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**THE U.S. EXPERIENCE WITH FISCAL STIMULUS: A Historical  
and Statistical Analysis of U.S. Fiscal Stimulus Activity, 1953-  
2011**

By Antony Davies, Bruce Yandle, Derek Thieme, and Robert Sarvis

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George Mason University

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## The U.S. Experience with Fiscal Stimulus

### A Historical and Statistical Analysis of U.S. Fiscal Stimulus Activity, 1953–2011

#### 1. Introduction

Can deliberate government spending activities have a continuing net positive impact on economic activity? Do federal spending programs designed to offset a recession's negative effects really add a net positive nudge to GDP growth? Can government purposefully and successfully stimulate ongoing employment growth?

Do federal government stimulus programs really work?

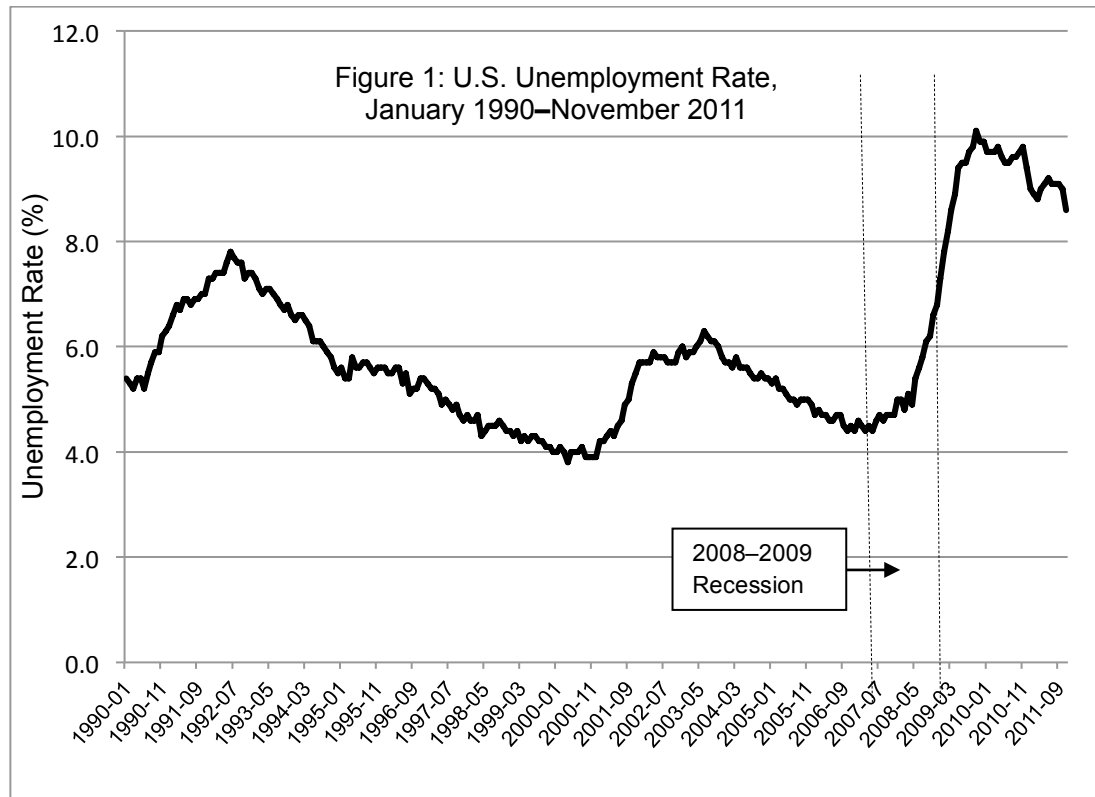
These questions and others like them were a constant part of U.S. public debate from 2010 to 2011 following implementation of the American Recovery and Reinvestment Act (ARRA). Signed into law in September 2009, ARRA provided some \$787 billion in federally funded transfers, purchases, and tax reductions in an effort to offset the deep recession that began in January 2008. The ARRA specified that \$288 billion be devoted to tax incentives and \$144 billion be given to state and local governments with more than 90 percent of the total going to Medicaid and education. The government allocated the remaining \$357 billion to federal spending programs for transportation, communication, and infrastructure improvements; scientific research; and an extension of federal unemployment benefits.

The ARRA: Forecasts and Outcomes

When the program began, Obama administration economists predicted it would generate or prevent the loss of almost four million jobs and that it would impede the U.S. unemployment rate from rising above 8.0 percent.<sup>1</sup> The unemployment rate then stood at 7.8 percent. It immediately rose to 8.2 percent, surpassed 10 percent in October 2009 (a monthly unemployment rate exceeded only 11 times in the past 770 months), then hovered in a range centered on 9.0 percent until October 2011 when the rate finally fell below 9.0 percent. The median duration of unemployment, which averaged 7.2 weeks from 1967 through 2008 and never rose above 13 weeks, reached a high of 25.5 weeks in June 2010. Figure 1 shows the U.S. unemployment rate from January 1990 to November 2011. The area between the dotted vertical lines indicates the 2008–2009 recession.

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<sup>1</sup> Christina Romer and Jared Bernstein, *The Job Impact of the American Recovery and Reinvestment Plan* (Washington, DC: Office of the Vice President-Elect, January 9, 2009).



As figure 1 shows, in early 2012, the unemployment rate, while falling, still seemed locked in a range that rotated around 8.5 percent.<sup>2</sup> This rate held despite the \$787 billion attempt to bring down unemployment; despite more than a trillion dollars obligated to bail out auto companies, insurance companies, mortgage lenders, and banks; and despite ongoing war-related expenditures of \$1 billion a day. And this spending was just the fiscal policy part of government actions. The Federal Reserve Board also took unprecedented steps to stabilize financial institutions, inject liquidity into the banking system, and generally open all stops in an effort to increase lending activity nationwide. Taken together, fiscal, monetary, and defense policies still did not seem able to put meaningful wind into the economy's flagging sails.

Even with ARRA and other federal actions taken to stabilize specific sectors, the economy continued to stumble along a bumpy recovery road after the National Bureau of Economic Research (NBER) declared June 2009 to be the end of the 2008–2009 recession. The recession was the most severe since the 1929 financial collapse and Great Depression that followed. At a glance, stimulus spending looks ineffective, but the stimulus effectiveness debate will no doubt continue for years, primarily because there is no conclusive way to resolve the matter.

<sup>2</sup> Data in figure 1 are from the U.S. Bureau of Labor Statistics.

## Economic Issues Encountered When Assessing Stimulus

When estimating stimulus effects, one encounters a host of issues. Theoretical models typically rely on the logic of Occam's Razor and employ the fewest possible variables to explain outcomes. Models, after all, are abstractions of the real world. They are valuable to the extent that a small amount of information can provide useful insight to large problems and issues. We describe a number of empirical models later in our report, and although these models provide useful information, none assesses directly the information problem people in government face when trying to determine what is really going on. Nor do the models typically adjust for the lags between the recognition of a serious economic problem by, say, White House officials, and actions taken by Congress and then approved by the president.

Even more perplexing, the elegant models used to explain and predict stimulus effects do not consistently account for decisions by monetary authorities that may either support or confound stimulus policy actions developed by the executive and legislative branches of government. And finally, as good as the information obtained may be and as well coordinated as political decision making can be, most models cannot adjust for fiscal actions that may be taken across the 50 states. Washington's actions may be disrupted by state-level taxing and spending.

Finally, there is the fundamental public choice problem that confronts lawmakers, even where inaction is the wisest policy. There is always public pressure on Congress and the president to take action when there are downturns. Mercatus Senior Research Fellow Brian Mannix describes the problem this way: "Planned solutions appear superior to unplanned market solutions in any model or analysis."<sup>3</sup> In short, the pressure to "do something" tends to become overwhelming. If the typical macro model included all these factors, the model would become so unwieldy as to be of only limited use. For this reason, we recognize the problems in our discussion of stimulus content found in various issues of the *Economic Report of the President (ERP)*. We then report our own empirical findings using a model that focuses on identifying the relationship between federal government spending and gross domestic product (GDP).

### How This Report Is Organized

This report goes far beyond the most recent recession in an effort to assess stimulus effectiveness. Our analysis includes every recession since World War II. We review the history of stimulus efforts as revealed by presidential statements found in the *ERP*. We also review efforts by academics and others to identify stimulus effectiveness. In addition, we provide our broad-based empirical assessment of stimulus effectiveness by examining the relationships between federal taxes and revenues, federal spending and GDP, and, most important, increased

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<sup>3</sup> Brian Mannix, "The Planners' Paradox," *Regulation* 26, no. 2 (Summer 2003): 8–9, <http://www.cato.org/pubs/regulation/regv26n2/mannix.pdf>.

government spending and GDP growth. Our empirical assessment examines data for all years since World War II.

We have already indicated that there is no conclusive way to resolve the matter of stimulus effectiveness. Let us explain. Economists' ability to measure unambiguously the effect on GDP growth or employment growth of increases in government spending requires a precise identification of how the nation's economic engine is operating in the absence of the increased spending. At the same time, GDP growth may itself induce government spending, and this effect has to be accounted for somehow. In addition, all forces that might affect GDP growth must be held constant while assessing the effect of government spending. Accomplishing these tasks may at first sound tractable. But the economic engine is operated by millions of unrelated decision makers whose expectations regarding government spending may affect how they will react to increases or decreases, especially when those expenditure changes are well advertised in advance. Some of these individuals may assume that their future taxes will be higher, or that the level of their future government services will be cut. After all, the money used to stimulate the economy has to come from somewhere.

Changed expectations about future government action and the funding of that action can alter behavior in ways that diminish or offset the effects of government spending. Then, how individual decision makers perceive changes in government spending or taxes (that is, will they be temporary or permanent?) can affect responses to those changes. However, individuals can be thought to behave on the basis of what they consider to be their permanent income paths, which means that they will discount the effects of nudges that push them temporarily off the path. In many instances, government fiscal actions are announced as temporary, which may then induce consumers and investment decision makers to behave accordingly. In short, it is practically impossible to adjust for all the items mentioned when attempting to estimate the unambiguous effect of government actions taken to stimulate the economy. Having said this, we recognize that serious efforts have been made to measure these effects, and we will summarize some of the more notable efforts.

We now move to a discussion of presidential stimulus pronouncements where we present statements about fiscal policy decisions made in anticipation of or in association with recessions defined by the NBER. We then discuss literature that attempts to determine if stimulus actions have affected economic performance. In that section, we provide a brief benefit–cost assessment of stimulus job creation that focuses on the most recent recession. The final section presents our effort to determine the actual relationship between spending and changes in GDP growth.

## **2. Stimulus Speak: A Survey of Presidential Pronouncements**

In our study of U.S. stimulus history, we identified stimulus statements by U.S. presidents by reviewing issues of the *ERP* from 1953 forward that precede, coincide with, or immediately

follow the dates set by the NBER for post-1948 U.S. recessions. We focus primarily on fiscal stimulus, recognizing that monetary policy actions can also play a powerful stimulus role. We neglect monetary policy because the Federal Reserve Board operates independently from the executive and legislative branches of government, and our investigation seeks to determine how fiscal policy actions affect economic performance.

#### NBER Recession Dates

Table 1 shows the NBER's dates for U.S. recessions.

<b>Beginning</b>	<b>Ending</b>	<b>Length (months)</b>
July 1953	May 1954	10
August 1957	April 1958	8
April 1960	February 1961	10
December 1969	November 1970	11
November 1973	March 1975	16
January 1980	July 1980	6
July 1981	November 1982	16
July 1990	March 1991	8
March 2001	November 2001	8
December 2007	July 2009	18

Our analysis covers 10 recessions. Arguably, each recession resulted from peculiar forces that may have shocked the economy or from deliberate actions taken to fight inflation and therefore slow economic activity. For example, the 1973–1975 and 1980 recessions resulted largely from oil price shocks, the 2001 recession from the September 11 attack, and the 2007–2009 recession from the severe credit contraction associated with the subprime mortgage crisis. We include some discussion of these events in our analysis.

#### Why Use the *Economic Report of the President*?

We focus on the *ERP* for several reasons. First, the annual report is the president's official statement of national economic conditions. It is organized and written by the Council of Economic Advisers, which advises the president regarding economic matters and “formulate[s] and recommend[s] national economic policy to promote employment, production, and

purchasing power under free competitive enterprise.”<sup>4</sup> The council also recommends fiscal policies and other actions that would stimulate or stabilize the economy to maintain a high level of employment.

A second reason for using the *ERP* is the high standards for its content. Since the *ERP* is considered a president’s preeminent assessment of the economy and its prospects, we expect the highest quality of factual accuracy in these reports. We recognize that as a president’s record of plans and accomplishments for the economy, the *ERP* is a political statement.

### Assessing the *ERPs*

We now provide a sequential summary of relevant statements beginning with the 1953–1963 *ERPs*. These statements reveal an evolving understanding of how stimulus actions may be devised as well as what form they may take.

#### *The 1953–1962 Statements*

The 1953 *ERP* refers to the 1948–1949 recession that followed World War II and discusses key elements that operate automatically to stabilize the economy during economic slowdowns. President Dwight D. Eisenhower’s first report implies that stimulus beyond the working of automatic stabilizers such as the progressive income tax system, farm price supports, unemployment compensation, and government expenditures may not be necessary. The report then makes this statement:

The time may come . . . when it will be necessary to provide some new support to the economy. Under such circumstances, it would be appropriate to reduce the tax burden to stimulate private demand. But it would be inappropriate to make these tax reductions prematurely, when they are not needed to stimulate demand and could even have inflationary effects, and when we are facing the prospect of sizable budget deficits despite full employment.<sup>5</sup>

The report makes no mention of deliberate stimulus action to affect the 1949 recession. Meanwhile, another recession was on the way.

The 1954 *ERP* discusses the 1953–1954 recession, describes the Fed’s purchase of government bonds as a way to increase the money supply, then discusses stimulus:

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<sup>4</sup> The White House, “About CEA,” <http://www.whitehouse.gov/administration/eop/cea/about>.

<sup>5</sup> Chairman of the Council of Economic Advisers (CEA), *Economic Report of the President (ERP)* (Washington, DC: Government Printing Office, 1953), 78.

Tax policy was continually reviewed by the Treasury, not only from the viewpoint of moving toward a budgetary balance, but also in the light of the economic situation at large and the part that fiscal policy could play in contributing to economic growth and stability. . . . The Secretary of the Treasury therefore announced in the plainest possible language that the Administration, besides relinquishing the excess-profits tax, would not seek to postpone the reduction of the personal income tax, averaging approximately 10 percent, scheduled for January 1, 1954. . . . In coming months these well-timed tax reductions are likely to give substantial support to consumer and investment markets.<sup>6</sup>

Although the 1954 *ERP* emphasizes tax reductions as a principle stimulus vehicle, the report also describes congressional actions that eased down-payment requirements for FHA mortgages in an effort to stimulate home building.

There were no recessions during 1955 or 1956, but Eisenhower's reports for these two years give ample discussion to earlier actions to counter the 1953–1954 recession. For example, the 1955 *ERP* glowingly describes prior actions this way:

Why did the economic setback of 1953–54 prove so mild on an over-all basis? . . . Clearly, many people had a part in stemming the economic decline and easing the readjustment from war to peace. The Federal Government also contributed significantly to the process of recovery. It influenced the economy in two principal ways, first, through the automatic workings of the fiscal system, second, by deliberately pursuing monetary, tax, and expenditure policies that inspired widespread confidence on the part of people and thus helped them to act in ways that were economically constructive.<sup>7</sup>

The report also refers to specific fiscal policy actions:

Excise taxes were cut, carrying a revenue loss of about 1 billion dollars in the fiscal year 1955, in addition to the loss of 1.4 billion dollars as a result of enacted structural tax changes. Some of our hard-pressed industries were aided—notably shipbuilding through a new construction program, and zinc and lead mining as a result of a revised stockpiling program. . . . The Government also attempted to assist localities suffering from unemployment by channeling contracts to them as far as feasible, by boosting the allowable rate of accelerated amortization on facilities needed for the mobilization base, and by expanding the activities of the Area Development Division of the Department of Commerce.<sup>8</sup>

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<sup>6</sup> CEA, *ERP* 1954, 52.

<sup>7</sup> CEA, *ERP* 1955, 17–18.

<sup>8</sup> *Ibid.*, 20.



The 1956 *ERP* summarizes the apparently successful past actions taken to counter the 1953–1954 recession and the economic adjustments associated with the end of the Korean conflict. The report suggests the government is learning how to successfully apply stimulus tools and directly addresses the knowledge and timing problems referred to in our introduction:

Although governmental efforts to curb inflationary or recessionary influences have not always proved successful, knowledge of how business fluctuations arise and of ways of dealing with them is steadily improving. The events of the past three years have been heartening. We have seen that our economy can continue to grow with a minimum of instability and without an appreciable change in the value of money. We have seen that wise and timely actions by the Government can help sustain a healthy expansion of economic activity and prevent it from turning into an inflationary boom; that soundly conceived and well-timed governmental policies, aided by private stabilizing influences, can prevent a minor contraction from turning into a spiraling depression; and that neither direct controls over prices and wages, nor huge spending programs, are needed to achieve a reasonably stable prosperity.<sup>9</sup>

But the report suggests that monetary actions to stimulate and calm the economy could generate difficulties, illustrating an understanding of the challenge of coordinating fiscal and monetary policy actions:

The credit expansion supporting the high level of demand in practically all sectors of the economy reached a pace which, if continued for long, would threaten the stability of the economy. To help avert this threat the Federal Reserve Banks reduced their holdings of government securities on a considerable scale between late July and mid-September. . . . Early in August, the discount rate was increased by one Reserve Bank to 2 ¼ percent and by the others to 2 percent. By mid-September, discount rates were raised to 2 ¼ percent by all Reserve Banks.<sup>10</sup>

Despite the much celebrated learning about how to manage the nation's macro economy, another recession hit the nation during August 1957 through April 1958.

The 1957 *ERP* speaks of actions taken to calm inflationary pressures. There is no evidence in the report that a slowing economy was on the horizon. When the 1958 report was published, the 1957–1958 recession was almost over. The knowledge problem shows itself in spades. The 1958 report gives the recession considerable recognition and focuses on fiscal policy details:

Contracts were negotiated by the States for the construction of Federal-aid highways to cost \$3 billion, 80 percent more than the amount obligated during the corresponding

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<sup>9</sup> CEA, *ERP* 1956, 10.

<sup>10</sup> *Ibid.*, 35.

period of 1957. During this same six-month period, Federal payments to the States exceeded \$1 ¼ billion. This, also, was 80 percent greater than the amounts paid during the same months a year earlier.<sup>11</sup>

The report continues:

In the year 1958, Federal expenditures were \$2.5 billion higher than in the fiscal year 1957. . . . This increase was due in part to actions taken specifically to help counter the recession but in part also to actions which, though taken for other reasons, had an expansive effect on the economy. . . . a small part of the impact of the recession on economic activity in general was lessened by a decline in personal income tax payments. Because of the structure of our tax system, the decline in personal income after taxes was less than the decline in income before taxes.<sup>12</sup>

Stimulus action was alive and well.

The 1958 *ERP* also emphasizes the challenge of attempting to juice up the economy in 1957 while avoiding inflationary pressures.

The paramount task during much of the year was to restrain inflationary tendencies. However, as the year developed, these tendencies diminished in strength. . . . For the first three quarters of the year, Federal Reserve operations were designed to limit the expansion of bank credit and to hold down increases in the money supply. A partly seasonal reduction of \$1.6 billion in Federal Reserve holdings of Government securities kept the reserve position of member banks under continuous pressure. Federal fiscal policies were also directed at restraining inflationary tendencies. . . . No general reduction of taxes was undertaken, and reductions in specific taxes—certain excise taxes and the tax rate on corporate income—that were scheduled to occur April 1, 1957 were postponed.<sup>13</sup>

The next recession began in April 1960 and ended in February 1961. We should not expect the 1959 *ERP* to anticipate that the economy would be slowing again. However, the 1960 report gives clear evidence that monetary policy actions taken that year would surely put a damper on things. Indeed, efforts taken to reduce inflation may have been a major cause for the slowdown:

In pursuance of a policy of greater restraint, the Federal Reserve Banks in March, May, and September 1959 raised the discount rate charged by them to member banks from 2 ½ to 4 percent, paralleling the rise in the interest rate on the 3-month Treasury bills. . . .

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<sup>11</sup> CEA, *ERP* 1958, 42.

<sup>12</sup> *Ibid.*, 43.

<sup>13</sup> *Ibid.*, 6–7.

Reflecting all developments influencing the availability of reserve funds, the money supply (demand deposits and currency) grew by about 0.5 percent in 1959, compared with 4 percent during 1958. . . . No change was made in the 90 percent margin requirement.<sup>14</sup>

President John F. Kennedy took office in 1961. Just one year after having tightened credit severely, the Fed reversed its policy in an effort to counter the slowdown it had inspired in the previous year. The credit market roller coaster was running well. Kennedy's 1961 *ERP* describes the change this way:

The demand for other loans also reflected some slackening in economic activity. . . . Thus, further monetary easing was clearly called for, and, accordingly, open market operations became more aggressive. . . . In June, the Federal Reserve Banks reduced discount rates from 4 percent to 3 ½ percent, and in August and early September rates were cut again, to 3 percent. In two successive steps taken in September and December, reserve requirements against demand deposits for central reserve city banks were reduced from 18 percent to 16 ½ percent. . . . As a partial offset, requirements for country banks were raised from 11 percent to 12 percent.<sup>15</sup>

There is no discussion of stimulus activity in the 1961 report. Bear in mind that the recession ended one month after the report was issued. But the 1962 report more than makes up for the absence of stimulus discussion in the previous report. In fact, in the president's statements, we see that all the stops have been pulled:

Last January the economy was in the grip of a recession. . . . These figures reflected not only the setback of 1960–61 but the incomplete recovery from the recession of 1957–58. The task before us was to recover from not one but two recessions. . . . The “Program to Restore Momentum to the American Economy” which I proposed to Congress on February 2 resulted in prompt legislation to

- extend unemployment insurance benefits on a temporary basis;
- make Federal aid available, through the States, to dependent children of the unemployed;
- liberalize social security benefits;
- promote homebuilding under the Housing Act of 1961;
- raise the minimum wage and extend it to more workers;
- provide Federal aid under the Area Redevelopment Act, to revitalize the economies of areas with large and persistent unemployment.<sup>16</sup>

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<sup>14</sup> CEA, *ERP* 1960, 44–47.

<sup>15</sup> CEA, *ERP* 1961, 23.

<sup>16</sup> CEA, *ERP* 1962, 4.

The report describes how the Kennedy administration intends to fine-tune the economy and how there has been some hoped-for stimulus learning:

I have submitted to the Congress a Budget which will balance in fiscal 1963 as prosperity generates sharply rising tax revenue. The Budget is appropriately paced to the expected rate of economic expansion. It will give less stimulus to business activity as private demand for goods and services grows stronger and shoulders more responsibility for continued gains. But the shift will be moderate and gradual. We have learned from the disappointing 1959–60 experience that an abrupt and excessively large swing in the Budget can drain the vigor from the private economy and halt its progress, especially if a restrictive monetary policy is followed simultaneously. This will not be repeated.<sup>17</sup>

In an optimistic assessment of the exercise of stimulus policy expertise, the 1962 report concludes,

Government fiscal and monetary policies contributed strongly to the favorable economic developments of the past year. Although the downswing probably would have ended early in 1961 in any case, the impressive pace of the economic expansion must be attributed in large measure to government actions.<sup>18</sup>

The report celebrates stimulus learning after saying that the downswing would have likely ended at the same time without the stimulus.

### *The 1969–1975 Recessions*

After the 1960–1961 recession, there were no NBER recognized recessions until the 11-month contraction that began in December 1969 and ended in November 1970. The recession greeted President Richard M. Nixon just as he was assuming office. The 1969 report, released in January that year, underlines the timing difficulties encountered when a president seeks to fine-tune an economy deemed to be growing too rapidly. Stimulus management clouds were appearing on the horizon. The report describes the problem this way:

The buoyancy of public and private demand and the resulting buildup of inflationary pressures that developed after mid-1967 accentuated the need for fiscal restraint. However, enactment of such restraint was long delayed, complicating the management of monetary policy and enabling inflationary tendencies to become entrenched.<sup>19</sup>

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<sup>17</sup> Ibid., 12.

<sup>18</sup> Ibid., 39.

<sup>19</sup> CEA, *ERP* 1969, 37.

This report identifies the difficulties posed by a long recognition-and-action lag: actions taken to slow an overheated economy finally take hold when the economy is already cooling.

The pace of economic expansion did in fact accelerate, and the President renewed the request for a 10 percent tax surcharge in January 1968. . . . Congressional approval finally came with the passage of the Revenue and Expenditure Control Act of 1968, signed into law by the President on June 28. The Act provided for the 10 percent surcharge as requested by the President in January, with effective dates made retroactive to January 1 for corporations and April 1 for individuals. . . . The Act also established specific limitations of the Federal budget outlays for the fiscal year 1969. Certain programs—support for Vietnam operations, interest on the public debt, veteran benefits and services, and social security benefits—were exempted from the limitations. Expenditures in the remaining categories were required to be reduced by \$6 billion below the levels contained in the January Budget.<sup>20</sup>

The report recognizes the problem:

In most respects, the economy has performed extremely well in the last 8 years, and vigorous use of fiscal and monetary policy has contributed to this good performance. . . . Most of the shortcomings of the period were errors of omission rather than commission. This applies both to the delays in taking adequate stimulative action in 1961–62 and to the more recent delays in achieving fiscal restraint.<sup>21</sup>

As emphasized in our introduction, there are inherent problems in seeking to counteract the ups and downs of economic activity. Selecting just the right time for action and identifying the proper action to take can seem easy when working at a blackboard. But managing stimulus in the real world where there are constitutional protections that limit the discretionary power of presidents and congressional leaders is another matter entirely.

There is little discussion of stimulus policy in the 1970 and 1971 reports. When discussed, there is a tendency to combine monetary and fiscal policy in logical statements about inflation and employment stability. By contrast, the 1972 report summarizes actions taken and attempted in those earlier years and again demonstrates the difficulty faced by presidents who try to design and implement what they believe to be the perfect stimulus package:

The fiscal package proposed by the Administration . . . was primarily motivated by the desire to stimulate at once a more rapid expansion of the economy. . . . The legislative outcome followed the general outline of the Administration's proposal but differed in several respects. Congress did not enact the 10-percent-5-percent job development credit,

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<sup>20</sup> Ibid., 38.

<sup>21</sup> Ibid., 77.

but instead passed a permanent 7-percent credit. Congress disapproved the revision in the treatment of first-year depreciation, which the Treasury had made administratively. Congress also put back the Administration's proposal, which had already been passed by the House in 1970, to defer taxes on profits from exports. On the other hand, Congress not only raised the personal exemption to \$750 for the calendar year 1972 but also raised the 1971 exemption to \$675. Congress went beyond the Administration's proposals in several other respects: It raised the "low income allowance," or minimum standard deduction, to \$1,300 from \$1,000 for 1972 and repealed the 10-percent excise tax on light trucks. Other legislation made the Federal pay increase effective January 1, 1972, contrary to the Administration's proposal. A new deduction for child care and household help was also introduced. The effect of the congressional action was to reduce the net revenue loss for calendar 1972 about \$1.2 billion below the cost of the Administration's proposal. . . . Nevertheless, the enactment of the tax bill contributed to the expectation that a strong economic advance lay ahead, an expectation which was becoming general as 1971 ended.<sup>22</sup>

Once again, the expectation that an economic advance lay ahead was to be met with deep disappointment. There was serious trouble in the making. First, after battling domestic inflation and pressure from other countries to defend the dollar, on August 15, 1971, President Nixon imposed wage and price controls, raised taxes, and took the United States off the international gold standard. For the first time since the 1944 Bretton Woods agreement, the U.S. dollar was no longer convertible to gold. Inflation expectations seemed to follow. Then, on October 17, 1973, following an Israeli-Arab war in which the United States sided with Israel, Arab members of the Organization of Petroleum Exporting Countries imposed an oil embargo on the United States. The nominal price of crude oil increased fourfold. An energy price shock immediately hit the U.S. economy.

The recession that followed, the second to occur on Nixon's watch, started in November 1973 and ended in March 1975. It was the longest since the Great Depression. The authors of the 1973 *ERP* had no way of knowing what might lie ahead when building that year's report. Indeed, the report is optimistic about an economic expansion. It also indicates that the administration had concocted just the right amount of stimulus:

Fiscal policy was deliberately expansionary in 1972. The stimulus came from rising expenditures and from the effect of tax reductions instituted in 1971 and 1972. On a national income accounts basis, full-employment revenues in calendar 1971 exceeded full-employment expenditures by \$1 billion. The corresponding figure for calendar 1972 was a full-employment deficit of \$4 billion—a swing of some \$5 billion. These estimates understate the size of the swing and of the stimulus provided by fiscal policy, because 1972 receipts include about \$9 billion in over-withheld personal income taxes. . . . On net

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<sup>22</sup> CEA, *ERP* 1972, 69.

balance, the stimulus from budget policy in 1972 was somewhere between \$5 billion and \$14 billion and probably closer to the higher end of this range. . . . [T]he unemployment rate, which had risen to 6 percent around the beginning of 1971, stayed at that level with only minor variation until the end of the year. Consequently, in presenting its plans for fiscal 1973 the Administration indicated that it would take additional steps to stimulate the economy by raising the level of expenditures during the remaining half of fiscal 1972. At the same time, the Administration's position was that the total stimulus provided would be sufficient to accelerate the recovery, but that further stimulus might threaten the anti-inflation program.<sup>23</sup>

The 1973–1975 recession was in full bloom when the 1974 *ERP* was written. Even so, the report leaves the impression that the country was in good hands. Again, it seemed the president's budget and the automatic stabilizers would produce just the right amount of fiscal stimulus. An underlying concern about inflation entered the picture:

In presenting its plans for fiscal 1973 the Administration indicated that it would take additional steps to stimulate the economy by raising the level of expenditures during the remaining half of fiscal 1972. At the same time, the Administration's position was that the total stimulus provided would be sufficient to accelerate the recovery, but that further stimulus might threaten the anti-inflation program.<sup>24</sup>

Things got worse for the national economy and for President Nixon, who resigned from office. President Gerald Ford assumed the mantle in August 1974 in the midst of the political turmoil surrounding Nixon and a recession. The 1975 *ERP* describes more stimulus:

To provide support for the economy, the President on January 13 proposed tax relief for individuals and business. For individuals the program calls for a tax rebate equivalent to 12 percent of total 1974 personal tax liabilities up to a limit of \$1,000 per return. The rebate would total approximately \$12 billion and would be paid in two installments, the first in May and the second in September. For business the President proposed a 1-year increase in the investment tax credit to 12 percent. Except for utilities, which now have a 4 percent credit, the present credit is equal to 7 percent of investment in equipment.<sup>25</sup>

But the inflation problem had to be considered and the fiscal plan fine-tuned:

Because of concern that a too expansionary budget carries the risk of worsening the inflation, the Administration has proposed a slower rate of increase in spending from fiscal 1975 to fiscal 1976 than from fiscal 1974 to fiscal 1975. The new budget calls for

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<sup>23</sup> CEA, *ERP* 1973, 40–41.

<sup>24</sup> CEA, *ERP* 1974, 29.

<sup>25</sup> CEA, *ERP* 1975, 20.

outlays of \$349.4 billion, a rise of 11.5 percent compared to a rise of 16.8 percent from fiscal 1974 to fiscal 1975. The President has proposed a moratorium on new spending programs except for energy as well as numerous actions to reduce spending in existing programs. The reductions total \$17.5 billion and embrace \$7.8 billion in proposals made last year and \$9.7 billion in new reductions. Taking into account the \$16 billion in tax cuts to stimulate the economy, receipts are expected to total \$297.5 billion, a rise of 6.7 percent over fiscal 1975.<sup>26</sup>

Then true confessions enter the report. Somehow the best laid plans had gone astray. Even the automatic stabilizers had proved to be unreliable:

Fiscal policy turned out to be tighter during 1974 than was anticipated last February in the 1975 budget, largely because the unanticipated acceleration of inflation lifted Federal revenues. In February 1974, a rising budget deficit was projected for calendar 1974. The projected increase in the deficit from 1973 to 1974, however, was not due to an expansionary shift in fiscal policy. Rather, the operation of the automatic stabilizers was expected to raise the budget deficit because it was anticipated that the economy would grow less than its potential. The fact that the economic activity was weaker than projected should have caused an even larger deficit automatically at given rates of inflation. In fact, however, there was no automatic fiscal stabilization to cushion the decline in real income since the revenue-reducing effect of lower real incomes was offset by the revenue-increasing effects of inflation. Furthermore, the growth in real Federal spending was reduced. As a result, the actual deficit remained small and showed no tendency to rise until the fourth quarter of 1974.<sup>27</sup>

Ford's 1976 *ERP* offers a more sober assessment of the difficulties associated with managing the stimulus. The report suggests fine-tuning the economy just could not be done:

There is a lesson to be drawn from past policy mistakes. The history of monetary and fiscal policies demonstrates that we have a great deal to learn about implementing discretionary policy changes. Our ability to forecast is at best imperfect, especially in an increasingly complex and interdependent world, and the difficulties in forecasting grow larger as we extend the period for which the forecast is made. . . . We also lack reliable estimates of how long it takes before the economy responds to policies once they are undertaken and how large the response will be. This is especially true now because high rates of inflation in recent years have made price expectations a much more important determinant of consumer and business behavior than they formerly were. . . . With respect to fiscal policy there is the additional complication that countercyclical increases in Government expenditures are difficult to check during later upswings. Because

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<sup>26</sup> Ibid., 24.

<sup>27</sup> Ibid., 59.



countercyclical policy changes may be slow to take hold and then hard to reverse, their effects may extend well past the time when they are most needed. Consequently a significant danger exists that, instead of smoothing economic fluctuations, discretionary changes in policy aimed at demand management may themselves become a source of economic instability. The proper conclusion is not that we should fore swear the use of discretionary policy. . . . But we must be mindful of the great difficulties in successfully executing countercyclical policies.<sup>28</sup>

### *Assessing the 1980–1991 Contractions*

President Jimmy Carter took office in January 1977. Unaware that a recession was just around the corner, but fully aware that the economy was slowing, Carter's 1979 *ERP* focuses on fighting inflation. Unfortunately, a revolution in Iran and a Middle East war between Iran and Iraq hit the U.S. economy with another oil price shock. This time the nominal price doubled. The oil price shocks transmitted higher prices across the economy while severely changing the relative price of energy. As a result, the government installed wage and price controls in an effort to control inflation. The 1980 report summarizes the situation this way:

The principal objective of economic policy in 1979 was to stem accelerating inflation. Restraining aggregate demand with fiscal and monetary policies was a key element of the government's anti-inflation program. It was recognized, however, that monetary and fiscal restraint could not do the job alone. As discussed earlier, the voluntary standards for prices and wages helped to hold down the rise of prices in the broad industrial and service sectors of the economy and to maintain wage restraint. Federal outlays for fiscal 1979 were \$494 billion, an increase of 9.5 percent over fiscal 1978 but well below the 12.1 percent average annual rate of increase from fiscal 1973 through 1978. The Revenue Act of 1978 provided tax relief . . . . The tax package offset the increase in individual income tax rates caused by inflation, and it also encouraged investment in the new and modern plant and equipment needed to improve productivity. These tax and spending programs yielded a unified budget deficit of \$28 billion in fiscal 1979, \$21 billion less than the fiscal 1978 level. The deficit was \$10 billion less than had been originally forecast.<sup>29</sup>

It became more apparent that a recession was in the works, and the 1980 *ERP* describes a truly mixed bag of Fed actions. Apparently, the Fed had first attempted to stimulate the economy only to reverse actions in an attempt to tighten the flow of credit to the economy. While undertaking these actions, the money supply continued to expand apace.

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<sup>28</sup> CEA, *ERP* 1976, 20.

<sup>29</sup> CEA, *ERP* 1980, 49.

The decline in real GNP in the second quarter, combined with uncertainties about the energy situation, led to a widespread belief that an economic downturn had begun. In this environment the Federal Reserve kept monetary policy approximately unchanged. The 9 ½ percent discount rate established in November 1978 was maintained until July; the Federal funds rate was raised 25 basis points to 10 ¼ percent in May and then held at that level until July.<sup>30</sup>

During the third quarter the Federal Reserve took steps that led to higher interest rates. The discount rate was moved up in several stages to 11 percent in mid-September, and the Federal funds rate was raised to 11 ½ percent. From the end of June to mid-September most short-term rates had climbed by almost 200 basis points. Nevertheless both M1 and M2 were growing rapidly, and it was clear that the Federal Reserve's 1979 target ranges would be breached if such high growth rates continued.<sup>31</sup>

The report recognizes that obvious efforts to fine-tune the economy by way of fiscal stimulus can be countered and then some by central bank actions. The report summarizes the challenge:

In most past periods of economic recession both fiscal and monetary policy have been eased significantly. At the present time, however, recession is still only a forecast; it has not yet appeared in overall measures of economic performance. Moreover the economy has recently withstood recessionary pressures far better than most analysts expected. These facts, together with the seriousness of our inflation problem, argue against an easing of policy at this time. Such a move would heighten expectations of inflation and reduce our prospects of making progress toward price stability. . . . Creating an environment conducive to reduced pressures on prices and costs requires restraint in fiscal and monetary policies and great caution in making changes.<sup>32</sup>

Finally, the 1980 recession entered. The short contraction, which began in January 1980 and ended in July, would soon be followed by a 16-month recession beginning in July 1981 and ending in November 1982. The economy was truly rocking and rolling. Inflation was rising at a rapid rate, interest rates were following the same pattern, and the economy seemed caught in a high unemployment period of stagflation. Meanwhile, Ronald Reagan was sworn into office in January 1981.

Reagan's 1982 *ERP* gives heavy treatment to past efforts to fine-tune the economy by way of stimulus and other countercyclical policy actions. But in the spirit of summarizing what might have been learned from these attempts, the report states its findings in decidedly pessimistic terms:

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<sup>30</sup> Ibid., 53.

<sup>31</sup> Ibid., 54.

<sup>32</sup> Ibid., 66.

Although the Federal Government is the appropriate agent for stabilizing the economy, the limits of such action must be understood. This Administration believes that “fine tuning” of the economy—attempting to offset every fluctuation—is not possible. The information needed to do so is often simply not available, and when it becomes available it is quite likely that underlying conditions will already have changed. As a result, a policy of fine tuning the economy is as likely to be counterproductive as it is to be helpful. Though it is necessary for the federal government to have macroeconomic policies, including both monetary and fiscal policies to achieve some desired growth of income, such policies are not suitable for correcting small fluctuations in economic activity.<sup>33</sup>

The report offered a dark summary of the inflation effects of past stimulus efforts.

For at least two decades the government has responded to recessions by pushing up Federal spending and monetary growth to stimulate the economy. Each time this has been done, output has recovered and employment has risen. Meanwhile, however, the rate of inflation has been higher in each trough than in the previous trough, and higher at each peak than at the previous peak.<sup>34</sup>

The administration then attempted to administer strong fiscal and monetary medicine to the economy. It reduced spending. It tightened monetary policy. At the time, the economy fell into the most severe recession since World War II.

Reagan’s 1983 *ERP* extensively discusses the 1981–1982 recession and attempts to explain why the government did not initiate a public works program to reduce unemployment and the pain of the contraction. The report summarizes studies of past public works program efforts and identifies serious lags between the decision to do something and the appearance of results in the economy.

Available evidence suggests that public works programs adopted in past recessions proved counterproductive, and that the inherent capability of public works programs to combat cyclical unemployment is limited.

Public employment programs that produce useful goods or services generally take time to plan and implement. Therefore, such programs often have their greatest effects on public employment long after an economic recovery has begun. For this reason, public employment programs have sometimes exacerbated rather than mitigated cyclical fluctuations in aggregate demand. A study of the Accelerated Public Works program

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<sup>33</sup> CEA, *ERP* 1981, 36.

<sup>34</sup> *Ibid.*, 53.

enacted in September 1962 by the Congress to combat the high unemployment rate of the early 1960s found that the number of jobs created by the program peaked in June 1964, 37 months after the bottom of the recession. More recent experience also confirms that lags in implementation are long. A recent study by the Office of Management and Budget found that 90 percent of the outlays for the local public works projects designed to stimulate recovery from the 1974–75 recession occurred more than 2 ½ years after the trough of the recession. The lags in implementing public works programs result in their having destabilizing effects, since a large share of the resulting spending occurs during periods of economic expansion.<sup>35</sup>

George H. W. Bush assumed office in January 1989. The next recession, which was once again associated with oil price shocks, started in July 1990 and ended in March 1991. This downturn ended a 92-month expansion that allowed ample time for White House economists to assess past stimulus actions. The 1990 *ERP* reviews some difficulties of attempts to manage the economy and concludes that macroeconomic fine-tuning had very limited effectiveness:

Experience has shown that the ability of discretionary macroeconomic policies to move the economy in the right direction at the right time is quite limited. First, assessing the current state of the economy is difficult because economic data are subject to appreciable errors and are generally available only after a considerable lag. Second, economic forecasting is difficult and quite imprecise, limiting the ability of policymakers to anticipate swings in the economy. Third, even if economic fluctuations are forecast correctly, determining the appropriate policy measures is difficult because the economy responds somewhat unpredictably to changes in fiscal and monetary policy. Finally, lags between a policy action and its ultimate effect on the economy imply that timely implementation of a discretionary change in policy frequently may not be possible. To be sure, discretionary policy changes might partly offset unusually large and sustained economic fluctuations. But, in general, the ability of discretionary macroeconomic policies to contribute to economic stability is quite limited.<sup>36</sup>

The 1991 *ERP*'s discussion of the recession and what might be done to counter the slowdown holds firm to the 1990 report's conclusion. Instead of trying to push a stimulus package through Congress, the White House describes the downside of such actions and stays the course:

Additional discretionary changes in fiscal policy designed to offset the temporary effects of the price shock would not be appropriate, although tax reform is still needed to improve incentives for saving and investment. Discretionary changes in the instruments of fiscal policy, such as changes in public spending, require legislative approval, which typically takes many months. It may well be that the effects of the recent oil price shock

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<sup>35</sup> CEA, *ERP* 1983, 39–40.

<sup>36</sup> CEA, *ERP* 1990, 64.

will not last as long as the gestation period for a discretionary fiscal policy response. As a result, automatic fiscal policy responses are likely to be more effective than discretionary responses in addressing oil price increases and many other types of shocks.<sup>37</sup>

Alas, the spirit is willing, but the flesh is weak. As the economy continued to struggle in 1991, the government pushed aside its commitment against short-run tinkering. The president requested a stimulus. This time, however, Congress refused to move. The 1992 *ERP* briefly summarizes the situation:

The need for a fiscal policy that would provide more direct economic stimulus became increasingly apparent when the already sluggish recovery showed signs of faltering in late 1991. In January 1992 the President submitted a set of proposals designed to provide a short-term stimulus to the economy as well as to enhance long-term growth. The proposals for short-term stimulus included a cut in the capital gains tax rate, a temporary investment tax allowance, simplified and enhanced depreciation for companies paying taxes under the corporate alternative minimum tax (AMT) rules, a temporary tax credit for first-time homebuyers, allowing individual retirement account (IRA) balances to be used for first-time home purchases, and two additional proposals aimed at providing a boost to real estate investment and values. Additional proposals were directed at boosting the Nation's long-term economic performance through higher investment and enhanced productivity. The Congress did not pass the President's proposals.

The President was, however, able to take unilateral steps that did not require the consent of the Congress, including the reduction of tax withholding and the acceleration of spending for certain programs already in place. If the President's broad set of proposals had been adopted, growth and employment would have been higher—and unemployment lower—than they actually were during 1992. The positive benefits of the proposals would have carried through to future years, boosting investment, productivity, economic growth, and the Nation's standard of living.<sup>38</sup>

President Bush's 1993 *ERP* continues to beat a dead horse. After a lengthy analysis of the relative merits of stimulus activities, including a discussion of monetary policy and a summary regarding stimulus limitations, the section concludes that more should have been done:

Overall, it appears that recent fiscal and monetary policy have been less expansionary than in the typical postwar recession and early recovery. It should be remembered, however, that in many cases past policies proved to be too expansionary and worsened inflation in the subsequent recovery. Nonetheless, the weakness of the economy—indicated by both the fall in output during the recession and the substantial decline in core inflation over the

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<sup>37</sup> CEA, *ERP* 1991, 93.

<sup>38</sup> CEA, *ERP* 1992, 55.

past year—and the prospects that the weakness would continue made a case for somewhat greater stimulus from fiscal and/or monetary policies during the recession and early recovery. Even perfect policies probably could not have prevented a recession, given the myriad factors impeding growth during this period, but they may have softened the recession and speeded up the recovery.<sup>39</sup>

### *The 2000–2009 Recessions*

Bill Clinton assumed office in January 1993. There was no recession during his eight years in office. George W. Bush was sworn into office in January 2001. The next recession arrived in March 2001 and ended in November the same year. Included in the interval was the September 11 terrorist attacks and the beginning of a major arms buildup for what would become a nine-year war in Iraq and a continuing conflict in Afghanistan. The administration forgot any past assessments of stimulus limitations, and the president successfully moved an extensive package of tax cuts and rebates through Congress. The report summarizes the package this way:

The President laid a strong foundation for growth in 2001 with the Economic Growth and Tax Relief Reconciliation Act. This package provides a powerful stimulus for future growth, with reductions in marginal tax rates that improve incentives and leave in the hands of Americans a greater share of their own money to spend on consumption, education, and retirement investment. The first reduction in marginal tax rates was effective for 2001 and was reflected in lower withholding during the second half of the year. In addition, the new 10 percent tax rate bracket, carved out of the beginning of the 15 percent rate bracket, was reflected in rebate checks totaling \$36 billion, which were mailed to 85 million taxpayers during the second half. The timing of these reductions in withholding and rebates proved propitious: they added significant economic stimulus by boosting purchasing power in the hands of consumers during a period of sluggish economic activity. The 2001 tax rate reductions were just the first step in a series of income tax rate reductions to be phased in by 2006; by that year the 39.6 percent tax rate will have dropped to 35 percent, the 36 percent rate to 33 percent, the 31 percent rate to 28 percent, and the 28 percent rate to 25 percent.<sup>40</sup>

The 2003 *ERP* offers a positive assessment of the prospects for making “well-designed and well-timed” tax cuts for stimulating the economy in the face of decades of past evidence to the contrary. The report details the president’s multipronged effort to counter the 2001 recession. By the time the report was published, the economy was on its feet again, making it easy to conclude that just the right stimulus recipe had been applied:

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<sup>39</sup> CEA, *ERP* 1993, 115.

<sup>40</sup> CEA, *ERP* 2002, 44.

All told, before the recent business cycle, many economists believed that monetary policy made the use of discretionary fiscal policy unnecessary to stabilize the economy. . . . The experience of the past three years, however, shows that well-designed and well-timed tax cuts are a useful complement to expansionary monetary policy. Over this period, three bills have made significant changes to the personal and corporate tax systems. The President came into office with proposals for permanently reducing taxes on work and saving. With the budget surplus having reached its highest level relative to GDP in half a century, the proposals were aimed predominantly at reducing tax-based impediments to long-term growth. The proposals resulted in the Economic Growth and Tax Relief Reconciliation Act (EGTRRA), which the President signed into law in June 2001. In the wake of the terrorist attacks of September 2001 and continuing softness in the economy, the Congress passed the Job Creation and Worker Assistance Act (JCWAA), which the President signed into law in March 2002. And, in early 2003, with the pace of economic growth still falling below its potential and the labor market lagging behind, the President proposed and the Congress enacted the Jobs and Growth Tax Relief Reconciliation Act (JGTRRA), which the President signed into law in May. These three bills provided substantial short-term stimulus to economic activity and helped put the economy on the road to recovery.<sup>41</sup>

All seemed well until the credit market meltdowns and collapse of the housing construction sector delivered the Great Recession, so named because of its record magnitude and global effect. It began in December 2007 and ended June 2009. Perhaps because of the magnitude of the devastation imparted to financial, commodity, and labor markets, policy makers scrambled to counteract the contraction's gale force winds. Whatever the government may have learned from past business cycles and from the general conclusion that countercyclical fiscal action was a serious gamble with doubtful results, politicians and their appointees pulled all the stops, opened money valves, bailed out failing financial and industrial firms, and took a series of actions aimed at stimulating new economic activity. But the government took none of these actions until it recognized the contraction's magnitude.

Bush's 2008 *ERP* again brings us face-to-face with the knowledge problem and gives a sense of how government underestimated the seriousness of the problem. The report was issued in January of that year. Later, the NBER dated the recession's start at December 2007. This report describes the Great Recession as a subprime problem, which the president felt justified some stimulus action:

In the wake of mounting problems with the performance of *subprime* (defined as higher risk) mortgages, financial markets from August onward were unsettled because of concerns about the risk entailed in holding some types of mortgage-backed securities, as well as fears about the financial health of some firms and the possibility of contagion to

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<sup>41</sup> CEA, *ERP* 2003, 43–45.

the nonfinancial economy. To insure against the downside risks from these financial and housing-related developments, the President called for an economic growth package to boost consumption, business investment, and labor demand.<sup>42</sup>

Lacking a crystal ball that might illuminate future economic trends, the administration cautiously suggested that markets can adjust and that it is often better to resist the temptation to steer the economy. The report puts it this way:

Markets naturally self-correct, rewarding good strategies and punishing bad ones. Government actions may be less effective at differentiating between the two and may prevent markets from creating products that benefit consumers. In addition, any government actions mitigating the outcomes of risky behavior may create perverse incentives for reckless decisions by borrowers and investors who may come to rely on government interventions.<sup>43</sup>

We all know that things rapidly became much worse. Indeed, as banks began to fail nationwide, housing markets collapsed, and the value of housing-related bonds plummeted, stimulus action became the order of the day. The 2009 *ERP* captures the seriousness of the economic downturn but sharply underestimates the magnitude and duration of the forming recession.

Despite rapid fiscal and monetary policy action in response to weakening economic conditions, the economy entered into recession at the end of 2007, ending 6 years of expansion and a record 52 months of uninterrupted job growth. Several factors contributed over many years to create the credit difficulties that reached crisis proportions late in the year. The magnitude of the crisis required unprecedented policy responses to reduce the extent of the damage to the economy. These policy actions have laid a foundation for a strong economic recovery early in the term of the next Administration. Most market forecasts suggest the weakness will continue in the first half of 2009, followed by a recovery beginning in the second half of 2009 that will gain momentum in 2010 and beyond.<sup>44</sup>

The report describes the stimulus legislation passed by Congress and its expected beneficial effects:

An economic stimulus package was proposed by the President in January and passed by Congress in February, authorizing about \$113 billion in tax rebate checks to low and middle-income taxpayers and allowing 50 percent expensing for business equipment

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<sup>42</sup> CEA, *ERP* 2008, 25.

<sup>43</sup> *Ibid.*, 77.

<sup>44</sup> CEA, *ERP* 2009, 19.



investment. The stimulus likely boosted GDP growth in the second and third quarters above what it might have been otherwise, but its influence faded by the end of the year.<sup>45</sup>

Yet, in what turned out to be its most overly optimistic statement, the report indicates that “the unemployment rate is expected to increase to an average of 7.7 percent for 2009. The expansion in 2010–2011 is projected to be vigorous, bringing the unemployment rate down to 5 percent by 2012.”<sup>46</sup> Unfortunately, the economy did not get the message. The unemployment rate rose to 10.9 percent in 2009 and did not fall below 8.6 percent in 2011. The prospects for 5 percent unemployment in 2012 look impossibly bleak.

The 2009 *ERP* extensively discusses the financial market difficulties and steps being taken to deal with the possible collapse of financial institutions. It also details steps taken by the Fed in conjunction with the Department of the Treasury. But in the end, the report is more than just cautiously optimistic about the fine-tuned stimulus package that had been applied to the economy. This summary statement makes the point:

The primary purpose of these [stimulus] actions was to provide short-term, counter-cyclical stimulus to the economy by encouraging short-run growth in consumer spending and business investment. Tax rebates were chosen as the best way to provide this short-term stimulus because of the speed with which they put money into the hands of people most likely to spend it. Similarly, the business tax incentives were designed to encourage firms to accelerate purchases of capital equipment, making such purchases in 2008 rather than waiting until 2009 or later. Compared to the paths consumption and investment would have otherwise followed, the rebates appear to have boosted real personal consumption expenditures in the second quarter of 2008 and the accelerated depreciation was expected to boost business investment throughout 2008.<sup>47</sup>

Barack Obama assumed office in January 2009. With the nation facing the collapse of major financial institutions and economic turmoil, the incoming Obama administration and the outgoing Bush administration cooperated to create a smooth transition. All along, the growing severity of the budding recession was becoming more apparent. The 2010 *ERP* describes the Obama administration’s immediate steps to counter the negative trends:

Less than one month after taking office, we enacted the most sweeping economic recovery package in history: the American Recovery and Reinvestment Act of 2009. The Recovery Act not only provided tax cuts to small businesses and 95 percent of working families and provided emergency relief to those out of work or without health insurance; it also began to lay a new foundation for long-term growth. With investments in health

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<sup>45</sup> Ibid., 33.

<sup>46</sup> Ibid., 22.

<sup>47</sup> Ibid., 160.

care, education, infrastructure, and clean energy, the Recovery Act has saved or created roughly two million jobs so far, and it has begun the hard work of transforming our economy to thrive in the modern, global era. Because of these and other steps, we can safely say that we have avoided the depression many feared. Our economy is growing again, and the growth over the last three months was the strongest in six years.<sup>48</sup>

In the face of the most severe recession in 75 years, multiple pages of the 2010 *ERP* explain the economic situation and the basis and expectations for the Obama administration's actions. Fiscal stimulus was the centerpiece of the administration's multipronged efforts.

The signature element of the Administration's policy response to the crisis was the American Recovery and Reinvestment Act of 2009 (ARRA). The President signed the Recovery Act in Denver on February 17, just 28 days after taking office. At an estimated cost of \$787 billion, the Act is the largest countercyclical fiscal action in American history. It provides tax cuts and increases in government spending equivalent to roughly 2 percent of GDP in 2009 and 2 ¼ percent of GDP in 2010. To put those figures in perspective, the largest expansionary swing in the budget during Franklin Roosevelt's New Deal was an increase in the deficit of about 1 ½ percent of GDP in fiscal 1936. That expansion, however, was counteracted the very next fiscal year by a contraction that was even larger.

The fiscal stimulus was designed to fill part of the shortfall in aggregate demand caused by the collapse of private demand and the Federal Reserve's inability to lower short-term interest rates further. It was part of a comprehensive package that included stabilizing the financial system, helping responsible homeowners avoid foreclosure, and aiding small businesses through tax relief and increased lending. The President set as a goal for the fiscal stimulus that it raise employment by 3 ½ million relative to what it otherwise would have been.<sup>49</sup>

Later, there would be considerable debate regarding whether the stimulus had achieved the president's goal, which the administration had interpreted to mean that the nation's payrolls would add 3.65 million jobs and the unemployment rate would not rise above 8 percent. Unfortunately, the stimulus achieved neither.

The 2010 *ERP* details other actions taken to counter recession forces. The Cash for Clunkers program provided subsidies to individuals trading older vehicles for new and more fuel-efficient cars. This temporary program provided up to \$4,500 toward the purchase of a new vehicle, absorbed \$1 billion in taxpayer funds, and sharply hastened the purchase and production of new autos and light trucks, in some cases robbing sales from the future. The housing sector received a

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<sup>48</sup> CEA, *ERP* 2010, 4–5.

<sup>49</sup> *Ibid.*, 511–555.

stimulus with a temporary \$8,000 tax credit for first-time home buyers. Both programs increased sales in the affected sectors, which later adjusted to lower long-run growth paths.

With instability in the housing, finance, labor, credit, and manufacturing production markets, the 2010 *ERP* had plenty to report on stimulus actions being taken at the time. It carefully describes various econometric models used to estimate the effects of some of the actions. This discussion, which might be of more interest to professional economists than to others, implicitly addresses the gap between promises of job and GDP growth and what actually occurred. For example, the counterfactual analysis provides the following for GDP growth:

[The estimates] suggest that the Recovery Act contributed approximately 2.8 percentage points to *growth* in the second quarter, 3.9 percentage points in the third, and 1.8 percentage points in the fourth. As a result, this approach suggests that the *level* of GDP in the fourth quarter was slightly more than 2 percent higher than it would have been in the absence of the stimulus.<sup>50</sup>

When applied to labor markets, the statistical model indicated the following:

This statistical procedure implies that given the economy's behavior through the first quarter of 2009 and its usual dynamics, one would have expected job losses of about 597,000 per month in the second quarter, 513,000 in the third quarter, and 379,000 in the fourth. Thus, actual employment as of the middle of the second quarter (May) was approximately 300,000 higher than one would have projected given the normal behavior of the economy; as of the middle of the third quarter (August), it was about 1.1 million higher; and as of the middle of the fourth quarter (November), it was about 2.1 million higher.<sup>51</sup>

Interestingly, the model suggested the stimulus had almost achieved the president's goal of adding 3.65 million jobs. But instead of adding to the current employment level, the jobs identified were potential losses that the stimulus prevented.

Obama's 2011 *ERP* summarizes additional stimulus steps and their effects:

The Recovery Act was enacted when U.S. real GDP was contracting at an annual rate of more than 6 percent and employment was falling by more than 700,000 jobs a month. The Recovery Act's spending provisions, tax cuts, and aid to states and individuals were designed to cushion the fall in demand caused by the financial crisis and the subsequent decline in consumer and business confidence, household wealth, and access to credit. As of the third quarter of 2010, the Council of Economic Advisers (CEA) estimates that the

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<sup>50</sup> *Ibid.*, 65–66. Italics in original.

<sup>51</sup> *Ibid.*, 69.

Recovery Act has raised the level of GDP, relative to what it otherwise would have been, by 2.7 percent and raised employment, relative to what it otherwise would have been, by between 2.7 million and 3.7 million jobs.<sup>52</sup>

In addition to the nearly \$800 billion major stimulus act, across 2009 and 2010 President Obama effected a flurry of stimulus and reform measures that the *ERP* describes as lifting U.S. economic performance. These measures included the Affordable Care Act; Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act; Hiring Incentives to Restore Employment Act; Education Jobs and Medicaid Assistance Act; Small Business Jobs Act; Startup America Initiative, National Export Initiative; State Small Business Credit Initiative; Home Affordable Refinance Program; Housing Affordable Modification Program; and Startup America. Some of these measures were temporary, while others were permanent, and some were repackaged versions of older programs, while others were freshly designed.

If we use just the roughly \$800 billion stimulus as the sole source of an additional 3.7 million jobs protected from loss, then the cost per job saved is \$216,000. We have no estimate of the number of years the employment protection covers. But if that number is five, say from 2008 through 2013, then the cost per job protected per year is roughly \$43,000.

As 2011 came to an end, the nation was experiencing meaningful growth in industrial production, higher retail sales, major export growth, and private sector employment growth, but it was still experiencing high unemployment levels and moribund construction activity. Later in this report, we address whether the massive stimulus programs made a difference.

#### What We Learned from the Review

Our review of issues of the *Economic Report of the President* that coincide with recessionary periods has uncovered key dimensions of the development and practice of White House stimulus policy. We first find the Eisenhower administration's reluctance to go beyond automatic stabilizers when recessions occur. Then, with what seem to be successful efforts in dealing with the 1953–1954 recession, the 1956 *ERP* speaks more optimistically about stimulus prospects. When the 1957–1958 recession hit, the Eisenhower White House officials seemed far more confident about using stimulus tools. Confidence rose with the Kennedy administration. But dealing with the 1960–1961 recession proved to be extraordinarily challenging because the Fed seemed to cause the recession. At this point in the story, the stimulus challenge becomes complicated by another challenge: how to avoid inflation. But throughout the reports, we find recognition of the knowledge problem, the timing problem, and the challenge of coordinating fiscal and monetary actions. In short, there is no lack of evidence that stimulus is an extraordinarily complex process and that any success may be better assigned to luck than to science.

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<sup>52</sup> CEA, *ERP* 2011, 40.

The 1969–1970 recession presented a nettlesome timing problem to the Nixon administration. The 1969 *ERP* clearly acknowledges the recognition–implementation lag and the perverse effects of improper stimulus timing. But the 1973–1975 recession seemed to be the high point for confidence in stimulus. Oil shocks, changes in world monetary system rules, rising inflation, and price controls affected what was perhaps one of the more complex recessions. Even so, the 1973 and 1974 *ERPs* suggest that the administration applied just the right amount of stimulus. Unfortunately, things got worse for President Nixon and for the economy.

President Ford’s *ERPs* speak to the difficulties of addressing high inflation and an underperforming economy. Taking a dimmer view of stimulus fine-tuning, the 1975 and 1976 *ERPs* worry as much about dealing with inflation as about stimulating the economy. In a sense, the high point of stimulus belief seemed to have passed, but only for a short time. The next recession always seemed to place pressure on “doing something.” Carter entered the White House in 1977 and immediately faced a recession, again inspired partly by an oil price shock. By this time, the *ERP* recognizes the complications of dealing with inflation and subpar economic performance. It also recognizes that fiscal policies implemented by presidents and Congress can be counteracted completely by monetary policy. Fiscal policy stimulus is not a one-horn band.

President Ronald Reagan’s 1981 White House entry brought with it an even dimmer view of stimulus thinking, perhaps the dimmest view of those covered in our survey. Stating outright that fine-tuning does not work, the Reagan period *ERPs* focus instead on the difficulties of purging inflation from the economy. From 1982 to 1983, the nation underwent one of the most severe recessions in modern times. Reagan stayed the course. There were no stimulus programs. President George H. W. Bush restated the Reagan administration’s dim view of stimulus when he assumed office in 1989, but held firm only until the next recession. The 1990–1991 recession forced Bush’s hand. Once again, stimulus rose from the ashes, and the government viewed it as a viable policy tool. When Clinton arrived in office in 1993, stimulus arrived with him. Congress approved a major tax reform package along with welfare reform. There were no recessions during Clinton’s time in office.

George W. Bush’s administration dealt with the recession that followed September 11. But before confronting those challenges, Bush pushed a tax-cut led stimulus package through Congress just in time to meet a recession that began in March 2001. From that point forward, there was massive expansion of government spending and high growth in deficits. After the financial crisis late in 2007, government intervention, whether for stimulus or otherwise, rose to new highs at the end of the Bush years. No matter the past learning about stimulus, timing, and intertwined monetary offsetting actions, the Obama administration embraced stimulus as the only logical way to deal with recessions.

Stimulus confidence seems to have risen from a low level in 1953–1961 to a relative high point in the Nixon years. Then, stimulus confidence fell as presidents examined the difficulties posed by timing as well as the challenge that seemed to come from related inflation. The Reagan and Ford years marked low points in stimulus confidence. Crises always seem to bring renewed interest in stimulus. This was the case with the Carter years and associated oil embargoes and high inflation. Stimulus confidence stayed on the rise through the Carter years, fell to a low during the Reagan administration, languished during the Clinton years, rose with George W. Bush, and reached an all-time high under Obama. All along, hope seemed to spring eternal in the hearts and minds of those who felt called to fine-tune the economy. Despite past frustrations in attempting to leap knowledge, timing, and coordination hurdles, each successive generation of White House officials seemed to believe that “this time is different.”<sup>53</sup>

We turn now to a more systematic empirical analysis of the effectiveness of stimulus programs across the years 1953 through 2010.

### 3. Past Efforts to Estimate Effectiveness

Past researchers have attempted to identify and estimate the effectiveness of federal government stimulus efforts. We use the term “effectiveness” advisedly. In the studies we review, effectiveness means a statistical relationship that links government spending to later growth in GDP, employment, or income. Effectiveness does not mean that those attempting to solve the knowledge, timing, and coordination problems have indeed cut the stimulus Gordian knot, for as indicated in our *ERP* review, that is another problem. Nor does the term imply that it is possible to generate a successful stimulus outcome without later having negative effects on the economy, such as inflation and higher debt burdens to be borne by future taxpayers.

Empirical studies on the subject are numerous and historically deep. To make the survey tractable, we consider studies that have been done in the last two years. We selected seven studies for direct review based on the researchers’ prominence, on the techniques used, and for the purpose of showing a wide range of findings. We review an additional 17 studies indirectly (one of the researchers in our direct review sample surveyed these studies). Thus, we provide the findings of 24 empirical studies.

We find a wide variety of models and approaches used in examining the relationship between federal government spending increases or tax decreases and economic performance, where the latter is generally measured by GDP growth. Most studies that attempt to estimate how many new dollars of GDP are generated for a one dollar increase in government spending (or decrease in federal taxes) focus on the spending and tax multiplier. If the multiplier is greater than zero,

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<sup>53</sup> The quotation is a deliberate play on the title of an excellent book that documents multiple-century efforts by governments to deal with financial collapse. See Carmen M. Reinhart and Kenneth S. Rogoff, *This Time Is Different: Eight Centuries of Financial Folly* (Princeton, NJ: Princeton University Press, 2011).

then increases in government spending (or decreases in taxes), on net, lead to increases in GDP. Although GDP growth is a key variable for many studies, others focus on employment growth, which is the more sensitive variable to the average person. Surveys of this empirical work reveal a wide range of multiplier estimates.

We begin with Valerie Ramey's study that both surveys the literature and focuses on the most recent experience.<sup>54</sup> Her study has been selected for publication in the American Economics Association's *Journal of Economic Literature*, an action that typically signals high-quality work that provides an extensive survey. Ramey's literature review and her own work, which examines a 50-state economic response to federal stimulus spending, conclude that the range of multiplier values that should be most appropriate to the 2008 stimulus package lies between 0.8 and 1.5. By "most appropriate," Ramey means that the values she prefers arise from statistical studies of experiences that involve stimulus efforts that were temporary and deficit-financed. Federal policy makers emphasized the temporary nature of the spending and gave no indication that the spending would have to be financed by future tax increases or by reductions in federally funded activities.

Ramey summarizes 17 studies that draw on federal government aggregate data in their investigations of federal stimulus programs. The multipliers in these 17 studies range from -0.3 to 3.6. In the case of the negative multiplier estimate, increases in government spending led to decreases in GDP. Some studies examine military spending alone; others focus on all federal spending. Yet other studies identify multipliers for an economy in recession or examine data that includes periods of recession and growth. Ramey also summarizes findings for 10 studies that examine data for the 50-state response to federal stimulus spending. Here she finds income multipliers that range from -0.57 to 2.0.

The Ramey survey also pays attention to stimulus employment effects. Some of the studies she examines estimate the number of additional jobs created by stimulus in certain time periods and, in some cases, the cost per job based on the federal spending package that stimulated job growth. For studies that cover 2008 to 2010, estimated federal costs per job range from \$25,000 to \$400,000, with differences in the estimates determined partly by the sector studied and the data sources used. For example, the \$400,000 estimate is associated with military contractor activity generated by military spending. The \$25,000 and other estimates close to that one are based on studies of the more inclusive economy.

In another recent study that focuses strictly on the 2008 stimulus, Feyrer and Sacerdote perform a 50-state analysis in an effort to estimate stimulus effects for various employment categories.<sup>55</sup>

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<sup>54</sup> Valerie A. Ramey, "Can Government Purchases Stimulate the Economy?" *Journal of Economic Literature* 49, no. 3 (2011): 673–685.

<sup>55</sup> James Feyrer and Bruce Sacerdote, "Did the Stimulus Stimulate? Real Time Estimates of the Effects of the American Recovery and Reinvestment Act" (NBER Working Paper No. 16759, National Bureau of Economic Research, Cambridge, MA, February 2011).

Their work examines state employment growth in association with the stimulus funds spent in states over the 20 months after Congress passed the stimulus bill in February 2009.<sup>56</sup> They also examine county level data and monthly employment growth across states in association with stimulus spending. They find a spending multiplier that ranges in value from 0.5 to 1.0. They also find significant differences in stimulus effects across various employment categories, such as negative employment growth for teachers but positive effects for construction workers. Their report estimates an average stimulus cost of \$170,000 per job gained.

A 2011 study by Conley and Dupor that focuses solely on the 2008 ARRA effects finds that job losses in some sectors associated with state stimulus dollars more than offset job gains in other sectors.<sup>57</sup> They specifically examine sectors that combine health and education, leisure and hospitality, and business and professional services to form one group, the combined services sector; all government employment as another sector; and goods producing industries as the last sector. They find no effect for the goods producing sector, an increase in government employment by as much as 900,000 jobs with stimulus funding, and a loss of as many as 1,435,000 jobs in the combined services sector. The Conley and Dupor study results are weak statistically but include anecdotal evidence regarding state substitution of stimulus funding for previously budgeted state revenues. Their work emphasizes that money is fungible and that funds received in one state may augment planned spending by the amount received whereas another state will cut planned expenditures by as much as or more than the stimulus funds obtained.

In a more specialized 2011 study, Gabriel Chodorow-Reich and others focus strictly on stimulus induced increases in state Medicaid funding.<sup>58</sup> Their study examines the employment effect of a \$60 billion increase in state matching funds that the federal government distributed by the end of June 2010. There was a wide variation in the per capita funding received across the states, which helped provide useful statistical properties to their study. The researchers find that the stimulus did indeed stimulate, and that a \$100,000 increase in state Medicaid funding was associated with an increase of 3.8 jobs of one year duration, of which 3.2 were outside the government and health and education sectors.<sup>59</sup> These figures translate to a cost per job of \$26,000.

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<sup>56</sup> Dylan Matthews, "Did the Stimulus Work? A Review of the Nine Best Studies on the Subject," Ezra Klein's Wonkblog, *The Washington Post*, August 24, 2011, [http://www.washingtonpost.com/blogs/ezra-klein/post/did-the-stimulus-work-a-review-of-the-nine-best-studies-on-the-subject/2011/08/16/gIQAThbiJ\\_blog.html](http://www.washingtonpost.com/blogs/ezra-klein/post/did-the-stimulus-work-a-review-of-the-nine-best-studies-on-the-subject/2011/08/16/gIQAThbiJ_blog.html).

<sup>57</sup> Timothy Conley and Bill Dupor, "The American Recovery and Reinvestment Act: Public Sector Jobs Saved, Private Sector Jobs Forestalled," Departments of Economics, University of Western Ontario, Canada, and Ohio State University, May 17, 2011.

<sup>58</sup> Gabriel Chodorow-Reich et al., "Does State Fiscal Relief During Recessions Increase Employment? Evidence from the American Recovery and Reinvestment Act," *American Economic Journal: Economic Policy*, forthcoming, <http://ssrn.com/abstract=1960632>.

<sup>59</sup> *Ibid.*, 24.



In a 2011 publication, John A. Taylor examines data for three stimulus programs that occurred in 2001, 2008, and 2009.<sup>60</sup> The programs included both tax rebates and increased spending. Taylor finds that individuals receiving tax rebates used most of the funds to pay off debt and increase savings; the rebates did not significantly stimulate consumption spending. State governments receiving funds substituted those funds largely for planned spending using their own revenues and also used the funds to support transfer programs already in place. Taylor reaches the following conclusion:

In sum, this empirical examination of the direct effects of the three countercyclical stimulus packages of the 2000s indicates that they did not have a positive effect on consumption and government purchases, and thus did not counter the decline in investment during the recessions as the basic Keynesian textbook model would suggest. Individuals and families largely saved the transfers and tax rebates. The federal government increased purchases, but by only an immaterial amount. State and local governments used the stimulus grants to reduce their net borrowing (largely by acquiring more financial assets) rather than to increase expenditures, and they shifted expenditures away from purchases toward transfers.<sup>61</sup>

Taylor ends his paper by speaking to another important question: Without stimulus spending, would the economic situation have deteriorated even more? He concludes that the stimulus programs did not reduce job losses or add new jobs.

In an earlier paper, Freedman and others of the International Monetary Fund (IMF) use the IMF's Global Integrated Monetary and Fiscal Model to compute short-run multipliers of fiscal stimulus measures and long-run crowding-out effects of higher debt.<sup>62</sup> Their work is noteworthy in that their findings relate to the world economy and include estimates for short-run stimulus effects as well as long-run effects when the stimulus leads to an increase in debt that must be financed. The model addresses both fiscal and monetary policy actions and includes a financial accelerator mechanism that accounts for difficulties business firms encounter when seeking additional credit to finance investments. The authors also assume that consumer budget constraints limit flexibility during a downturn.

Freedman and others summarize their findings this way:

We find that the multipliers of a two-year fiscal stimulus package range from 1.3 for government investment to 0.2 for general transfers, with targeted transfers closer to the upper end of that range and tax cuts closer to the lower end. In the presence of monetary

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<sup>60</sup> John A. Taylor, "An Empirical Analysis of the Revival of Fiscal Activism in the 2000s," *Journal of Economic Literature* 49, no. 3 (2011): 686–702.

<sup>61</sup> *Ibid.*, 701.

<sup>62</sup> Charles Freedman et al., "Fiscal Stimulus to the Rescue? Short-Run Benefits and Potential Long-Run Costs of Fiscal Deficits" (IMF Working Paper WP/09/255, International Monetary Fund, Washington, DC, 2009).

accommodation and a financial accelerator mechanism multipliers are up to twice as large, as accommodation lowers real interest rates, which in turn has a positive effect on corporate balance sheets and therefore on the external finance premium. As for crowding-out, a permanent 0.5 percentage points increase in the U.S. deficit to GDP ratio leads to a 10 percentage points increase in the U.S. debt to GDP ratio in the long run. Servicing this higher debt raises the U.S. tax burden and world real interest rates in the long run, thereby eventually reducing U.S. output by between 0.3 and 0.6 percent, with the size of the output loss again depending on the distortionary effects of the fiscal instrument. These output losses are larger than the corresponding short-run stimulus effects for the same instruments. But much more importantly, they are also permanent. The real interest rate effect (but not the tax burden effect) affects the rest of the world equally and accounts for output losses of around 0.2 percent.<sup>63</sup>

To summarize, the study indicates that the stimulus multiplier varies widely depending on the targeted use of funds. Such things as investment in infrastructure carry a 1.3 multiplier whereas transfer payments for such things as unemployment benefits have a multiplier of 0.2. When funded by debt that must be financed over many years, the investment multiplier falls by as much as 50 percent and the transfer multiplier becomes negative. We call special attention to the crowding-out finding. Here, we find a long-run price must be paid for short-run stimulus. Indeed, the long effects swamp the short-run gains. There is no such thing as free stimulus.

We close our review of stimulus effectiveness with Barro and Redlick.<sup>64</sup> Their research has received much attention because of its low multiplier value estimate and because Barro has criticized the Obama administration's stimulus package and promises.<sup>65</sup> The multipliers the Obama administration assumed when evaluating the \$787 billion stimulus average 1.48.<sup>66</sup> The multipliers were time-phased on a quarterly basis for 1 to 16 quarters. The Barro–Redlick multiplier estimate ranges from 0.6 to 0.7, which is less than half the size of the Romer–Zandi assumption. In the Romer–Zandi case, a \$787 billion increase in spending would lead to a \$1.16 trillion increase in GDP. In the Barro–Redlick case, the same spending increase would yield a \$550 billion increase, if the 0.7 estimate is used.<sup>67</sup> If we adopt the Freedman study estimates, there will be no long-term gain. Indeed, stimulus spending will cause economic losses overall.

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<sup>63</sup> Ibid., 26.

<sup>64</sup> Robert J. Barro and Charles J. Redlick, "Macroeconomic Effects from Government Purchases and Taxes" (NBER Working Paper No. 15369, National Bureau of Economic Research, Cambridge, MA, September 2009).

<sup>65</sup> Matthews, "Did the Stimulus Work?"

<sup>66</sup> On this, see Christina Romer and Jared Bernstein, *The Job Impact of the American Recovery Investment Plan* (Washington, DC: Office of the Vice President-Elect, January 9, 2009).

<sup>67</sup> Barro and Redlick examine data from as early as 1916 with various inclusive years that reach to 2006. They focus solely on the effect of federal defense expenditures, arguing (1) that there is too little variation in nondefense spending to obtain statistically meaningful findings and (2) that nondefense spending is itself stimulated by the nation's GDP growth, which then leads to a serious problem when trying to explain GDP growth. Barro and Redlick make clear that their robust findings are for defense spending, leaving open the possibilities for different multiplier values when more inclusive spending is analyzed.

## Summary of Findings

Recent researchers found a wide variation of expenditure multipliers. In some cases, the multiplier was negative, which means that stimulus spending reduced GDP. In others, the multiplier was as high as 2.0, meaning that a \$1 increase in government spending led to a \$2 increase in GDP. Some studies accounted for Federal Reserve actions; others represented no financial or monetary sector. Only the IMF study accounted for the effect of permanent debt financing.

The research we surveyed also estimates the cost per job generated by stimulus funding. The estimates ranged from \$25,000 to \$170,000 in stimulus funding for one additional job generated for one year. Recall that calculations based on estimates in the 2011 *ERP* indicate an average cost per job of \$43,000. For the sake of discussion, we will use this optimistic number, recognizing that the multiplier could be zero or negative in the long run, which means that no matter how much the government spends, it would add not one job to the economy.

Now, using \$43,000 as the cost per job gained, let us do some arithmetic. If individuals did not obtain jobs by way of stimulus, they would be eligible for unemployment compensation. For the sake of simplifying the example, assume that unemployment benefits are funded with federal dollars, which is to say we are in the extended benefit period. To put these numbers into perspective, we will focus on two states, New York and West Virginia. Unemployment compensation and earning opportunities vary significantly across the 50 states; we chose these states to illustrate differences that may be observed in higher and lower per capita income locations.

We consider New York first. We use average compensation and average wages earned, since the two are interrelated. According to Bureau of Labor Statistics data, the average unemployment compensation paid in New York State is \$298 per week or \$15,496 a year. Let us assume an unemployed person in New York is receiving that money from federal funds.<sup>68</sup> Then, a stimulus program that costs \$43,000 per job generated provides a job for that person. The job pays the New York average of \$1,159 per week or \$60,268 per year based on 2010 data.<sup>69</sup> Taxpayers will no longer pay the unemployment compensation but will pay the cost of the stimulus job generation. The stimulus cost of \$43,000 minus the unemployment compensation cost of \$15,496 leaves a net cost of \$27,504. But the individual is producing goods and services worth \$60,268. Taking away the net cost of \$27,504 yields a \$32,764 gain. The margin is large. But suppose instead of \$43,000 per job generated, the cost is \$140,000, as estimated in one study we reviewed. The loss to the economy would be \$64,236.

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<sup>68</sup> The unemployment compensation data are for 3Q 2011. See Bureau of Labor Statistics, *Unemployment Insurance Data Summary*, [http://workforcesecurity.doleta.gov/unemploy/content/data\\_stats/datasum11/DataSum\\_2011\\_3.pdf](http://workforcesecurity.doleta.gov/unemploy/content/data_stats/datasum11/DataSum_2011_3.pdf).

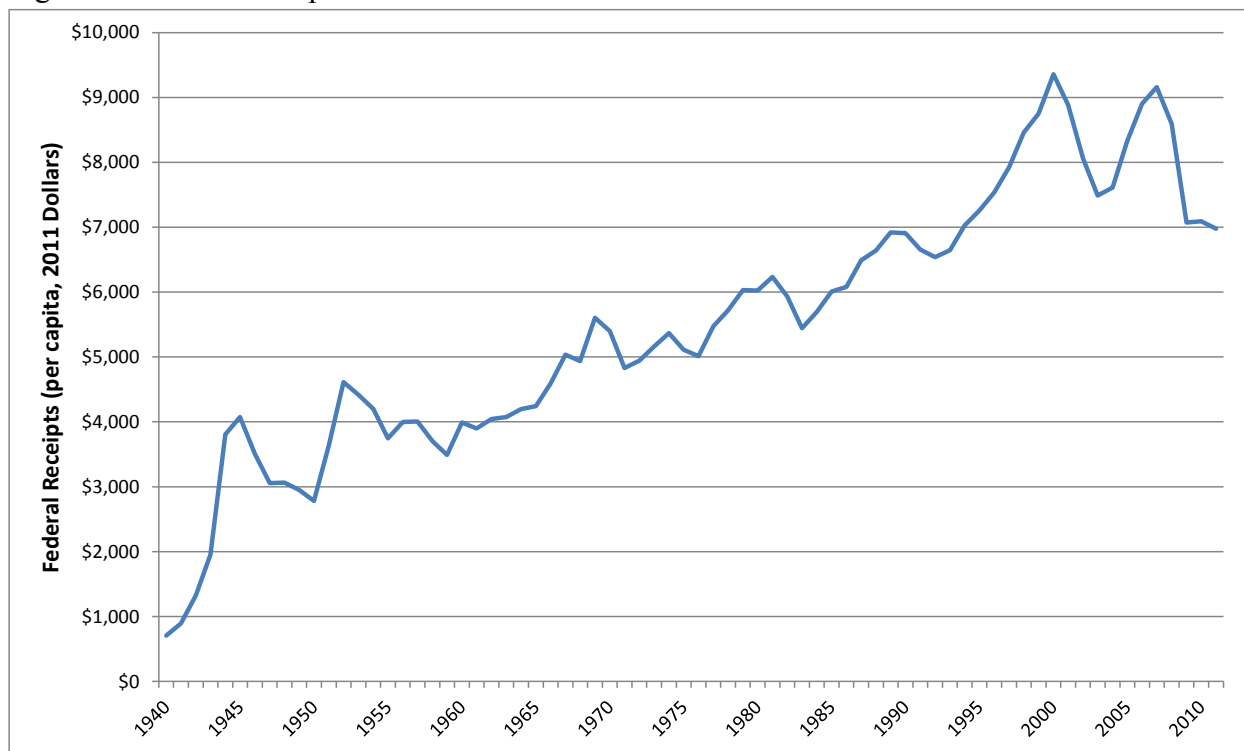
<sup>69</sup> Data on average wages are for 2010. See Bureau of Labor Statistics, *Quarterly Census of Employment and Wages, Employment and Wages, Annual Averages 2010*, <http://www.bls.gov/cew/ew10table5.pdf>.

Now let us consider West Virginia. The average unemployment compensation there is \$256 per week or \$13,312 per year, and the average West Virginia wage is \$728 per week or \$37,856 annually. Again, assume that \$43,000 in stimulus spending generates a job that pays the average West Virginia wage. The individual taking that job is no longer paid \$13,312 in unemployment compensation, which is a saving to taxpayers, and produces goods and services worth \$37,856. There is a \$24,544 net gain in earnings over unemployment compensation, but at a cost of \$43,000. The West Virginia situation generates an economic loss of \$18,456. Again, that loss would expand significantly if the stimulus cost of the job rose to \$140,000.

There is more to either story—far more. First, the government targets stimulus spending to particular occupations and sectors, such as teachers, first responders, and healthcare workers. The choices made may reflect the public choice realities of gaining and keeping off. In any case, targeted stimulus causes distortions in the favored sectors through a displacement of resources from those sectors not favored. Overall, economic productivity can suffer. Then, at some point, the stimulus funds must be paid for, or the associated debt must be refunded by issuing new debt to pay off old debt. Government borrowing can displace private sector borrowing. When this happens, temporary economic activity shoves aside activity that is more sustainable. In any case, there is no such thing as a free stimulus.

#### **4. Stimulus Spending, the Federal Budget, and the Economy**

When the economy finally emerges from recession, the government often calls for higher taxes to close the budget gap that the stimulus opened. Politicians often point to the deficit as the rationale for increasing taxes, yet evidence suggests that deficits do not make a reasonable justification for higher taxes. Figure 2 shows federal receipts from all sources on a per capita and inflation-adjusted basis. In 1940, the federal government collected a little more than \$700 per person in today's dollars. By 2007, federal revenues had risen to almost \$9,200 per person before falling to just under \$7,000 per person in 2011. Claims that the budget deficit problem is due to too little revenue ring hollow considering that the government collects, in real terms, 10 times the revenue per person that it did 70 years ago.

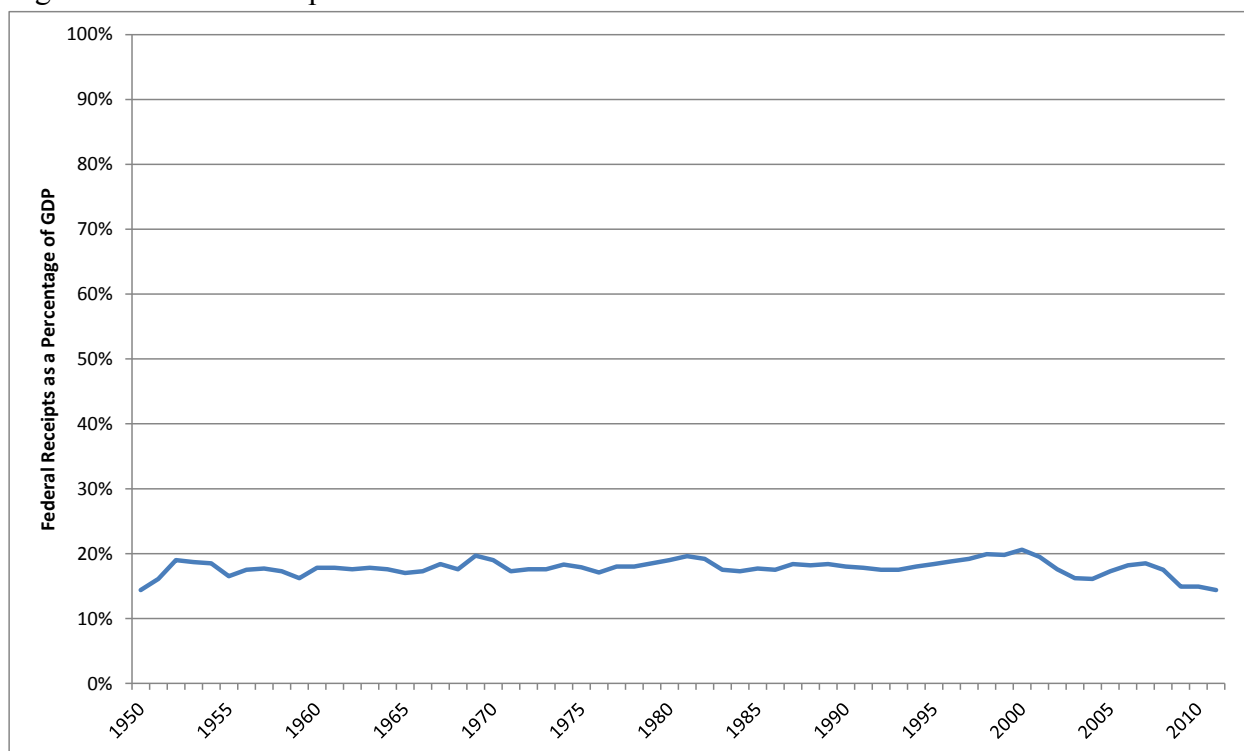
Figure 2. Federal Receipts Since 1940<sup>70</sup>

The counterargument is that tax revenue, though growing, is not growing fast enough and that the government has no choice but to raise tax rates in response to budget deficits. Interestingly, federal tax revenues have remained relatively constant as a fraction of GDP (figure 3), suggesting that the federal government does not have much control over the slice of the economic pie that it collects in revenue.

Barro and Redlick calculate the average marginal income tax rate in the United States through 2006.<sup>71</sup> Their calculations include federal income taxes and Social Security and Medicare payroll taxes. They account for self-employment taxes and for the income ceiling on Social Security taxes. The median average marginal tax rate from 1950 through 2006 was 31.0 percent. From 1950 through 1976 and again in 2005, the marginal rate was below the median and averaged 25.6 percent. From 1977 through 2004, the marginal rate exceeded the median and averaged 33.8 percent (figure 4).

<sup>70</sup> Office of Management and Budget (OMB), Historical Tables, *Table 1.3, Summary of Receipts, Outlays, and Surpluses or Deficits in Current Dollars, Constant (FY 2005) Dollars, and as Percentages of GDP: 1940–2017*, <http://www.whitehouse.gov/omb/budget/Historicals/>.

<sup>71</sup> Barro and Redlick, “Macroeconomic Effects from Government Purchases and Taxes.”

Figure 3. Federal Receipts Relative to GDP Since 1950<sup>72</sup>

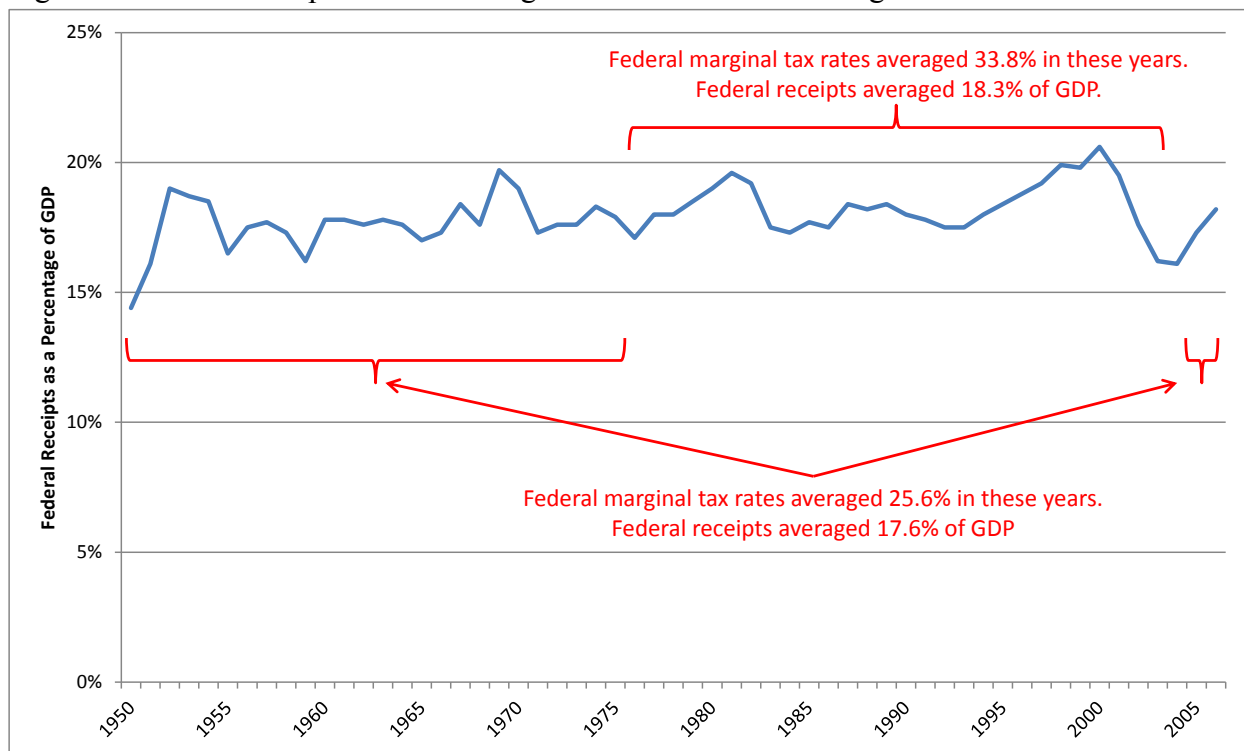
In the above-median years, marginal tax rates were (on average) 8.3 percentage points greater than were marginal tax rates in the below-median years. However, in the above-median years, federal receipts (as a fraction of GDP) averaged only 0.7 percentage points more than in the below-median years. This finding suggests that changes in tax rates have little effect on tax revenues. In 2009, federal outlays were 25 percent of GDP and federal receipts were 15 percent of GDP. Based on the numbers in figure 4, to increase federal receipts enough to balance the budget in 2009, the government would have had to increase marginal rates by almost 120 percentage points! A tax increase this large would actually cause revenue to decline, however. Assuming the average marginal federal tax rate in 2009 was around 30 percent, the most the government could do—even in theory—would be to raise marginal rates by 70 percentage points. At that point, the average marginal tax rate would be 100 percent and the average person would have no incentive to work.

The reason tax revenue remains a relatively constant 18 percent of GDP may be explained by the Laffer curve, which is based on the notion that after some point, disincentives from higher tax rates are so discouraging that economic agents, at the margin, abandon their wealth-creating activities. Alternately, constant tax revenues may be due to Congress buying support for tax increases by writing more tax loopholes into the code; it may be due to a greater incentive to shelter income from taxes as tax rates rise, or it could be due to any one of many other factors.

<sup>72</sup> OMB, Historical Tables, Table 1.3.

Reasons aside, it is clear that, historically, these and other reasons have created the net effect of holding tax revenue to a relatively constant fraction of GDP.

Figure 4. Federal Receipts as a Percentage of GDP in Periods of High versus Low Tax Rates<sup>73</sup>



A reasonable counterargument is that what really matters is tax revenue, not tax revenue as a fraction of GDP. Those data are somewhat more revealing. Figure 5 shows federal receipts per capita (adjusted for inflation) compared to the top federal marginal income tax rate. The data show a clear trend—in years in which the top income tax rate was higher, federal receipts were lower. It is possible that the data reveal the federal government's *response* to tax receipts—when tax receipts are low, the federal government is compelled to raise rates in an attempt to raise revenue. One way to control for this effect is to compare the top income tax rate to federal receipts *in future years*.

<sup>73</sup> Ibid.

Figure 5. Top Federal Income Tax Rates Compared to Per-capita, Inflation-adjusted Federal Receipts.<sup>74</sup>

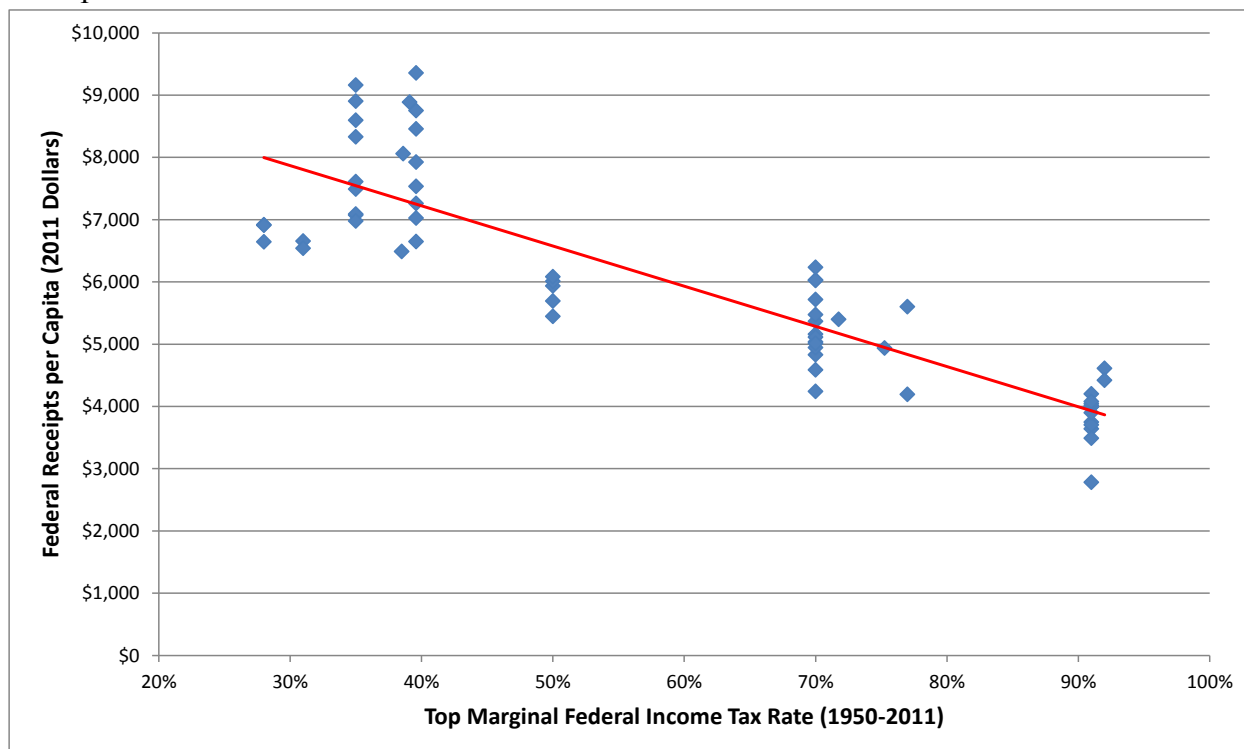
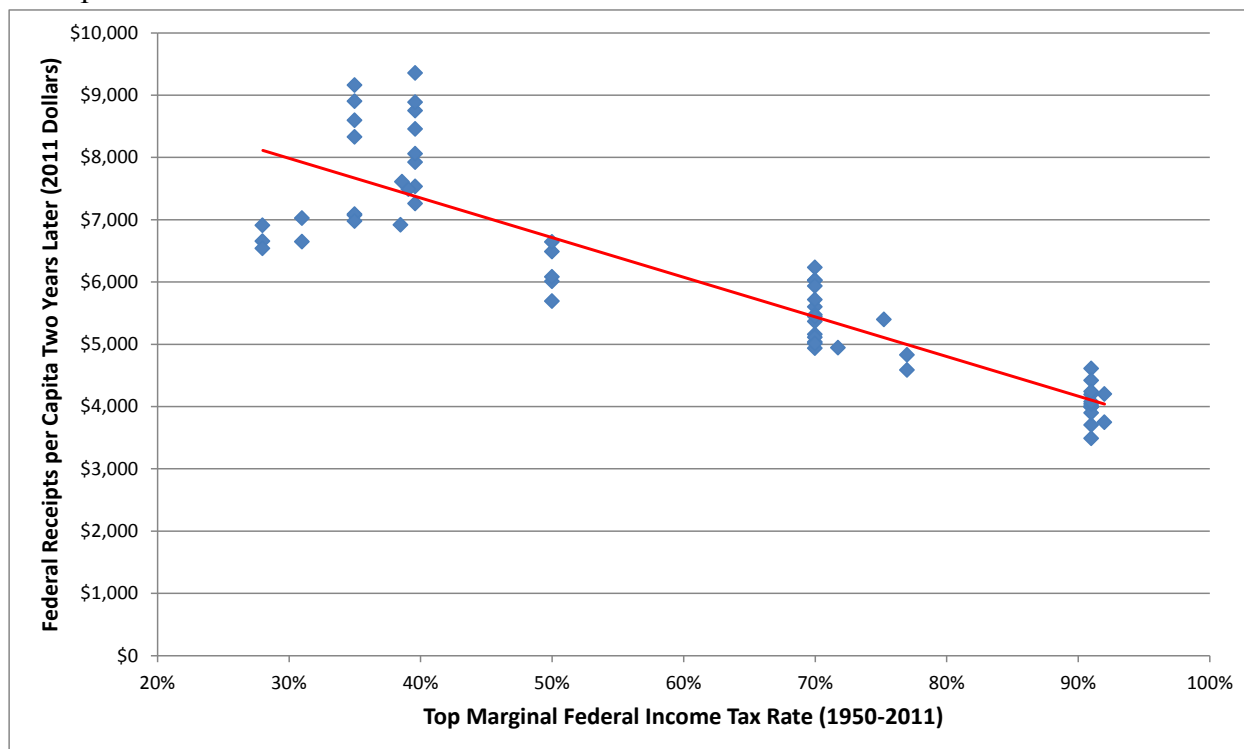


Figure 6 shows the relationship between the top income tax rate and tax revenues per capita two years later. The same negative relationship appears. In fact, the negative relationship appears (with very little change in the slope) for federal receipts one, three, and four years into the future as well.

<sup>74</sup> Barro and Redlick, "Macroeconomic Effects from Government Purchases and Taxes"; OMB, Historical Tables, Table 1.3.



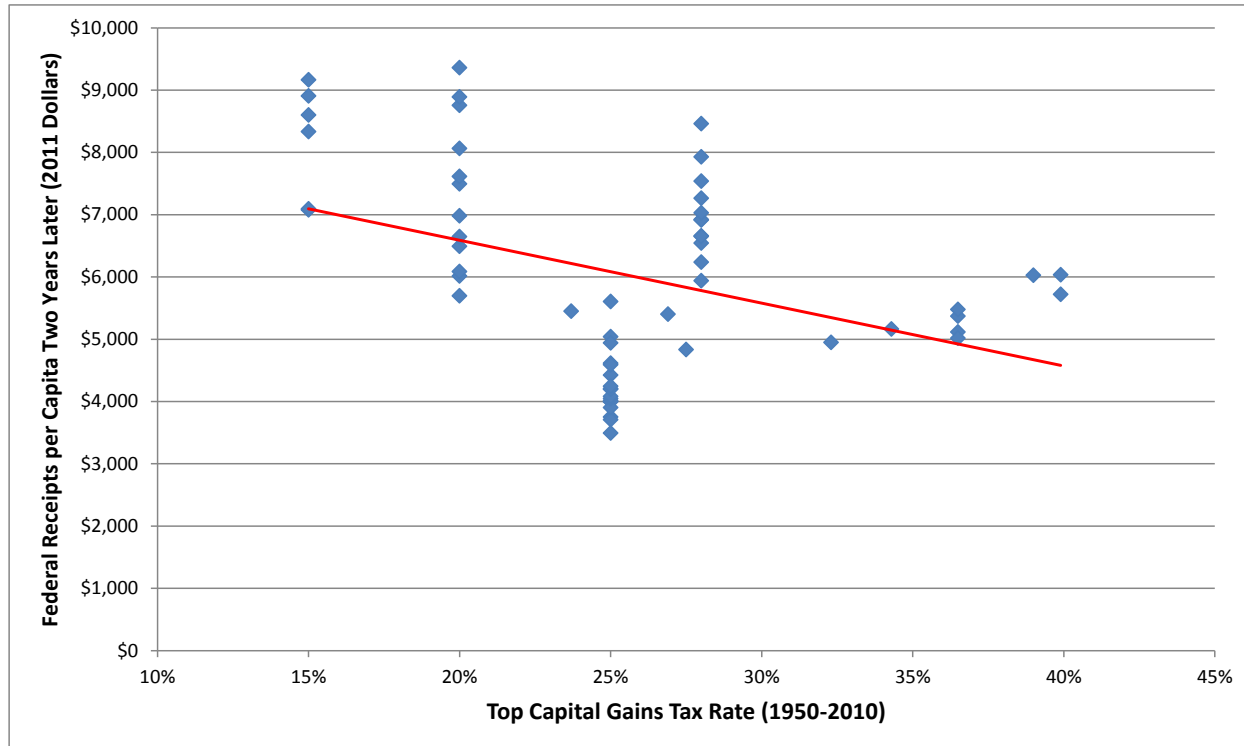
Figure 6. Top Federal Income Tax Rates Compared to Per-capita, Inflation-adjusted Federal Receipts Two Years Later.<sup>75</sup>



he same negative relationship appears for the top capital gains tax rate (figure 7) for the average effective corporate income tax rate (figure 8).<sup>76</sup> One of the few positive relationships is between the average marginal income and payroll tax rates and federal receipts per capita (figure 9). Contrasting figure 6 and figure 9 suggests that the lower and middle classes represent the real source of federal receipt gains. While increasing tax rates on the rich results in reduced revenue, increasing tax rates on the nonrich results in increased revenue. Given the government's penchant for defining down "millionaire" to include those at the low end of six-figure incomes suggests that the government is well aware that the lower and middle classes represent the last frontier of untapped revenues.

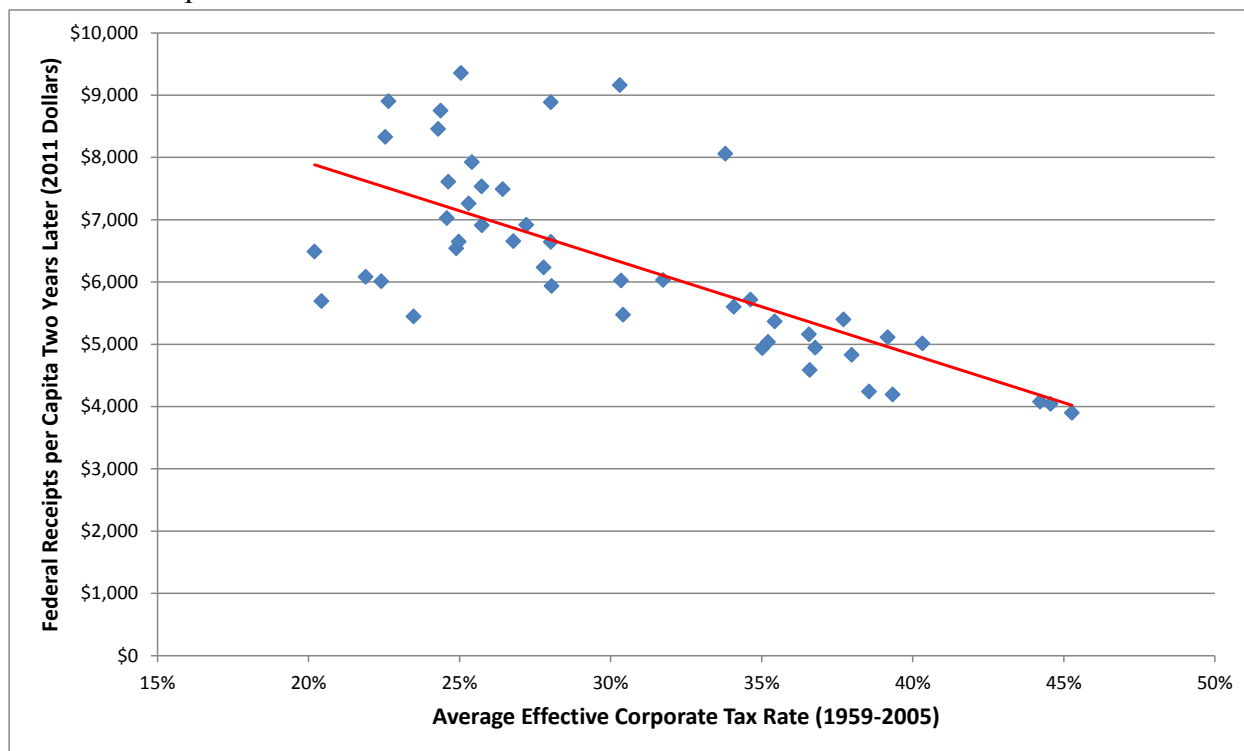
<sup>76</sup> Differences in the years covered in the data sets are due to data availability.

Figure 7. Capital Gains Tax Rates Compared to Per-capita, Inflation-adjusted Federal Receipts Two Years Later.<sup>77</sup>



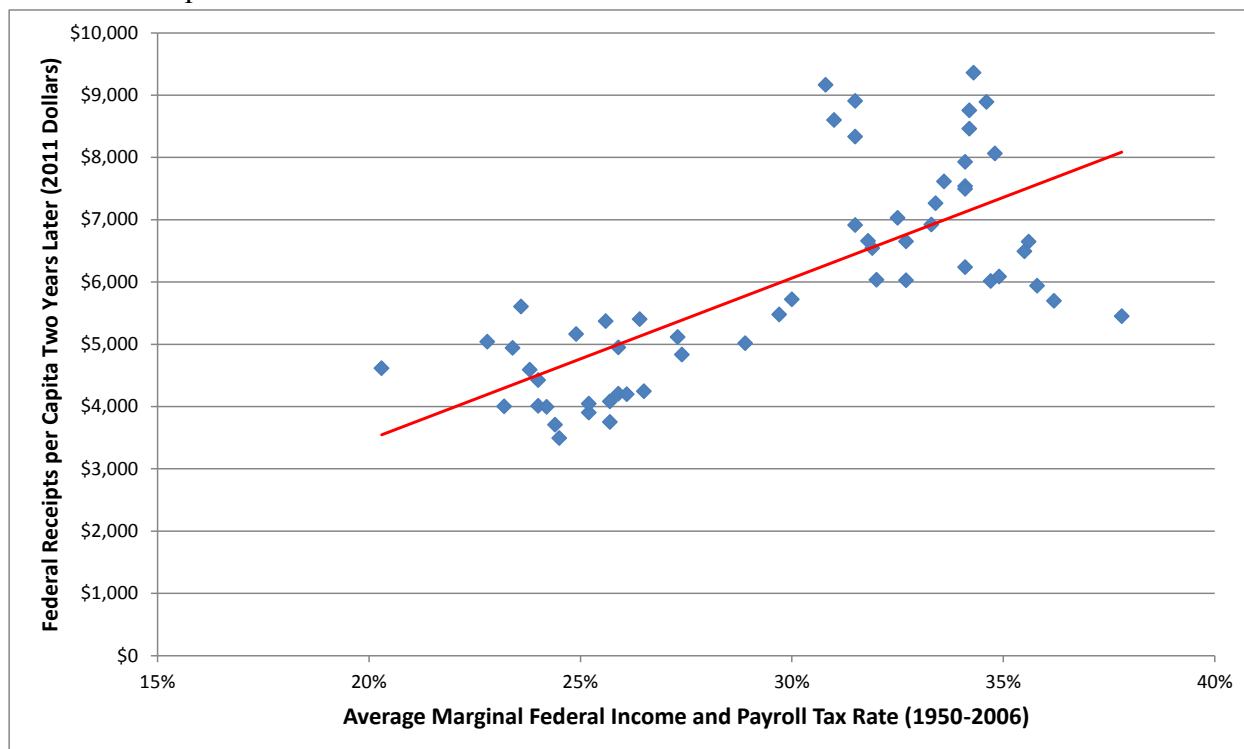
<sup>77</sup> Barro and Redlick, "Macroeconomic Effects from Government Purchases and Taxes"; OMB, Historical Tables, Table 1.3.

Figure 8. Average Effective Corporate Tax Rates Compared to Per-capita, Inflation-adjusted Federal Receipts Two Years Later.<sup>78</sup>



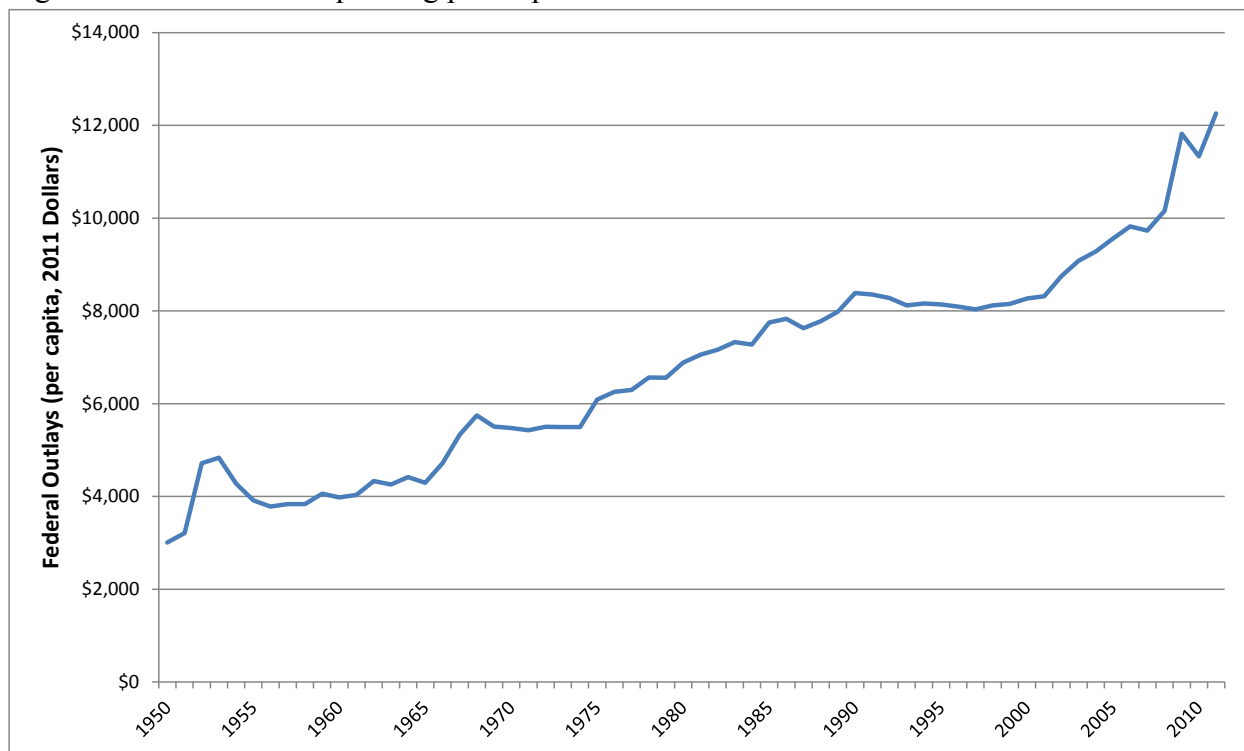
<sup>78</sup> Barro and Redlick, "Macroeconomic Effects from Government Purchases and Taxes"; OMB, Historical Tables, Table 1.3.

Figure 9. Average Marginal Income Tax Rates Compared to Per-capita, Inflation-adjusted Federal Receipts Two Years Later.<sup>79</sup>



While history suggests that the government has far less ability to increase its revenue than politicians would have us believe, history also shows that the government has no difficulty increasing its spending. In 1950, the federal government spent \$3,000 per person in today's dollars. By 2010, that figure had risen to more than \$12,000 (figure 9). In 60 years, the federal government's spending on a per person and inflation-adjusted basis quadrupled. In nominal terms, per person federal spending rose almost 4,300 percent from 1950 to 2010. To put that in perspective, health care costs (as measured by the Census Bureau's medical care price index) rose by less than 2,500 percent over the same period while consumer prices rose slightly more than 800 percent.

<sup>79</sup> Barro and Redlick, "Macroeconomic Effects from Government Purchases and Taxes"; OMB, Historical Tables, Table 1.3.

Figure 10. Real Federal Spending per Capita Since 1950.<sup>80</sup>

Some increased spending was intentional stimulus spending, some was unintentional stimulus spending (that is, the government coincidentally increased spending at the same time that the economy was in recession), and some of the increased spending was automatic because of mandated expenditures (like Social Security retirement benefits) being tied to consumer inflation. Rather than tease out which federal outlays were expressly intended as stimulus spending, let us compare changes in economic growth to changes in government spending, regardless of whether government expressly intended those changes as stimulus spending. Ultimately, what we want to know is how changes in government spending affect economic growth. Altering what we call the spending has no bearing on the spending's economic effects.

<sup>80</sup> OMB, Historical Tables, Table 1.3.

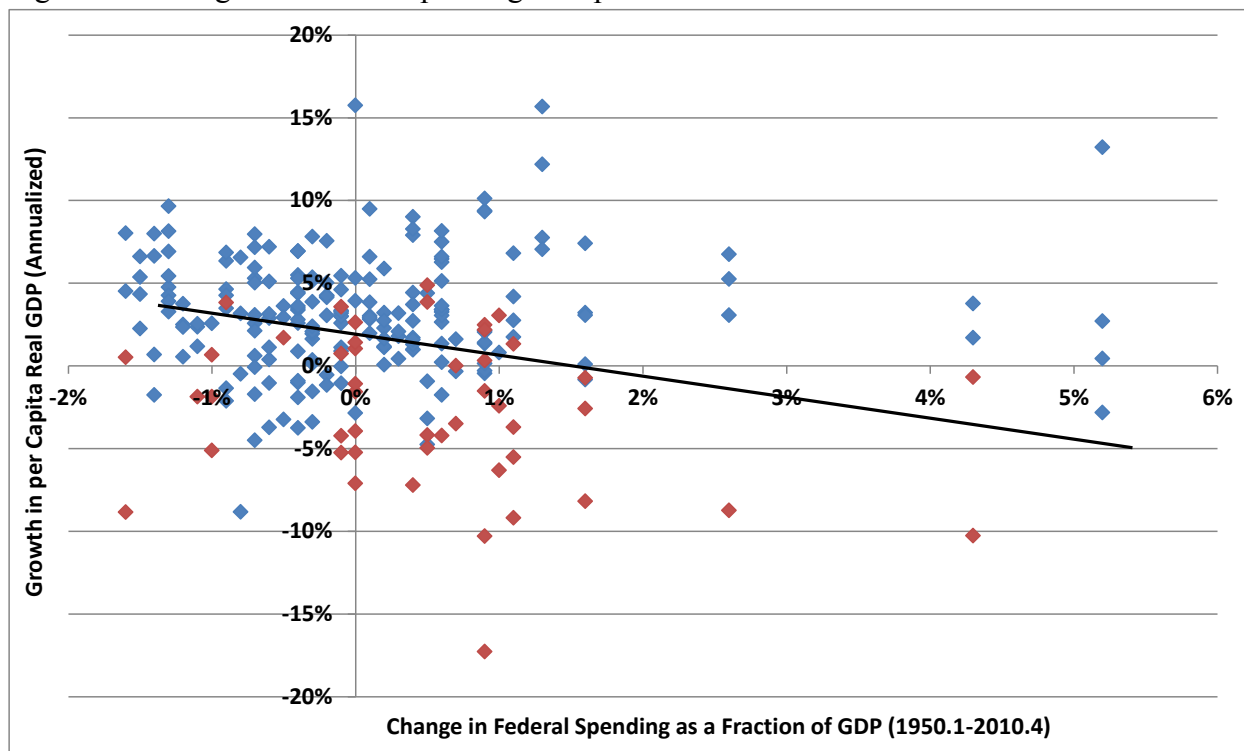
Figure 11. Changes in Federal Spending Compared to Economic Growth.<sup>81</sup>

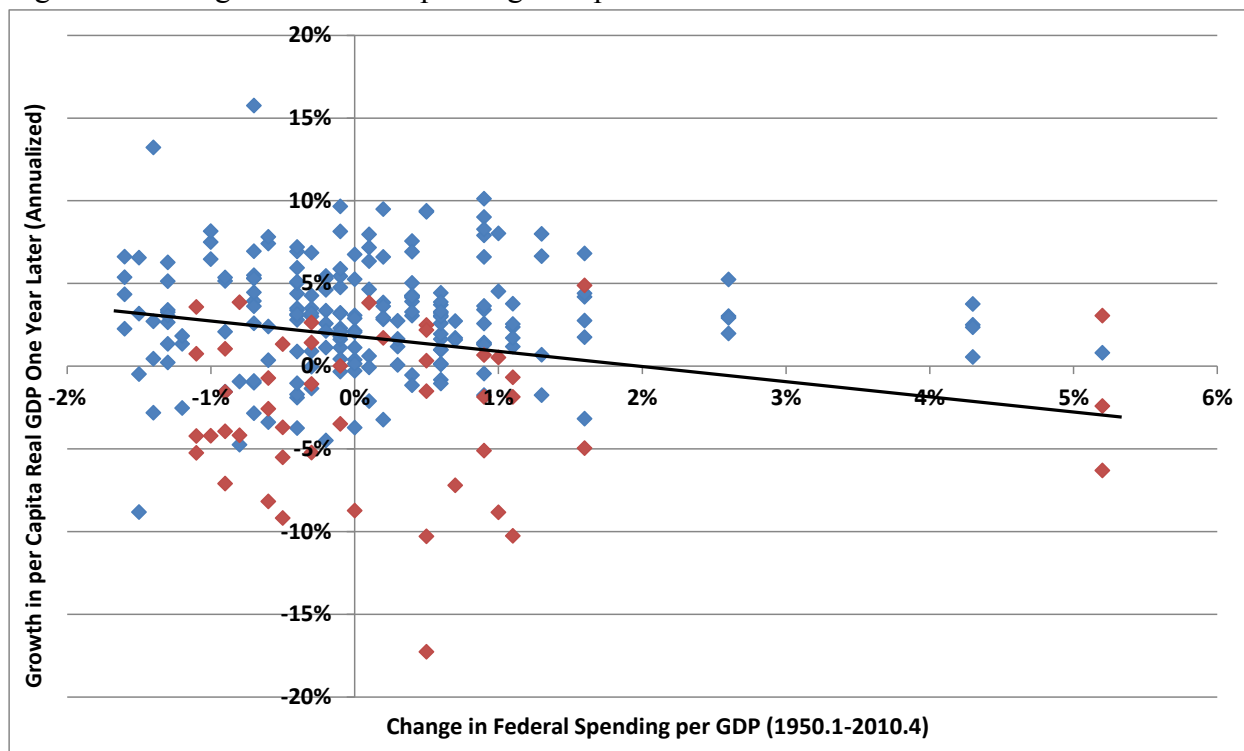
Figure 11 compares changes in federal spending (as a fraction of GDP) to real per capita economic growth over the period 1950 through 2010. If the government employed Keynesian policy, which calls for the government to increase spending during recessions and to decrease spending during expansions, and could respond instantaneously to changes in the business cycle, then we would expect to see a negative relationship between contemporaneous economic growth and government spending like that shown in figure 11. The negative relationship would arise because when the economy was in recession, the government would increase spending, and when the economy was growing, the government would cut back on spending. This negative contemporaneous relationship would reflect the pursuit of Keynesian policy wherein changes in the business cycle today elicit changes in government spending today. However, if Keynesian theory held, we should also expect to see a positive relationship between government spending now and economic growth in the future. This positive lagged relationship would reflect the effectiveness of Keynesian policy wherein changes in government spending today cause changes in economic growth in the future. When the government opens the spending taps, the economy (according to Keynes) should subsequently grow, and when the government closes the taps, the economy should subsequently contract.

Reality does not reflect this theory. Figure 12 shows the relationship between changes in federal spending and real per capita economic growth one year in the future. The relationship appears to

<sup>81</sup> National Bureau of Economic Research (NBER), "U.S. Business Cycle Expansions and Contractions," <http://www.nber.org/cycles.html>; OMB, Historical Tables, Table 1.3.

be negative, though it is statistically indistinguishable from a flat trend line. In short, at a one-year time horizon, historical data do not reveal the positive relationship between spending and economic growth that Keynesians would have us believe.

Figure 12. Changes in Federal Spending Compared to Economic Growth One Year Later.<sup>82</sup>



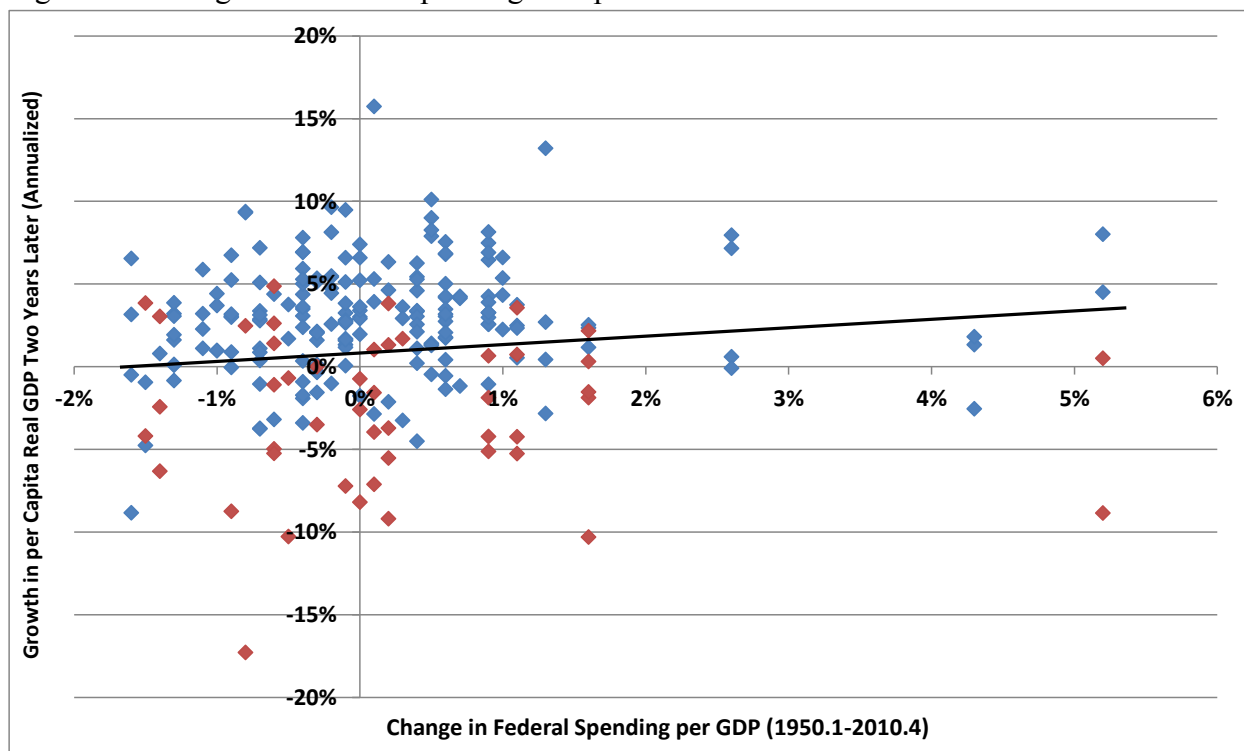
It is possible that it takes more than a year for government spending to affect the economy. Comparing changes in federal spending to economic growth two years later reveals a slightly positive relationship, but again the relationship is statistically indistinguishable from a flat trend line (figure 13). Extending the time horizon out as far as 10 years reveals relationships between government spending and economic growth that are sometimes slightly positive (for 2-, 3-, and 9-year horizons) and sometimes slightly negative (for 1-, 4-, 5-, 6-, 7-, 8-, and 10-year horizons), but always statistically zero.

A counterargument is that what really matters is the relationship between stimulus spending and economic growth during recessions. Although it is unclear that Keynesian theory would support such a claim, one can nonetheless look to the data for possible evidence. If we restrict our vision to recessions only (the red dots in figures 11–13), the same story emerges. There is no significant relationship between changes in government spending during recessions and economic growth at any point from one to 10 years later. In summary, regardless of the time horizon and regardless of whether the economy is in recession or expansion, the data exhibit no evidence of stimulus spending having any effect on economic growth.

<sup>82</sup> NBER, “U.S. Business Cycle Expansions and Contractions”; OMB, Historical Tables, Table 1.3.

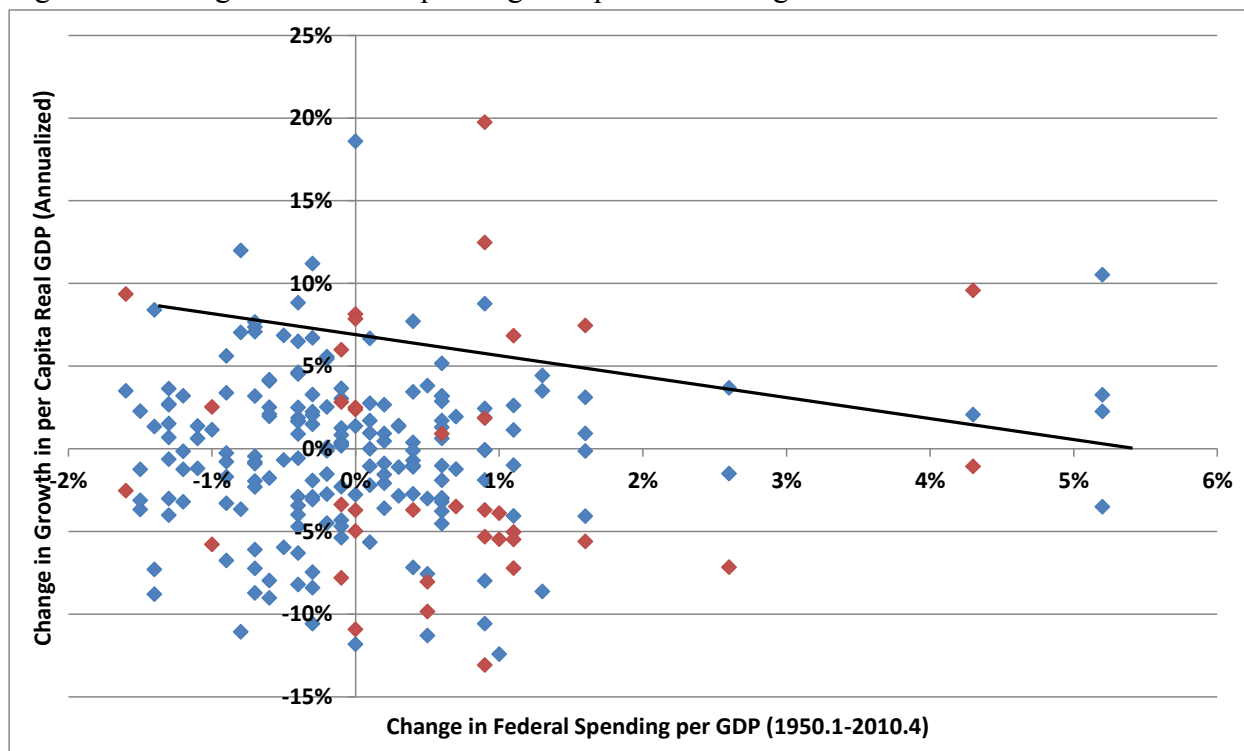
One could argue that because of a persistent baseline growth in per capita GDP, changes in federal spending should be compared to changes in per capita GDP growth. That comparison yields the same absence of results as do the previous comparisons. Figures 14 and 15 show the contemporaneous and one-year lagged relationships.

Figure 13. Changes in Federal Spending Compared to Economic Growth Two Years Later.<sup>83</sup>



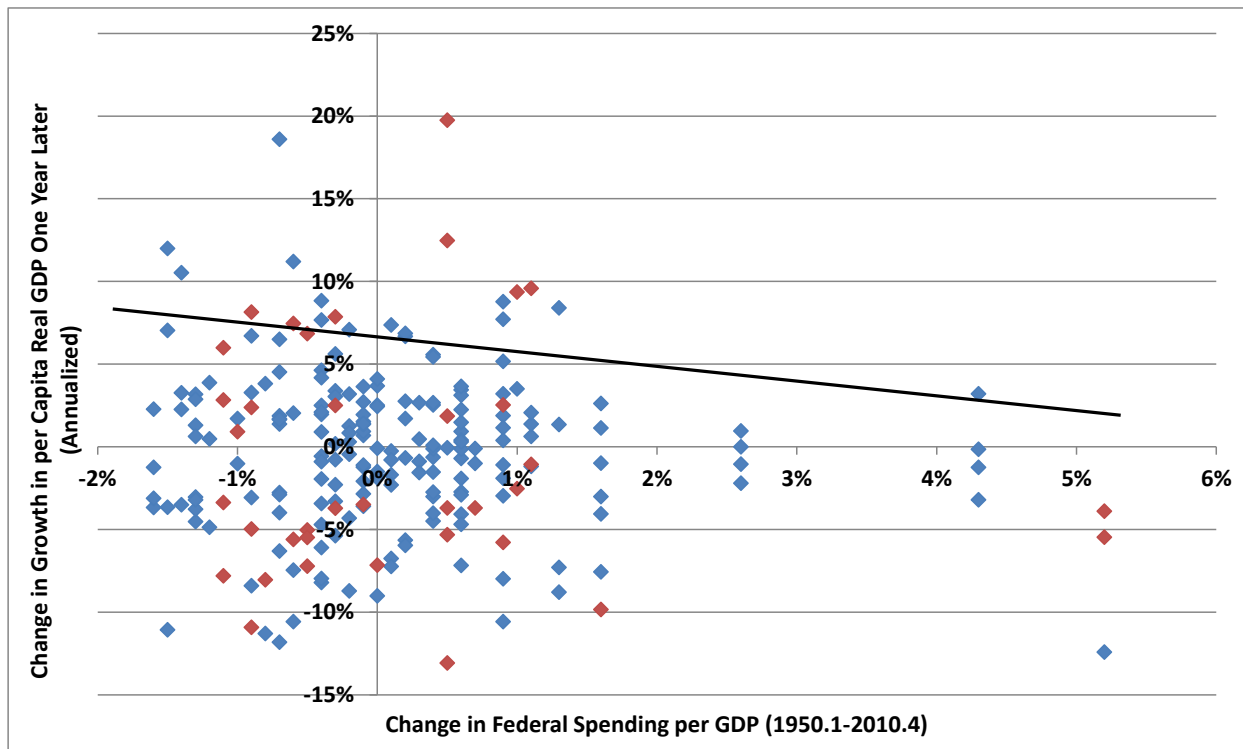
<sup>83</sup> NBER, "U.S. Business Cycle Expansions and Contractions"; OMB, Historical Tables, Table 1.3.



Figure 14. Changes in Federal Spending Compared to Changes in Economic Growth.<sup>84</sup>

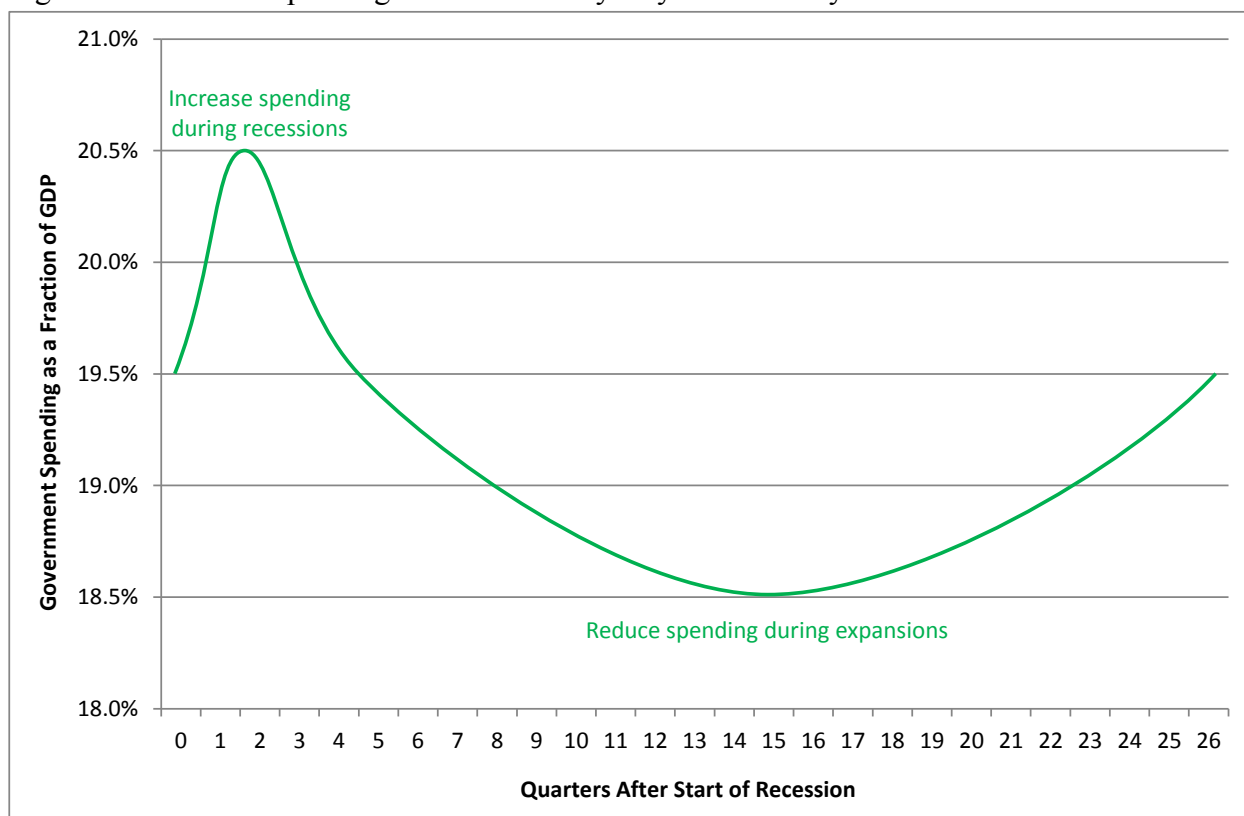
<sup>84</sup> NBER, "U.S. Business Cycle Expansions and Contractions"; OMB, Historical Tables, Table 1.3.

Figure 15. Changes in Federal Spending Compared to Changes in Economic Growth One Year Later.<sup>85</sup>



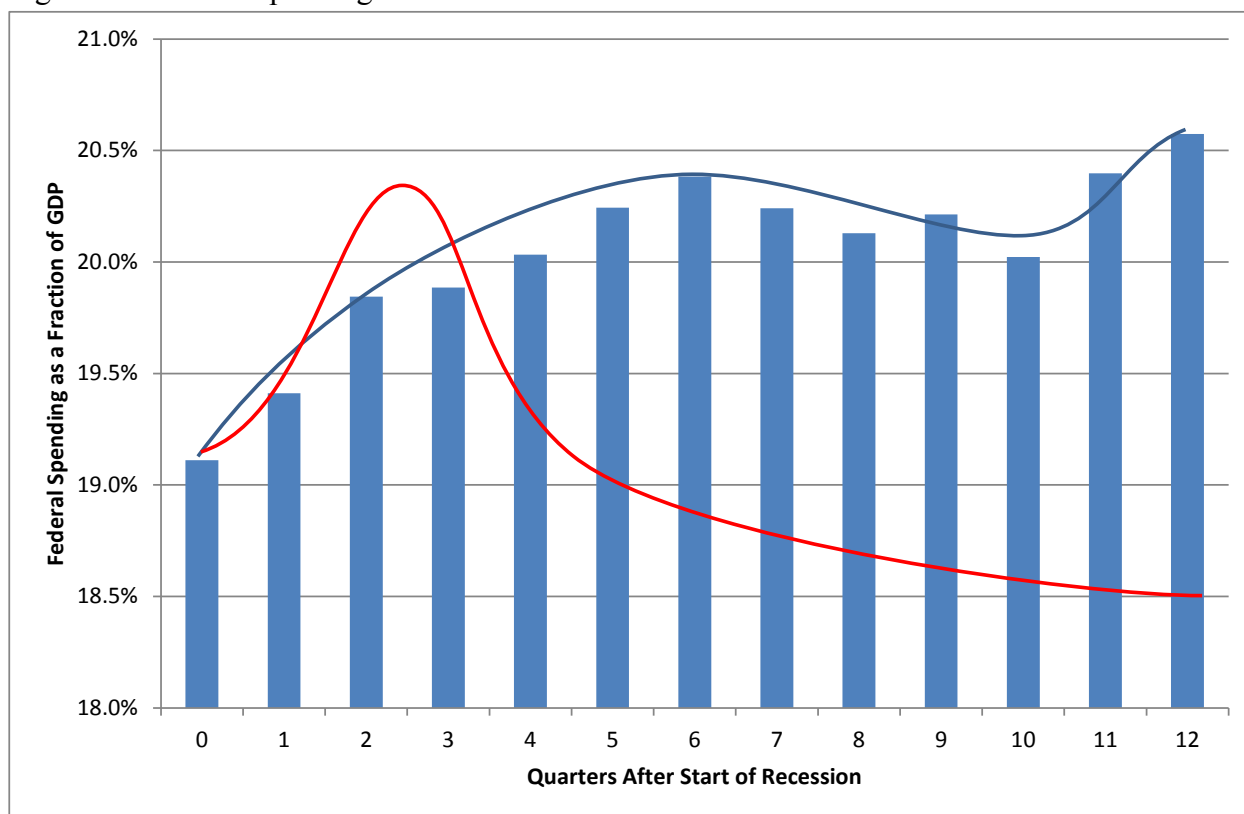
Historical data call into question the efficacy of stimulus spending. Although factors other than government spending influence economic growth, unless Keynesians are prepared to claim that those factors have conspired to counteract government spending on a consistent basis and over many decades, Keynesians are left having to explain why 60 years of economic data do not show, at least on average, economic growth accompanying increased government spending. Furthermore, even if increased government spending did stimulate the economy, evidence suggests that, as pointed out earlier in this paper, politicians are unable to get their timing right so as to enact the stimulus spending when it is needed and to shut it off when the need passes. Since 1950, the median recession has lasted 4.5 quarters and the median expansion has lasted 21 quarters. Following Keynesian theory, successful stimulus spending should then follow the pattern shown in figure 14.

<sup>85</sup> NBER, “U.S. Business Cycle Expansions and Contractions”; OMB, Historical Tables, Table 1.3.

Figure 16. Stimulus Spending as Advocated by Keynesian Policy.<sup>86</sup>

In fact, stimulus spending has followed the pattern shown in figure 14. This figure shows average federal spending during and immediately after the starts of recessions since 1950. The first vertical bar shows average federal spending in the quarter in which the recessions begin. The last vertical bar shows average federal spending 12 months after the recessions started. Since the median recession lasts 4.5 quarters, the red curve shows the stimulus spending pattern that Keynesian theory advises. On average, the pattern of federal spending during and immediately after recessions has been lagged—federal spending peaks six quarters after the starts of recessions rather than after 2.25 quarters. Rather than continuing to decline after the peak until the next recession, federal spending accelerates again 11 quarters after the recession. The result is destabilization. As the economy naturally moves from recession to expansion, federal spending continues to increase and pressures the economy to move beyond full employment.

<sup>86</sup> NBER, “U.S. Business Cycle Expansions and Contractions”; OMB, Historical Tables, Table 1.3.

Figure 17. Federal Spending Continues to Rise After Recessions Abate.<sup>87</sup>

Economists have suggested that some politicians use recessions as an excuse to expand the scope of government—using Keynesian expansionary rules to justify increased spending during recessions, but ignoring Keynesian contractionary rules once the recessions end.<sup>88</sup> The Great Recession is a case in point. The blue bars in figure 15 show actual federal spending (as a fraction of GDP) in the quarters leading up to, during, and immediately following the Great Recession. The recession began in the fourth quarter of 2007 and peaked in the third quarter of 2008. The Keynesian theory of stimulus spending would have called for the government to increase spending during this period. Government spending then should have followed the pattern shown by the red bars. Spending would have peaked in the third quarter of 2008 and then declined to its pre-recession level by the third quarter of 2009, when the recession ended.

Instead, government spending continued to increase until the second quarter of 2009—almost one year beyond the recession’s peak—but then, rather than returning to the pre-recession level, it remained near this peak level into 2011. Figure 16 confirms the observation in figure 15 that stimulus spending is destabilizing because it continues to accelerate after the recession has begun

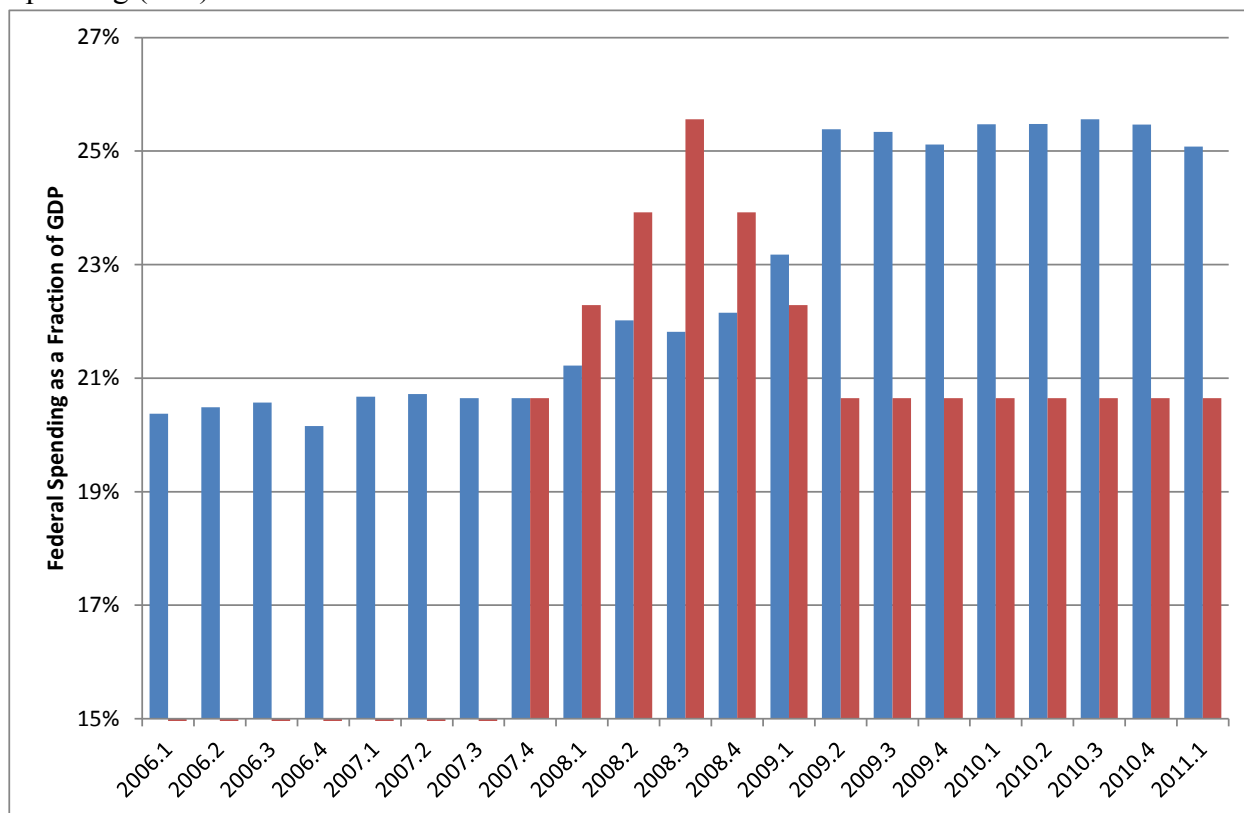
<sup>87</sup> Bureau of Economic Analysis, National Income and Product Accounts, Table 3.2.

(<http://www.bea.gov/national/nipaweb/TableView.asp?SelectedTable=87&ViewSeries=NO&Java=no&Request3Place=N&3Place=N&FromView=YES&Freq=Qtr&FirstYear=1953&LastYear=2011&3Place=N&Update=Update&JavaBox=no>)

<sup>88</sup> Heritage Foundation, “Reining in Runaway Spending and Deficits,” *Solutions for America* 4 (August 17, 2010): 7–8, [http://thf\\_media.s3.amazonaws.com/2010/pdf/Solutions\\_4.pdf](http://thf_media.s3.amazonaws.com/2010/pdf/Solutions_4.pdf).

to subsidize. It also confirms the suspicion among some economists that big government politicians do not believe in Keynes but judiciously quote him to justify expanding the government's control over the economy.

Figure 18. Actual Spending During the Great Recession (Blue) versus Textbook Keynesian Spending (Red).<sup>89</sup>



## 5. Final Thoughts

Deliberate efforts to stimulate the U.S. economy through government fiscal policy have been a formal part of the political economy for more than 80 years. The effort reaches back to the 1930s when John Maynard Keynes famously offered economic advice to prime ministers and presidents urging increased government spending as a way to prime the economic engine.<sup>90</sup> Deficit spending then became the order of the day for depression-weary government leaders. Our survey of statements on U.S. stimulus efforts found in annual issues of the *Economic Report of the President* from 1953 to 2011 uncovered a rich but at times confused history of efforts to

<sup>89</sup> Bureau of Economic Analysis, National Income and Product Accounts, Table 3.2.

(<http://www.bea.gov/national/nipaweb/TableView.asp?SelectedTable=87&ViewSeries=NO&Java=no&Request3Place=N&3Place=N&FromView=YES&Freq=Qtr&FirstYear=1953&LastYear=2011&3Place=N&Update=Update&JavaBox=no>).

<sup>90</sup> James M. Buchanan and Richard E. Wagner, *Democracy in Deficit: The Political Legacy of Lord Keynes* (New York: Academic Press, 1977).

spend our way out of recessions on the one hand but then, on the other hand, to deal later with an inflationary economy by way of monetary policy.

The long experience reveals periods where it seems fiscal policy may have worked, which is to say there were times when the economy improved following changes in spending and tax policy. But then there were serious bouts with the knowledge problem: recognizing when there was a problem, identifying what might be done about it, gaining congressional approval, and coordinating federal fiscal policy with state and local government spending and with monetary policy. Indeed, there were times when the economy had seemingly healed itself by the time the government applied the fiscal medicine. Yet, our review of the record found an expression of high hopes for making fiscal policy work. It also found a growing dedication to the proposition that White House economists in conjunction with presidents and a cooperating Congress can fine-tune the economy in ways that would smooth business cycles and improve economic performance. After decades of experience, presidents became less enamored with the idea, especially when the inflation that seemed to follow stimulus efforts began to cripple economic performance. But then came the Great Recession, and once again, the urge arose to stimulate the economy.

Although there can be appearances of strongly favorable responses to fiscal medicine, as indicated in our *ERP* surveys, our review of the more rigorous statistical analysis of relationships between stimulus spending and GDP growth presented mixed evidence. Because each study is based on unique assumptions and model specifications, we could not judge the studies head-to-head. However, their estimates of stimulus response run a gamut that extends from negative results (the economy actually lost ground when stimulated) to somewhat moderate findings (the economy did respond but on a less than dollar-for-dollar basis) to strongly positive results (where the economy expanded by more than a dollar for each dollar spent on stimulus). Just one of the studies we reviewed accounts for the opportunity cost of the stimulus dollars being spent—that is, how credit markets respond when governments borrow in order to spend. And none of the models attempts to account for the difficulties of implementing fiscal policy, because that is not their purpose.

In our short examination of the benefits and costs of jobs generated by stimulus efforts, we applied the estimated stimulus costs per job provided by the Obama administration and a higher estimate found in one of the studies we surveyed to a hypothetical unemployed person in New York State and in West Virginia. In each case, our analysis assumed the affected individuals were receiving unemployment compensation at the average rate, became employed as a result of the stimulus, and then earned the average wage. The analysis demonstrated the possibility for an overall gain when average wages are high, as in New York, but an overall loss when wages are lower, as in West Virginia. The results also revealed the sensitivity to the size of the multiplier assumed in the analysis.

The last part of our report looked long and hard at the record for the U.S. economy with regard to federal government spending and GDP growth. Our examination of numerous data points shows that the economy responds either negatively or not at all to increased government spending, which is to say that GDP growth does not follow stimulus spending. We found this relationship when examining contemporaneous and lagged relationships.

To be effective as a policy tool, stimulus spending must overcome three hurdles. The first is whether Keynesian economic theory is sound. There is considerable debate as to whether the multiplier—the core mechanism on which stimulus spending is based—is greater than one, or even positive. If the multiplier is less than one, then a dollar of stimulus spending would generate less than a dollar's worth of economic growth. The Congressional Budget Office estimated that the long-run multiplier associated with the American Recovery and Reinvestment Act of 2009 was between 0.63 and 1.8.<sup>91</sup>

The second hurdle is timing. Even if Keynesian theory were sound, if policy makers cannot time stimulus spending correctly, then their efforts will actually destabilize the economy by reducing spending during recessions and increasing spending during expansions. Evidence suggests not only that policy makers cannot get their timing right, but that this inability has been common knowledge among policy makers for decades.

The third hurdle is reversing the stimulus spending. Even if Keynesian theory were sound and even if policy makers could get the timing right, they would need the political will to shut off the stimulus spending at the ends of the recessions. By definition, stimulus spending is meant as a temporary boost to a flagging economy. When the economy picks up, the stimulus spending should be reversed. Evidence suggests that, either from lack of political will or from a desire to use stimulus spending as an excuse for permanent expansion of government, government spending tends to increase more often than it decreases. Since 1950, annual per capita real federal outlays have declined 23 times but increased 39 times, and each increase has been, on average, 2.5 times the size of each decrease. Certainly, the government did not intend all of these increases as stimulus spending, but the fact remains that the clear tendency is to increase rather than to decrease spending. Focusing on discretionary spending only produces a similar story. Since 1962, federal per capita real discretionary spending has increased 27 times but decreased only 22 times. On average, each increase was 1.34 times the size of each decrease.

Finally, there is evidence that the relationship between government spending and economic growth changes as an economy grows, and that the phenomenon is not particular to the United States. An examination of 150 countries over 25 years shows that as economies grow, the optimal size of government—the government spending per dollar of GDP that is associated with

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<sup>91</sup> This multiplier is a weighted average of the CBO's estimates of the multipliers associated with each of nine provisions in the act. Douglas W. Elmendorf (director of the Congressional Budget Office) to Senator Charles E. Grassley, March 2, 2009, [http://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/100xx/doc10008/03-02-macro\\_effects\\_of\\_arra.pdf](http://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/100xx/doc10008/03-02-macro_effects_of_arra.pdf).

maximum economic growth—declines.<sup>92</sup> It may be that when a country is small, private investment is commensurately small, financial markets are less developed, and government can play a useful role in funding industries that require large start-up costs. This need would diminish as the country's economy develops. The implication is that there may be a fourth hurdle: even if Keynesian theory were correct, and even if policy makers could get the timing right, and even if they had the political will to reverse stimulus spending at the ends of recessions, stimulus spending would become less and less potent over time as a country's economy grew.

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<sup>92</sup> Antony Davies, "Human Development and the Optimal Size of Government," *Journal of Socioeconomics* 35, no. 5 (2009): 868–876.