



STRATEGY PAPER

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# If, When, How: A Primer on Fiscal Stimulus

Douglas W. Elmendorf and Jason Furman

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# If, When, How: A Primer on Fiscal Stimulus

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## Introduction

Recent economic data provide the clearest signs that the problems in the housing and financial markets are affecting the economy as a whole. In December 2007, payroll employment growth fell nearly to zero and the unemployment rate rose 0.3 percentage points to 5.0 percent. The last time the unemployment rate climbed this much in one month was in the 2001 recession. Delinquency and foreclosure rates are rising and risk spreads in financial markets remain much wider than last summer. On the other hand, there are some reassuring indicators: net exports have been trending up, and consumer spending rose at a brisk pace in October and November—although it fell back in December. However, most forecasters are predicting a marked slowdown in economic growth for several quarters, and many put the odds of recession in the neighborhood of 50 percent.

Economists believe that monetary policy should play the lead role in stabilizing the economy because of the Federal Reserve's ability to act quickly and effectively to adjust interest rates, using its technical expertise and political insulation to balance competing priorities. The Federal Reserve has already cut the federal funds rate by 1.75 percentage points since September 2007, and financial markets expect substantial further rate cuts this year.

Fiscal policy can also help to stabilize the economy. Countercyclical fiscal policy happens automatically to a certain extent, because tax payments fall and unemployment insurance spending rises when the economy slows. But some leading economists, including Martin

Feldstein and Lawrence Summers, have argued that monetary policy and the automatic fiscal stabilizers may be insufficient in the current situation and that further fiscal stimulus may be necessary. Such stimulus could include legislated tax cuts or spending increases designed to give a quick boost to the economy by increasing aggregate demand. The President and Congressional leaders have said they are giving serious thought to possible fiscal measures.

In considering fiscal policy at this juncture, policymakers need to answer several questions. Is fiscal stimulus needed? When should such stimulus be provided? And what would constitute effective fiscal stimulus? These questions are not merely technical. The livelihoods and living standards of many Americans are at stake. Fortunately, economic research provides clear theory and evidence for making appropriate decisions about if, when, and how to craft fiscal stimulus. This paper summarizes the evidence and provides straightforward principles and examples for formulating effective stimulus.<sup>1</sup>

We begin by examining the conditions under which fiscal stimulus is appropriate. Although monetary policy should generally be the first line of defense against an economic slowdown, there are several circumstances in which fiscal stimulus can be helpful or even crucial. Two of these circumstances are potentially relevant today: one is if a sharp economic downturn appears imminent, and well-designed tax or spending changes could be implemented quickly; such fiscal stimulus could boost economic activity more quickly than monetary stimulus. The other circumstance is if, allowing for uncer-

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1 For a good discussion of these issues in the context of Fall 2001 see Gale, Orszag and Sperling (2001).

tainty about the effects of fiscal and monetary stimulus, a mixture of the two provides greater confidence about the economic outcome. However, it would be better not to have a fiscal stimulus at all than to have tax cuts or spending increases that are poorly timed, badly targeted, or permanently increase the budget deficit. A purported stimulus package with these characteristics could have small or non-existent short-run benefits and a substantial long-run cost.

The paper then analyzes three principles of fiscal stimulus that have been advocated by Summers (2007), Gene Sperling (2007), the Center on Budget and Policy Priorities (Stone and Cox 2008), and others. These principles are that fiscal stimulus should be timely, targeted, and temporary:

**Timely.** Policymakers should act in a timely manner to lessen any economic downturn. Thus, fiscal stimulus should not be enacted prematurely, delayed too long, or consist of tax cuts or spending increases that would take too long to be implemented or to boost output. Policymakers should give serious consideration to passing a conditional stimulus plan that would go into effect only if, for example, job growth was negative over a three-month period, as proposed by Feldstein.

**Targeted.** From a macroeconomic perspective, policymakers should ensure that each dollar of tax cuts or higher spending raises output in the short run by the maximum amount. From the perspective of households, policymakers should ensure that money ends up in the pockets of families that are most vulnerable in a weakening economy. Fortunately, these two goals are complementary, because the families that most need the

money are also the most likely to stimulate the economy by spending it quickly.

**Temporary.** Taxes should be cut or spending increased in order to raise output in the short run. However, these policy changes should not increase the budget deficit in the long run. Allowing for a larger long-run deficit could reduce the extent of short-run stimulus by raising interest rates, and it would reduce long-run living standards by crimping national saving.

The paper goes on to evaluate some potential options for fiscal stimulus using these criteria. Policies that are potentially most effective include temporary and refundable tax credits, temporary increases in food stamps, and a temporary extension of unemployment insurance benefits. Policies that are especially counterproductive include permanent reductions in tax rates and making the 2001 and 2003 tax cuts permanent; this latter change would be poorly timed (because the tax cuts would take effect only in 2011), poorly targeted (because much of the tax reduction would go to high-income households), and not temporary (so it would increase the long-run budget deficit). However, if the economy appears to weaken substantially further, a well-designed fiscal stimulus that is expansionary in the short run but fiscally disciplined over the long run could potentially play a helpful role in stabilizing the economy.

The paper concludes by discussing the importance of improving risk protection for families. In particular, reforming unemployment insurance and establishing universal health insurance would not only help many families but would have the ancillary benefit of strengthening the automatic fiscal stabilizers and helping to smooth the business cycle.

## When Is Fiscal Stimulus Appropriate?

**R**eductions in taxes and increases in government expenditures can boost household and business spending during economic downturns, thereby keeping national output, income, and employment at a higher level. The idea of using fiscal policy to reduce the magnitude of economic fluctuations dates back at least to the Great Depression of the 1930s, and it was the centerpiece in discussions of short-term economic policy for a number of decades thereafter. Economists almost universally support the automatic stabilizers that do not require any legislative action, like mechanical reductions in tax payments and increases in unemployment insurance payments when incomes fall and unemployment rises. But during the past several decades, the idea that Congress should make legislative changes to tax or spending policies in order to counter the business cycle has fallen into disfavor among economists.

This shift in sentiment in the economics profession is not based on a purely economic analysis of monetary and fiscal policy, which generally shows that using two instruments is superior to using only one. Instead, the shift is based on very important political and administrative challenges to countercyclical fiscal policy, especially with regard to the timing and design of the stimulus. In some situations, however, economic conditions are such that fiscal stimulus, even with the political and administrative limitations, may be crucial. In other situations, including the current one, fiscal stimulus may not be essential but may still be helpful if well-crafted. This section of the paper reviews the appropriate roles of countercyclical monetary and fiscal policy.<sup>2</sup>

### The advantages of monetary policy

Economists view monetary policy as the first line of defense against economic slowdowns for three main reasons. The first is that the Federal Reserve can adjust monetary policy more quickly than administrations and Congresses can adjust fiscal policy. Because most contractions in economic activity last for only a few quarters, the timeliness of the policy response is crucial. In the past five months, for example, the Federal Reserve has lowered the federal funds rate by 1.75 percentage points, reduced the discount rate by 2.25 percentage points, and taken other steps to provide liquidity to the financial system. By contrast, fiscal policy generally responds to changes in economic conditions with considerable lags, due to both the time needed to enact a stimulus bill and the time needed for the bill to be implemented and the spending increases or tax reductions to actually reach the pockets of consumers. As a result, the effect of fiscal stimulus on household and business spending may be poorly timed.

A second justification for preferring monetary policy as a stabilization tool is that the Federal Reserve can best judge the timing and magnitude of needed stimulus. The optimal stimulus depends on contemporaneous economic conditions, on projections of likely future conditions, and on assessments of the risks to both economic activity and inflation going forward. Forecasting economic conditions—and even determining the current state of the economy—is inherently very difficult, given limitations in the available data and in economists’

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<sup>2</sup> Blinder and Solow (1973) presented one of the classic analyses of fiscal policy. Blinder (2004) argues that some analysts had taken the case against fiscal policy to an unjustified extreme. See Taylor (2000) for a more skeptical perspective.

understanding of the world. But the Federal Reserve's large and sophisticated team of analysts is better positioned to accomplish this task than any other agency of the federal government. In addition, the Federal Reserve staff carries out this work independent of political considerations.

An important implication of these first two reasons for favoring monetary policy is that monetary adjustments may offset fiscal stimulus to some degree. If the Federal Reserve thinks that the risks of lower employment and higher inflation are best balanced at a particular level of economic activity, then long-lasting fiscal stimulus that keeps activity above that level may induce the Fed to provide less monetary stimulus and thus effectively undo the actions of Congress.

Finally, economists worry that poorly crafted fiscal stimulus would have little short-run economic benefit and could do long-run economic harm. For example, permanent tax cuts that are not accompanied by permanent spending reductions would increase the long-run budget deficit. A permanent increase in the deficit—especially now, when the budget is already so far out of long-run balance—would reduce economic growth over time (Ball and Mankiw 1995; Rubin, Orszag, and Sinai 2004). Moreover, because higher expected government borrowing would likely push up current long-term interest rates, the short-run stimulative effect would be muted as well.<sup>3</sup> (Furthermore, some economists have worried that temporary tax rebates, although not harmful in the long run, would not be helpful in the short run either. As discussed below, the latest economic research finds that this is not the case.)

### The benefits of automatic fiscal stabilizers

None of these reasons for focusing attention on monetary policy speaks against the value of so-called “automatic stabilizers.” These stabilizers arise inevitably from the design of tax and transfer systems: when incomes are high, tax liabilities rise and eligibility for government benefits falls. Conversely, when incomes slip, families' tax liabilities drop and more become eligible for government programs such as food stamps and un-

employment insurance that help buttress their income. Such automatic stabilizers are quantitatively important at the federal level. Alan Auerbach and Dan Feenberg (2000) estimate that reduced income and payroll tax collection would offset about 8 percent of any decline in GDP. In addition, as Peter Orszag (2001) points out, their estimates imply that the additional stabilization from unemployment insurance is smaller in total magnitude than that from the tax system, but eight times as effective per dollar of lost revenue.

Automatic stabilizers also arise in the tax and transfer systems of state and local governments. However, state constitutions often require balanced budgets, which can force countervailing changes in outlays and tax rules (Poterba 1994). The requirements do not force complete balance on an annual basis; they generally focus on budget projections rather than realizations, so unexpectedly weak economic conditions can cause deficits. In addition, many governments have so-called “rainy day” funds that they draw down during periods of budget stringency. Still, these features do not contradict the main point that most state and local governments respond to economic slowdowns by enacting contractionary fiscal actions to move back toward budget balance.

### The potential for discretionary fiscal stimulus

Economists' concerns about discretionary fiscal stimulus are centered on political and administrative limitations, particularly the long lags in enacting and implementing stimulus and the potential for politically motivated measures that are ineffective or even counterproductive at increasing short-run growth. However, these concerns lose force against a well-crafted stimulus proposal. Thus, effective policymaking requires a balancing of risks: how do the risks of inaction regarding fiscal policy compare to the risks of taking inappropriate action? In striking this balance, it is crucial to recognize the strengths of fiscal policy as well as the weaknesses.

A key potential advantage of fiscal stimulus relative to monetary stimulus is that it can boost economic activity more quickly, which is especially important if economic

<sup>3</sup> Elmendorf and Reifschneider (2002) argue that, under plausible assumptions about economic behavior, the response of forward-looking financial markets to a sustained reduction in income taxes offsets about half of the incipient stimulative effect of the tax cut.

conditions are deteriorating rapidly. According to the Federal Reserve's large-scale econometric model, a one percentage point drop in the federal funds rate enacted this quarter would add nothing to the level of GDP in the current quarter, 0.1 percent next quarter, 0.2 percent in the third quarter, and 0.4 percent in the fourth quarter of the year.<sup>4</sup> In contrast, fiscal stimulus enacted promptly and with funds distributed even by the middle of the year could strengthen GDP a good deal more in the second half of the year than this monetary easing could. Using the Fed's model, Douglas Elmendorf and David Reifschneider (2002) show that a temporary tax cut amounting to about \$70 billion in today's economy, distributed in the third quarter to households that are likely to spend much of their extra income, would boost the level of GDP by 0.5 percent during the third quarter and 0.6 percent in the fourth quarter. Thus, true fiscal stimulus implemented promptly can provide a larger near-term impetus to economic activity than monetary policy can.<sup>5</sup>

In addition, fiscal stimulus used in combination with monetary stimulus can reduce uncertainty about the total amount of thrust provided to the economy. The effects on economic activity of tax cuts, government spending increases, and Federal Reserve-induced reductions in interest rates are all very uncertain. Bill Brainard (1967) showed that, when the impact of policy instruments is not known, policymakers should use all of the instruments available. The rationale is that surprises in the effects of different instruments will not be perfectly correlated and will therefore cancel out to at least some extent. Thus, for any given amount of total stimulus, providing some through monetary means and some through fiscal means reduces uncertainty about the ultimate effect.

Fiscal stimulus is also warranted in some other particular circumstances, although it is unclear whether these rationales are compelling in today's economy.

First, fiscal stimulus could be essential if the Federal Reserve has already lowered the federal funds rate close

to zero. Being unable to reduce the funds rate further does not mean that the Fed would have no tools for stimulating the economy. However, as then-Governor of the Federal Reserve Ben Bernanke said in 2002, "calibrating the economic effects of nonstandard means of injecting money may be difficult, given our relative lack of experience with such policies." He went on to say that "the effectiveness of [such] policy could be significantly enhanced by cooperation between the monetary and fiscal authorities" and mentioned "a broad-based tax cut" as an example. That said, the federal funds rate is currently above three percent, so this argument has no bearing on the current situation.

Second, fiscal stimulus would be critical if monetary policy becomes powerless to boost economic activity. The Federal Reserve usually provides stimulus by reducing the federal funds rate, the interest rate for certain overnight loans between banks. But lowering the funds rate does not necessarily cause other interest rates to fall. And even if they did, wary lenders might not be willing to lend money, or consumers and businesses might not be willing to borrow money. In these cases, the desired increases in consumer and business spending would not take place, and the economy would receive no stimulus.

Although careful monitoring of credit markets is surely needed, the force of this argument under current conditions is not convincing. Monetary expansions still appear able to reduce a wide range of interest rates: although spreads between the federal funds rate and other short-term borrowing rates have been much wider than usual, reductions in the federal funds rate have tended to bring down other rates rather than generating still-larger spreads. In addition, banks appear able to lend money: capital remains well above statutory requirements for almost all institutions (even those that have lost a good deal of capital), capital can be restored in various ways (including new investments and trimming of dividends), and institutions that have not been hurt by recent events can seize new opportunities. Moreover, there is no evidence that households and businesses are

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4 These figures were graciously provided by David Reifschneider of the Federal Reserve Board staff.

5 The Federal Reserve model, like other economic models, may not capture effects of policy actions on household and business confidence. If vigorous fiscal and monetary stimulus improve confidence, then both policies might have larger near-term effects than these estimates. However, it still seems clear that appropriate fiscal policy would work more rapidly than monetary policy.

uninterested in borrowing more, or that more borrowing would not tend to spur more spending. Of course, the precise magnitude of the effect of monetary easing undoubtedly varies from episode to episode and should be evaluated on an ongoing basis.

There are also dangers in believing that monetary policy has lost its stimulative power if it has not. Bernanke (2004) argues that “inflation pessimism” in the 1970s—the view of some observers and monetary policymakers that the Fed was powerless in the face of rising inflation—delayed the adoption of sustained anti-inflationary policies. Similarly, output pessimism today might discourage appropriate monetary stimulus. It is clear that turmoil in the financial system has created headwinds for monetary policy. But the appropriate reaction to headwinds is to pedal harder, not to assume that the pedals have become disconnected from the wheels.

A third circumstance in which fiscal stimulus is appropriate is if policymakers want to achieve full employment with higher interest rates rather than lower interest rates. Monetary policy increases economic output by lowering interest rates; fiscal policy expands economic output while increasing budget deficits, thus resulting in higher interest rates. Some have worried that low interest rates could fuel another asset price bubble, or they could result in investors fleeing U.S. assets leading to further financial turmoil and a sharp fall in the value of the dollar.

These legitimate concerns are at least partly offset by three other considerations. The first is that some de-

preciation of the dollar, the likely result of interest-rate reductions, may be unavoidable. Most analysts think that the current massive capital inflow to the United States, and corresponding massive trade deficit, are not sustainable indefinitely. Correcting these imbalances may require a decline in the value of the dollar, which is acceptable as long as currency markets remain orderly. Indeed, the decline in the dollar’s value during the past few years has spurred U.S. exports and restrained U.S. imports so that the change in net exports contributed more to GDP growth in the second and third quarters of 2007 than the continued slump in housing construction deducted. Looking ahead, a depreciating currency is one channel through which monetary policy can stimulate the economy.<sup>6</sup> The second consideration is that the current problems in housing and mortgage markets, and in financial markets more generally, would be ameliorated by lower interest rates. Lower rates tend to support housing demand, ease mortgage refinancing, and boost asset values—all of which would help to damp the disruptions experienced in recent months. The third consideration, which is not particular to this moment in time, is that lower interest rates help to spur investment and thus long-term economic growth.

In summary, fiscal stimulus is crucial when monetary policy has little or no ability to expand the economy, and it can provide a valuable complement to monetary stimulus at other times. But the value of fiscal stimulus depends critically on the characteristics of the policy changes. The remainder of this paper discusses three principles that should guide the design of effective fiscal stimulus.

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6 On the negative side, declines in the dollar put upward pressure on inflation (beyond any inflationary pressure from the level of resource utilization) because rising prices for imported goods act as a negative supply shock.

## Principle 1: Fiscal Stimulus Should Be Timely

To be effective and not counterproductive, fiscal stimulus must be timely. If fiscal stimulus is undertaken unnecessarily, the result could be over-expansion and higher inflation. If fiscal stimulus is enacted too slowly, output and incomes could fall first and then stimulus might arrive after the economy has begun to pick up speed again. Achieving timely policy is especially challenging because timeliness involves not just the enactment of tax cuts or spending increases but also the implementation of policy changes and getting the money out the door. In the worst case, poorly timed policies add instability to the economy, potentially exacerbating rather than damping business cycles (Friedman 1953).

Unfortunately, detecting economic contractions before, or even as, they begin is very difficult. For example, Karen Dynan and Elmendorf (2001) show that provisional estimates of GDP tend to miss turning points and that contemporaneous information about financial markets and consumer sentiment does not reduce forecast errors very much. Even months after a recession begins, the timing of the downturn may be unclear: in November 2001, the National Bureau of Economic Research announced that a recession had started in March of that year, but subsequent data revisions showed that economic growth first turned negative in the third quarter of 2000.

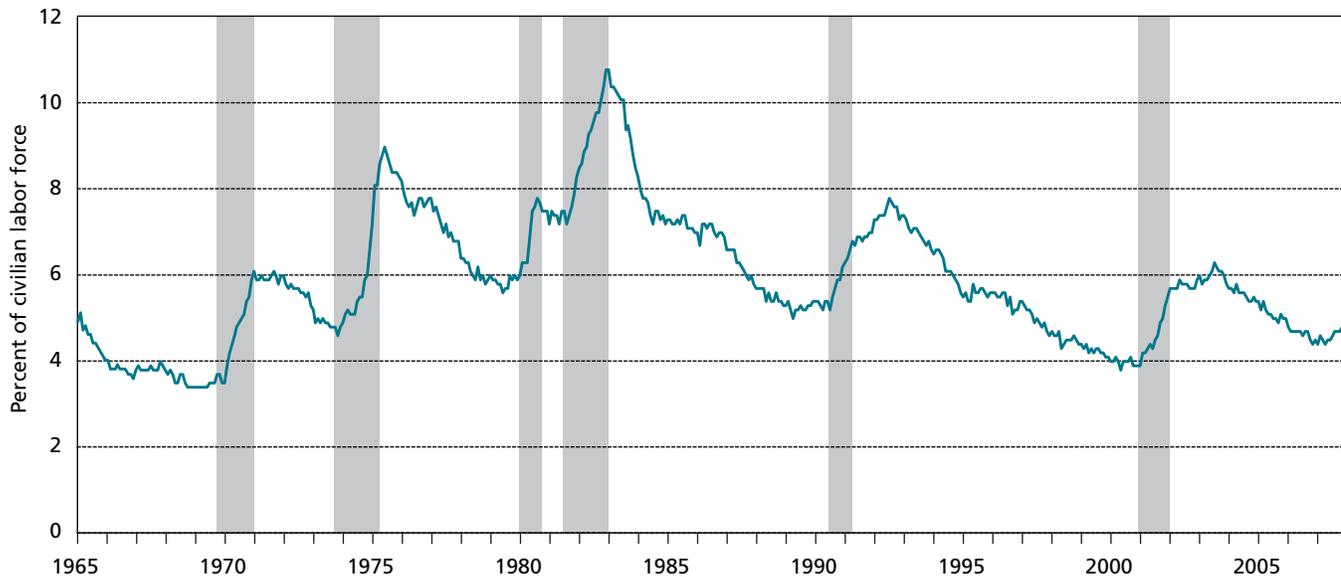
Today, many forecasters appear to expect the economy to experience a brief slow patch and then to return to faster growth by midyear. For example, the *Blue Chip Economic Indicators* from December 10, 2007 reported an average projection for real GDP growth of 0.8 percent in the fourth quarter of 2007, 1.4 percent in the first quarter of 2008, 2.0 percent in the second quarter

of this year, and above 2 percent in the second half of the year. In a survey conducted in early December, the *Wall Street Journal* found that the average analyst put the probability of recession at nearly 40 percent. But the recent report that payroll employment was essentially unchanged in December while the unemployment rate jumped by 0.3 percentage points appears to have lowered growth prospects and heightened the risk of recession. Figure 1 provides one perspective on this concern: every time in the last forty years that the unemployment rate has risen as much as it has in the past six months, the country has experienced a recession and a much more substantial increase in the unemployment rate.

Faced with this uncertainty, how should policymakers decide in the next few months whether fiscal stimulus might be appropriate? We examine the pros and cons of three possible approaches.

One possibility is to go ahead with a tax cut or spending increase immediately. This approach would make sense if policymakers were confident that economic growth would be much weaker than most professional forecasters seem to expect, or if policymakers were sure that risks were more skewed toward the downside. If the economy were to slow sharply in coming months, having a fiscal stimulus already underway would be very helpful. On the other hand, if the economy were to follow the December Blue Chip consensus, then a fiscal stimulus would end up spurring growth when the economy was already growing close to its sustainable pace and the unemployment rate was close to its sustainable level. Under those circumstances, greater economic stimulus could lead to higher inflation or tighter mon-

FIGURE 1  
Unemployment Rate, 1965–2007



Notes: Percent of civilian labor force unemployed for 27 weeks or longer. Shaded regions show recessions as defined by the NBER.  
Source: BLS (2007)

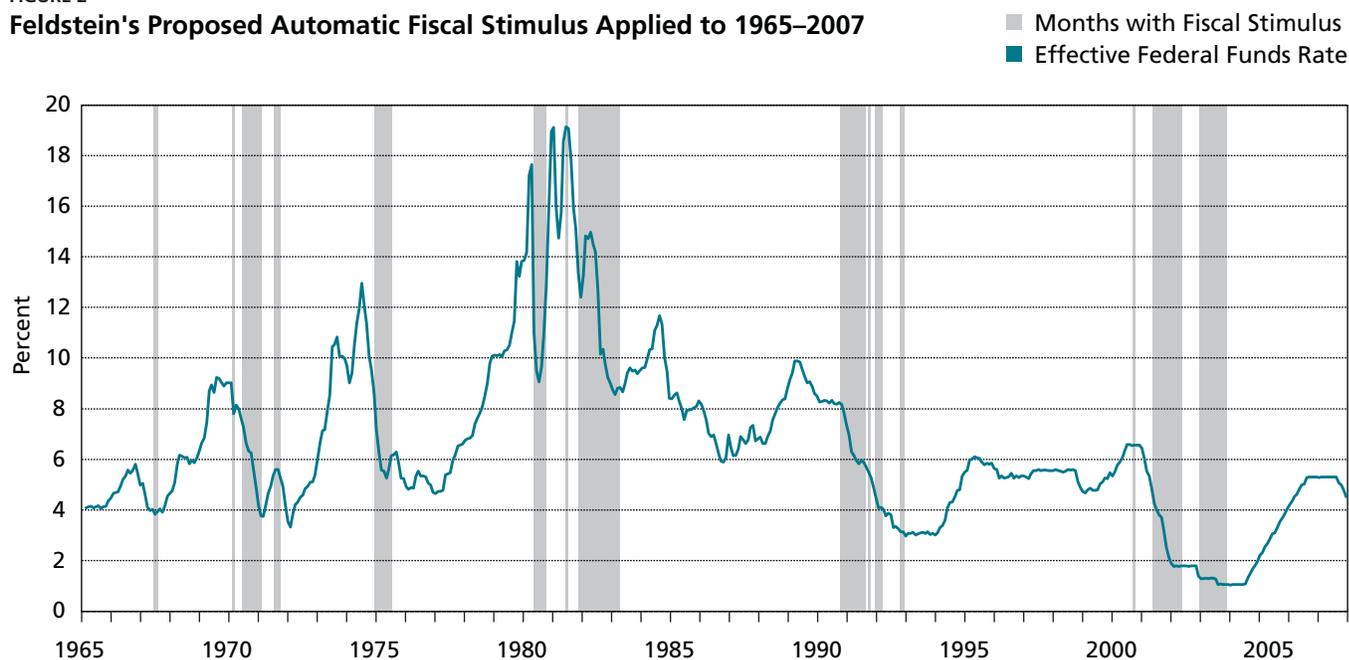
etary policy. Moreover, just as growth might well fall short of the Blue Chip expectation, it might also exceed that expectation. In addition, an attempt to legislate fiscal stimulus could end up with tax or spending changes that fail to provide an effective spur to economic activity, worsen the long-run budget outlook, or both.

A second possibility is to wait for more economic data, and then to cut taxes or increase spending only if forecasters project a greater slowdown or even negative growth. This wait-and-see approach could reduce the probability that fiscal stimulus would be counterproductive by reducing the chances of spurring economic activity at a time when output and employment are already solid and the risk of inflation is rising. In addition, forecasters make use of all available information in judging the economic outlook, which is preferable to basing countercyclical policy on a single indicator. On the other hand, delays in recognizing the onset of a significant downturn in economic activity could mean that fiscal stimulus arrives later than would be desirable. Moreover, this approach might lead policymakers to delay developing an effective stimulus plan and therefore not have one agreed upon and ready to go when circumstances warrant.

A third possibility is to enact a fiscal stimulus now but have the stimulus take effect only if a specific triggering event occurs. Feldstein (2007) recently proposed this approach, with stimulus beginning after a three-month cumulative decline in payroll employment and ending either when employment begins to rise or when employment reaches its pre-downturn level. As Feldstein explained, this policy would avoid the typical delays of the legislative process following negative economic data, because all of the negotiations between the House, the Senate, and the President could take place before the stimulus was needed. In addition, this approach could boost household and business confidence by making clear that fiscal stimulus would be used against a serious economic slowdown. On the other hand, gearing policy to a single economic indicator leaves aside other, potentially valuable, information on economic conditions.

To examine the performance of Feldstein's proposed trigger during past business cycles, we use the real-time data on payroll employment compiled by the Federal Reserve Bank of Philadelphia. Because these data do not incorporate subsequent revisions, they allow us to construct changes in employment as they were perceived at the time. We compare the timing of fiscal

FIGURE 2

**Feldstein's Proposed Automatic Fiscal Stimulus Applied to 1965–2007**

Notes: This variant of Martin Feldstein's proposed automatic fiscal stimulus would have occurred in any month when the previous three-month change in payroll employment, as perceived by policymakers in that month, was negative.

Source: Authors' calculations based on the Federal Reserve Bank of Philadelphia's Real-Time Data Set

stimulus under the scenario in which stimulus ends when employment begins rising to the timing of monetary stimulus as measured by the nominal effective federal funds rate. For simplicity, we ignore lags associated with disbursing funds and assume that the stimulus hits the economy in the month of the employment report.<sup>7</sup> In Figure 2, the line plots the funds rate on a monthly basis since 1965, and the shaded bars indicate months when the preceding three-month change in payroll employment was negative. With this algorithm, fiscal stimulus would have been implemented fifteen

times in the past 40 years, for periods ranging from one month to about a year and a half.<sup>8</sup>

Under this trigger, fiscal stimulus would have occurred during some portion of every significant easing in monetary policy. The stimulus generally would have begun after the funds rate had started down and ended before the funds rate turned back up. Of course, monetary policy might well have followed a different course if this fiscal stimulus had been in place as well. This trigger would sometimes have activated fiscal stimulus for only one or

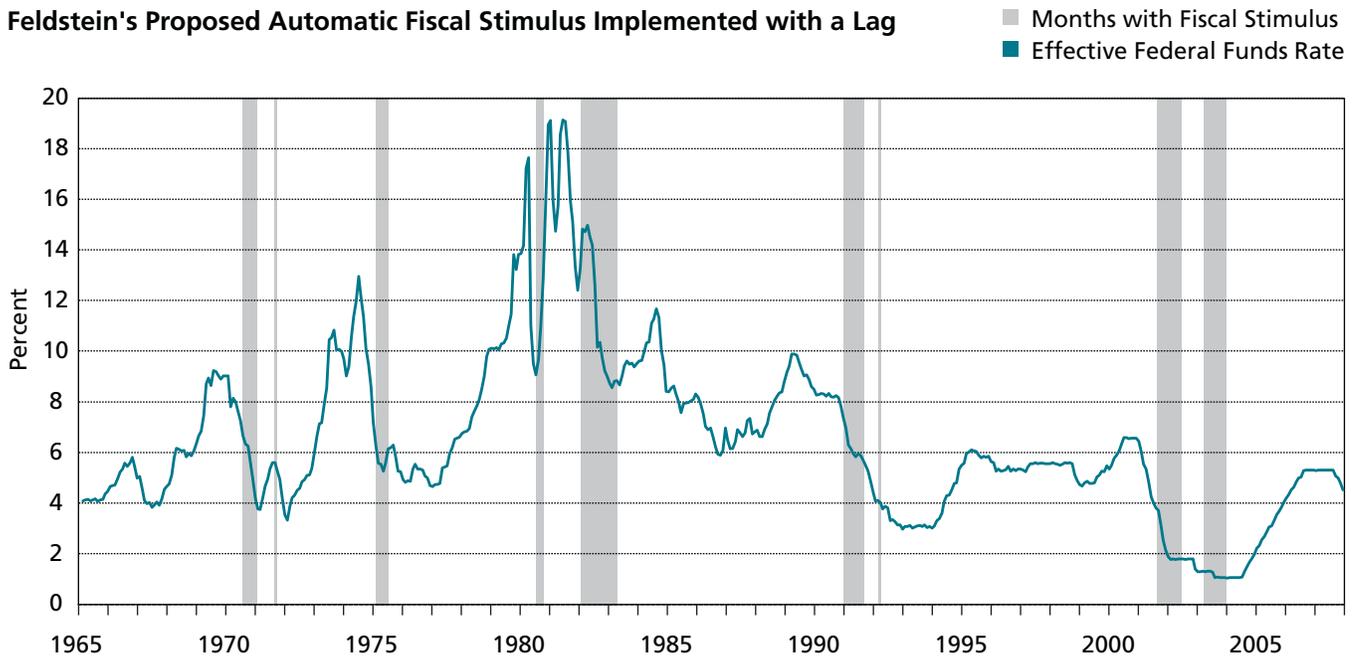
7 We are grateful to Pascal Noel for his work on this exercise. Croushore and Stark (2001) explain the construction of the real-time data set, which is available at <http://www.philadelphiafed.org/econ/forecast/real-time-data/index.cfm>. The timing of fiscal stimulus could also be compared to the recession dates established by the National Bureau of Economic Research. However, extended weakness in the labor market led the Federal Reserve to continue cutting the federal funds rate well beyond the official end of the past two recessions (and the pickups in output), and continued fiscal stimulus during those periods might have been welcome also.

8 The principal difference for the alternative algorithm in which stimulus ends when employment returns to its pre-decline levels is, not surprisingly, that stimulus remains in place for longer periods. For example, stimulus would have been in place continuously between May 2001 and December 2004. However, if fiscal stimulus took the form of one-time tax rebates, as discussed below, then the terminal date for stimulus would be a moot issue.

9 This problem highlights an important distinction between the automatic stabilizers and a triggered tax cut of the sort proposed by Feldstein. The automatic tax stabilizers operate like a dial, with changes in employment and incomes generating constant small adjustments in taxes collected. But a triggered tax cut operates like a switch, with changes in employment having no effect on taxes until they reach some threshold and then generate a substantial effect.

FIGURE 3

Feldstein's Proposed Automatic Fiscal Stimulus Implemented with a Lag



Notes: This variant of Martin Feldstein's proposed automatic fiscal stimulus would have occurred in any month when the previous three-month change in payroll employment, as perceived by policymakers in that month, was negative for three straight months.

Source: Authors' calculations based on the Federal Reserve Bank of Philadelphia's Real-Time Data Set

two months, which is impractical.<sup>9</sup> Figure 3 presents a variant on the Feldstein trigger in which fiscal stimulus begins only when the three-month change in employment is negative for three months in a row. Here, fiscal stimulus would have been implemented nine times in the past 40 years, for periods ranging from one month to fifteen months. Compared with the original trigger, this approach reduces the number of very short stimulus periods but at the cost of delaying action.

## Principle 2: Fiscal Stimulus Should Be Well-Targeted

A second key factor in designing fiscal stimulus is effective targeting. Targeting is important in two respects. The first is purely macroeconomic: tax cuts and spending increases should be directed so that each dollar generates the largest possible increase in short-run GDP. The second is based on fairness to households: tax cuts and spending increases should be directed so that they provide the greatest benefit to people who are affected most adversely by an economic slowdown.

These two aspects of targeting are complementary. The macroeconomic impact of fiscal stimulus is largest when the stimulus leads to the largest increases in household (or business) spending. Higher-income households are generally able to smooth their consumption over the business cycle by reducing their saving or increasing their borrowing, so additional resources directed to them would likely have little effect on consumer spending. In contrast, lower-income families are more likely to be liquidity-constrained and to be forced to cut back their consumption in hard times. If these families receive additional money, in the form of tax cuts or transfer payments, they are likely to spend it—helping to protect them from the downturn while increasing aggregate economic activity.

Stimulus not only boosts the spending of households receiving tax cuts or transfers (or businesses receiving new investment incentives) but also has important indirect effects. For example, higher household spending encourages firms to hire more workers, which further boosts household income and spending through a so-called “multiplier effect.” At the same time, some of the

extra spending would be for imported goods, which would not raise domestic production or income. In addition, a larger long-run budget deficit would raise interest rates, which would discourage some investment.

### Lessons from the 2001–2003 stimulus measures

Between 2001 and 2003, Congress enacted several packages of fiscal stimulus. Research on the effects of these stimulus measures strengthens the case for individual tax rebates compared with business tax incentives, and it highlights the importance of ensuring that tax rebates go to low-income workers.

Between July and September 2001, the government mailed income tax rebates of \$300 for individuals and \$600 for married couples. Ninety million households received \$38 billion in rebates, but tens of millions of working households that were not paying positive income taxes did not receive rebates. In 2003, the government made changes in the child tax credit, withholding taxes, and other features of the individual income tax. In 2001 the government also enacted so-called “bonus depreciation,” which was a temporary tax incentive for business investment. Including the additional bonus depreciation measures enacted in 2002 and 2003, companies were allowed to immediately deduct 50 percent of any investment made between September 11, 2001, and the end of 2004.

Most economists probably expected that both measures would be expansionary, but they were probably not confident that either would be highly effective. For example, CBO (2002) described both policies as hav-

ing “medium” bang-for-the-buck and rated the uncertainty about the policies’ effects as “high.” A skeptic of the effects of income tax rebates would have argued that a rational consumer should not raise his or her spending very much in response to a one-time rebate that does not significantly increase lifetime income. A skeptic about temporary investment incentives would have noted that investment generally adjusts slowly to changes in the desired level of capital.

In the event, the stimulus efforts focused on individuals had a larger effect on spending than skeptical economists might have expected and strengthens the case for such measures in the future. The 2001 rebate checks were mailed on a staggered basis depending on an essentially random digit in taxpayers’ Social Security numbers; this administrative feature meant that the timing of rebates was like a randomized trial. Two careful studies have exploited this timing feature. David Johnson, Jonathan Parker, and Nicholas Souleles (2007) analyze data on household spending and found that households spent about one-third of their rebates in the quarter the rebates were received and another third in the following quarter. Moreover, low-income households spent a significantly larger fraction of their rebates than households on average. Sumit Agarwal, Chunlin Liu, and Souleles (2007) analyze credit card data and find that households initially used some of their rebates to pay down credit card balances, but soon increased their spending by comparable amounts.

Survey evidence confirms that households are a good deal more responsive to shifts in income than theoretical models focused on lifetime income would suggest. However, the magnitude of the consumption response, as well as the nature of the response to different sorts of income tax changes, naturally differs across studies. For example, two recent studies based on asking households what they would do with the rebates—Matthew Shapiro and Joel Slemrod (2003) on the 2001 tax rebate, and Julia Coronado, Joseph Lupton, and Louise Sheiner (2005) on the 2003 child credit rebate and reduction in withholdings—estimate that households spent about one-quarter of their rebates in the short run. However, it is very difficult for survey respondents to accurately describe the effect that, say, a \$600 check had on their consumption over the following six months.

In contrast with the significant stimulus generated by certain cuts in individual taxes, bonus depreciation for business investment did not seem to be very effective in spurring economic activity. Darrel Cohen and Jason Cummins (2006) report that surveys by the Institute for Supply Management, the Empire State Manufacturing Survey, the National Association of Business Economists, and the Philadelphia Federal Reserve all found that only about 10 percent of businesses said that bonus depreciation was an important factor in their decisions about the level or timing of investment. Moreover, Cohen and Cummins find no evidence that the amount of investment in long-lived capital stepped up more than the amount of investment in short-lived capital, despite the bigger tax break it received. Christopher House and Matthew Shapiro (2006) do find a positive effect of bonus depreciation on investment, but the timing of the estimated effect did not line up well with theoretical predictions and the maximum effect occurred after three years, well beyond the point at which fiscal stimulus was most needed.

### **Economic modeling of the effects of fiscal stimulus**

One modeling effort by Elmendorf and Reifschneider (2002) uses the Federal Reserve Board’s large-scale econometric model of the U.S. economy to simulate the effects of alternative fiscal policies, taking into account the full range of responses by both private actors and Federal Reserve policymakers. Of course, any model depends on a raft of estimates and assumptions about economic behavior, and the specific quantitative results described here should be treated with caution. The results are summarized in Table 1.

These estimates contain several lessons. First, the permanent fiscal change with the largest stimulus effect is the increase in federal purchases, while a permanent tax cut would have less effect, and an investment tax credit would have the least effect. The increase in federal purchases has the largest effect because it initially raises aggregate spending in the economy dollar-for-dollar, whereas only a small share of the tax cut is assumed to be spent and the rest to be saved. Of course, these simulations ignore the key practical question of how quickly purchases can be increased while being used effectively.

TABLE 1

**Elmendorf-Reifschneider (2002) Estimates of the Effect of Alternative Fiscal Policies<sup>1</sup>**

	Increase in the Level of Real GDP		
	2008–Q2	2008–Q3	2009–Q1
<b>Policies Costing 1 Percent of GDP Annually on a Permanent Basis<sup>2</sup></b>			
Proportional cut in personal income taxes	0.2	0.3	0.4
Ten-percent investment tax credit	0.2	0.1	0.2
Increase in federal purchases	1.0	1.0	1.0
<b>Policies Costing 1 Percent of Annual GDP on a One-Time Basis<sup>3</sup></b>			
Temporary tax rebate (assuming 20 percent spent)	0.3	0	0
Temporary tax rebate (assuming 50 percent spent)	1.0	1.2	0.2
<b>Memo:</b>			
One-percentage-point reduction in federal funds rate	0.2	0.4	0.5

1 These figures apply the dynamic responses reported in the paper to a hypothetical fiscal stimulus implemented in the third quarter of this year. The memo line applies the dynamic responses reported in personal communication by David Reifschneider to a hypothetical monetary stimulus implemented in the first quarter of this year.

2 Tax and spending changes cannot literally be permanent without offsetting changes on the other side of the government ledger, or government debt would spiral upward as a share of output. Therefore, the analysis assumed that changes would be sustained for ten years before budget balance was gradually restored. A permanent ten percent investment tax credit was not calibrated to cost exactly one percent of GDP, but its budget implications turned out to be very similar to that of the other policies shown here.

3 The “50 percent” simulations assumed that half of all subsequent increases in income would be consumed as well. If, instead, only one-fifth of subsequent multiplier increases in pre-tax income is spent by households, then the results here would require that the tax cut be targeted so that somewhat more than half of it was spent.

Source: Elmendorf and Reifschneider (2002)

The investment tax credit has the least effect largely because investment has historically responded slowly to shifts in the desired capital stock.

The second lesson is that a temporary stimulus can be as effective, or more effective, than a permanent policy change at a much lower long-run cost. The permanent fiscal changes studied in the paper all increase the budget deficit by one percent of GDP immediately and more over time as the additional debt service compounds. Temporary tax rebates with the same short-run cost but no long-run cost (except the small extra debt service on the one-time bump in the deficit) can provide as much immediate stimulus as permanent tax cuts. This result arises partly because the larger long-run deficit raises long-term interest rates immediately and thereby blunts some of the incipient initial stimulus.

Third, the impact of fiscal stimulus depends critically on the share of tax changes that is spent by households. Econometric estimates of historical consumption behavior imply that, on average, only about 20 percent

of swings in aggregate income are reflected in aggregate consumption. However, the analysis of recent tax rebates discussed above shows that more than 50 percent of targeted tax rebates may be spent within a few quarters. Taking into account the feedback effects, Elmendorf and Reifschneider calculate that a one-time tax rebate equal to one percent of GDP (about \$140 billion in today’s economy) and directed at households likely to spend the money would boost the level of GDP by one percent or more for two consecutive quarters. Such an effect would increase the annualized GDP growth rate (the number generally reported for aggregate economic growth) by about 4 percentage points in the first quarter of the effect.

CBO (2008) and Moody’s Economy.com (2008) also analyze the impact of alternative approaches to fiscal stimulus. As summarized in Table 2, Moody’s Economy.com finds that policies targeting people most affected by economic slowdowns, such as the long-term unemployed, have the highest bang-for-the-buck in terms of increases in GDP relative to the cost of reduced federal

TABLE 2

## The Impact of Various Stimulus Options

	CBO		Moody's Economy.com	
	Cost-Effectiveness	Time From Enactment to Impact	Cost-Effectiveness <sup>1</sup>	Time From Enactment to Impact <sup>2</sup>
<b>Tax Cuts</b>				
Non-refundable lump-sum rebate	Large <sup>3</sup>	Medium	1.02	Medium
Refundable lump-sum rebate			1.26	Medium
Payroll tax holiday	Large	Medium	1.29	Medium
Temporary across-the-board cut	Small	Short	1.03	N/A.
Accelerated depreciation	Medium	Medium	0.27	Medium/ Long
Extend AMT patch permanently	Medium	Long	0.48	Long
Bush tax cuts permanent	Small	Long	0.29	Long
Dividend/capital gains permanent	N.A.	N.A.	0.37	Long
Cut corporate tax rate	Small	Long	0.30	N/A.
Extend operating loss/carryback	Small	Medium	N.A.	N/A.
<b>Spending Increases</b>				
Extending UI Benefits	Large	Short	1.64	Short
Temporary food stamps increase	Large	Short	1.73	Short
Aid to state governments	Medium	Medium	1.36	Short/ Medium
Increased infrastructure spending	Small	Long	1.59	Long

1 One year dollar change in real GDP for a given dollar reduction in federal tax revenue or increase in spending. The estimate is for the year the spending/tax change takes effect, which is not necessarily the year it is enacted.

2 Authors' assessments based on the discussion by Moody's Economy.com.

3 CBO's table does not distinguish between refundable and non-refundable rebates but its text states, "Making the rebate refundable would further boost the cost effectiveness of the stimulus."

Source: CBO, *Options for Responding to Short-Term Economic Weakness*, January 2008 and Moody's Economy.com "Assessing the Macro Economic Impact of Fiscal Stimulus 2008," January 2008.

taxes or increased federal outlays. It judges across-the-board rate reductions to be less than half as effective as a flat tax cut per household, and capital-oriented tax cuts to provide little short-run stimulus. CBO also concludes that tax cuts targeted at low-income families would have much more bang-for-the-buck than across-the-board tax rate cuts.

## Principle 3: Stimulus Should Be Temporary

The third principle for effective fiscal stimulus is that tax and spending changes must be temporary and not increase the already large long-run budget deficit. While fiscal stimulus can increase economic growth in the short run, it will simply result in higher inflation or tighter monetary policy in the long run. If the economy is operating below its potential, as happens temporarily during recessions, then fiscal stimulus can raise output and incomes. For example, boosting consumer spending can put unemployed individuals and idle factories back to work. In the long run, however, the Federal Reserve generally keeps the economy operating close to full employment and full capacity, and boosting aggregate demand does not increase output on a sustained basis.

Even worse, the key to long-run economic growth is higher saving and investment to increase the capital stock and thus the productive capacity of the economy. But budget deficits reduce national saving, resulting in lower investment or more foreign borrowing. Although the short-run stimulus effects may justify temporarily elevated budget deficits, in the long run these deficits will have no direct stimulus benefit and will only impede capital formation and growth.

Moreover, larger long-run budget deficits can undo part, or even all, of the direct stimulative effects of lower taxes and higher government spending. Financial markets' anticipation of larger future deficits and thus larger government borrowing needs will tend to raise long-run interest rates, all else equal. Higher interest rates restrain investment—and net exports by pushing up the value of the dollar—which reduces aggregate demand and economic activity in the short run. Indeed, the Elmendorf-Reifschneider analysis discussed earlier shows that a permanent tax cut phased in gradually may actually be contractionary in the short run because the interest-rate response can outweigh the stimulus of higher after-tax income. This possibility was examined theoretically by Olivier Blanchard (1984) and William Branson (1985), and it played a noteworthy role in discussions of fiscal policy during the Clinton administration (as described by Elmendorf, Jeffrey Liebman, and David Wilcox 2002).

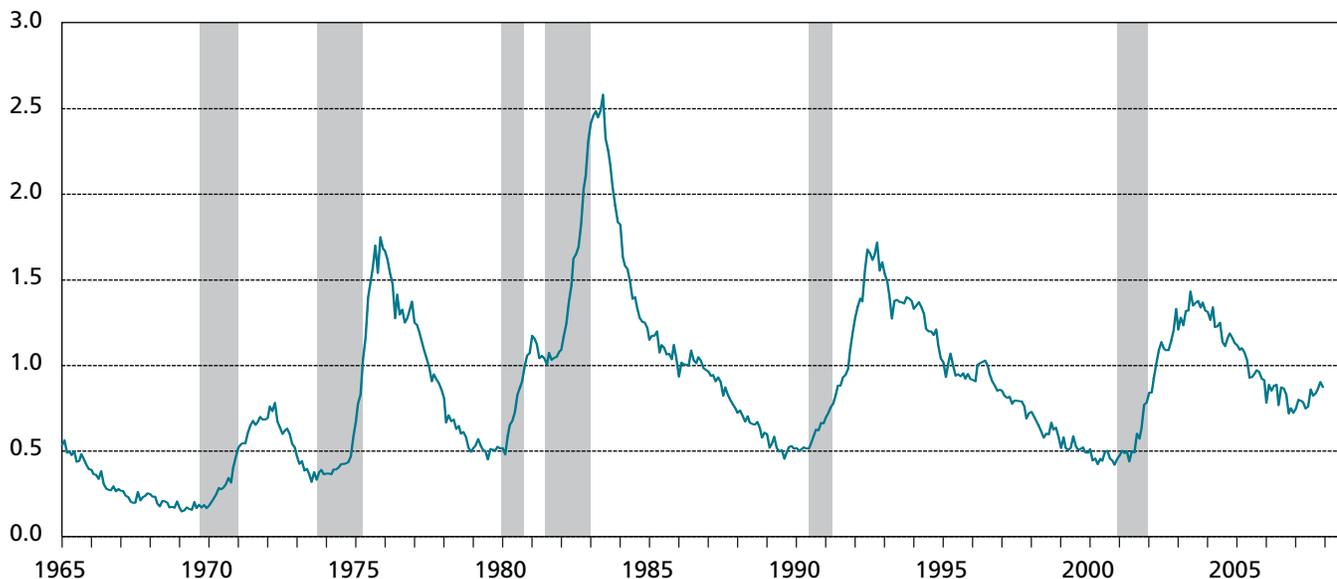
At a minimum, this consideration implies that spending or tax changes in a fiscal stimulus package should be temporary. The stimulus would be even more effective, however, if the short-run increase in the budget deficit were repaid over five or ten years so the long-run path of federal debt would be unchanged.

## Applying These Principles to Policy Options

The previous section demonstrated the importance of fiscal stimulus being timely, targeted, and temporary. In this section, we use these principles to evaluate some specific stimulus options. Some options that have been discussed would generate effective stimulus, others would be less effective, and some would be ineffective or even counterproductive. This discussion focuses on the approaches to fiscal stimulus that have received the greatest attention. Other options such as targeted help for homeowners facing foreclosure and transfers to state and local governments facing increased budget stringency deserve attention as well but lie beyond the scope of this primer.

Much of the public discussion of stimulus has been conducted in terms of “tax” policies like rebates or rate reductions versus “spending” policies like unemployment insurance or infrastructure. This distinction corresponds to the government’s accounting conventions. However, a more useful distinction in evaluating macroeconomic impacts of fiscal changes is between, on the one hand, “taxes and transfers” (e.g., tax cuts or unemployment insurance expansions) designed to increase disposable income and thus consumption, and on the other hand, “government purchases of goods and services” (e.g., infrastructure spending) designed to increase spending directly. The macroeconomic effect

FIGURE 4  
Long-Term Unemployment Rate, 1965–2007



Notes: Percent of civilian labor force unemployed for 27 weeks or longer. Shaded regions show recessions as defined by the NBER.

Source: BLS (2007)

of temporary expansions in unemployment insurance benefits or food stamps, two options discussed below, are similar to that of targeted tax rebates, except even more expansionary because people are likely to spend a larger share of what they receive.

## More effective options

Policymakers designing fiscal stimulus should consider the following policies:

**Extend unemployment insurance benefits temporarily.** Unemployment insurance benefits are generally limited to 26 weeks. This limitation is based on a judgment about how to balance the greater protection afforded by additional weeks of unemployment insurance against the greater distortion to people's incentives for finding new jobs. During economic slowdowns when new jobs are harder to find, the optimal balance shifts toward longer periods of eligibility. In the past policymakers have recognized this by extending unemployment insurance benefits during recessions. Such action could be even more important this year because, as shown in Figure 4, the long-term unemployment rate was nearly twice as high in the last quarter of 2007 as it was immediately before the 2001 recession.<sup>10</sup> In addition, as discussed above, this policy has a very high bang-for-the-buck in terms of macroeconomic stimulus.

**Increase food stamps temporarily.** Another option is to increase food stamps on a temporary basis; for example, anyone receiving food stamps might automatically receive 20 percent more stamps for six months. This change could be administered easily and quickly by raising the value of electronic benefit cards issued to food stamp beneficiaries. The change would also be well-targeted at families that are very vulnerable to an economic slowdown and that would spend essentially all of the extra income—likely an even higher fraction than any tax policy that is being contemplated.

**Issue flat, refundable tax credits temporarily.** The previous two policy options probably would not involve enough money to represent adequate stimulus on their

own. A larger-scale option that could satisfy the three criteria of effective stimulus is tax rebates for working households. Tax rebates could be based on 2007 returns and sent to households over a five-to-six week period beginning in May or June.<sup>11</sup> To maximize the share of tax credits that is spent rather than saved, and to help ensure that households most vulnerable to a weak economy are helped, the lowest-income households must receive credits. In contrast, a nonrefundable income tax rebate like the one included in the 2001 tax law would exclude more than 25 million working households that have no income tax liability; the result would be less fair and provide less bang-for-the-buck as macroeconomic stimulus, as discussed above. To ensure that the tax credits do not worsen the long-run budget outlook, they should be temporary.

Policymakers are currently discussing a stimulus package totaling \$145 billion, or roughly 1 percent of GDP. We can gauge the macroeconomic effects of such a package using the Elmendorf-Reifschneider estimates discussed earlier. If a package of this size with these elements were implemented, it could increase the annualized growth rate of real GDP by 4 percentage points in the third quarter and elevate the level of real GDP for the remainder of the calendar year. With this time path, fiscal stimulus would support economic activity during the time before any further monetary stimulus would have its maximum effect.

## Less effective options

The following policies are likely to be less effective in spurring economic activity than the policies just discussed, either because the available evidence indicates they do not provide well-timed stimulus or because there is considerable economic and administrative uncertainty about how they might work:

**Increase infrastructure investment.** Although additional physical and technological infrastructure investments might provide an important boost to long-term growth, they are difficult to design in a manner that would generate significant short-term stimulus. In the

<sup>10</sup> Note also that the trough of the long-term unemployment rate in this cycle was well above the troughs in previous cycles.

<sup>11</sup> JCT (2008) has an extensive discussion of economic and administrative issues in designing rebates.

past, infrastructure projects that were initiated as the economy started to weaken did not involve substantial amounts of spending until after the economy had recovered. However, this approach might be more useful if policies could be designed to prevent cutoffs in ongoing infrastructure spending (such as road repair) that would exacerbate an economic downturn.

**Create temporary investment tax incentives.** Temporary tax incentives for business investment, like the bonus depreciation provision enacted in 2003, can stimulate the economy by raising outlays for business equipment and structures. In particular, such incentives can induce businesses to undertake investment immediately that they would otherwise pursue in some future year. But research on this topic has found, as described above, that the magnitude of this effect is small at best. Moreover, any effect appears to work more slowly in stimulating the economy than household consumption-oriented measures—a distinct disadvantage when a principal rationale for adding fiscal stimulus to monetary stimulus is its potential for more immediate impact. Finally, temporary investment tax incentives provide no direct help for families coping with a temporary economic downturn.

### Ineffective or counterproductive options

These last two policies would have very little effect in boosting economic activity or might even reduce it.

**Reduce tax rates.** As noted earlier, reducing tax rates would generate less than half as much economic stimulus as flat, refundable tax credits of the same size. Such a tax reduction would give disproportionate benefits to high-income households, which are the households least likely to be hurt by an economic downturn. And the permanence of the tax reduction would likely raise long-term interest rates and crowd out some of the modest direct stimulus.

**Make the 2001 and 2003 tax cuts permanent.** The tax reductions enacted in 2001 and 2003 expire at the end of 2010. Making those tax cuts permanent would violate all three principles of effective fiscal stimulus discussed earlier, and it might even hurt the economy in the short run. First, a reduction in income taxes starting in 2011 would provide little or no boost to consumer spending in 2008.<sup>12</sup> Second, the 2001 and 2003 tax reductions offered the largest dollar benefits to the highest-income families, so extending them would provide low bang-for-the-buck in terms of economic stimulus even in 2011. Third, this sort of permanent tax change would increase the long-run budget deficit, likely reducing long-run economic growth. In addition, if making the tax cuts permanent were perceived by forward-looking financial markets as raising the long-run deficit, interest rates would rise today, crowding out investment and reducing GDP in the short run as well.<sup>13</sup>

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12 Consumers who determine their spending based on their expected lifetime income would raise current spending if future taxes were reduced. However, the magnitude of the increase would not be very large, if these consumers think there is some chance of a supposedly permanent change being rescinded later, or if they currently think there is some chance of the tax cuts being extended and have already factored that possibility into their consumption plans. Moreover, some consumers are not so forward-looking in their spending decisions, and others may be forward-looking enough to understand that taxes will eventually be raised or outlays reduced in order to satisfy the government's long-run budget constraint. Consumers in these groups would not raise their spending at all today if the tax cuts were extended.

13 Making the tax cuts permanent could have other short-run economic effects. For example, a rational, forward-looking worker might reduce his or her labor effort today in response to lower tax rates in the future. Extending current provisions for small-business expensing would reduce the pressure on small businesses to make investments before those provisions expire, which could reduce current investment and slow the economy. But extending lower tax rates for S corporations would have the opposite effect, removing an incentive for shifting investment into future periods when deductions would have been more valuable. A complete analysis of these factors lies beyond the scope of this paper; in any event, their total economic effect is unlikely to be large in the short run.

## Conclusion: Building Better Long-run Policy

As policymakers focus on averting a recession, it is also a good time to consider long-run policies to help damp the business cycle and protect families from unnecessary economic risk.

One question that merits further study is whether a trigger mechanism like that proposed by Feldstein should be adopted on a permanent basis, so that future declines in employment would automatically generate some sort of uniform, refundable tax cut. On the upside, such an approach is similar to strengthening the automatic stabilizers, which are a universally supported feature of our fiscal system. The strength of these stabilizers depends not on any explicit judgment about the appropriate policy response to economic slowdowns, but rather on the progressivity of our tax and transfer system as determined by objectives other than stabilization. Thus, Auerbach and Feenberg estimate that a dollar change in income generated a 25-cent change in federal taxes in the 1960s, a 35-cent change in 1980, and a 25-cent change between the late 1980s and late 1990s—indicating that the automatic stabilizers are weaker than they once were. As mentioned already, strengthening the stabilizers would avoid the lags in deciding upon fiscal stimulus and boost confidence in the stability of the economy.

On the downside, enshrining a trigger permanently in law puts a great deal of weight on a particular numerical cutoff for a particular data series, even though the appropriate trigger would likely change over time. Moreover, policymakers usually want to make (and get credit for) explicit decisions to reduce taxes or raise expenditures, so a pre-legislated trigger might not reduce

the pressure for other policy changes in future downturns. Policymakers may be especially uncomfortable about automatic mechanisms generating tax increases or spending cuts when economic growth picks up. In addition, if a significant amount of fiscal stimulus is in place for two years or more, as would have been true under some of the triggers analyzed here, it has a noticeable effect on federal debt that should not be ignored but should be offset by more-positive budget balance during periods of strong economic growth.

A number of other measures would more directly reduce the risks that households face while having the ancillary benefit of enhancing the automatic stabilizers and thus reducing aggregate economic volatility. One of the most important is modernizing the unemployment insurance system to reflect the changing patterns of work, including the increase in part-time, self-employed, and temporary workers. All of these trends, together with the rise in long-term unemployment, have resulted in a reduction in the fraction of unemployed workers covered by unemployment insurance to about one-third today. The Hamilton Project has outlined several alternative ways to improve unemployment insurance and create wage insurance (Kletzer and Rosen 2006 and Kling 2006). Some of these ideas are embodied in a reform of the unemployment insurance system that was approved by the House of Representatives in 2007 but is awaiting action in the Senate.

An even bigger risk facing American families is that of losing their health insurance. The Hamilton Project has released four alternative proposals to achieve, or at least move significantly toward, universal health insurance

(Anderson and Waters 2007; Butler 2007; Emanuel and Fuchs 2007; and Gruber 2007). All of these proposals would greatly mitigate the risks that families face in economic downturns, and in the process help strengthen the automatic stabilizers.

Finally, The Hamilton Project's tax strategy discussed the many efficiency and equity benefits of shifting social policies embodied in the tax code from deductions to uniform, refundable credits—for example to encourage savings, health insurance, or homeownership (Furman, Summers, and Bordoff 2007; Gale, Gruber, and Orszag 2006; and Gale and Gruber 2007). As Lily Batchelder,

Fred Goldberg, and Orszag (2006) have noted, such a shift would also help to insure people against income fluctuations and act as a more robust automatic stabilizer.

Going beyond protecting families from risk and damping the business cycle, the biggest economic gains will come from stronger and more-shared economic growth. Preventing a recession may increase long-run output. But even more important, it is critical that efforts to fight a recession do not end up increasing the long-run budget deficit and thus harming long-run growth.

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Doug Elmendorf is a senior fellow in the Economic Studies program at the Brookings Institution. He is also the Edward M. Bernstein Scholar and will become co-editor of the Brookings Papers on Economic Activity in 2008. His areas of expertise are macroeconomics, public economics, and fiscal policy.

Elmendorf was previously an assistant professor at Harvard University, a principal analyst at the Congressional Budget Office, a senior economist at the White House Council of Economic Advisers, a deputy assistant secretary for economic policy at the Treasury Department, and an assistant director of the Division of Research and Statistics at the Federal Reserve Board. In these positions he worked on budget policy, Social Security reform, Medicare and national health reform, financial-market issues, macroeconomic analysis and forecasting, and other issues. He earned his PhD and AM in economics from Harvard University, where he was a National Science Foundation Graduate Fellow, and his AB summa cum laude from Princeton University.

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Jason Furman is a Senior Fellow at the Brookings Institution where he is Director of the Hamilton Project. Furman previously served as Special Assistant to the President for Economic Policy in the Clinton Administration. Earlier in the Administration, Furman served as Staff Economist at the Council of Economic Advisers and a Senior Director at the National Economic Council. Furman also served as Senior Economic Adviser to the Chief Economist of the World Bank. Furman has been a visiting lecturer at Columbia and Yale Universities and was a Visiting Scholar at New York University's Wagner Graduate Public Service. He received his Ph.D. in economics from Harvard University.



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