Fed also reduced its key lending rate by 50 basis points on September 17 and another 50 basis points on October 2. On September 14, Congress approved a $40 billion spending package for defense, rescue, and rebuilding efforts, which was signed into law by the president on September 18.[1] The administration and Congress have also agreed on a $5 billion bailout, along with a loan guarantee program, for the airline industry.

The key issues facing economic policymakers are whether additional stimulus proposals should be approved, and if so, what form they should take. Spending initiatives aimed at quickly stimulating the economy — including the rapid clean-up and rebuilding of New York City and efforts to attenuate the costs of economic slowdown — are worthy of consideration, and should likely form part of any stimulus package. Since tax cut proposals have now taken center stage in the stimulus debate, however, we focus on the stimulus potential of alternative types of tax cuts. We do not attempt to determine *whether* a stimulus should be provided. Rather, the central question we address is "if a stimulus is desirable, what is the best way to design the tax side of the package?"

The effectiveness of any potential tax stimulus needs to be evaluated relative to the current and expected economic and budget outlook. The attacks disrupted the workings of an already weakening economy, and most economists argue that it may have pushed the economy into a recession. A variety of commentators, however, agree that the economy's long-term prospects remain strong. The 10-year budget outlook, which was relatively auspicious at the beginning of the year, has deteriorated rapidly due to the tax cut enacted this spring, the weakening of the economy before the terrorist attack, and the attack itself. The attack will likely put further pressure on the budget by reducing output (which will reduce tax revenue and raise spending), and by introducing new spending requirements (for the war on terrorism and for economic recovery).

The economic outlook thus suggests the need for policies that stimulate the economy in the short run, but little need (or, more precisely, little *increased* need in the wake of the attacks) for policies geared toward longer-term growth. The budget outlook suggests that the long-run revenue impact of stimulus policies should be limited, so as to avoid exacerbating long-term fiscal challenges, which would raise long-term interest rates and undermine the effectiveness of the stimulus.

In short, the most effective stimulus package would be temporary and maximize its "bang for the buck." It would direct the largest share of its tax cuts toward spurring new economic activity, and it would minimize long-term revenue losses. This reasoning suggests five principles for designing the most effective tax stimulus package:

1. *Allow only temporary, not permanent, items.* The stimulus package should include only temporary items, not permanent changes. This will limit the long-term cost of the package and reduce the temptation for policymakers to try to push through long-standing proposals that may or may not have merit for other reasons, but do little or nothing to stimulate the economy in the short run.
2. *Set an overall stimulus budget.* Policymakers should set an overall budget for economic stimulus before debating the actual features of the package. This approach will further limit the possibility of a runaway "Christmas tree" spending and tax package that could severely damage budget prospects and thus raise interest rates. Fed Chairman Alan Greenspan and former Treasury Secretary Robert Rubin recently suggested a "budget" for the stimulus of $100 billion, including those items that have already been enacted since the attacks.[2]

[1]The legislation (the 2001 Emergency Supplemental Appropriations Act for Recovery From and Response to Terrorist Attacks on the United States) provides funding for federal, state, and local efforts to respond to the attacks; increased transportation security; the repair of public facilities and transportation systems; and national security. Half of the $40 billion may be obligated only when enacted in a subsequent emergency appropriations bill. In addition, not less than half of the $40 billion total must be spent on relief to New York, Virginia, and Pennsylvania.

[2]Curt Anderson, "Greenspan, Rubin Agree on Tax Cuts," Associated Press, Sept. 25, 2001, 5:42 pm.

3. *Structure any business tax incentives to encourage new investment, not to provide a windfall for previous investment.* Policymakers should focus business incentives on new investment. This could include temporary provisions to provide accelerated depreciation, expensing, or tax credits for new investments during the near future. Reductions in tax rates on corporate income or capital gains primarily give windfalls to old investments by reducing the taxes owed on the returns those investments have generated. Cutting the tax rate on the returns from old investment would do little or nothing to stimulate the economy now.
4. *Design any household tax reductions to maximize effect on demand.* Any tax cuts for households should encourage people to spend the funds, to boost the economy further. Tax cuts should therefore be focused on low- and middle-income households that tend to have a higher propensity to spend out of their income than do high-income households. Timing any new tax cut for households to coincide with the holiday season may be an effective way to encourage it to be spent.
5. *Maintain long-term fiscal discipline.* Policymakers should offset the cost of any short-term stimulus package and the long-term continuing costs of any permanent additional anti-terrorism measures by scaling back part of the already legislated future tax cuts for those least in financial need of additional tax reductions. Whatever one's view of the affordability of the tax package enacted last spring, it was passed before the nation realized it would need to finance a new war. Furthermore, combining short-term stimulus with long-term fiscal discipline provides more stimulative impetus to the economy than a stimulus package alone, since it restrains any increase in interest rates that could undermine the effectiveness of the stimulus.

These principles suggest that the most effective tax stimulus packages would stimulate consumer spending and/or business investment in the short run, without exacerbating long-term fiscal problems. Thus, temporary rebates to individuals and temporary subsidies for new investment for firms would likely be the most effective way to stimulate short-term economic activity via tax cuts.

It is worth emphasizing that a stimulus package with substantial long-term revenue costs could do as much harm as good. Expensive long-term packages would raise interest rates, which would restrain business and housing investment and interest-sensitive consumption. Many of the stimulus proposals currently being considered do little or nothing to address the need to stimulate the economy in the short run, and would exacerbate long-term fiscal problems. Proposals to cut tax rates on capital gains or on corporate income are particularly problematic along these dimensions. These proposals may be worth discussing in other contexts, but they clearly represent the wrong policy response at the current time.

II. The Economic and Budget Situation

An effective economic stimulus should take into account both the underlying economic situation and the government's budget constraint.

A. The Economy

The economy began to weaken well before the recent attack. After several years of unusually strong growth, economic growth began to slow in the latter half of 2000. Real Gross Domestic Product (GDP) growth fell to 0.3 percent in the second quarter of 2001 (on a seasonally adjusted and annualized basis). Much of the decline was associated with a softening in business investment: Investment in equipment and software, for example, *fell* by 15 percent on an annualized basis in the second quarter. Household consumption remained resilient before the attack, as did the housing market. Yet concerns were starting to mount that increases in unemployment (which rose to 4.9 percent of the labor force in August) and declines in consumer confidence would weaken consumer spending, producing a more substantial slowdown in the economy as a whole.

The attack may have complex implications for the economy. It clearly caused severe short-term disruptions and reduced consumer confidence levels. The attack poses a particularly difficult challenge for the travel and tourism industry, and could potentially interrupt some business activities that require face-to-face meetings or expedited shipping. The stock market plummeted following the attack, with the S&P 500 falling 12 percent and eliminating an estimated $1.4 trillion in equity wealth in the first week it was open. A serious risk is that consumer spending will decline sharply, in response to declining stock prices and general economic uncertainty.[3] If so, the decline in aggregate demand could cause business investment to fall further. Most forecasters are now predicting a recession, with estimates of the depth and duration varying.

On the other hand, several factors suggest a somewhat more auspicious outlook in the short run. In response to the Federal Reserve's actions, interest rates have fallen substantially. By some measures, short-term interest rates are now negative in inflation-adjusted terms. Energy prices have also fallen, with the average price of unleaded gasoline falling from $1.73 per gallon in May to $1.43 in August. The "automatic stabilizers" of the federal budget (such as the reduction in tax payments and increase in unemployment insurance payments) will also spur demand as the economy slows, as will the additional fiscal stimulus packages that have already been approved.

Finally, it is crucial to recognize that the long-term prospects of the country remain sound. As Alan Greenspan noted in congressional testimony on September 20, "as we struggle to make sense of our profound loss and its immediate consequences for the

[3]Standard estimates suggest that a decline in stock market wealth of $1.4 trillion would cause a decline in consumer spending of between $40 billion and $70 billion.

economy, we must not lose sight of our longer-run prospects, which have not been significantly diminished by these terrible events."[4] Indeed, one of the fundamental points of this paper is that even in the wake of the nation's tragedy, we should not ignore issues relating to the economy's long-term health.

B. The Budget

Over the past decade, the federal budget has experienced a dramatic shift. In 1989, the federal deficit amounted to 2.8 percent of GDP. By 1998, as the result of both deficit reduction efforts and surprisingly strong economic growth, the federal government ran a unified budget surplus of 0.8 percent of GDP, which rose further in 1999 and 2000. The ratio of debt held by the public to GDP fell by 15 percentage points between 1995 and 2000. As the nation entered 2001, it therefore enjoyed a relatively good medium-term budget outlook. The Congressional Budget Office, for example, estimated in January that the federal government would run a budget surplus outside social security of roughly $3.1 trillion between 2002 and 2011. After 2011, as the baby boomers began to retire, the budget outlook worsened. But for the next decade or so, the projections suggested substantial surpluses.

Since January, the 10-year budget outlook has deteriorated substantially. Revised estimates released by the Congressional Budget Office in August showed a projected surplus over the next 10 years outside of social security of $846 billion. Most of the reduction reflected the enactment of the new tax legislation, not the slowing economy; legislative changes (principally the tax cut) accounted for roughly 70 to 80 percent of the reduction in the projected surpluses over the next 10 years. Even the $846 billion in projected surpluses outside social security, moreover, are based on relatively optimistic assumptions about economic growth, tax collections, and spending plans.[5]

The terrorist attack will cause a further deterioration in the federal budget outlook for three reasons. First, as noted above, the government has already allocated substantial sums to an economic stimulus package and seems likely to allocate additional funds in the near future. If this stimulus effort is temporary only (as recommended here), it would have only a marginal effect on the long-term fiscal outlook, but if the "stimulus" includes permanent components, it could impose much more substantial costs on the budget in the long term. Second, the federal government will devote substantial resources to countering the effects of the attack on affected parties and to improving national security. Many of these costs will be continuing ones. Third, the attack may cause a slowing of the economy, which would result in lower revenue and higher spending — and therefore put further pressure on the budget.

Congress could cover much of the costs associated with the response to the terrorist attacks simply by freezing portions of the tax cuts scheduled for 2004 and thereafter. For example, freezing the top marginal tax rate at 38.6 percent, rather than allowing it to decline in the future, could finance a short-term stimulus package without endangering long-term fiscal discipline. According to the Joint Committee on Taxation, freezing the 38.6 percent marginal tax rate would save roughly $100 billion between 2002 and 2011 (excluding debt service savings),[6] enough to meet the full costs of $100 billion in total stimulus (including the initial $40 billion and airline legislation). Such a freeze would not represent a change relative to current law until 2004, well after the nation's short-term economic challenges are likely to have passed. It would also affect only 1.1 million taxpayers, who have an average adjusted gross income of $1.025 million. Even those high-income taxpayers would only forgo a future marginal tax cut, rather than experiencing a tax increase relative to today's rates, and would still enjoy a continuing reduction in average tax rates (since the tax rates applying at lower levels of income would continue to decline). Since the long-term response to preventing terrorism will cost much more than the short-term stimulus package alone, other adjustments will have to be considered by Congress and the administration to help the nation meet its long-term fiscal obligations.

III. Analysis of Specific Tax Proposals

Because the economy is facing a short-term downturn, a tax package should stimulate consumer spending and new business investment. Because the long-run prospects for the economy remain strong, there is little (increased) need for permanent tax changes. And because the long-term budget situation is precarious, stimulus packages that reduce revenue significantly in the long run could be counterproductive because of their impact on long-term interest rates.

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[4]Alan Greenspan, "The Condition of the Financial Markets," Committee on Banking, Housing, and Urban Affairs, U.S. Senate, September 20, 2001.

[5]For example, the $846 billion figure does not reflect other initiatives in the congressional budget resolution (such as a prescription drug benefit); assumes that the $1.35 trillion package of tax cuts actually will expire on December 31, 2010; assumes that temporary tax provisions will be allowed to expire; does not reflect the additional defense spending that the administration requested in June; assumes that Congress will not aim to fix the problems arising from 35 million taxpayers having to face the alternative minimum tax; and assumes that funding for nondefense programs over the next decade falls below what is needed for these programs to keep pace with inflation and population growth. The $846 billion figure does not reflect the bipartisan commitment to save the surpluses in the Medicare Part A program, nor does it devote the cash surpluses in federal and military pension funds to saving.

[6]Letter from Bernard Schmitt, Joint Committee on Taxation, to Senator Barbara Boxer, September 4, 2001. The Joint Committee estimate applies specifically to the projected cost of reducing the 38.6 percent rate to 35 percent, given the tax code prior to the enactment of the Economic Growth and Tax Relief Reconciliation Act of 2001. The savings from freezing the 38.6 percent rate at this point may be somewhat smaller than this estimate, since other provisions of that act interact with the marginal tax rate revenue effects.

A. Capital Gains Tax Cuts

One proposal would reduce the maximum tax rate on long-term capital gains from 20 percent to 15 percent.[7] Whatever its merits in other contexts, a capital gains tax cut has several crucial drawbacks as a stimulus tool.[8]

1. Permanent cut. A permanent capital gains tax cut is poorly designed to address the short-term economic problems at hand.[9] First, cutting the tax rate on capital gains is unlikely to stimulate consumption. Indeed, proponents of a capital gains tax reduction typically argue that it would stimulate national saving, not consumption.[10] Second, a capital gains tax cut is typically promoted as producing economic benefits in the long run, not the short run. Even those who believe that a capital gains tax cut would encourage business investment acknowledge that the impact is slow.[11] And even in the long run, the benefits are limited. For example, a recent Congressional Budget Office study concluded that reducing the top tax rate on long-term capital gains from 20 percent to 15 percent would have a minuscule effect on private saving and long-term economic growth.[12]

Third, a capital gains tax reduction is not an efficient way to target *new* investment, because the tax cut would apply to capital gains on *existing* assets, and those gains are a return to prior investment. Finally, the capital gains rate cut would reduce revenue in the long run, and exert upward pressure on long-term interest rates.[13]

2. Temporary cut. Another version of the proposed reduction in capital gains taxes would make the reduction temporary. A temporary reduction in capital gains tax rates is particularly problematic. For example, a temporary capital gains tax cut could generate short-term stimulus if individuals were more likely to consume out of realized capital gains than unrealized gains, and the realized gains induced by a temporary capital gains tax cut therefore boosted consumption. But to the extent the realized gains were consumed, stock prices would tend to decline because the realized gains would not be reinvested in the stock market. Any such stock market decline could harm consumer confidence and hurt the economy. Fundamentally, policies that could induce stock market declines are unlikely to

[7]For assets held more than one year, taxpayers in the 15 percent bracket and lower brackets face a 10 percent capital gains rate, while taxpayers in the 27 percent bracket and higher brackets face a 20 percent capital gains rate. Rates lower than these can apply to assets held for at least five years. Assets acquired after December 31, 2000, that would otherwise be subject to the 10 percent rate will be taxed at 8 percent if they have been held for more than five years before being sold. For assets otherwise subject to the 20 percent rate, a 18 percent rate will apply if the asset has been held for more than five years and was acquired after December 31, 2000. This 18 percent rate thus can be applied to some assets sold beginning in 2006. Assets held for less than one year (short-term capital gains) are taxed at the same rate as regular income. If the top rate were reduced to 15 percent, the 10 percent rate would presumably be reduced to 7.5 percent, which has been the case with similar proposals in the past, but no specifics are currently available.

[8]Some of this material is taken from Joel Friedman, Iris Lav, and Peter Orszag, "Would a Capital Gains Tax Cut Stimulate the Economy?" Center on Budget and Policy Priorities, September 20, 2001.

[9]For further discussion of the effects of a capital gains tax cut, see Leonard Burman, *The Labryrinth of Capital Gains Tax Policy: A Guide for the Perplexed*, Brookings Institution, 1999, and Henry Aaron, "The Capital Gains Tax Cut Mystery," *Tax Notes*, Mar. 9, 1992, p. 1269.

[10]It is also worth noting that a capital gains tax reduction — whether temporary or permanent — would produce disproportionate benefits for higher earners, who would be unlikely to spend a large percentage of their tax gains. Based on estimates by the Congressional Research Service (CRS), it is likely that 80 percent of the benefits from a capital gains tax cut would accrue to the 2 percent of the population with the highest incomes — those with incomes exceeding $200,000. Using Joint Committee on Taxation data for 1999, CRS estimated that the 1.8 percent of taxpayers with incomes over $200,000 (in 1999 dollars) pay 78.6 percent of capital gains taxes. Jane G. Gravelle, "Capital Gains Taxes: Distributional Effects," Congressional Research Service, September 24, 1999.

[11]*See, e.g.*, "Capital Gains Taxes and the Economy: A Retrospective Look," prepared for American Council for Capital Formation by Standard and Poor's DRI, June 25, 1999.

[12]Congressional Budget Office, "An Analysis of the Potential Macroeconomic Effects of the Economic Growth Act of 1998," CBO Memorandum, August 1998. CBO estimated that private saving would rise by 0.3 percent, adding about 0.06 percent to the capital stock after 10 years. The increase in GDP would amount to about $2 billion to $3 billion in the 10th year — or less than two one-hundredths of 1 percent of GDP. The long-run benefits of a capital gains tax cut are limited for several reasons. For example, many assets would be unaffected. Assets held in pension funds and individual retirement accounts do not face individual capital gains tax — nor do assets held by foreign investors, corporations, nonprofits, or those who offset capital gains with capital losses. Similarly, capital gains on assets held for less than one year are subject to the regular income tax rate, not the preferential long-term capital gains rate, and therefore would be unaffected. Furthermore, for most families, any gain on the sale of their personal residence is exempt from the capital gains tax, since the first $500,000 of the gain for married couples ($250,000 for singles) is exempt from the tax. Investors can also reduce or avoid the impact of capital gains taxes by deferring the sale of assets. In fact, about half of all capital gains tax is avoided by investors altogether, as they hold onto assets until they die. (Heirs do not have to pay tax on the gains accrued during the lifetime of the original owner.)

[13]Reducing the maximum capital gains tax rate from 20 percent to 15 percent would be expected to result in revenue losses totaling more than $50 billion over the next 10 years (and disproportionately more over longer time horizons, given the short run revenue gain that occurs when the change is first implemented). In 1999, the Joint Tax Committee estimated a similar proposal to cost $52 billion between 2000 and 2009. Joint Committee on Taxation, "Estimated Budget Effects of H.R. 2488, the Financial Freedom Act of 1999, as passed by the House of Representatives," JCX-53-99, July 22, 1999. One would expect the 10-year costs to be higher today, as the budget window has shifted forward to 2002 through 2011 and baseline estimates of capital gains realizations have risen.

be beneficial at this point. A temporary capital gains tax cut is thus an inappropriate response to the current economic slowdown.

3. Summary. The discussion above leads us to the same conclusion as economist Jane Gravelle in a recent Congressional Research Service report: "a capital gains tax cut appears the least likely of any permanent tax cut to stimulate the economy in the short run; a temporary capital gains cut is unlikely to provide any stimulus."[14]

B. Corporate Tax Rate Cuts

Recent reports indicate that high-ranking administration economic officials are advocating reductions in the tax rate on corporate income as the best method for stimulating the economy.[15] Advocates offer a variety of claims on behalf of such a tax cut: They claim it would raise stock market values (thereby stimulating consumer spending through the wealth effect), would result in lower costs of goods to households, and would increase investment. In fact, a senior economic administration official went so far as to assert that the only reason to oppose a permanent corporate rate cut is "'fundamentally political' because it would be portrayed as a break for powerful special interests."[16] Rhetoric aside, though, a corporate tax rate cut is ill-suited to address the nation's short run economic challenges.[17]

1. Permanent cut. A permanent corporate tax rate cut is a poor way to stimulate a faltering economy for three general reasons. First, it is an inefficient way to stimulate economic activity because it provides a windfall to the income earned on investments made in previous years. Firms that are making no current investments, or are reducing their current investments, would still benefit greatly if they are profitable — that is, if they have sufficient income from previous investments to more than cover their expenses. Second, the corporate tax rate cut provides little, if any, immediate assistance to firms that are currently facing losses and therefore are not currently paying corporate income taxes. These are, however, the firms that are disproportionately in need of assistance during the downturn. Third, permanent reductions in corporate tax rates are expensive — each percentage point decline in the corporate tax rate reduces projected surpluses by about $90 billion over the next decade, including about $70 billion in tax revenue losses and $20 billion in additional interest on the public debt.[18] This decline in the surplus will cause any significant cut in corporate rates to put upward pressure on long-term interest rates, which in turn could potentially erode any positive effects of a corporate tax cut on the stock market (see Appendix 1) and on new investment (see Appendix 2).

Some have claimed that cutting the corporate rate would stimulate consumption, through a somewhat circuitous three-step route. First, the argument goes, reducing the top corporate tax rate from 35 percent to 25 percent (and the other corporate tax rates by a similar proportion) would raise after-tax earnings in 2002 by $60 billion, with the amount rising over time.[19] Second, since the aggregate stock market price-to-earnings ratio is roughly 20, the increase in after-tax earnings would add $1.2 trillion to the value of the stock market. Third, if investors spend between 3 percent and 5 percent of the increase in stock values — the so-called wealth effect assumed by most economists — between $36 billion and $60 billion would be added to aggregate demand in the near term, when the economy needs it most.

This chain of reasoning is problematic for several reasons. First, even if it were valid, the corporate tax rate cut would imply a very small short-term stimulus relative to its long-term costs. The tax cut described above would reduce tax revenue by more than $700 billion over the next decade. Including the associated increase in interest payments on the federal debt, the 10-year cost would exceed $900 billion. But the stimulus provided over the next year would amount to only $36 billion to $60 billion, or between 4 and 7 percent of the 10-year cost (or even less if, as some economists believe, wealth effects take time to materialize as increased consumption). Other tax reductions — targeted at consumer spending or new business investment — could achieve a much larger short-term stimulus per dollar spent.

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[14]Jane G. Gravelle, "Economic and Revenue Effects of Permanent and Temporary Capital Gains Tax Cuts," Congressional Research Service, September 17, 2001.

[15]John D. McKinnon and Shailagh Murray, "White House Quietly Pushes Corporate-Tax Cut," *Wall Street Journal*, Sept. 26, 2001.

[16]Richard Stevenson and Joseph Kahn, "The Economy: Bush Tries to Steady Economy Jolted by Attack," *New York Times*, Sept. 23, 2001, Section 1A.

[17]For further discussion, see Joel Friedman and Iris Lav, "A Permanent Corporate Tax Rate Cut: The Wrong Medicine for Short-Term Economic Ills," Center on Budget and Policy Priorities, September 26, 2001.

[18]These estimates are based on communications with Richard Kogan, Center on Budget and Policy Priorities. They do not include interactions with the alternative minimum tax or corporate responses via increased investment. Including either of these responses would reduce the revenue costs. Nor do the estimates include the potential shifting of economic activity from the personal sector (including individual proprietorships and partnerships) and S corporations into the corporate sector to take advantage of corporate tax rates that would be far lower than the highest individual tax rates. Including this response would raise the overall revenue cost — to be precise, it would reduce the corporate tax revenue loss, but increase the individual income tax revenue loss by even more. Evidence suggests that the potential for shifting economic activity from one sector to the other is quite large. *See, e.g.*, Roger H. Gordon and Joel B. Slemrod, "Are 'Real' Responses to Taxes Simply Income Shifting Between Corporate and Personal Tax Bases?" in Joel B. Slemrod, ed., *Does Atlas Shrug? The Economic Consequences of Taxing the Rich* (Russell Sage Foundation: New York, 2000).

[19]Projected baseline corporate revenues are $210 billion in fiscal 2002, rising to $321 billion in 2011. Congressional Budget Office, *The Budget and Economic Outlook*, August 2001, Table 1-2.

Second, the optimistic scenario for stock prices is unlikely to be valid because it ignores the likelihood of an increase in long-term interest rates in response to the tax cuts. Policies that diminish expected debt reduction raise long-term interest rates, an effect that many analysts believe is already manifesting itself in a steeper yield curve.[20] Some corporate rate cut defenders may claim that reducing federal surpluses by $900 billion over the next decade would not raise long-term interest rates. Yet for years, corporate America has claimed that high federal deficits and debt raised interest rates and therefore crowded out private-sector borrowers.[21] Indeed, estimates from President Clinton's Council of Economic Advisers and from Harvard Professor Martin Feldstein suggest that the rise in interest rates resulting from a tax cut of the size discussed above would be sufficient to wipe out most, if not all, of any prospective gain in the stock market (see Appendix 1).

Third, even if the increase in interest rates were small enough to allow some increase in stock prices, the higher interest rates could dampen demand in other sectors, including real estate and interest-sensitive consumption. Fundamentally, an increase in long-term interest rates could attenuate or eliminate any short run stimulus and thus undermine the intent of the stimulus package.[22]

A second claim made by proponents of reducing corporate tax rates is that the tax cuts would be immediately passed along to consumers in the form of lower prices for goods and services. This argument is also problematic: most evidence, including studies by the Congressional Budget Office and the Treasury Department, suggests that the corporate tax is borne by owners of capital in general or owners of corporate capital, not by consumers. Second, note the tension between the claim of lower consumer costs and the claim of higher stock market values above. The putative increase in stock values depends on a reduction in corporate taxes *without* a reduction in pre-tax corporate revenue. If corporate revenue fell because the tax savings were fully passed on to consumers in the form of lower prices, there would be no reason for stock values to rise in the first place (even if interest rates remained constant), since after-tax corporate earnings would not have changed. Finally, recall that firms that are currently losing money do not pay corporate income taxes. Thus, they would not realize any cost savings, but they would (through the decline in market prices caused by the actions of profitable firms) experience a reduction in revenue. As a result, if the cut in corporate taxes were indeed passed along in the form of reduced prices, the result could make survival even more difficult for those firms already hit hardest by recent events.

A third claim is that corporate tax rate cuts would raise investment by reducing the cost of capital investment and raising the after-tax return on such investment. This argument is correct as far as it goes, but it ignores several critical factors. The main point — as documented in Appendix 2 — is that a temporary investment tax credit (ITC) could generate an equal or larger effect on new investment at a tiny fraction of the cost of a corporate tax rate cut. A corporate rate cut is thus an extremely inefficient mechanism for generating new investment.

To see why a corporate tax cut is a much less efficient approach to encouraging new investment than a temporary investment tax incentive, consider the following three points. First, assume there is no change in interest rates due to either policy. Under that assumption, reducing the corporate tax rate by 10 percentage points has the same effect on the cost of new capital investments as the creation of a new investment tax credit of roughly 5 percent. However, the 10-year revenue loss of a one-year ITC is about $50 billion (without debt service), whereas the 10-year revenue loss due to the corporate rate cut is about $700 billion (without debt service). Thus, even with no interest rate effects, it costs more than 10 times as much to obtain a given reduction in the cost of new capital during the next year via a permanent corporate tax cut than through a temporary ITC. The intuition is that the ITC focuses on new investment and would be temporary, whereas the corporate tax cut mainly subsidizes old investment and is permanent. Since the stock of existing capital is so much larger than the flow of new investment in any given year, the vast majority of the benefit from a corporate rate reduction would accrue to *existing* capital rather than new capital. For example, according to data from the Bureau of Economic Analysis, the value of nonresidential structures, equipment, and software amounted to more than $10 trillion at the end of 1999.[23] Yet annual investment in such areas amounts to roughly $1.3 trillion. If the return from existing capital is

[20]Early this year, the yield spread between 30-year Treasury securities and 1-year Treasury securities was less than 100 basis points. Last week, it had risen to more than 300 basis points.

[21]The President of the National Association of Manufacturers, for example, has written that economic policy errors of the 1980s "created huge Federal budget deficits, raised interest rates, overvalued the dollar, raised the cost of capital, and, in the end, lessened the competitiveness of American industry." *See* Jerry Jasinowski, "The Low Dollar Has Worked Wonders," *The New York Times*, Apr. 10, 1988, section 3, page 3.

[22]For additional reasons and analysis of why the stock market effect is likely to be more muted than corporate tax cut advocates would like, see Jane Gravelle, "Using Business Tax Cuts to Stimulate the Economy," October 1, 2001, Congressional Research Service. Gravelle notes that the tax cut would raise the desired capital stock, but that as the capital stock rose over time, the marginal product of capital would fall. Anticipations of this effect would reduce the initial stock market run-up, since the stock market is forward-looking. The faster the speed of adjustment to the new equilibrium capital stock, the smaller would be the initial boost in stock values.

[23]Bureau of Economic Analysis, "Fixed Assets and Consumer Durable Goods for 1925-99," corrected tables, June 15, 2001, http://www.bea.doc.gov/bea/dn1.htm. The $10 trillion figure reflects the current cost estimate of the net stock of private, nonresidential structure, equipment, and software.

equal to the return from new investment, roughly 90 percent of the benefits from a corporate tax cut would accrue to old investment rather than new investment.[24]

Second, the "bang for the buck" efficiency of a temporary ITC relative to a corporate tax rate reduction becomes even larger once interest rates are allowed to change in response to the policies. As shown in Appendix 1, cutting the corporate tax rate by 10 percentage points could raise interest rates by roughly 60 basis points. This increase in the interest rate would eliminate more than half of the reduction in the cost of capital created by the corporate tax rate cut assuming no change in interest rates. Thus, allowing for interest rate adjustments, a temporary ITC of 2 percent would be sufficient to generate the same one-year reduction in the cost of new capital investment as a permanent corporate rate cut of 10 percentage points. A temporary ITC of 2 percent would only cost about $20 billion over the next decade — roughly 3 percent as much as a corporate rate cut that generates the same reduction in the cost of new investment.

Third, suppose (as above) that a temporary ITC and a permanent corporate tax rate cut have the same effect on the cost of new investment during the next year. Under these circumstances, the ITC provides a *greater* incentive to invest during the year. The temporary measure reduces the cost of current investment relative to future investment. This encourages firms to accelerate their investment plans, whereas a permanent measure does not.

In fairness, it should also be pointed out that the corporate tax rate cut would raise firms' after-tax cash flow, and that this effect might raise investment, independent of any effect of the tax cut on the cost of capital. However, it would probably be a mistake to rely on cash-flow effects to stimulate much investment for two reasons. First, from the end of 1999 to the middle of 2001, holdings of liquid financial assets (checking accounts, money market, and time deposit accounts) by nonfarm, nonfinancial corporations rose by more than $100 billion (or more than 17 percent) and holding of total financial assets rose by more than $700 billion (almost 9 percent).[25] These substantial increases did not stop a drop in investment from occurring earlier this year. But they do indicate that cash-flow shortages do not appear to be major constraints on current or recent investment behavior. It seems much more plausible and consistent with the data that the existence of significant excess capacity and declining consumer demand are causing the drop-off in investment. Second, the econometric evidence on the robustness and to some extent even the presence of such cash-flow effects on investment is questionable. For example, economist Bronwyn Hall summarized the academic literature as follows: " . . . evidence to date on the importance of liquidity constraints in investment is somewhat inconclusive. In many cases, conflicting results have been found using essentially the same data sets, and the modeling has proceeded in a somewhat ad hoc manner . . . "[26] These factors suggest that there is little reason to believe that a significant share of funds given to firms under current circumstances would show up as new investment.

We emphasize that the calculations above are illustrative; the important conclusion is not the precise ratios but that the costs of a permanent corporate tax rate cut would vastly exceed the costs of a temporary investment tax credit with the same incentive for new investment. A key lesson, therefore, is that a short-term investment incentive, especially if it is combined with long-term fiscal discipline, is particularly effective because it avoids any significant increase in interest rates.

A final claim is that corporate tax rate cuts would help reduce layoffs. Such an effect seems unlikely. After all, corporate income tax cuts do not help firms that are already losing money, and these would seem to be the firms most likely to lay off workers.[27]

1. Delayed but permanent cut. A twist on this proposal would enact a permanent corporate rate tax cut, but delay the implementation for a few years. This approach would ostensibly give firms incentives to invest now, claim deductions against these investments at current (higher) tax rates, and then realize the income from the capital investments at future (lower) tax rates. The delay may also reduce the revenue cost of the proposal slightly. This proposal thus has a slight advantage over a permanent, immediate corporate income tax cut, but it still shares all of the other problems noted above. It would still reward old investment in addition to new investment, and it would provide no benefits to firms that are unprofitable currently. It would also tend to raise long-term interest rates, since it would reduce revenue in the long run. Therefore the stock market effects may not be very large, for the reasons noted above. In summary, it would be an inefficient way to stimulate the economy.

2. Temporary cut. A temporary corporate tax rate cut would certainly be less costly from a fiscal point of view than a permanent corporate tax cut. But a temporary cut could actually depress investment and thus be counterproductive from a stimulus point of view. A temporary rate cut would give businesses an incentive

[24]An even larger share of the tax benefits would accrue to old investment plus the share of new investment that would have been undertaken even in the absence of the tax reduction.

[25]Federal Reserve Board, Balance Sheet of Nonfinancial Corporate Business," table B.102, September 18, 2001.

[26]Bronwyn Hall, "Comment on Chapter 8," in Alan J. Auerbach, ed., *Fiscal Policy: Lessons from Economic Research*, MIT Press, 1997, p. 393.

[27]A temporary reduction in firms' payroll taxes (financed by general revenue) could be more effective in reducing layoffs. Although most economists agree that lower payroll taxes in the long term would result in higher after-tax wages for workers and little change in employers' overall labor costs, it takes time for wages to adjust to that new equilibrium. Thus, in the short term, it seems likely that reductions in employers' payroll taxes would not be passed along to workers. The reduction in labor costs per worker would provide an incentive for higher levels of employment than would otherwise be the case (regardless of whether the employer was currently profitable or unprofitable).

to *postpone* investment spending from today until after the rate cut expired. Capital expenditures generate income tax deductions, and those deductions are more valuable when the corporate tax rate is higher than when it is lower. A temporary corporate rate cut could thus provide an incentive to delay investments until the higher rate has been restored.

C. Incentives for New Business Investment

An alternative set of proposals would aim to stimulate new business investment. These policies could include an investment tax credit or accelerated depreciation schedules (or expensing, a form of accelerated depreciation) for new investments. Of the business-oriented tax proposals currently under discussion, such temporary investment incentives are the most consistent with the principles delineated above.

Direct investment proposals would be more effective in stimulating the economy than corporate tax rate cuts for two important reasons. First, unlike corporate tax rate cuts, which provide benefits to old investments as well as new investments, these investment incentives would provide tax subsidies only to new investments. Hence, they would likely generate a larger "bang-for-the-buck" than corporate tax rate cuts. Second, temporary corporate tax rate cuts encourage firms to postpone investments and other expenses, so as to declare more profits while the low tax rates exist and generate more deductions when high tax rates exist. In contrast, a temporary business investment incentive encourages firms to accelerate their future investments to today and thereby raise their current investments by more than a permanent investment incentive would. Thus, a temporary incentive for new investment is both more stimulative and less costly than a permanent one.

The precise form of a temporary investment incentive should reflect administrative and other issues. For example, some practitioners believe that accelerated depreciation or partial expensing may be slightly easier to implement than an investment tax credit. If so, and since the two approaches can produce the same incentive for new investments, accelerated depreciation or partial expensing may be slightly preferable relative to a temporary ITC. Another key issue is what type of investment should qualify for the credit. Traditionally, most such proposals favor equipment over structures, and goods over services. It would be appropriate to consider whether these biases could be addressed or attenuated. These issues are important and need to be addressed, but should not detract from the general point that a temporary investment incentive is the capital tax cut most consistent with the principles outlined in this report.

Despite our conclusions regarding the relative advantages of temporary investment incentives over other forms of tax cuts for capital as an economic stimulus, it is important to note that these incentives are not foolproof. One problem is that their impact on investment may be limited, especially during periods such as the present — when firms already have significant cash-on-hand, there is excess capacity, and aggregate demand is falling.[28] A second potential problem is that investment tax incentives may drive up the prices of investment goods, which would then limit the impact on investment.[29] This concern, however, seems unlikely to be relevant to current conditions, since the recent decline in investment appears to have created significant excess capacity in the capital goods industry.

Third, if the incentive for new investment were temporary, it would have a bigger effect than a permanent incentive during the time period it operates, but it could also create a decline in investment after the period ends. Fourth, incentives for business investment apply to new investments that would have occurred anyway during the time period the incentives are in effect, as well as to investments that are undertaken then only because of the tax subsidy. The business incentives would be more efficient — they would have a bigger "bang-for-the-buck" in stimulating the economy — if they could apply only to new investment that would not have occurred immediately without the credit. This issue could be partially addressed by designing a subsidy only for investment above some firm-specific threshold (such as 80 percent of the firm's average investment in the last three years), but such proposals have proven difficult to design and implement in the past. Fifth, as with corporate rate reductions, a temporary investment tax subsidy provides little or no additional incentive to invest to firms that are not profitable and therefore are not paying corporate income tax.

Sixth, historically, temporary incentives for new business investment have not been timed particularly well. Rather than stabilizing investment flows over the business cycle — by encouraging new investment during recessions — the actual timing and pattern of prior interventions appears to have destabilized investment over time.[30] Finally, to ensure the effectiveness of *temporary* investment incentives, lawmakers would have to emphasize their commitment to the measures as a one-time offer. If companies come to believe that incentives would be continued as part of frequent "extender" packages, the incentive to accelerate investment would be weakened and the danger that the market would raise interest rates (which would dampen demand in the short run) would be more substantial. Despite these caveats, a temporary investment

[28]*See* Jason Cummins, R. Glenn Hubbard, and Kevin Hassett, "A Reconsideration of Investment Behavior Using Tax Reforms as Natural Experiments," *Brookings Papers on Economic Activity,* 1994, and Robert Chirinko, Steven Farrazi, and Andrew Meyer, "How Responsive Is Business Capital Formation to Its User Cost? An Exploration With Micro Data," *Journal of Public Economics* 74 (1999), p. 53, for different views on the effectiveness of investment tax credits.

[29]Austan Goolsbee, "Investment Tax Incentives, Prices, and the Supply of Capital Goods," NBER Working Paper 6192, September 1997.

[30]*See* Alan J. Auerbach and Kevin A. Hassett, "Tax Policy and Business Fixed Investment in the United States," 47 *Journal of Public Economics* 141 (1992).

incentive is more promising than other tax cuts on capital.

D. Another Rebate for Consumers

The declines in consumer confidence and consumer spending due to fears about travel security and a weakening labor market have led several members of Congress and policy advisors to call for a second round of consumer rebates as an effort to directly bolster consumer demand. Research suggests that in the past households have spent in the current period between 20 percent and 70 percent of the temporary income tax cuts they receive.[31]

Although the first round of $300 and $600 rebate checks were distributed in a more timely manner than many previous fiscal stimulus efforts, the impact was still less than had been hoped, since taxpayers receiving the checks appeared to be saving a substantial percentage of the funds even before the terrorist attacks. A survey undertaken by the University of Michigan in August and September finds that only 19 percent of respondents said that they were going to spend their rebates, with the remainder either planning to pay off debts or save the funds. The proportion saying they were going to spend the funds did not rise as income fell, but this may be because those in lower income groups felt the brunt of increased economic uncertainty.[32]

In contrast to the Michigan survey, there is significant formal econometric evidence that families with lower incomes are likely to spend a larger percentage of any additional income than families with higher incomes. Dynan, Skinner, and Zeldes (2001) show that, in several different data sets, marginal propensities to consume (MPC) out of current and permanent income fall as those income measures rise. Parker (1999) uses data from the Consumer Expenditure Survey and finds that the marginal propensity to consume out of transitory income at low levels of resources (which for most low-income households is effectively current income) is much higher than the MPC out of transitory income for very high-income households. McCarthy (1995) uses data from the Panel Survey of Income Dynamics and shows that the marginal propensity to consume out of idiosyncratic income shocks is larger for low-wealth households than for high-wealth households.[33] The tension between the Michigan survey results and the econometric findings is thus intriguing, but currently the weight of the evidence suggests that lower- and middle-income households do have higher propensities to consume out of available resources.

To raise the "bang for the buck" in a second round of rebates, policymakers need to consider several elements.

- *Better Targeting.* A second round of rebates should be better targeted to lower- and moderate-income families. The first rebate was inefficiently targeted. Because it was based on federal income taxes, it excluded roughly 30 million low- and moderate-income families who paid payroll and excise taxes, but did not have enough income to owe federal income taxes once deductions and credits were taken into account To target such households, the rebates should be based on employee social security and Medicare payroll taxes. (Although the rebate would be *based* on payroll taxes, it should be financed through general revenues.)[34]
- *Administrative Issues.* Although basing the next round of tax cuts on payroll taxes would likely lead to greater stimulative "bang for the buck," it may be more efficient to repeat the initial rebate, because the Internal Revenue Service could simply work off its existing mailing list and income information. The concern is that the IRS and Social Security Administration would not have enough information to determine in a timely manner who is paying social security and Medicare payroll taxes. It is not clear how significant this concern is. For example, a payroll-based rebate could be set as one amount for anyone with earnings over some minimum level in 2000, and could be based on W-2 information for calendar year 2000. This approach should allow tax rebates to be processed quickly, albeit with an accelerated effort by the government, and would provide clarity to families about the amount of their rebate.

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[31]*See, e.g.,* Alan S. Blinder, "Temporary Income Taxes and Consumer Spending," *Journal of Political Economy,* February 1981, p. 26; James M. Poterba, "Are Consumers Forward Looking? Evidence From Fiscal Experiments," *American Economic Review,* May 1988, p. 413; Matthew D. Shapiro and Joel Slemrod, "Consumer Response to the Timing of Income: Evidence From a Change in Tax Withholding," *American Economic Review,* March 1995, p. 274; Nicholas Souleles, "The Response of Household Consumption to Income Tax Refunds," *American Economic Review,* September 1999, p. 947; and Chris Carroll, "A Theory of the Consumption Function, With and Without Liquidity Constraints (Expanded Version)," NBER Working Paper 8387, National Bureau of Economic Research, July 2001.

[32]Of those who thought their financial situation next year would be worse than it is now, only 10 percent spent the funds. *See* Matthew D. Shapiro and Joel Slemrod, "Consumer Response to Tax Rebates," mimeo., October 2001, University of Michigan.

[33]*See* Karen E. Dynan, Jonathan Skinner, and Stephen P. Zeldes, "Do the Rich Save More?" NBER Working Paper 7906, National Bureau of Economic Research, September 2000; Jonathan Parker, "The Consumption Function Re-estimated," August 1999; and Jonathan McCarthy, "Imperfect Insurance and Differing Propensities to Consume Across Households," *Journal of Monetary Economics,* November 1995, p. 301.

[34]The rebate could be implemented in several possible ways. One possibility is to impute payroll taxes from 2000 based on income tax returns. A second possibility is to accelerate social security's processing of W-2s for 2000. A third possibility, which we would not endorse unless it were absolutely necessary for administrative reasons, is a temporary holiday on current payroll taxes. Under the third option, which should be avoided if at all possible, general revenue transfers would then protect the trust funds against the loss in revenue. The first and second options, although imperfect, appear much more attractive than the third option.

- *Timing: A Holiday Tax Rebate.* One idea that could have a positive psychological and economic impact would be to time the rebate checks for the holiday shopping season. Holiday purchases of presents for friends and family are highly seasonal and should be relatively unaffected by the direct fear of terrorism. Intuitively, putting more resources in the hands of lower- and moderate-income families during the holiday season seems likely to bolster the volume of shopping during the holiday season. Shopping establishments — which have already experienced one rebate round — may be particularly astute about marketing sales and deals based on the rebates. The concentrated infusion of demand during the holiday season could encourage stores to employ the normal amount of temporary holiday help, which would also help to prop up demand.

IV. Conclusion

The current economic and budget outlook suggests the need to focus on policies that stimulate the economy in the short run and do not damage the long-term fiscal outlook, since any deterioration in long-run fiscal conditions could raise interest rates and dampen the stimulus effect in the short run. In evaluating stimulus packages, policymakers should emphasize five principles: Allow only temporary, not permanent, items; set an overall stimulus budget; provide incentives for new investment, not old investment; design any household tax reductions to maximize effect on demand; and maintain long-term fiscal discipline. Policies that do not embrace these principles will generate weaker economic stimuli than those that do. There are limits, however, to the effects of any type of tax cut in stimulating economic activity, particularly in times of uncertainty when people and firms are delaying major economic decisions.

Corporate income tax rate reductions or capital gains tax cuts — whether permanent or temporary — are not consistent with the principles delineated above. A temporary incentive for new investment (whether in the form of accelerated depreciation or an investment tax credit), or another round of household tax rebates, are much more consistent with the principles. The emphasis on *temporary* stimulus measures is particularly important, to avoid an increase in long-term interest rates that could undermine the purpose of the stimulus package. Furthermore, a combined policy — of temporary stimulus and long-term fiscal discipline — would have a larger stimulative effect on the economy in the short run than a stimulus package itself, since it would prevent an increase in interest rates that could dampen economic activity in the short run.

(Appendices begin on next page.)

Appendix 1: Corporate Income Tax Cuts and the Stock Market

Proponents of corporate income tax reductions argue that the rate reductions would raise after-tax corporate earnings and thus boost stock market values. The increase in stock market values, according to this argument, would stimulate the economy by generating increased consumption (through the wealth effect) and increased investment. However, in addition to increasing after-tax corporate income, the corporate income tax reduction would also reduce public saving — and therefore could put upward pressure on real interest rates. An increase in interest rates, all else equal, reduces stock prices. Thus, a vigorous stock market increase in response to a corporate income tax reduction is by no means assured, as the following simplified calculation demonstrates.

For simplicity, assume that the stock price is equal to the present value of future after-tax corporate earnings. In other words:

$$P = \frac{(1-\tau)e}{(r-g)}$$

where P is the stock price, τ is the corporate tax rate, e is pre-tax earnings per share, r is the discount rate (that is, the interest rate at which investors in the stock market discount future earnings to determine a stock's value), and g is the growth rate of pre-tax earnings.[35] By itself, a decrease in τ raises $(1-\tau)e$, which causes an increase in P. But a decline in public saving from the loss of tax revenue would also raise r, which causes a decline in P. For some increase in r, these two effects would balance each other and P would not change. We therefore proceed in two steps. First, we estimate the increase in interest rates that would produce no change in P (because the higher interest rates offset the increase in after-tax earnings). Second, we compare that increase to the increase that would be expected from the loss of tax revenue associated with the corporate tax cut.

For P to remain constant, we require $\frac{(1-\tau_1)e_1}{(r_1-g_1)} = \frac{(1-\tau_2)e_2}{(r_2-g_2)}$, where the subscript *1* denotes a value before the reduction in the corporate tax rate and the subscript *2* denotes a value after the reduction. We assume that the corporate income tax cut does not affect pre-tax corporate earnings or their real growth rate. Thus $e_1 = e_2$ and $g_1 = g_2$. Stock prices would thus remain constant if $r_2{}^* = r_1\left[\frac{1-\tau_2}{1-\tau_1}\right] + g\left[\frac{\tau_2-\tau_1}{1-\tau_1}\right]$.[36] To solve for $r_2{}^*$, assume that corporate income taxes are reduced from $\tau_1 = 0.35$ to $\tau_2 = 0.25$. Further assume that $r_1 = 0.07$ and $g = 0.025$.[37] Then $r_2{}^* = 0.07\left[\frac{1-0.25}{1-0.35}\right] + 0.025\left[\frac{0.25-0.35}{1-0.35}\right] = 0.0769$.

In other words, an increase in the discount rate from 7.0 percent to 7.69 percent — or an increase of 69 basis points — would prevent an increase in the stock price. Assuming that the equity premium is unaffected by the corporate rate cut, a 69 basis point increase in interest rates would generate a 69 basis point increase in the discount rate applied to equities.[38] The key question is thus whether a reduction in corporate income tax rates would be expected to produce an increase in interest rates of that magnitude.

The corporate income tax is projected to produce revenue of approximately 1.9 percent of GDP over the next 10 years.[39] Reducing the corporate income tax permanently from 35 percent to 25 percent (and proportionately reducing corporate rates at lower income levels) would therefore reduce public saving by slightly more than 0.5 percent of GDP (=10 / 35*1.9).[40] In 1994, the Council of Economic Advisers estimated that a permanent increase in public saving of 1.75 percent of GDP would reduce real interest rates by 200 basis points.[41] The implication is that a permanent reduction in public saving of slightly more than 0.5 percent of GDP would raise real interest rates by slightly more than 60 basis points. Professor Martin Feldstein of Harvard University has similarly found that "Each percentage point increase in the five-year projected ratio of budget deficits to GNP raises the long-term government bond

[35]A more precise model (e.g., incorporating a dividend payout assumption, debt-equity distinctions, individual-level taxation, and average corporate tax rates rather than marginal corporate tax rates), would likely *reduce* the increase in interest rates required for stock values to remain constant. This simplified approach, if anything, likely biases us toward finding a stock market increase.

[36]If r_2 rises above $r_2{}^*$, stock prices would decline, and if r_2 remained below $r_2{}^*$, stock prices would increase.

[37]These assumptions are roughly consistent with historical averages and produce a price-earnings ratio of about 20 (where the price-earnings ratio is defined, as is typical, as $\frac{P}{(1-\tau)e}$), which is consistent with the observed value. Note that a higher assumed g would reduce $r_2{}^*$.

[38]In other words, $r = r_g + \theta$, where r is the real discount rate applied to equities, r_g is the real risk-free (government bond) interest rate, and θ is the equity premium. Assuming that the equity premium is unaffected, the change in r is therefore equal to the change in r_g.

[39]Congressional Budget Office, *The Budget and Economic Outlook: An Update*, August 2001, Table 1-2.

[40]The precise revenue cost would depend on assumptions regarding interactions with the corporate alternative minimum tax and shifts in corporate form between S corporations and C corporations.

[41]Council of Economic Advisers, *Economic Report of the President*, February 1994, pages 81-87. The estimates are based on the Solow model of long-term economic growth.

rate by approximately 1.2 percentage points. . . . "[42] A reduction in tax revenue of slightly more than 0.5 percent of GDP would therefore be predicted to raise interest rates by roughly 60 basis points. In other words, the predicted increase in interest rates is roughly in line with the increase that would prevent an increase in stock prices.

The conclusion from this simplified exercise is that a reduction in the corporate income tax rate from 35 percent to 25 percent would be expected to increase interest rates by roughly 60 basis points. That increase would offset most, if not all, of the upward pressure on stock prices from the tax cut. It is thus not clear that stock prices would increase substantially in response to the corporate income tax cut.

Appendix 2:
Investment, the Corporate Income Tax, and a Temporary Investment Tax Credit

This appendix uses an illustrative set of examples to examine the relative impact of permanent corporate income tax cuts and temporary investment tax credits on the cost of new capital investments for corporations and on budgetary outcomes. It makes three main points:

- First, ignoring any induced changes in interest rates, permanent corporate income tax cuts are a much more expensive way to reduce the cost of new investment than a temporary investment tax credit (ITC) is. Corporate rate cuts cost more than 10 times as much.
- Second, allowing for interest rate effects magnifies the inefficiency of corporate tax cuts. By raising long-term interest rates, corporate tax cuts indirectly raise the cost of capital in a manner sufficient to eliminate more than half the direct reduction in the cost of capital caused by the rate cuts. As a result, allowing for interest rate effects, the permanent corporate tax rate cuts cost about 35 times as much over the next 10 years (and more over a longer horizon) as a temporary ITC that would give the same reduction in the cost of new investment during the next year.
- Third, for a given reduction in the cost of new capital investment in a given time period, a temporary ITC will provide a bigger incentive to invest than a permanent corporate rate cut, because it reduces the cost of investment now relative to future years. Firms therefore have incentives to accelerate investment over time.

We emphasize that these calculations are illustrative; the important conclusion is not the precise ratios, but that the costs of a permanent corporate tax rate cut would vastly exceed the costs of a temporary investment tax credit with the same incentive for new investment. Nevertheless, this simplified exercise highlights the fundamental benefit of targeting any incentive on *new* investment and ensuring that any stimulus is temporary (while combining it with long-term fiscal discipline). By preventing an increase in interest rates, the combined approach ensures that the benefits of the short-term stimulus are not dissipated by the negative effects of higher interest rates.

Background

Economists often evaluate the effect of tax policy on investment behavior using the concept of a "user cost of capital," which is the expected real cost of using a unit of capital for a specific period of time.[43] The lower the user cost of capital, all else equal, the higher investment will be. The user cost of capital is defined as:

$$c = \frac{P_k\,(1-k-\tau(1-k)z)\left[r-\frac{dP_k}{P_k}+d\right]}{(1-\tau)}$$

where c is the user cost of capital, P_k is the cost of purchasing a unit of capital, k is an investment tax credit (which is assumed to reduce the firm's depreciable basis), τ is the marginal corporate tax rate, r is the interest rate, z is the present value of depreciation allowances from a dollar of investment, $\frac{dP_k}{P_k}$ is the real percentage price gain from owning a unit of capital, and d is the economic depreciation rate.

Step 1: Assuming no change in interest rates

The first step is to estimate how large an ITC would have to be to produce an equal reduction in the user cost of capital as a cut in the corporate tax rate from 35 percent to 25 percent, assuming no change in interest rates. In particular, the user cost of capital would fall in response to a reduction in the marginal corporate tax rate from 35 percent to 25 percent (assuming no change in interest rates). We then compute the investment tax credit that would result in the same reduction in the user cost of capital if the corporate rate remained 35 percent.

To undertake the calculations, we assume that z=0.7 (which is roughly the average of the individual values of z for equipment and structures), d=0.1 (which is also roughly the average of the individual rates of depreciation for equipment and structures),[44] that capital prices do not change in real terms (so that $\frac{dP_k}{P_k}$=0) and are not

[42]Martin Feldstein, "Budget Deficits, Tax Rules, and Real Interest Rates," Working Paper No. 1970, National Bureau of Economic Research, July 1986, page 48.

[43]*See* Robert Hall and Dale Jorgensen, "Tax Policy and Investment Behavior," *American Economic Review* (June 1967), p. 391.

[44]The underlying data on z and d for equipment and structures are based on communication with Jane Gravelle of the Congressional Research Service, September 28, 2001.

affected by the corporate rate reduction,[45] and that r=0.07.[46]

Under these assumptions, reducing the marginal corporate tax rate from 35 percent to 25 percent reduces the user cost of capital by roughly 5 percent:

$$\frac{\Delta c}{c} = \frac{\dfrac{(1-0.25^{*}0.7)}{0.75}}{\dfrac{(1-0.35^{*}0.07)}{0.65}} - 1 = 0.947 - 1 = -0.053$$

A temporary investment tax credit (with full depreciable basis offset) of 5.3 percent would reduce the user cost of capital by an equivalent amount during the period it applied. In particular, consider a temporary investment tax credit of k=0.053 (so that the credit were equal to 5.3 percent of the purchase price of capital). Relative to k=0, the percentage reduction in the user cost of capital is:

$$\frac{\Delta c}{c} = \frac{(1-0.053)(1-0.35^{*}0.7)}{(1-0.35^{*}0.7)} - 1 = 0.947 - 1 = -0.053$$

Note, however, that these two approaches to reducing the user cost of capital over the next year entail dramatically different revenue costs. The corporate rate reduction would reduce tax revenue by $700 billion over 10 years, whereas a temporary investment tax credit of 5.3 percent would reduce revenue by only about $50 billion over 10 years.[47] The corporate rate reduction is thus more than 10 times as expensive as a temporary ITC with the same incentive for new investment. The reason is that the corporate rate reduction subsidizes returns on old investment as well as new investment, whereas the ITC targets its incentives on new investment.

Step 2: Incorporating the change in interest rates

The analysis above does not incorporate the effect on interest rates from reduced corporate revenue. Appendix 1 cites estimates that the corporate tax reduction in question would raise interest rates by about 60 basis points or so. Assuming that a corporate rate reduction from 35 percent to 25 percent raises interest rates by 60 basis points, the net effect would be reduction in the user cost of capital of only 2 percent:

$$\frac{\Delta c}{c} = \frac{\dfrac{(1-0.25^{*}0.7)[0.076+0.1]}{0.75}}{\dfrac{(1-0.35^{*}0.7)[0.07+0.1]}{0.65}} - 1 = 0.98 - 1 = -0.02$$

A temporary investment tax credit, on the other hand, would involve minimal long-term costs and therefore should have no appreciable effect on interest rates.[48] A temporary investment tax credit of 2 percent could accomplish the same reduction in the user cost of capital as a corporate rate reduction once the impact on interest rates is incorporated into the analysis:

$$\frac{\Delta c}{c} = \frac{(1-0.02)(1-0.35^{*}0.7)}{(1-0.35^{*}0.7)} - 1 = 0.98 - 1 = -0.02$$

The cost of a 2 percent ITC is only about $20 billion over 10 years. The corporate rate reduction is thus roughly 35 times more expensive over the next 10 years than a temporary ITC with the same investment incentives, once interest rate effects are incorporated.

The model used in steps 1 and 2 is extremely simple and could be extended in a number of directions. For example, allowing for partial debt finance of new investments would make the basic findings even stronger, since the corporate tax rate cuts reduce the benefits from the tax deductibility of debt interest costs. Removing the basis adjustment for the ITC has a trivial effect on the credit rate necessary to produce the same investment incentive as a corporate rate reduction (since the credit levels in question are relatively small even with the full basis adjustment), and does not change the fundamental conclusion regarding the relative costs of the two approaches. Likewise, allowing for a two-year ITC would roughly cut the ratios in half, so that a permanent corporate tax cut would be about 15 times as expensive as an ITC that generates the same reduction in the cost of new investment (once interest rate effects are incorporated). Allowing for separate estimates for equipment (using z=0.83 and d=0.15) and structures (using z=0.54 and d=0.03) does not change the basic results either. For equipment (structures), a permanent corporate tax rate would be

[45]These assumptions are adopted for simplicity. Some evidence suggests that investment tax credits (and presumably other preferences for capital investment) could raise the price of capital goods in the short run, which then restrains the short run impact on investment. *See, e.g.,* Austan Goolsbee, "Investment Tax Incentives, Prices, and the Supply of Capital Goods," NBER Working Paper 6192, September 1997. If the price of new capital rose in response to the corporate tax reduction, the user cost of capital would be even less likely to fall — and therefore investment would be even less likely to rise — than under the assumption of a fixed price of capital. Any such increase in the price of capital, it should be noted, would also limit the effectiveness of an investment tax credit or accelerated depreciation. But it seems unlikely that the price of capital would rise significantly in response to a tax incentive under current conditions, since investment has recently fallen substantially and many capital suppliers have significant excess capacity.

[46]This value of r assumes that all investment is financed with equity. Including corporate debt finance would complicate the analysis but not change any of the fundamental conclusions.

[47]Preliminary estimates suggest that a one-year investment tax credit (with qualifying investment defined as under the investment tax credit in existence in 1985 and full basis offset) of 7 percent would reduce revenue by approximately $70 billion (before interest costs) over 10 years. An investment tax credit of 5.3 percent should therefore reduce revenue by roughly $50 billion over 10 years.

[48]Allowing a small interest rate increase due to the temporary ITC's effect on future surpluses does not change the basic results. For example, if the temporary ITC raises interest rates by 6 basis points — one-tenth as much as the estimated effect of the corporate rate reduction — the required credit would be 2.3 percent instead of 2 percent.

roughly 20 (10) times as expensive as a one-year ITC that generated the same reduction in the cost of new investment (assuming no change in interest rates).

Step 3: Temporary vs. permanent changes

Finally, for any given reduction in the current user cost of capital, a temporary ITC will have a larger effect on current investment *incentives* than a permanent rate cut would, because a temporary measure reduces the cost of current investment relative to future investment. The temporary measure thus encourages firms to accelerate their investment plans, whereas a permanent measure does not. We do not model this fact explicitly but clearly this effect makes the permanent tax rate cut even more expensive relative to a temporary ITC that gives the same reduction in the cost of new investments.[49]

[49]*See* Alan J. Auerbach, "Tax Reform and Adjustment Costs: The Impact on Investment and Market Value," 30 *International Economic Review*, 939 (1989), and Alan J. Auerbach and Kevin A. Hassett, "Tax Policy and Business Fixed Investment in the United States, 47 *Journal of Public Economics* 141 (1992).

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