FISCAL MULTIPLIERS: HOW MUCH BANG FOR THE BUCK?

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The U.S. federal government has consistently conducted an expansionary fiscal policy during the period following business cycle peaks (during the downturn and early in the recovery). However, the selected policies have frequently included actions that have relatively low direct multipliers. This study examines the historical record to gauge the effectiveness of fiscal policy – in terms of the timing, size and composition of the policy response – in stimulating demand. We use a narrative method to identify the policy choices following each post-war recession and draw on econometric evidence from the literature and from FRB/US macro model to estimate the boost to aggregate demand. We find that the direct multipliers are frequently well below 1 owing to a reliance on tax cuts.

Introduction

Considerable attention and debate has centered on the fiscal policy actions undertaken in response to the economic turmoil following the recent financial crisis. The United States implemented a substantial counter-cyclical policy by augmenting the automatic stabilizers – the boost in spending and reduction in tax payments that occur endogenously during an economic downturn – with a variety of discretionary tax and spending programs through the American Recovery and Reinvestment Act (ARRA) and other actions. This counter-cyclical response is not unusual; previous work by Follette and Lutz (2010) demonstrated that discretionary fiscal policy has typically been expansionary following business cycle peaks. This paper examines the issue more closely by detailing the *types* of policy actions taken in response to recessions and evaluating their impact on government budgets and on aggregate demand. The approach of the paper is as follows. We begin by outlining the issues and our methodology. We then turn to describing the discretionary policy actions in response to each of the post-World War II recessions and estimate their impact on the federal budget deficit. Next, we calculate the *direct* impulse to aggregate demand from these actions to gauge the "bang for the buck" (but do not consider follow-on, or total multiplier, effects). We do so using parameter values from the econometric literature on the response of consumers, businesses and subnational governments to federal government taxation and spending. Next we examine the role of automatic stabilizers in stabilizing demand. Our analysis suggests that the support to aggregate demand from automatic stabilizers is modest, leaving a potential role for active fiscal policy. Finally, we offer some concluding comments.

Methodological notes on measuring discretionary fiscal policies

We identify discretionary fiscal policy actions by using a narrative approach, similar to that pursued by Romer and Romer's (2009) analysis of tax policies. Our focus is on the federal government policies, where most significant counter-cyclical policy actions occur.[1] Accordingly, we use a variety of sources including the *Treasury Annual Report*, *Monthly Treasury Statement*, Congressional Budget Office documents, Joint Committee on Taxation budget estimates of

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The analysis and conclusions set forth are those of the authors and do not indicate concurrence by other members of the research staff or the Board of Governors.

[1] In Follette and Lutz (2010) we document the small size and pro-cyclical movement of state and local fiscal actions.

proposed legislation, BEA's detailed tables on the National Income and Product Accounts, and *Congressional Quarterly* to estimate the budget effects of fiscal policy actions.

Unlike Romer and Romer, we are concerned with all of the budget actions that occur during and following recessions, regardless of their motivation. Romer and Romer's work focused on those tax actions that were not counter-cyclical to estimate total tax multipliers because those actions were least likely to be correlated with other impulses on aggregate demand. Our inclusive examination is consistent with the observations of Perotti (2012); when he examined budget consolidation efforts, the results were sensitive to whether all fiscal actions were included. Perotti notes that fiscal actions are often in response to other fiscal policies and thus looking at a subset will be biased. For this reason we would not want to exclude exogenous defense spending decisions, for example, because the counter-cyclical actions the government takes will be conditioned on these defense spending actions. While Romer and Romer's methodology of excluding some fiscal actions is proper and innovative for estimating total multipliers, it would not be appropriate for our goal of assessing the overall magnitude and effect of policy during and following recessions. Focusing on only explicit counter-cyclical actions could mischaracterize the government's response in many instances because the response is in part conditioned on the knowledge of the other fiscal policies. Therefore, focusing solely on the explicit counter-cyclical policies would not be helpful.[2] Nonetheless, we do attempt to decompose the change in policy around recessions into an explicit counter-cyclical component (*i.e.*, stimulus) and a non-counter-cyclical component.

To implement our narrative approach we have to define what constitutes a policy action and how to measure its size and timing. For purchases, we define the discretionary policy action to be equal to the real change in purchases over the period. Thus, no change in policy would be zero real growth in consumption and investment. Our definition is useful for examining short-run changes in policies and their effects on aggregate demand relative to zero growth – *i.e.*, to answer the question of whether fiscal policy is contributing to an increase aggregate demand. It would not be appropriate for longer run analysis, or evaluating whether fiscal policy is pushing demand above or below trend growth; in such cases alternative measure such as real purchases as a share of GDP, or as a share of potential GDP, would be more appropriate. In addition, although policies are formally set in nominal terms through the annual appropriations process, we are assuming that policy makers' decisions are based on the underlying real quantities. Finally the timing of the action is equated with the actual increase in spending and not when the decision is made.[3] For taxes and transfers we use the effect on revenues or outlays of changes in law and not movements automatically triggered by changes in economic activity. The timing of the policy change is set equal to the change in actual collections, rather than the time of enactment. The size of the policy action is based relative to prior law, except when prior law assumes the expiration of a tax. One potential flaw in our measure of using prior law is that it is sensitive to whether the baseline law includes inflation indexation. For example, during the high inflation 1970s the taxes rose as a share of GDP owing to bracket creep that was not fully offset by legislated tax cuts. With our measure, tax policy looks to be loose, when it was actually somewhat restrictive. For grants in aid, we use the change in real grants disbursed for non-Medicaid grants and the changes in laws for Medicaid grants, which move mostly endogenously.

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2 For example, the Bush Administration did little explicit counter-cyclical policy in 2001 and 2002, perhaps owing to the fact that its tax policy was already counter-cyclical.

3 For example, a permanent increase in defense spending of 1 percent would increase actual purchases by roughly 0.6 per cent in the first year owing to time to build and other implementation lags. Our measure would yield an estimate of 0.6 per cent for the policy action.

Discretionary fiscal policy actions

This section provides a brief narration of the discretionary fiscal policy enacted during and following each post-war recession. The total effects on the deficit for each episode are summarized on Table 1. The total effect is also decomposed into three pieces: defense, stimulus (*i.e.*, policy actions undertaken explicitly for counter-cyclical reasons) and other.

1953. According to the National Bureau of Economic Research (NBER), the 1953 recession spanned from the third quarter of 1953 through the second quarter of 1954. The economy was overheating at the time of the recession, with the unemployment rate at 2-1/2 per cent at the business cycle peak. With the outbreak of the Korean War in June 1950, defense spending rose rapidly driving down the unemployment rate. Truman offset a portion of the increased demand by raising taxes and implementing wage/price and other controls on private demand. The 1950 personal and corporate income tax increases were permanent, whereas increases in these taxes in 1951 were temporary and slated to end in 1954. Balancing the budget was an important goal of the Truman and Eisenhower administrations (beginning January 1953), but the Truman tax increases were insufficient to keep the budget in balance. When the war ended in the summer of 1953 defense spending began to fall rapidly and the economy moved into recession. The Eisenhower administration let most of the temporary taxes expire as scheduled and enacted some additional tax cuts. But these were smaller than the declines in defense spending and the budget moved into surplus. Accordingly, as shown in Table 1, discretionary policy actions were pro-cyclical on net.

1957. The next business cycle peak was August 1957 and the trough was reached in April 1958. Again, the economy was rising briskly until the peak, with the unemployment rate falling to 4 per cent. It rose to 7-1/2 per cent over the recession and then declined to 5-1/2 per cent during the first year of the recovery. The Eisenhower administration was still more concerned with keeping the budget near balance than using counter-cyclical policy. Nonetheless, discretionary policies were mildly expansionary owing to increases in non-defense purchases that outstripped defense cuts and tax increases. The increase in non-defense purchases reflected policy decisions, such as the interstate highway program (enacted in 1956), that were taken before the recession.

1960. The business cycle peak was April 1960 and the trough was reached in February 1961. Real GDP rose 5 per cent over the four quarters ending 1960Q1 and then fell 1 per cent over the succeeding four quarters during which time unemployment rose from 5.1 per cent to peak at 7 per cent in 1960Q2. Fiscal policy was somewhat pro-cyclical during this period – tight during the recession and loose during the expansion – and there was little explicit counter-cyclical policy. The key policy changes included an increase in the social security tax rate in 1960Q1 just before the peak, a cut to corporate taxes in 1962, and increased real defense purchases owing to foreign entanglements. A small increase in unemployment benefits was enacted to provide additional weeks of unemployment insurance to those exhausting their benefits in 1961, after the trough.[4] In each subsequent recession extended UI benefits would be granted temporarily.

1970. The next business cycle peaked in December 1969 and the trough was reached in November 1970. The recession likely reflected, at least in part, a tightening in monetary policy to attack rising inflation. The Nixon administration also responded with wage/price controls during this period. The economy limped into this recession expanding only 2 per cent over the year prior to the peak and the unemployment rate was drifting up, although it was quite low at 3.6 per cent in 1969Q4. During 1970 the unemployment rate rose to 5.8 per cent and real output essentially moved sideways. During the recession real federal purchases were falling owing to a reduction in

[4] Unemployment benefits typically run out after 26 weeks. The legislation added up to 13 additional weeks of unemployment compensation and cost $1 billion. It was financed by increased UI taxes in 1962 and 1963.

Table 1

Budget and Economic Effects of Discretionary Fiscal Actions

(percent of GDP)

Date	Policy	Recession	*t*+1	*t*+2		Recession	*t*+1	*t*+2
		Effect on Budget Deficit				Aggregate Demand Effect		
2008Q1	Discretionary actions	1.3	2.5	3.5		0.7	1.6	2.6
	Defense	0.3	0.6	0.7		0.3	0.6	0.7
	Stimulus	0.9	1.8	2.5		0.3	0.8	1.7
	Other	0.1	0.2	0.2		0.1	0.2	0.2
2001Q1	Discretionary actions	0.9	1.9	3.0		0.6	1.5	2.4
	Defense	0.2	0.4	0.8		0.2	0.4	0.8
	Stimulus	0.4	0.2	0.7		0.2	0.1	0.3
	Other	0.3	1.3	1.6		0.2	0.9	1.2
1990Q3	Discretionary actions	–0.1	–0.4	–0.5		0.0	–0.3	–0.4
	Defense	0.0	–0.4	–0.6		0.0	–0.4	–0.6
	Stimulus	0.0	0.1	0.2		0.0	0.1	0.2
	Other	–0.1	–0.1	–0.1		0.1	0.0	0.1
1981Q3	Discretionary actions	0.2	1.9	2.7		0.3	1.4	2.3
	Defense	0.5	1.0	1.4		0.5	1.0	1.4
	Stimulus	0.0	0.1	0.1		0.0	0.1	0.1
	Other	–0.3	0.7	1.2		–0.2	0.2	0.8
1973Q4	Discretionary actions	–0.6	0.9	0.9		–0.4	0.2	0.7
	Defense	–0.2	–0.2	–0.2		–0.2	–0.2	–0.2
	Stimulus	0.0	1.1	1.0		0.0	0.4	0.6
	Other	–0.5	0.0	0.1		–0.2	0.0	0.3
1970Q1	Discretionary actions	0.5	0.4	1.4		–0.6	–0.7	–0.3
	Defense	–1.1	–2.2	–2.8		–1.1	–2.2	–2.8
	Stimulus	0.0	0.1	0.3		0.0	0.1	0.3
	Other	1.5	2.6	3.8		0.5	1.4	2.2
1960Q2	Discretionary actions	–0.6	0.5	1.5		–0.4	0.5	1.3
	Defense	–0.1	0.7	1.1		–0.1	0.7	1.1
	Stimulus	0.0	0.1	0.0		0.0	0.1	0.0
	Other	–0.5	–0.3	0.3		–0.4	–0.3	0.2
1957Q3	Discretionary actions	0.1	0.5	0.2		0.1	0.4	0.3
	Defense	0.2	0.0	–0.3		0.2	0.0	–0.3
	Stimulus	0.0	0.0	0.0		0.0	0.0	0.0
	Other	–0.1	0.5	0.5		–0.2	0.4	0.6
1953Q3	Discretionary actions	–0.3	–2.8	–3.3		–0.7	–3.6	–4.1
	Defense	–1.0	–4.0	–4.6		–1.0	–4.0	–4.6
	Stimulus	0.0	0.0	0.0		0.0	0.0	0.0
	Other	0.7	1.2	1.3		0.2	0.4	0.5

Recession is the first 4 quarters following business cycle peak (beginning in the quarter indicated), *t*+1 is following 4 quarters, and *t*+2 is next 4 quarters.

Vietnam-related defense spending. The Nixon Administration raised transfers significantly in 1970Q2 and cut personal and corporate income taxes, in part, by letting Johnson's temporary tax surcharges expire. In January 1971 Nixon's State of the Union message promoted an expansionary budget to help stimulate the economy – by increasing transfers and grants to state and local governments. The goal was a full employment budget balance at 4 per cent unemployment. From a budgetary perspective these increases were larger than the cuts in defense spending. We have only identified the extra UI benefits as stimulus because the other parts of the Nixon program were permanent. Overall, policy actions boosted the deficit, but reduced aggregate demand owing to their timing and composition.

1973. Economic policy making during the 1973-75 recession was complicated by the combination of high inflation – reflecting in part sharp rises in oil and commodity prices – and a long and deep recession. The economy peaked in November 1973 and reached bottom in March 1975. The economy fell particularly steeply during the second half of the period. The unemployment rate rose from 4.8 to nearly 9 per cent. Fiscal policy was somewhat restrictive in 1974, in part owing to declining defense spending, but also because of an increase in social security taxes that was only partly offset by increased social security benefits.[5] In 1974, inflation was seen as a more urgent problem (Stein, *Presidential Economics*, p. 212) and the Whip Inflation Now program was unveiled. But when the economy began to drop quickly in the fall of 1974, policy makers shifted to stimulative fiscal policy. First extended unemployment benefits were proposed, along with expenditure restraint and taxes to pay for the benefits. However, after the severity of the recession became apparent a substantial stimulus program was enacted in February 1975 that included permanent and temporary tax cuts. Personal income tax cuts averaged 1¼ per cent of GDP in calendar 1975, with most of it delivered as a rebate in the second quarter – boosting disposable personal income by more than 3 per cent of GDP in that quarter. The economy began to expand in Q2. We have assigned the permanent portion of the 1975 tax cut as part of stimulus program as well as the rebate and the extended unemployment benefits.[6]

1981. High inflation and the subsequent tight monetary policies led to a sharp recession that lasted from July 1981 to November 1982 and the unemployment rate rose from 7.4 to 10.7 per cent. Real government purchases were on an upswing at that point as real defense spending began to climb under Carter and accelerated under Reagan. Significant tax cuts for individuals (phased in over 1981Q3, 1982 Q2, and 1983Q3) and corporations, including investment incentives, were enacted in August 1981. These were partly offset by tax increases in 1982 and 1983 in response to rising deficits and to cuts in transfers and grants. Deficits rose and fiscal policy was expansionary.

1990. The 1990 recession followed a period of restrictive monetary policy and a spike in oil prices caused by the invasion of Kuwait. The economy peaked in July 1990 and moved sideways for a few months before declining 1 percent through March 1991. The unemployment rate rose from 5.3 to 6.6 per cent by the trough and then continued to drift up over the next year and a half owing to the shallowness of the recovery. Fiscal policy was contractionary owing to the enactment of the 1990 Budget Enforcement Act which raised taxes, cut entitlements, and capped expenditures on federal purchases. In addition, defense purchases were put on a downward path reflecting the end of the Cold War, but this was offset temporarily – during the recession year – by expenditures related to the first Gulf War. Increased non-defense purchases, from budget decisions made before the 1990 Budget Enforcement Act moderated the degree of restraint.

2001. After a long expansion, culminating in the dot.com boom and bust, the economy peaked in March 2001 and then fell into a mild recession which reached the trough in November. GDP

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5 In addition, policy was tight because of rising bracket creep which is not captured in our measures of fiscal policy.

6 We did not include any of the 1970 actions in stimulus because the goal was set forth as balancing the high-employment budget. In this case the goal was boosting economic activity and the actions were taken in response to the severity of the recession.

declined ¾ per cent over the period and the unemployment rate rose modestly from 4 to 5½ per cent. The unemployment rate continued to rise during the meager recovery, reaching 6¼ per cent in 2003. Fiscal policy was expansionary owing to tax cuts that had been planned before the economy weakened and increased spending on defense (in response to the terrorist attacks of 9-11) and domestic initiatives (e.g., No Child Left Behind and several expansions of Medicare benefits). The 2001 tax act was originally conceived as a phased-in reduction of income and estate taxes beginning in 2001 and the 2001 portion of the tax cut was increased and a rebate on 2000 taxes was added in response to the weak economic outlook. Additional stimulus provisions were enacted in 2002 (partial expensing extended unemployment benefits) and 2003 (accelerating provisions of the 2001 act, cutting taxes on dividends and temporary boost to grants) owing to the subpar recovery. We designate the 2001 rebate and the 2002 and 2003 actions as stimulus.

2008. The Economy peaked in December 2007 with an unemployment rate of 4.8 per cent and output fell 5 percent over the next six quarters until the trough was reached in June 2009 with the unemployment rate up to 9.3 per cent. Despite the large decline, the economy only slowly recovered and the unemployment rate continued to move up to 10 per cent by the end of the 2009 before drifting down. Against this backdrop, several stimulus actions were taken. First in 2008 a temporary income tax cut was enacted and subsequently unemployment benefits were augmented.[7] In February 2009 ARRA was enacted which included temporary tax cuts and increases in transfers, aid to state and local governments, and federal purchases. Subsequently, in 2010 some of these programs were extended, and in 2011 and 2012 a payroll tax cut was put in place.

Budget effects of policy decisions

From this narrative, one can readily see that substantial counter-cyclical policy actions enacted explicitly for counter-cyclical reasons were only taken twice, towards the end of the 1973-75 recession and in 2008-9. In addition, policy moved in a decidedly counter-cyclical direction in 1982 and 2001 owing to campaign promises. By contrast, policies were pro-cyclical in 1990 and 1953.

Defense purchases have been an important component of fiscal actions during many of the cycles. Although these purchases are often considered to be exogenous, the manner in which they are financed is a crucial determinant of the overall stance of fiscal policy. Thus, it is instructive to examine defense purchases as a separate category.

A number of conclusions can be drawn by comparing and contrasting the post-war recessions. As revealed on Table 1:

- As noted above, of the nine recessions, only the 1973 and 2008 recessions had large explicit counter-cyclical policies either during the recession or shortly thereafter. And only in 2008 was counter-cyclical policy put in place during the initial year of the recession.
- In three of the recessions defense spending was falling rapidly (1953, 1970, 1990) and in four it was rising quickly (1960, 1981, 2001, and 2008).
- Between 1953 and 1973 there is a negative correlation between defense spending and other policies during the recession and early recovery period, consistent with a strong balanced budget motive, while after 1973 there is a strong positive correlation.

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[7] In the summer and fall of 2008 financial markets were addressed by nationalizing the government sponsored enterprises (GSEs) Fannie Mae and Freddie Mac and providing liquidity and support to banks and the auto sector through TARP – these actions are not included in our fiscal measures. The Troubled Asset Relief Program (TARP) has been virtually budget neutral – the government made money on loans to banks which were offset by losses associated with AIG and GM. The bailout of Fannie Mae and Freddie Mac may cost the government about 1½ percent of GDP. The economic effects of these programs while possibly substantial, are extremely difficult to quantify. Blinder and Zandi (2011) have tried to do so.

- In part because of the change in the correlation between defense and other policies, fiscal policies has generally have been much more expansionary, in terms of the size of the deficit, since the mid-1970s than in the earlier period.
- The largest fiscal programs were put in place following the 1981, 2001, and 2008 recessions.
  - The 1981 and 2008 recessions were the deepest in the post-war period and thus would be natural to have larger responses. By contrast, the 2001 recession was quite mild in terms of the loss of GDP or the peak unemployment rate, yet the fiscal response was very strong.[8]
  - That said, defense spending was an important component in all three episodes and tax cuts had ben preannounced in two of them. Thus, the size and timing of the 1981 and 2001 policies may have been somewhat fortuitous.
- Policy has tended to be relatively modest in the recession year, with much larger actions in the second (t+1) and third years (t+2). The delayed timing may reflect the recognition lags, as well as a general reluctance to pursue counter-cyclical policy until a recession is shown to be substantial.

Aggregate demand effects of discretionary policies

Romer and Romer (2009) argue persuasively that omitted variable bias issues make it exceedingly difficult to estimate the effectiveness of counter-cyclical policies. Accordingly, we estimate the aggregate demand effects by looking to research on macro consumption and investment functions as well as research based on panel studies to choose parameter values for responses to tax and transfer policies.[9] We estimate aggregate demand effects by summing the changes in real government purchases, plus the induced consumption from tax and transfer policies based on an estimated consumption function, plus increased investment from changes in taxes and subsidies, and add in an assumed response by state and local governments to changes in discretionary grants-in-aid. By design these estimates only include the direct effect and not the follow-on multiplier effects. Thus, the change in aggregate demand from an increase in real purchases is 1.0 because there are no leakages from imports, crowding out from higher interest rates, or second round multiplier effects. While these may be important the focus here is on the impact effect due to the composition of policies chosen. The 2008-10 fiscal policies and estimated economic effect are described in detail as a guide to the procedure.

2008-10 Stimulus policies[10]

The federal government enacted two pieces of stimulus legislation in 2008. First, a temporary tax cut of $100 billion (0.7 per cent of GDP) was delivered in Q2 and Q3, along with a one-year 50 per cent partial expensing provision ($40 billion in 2008, but only $10 billion over ten years). Second, temporary extended unemployment benefits were put in place the third quarter. These benefits were then enlarged in November and the program's duration was extended several times (including by the ARRA legislation in 2009). The benefits were initially equal to 0.1 per cent of GDP in 2008Q3 and grew to 0.6 per cent of GDP by 2010Q2. These actions probably had only a small effect on aggregate demand in 2008. Empirical investigations by Shapiro and Slemrod (2009), Parker, Souleles, Johnson and McClelland (2011), Sahm, Shapiro, and Slemrod (2010) and

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8 Judging the size of the stimulus relative to the size of the shock is complicated by the fact that greater stimulus will reduce the output gap and thus generate a smaller *ex post*-measured shock.

9 Many of the studies do not offer quarterly timing of the demand effects and we therefore judgmentally set the quarterly timing.

10 The 2011 stimulus policies are not included because they fall outside our three year window.

others suggest that that 25 to 50 per cent of a temporary tax rebate is spent within 2 quarters of receipt and the rest is saved (we assume 40 per cent is spent, 25 per cent in the first quarter and 15 per cent in the following one). Work by House and Shapiro (2008) and Cohen and Cummins (2006) suggest that partial expensing has little impact on investment. By contrast, much of the increase in unemployment benefits probably was spent – we assume 85 per cent, in part, because it is targeted to those with significant income losses.[11] As a result, as shown in Figure 1, only a small portion of the stimulus was spent in 2008, with the ratio of increased demand to increased budget deficit, interpretable as an "aggregate MPC", of only 0.35 – largely because most of the tax rebate was saved, but also because the lack of stimulus from the partial expensing provisions.

In early 2009 the American Recovery and Reinvestment Act (ARRA) was passed. It included personal and corporate income tax cuts, grants to state and local governments, increases in transfer payments, and a

Figure 1

Stimulus Policies and Aggregate Demand, 2008-11

(percent of GDP)

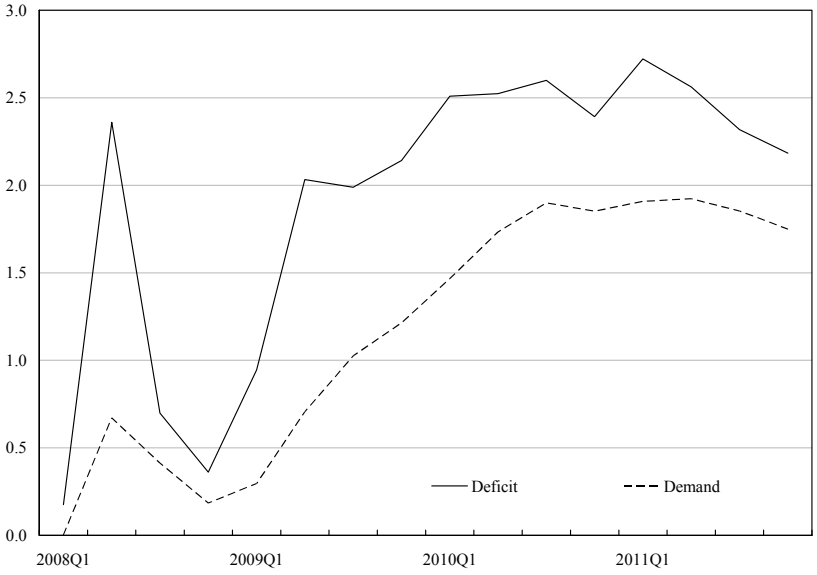
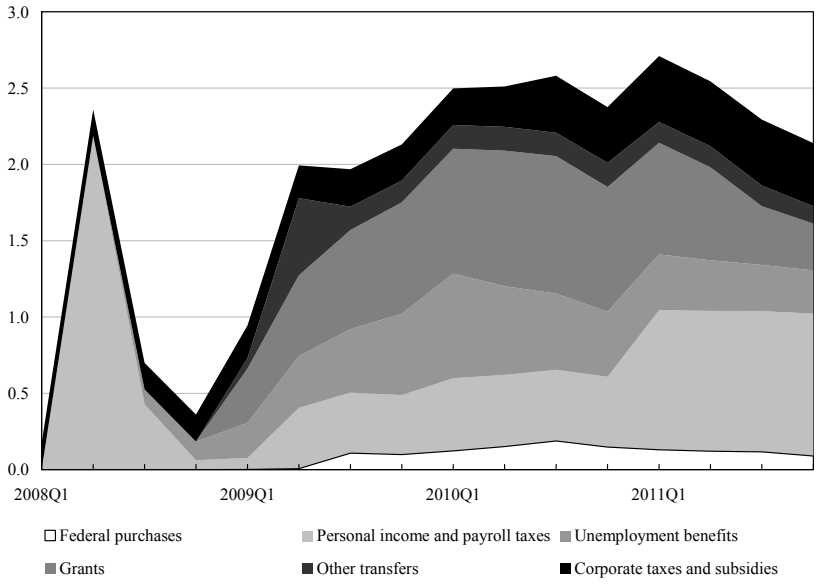


Figure 2

Composition of Stimulus Policies, 2008-11



[11] Aggregate consumption functions typically indicate that consumption out of transfers is higher than that out of other income. We base our demand effects on the consumption function used in the FRB/US structural model, with an MPC of 0.85 over 8 quarters, versus 0.7 for other income. See Brayton and Tinsley (1996). Note, that these benefits are targeted to those with unemployment durations longer than 26 weeks.

small increase in federal purchases of goods and services. The program – excluding the routine extension of AMT and extension of UI benefits (which we included in the 2008 actions) – totaled about $700 billion, or 5 per cent of GDP, that was expected to be largely spent out by the government over several years. Subsequently the grants programs were extended and at the end of 2010, with the economy still weak, the expiring $60 billion personal tax cut included in ARRA was replaced by a $100 billion payroll tax cut. The table below sketches out the effect of ARRA and other stimulus legislation on major budget aggregates and the quarterly pattern is displayed in Figure 2.

Composition of 2008-11 Stimulus Program
(effect on budget, percent of GDP)

Year	Personal and Payroll Taxes	Unemployment Benefits	Other Transfers	Grants	Federal Purchases	Corporate Taxes and Subsidies
2008	0.67	0.05	0.00	0.00	0.00	0.17
2009	0.32	0.38	0.22	0.57	0.05	0.23
2010	0.47	0.55	0.16	0.86	0.15	0.31
2011	0.92	0.32	0.13	0.51	0.11	0.43

An important feature of the stimulus program was the significant use of temporary grants to state and local governments. Empirical work on the effect of state and local grants is not dispositive. Early research, such as Gramlich (1969), suggested that an increase in grants is spent by the government and in the area that for which the grant was made – and dubbed the flypaper effect. More recent work, such as that by Brian Knight (2002), suggests that increased grants sometimes result in lower taxes. Interesting work by Suarez and Wingender (2010), Shoag (2012) and others on state fiscal multipliers are consistent with the grants being spent and spent quickly.[12] Moreover, in the current episode the temporary grants are of roughly the same magnitude – but smaller – than the cyclical shortfall in revenue. With state and local governments restricted by their constitutions to run budgets that are close to balance it would probably be optimal to spend the extra grants to prevent *temporary* swings in provision of state and local services – namely education and health. Accordingly, consistent with the new state-level fiscal multiplier literature, we assume that the increased grants are spent out over the four quarters following receipt.

The net result of the effect of all stimulus actions on aggregate demand is the pattern shown in Figure 1: the direct boost to aggregate demand is consistently below that of the effect on the budget, but the ratio of the two – the "aggregate MPC" – moves towards 1 over time, rising from 0.35 in 2008 to 0.7 in 2010. This reflects, in part, the phased-in response of consumers and state and local governments to the tax cuts, transfers, and grants.

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[12] By contrast, Cogan and Taylor (2011) argue that state and localities saved the extra grants. However, their regression analysis rests on a levels regression using non-stationary variables. Moreover, their hypothesis suggests that state and local budgets would be flush with funds, however, state budget balances are quite low by historical standards (see National Association of State Budget Officers, 2012) and state and local deficits as measured in the NIPA are exceptionally large.

Budget and Demand Effects from 2008-10 Fiscal Policies
(percent of GDP)

Year	Stimulus		All Discretionary Policies		Memo: Change in Demand per 1 ppt Deficit	
	Budget	Demand	Budget	Demand	Stimulus	Total
Recession (2008)	0.9	0.3	1.3	0.7	0.35	0.54
t+1 (2009)	1.8	0.8	2.5	1.6	0.45	0.62
t+2 (2010)	2.5	1.7	3.5	2.6	0.67	0.76

GDP effects are annual average (year over year) to be comparable to the budget effects.

Budget and Demand Effects from 1973-75 Fiscal Policies
(percent of GDP)

Year	Stimulus		All Discretionary Policies		Memo: Change in Demand per 1 ppt Deficit	
	Budget	Demand	Budget	Demand	Stimulus	Total
Recession (1973Q4-74Q3)	0.0	0.0	–0.6	–0.4	n.a.	0.64
t+1 (1974Q4-75Q3)	1.1	0.4	0.9	0.2	0.36	0.23
t+2 (1973Q4-76Q3)	1.0	0.3	0.9	0.6	0.63	0.69

Other discretionary fiscal policies were being implemented in addition to the stimulus actions, namely expanding defense commitments. Taken together, the increase in the deficit was 1.3 per cent of GDP in 2008, rising to 3.5 per cent by 2010, with the direct boost to aggregate demand estimated to be .7 per cent of GDP in 2008 and 2.6 per cent of GDP in 2010. Figure 3 compares the effects of all discretionary policies to stimulus policies.

1973-75 stimulus policies

The other period of active counter-cyclical fiscal policy was in response to the 1973-75 downturn. As described earlier, the stimulus was implemented through a one-time rebate and what became permanent tax cuts, and extended unemployment benefits, Figure 4. Given the low MPC that are estimated for rebates, and the slow adjustment by consumers to permanent tax cuts, the stimulus was rather modest. Moreover, these policies were against a backdrop of a downturn in defense spending. In sum, fiscal policy was not very stimulative and did not turn stimulative until the recession was ending, and the bang for the buck was initially muted.[13]

[13] The stimulus package was implemented at the business cycle trough and thus some argue that the package was unnecessary. But, the recovery may have begun at this point because of the additional boost to aggregate demand created by fiscal policy, either directly or through shifts in expectations.

The 1981 and 2001 recessions

Policy in these two periods was similar. In the first year, tax cuts and increased defense spending were enacted to carry out campaign promises with little explicit regard to the cyclical position of the economy. In subsequent years the policy actions of the two periods diverged a bit. After the initial bout of tax cuts, tax increases were enacted in 1982 and 1983 in response to the budget deficits, while in 2002 and 2003 additional tax cuts and spending programs were enacted, with some of the 2002 and 2003 tax cuts explicitly implemented as part of a stimulus program. The heavy use of tax cuts, 70 per cent of the discretionary increase in the deficit in 1981-83 and 40 per cent in the 2001-03 period would normally imply that the demand effects of the discretionary policies will be somewhat muted, but the rapid increases in defense purchases boosted the "bang for the buck".[14] Indeed, the ratio of the increase in aggregate demand to the increase in the deficit was about 0.8 in the both episodes.

Figure 3

Discretionary Policies and Demand, 2008-11

(percent of GDP)

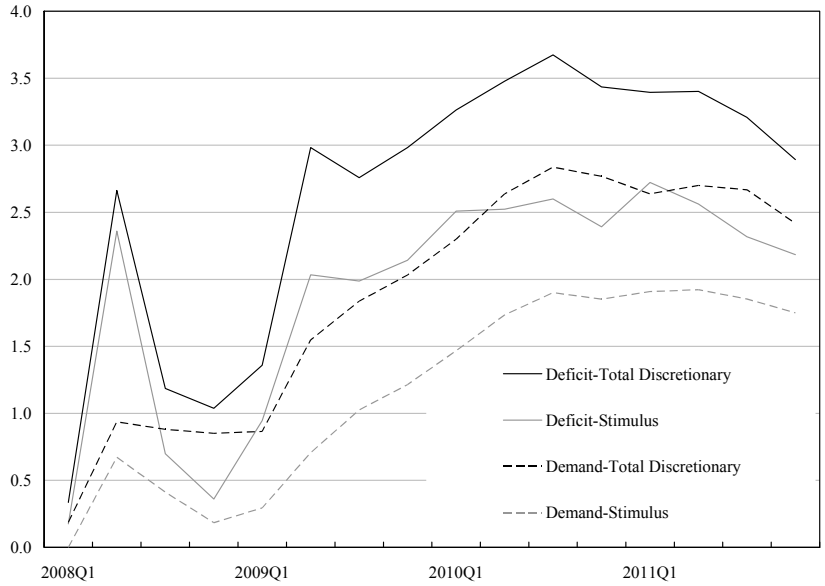
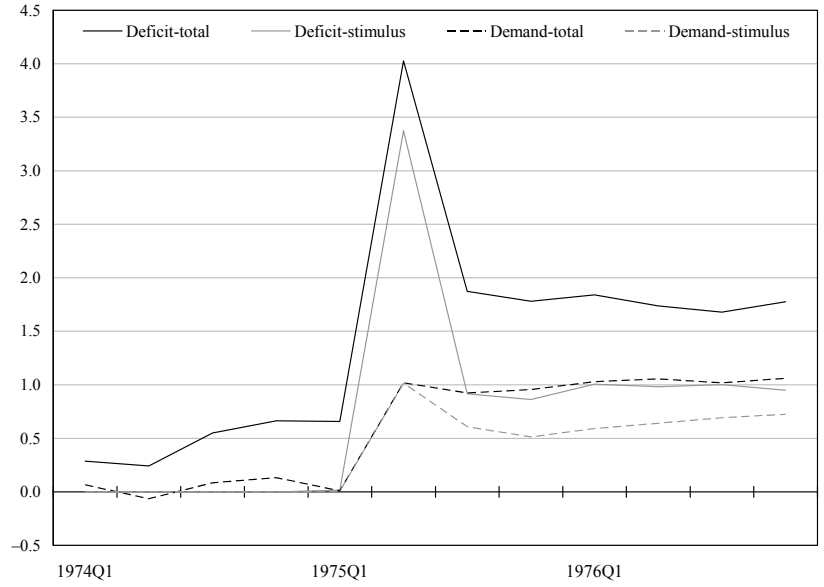


Figure 4

Discretionary Policies and Demand: 1974-76



[14] The Reagan Administration also cut some spending programs, particularly grants. Of the change in the deficit, 60 per cent was from increased defense spending, 70 per cent was from tax cuts and –30 per cent was from grants and other spending. Over the 2001-3 period, defense purchases contributed 25 per cent, non-defense purchases 10 per cent, and grants 15 per cent of the increase in the deficit owing to discretionary policy actions, with tax cuts the remainder.

Table 2

Direct Fiscal Multipliers
(percent of GDP)

Year	Total				Excluding Defense			
	Recession	*t*=1	*t*=2	3-Year Average	Recession	*t*=1	*t*=2	3-Year Average
2008	0.5	0.6	0.8	0.7	0.4	0.5	0.7	0.6
2001	0.7	0.8	0.8	0.8	0.6	0.7	0.7	0.7
1990	–0.5	0.7	0.7	0.6	–1.0	0.5	0.7	0.7
1981	1.6	0.7	0.8	0.8	0.6	0.4	0.7	0.6
1973	0.6	0.2	0.8	0.4	0.4	0.4	0.8	0.6
1970	–1.2	–1.7	–0.2	–0.7	0.3	0.6	0.6	0.5
1960	0.8	1.0	0.9	1.0	0.8	1.0	0.6	1.0
1957	0.6	0.8	1.7	1.0	1.3	0.8	1.3	1.0
1953	2.3	1.3	1.2	1.3	0.4	0.4	0.4	0.4

The multipliers are calculated as the ratio of the demand effect in the current period (from both current and previous policy actions), divided by current policy actions. No follow-on multiplier effects are included.

Looking at fiscal policy actions during the two years following the business cycle peak, we see that discretionary fiscal policies excluding defense spending pack little power. On average the ratio of the direct boost to demand relative to a sustained increase in the deficit is only about 0.4 in the recession year and about 0.6 in year t+1. The increase is largely accounted for by the lagged response of consumption to tax cuts and increased transfers. This is similar to the effectiveness of the stimulus programs put in place in 2008-10.

Indirect aggregate demand effects

The estimates above are only of the direct effects of fiscal policy actions, effectively translating fiscal actions into aggregate demand shocks. Table 2 reports the fiscal demand shocks as a ratio to the budget effects, which we label as the direct fiscal multiplier. The total effect of fiscal policy on the economy depends critically on the stance of monetary policy. Coenen *et al.* (2012) examine fiscal policy simulations using the structural models used by the IMF, Federal Reserve and other organizations. Their estimates suggest that if monetary policy is accommodative then the total fiscal multiplier would be in the range of 1.2 to 2.2 times that of the direct effect after two years. By contrast, with monetary policy not accommodative, then the multiplier falls to a range of 0.7 to 0.9 of the direct effect, figures below unity owing to crowing out of domestic demand and net exports.

Automatic stabilizers

This section considers the effect of the automatic stabilizers on aggregate demand to provide a point of comparison to the magnitudes of the discretionary actions taken by policymakers. See

Table 3

Recessions, Automatic Stabilizers, and Aggregate Demand

Cycle	Cyclical Deficit			Induced Demand			Unemployment Rate			GDP Gap		
	t–1	Recession	*t*+1	*t*–1	Recession	*t*+1	*t*–1	Recession	*t*+1	*t*–1	Recession	*t*+1
2008Q1	0.0	0.8	2.4	–0.1	0.2	1.1	4.6	5.8	9.3	–0.2	–2.6	–7.3
2001Q1	–1.1	–0.1	0.6	–0.6	–0.3	0.1	4.0	4.7	5.8	2.5	0.0	–1.5
1990Q3	–0.4	0.6	1.3	–0.2	0.1	0.6	5.3	6.3	7.3	1.0	–1.7	–3.0
1981Q3	0.7	1.2	2.2	0.2	0.6	1.4	7.5	8.5	10.3	–1.7	–4.2	–7.0
1973Q4	–0.8	–0.2	1.5	–0.2	–0.3	0.6	5.0	5.2	8.1	2.6	0.1	–4.1
1970Q1	–1.2	0.0	0.4	–0.8	–0.4	0.2	3.5	5.0	5.9	3.5	–0.2	–0.6
1960Q2	–0.2	0.4	0.6	–0.2	–0.1	0.1	5.3	6.0	6.4	0.4	–1.6	–1.8
1957Q3	–0.6	0.1	0.3	–0.2	–0.1	0.1	4.1	5.7	6.2	2.6	–0.8	–1.1
1953Q3	–1.3	–0.4	0.0	–0.4	–0.3	–0.1	2.8	4.4	5.1	5.7	1.8	0.7
Average	–0.5	0.3	1.0	–0.3	–0.1	0.4	4.7	5.7	7.1	1.8	–1.0	–2.9

Cyclical Deficit measures the cyclical effect of the economy on the budget surplus as a percent of potential GDP. A positive sign indicates that the actual surplus is higher than the high-employment surplus.
Induced Demand measures the contribution to the level of GDP, as a percent of GDP, from the demand induced by the cyclical swing in transfers and taxes.
Unemployment rate is the average unemployment rate for the period.
GDP gap measures the difference between actual and potential GDP as a percent of potential GDP.
Recession designates the four quarters following the business cycle peak, beginning in quarter indicated.
t–1 designates the four quarters before the "recession" year.
t +1 designates the four quarters following the "recession" year. For 1973, 1981 and 2008 recessions it includes some recessionary quarters.
The brief 1980 recession is omitted because much of the post recession period overlaps with the 1981 recession.

Follette and Lutz (2010) for details describing the estimation procedure for the budget effects of the automatic stabilizers. The methodology for calculating the aggregate demand effect arising out of these changes in government activity is discussed below.

The automatic stabilizers are primarily composed of personal and corporate income taxes, social insurance taxes, and unemployment benefits. Most of the budgetary effect is on the tax side of the ledger: We estimate that for every 1 percentage point swing in cyclical GDP there is a 0.35 percentage point increase in the federal deficit with 0.3 percentage point coming from taxes. The aggregate demand effects are a bit less unbalanced because the marginal propensity to consume (MPC) out of cyclical corporate taxes is probably tiny and that of transfers tends to be larger than that of personal taxes. Table 3 provides our estimate of the budget effects and aggregate demand effects of the automatic stabilizers in the year of the recession and the following year. By comparison we also show the depth of the recession. A key take-away is that the offset to the weakness in aggregate demand that is provided by the automatic stabilizers is modest. This is largely a consequence of our assumption that the marginal propensity to consume (MPC) for these policies is small initially, in line with responses by consumers to income in general. Given that this income is temporary, the small MPC is probably appropriate, but given that it is delivered in a targeted fashion to those with income losses, the actual MPC may be higher than assumed, particularly to the extent that consumers are liquidity constrained. A second observation is that the amount of support to aggregate demand from the automatic stabilizers is frequently much less than that provided by discretionary actions.

Conclusion

Fiscal policy has frequently been stimulative during recessions and early during the recovery. Much of the stimulus has come from policies that were put in place for non-counter-cyclical reasons, notably defense spending and structural changes to the tax system. Owing to the composition of policies chosen, on average, a 1 percentage point increase in the deficit for two years is estimated to boost demand by 0.4 percent of GDP in the first year and 0.6 per cent of GDP in the second year. This was the case for the 2008-10 stimulus program, for example. One reason for the low direct multipliers is that it is difficult to increase federal purchases quickly, and federal transfer programs and grants programs that may have relatively high multipliers are generally small and slow to implement. Accordingly, tax cuts have been an important component of stimulus programs, but they are not particularly effective.

Further work may be fruitful in two areas: improved measurement of the fiscal policy changes, and estimating the aggregate demand response. With regard to measuring policy changes, more attention can be given to precise timing (when the policy is announced versus when it is implemented), size (initial estimates by budget agencies versus *ex post* values), and defining the baseline. With regards to the latter, the U.S. has shifted to inflation-indexed tax and benefit systems in the 1970s and 1980s. As noted earlier, in the 1970s some tax policies are scored as tax cuts even when they allow effective tax rates to rise due to bracket creep. Moreover, the failure to adjust the tax code during episodes of high inflation should arguably be scored as a tax increase. Our survey of the empirical literature with regards to the to the demand effects of policy actions indicates that the direct effect on consumption from tax and transfer changes is better understood than the changes in state and local spending to federal aid, or the changes in investment to temporary tax credits (partial expensing, first time home buyers credits, etc). Better understanding of the state and local government response to temporary increases in aid would particularly useful.

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